## Atlas of

## Urban Expansion

## The 2016 Edition Volume 2: Blocks and Roads



Shlomo Angel, Patrick Lamson-Hall, Manuel Madrid, Alejandro M. Blei, and Jason Parent, with

# Atlas of Urban Expansion The 2016 Edition Volume 2: Blocks and Roads 

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Cover Image: The urban periphery of Kolkata, India (left) and Lima, Peru (right)

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## FOREWARD

The Atlas of Urban Expansion - 2016 Edition presents maps and measures of the recent, as well as the long-term, expansion of cities in an easily accessible format, providing authoritative data, information, and advice on current and emerging urbanization trends and conditions in cities the world over.

The study underlying the Atlas pushes forward the borders of the 'science of cities' using state-of-theart research, satellite imagery, and novel analytical techniques to produce one of the most critical masses of urban indicators and metrics since Habitat II. Much like medical science before it, this book adopts cities as units of analysis and studies them together to discover patterns of similarities and differences among them.

UN-Habitat, the UN agency charged with overseeing, reporting, and advising on world urbanization trends and developments, has started to monitor these trends and developments with a new UN Global Sample of Cities. This sample - composed of 200 cities that statistically represent the urban world-was created, tested, and applied in a series of studies undertaken by a tri-partite collaboration between UN-Habitat, New York University, and the Lincoln Institute of Land Policy. The Atlas of Urban Expansion - 2016 Edition is part of a broader research programme entitled Monitoring Global Urban Expansion that, in different products, provides maps and metrics on the growth and expansion of cities the world over, along with information regarding the quality of that expansion, the performance of the housing sector, and the state of regulatory regimes in the expansion areas of cities, the areas built between 1990 and 2014. All these studies provide globally representative evidence to substantiate and support the implementation, follow-up, and review of the city-related Sustainable Development Goals
and the New Urban Agenda.
The results of this study are quite shocking: urban growth is mostly taking place in an unplanned and disorderly manner, informality is becoming more common over time, cities are expanding their territories faster than their populations, residential densities are decreasing dramatically, public spaces and the lands allocated to streets and arterial roads are also in decline. All these are real, empirical facts, proving that the contemporary model of urbanization is becoming highly unsustainable.

The aim of this study is to provide informed analyses to policy makers, public officials, research administrators, and scientists for use in their decision-making processes. In this sense, the Atlas of Urban Expansion is part of the emerging 'science of policy' that is dedicated to the production of knowledge that best serves the public interest.

Joan Clos, Under-Secretary-General, United Nations
Executive Director, UN-Habitat
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The chronicle of global urbanization that follows offers a visually stunning example of how increasingly enhanced satellite technology might be used to guide the future growth of the world's cities. The Atlas of Urban Expansion - The 2016 Edition underscores a basic truth: we'll need to do a better job managing this planet of cities over the next decades than we did during the last few. The next half-century represents our last and only opportunity to get urbanization right. As we welcome hundreds of millions of people into our cities in the coming decades, we'll need our best tools to craft them into the cities we, and the planet, need. The Atlas is one of those tools.

Buttressed by survey research that connects actions on the ground with the view from space, the Atlas begins to articulate a more informed narrative about the relationship between land policies and urban form. Only by understanding the quality of urban growth that has occurred up to this point, and the efficacy of our efforts to manage it, can we hope to make the necessary changes in urban practice that we need to build environmentally and fiscally sustainable places.

An urban observatory based on the approach demonstrated in the Atlas will play an important role in monitoring the implementation of the New Urban Agenda following Habitat III in Quito, Ecuador in October 2016. It will produce a more scientific, evidence-based record of city-building-holding us, and UN member states, accountable for delivering on our commitments to create the better urban future embodied in the New Urban Agenda and the Sustainable Development Goals. We will see whether cities
are on the right track by observing from space and on the ground if cities are getting better for all of the billions of citizens inhabiting them; and not just observing, but testing hypotheses regarding what we think will work, and finding out what does.

The Lincoln Institute of Land Policy was honored to begin this work with Shlomo "Solly" Angel and his team, establishing the original online Atlas of Urban Expansion and publishing two books, The Atlas of Urban Expansion and Planet of Cities. We celebrate this next stage of this important undertaking, in partnership with New York University and UN-Habitat: The Atlas of Urban Expansion-2016 edition.

George W. "Mac" McCarthy
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The anti-sprawl agenda-decrying unplanned, low density, fragmented and non-compact urban expansion - has been guiding city planners for decades and we now find that the majority of cities have adopted land use plans that seek to contain their outward expansion in one form or another. This new finding raises a number of important questions: Has the expansion of cities - still propelled by urban population growth, by larger incomes that allow residents to consume more land, by inexpensive transport that allows them to travel to work over longer distances, and by resistance to the densification of built-up neighborhoods-slowed down, or even halted? Are average urban population densities increasing or decreasing? Where are the new urban areas, the areas developed during the past twentyfive years? Are these areas being properly laid out before development occurs? Are sufficient public works - be they local roads that organize neighborhoods or arterial roads that connect workers to the best jobs available to them - being put in place, or does the new urban periphery remain largely invisible to municipal officials, suffering from benign neglect?

In the past, these questions could only be answered, if at all, by studies that focused on one city in detail, on a few cities in one country, or on a few cities in a few countries, and concluding these studies with hints or implications for overall urban policy everywhere. Worse yet, researchers - attracted to cities with better data-often chose to study cities in more developed countries and then offer urban policy recipes for cities in less developed ones, where conditions - rapid rates of population growth, inadequate municipal or housing finance, and weak rule of law, for example - make the transfer of knowledge, policy prescriptions, and planning practices rather irrelevant. The observation that there will be eighteen or more new urban residents in less developed countries in the coming decades for each new urban
resident in more developed ones, makes such intellectual exports even less relevant.
The new Atlas of Urban Expansion - 2016 Edition sheds new light on some of these questions by studying urban expansion and urban peripheries in cities the world over, be they in more developed or less developed countries, be they familiar megacities with many millions of residents or unfamiliar provincial towns with 100,000 inhabitants or more. With a new focus on a carefully chosen sample of 200 cities from the entire universe of cities - all 4,231cities and metropolitan areas that had 100,000 people on more in 2010 - it becomes possible to gather new knowledge about cities, knowledge that had thus far eluded us. The new Atlas explores a number of new data layers that pertain to this global sample of cities and that can now inform us about the universe of cities as a whole. It also offers us a new platform for studying more and more data layers in the future in a systematic manner, quickly becoming an effective tool for monitoring cities globally, a tool that will allow us to monitor the New Urban Agenda and the city-based Sustainable Development Goals in a rigorous and systematic manner in the years to come.

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## GHAPTER 1

## The Dynamics of Global Urban Expansion

The Atlas of Urban Expansion-The 2016 Edition provides maps and estimates of the dimensions and attributes of urban expansion in a global sample of 200 cities. These maps and estimates should help us examine two sets of simple questions. First, what are the physical extents of urban areas on our planet today, what are their key attributes, and how and why are they changing over time? Second, how well configured are recently built urban peripheries, and how and why are layouts changing over time? Answers to these questions, provisional as they may be, may make us all less fearful of the rapid expansion of the urban peripheries of our cities, and hence better able to confront this expansion in a meaningful way. In large part, these are not theoretical questions but rather practical ones. Allowing cities to expand simply through the cumulative acts of their residents carries heavy costs. City residents need to engage - as responsible citizens acting together in their common interest - in ensuring that urban peripheries are laid out in a timely and pragmatic manner before they are occupied, as urban communities have done many times in the past. This is a seemingly simple task that, for one reason or another, we are failing at today - as an initial inspection of the Atlas clearly shows - with serious consequences for the productivity, inclusiveness, and sustainability of our cities in the decades to come.

Humanity is in the midst of its most ambitious project, the Urbanization Project - the gradual movement of people away from being closer to the land to being closer to each other. This project, which entails accommodating increasing numbers of people in cities, started in earnest at the beginning of the eighteenth century when less than $10 \%$ of the people lived in cities, and will be largely complete by the end of the twenty-first century when three-quarters or more of humanity will live in cities. By 1950, only $30 \%$ of the world's population resided in cities. That share increased to $54 \%$ by 2015 and is now expected to increase to $66 \%$ by 2050 . The world's urban population is expected to increase from 4.0 billion in 2015 to 6.3 billion in 2050, and almost all of this growth is expected to take place in less developed countries (figure 1.1). Cities in more developed countries will add only 130 million people to their populations during this period. Cities in less developed countries will need to absorb 18 times that number, or close to 2.3 billion people, thereby increasing their total urban population of 3.0 billion in 2015 by $75 \%$ (United Nations Population Division 2014, files 2 and 3).

FIGURE 1.1:
Increases in the urban population of more developed and less developed countries, 1950-2050


When cities grow in population and income, they grow outwards and upwards (figure 1.2). The amount of outward expansion is typically underestimated and the quality of urban layouts in expansion areas is largely unknown. The population of cities in less developed countries doubled between 1990 and 2015, for example - the time period covered in this Atlas - and their urban extents increased on average
by a factor of 3.5. In parallel, the population of cities in more developed countries increased by a factor of 1.2 between 1990 and 2015; their urban extents increased by a factor of 1.8 . The areas of cities are growing at a faster rate than their populations, in part because economic development results in more consumption in general and more land consumption per capita. In fact, average urban densities in less developed countries - 3.3 times higher than densities in more developed countries in 1990 - declined at an average annual rate of $2.1 \%$ between 1990 and 2015. In more developed countries, densities declined at $1.5 \%$ during this period. Urban land consumption per capita in these regions-the reciprocal of density-increased at identical rates.

FIGURE 1.2:
The outward and upward growth of Panama City, Panama, 1930-2009


Images via: Skyscraper City, Brian Gratwicke
These trends are likely to continue in one form or another. Between 2015 and 2050, urban extents in more developed countries can be expected to increase by a factor of 1.9 at the current rate of increase in land consumption, by a factor of 1.5 at half the current rate, and by a factor of 1.1 if land consumption per capita remains constant over time. During this period, urban extents in less developed countries will increase by a factor of 3.7 at the current rate of increase in land consumption, by a factor of 2.5 at half the current rate, and by a factor of 1.8 if land consumption remains constant.

By now, it should be clear that we cannot hope to slow down the urbanization process or to shift populations among cities. People are free to move within their own countries and their right to move is
enshrined in the Universal Declaration of Human Rights. ${ }^{1}$ We know that population growth in cities large and small cannot be guided by policy effectively. But the conversion of land from rural to urban use is very much guided and influenced by policy.

When cities grow in population and wealth they expand. As cities expand, they need to convert and prepare lands for urban use. Stated as a broad policy goal, cities need adequate lands to accommodate their growing populations and these lands need to be affordable, properly serviced, and accessible to jobs to be of optimum use to their inhabitants. To meet this goal, cities need concerted public actionaction that secures adequate lands for public works and public open spaces in advance of development, for example - that precedes and guides the operation of the free market on the urban fringe. In the absence of concerted public action, land and housing markets, efficient as they may be in theory, will fail to perform properly in practice.

Indeed, an initial inspection of urban layouts in the global sample of cities suggests that most of the residential fabric in the expansion areas of cities (1990-2014), especially in less developed countries, is unplanned and disorderly, taking place in defiance of municipal plans or regulations. It suggests that the share of urban lands that are laid out before occupation is declining over time; it also suggests that the share of the areas of cities within walking distance of arterial roads is declining as well, failing to connect urban peripheries effectively to metropolitan labor markets, making cities less productive, less inclusive, and less sustainable. In many cities, not enough land is allocated to local streets, segregating neighborhoods, minimizing redundancy in route selection, and creating serious bottlenecks, all of which impede the integration of the urban fringe into the city. The share of the land allocated to streets in newly urbanized areas is also declining. Substantial areas on the urban fringe consist of large city blocks and a very small share of intersections that are 4-way, which creates traffic jams and compromises walking and biking. In addition, the average block size is increasing over time.

Yet, there is reluctance to engage with the prospects of urban expansion, perhaps for perfectly understandable reasons. Many people believe that cities consume enough land as it is, and that all future construction should take place within existing urban footprints. Others oppose expansion to conserve municipal budgets, reduce commuting and its subsequent traffic congestion, help decaying central cities thrive again, conserve energy, reduce air pollution, or protect precious cultivated lands at the urban

[^0]fringe. This reluctance, reasonable as it may seem, keeps the reality of urban expansion in the dark and prevents us from addressing it in a clear and forthright manner.

Empirical data on actual urban expansion, its key attributes, and their change over time can provide a much-needed basis for understanding the global and historical contexts of urban expansion. Coupled with theories that could explain the underlying forces that propel and shape urban expansion, these data could provide the evidence needed to assess and address our concerns: that it would be very difficult, if not futile, to resist urban expansion in the face of rapid population growth; that ignoring it or denying it in the hope that it will not occur will simply allow expansion to take place unhindered and in a more costly and destructive way. Acquiring a better understanding of expansion will make it less formidable and more manageable. Making minimal yet effective preparations for it is the only responsible way to proceed.

The Atlas of Urban Expansion-2016 Edition focuses on the land converted to urban use in the past 25 years in a global representative sample of 200 cities. It provides maps and metric data on the spatial changes in these cities during this period with the aim of helping cities the world over make realistic plans in preparing lands for their future expansion. Increased global awareness is urgently needed to better understand and plan for this massive expansion of cities in coming decades. Local and national governments, civic institutions, international organizations, and concerned citizens will need to advocate for and implement minimum adequate preparations of lands for urban expansion. For example, it is vital that cities acquire the rights-of-way for arterial roads that can carry public transport and trunk infrastructure, and that cities protect selected open spaces on the urban periphery from encroachment in advance of the coming expansion. The sooner they act, the more effective and the less costly it will be.

It is important to note that the risks of making at least some preparations on the urban periphery for the expected expansion of cities are asymmetrical. The risk of failure to prepare adequate lands for expansion carries a high cost. It will likely result in disorderly development with a shortage of arterial roads that provide access to the job market from the urban periphery, with land supply bottlenecks that render housing unaffordable, with a shortage of public open spaces, and with damage to areas of high environmental risk. It will be next to impossible to secure lands for arterial roads or public open spaces in the expansion areas of cities after they have been occupied. The damage to the productivity, the inclusiveness, and the sustainability of these cities will have been done. In contrast, as long as investments in land preparation are kept to a minimum, the risk of preparing too much land for urban expansion and keeping it vacant or in agricultural use is rather low.

The main objective of this edition of the Atlas, like its previous 2012 edition, is to increase awareness
and help residents, policy makers, and researchers around the world come to terms with and prepare for the expected global urban expansion in the coming decades. This call for action is timely because, as noted earlier, the Urbanization Project now underway will be largely completed by the end of the twenty-first century. By then, it will be too late to turn the tide. If the land required for public works or public open spaces is not protected from encroachment before it is developed, it will be next to impossible to ensure the orderly development of cities to make them more productive, more inclusive, and more sustainable in the decades to come.

## MONITORING GLOBAL URBAN EXPANSION

The Atlas of Urban Expansion-2016 Edition is part of a long-term research project that includes a series of related publications and online resources and involves a number of partnerships and funding sources. The earlier phases of the research program, leading to the creation of this new atlas, culminated in the publication of The Dynamics of Global Urban Expansion (Angel et al., 2005), and The Atlas of Urban Expansion (Angel et al., 2012). The World Bank supported the research work for the former publication and the Lincoln Institute of Land Policy supported research for the latter, as well as its publication. Research for both publications focused on the collection and analysis of satellite imagery and population data for a global sample of 120 cities in two time periods, 1990 and 2000. Research for the Atlas of Urban Expansion also included collecting, geo-referencing, and digitizing the historical maps of the built-up areas of cities at 20-25 year intervals for the period from 1800 to 2000 for a representative sub-group of 30 cities from the 120 -city sample. The policy implications and the general lessons drawn from these data collection and analysis efforts were summarized in a policy focus report entitled Making Room for a Planet of Cities (Angel et al., 2011) and elaborated upon in the book Planet of Cities (Angel, S., 2012).

The NYU Urban Expansion Program at the Marron Institute of Urban Management and the Stern School of Business at New York University, in partnership with the United Nations Human Settlements Programme (UN-Habitat) and the Lincoln Institute of Land Policy, initiated a multiphase research effort in 2014 to expand the monitoring of the quantitative and qualitative aspects of global urban expansion to more cities, more time periods, and more attributes. The monitoring program is now in advanced stages of completion of three interdependent phases. A number of new phases, requiring new partners and new sources of funding, are in earlier stages of development.

Phase I-the mapping and measurement of global urban expansion-focused on mapping and measuring urban extent, average built-up area density, fragmentation of the built-up area of the city by open spaces, and compactness of the geographical shapes of urban extents in the global sample of 200
cities in three time periods: circa 1990, circa 2000, and circa 2014. This phase required the classification and analysis of medium-resolution Landsat satellite imagery as well as the analysis of population data associated with the enumeration zones that contain the built-up areas of these cities. The key output of this phase is the Atlas of Urban Expansion - 2016 Edition, Volume 1: Areas and Densities. This volume will be available online (www.atlasofurbanexpansion.org) as an open source of data for all interested parties worldwide, including a PDF version, spreadsheets, and GIS files, all available for download. This phase will include a number of technical reports and publications focused on findings in peer-reviewed journals and other venues.

Phase II-the mapping and measurement of urban layouts-focused on the recently-built urban peripheries (areas built between 1990 and 2014) in the global sample of 200 cities; urban areas built before 1990 compared to areas built between 1990 and 2014 in cities in the global sample; and city areas built in five different time periods (before 1900, between 1900 and 1930, between 1930 and 1960, between 1960 and 1990, and between 1990 and 2014) in a representative subgroup of 30 cities from the global sample. This phase relied on digitizing and analyzing a random sample of 10 -hectare locales using high-resolution Bing and Google Earth imagery. This analysis yielded information and metrics on different attributes of urban layouts that could be observed from space: the share of residential areas that were laid out informally, formally, or not at all; the share of the land that was laid out in rectangular grids; the share of the land in streets; the average width of streets; the average size of blocks; the density of 3-way and 4-way intersections; and the share of the built-up area within walking distance of arterial roads, among others. The key output of this phase is the Atlas of Urban Expansion-2016 Edition, Volume 2: Blocks and Roads. This volume will also be available online (www.atlasofurbanexpansion.org) as an open source of data for all interested parties worldwide, including a PDF version, spreadsheets, and GIS files, all available for download. This phase will include a number of technical reports and publications focused on findings in peer-reviewed journals and other venues.

Phase III-The Land and Housing Survey in a Global Sample of Cities - included two separate survey instruments in ten languages. The first, The Survey of the Regulatory Regime Governing Land and Housing, captured land ownership patterns, land-use planning practices, and the development of new subdivisions in the expansion areas of cities. The second, The Affordability Survey, measured the prices as well as the key attributes of different types of residential plots, houses, and apartments available for sale or rent in the 200 cities in the global sample and compared them to household incomes in these cities. This phase required the engagement of city-based researchers in the 200 cities in the global sample, as well as regional coordinators based at New York University. The two surveys are now
complete. This phase will also include a number of technical reports and publications focused on the findings in peer-reviewed journals and other venues, but the results of this survey are not included in the Atlas.

Selected findings from all three phases were used by the three partners-UN- Habitat, New York University, and the Lincoln Institute of Land Policy - at Habitat III: United Nations Conference on Housing and Sustainable Urban Development that took place in Quito, Ecuador, from the 17th to the 20th of October 17-20, 2016, and were also presented at Habitat III, both at selected events at Habitat III and in audiovisual displays at conference venues throughout the conference.

## CHAPTER 2

## The Global Sample of Cities

## THE 2010 UNIVERSE OF 4,231 CITIES

The study of global urbanization trends from the perspective of countries in which national censuses differentiate between urban and rural populations yields important insights and policy prescriptions as we have seen in the previous chapter. Yet these results are limited because national urban population statistics lump all cities, large and small, together. We can advance our knowledge and understanding of global urbanization attributes and trends if we focus our attention on all the cities in the world, rather than on all countries, as units of analysis.

Identifying the universe of all cities in a given year requires a definition of what constitutes a city. Since cities have been defined along many different dimensions, any such definition involves a choice, or rather a number of choices. Cities can be distinguished from hamlets, villages, or towns by population thresholds; they can be identified by their historical centers, their municipal boundaries, the commuting patterns of their workers, or their geographical extent (Parr, 2007). They can also be identified by their local newspapers or by their local sports teams. We chose to identify cities first by a population threshold and then by their geographical extent. To ensure that the settlements we defined were indeed cities, we
chose a population threshold of 100,000 , a threshold that is above the thresholds used to define what constitutes a city in all countries except China.

Identifying cities by their geographical extent follows the Roman tradition of defining a city by the edge of its built-up area, its extrema tectorum. That geographical extent is typically associated with a city name, the name of its largest and most prominent historical center. The built-up areas of municipalities the governmental units associated with well-defined administrative boundaries-often merge into each other over time, as do their labor markets, as more and more people live in one municipality and commute to work in another. We define cities as agglomerations of contiguous built-up areas (and the open spaces in and around them) that may contain a large number of municipalities but, more often than not, constitute a single labor market. We consider the metropolitan region of São Paulo, Brazil, for example, to be a single city even though it contains no fewer than 39 municipalities (figure 2.1). We define São Paulo as a city by its urban edge, its extrema tectorum, which can be derived from freely available satellite imagery. In 2010, there were 156 free standing cities of 100,000 people or more in Brazil that had their own contiguous built-up areas made up of one or more municipalities. In contrast, there were no fewer than 5,570 municipalities in the country at that time, defined as administrative subdivisions of its national territory.

FIGURE 2.1:
The urban extent of São Paulo, Brazil (grey), showing the administrative boundaries of the 39 municipalities that constituted its metropolitan region. The urban extent of São Paulo is contained in 31 municipalities (bounded in a red line).


Using the population threshold and geographical extent definition of a city enables us to construct an entire universe of cities for the world at large. Other, possibly more precise, definitions that use information on commuting patterns or on small-area population densities cannot be used to create such a universe of cities because those data are not universally available for all cities in all countries.

Ideally, the population of a city in the universe, using our definition of population threshold and geographical extent, is the share of the population within the geographical area of the city in all the administrative (or census enumeration) zones that encompass that extent-identifiable in satellite imagery - excluding the population of villages and towns within those zones that are not part of its extent. These population estimates can, in principle, be constructed from available population data for census enumeration zones for dates roughly corresponding to 1990, 2000, and 2010. They require population data for well-defined enumeration zones, as well as rules for allocating the population of a given zone among its urban and rural built-up areas. We used this more demanding method of obtaining population estimates for the urban extent of all 200 cities in the global sample of cities described here.

For the remaining cities in the universe, we used a number of data sources that provide information on their populations, associating population with city names and coordinates without associating a specific set of enumeration zones with those names. Notably, the most useful sources on information on city populations were the United Nations Population Division (for cities of 300,000 or more) and the website www.citypopulation.de (Brinkhoff, 2016). Both sources had been consulted extensively to construct the 2010 universe of cities. That said, neither source could provide precise data on Chinese cities. According to the official definition of a city in China, the country had no more than 662 cities in 2010. We have identified a total of 1,029 settlements in China that had contiguous geographical extents of substantial area as well as populations of 100,000 or more in 2010. Their populations were estimated from data we obtained from the Chinese Academy of Sciences.

All the cities that were found to contain 100,000 or more people in 2010 were identified on Google Earth to determine whether they were part of larger urban agglomerations. Urban agglomerations were identified and listed in the universe by a single city name. Only cities that were not part of larger, named urban agglomerations were listed as cities in the universe.

The 2010 universe of cities is the third universe of cities constructed by the authors and their colleagues. The first universe of cities, described in The Dynamics of Global Urban Expansion (Angel, S. et al., 2005), identified a total of 3,943 cities with 100,000 or more residents in 2000 . The second universe of cities, described in the Atlas of Urban Expansion (Angel, S., et al., 2012), identified a total of 3,646 cities that had 100,000 or more people in 2000. The 2010 universe of cities shown in figure 2.2 contains a total
of 4,231 free-standing cities in 172 countries or territories that had 100,000 or more people that year.
The universe of cities provides us with a new and powerful tool for analyzing urbanization patterns, attributes, and trends on a global scale. It makes it possible for us to assign individual values to cities in the universe - such as populations or population growth rates, for example - and then to study variations in these values among regions, income groups, or population sizes. However, the greatest and most promising value of having a universe of cities is in taking a stratified sample of cities from this universe and obtaining rigorous results from this sample and generalizing these results to the universe of cities as a whole. The global sample of 200 cities, drawn from the 2010 universe of cities, is the focus of this Atlas.

FIGURE 2.2:
The 2010 Universe of Cities, comprising a total of 4,231 cities that had 100,000 people or more in 2010.


## THE GLOBAL SAMPLE OF CITIES

Beyond the names of cities, their locations, and their estimated populations at several points in time, no quantitative information pertaining to the universe of cities is available at this time. We can learn more about these cities by studying a carefully constructed sample from this universe selected with the goal of obtaining quantitative measures that can be generalized to the entire universe. For this edition of the Atlas, we selected a global sample of 200 cities (see figure 2.1). The sample was stratified so as to be more representative of this universe - namely, to ensure that cities of all sizes, from all regions, and from large and small countries were well-represented. The sample was constructed with three strata in mind:

World Regions: Cities were selected at random from eight world regions in proportion to the urban population in each region. The eight regions were:
(1) East Asia and the Pacific;
(2) Southeast Asia;
(3) South and Central Asia;
(4) Western Asia and North Africa;
(5) Sub-Saharan Africa;
(6) Latin America and the Caribbean;
(7) Europe and Japan; and
(8) Land-Rich Developed Countries.

City Population Size: An approximately equal number of cities were selected at random from four ranges of population size, each range containing one-quarter of the total population of the cities in the universe. The population ranges were:
(1) 100,000-427,000;
(2) $427,001-1,570,000$;
(3) $1,570,001-5,715,000$; and
(4) 5,715,001 and above.

Number of Cities in the Country: Cities were selected at random from three country groups identified by the number of cities in the country in proportion to the urban population in each group. The three groups were:
(1) $1-9$ cities;
(2) 10-19 cities; and
(3) 20 or more cities.

The eight world regions largely followed the divisions presented in the United Nations' World Urbanization Prospects (U.N. Population Division, 2014), with minor changes. The United Nations divided countries into two mega-regions: more developed countries and less developed countries. The more developed countries mega-region included North America (U.S. and Canada), Australia and New Zealand, Europe, and Japan. The less developed countries mega-region included all other countries, even though some of them, (e.g. Singapore), had higher per capita income than many more developed countries. The more developed countries mega-region was divided in two to reflect different patterns of urban expansion: (1) Europe and Japan, with lower levels of arable land per person and typically higher urban densities; and (2) land-rich developed countries (U.S., Canada, Australia, and New Zealand) with higher levels of arable land per person and typically lower urban densities. The less developed countries
mega-region was divided into six regions: (1) East Asia and the Pacific, (2) Southeast Asia, (3) South and Central Asia, (4) Western Asia and North Africa, (5) Sub-Saharan Africa, and (6) Latin America and the Caribbean (see figure 2.3). To ensure that there were a minimum number of cities representing each of the eight world regions, we over-sampled cities from the smaller regions - Southeast Asia and Western Asia and North Africa - and under-sampled cities from the largest region, East Asia and the Pacific.

FIGURE 2.3:
The assignment of countries into eight world regions.


The assignment of cities in the universe of cities to four population-size categories entailed ranking the cities in the universe in increasing order of their populations and then dividing them into four ranges -small, medium, large, and very large cities -so that each of the four ranges contained approximately the same total population. The universe of cities had a total population of 2.49 billion in 2010. The four population-size ranges had approximately 622 million people in each range. This division into ranges resulted in a highly skewed distribution of the number of cities in each range: there were 3,150 small cities in the first range, 814 medium-sized cities in the second, 227 large cities in the third, and only 54 very large cities in the fourth. Each range contained approximately one-quarter of the number of cities in the preceding range, yet each range contained the same population total. Sampling at random from the universe as a whole would have resulted in three-quarters of the cities in the sample being small cities. Instead, we opted to under-sample small cities and to over-sample larger ones, drawing approximately the same number of cities from each city-size range. More specifically, we drew 56 small cities, 50 medium-sized ones, 54 large ones, and 40 very large ones from the universe. As a result of this decision, the 200 cities in the sample - while constituting only $4.7 \%$ of the total number of cities in the universe - contained $29 \%$ of the population of the universe.

Finally, the assignment of cities to one of three groups, each pertaining to the number of cities in the country, was important to ensure that countries with fewer cities were adequately represented in the sample. Indeed, less than $7 \%$ of the population of the universe of cities was found to be in countries with 1-9 cities and less than $6 \%$ in countries with 10-19 cities. Almost $88 \%$ were in countries with 20 or more cities. Cities in the first two groups would be under-represented if the sample were drawn at random from the universe as a whole. To correct this bias, we sampled cities from countries with fewer cities in slightly higher proportion than the share of their population in the universe of cities. As a result, the sample contains cities from as many as 79 countries.

Summary values for the three strata comparing the cities in the universe and the cities in the sample are given in table 2.1. The location of cities in the sample is shown in figure 2.4.

TABLE 2.1:
A comparison of the universe of cities and the sample of cities, stratified according to world regions, city population ranges, and number-of-cities-in-the-country groups.

| Categories in the Three Strata |  | Universe of Cities |  |  |  | Sample of Cities |  |  |  | Sample/Universe Ratios |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Category ID Number | Categories | Number <br> of Cities <br> in this <br> Category in <br> Universe | Share of <br> Cities in this <br> Category in <br> Universe | Population in this Category in Universe | Share of Population in this Category in Universe | Number of Cities in this Category in Sample | Share of Cities in this Category in Sample | Population in this Category in Sample | Share of Population in this Category in Sample | Ratio of Cities in this Catgory in Sample and Universe | Ratio of Population in this Catgory in Sample and Universe |
| World Regions |  |  |  |  |  |  |  |  |  |  |  |
| 1 | East Asia and the Pacific (EAP) | 1,081 | 26\% | 652,310,754 | 26\% | 42 | 21\% | 174,414,516 | 24\% | 4\% | 27\% |
| 2 | Southeast Asia (SEA) | 229 | 5\% | 143,551,770 | 6\% | 15 | 8\% | 53,516,916 | 7\% | 7\% | 37\% |
| 3 | South and Central Asia (SCA) | 693 | 16\% | 387,180,823 | 16\% | 32 | 16\% | 115,807,394 | 16\% | 5\% | 30\% |
| 4 | Western Asia and North Africa (WANA) | 301 | 7\% | 176,496,133 | 7\% | 15 | 8\% | 57,446,118 | 8\% | 5\% | 33\% |
| 5 | Sub-Saharan Africa (SSA) | 329 | 8\% | 186,702,647 | 8\% | 18 | 9\% | 51,003,826 | 7\% | 5\% | 27\% |
| 6 | Latin America and the Caribbean (LAC) | 483 | 11\% | 310,444,386 | 12\% | 26 | 13\% | 89,709,870 | 12\% | 5\% | 29\% |
| 7 | Europe and Japan (E\&J) | 781 | 18\% | 389,298,026 | 16\% | 34 | 17\% | 119,848,657 | 16\% | 4\% | 31\% |
| 8 | Land-Rich Developed Countries (LRDC) | 334 | 8\% | 242,563,694 | 10\% | 18 | 9\% | 70,259,700 | 10\% | 5\% | 29\% |
|  | Grand Total | 4,231 | 100\% | 2,488,548,233 | 100\% | 200 | 100\% | 732,006,997 | 100\% | 5\% | 29\% |
| City Population Ranges |  |  |  |  |  |  |  |  |  |  |  |
| 1 | 100,000-427,000 | 3,143 | 74\% | 622,020,086 | 25\% | 59 | 30\% | 14,185,408 | 2\% | 2\% | 2\% |
| 2 | 427,001-1,570,000 | 811 | 19\% | 621,981,767 | 25\% | 47 | 24\% | 38,611,298 | 5\% | 6\% | 6\% |
| 3 | 1,570,001-5,715,000 | 225 | 5\% | 617,006,284 | 25\% | 54 | 27\% | 173,340,491 | 24\% | 24\% | 28\% |
| 4 | 5,715,001+ | 52 | 1\% | 627,540,096 | 25\% | 40 | 20\% | 505,869,800 | 69\% | 77\% | 81\% |
|  | Grand Total | 4,231 | 100\% | 2,488,548,233 | 100\% | 200 | 100\% | 732,006,997 | 100\% | 5\% | 29\% |
| Number-of-Cities-in-the-Country Groups |  |  |  |  |  |  |  |  |  |  |  |
| 1 | 1-9 | 368 | 9\% | 183,410,690 | 7\% | 24 | 12\% | 38,599,273 | 5\% | 7\% | 21\% |
| 2 | 10-19 | 306 | 7\% | 160,113,938 | 6\% | 17 | 9\% | 41,477,283 | 6\% | 6\% | 26\% |
| 3 | $20+$ | 3,557 | 84\% | 2,145,023,605 | 86\% | 159 | 80\% | 651,930,441 | 89\% | 4\% | 30\% |
| Grand Total |  | 4,231 | 100\% | 2,488,548,233 | 100\% | 200 | 100\% | 732,006,997 | 100\% | 5\% | 29\% |

The new global sample of 200 cities is different in some respects from the sample of 120 cities used in the two earlier publications, The Dynamics of Global Urban Expansion (Angel et al., 2005) and Atlas of Urban Expansion (Angel et al., 2012). The first two strata, eight world regions, and four city population size ranges used in the earlier sample were maintained. However, the earlier sample used countries' Gross Domestic Product (GDP) per capita as a stratum. This was abandoned because of the strong correlation between the regional affiliation of cities in the sample and their countries' GDP per capita. The number
of cities in the country was introduced instead as a third stratum for the reasons explained here. Cities in the earlier sample that fit into the new sampling framework were retained in the new sample. Other cities were dropped because they were parts of larger metropolitan agglomerations, they had less than 100,000 people in 2010, or they did not represent enough similar cities in the universe. Altogether, 96 cities from the earlier sample of 120 cities are in the new sample. The earlier classifications of the satellite imagery of these cities were revisited, completed, and corrected where necessary. New metrics were derived for them as well, in line with the revised definitions of the metrics in this edition of the Atlas described in detail in the following chapter.

FIGURE 2.4:
The global sample of $\mathbf{2 0 0}$ cities.


The simplest way to envision the stratified sampling process, given the three strata chosen in this edition of the Atlas, is to envision these strata as dimensions: world regions along the x -axis, city population size ranges along the y -axis, and the number of cities in the country groups along the z -axis. Each city in the universe (or in the sample, for that matter) could then be seen as belonging to a box in three-dimensional space, identified by a three-digit number, its world region (1-8), its city population size range (1-4), and its number of cities in the country group (1-3) (see figure 2.5). Halifax, Canada, for example, belongs to box 813. It is located in Region 8 (land-rich developed countries); it had 390,000 people in 2010, assigning it to city population size range 1; and Canada had 34 cities in the 2010 universe of cities, assigning Halifax to number of cities in the country group 3 ( $20+$ cities in the country). Box 813 contains all 210 cities in the universe that were located in land-rich developed countries, that had less than 427,000 people in 2010, and that were in countries with 20 cities or more.

FIGURE 2.5:
The sampling framework comprising 96 boxes, each box corresponding to one of eight world regions, one of four city-population-size ranges, and one of three number-of-cities-in-the-country groups (8 x $4 \times 3=96$ ).


Of the 96 boxes $(8 \times 4 \times 3=96)$ shown in figure 2.5, only 76 had cities in the universe of cities. The rest were empty. Of these, 61 boxes had cities in the sample. The remaining 15 boxes that are not represented by cities in the sample contain 114 cities in the universe with a total population of 63.2 million, comprising $3 \%$ of the cities and $3 \%$ the population of the universe in 2010 . These cities were assigned to "nearby" boxes, boxes in the same region with cities with similar population size and similar number of cities in the country assignments, to be represented by the sample as well. In this manner, all the cities in the universe were represented by cities in the sample.

The process of selecting cities in this framework consisted of picking cities at random from each box in rough proportion to the total population in each box. For example, four cities were selected at random to represent box 813: Victoria, British Columbia in Canada, and Gainesville FL, Killeen, TX, and Modesto, CA, in the United States. As there were 210 cities in the universe in this box, one city in the sample represented some 50 cities in the box 813. In parallel, as there were 44.9 million people in the cities in the universe in this box and 1.1 million people in the four sample cities in the box, every urban dweller in the cities in the sample in box 813 represented 40 urban dwellers in the universe of
cities in this box.
The values 50 and 40 in this example can be thought of as city-based and population-based weights respectively. They can be used to obtain weighted averages for the universe from values obtained for the sample. If a city in a given box represents 50 cities, then any value associated with it - say, its population growth rate between 2000 and 2010 - is given a city-based weight of 50 , while another city in the sample representing, say, only 27 cities is given a city-based weight of 27 . Similarly, if the population of a sampled city in a given box represents a population 40 times as large, then each resident in this city is given a population-based weight of 40 .

The population growth rates for these cities were not used as a stratum in the creation of the sample. The universe of cities contains data on the population of each city for three time periods, 1990, 2000, and 2010. We could use this information to test whether the sample was representative of the universe. Indeed, when we compared the average population growth rates between 2000 and 2010 in all the cities in the universe with both the city-based and population-based weighted averages of the cities in the sample, we found that they were not different from each other at the $95 \%$ confidence level. This assured us that the global sample of cities was indeed representative of the universe of cities.

Using these city-based and population-based weights, we can now answer new questions about the universe of cities as a whole. For example, we determined that average densities in the universe declined significantly between 1990 and 2000, and continued to decline - albeit at a significantly lower rate - between 2000 and 2014. We also determined, for example, that the average share of area that was laid out before it was occupied in the expansion zones of cities in the universe - areas converted to urban use between 1990 and 2014 - was significantly lower than it was in areas developed before 1990. In other words, the global sample of cities makes it possible, for the first time, to monitor global urban expansion in a consistent and rigorous manner. Needless to say, it can also be used to monitor other urban attributes of interest, from housing affordability to air quality, from Internet use to access to public open spaces, and from the quality of drinking water to the availability of public transport in the sample of cities to obtain valid, rigorous, comparative data-data that was never available before - on the universe of cities as a whole.

## THE REPRESENTATIVE GROUP OF 30 CITIES

A representative group of 30 cities, including 27 from the global sample of 200 cities, was created to explore long-term changes in urban expansion, urban population density, and the attributes of urban
layouts from circa 1800 until circa 2014. The selection of cities for this historical analysis was guided by two factors: their regional distribution and the availability of historic maps depicting their built-up areas at 20- to 25-year intervals. Three cities - Jeddah, Saudi Arabia, Nairobi, Kenya, and Kuwait City, Kuwait - were added to the 27 representative cities from the global sample to ensure a balanced subregional distribution of cities (figure 2.6).

FIGURE 2.6:
The location of the $\mathbf{3 0}$ cities in the representative group of cities where urban expansion was mapped and animated between 1800 and 2014.


To be included in this representative group, the relevant maps of a given city needed to depict the totality of the urban extent of the city for time periods some 20-25 years apart and have sufficiently clear landmarks to be georeferenced to Google Earth imagery. This geo-referencing process aligned the maps to a common coordinate system, thereby allowing them to be accurately compared to each other. A complete list of the map references containing the original maps used to construct the composite maps for each city is available in the earlier Atlas of Urban Expansion (Angel, S. et al., 2012).

The maps are digitized composite maps of the urban extent of a given city on different dates. A total of 261 maps were used to create the composite maps for the 30 cities in this representative sample, an average of 8.7 maps per city approximately $19 \pm 1$ years apart. The composite maps for each city with their associated populations, densities, and changes over time appear in the 2012 edition of the Atlas of Urban Expansion. They were subsequently animated to show the long-term expansion of these cities. These animations can be seen on the Atlas website at www.atlasofurbanexpansion.org.

These maps were also used in Volume 2 of the Atlas to study the changes in the attributes of urban extents over time. We divided the urban extents of the 30 cities in this representative sample to areas
that were built-up in five time periods: (1) Before $\sim 1990$, (2) between $\sim 1900$ and $\sim 1930$, (3) between $\sim 1930$ and $\sim 1960$, (3) between $\sim 1960$ and $\sim 1990$, and (5) between $\sim 1990$ and 2014. We then studied the attributes of the urban fabric and calculated the metrics associated with them in each one of these areas for each city. We used these metrics to calculate average values of each attribute - say, the share of the built-up area in streets or the average block size - in each one of the five time periods, so as to observe their changes over a century or more.

## CHAPTER 3

## Understanding and Measuring Urban Layouts

## INTRODUCTION

Volume 1: Areas and Densities focused on the physical extents of urban areas on our planet today, their key attributes, and their change over time. Its main thrust was to alert readers - be they policy makers, public officials, academics, civic groups, or interested citizens - to the quantity of land converted to urban use and its relation to urban population growth, as well as to key attributes of the resulting physical extent of cities - density, fragmentation, and compactness - and their change over time. As the maps and metrics in Volume 1 clearly illustrate, the majority of cities expand outwards at a faster rate than the population they accommodate. While higher rates of land consumption per capita are largely accounted for by economic growth, by the availability of inexpensive transport, and by the plentitude of land for urban expansion, they may still be a cause for concern, calling for public intervention in urban real estate markets. Slowing down the existing rates of urban expansion would require effective strategies to facilitate the densification of existing urban extents, both by removing regulatory barriers and by addressing local community resistance to densification in its various forms. It may entail, among other things, allowing and promoting smaller dwelling units, smaller plots, higher plot coverage, taller
buildings, the transformation of more land to residential use, and the infill of vacant open spaces, both public and private. It may also entail facilitating higher-density development in the expansion areas of cities, permitting, among other things, the construction of multi-family dwellings and small-lot townhouses, and the designation of more lands for residential use.

However, regardless of whether the rapid rate of urban expansion requires public intervention to slow it down or not, there is a second and separate concern that needs to be addressed: None of the attributes described and measured in Volume 1 informs us about the physical layouts of urban areas or about their change over time. It may well be that cities are expanding in an orderly manner - ensuring that they are as productive, as inclusive, and as sustainable as can be - and if they indeed are, then we need not be unduly concerned about the quality of their expansion. But it may also be that cities are expanding in a disorderly manner that is not productive, not inclusive, and not sustainable. In this case, the quality of their physical expansion should be of great concern, regardless of its quantitative dimensions.

Cities become more productive when all workers have access to all jobs; they become more inclusive when they provide decent and affordable housing for all, with residential amenities and good access to these jobs; and they are more sustainable when they provide more of this access with good public transport while preserving public open spaces and areas of high environmental risk from urban development. Cities expand in an orderly manner when they plan, prepare, and secure adequate lands for arterial roads and for streets - as well as their public open spaces - to organize their urban peripheries before development occurs in ways that make them more productive, more inclusive, and more sustainable. Whether they do so or not, and whether they are doing it better or worse than before, raises a set of questions that, until now, could not be properly answered: How well laid out are recently built urban peripheries, how are layouts changing over time, and why?

Volume 2: Blocks and Roads begins to provide answers to these questions by the mapping and measurement of urban layouts in the global sample of 200 cities using freely available, high-resolution, Bing satellite imagery. More specifically, it addresses three questions:

1. How well laid out are the expansion areas (areas converted to urban use between $\sim 1990$ and ~2014) in the global sample of 200 cities?
2. How well laid out are areas converted to urban use before $\sim 1990$ - the pre-1990 areas compared to expansion areas in the global sample of 200 cities? and
3. How well laid out are the areas converted to urban use in five different time periods - Period

1: before ~1900; Period 2: ~1900 - ~1930; Period 3: $\sim 1930-\sim 1960$; Period 4: $\sim 1960-\sim 1990$; and Period 5: $\sim 1990$ - $\sim 2014$ - in a representative sub-sample of 30 cities?

## THE SELECTION OF AREAS FOR ANALYSIS

The answers to the first two questions require maps identifying the pre-1990 areas and the expansion areas of all the 200 cities in the global sample. These maps can be drawn from the urban extent maps for each city in the global sample compiled in Volume 1 of this Atlas. The map of the pre-1990 area of Addis Ababa, Ethiopia, for example, is simply the map of its urban extent in $\sim 1990$. For purposes of analysis, we combined the areas converted to urban use between $\sim 1990$ and $\sim 2000$ and between $\sim 2000$ and $\sim 2014$ into one area, referring to it as the expansion area. The map of the expansion area of the city is then simply the map of its urban extent in $\sim 2014$, with its pre-1990 area excluded (see figure 3.1). That said, in the maps of the 200 cities presented in the main section of this volume of the Atlas, the two areas are shown as two distinct expansion areas.

FIGURE 3.1:
The Pre-1990 Area (ochre) and the Expansion Area (red) of Addis Ababa, Ethiopia.


Answers to the third question posed in the previous section require maps that show the history of the expansion of the 30 cities in the global representative sample of cities over the past two centuries. These maps were created and presented in the first edition of the Atlas of Urban Expansion (S. Angel et al. 2011, 260-319), and they are not reproduced in full in this edition of the Atlas. Instead, summary maps for all 30 cities, showing the areas converted to urban use in each of the five periods listed in the
previous section are given in the pages pertaining to these cities. An example of a summary map for Paris, France, showing the areas developed in five consecutive periods is given in figure 3.2.

FIGURE 3.2:
Area converted to urban use in the five different time periods in Paris, France.


We can answer a number of important questions regarding the quality of urban layouts by patiently digitizing and analyzing high-resolution satellite imagery. Bing imagery, for example, is now freely available worldwide (similar Google Earth imagery is still proprietary) and can be analyzed using identical methods in each city in the sample, thus ensuring that results are consistent and comparable. That said, such studies are very labor intensive. In small cities, digitizing key features of urban layouts can be carried out in almost the entire urban extent of the city-including both its pre-1990 area and its expansion area. In larger cities, some layout features, like the presence of arterial roads, can be digitized and analyzed for the city as a whole, but more detailed features - like residential types, the share of the land in roads, block sizes, or plot sizes - cannot be. They can be more thoroughly investigated by sampling a limited number of 10 -hectare locales at random in each of the areas of interest in the city, calculating the relevant metrics from these sampled locales, and generalizing the results for these areas of interest as a whole. In the largest cities, even the presence of arterial roads may need to be determined by sampling as well, in our case by sampling randomly selected one-kilometer squares throughout their urban extents. In broad terms, this is the procedure followed in generating the maps and metrics for this volume of the Atlas.

Most of the analysis focused on digitizing and analyzing randomly selected 10-hectare locales in the 200 cities in the global sample. All in all, a total of 20,795 locales were digitized, approximately 100 locales per city, on average. In addition, a total of 5,638 additional locales were analyzed in the subsample of the 30 cities used to study changes in urban layouts over a longer period: $\sim 1900-\sim 2014$.

The locations of these locales in a given city were determined by combining a quasi-random series of numbers known as a Halton Sequence with the XY (latitude and longitude) origins of a bounding box that encompassed the city as a whole. This procedure generates a set of points in two-dimensional space that appear to be randomly distributed but cover the space more evenly than a set of points generated at random. A particular Halton Sequence, using the same initial XY origin to generate point coordinates, always generates the same set of points in the same order. We used one tenth of a degree of longitude and latitude as XY origins to generate points for every city in the global sample. The set of points generated for the study area of Addis Ababa, Ethiopia, is shown in figure 3.3. Subsequently, in every area of interest, say the expansion area of Addis Ababa, we initially selected 40 points for analysis in the order they were identified by the Halton sequence.

FIGURE 3.3:
Quasi-random placement of potential 10-hectare locales for the analysis of urban layouts in the study area of Addis Ababa, Ethiopia, using a Halton sequence.


As noted earlier, in each city in the sample we digitized the arterial road network in its entire urban extent in order to determine the share of the relevant area within that extent that was within walking distance of an arterial road, as well as to estimate the share of the built-up area in arterial roads. To do so in an orderly fashion, we placed a one-kilometer grid over the entire urban extent of the city and then identified and digitized arterial roads in each of the grid squares. Since arterial roads within walking
distance of a built-up area may include roads outside the urban extent, we also included areas within one-kilometer of the edge of the urban extent in our analysis. The one-kilometer grid for the 2014 urban extent of Addis Ababa, Ethiopia, is shown in figure 3.4.

FIGURE 3.4:
The one-kilometer grid used to identify arterial roads in the urban extent of Addis Ababa, Ethiopia, including a one-kilometer-wide buffer around it.


In the largest cities in the global sample, identifying, digitizing, and analyzing arterial roads in their entire urban extent proved unnecessary. Instead, we selected a set of one-kilometer squares at random, using our set of Halton points described earlier. We then identified the arterial roads within each square, as well as in an area within one-kilometer of its edge, so as to be able to determine the share of the area within the square that was within walking distance of an arterial road, a road that could well be outside that square. The resulting set of randomly placed 3-by-3-kilometer areas their rounded edges are the result of being one kilometer away from the corners of the one-kilometer squares) used to identify, digitize, and analyze arterial roads on the periphery of Tokyo, Japan, is illustrated in figure 3.5.

To summarize: Measuring the attributes of urban layouts requires a focus on high-resolution satellite imagery which, in turn, requires a more careful selection of representative areas for analysis within the urban extents of cities in the global sample. In order to study the changes over time in the attributes of urban layouts, we divided the urban extents of all cities in $\sim 2014$ into two: pre-1990 and post-1990 areas. To study changes in these attributes over a longer time period, we also differentiated the urban extents of 30 cities into five periods, spanning the twentieth century and the first fifteen years of the present century. In the absence of sampling, the study of urban layouts in the global sample of cities would be a daunting task. We rendered it doable by sampling 10-hectare locales within the urban extents of cities.

The actual locales randomly selected for digitizing and analysis of the change in urban layouts over time in Paris, France, are shown in figure 3.6. In a number of the largest cities in the global sample, we also sampled a number of one-kilometer squares throughout their urban extents to map enough of their arterial road networks to calculate the various metrics associated with them.

FIGURE 3.5:
Randomly selected 3-by-3-kilometer areas used to identify, digitize, and analyze arterial roads (in yellow) on the urban periphery of Tokyo, Japan.


FIGURE 3.6:
Actual locales selected in a quasi-random process from the total number of available locales in the study area of Paris, France, to record the changes in the attributes of urban layouts over time.


## MEASURING KEY ATTRIBUTES OF URBAN LAYOUTS

Within each 10-hectare locale, manual digitization techniques were used to identify, map, and measure the physical characteristics of its urban fabric. The primary focus was on the quality and orderliness of their block and road layouts, the quality of their visible infrastructure, the size of blocks and residential plots, and the density of street intersections. Orderliness or disorderliness that can be assessed from satellite imagery largely comes down to the way in which public space is used to organize the urban fabric (through road and block layouts), the level of infrastructure that is provided in a given area (indicative of formality or informality), and the form of dwellings, both through identification of plot boundaries and through a visual assessment of building types. Much of this work falls on the image analyst. With that in mind, detailed rules were developed to assist the analyst in classifying the imagery. We summarize these rules here so that the method we used to arrive at the maps and metrics in the following Atlas pages can be better understood and easily replicated.

## Blocks and Roads

Classification of satellite imagery is fundamentally an exercise in pattern recognition. As with all pattern recognition, the first task in identifying the elements of a locale involves making a primary distinction between these elements. In our case, that distinction is between block space and road space. Road space consists of all land that is currently or potentially used by either pedestrians or vehicles to travel from one place to another. We seek to identify the right-of-way of streets and roads, containing both the area that is currently in use and any lands that are clearly reserved for future use. All of these areas constitute road space. Block space, in turn, consists of all other uses, including open space and off-street parking areas. Road space and block space add up to the entire area of a 10-hectare locale. In other words, all space that is not road space is block space, and all block space is assigned a land use. The division of a high-resolution satellite image of a locale in Accra, Ghana, into street space and block space is illustrated in figure 3.7.

Block space is subdivided into units identified as blocks. Individual blocks are areas that are continuously bounded by roads or vacant open spaces (for instance, a block at the edge of a built-up area that borders on farmland). Any given block might contain several different land uses (say, apartment buildings on one end, single-family homes in the middle, and a school at the far end). Blocks and block space can be further subdivided into plots, individual parcels of land that would likely be identified as separate properties in a cadaster. Any given block is composed of either one large plot or a series of smaller plots. Much like the identification of rights-of-way, plot boundaries are identified through surface indicators,
pattern recognition, and comparisons with nearby areas. The concept of the plot is very important in differentiating residential categories. A suburban plot in a formal residential area might contain several structures - a house, a garage, and a toolshed, for example. We were not interested in measuring the dimensions of these structures in this Atlas. Instead, our goal was to measure the use of the underlying land so as to get a sense of the shares of land in different uses. When land uses are determined, it is the land use of the plot as a whole that is determined and measured, not the land occupied by a specific building. The same principle holds true when assessing patterns to determine land use in a larger area: The key is to focus on the pattern of plot boundaries and not on building footprints.

FIGURE 3.7:
The division of a high-resolution satellite image of a 10-hectare locale in Accra, Ghana, into road space (light brown) and block space (orange borders)


## Land Use Categories

Each city in the global sample has specific residential and non-residential typologies, along with unique characteristics of form and layout that deserve recognition and study in their own right. However, in order to study land use on a global scale, the land use categories must be simple enough and broad enough to be identified in any city in the world, encompassing (to the maximum extent possible) the whole range of land use types found in cities. Following a review of numerous land use classifications, we narrowed our classification to seven land uses that could be reliably identified in high-resolution satellite imagery, with a focus on four types of residential land use: (1) open space; (2) non-residential areas; (3) atomistic settlements; (4) informal land subdivisions; (5) formal land subdivisions; (6) housing projects; and (7) road space.

1. Open Space includes open countryside, forests, cultivated lands, parks, vacant lands that have not been subdivided, cleared land, and water bodies: seas, rivers, lakes, and canals.
2. Non-Residential Areas include all built-up areas, both public and private, that are not in residential use.
3. Atomistic Settlements are areas with irregular layouts that were clearly not subdivided or laid out before residential construction took place. This category includes squatter settlements that grew incrementally without an overall plan, homes built on irregular parcels of land, or homes built on rural plots that were not regularly subdivided before their conversion to urban use.
4. Informal Land Subdivisions are areas that have been subdivided for urban use, but that lack visible evidence of conformity to land subdivision regulations such as regular plot dimensions, paved roads, streetlights, or sidewalks. That said, structures in these informal land subdivisions, although different in size and form, are typically laid out along straight or almost-straight roads, with regular intersections and standardized widths. Blocks are also regular or semi-regular in size and shape, when topography permits.
5. Formal Land Subdivisions are similar in layout to informal layouts, but exhibit a higher level of regularity, a higher level of provision of infrastructure, and better connections to existing roads. All roads must be paved for an area to be classified as a formal land subdivision. Sidewalks and streetlights are often visible as well.
6. Housing Projects range from large apartment tower projects to suburban tract housing. Housing projects share one feature: their structures must be essentially homogenous. These are projects in which all structures are built by a single developer using variations on the same plan.
7. Road Space includes the rights-of-way of lanes, streets and roads, both paved and unpaved, containing both the area that is currently in use and any lands that are clearly reserved for future use.

The four types of residential land use are illustrated with examples in figure 3.8. These types were chosen to reflect stages in the evolution of the housing sector, from a state of weaker planning skills and traditions, less regimented property-right and regulatory regimes, low availability of capital, and an absence of housing finance, to a state of stronger planning and regulatory regimes and a broader availability of capital. The housing sector is at its most basic in atomistic settlements, where the organization of the settlements is insufficient even to ensure consistent plot size or road width and
where dwellings are located haphazardly and constructed over time. The housing sector is at its most complex when it is able to support large, planned housing projects, whether private or public, with access to capital, constructed from start to finish over a short period of time. The characterizations of these seven land use categories were used by analysts to determine the land uses within blocks in the 10-hectare locales, taking into account that a single block surrounded by roads or open spaces on all sides may contain more than one of six land uses.

FIGURE 3.8:
Four types of residential land use identified in locales, using high-resolution satellite imagery: Atomistic settlements (top left), informal land subdivisions (top right), formal land subdivisions (bottom right), and housing projects (bottom left).


## Plots, Blocks, and Intersections

The dimensions of residential plots in formal and informal land subdivisions are of interest because they may tell us, for example, whether large plot sizes in formal subdivisions are leading to high rates of land consumption per capita or whether small plot sizes in informal subdivisions reflect a discrepancy between minimum official plot sizes and those offered in the informal market. It is possible to measure plot sizes in land subdivisions using high-resolution satellite imagery when plots are relatively uniform. In these cases, it is possible to identify the boundaries between plots, to count the plots, and to determine their widths and depths. To measure plot dimensions in residential subdivisions, a block that had an array of plots of uniform size was identified and two lines were drawn along two of its edges. Each line was tagged
with the number of plots along it, creating an estimate of typical plot depth and width in that area. This procedure is illustrated in figure 3.9. In this example, the length of the block ( 160 meters) is divided by 22 and its depth ( 40 meters) is divided by 2 to yield a typical plot size of 7.3 -by- 20 meters or $146 \mathrm{~m}^{2}$.

FIGURE 3.9:

## Arriving at a typical plot size in an informal subdivision in Guadelajara, Mexico, by measuring overall block

 length and depth and dividing each dimension by the number of plots along it.

The size of city blocks or, alternatively, the density of 4-way intersections compared to 3-way ones in typical city neighborhoods is of interest because neighborhoods with small blocks and with high 4 -way intersection densities facilitate walking and bicycling, reducing the reliance on private automobiles and making the urban environment healthier and more convivial. It is indeed possible to measure the size of blocks and the density of both 3-way and 4-way intersections using high-resolution satellite imagery, and we did indeed measure them in all locales.

To measure block sizes and intersection density, the analysis of locales required the digitization of road medians (the lines along the middle of roads). This was done for all blocks in every locale, and included the digitization of medians along the entire perimeter of all blocks within the locale, including those clipped by the circular boundary of the locale. It is important to note that using this procedure implied that the area of blocks was calculated as the entire area enclosed by road medians, including the area of roads. The procedure for identifying and mapping blocks is illustrated in figure 3.10. The density of intersections was calculated by counting the intersections within the locale and dividing their total by the built-up area of the local, excluding areas identified as open space. The procedure for identifying and counting road intersections is illustrated in figure 3.11. In this example, there are 4

4-way intersections, 33 3-way intersections, and a total area of 9.3 hectares (or $0.093 \mathrm{~km}^{2}$ ) in built-up areas. The 3-way intersection density in this locale is therefore $354 \mathrm{per} \mathrm{km}^{2}$ and the 4 -way intersection density is 43 per $\mathrm{km}^{2}$.

FIGURE 3.10:
Identifying all the blocks in a typical locale by digitizing the road medians around them, including blocks that are clipped by the circular boundary of the locale.


FIGURE 3.11:
Identifying all the 3 -way and 4 -way road intersections in a typical locale by digitizing the road medians within the locale (4-way intersections are marked with a + and 3-way intersections are marked with a T ).


## Arterial Roads

Arterial roads in cities are of interest because they are essential for integrating urban labor markets providing access, by all transport modes, from all residences to all workplaces in the city-and the more integrated their labor markets, the more productive they are. The road network in every country typically forms a three-tier hierarchy of primary, secondary, and tertiary roads. Central or state governments usually plan, acquire land, finance, construct, and maintain the primary intercity road network that connects the country together. Municipalities typically plan, acquire land, finance, construct, and maintain the secondary or arterial road network within their jurisdictions. In many cases, private developers of residential neighborhoods or of commercial, office, and industrial projects typically plan, acquire land, finance, and construct the tertiary roads that serve buildings within their projects. In many other cases, municipalities plan and build the tertiary road network as well. The network of arterial roads is a classic public good (i.e., users cannot be effectively excluded from using it). Since it is a public good, there is no market mechanism that can ensure that arterial roads are in adequate supply in appropriate locations. In other words, a shortage of arterial roads may be a form of market failure. This means that it is up to public authorities to supply arterial roads in adequate quantities, in the right locations throughout the city, preferably before development takes place. Whether or not this happens in practice can only be determined by observation and measurement.

We identified and digitized arterial roads throughout the urban extents of all cities in the sample. As noted earlier, in the largest cities in the sample we opted to sample locations selected at random and to identify and digitize arterial roads only in these sampled locations. The information obtained from digitizing arterial roads was then used to calculate the share of the built-up area within walking distance to arterial roads, the average beeline distance to an arterial road, and the density of arterial roads. All of these measures provide some insight, for the first time, on the availability of arterial roads in cities the world over, as well as on its change over time.

All roads that fall within the urban footprint (or its surrounding one-kilometer buffer) were considered as possible arterial roads. Likely candidate roads were identified in three data sources: Java Open Street Map, Google maps, and Bing maps, where roads are available as map layers. On any of these three road map layers, roads having through-connectivity are distinguished by width and color. Analysts examined each one-kilometer grid square in the urban extent to identify arterial roads. A candidate road was identified as an arterial road when it met two criteria:

1. It connected to other arterial roads, forming part of a network that extends throughout the city; and
2. It connected to the nearby minor roads. Limited access roads (freeways or expressways) were not considered arterial roads, even though they were connected to other arterial roads.

When an analyst identified a road as arterial, they differentiated it further into two categories: Wide and Narrow, where wide roads were those having rights-of-way of 18 -meters or more. The network of wide and narrow arterial roads in the urban extent of Addis Ababa, Ethiopia in 2014 is shown in figure 3.12. The same procedure was followed in identifying wide and narrow arterial roads in randomly selected 3-by-3-kilometer squares in the largest cities in the sample, as previously shown (figure 3.4).

FIGURE 3.12:
The network of arterial roads in the urban extent of Addis Ababa, Ethiopia in 2014, distinguishing wide arterial roads (brown) from narrow ones (blue).


## Urban Layout Metrics

In each city in the global sample of 200 cities, we initially selected at random 40 locales for analysis in its pre-1990 area and 40 locales in its expansion area, a total of 80 locales per city or 16,000 locales for the global sample as a whole. Key layout features of these locales, observed in high-resolution satellite imagery, were then digitized, analyzed, and stored. The digital files associated with locales were processed in ArcGIS using a Python script that calculated the following metrics for each locale:

## - Land Use

- Share of land in open space (open space in locale/area of locale);
- Share of built-up area in non-residential use (non-residential land in locale excluding roads/area of locale);
- Share of the built-up area in residential use (all area in residential use in locale/built-up area of locale);
- Share of built-up area occupied by roads (area in roads/built-up area)
- Share of the residential area not laid out before development (area of atomistic settlements/residential area);
- Share of the residential area in informal land subdivisions (area in informal land subdivisions/residential area);
- Share of the residential area in formal land subdivisions (area in formal land subdivisions/ residential area);
- Share of the residential area in housing projects (area in housing projects/residential area);
- Share of the residential areas laid out before development (area in both formal and informal land subdivisions/residential area);
- Share of locale that is gridded [visual assessment of the presence of orthogonal street grids in the locale and their assignment to three categories: not gridded, partially gridded (covering 10-90\% of the locale area), and gridded (covering $90 \%$ or more of the locale area)].
- Average plot size in informal land subdivisions; and
- Average plot size in formal land subdivisions.


## - Roads

- Share of roads less than 4-meters-wide (length of roads less than 4-meters-wide in locale/ length of total road network in locale);
- Share of roads that are 4-to-8-meters-wide (length of roads 4-8-meters-wide in locale/ length of total road network in locale);
- Share of roads that are 8-to-12-meters-wide (length of roads 8-12-meters-wide in locale/ length of total road network in locale);
- Share of roads that are more than 16-meters-wide (length of roads more than 16-meterswide in locale/length of total road network in locale); and
- Average road width in locale.


## - Block Layout

- Average block size (hectares);
- The density of 3-way intersections (number per square kilometer of locale area);
- The density of 4-way intersections (number per square kilometer of locale area);
- Share of intersections that are 4-way (ratio of 4-way intersections to total number of intersections in locale);
- The Walkability Ratio (The average ratio of the beeline distance and the street travel distance for 40 pairs of sample points within the locale that are more than 200-meters apart);

In addition to calculating metrics for individual locales, a number of metrics were calculated for the arterial road network identified in each city:

## - Arterial Roads

- The average density of all arterial roads (linear kilometers of arterial roads/square kilometers of urban extent);
- The average density of wide $(18 \mathrm{~m}+$ ) arterial roads (linear kilometers of wide arterial roads/square kilometers of urban extent);
- Average beeline distance to all arterial roads (meters);
- Average beeline distance to wide arterial roads (meters);
- Share of the urban extent within walking distance ( 625 m ) of all arterial roads; and
- Share of urban extent within walking distance ( 625 m ) of wide arterial roads.

Data for each locale is stored in four files: (1) Locale boundary file; (2) Blocks file; (3) Plot measurement file; and (4) Street medians file. Arterial roads data is stored in two additional files: (5) Arterials master file; and (6) Arterials study area file. All of the data is stored in shapefile format and can be downloaded on a city-by-city basis or in batches at www.atlasofurbanexpansion.org.

The Atlas pages that follow provide average values for the locales in each area of interest in each of the 200 cities in the global sample for many, but not all, of these metrics. Some metrics were chosen over others as more illustrative of the quality of urban layouts in cities at the present time. Tables summarizing these metrics in Excel format are given following the city-focused pages.

## Improving the confidence in the metric averages

The metrics that we calculated exhibited a high degree of variation across locales within a city. This
intra-city variability poses a challenge for making correct inferences. More specifically, in order to detect statistically significant differences in the mean value of a metric across cities, precise estimates of the mean value of a metric within a city are needed. Although the sample average for a given metric - say, the average share of the built-up area in roads - might differ in two cities, the number of locales in each city might not be large enough to reject the null hypothesis that the two means are equal to each other. We can improve the precision of our estimates by adding locale observations to each city, but additional locales entail additional costs, in terms of both time and money.

Given the time and cost associated with extracting data from each locale, the study leading to the production of this volume of the Atlas operated with a budget allowing for the analysis of approximately 20,000 locales in the 200 cities in the global sample. All in all, some 30 analysts worked for an average of 90 days each to digitize and analyze these locales. We initially allocated 80 locales to each city in the sample, 40 in the pre-1990 area of the city and 40 in its expansion area. Then, rather than equally dividing the remaining 4,000 locales evenly among all cities, these locales were allocated using a rule to improve the overall precision of our subsequent estimates of city averages. This rule was based on the understanding that some cities are more complex than others and feature more variability in key metrics of interest. Adding locales to these cities may therefore be especially useful in improving the precision of our estimates.

We chose to focus on three principle metrics, or 'variables of interest', that are of key importance in assessing the quality of urban layouts: (1) the share of the built-up area in roads; (2) the share of residential land in atomistic settlements; and (3) the share of residential land in informal land subdivisions. Each sampled locale provides values for each one of these three metrics. For each city, given a set of sampled locales, we can calculate the sample average and sample standard deviation of each variable of interest. The method chosen to add locales to particular cities uses the information on the averages and standard deviations for these three metrics to improve the statistical power to detect differences between hypothesized means in the cities in the global sample (For a general discussion of statistical power see Casella and Berger, 2002, pp. 382-383). The procedure we followed involved the following steps:

- Initially, allocate 80 locales to each city;
- Calculate the statistical power associated with one-sided hypothesis tests for each of the variables of interest in all the cities in the sample;
- Create a power index for each city, which is the average statistical power associated with the tests for the three variables of interest;
- Sort cities on the basis of the power index from lowest to highest;
- Select the 20 cities with the lowest rankings on the power index;
- Add 10 new locales to each of these 20 cities, then calculate new metrics and new power indices;
- Rank cities again, using this new information;
- Repeat the process until all 4,000 new locales have been allocated.

It should be noted that in some cities, the expansion area is sufficiently small that it might be completely covered with locales, either before the initial 80 locales are randomly chosen or before the termination of the procedure for adding locales. As soon as it becomes impossible to add another locale that does not overlap with the existing locales, no more locales are added to a given city. As noted earlier, all in all, 20,795 locales were digitized and analyzed, a maximum of 270 locales in Cairo, Egypt and a minimum of 25 locales in Zhijin, China. Unfortunately, the addition of locales at this scale does not yet ensure that the average values reported in the Atlas pages that follow are significantly different from each other.

There are two pages in Volume 2 of the Atlas for each city in the global sample of 200 cities, arranged in alphabetical order in the following pages. They are followed by Atlas pages with maps and metrics for the 30 cities for which we have data on urban layouts that were created from 1800 onwards. These maps and metrics pages are followed by summary tables in Excel format that provide metric values for all attributes shown in the individual city tables.

## Maps and Metrics for 200 Cities, 1990-2014

The following pages provide maps and metrics for the 200 cities in the global sample. The cities are arranged in alphabetical order. The Index at the end of the volume lists them by country and by world region. There are two pages for every city. The left hand pages provide six high-resolution satellite images of typical locales, three in the pre-1990 area (top row) and three in the expansion area (bottom row). Below these images there is a map showing the network of arterial roads overlaid on a map of recent urban expansion. The right hand pages provide a table with metric values for different attributes of urban layouts in the city and six charts showing comparisons to other cities in the region and the world.

Accra, Ghana (Sub-Saharan Africa)



Selected Locales in Area Developed Before 1991


Selected Locales in Expansion Area, 1991-2014


## Accra, Ghana (Sub-Saharan Africa)



| Legend for Charts |  |  |
| :---: | :---: | :---: |
| Accra \| Other cities in region | All other cities | Globa | rage - |
| Metrics | Pre1991 | $\begin{aligned} & 1991- \\ & 2014 \end{aligned}$ |
| Roads |  |  |
| Share of Built-Up Area Occupied by Roads | 15\% | 14\% |
| Share of Built-Up Area that is Gridded or Partially Gridded | 23\% | 10\% |
| Average Road Width (m) | 9.0 | 6.6 |
| Share of Roads less than 4 m Wide | 7\% | 26\% |
| Share of Roads more than 16 m Wide | 7\% | 3\% |
| Arterial Roads |  |  |
| Density of Arterial Roads (km/km²) | 1.9 | 0.8 |
| Average Beeline Distance to Arterial Roads (m) | 199 | 575 |
| Share of Urban Extent Within Walking Distance ( 625 m ) of all Arterial Roads | 95\% | 67\% |
| Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( $>16 \mathrm{~m}$ wide) | 77\% | 49\% |
| Block Size, Plot Size, Intersection Density, and Walkability |  |  |
| Share of Intersections that are 4-way | 19\% | 5\% |
| Average Block Size (ha) | 6.2 | 3.9 |
| 3-way Intersection Density (number per $\mathrm{km}^{2}$ ) | 47 | 117 |
| 4-way Intersection Density (number per $\mathrm{km}^{2}$ ) | 14 | 9 |
| Walkabity Ratio | 1.8 | 1.7 |
| Average Plot Size in Informal Subdivisions ( $\mathrm{m}^{2}$ ) | 22 | 949 |
| Average Plot Size in Formal Subdivisions ( $\mathrm{m}^{2}$ ) | 555 | 636 |
| Stages in the Evolution of Residential Layouts |  |  |
| Share of Built-Up Area in Residential Use | 69\% | 78\% |
| Share of Residential Area Not Laid Out Before Occupation | 42\% | 47\% |
| Share of Residential Area Laid Out Before Occupation | 50\% | 52\% |
| Share of Residential Area in Informal Land Subdivisions | 34\% | 47\% |
| Share of Residential Area in Formal Land Subdivisions | 12\% | 4\% |
| Share of Residential Area in Housing Projects | 10\% | 0\% |




Selected Locales in Area Developed Before 1986


Selected Locales in Expansion Area, 1986-2010



| Legend for Charts |  |  |
| :---: | :---: | :---: |
| Addis Ababa \| Other cities in region | All other cities | | Globa | rage - |
| Metrics | Pre1986 | $\begin{aligned} & 1986- \\ & 2010 \end{aligned}$ |
| Roads |  |  |
| Share of Built-Up Area Occupied by Roads | 18\% | 21\% |
| Share of Built-Up Area that is Gridded or Partially Gridded | 2\% | 30\% |
| Average Road Width (m) | 9.0 | 8.1 |
| Share of Roads less than 4m Wide | 13\% | 15\% |
| Share of Roads more than 16 m Wide | 12\% | 8\% |
| Arterial Roads |  |  |
| Density of Arterial Roads (km/km²) | 2.7 | 1.7 |
| Average Beeline Distance to Arterial Roads (m) | 123 | 257 |
| Share of Urban Extent Within Walking Distance ( 625 m ) of all Arterial Roads | 99\% | 89\% |
| Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( $>16 \mathrm{~m}$ wide) | 93\% | 83\% |
| Block Size, Plot Size, Intersection Density, and Walkability |  |  |
| Share of Intersections that are 4-way | 7\% | 12\% |
| Average Block Size (ha) | 3.1 | 3.2 |
| 3-way Intersection Density (number per km²) | 104 | 176 |
| 4-way Intersection Density (number per $\mathrm{km}^{2}$ ) | 10 | 28 |
| Walkabity Ratio | 1.8 | 1.6 |
| Average Plot Size in Informal Subdivisions ( $\mathrm{m}^{2}$ ) |  | 244 |
| Average Plot Size in Formal Subdivisions ( $\mathrm{m}^{2}$ ) | 675 | 187 |
| Stages in the Evolution of Residential Layouts |  |  |
| Share of Built-Up Area in Residential Use | 56\% | 73\% |
| Share of Residential Area Not Laid Out Before Occupation | 65\% | 41\% |
| Share of Residential Area Laid Out Before Occupation | 34\% | 58\% |
| Share of Residential Area in Informal Land Subdivisions | 15\% | 43\% |
| Share of Residential Area in Formal Land Subdivisions | 18\% | 1\% |
| Share of Residential Area in Housing Projects | 1\% | 12\% |







Selected Locales in Area Developed Before 1989


Selected Locales in Expansion Area, 1989-2013



| Legend for Charts |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Ahmedabad | Other cities in region \| | All other cities | Global average - |  |
| Metrics |  |  | $\begin{aligned} & \text { Pre- } \\ & 1989 \end{aligned}$ | $\begin{aligned} & 1989- \\ & 2013 \end{aligned}$ |
| Roads |  |  |  |  |
| Share of Built-Up Area Occupied by Roads |  |  | 23\% | 24\% |
| Share of Built-Up Area that is Gridded or Partially Gridded |  |  | 0\% | 0\% |
| Average Road Width (m) |  |  | 7.2 | 8.4 |
| Share of Roads less than 4 m Wide |  |  | 37\% | 17\% |
| Share of Roads more than 16 m Wide |  |  | 9\% | 8\% |


| Arterial Roads |  |  |  |
| :--- | :--- | :--- | :---: |
| Density of Arterial Roads (km/km²) | 1.9 | 1.6 |  |
| Average Beeline Distance to Arterial Roads (m) | 185 | 218 |  |
| Share of Urban Extent Within Walking Distance <br> (625m) of all Arterial Roads | $97 \%$ | $94 \%$ |  |
| Share of Urban Extent Within Walking Distance <br> of Wide Arterial Roads (>16m wide) | $93 \%$ | $89 \%$ |  |

Block Size, Plot Size, Intersection Density, and Walkability

| Share of Intersections that are 4-way | $8 \%$ | $17 \%$ |
| :--- | :--- | :--- |
| Average Block Size (ha) | 2.4 | 4.2 |
| 3-way Intersection Density (number per $\mathrm{km}^{2}$ ) | 297 | 139 |
| 4-way Intersection Density (number per $\mathrm{km}^{2}$ ) | 35 | 28 |
| Walkabity Ratio | 1.8 | 1.6 |
| Average Plot Size in Informal Subdivisions (m²) | 342 | 100 |
| Average Plot Size in Formal Subdivisions (m²) | 389 | 120 |
| Stages in the Evolution of Residential Layouts |  |  |
| Share of Built-Up Area in Residential Use | $71 \%$ | $73 \%$ |
| Share of Residential Area Not Laid Out Before Occupation | $20 \%$ | $14 \%$ |
| Share of Residential Area Laid Out Before Occupation | $79 \%$ | $85 \%$ |
| Share of Residential Area in Informal Land Subdivisions | $30 \%$ | $31 \%$ |
| Share of Residential Area in Formal Land Subdivisions | $35 \%$ | $10 \%$ |
| Share of Residential Area in Housing Projects | $13 \%$ | $44 \%$ |






Ahvaz, Iran (South and Central Asia)


Selected Locales in Area Developed Before 1991


Selected Locales in Expansion Area, 1991-2013



| Legend for Charts |  |  |
| :---: | :---: | :---: |
| Ahvaz \| Other cities in region | All other cities | Globa | rage - |
| Metrics | Pre1991 | $\begin{aligned} & 1991- \\ & 2013 \end{aligned}$ |
| Roads |  |  |
| Share of Built-Up Area Occupied by Roads | 27\% | 23\% |
| Share of Built-Up Area that is Gridded or Partially Gridded | 15\% | 0\% |
| Average Road Width (m) | 10.9 | 8.5 |
| Share of Roads less than 4 m Wide | 11\% | 19\% |
| Share of Roads more than 16 m Wide | 18\% | 9\% |
| Arterial Roads |  |  |
| Density of Arterial Roads (km/km²) | 2.0 | 1.6 |
| Average Beeline Distance to Arterial Roads (m) | 197 | 253 |
| Share of Urban Extent Within Walking Distance ( 625 m ) of all Arterial Roads | 95\% | 90\% |
| Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) | 94\% | 87\% |
| Block Size, Plot Size, Intersection Density, and Walkability |  |  |
| Share of Intersections that are 4-way | 17\% | 13\% |
| Average Block Size (ha) | 2.2 | 3.5 |
| 3-way Intersection Density (number per $\mathrm{km}^{2}$ ) | 97 | 106 |
| 4-way Intersection Density (number per $\mathrm{km}^{2}$ ) | 24 | 19 |
| Walkabity Ratio | 1.6 | 2.0 |
| Average Plot Size in Informal Subdivisions ( $\mathrm{m}^{2}$ ) | 181 | 295 |
| Average Plot Size in Formal Subdivisions ( $\mathrm{m}^{2}$ ) | 207 | 217 |
| Stages in the Evolution of Residential Layouts |  |  |
| Share of Built-Up Area in Residential Use | 77\% | 61\% |
| Share of Residential Area Not Laid Out Before Occupation | 0\% | 7\% |
| Share of Residential Area Laid Out Before Occupation | 99\% | 92\% |
| Share of Residential Area in Informal Land Subdivisions | 15\% | 29\% |
| Share of Residential Area in Formal Land Subdivisions | 74\% | 41\% |
| Share of Residential Area in Housing Projects | 8\% | 21\% |






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Alexandria, Egypt (Western Asia and North Africa)
```



Selected Locales in Area Developed Before 1987


Selected Locales in Expansion Area, 1987-2013


Alexandria, Egypt 1987-2013


## Alexandria, Egypt (Western Asia and North Africa)

| Legend for Charts |  |  |
| :---: | :---: | :---: |
| Alexandria \| Other cities in region | All other cities | Globa | rage - |
| Metrics | Pre1987 | $\begin{aligned} & 1987- \\ & 2013 \end{aligned}$ |
| Roads |  |  |
| Share of Built-Up Area Occupied by Roads | 16\% | 23\% |
| Share of Built-Up Area that is Gridded or Partially Gridded | 15\% | 0\% |
| Average Road Width (m) | 7.5 | 9.1 |
| Share of Roads less than 4 m Wide | 20\% | 27\% |
| Share of Roads more than 16 m Wide | 7\% | 13\% |
| Arterial Roads |  |  |
| Density of Arterial Roads (km/km²) | 2.7 | 1.5 |
| Average Beeline Distance to Arterial Roads (m) | 162 | 356 |
| Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads | 96\% | 80\% |
| Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) | 82\% | 70\% |
| Block Size, Plot Size, Intersection Density, and Walkability |  |  |
| Share of Intersections that are 4-way | 9\% | 9\% |
| Average Block Size (ha) | 1.9 | 5.2 |
| 3-way Intersection Density (number per $\mathrm{km}^{2}$ ) | 120 | 198 |
| 4-way Intersection Density (number per $\mathrm{km}^{2}$ ) | 22 | 26 |
| Walkabity Ratio | 1.8 | 2.0 |
| Average Plot Size in Informal Subdivisions ( $\mathrm{m}^{2}$ ) |  |  |
| Average Plot Size in Formal Subdivisions ( $\mathrm{m}^{2}$ ) | 354 |  |
| Stages in the Evolution of Residential Layouts |  |  |
| Share of Built-Up Area in Residential Use | 63\% | 81\% |
| Share of Residential Area Not Laid Out Before Occupation | 5\% | 20\% |
| Share of Residential Area Laid Out Before Occupation | 94\% | 79\% |
| Share of Residential Area in Informal Land Subdivisions | 15\% | 55\% |
| Share of Residential Area in Formal Land Subdivisions | 72\% | 2\% |
| Share of Residential Area in Housing Projects | 6\% | 21\% |







Algiers, Algeria (Western Asia and North Africa)


Selected Locales in Area Developed Before 1987


Selected Locales in Expansion Area, 1987-2014


Algiers, Algeria 1987-2014

Arterial Roads


Algiers, Algeria (Western Asia and North Africa)


| Legend for Charts |  |  |  |
| :---: | :---: | :---: | :---: |
| Algiers | Other cities in region | All other cities \| Globa | rage - |
| Metrics |  | Pre1987 | $\begin{aligned} & 1987- \\ & 2014 \end{aligned}$ |
| Roads |  |  |  |
| Share of Buit | a Occupied by Roa | 22\% | 25\% |
| Share of Buit | that is Gridded or | ally Gridded 1\% | 7\% |
| Average Road | (m) | 9.5 | 6.6 |
| Share of Roads | than 4 m Wide | 12\% | 19\% |
| Share of Road | than 16 m Wide | 13\% | 3\% |
| Arterial Roads |  |  |  |
| Density of Ar | ads (km/km²) | 1.7 | 1.1 |
| Average Bee | ance to Arterial Ro | (m) 267 | 376 |
| Share of Urb (625m) of all | t Within Walking Dis Roads | e $89 \%$ | 79\% |
| Share of Urb of Wide Arte | t Within Walking Dis s ( $>16 \mathrm{~m}$ wide) | 86\% | 67\% |
| Block Size, Plot Size, Intersection Density, and Walkability |  |  |  |
| Share of Inte | that are 4-way | 8\% | 6\% |
| Average Blo |  | 4.5 | 6.7 |
| 3-way Inters | ensity (number per | 62 | 140 |
| 4-way Inters | nsity (number per k | 16 | 14 |
| Walkabity R |  | 1.9 | 1.8 |
| Average Plot Size in Informal Subdivisions ( $\mathrm{m}^{2}$ ) |  |  |  |
| Average Plo | Formal Subdivisions | 356 | 225 |
| Stages in the Evolution of Residential Layouts |  |  |  |
| Share of Buit | a in Residential Use | 61\% | 60\% |
| Share of Res | Area Not Laid Out B | e Occupation 59\% | 33\% |
| Share of Res | Area Laid Out Befor | ccupation 34\% | 66\% |
| Share of Resid | Area in Informal Lan | ubdivisions 2\% | 15\% |
| Share of Res | Area in Formal Land | divisions $23 \%$ | 24\% |
| Share of Res | Area in Housing Pro | 13\% | 26\% |





Anqing, Anhui, China (East Asia and the Pacific)


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2013


## Anqing, Anhui, China (East Asia and the Pacific)

| Legend for Charts |  |  |
| :---: | :---: | :---: |
| Anqing \| Other cities in region | All other cities | Glob | rage - |
| Metrics | $\begin{aligned} & \text { Pre- } \\ & 1990 \end{aligned}$ | $\begin{aligned} & 1990- \\ & 2013 \end{aligned}$ |
| Roads |  |  |
| Share of Built-Up Area Occupied by Roads | 23\% | 25\% |
| Share of Built-Up Area that is Gridded or Partially Gridded | 0\% | 2\% |
| Average Road Width (m) | 8.3 | 9.3 |
| Share of Roads less than 4 m Wide | 24\% | 34\% |
| Share of Roads more than 16 m Wide | 14\% | 14\% |
| Arterial Roads |  |  |
| Density of Arterial Roads (km/km²) | 1.6 | 1.2 |
| Average Beeline Distance to Arterial Roads (m) | 251 | 336 |
| Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads | 91\% | 84\% |
| Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) | 91\% | 86\% |
| Block Size, Plot Size, Intersection Density, and Walkability |  |  |
| Share of Intersections that are 4-way | 8\% | 7\% |
| Average Block Size (ha) | 3.8 | 4.8 |
| 3-way Intersection Density (number per $\mathrm{km}^{2}$ ) | 191 | 121 |
| 4-way Intersection Density (number per km²) | 24 | 15 |
| Walkabity Ratio | 1.8 | 1.5 |
| Average Plot Size in Informal Subdivisions ( $\mathrm{m}^{2}$ ) |  |  |
| Average Plot Size in Formal Subdivisions ( $\mathrm{m}^{2}$ ) |  |  |
| Stages in the Evolution of Residential Layouts |  |  |
| Share of Built-Up Area in Residential Use | 46\% | 59\% |
| Share of Residential Area Not Laid Out Before Occupation | 39\% | 34\% |
| Share of Residential Area Laid Out Before Occupation | 60\% | 65\% |
| Share of Residential Area in Informal Land Subdivisions | 5\% | 13\% |
| Share of Residential Area in Formal Land Subdivisions | 22\% | 6\% |
| Share of Residential Area in Housing Projects | 32\% | 44\% |






Antwerp, Belgium (Europe and Japan)


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2013


Antwerp, Belgium (Europe and Japan)

| Legend for Charts |  |  |
| :---: | :---: | :---: |
| Antwerp \| Other cities in region | All other cities | Glob | rage |
| Metrics | $\begin{aligned} & \text { Pre- } \\ & 1990 \end{aligned}$ | $\begin{aligned} & 1990- \\ & 2013 \end{aligned}$ |
| Roads |  |  |
| Share of Built-Up Area Occupied by Roads | 13\% | 13\% |
| Share of Built-Up Area that is Gridded or Partially Gridded |  | 0\% |
| Average Road Width (m) | 7.9 | 7.1 |
| Share of Roads less than 4 m Wide | 22\% | 20\% |
| Share of Roads more than 16 m Wide | 5\% | 1\% |
| Arterial Roads |  |  |
| Density of Arterial Roads (km/km²) | 1.6 | 1.4 |
| Average Beeline Distance to Arterial Roads (m) | 228 | 248 |
| Share of Urban Extent Within Walking Distance ( 625 m ) of all Arterial Roads | 92\% | 90\% |
| Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( $>16 \mathrm{~m}$ wide) | 60\% | 48\% |
| Block Size, Plot Size, Intersection Density, and Walkability |  |  |
| Share of Intersections that are 4-way | 8\% | 9\% |
| Average Block Size (ha) | 7.1 | 14.7 |
| 3-way Intersection Density (number per $\mathrm{km}^{2}$ ) | 62 | 55 |
| 4-way Intersection Density (number per $\mathrm{km}^{2}$ ) | 5 | 6 |
| Walkabity Ratio | 1.8 | 1.4 |
| Average Plot Size in Informal Subdivisions ( $\mathrm{m}^{2}$ ) |  |  |
| Average Plot Size in Formal Subdivisions ( $\mathrm{m}^{2}$ ) |  | 1448 |
| Stages in the Evolution of Residential Layouts |  |  |
| Share of Built-Up Area in Residential Use | 64\% | 70\% |
| Share of Residential Area Not Laid Out Before Occupation | 15\% | 85\% |
| Share of Residential Area Laid Out Before Occupation | 84\% | 14\% |
| Share of Residential Area in Informal Land Subdivisions | 0\% | 0\% |
| Share of Residential Area in Formal Land Subdivisions | 80\% | 13\% |
| Share of Residential Area in Housing Projects | 3\% | 0\% |






Arusha, Tanzania (Sub-Saharan Africa)


Selected Locales in Area Developed Before 1988


Selected Locales in Expansion Area, 1988-2013


Arusha, Tanzania (Sub-Saharan Africa)

| Legend for Charts |  |  |
| :---: | :---: | :---: |
| Arusha \| Other cities in region | All other cities | Globa | rage - |
| Metrics | $\begin{aligned} & \text { Pre- } \\ & 1988 \end{aligned}$ | $\begin{aligned} & 1988- \\ & 2013 \end{aligned}$ |
| Roads |  |  |
| Share of Built-Up Area Occupied by Roads | 20\% | 10\% |
| Share of Built-Up Area that is Gridded or Partially Gridded | 17\% | 0\% |
| Average Road Width (m) | 8.7 | 4.7 |
| Share of Roads less than 4m Wide | 20\% | 65\% |
| Share of Roads more than 16 m Wide | 10\% | 5\% |
| Arterial Roads |  |  |
| Density of Arterial Roads (km/km²) | 2.9 | 1.0 |
| Average Beeline Distance to Arterial Roads (m) | 104 | 219 |
| Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads | 100\% | 95\% |
| Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( $>16 \mathrm{~m}$ wide) | 100\% | 84\% |
| Block Size, Plot Size, Intersection Density, and Walkability |  |  |
| Share of Intersections that are 4-way | 14\% | 5\% |
| Average Block Size (ha) | 4.8 | 5.0 |
| 3-way Intersection Density (number per $\mathrm{km}^{2}$ ) | 111 | 128 |
| 4-way Intersection Density (number per $\mathrm{km}^{2}$ ) | 18 | 11 |
| Walkabity Ratio | 1.6 | 1.6 |
| Average Plot Size in Informal Subdivisions ( $\mathrm{m}^{2}$ ) | 553 | 369 |
| Average Plot Size in Formal Subdivisions ( $\mathrm{m}^{2}$ ) | 456 | 654 |
| Stages in the Evolution of Residential Layouts |  |  |
| Share of Built-Up Area in Residential Use | 57\% | 79\% |
| Share of Residential Area Not Laid Out Before Occupation | 35\% | 85\% |
| Share of Residential Area Laid Out Before Occupation | 65\% | 14\% |
| Share of Residential Area in Informal Land Subdivisions | 34\% | 12\% |
| Share of Residential Area in Formal Land Subdivisions | 28\% | 1\% |
| Share of Residential Area in Housing Projects | 1\% | 0\% |







Astrakhan, Russia (Europe and Japan)


Selected Locales in Area Developed Before 1988


Selected Locales in Expansion Area, 1988-2014


Astrakhan, Russia (Europe and Japan)

| Legend for Charts |  |  |
| :---: | :---: | :---: |
| Astrakhan \| Other cities in region | All other cities | Globa | rage - |
| Metrics | Pre1988 | $\begin{aligned} & 1988- \\ & 2014 \end{aligned}$ |
| Roads |  |  |
| Share of Built-Up Area Occupied by Roads | 22\% | 20\% |
| Share of Built-Up Area that is Gridded or Partially Gridded | 2\% | 5\% |
| Average Road Width (m) | 7.4 | 5.3 |
| Share of Roads less than 4m Wide | 7\% | 28\% |
| Share of Roads more than 16 m Wide | 3\% | 1\% |
| Arterial Roads |  |  |
| Density of Arterial Roads (km/km²) | 1.2 | 0.8 |
| Average Beeline Distance to Arterial Roads (m) | 334 | 371 |
| Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads | 84\% | 80\% |
| Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) | 69\% | 63\% |
| Block Size, Plot Size, Intersection Density, and Walkability |  |  |
| Share of Intersections that are 4-way | 10\% | 12\% |
| Average Block Size (ha) | 2.0 | 2.8 |
| 3-way Intersection Density (number per $\mathrm{km}^{2}$ ) | 160 | 196 |
| 4-way Intersection Density (number per $\mathrm{km}^{2}$ ) | 21 | 27 |
| Walkabity Ratio | 1.8 | 1.6 |
| Average Plot Size in Informal Subdivisions ( $\mathrm{m}^{2}$ ) | 473 | 991 |
| Average Plot Size in Formal Subdivisions ( $\mathrm{m}^{2}$ ) |  |  |
| Stages in the Evolution of Residential Layouts |  |  |
| Share of Built-Up Area in Residential Use | 59\% | 72\% |
| Share of Residential Area Not Laid Out Before Occupation | 2\% | 19\% |
| Share of Residential Area Laid Out Before Occupation | 97\% | 80\% |
| Share of Residential Area in Informal Land Subdivisions | 59\% | 80\% |
| Share of Residential Area in Formal Land Subdivisions | 19\% | 0\% |
| Share of Residential Area in Housing Projects | 19\% | 0\% |






Auckland, New Zealand (Land-Rich Developed Countries)


Selected Locales in Area Developed Before 1989


Selected Locales in Expansion Area, 1989-2014


Auckland, New Zealand (Land-Rich Developed Countries)


| Legend for Charts |  |  |
| :---: | :---: | :---: |
| Auckland \| Other cities in region | All other cities | Globa | rage - |
| Metrics | Pre1989 | $\begin{aligned} & 1989- \\ & 2014 \end{aligned}$ |
| Roads |  |  |
| Share of Built-Up Area Occupied by Roads | 17\% | 19\% |
| Share of Built-Up Area that is Gridded or Partially Gridded | 0\% | 0\% |
| Average Road Width (m) | 14.2 | 10.3 |
| Share of Roads less than 4 m Wide | 7\% | 20\% |
| Share of Roads more than 16 m Wide | 43\% | 19\% |
| Arterial Roads |  |  |
| Density of Arterial Roads (km/km²) | 1.6 | 1.5 |
| Average Beeline Distance to Arterial Roads (m) | 233 | 244 |
| Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads | 92\% | 92\% |
| Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) | 92\% | 91\% |
| Block Size, Plot Size, Intersection Density, and Walkability |  |  |
| Share of Intersections that are 4-way | 6\% | 9\% |
| Average Block Size (ha) | 9.3 | 8.1 |
| 3-way Intersection Density (number per $\mathrm{km}^{2}$ ) | 33 | 54 |
| 4-way Intersection Density (number per $\mathrm{km}^{2}$ ) | 3 | 6 |
| Walkabity Ratio | 1.6 | 1.6 |
| Average Plot Size in Informal Subdivisions ( $\mathrm{m}^{2}$ ) |  |  |
| Average Plot Size in Formal Subdivisions ( $\mathrm{m}^{2}$ ) | 580 | 454 |
| Stages in the Evolution of Residential Layouts |  |  |
| Share of Built-Up Area in Residential Use | 81\% | 79\% |
| Share of Residential Area Not Laid Out Before Occupation | 0\% | 7\% |
| Share of Residential Area Laid Out Before Occupation | 99\% | 92\% |
| Share of Residential Area in Informal Land Subdivisions | 0\% | 0\% |
| Share of Residential Area in Formal Land Subdivisions | 96\% | 85\% |
| Share of Residential Area in Housing Projects | 3\% | 7\% |







Bacolod, Philippines (Southeast Asia)


Selected Locales in Area Developed Before 1992


Selected Locales in Expansion Area, 1992-2015


Bacolod, Philippines (Southeast Asia)

| Legend for Charts |  |  |  |
| :---: | :---: | :---: | :---: |
| Bacolod | Other cities in region \| | All other cities \| Globa | rage - |
| Metrics |  | Pre1992 | $\begin{aligned} & 1992- \\ & 2015 \end{aligned}$ |
| Roads |  |  |  |
| Share of Buil | Occupied by Road | 26\% | 20\% |
| Share of Buil | that is Gridded or | ally Gridded 10\% | 7\% |
| Average Roa | (m) | 8.9 | 5.7 |
| Share of Roa | than 4 m Wide | 23\% | 27\% |
| Share of Roa | than 16 m Wide | 26\% | 1\% |
| Arterial Roads |  |  |  |
| Density of Ar | ads (km/km²) | 2.3 | 1.4 |
| Average Bee | ance to Arterial Roa | (m) 160 | 264 |
| Share of Urb (625m) of all | ht Within Walking Dis Roads | 98\% | 89\% |
| Share of Urb of Wide Arteria | Within Walking Dis (>16m wide) | 89\% | 82\% |
| Block Size, Plot Size, Intersection Density, and Walkability |  |  |  |
| Share of Inte | that are 4-way | 41\% | 10\% |
| Average Block |  | 4.2 | 2.9 |
| 3-way Interse | ensity (number per k | 96 | 159 |
| 4-way Interse | ensity (number per k | 44 | 19 |
| Walkabity Ra |  | 2.1 | 2.2 |
| Average Plot | Informal Subdivision | 23 | 383 |
| Average Plot | Formal Subdivisions | 363 | 409 |
| Stages in the Evolution of Residential Layouts |  |  |  |
| Share of Buil | a in Residential Use | 97\% | 69\% |
| Share of Res | Area Not Laid Out B | e Occupation 42\% | 33\% |
| Share of Res | Area Laid Out Before | ccupation 78\% | 66\% |
| Share of Res | Area in Informal Lan | ubdivisions 5\% | 44\% |
| Share of Res | Area in Formal Land | divisions 64\% | 20\% |
| Share of Res | Area in Housing Proj | 8\% | 1\% |



Baghdad, Iraq (Western Asia and North Africa)
:Gl all


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2013








Baku, Azerbaijan (Western Asia and North Africa)


Selected Locales in Area Developed Before 1989


Selected Locales in Expansion Area, 1989-2014


| Legend for Charts |  |  |
| :---: | :---: | :---: |
| Baku \| Other cities in region | All other cities | | Globa | rage - |
| Metrics | Pre1989 | $\begin{aligned} & 1989- \\ & 2014 \end{aligned}$ |
| Roads |  |  |
| Share of Built-Up Area Occupied by Roads | 18\% | 17\% |
| Share of Built-Up Area that is Gridded or Partially Gridded | 4\% | 2\% |
| Average Road Width (m) | 8.3 | 6.7 |
| Share of Roads less than 4 m Wide | 17\% | 18\% |
| Share of Roads more than 16 m Wide | 11\% | 4\% |
| Arterial Roads |  |  |
| Density of Arterial Roads (km/km²) | 1.8 | 1.4 |
| Average Beeline Distance to Arterial Roads (m) | 251 | 317 |
| Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads | 90\% | 84\% |
| Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) | 81\% | 68\% |
| Block Size, Plot Size, Intersection Density, and Walkability |  |  |
| Share of Intersections that are 4-way | 9\% | 5\% |
| Average Block Size (ha) | 3.1 | 3.9 |
| 3-way Intersection Density (number per $\mathrm{km}^{2}$ ) | 107 | 117 |
| 4-way Intersection Density (number per $\mathrm{km}^{2}$ ) | 13 | 7 |
| Walkabity Ratio | 1.9 | 1.7 |
| Average Plot Size in Informal Subdivisions ( $\mathrm{m}^{2}$ ) |  | 637 |
| Average Plot Size in Formal Subdivisions ( $\mathrm{m}^{2}$ ) | 728 |  |
| Stages in the Evolution of Residential Layouts |  |  |
| Share of Built-Up Area in Residential Use | 57\% | 78\% |
| Share of Residential Area Not Laid Out Before Occupation | 31\% | 44\% |
| Share of Residential Area Laid Out Before Occupation | 68\% | 55\% |
| Share of Residential Area in Informal Land Subdivisions | 23\% | 48\% |
| Share of Residential Area in Formal Land Subdivisions | 26\% | 4\% |
| Share of Residential Area in Housing Projects | 18\% | 2\% |






Bamako, Mali (Sub-Saharan Africa)


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2013


Bamako, Mali (Sub-Saharan Africa)

| Legend for Charts |  |  |
| :---: | :---: | :---: |
| Bamako \| Other cities in region | All other cities | | Glob | rage - |
| Metrics | Pre1990 | $\begin{aligned} & 1990- \\ & 2013 \end{aligned}$ |
| Roads |  |  |
| Share of Built-Up Area Occupied by Roads | 18\% | 20\% |
| Share of Built-Up Area that is Gridded or Partially Gridded | 32\% | 17\% |
| Average Road Width (m) | 8.5 | 6.5 |
| Share of Roads less than 4m Wide | 7\% | 19\% |
| Share of Roads more than 16 m Wide | 5\% | 2\% |
| Arterial Roads |  |  |
| Density of Arterial Roads (km/km²) | 1.9 | 1.0 |
| Average Beeline Distance to Arterial Roads (m) | 178 | 376 |
| Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads | 98\% | 80\% |
| Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) | 87\% | 65\% |
| Block Size, Plot Size, Intersection Density, and Walkability |  |  |
| Share of Intersections that are 4-way | 28\% | 20\% |
| Average Block Size (ha) | 2.2 | 1.6 |
| 3-way Intersection Density (number per $\mathrm{km}^{2}$ ) | 111 | 184 |
| 4-way Intersection Density (number per $\mathrm{km}^{2}$ ) | 44 | 46 |
| Walkabity Ratio | 1.6 | 1.5 |
| Average Plot Size in Informal Subdivisions ( $\mathrm{m}^{2}$ ) | 651 | 467 |
| Average Plot Size in Formal Subdivisions ( $\mathrm{m}^{2}$ ) |  |  |
| Stages in the Evolution of Residential Layouts |  |  |
| Share of Built-Up Area in Residential Use | 66\% | 83\% |
| Share of Residential Area Not Laid Out Before Occupation | 0\% | 21\% |
| Share of Residential Area Laid Out Before Occupation | 99\% | 78\% |
| Share of Residential Area in Informal Land Subdivisions | 99\% | 77\% |
| Share of Residential Area in Formal Land Subdivisions | 0\% | 0\% |
| Share of Residential Area in Housing Projects | 0\% | 0\% |







Bangkok, Thailand (Southeast Asia)


Selected Locales in Area Developed Before 1988


Selected Locales in Expansion Area, 1988-2015


## Bangkok, Thailand (Southeast Asia)

| Legend for Charts |  |  |
| :---: | :---: | :---: |
| Bangkok \| Other cities in region | All other cities | | Globa | rage - |
| Metrics | Pre- <br> 1988 | $\begin{aligned} & 1988- \\ & 2015 \end{aligned}$ |
| Roads |  |  |
| Share of Built-Up Area Occupied by Roads | 18\% | 21\% |
| Share of Built-Up Area that is Gridded or Partially Gridded | 4\% | 2\% |
| Average Road Width (m) | 9.5 | 7.0 |
| Share of Roads less than 4m Wide | 16\% | 23\% |
| Share of Roads more than 16 m Wide | 12\% | 5\% |
| Arterial Roads |  |  |
| Density of Arterial Roads (km/km²) | 1.1 | 0.8 |
| Average Beeline Distance to Arterial Roads (m) | 353 | 520 |
| Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads | 83\% | 70\% |
| Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) | 77\% | 62\% |
| Block Size, Plot Size, Intersection Density, and Walkability |  |  |
| Share of Intersections that are 4-way | 10\% | 6\% |
| Average Block Size (ha) | 5.8 | 5.4 |
| 3-way Intersection Density (number per $\mathrm{km}^{2}$ ) | 60 | 91 |
| 4-way Intersection Density (number per $\mathrm{km}^{2}$ ) | 10 | 9 |
| Walkabity Ratio | 1.7 | 2.2 |
| Average Plot Size in Informal Subdivisions ( $\mathrm{m}^{2}$ ) |  | 279 |
| Average Plot Size in Formal Subdivisions ( $\mathrm{m}^{2}$ ) | 224 | 196 |
| Stages in the Evolution of Residential Layouts |  |  |
| Share of Built-Up Area in Residential Use | 55\% | 54\% |
| Share of Residential Area Not Laid Out Before Occupation | 73\% | 40\% |
| Share of Residential Area Laid Out Before Occupation | 22\% | 59\% |
| Share of Residential Area in Informal Land Subdivisions | 1\% | 15\% |
| Share of Residential Area in Formal Land Subdivisions | 19\% | 8\% |
| Share of Residential Area in Housing Projects | 4\% | 35\% |







## Beijing, Beijing, China (East Asia and the Pacific)



Selected Locales in Area Developed Before 1988


Selected Locales in Expansion Area, 1988-2013


Beijing, Beijing, China (East Asia and the Pacific)

| Legend for Charts |  |  |
| :---: | :---: | :---: |
| Beijing \| Other cities in region | All other cities | | Globa | rage - |
| Metrics | Pre1988 | $\begin{aligned} & 1988- \\ & 2013 \end{aligned}$ |
| Roads |  |  |
| Share of Built-Up Area Occupied by Roads | 24\% | 25\% |
| Share of Built-Up Area that is Gridded or Partially Gridded | 2\% | 2\% |
| Average Road Width (m) | 10.4 | 7.3 |
| Share of Roads less than 4 m Wide | 27\% | 42\% |
| Share of Roads more than 16 m Wide | 19\% | 11\% |
| Arterial Roads |  |  |
| Density of Arterial Roads (km/km²) | 1.6 | 0.7 |
| Average Beeline Distance to Arterial Roads (m) | 271 | 573 |
| Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads | 89\% | 71\% |
| Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( $>16 \mathrm{~m}$ wide) | 87\% | 57\% |
| Block Size, Plot Size, Intersection Density, and Walkability |  |  |
| Share of Intersections that are 4-way | 10\% | 11\% |
| Average Block Size (ha) | 6.2 | 4.5 |
| 3-way Intersection Density (number per $\mathrm{km}^{2}$ ) | 106 | 147 |
| 4-way Intersection Density (number per $\mathrm{km}^{2}$ ) | 15 | 35 |
| Walkabity Ratio | 1.6 | 1.8 |
| Average Plot Size in Informal Subdivisions ( $\mathrm{m}^{2}$ ) | 21 |  |
| Average Plot Size in Formal Subdivisions ( $\mathrm{m}^{2}$ ) | 421 |  |
| Stages in the Evolution of Residential Layouts |  |  |
| Share of Built-Up Area in Residential Use | 51\% | 53\% |
| Share of Residential Area Not Laid Out Before Occupation | 19\% | 10\% |
| Share of Residential Area Laid Out Before Occupation | 64\% | 89\% |
| Share of Residential Area in Informal Land Subdivisions | 8\% | 39\% |
| Share of Residential Area in Formal Land Subdivisions | 12\% | 19\% |
| Share of Residential Area in Housing Projects | 59\% | 29\% |






Beira, Mozambique (Sub-Saharan Africa)



Selected Locales in Area Developed Before 1991


Selected Locales in Expansion Area, 1991-2013


| Legend for Charts |  |  |
| :---: | :---: | :---: |
| Beira \| Other cities in region | All other cities | Globa | rage |
| Metrics | Pre1991 | $\begin{aligned} & 1991- \\ & 2013 \end{aligned}$ |
| Roads |  |  |
| Share of Built-Up Area Occupied by Roads | 14\% | 10\% |
| Share of Built-Up Area that is Gridded or Partially Gridded | 13\% | 7\% |
| Average Road Width (m) | 7.6 | 6.5 |
| Share of Roads less than 4m Wide | 25\% | 28\% |
| Share of Roads more than 16 m Wide | 8\% | 4\% |
| Arterial Roads |  |  |
| Density of Arterial Roads (km/km²) | 1.1 | 0.6 |
| Average Beeline Distance to Arterial Roads (m) | 336 | 803 |
| Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads | 83\% | 57\% |
| Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) | 77\% | 55\% |
| Block Size, Plot Size, Intersection Density, and Walkability |  |  |
| Share of Intersections that are 4-way | 15\% | 10\% |
| Average Block Size (ha) | 5.2 | 10.4 |
| 3-way Intersection Density (number per $\mathrm{km}^{2}$ ) | 58 | 42 |
| 4-way Intersection Density (number per $\mathrm{km}^{2}$ ) | 17 | 8 |
| Walkabity Ratio | 1.6 | 1.5 |
| Average Plot Size in Informal Subdivisions ( $\mathrm{m}^{2}$ ) | 420 |  |
| Average Plot Size in Formal Subdivisions ( $\mathrm{m}^{2}$ ) | 778 |  |
| Stages in the Evolution of Residential Layouts |  |  |
| Share of Built-Up Area in Residential Use | 78\% | 76\% |
| Share of Residential Area Not Laid Out Before Occupation | 66\% | 83\% |
| Share of Residential Area Laid Out Before Occupation | 33\% | 16\% |
| Share of Residential Area in Informal Land Subdivisions | 16\% | 16\% |
| Share of Residential Area in Formal Land Subdivisions | 10\% | 0\% |
| Share of Residential Area in Housing Projects | 6\% | 0\% |








Selected Locales in Area Developed Before 1989


Selected Locales in Expansion Area, 1989-2014

Belgaum, India
1989-2014

| $\boldsymbol{\Pi}$ | 1 | 2 |  | km |
| :--- | :--- | :--- | :--- | :--- | :--- |
| 0 | 1 | 2 | 3 | 4 |

Urban Extent in 1989
Arterial Roads
Expansion, 1989-2000
Expansion, 2000-2014


| Legend for Charts |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Belgaum | Other cities in region \| | All other cities | Global average - |  |
| Metrics |  |  | Pre1989 | $\begin{aligned} & 1989- \\ & 2014 \end{aligned}$ |
| Roads |  |  |  |  |
| Share of Built-Up Area Occupied by Roads |  |  | 21\% | 23\% |
| Share of Built-Up Area that is Gridded or Partially Gridded |  |  | 0\% | 2\% |
| Average Road Width (m) |  |  | 9.2 | 8.0 |
| Share of Roads less than 4 m Wide |  |  | 8\% | 9\% |
| Share of Roads more than 16 m Wide |  |  | 12\% | 6\% |


| Arterial Roads |  |  |  |  |  |
| :--- | :--- | :--- | :---: | :---: | :---: |
| Density of Arterial Roads (km/km²) | 2.6 | 1.5 |  |  |  |
| Average Beeline Distance to Arterial Roads (m) | 138 | 307 |  |  |  |
| Share of Urban Extent Within Walking Distance <br> (625m) of all Arterial Roads | $100 \%$ | $87 \%$ |  |  |  |
| Share of Urban Extent Within Walking Distance <br> of Wide Arterial Roads (>16m wide) | $97 \%$ | $74 \%$ |  |  |  |

Block Size, Plot Size, Intersection Density, and Walkability

| Share of Intersections that are 4-way | $7 \%$ | $10 \%$ |
| :--- | :--- | :--- |
| Average Block Size (ha) | 2.6 | 2.7 |
| 3-way Intersection Density (number per $\mathrm{km}^{2}$ ) | 113 | 152 |
| 4-way Intersection Density (number per $\mathrm{km}^{2}$ ) | 12 | 22 |
| Walkabity Ratio | 1.7 | 1.6 |
| Average Plot Size in Informal Subdivisions (m²) | 177 |  |
| Average Plot Size in Formal Subdivisions (m²) | 405 |  |
| Stages in the Evolution of Residential Layouts |  |  |
| Share of Built-Up Area in Residential Use | $72 \%$ | $78 \%$ |
| Share of Residential Area Not Laid Out Before Occupation | $50 \%$ | $23 \%$ |
| Share of Residential Area Laid Out Before Occupation | $49 \%$ | $76 \%$ |
| Share of Residential Area in Informal Land Subdivisions | $38 \%$ | $51 \%$ |
| Share of Residential Area in Formal Land Subdivisions | $3 \%$ | $25 \%$ |
| Share of Residential Area in Housing Projects | $7 \%$ | $0 \%$ |





Belgrade, Serbia (Europe and Japan)


Selected Locales in Area Developed Before 1988


Selected Locales in Expansion Area, 1988-2014


## Belgrade, Serbia (Europe and Japan)



| Legend for Charts |  |  |
| :---: | :---: | :---: |
| Belgrade \| Other cities in region | All other cities | Globa | rage - |
| Metrics | $\begin{aligned} & \text { Pre- } \\ & 1988 \end{aligned}$ | $\begin{aligned} & 1988- \\ & 2014 \end{aligned}$ |
| Roads |  |  |
| Share of Built-Up Area Occupied by Roads | 22\% | 13\% |
| Share of Built-Up Area that is Gridded or Partially Gridded | 2\% | 2\% |
| Average Road Width (m) | 8.5 | 5.7 |
| Share of Roads less than 4 m Wide | 21\% | 36\% |
| Share of Roads more than 16 m Wide | 10\% | 3\% |
| Arterial Roads |  |  |
| Density of Arterial Roads (km/km²) | 2.0 | 1.6 |
| Average Beeline Distance to Arterial Roads (m) | 182 | 245 |
| Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads | 97\% | 93\% |
| Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) | 83\% | 77\% |
| Block Size, Plot Size, Intersection Density, and Walkability |  |  |
| Share of Intersections that are 4-way | 11\% | 7\% |
| Average Block Size (ha) | 3.1 | 7.1 |
| 3 -way Intersection Density (number per $\mathrm{km}^{2}$ ) | 120 | 69 |
| 4-way Intersection Density (number per $\mathrm{km}^{2}$ ) | 17 | 7 |
| Walkabity Ratio | 1.8 | 1.6 |
| Average Plot Size in Informal Subdivisions ( $\mathrm{m}^{2}$ ) |  |  |
| Average Plot Size in Formal Subdivisions ( $\mathrm{m}^{2}$ ) |  |  |
| Stages in the Evolution of Residential Layouts |  |  |
| Share of Built-Up Area in Residential Use | 52\% | 81\% |
| Share of Residential Area Not Laid Out Before Occupation | 18\% | 35\% |
| Share of Residential Area Laid Out Before Occupation | 81\% | 64\% |
| Share of Residential Area in Informal Land Subdivisions | 0\% | 27\% |
| Share of Residential Area in Formal Land Subdivisions | 59\% | 33\% |
| Share of Residential Area in Housing Projects | 21\% | 3\% |






Belo Horizonte, Brazil (Latin America and the Caribbean)


Selected Locales in Area Developed Before 1989


Selected Locales in Expansion Area, 1989-2013


## Belo Horizonte, Brazil (Latin America and the Caribbean)



| Legend for Charts |  |  |
| :---: | :---: | :---: |
| Belo Horizonte \| Other cities in region | All other cities | | Globa | rage - |
| Metrics | Pre1989 | $\begin{aligned} & 1989- \\ & 2013 \end{aligned}$ |
| Roads |  |  |
| Share of Built-Up Area Occupied by Roads | 22\% | 19\% |
| Share of Built-Up Area that is Gridded or Partially Gridded | 10\% | 2\% |
| Average Road Width (m) | 9.5 | 7.3 |
| Share of Roads less than 4m Wide | 11\% | 17\% |
| Share of Roads more than 16 m Wide | 9\% | 2\% |
| Arterial Roads |  |  |
| Density of Arterial Roads (km/km²) | 2.0 | 1.7 |
| Average Beeline Distance to Arterial Roads (m) | 204 | 242 |
| Share of Urban Extent Within Walking Distance ( 625 m ) of all Arterial Roads | 95\% | 92\% |
| Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) | 83\% | 76\% |
| Block Size, Plot Size, Intersection Density, and Walkability |  |  |
| Share of Intersections that are 4-way | 20\% | 13\% |
| Average Block Size (ha) | 3.0 | 5.9 |
| 3-way Intersection Density (number per $\mathrm{km}^{2}$ ) | 95 | 78 |
| 4-way Intersection Density (number per $\mathrm{km}^{2}$ ) | 23 | 9 |
| Walkabity Ratio | 1.7 | 1.8 |
| Average Plot Size in Informal Subdivisions ( $\mathrm{m}^{2}$ ) | 182 |  |
| Average Plot Size in Formal Subdivisions ( $\mathrm{m}^{2}$ ) | 388 | 194 |
| Stages in the Evolution of Residential Layouts |  |  |
| Share of Built-Up Area in Residential Use | 80\% | 84\% |
| Share of Residential Area Not Laid Out Before Occupation | 14\% | 10\% |
| Share of Residential Area Laid Out Before Occupation | 85\% | 89\% |
| Share of Residential Area in Informal Land Subdivisions | 9\% | 18\% |
| Share of Residential Area in Formal Land Subdivisions | 74\% | 69\% |
| Share of Residential Area in Housing Projects | 1\% | 0\% |







Berezniki, Russia (Europe and Japan)


Selected Locales in Area Developed Before 1989


Selected Locales in Expansion Area, 1989-2010


## Berezniki, Russia (Europe and Japan)








Berlin, Germany (Europe and Japan)



Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2013


## Berlin, Germany (Europe and Japan)






## Bicheng, Chongqing, China (East Asia and the Pacific)



Selected Locales in Area Developed Before 1988


Selected Locales in Expansion Area, 1988-2013


## Bicheng, Chongqing, China (East Asia and the Pacific)



| Legend for Charts |  |  |
| :---: | :---: | :---: |
| Bicheng \| Other cities in region | All other cities | | Globa | rage - |
| Metrics | Pre- <br> 1988 | $\begin{aligned} & 1988- \\ & 2013 \end{aligned}$ |
| Roads |  |  |
| Share of Built-Up Area Occupied by Roads | 33\% | 28\% |
| Share of Built-Up Area that is Gridded or Partially Gridded | 0\% | 0\% |
| Average Road Width (m) | 8.7 | 10.2 |
| Share of Roads less than 4 m Wide | 20\% | 19\% |
| Share of Roads more than 16 m Wide | 13\% | 18\% |
| Arterial Roads |  |  |
| Density of Arterial Roads (km/km²) | 2.4 | 1.1 |
| Average Beeline Distance to Arterial Roads (m) | 148 | 229 |
| Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads | 100\% | 93\% |
| Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( $>16 \mathrm{~m}$ wide) | 100\% | 92\% |
| Block Size, Plot Size, Intersection Density, and Walkability |  |  |
| Share of Intersections that are 4-way | 25\% | 7\% |
| Average Block Size (ha) | 0.9 | 6.3 |
| 3-way Intersection Density (number per $\mathrm{km}^{2}$ ) | 248 | 105 |
| 4-way Intersection Density (number per $\mathrm{km}^{2}$ ) | 86 | 11 |
| Walkabity Ratio | 1.4 | 1.9 |
| Average Plot Size in Informal Subdivisions ( $\mathrm{m}^{2}$ ) |  |  |
| Average Plot Size in Formal Subdivisions ( $\mathrm{m}^{2}$ ) |  |  |
| Stages in the Evolution of Residential Layouts |  |  |
| Share of Built-Up Area in Residential Use | 92\% | 38\% |
| Share of Residential Area Not Laid Out Before Occupation | 1\% | 26\% |
| Share of Residential Area Laid Out Before Occupation | 99\% | 73\% |
| Share of Residential Area in Informal Land Subdivisions | 0\% | 3\% |
| Share of Residential Area in Formal Land Subdivisions | 83\% | 32\% |
| Share of Residential Area in Housing Projects | 16\% | 37\% |





Bogota, Colombia (Latin America and the Caribbean)


Selected Locales in Area Developed Before 1989


Selected Locales in Expansion Area, 1989-2010


## Bogota, Colombia (Latin America and the Caribbean)

| Legend for Charts |  |  |
| :---: | :---: | :---: |
| Bogota \| Other cities in region | All other cities | | Glob | rage - |
| Metrics | Pre1989 | $\begin{aligned} & 1989- \\ & 2010 \end{aligned}$ |
| Roads |  |  |
| Share of Built-Up Area Occupied by Roads | 25\% | 22\% |
| Share of Built-Up Area that is Gridded or Partially Gridded | 22\% | 10\% |
| Average Road Width (m) | 10.9 | 8.8 |
| Share of Roads less than 4 m Wide | 14\% | 15\% |
| Share of Roads more than 16 m Wide | 17\% | 11\% |
| Arterial Roads |  |  |
| Density of Arterial Roads (km/km²) | 2.7 | 2.4 |
| Average Beeline Distance to Arterial Roads (m) | 145 | 176 |
| Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads | 98\% | 96\% |
| Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) | 87\% | 84\% |
| Block Size, Plot Size, Intersection Density, and Walkability |  |  |
| Share of Intersections that are 4-way | 18\% | 13\% |
| Average Block Size (ha) | 1.9 | 4.2 |
| 3-way Intersection Density (number per $\mathrm{km}^{2}$ ) | 167 | 155 |
| 4-way Intersection Density (number per $\mathrm{km}^{2}$ ) | 38 | 40 |
| Walkabity Ratio | 1.7 | 1.9 |
| Average Plot Size in Informal Subdivisions ( $\mathrm{m}^{2}$ ) |  |  |
| Average Plot Size in Formal Subdivisions ( $\mathrm{m}^{2}$ ) | 130 |  |
| Stages in the Evolution of Residential Layouts |  |  |
| Share of Built-Up Area in Residential Use | 63\% | 75\% |
| Share of Residential Area Not Laid Out Before Occupation | 0\% | 4\% |
| Share of Residential Area Laid Out Before Occupation | 99\% | 95\% |
| Share of Residential Area in Informal Land Subdivisions | 8\% | 26\% |
| Share of Residential Area in Formal Land Subdivisions | 63\% | 17\% |
| Share of Residential Area in Housing Projects | 26\% | 51\% |





Budapest, Hungary (Europe and Japan)


Selected Locales in Area Developed Before 1992


Selected Locales in Expansion Area, 1992-2013


Budapest, Hungary (Europe and Japan)

| Legend for Charts |  |  |
| :---: | :---: | :---: |
| Budapest \| Other cities in region | All other cities | Globa | rage - |
| Metrics | Pre1992 | $\begin{aligned} & 1992- \\ & 2013 \end{aligned}$ |
| Roads |  |  |
| Share of Built-Up Area Occupied by Roads | 20\% | 15\% |
| Share of Built-Up Area that is Gridded or Partially Gridded | 7\% | 15\% |
| Average Road Width (m) | 9.1 | 7.7 |
| Share of Roads less than 4 m Wide | 7\% | 15\% |
| Share of Roads more than 16 m Wide | 5\% | 2\% |
| Arterial Roads |  |  |
| Density of Arterial Roads (km/km²) | 1.8 | 1.4 |
| Average Beeline Distance to Arterial Roads (m) | 205 | 267 |
| Share of Urban Extent Within Walking Distance ( 625 m ) of all Arterial Roads | 96\% | 90\% |
| Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( $>16 \mathrm{~m}$ wide) | 69\% | 53\% |
| Block Size, Plot Size, Intersection Density, and Walkability |  |  |
| Share of Intersections that are 4-way | 19\% | 26\% |
| Average Block Size (ha) | 3.5 | 5.3 |
| 3-way Intersection Density (number per $\mathrm{km}^{2}$ ) | 93 | 71 |
| 4-way Intersection Density (number per $\mathrm{km}^{2}$ ) | 19 | 14 |
| Walkabity Ratio | 1.7 | 1.5 |
| Average Plot Size in Informal Subdivisions ( $\mathrm{m}^{2}$ ) |  | 868 |
| Average Plot Size in Formal Subdivisions ( $\mathrm{m}^{2}$ ) | 644 | 719 |
| Stages in the Evolution of Residential Layouts |  |  |
| Share of Built-Up Area in Residential Use | 79\% | 90\% |
| Share of Residential Area Not Laid Out Before Occupation | 3\% | 11\% |
| Share of Residential Area Laid Out Before Occupation | 96\% | 88\% |
| Share of Residential Area in Informal Land Subdivisions | 6\% | 26\% |
| Share of Residential Area in Formal Land Subdivisions | 84\% | 62\% |
| Share of Residential Area in Housing Projects | 6\% | 0\% |





## Buenos Aires, Argentina (Latin America and the Caribbean)



Selected Locales in Area Developed Before 1989


Selected Locales in Expansion Area, 1989-2014


## Buenos Aires, Argentina (Latin America and the Caribbean)



| Legend for Charts |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Buenos Aires | Other cities in region \| | All other cities | Global average - |  |
| Metrics |  |  | $\begin{aligned} & \text { Pre- } \\ & 1989 \end{aligned}$ | $\begin{aligned} & 1989- \\ & 2014 \end{aligned}$ |
| Roads |  |  |  |  |
| Share of Built-Up Area Occupied by Roads |  |  | 25\% | 15\% |
| Share of Built-Up Area that is Gridded or Partially Gridded |  |  | 87\% | 72\% |
| Average Road Width (m) |  |  | 11.9 | 5.9 |
| Share of Roads less than 4 m Wide |  |  | 3\% | 13\% |
| Share of Roads more than 16 m Wide |  |  | 18\% | 1\% |



| Arterial Roads |  |  |
| :--- | :--- | :--- |
| Density of Arterial Roads (km/km²) | 2.6 | 2.1 |
| Average Beeline Distance to Arterial Roads (m) | 147 | 194 |
| Share of Urban Extent Within Walking Distance <br> (625m) of all Arterial Roads | $98 \%$ | $94 \%$ |
| Share of Urban Extent Within Walking Distance <br> of Wide Arterial Roads (>16m wide) | $78 \%$ | $70 \%$ |







Selected Locales in Area Developed Before 1991


Selected Locales in Expansion Area, 1991-2013


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| Legend for Charts |  |  |
| :---: | :---: | :---: |
| Bukhara \| Other cities in region | All other cities | | Globa | rage - |
| Metrics | Pre1991 | $\begin{aligned} & 1991- \\ & 2013 \end{aligned}$ |
| Roads |  |  |
| Share of Built-Up Area Occupied by Roads | 18\% | 14\% |
| Share of Built-Up Area that is Gridded or Partially Gridded | 0\% | 0\% |
| Average Road Width (m) | 10.3 | 8.6 |
| Share of Roads less than 4 m Wide | 11\% | 15\% |
| Share of Roads more than 16 m Wide | 15\% | 9\% |
| Arterial Roads |  |  |
| Density of Arterial Roads (km/km²) | 1.6 | 0.8 |
| Average Beeline Distance to Arterial Roads (m) | 291 | 579 |
| Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads | 89\% | 69\% |
| Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) | 86\% | 63\% |
| Block Size, Plot Size, Intersection Density, and Walkability |  |  |
| Share of Intersections that are 4-way | 7\% | 4\% |
| Average Block Size (ha) | 4.0 | 10.0 |
| 3-way Intersection Density (number per $\mathrm{km}^{2}$ ) | 73 | 55 |
| 4-way Intersection Density (number per $\mathrm{km}^{2}$ ) | 6 | 3 |
| Walkabity Ratio | 1.6 | 1.7 |
| Average Plot Size in Informal Subdivisions ( $\mathrm{m}^{2}$ ) | 1499 |  |
| Average Plot Size in Formal Subdivisions ( $\mathrm{m}^{2}$ ) | 565 | 2653 |
| Stages in the Evolution of Residential Layouts |  |  |
| Share of Built-Up Area in Residential Use | 73\% | 77\% |
| Share of Residential Area Not Laid Out Before Occupation | 16\% | 7\% |
| Share of Residential Area Laid Out Before Occupation | 83\% | 92\% |
| Share of Residential Area in Informal Land Subdivisions | 40\% | 57\% |
| Share of Residential Area in Formal Land Subdivisions | 41\% | 23\% |
| Share of Residential Area in Housing Projects | 1\% | 12\% |






Busan, Korea Rep. (East Asia and the Pacific)


Selected Locales in Area Developed Before 1991


Selected Locales in Expansion Area, 1991-2013


Busan, Korea Rep. (East Asia and the Pacific)

| Legend for Charts |  |  |
| :---: | :---: | :---: |
| Busan \| Other cities in region | All other cities | | Globa | rage |
| Metrics | Pre1991 | $\begin{aligned} & 1991- \\ & 2013 \end{aligned}$ |
| Roads |  |  |
| Share of Built-Up Area Occupied by Roads | 21\% | 28\% |
| Share of Built-Up Area that is Gridded or Partially Gridded | 7\% | 0\% |
| Average Road Width (m) | 6.5 | 6.9 |
| Share of Roads less than 4m Wide | 36\% | 39\% |
| Share of Roads more than 16 m Wide | 6\% | 8\% |
| Arterial Roads |  |  |
| Density of Arterial Roads (km/km²) | 2.9 | 2.1 |
| Average Beeline Distance to Arterial Roads (m) | 213 | 289 |
| Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads | 91\% | 87\% |
| Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) | 87\% | 82\% |
| Block Size, Plot Size, Intersection Density, and Walkability |  |  |
| Share of Intersections that are 4-way | 13\% | 10\% |
| Average Block Size (ha) | 2.5 | 2.8 |
| 3-way Intersection Density (number per $\mathrm{km}^{2}$ ) | 162 | 185 |
| 4-way Intersection Density (number per $\mathrm{km}^{2}$ ) | 33 | 18 |
| Walkabity Ratio | 1.7 | 1.7 |
| Average Plot Size in Informal Subdivisions ( $\mathrm{m}^{2}$ ) |  |  |
| Average Plot Size in Formal Subdivisions ( $\mathrm{m}^{2}$ ) | 166 | 228 |
| Stages in the Evolution of Residential Layouts |  |  |
| Share of Built-Up Area in Residential Use | 60\% | 39\% |
| Share of Residential Area Not Laid Out Before Occupation | 27\% | 50\% |
| Share of Residential Area Laid Out Before Occupation | 72\% | 49\% |
| Share of Residential Area in Informal Land Subdivisions | 1\% | 0\% |
| Share of Residential Area in Formal Land Subdivisions | 44\% | 24\% |
| Share of Residential Area in Housing Projects | 26\% | 24\% |







## Cabimas, Venezuela (Latin America and the Caribbean)



Selected Locales in Area Developed Before 1989


Selected Locales in Expansion Area, 1989-2014


## Cabimas, Venezuela (Latin America and the Caribbean)



| Legend for Charts |  |  |
| :---: | :---: | :---: |
| Cabimas \| Other cities in region | All other cities | Glob | rage - |
| Metrics | $\begin{aligned} & \text { Pre- } \\ & 1989 \end{aligned}$ | $\begin{aligned} & 1989- \\ & 2014 \end{aligned}$ |
| Roads |  |  |
| Share of Built-Up Area Occupied by Roads | 16\% | 20\% |
| Share of Built-Up Area that is Gridded or Partially Gridded | 2\% | 7\% |
| Average Road Width (m) | 8.7 | 7.1 |
| Share of Roads less than 4 m Wide | 4\% | 13\% |
| Share of Roads more than 16 m Wide | 5\% | 4\% |
| Arterial Roads |  |  |
| Density of Arterial Roads (km/km²) | 1.8 | 1.4 |
| Average Beeline Distance to Arterial Roads (m) | 179 | 241 |
| Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads | 97\% | 92\% |
| Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) | 82\% | 74\% |
| Block Size, Plot Size, Intersection Density, and Walkability |  |  |
| Share of Intersections that are 4-way | 14\% | 16\% |
| Average Block Size (ha) | 3.7 | 4.4 |
| 3-way Intersection Density (number per $\mathrm{km}^{2}$ ) | 82 | 106 |
| 4-way Intersection Density (number per $\mathrm{km}^{2}$ ) | 12 | 22 |
| Walkabity Ratio | 1.6 | 1.7 |
| Average Plot Size in Informal Subdivisions ( $\mathrm{m}^{2}$ ) |  |  |
| Average Plot Size in Formal Subdivisions ( $\mathrm{m}^{2}$ ) | 906 | 456 |
| Stages in the Evolution of Residential Layouts |  |  |
| Share of Built-Up Area in Residential Use | 79\% | 82\% |
| Share of Residential Area Not Laid Out Before Occupation | 0\% | 28\% |
| Share of Residential Area Laid Out Before Occupation | 100\% | 71\% |
| Share of Residential Area in Informal Land Subdivisions | 15\% | 43\% |
| Share of Residential Area in Formal Land Subdivisions | 81\% | 18\% |
| Share of Residential Area in Housing Projects | 2\% | 8\% |






Cairo, Egypt (Western Asia and North Africa)


Selected Locales in Area Developed Before 1992


Selected Locales in Expansion Area, 1992-2013


Cairo, Egypt 1992-2013 $\square$ Urban Extent in 1992 Arterial Roads

Expansion, 1992-2003

## Cairo, Egypt (Western Asia and North Africa)

| Legend for Charts |  |  |
| :---: | :---: | :---: |
| Cairo \| Other cities in region | All other cities | Globa | rage - |
| Metrics | Pre1992 | $\begin{aligned} & 1992- \\ & 2013 \end{aligned}$ |
| Roads |  |  |
| Share of Built-Up Area Occupied by Roads | 25\% | 23\% |
| Share of Built-Up Area that is Gridded or Partially Gridded | 13\% | 7\% |
| Average Road Width (m) | 10.2 | 9.5 |
| Share of Roads less than 4 m Wide | 18\% | 25\% |
| Share of Roads more than 16 m Wide | 20\% | 16\% |
| Arterial Roads |  |  |
| Density of Arterial Roads (km/km²) | 1.5 | 1.5 |
| Average Beeline Distance to Arterial Roads (m) | 328 | 406 |
| Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads | 83\% | 77\% |
| Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) | 81\% | 69\% |
| Block Size, Plot Size, Intersection Density, and Walkability |  |  |
| Share of Intersections that are 4-way | 20\% | 12\% |
| Average Block Size (ha) | 2.5 | 4.1 |
| 3-way Intersection Density (number per $\mathrm{km}^{2}$ ) | 102 | 144 |
| 4-way Intersection Density (number per $\mathrm{km}^{2}$ ) | 32 | 30 |
| Walkabity Ratio | 1.6 | 1.8 |
| Average Plot Size in Informal Subdivisions ( $\mathrm{m}^{2}$ ) | 82 | 595 |
| Average Plot Size in Formal Subdivisions ( $\mathrm{m}^{2}$ ) | 525 | 473 |
| Stages in the Evolution of Residential Layouts |  |  |
| Share of Built-Up Area in Residential Use | 69\% | 75\% |
| Share of Residential Area Not Laid Out Before Occupation | 22\% | 43\% |
| Share of Residential Area Laid Out Before Occupation | 68\% | 56\% |
| Share of Residential Area in Informal Land Subdivisions | 16\% | 17\% |
| Share of Residential Area in Formal Land Subdivisions | 58\% | 13\% |
| Share of Residential Area in Housing Projects | 2\% | 25\% |






Area w/n Walking Distance of Wide Arterial Roads, ~1990 - ~2014


## Caracas, Venezuela (Latin America and the Caribbean)

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Selected Locales in Area Developed Before 1991


Selected Locales in Expansion Area, 1991-2014



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\(\square\) Urban Extent in 1991
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Expansion, 1991-2001
— Expansion, 2001-2014

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\section*{Caracas, Venezuela (Latin America and the Caribbean)}

\begin{tabular}{|c|c|c|c|}
\hline \multicolumn{4}{|c|}{Legend for Charts} \\
\hline Caracas & Other cities in region | & All other cities | Globa & rage - \\
\hline Metrics & & Pre1991 & \[
\begin{aligned}
& 1991- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{4}{|c|}{Roads} \\
\hline Share of Buil & a Occupied by Road & 20\% & 21\% \\
\hline Share of Buil & that is Gridded or & ally Gridded 2\% & 0\% \\
\hline Average Road & (m) & 11.4 & 6.5 \\
\hline Share of Roa & than 4 m Wide & 8\% & 24\% \\
\hline Share of Road & than 16 m Wide & 18\% & 3\% \\
\hline \multicolumn{4}{|c|}{Arterial Roads} \\
\hline Density of Ar & ads (km/km²) & 2.1 & 1.9 \\
\hline Average Bee & ance to Arterial Roa & (m) 227 & 255 \\
\hline Share of Urb (625m) of all & hithin Walking Dis Roads & e 92\% & 90\% \\
\hline Share of Urb of Wide Arteria & Within Walking Dis (>16m wide) & 82\% & 78\% \\
\hline \multicolumn{4}{|c|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Inte & that are 4-way & 12\% & 1\% \\
\hline Average Block & & 4.6 & 6.3 \\
\hline 3-way Inters & ensity (number per k & 40 & 48 \\
\hline 4-way Inters & ensity (number per k & 8 & 3 \\
\hline Walkabity Ra & & 1.9 & 1.8 \\
\hline \multicolumn{4}{|l|}{Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline Average Plot & Formal Subdivisions & 550 & \\
\hline \multicolumn{4}{|c|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Buil & a in Residential Use & 73\% & 74\% \\
\hline Share of Res & Area Not Laid Out B & Occupation 36\% & 51\% \\
\hline Share of Res & Area Laid Out Before & ccupation 63\% & 48\% \\
\hline Share of Res & Area in Informal Lan & ubdivisions 6\% & 4\% \\
\hline Share of Res & Area in Formal Land & divisions 51\% & 24\% \\
\hline Share of Resid & Area in Housing Proj & 5\% & 19\% \\
\hline
\end{tabular}






\section*{Cebu City, Philippines (Southeast Asia)}


Selected Locales in Area Developed Before 1993


Selected Locales in Expansion Area, 1993-2014


Cebu City, Philippines 1993-2014

\(\square\) Urban Extent in 1993
Expansion, 1993-2000


\section*{Cebu City, Philippines (Southeast Asia)}
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Cebu City | Other cities in region | All other cities & Glob & rage \\
\hline Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1993
\end{aligned}
\] & \[
\begin{aligned}
& 1993- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 13\% & 14\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 0\% \\
\hline Average Road Width (m) & 9.0 & 5.2 \\
\hline Share of Roads less than 4 m Wide & 20\% & 42\% \\
\hline Share of Roads more than 16 m Wide & 8\% & 3\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 1.7 & 1.3 \\
\hline Average Beeline Distance to Arterial Roads (m) & 237 & 295 \\
\hline Share of Urban Extent Within Walking Distance ( 625 m ) of all Arterial Roads & 91\% & 86\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( \(>16 \mathrm{~m}\) wide) & 78\% & 63\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 7\% & 0\% \\
\hline Average Block Size (ha) & 6.5 & 4.4 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 79 & 115 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 7 & 1 \\
\hline Walkabity Ratio & 2.1 & 2.2 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & & \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 243 & \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 61\% & 78\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 63\% & 79\% \\
\hline Share of Residential Area Laid Out Before Occupation & 36\% & 20\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 25\% & 15\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 11\% & 0\% \\
\hline Share of Residential Area in Housing Projects & 0\% & 3\% \\
\hline
\end{tabular}






Changzhi, Hunan, China (East Asia and the Pacific)


Selected Locales in Area Developed Before 1992


Selected Locales in Expansion Area, 1992-2014


Changzhi, Hunan, China 1992-2014

\section*{Changzhi, Hunan, China (East Asia and the Pacific)}
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Changzhi | Other cities in region | All other cities & Globa & rage \\
\hline Metrics & Pre1992 & \[
\begin{aligned}
& 1992- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 24\% & 22\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 2\% & 2\% \\
\hline Average Road Width (m) & 9.1 & 6.8 \\
\hline Share of Roads less than 4 m Wide & 37\% & 50\% \\
\hline Share of Roads more than 16 m Wide & 17\% & 10\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 2.1 & 1.3 \\
\hline Average Beeline Distance to Arterial Roads (m) & 178 & 317 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 98\% & 86\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( \(>16 \mathrm{~m}\) wide) & 98\% & 74\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 13\% & 10\% \\
\hline Average Block Size (ha) & 4.4 & 5.7 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 153 & 140 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 38 & 22 \\
\hline Walkabity Ratio & 1.8 & 1.7 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & & 561 \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 269 & 394 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 52\% & 45\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 6\% & 0\% \\
\hline Share of Residential Area Laid Out Before Occupation & 93\% & 99\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 4\% & 26\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 76\% & 59\% \\
\hline Share of Residential Area in Housing Projects & 12\% & 13\% \\
\hline
\end{tabular}




\section*{Changzhou, Jingsu, China (East Asia and the Pacific)}


Selected Locales in Area Developed Before 1989


Selected Locales in Expansion Area, 1989-2014


\section*{Changzhou, Jingsu, China (East Asia and the Pacific)}
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Changzhou | Other cities in region | All other cities & Glob & rage - \\
\hline Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1989
\end{aligned}
\] & \[
\begin{aligned}
& 1989- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 22\% & 26\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 0\% \\
\hline Average Road Width (m) & 9.6 & 10.4 \\
\hline Share of Roads less than 4 m Wide & 32\% & 31\% \\
\hline Share of Roads more than 16 m Wide & 19\% & 18\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km \({ }^{\text {2 }}\) ) & 2.2 & 1.4 \\
\hline Average Beeline Distance to Arterial Roads (m) & 154 & 313 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 99\% & 86\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( \(>16 \mathrm{~m}\) wide) & 99\% & 84\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 9\% & 11\% \\
\hline Average Block Size (ha) & 4.3 & 5.7 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 96 & 131 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 14 & 14 \\
\hline Walkabity Ratio & 1.5 & 1.8 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 44\% & 42\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 24\% & 68\% \\
\hline Share of Residential Area Laid Out Before Occupation & 76\% & 31\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 5\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 40\% & 1\% \\
\hline Share of Residential Area in Housing Projects & 35\% & 25\% \\
\hline
\end{tabular}





Chengdu, Sichuan, China (East Asia and the Pacific)


Selected Locales in Area Developed Before 1988


Selected Locales in Expansion Area, 1988-2009


\section*{Chengdu, Sichuan, China (East Asia and the Pacific)}

\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Chengdu | Other cities in region | All other cities | & Globa & rage - \\
\hline Metrics & Pre1988 & \[
\begin{aligned}
& 1988- \\
& 2009
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 25\% & 20\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 2\% & 2\% \\
\hline Average Road Width (m) & 8.9 & 9.4 \\
\hline Share of Roads less than 4 m Wide & 28\% & 31\% \\
\hline Share of Roads more than 16 m Wide & 16\% & 17\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 2.5 & 0.4 \\
\hline Average Beeline Distance to Arterial Roads (m) & 151 & 3004 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 98\% & 31\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 98\% & 31\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 12\% & 7\% \\
\hline Average Block Size (ha) & 3.4 & 8.0 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 174 & 64 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 21 & 11 \\
\hline Walkabity Ratio & 1.8 & 1.9 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 47\% & 50\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 7\% & 39\% \\
\hline Share of Residential Area Laid Out Before Occupation & 92\% & 60\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 9\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 70\% & 23\% \\
\hline Share of Residential Area in Housing Projects & 21\% & 27\% \\
\hline
\end{tabular}




Chengguan, Guizhou, China (East Asia and the Pacific)


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2013


\section*{Chengguan, Guizhou, China (East Asia and the Pacific)}

\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Chengguan | Other cities in region | All other cities & Globa & rage - \\
\hline Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1990
\end{aligned}
\] & \[
\begin{aligned}
& 1990- \\
& 2013
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 16\% & 11\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 0\% \\
\hline Average Road Width (m) & 8.9 & 7.9 \\
\hline Share of Roads less than 4m Wide & 22\% & 27\% \\
\hline Share of Roads more than 16 m Wide & 17\% & 3\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 2.0 & 1.9 \\
\hline Average Beeline Distance to Arterial Roads (m) & 114 & 139 \\
\hline Share of Urban Extent Within Walking Distance ( 625 m ) of all Arterial Roads & 100\% & 100\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( \(>16 \mathrm{~m}\) wide) & 96\% & 95\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 10\% & 3\% \\
\hline Average Block Size (ha) & 5.5 & 15.9 \\
\hline 3-way Intersection Density (number per km²) & 67 & 20 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 12 & 3 \\
\hline Walkabity Ratio & 1.8 & 1.6 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 78\% & 69\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 74\% & 79\% \\
\hline Share of Residential Area Laid Out Before Occupation & 25\% & 20\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 0\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 24\% & 3\% \\
\hline Share of Residential Area in Housing Projects & 1\% & 16\% \\
\hline
\end{tabular}





Cheonan, Korea Rep. (East Asia and the Pacific)


Selected Locales in Area Developed Before 1991


Selected Locales in Expansion Area, 1991-2014


Cheonan, Korea Rep. (East Asia and the Pacific)
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Cheonan | Other cities in region | All other cities & Globa & rage - \\
\hline Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1991
\end{aligned}
\] & \[
\begin{aligned}
& 1991- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 22\% & 26\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 17\% & 0\% \\
\hline Average Road Width (m) & 7.0 & 6.7 \\
\hline Share of Roads less than 4 m Wide & 25\% & 36\% \\
\hline Share of Roads more than 16 m Wide & 7\% & 7\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km \({ }^{\text {2 }}\) ) & 3.3 & 0.5 \\
\hline Average Beeline Distance to Arterial Roads (m) & 94 & 331 \\
\hline Share of Urban Extent Within Walking Distance ( 625 m ) of all Arterial Roads & 100\% & 82\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( \(>16 \mathrm{~m}\) wide) & 100\% & 82\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 22\% & 6\% \\
\hline Average Block Size (ha) & 1.7 & 4.4 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 172 & 149 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 59 & 15 \\
\hline Walkabity Ratio & 1.3 & 1.5 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & & \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 170 & \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 69\% & 51\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 35\% & 56\% \\
\hline Share of Residential Area Laid Out Before Occupation & 64\% & 43\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 8\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 53\% & 10\% \\
\hline Share of Residential Area in Housing Projects & 10\% & 24\% \\
\hline
\end{tabular}






Chicago, United States (Land-Rich Developed Countries)


Selected Locales in Area Developed Before 1989


Selected Locales in Expansion Area, 1989-2014


\section*{Chicago, United States (Land-Rich Developed Countries)}
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Chicago | Other cities in region | All other cities & Glob & rage \\
\hline Metrics & Pre1989 & \[
\begin{aligned}
& 1989- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 27\% & 24\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 56\% & 0\% \\
\hline Average Road Width (m) & 11.6 & 10.0 \\
\hline Share of Roads less than 4m Wide & 8\% & 26\% \\
\hline Share of Roads more than 16 m Wide & 42\% & 29\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 1.4 & 1.4 \\
\hline Average Beeline Distance to Arterial Roads (m) & 241 & 258 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 92\% & 91\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 79\% & 79\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 33\% & 8\% \\
\hline Average Block Size (ha) & 7.4 & 3.9 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 61 & 74 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 38 & 12 \\
\hline Walkabity Ratio & 1.5 & 1.7 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 637 & 1795 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 80\% & 82\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 1\% & 19\% \\
\hline Share of Residential Area Laid Out Before Occupation & 82\% & 80\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 2\% & 0\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 88\% & 64\% \\
\hline Share of Residential Area in Housing Projects & 7\% & 16\% \\
\hline
\end{tabular}





Cirebon, Indonesia (Southeast Asia)


Selected Locales in Area Developed Before 1989


Selected Locales in Expansion Area, 1989-2014


Arterial Roads

\section*{Cirebon, Indonesia (Southeast Asia)}
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Cirebon | Other cities in region | All other cities | & Globa & rage - \\
\hline Metrics & Pre1989 & \[
\begin{aligned}
& 1989- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 12\% & 14\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 0\% \\
\hline Average Road Width (m) & 5.4 & 5.8 \\
\hline Share of Roads less than 4 m Wide & 39\% & 32\% \\
\hline Share of Roads more than 16 m Wide & 1\% & 3\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 1.7 & 0.9 \\
\hline Average Beeline Distance to Arterial Roads (m) & 229 & 435 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 97\% & 77\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 95\% & 66\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 11\% & 4\% \\
\hline Average Block Size (ha) & 2.0 & 6.7 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 179 & 123 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 29 & 11 \\
\hline Walkabity Ratio & 1.7 & 1.8 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & & 270 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 74\% & 81\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 47\% & 61\% \\
\hline Share of Residential Area Laid Out Before Occupation & 52\% & 38\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 16\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 50\% & 22\% \\
\hline Share of Residential Area in Housing Projects & 1\% & 0\% \\
\hline
\end{tabular}





Area w/n Walking Distance of Wide Arterial Roads, ~1990 - ~2014


Cleveland, United States (Land-Rich Developed Countries)


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2013


Cleveland, United States 1990-2013


\section*{Cleveland, United States (Land-Rich Developed Countries)}

\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Cleveland | Other cities in region | All other cities & Glob & rage - \\
\hline Metrics & Pre-
\[
1990
\] & \[
\begin{aligned}
& 1990- \\
& 2013
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 19\% & 15\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 5\% & 0\% \\
\hline Average Road Width (m) & 10.8 & 21.8 \\
\hline Share of Roads less than 4 m Wide & 18\% & 12\% \\
\hline Share of Roads more than 16 m Wide & 26\% & 26\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 1.6 & 1.2 \\
\hline Average Beeline Distance to Arterial Roads (m) & 225 & 258 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 95\% & 91\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 90\% & 51\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 10\% & 9\% \\
\hline Average Block Size (ha) & 5.3 & 7.7 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 82 & 99 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 11 & 11 \\
\hline Walkabity Ratio & 1.7 & 1.7 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 840 & 1381 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 67\% & 77\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 7\% & 15\% \\
\hline Share of Residential Area Laid Out Before Occupation & 92\% & 84\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 3\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 85\% & 75\% \\
\hline Share of Residential Area in Housing Projects & 6\% & 6\% \\
\hline
\end{tabular}






Area w/n Walking Distance of Wide Arterial Roads, ~1990 - ~2014



Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2013


\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Cochabamba | Other cities in region | All other cities | & Globa & rage - \\
\hline Metrics & Pre1990 & \[
\begin{aligned}
& 1990- \\
& 2013
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 24\% & 19\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 17\% & 0\% \\
\hline Average Road Width (m) & 10.4 & 8.5 \\
\hline Share of Roads less than 4 m Wide & 7\% & 24\% \\
\hline Share of Roads more than 16 m Wide & 16\% & 2\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 2.4 & 1.2 \\
\hline Average Beeline Distance to Arterial Roads (m) & 164 & 378 \\
\hline Share of Urban Extent Within Walking Distance ( 625 m ) of all Arterial Roads & 97\% & 81\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 95\% & 72\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 18\% & 17\% \\
\hline Average Block Size (ha) & 2.1 & 5.6 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 126 & 133 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 27 & 26 \\
\hline Walkabity Ratio & 1.7 & 1.6 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & & 319 \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 356 & 347 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 67\% & 62\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 0\% & 30\% \\
\hline Share of Residential Area Laid Out Before Occupation & 99\% & 69\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 33\% & 55\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 65\% & 13\% \\
\hline Share of Residential Area in Housing Projects & 0\% & 0\% \\
\hline
\end{tabular}






\section*{Coimbatore, India (South and Central Asia)}


Selected Locales in Area Developed Before 1992


Selected Locales in Expansion Area, 1992-2014


Coimbatore, India 1992-2014 Arterial Roads


\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Coimbatore | Other cities in region | All other cities & Globa & rage - \\
\hline Metrics & Pre1992 & \[
\begin{aligned}
& 1992- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 18\% & 23\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 2\% & 0\% \\
\hline Average Road Width (m) & 8.1 & 6.5 \\
\hline Share of Roads less than 4 m Wide & 10\% & 17\% \\
\hline Share of Roads more than 16 m Wide & 8\% & 6\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 1.8 & 1.4 \\
\hline Average Beeline Distance to Arterial Roads (m) & 196 & 238 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 96\% & 93\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 78\% & 65\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 9\% & 7\% \\
\hline Average Block Size (ha) & 4.5 & 3.9 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 130 & 182 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 13 & 19 \\
\hline Walkabity Ratio & 2.0 & 1.9 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & 209 & 174 \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 315 & 220 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 59\% & 57\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 20\% & 23\% \\
\hline Share of Residential Area Laid Out Before Occupation & 79\% & 76\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 44\% & 69\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 31\% & 1\% \\
\hline Share of Residential Area in Housing Projects & 2\% & 4\% \\
\hline
\end{tabular}





Cordoba, Argentina (Latin America and the Caribbean)


Selected Locales in Area Developed Before 1991


Selected Locales in Expansion Area, 1991-2014


\section*{Cordoba, Argentina (Latin America and the Caribbean)}

\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Cordoba | Other cities in region | All other cities & Glob & rage - \\
\hline Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1991
\end{aligned}
\] & \[
\begin{aligned}
& 1991- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 22\% & 20\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 47\% & 15\% \\
\hline Average Road Width (m) & 10.2 & 7.5 \\
\hline Share of Roads less than 4 m Wide & 5\% & 15\% \\
\hline Share of Roads more than 16 m Wide & 8\% & 4\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 2.3 & 1.8 \\
\hline Average Beeline Distance to Arterial Roads (m) & 190 & 235 \\
\hline Share of Urban Extent Within Walking Distance ( 625 m ) of all Arterial Roads & 95\% & 92\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( \(>16 \mathrm{~m}\) wide) & 86\% & 82\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 42\% & 20\% \\
\hline Average Block Size (ha) & 2.3 & 5.7 \\
\hline 3 -way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 70 & 80 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 55 & 25 \\
\hline Walkabity Ratio & 1.4 & 1.7 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & 344 & 789 \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 326 & 768 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 79\% & 75\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 3\% & 9\% \\
\hline Share of Residential Area Laid Out Before Occupation & 96\% & 90\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 15\% & 53\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 80\% & 23\% \\
\hline Share of Residential Area in Housing Projects & 1\% & 12\% \\
\hline
\end{tabular}






Culiacan, Mexico (Latin America and the Caribbean)


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2014


Culiacan, Mexico (Latin America and the Caribbean)

Legend for Charts
\begin{tabular}{|c|c|c|c|c|}
\hline \multicolumn{5}{|c|}{Legend for Charts} \\
\hline Culiacan & Other cities in region | & All other cities & \multicolumn{2}{|l|}{Global average -} \\
\hline Metrics & & & Pre1990 & \[
\begin{aligned}
& 1990- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{5}{|c|}{Roads} \\
\hline \multicolumn{3}{|l|}{Share of Built-Up Area Occupied by Roads} & 23\% & 28\% \\
\hline \multicolumn{3}{|l|}{Share of Built-Up Area that is Gridded or Partially Gridded} & 35\% & 7\% \\
\hline \multicolumn{3}{|l|}{Average Road Width (m)} & 10.1 & 7.0 \\
\hline \multicolumn{3}{|l|}{Share of Roads less than 4 m Wide} & 9\% & 25\% \\
\hline \multicolumn{3}{|l|}{Share of Roads more than 16 m Wide} & 12\% & 5\% \\
\hline
\end{tabular}
\begin{tabular}{|lll|}
\hline \multicolumn{4}{|c|}{ Arterial Roads } \\
\hline Density of Arterial Roads \(\left(\mathrm{km} / \mathrm{km}^{2}\right)\) & 2.2 & 1.5 \\
\hline Average Beeline Distance to Arterial Roads (m) & 159 & 297 \\
\hline \begin{tabular}{l} 
Share of Urban Extent Within Walking Distance \\
\((625 \mathrm{~m})\) of all Arterial Roads
\end{tabular} & \(97 \%\) & \(85 \%\) \\
\begin{tabular}{l} 
Share of Urban Extent Within Walking Distance \\
of Wide Arterial Roads (>16m wide)
\end{tabular} & \(88 \%\) & \(79 \%\) \\
\hline
\end{tabular}

Block Size, Plot Size, Intersection Density, and Walkability
\begin{tabular}{|lll|}
\hline Share of Intersections that are 4-way & \(37 \%\) & \(14 \%\) \\
\hline Average Block Size (ha) & 2.8 & 2.8 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 77 & 183 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 51 & 35 \\
\hline Walkabity Ratio & 1.8 & 2.0 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & 265 & 152 \\
\hline Average Plot Size in Formal Subdivisions (m²) & 161 & 132 \\
\hline \multicolumn{1}{|c|}{ Stages in the Evolution of Residential Layouts } & \\
\hline Share of Built-Up Area in Residential Use & \(66 \%\) & \(65 \%\) \\
\hline Share of Residential Area Not Laid Out Before Occupation & \(2 \%\) & \(3 \%\) \\
\hline Share of Residential Area Laid Out Before Occupation & \(97 \%\) & \(96 \%\) \\
\hline Share of Residential Area in Informal Land Subdivisions & \(35 \%\) & \(23 \%\) \\
\hline Share of Residential Area in Formal Land Subdivisions & \(61 \%\) & \(67 \%\) \\
\hline Share of Residential Area in Housing Projects & \(0 \%\) & \(5 \%\) \\
\hline
\end{tabular}






\section*{Curitiba, Brazil (Latin America and the Caribbean)}


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2014


\begin{tabular}{lllll} 
픈 \\
0 & 5 & 10 & 15 & 20
\end{tabular}

Arterial Roads

Curitiba, Brazil (Latin America and the Caribbean)
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Curitiba | Other cities in region | All other cities | & Glob & rage \\
\hline Metrics & Pre1990 & \[
\begin{aligned}
& 1990- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 26\% & 15\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 45\% & 17\% \\
\hline Average Road Width (m) & 12.5 & 6.6 \\
\hline Share of Roads less than 4 m Wide & 7\% & 16\% \\
\hline Share of Roads more than 16 m Wide & 26\% & 1\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 2.2 & 1.6 \\
\hline Average Beeline Distance to Arterial Roads (m) & 173 & 262 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 98\% & 90\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 96\% & 81\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 37\% & 18\% \\
\hline Average Block Size (ha) & 4.1 & 5.3 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 57 & 70 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 26 & 20 \\
\hline Walkabity Ratio & 1.5 & 1.7 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & & 370 \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 325 & 376 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 69\% & 71\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 1\% & 18\% \\
\hline Share of Residential Area Laid Out Before Occupation & 98\% & 81\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 29\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 96\% & 47\% \\
\hline Share of Residential Area in Housing Projects & 1\% & 4\% \\
\hline
\end{tabular}






Dhaka, Bangladesh (South and Central Asia)


Selected Locales in Area Developed Before 1989


Selected Locales in Expansion Area, 1989-2014


\section*{Dhaka, Bangladesh (South and Central Asia)}

\begin{tabular}{|c|c|c|c|}
\hline \multicolumn{4}{|c|}{Legend for Charts} \\
\hline Dhaka & Other cities in region & All other cities | Globa & Global average - \\
\hline Metrics & & Pre1989 & \[
\begin{aligned}
& 1989- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{4}{|c|}{Roads} \\
\hline \multicolumn{2}{|l|}{Share of Built-Up Area Occupied by Roads} & 15\% & 11\% \\
\hline \multicolumn{3}{|l|}{Share of Built-Up Area that is Gridded or Partially Gridded} & 0\% \\
\hline \multicolumn{2}{|l|}{Average Road Width (m)} & 6.8 & 4.3 \\
\hline \multicolumn{2}{|l|}{Share of Roads less than 4 m Wide} & 39\% & 55\% \\
\hline \multicolumn{2}{|l|}{Share of Roads more than 16 m Wide} & 9\% & 1\% \\
\hline \multicolumn{4}{|c|}{Arterial Roads} \\
\hline \multicolumn{2}{|l|}{Density of Arterial Roads (km/km²)} & 2.3 & 1.5 \\
\hline \multicolumn{3}{|l|}{Average Beeline Distance to Arterial Roads (m)} & 261 \\
\hline \multicolumn{3}{|l|}{Share of Urban Extent Within Walking Distance ( 625 m ) of all Arterial Roads} & 90\% \\
\hline \multicolumn{3}{|l|}{Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide)} & 68\% \\
\hline \multicolumn{4}{|c|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline \multicolumn{2}{|l|}{Share of Intersections that are 4-way} & 9\% & 5\% \\
\hline \multicolumn{2}{|l|}{Average Block Size (ha)} & 3.3 & 5.8 \\
\hline \multicolumn{2}{|l|}{3-way Intersection Density (number per km \({ }^{\text {a }}\) )} & 131 & 149 \\
\hline \multicolumn{2}{|l|}{4-way Intersection Density (number per km} & 15 & 8 \\
\hline \multicolumn{2}{|l|}{Walkabity Ratio} & 1.6 & 1.5 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) )} & 349 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) )} & \\
\hline \multicolumn{4}{|c|}{Stages in the Evolution of Residential Layouts} \\
\hline \multicolumn{2}{|l|}{Share of Built-Up Area in Residential Use} & 74\% & 70\% \\
\hline \multicolumn{3}{|l|}{Share of Residential Area Not Laid Out Before Occupation} & 91\% \\
\hline \multicolumn{3}{|l|}{Share of Residential Area Laid Out Before Occupation} & 8\% \\
\hline \multicolumn{3}{|l|}{Share of Residential Area in Informal Land Subdivisions} & 5\% \\
\hline \multicolumn{3}{|l|}{Share of Residential Area in Formal Land Subdivisions} & 0\% \\
\hline \multicolumn{3}{|l|}{Share of Residential Area in Housing Projects} & 3\% \\
\hline
\end{tabular}





Dzerzhinsk, Russia (Europe and Japan)


Selected Locales in Area Developed Before 1989


Selected Locales in Expansion Area, 1989-2010


\section*{Dzerzhinsk, Russia (Europe and Japan)}
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Dzerzhinsk | Other cities in region | All other cities | & Globa & rage - \\
\hline Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1989
\end{aligned}
\] & \[
\begin{aligned}
& 1989- \\
& 2010
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 21\% & 17\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & & 0\% \\
\hline Average Road Width (m) & 6.5 & 5.2 \\
\hline Share of Roads less than 4m Wide & 27\% & 30\% \\
\hline Share of Roads more than 16 m Wide & 6\% & 1\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 1.5 & 1.3 \\
\hline Average Beeline Distance to Arterial Roads (m) & 471 & 494 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 75\% & 73\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 83\% & 82\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 8\% & 8\% \\
\hline Average Block Size (ha) & 4.0 & 8.7 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 155 & 83 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 20 & 9 \\
\hline Walkabity Ratio & 2.0 & 2.1 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & 683 & \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 49\% & 93\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 4\% & 1\% \\
\hline Share of Residential Area Laid Out Before Occupation & 95\% & 98\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 60\% & 94\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 28\% & 4\% \\
\hline Share of Residential Area in Housing Projects & 6\% & 0\% \\
\hline
\end{tabular}





Area w/n Walking Distance of Wide Arterial Roads, ~1990 - ~2014


Florianopolis, Brazil (Latin America and the Caribbean)


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2014


Florianopolis, Brazil (Latin America and the Caribbean)

\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Florianopolis | Other cities in region | All other cities | & Globa & rage - \\
\hline Metrics & Pre1990 & \[
\begin{aligned}
& 1990- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 23\% & 18\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 7\% & 0\% \\
\hline Average Road Width (m) & 9.3 & 6.3 \\
\hline Share of Roads less than 4 m Wide & 5\% & 17\% \\
\hline Share of Roads more than 16 m Wide & 6\% & 0\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 2.0 & 1.4 \\
\hline Average Beeline Distance to Arterial Roads (m) & 206 & 344 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 96\% & 85\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 73\% & 61\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 18\% & 10\% \\
\hline Average Block Size (ha) & 3.6 & 5.7 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 73 & 54 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 18 & 12 \\
\hline Walkabity Ratio & 1.8 & 1.9 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & 345 & 233 \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 326 & 241 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 61\% & 88\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 3\% & 14\% \\
\hline Share of Residential Area Laid Out Before Occupation & 96\% & 85\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 5\% & 22\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 82\% & 60\% \\
\hline Share of Residential Area in Housing Projects & 8\% & 2\% \\
\hline
\end{tabular}






Fukuoka, Japan (Europe and Japan)


Selected Locales in Area Developed Before 1993


Selected Locales in Expansion Area, 1993-2014


Fukuoka, Japan 1993-2014

Arterial Roads
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Fukuoka | Other cities in region | All other cities | & & rage - \\
\hline Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1993
\end{aligned}
\] & \[
\begin{aligned}
& 1993- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 24\% & 28\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 0\% \\
\hline Average Road Width (m) & 5.4 & 5.1 \\
\hline Share of Roads less than 4 m Wide & 48\% & 45\% \\
\hline Share of Roads more than 16 m Wide & 4\% & 1\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 2.3 & 2.1 \\
\hline Average Beeline Distance to Arterial Roads (m) & 174 & 185 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 97\% & 97\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( \(>16 \mathrm{~m}\) wide) & 76\% & 70\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 17\% & 15\% \\
\hline Average Block Size (ha) & 1.6 & 1.9 \\
\hline 3 -way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 254 & 288 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 57 & 55 \\
\hline Walkabity Ratio & 1.5 & 1.5 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & 230 & 229 \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 248 & 257 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 64\% & 58\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 18\% & 31\% \\
\hline Share of Residential Area Laid Out Before Occupation & 81\% & 68\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 4\% & 9\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 76\% & 58\% \\
\hline Share of Residential Area in Housing Projects & 0\% & 0\% \\
\hline
\end{tabular}





Gainesville, FL, United States (Land-Rich Developed Countries)


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2013


Gainesville, FL, United States
\[
1990-2013
\]
\(\square\) Urban Extent in 1990
Expansion, 1990-2000


\section*{Gainesville, FL, United States (Land-Rich Developed Countries)}
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Gainesville | Other cities in region | All other cities | & Globa & rage \\
\hline Metrics & Pre1990 & \[
\begin{aligned}
& 1990- \\
& 2013
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 18\% & 18\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 0\% \\
\hline Average Road Width (m) & 8.5 & 9.9 \\
\hline Share of Roads less than 4m Wide & 17\% & 12\% \\
\hline Share of Roads more than 16 m Wide & 13\% & 13\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 1.7 & 1.4 \\
\hline Average Beeline Distance to Arterial Roads (m) & 197 & 233 \\
\hline Share of Urban Extent Within Walking Distance ( 625 m ) of all Arterial Roads & 96\% & 93\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 96\% & 92\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 13\% & 6\% \\
\hline Average Block Size (ha) & 3.8 & 7.6 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 92 & 69 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 17 & 5 \\
\hline Walkabity Ratio & 1.8 & 2.4 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 1037 & 1009 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 71\% & 74\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 3\% & 10\% \\
\hline Share of Residential Area Laid Out Before Occupation & 96\% & 89\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 0\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 89\% & 74\% \\
\hline Share of Residential Area in Housing Projects & 6\% & 14\% \\
\hline
\end{tabular}





Gaoyou, Jiangsu, China (East Asia and the Pacific)


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2016


\section*{Gaoyou, Jiangsu, China (East Asia and the Pacific)}
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Gaoyou | Other cities in region | All other cities & Globa & rage - \\
\hline Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1990
\end{aligned}
\] & \[
\begin{aligned}
& 1990- \\
& 2016
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 12\% & 23\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & & \\
\hline Average Road Width (m) & 7.0 & 8.6 \\
\hline Share of Roads less than 4 m Wide & 33\% & 24\% \\
\hline Share of Roads more than 16 m Wide & 9\% & 16\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 1.5 & 1.5 \\
\hline Average Beeline Distance to Arterial Roads (m) & 334 & 310 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 83\% & 91\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 83\% & 91\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 9\% & 14\% \\
\hline Average Block Size (ha) & 5.3 & 8.0 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 80 & 59 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 12 & 14 \\
\hline Walkabity Ratio & 1.5 & 1.5 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & & 674 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 69\% & 51\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 40\% & 43\% \\
\hline Share of Residential Area Laid Out Before Occupation & 60\% & 56\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 1\% & 0\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 35\% & 39\% \\
\hline Share of Residential Area in Housing Projects & 23\% & 16\% \\
\hline
\end{tabular}




Gombe, Nigeria (Sub-Saharan Africa)


Selected Locales in Area Developed Before 1990

Gombe, Nigeria
\(1990-2013\)

1990-2013



Selected Locales in Expansion Area, 1990-2013
-
 \(\begin{array}{lllll}\text { 트른 } & & & & \\ 0 & 1 & 2 & 3 & 4\end{array}\)

\section*{Gombe, Nigeria (Sub-Saharan Africa)}
\begin{tabular}{|c|c|c|c|}
\hline \multicolumn{4}{|c|}{Legend for Charts} \\
\hline Gombe & Other cities in region & All other cities | Globa & Global average - \\
\hline Metrics & & Pre1990 & \[
\begin{aligned}
& 1990- \\
& 2013
\end{aligned}
\] \\
\hline \multicolumn{4}{|c|}{Roads} \\
\hline \multicolumn{2}{|l|}{Share of Built-Up Area Occupied by Roads} & 20\% & 20\% \\
\hline \multicolumn{3}{|l|}{Share of Built-Up Area that is Gridded or Partially Gridded} & 0\% \\
\hline \multicolumn{2}{|l|}{Average Road Width (m)} & 7.5 & 8.2 \\
\hline \multicolumn{2}{|l|}{Share of Roads less than 4 m Wide} & 16\% & 23\% \\
\hline \multicolumn{2}{|l|}{Share of Roads more than 16 m Wide} & 6\% & 6\% \\
\hline \multicolumn{4}{|c|}{Arterial Roads} \\
\hline \multicolumn{2}{|l|}{Density of Arterial Roads (km/km²)} & 2.2 & 1.2 \\
\hline \multicolumn{3}{|l|}{Average Beeline Distance to Arterial Roads (m)} & 336 \\
\hline \multicolumn{3}{|l|}{Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads} & 81\% \\
\hline \multicolumn{3}{|l|}{Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide)} & 67\% \\
\hline \multicolumn{4}{|c|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline \multicolumn{2}{|l|}{Share of Intersections that are 4-way} & 21\% & 9\% \\
\hline \multicolumn{2}{|l|}{Average Block Size (ha)} & 1.6 & 2.5 \\
\hline \multicolumn{2}{|l|}{3 -way Intersection Density (number per km \({ }^{\text {a }}\) )} & 193 & 248 \\
\hline \multicolumn{2}{|l|}{4-way Intersection Density (number per km} & 55 & 37 \\
\hline \multicolumn{2}{|l|}{Walkabity Ratio} & 1.5 & 1.7 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) )} & 599 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) )} & 806 \\
\hline \multicolumn{4}{|c|}{Stages in the Evolution of Residential Layouts} \\
\hline \multicolumn{2}{|l|}{Share of Built-Up Area in Residential Use} & 76\% & 73\% \\
\hline \multicolumn{3}{|l|}{Share of Residential Area Not Laid Out Before Occupation} & 41\% \\
\hline \multicolumn{3}{|l|}{Share of Residential Area Laid Out Before Occupation} & 58\% \\
\hline \multicolumn{3}{|l|}{Share of Residential Area in Informal Land Subdivisions} & 52\% \\
\hline \multicolumn{3}{|l|}{Share of Residential Area in Formal Land Subdivisions} & 3\% \\
\hline \multicolumn{3}{|l|}{Share of Residential Area in Housing Projects} & 2\% \\
\hline
\end{tabular}





Gomel, Belarus (Europe and Japan)


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2013


Gomel, Belarus 1990-2013


Urban Extent in 1990

Gomel, Belarus (Europe and Japan)

\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Gomel | Other cities in region | All other cities & Globa & rage - \\
\hline Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1990
\end{aligned}
\] & \[
\begin{aligned}
& 1990- \\
& 2013
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 19\% & 15\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 0\% \\
\hline Average Road Width (m) & 6.9 & 6.5 \\
\hline Share of Roads less than 4 m Wide & 22\% & 25\% \\
\hline Share of Roads more than 16 m Wide & 7\% & 5\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 0.8 & 0.7 \\
\hline Average Beeline Distance to Arterial Roads (m) & 448 & 475 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 72\% & 70\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 71\% & 70\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 14\% & 13\% \\
\hline Average Block Size (ha) & 3.4 & 5.1 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 164 & 79 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 20 & 17 \\
\hline Walkabity Ratio & 2.0 & 1.8 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & & 847 \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 731 & 806 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 58\% & 77\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 0\% & 5\% \\
\hline Share of Residential Area Laid Out Before Occupation & 99\% & 94\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 37\% & 81\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 41\% & 7\% \\
\hline Share of Residential Area in Housing Projects & 20\% & 5\% \\
\hline
\end{tabular}





Gorgan, Iran (South and Central Asia)


Selected Locales in Area Developed Before 1991


Selected Locales in Expansion Area, 1991-2014


Gorgan, Iran 1991-2014

\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Gorgan | Other cities in region | All other cities & Glob & rage - \\
\hline Metrics & Pre1991 & \[
\begin{aligned}
& 1991 \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 22\% & 24\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 0\% \\
\hline Average Road Width (m) & 8.6 & 8.6 \\
\hline Share of Roads less than 4 m Wide & 14\% & 20\% \\
\hline Share of Roads more than 16 m Wide & 10\% & 9\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 1.9 & 1.5 \\
\hline Average Beeline Distance to Arterial Roads (m) & 169 & 236 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 99\% & 92\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( \(>16 \mathrm{~m}\) wide) & 98\% & 90\% \\
\hline
\end{tabular}


Block Size, Plot Size, Intersection Density, and Walkability
\begin{tabular}{|lcc|}
\hline Share of Intersections that are 4-way & \(7 \%\) & \(7 \%\) \\
\hline Average Block Size (ha) & 2.1 & 7.0 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 171 & 109 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 16 & 15 \\
\hline Walkabity Ratio & 1.8 & 1.7 \\
\hline Average Plot Size in Informal Subdivisions (m²) & 259 & \\
\hline Average Plot Size in Formal Subdivisions (m²) & \\
\hline \multicolumn{1}{|c|}{ Stages in the Evolution of Residential Layouts } & \\
\hline Share of Built-Up Area in Residential Use & \(65 \%\) & \(68 \%\) \\
\hline Share of Residential Area Not Laid Out Before Occupation & \(11 \%\) & \(6 \%\) \\
\hline Share of Residential Area Laid Out Before Occupation & \(88 \%\) & \(93 \%\) \\
\hline Share of Residential Area in Informal Land Subdivisions & \(7 \%\) & \(75 \%\) \\
\hline Share of Residential Area in Formal Land Subdivisions & \(78 \%\) & \(14 \%\) \\
\hline Share of Residential Area in Housing Projects & \(2 \%\) & \(3 \%\) \\
\hline
\end{tabular}




Guadalajara, Mexico (Latin America and the Caribbean)


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2014


Guadalajara, Mexico 1990-2014
\(\square\) Urban Extent in 1990
Arterial Roads
Expansion, 1990-1999
Expansion, 1999-2014

\section*{Guadalajara, Mexico (Latin America and the Caribbean)}

Legend for Charts
\begin{tabular}{|c|c|c|c|c|}
\hline \multicolumn{5}{|c|}{Legend for Charts} \\
\hline Guadalajara & Other cities in region | & All other cities & \multicolumn{2}{|l|}{Global average -} \\
\hline Metrics & & & Pre1990 & \[
\begin{aligned}
& 1990- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{5}{|c|}{Roads} \\
\hline \multicolumn{3}{|l|}{Share of Built-Up Area Occupied by Roads} & 26\% & 27\% \\
\hline \multicolumn{3}{|l|}{Share of Built-Up Area that is Gridded or Partially Gridded} & 27\% & 7\% \\
\hline \multicolumn{3}{|l|}{Average Road Width (m)} & 12.4 & 9.3 \\
\hline \multicolumn{3}{|l|}{Share of Roads less than 4 m Wide} & 5\% & 9\% \\
\hline \multicolumn{3}{|l|}{Share of Roads more than 16 m Wide} & 18\% & 10\% \\
\hline
\end{tabular}
\begin{tabular}{|lll|}
\hline \multicolumn{4}{c|}{ Arterial Roads } \\
\hline Density of Arterial Roads (km/km²) & 2.3 & 1.6 \\
\hline Average Beeline Distance to Arterial Roads (m) & 165 & 298 \\
\hline \begin{tabular}{l} 
Share of Urban Extent Within Walking Distance \\
\((625 \mathrm{~m})\) of all Arterial Roads
\end{tabular} & \(97 \%\) & \(86 \%\) \\
\begin{tabular}{l} 
Share of Urban Extent Within Walking Distance \\
of Wide Arterial Roads (>16m wide)
\end{tabular} & \(92 \%\) & \(78 \%\) \\
\hline
\end{tabular}

Block Size, Plot Size, Intersection Density, and Walkability
\begin{tabular}{lll}
\hline Share of Intersections that are 4-way & \(28 \%\) & \(10 \%\) \\
\hline Average Block Size (ha) & 3.0 & 3.2 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 100 & 142 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 44 & 19 \\
\hline Walkabity Ratio & 1.7 & 1.8
\end{tabular}

Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) )
Average Plot Size in Formal Subdivisions \(\left(\mathrm{m}^{2}\right)\)
Stages in the Evolution of Residential Layouts
\begin{tabular}{lrr}
\hline Share of Built-Up Area in Residential Use & \(60 \%\) & \(76 \%\) \\
\hline Share of Residential Area Not Laid Out Before Occupation & \(0 \%\) & \(2 \%\) \\
\hline Share of Residential Area Laid Out Before Occupation & \(100 \%\) & \(97 \%\) \\
\hline Share of Residential Area in Informal Land Subdivisions & \(15 \%\) & \(40 \%\) \\
\hline Share of Residential Area in Formal Land Subdivisions & \(79 \%\) & \(45 \%\) \\
\hline Share of Residential Area in Housing Projects & \(5 \%\) & \(12 \%\) \\
\hline
\end{tabular}





Area w/n Walking Distance of Wide Arterial Roads, ~1990 - ~2014


Guangzhou, Guangdong, China (East Asia and the Pacific)


Selected Locales in Area Developed Before 1991


Selected Locales in Expansion Area, 1991-2014


Guangzhou, Guangdong, China 1991-2014


\section*{Guangzhou, Guangdong, China (East Asia and the Pacific)}

\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Guangzhou | Other cities in region | All other cities & Glob & rage - \\
\hline Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1991
\end{aligned}
\] & \[
\begin{aligned}
& 1991- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 18\% & 19\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & & 0\% \\
\hline Average Road Width (m) & 8.6 & 7.9 \\
\hline Share of Roads less than 4 m Wide & 27\% & 33\% \\
\hline Share of Roads more than 16 m Wide & 12\% & 12\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 2.2 & 0.6 \\
\hline Average Beeline Distance to Arterial Roads (m) & 175 & 912 \\
\hline Share of Urban Extent Within Walking Distance ( 625 m ) of all Arterial Roads & 97\% & 70\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 97\% & 69\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 6\% & 5\% \\
\hline Average Block Size (ha) & 3.6 & 5.2 \\
\hline 3-way Intersection Density (number per km²) & 123 & 124 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 10 & 10 \\
\hline Walkabity Ratio & 1.8 & 1.8 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & & 168 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 51\% & 49\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 46\% & 49\% \\
\hline Share of Residential Area Laid Out Before Occupation & 53\% & 50\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 26\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 37\% & 10\% \\
\hline Share of Residential Area in Housing Projects & 15\% & 13\% \\
\hline
\end{tabular}




Guatemala City, Guatemala (Latin America and the Caribbean)


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2013


Guatemala City, Guatemala 1990-2013

\(\square\) Urban Extent in 1990
Expansion, 1990-2001
Expansion, 2001-2013

\section*{Guatemala City, Guatemala (Latin America and the Caribbean)}

\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Guatemala City | Other cities in region | All other cities & Globa & rage - \\
\hline Metrics & Pre1990 & \[
\begin{aligned}
& 1990- \\
& 2013
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 20\% & 19\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 49\% & 2\% \\
\hline Average Road Width (m) & 8.3 & 6.9 \\
\hline Share of Roads less than 4 m Wide & 12\% & 12\% \\
\hline Share of Roads more than 16 m Wide & 9\% & 3\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 2.0 & 1.5 \\
\hline Average Beeline Distance to Arterial Roads (m) & 187 & 250 \\
\hline Share of Urban Extent Within Walking Distance ( 625 m ) of all Arterial Roads & 95\% & 90\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( \(>16 \mathrm{~m}\) wide) & 81\% & 67\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 30\% & 9\% \\
\hline Average Block Size (ha) & 2.1 & 2.0 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 89 & 97 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 42 & 21 \\
\hline Walkabity Ratio & 1.6 & 1.8 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 392 & 187 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 72\% & 72\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 25\% & 15\% \\
\hline Share of Residential Area Laid Out Before Occupation & 67\% & 84\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 7\% & 36\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 63\% & 40\% \\
\hline Share of Residential Area in Housing Projects & 3\% & 7\% \\
\hline
\end{tabular}






\section*{Guixi, Chongqing, China (East Asia and the Pacific)}


Selected Locales in Area Developed Before 1988


Selected Locales in Expansion Area, 1988-2016


Guixi, Chongqing, China 1988-2016


\section*{Guixi, Chongqing, China (East Asia and the Pacific)}
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Guixi | Other cities in region | All other cities & Globa & rage - \\
\hline Metrics & \begin{tabular}{l}
Pre- \\
1988
\end{tabular} & \[
\begin{aligned}
& 1988- \\
& 2016
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 17\% & 18\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 0\% \\
\hline Average Road Width (m) & 10.2 & 9.5 \\
\hline Share of Roads less than 4 m Wide & 17\% & 38\% \\
\hline Share of Roads more than 16 m Wide & 18\% & 17\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 1.0 & 1.0 \\
\hline Average Beeline Distance to Arterial Roads (m) & 214 & 264 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 100\% & 88\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( \(>16 \mathrm{~m}\) wide) & 100\% & 96\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 27\% & 5\% \\
\hline Average Block Size (ha) & 4.1 & 7.9 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 69 & 47 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 17 & 6 \\
\hline Walkabity Ratio & 1.4 & 1.7 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 66\% & 61\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 54\% & 63\% \\
\hline Share of Residential Area Laid Out Before Occupation & 45\% & 36\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 3\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 44\% & 7\% \\
\hline Share of Residential Area in Housing Projects & 1\% & 25\% \\
\hline
\end{tabular}





Area w/n Walking Distance of Wide Arterial Roads, ~1990 - ~2014


Gwangju, Korea Rep. (East Asia and the Pacific)


Selected Locales in Area Developed Before 1989


Selected Locales in Expansion Area, 1989-2015


Gwangju, Korea Rep. (East Asia and the Pacific)
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Gwangju | Other cities in region | All other cities & Glob & rage - \\
\hline Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1989
\end{aligned}
\] & \[
\begin{aligned}
& 1989- \\
& 2015
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 23\% & 24\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 2\% & 0\% \\
\hline Average Road Width (m) & 7.6 & 6.7 \\
\hline Share of Roads less than 4 m Wide & 30\% & 42\% \\
\hline Share of Roads more than 16 m Wide & 10\% & 7\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km \({ }^{\text {2 }}\) ) & 4.6 & 2.8 \\
\hline Average Beeline Distance to Arterial Roads (m) & 69 & 199 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 99\% & 91\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( \(>16 \mathrm{~m}\) wide) & 99\% & 89\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 17\% & 10\% \\
\hline Average Block Size (ha) & 2.3 & 4.3 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 150 & 189 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 38 & 19 \\
\hline Walkabity Ratio & 1.5 & 1.7 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & & \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 189 & 236 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 61\% & 30\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 25\% & 37\% \\
\hline Share of Residential Area Laid Out Before Occupation & 74\% & 62\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 3\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 41\% & 33\% \\
\hline Share of Residential Area in Housing Projects & 33\% & 24\% \\
\hline
\end{tabular}






Haikou, Hainan, China (East Asia and the Pacific)


Selected Locales in Area Developed Before 1991


Selected Locales in Expansion Area, 1991-2013


Haikou, Hainan, China (East Asia and the Pacific)
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Haikou | Other cities in region | All other cities & Globa & rage \\
\hline Metrics & Pre1991 & \[
\begin{aligned}
& 1991- \\
& 2013
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 22\% & 21\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 0\% \\
\hline Average Road Width (m) & 11.7 & 7.9 \\
\hline Share of Roads less than 4 m Wide & 18\% & 23\% \\
\hline Share of Roads more than 16 m Wide & 21\% & 8\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 2.0 & 1.6 \\
\hline Average Beeline Distance to Arterial Roads (m) & 192 & 249 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 95\% & 91\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 95\% & 91\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 10\% & 4\% \\
\hline Average Block Size (ha) & 3.7 & 4.6 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 99 & 136 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 7 & 7 \\
\hline Walkabity Ratio & 1.8 & 1.7 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 54\% & 59\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 25\% & 40\% \\
\hline Share of Residential Area Laid Out Before Occupation & 74\% & 59\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 2\% & 10\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 50\% & 16\% \\
\hline Share of Residential Area in Housing Projects & 21\% & 32\% \\
\hline
\end{tabular}





Halle, Germany (Europe and Japan)


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2010


Halle, Germany 1990-2010

\(\square\) Urban Extent in 1990
Expansion, 1990-1999
- Expansion, 1999-2010

\section*{Halle, Germany (Europe and Japan)}
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Halle | Other cities in region | All other cities & Globa & rage - \\
\hline Metrics & Pre1990 & \[
\begin{aligned}
& 1990- \\
& 2010
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 18\% & 14\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 0\% \\
\hline Average Road Width (m) & 6.4 & 5.0 \\
\hline Share of Roads less than 4m Wide & 37\% & 39\% \\
\hline Share of Roads more than 16 m Wide & 6\% & 0\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 2.2 & 1.9 \\
\hline Average Beeline Distance to Arterial Roads (m) & 155 & 187 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 98\% & 96\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 90\% & 76\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 9\% & 3\% \\
\hline Average Block Size (ha) & 2.5 & 4.3 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 214 & 155 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 27 & 11 \\
\hline Walkabity Ratio & 1.7 & 1.6 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & & 325 \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 405 & 674 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 57\% & 69\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 4\% & 23\% \\
\hline Share of Residential Area Laid Out Before Occupation & 95\% & 76\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 1\% & 13\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 66\% & 62\% \\
\hline Share of Residential Area in Housing Projects & 27\% & 1\% \\
\hline
\end{tabular}





Hangzhou, Zhejiang, China (East Asia and the Pacific)


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2013


\section*{Hangzhou, Zhejiang, China (East Asia and the Pacific)}

\section*{Legend for Charts}
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Hangzhou | Other cities in region | All other cities | & Globa & rage - \\
\hline Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1990
\end{aligned}
\] & \[
\begin{aligned}
& 1990- \\
& 2013
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 31\% & 26\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 2\% & 2\% \\
\hline Average Road Width (m) & 9.9 & 8.1 \\
\hline Share of Roads less than 4 m Wide & 25\% & 38\% \\
\hline Share of Roads more than 16 m Wide & 16\% & 13\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 3.0 & 0.7 \\
\hline Average Beeline Distance to Arterial Roads (m) & 129 & 1556 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 99\% & 66\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 99\% & 63\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 13\% & 12\% \\
\hline Average Block Size (ha) & 2.4 & 3.6 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 259 & 154 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 42 & 24 \\
\hline Walkabity Ratio & 1.7 & 1.7 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 162 & 592 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 46\% & 55\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 24\% & 21\% \\
\hline Share of Residential Area Laid Out Before Occupation & 75\% & 78\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 38\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 23\% & 17\% \\
\hline Share of Residential Area in Housing Projects & 51\% & 22\% \\
\hline
\end{tabular}





Hindupur, India (South and Central Asia)


Selected Locales in Area Developed Before 1989


Selected Locales in Expansion Area, 1989-2014


Hindupur, India 1989-2014
\(\square\) Urban Extent in 1989
Expansion, 1989-2000


Expansion, 2000-2014

\begin{tabular}{|c|c|c|c|c|}
\hline \multicolumn{5}{|c|}{Legend for Charts} \\
\hline Hindupur & Other cities in region | & All other cities & \multicolumn{2}{|l|}{Global average -} \\
\hline Metrics & & & Pre1989 & \[
\begin{aligned}
& 1989- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{5}{|c|}{Roads} \\
\hline \multicolumn{3}{|l|}{Share of Built-Up Area Occupied by Roads} & 18\% & 20\% \\
\hline \multicolumn{3}{|l|}{Share of Built-Up Area that is Gridded or Partially Gridded} & 0\% & 0\% \\
\hline \multicolumn{3}{|l|}{Average Road Width (m)} & 6.5 & 5.1 \\
\hline \multicolumn{3}{|l|}{Share of Roads less than 4 m Wide} & 26\% & 39\% \\
\hline \multicolumn{3}{|l|}{Share of Roads more than 16 m Wide} & 3\% & 1\% \\
\hline
\end{tabular}


Ho Chi Minh City, Vietnam (Southeast Asia)


Selected Locales in Area Developed Before 1989


Selected Locales in Expansion Area, 1989-2015


\section*{Ho Chi Minh City, Vietnam (Southeast Asia)}
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Ho Chi Minh City | Other cities in region | All other cities & Glob & rage - \\
\hline Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1989
\end{aligned}
\] & \[
\begin{aligned}
& 1989- \\
& 2015
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 17\% & 15\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 7\% & 2\% \\
\hline Average Road Width (m) & 9.0 & 7.2 \\
\hline Share of Roads less than 4 m Wide & 23\% & 34\% \\
\hline Share of Roads more than 16 m Wide & 13\% & 6\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 2.6 & 1.2 \\
\hline Average Beeline Distance to Arterial Roads (m) & 146 & 362 \\
\hline Share of Urban Extent Within Walking Distance ( 625 m ) of all Arterial Roads & 97\% & 82\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 94\% & 64\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 14\% & 5\% \\
\hline Average Block Size (ha) & 3.0 & 5.3 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 118 & 88 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 22 & 7 \\
\hline Walkabity Ratio & 1.7 & 1.8 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & & 193 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 66\% & 67\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 49\% & 56\% \\
\hline Share of Residential Area Laid Out Before Occupation & 50\% & 43\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 22\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 50\% & 19\% \\
\hline Share of Residential Area in Housing Projects & 0\% & 0\% \\
\hline
\end{tabular}






Holguin, Cuba (Latin America and the Caribbean)


Selected Locales in Area Developed Before 1987


Selected Locales in Expansion Area, 1987-2014


Holguin, Cuba 1987-2014

\section*{Holguin, Cuba (Latin America and the Caribbean)}

\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Holguin | Other cities in region | All other cities & Glob & rage - \\
\hline Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1987
\end{aligned}
\] & \[
\begin{aligned}
& 1987- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 15\% & 20\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 12\% & 0\% \\
\hline Average Road Width (m) & 6.2 & 7.0 \\
\hline Share of Roads less than 4 m Wide & 17\% & 19\% \\
\hline Share of Roads more than 16 m Wide & 3\% & 8\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 1.7 & 1.5 \\
\hline Average Beeline Distance to Arterial Roads (m) & 235 & 250 \\
\hline Share of Urban Extent Within Walking Distance ( 625 m ) of all Arterial Roads & 92\% & 92\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 68\% & 67\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 20\% & 6\% \\
\hline Average Block Size (ha) & 4.2 & 8.5 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 96 & 117 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 32 & 14 \\
\hline Walkabity Ratio & 1.5 & 1.8 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & 134 & \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 241 & \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 72\% & 68\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 32\% & 56\% \\
\hline Share of Residential Area Laid Out Before Occupation & 67\% & 43\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 43\% & 42\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 15\% & 0\% \\
\hline Share of Residential Area in Housing Projects & 8\% & 1\% \\
\hline
\end{tabular}






Hong Kong, Hong Kong, China (East Asia and the Pacific)


Selected Locales in Area Developed Before 1989


Selected Locales in Expansion Area, 1989-2013


Hong Kong, Hong Kong, China


Urban Extent in 1989


\section*{Hong Kong, Hong Kong, China (East Asia and the Pacific)}
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Hong Kong | Other cities in region | All other cities & Glob & rage - \\
\hline Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1989
\end{aligned}
\] & \[
\begin{aligned}
& 1989- \\
& 2013
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 25\% & 20\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 2\% \\
\hline Average Road Width (m) & 11.3 & 9.4 \\
\hline Share of Roads less than 4 m Wide & 14\% & 25\% \\
\hline Share of Roads more than 16 m Wide & 23\% & 16\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km \({ }^{\text {2 }}\) ) & 3.9 & 3.2 \\
\hline Average Beeline Distance to Arterial Roads (m) & 105 & 132 \\
\hline Share of Urban Extent Within Walking Distance ( 625 m ) of all Arterial Roads & 99\% & 97\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( \(>16 \mathrm{~m}\) wide) & 98\% & 94\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 11\% & 17\% \\
\hline Average Block Size (ha) & 4.6 & 3.7 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 55 & 27 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 12 & 8 \\
\hline Walkabity Ratio & 1.9 & 1.7 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 1098 & \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 50\% & 44\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 16\% & 31\% \\
\hline Share of Residential Area Laid Out Before Occupation & 83\% & 68\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 0\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 31\% & 8\% \\
\hline Share of Residential Area in Housing Projects & 52\% & 60\% \\
\hline
\end{tabular}





Houston, United States (Land-Rich Developed Countries)


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2014


\section*{Houston, United States (Land-Rich Developed Countries)}
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Houston | Other cities in region | All other cities | & Globa & rage - \\
\hline Metrics & Pre1990 & \[
\begin{aligned}
& 1990- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 20\% & 19\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 5\% & 0\% \\
\hline Average Road Width (m) & 10.6 & 10.0 \\
\hline Share of Roads less than 4 m Wide & 11\% & 12\% \\
\hline Share of Roads more than 16 m Wide & 20\% & 14\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 2.0 & 0.8 \\
\hline Average Beeline Distance to Arterial Roads (m) & 181 & 396 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 97\% & 80\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 95\% & 73\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 13\% & 11\% \\
\hline Average Block Size (ha) & 5.9 & 6.7 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 81 & 53 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 13 & 9 \\
\hline Walkabity Ratio & 1.8 & 1.9 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 800 & 852 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 64\% & 83\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 4\% & 13\% \\
\hline Share of Residential Area Laid Out Before Occupation & 95\% & 86\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 0\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 85\% & 73\% \\
\hline Share of Residential Area in Housing Projects & 9\% & 13\% \\
\hline
\end{tabular}





Hyderabad, India (South and Central Asia)


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2014


Hyderabad, India 1990-2014

\begin{tabular}{|c|c|c|c|c|}
\hline \multicolumn{5}{|c|}{Legend for Charts} \\
\hline Hyderabad & Other cities in region | & All other cities & \multicolumn{2}{|l|}{Global average -} \\
\hline Metrics & & & Pre1990 & \[
\begin{aligned}
& 1990- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{5}{|c|}{Roads} \\
\hline \multicolumn{3}{|l|}{Share of Built-Up Area Occupied by Roads} & 18\% & 20\% \\
\hline \multicolumn{3}{|l|}{Share of Built-Up Area that is Gridded or Partially Gridded} & 2\% & 0\% \\
\hline \multicolumn{3}{|l|}{Average Road Width (m)} & 6.8 & 6.2 \\
\hline \multicolumn{3}{|l|}{Share of Roads less than 4 m Wide} & 18\% & 23\% \\
\hline \multicolumn{3}{|l|}{Share of Roads more than 16 m Wide} & 3\% & 2\% \\
\hline
\end{tabular}
\begin{tabular}{|lll|}
\hline \multicolumn{3}{|c|}{ Arterial Roads } \\
\hline Density of Arterial Roads (km/km²) & 1.9 & 1.3 \\
\hline Average Beeline Distance to Arterial Roads (m) & 184 & 279 \\
\hline \begin{tabular}{l} 
Share of Urban Extent Within Walking Distance \\
(625m) of all Arterial Roads
\end{tabular} & \(98 \%\) & \(90 \%\) \\
\begin{tabular}{l} 
Share of Urban Extent Within Walking Distance \\
of Wide Arterial Roads (>16m wide)
\end{tabular} & \(77 \%\) & \(63 \%\) \\
\hline
\end{tabular}

Block Size, Plot Size, Intersection Density, and Walkability
\begin{tabular}{|lll|}
\hline Share of Intersections that are 4-way & \(9 \%\) & \(15 \%\) \\
\hline Average Block Size (ha) & 2.2 & 3.0 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 189 & 204 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 25 & 43 \\
\hline Walkabity Ratio & 1.7 & 1.5 \\
\hline Average Plot Size in Informal Subdivisions (m²) & 95 & 159 \\
\hline Average Plot Size in Formal Subdivisions (m²) & 213 & 190 \\
\hline \multicolumn{1}{|c|}{ Stages in the Evolution of Residential Layouts } & \\
\hline Share of Built-Up Area in Residential Use & \(68 \%\) & \(66 \%\) \\
\hline Share of Residential Area Not Laid Out Before Occupation & \(10 \%\) & \(14 \%\) \\
\hline Share of Residential Area Laid Out Before Occupation & \(89 \%\) & \(85 \%\) \\
\hline Share of Residential Area in Informal Land Subdivisions & \(3 \%\) & \(64 \%\) \\
\hline Share of Residential Area in Formal Land Subdivisions & \(83 \%\) & \(19 \%\) \\
\hline Share of Residential Area in Housing Projects & \(2 \%\) & \(1 \%\) \\
\hline
\end{tabular}





\section*{Ibadan, Nigeria (Sub-Saharan Africa)}


Selected Locales in Area Developed Before 1984


Selected Locales in Expansion Area, 1984-2013


Ibadan, Nigeria 1984-2013 \(\square\) Urban Extent in 1984
Expansion, 1984-2000
Expansion, 2000-2013

\section*{Ibadan, Nigeria (Sub-Saharan Africa)}
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Ibadan | Other cities in region | All other cities & Glob & rage - \\
\hline Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1984
\end{aligned}
\] & \[
\begin{aligned}
& 1984- \\
& 2013
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 11\% & 12\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 5\% & 0\% \\
\hline Average Road Width (m) & 6.0 & 3.2 \\
\hline Share of Roads less than 4 m Wide & 21\% & 68\% \\
\hline Share of Roads more than 16 m Wide & 1\% & 0\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 1.0 & 0.7 \\
\hline Average Beeline Distance to Arterial Roads (m) & 353 & 596 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 81\% & 65\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( \(>16 \mathrm{~m}\) wide) & 49\% & 33\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 4\% & 7\% \\
\hline Average Block Size (ha) & 5.7 & 4.2 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 70 & 196 \\
\hline 4-way Intersection Density (number per km²) & 5 & 14 \\
\hline Walkabity Ratio & 1.8 & 1.7 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & & \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 677 & \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 70\% & 75\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 35\% & 75\% \\
\hline Share of Residential Area Laid Out Before Occupation & 64\% & 24\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 56\% & 24\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 6\% & 0\% \\
\hline Share of Residential Area in Housing Projects & 1\% & 0\% \\
\hline
\end{tabular}



llheus, Brazil (Latin America and the Caribbean)


Selected Locales in Area Developed Before 1993


Selected Locales in Expansion Area, 1993-2013

llheus, Brazil
1993-2013

llheus, Brazil (Latin America and the Caribbean)
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline llheus | Other cities in region | All other cities & Glob & rage - \\
\hline Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1993
\end{aligned}
\] & \[
\begin{aligned}
& 1993- \\
& 2013
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 22\% & 21\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 10\% \\
\hline Average Road Width (m) & 9.0 & 8.7 \\
\hline Share of Roads less than 4 m Wide & 13\% & 6\% \\
\hline Share of Roads more than 16 m Wide & 9\% & 5\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 2.3 & 1.7 \\
\hline Average Beeline Distance to Arterial Roads (m) & 156 & 264 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 97\% & 88\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( \(>16 \mathrm{~m}\) wide) & 94\% & 78\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 13\% & 14\% \\
\hline Average Block Size (ha) & 3.3 & 3.3 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 107 & 79 \\
\hline 4-way Intersection Density (number per km²) & 17 & 18 \\
\hline Walkabity Ratio & 1.6 & 1.7 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & & 500 \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & & 253 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 74\% & 78\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 3\% & 6\% \\
\hline Share of Residential Area Laid Out Before Occupation & 96\% & 93\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 28\% & 50\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 67\% & 42\% \\
\hline Share of Residential Area in Housing Projects & 1\% & 0\% \\
\hline
\end{tabular}





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Ipoh, Malaysia (Southeast Asia)

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Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2015


Ipoh, Malaysia 1990-2015


Urban Extent in 1990
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Ipoh | Other cities in region | All other cities & Globa & rage - \\
\hline Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1990
\end{aligned}
\] & \[
\begin{aligned}
& 1990- \\
& 2015
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 31\% & 29\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 2\% & 2\% \\
\hline Average Road Width (m) & 10.8 & 8.6 \\
\hline Share of Roads less than 4 m Wide & 5\% & 8\% \\
\hline Share of Roads more than 16 m Wide & 14\% & 6\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 1.1 & 0.8 \\
\hline Average Beeline Distance to Arterial Roads (m) & 387 & 479 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 79\% & 71\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 68\% & 57\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 7\% & 3\% \\
\hline Average Block Size (ha) & 2.7 & 3.2 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 151 & 146 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 16 & 8 \\
\hline Walkabity Ratio & 2.0 & 1.6 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & & \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 358 & 336 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 69\% & 82\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 0\% & 10\% \\
\hline Share of Residential Area Laid Out Before Occupation & 99\% & 89\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 4\% & 4\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 68\% & 28\% \\
\hline Share of Residential Area in Housing Projects & 26\% & 56\% \\
\hline
\end{tabular}






Istanbul, Turkey (Western Asia and North Africa)


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2013


\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Istanbul | Other cities in region | All other cities & Glob & rage - \\
\hline Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1990
\end{aligned}
\] & \[
\begin{aligned}
& 1990- \\
& 2013
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 26\% & 28\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 10\% & 5\% \\
\hline Average Road Width (m) & 9.2 & 7.8 \\
\hline Share of Roads less than 4 m Wide & 9\% & 14\% \\
\hline Share of Roads more than 16 m Wide & 9\% & 5\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km \({ }^{\text {2 }}\) ) & 3.3 & 2.3 \\
\hline Average Beeline Distance to Arterial Roads (m) & 115 & 202 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 98\% & 93\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( \(>16 \mathrm{~m}\) wide) & 93\% & 81\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 17\% & 6\% \\
\hline Average Block Size (ha) & 2.0 & 4.3 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 143 & 160 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 30 & 15 \\
\hline Walkabity Ratio & 1.7 & 2.0 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & & \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 355 & 318 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 73\% & 68\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 41\% & 24\% \\
\hline Share of Residential Area Laid Out Before Occupation & 52\% & 75\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 12\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 50\% & 34\% \\
\hline Share of Residential Area in Housing Projects & 7\% & 28\% \\
\hline
\end{tabular}



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Jaipur, India (South and Central Asia)

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Selected Locales in Area Developed Before 1989


Selected Locales in Expansion Area, 1989-2014


\begin{tabular}{|c|c|c|c|c|}
\hline \multicolumn{5}{|c|}{Legend for Charts} \\
\hline Jaipur & Other cities in region | & All other cities & \multicolumn{2}{|l|}{Global average -} \\
\hline Metrics & & & Pre1989 & \[
\begin{aligned}
& 1989 \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{5}{|c|}{Roads} \\
\hline \multicolumn{3}{|l|}{Share of Built-Up Area Occupied by Roads} & 21\% & 27\% \\
\hline \multicolumn{3}{|l|}{Share of Built-Up Area that is Gridded or Partially Gridded} & 0\% & 0\% \\
\hline \multicolumn{3}{|l|}{Average Road Width (m)} & 8.0 & 7.4 \\
\hline \multicolumn{3}{|l|}{Share of Roads less than 4 m Wide} & 19\% & 18\% \\
\hline \multicolumn{3}{|l|}{Share of Roads more than 16 m Wide} & 9\% & 7\% \\
\hline
\end{tabular}

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Jalna, India (South and Central Asia)

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Selected Locales in Area Developed Before 1989


Selected Locales in Expansion Area, 1989-2014


\begin{tabular}{|c|c|c|c|c|}
\hline \multicolumn{5}{|c|}{Legend for Charts} \\
\hline Jalna & Other cities in region | & All other cities & \multicolumn{2}{|l|}{Global average -} \\
\hline Metrics & & & \[
\begin{aligned}
& \text { Pre- } \\
& 1989
\end{aligned}
\] & \[
\begin{aligned}
& 1989- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{5}{|c|}{Roads} \\
\hline \multicolumn{3}{|l|}{Share of Built-Up Area Occupied by Roads} & 19\% & 18\% \\
\hline \multicolumn{3}{|l|}{Share of Built-Up Area that is Gridded or Partially Gridded} & 0\% & 0\% \\
\hline \multicolumn{3}{|l|}{Average Road Width (m)} & 6.3 & 7.2 \\
\hline \multicolumn{3}{|l|}{Share of Roads less than 4 m Wide} & 20\% & 28\% \\
\hline \multicolumn{3}{|l|}{Share of Roads more than 16 m Wide} & 1\% & 6\% \\
\hline
\end{tabular}
\begin{tabular}{|lll|}
\hline \multicolumn{4}{|c|}{ Arterial Roads } \\
\hline Density of Arterial Roads (km/km²) & 1.6 & 1.5 \\
\hline Average Beeline Distance to Arterial Roads (m) & 190 & 241 \\
\hline \begin{tabular}{l} 
Share of Urban Extent Within Walking Distance \\
(625m) of all Arterial Roads
\end{tabular} & \(96 \%\) & \(93 \%\) \\
\begin{tabular}{l} 
Share of Urban Extent Within Walking Distance \\
of Wide Arterial Roads (>16m wide)
\end{tabular} & \(63 \%\) & \(66 \%\) \\
\hline
\end{tabular}

Block Size, Plot Size, Intersection Density, and Walkability
\begin{tabular}{|lll|}
\hline Share of Intersections that are 4-way & \(8 \%\) & \(10 \%\) \\
\hline Average Block Size (ha) & 3.0 & 5.3 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 162 & 179 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 15 & 28 \\
\hline Walkabity Ratio & 1.6 & 1.6 \\
\hline Average Plot Size in Informal Subdivisions (m²) & 145 & \\
\hline Average Plot Size in Formal Subdivisions (m²) & 141 & \\
\hline \multicolumn{1}{|c|}{ Stages in the Evolution of Residential Layouts } & \\
\hline Share of Built-Up Area in Residential Use & \(54 \%\) & \(55 \%\) \\
\hline Share of Residential Area Not Laid Out Before Occupation & \(49 \%\) & \(30 \%\) \\
\hline Share of Residential Area Laid Out Before Occupation & \(50 \%\) & \(69 \%\) \\
\hline Share of Residential Area in Informal Land Subdivisions & \(31 \%\) & \(62 \%\) \\
\hline Share of Residential Area in Formal Land Subdivisions & \(17 \%\) & \(7 \%\) \\
\hline Share of Residential Area in Housing Projects & \(1 \%\) & \(0 \%\) \\
\hline
\end{tabular}





Jequie, Brazil (Latin America and the Caribbean)


Selected Locales in Area Developed Before 1992


Selected Locales in Expansion Area, 1992-2014


Jequie, Brazil 1992-2014


Urban Extent in 1992
\(\square\) Expansion, 1992-2001


Expansion, 2001-2014

\section*{Jequie, Brazil (Latin America and the Caribbean)}
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Jequie | Other cities in region | All other cities & Globa & rage \\
\hline Metrics & Pre1992 & \[
\begin{aligned}
& 1992- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 24\% & 26\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 10\% & 11\% \\
\hline Average Road Width (m) & 7.6 & 5.6 \\
\hline Share of Roads less than 4 m Wide & 20\% & 28\% \\
\hline Share of Roads more than 16 m Wide & 4\% & 1\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 1.2 & 1.0 \\
\hline Average Beeline Distance to Arterial Roads (m) & 332 & 383 \\
\hline Share of Urban Extent Within Walking Distance ( 625 m ) of all Arterial Roads & 83\% & 79\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( \(>16 \mathrm{~m}\) wide) & 68\% & 65\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 19\% & 17\% \\
\hline Average Block Size (ha) & 2.3 & 3.1 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 181 & 254 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 38 & 47 \\
\hline Walkabity Ratio & 1.9 & 1.6 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & 202 & 173 \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 132 & 274 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 68\% & 69\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 0\% & 15\% \\
\hline Share of Residential Area Laid Out Before Occupation & 99\% & 84\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 59\% & 58\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 36\% & 15\% \\
\hline Share of Residential Area in Housing Projects & 4\% & 10\% \\
\hline
\end{tabular}






Jinan, Shandong, China (East Asia and the Pacific)


Selected Locales in Area Developed Before 1991


Selected Locales in Expansion Area, 1991-2013


Jinan, Shandong, China (East Asia and the Pacific)
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Jinan | Other cities in region | All other cities & Globa & rage - \\
\hline Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1991
\end{aligned}
\] & \[
\begin{aligned}
& 1991 \\
& 2013
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 25\% & 22\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 0\% \\
\hline Average Road Width (m) & 9.5 & 9.5 \\
\hline Share of Roads less than 4 m Wide & 35\% & 41\% \\
\hline Share of Roads more than 16 m Wide & 15\% & 16\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 1.4 & 1.2 \\
\hline Average Beeline Distance to Arterial Roads (m) & 332 & 500 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 86\% & 75\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 86\% & 75\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 5\% & 14\% \\
\hline Average Block Size (ha) & 3.7 & 7.2 \\
\hline 3 -way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 158 & 111 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 13 & 14 \\
\hline Walkabity Ratio & 2.0 & 1.6 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 38\% & 48\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 7\% & 13\% \\
\hline Share of Residential Area Laid Out Before Occupation & 92\% & 86\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 21\% & 29\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 45\% & 12\% \\
\hline Share of Residential Area in Housing Projects & 25\% & 45\% \\
\hline
\end{tabular}



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Jinju, Korea Rep. (East Asia and the Pacific)

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Selected Locales in Area Developed Before 1988


Selected Locales in Expansion Area, 1988-2014


Jinju, Korea Rep. (East Asia and the Pacific)
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Jinju | Other cities in region | All other cities & Glob & rage - \\
\hline Metrics & Pre1988 & \[
\begin{aligned}
& 1988- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 24\% & 17\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 17\% & 0\% \\
\hline Average Road Width (m) & 7.5 & 4.8 \\
\hline Share of Roads less than 4 m Wide & 30\% & 53\% \\
\hline Share of Roads more than 16 m Wide & 9\% & 1\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 2.4 & 1.3 \\
\hline Average Beeline Distance to Arterial Roads (m) & 172 & 404 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 97\% & 80\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( \(>16 \mathrm{~m}\) wide) & 94\% & 51\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 20\% & 14\% \\
\hline Average Block Size (ha) & 2.4 & 5.5 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 159 & 108 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 41 & 21 \\
\hline Walkabity Ratio & 1.4 & 1.6 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 58\% & 30\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 19\% & 76\% \\
\hline Share of Residential Area Laid Out Before Occupation & 80\% & 23\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 0\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 55\% & 3\% \\
\hline Share of Residential Area in Housing Projects & 24\% & 19\% \\
\hline
\end{tabular}




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Johannesburg, South Africa (Sub-Saharan Africa)

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Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2013


Johannesburg, South Africa (Sub-Saharan Africa)
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Johannesburg | Other cities in region | All other cities & Glob & rage - \\
\hline Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1990
\end{aligned}
\] & \[
\begin{aligned}
& 1990- \\
& 2013
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 24\% & 17\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 25\% & 2\% \\
\hline Average Road Width (m) & 13.2 & 7.4 \\
\hline Share of Roads less than 4 m Wide & 6\% & 21\% \\
\hline Share of Roads more than 16 m Wide & 31\% & 7\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 1.5 & 0.5 \\
\hline Average Beeline Distance to Arterial Roads (m) & 238 & 835 \\
\hline Share of Urban Extent Within Walking Distance ( 625 m ) of all Arterial Roads & 93\% & 49\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( \(>16 \mathrm{~m}\) wide) & 93\% & 46\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 23\% & 10\% \\
\hline Average Block Size (ha) & 7.6 & 5.3 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 48 & 109 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 18 & 14 \\
\hline Walkabity Ratio & 1.6 & 2.2 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & 230 & 290 \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 965 & 509 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 84\% & 82\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 0\% & 13\% \\
\hline Share of Residential Area Laid Out Before Occupation & 92\% & 86\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 4\% & 45\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 87\% & 38\% \\
\hline Share of Residential Area in Housing Projects & 7\% & 1\% \\
\hline
\end{tabular}






\section*{Kabul, Afghanistan (South and Central Asia)}


Selected Locales in Area Developed Before 1987


Selected Locales in Expansion Area, 1987-2014


Kabul, Afghanistan (South and Central Asia)






\section*{Kaiping, Guangdong, China (East Asia and the Pacific)}


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2014


\section*{Kaiping, Guangdong, China (East Asia and the Pacific)}

\section*{Legend for Charts}
\begin{tabular}{|c|c|c|c|c|}
\hline \multicolumn{5}{|c|}{Legend for Charts} \\
\hline Kaiping & Other cities in region & All other cities & \multicolumn{2}{|l|}{Global average -} \\
\hline Metrics & & & Pre1990 & \[
\begin{aligned}
& 1990- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{5}{|c|}{Roads} \\
\hline \multicolumn{3}{|l|}{Share of Built-Up Area Occupied by Roads} & 18\% & 24\% \\
\hline \multicolumn{3}{|l|}{Share of Built-Up Area that is Gridded or Partially Gridded} & 0\% & 0\% \\
\hline \multicolumn{3}{|l|}{Average Road Width (m)} & 5.1 & 8.4 \\
\hline \multicolumn{3}{|l|}{Share of Roads less than 4 m Wide} & 52\% & 33\% \\
\hline \multicolumn{3}{|l|}{Share of Roads more than 16 m Wide} & 5\% & 12\% \\
\hline
\end{tabular}
\begin{tabular}{|lll|}
\hline \multicolumn{4}{c|}{ Arterial Roads } \\
\hline Density of Arterial Roads (km/km²) & 2.0 & 1.4 \\
\hline Average Beeline Distance to Arterial Roads (m) & 161 & 235 \\
\hline \begin{tabular}{l} 
Share of Urban Extent Within Walking Distance \\
(625m) of all Arterial Roads
\end{tabular} & \(100 \%\) & \(92 \%\) \\
\begin{tabular}{l} 
Share of Urban Extent Within Walking Distance \\
of Wide Arterial Roads (>16m wide)
\end{tabular} & \(100 \%\) & \(89 \%\) \\
\hline
\end{tabular}

Block Size, Plot Size, Intersection Density, and Walkability
\begin{tabular}{|lll|}
\hline Share of Intersections that are 4-way & \(16 \%\) & \(8 \%\) \\
\hline Average Block Size (ha) & 1.0 & 2.5 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 311 & 267 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 84 & 49 \\
\hline Walkabity Ratio & 1.5 & 1.6 \\
\hline
\end{tabular}

Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) )
Average Plot Size in Formal Subdivisions \(\left(\mathrm{m}^{2}\right)\)
Stages in the Evolution of Residential Layouts
\begin{tabular}{|lrr|}
\hline Share of Built-Up Area in Residential Use & \(82 \%\) & \(48 \%\) \\
\hline Share of Residential Area Not Laid Out Before Occupation & \(6 \%\) & \(9 \%\) \\
\hline Share of Residential Area Laid Out Before Occupation & \(93 \%\) & \(90 \%\) \\
\hline Share of Residential Area in Informal Land Subdivisions & \(31 \%\) & \(56 \%\) \\
\hline Share of Residential Area in Formal Land Subdivisions & \(49 \%\) & \(10 \%\) \\
\hline Share of Residential Area in Housing Projects & \(12 \%\) & \(22 \%\) \\
\hline
\end{tabular}



Share of Built-up Area in Roads ~1990 - ~2014






Selected Locales in Area Developed Before 1992


Selected Locales in Expansion Area, 1992-2010








Kampala, Uganda (Sub-Saharan Africa)


Selected Locales in Area Developed Before 1988


Selected Locales in Expansion Area, 1988-2015


Legend for Charts
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Kampala | Other cities in region | All other cities & Globa & rage - \\
\hline Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1988
\end{aligned}
\] & \[
\begin{aligned}
& 1988- \\
& 2015
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 12\% & 11\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 0\% \\
\hline Average Road Width (m) & 6.7 & 4.5 \\
\hline Share of Roads less than 4m Wide & 20\% & 41\% \\
\hline Share of Roads more than 16 m Wide & 3\% & 0\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 2.1 & 1.1 \\
\hline Average Beeline Distance to Arterial Roads (m) & 157 & 346 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 98\% & 83\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 58\% & 37\% \\
\hline
\end{tabular}

Block Size, Plot Size, Intersection Density, and Walkability
\begin{tabular}{|lll|}
\hline Share of Intersections that are 4-way & \(6 \%\) & \(3 \%\) \\
\hline Average Block Size (ha) & 6.0 & 7.5 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 74 & 105 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 6 & 5 \\
\hline Walkabity Ratio & 1.8 & 1.6 \\
\hline Average Plot Size in Informal Subdivisions (m²) & & \\
\hline Average Plot Size in Formal Subdivisions (m²) & & \\
\hline \multicolumn{1}{|c|}{ Stages in the Evolution of Residential Layouts } & \\
\hline Share of Built-Up Area in Residential Use & \(71 \%\) & \(68 \%\) \\
\hline Share of Residential Area Not Laid Out Before Occupation & \(48 \%\) & \(67 \%\) \\
\hline Share of Residential Area Laid Out Before Occupation & \(51 \%\) & \(32 \%\) \\
\hline Share of Residential Area in Informal Land Subdivisions & \(47 \%\) & \(32 \%\) \\
\hline Share of Residential Area in Formal Land Subdivisions & \(1 \%\) & \(0 \%\) \\
\hline Share of Residential Area in Housing Projects & \(2 \%\) & \(0 \%\) \\
\hline
\end{tabular}






Selected Locales in Area Developed Before 1991


Selected Locales in Expansion Area, 1991-2014


\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Kanpur | Other cities in region | All other cities & Glob & rage - \\
\hline Metrics & Pre1991 & \[
\begin{aligned}
& 1991- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 19\% & 22\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 2\% \\
\hline Average Road Width (m) & 6.8 & 5.7 \\
\hline Share of Roads less than 4 m Wide & 23\% & 37\% \\
\hline Share of Roads more than 16 m Wide & 5\% & 4\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 1.8 & 1.5 \\
\hline Average Beeline Distance to Arterial Roads (m) & 187 & 261 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 97\% & 91\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( \(>16 \mathrm{~m}\) wide) & 94\% & 84\% \\
\hline
\end{tabular}





> Karachi, Pakistan (South and Central Asia)


Selected Locales in Area Developed Before 1991


Selected Locales in Expansion Area, 1991-2013


Karachi, Pakistan 1991-2013


Urban Extent in 1991

\section*{Karachi, Pakistan (South and Central Asia)}

\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Karachi | Other cities in region | All other cities & Globa & rage \\
\hline Metrics & Pre1991 & \[
\begin{aligned}
& 1991- \\
& 2013
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 21\% & 22\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 5\% & 12\% \\
\hline Average Road Width (m) & 8.3 & 7.4 \\
\hline Share of Roads less than 4m Wide & 29\% & 30\% \\
\hline Share of Roads more than 16 m Wide & 12\% & 8\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 3.1 & 2.6 \\
\hline Average Beeline Distance to Arterial Roads (m) & 130 & 158 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 99\% & 98\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 94\% & 89\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 12\% & 21\% \\
\hline Average Block Size (ha) & 3.2 & 2.4 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 220 & 226 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 50 & 74 \\
\hline Walkabity Ratio & 1.7 & 1.7 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & 83 & \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 464 & 343 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 71\% & 70\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 24\% & 27\% \\
\hline Share of Residential Area Laid Out Before Occupation & 75\% & 72\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 26\% & 60\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 46\% & 6\% \\
\hline Share of Residential Area in Housing Projects & 2\% & 4\% \\
\hline
\end{tabular}





Kaunas, Lithuania (Europe and Japan)


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2014


Kaunas, Lithuania (Europe and Japan)
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Kaunas | Other cities in region | All other cities & Globa & rage \\
\hline Metrics & Pre1990 & \[
\begin{aligned}
& 1990- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 17\% & 12\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 0\% \\
\hline Average Road Width (m) & 7.9 & 5.4 \\
\hline Share of Roads less than 4m Wide & 26\% & 31\% \\
\hline Share of Roads more than 16 m Wide & 10\% & 1\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 1.3 & 1.2 \\
\hline Average Beeline Distance to Arterial Roads (m) & 275 & 281 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 90\% & 89\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 80\% & 77\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 13\% & 8\% \\
\hline Average Block Size (ha) & 4.9 & 5.5 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 90 & 80 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 17 & 7 \\
\hline Walkabity Ratio & 2.0 & 1.5 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & 1567 & 990 \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 741 & 784 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 61\% & 73\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 25\% & 24\% \\
\hline Share of Residential Area Laid Out Before Occupation & 74\% & 75\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 17\% & 27\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 40\% & 38\% \\
\hline Share of Residential Area in Housing Projects & 16\% & 9\% \\
\hline
\end{tabular}





Kayseri, Turkey (Western Asia and North Africa)


Selected Locales in Area Developed Before 1987


Selected Locales in Expansion Area, 1987-2013



\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Kayseri | Other cities in region | All other cities & Globa & rage - \\
\hline Metrics & Pre1987 & \[
\begin{aligned}
& 1987- \\
& 2013
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 31\% & 27\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 5\% & 0\% \\
\hline Average Road Width (m) & 9.4 & 9.1 \\
\hline Share of Roads less than 4 m Wide & 16\% & 27\% \\
\hline Share of Roads more than 16 m Wide & 12\% & 17\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 2.9 & 1.8 \\
\hline Average Beeline Distance to Arterial Roads (m) & 125 & 218 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 99\% & 92\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( \(>16 \mathrm{~m}\) wide) & 99\% & 89\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 14\% & 12\% \\
\hline Average Block Size (ha) & 1.7 & 3.3 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 205 & 201 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 26 & 37 \\
\hline Walkabity Ratio & 1.6 & 1.6 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & & \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 561 & 275 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 48\% & 68\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 9\% & 23\% \\
\hline Share of Residential Area Laid Out Before Occupation & 90\% & 76\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 10\% & 18\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 76\% & 27\% \\
\hline Share of Residential Area in Housing Projects & 3\% & 30\% \\
\hline
\end{tabular}




Area w/n Walking Distance of Wide Arterial Roads, ~1990 - ~2014


\section*{Khartoum, Sudan (Western Asia and North Africa)}


Selected Locales in Area Developed Before 1988


Selected Locales in Expansion Area, 1988-2014


Khartoum, Sudan (Western Asia and North Africa)

\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Khartoum | Other cities in region | All other cities & Globa & rage - \\
\hline Metrics & Pre1988 & \[
\begin{aligned}
& 1988- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 23\% & 22\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & & 7\% \\
\hline Average Road Width (m) & 9.3 & 7.3 \\
\hline Share of Roads less than 4m Wide & 4\% & 20\% \\
\hline Share of Roads more than 16 m Wide & 8\% & 6\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 1.8 & 1.2 \\
\hline Average Beeline Distance to Arterial Roads (m) & 281 & 516 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 89\% & 74\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 88\% & 72\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 20\% & 18\% \\
\hline Average Block Size (ha) & 1.4 & 1.7 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 168 & 226 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 51 & 60 \\
\hline Walkabity Ratio & 1.5 & 1.5 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & 534 & 345 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 74\% & 86\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 3\% & 5\% \\
\hline Share of Residential Area Laid Out Before Occupation & 96\% & 94\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 87\% & 94\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 5\% & 0\% \\
\hline Share of Residential Area in Housing Projects & 4\% & 0\% \\
\hline
\end{tabular}




\section*{Kigali, Rwanda (Sub-Saharan Africa)}


Selected Locales in Area Developed Before 1987


Selected Locales in Expansion Area, 1987-2014


\section*{Kigali, Rwanda (Sub-Saharan Africa)}
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Kigali | Other cities in region | All other cities | & Globa & rage \\
\hline Metrics & Pre1987 & \[
\begin{aligned}
& 1987- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 17\% & 14\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 0\% \\
\hline Average Road Width (m) & 7.9 & 5.5 \\
\hline Share of Roads less than 4m Wide & 18\% & 32\% \\
\hline Share of Roads more than 16 m Wide & 7\% & 1\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 2.2 & 1.2 \\
\hline Average Beeline Distance to Arterial Roads (m) & 179 & 318 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 95\% & 86\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 72\% & 57\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 6\% & 3\% \\
\hline Average Block Size (ha) & 5.7 & 4.6 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 65 & 99 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 7 & 5 \\
\hline Walkabity Ratio & 2.3 & 1.7 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & & 444 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 58\% & 78\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 43\% & 69\% \\
\hline Share of Residential Area Laid Out Before Occupation & 56\% & 30\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 34\% & 29\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 22\% & 0\% \\
\hline Share of Residential Area in Housing Projects & 0\% & 0\% \\
\hline
\end{tabular}





\section*{Killeen, United States (Land-Rich Developed Countries)}


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2013

\begin{tabular}{|c|c|c|c|}
\hline \multicolumn{4}{|c|}{Legend for Charts} \\
\hline Killeen & Other cities in region | & All other cities | Globa & rage - \\
\hline Metrics & & Pre1990 & \[
\begin{aligned}
& 1990- \\
& 2013
\end{aligned}
\] \\
\hline \multicolumn{4}{|c|}{Roads} \\
\hline Share of Buit & a Occupied by Road & 24\% & 22\% \\
\hline Share of Buit & that is Gridded or & ally Gridded 0\% & 2\% \\
\hline Average Road & (m) & 10.6 & 18.8 \\
\hline Share of Roads & than 4 m Wide & 11\% & 12\% \\
\hline Share of Road & than 16 m Wide & 23\% & 30\% \\
\hline \multicolumn{4}{|c|}{Arterial Roads} \\
\hline Density of Ar & ads (km/km²) & 1.1 & 0.9 \\
\hline Average Bee & ance to Arterial Roa & (m) 470 & 472 \\
\hline Share of Urb (625m) of all & hithin Walking Dis Roads & - \(76 \%\) & 74\% \\
\hline Share of Urb of Wide Arte & Within Walking Dis (>16m wide) & 74\% & 72\% \\
\hline \multicolumn{4}{|c|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Inte & that are 4-way & 18\% & 8\% \\
\hline Average Blo & & 2.9 & 5.4 \\
\hline 3-way Inters & ensity (number per k & 109 & 52 \\
\hline 4-way Inters & ensity (number per k & 20 & 7 \\
\hline Walkabity R & & 1.8 & 1.7 \\
\hline \multicolumn{4}{|l|}{Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline Average Plo & Formal Subdivisions & 742 & 770 \\
\hline \multicolumn{4}{|c|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Buit & a in Residential Use & 73\% & 93\% \\
\hline Share of Res & Area Not Laid Out B & e Occupation 0\% & 9\% \\
\hline Share of Res & Area Laid Out Before & ccupation 99\% & 90\% \\
\hline Share of Resid & Area in Informal Lan & ubdivisions 0\% & 0\% \\
\hline Share of Res & Area in Formal Land & divisions 67\% & 85\% \\
\hline Share of Res & Area in Housing Proj & 32\% & 5\% \\
\hline
\end{tabular}




Kinshasa, Congo Dem. Rep. (Sub-Saharan Africa)


Selected Locales in Area Developed Before 1994


Selected Locales in Expansion Area, 1994-2013


\section*{Kinshasa, Congo Dem. Rep. (Sub-Saharan Africa)}

\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Kinshasa | Other cities in region | All other cities | & Glob & rage \\
\hline Metrics & Pre1994 & \[
\begin{aligned}
& 1994- \\
& 2013
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 14\% & 13\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 10\% & 5\% \\
\hline Average Road Width (m) & 9.5 & 5.2 \\
\hline Share of Roads less than 4 m Wide & 28\% & 37\% \\
\hline Share of Roads more than 16 m Wide & 4\% & 2\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 1.3 & 0.8 \\
\hline Average Beeline Distance to Arterial Roads (m) & 327 & 709 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 84\% & 65\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 41\% & 35\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 22\% & 12\% \\
\hline Average Block Size (ha) & 2.1 & 2.7 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 123 & 116 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 36 & 25 \\
\hline Walkabity Ratio & 1.7 & 1.7 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & 444 & 124 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 84\% & 85\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 18\% & 36\% \\
\hline Share of Residential Area Laid Out Before Occupation & 81\% & 63\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 72\% & 58\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 8\% & 1\% \\
\hline Share of Residential Area in Housing Projects & 0\% & 2\% \\
\hline
\end{tabular}





Kolkata, India (South and Central Asia)


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2014


\begin{tabular}{|c|c|c|c|c|}
\hline \multicolumn{5}{|c|}{Legend for Charts} \\
\hline Kolkata & Other cities in region | & All other cities & \multicolumn{2}{|l|}{Global average -} \\
\hline Metrics & & & Pre1990 & \[
\begin{aligned}
& 1990- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{5}{|c|}{Roads} \\
\hline \multicolumn{3}{|l|}{Share of Built-Up Area Occupied by Roads} & 12\% & 9\% \\
\hline \multicolumn{3}{|l|}{Share of Built-Up Area that is Gridded or Partially Gridded} & 1\% & 2\% \\
\hline \multicolumn{3}{|l|}{Average Road Width (m)} & 5.8 & 4.0 \\
\hline \multicolumn{3}{|l|}{Share of Roads less than 4 m Wide} & 38\% & 59\% \\
\hline \multicolumn{3}{|l|}{Share of Roads more than 16 m Wide} & 4\% & 1\% \\
\hline
\end{tabular}
\begin{tabular}{|lll|}
\hline \multicolumn{4}{|c|}{ Arterial Roads } \\
\hline Density of Arterial Roads (km/km²) & 1.6 & 1.1 \\
\hline \begin{tabular}{l} 
Average Beeline Distance to Arterial Roads (m)
\end{tabular} & 245 & 335 \\
\hline \begin{tabular}{l} 
Share of Urban Extent Within Walking Distance \\
(625m) of all Arterial Roads
\end{tabular} & \(91 \%\) & \(84 \%\) \\
\begin{tabular}{l} 
Share of Urban Extent Within Walking Distance \\
of Wide Arterial Roads (>16m wide)
\end{tabular} & \(62 \%\) & \(54 \%\) \\
\hline
\end{tabular}

Block Size, Plot Size, Intersection Density, and Walkability
\begin{tabular}{|lll|}
\hline Share of Intersections that are 4-way & \(8 \%\) & \(3 \%\) \\
\hline Average Block Size (ha) & 5.2 & 4.8 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 85 & 108 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 9 & 6 \\
\hline Walkabity Ratio & 1.6 & 1.6 \\
\hline Average Plot Size in Informal Subdivisions (m²) & 271 & 217 \\
\hline Average Plot Size in Formal Subdivisions (m²) & \\
\hline \multicolumn{1}{|c|}{ Stages in the Evolution of Residential Layouts } & \\
\hline Share of Built-Up Area in Residential Use & \(76 \%\) & \(84 \%\) \\
\hline Share of Residential Area Not Laid Out Before Occupation & \(83 \%\) & \(73 \%\) \\
\hline Share of Residential Area Laid Out Before Occupation & \(15 \%\) & \(26 \%\) \\
\hline Share of Residential Area in Informal Land Subdivisions & \(6 \%\) & \(15 \%\) \\
\hline Share of Residential Area in Formal Land Subdivisions & \(6 \%\) & \(2 \%\) \\
\hline Share of Residential Area in Housing Projects & \(2 \%\) & \(8 \%\) \\
\hline
\end{tabular}






Selected Locales in Area Developed Before 1991


Selected Locales in Expansion Area, 1991-2014


\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Kozhikode | Other cities in region | All other cities & \multicolumn{2}{|l|}{Global average -} \\
\hline Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1991
\end{aligned}
\] & \[
\begin{aligned}
& 1991 \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 14\% & 8\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 0\% \\
\hline Average Road Width (m) & 6.3 & 4.8 \\
\hline Share of Roads less than 4m Wide & 26\% & 44\% \\
\hline Share of Roads more than 16 m Wide & 3\% & 3\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 2.2 & 0.7 \\
\hline Average Beeline Distance to Arterial Roads (m) & 189 & 314 \\
\hline Share of Urban Extent Within Walking Distance ( 625 m ) of all Arterial Roads & 98\% & 88\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 100\% & 67\% \\
\hline
\end{tabular}

Block Size, Plot Size, Intersection Density, and Walkability
\begin{tabular}{|lll|}
\hline Share of Intersections that are 4-way & \(4 \%\) & \(5 \%\) \\
\hline Average Block Size (ha) & 1.7 & 7.5 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 176 & 111 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 9 & 10 \\
\hline Walkabity Ratio & 1.4 & 1.6 \\
\hline Average Plot Size in Informal Subdivisions (m²) & & \\
\hline Average Plot Size in Formal Subdivisions \(\left(\mathrm{m}^{2}\right)\) & & \\
\hline \multicolumn{1}{|c|}{ Stages in the Evolution of Residential Layouts } & \\
\hline Share of Built-Up Area in Residential Use & \(44 \%\) & \(87 \%\) \\
\hline Share of Residential Area Not Laid Out Before Occupation & \(100 \%\) & \(54 \%\) \\
\hline Share of Residential Area Laid Out Before Occupation & \(0 \%\) & \(45 \%\) \\
\hline Share of Residential Area in Informal Land Subdivisions & \(0 \%\) & \(44 \%\) \\
\hline Share of Residential Area in Formal Land Subdivisions & \(0 \%\) & \(0 \%\) \\
\hline Share of Residential Area in Housing Projects & \(0 \%\) & \(0 \%\) \\
\hline
\end{tabular}





\section*{Lagos, Nigeria (Sub-Saharan Africa)}


Selected Locales in Area Developed Before 1984


Selected Locales in Expansion Area, 1984-2013


Lagos, Nigeria (Sub-Saharan Africa)






Area w/n Walking Distance of Wide Arterial Roads, ~1990 - ~2014

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Lahore, Pakistan (South and Central Asia)

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Selected Locales in Area Developed Before 1991


Selected Locales in Expansion Area, 1991-2013


Lahore, Pakistan 1991-2013 Arterial Roads

\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Lahore | Other cities in region | All other cities & Globa & rage - \\
\hline Metrics & Pre1991 & \[
\begin{aligned}
& 1991- \\
& 2013
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 19\% & 23\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 0\% \\
\hline Average Road Width (m) & 7.3 & 6.4 \\
\hline Share of Roads less than 4 m Wide & 31\% & 31\% \\
\hline Share of Roads more than 16 m Wide & 8\% & 6\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 3.2 & 2.5 \\
\hline Average Beeline Distance to Arterial Roads (m) & 119 & 167 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 99\% & 97\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( \(>16 \mathrm{~m}\) wide) & 93\% & 87\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 11\% & 10\% \\
\hline Average Block Size (ha) & 2.3 & 1.9 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 208 & 209 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 31 & 23 \\
\hline Walkabity Ratio & 1.5 & 1.9 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & & \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 394 & 440 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 81\% & 70\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 35\% & 11\% \\
\hline Share of Residential Area Laid Out Before Occupation & 64\% & 88\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 20\% & 31\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 42\% & 54\% \\
\hline Share of Residential Area in Housing Projects & 0\% & 2\% \\
\hline
\end{tabular}





\section*{Lausanne, Switzerland (Europe and Japan)}


Selected Locales in Area Developed Before 1987


Selected Locales in Expansion Area, 1987-2015


Lausanne, Switzerland (Europe and Japan)

\begin{tabular}{|c|c|c|c|c|}
\hline \multicolumn{5}{|c|}{Legend for Charts} \\
\hline Lausanne & Other cities in region & All other cities & \multicolumn{2}{|l|}{Global average -} \\
\hline Metrics & & & Pre1987 & \[
\begin{aligned}
& 1987- \\
& 2015
\end{aligned}
\] \\
\hline \multicolumn{5}{|c|}{Roads} \\
\hline \multicolumn{3}{|l|}{Share of Built-Up Area Occupied by Roads} & 20\% & 23\% \\
\hline \multicolumn{3}{|l|}{Share of Built-Up Area that is Gridded or Partially Gridded} & 0\% & 0\% \\
\hline \multicolumn{3}{|l|}{Average Road Width (m)} & 18.3 & 6.2 \\
\hline \multicolumn{3}{|l|}{Share of Roads less than 4 m Wide} & 17\% & 21\% \\
\hline \multicolumn{3}{|l|}{Share of Roads more than 16 m Wide} & 13\% & 1\% \\
\hline
\end{tabular}


Le Mans, France (Europe and Japan)


Selected Locales in Area Developed Before 1992


Selected Locales in Expansion Area, 1992-2013


\section*{Le Mans, France (Europe and Japan)}
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Le Mans | Other cities in region | All other cities & Globa & rage - \\
\hline Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1992
\end{aligned}
\] & \[
\begin{aligned}
& 1992- \\
& 2013
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 20\% & 20\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 0\% \\
\hline Average Road Width (m) & 6.7 & 5.5 \\
\hline Share of Roads less than 4 m Wide & 24\% & 33\% \\
\hline Share of Roads more than 16 m Wide & 3\% & 2\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 2.9 & 2.8 \\
\hline Average Beeline Distance to Arterial Roads (m) & 117 & 122 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 99\% & 99\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 84\% & 83\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 8\% & 7\% \\
\hline Average Block Size (ha) & 2.7 & 6.3 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 184 & 138 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 22 & 14 \\
\hline Walkabity Ratio & 2.0 & 1.7 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & & \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 647 & 720 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 61\% & 54\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 13\% & 44\% \\
\hline Share of Residential Area Laid Out Before Occupation & 86\% & 55\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 0\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 71\% & 53\% \\
\hline Share of Residential Area in Housing Projects & 14\% & 2\% \\
\hline
\end{tabular}





Leon, Nicaragua (Latin America and the Caribbean)


Selected Locales in Area Developed Before 1993


Selected Locales in Expansion Area, 1993-2010



Urban Extent in 1993

\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Leon | Other cities in region | All other cities | & Globa & rage - \\
\hline Metrics & Pre1993 & \[
\begin{aligned}
& 1993- \\
& 2010
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 18\% & 18\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 22\% & 12\% \\
\hline Average Road Width (m) & 7.8 & 5.5 \\
\hline Share of Roads less than 4 m Wide & 8\% & 18\% \\
\hline Share of Roads more than 16 m Wide & 2\% & 0\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 3.0 & 2.0 \\
\hline Average Beeline Distance to Arterial Roads (m) & 119 & 188 \\
\hline Share of Urban Extent Within Walking Distance ( 625 m ) of all Arterial Roads & 99\% & 96\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 66\% & 66\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 36\% & 19\% \\
\hline Average Block Size (ha) & 2.7 & 5.8 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 79 & 155 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 34 & 57 \\
\hline Walkabity Ratio & 1.6 & 1.6 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 143 & 355 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 74\% & 81\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 6\% & 10\% \\
\hline Share of Residential Area Laid Out Before Occupation & 93\% & 89\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 15\% & 62\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 78\% & 24\% \\
\hline Share of Residential Area in Housing Projects & 0\% & 1\% \\
\hline
\end{tabular}






Leshan, Sichuan, China (East Asia and the Pacific)


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2014


Leshan, Sichuan, China (East Asia and the Pacific)






London, United Kingdom (Europe and Japan)


Selected Locales in Area Developed Before 1989


Selected Locales in Expansion Area, 1989-2013


\section*{London, United Kingdom (Europe and Japan)}
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline London | Other cities in region | All other cities & Globa & rage \\
\hline Metrics & Pre1989 & \[
\begin{aligned}
& 1989- \\
& 2013
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 19\% & 9\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 0\% \\
\hline Average Road Width (m) & 9.5 & 7.5 \\
\hline Share of Roads less than 4m Wide & 9\% & 18\% \\
\hline Share of Roads more than 16 m Wide & 9\% & 4\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 2.2 & 1.4 \\
\hline Average Beeline Distance to Arterial Roads (m) & 163 & 439 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 98\% & 78\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 75\% & 37\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 12\% & 4\% \\
\hline Average Block Size (ha) & 8.4 & 8.2 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 51 & 61 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 10 & 10 \\
\hline Walkabity Ratio & 1.7 & 1.7 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & & \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 550 & 612 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 73\% & 72\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 2\% & 13\% \\
\hline Share of Residential Area Laid Out Before Occupation & 95\% & 86\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 0\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 45\% & 86\% \\
\hline Share of Residential Area in Housing Projects & 52\% & 0\% \\
\hline
\end{tabular}




Los Angeles, United States (Land-Rich Developed Countries)


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2014


Los Angeles, United States 1990-2014
\(0 \quad 102030405060\) \(\square\) Urban Extent in 1990


Expansion, 1990-2000
- Expansion, 2000-2014

\section*{Los Angeles, United States (Land-Rich Developed Countries)}
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Los Angeles | Other cities in region | All other cities & Globa & rage - \\
\hline Metrics & Pre1990 & \[
\begin{aligned}
& 1990- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 24\% & 25\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 28\% & 0\% \\
\hline Average Road Width (m) & 15.1 & 15.8 \\
\hline Share of Roads less than 4 m Wide & 6\% & 18\% \\
\hline Share of Roads more than 16 m Wide & 46\% & 20\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 2.1 & 0.3 \\
\hline Average Beeline Distance to Arterial Roads (m) & 187 & 2340 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 95\% & 20\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( \(>16 \mathrm{~m}\) wide) & 95\% & 20\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 26\% & 5\% \\
\hline Average Block Size (ha) & 6.5 & 6.5 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 47 & 74 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 19 & 8 \\
\hline Walkabity Ratio & 1.6 & 2.0 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 752 & 789 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 85\% & 86\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 2\% & 19\% \\
\hline Share of Residential Area Laid Out Before Occupation & 91\% & 80\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 3\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 90\% & 62\% \\
\hline Share of Residential Area in Housing Projects & 7\% & 15\% \\
\hline
\end{tabular}





\section*{Luanda, Angola (Sub-Saharan Africa)}


Selected Locales in Area Developed Before 1991


Selected Locales in Expansion Area, 1991-2014


\section*{Luanda, Angola (Sub-Saharan Africa)}
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Luanda | Other cities in region | All other cities & Globa & rage \\
\hline Metrics & Pre1991 & \[
\begin{aligned}
& 1991- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 15\% & 17\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 10\% & 0\% \\
\hline Average Road Width (m) & 7.9 & 6.4 \\
\hline Share of Roads less than 4m Wide & 16\% & 30\% \\
\hline Share of Roads more than 16 m Wide & 6\% & 5\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 1.1 & 0.6 \\
\hline Average Beeline Distance to Arterial Roads (m) & 412 & 698 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 78\% & 58\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 66\% & 52\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 15\% & 14\% \\
\hline Average Block Size (ha) & 3.2 & 2.4 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 96 & 139 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 17 & 29 \\
\hline Walkabity Ratio & 1.7 & 1.7 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & 255 & 387 \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 291 & \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 69\% & 75\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 58\% & 52\% \\
\hline Share of Residential Area Laid Out Before Occupation & 41\% & 47\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 32\% & 37\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 9\% & 2\% \\
\hline Share of Residential Area in Housing Projects & 0\% & 7\% \\
\hline
\end{tabular}





Lubumbashi, Congo Dem. Rep. (Sub-Saharan Africa)


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2013


Lubumbashi, Congo Dem. Rep. 1990-2013

\(\square\) Urban Extent in 1990
Arterial Roads
Expansion, 1990-1998
Expansion, 1998-2013

\section*{Lubumbashi, Congo Dem. Rep. (Sub-Saharan Africa)}

\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Lubumbashi | Other cities in region | All other cities & Globa & rage - \\
\hline Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1990
\end{aligned}
\] & \[
\begin{aligned}
& 1990- \\
& 2013
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 16\% & 15\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 22\% & 0\% \\
\hline Average Road Width (m) & 9.1 & 5.6 \\
\hline Share of Roads less than 4 m Wide & 9\% & 32\% \\
\hline Share of Roads more than 16 m Wide & 10\% & 1\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 1.6 & 1.0 \\
\hline Average Beeline Distance to Arterial Roads (m) & 259 & 428 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 90\% & 74\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 65\% & 46\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 30\% & 18\% \\
\hline Average Block Size (ha) & 5.7 & 3.3 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 61 & 170 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 26 & 30 \\
\hline Walkabity Ratio & 1.6 & 1.6 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & 611 & 839 \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 1452 & \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 83\% & 84\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 7\% & 29\% \\
\hline Share of Residential Area Laid Out Before Occupation & 92\% & 70\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 87\% & 67\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 4\% & 1\% \\
\hline Share of Residential Area in Housing Projects & 0\% & 1\% \\
\hline
\end{tabular}





Selected Locales in Area Developed Before 1991


Selected Locales in Expansion Area, 1991-2010


Madrid, Spain
1991-2010


051015202530
\(\square\)

Urban Extent in 1991
Expansion, 1991-2002

\section*{Madrid, Spain (Europe and Japan)}

\begin{tabular}{|c|c|c|c|c|}
\hline \multicolumn{5}{|c|}{Legend for Charts} \\
\hline Madrid & Other cities in region | & All other cities & \multicolumn{2}{|l|}{Global average -} \\
\hline Metrics & & & \[
\begin{aligned}
& \text { Pre- } \\
& 1991
\end{aligned}
\] & \[
\begin{aligned}
& 1991- \\
& 2010
\end{aligned}
\] \\
\hline \multicolumn{5}{|c|}{Roads} \\
\hline \multicolumn{3}{|l|}{Share of Built-Up Area Occupied by Roads} & 28\% & 29\% \\
\hline \multicolumn{3}{|l|}{Share of Built-Up Area that is Gridded or Partially Gridded} & 7\% & 5\% \\
\hline \multicolumn{3}{|l|}{Average Road Width (m)} & 13.2 & 11.3 \\
\hline \multicolumn{3}{|l|}{Share of Roads less than 4 m Wide} & 11\% & 22\% \\
\hline \multicolumn{3}{|l|}{Share of Roads more than 16 m Wide} & 25\% & 27\% \\
\hline
\end{tabular}
\begin{tabular}{|lll|}
\hline \multicolumn{4}{|c|}{ Arterial Roads } \\
\hline Density of Arterial Roads (km/km²) & 1.8 & 1.4 \\
\hline Average Beeline Distance to Arterial Roads (m) & 204 & 266 \\
\hline \begin{tabular}{l} 
Share of Urban Extent Within Walking Distance \\
(625m) of all Arterial Roads
\end{tabular} & \(96 \%\) & \(90 \%\) \\
\begin{tabular}{l} 
Share of Urban Extent Within Walking Distance \\
of Wide Arterial Roads (>16m wide)
\end{tabular} & \(94 \%\) & \(80 \%\) \\
\hline
\end{tabular}

Block Size, Plot Size, Intersection Density, and Walkability
\begin{tabular}{|lcc|}
\hline Share of Intersections that are 4-way & \(18 \%\) & \(21 \%\) \\
\hline Average Block Size (ha) & 3.8 & 5.5 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 108 & 80 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 34 & 26 \\
\hline Walkabity Ratio & 1.6 & 1.8 \\
\hline Average Plot Size in Informal Subdivisions (m²) & 565 & 546 \\
\hline Average Plot Size in Formal Subdivisions (m²) & & \\
\hline \multicolumn{1}{|c|}{ Stages in the Evolution of Residential Layouts } & \\
\hline Share of Built-Up Area in Residential Use & \(67 \%\) & \(70 \%\) \\
\hline Share of Residential Area Not Laid Out Before Occupation & \(4 \%\) & \(13 \%\) \\
\hline Share of Residential Area Laid Out Before Occupation & \(95 \%\) & \(86 \%\) \\
\hline Share of Residential Area in Informal Land Subdivisions & \(0 \%\) & \(0 \%\) \\
\hline Share of Residential Area in Formal Land Subdivisions & \(79 \%\) & \(67 \%\) \\
\hline Share of Residential Area in Housing Projects & \(16 \%\) & \(19 \%\) \\
\hline
\end{tabular}




Malatya, Turkey (Western Asia and North Africa)


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2014


Malatya, Turkey 1990-2014
\(\square\)
Urban Extent in 1990
Expansion, 1990-2000
- Expansion, 2000-2014

\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Malatya | Other cities in region | All other cities & Glob & rage - \\
\hline Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1990
\end{aligned}
\] & \[
\begin{aligned}
& 1990- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 27\% & 27\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 2\% & 0\% \\
\hline Average Road Width (m) & 9.2 & 9.3 \\
\hline Share of Roads less than 4 m Wide & 10\% & 19\% \\
\hline Share of Roads more than 16 m Wide & 11\% & 14\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 1.9 & 1.3 \\
\hline Average Beeline Distance to Arterial Roads (m) & 228 & 354 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 90\% & 79\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( \(>16 \mathrm{~m}\) wide) & 86\% & 73\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 14\% & 8\% \\
\hline Average Block Size (ha) & 1.4 & 5.9 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 204 & 121 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 35 & 14 \\
\hline Walkabity Ratio & 1.5 & 1.8 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 72\% & 79\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 3\% & 27\% \\
\hline Share of Residential Area Laid Out Before Occupation & 96\% & 72\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 10\% & 12\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 76\% & 31\% \\
\hline Share of Residential Area in Housing Projects & 9\% & 28\% \\
\hline
\end{tabular}







Selected Locales in Area Developed Before 1991


Selected Locales in Expansion Area, 1991-2014


Malegaon, India 1991-2014

Urban Extent in 1991

\section*{__ Arterial Roads}
- Expansion, 1991-2000

■ Expansion, 2000-2014

\begin{tabular}{|c|c|c|c|c|}
\hline \multicolumn{5}{|c|}{Legend for Charts} \\
\hline Malegaon & Other cities in region & All other cities & \multicolumn{2}{|l|}{Global average -} \\
\hline Metrics & & & Pre1991 & \[
\begin{aligned}
& 1991- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{5}{|c|}{Roads} \\
\hline \multicolumn{3}{|l|}{Share of Built-Up Area Occupied by Roads} & 19\% & 26\% \\
\hline \multicolumn{3}{|l|}{Share of Built-Up Area that is Gridded or Partially Gridded} & 0\% & 0\% \\
\hline \multicolumn{3}{|l|}{Average Road Width (m)} & 5.3 & 4.6 \\
\hline \multicolumn{3}{|l|}{Share of Roads less than 4 m Wide} & 36\% & 39\% \\
\hline \multicolumn{3}{|l|}{Share of Roads more than 16 m Wide} & 2\% & 1\% \\
\hline
\end{tabular}


Manchester, United Kingdom (Europe and Japan)


Selected Locales in Area Developed Before 1989


Selected Locales in Expansion Area, 1989-2010


\section*{Manchester, United Kingdom (Europe and Japan)}
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Manchester | Other cities in region | All other cities | & Globa & rage - \\
\hline Metrics & Pre1989 & \[
\begin{aligned}
& 1989- \\
& 2010
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 19\% & 19\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 0\% \\
\hline Average Road Width (m) & 7.4 & 6.3 \\
\hline Share of Roads less than 4 m Wide & 25\% & 35\% \\
\hline Share of Roads more than 16 m Wide & 4\% & 3\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 1.8 & 1.7 \\
\hline Average Beeline Distance to Arterial Roads (m) & 187 & 194 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 97\% & 96\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 58\% & 56\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 10\% & 6\% \\
\hline Average Block Size (ha) & 5.3 & 11.1 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 150 & 76 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 22 & 8 \\
\hline Walkabity Ratio & 2.0 & 1.8 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 489 & 321 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 63\% & 58\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 1\% & 21\% \\
\hline Share of Residential Area Laid Out Before Occupation & 98\% & 78\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 0\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 97\% & 78\% \\
\hline Share of Residential Area in Housing Projects & 0\% & 0\% \\
\hline
\end{tabular}

Average Block Size
~1990 - ~2014


4-way Intersection Density
~1990 - ~2014



Area w/n Walking Distance of Wide Arterial Roads, ~1990 - ~2014


Manila, Philippines (Southeast Asia)


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2014


Manila, Philippines
1990-2014

\(\square\) Urban Extent in 1990
\(\square\) Expansion, 1990-2000
Expansion, 2000-2014

\section*{Manila, Philippines (Southeast Asia)}

\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Manila | Other cities in region | All other cities & Globa & rage \\
\hline Metrics & Pre1990 & \[
\begin{aligned}
& 1990- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 19\% & 22\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 12\% & 0\% \\
\hline Average Road Width (m) & 9.2 & 5.8 \\
\hline Share of Roads less than 4 m Wide & 11\% & 23\% \\
\hline Share of Roads more than 16 m Wide & 10\% & 0\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 1.9 & 1.5 \\
\hline Average Beeline Distance to Arterial Roads (m) & 202 & 265 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 95\% & 90\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 72\% & 61\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 19\% & 10\% \\
\hline Average Block Size (ha) & 3.1 & 2.7 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 82 & 189 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 28 & 26 \\
\hline Walkabity Ratio & 1.6 & 1.8 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & & 94 \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 329 & 312 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 69\% & 76\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 44\% & 32\% \\
\hline Share of Residential Area Laid Out Before Occupation & 50\% & 67\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 1\% & 27\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 52\% & 33\% \\
\hline Share of Residential Area in Housing Projects & 0\% & 6\% \\
\hline
\end{tabular}






Marrakesh, Morocco (Western Asia and North Africa)


Selected Locales in Area Developed Before 1988


Selected Locales in Expansion Area, 1988-2014


Marrakesh, Morocco (Western Asia and North Africa)

\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Marrakesh | Other cities in region | All other cities & Globa & rage \\
\hline Metrics & Pre1988 & \[
\begin{aligned}
& 1988- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 21\% & 25\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 2\% & 0\% \\
\hline Average Road Width (m) & 8.5 & 8.7 \\
\hline Share of Roads less than 4m Wide & 27\% & 19\% \\
\hline Share of Roads more than 16 m Wide & 13\% & 12\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 2.3 & 1.4 \\
\hline Average Beeline Distance to Arterial Roads (m) & 176 & 360 \\
\hline Share of Urban Extent Within Walking Distance ( 625 m ) of all Arterial Roads & 97\% & 85\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( \(>16 \mathrm{~m}\) wide) & 92\% & 80\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 12\% & 13\% \\
\hline Average Block Size (ha) & 2.7 & 4.8 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 159 & 172 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 21 & 27 \\
\hline Walkabity Ratio & 1.7 & 1.5 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & 136 & 1226 \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 194 & 478 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 62\% & 75\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 20\% & 22\% \\
\hline Share of Residential Area Laid Out Before Occupation & 79\% & 77\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 3\% & 12\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 61\% & 33\% \\
\hline Share of Residential Area in Housing Projects & 14\% & 31\% \\
\hline
\end{tabular}






Medan, Indonesia (Southeast Asia)


Selected Locales in Area Developed Before 1989


Selected Locales in Expansion Area, 1989-2013


Medan, Indonesia 1989-2013
km

\section*{Medan, Indonesia (Southeast Asia)}
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Medan | Other cities in region | All other cities | & Globa & rage - \\
\hline Metrics & Pre1989 & \[
\begin{aligned}
& 1989- \\
& 2013
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 12\% & 11\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 0\% \\
\hline Average Road Width (m) & 6.5 & 5.1 \\
\hline Share of Roads less than 4 m Wide & 24\% & 37\% \\
\hline Share of Roads more than 16 m Wide & 4\% & 0\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 1.3 & 0.7 \\
\hline Average Beeline Distance to Arterial Roads (m) & 284 & 645 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 88\% & 68\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( \(>16 \mathrm{~m}\) wide) & 70\% & 42\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 9\% & 5\% \\
\hline Average Block Size (ha) & 5.2 & 7.6 \\
\hline 3-way Intersection Density (number per km²) & 76 & 55 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 10 & 4 \\
\hline Walkabity Ratio & 1.7 & 1.5 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 483 & \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 69\% & 75\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 10\% & 69\% \\
\hline Share of Residential Area Laid Out Before Occupation & 89\% & 30\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 38\% & 25\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 50\% & 4\% \\
\hline Share of Residential Area in Housing Projects & 0\% & 0\% \\
\hline
\end{tabular}






\section*{Mexico City, Mexico (Latin America and the Caribbean)}


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2014


Mexico City, Mexico (Latin America and the Caribbean)

Legend for Charts
\begin{tabular}{|c|c|c|c|c|}
\hline \multicolumn{5}{|c|}{Legend for Charts} \\
\hline Mexico City & Other cities in region | & All other cities & \multicolumn{2}{|l|}{Global average -} \\
\hline Metrics & & & Pre1990 & \[
\begin{aligned}
& 1990- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{5}{|c|}{Roads} \\
\hline \multicolumn{3}{|l|}{Share of Built-Up Area Occupied by Roads} & 25\% & 23\% \\
\hline \multicolumn{3}{|l|}{Share of Built-Up Area that is Gridded or Partially Gridded} & 53\% & 7\% \\
\hline \multicolumn{3}{|l|}{Average Road Width (m)} & 12.5 & 8.0 \\
\hline \multicolumn{3}{|l|}{Share of Roads less than 4 m Wide} & 5\% & 14\% \\
\hline \multicolumn{3}{|l|}{Share of Roads more than 16 m Wide} & 19\% & 4\% \\
\hline
\end{tabular}

\begin{tabular}{|lll|}
\hline \multicolumn{3}{|c|}{ Arterial Roads } \\
\hline Density of Arterial Roads (km/km²) & 2.4 & 0.8 \\
\hline Average Beeline Distance to Arterial Roads (m) & 162 & 418 \\
\hline \begin{tabular}{l} 
Share of Urban Extent Within Walking Distance \\
(625m) of all Arterial Roads
\end{tabular} & \(98 \%\) & \(77 \%\) \\
\begin{tabular}{l} 
Share of Urban Extent Within Walking Distance \\
of Wide Arterial Roads (>16m wide)
\end{tabular} & \(97 \%\) & \(55 \%\) \\
\hline
\end{tabular}

Block Size, Plot Size, Intersection Density, and Walkability
\begin{tabular}{|lll|}
\hline Share of Intersections that are 4-way & \(38 \%\) & \(14 \%\) \\
\hline Average Block Size (ha) & 2.7 & 3.5 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 68 & 149 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 37 & 25 \\
\hline Walkabity Ratio & 1.6 & 1.7 \\
\hline Average Plot Size in Informal Subdivisions (m²) & 211 & 132 \\
\hline Average Plot Size in Formal Subdivisions (m²) & 181 \\
\hline \multicolumn{1}{|c|}{ Stages in the Evolution of Residential Layouts } & \\
\hline Share of Built-Up Area in Residential Use & \(65 \%\) & \(64 \%\) \\
\hline Share of Residential Area Not Laid Out Before Occupation & \(4 \%\) & \(25 \%\) \\
\hline Share of Residential Area Laid Out Before Occupation & \(90 \%\) & \(74 \%\) \\
\hline Share of Residential Area in Informal Land Subdivisions & \(3 \%\) & \(27 \%\) \\
\hline Share of Residential Area in Formal Land Subdivisions & \(89 \%\) & \(42 \%\) \\
\hline Share of Residential Area in Housing Projects & \(1 \%\) & \(4 \%\) \\
\hline
\end{tabular}





Milan, Italy (Europe and Japan)


Selected Locales in Area Developed Before 1988


Selected Locales in Expansion Area, 1988-2013


\section*{Milan, Italy (Europe and Japan)}
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Milan | Other cities in region | All other cities & Glob & rage - \\
\hline Metrics & Pre1988 & \[
\begin{aligned}
& 1988- \\
& 2013
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 21\% & 18\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 2\% & 0\% \\
\hline Average Road Width (m) & 8.4 & 5.0 \\
\hline Share of Roads less than 4m Wide & 17\% & 40\% \\
\hline Share of Roads more than 16 m Wide & 10\% & 0\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 1.5 & 1.5 \\
\hline Average Beeline Distance to Arterial Roads (m) & 234 & 244 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 93\% & 92\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 52\% & 31\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 10\% & 9\% \\
\hline Average Block Size (ha) & 3.9 & 7.1 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 93 & 101 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 13 & 14 \\
\hline Walkabity Ratio & 2.1 & 2.0 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 58\% & 66\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 4\% & 39\% \\
\hline Share of Residential Area Laid Out Before Occupation & 95\% & 60\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 0\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 84\% & 44\% \\
\hline Share of Residential Area in Housing Projects & 11\% & 16\% \\
\hline
\end{tabular}





Minneapolis, United States (Land-Rich Developed Countries)


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2014


Minneapolis, United States

1990-2014


01020304050
\(\square\) Urban Extent in 1990
Expansion, 1990-2000
Expansion, 2000-2014

\section*{Minneapolis, United States (Land-Rich Developed Countries)}
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Minneapolis | Other cities in region | All other cities & Glob & rage - \\
\hline Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1990
\end{aligned}
\] & \[
\begin{aligned}
& 1990- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 22\% & 20\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 15\% & 0\% \\
\hline Average Road Width (m) & 9.5 & 8.8 \\
\hline Share of Roads less than 4 m Wide & 15\% & 15\% \\
\hline Share of Roads more than 16 m Wide & 14\% & 6\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km \({ }^{\text {2 }}\) ) & 1.8 & 1.5 \\
\hline Average Beeline Distance to Arterial Roads (m) & 213 & 250 \\
\hline Share of Urban Extent Within Walking Distance ( 625 m ) of all Arterial Roads & 95\% & 92\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( \(>16 \mathrm{~m}\) wide) & 92\% & 88\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 17\% & 5\% \\
\hline Average Block Size (ha) & 3.8 & 10.5 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 102 & 52 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 17 & 5 \\
\hline Walkabity Ratio & 1.8 & 1.6 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & & \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 925 & 1091 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 72\% & 84\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 6\% & 28\% \\
\hline Share of Residential Area Laid Out Before Occupation & 93\% & 71\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 0\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 80\% & 61\% \\
\hline Share of Residential Area in Housing Projects & 13\% & 9\% \\
\hline
\end{tabular}





Modesto, United States (Land-Rich Developed Countries)


Selected Locales in Area Developed Before 1992


Selected Locales in Expansion Area, 1992-2014


Modesto, United States (Land-Rich Developed Countries)
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Modesto | Other cities in region | All other cities | & Glob & rage \\
\hline Metrics & Pre1992 & \[
\begin{aligned}
& 1992- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 24\% & 28\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 2\% & 0\% \\
\hline Average Road Width (m) & 10.6 & 10.2 \\
\hline Share of Roads less than 4m Wide & 17\% & 21\% \\
\hline Share of Roads more than 16 m Wide & 17\% & 18\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 1.9 & 1.5 \\
\hline Average Beeline Distance to Arterial Roads (m) & 196 & 242 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 96\% & 92\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 90\% & 82\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 13\% & 13\% \\
\hline Average Block Size (ha) & 2.5 & 5.1 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 128 & 139 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 16 & 27 \\
\hline Walkabity Ratio & 1.9 & 2.1 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & & \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 620 & 581 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 70\% & 66\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 5\% & 3\% \\
\hline Share of Residential Area Laid Out Before Occupation & 94\% & 96\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 1\% & 0\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 87\% & 89\% \\
\hline Share of Residential Area in Housing Projects & 5\% & 6\% \\
\hline
\end{tabular}






Montreal, Canada (Land-Rich Developed Countries)


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2013


Montreal, Canada 1990-2013 \(\square\) Urban Extent in 1990
__ Arterial Roads
- Expansion, 1990-2000
- Expansion, 2000-2013

Montreal, Canada (Land-Rich Developed Countries)
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Montreal | Other cities in region | All other cities & Globa & rage - \\
\hline Metrics & \begin{tabular}{l}
Pre- \\
1990
\end{tabular} & \[
\begin{aligned}
& 1990- \\
& 2013
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 20\% & 19\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 0\% \\
\hline Average Road Width (m) & 9.4 & 16.1 \\
\hline Share of Roads less than 4 m Wide & 10\% & 11\% \\
\hline Share of Roads more than 16 m Wide & 8\% & 11\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 2.3 & 2.1 \\
\hline Average Beeline Distance to Arterial Roads (m) & 165 & 187 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 97\% & 96\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( \(>16 \mathrm{~m}\) wide) & 82\% & 77\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 10\% & 5\% \\
\hline Average Block Size (ha) & 4.1 & 5.0 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 84 & 67 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 9 & 7 \\
\hline Walkabity Ratio & 2.5 & 2.2 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & & \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 556 & 593 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 74\% & 79\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 0\% & 7\% \\
\hline Share of Residential Area Laid Out Before Occupation & 99\% & 92\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 0\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 92\% & 73\% \\
\hline Share of Residential Area in Housing Projects & 6\% & 18\% \\
\hline
\end{tabular}






Moscow, Russia (Europe and Japan)


Selected Locales in Area Developed Before 1991


Selected Locales in Expansion Area, 1991-2014


\section*{Moscow, Russia (Europe and Japan)}
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Moscow | Other cities in region | All other cities & Glob & rage - \\
\hline Metrics & Pre1991 & \[
\begin{aligned}
& 1991- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 19\% & 14\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 3\% & 2\% \\
\hline Average Road Width (m) & 9.7 & 5.6 \\
\hline Share of Roads less than 4 m Wide & 10\% & 31\% \\
\hline Share of Roads more than 16 m Wide & 25\% & 2\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 1.1 & 0.3 \\
\hline Average Beeline Distance to Arterial Roads (m) & 385 & 1191 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 79\% & 35\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 75\% & 28\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 14\% & 10\% \\
\hline Average Block Size (ha) & 6.1 & 4.8 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 43 & 102 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 8 & 22 \\
\hline Walkabity Ratio & 1.6 & 2.1 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & & 1099 \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & & 962 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 74\% & 84\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 5\% & 0\% \\
\hline Share of Residential Area Laid Out Before Occupation & 78\% & 99\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 8\% & 74\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 54\% & 10\% \\
\hline Share of Residential Area in Housing Projects & 31\% & 14\% \\
\hline
\end{tabular}




\section*{Mumbai, India (South and Central Asia)}


Selected Locales in Area Developed Before 1991


Selected Locales in Expansion Area, 1991-2014


Mumbai, India 1991-2014

\begin{tabular}{|c|c|c|c|c|}
\hline \multicolumn{5}{|c|}{Legend for Charts} \\
\hline Mumbai & Other cities in region | & All other cities & \multicolumn{2}{|l|}{Global average -} \\
\hline Metrics & & & Pre1991 & \[
\begin{aligned}
& 1991- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{5}{|c|}{Roads} \\
\hline \multicolumn{3}{|l|}{Share of Built-Up Area Occupied by Roads} & 17\% & 19\% \\
\hline \multicolumn{3}{|l|}{Share of Built-Up Area that is Gridded or Partially Gridded} & 0\% & 2\% \\
\hline \multicolumn{3}{|l|}{Average Road Width (m)} & 11.6 & 8.6 \\
\hline \multicolumn{3}{|l|}{Share of Roads less than 4 m Wide} & 10\% & 24\% \\
\hline \multicolumn{3}{|l|}{Share of Roads more than 16 m Wide} & 18\% & 11\% \\
\hline
\end{tabular}
\begin{tabular}{|lll|}
\hline \multicolumn{4}{|c|}{ Arterial Roads } \\
\hline Density of Arterial Roads (km/km²) & 1.6 & 1.3 \\
\hline Average Beeline Distance to Arterial Roads (m) & 272 & 347 \\
\hline \begin{tabular}{l} 
Share of Urban Extent Within Walking Distance \\
(625m) of all Arterial Roads
\end{tabular} & \(90 \%\) & \(84 \%\) \\
\begin{tabular}{l} 
Share of Urban Extent Within Walking Distance \\
of Wide Arterial Roads (>16m wide)
\end{tabular} & \(87 \%\) & \(79 \%\) \\
\hline
\end{tabular}

Block Size, Plot Size, Intersection Density, and Walkability
\begin{tabular}{|lcc|}
\hline Share of Intersections that are 4-way & \(11 \%\) & \(9 \%\) \\
\hline Average Block Size (ha) & 5.8 & 4.9 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 62 & 89 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 12 & 13 \\
\hline Walkabity Ratio & 1.6 & 1.7 \\
\hline Average Plot Size in Informal Subdivisions (m²) & 655 & \\
\hline Average Plot Size in Formal Subdivisions (m²) & \\
\hline \multicolumn{1}{|c|}{ Stages in the Evolution of Residential Layouts } & \\
\hline Share of Built-Up Area in Residential Use & \(66 \%\) & \(70 \%\) \\
\hline Share of Residential Area Not Laid Out Before Occupation & \(60 \%\) & \(62 \%\) \\
\hline Share of Residential Area Laid Out Before Occupation & \(35 \%\) & \(37 \%\) \\
\hline Share of Residential Area in Informal Land Subdivisions & \(1 \%\) & \(0 \%\) \\
\hline Share of Residential Area in Formal Land Subdivisions & \(24 \%\) & \(15 \%\) \\
\hline Share of Residential Area in Housing Projects & \(13 \%\) & \(21 \%\) \\
\hline
\end{tabular}





Myeik, Myanmar (Southeast Asia)


Selected Locales in Area Developed Before 1991


Selected Locales in Expansion Area, 1991-2014


\section*{Myeik, Myanmar (Southeast Asia)}







\section*{Nakuru, Kenya (Sub-Saharan Africa)}


Selected Locales in Area Developed Before 1989


Selected Locales in Expansion Area, 1989-2014


Nakuru, Kenya (Sub-Saharan Africa)

\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Nakuru | Other cities in region | All other cities & Globa & rage \\
\hline Metrics & Pre1989 & \[
\begin{aligned}
& 1989- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 23\% & 21\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 0\% \\
\hline Average Road Width (m) & 10.8 & 5.5 \\
\hline Share of Roads less than 4m Wide & 13\% & 31\% \\
\hline Share of Roads more than 16 m Wide & 19\% & 1\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 1.0 & 0.6 \\
\hline Average Beeline Distance to Arterial Roads (m) & 546 & 916 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 65\% & 60\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 64\% & 59\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 16\% & 9\% \\
\hline Average Block Size (ha) & 4.4 & 5.8 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 103 & 165 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 18 & 17 \\
\hline Walkabity Ratio & 1.6 & 1.7 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & 302 & 626 \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 2240 & \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 54\% & 75\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 0\% & 16\% \\
\hline Share of Residential Area Laid Out Before Occupation & 99\% & 83\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 81\% & 79\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 2\% & 2\% \\
\hline Share of Residential Area in Housing Projects & 15\% & 1\% \\
\hline
\end{tabular}




Ndola, Zambia (Sub-Saharan Africa)


Selected Locales in Area Developed Before 1989


Selected Locales in Expansion Area, 1989-2014


Ndola, Zambia (Sub-Saharan Africa)
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Ndola | Other cities in region | All other cities & Globa & rage \\
\hline Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1989
\end{aligned}
\] & \[
\begin{aligned}
& 1989- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 16\% & 13\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & & 0\% \\
\hline Average Road Width (m) & 8.9 & 4.9 \\
\hline Share of Roads less than 4m Wide & 16\% & 43\% \\
\hline Share of Roads more than 16 m Wide & 13\% & 2\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 1.2 & 1.0 \\
\hline Average Beeline Distance to Arterial Roads (m) & 332 & 392 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 85\% & 79\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 85\% & 79\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 10\% & 11\% \\
\hline Average Block Size (ha) & 5.1 & 3.0 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 102 & 148 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 13 & 22 \\
\hline Walkabity Ratio & 1.9 & 1.7 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & 742 & 373 \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 1810 & 424 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 83\% & 72\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 5\% & 18\% \\
\hline Share of Residential Area Laid Out Before Occupation & 94\% & 81\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 70\% & 80\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 22\% & 0\% \\
\hline Share of Residential Area in Housing Projects & 1\% & 0\% \\
\hline
\end{tabular}





New York, United States (Land-Rich Developed Countries)


Selected Locales in Area Developed Before 1991


Selected Locales in Expansion Area, 1991-2011


\section*{New York, United States (Land-Rich Developed Countries)}
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline New York | Other cities in region | All other cities & Globa & rage \\
\hline Metrics & Pre1991 & \[
\begin{aligned}
& 1991- \\
& 2011
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 20\% & 12\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & & 0\% \\
\hline Average Road Width (m) & 10.8 & 8.9 \\
\hline Share of Roads less than 4m Wide & 7\% & 14\% \\
\hline Share of Roads more than 16 m Wide & 12\% & 7\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 1.8 & 0.7 \\
\hline Average Beeline Distance to Arterial Roads (m) & 226 & 393 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 93\% & 78\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 62\% & 41\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 21\% & 0\% \\
\hline Average Block Size (ha) & 5.1 & 6.7 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 45 & 47 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 14 & 2 \\
\hline Walkabity Ratio & 1.6 & 1.8 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & & \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 712 & 400 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 82\% & 82\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 3\% & 11\% \\
\hline Share of Residential Area Laid Out Before Occupation & 96\% & 88\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 0\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 93\% & 86\% \\
\hline Share of Residential Area in Housing Projects & 3\% & 1\% \\
\hline
\end{tabular}






Nikolaev, Ukraine (Europe and Japan)


Selected Locales in Area Developed Before 1989


Selected Locales in Expansion Area, 1989-2013


\section*{Nikolaev, Ukraine (Europe and Japan)}
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Nikolaev | Other cities in region | All other cities & Globa & rage - \\
\hline Metrics & Pre1989 & \[
\begin{aligned}
& 1989- \\
& 2013
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 18\% & 14\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 5\% & 0\% \\
\hline Average Road Width (m) & 8.6 & 5.6 \\
\hline Share of Roads less than 4 m Wide & 10\% & 25\% \\
\hline Share of Roads more than 16 m Wide & 7\% & 0\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 0.9 & 0.8 \\
\hline Average Beeline Distance to Arterial Roads (m) & 481 & 531 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 72\% & 67\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 71\% & 65\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 12\% & 13\% \\
\hline Average Block Size (ha) & 3.7 & 5.3 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 101 & 129 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 13 & 16 \\
\hline Walkabity Ratio & 1.9 & 1.5 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & 501 & \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 484 & \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 73\% & 85\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 12\% & 8\% \\
\hline Share of Residential Area Laid Out Before Occupation & 87\% & 91\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 50\% & 62\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 25\% & 25\% \\
\hline Share of Residential Area in Housing Projects & 11\% & 3\% \\
\hline
\end{tabular}





Okayama, Japan (Europe and Japan)


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2014


\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Okayama | Other cities in region | All other cities & Globa & rage \\
\hline Metrics & Pre1990 & \[
\begin{aligned}
& 1990- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 25\% & 23\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 0\% \\
\hline Average Road Width (m) & 5.7 & 4.4 \\
\hline Share of Roads less than 4 m Wide & 50\% & 60\% \\
\hline Share of Roads more than 16 m Wide & 5\% & 2\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 1.6 & 1.6 \\
\hline Average Beeline Distance to Arterial Roads (m) & 314 & 320 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 89\% & 89\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 53\% & 50\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 16\% & 10\% \\
\hline Average Block Size (ha) & 1.6 & 2.3 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 278 & 270 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 59 & 38 \\
\hline Walkabity Ratio & 1.5 & 1.7 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 189 & 283 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 57\% & 54\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 25\% & 32\% \\
\hline Share of Residential Area Laid Out Before Occupation & 74\% & 67\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 2\% & 10\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 71\% & 56\% \\
\hline Share of Residential Area in Housing Projects & 0\% & 0\% \\
\hline
\end{tabular}





Oldenburg, Germany (Europe and Japan)


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2013


\section*{Oldenburg, Germany (Europe and Japan)}
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Oldenburg | Other cities in region | All other cities & Globa & rage - \\
\hline Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1990
\end{aligned}
\] & \[
\begin{aligned}
& 1990- \\
& 2013
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 18\% & 18\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 0\% \\
\hline Average Road Width (m) & 7.6 & 6.6 \\
\hline Share of Roads less than 4 m Wide & 17\% & 23\% \\
\hline Share of Roads more than 16 m Wide & 4\% & 3\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 1.4 & 1.4 \\
\hline Average Beeline Distance to Arterial Roads (m) & 239 & 252 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 92\% & 92\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 87\% & 80\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 7\% & 8\% \\
\hline Average Block Size (ha) & 3.4 & 4.9 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 99 & 110 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 9 & 10 \\
\hline Walkabity Ratio & 1.8 & 1.7 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & & 536 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 71\% & 82\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 0\% & 6\% \\
\hline Share of Residential Area Laid Out Before Occupation & 100\% & 93\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 3\% & 0\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 86\% & 87\% \\
\hline Share of Residential Area in Housing Projects & 10\% & 6\% \\
\hline
\end{tabular}




Osaka, Japan (Europe and Japan)


Selected Locales in Area Developed Before 1989


Selected Locales in Expansion Area, 1989-2014


Osaka, Japan (Europe and Japan)







Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2014


Oyo, Nigeria (Sub-Saharan Africa)
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Oyo | Other cities in region | All other cities & Glob & rage - \\
\hline Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1990
\end{aligned}
\] & \[
\begin{aligned}
& 1990- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 12\% & 15\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 0\% \\
\hline Average Road Width (m) & 7.6 & 6.7 \\
\hline Share of Roads less than 4 m Wide & 12\% & 23\% \\
\hline Share of Roads more than 16 m Wide & 3\% & 3\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 1.1 & 0.8 \\
\hline Average Beeline Distance to Arterial Roads (m) & 269 & 428 \\
\hline Share of Urban Extent Within Walking Distance ( 625 m ) of all Arterial Roads & 94\% & 78\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 49\% & 52\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 10\% & 9\% \\
\hline Average Block Size (ha) & 5.6 & 5.4 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 54 & 77 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 5 & 6 \\
\hline Walkabity Ratio & 1.7 & 1.6 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & 558 & 393 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 89\% & 83\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 72\% & 31\% \\
\hline Share of Residential Area Laid Out Before Occupation & 27\% & 68\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 26\% & 65\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 0\% & 0\% \\
\hline Share of Residential Area in Housing Projects & 0\% & 3\% \\
\hline
\end{tabular}





Palembang, Indonesia (Southeast Asia)


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2013


\section*{Palembang, Indonesia (Southeast Asia)}
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Palembang | Other cities in region | All other cities & Globa & rage - \\
\hline Metrics & Pre1990 & \[
\begin{aligned}
& 1990- \\
& 2013
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 12\% & 13\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 0\% \\
\hline Average Road Width (m) & 5.8 & 4.4 \\
\hline Share of Roads less than 4 m Wide & 34\% & 50\% \\
\hline Share of Roads more than 16 m Wide & 5\% & 1\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 0.9 & 0.5 \\
\hline Average Beeline Distance to Arterial Roads (m) & 400 & 783 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 80\% & 57\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 64\% & 44\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 8\% & 2\% \\
\hline Average Block Size (ha) & 4.1 & 6.1 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 104 & 71 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 16 & 7 \\
\hline Walkabity Ratio & 1.6 & 1.5 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & 189 & \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 185 & 244 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 73\% & 56\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 32\% & 78\% \\
\hline Share of Residential Area Laid Out Before Occupation & 67\% & 21\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 26\% & 12\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 37\% & 3\% \\
\hline Share of Residential Area in Housing Projects & 2\% & 6\% \\
\hline
\end{tabular}






Palermo, Italy (Europe and Japan)


Selected Locales in Area Developed Before 1987


Selected Locales in Expansion Area, 1987-2013


Palermo, Italy (Europe and Japan)
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Palermo | Other cities in region | All other cities & Globa & rage \\
\hline Metrics & Pre1987 & \[
\begin{aligned}
& 1987- \\
& 2013
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 20\% & 19\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 5\% & 0\% \\
\hline Average Road Width (m) & 7.2 & 5.4 \\
\hline Share of Roads less than 4m Wide & 29\% & 39\% \\
\hline Share of Roads more than 16 m Wide & 8\% & 0\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 2.3 & 1.9 \\
\hline Average Beeline Distance to Arterial Roads (m) & 165 & 197 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 97\% & 95\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 85\% & 64\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 7\% & 7\% \\
\hline Average Block Size (ha) & 3.1 & 6.3 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 156 & 105 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 20 & 10 \\
\hline Walkabity Ratio & 1.7 & 2.0 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & & 867 \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 1119 & 444 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 56\% & 58\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 15\% & 36\% \\
\hline Share of Residential Area Laid Out Before Occupation & 84\% & 63\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 1\% & 21\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 80\% & 41\% \\
\hline Share of Residential Area in Housing Projects & 2\% & 0\% \\
\hline
\end{tabular}





Area w/n Walking Distance of Wide Arterial Roads, ~1990 - ~2014


Palmas, Brazil (Latin America and the Caribbean)


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2013


Palmas, Brazil 1990-2013 \(\qquad\)


Expansion, 2000-2013

Palmas, Brazil (Latin America and the Caribbean)
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Palmas | Other cities in region | All other cities | & Glob & rage - \\
\hline Metrics & Pre1990 & \[
\begin{aligned}
& 1990- \\
& 2013
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 30\% & 36\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 22\% & 0\% \\
\hline Average Road Width (m) & 9.6 & 8.3 \\
\hline Share of Roads less than 4m Wide & 27\% & 18\% \\
\hline Share of Roads more than 16 m Wide & 16\% & 9\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 2.2 & 1.1 \\
\hline Average Beeline Distance to Arterial Roads (m) & 189 & 590 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 96\% & 68\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 96\% & 84\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 26\% & 20\% \\
\hline Average Block Size (ha) & 3.4 & 2.9 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 89 & 174 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 23 & 43 \\
\hline Walkabity Ratio & 1.5 & 1.6 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & 395 & 350 \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 342 & 306 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 64\% & 85\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 0\% & 3\% \\
\hline Share of Residential Area Laid Out Before Occupation & 100\% & 96\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 8\% & 41\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 89\% & 54\% \\
\hline Share of Residential Area in Housing Projects & 2\% & 0\% \\
\hline
\end{tabular}






Parbhani, India (South and Central Asia)


Selected Locales in Area Developed Before 1991


Selected Locales in Expansion Area, 1991-2014


\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Parbhani | Other cities in region | All other cities & \multicolumn{2}{|l|}{Global average -} \\
\hline Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1991
\end{aligned}
\] & \[
\begin{aligned}
& 1991- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 23\% & 27\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 0\% \\
\hline Average Road Width (m) & 6.5 & 3.8 \\
\hline Share of Roads less than 4m Wide & 15\% & 46\% \\
\hline Share of Roads more than 16 m Wide & 2\% & 0\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 1.1 & 0.9 \\
\hline Average Beeline Distance to Arterial Roads (m) & 332 & 376 \\
\hline Share of Urban Extent Within Walking Distance ( 625 m ) of all Arterial Roads & 85\% & 80\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( \(>16 \mathrm{~m}\) wide) & 64\% & 60\% \\
\hline
\end{tabular}

\begin{tabular}{|lll|}
\hline Share of Intersections that are 4-way & \(9 \%\) & \(17 \%\) \\
\hline Average Block Size (ha) & 1.5 & 1.2 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 242 & 500 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 24 & 104 \\
\hline Walkabity Ratio & 1.8 & 1.7 \\
\hline Average Plot Size in Informal Subdivisions (m²) & 216 & \\
\hline Average Plot Size in Formal Subdivisions (m²) & 411 & \\
\hline \multicolumn{1}{|c|}{ Stages in the Evolution of Residential Layouts } & \\
\hline Share of Built-Up Area in Residential Use & \(79 \%\) & \(84 \%\) \\
\hline Share of Residential Area Not Laid Out Before Occupation & \(2 \%\) & \(26 \%\) \\
\hline Share of Residential Area Laid Out Before Occupation & \(97 \%\) & \(73 \%\) \\
\hline Share of Residential Area in Informal Land Subdivisions & \(80 \%\) & \(73 \%\) \\
\hline Share of Residential Area in Formal Land Subdivisions & \(16 \%\) & \(0 \%\) \\
\hline Share of Residential Area in Housing Projects & \(0 \%\) & \(0 \%\) \\
\hline
\end{tabular}




Parepare, Indonesia (Southeast Asia)


Selected Locales in Area Developed Before 1994


Selected Locales in Expansion Area, 1994-2014


Parepare, Indonesia (Southeast Asia)
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Parepare | Other cities in region | All other cities & Globa & rage - \\
\hline Metrics & Pre1994 & \[
\begin{aligned}
& 1994- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 12\% & 10\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 0\% \\
\hline Average Road Width (m) & 7.6 & 6.3 \\
\hline Share of Roads less than 4 m Wide & 10\% & 14\% \\
\hline Share of Roads more than 16 m Wide & 0\% & 0\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 2.4 & 1.7 \\
\hline Average Beeline Distance to Arterial Roads (m) & 142 & 179 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 99\% & 98\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 40\% & 30\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 8\% & 10\% \\
\hline Average Block Size (ha) & 4.9 & 8.5 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 65 & 75 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 10 & 20 \\
\hline Walkabity Ratio & 1.7 & 1.6 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 75\% & 85\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 60\% & 60\% \\
\hline Share of Residential Area Laid Out Before Occupation & 39\% & 39\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 1\% & 13\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 37\% & 25\% \\
\hline Share of Residential Area in Housing Projects & 0\% & 0\% \\
\hline
\end{tabular}






Paris, France (Europe and Japan)


Selected Locales in Area Developed Before 1987


Selected Locales in Expansion Area, 1987-2014


Paris, France (Europe and Japan)
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Paris | Other cities in region | All other cities & Globa & rage - \\
\hline Metrics & Pre1987 & \[
\begin{aligned}
& 1987- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 20\% & 15\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 6\% & 0\% \\
\hline Average Road Width (m) & 9.2 & 6.2 \\
\hline Share of Roads less than 4 m Wide & 9\% & 27\% \\
\hline Share of Roads more than 16 m Wide & 11\% & 5\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 3.3 & 0.9 \\
\hline Average Beeline Distance to Arterial Roads (m) & 110 & 973 \\
\hline Share of Urban Extent Within Walking Distance ( 625 m ) of all Arterial Roads & 99\% & 46\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( \(>16 \mathrm{~m}\) wide) & 79\% & 24\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 20\% & 10\% \\
\hline Average Block Size (ha) & 4.5 & 6.7 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 72 & 78 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 21 & 10 \\
\hline Walkabity Ratio & 1.6 & 1.6 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 447 & 545 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 76\% & 72\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 22\% & 29\% \\
\hline Share of Residential Area Laid Out Before Occupation & 69\% & 70\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 1\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 63\% & 67\% \\
\hline Share of Residential Area in Housing Projects & 14\% & 1\% \\
\hline
\end{tabular}





\section*{Pematangsiantar, Indonesia (Southeast Asia)}


Selected Locales in Area Developed Before 1994


Selected Locales in Expansion Area, 1994-2014


Pematangsiantar, Indonesia 1994-2014

\(\square\) Urban Extent in 1994
- Arterial Roads

Expansion, 1994-2001
Expansion, 2001-2014

\section*{Pematangsiantar, Indonesia (Southeast Asia)}
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Pematangsiantar | Other cities in region | All other cities | & Glob & rage - \\
\hline Metrics & Pre1994 & \[
\begin{aligned}
& 1994- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 11\% & 13\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 10\% & 0\% \\
\hline Average Road Width (m) & 6.1 & 5.0 \\
\hline Share of Roads less than 4 m Wide & 25\% & 36\% \\
\hline Share of Roads more than 16 m Wide & 1\% & 0\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 0.7 & 0.6 \\
\hline Average Beeline Distance to Arterial Roads (m) & 529 & 544 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 64\% & 64\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 75\% & 77\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 14\% & 4\% \\
\hline Average Block Size (ha) & 5.6 & 7.7 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 74 & 108 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 17 & 7 \\
\hline Walkabity Ratio & 1.6 & 1.8 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 74\% & 62\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 40\% & 21\% \\
\hline Share of Residential Area Laid Out Before Occupation & 59\% & 78\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 11\% & 58\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 47\% & 19\% \\
\hline Share of Residential Area in Housing Projects & 0\% & 0\% \\
\hline
\end{tabular}






Philadelphia, United States (Land-Rich Developed Countries)


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2014


Philadelphia, United States 1990-2014


01020304050


Urban Extent in 1990
Expansion, 1990-2000
— Expansion, 2000-2014

Philadelphia, United States (Land-Rich Developed Countries)
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Philadelphia | Other cities in region | All other cities & Glob & rage - \\
\hline Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1990
\end{aligned}
\] & \[
\begin{aligned}
& 1990- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 21\% & 15\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 7\% & 0\% \\
\hline Average Road Width (m) & 17.8 & 8.1 \\
\hline Share of Roads less than 4 m Wide & 15\% & 14\% \\
\hline Share of Roads more than 16 m Wide & 10\% & 6\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km \({ }^{\text {2 }}\) ) & 1.8 & 0.9 \\
\hline Average Beeline Distance to Arterial Roads (m) & 223 & 394 \\
\hline Share of Urban Extent Within Walking Distance ( 625 m ) of all Arterial Roads & 93\% & 79\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( \(>16 \mathrm{~m}\) wide) & 70\% & 36\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 14\% & 8\% \\
\hline Average Block Size (ha) & 3.6 & 9.9 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 110 & 28 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 17 & 5 \\
\hline Walkabity Ratio & 1.8 & 1.6 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & & \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 709 & 986 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 75\% & 85\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 7\% & 9\% \\
\hline Share of Residential Area Laid Out Before Occupation & 92\% & 90\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 0\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 84\% & 85\% \\
\hline Share of Residential Area in Housing Projects & 7\% & 4\% \\
\hline
\end{tabular}






Pingxiang, Jiangxi, China (East Asia and the Pacific)


Selected Locales in Area Developed Before 1989


Selected Locales in Expansion Area, 1989-2013


Pingxiang, Jiangxi, China (East Asia and the Pacific)
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Pingxiang | Other cities in region | All other cities | & & rage - \\
\hline Metrics & Pre1989 & \[
\begin{aligned}
& 1989- \\
& 2013
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 14\% & 11\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 0\% \\
\hline Average Road Width (m) & 6.5 & 4.0 \\
\hline Share of Roads less than 4 m Wide & 38\% & 63\% \\
\hline Share of Roads more than 16 m Wide & 7\% & 1\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 1.1 & 0.7 \\
\hline Average Beeline Distance to Arterial Roads (m) & 510 & 771 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 66\% & 63\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 46\% & 53\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 8\% & 8\% \\
\hline Average Block Size (ha) & 6.5 & 6.6 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 54 & 102 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 12 & 27 \\
\hline Walkabity Ratio & 1.5 & 1.3 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 170 & \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 66\% & 83\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 80\% & 93\% \\
\hline Share of Residential Area Laid Out Before Occupation & 19\% & 6\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 5\% & 3\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 7\% & 0\% \\
\hline Share of Residential Area in Housing Projects & 7\% & 2\% \\
\hline
\end{tabular}





Pokhara, Nepal (South and Central Asia)


Selected Locales in Area Developed Before 1989


Selected Locales in Expansion Area, 1989-2013


Pokhara, Nepal 1989-2013

\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Pokhara | Other cities in region | All other cities & Globa & rage - \\
\hline Metrics & Pre1989 & \[
\begin{aligned}
& 1989- \\
& 2013
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 16\% & 17\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 0\% \\
\hline Average Road Width (m) & 6.0 & 4.8 \\
\hline Share of Roads less than 4 m Wide & 29\% & 42\% \\
\hline Share of Roads more than 16 m Wide & 2\% & 0\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 2.0 & 1.4 \\
\hline Average Beeline Distance to Arterial Roads (m) & 190 & 253 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 94\% & 89\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( \(>16 \mathrm{~m}\) wide) & 77\% & 76\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 10\% & 4\% \\
\hline Average Block Size (ha) & 3.5 & 5.4 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 100 & 115 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 10 & 7 \\
\hline Walkabity Ratio & 1.7 & 1.7 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 59\% & 66\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 82\% & 65\% \\
\hline Share of Residential Area Laid Out Before Occupation & 17\% & 34\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 14\% & 28\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 1\% & 0\% \\
\hline Share of Residential Area in Housing Projects & 1\% & 5\% \\
\hline
\end{tabular}





Port Elizabeth, South Africa (Sub-Saharan Africa)


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2013


Port Elizabeth, South Africa 1990-2013


Port Elizabeth, South Africa (Sub-Saharan Africa)
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Port Elizabeth | Other cities in region | All other cities & Globa & rage - \\
\hline Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1990
\end{aligned}
\] & \[
\begin{aligned}
& 1990- \\
& 2013
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 22\% & 17\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 2\% & 0\% \\
\hline Average Road Width (m) & 10.3 & 7.0 \\
\hline Share of Roads less than 4 m Wide & 10\% & 19\% \\
\hline Share of Roads more than 16 m Wide & 14\% & 2\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 1.1 & 0.9 \\
\hline Average Beeline Distance to Arterial Roads (m) & 370 & 601 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 81\% & 71\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( \(>16 \mathrm{~m}\) wide) & 78\% & 72\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 8\% & 13\% \\
\hline Average Block Size (ha) & 4.8 & 3.3 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 90 & 93 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 11 & 17 \\
\hline Walkabity Ratio & 1.8 & 1.8 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & 297 & 290 \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 646 & 755 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 72\% & 83\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 1\% & 7\% \\
\hline Share of Residential Area Laid Out Before Occupation & 98\% & 92\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 5\% & 20\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 83\% & 69\% \\
\hline Share of Residential Area in Housing Projects & 10\% & 2\% \\
\hline
\end{tabular}





Area w/n Walking Distance of Wide Arterial Roads, ~1990 - ~2014


Portland, OR, United States (Land-Rich Developed Countries)


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2014


Portland, OR, United States
\(\square\) Urban Extent in 1990
Expansion, 1990-2000
Expansion, 2000-2014

Portland, OR, United States (Land-Rich Developed Countries)
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Portland | Other cities in region | All other cities | & Glob & rage - \\
\hline Metrics & Pre1990 & \[
\begin{aligned}
& 1990- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 23\% & 20\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 12\% & 0\% \\
\hline Average Road Width (m) & 10.1 & 10.0 \\
\hline Share of Roads less than 4 m Wide & 18\% & 10\% \\
\hline Share of Roads more than 16 m Wide & 14\% & 7\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 2.0 & 1.7 \\
\hline Average Beeline Distance to Arterial Roads (m) & 189 & 218 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 96\% & 95\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 92\% & 87\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 17\% & 3\% \\
\hline Average Block Size (ha) & 4.3 & 4.9 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 98 & 60 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 21 & 4 \\
\hline Walkabity Ratio & 1.6 & 1.8 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & & \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 640 & 842 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 73\% & 90\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 2\% & 27\% \\
\hline Share of Residential Area Laid Out Before Occupation & 97\% & 72\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 0\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 87\% & 64\% \\
\hline Share of Residential Area in Housing Projects & 9\% & 7\% \\
\hline
\end{tabular}






Pune, India (South and Central Asia)


Selected Locales in Area Developed Before 1991


Selected Locales in Expansion Area, 1991-2011


Pune, India 1991-2011

\begin{tabular}{|c|c|c|c|c|}
\hline \multicolumn{5}{|c|}{Legend for Charts} \\
\hline Pune & Other cities in region | & All other cities & \multicolumn{2}{|l|}{Global average -} \\
\hline Metrics & & & Pre1991 & \[
\begin{aligned}
& 1991- \\
& 2011
\end{aligned}
\] \\
\hline \multicolumn{5}{|c|}{Roads} \\
\hline \multicolumn{3}{|l|}{Share of Built-Up Area Occupied by Roads} & 20\% & 21\% \\
\hline \multicolumn{3}{|l|}{Share of Built-Up Area that is Gridded or Partially Gridded} & 0\% & 0\% \\
\hline \multicolumn{3}{|l|}{Average Road Width (m)} & 9.9 & 7.8 \\
\hline \multicolumn{3}{|l|}{Share of Roads less than 4 m Wide} & 6\% & 12\% \\
\hline \multicolumn{3}{|l|}{Share of Roads more than 16 m Wide} & 12\% & 6\% \\
\hline
\end{tabular}
\begin{tabular}{|lll|}
\hline \multicolumn{4}{|c|}{ Arterial Roads } \\
\hline Density of Arterial Roads (km/km²) & 2.1 & 1.4 \\
\hline Average Beeline Distance to Arterial Roads (m) & 167 & 264 \\
\hline \begin{tabular}{l} 
Share of Urban Extent Within Walking Distance \\
(625m) of all Arterial Roads
\end{tabular} & \(98 \%\) & \(91 \%\) \\
\begin{tabular}{l} 
Share of Urban Extent Within Walking Distance \\
of Wide Arterial Roads (>16m wide)
\end{tabular} & \(90 \%\) & \(73 \%\) \\
\hline
\end{tabular}



Pyongyang, Korea Dem. Rep. (East Asia and the Pacific)


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2014


Pyongyang, Korea Dem. Rep. (East Asia and the Pacific)

\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Pyongyang | Other cities in region | All other cities & Glob & rage \\
\hline Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1990
\end{aligned}
\] & \[
\begin{aligned}
& 1990- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 22\% & 17\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 0\% \\
\hline Average Road Width (m) & 7.1 & 4.5 \\
\hline Share of Roads less than 4 m Wide & 30\% & 55\% \\
\hline Share of Roads more than 16 m Wide & 6\% & 2\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 2.1 & 1.9 \\
\hline Average Beeline Distance to Arterial Roads (m) & 172 & 195 \\
\hline Share of Urban Extent Within Walking Distance ( 625 m ) of all Arterial Roads & 97\% & 95\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( \(>16 \mathrm{~m}\) wide) & 86\% & 80\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 5\% & 2\% \\
\hline Average Block Size (ha) & 4.2 & 6.7 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 131 & 92 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 9 & 4 \\
\hline Walkabity Ratio & 1.8 & 2.2 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & & 289 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 46\% & 29\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 46\% & 52\% \\
\hline Share of Residential Area Laid Out Before Occupation & 53\% & 47\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 8\% & 45\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 32\% & 0\% \\
\hline Share of Residential Area in Housing Projects & 12\% & 2\% \\
\hline
\end{tabular}





Qingdao, Shandong, China (East Asia and the Pacific)


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2013


Qingdao, Shandong, China
1990-2013


Arterial Roads

\section*{Qingdao, Shandong, China (East Asia and the Pacific)}

\section*{Legend for Charts}
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Qingdao | Other cities in region | All other cities & Glob & rage - \\
\hline Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1990
\end{aligned}
\] & \[
\begin{aligned}
& 1990- \\
& 2013
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 26\% & 24\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 0\% \\
\hline Average Road Width (m) & 10.1 & 8.3 \\
\hline Share of Roads less than 4 m Wide & 21\% & 23\% \\
\hline Share of Roads more than 16 m Wide & 18\% & 9\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 2.1 & 1.2 \\
\hline Average Beeline Distance to Arterial Roads (m) & 168 & 380 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 98\% & 83\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( \(>16 \mathrm{~m}\) wide) & 97\% & 80\% \\
\hline
\end{tabular}

Block Size, Plot Size, Intersection Density, and Walkability
\begin{tabular}{lll}
\hline Share of Intersections that are 4-way & \(16 \%\) & \(13 \%\) \\
\hline Average Block Size (ha) & 3.5 & 4.7 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 160 & 168 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 33 & 51 \\
\hline Walkabity Ratio & 1.5 & 1.5
\end{tabular}

Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) )
Average Plot Size in Formal Subdivisions \(\left(\mathrm{m}^{2}\right)\)
Stages in the Evolution of Residential Layouts
\begin{tabular}{lrrr}
\hline Share of Built-Up Area in Residential Use & \(50 \%\) & \(56 \%\) \\
\hline Share of Residential Area Not Laid Out Before Occupation & \(5 \%\) & \(0 \%\) \\
\hline Share of Residential Area Laid Out Before Occupation & \(94 \%\) & \(99 \%\) \\
\hline Share of Residential Area in Informal Land Subdivisions & \(11 \%\) & \(23 \%\) \\
\hline Share of Residential Area in Formal Land Subdivisions & \(20 \%\) & \(11 \%\) \\
\hline Share of Residential Area in Housing Projects & \(63 \%\) & \(64 \%\) \\
\hline
\end{tabular}

Average Block Size
~1990 - ~2014


4-way Intersection Density
~1990 - ~2014





Area w/n Walking Distance of Wide Arterial Roads, ~1990 - ~2014


Qom, Iran (South and Central Asia)


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2010


\begin{tabular}{|c|c|c|c|}
\hline \multicolumn{4}{|c|}{Legend for Charts} \\
\hline Qom & Other cities in region | & All other cities | Global & rage - \\
\hline Metrics & & Pre1990 & \[
\begin{aligned}
& 1990- \\
& 2010
\end{aligned}
\] \\
\hline \multicolumn{4}{|c|}{Roads} \\
\hline Share of Buit & Occupied by Road & 26\% & 28\% \\
\hline Share of Bulu & that is Gridded or & ally Gridded 0\% & 0\% \\
\hline Average Road & (m) & 9.3 & 10.5 \\
\hline Share of Road & than 4 m Wide & 13\% & 11\% \\
\hline Share of Road & than 16 m Wide & 14\% & 16\% \\
\hline \multicolumn{4}{|c|}{Arterial Roads} \\
\hline Density of A & ads (km/km²) & 2.8 & 2.0 \\
\hline Average Be & ance to Arterial Roa & (m) 127 & 218 \\
\hline Share of U ( 625 m ) of & ht Within Walking Dis Roads & 100\% & 94\% \\
\hline Share of U of Wide Art & Within Walking Dis (>16m wide) & 100\% & 96\% \\
\hline \multicolumn{4}{|c|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of In & that are 4-way & 14\% & 11\% \\
\hline Average Blo & & 1.8 & 4.2 \\
\hline 3-way Inter & ensity (number per k & 164 & 139 \\
\hline 4-way Inters & ensity (number per k & 26 & 15 \\
\hline Walkabity R & & 1.6 & 1.7 \\
\hline \multicolumn{4}{|l|}{Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) )} & 166 \\
\hline \multicolumn{4}{|c|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Bu & a in Residential Use & 74\% & 77\% \\
\hline Share of Re & Area Not Laid Out B & e Occupation 9\% & 1\% \\
\hline Share of Re & Area Laid Out Before & ccupation 90\% & 98\% \\
\hline Share of Re & Area in Informal Lan & ubdivisions 2\% & 14\% \\
\hline Share of Re & Area in Formal Land & bdivisions 83\% & 58\% \\
\hline Share of Re & Area in Housing Proj & 3\% & 25\% \\
\hline
\end{tabular}





Quito, Ecuador (Latin America and the Caribbean)


Selected Locales in Area Developed Before 1988


Selected Locales in Expansion Area, 1988-2013


\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Quito | Other cities in region | All other cities & Global & rage - \\
\hline Metrics & Pre1988 & \[
\begin{aligned}
& 1988- \\
& 2013
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 23\% & 21\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 7\% & 2\% \\
\hline Average Road Width (m) & 12.0 & 7.8 \\
\hline Share of Roads less than 4 m Wide & 5\% & 11\% \\
\hline Share of Roads more than 16 m Wide & 19\% & 4\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 3.1 & 1.6 \\
\hline Average Beeline Distance to Arterial Roads (m) & 101 & 367 \\
\hline Share of Urban Extent Within Walking Distance ( 625 m ) of all Arterial Roads & 100\% & 83\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( \(>16 \mathrm{~m}\) wide) & 94\% & 68\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 19\% & 13\% \\
\hline Average Block Size (ha) & 2.8 & 3.5 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 93 & 120 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 25 & 20 \\
\hline Walkabity Ratio & 1.6 & 1.8 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & & 543 \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 336 & 374 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 56\% & 75\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 1\% & 13\% \\
\hline Share of Residential Area Laid Out Before Occupation & 98\% & 86\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 17\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 89\% & 67\% \\
\hline Share of Residential Area in Housing Projects & 8\% & 1\% \\
\hline
\end{tabular}






\section*{Rajshahi, Bangladesh (South and Central Asia)}


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2010


\section*{Rajshahi, Bangladesh (South and Central Asia)}

\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Rajshahi | Other cities in region | All other cities | & Globa & rage - \\
\hline Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1990
\end{aligned}
\] & \[
\begin{aligned}
& 1990- \\
& 2010
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 9\% & 12\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 0\% \\
\hline Average Road Width (m) & 4.8 & 4.9 \\
\hline Share of Roads less than 4 m Wide & 47\% & 43\% \\
\hline Share of Roads more than 16 m Wide & 3\% & 2\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 4.2 & 1.6 \\
\hline Average Beeline Distance to Arterial Roads (m) & 59 & 204 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 100\% & 94\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 100\% & 72\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 12\% & 6\% \\
\hline Average Block Size (ha) & 3.3 & 11.0 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 93 & 49 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 17 & 4 \\
\hline Walkabity Ratio & 1.5 & 1.6 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & & 360 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 84\% & 83\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 100\% & 85\% \\
\hline Share of Residential Area Laid Out Before Occupation & 0\% & 14\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 14\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 0\% & 0\% \\
\hline Share of Residential Area in Housing Projects & 0\% & 0\% \\
\hline
\end{tabular}





Raleigh, United States (Land-Rich Developed Countries)


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2013


\section*{Raleigh, United States (Land-Rich Developed Countries)}
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Raleigh | Other cities in region | All other cities & Glob & rage \\
\hline Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1990
\end{aligned}
\] & \[
\begin{aligned}
& 1990- \\
& 2013
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 20\% & 18\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 2\% & 0\% \\
\hline Average Road Width (m) & 9.1 & 9.5 \\
\hline Share of Roads less than 4 m Wide & 7\% & 13\% \\
\hline Share of Roads more than 16 m Wide & 9\% & 8\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 1.8 & 1.2 \\
\hline Average Beeline Distance to Arterial Roads (m) & 182 & 338 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 97\% & 85\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( \(>16 \mathrm{~m}\) wide) & 90\% & 59\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 10\% & 6\% \\
\hline Average Block Size (ha) & 4.9 & 9.2 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 82 & 56 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 11 & 6 \\
\hline Walkabity Ratio & 2.0 & 1.8 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 1166 & 521 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 83\% & 88\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 6\% & 4\% \\
\hline Share of Residential Area Laid Out Before Occupation & 93\% & 95\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 0\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 78\% & 78\% \\
\hline Share of Residential Area in Housing Projects & 15\% & 17\% \\
\hline
\end{tabular}





Area w/n Walking Distance of Wide Arterial Roads, ~1990 - ~2014



Selected Locales in Area Developed Before 1989


Selected Locales in Expansion Area, 1989-2014


Rawang, Malaysia (Southeast Asia)
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Rawang | Other cities in region | All other cities | & Globa & rage - \\
\hline Metrics & Pre1989 & \[
\begin{aligned}
& 1989- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 24\% & 28\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 0\% \\
\hline Average Road Width (m) & 7.8 & 9.2 \\
\hline Share of Roads less than 4 m Wide & 13\% & 13\% \\
\hline Share of Roads more than 16 m Wide & 5\% & 14\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 1.1 & 0.7 \\
\hline Average Beeline Distance to Arterial Roads (m) & 341 & 558 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 82\% & 65\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( \(>16 \mathrm{~m}\) wide) & 66\% & 55\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 6\% & 5\% \\
\hline Average Block Size (ha) & 2.3 & 3.5 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 163 & 141 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 17 & 14 \\
\hline Walkabity Ratio & 2.9 & 2.1 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & 376 & \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 319 & 1175 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 62\% & 53\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 3\% & 4\% \\
\hline Share of Residential Area Laid Out Before Occupation & 97\% & 95\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 14\% & 14\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 66\% & 35\% \\
\hline Share of Residential Area in Housing Projects & 16\% & 45\% \\
\hline
\end{tabular}




Reynosa, Mexico (Latin America and the Caribbean)


Selected Locales in Area Developed Before 1991


Selected Locales in Expansion Area, 1991-2013


Reynosa, Mexico 1991-2013

Urban Extent in 1991
\(\square\) Expansion, 1991-2000
Expansion, 2000-2013

Reynosa, Mexico (Latin America and the Caribbean)

\section*{Legend for Charts}
\begin{tabular}{|c|c|c|c|c|}
\hline \multicolumn{5}{|c|}{Legend for Charts} \\
\hline Reynosa & Other cities in region | & All other cities & \multicolumn{2}{|l|}{Global average -} \\
\hline Metrics & & & \[
\begin{aligned}
& \text { Pre- } \\
& 1991
\end{aligned}
\] & \[
\begin{aligned}
& 1991- \\
& 2013
\end{aligned}
\] \\
\hline \multicolumn{5}{|c|}{Roads} \\
\hline \multicolumn{3}{|l|}{Share of Built-Up Area Occupied by Roads} & 26\% & 29\% \\
\hline \multicolumn{3}{|l|}{Share of Built-Up Area that is Gridded or Partially Gridded} & 30\% & 5\% \\
\hline \multicolumn{3}{|l|}{Average Road Width (m)} & 9.8 & 8.7 \\
\hline \multicolumn{3}{|l|}{Share of Roads less than 4m Wide} & 10\% & 15\% \\
\hline \multicolumn{3}{|l|}{Share of Roads more than 16 m Wide} & 10\% & 5\% \\
\hline
\end{tabular}
\begin{tabular}{|lll|}
\hline \multicolumn{4}{c|}{ Arterial Roads } \\
\hline Density of Arterial Roads (km/km²) & 1.1 & 0.9 \\
\hline Average Beeline Distance to Arterial Roads (m) & 384 & 478 \\
\hline \begin{tabular}{l} 
Share of Urban Extent Within Walking Distance \\
(625m) of all Arterial Roads
\end{tabular} & \(78 \%\) & \(70 \%\) \\
\hline \begin{tabular}{l} 
Share of Urban Extent Within Walking Distance \\
of Wide Arterial Roads (>16m wide)
\end{tabular} & \(77 \%\) & \(68 \%\) \\
\hline
\end{tabular}

Block Size, Plot Size, Intersection Density, and Walkability
\begin{tabular}{|lll|}
\hline Share of Intersections that are 4-way & \(29 \%\) & \(26 \%\) \\
\hline Average Block Size (ha) & 2.7 & 2.2 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 114 & 141 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 43 & 51 \\
\hline Walkabity Ratio & 1.9 & 1.9 \\
\hline Average Plot Size in Informal Subdivisions (m²) & 377 & 178 \\
\hline Average Plot Size in Formal Subdivisions (m²) & 260 & 157 \\
\hline \multicolumn{1}{|c|}{ Stages in the Evolution of Residential Layouts } & \\
\hline Share of Built-Up Area in Residential Use & \(67 \%\) & \(79 \%\) \\
\hline Share of Residential Area Not Laid Out Before Occupation & \(6 \%\) & \(3 \%\) \\
\hline Share of Residential Area Laid Out Before Occupation & \(93 \%\) & \(96 \%\) \\
\hline Share of Residential Area in Informal Land Subdivisions & \(31 \%\) & \(30 \%\) \\
\hline Share of Residential Area in Formal Land Subdivisions & \(55 \%\) & \(14 \%\) \\
\hline Share of Residential Area in Housing Projects & \(6 \%\) & \(50 \%\) \\
\hline
\end{tabular}






Ribeirao Preto, Brazil (Latin America and the Caribbean)


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2014


Ribeirao Preto, Brazil 1990-2014

\(\square\) Urban Extent in 1990
Expansion, 1990-2001
—Expansion, 2001-2014

Ribeirao Preto, Brazil (Latin America and the Caribbean)

\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Ribeirao Preto | Other cities in region | All other cities & Glob & rage - \\
\hline Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1990
\end{aligned}
\] & \[
\begin{aligned}
& 1990- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 28\% & 26\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 42\% & 5\% \\
\hline Average Road Width (m) & 11.3 & 8.0 \\
\hline Share of Roads less than 4 m Wide & 6\% & 12\% \\
\hline Share of Roads more than 16 m Wide & 15\% & 5\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km \({ }^{\text {2 }}\) ) & 2.2 & 1.8 \\
\hline Average Beeline Distance to Arterial Roads (m) & 171 & 200 \\
\hline Share of Urban Extent Within Walking Distance ( 625 m ) of all Arterial Roads & 98\% & 96\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( \(>16 \mathrm{~m}\) wide) & 92\% & 90\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 33\% & 12\% \\
\hline Average Block Size (ha) & 3.7 & 6.9 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 95 & 91 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 46 & 16 \\
\hline Walkabity Ratio & 1.8 & 1.8 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & & 3208 \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 303 & 513 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 76\% & 81\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 3\% & 7\% \\
\hline Share of Residential Area Laid Out Before Occupation & 96\% & 92\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 16\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 90\% & 70\% \\
\hline Share of Residential Area in Housing Projects & 6\% & 4\% \\
\hline
\end{tabular}






Riyadh, Saudi Arabia (Western Asia and North Africa)


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2013


Riyadh, Saudi Arabia 1990-2013

Arterial Roads
\(\begin{array}{llllll}\square & \square & 10 & 20 & 30 & 40\end{array}\)

Riyadh, Saudi Arabia (Western Asia and North Africa)

\section*{地定}
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Riyadh | Other cities in region | All other cities & Glob & rage - \\
\hline Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1990
\end{aligned}
\] & \[
\begin{aligned}
& 1990- \\
& 2013
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 35\% & 34\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 0\% \\
\hline Average Road Width (m) & 16.3 & 15.5 \\
\hline Share of Roads less than 4m Wide & 4\% & 5\% \\
\hline Share of Roads more than 16 m Wide & 36\% & 38\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 2.2 & 1.6 \\
\hline Average Beeline Distance to Arterial Roads (m) & 178 & 304 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 96\% & 87\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( \(>16 \mathrm{~m}\) wide) & 96\% & 87\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 8\% & 3\% \\
\hline Average Block Size (ha) & 3.3 & 5.8 \\
\hline 3 -way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 150 & 111 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 16 & 5 \\
\hline Walkabity Ratio & 1.6 & 1.8 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & & \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 448 & 432 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 75\% & 53\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 2\% & 4\% \\
\hline Share of Residential Area Laid Out Before Occupation & 97\% & 95\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 3\% & 5\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 87\% & 77\% \\
\hline Share of Residential Area in Housing Projects & 6\% & 12\% \\
\hline
\end{tabular}





Rovno, Ukraine (Europe and Japan)


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2014


Rovno, Ukraine 1990-2014 \(\square\) Urban Extent in 1990


Expansion, 1990-2000
- Expansion, 2000-2014

\section*{Rovno, Ukraine (Europe and Japan)}
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Rovno | Other cities in region | All other cities & Globa & rage - \\
\hline Metrics & \begin{tabular}{l}
Pre- \\
1990
\end{tabular} & \[
\begin{aligned}
& 1990- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 20\% & 15\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 0\% \\
\hline Average Road Width (m) & 7.6 & 5.8 \\
\hline Share of Roads less than 4m Wide & 28\% & 34\% \\
\hline Share of Roads more than 16 m Wide & 8\% & 3\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 2.0 & 1.4 \\
\hline Average Beeline Distance to Arterial Roads (m) & 179 & 313 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 97\% & 86\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 88\% & 75\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 7\% & 9\% \\
\hline Average Block Size (ha) & 3.9 & 6.5 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 132 & 86 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 14 & 12 \\
\hline Walkabity Ratio & 1.7 & 1.6 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & & 1326 \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 776 & 1071 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 53\% & 74\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 21\% & 48\% \\
\hline Share of Residential Area Laid Out Before Occupation & 78\% & 51\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 34\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 48\% & 16\% \\
\hline Share of Residential Area in Housing Projects & 29\% & 1\% \\
\hline
\end{tabular}





Saidpur, Bangladesh (South and Central Asia)


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2014


Saidpur, Bangladesh (South and Central Asia)

\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Saidpur | Other cities in region | All other cities & Globa & rage - \\
\hline Metrics & Pre1990 & \[
\begin{aligned}
& 1990- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 9\% & 14\% \\
\hline \multicolumn{3}{|l|}{Share of Built-Up Area that is Gridded or Partially Gridded} \\
\hline Average Road Width (m) & 3.6 & 4.7 \\
\hline Share of Roads less than 4m Wide & 65\% & 45\% \\
\hline Share of Roads more than 16 m Wide & 0\% & 0\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 2.8 & 1.9 \\
\hline Average Beeline Distance to Arterial Roads (m) & 98 & 173 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 100\% & 96\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( \(>16 \mathrm{~m}\) wide) & 15\% & 43\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 8\% & 5\% \\
\hline Average Block Size (ha) & 2.8 & 9.7 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 103 & 77 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 17 & 6 \\
\hline Walkabity Ratio & 1.4 & 1.5 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 82\% & 70\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 89\% & 85\% \\
\hline Share of Residential Area Laid Out Before Occupation & 10\% & 14\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 10\% & 3\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 0\% & 0\% \\
\hline Share of Residential Area in Housing Projects & 0\% & 11\% \\
\hline
\end{tabular}






Saint Petersburg, Russia (Europe and Japan)


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2014


Saint Petersburg, Russia 1990-2014

Saint Petersburg, Russia (Europe and Japan)
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Saint Petersburg | Other cities in region | All other cities & Glob & rage - \\
\hline Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1990
\end{aligned}
\] & \[
\begin{aligned}
& 1990- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 26\% & 20\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 5\% \\
\hline Average Road Width (m) & 9.3 & 8.1 \\
\hline Share of Roads less than 4 m Wide & 13\% & 19\% \\
\hline Share of Roads more than 16 m Wide & 13\% & 9\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 1.2 & 0.9 \\
\hline Average Beeline Distance to Arterial Roads (m) & 433 & 523 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 78\% & 70\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( \(>16 \mathrm{~m}\) wide) & 76\% & 61\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 11\% & 6\% \\
\hline Average Block Size (ha) & 3.3 & 5.3 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 133 & 77 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 20 & 6 \\
\hline Walkabity Ratio & 1.7 & 1.8 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & & 736 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 66\% & 82\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 12\% & 30\% \\
\hline Share of Residential Area Laid Out Before Occupation & 87\% & 69\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 18\% & 34\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 43\% & 24\% \\
\hline Share of Residential Area in Housing Projects & 25\% & 10\% \\
\hline
\end{tabular}





San Salvador, El Salvador (Latin America and the Caribbean)


Selected Locales in Area Developed Before 1991


Selected Locales in Expansion Area, 1991-2014


San Salvador, El Salvador (Latin America and the Caribbean)

\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline San Salvador | Other cities in region | All other cities & Glob & rage - \\
\hline Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1991
\end{aligned}
\] & \[
\begin{aligned}
& 1991- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 24\% & 22\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 5\% & 0\% \\
\hline Average Road Width (m) & 10.4 & 8.1 \\
\hline Share of Roads less than 4 m Wide & 7\% & 20\% \\
\hline Share of Roads more than 16 m Wide & 13\% & 8\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 2.8 & 2.0 \\
\hline Average Beeline Distance to Arterial Roads (m) & 155 & 212 \\
\hline Share of Urban Extent Within Walking Distance ( 625 m ) of all Arterial Roads & 96\% & 93\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 82\% & 74\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 17\% & 12\% \\
\hline Average Block Size (ha) & 2.1 & 4.8 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 94 & 104 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 22 & 28 \\
\hline Walkabity Ratio & 1.6 & 1.8 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & & 77 \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 91 & 157 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 68\% & 78\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 18\% & 26\% \\
\hline Share of Residential Area Laid Out Before Occupation & 81\% & 73\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 17\% & 24\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 61\% & 40\% \\
\hline Share of Residential Area in Housing Projects & 2\% & 8\% \\
\hline
\end{tabular}





Sana, Yemen (Western Asia and North Africa)


Selected Locales in Area Developed Before 1989


Selected Locales in Expansion Area, 1989-2014


Sana, Yemen (Western Asia and North Africa)
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Sana | Other cities in region | All other cities & Glob & rage - \\
\hline Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1989
\end{aligned}
\] & \[
\begin{aligned}
& 1989- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 29\% & 28\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 0\% \\
\hline Average Road Width (m) & 10.7 & 7.8 \\
\hline Share of Roads less than 4 m Wide & 15\% & 33\% \\
\hline Share of Roads more than 16 m Wide & 15\% & 10\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 2.2 & 1.0 \\
\hline Average Beeline Distance to Arterial Roads (m) & 219 & 767 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 92\% & 70\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( \(>16 \mathrm{~m}\) wide) & 90\% & 69\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 12\% & 5\% \\
\hline Average Block Size (ha) & 2.3 & 3.5 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 172 & 218 \\
\hline 4-way Intersection Density (number per km²) & 26 & 15 \\
\hline Walkabity Ratio & 1.7 & 1.7 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & & 221 \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 193 & 407 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 62\% & 67\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 30\% & 56\% \\
\hline Share of Residential Area Laid Out Before Occupation & 69\% & 43\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 17\% & 35\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 49\% & 8\% \\
\hline Share of Residential Area in Housing Projects & 3\% & 0\% \\
\hline
\end{tabular}




Santiago, Chile (Latin America and the Caribbean)


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2014


Santiago, Chile (Latin America and the Caribbean)
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Santiago | Other cities in region | All other cities & Globa & rage - \\
\hline Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1990
\end{aligned}
\] & \[
\begin{aligned}
& 1990- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 25\% & 18\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 37\% & 5\% \\
\hline Average Road Width (m) & 12.6 & 7.9 \\
\hline Share of Roads less than 4 m Wide & 4\% & 15\% \\
\hline Share of Roads more than 16 m Wide & 26\% & 10\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 3.0 & 2.4 \\
\hline Average Beeline Distance to Arterial Roads (m) & 126 & 199 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 99\% & 94\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( \(>16 \mathrm{~m}\) wide) & 99\% & 90\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 33\% & 13\% \\
\hline Average Block Size (ha) & 3.5 & 6.5 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 61 & 117 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 26 & 20 \\
\hline Walkabity Ratio & 1.6 & 2.0 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & & \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 493 & 282 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 64\% & 77\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 2\% & 16\% \\
\hline Share of Residential Area Laid Out Before Occupation & 93\% & 83\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 5\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 89\% & 63\% \\
\hline Share of Residential Area in Housing Projects & 8\% & 14\% \\
\hline
\end{tabular}




Sao Paulo, Brazil (Latin America and the Caribbean)


Selected Locales in Area Developed Before 1988


Selected Locales in Expansion Area, 1988-2014


Sao Paulo, Brazil 1988-2014

Arterial Roads

Sao Paulo, Brazil (Latin America and the Caribbean)
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Sao Paulo | Other cities in region | All other cities & Glob & rage - \\
\hline Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1988
\end{aligned}
\] & \[
\begin{aligned}
& 1988- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 23\% & 22\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 21\% & 2\% \\
\hline Average Road Width (m) & 9.9 & 7.2 \\
\hline Share of Roads less than 4 m Wide & 4\% & 10\% \\
\hline Share of Roads more than 16 m Wide & 18\% & 1\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 2.4 & 0.5 \\
\hline Average Beeline Distance to Arterial Roads (m) & 162 & 1268 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 99\% & 39\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( \(>16 \mathrm{~m}\) wide) & 78\% & 23\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 26\% & 6\% \\
\hline Average Block Size (ha) & 3.5 & 6.7 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 67 & 83 \\
\hline 4-way Intersection Density (number per km²) & 18 & 5 \\
\hline Walkabity Ratio & 1.8 & 1.7 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & & \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 286 & \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 72\% & 71\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 1\% & 22\% \\
\hline Share of Residential Area Laid Out Before Occupation & 92\% & 77\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 3\% & 23\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 91\% & 49\% \\
\hline Share of Residential Area in Housing Projects & 3\% & 4\% \\
\hline
\end{tabular}






\author{
Seoul, Korea Rep. (East Asia and the Pacific)
}


Selected Locales in Area Developed Before 1991


Selected Locales in Expansion Area, 1991-2014


Seoul, Korea Rep. (East Asia and the Pacific)






Shanghai, Shanghai, China (East Asia and the Pacific)


Selected Locales in Area Developed Before 1991


Selected Locales in Expansion Area, 1991-2015


Shanghai, Shanghai, China
\begin{tabular}{lll}
\(1991-2015\) \\
0 & 10 & 20 \\
0 & 30
\end{tabular}

Expansion, 1991-2000
- Expansion, 2000-2015

Shanghai, Shanghai, China (East Asia and the Pacific)

\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Shangha | Other cities in region | All other cities | & Globa & rage - \\
\hline Metrics & Pre1991 & \[
\begin{aligned}
& 1991- \\
& 2015
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 27\% & 21\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 2\% & 7\% \\
\hline Average Road Width (m) & 9.7 & 8.2 \\
\hline Share of Roads less than 4 m Wide & 16\% & 40\% \\
\hline Share of Roads more than 16 m Wide & 24\% & 14\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 1.7 & 0.7 \\
\hline Average Beeline Distance to Arterial Roads (m) & 229 & 1286 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 93\% & 63\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 93\% & 60\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 20\% & 13\% \\
\hline Average Block Size (ha) & 6.1 & 6.8 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 67 & 81 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 18 & 10 \\
\hline Walkabity Ratio & 1.6 & 1.7 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 302 & \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 51\% & 46\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 11\% & 45\% \\
\hline Share of Residential Area Laid Out Before Occupation & 82\% & 54\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 6\% & 16\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 38\% & 10\% \\
\hline Share of Residential Area in Housing Projects & 43\% & 27\% \\
\hline
\end{tabular}




Sheffield, United Kingdom (Europe and Japan)


Selected Locales in Area Developed Before 1992


Selected Locales in Expansion Area, 1992-2013


Sheffield, United Kingdom 1992-2013


Sheffield, United Kingdom (Europe and Japan)
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Sheffield | Other cities in region | All other cities & Globa & rage - \\
\hline Metrics & Pre1992 & \[
\begin{aligned}
& 1992- \\
& 2013
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 18\% & 16\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 0\% \\
\hline Average Road Width (m) & 8.0 & 7.5 \\
\hline Share of Roads less than 4 m Wide & 24\% & 23\% \\
\hline Share of Roads more than 16 m Wide & 6\% & 4\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 1.6 & 1.5 \\
\hline Average Beeline Distance to Arterial Roads (m) & 220 & 234 \\
\hline Share of Urban Extent Within Walking Distance ( 625 m ) of all Arterial Roads & 94\% & 93\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( \(>16 \mathrm{~m}\) wide) & 46\% & 44\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 7\% & 6\% \\
\hline Average Block Size (ha) & 3.4 & 6.2 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 98 & 63 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 10 & 6 \\
\hline Walkabity Ratio & 1.6 & 1.5 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 525 & 144 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 68\% & 73\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 2\% & 5\% \\
\hline Share of Residential Area Laid Out Before Occupation & 97\% & 94\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 3\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 90\% & 77\% \\
\hline Share of Residential Area in Housing Projects & 6\% & 13\% \\
\hline
\end{tabular}





\section*{Shenzhen, Guangdong, China (East Asia and the Pacific)}


Selected Locales in Area Developed Before 1987


Selected Locales in Expansion Area, 1987-2013


Shenzhen, Guangdong, China

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UUban Extent in }198
Arterial Roads
Expansion, 1987-2000
\square Expansion, 2000-2013

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Shenzhen, Guangdong, China (East Asia and the Pacific)
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Shenzhen | Other cities in region | All other cities | & Globa & rage \\
\hline Metrics & Pre1987 & \[
\begin{aligned}
& 1987- \\
& 2013
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 26\% & 24\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 0\% \\
\hline Average Road Width (m) & 10.7 & 8.4 \\
\hline Share of Roads less than 4m Wide & 20\% & 33\% \\
\hline Share of Roads more than 16 m Wide & 17\% & 14\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 2.8 & 1.0 \\
\hline Average Beeline Distance to Arterial Roads (m) & 148 & 444 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 97\% & 80\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 97\% & 80\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 6\% & 18\% \\
\hline Average Block Size (ha) & 3.0 & 3.3 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 132 & 251 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 12 & 82 \\
\hline Walkabity Ratio & 1.8 & 1.7 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & & 158 \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 302 & 214 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 44\% & 46\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 8\% & 38\% \\
\hline Share of Residential Area Laid Out Before Occupation & 91\% & 61\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 4\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 51\% & 39\% \\
\hline Share of Residential Area in Housing Projects & 40\% & 17\% \\
\hline
\end{tabular}




Shymkent, Kazakhstan (South and Central Asia)


Selected Locales in Area Developed Before 1993


Selected Locales in Expansion Area, 1993-2013


Shymkent, Kazakhstan (South and Central Asia)
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Shymkent | Other cities in region | All other cities & Globa & rage - \\
\hline Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1993
\end{aligned}
\] & \[
\begin{aligned}
& 1993- \\
& 2013
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 14\% & 16\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 7\% & 0\% \\
\hline Average Road Width (m) & 8.5 & 7.7 \\
\hline Share of Roads less than 4 m Wide & 13\% & 17\% \\
\hline Share of Roads more than 16 m Wide & 8\% & 7\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 1.2 & 0.9 \\
\hline Average Beeline Distance to Arterial Roads (m) & 461 & 469 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 75\% & 74\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 65\% & 57\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 14\% & 14\% \\
\hline Average Block Size (ha) & 6.4 & 5.6 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 44 & 65 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 8 & 13 \\
\hline Walkabity Ratio & 1.7 & 1.8 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & 1144 & 959 \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 729 & 879 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 71\% & 86\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 19\% & 13\% \\
\hline Share of Residential Area Laid Out Before Occupation & 80\% & 86\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 23\% & 62\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 45\% & 21\% \\
\hline Share of Residential Area in Housing Projects & 11\% & 3\% \\
\hline
\end{tabular}





Sialkot, Pakistan (South and Central Asia)


Selected Locales in Area Developed Before 1992


Selected Locales in Expansion Area, 1992-2014


Sialkot, Pakistan 1992-2014

Arterial Roads

\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Sialkot | Other cities in region | All other cities & Glob & rage - \\
\hline Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1992
\end{aligned}
\] & \[
\begin{aligned}
& 1992- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 16\% & 17\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 0\% \\
\hline Average Road Width (m) & 7.1 & 5.1 \\
\hline Share of Roads less than 4 m Wide & 46\% & 45\% \\
\hline Share of Roads more than 16 m Wide & 12\% & 4\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 1.8 & 1.0 \\
\hline Average Beeline Distance to Arterial Roads (m) & 181 & 379 \\
\hline Share of Urban Extent Within Walking Distance ( 625 m ) of all Arterial Roads & 99\% & 81\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( \(>16 \mathrm{~m}\) wide) & 88\% & 70\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 8\% & 6\% \\
\hline Average Block Size (ha) & 2.4 & 5.1 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 150 & 154 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 16 & 19 \\
\hline Walkabity Ratio & 1.6 & 1.8 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 332 & 234 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 75\% & 72\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 57\% & 69\% \\
\hline Share of Residential Area Laid Out Before Occupation & 42\% & 30\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 18\% & 16\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 23\% & 7\% \\
\hline Share of Residential Area in Housing Projects & 0\% & 7\% \\
\hline
\end{tabular}





\section*{Singapore, Singapore (Southeast Asia)}


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2013


Singapore, Singapore 1990-2013


Singapore, Singapore (Southeast Asia)
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Singapore | Other cities in region | All other cities & Globa & rage \\
\hline Metrics & \begin{tabular}{l}
Pre- \\
1990
\end{tabular} & \[
\begin{aligned}
& 1990- \\
& 2013
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 23\% & 25\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 10\% \\
\hline Average Road Width (m) & 11.7 & 9.1 \\
\hline Share of Roads less than 4m Wide & 7\% & 21\% \\
\hline Share of Roads more than 16 m Wide & 23\% & 15\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 1.7 & 1.4 \\
\hline Average Beeline Distance to Arterial Roads (m) & 243 & 513 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 92\% & 82\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 92\% & 82\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 4\% & 15\% \\
\hline Average Block Size (ha) & 4.5 & 3.9 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 78 & 100 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 5 & 16 \\
\hline Walkabity Ratio & 2.2 & 2.0 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & & 520 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 54\% & 55\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 3\% & 14\% \\
\hline Share of Residential Area Laid Out Before Occupation & 96\% & 85\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 0\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 38\% & 13\% \\
\hline Share of Residential Area in Housing Projects & 58\% & 72\% \\
\hline
\end{tabular}




Singrauli, India (South and Central Asia)


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2010


Singrauli, India 1990-2010 \(\square\) Urban Extent in 1990

Expansion, 1990-2000
Expansion, 2000-2010

\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Singrauli | Other cities in region | All other cities & Globa & rage - \\
\hline Metrics & Pre1990 & \[
\begin{aligned}
& 1990- \\
& 2010
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 28\% & 18\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & & 0\% \\
\hline Average Road Width (m) & 8.5 & 6.2 \\
\hline Share of Roads less than 4m Wide & 7\% & 28\% \\
\hline Share of Roads more than 16 m Wide & 7\% & 4\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 0.0 & 0.6 \\
\hline Average Beeline Distance to Arterial Roads (m) & 1182 & 678 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 21\% & 54\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 21\% & 57\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 8\% & 5\% \\
\hline Average Block Size (ha) & 3.4 & 6.0 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 180 & 137 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 20 & 12 \\
\hline Walkabity Ratio & 1.5 & 1.7 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & & 236 \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 226 & \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 60\% & 74\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 1\% & 33\% \\
\hline Share of Residential Area Laid Out Before Occupation & 98\% & 66\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 33\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 21\% & 3\% \\
\hline Share of Residential Area in Housing Projects & 76\% & 29\% \\
\hline
\end{tabular}






Selected Locales in Area Developed Before 1989


Selected Locales in Expansion Area, 1989-2014


Sitapur, India 1989-2014
Urban Extent in \(1989 \quad\) Expansion, 1989-2000
Expansion, 2000-2014

\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Sitapur | Other cities in region | All other cities & Glob & rage - \\
\hline Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1989
\end{aligned}
\] & \[
\begin{aligned}
& 1989- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 17\% & 25\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 10\% & 0\% \\
\hline Average Road Width (m) & 5.5 & 5.0 \\
\hline Share of Roads less than 4 m Wide & 45\% & 42\% \\
\hline Share of Roads more than 16 m Wide & 4\% & 0\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 1.9 & 1.7 \\
\hline Average Beeline Distance to Arterial Roads (m) & 175 & 251 \\
\hline Share of Urban Extent Within Walking Distance ( 625 m ) of all Arterial Roads & 96\% & 90\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 78\% & 75\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 10\% & 5\% \\
\hline Average Block Size (ha) & 2.6 & 4.8 \\
\hline 3-way Intersection Density (number per km²) & 203 & 132 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 26 & 7 \\
\hline Walkabity Ratio & 1.8 & 1.3 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & 108 & 93 \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 149 & \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 69\% & 51\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 26\% & 1\% \\
\hline Share of Residential Area Laid Out Before Occupation & 73\% & 98\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 70\% & 78\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 3\% & 0\% \\
\hline Share of Residential Area in Housing Projects & 0\% & 20\% \\
\hline
\end{tabular}





Springfield, MA, United States (Land-Rich Developed Countries)


Selected Locales in Area Developed Before 1991


Selected Locales in Expansion Area, 1991-2014


Springfield, MA, United States

\(\square\) Urban Extent in 1991
Urban Exient in 1091
Expansion, 1991-2000
Expansion, 2000-2014

Springfield, MA, United States (Land-Rich Developed Countries)
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Springfield | Other cities in region | All other cities & Globa & rage \\
\hline Metrics & Pre1991 & \[
\begin{aligned}
& 1991- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 18\% & 15\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 2\% & 0\% \\
\hline Average Road Width (m) & 8.1 & 7.9 \\
\hline Share of Roads less than 4m Wide & 18\% & 13\% \\
\hline Share of Roads more than 16 m Wide & 8\% & 2\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 1.9 & 1.4 \\
\hline Average Beeline Distance to Arterial Roads (m) & 246 & 275 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 92\% & 89\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 75\% & 48\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 8\% & 5\% \\
\hline Average Block Size (ha) & 3.8 & 7.2 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 97 & 45 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 9 & 8 \\
\hline Walkabity Ratio & 1.6 & 1.6 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 950 & 1508 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 73\% & 75\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 9\% & 32\% \\
\hline Share of Residential Area Laid Out Before Occupation & 90\% & 67\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 0\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 85\% & 66\% \\
\hline Share of Residential Area in Housing Projects & 4\% & 1\% \\
\hline
\end{tabular}




Area w/n Walking Distance of Wide Arterial Roads, ~1990 - ~2014


Suining, Sichuan, China (East Asia and the Pacific)


Selected Locales in Area Developed Before 1988


Selected Locales in Expansion Area, 1988-2013


Suining, Sichuan, China (East Asia and the Pacific)
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Suining | Other cities in region | All other cities & Globa & rage \\
\hline Metrics & \begin{tabular}{l}
Pre- \\
1988
\end{tabular} & \[
\begin{aligned}
& 1988- \\
& 2013
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 27\% & 27\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 0\% \\
\hline Average Road Width (m) & 10.8 & 11.0 \\
\hline Share of Roads less than 4 m Wide & 6\% & 9\% \\
\hline Share of Roads more than 16 m Wide & 19\% & 18\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 2.6 & 1.8 \\
\hline Average Beeline Distance to Arterial Roads (m) & 117 & 190 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 100\% & 96\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 100\% & 94\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 7\% & 6\% \\
\hline Average Block Size (ha) & 2.2 & 5.6 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 209 & 140 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 18 & 15 \\
\hline Walkabity Ratio & 1.4 & 1.9 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 69\% & 60\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 2\% & 26\% \\
\hline Share of Residential Area Laid Out Before Occupation & 97\% & 73\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 13\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 97\% & 29\% \\
\hline Share of Residential Area in Housing Projects & 0\% & 30\% \\
\hline
\end{tabular}





Suva, Fiji (East Asia and the Pacific)


Selected Locales in Area Developed Before 1991


Selected Locales in Expansion Area, 1991-2014


Suva, Fiji 1991-2014

\(\square\)

Urban Extent in 1991
Arterial Roads
Expansion, 1991-1999
Expansion, 1999-2014
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Suva | Other cities in region | All other cities & Globa & rage - \\
\hline Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1991
\end{aligned}
\] & \[
\begin{aligned}
& 1991- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 24\% & 12\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 0\% \\
\hline Average Road Width (m) & 10.9 & 8.4 \\
\hline Share of Roads less than 4 m Wide & 7\% & 19\% \\
\hline Share of Roads more than 16 m Wide & 16\% & 8\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 2.9 & 1.4 \\
\hline Average Beeline Distance to Arterial Roads (m) & 83 & 253 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 100\% & 90\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( \(>16 \mathrm{~m}\) wide) & 100\% & 90\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 1\% & 2\% \\
\hline Average Block Size (ha) & 5.2 & 8.4 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 142 & 32 \\
\hline 4-way Intersection Density (number per km²) & 5 & 1 \\
\hline Walkabity Ratio & 1.5 & 1.6 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 48\% & 84\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 29\% & 39\% \\
\hline Share of Residential Area Laid Out Before Occupation & 70\% & 60\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 14\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 69\% & 41\% \\
\hline Share of Residential Area in Housing Projects & 1\% & 3\% \\
\hline
\end{tabular}





\section*{Sydney, Australia (Land-Rich Developed Countries)}


Selected Locales in Area Developed Before 1991


Selected Locales in Expansion Area, 1991-2014


Sydney, Australia 1991-2014 \(\square\) Expansion, 1991-2000
- Expansion, 2000-2014

\section*{Sydney, Australia (Land-Rich Developed Countries)}
\begin{tabular}{|c|c|c|c|}
\hline \multicolumn{4}{|c|}{Legend for Charts} \\
\hline Sydney & Other cities in region & All other cities | Globa & Global average - \\
\hline Metrics & & Pre1991 & \[
\begin{aligned}
& 1991 \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{4}{|c|}{Roads} \\
\hline \multicolumn{2}{|l|}{Share of Built-Up Area Occupied by Roads} & 26\% & 19\% \\
\hline \multicolumn{3}{|l|}{Share of Built-Up Area that is Gridded or Partially Gridded} & 2\% \\
\hline \multicolumn{2}{|l|}{Average Road Width (m)} & 15.7 & 9.9 \\
\hline \multicolumn{2}{|l|}{Share of Roads less than 4 m Wide} & 5\% & 7\% \\
\hline \multicolumn{2}{|l|}{Share of Roads more than 16 m Wide} & 50\% & 15\% \\
\hline \multicolumn{4}{|c|}{Arterial Roads} \\
\hline \multicolumn{2}{|l|}{Density of Arterial Roads (km/km²)} & 2.3 & 1.3 \\
\hline \multicolumn{3}{|l|}{Average Beeline Distance to Arterial Roads (m)} & 357 \\
\hline \multicolumn{3}{|l|}{Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads} & 82\% \\
\hline \multicolumn{3}{|l|}{Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide)} & 76\% \\
\hline \multicolumn{4}{|c|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline \multicolumn{2}{|l|}{Share of Intersections that are 4-way} & 17\% & 4\% \\
\hline \multicolumn{2}{|l|}{Average Block Size (ha)} & 5.8 & 6.2 \\
\hline \multicolumn{2}{|l|}{3-way Intersection Density (number per km} & 61 & 36 \\
\hline \multicolumn{2}{|l|}{4-way Intersection Density (number per km} & 17 & 3 \\
\hline \multicolumn{2}{|l|}{Walkabity Ratio} & 1.7 & 1.8 \\
\hline \multicolumn{4}{|l|}{Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline \multirow[t]{2}{*}{Average Plot} & Formal Subdivisions & ) 575 & 707 \\
\hline & \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline \multicolumn{2}{|l|}{Share of Built-Up Area in Residential Use} & 82\% & 78\% \\
\hline \multicolumn{3}{|l|}{Share of Residential Area Not Laid Out Before Occupation} & 13\% \\
\hline \multicolumn{3}{|l|}{Share of Residential Area Laid Out Before Occupation} & 86\% \\
\hline \multicolumn{3}{|l|}{Share of Residential Area in Informal Land Subdivisions} & 0\% \\
\hline \multicolumn{3}{|l|}{Share of Residential Area in Formal Land Subdivisions} & 80\% \\
\hline \multicolumn{3}{|l|}{Share of Residential Area in Housing Projects} & 6\% \\
\hline
\end{tabular}






Taipei, Taiwan, China (East Asia and the Pacific)


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2014


Taipei, Taiwan, China 1990-2014

\(\square\) Urban Extent in 1990
Expansion, 1990-2001
Expansion, 2001-2014

Taipei, Taiwan, China (East Asia and the Pacific)
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Taipei | Other cities in region | All other cities & Glob & rage - \\
\hline Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1990
\end{aligned}
\] & \[
\begin{aligned}
& 1990- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 21\% & 17\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 0\% \\
\hline Average Road Width (m) & 8.5 & 5.3 \\
\hline Share of Roads less than 4 m Wide & 22\% & 44\% \\
\hline Share of Roads more than 16 m Wide & 11\% & 3\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 4.6 & 3.1 \\
\hline Average Beeline Distance to Arterial Roads (m) & 83 & 134 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 99\% & 97\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( \(>16 \mathrm{~m}\) wide) & 95\% & 81\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 13\% & 3\% \\
\hline Average Block Size (ha) & 2.9 & 7.7 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 135 & 96 \\
\hline 4-way Intersection Density (number per km²) & 24 & 8 \\
\hline Walkabity Ratio & 1.6 & 1.9 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & & \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 209 & \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 47\% & 40\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 22\% & 55\% \\
\hline Share of Residential Area Laid Out Before Occupation & 77\% & 44\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 0\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 70\% & 35\% \\
\hline Share of Residential Area in Housing Projects & 6\% & 8\% \\
\hline
\end{tabular}





Tangshan, Hebei, China (East Asia and the Pacific)


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2013


Tangshan, Hebei, China 1990-2013



Urban Extent in 1990
Arterial Roads
Expansion, 1990-2000
—Expansion, 2000-2013

Tangshan, Hebei, China (East Asia and the Pacific)






Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2013


(. \(\because: \cdot\)
\begin{tabular}{|c|c|c|c|c|}
\hline \multicolumn{5}{|c|}{Legend for Charts} \\
\hline Tashkent & Other cities in region | & All other cities & \multicolumn{2}{|l|}{Global average -} \\
\hline Metrics & & & Pre1990 & \[
\begin{aligned}
& 1990- \\
& 2013
\end{aligned}
\] \\
\hline \multicolumn{5}{|c|}{Roads} \\
\hline \multicolumn{3}{|l|}{Share of Built-Up Area Occupied by Roads} & 16\% & 11\% \\
\hline \multicolumn{3}{|l|}{Share of Built-Up Area that is Gridded or Partially Gridded} & 0\% & 0\% \\
\hline \multicolumn{3}{|l|}{Average Road Width (m)} & 8.8 & 5.6 \\
\hline \multicolumn{3}{|l|}{Share of Roads less than 4 m Wide} & 12\% & 30\% \\
\hline \multicolumn{3}{|l|}{Share of Roads more than 16 m Wide} & 10\% & 1\% \\
\hline
\end{tabular}




\author{
Tebessa, Algeria (Western Asia and North Africa)
}


Selected Locales in Area Developed Before 1988


Selected Locales in Expansion Area, 1988-2014


Tebessa, Algeria 1988-2014


Tebessa, Algeria (Western Asia and North Africa)
\begin{tabular}{|c|c|c|c|}
\hline \multicolumn{4}{|c|}{Legend for Charts} \\
\hline Tebessa & Other cities in region & All other cities | Globa & rage - \\
\hline Metrics & & Pre1988 & \[
\begin{aligned}
& 1988- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{4}{|c|}{Roads} \\
\hline Share of Built & Occupied by Road & 23\% & 23\% \\
\hline Share of Built & that is Gridded or & ally Gridded 2\% & 0\% \\
\hline Average Roa & (m) & 7.8 & 6.2 \\
\hline Share of Roa & than 4 m Wide & 28\% & 32\% \\
\hline Share of Roa & than 16 m Wide & 10\% & 7\% \\
\hline \multicolumn{4}{|c|}{Arterial Roads} \\
\hline Density of Ar & ads (km/km²) & 1.7 & 1.2 \\
\hline Average Bee & ance to Arterial Ro & (m) 205 & 305 \\
\hline Share of Urb ( 625 m ) of all & t Within Walking Dis Roads & 95\% & 85\% \\
\hline Share of Urb of Wide Arteria & Within Walking Di (>16m wide) & 86\% & 81\% \\
\hline \multicolumn{4}{|c|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Inte & that are 4-way & 12\% & 13\% \\
\hline Average Bloc & & 1.4 & 2.5 \\
\hline 3-way Interse & ensity (number per & 250 & 283 \\
\hline 4-way Interse & nsity (number per k & 44 & 57 \\
\hline Walkabity Ra & & 1.7 & 1.6 \\
\hline Average Plot & Informal Subdivisio & 251 & 178 \\
\hline Average Plot & Formal Subdivisions & 330 & 240 \\
\hline \multicolumn{4}{|c|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Buil & a in Residential Use & 61\% & 61\% \\
\hline Share of Res & Area Not Laid Out B & e Occupation 7\% & 19\% \\
\hline Share of Res & Area Laid Out Befor & ccupation 92\% & 80\% \\
\hline Share of Res & Area in Informal Lan & ubdivisions 44\% & 52\% \\
\hline Share of Res & Area in Formal Land & divisions 32\% & 1\% \\
\hline Share of Res & Area in Housing Pro & 15\% & 26\% \\
\hline
\end{tabular}







Selected Locales in Area Developed Before 1991


Selected Locales in Expansion Area, 1991-2010


Tehran, Iran 1991-2010 Arterial Roads
\begin{tabular}{lllllll}
\hline & ロ & 5 & 10 & 15 & 20
\end{tabular}

Tehran, Iran (South and Central Asia)

\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Tehran | Other cities in region | All other cities | & Globa & rage - \\
\hline Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1991
\end{aligned}
\] & \[
\begin{aligned}
& 1991- \\
& 2010
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 22\% & 27\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 12\% & 0\% \\
\hline Average Road Width (m) & 11.2 & 9.5 \\
\hline Share of Roads less than 4 m Wide & 15\% & 19\% \\
\hline Share of Roads more than 16 m Wide & 19\% & 14\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 2.4 & 1.9 \\
\hline Average Beeline Distance to Arterial Roads (m) & 176 & 255 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 96\% & 91\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 96\% & 90\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 16\% & 13\% \\
\hline Average Block Size (ha) & 4.1 & 4.2 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 81 & 162 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 28 & 24 \\
\hline Walkabity Ratio & 1.5 & 2.1 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 258 & \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 70\% & 63\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 19\% & 24\% \\
\hline Share of Residential Area Laid Out Before Occupation & 65\% & 75\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 18\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 73\% & 40\% \\
\hline Share of Residential Area in Housing Projects & 6\% & 16\% \\
\hline
\end{tabular}



Tel Aviv, Israel (Western Asia and North Africa)


Selected Locales in Area Developed Before 1987


Selected Locales in Expansion Area, 1987-2014


Tel Aviv, Israel (Western Asia and North Africa)

\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Tel Aviv | Other cities in region | All other cities & Globa & rage - \\
\hline Metrics & Pre1987 & \[
\begin{aligned}
& 1987- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 23\% & 21\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 1\% & 0\% \\
\hline Average Road Width (m) & 11.8 & 9.4 \\
\hline Share of Roads less than 4m Wide & 6\% & 19\% \\
\hline Share of Roads more than 16 m Wide & 18\% & 13\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 2.0 & 1.1 \\
\hline Average Beeline Distance to Arterial Roads (m) & 178 & 376 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 96\% & 80\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( \(>16 \mathrm{~m}\) wide) & 96\% & 78\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 21\% & 9\% \\
\hline Average Block Size (ha) & 4.0 & 5.7 \\
\hline 3 -way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 76 & 65 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 110 & 8 \\
\hline Walkabity Ratio & 1.6 & 2.1 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & & 554 \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 487 & 772 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 70\% & 71\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 14\% & 17\% \\
\hline Share of Residential Area Laid Out Before Occupation & 71\% & 82\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 1\% & 16\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 72\% & 59\% \\
\hline Share of Residential Area in Housing Projects & 11\% & 6\% \\
\hline
\end{tabular}




Thessaloniki, Greece (Europe and Japan)


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2011


Thessaloniki, Greece (Europe and Japan)
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Thessaloniki | Other cities in region | All other cities & Glob & rage - \\
\hline Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1990
\end{aligned}
\] & \[
\begin{aligned}
& 1990- \\
& 2011
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 22\% & 20\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 7\% & 0\% \\
\hline Average Road Width (m) & 8.5 & 7.0 \\
\hline Share of Roads less than 4m Wide & 21\% & 22\% \\
\hline Share of Roads more than 16 m Wide & 9\% & 8\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 2.9 & 2.1 \\
\hline Average Beeline Distance to Arterial Roads (m) & 138 & 198 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 98\% & 94\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( \(>16 \mathrm{~m}\) wide) & 89\% & 78\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 22\% & 9\% \\
\hline Average Block Size (ha) & 5.1 & 9.1 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 159 & 84 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 46 & 9 \\
\hline Walkabity Ratio & 1.7 & 2.3 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 60\% & 57\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 5\% & 9\% \\
\hline Share of Residential Area Laid Out Before Occupation & 94\% & 90\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 1\% & 30\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 91\% & 53\% \\
\hline Share of Residential Area in Housing Projects & 2\% & 6\% \\
\hline
\end{tabular}





Tianjin, Tianjin, China (East Asia and the Pacific)


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2013


Tianjin, Tianjin, China 1990-2013 \(\square\) Urban Extent in 1990
Expansion, 1990-2000

Expansion, 2000-2013

\section*{Tianjin, Tianjin, China (East Asia and the Pacific)}
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Tianjin | Other cities in region | All other cities & Globa & rage - \\
\hline Metrics & Pre1990 & \[
\begin{aligned}
& 1990- \\
& 2013
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 21\% & 22\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 0\% \\
\hline Average Road Width (m) & 9.2 & 8.4 \\
\hline Share of Roads less than 4 m Wide & 24\% & 30\% \\
\hline Share of Roads more than 16 m Wide & 11\% & 13\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 2.3 & 0.8 \\
\hline Average Beeline Distance to Arterial Roads (m) & 173 & 522 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 97\% & 69\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( \(>16 \mathrm{~m}\) wide) & 96\% & 61\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 12\% & 13\% \\
\hline Average Block Size (ha) & 3.0 & 5.7 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 119 & 100 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 18 & 16 \\
\hline Walkabity Ratio & 1.9 & 1.9 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 42\% & 45\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 3\% & 4\% \\
\hline Share of Residential Area Laid Out Before Occupation & 96\% & 95\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 8\% & 25\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 16\% & 19\% \\
\hline Share of Residential Area in Housing Projects & 71\% & 50\% \\
\hline
\end{tabular}




Tijuana, Mexico (Latin America and the Caribbean)


Selected Locales in Area Developed Before 1989


Selected Locales in Expansion Area, 1989-2014


Tijuana, Mexico (Latin America and the Caribbean)







Tokyo, Japan (Europe and Japan)


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2014


Tokyo, Japan 1990-2014

Tokyo, Japan (Europe and Japan)

\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Tokyo | Other cities in region | All other cities & Globa & rage - \\
\hline Metrics & \begin{tabular}{l}
Pre- \\
1990
\end{tabular} & \[
\begin{aligned}
& 1990- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 37\% & 24\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 15\% & 2\% \\
\hline Average Road Width (m) & 5.4 & 5.0 \\
\hline Share of Roads less than 4 m Wide & 45\% & 51\% \\
\hline Share of Roads more than 16 m Wide & 2\% & 2\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 2.8 & 1.7 \\
\hline Average Beeline Distance to Arterial Roads (m) & 129 & 198 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 99\% & 93\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 84\% & 57\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 18\% & 15\% \\
\hline Average Block Size (ha) & 1.6 & 2.5 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 169 & 194 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 41 & 47 \\
\hline Walkabity Ratio & 1.5 & 1.4 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & 350 & \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 200 & 230 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 62\% & 55\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 47\% & 46\% \\
\hline Share of Residential Area Laid Out Before Occupation & 48\% & 53\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 1\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 49\% & 49\% \\
\hline Share of Residential Area in Housing Projects & 3\% & 2\% \\
\hline
\end{tabular}





Toledo, United States (Land-Rich Developed Countries)


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2014


Toledo, United States 1990-2014


Arterial Roads

Toledo, United States (Land-Rich Developed Countries)
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Toledo | Other cities in region | All other cities & Globa & rage \\
\hline Metrics & Pre1990 & \[
\begin{aligned}
& 1990- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 20\% & 18\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 2\% & 0\% \\
\hline Average Road Width (m) & 8.6 & 9.3 \\
\hline Share of Roads less than 4m Wide & 24\% & 14\% \\
\hline Share of Roads more than 16 m Wide & 17\% & 21\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 1.4 & 1.2 \\
\hline Average Beeline Distance to Arterial Roads (m) & 258 & 340 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 91\% & 84\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 74\% & 56\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 17\% & 4\% \\
\hline Average Block Size (ha) & 2.4 & 6.9 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 126 & 75 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 25 & 3 \\
\hline Walkabity Ratio & 1.7 & 1.6 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 625 & 1238 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 71\% & 79\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 1\% & 33\% \\
\hline Share of Residential Area Laid Out Before Occupation & 98\% & 66\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 0\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 88\% & 58\% \\
\hline Share of Residential Area in Housing Projects & 9\% & 8\% \\
\hline
\end{tabular}






Tyumen, Russia (Europe and Japan)


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2011


\section*{Tyumen, Russia (Europe and Japan)}
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Tyumen | Other cities in region | All other cities & Globa & rage \\
\hline Metrics & \begin{tabular}{l}
Pre- \\
1990
\end{tabular} & \[
\begin{aligned}
& 1990- \\
& 2011
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 20\% & 18\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 10\% & 2\% \\
\hline Average Road Width (m) & 7.7 & 6.7 \\
\hline Share of Roads less than 4m Wide & 17\% & 19\% \\
\hline Share of Roads more than 16 m Wide & 7\% & 5\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 1.3 & 1.1 \\
\hline Average Beeline Distance to Arterial Roads (m) & 312 & 392 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 85\% & 79\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 84\% & 75\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 9\% & 16\% \\
\hline Average Block Size (ha) & 5.2 & 3.8 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 109 & 126 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 13 & 18 \\
\hline Walkabity Ratio & 1.8 & 1.7 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & 471 & 900 \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 1104 & 1185 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 47\% & 84\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 14\% & 0\% \\
\hline Share of Residential Area Laid Out Before Occupation & 85\% & 99\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 38\% & 85\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 19\% & 10\% \\
\hline Share of Residential Area in Housing Projects & 26\% & 2\% \\
\hline
\end{tabular}





Ulaanbaatar, Mongolia (East Asia and the Pacific)


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2014


\section*{Ulaanbaatar, Mongolia (East Asia and the Pacific)}
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Ulaanbaatar | Other cities in region | All other cities & Globa & rage - \\
\hline Metrics & Pre1990 & \[
\begin{aligned}
& 1990- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 15\% & 11\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 0\% \\
\hline Average Road Width (m) & 7.1 & 4.2 \\
\hline Share of Roads less than 4 m Wide & 24\% & 51\% \\
\hline Share of Roads more than 16 m Wide & 7\% & 0\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 1.6 & 1.2 \\
\hline Average Beeline Distance to Arterial Roads (m) & 272 & 394 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 89\% & 78\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 81\% & 67\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 2\% & 7\% \\
\hline Average Block Size (ha) & 5.6 & 4.4 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 85 & 91 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 4 & 10 \\
\hline Walkabity Ratio & 1.8 & 1.7 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & 643 & 629 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 66\% & 85\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 23\% & 25\% \\
\hline Share of Residential Area Laid Out Before Occupation & 76\% & 74\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 64\% & 71\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 5\% & 0\% \\
\hline Share of Residential Area in Housing Projects & 6\% & 3\% \\
\hline
\end{tabular}




Valledupar, Colombia (Latin America and the Caribbean)


Selected Locales in Area Developed Before 1989


Selected Locales in Expansion Area, 1989-2011


Valledupar, Colombia (Latin America and the Caribbean)
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Valledupar | Other cities in region | All other cities & Globa & rage - \\
\hline Metrics & Pre1989 & \[
\begin{gathered}
\text { 1989- } \\
2011
\end{gathered}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 21\% & 26\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 67\% & 30\% \\
\hline Average Road Width (m) & 8.9 & 6.9 \\
\hline Share of Roads less than 4 m Wide & 7\% & 14\% \\
\hline Share of Roads more than 16 m Wide & 9\% & 1\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 3.3 & 2.4 \\
\hline Average Beeline Distance to Arterial Roads (m) & 107 & 209 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 99\% & 90\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( \(>16 \mathrm{~m}\) wide) & 97\% & 86\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 38\% & 33\% \\
\hline Average Block Size (ha) & 1.3 & 2.2 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 119 & 183 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 68 & 91 \\
\hline Walkabity Ratio & 1.4 & 1.7 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & & 90 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 73\% & 89\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 0\% & 4\% \\
\hline Share of Residential Area Laid Out Before Occupation & 99\% & 95\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 23\% & 55\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 76\% & 1\% \\
\hline Share of Residential Area in Housing Projects & 0\% & 38\% \\
\hline
\end{tabular}






Victoria, Canada (Land-Rich Developed Countries)


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2013


Victoria, Canada (Land-Rich Developed Countries)
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Victoria | Other cities in region | All other cities & Globa & rage - \\
\hline Metrics & Pre1990 & \[
\begin{aligned}
& 1990- \\
& 2013
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 18\% & 17\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 2\% & 0\% \\
\hline Average Road Width (m) & 9.8 & 7.3 \\
\hline Share of Roads less than 4 m Wide & 8\% & 21\% \\
\hline Share of Roads more than 16 m Wide & 12\% & 3\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 2.0 & 1.6 \\
\hline Average Beeline Distance to Arterial Roads (m) & 185 & 260 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 96\% & 89\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( \(>16 \mathrm{~m}\) wide) & 88\% & 75\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 18\% & 2\% \\
\hline Average Block Size (ha) & 7.5 & 13.5 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 68 & 22 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 11 & 3 \\
\hline Walkabity Ratio & 1.8 & 1.3 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & & \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 778 & 725 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 83\% & 75\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 8\% & 34\% \\
\hline Share of Residential Area Laid Out Before Occupation & 91\% & 65\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 6\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 83\% & 56\% \\
\hline Share of Residential Area in Housing Projects & 7\% & 2\% \\
\hline
\end{tabular}





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Vienna, Austria (Europe and Japan)

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Selected Locales in Area Developed Before 1991


Selected Locales in Expansion Area, 1991-2013


Vienna, Austria (Europe and Japan)
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Vienna | Other cities in region | All other cities & Globa & rage \\
\hline Metrics & Pre1991 & \[
\begin{aligned}
& 1991- \\
& 2013
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 22\% & 18\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 5\% & 0\% \\
\hline Average Road Width (m) & 7.8 & 6.6 \\
\hline Share of Roads less than 4 m Wide & 23\% & 21\% \\
\hline Share of Roads more than 16 m Wide & 8\% & 0\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 2.0 & 1.8 \\
\hline Average Beeline Distance to Arterial Roads (m) & 169 & 207 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 97\% & 95\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 84\% & 70\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 18\% & 9\% \\
\hline Average Block Size (ha) & 2.8 & 4.9 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 198 & 103 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 40 & 17 \\
\hline Walkabity Ratio & 1.7 & 2.1 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & & \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 575 & 587 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 68\% & 78\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 0\% & 12\% \\
\hline Share of Residential Area Laid Out Before Occupation & 99\% & 87\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 1\% & 0\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 82\% & 80\% \\
\hline Share of Residential Area in Housing Projects & 15\% & 6\% \\
\hline
\end{tabular}





Vijayawada, India (South and Central Asia)


Selected Locales in Area Developed Before 1991


Selected Locales in Expansion Area, 1991-2014


\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Vijayawada | Other cities in region | All other cities | & Globa & rage - \\
\hline Metrics & Pre1991 & \[
\begin{aligned}
& 1991- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 19\% & 18\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 0\% \\
\hline Average Road Width (m) & 7.0 & 5.8 \\
\hline Share of Roads less than 4 m Wide & 20\% & 31\% \\
\hline Share of Roads more than 16 m Wide & 7\% & 3\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 2.0 & 1.6 \\
\hline Average Beeline Distance to Arterial Roads (m) & 161 & 221 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 99\% & 94\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 92\% & 87\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 15\% & 5\% \\
\hline Average Block Size (ha) & 1.8 & 6.8 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 158 & 130 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 34 & 17 \\
\hline Walkabity Ratio & 1.7 & 1.8 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & 281 & 195 \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 233 & 69 \\
\hline
\end{tabular}




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Vinh Long, Vietnam (Southeast Asia)

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Selected Locales in Area Developed Before 1989


Selected Locales in Expansion Area, 1989-2014


Vinh Long, Vietnam 1989-2014

\(\square\) Urban Extent in 1989
Expansion, 1989-2000

\section*{Vinh Long, Vietnam (Southeast Asia)}
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Vinh Long | Other cities in region | All other cities & Globa & rage - \\
\hline Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1989
\end{aligned}
\] & \[
\begin{aligned}
& 1989- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 16\% & 9\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 0\% \\
\hline Average Road Width (m) & 7.7 & 6.1 \\
\hline Share of Roads less than 4m Wide & 18\% & 46\% \\
\hline Share of Roads more than 16 m Wide & 3\% & 8\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 3.6 & 1.0 \\
\hline Average Beeline Distance to Arterial Roads (m) & 74 & 321 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 100\% & 83\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( \(>16 \mathrm{~m}\) wide) & 89\% & 66\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 22\% & 2\% \\
\hline Average Block Size (ha) & 1.9 & 14.4 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 92 & 33 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 23 & 6 \\
\hline Walkabity Ratio & 1.4 & 1.3 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 66\% & 66\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 46\% & 98\% \\
\hline Share of Residential Area Laid Out Before Occupation & 53\% & 1\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 1\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 53\% & 0\% \\
\hline Share of Residential Area in Housing Projects & 0\% & 0\% \\
\hline
\end{tabular}






Warsaw, Poland (Europe and Japan)


Selected Locales in Area Developed Before 1992


Selected Locales in Expansion Area, 1992-2013


Warsaw, Poland (Europe and Japan)
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Warsaw | Other cities in region | All other cities | & Glob & rage - \\
\hline Metrics & Pre1992 & \[
\begin{aligned}
& 1992- \\
& 2013
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 21\% & 15\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 4\% & 5\% \\
\hline Average Road Width (m) & 9.3 & 6.3 \\
\hline Share of Roads less than 4 m Wide & 7\% & 24\% \\
\hline Share of Roads more than 16 m Wide & 12\% & 1\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 1.9 & 1.6 \\
\hline Average Beeline Distance to Arterial Roads (m) & 185 & 214 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 96\% & 94\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 78\% & 64\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 20\% & 13\% \\
\hline Average Block Size (ha) & 6.0 & 6.9 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 29 & 79 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 19 & 17 \\
\hline Walkabity Ratio & 1.6 & 1.6 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & 22 & 1401 \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 772 & 751 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 68\% & 76\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 5\% & 14\% \\
\hline Share of Residential Area Laid Out Before Occupation & 89\% & 85\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 7\% & 36\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 66\% & 41\% \\
\hline Share of Residential Area in Housing Projects & 20\% & 7\% \\
\hline
\end{tabular}





\section*{Wuhan, Hubei, China (East Asia and the Pacific)}


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2013


Wuhan, Hubei, China (East Asia and the Pacific)
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Wuhan | Other cities in region | All other cities & Glob & rage - \\
\hline Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1990
\end{aligned}
\] & \[
\begin{aligned}
& 1990- \\
& 2013
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 16\% & 16\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 0\% \\
\hline Average Road Width (m) & 9.8 & 7.4 \\
\hline Share of Roads less than 4m Wide & 18\% & 28\% \\
\hline Share of Roads more than 16 m Wide & 19\% & 8\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 1.6 & 0.8 \\
\hline Average Beeline Distance to Arterial Roads (m) & 193 & 453 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 98\% & 75\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( \(>16 \mathrm{~m}\) wide) & 98\% & 76\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 12\% & 16\% \\
\hline Average Block Size (ha) & 5.5 & 6.9 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 63 & 80 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 7 & 15 \\
\hline Walkabity Ratio & 1.5 & 1.7 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 53\% & 64\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 7\% & 6\% \\
\hline Share of Residential Area Laid Out Before Occupation & 92\% & 93\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 8\% & 75\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 83\% & 2\% \\
\hline Share of Residential Area in Housing Projects & 0\% & 15\% \\
\hline
\end{tabular}





Xingping, Shaanxi, China (East Asia and the Pacific)


Selected Locales in Area Developed Before 1992


Selected Locales in Expansion Area, 1992-2013


Xingping, Shaanxi, China 1992-2013
\begin{tabular}{llll}
\(\square\) & 1 & \(\square\) & km
\end{tabular}
\(\square\) Urban Extent in 1992 Arterial Roads
\(\square\) Expansion, 1992-2000
Expansion, 2000-2013

Xingping, Shaanxi, China (East Asia and the Pacific)
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Xingping | Other cities in region | All other cities & Globa & rage - \\
\hline Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1992
\end{aligned}
\] & \[
\begin{aligned}
& 1992- \\
& 2013
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 20\% & 24\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 0\% \\
\hline Average Road Width (m) & 8.5 & 9.2 \\
\hline Share of Roads less than 4 m Wide & 21\% & 34\% \\
\hline Share of Roads more than 16 m Wide & 22\% & 18\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km \({ }^{\text {2 }}\) ) & 1.8 & 1.3 \\
\hline Average Beeline Distance to Arterial Roads (m) & 136 & 259 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 100\% & 92\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( \(>16 \mathrm{~m}\) wide) & 100\% & 91\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 10\% & 8\% \\
\hline Average Block Size (ha) & 3.7 & 7.4 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 53 & 106 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 10 & 13 \\
\hline Walkabity Ratio & 1.4 & 1.6 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 67\% & 56\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 89\% & 44\% \\
\hline Share of Residential Area Laid Out Before Occupation & 10\% & 55\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 38\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 0\% & 1\% \\
\hline Share of Residential Area in Housing Projects & 10\% & 15\% \\
\hline
\end{tabular}




Xucheng, Jiangsu, China (East Asia and the Pacific)


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2013


Xucheng, Jiangsu, China 1990-2013


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Urban Extent in 1990
Arterial Roads
Expansion, 1990-2000
Expansion, 2000-2013

\section*{Xucheng, Jiangsu, China (East Asia and the Pacific)}

\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Xucheng | Other cities in region | All other cities & Globa & rage - \\
\hline Metrics & \begin{tabular}{l}
Pre- \\
1990
\end{tabular} & \[
\begin{aligned}
& 1990- \\
& 2013
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 27\% & 28\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 0\% \\
\hline Average Road Width (m) & 5.5 & 5.8 \\
\hline Share of Roads less than 4m Wide & 47\% & 45\% \\
\hline Share of Roads more than 16 m Wide & 3\% & 4\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 1.6 & 1.5 \\
\hline Average Beeline Distance to Arterial Roads (m) & 243 & 241 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 90\% & 91\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 79\% & 70\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 10\% & 12\% \\
\hline Average Block Size (ha) & 2.8 & 2.4 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 204 & 282 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 31 & 42 \\
\hline Walkabity Ratio & 1.6 & 1.5 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & & \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 293 & 292 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 56\% & 61\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 69\% & 45\% \\
\hline Share of Residential Area Laid Out Before Occupation & 30\% & 54\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 24\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 30\% & 29\% \\
\hline Share of Residential Area in Housing Projects & 0\% & 0\% \\
\hline
\end{tabular}





Yamaguchi, Japan (Europe and Japan)


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2014



Yamaguchi, Japan 1990-2014

\(\square\) Urban Extent in 1990
Arterial Roads
- Expansion, 1990-1999

Expansion, 1999-2014

Yamaguchi, Japan (Europe and Japan)
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Yamaguchi | Other cities in region | All other cities & Globa & rage \\
\hline Metrics & Pre1990 & \[
\begin{aligned}
& 1990- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 23\% & 15\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 0\% \\
\hline Average Road Width (m) & 8.6 & 3.3 \\
\hline Share of Roads less than 4 m Wide & 31\% & 75\% \\
\hline Share of Roads more than 16 m Wide & 16\% & 2\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 0.9 & 0.6 \\
\hline Average Beeline Distance to Arterial Roads (m) & 451 & 836 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 69\% & 59\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 69\% & 57\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 10\% & 16\% \\
\hline Average Block Size (ha) & 3.0 & 3.8 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 147 & 178 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 21 & 32 \\
\hline Walkabity Ratio & 1.7 & 1.5 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & 440 & 474 \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 331 & \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 70\% & 71\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 0\% & 0\% \\
\hline Share of Residential Area Laid Out Before Occupation & 99\% & 99\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 51\% & 97\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 25\% & 0\% \\
\hline Share of Residential Area in Housing Projects & 23\% & 1\% \\
\hline
\end{tabular}





Yanggu, Shandong, China (East Asia and the Pacific)


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2014


Yanggu, Shandong, China 1990-2014


Urban Extent in 1990
Expansion, 1990-2000
\(\square\) Expansion, 2000-2014

\section*{Yanggu, Shandong, China (East Asia and the Pacific)}

\section*{Legend for Charts}
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Yanggu | Other cities in region | All other cities & Glob & rage - \\
\hline Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1990
\end{aligned}
\] & \[
\begin{aligned}
& 1990- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 16\% & 15\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 0\% \\
\hline Average Road Width (m) & 10.7 & 6.8 \\
\hline Share of Roads less than 4 m Wide & 17\% & 48\% \\
\hline Share of Roads more than 16 m Wide & 18\% & 10\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 1.6 & 0.8 \\
\hline Average Beeline Distance to Arterial Roads (m) & 263 & 481 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 91\% & 77\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( \(>16 \mathrm{~m}\) wide) & 91\% & 71\% \\
\hline
\end{tabular}

Block Size, Plot Size, Intersection Density, and Walkability
\begin{tabular}{llc} 
Share of Intersections that are 4-way & \(10 \%\) & \(5 \%\) \\
\hline Average Block Size (ha) & 10.4 & 13.1 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 40 & 63 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 5 & 5 \\
\hline Walkabity Ratio & 1.7 & 1.3
\end{tabular}

Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) )
Average Plot Size in Formal Subdivisions \(\left(\mathrm{m}^{2}\right)\)
Stages in the Evolution of Residential Layouts
\begin{tabular}{|lcc|}
\hline Share of Built-Up Area in Residential Use & \(63 \%\) & \(78 \%\) \\
\hline Share of Residential Area Not Laid Out Before Occupation & \(62 \%\) & \(70 \%\) \\
\hline Share of Residential Area Laid Out Before Occupation & \(37 \%\) & \(29 \%\) \\
\hline Share of Residential Area in Informal Land Subdivisions & \(6 \%\) & \(24 \%\) \\
\hline Share of Residential Area in Formal Land Subdivisions & \(24 \%\) & \(3 \%\) \\
\hline Share of Residential Area in Housing Projects & \(6 \%\) & \(1 \%\) \\
\hline
\end{tabular}





Yiyang, Hunan, China (East Asia and the Pacific)


Selected Locales in Area Developed Before 1994


Selected Locales in Expansion Area, 1994-2013


Yiyang, Hunan, China 1994-2013
\begin{tabular}{lllll} 
■■ & ■ & 2 & 4 & 6
\end{tabular}
\(\square\) Urban Extent in 1994 Arterial Roads
\(\square\) Expansion, 1994-1999
- Expansion, 1999-2013

Yiyang, Hunan, China (East Asia and the Pacific)
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Yiyang | Other cities in region | All other cities & Glob & rage - \\
\hline Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1994
\end{aligned}
\] & \[
\begin{aligned}
& 1994- \\
& 2013
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 19\% & 20\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 0\% \\
\hline Average Road Width (m) & 6.7 & 6.0 \\
\hline Share of Roads less than 4 m Wide & 43\% & 48\% \\
\hline Share of Roads more than 16 m Wide & 10\% & 6\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km \({ }^{\text {2 }}\) ) & 1.8 & 1.0 \\
\hline Average Beeline Distance to Arterial Roads (m) & 324 & 591 \\
\hline Share of Urban Extent Within Walking Distance ( 625 m ) of all Arterial Roads & 83\% & 71\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( \(>16 \mathrm{~m}\) wide) & 96\% & 60\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 8\% & 7\% \\
\hline Average Block Size (ha) & 2.7 & 5.8 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 187 & 156 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 24 & 18 \\
\hline Walkabity Ratio & 1.6 & 1.5 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & & \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 433 & \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 51\% & 56\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 57\% & 72\% \\
\hline Share of Residential Area Laid Out Before Occupation & 42\% & 27\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 1\% & 11\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 26\% & 8\% \\
\hline Share of Residential Area in Housing Projects & 14\% & 8\% \\
\hline
\end{tabular}




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Yucheng, Zhejiang, China (East Asia and the Pacific)
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Yucheng, Zhejiang, China (East Asia and the Pacific)
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Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2014


\section*{Yucheng, Zhejiang, China (East Asia and the Pacific)}

\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Yucheng | Other cities in region | All other cities & Globa & rage - \\
\hline Metrics & Pre1990 & \[
\begin{aligned}
& 1990- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 16\% & 15\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 0\% \\
\hline Average Road Width (m) & 8.6 & 6.9 \\
\hline Share of Roads less than 4 m Wide & 30\% & 45\% \\
\hline Share of Roads more than 16 m Wide & 15\% & 9\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 1.8 & 1.0 \\
\hline Average Beeline Distance to Arterial Roads (m) & 208 & 616 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 97\% & 72\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 97\% & 66\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 9\% & 5\% \\
\hline Average Block Size (ha) & 4.5 & 5.1 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 73 & 91 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 9 & 6 \\
\hline Walkabity Ratio & 1.8 & 1.7 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & & 187 \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & 305 & 141 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 59\% & 69\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 51\% & 70\% \\
\hline Share of Residential Area Laid Out Before Occupation & 48\% & 29\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 12\% & 10\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 31\% & 10\% \\
\hline Share of Residential Area in Housing Projects & 5\% & 8\% \\
\hline
\end{tabular}





Area w/n Walking Distance of Wide Arterial Roads, ~1990 - ~2014


Yulin, Guangxi, China (East Asia and the Pacific)


Selected Locales in Area Developed Before 1991


Selected Locales in Expansion Area, 1991-2009


Yulin, Guangxi, China 1991-2009


\(\square\) Urban Extent in 1991


Expansion, 1991-2000
Expansion, 2000-2009

\section*{Yulin, Guangxi, China (East Asia and the Pacific)}
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Yulin | Other cities in region | All other cities & Globa & rage - \\
\hline Metrics & Pre1991 & \[
\begin{aligned}
& 1991- \\
& 2009
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 22\% & 20\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 0\% \\
\hline Average Road Width (m) & 8.1 & 8.5 \\
\hline Share of Roads less than 4 m Wide & 32\% & 31\% \\
\hline Share of Roads more than 16 m Wide & 16\% & 13\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 2.0 & 0.8 \\
\hline Average Beeline Distance to Arterial Roads (m) & 181 & 527 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 98\% & 80\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 98\% & 76\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 10\% & 7\% \\
\hline Average Block Size (ha) & 4.1 & 5.7 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 142 & 111 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 14 & 16 \\
\hline Walkabity Ratio & 1.9 & 1.6 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & & 333 \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & & 357 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 48\% & 53\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 13\% & 28\% \\
\hline Share of Residential Area Laid Out Before Occupation & 86\% & 71\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 45\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 50\% & 1\% \\
\hline Share of Residential Area in Housing Projects & 35\% & 24\% \\
\hline
\end{tabular}





Zhengzhou, Henan, China (East Asia and the Pacific)

Selected Locales in Area Developed Before 1992


Selected Locales in Expansion Area, 1992-2015


Zhengzhou, Henan, China 1992-2015
\begin{tabular}{llll}
\(\square\) & \(\square\) & \(\square\) & \(\square\)
\end{tabular}

```

Urban Extent in 1992 Arterial Roads
Expansion, 1992-2000
Expansion, 2000-2015

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Zhengzhou, Henan, China (East Asia and the Pacific)


\section*{Legend for Charts}
\begin{tabular}{|c|c|c|c|c|}
\hline \multicolumn{5}{|c|}{Legend for Charts} \\
\hline Zhengzhou & Other cities in region | & All other cities & \multicolumn{2}{|l|}{Global average -} \\
\hline Metrics & & & \[
\begin{aligned}
& \text { Pre- } \\
& 1992
\end{aligned}
\] & \[
\begin{aligned}
& 1992- \\
& 2015
\end{aligned}
\] \\
\hline \multicolumn{5}{|c|}{Roads} \\
\hline \multicolumn{3}{|l|}{Share of Built-Up Area Occupied by Roads} & 23\% & 22\% \\
\hline \multicolumn{3}{|l|}{Share of Built-Up Area that is Gridded or Partially Gridded} & 0\% & 0\% \\
\hline \multicolumn{3}{|l|}{Average Road Width (m)} & 6.1 & 6.8 \\
\hline \multicolumn{3}{|l|}{Share of Roads less than 4 m Wide} & 39\% & 33\% \\
\hline \multicolumn{3}{|l|}{Share of Roads more than 16 m Wide} & 5\% & 7\% \\
\hline
\end{tabular}
\begin{tabular}{|lll|}
\hline \multicolumn{4}{|c|}{ Arterial Roads } \\
\hline Density of Arterial Roads \(\left(\mathrm{km} / \mathrm{km}^{2}\right)\) & 0.7 & 0.6 \\
\hline Average Beeline Distance to Arterial Roads (m) & 662 & 876 \\
\hline \begin{tabular}{l} 
Share of Urban Extent Within Walking Distance \\
\((625 \mathrm{~m})\) of all Arterial Roads
\end{tabular} & \(59 \%\) & \(56 \%\) \\
\hline \begin{tabular}{l} 
Share of Urban Extent Within Walking Distance \\
of Wide Arterial Roads (>16m wide)
\end{tabular} & \(50 \%\) & \(47 \%\) \\
\hline
\end{tabular}

Block Size, Plot Size, Intersection Density, and Walkability
\begin{tabular}{|lll|}
\hline Share of Intersections that are 4-way & \(7 \%\) & \(8 \%\) \\
\hline Average Block Size (ha) & 5.3 & 5.8 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 144 & 110 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 21 & 18 \\
\hline Walkabity Ratio & 1.5 & 1.8 \\
\hline Average Plot Size in Informal Subdivisions (m²) & 275 & 206 \\
\hline Average Plot Size in Formal Subdivisions (m²) & 275 \\
\hline \multicolumn{1}{|c|}{ Stages in the Evolution of Residential Layouts } & \\
\hline Share of Built-Up Area in Residential Use & \(73 \%\) & \(68 \%\) \\
\hline Share of Residential Area Not Laid Out Before Occupation & \(70 \%\) & \(58 \%\) \\
\hline Share of Residential Area Laid Out Before Occupation & \(29 \%\) & \(41 \%\) \\
\hline Share of Residential Area in Informal Land Subdivisions & \(10 \%\) & \(12 \%\) \\
\hline Share of Residential Area in Formal Land Subdivisions & \(10 \%\) & \(12 \%\) \\
\hline Share of Residential Area in Housing Projects & \(8 \%\) & \(17 \%\) \\
\hline
\end{tabular}






\section*{Zhuji, Zhejiang, China (East Asia and the Pacific)}


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2013


Zhuji, Zhejiang, China 1990-2013

\(\square\) Urban Extent in 1990
Arterial Roads
Expansion, 1990-2000
Expansion, 2000-2013

Zhuji, Zhejiang, China (East Asia and the Pacific)
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Zhuji | Other cities in region | All other cities & Globa & rage \\
\hline Metrics & Pre1990 & \[
\begin{aligned}
& 1990- \\
& 2013
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 20\% & 16\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 0\% \\
\hline Average Road Width (m) & 7.6 & 7.2 \\
\hline Share of Roads less than 4 m Wide & 28\% & 32\% \\
\hline Share of Roads more than 16 m Wide & 11\% & 10\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 2.2 & 1.4 \\
\hline Average Beeline Distance to Arterial Roads (m) & 163 & 234 \\
\hline Share of Urban Extent Within Walking Distance (625m) of all Arterial Roads & 100\% & 92\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads (>16m wide) & 100\% & 77\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 5\% & 5\% \\
\hline Average Block Size (ha) & 7.3 & 7.2 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 117 & 68 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 9 & 7 \\
\hline Walkabity Ratio & 2.5 & 1.9 \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline \multicolumn{3}{|l|}{Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) )} \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 51\% & 50\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 28\% & 54\% \\
\hline Share of Residential Area Laid Out Before Occupation & 71\% & 45\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 2\% & 12\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 39\% & 10\% \\
\hline Share of Residential Area in Housing Projects & 29\% & 23\% \\
\hline
\end{tabular}




\section*{Zunyi, Guizhou, China (East Asia and the Pacific)}


Selected Locales in Area Developed Before 1988


Selected Locales in Expansion Area, 1988-2013


\section*{Zunyi, Guizhou, China (East Asia and the Pacific)}

\section*{Legend for Charts}
\begin{tabular}{|c|c|c|c|c|}
\hline \multicolumn{5}{|c|}{Legend for Charts} \\
\hline Zunyi & Other cities in region | & All other cities & \multicolumn{2}{|l|}{Global average -} \\
\hline Metrics & & & \[
\begin{aligned}
& \text { Pre- } \\
& 1988
\end{aligned}
\] & \[
\begin{aligned}
& 1988- \\
& 2013
\end{aligned}
\] \\
\hline \multicolumn{5}{|c|}{Roads} \\
\hline \multicolumn{3}{|l|}{Share of Built-Up Area Occupied by Roads} & 22\% & 26\% \\
\hline \multicolumn{3}{|l|}{Share of Built-Up Area that is Gridded or Partially Gridded} & 0\% & 0\% \\
\hline \multicolumn{3}{|l|}{Average Road Width (m)} & 4.7 & 6.6 \\
\hline \multicolumn{3}{|l|}{Share of Roads less than 4 m Wide} & 49\% & 34\% \\
\hline \multicolumn{3}{|l|}{Share of Roads more than 16 m Wide} & 3\% & 7\% \\
\hline
\end{tabular}
\begin{tabular}{|lll|}
\hline \multicolumn{4}{|c|}{ Arterial Roads } \\
\hline Density of Arterial Roads \(\left(\mathrm{km} / \mathrm{km}^{2}\right)\) & 1.7 & 1.5 \\
\hline Average Beeline Distance to Arterial Roads (m) & 214 & 242 \\
\hline \begin{tabular}{l} 
Share of Urban Extent Within Walking Distance \\
\((625 \mathrm{~m})\) of all Arterial Roads
\end{tabular} & \(95 \%\) & \(93 \%\) \\
\begin{tabular}{l} 
Share of Urban Extent Within Walking Distance \\
of Wide Arterial Roads (>16m wide)
\end{tabular} & \(92 \%\) & \(90 \%\) \\
\hline
\end{tabular}

Block Size, Plot Size, Intersection Density, and Walkability
\begin{tabular}{|lll|}
\hline Share of Intersections that are 4-way & \(10 \%\) & \(15 \%\) \\
\hline Average Block Size (ha) & 1.9 & 4.1 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 329 & 207 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 43 & 47 \\
\hline Walkabity Ratio & 1.8 & 1.8 \\
\hline Average Plot Size in Informal Subdivisions (m²) & 646 & 1219 \\
\hline Average Plot Size in Formal Subdivisions (m²) & & \\
\hline \multicolumn{1}{|c|}{ Stages in the Evolution of Residential Layouts } & \\
\hline Share of Built-Up Area in Residential Use & \(63 \%\) & \(64 \%\) \\
\hline Share of Residential Area Not Laid Out Before Occupation & \(8 \%\) & \(19 \%\) \\
\hline Share of Residential Area Laid Out Before Occupation & \(91 \%\) & \(80 \%\) \\
\hline Share of Residential Area in Informal Land Subdivisions & \(0 \%\) & \(3 \%\) \\
\hline Share of Residential Area in Formal Land Subdivisions & \(30 \%\) & \(46 \%\) \\
\hline Share of Residential Area in Housing Projects & \(60 \%\) & \(30 \%\) \\
\hline
\end{tabular}






\section*{Zwolle, Netherlands (Europe and Japan)}


Selected Locales in Area Developed Before 1990


Selected Locales in Expansion Area, 1990-2014


Zwolle, Netherlands 1990-2014

\(\square\) Expansion, 1990-2000
—Expansion, 2000-2014

Zwolle, Netherlands (Europe and Japan)
\begin{tabular}{|c|c|c|}
\hline \multicolumn{3}{|l|}{Legend for Charts} \\
\hline Zwolle | Other cities in region | All other cities & Globa & rage \\
\hline Metrics & Pre1990 & \[
\begin{aligned}
& 1990- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{3}{|l|}{Roads} \\
\hline Share of Built-Up Area Occupied by Roads & 16\% & 26\% \\
\hline Share of Built-Up Area that is Gridded or Partially Gridded & 0\% & 0\% \\
\hline Average Road Width (m) & 8.8 & 6.6 \\
\hline Share of Roads less than 4m Wide & 12\% & 34\% \\
\hline Share of Roads more than 16 m Wide & 10\% & 7\% \\
\hline \multicolumn{3}{|l|}{Arterial Roads} \\
\hline Density of Arterial Roads (km/km²) & 1.7 & 1.5 \\
\hline Average Beeline Distance to Arterial Roads (m) & 214 & 242 \\
\hline Share of Urban Extent Within Walking Distance ( 625 m ) of all Arterial Roads & 95\% & 93\% \\
\hline Share of Urban Extent Within Walking Distance of Wide Arterial Roads ( \(>16 \mathrm{~m}\) wide) & 92\% & 90\% \\
\hline \multicolumn{3}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-way & 7\% & 15\% \\
\hline Average Block Size (ha) & 5.7 & 4.1 \\
\hline 3-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 61 & 207 \\
\hline 4-way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 8 & 47 \\
\hline Walkabity Ratio & 1.8 & 1.8 \\
\hline Average Plot Size in Informal Subdivisions ( \(\mathrm{m}^{2}\) ) & 962 & \\
\hline Average Plot Size in Formal Subdivisions ( \(\mathrm{m}^{2}\) ) & & 1219 \\
\hline \multicolumn{3}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-Up Area in Residential Use & 72\% & 64\% \\
\hline Share of Residential Area Not Laid Out Before Occupation & 22\% & 53\% \\
\hline Share of Residential Area Laid Out Before Occupation & 77\% & 46\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 37\% & 3\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 37\% & 46\% \\
\hline Share of Residential Area in Housing Projects & 9\% & 30\% \\
\hline
\end{tabular}





Area w/n Walking Distance of Wide Arterial Roads, ~1990 - ~2014


\section*{Maps and Metrics for 30 Cities, 1900-2014}

The following pages provide maps and metrics for a representative group of 30 cities, 27 of which are in the global sample of 200 cities. The cities are arranged in alphabetical order. The Index at the end of the volume lists them by country and by world region. There are two pages for every city. The left hand pages provide six high-resolution satellite images of typical locales developed at five approximate time periods: pre-1900, 1900-1930, 1930-1960, 1960-1990, and 1990-2014. Below these images, there is a map showing the network of arterial roads overlaid on a map of the city's historical expansion, \(\sim 1900\) to ~2014. The right hand pages provide a table with metric values for each of five periods, as well as three charts with metric values associated with the different attributes of urban layouts in the city at different time periods and their comparison to the average of the 30 cities in the group.

Accra, Ghana (Sub-Saharan Africa 1903 - 2014)


1903


1991


1929


2000


2014



\begin{tabular}{|c|c|c|c|c|c|}
\hline Urban Layout Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1903
\end{aligned}
\] & \[
1903 \text { - }
\] & \[
\begin{array}{r}
1929 \\
1966
\end{array}
\] & \[
\begin{gathered}
1966-1 \\
1991
\end{gathered}
\] & \[
\begin{gathered}
1991- \\
2014
\end{gathered}
\] \\
\hline \multicolumn{6}{|l|}{Roads} \\
\hline Share of Built-up Area Occupied by Roads & & 17\% & 15\% & 15\% & 17\% \\
\hline Share of Built-up Area That Is Gridded & & 40\% & 24\% & 15\% & 11\% \\
\hline Share of Roads Less Than 4 Meters Wide & & 6\% & 9\% & 11\% & 27\% \\
\hline Share of Roads More Than 16 Meters Wide & & 10\% & 5\% & 7\% & 2\% \\
\hline \multicolumn{6}{|l|}{Arterial Roads} \\
\hline Total Area of Zone ( \(\mathrm{km}^{2}\) ) & & 3 & 37 & 156 & 682 \\
\hline Total Length of Arterial Roads ( \(\mathrm{km}^{2}\) ) & & 2 & 37 & 141 & 60 \\
\hline Density of All Arterial Roads (km/km²) & & 0.81 & 1.01 & 0.92 & 0.09 \\
\hline Average Beeline Distance to All Arterial Roads (meters) & & 254 & 364 & 471 & 2,915 \\
\hline Share of Area within Walking Distance of All Arterial Roads & & 95\% & 82\% & 71\% & 14\% \\
\hline \multicolumn{6}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-Way & & 40\% & 25\% & 10\% & 8\% \\
\hline Average Block Size (ha) & & 4.0 & 5.7 & 7.0 & 3.5 \\
\hline 4-Way Intersection Density (number per \(\mathrm{km}^{2}\) ) & & 29 & 15 & 9 & 12 \\
\hline Walkability Ratio & & 1.6 & 1.8 & 1.6 & 1.7 \\
\hline Average Plot Size in Informal Land Subdivisions & & 417 & 688 & 757 & \\
\hline Average Plot Size in Formal Land Subdivisions & & 583 & 528 & & \\
\hline \multicolumn{6}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-up Area That Is Residential & & 43\% & 59\% & 70\% & 82\% \\
\hline Share of Residential Areas Not Laid Out Before Development & & 42\% & 40\% & 65\% & 47\% \\
\hline Share of Residential Areas Laid Out Before Development & & 58\% & 60\% & 55\% & 53\% \\
\hline Share of Residential Area in Informal Land Subdivisions & & 24\% & 27\% & 31\% & 45\% \\
\hline Share of Residential Area in Formal Land Subdivisions & & 18\% & 16\% & 4\% & 7\% \\
\hline Share of Residential Area in Housing Projects & & 16\% & 17\% & 1\% & 0\% \\
\hline
\end{tabular}

Average Block Size (hectares)


Share of Area Within Walking Distance of Arterial Road (625m)


Share of Roads Less Than 4-meters Wide


Algiers, Algeria (Northern Africa 1903 - 2014)


A CBD
Study area
Water
1903
1929
1972
\begin{tabular}{|l|ll}
\hline 1987 & SBD \\
\hline 2000 & & Study area \\
\hline & & \\
\hline & Arterial Roads & \\
\hline
\end{tabular}
\begin{tabular}{|llllll|}
\hline Algiers, Algeria (Northern Africa \(1903-2014)\) & & & & & \\
\hline
\end{tabular}

Average Block Size (hectares)


Share of Area Within Walking Distance of Arterial Road (625m)


Share of Roads Less Than 4-meters Wide


Bangkok, Thailand (Southeast Asia 1900 - 2015)



1900


1988


1922


2002


1953


2015


\begin{tabular}{|c|c|c|c|c|c|}
\hline Urban Layout Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1900
\end{aligned}
\] & \[
\begin{array}{r}
1900- \\
1922
\end{array}
\] & \[
\begin{gathered}
1922 \\
1953
\end{gathered}
\] & \[
\begin{gathered}
1953- \\
1988
\end{gathered}
\] & \[
\begin{array}{r}
1988- \\
2015
\end{array}
\] \\
\hline \multicolumn{6}{|l|}{Roads} \\
\hline Share of Built-up Area Occupied by Roads & 18\% & 15\% & 18\% & 21\% & 11\% \\
\hline Share of Built-up Area That Is Gridded & 8\% & 0\% & 3\% & 8\% & 3\% \\
\hline Share of Roads Less Than 4 Meters Wide & 19\% & 23\% & 14\% & 17\% & 27\% \\
\hline Share of Roads More Than 16 Meters Wide & 17\% & 12\% & 15\% & 10\% & 9\% \\
\hline \multicolumn{6}{|l|}{Arterial Roads} \\
\hline Total Area of Zone (km²) & 35 & 13 & 57 & 1538 & 2966 \\
\hline Total Length of Arterial Roads ( \(\mathrm{km}^{2}\) ) & 89 & 28 & 82 & 1390 & 1667 \\
\hline Density of All Arterial Roads (km/km²) & 2.55 & 2.16 & 1.42 & 0.90 & 0.47 \\
\hline Average Beeline Distance to All Arterial Roads (meters) & 138 & 221 & 240 & 549 & 921 \\
\hline Share of Area within Walking Distance of All Arterial Roads & 99\% & 94\% & 95\% & 69\% & 49\% \\
\hline \multicolumn{6}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-Way & 14\% & 7\% & 10\% & 9\% & 12\% \\
\hline Average Block Size (ha) & 4.1 & 6.4 & 6.3 & 9.0 & 5.5 \\
\hline 4-Way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 13 & 4 & 5 & 5 & 7 \\
\hline Walkability Ratio & 1.6 & 1.6 & 1.7 & 1.5 & 1.0 \\
\hline \multicolumn{6}{|l|}{Average Plot Size in Informal Land Subdivisions} \\
\hline Average Plot Size in Formal Land Subdivisions & & & 295 & 216 & \\
\hline \multicolumn{6}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-up Area That Is Residential & 43\% & 50\% & 47\% & 51\% & 30\% \\
\hline Share of Residential Areas Not Laid Out Before Development & 87\% & 94\% & 93\% & 61\% & 35\% \\
\hline Share of Residential Areas Laid Out Before Development & 13\% & 6\% & 7\% & 39\% & 65\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 0\% & 0\% & 0\% & 31\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 13\% & 6\% & 5\% & 27\% & 25\% \\
\hline Share of Residential Area in Housing Projects & 0\% & 1\% & 2\% & 11\% & 46\% \\
\hline
\end{tabular}

Average Block Size (hectares)


Share of Area Within Walking Distance of Arterial Road (625m)


Share of Roads Less Than 4-meters Wide


Beijing, China (Eastern Asia \& the Pacific 1900 - 2013)
***


Beijing, China



1900
1929
1959

```

                                    1988
                                    1999
    2013
Arterial Roads

```
* CBD

Study area
Water
No data
\begin{tabular}{|c|c|c|c|c|c|}
\hline Urban Layout Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1900
\end{aligned}
\] & \[
\begin{array}{r}
1900 \\
1929
\end{array}
\] & \[
\begin{gathered}
1929- \\
1959
\end{gathered}
\] & \[
\begin{gathered}
1959- \\
1988
\end{gathered}
\] & \[
\begin{gathered}
1988- \\
2013
\end{gathered}
\] \\
\hline \multicolumn{6}{|l|}{Roads} \\
\hline Share of Built-up Area Occupied by Roads & 23\% & 32\% & 24\% & 24\% & 12\% \\
\hline Share of Built-up Area That Is Gridded & 3\% & 4\% & 3\% & 3\% & 3\% \\
\hline Share of Roads Less Than 4 Meters Wide & 27\% & 21\% & 18\% & 41\% & 22\% \\
\hline Share of Roads More Than 16 Meters Wide & 19\% & 29\% & 25\% & 16\% & 15\% \\
\hline \multicolumn{6}{|l|}{Arterial Roads} \\
\hline Total Area of Zone (km²) & 55 & 6 & 107 & 2628 & 1301 \\
\hline Total Length of Arterial Roads ( \(\mathrm{km}^{2}\) ) & 204 & 22 & 351 & 3525 & 1821 \\
\hline Density of All Arterial Roads (km/km²) & 3.69 & 3.89 & 3.26 & 1.34 & 0.67 \\
\hline Average Beeline Distance to All Arterial Roads (meters) & 103 & 102 & 123 & 791 & 573 \\
\hline Share of Area within Walking Distance of All Arterial Roads & 100\% & 100\% & 99\% & 67\% & 71\% \\
\hline \multicolumn{6}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-Way & 13\% & 15\% & 9\% & 7\% & 18\% \\
\hline Average Block Size (ha) & 4.7 & 3.7 & 8.4 & 9.4 & 2.6 \\
\hline 4-Way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 10 & 14 & 6 & 12 & 36 \\
\hline Walkability Ratio & 1.5 & 1.4 & 1.6 & 1.7 & 0.8 \\
\hline Average Plot Size in Informal Land Subdivisions & & & & 377 & \\
\hline Average Plot Size in Formal Land Subdivisions & & & & 421 & \\
\hline \multicolumn{6}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-up Area That Is Residential & 44\% & 30\% & 29\% & 32\% & 20\% \\
\hline Share of Residential Areas Not Laid Out Before Development & 35\% & 26\% & 5\% & 61\% & 11\% \\
\hline Share of Residential Areas Laid Out Before Development & 65\% & 74\% & 95\% & 39\% & 89\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 0\% & 0\% & 33\% & 48\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 21\% & 6\% & 23\% & 4\% & 38\% \\
\hline Share of Residential Area in Housing Projects & 44\% & 68\% & 72\% & 43\% & 47\% \\
\hline
\end{tabular}

Average Block Size (hectares)


Share of Area Within Walking Distance of Arterial Road (625m)


Share of Roads Less Than 4-meters Wide


Buenos Aires, Argentina (Latin America \& the Caribbean 1887- 2014)


1887


1989


1918


2001


1964


2014


\begin{tabular}{|c|c|c|c|c|c|}
\hline Urban Layout Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1887
\end{aligned}
\] & \[
\begin{aligned}
& 1887-1918
\end{aligned}
\] & \[
\begin{gathered}
1918- \\
1964
\end{gathered}
\] & \[
\begin{gathered}
1964- \\
1989
\end{gathered}
\] & \[
\begin{gathered}
1989- \\
2014
\end{gathered}
\] \\
\hline \multicolumn{6}{|l|}{Roads} \\
\hline Share of Built-up Area Occupied by Roads & 27\% & 26\% & 26\% & 25\% & 6\% \\
\hline Share of Built-up Area That Is Gridded & 100\% & 90\% & 90\% & 70\% & 73\% \\
\hline Share of Roads Less Than 4 Meters Wide & 2\% & 3\% & 3\% & 4\% & 12\% \\
\hline Share of Roads More Than 16 Meters Wide & 29\% & 19\% & 13\% & 10\% & 3\% \\
\hline \multicolumn{6}{|l|}{Arterial Roads} \\
\hline Total Area of Zone (km²) & 20 & 491 & 496 & 827 & 1941 \\
\hline Total Length of Arterial Roads ( \(\mathrm{km}^{2}\) ) & 59 & 655 & 467 & 462 & 4164 \\
\hline Density of All Arterial Roads (km/km²) & 2.69 & 1.33 & 0.94 & 0.56 & 1.22 \\
\hline Average Beeline Distance to All Arterial Roads (meters) & 104 & 352 & 468 & 809 & 349 \\
\hline Share of Area within Walking Distance of All Arterial Roads & 100\% & 82\% & 73\% & 52\% & 82\% \\
\hline \multicolumn{6}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-Way & 86\% & 50\% & 54\% & 41\% & 25\% \\
\hline Average Block Size (ha) & 1.8 & 2.8 & 1.8 & 3.5 & 3.6 \\
\hline 4-Way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 58 & 46 & 54 & 37 & 42 \\
\hline Walkability Ratio & 1.3 & 1.4 & 1.4 & 1.5 & 0.5 \\
\hline Average Plot Size in Informal Land Subdivisions & & 332 & 277 & & 103 \\
\hline Average Plot Size in Formal Land Subdivisions & 168 & 197 & 311 & 324 & \\
\hline \multicolumn{6}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-up Area That Is Residential & 43\% & 52\% & 62\% & 52\% & 67\% \\
\hline Share of Residential Areas Not Laid Out Before Development & 0\% & 4\% & 2\% & 0\% & 13\% \\
\hline Share of Residential Areas Laid Out Before Development & 100\% & 96\% & 98\% & 100\% & 87\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 6\% & 45\% & 65\% & 28\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 100\% & 89\% & 51\% & 34\% & 17\% \\
\hline Share of Residential Area in Housing Projects & 0\% & 1\% & 2\% & 1\% & 18\% \\
\hline
\end{tabular}

Average Block Size (hectares)


Share of Area Within Walking Distance of Arterial Road (625m)


Share of Roads Less Than 4-meters Wide


\section*{Cairo, Egypt (Western Asia and North Africa 1897- 2013)}


1992


1927


2003


1960




2013

Cairo, Egypt
\(1897-2013\)
\begin{tabular}{lll|l|l|l|}
\hline & \(\mid\) & \(\mid\) & \(\mid\) & \(\mid\) & \(\mid\) \\
0 & 5 & 10 & 20 km
\end{tabular}

\(\square\)

\begin{tabular}{|c|c|c|c|c|c|}
\hline Urban Layout Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1987
\end{aligned}
\] & \[
\begin{gathered}
1897- \\
1927
\end{gathered}
\] & \[
\begin{gathered}
1927- \\
1960
\end{gathered}
\] & \[
\begin{array}{r}
1960- \\
1992
\end{array}
\] & \[
\begin{gathered}
1992 \\
2013
\end{gathered}
\] \\
\hline \multicolumn{6}{|l|}{Roads} \\
\hline Share of Built-up Area Occupied by Roads & 23\% & 27\% & 29\% & 21\% & 12\% \\
\hline Share of Built-up Area That Is Gridded & 15\% & 13\% & 17\% & 5\% & 8\% \\
\hline Share of Roads Less Than 4 Meters Wide & 38\% & 14\% & 14\% & 14\% & 26\% \\
\hline Share of Roads More Than 16 Meters Wide & 13\% & 24\% & 26\% & 18\% & 19\% \\
\hline \multicolumn{6}{|l|}{Arterial Roads} \\
\hline Total Area of Zone (km²) & 16 & 20 & 29 & 550 & 1368 \\
\hline Total Length of Arterial Roads ( \(\mathrm{km}^{2}\) ) & 45 & 82 & 122 & 1294 & 1560 \\
\hline Density of All Arterial Roads (km/km²) & 2.85 & 4.14 & 4.25 & 2.35 & 1.13 \\
\hline Average Beeline Distance to All Arterial Roads (meters) & 137 & 101 & 97 & 488 & 584 \\
\hline Share of Area within Walking Distance of All Arterial Roads & 100\% & 100\% & 100\% & 81\% & 68\% \\
\hline \multicolumn{6}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-Way & 14\% & 25\% & 26\% & 14\% & 16\% \\
\hline Average Block Size (ha) & 1.1 & 1.9 & 2.6 & 5.0 & 4.5 \\
\hline 4-Way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 44 & 46 & 49 & 20 & 36 \\
\hline Walkability Ratio & 1.5 & 1.6 & 1.6 & 1.6 & 0.6 \\
\hline Average Plot Size in Informal Land Subdivisions & 128 & 148 & 87 & 77 & 190 \\
\hline Average Plot Size in Formal Land Subdivisions & 332 & 665 & 618 & 486 & 217 \\
\hline \multicolumn{6}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-up Area That Is Residential & 59\% & 44\% & 46\% & 39\% & 42\% \\
\hline Share of Residential Areas Not Laid Out Before Development & 58\% & 7\% & 4\% & 35\% & 41\% \\
\hline Share of Residential Areas Laid Out Before Development & 42\% & 93\% & 96\% & 65\% & 59\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 5\% & 14\% & 22\% & 35\% & 37\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 36\% & 78\% & 70\% & 25\% & 28\% \\
\hline Share of Residential Area in Housing Projects & 2\% & 1\% & 4\% & 6\% & 42\% \\
\hline
\end{tabular}

Average Block Size (hectares)


Share of Area Within Walking Distance of Arterial Road (625m)


Share of Roads Less Than 4-meters Wide


\section*{Chicago, United States (Land-Rich Developed Countries 1893 - 2014)}



1893


1989


1945


2001


1967


2014


\begin{tabular}{|c|c|c|c|c|c|}
\hline Urban Layout Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1893
\end{aligned}
\] & \[
\begin{gathered}
1893- \\
1945
\end{gathered}
\] & \[
\begin{gathered}
1945- \\
1967
\end{gathered}
\] & \[
\begin{gathered}
1967- \\
1989
\end{gathered}
\] & \[
\begin{aligned}
& 1989- \\
& 2014
\end{aligned}
\] \\
\hline \multicolumn{6}{|l|}{Roads} \\
\hline Share of Built-up Area Occupied by Roads & 34\% & 28\% & 23\% & 19\% & 14\% \\
\hline Share of Built-up Area That Is Gridded & 83\% & 80\% & 30\% & 8\% & 0\% \\
\hline Share of Roads Less Than 4 Meters Wide & 8\% & 8\% & 8\% & 11\% & 29\% \\
\hline Share of Roads More Than 16 Meters Wide & 49\% & 44\% & 40\% & 31\% & 32\% \\
\hline \multicolumn{6}{|l|}{Arterial Roads} \\
\hline Total Area of Zone (km²) & 302 & 101 & 2099 & 84 & 618 \\
\hline Total Length of Arterial Roads ( \(\mathrm{km}^{2}\) ) & 2990 & 913 & 9043 & 234 & 681 \\
\hline Density of All Arterial Roads (km/km²) & 9.89 & 9.07 & 4.31 & 2.78 & 0.79 \\
\hline Average Beeline Distance to All Arterial Roads (meters) & 49 & 67 & 241 & 410 & 358 \\
\hline Share of Area within Walking Distance of All Arterial Roads & 100\% & 100\% & 90\% & 77\% & 81\% \\
\hline \multicolumn{6}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-Way & 45\% & 43\% & 18\% & 15\% & 14\% \\
\hline Average Block Size (ha) & 3.2 & 2.5 & 0.1 & 20.8 & 3.2 \\
\hline 4-Way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 64 & 51 & 15 & 7 & 12 \\
\hline Walkability Ratio & 1.5 & 1.5 & 1.6 & 1.4 & 0.5 \\
\hline \multicolumn{6}{|l|}{Average Plot Size in Informal Land Subdivisions} \\
\hline Average Plot Size in Formal Land Subdivisions & 374 & 463 & 812 & 1348 & 1622 \\
\hline \multicolumn{6}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-up Area That Is Residential & 39\% & 46\% & 45\% & 54\% & 58\% \\
\hline Share of Residential Areas Not Laid Out Before Development & 0\% & 0\% & 7\% & 2\% & 19\% \\
\hline Share of Residential Areas Laid Out Before Development & 100\% & 100\% & 93\% & 98\% & 81\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 0\% & 3\% & 8\% & 0\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 94\% & 98\% & 78\% & 72\% & 44\% \\
\hline Share of Residential Area in Housing Projects & 6\% & 2\% & 11\% & 18\% & 36\% \\
\hline
\end{tabular}

Average Block Size (hectares)


Share of Area Within Walking Distance of Arterial Road (625m)


Share of Roads Less Than 4-meters Wide


\section*{Guatemala City, Guatemala (Latin America \& the Caribbean 1900 - 2013)}


1900


1990


1936


2001


1976


2013


CBD
Study area
Water
No data
\begin{tabular}{|c|c|c|c|c|c|}
\hline Urban Layout Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1900
\end{aligned}
\] & \[
\begin{array}{r}
1900- \\
1936
\end{array}
\] & \[
\begin{gathered}
1936- \\
1976
\end{gathered}
\] & \[
\begin{gathered}
\text { 1976- } \\
1990
\end{gathered}
\] & \[
\begin{gathered}
1990- \\
2013
\end{gathered}
\] \\
\hline \multicolumn{6}{|l|}{Roads} \\
\hline Share of Built-up Area Occupied by Roads & 24\% & 26\% & 18\% & 18\% & 19\% \\
\hline Share of Built-up Area That Is Gridded & 84\% & 78\% & 58\% & 14\% & 3\% \\
\hline Share of Roads Less Than 4 Meters Wide & 8\% & 7\% & 12\% & 15\% & 13\% \\
\hline Share of Roads More Than 16 Meters Wide & 12\% & 22\% & 4\% & 8\% & 4\% \\
\hline \multicolumn{6}{|l|}{Arterial Roads} \\
\hline Total Area of Zone (km²) & 11 & 6 & 7 & 198 & 376 \\
\hline Total Length of Arterial Roads ( \(\mathrm{km}^{2}\) ) & 22 & 18 & 11 & 150 & 579 \\
\hline Density of All Arterial Roads (km/km \({ }^{2}\) ) & 1.89 & 3.16 & 1.53 & 0.76 & 0.88 \\
\hline Average Beeline Distance to All Arterial Roads (meters) & 323 & 182 & 352 & 504 & 390 \\
\hline Share of Area within Walking Distance of All Arterial Roads & 82\% & 94\% & 80\% & 69\% & 78\% \\
\hline \multicolumn{6}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-Way & 49\% & 46\% & 31\% & 16\% & 8\% \\
\hline Average Block Size (ha) & 1.6 & 1.9 & 1.5 & 2.9 & 2.3 \\
\hline 4-Way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 62 & 70 & 48 & 22 & 14 \\
\hline Walkability Ratio & 1.5 & 1.4 & 1.6 & 1.7 & 1.9 \\
\hline \multicolumn{6}{|l|}{Average Plot Size in Informal Land Subdivisions} \\
\hline Average Plot Size in Formal Land Subdivisions & & & & 748 & 143 \\
\hline \multicolumn{6}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-up Area That Is Residential & 28\% & 26\% & 47\% & 57\% & 58\% \\
\hline Share of Residential Areas Not Laid Out Before Development & 11\% & 24\% & 46\% & 28\% & 16\% \\
\hline Share of Residential Areas Laid Out Before Development & 89\% & 76\% & 54\% & 72\% & 84\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 1\% & 29\% & 3\% & 14\% & 46\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 86\% & 48\% & 52\% & 53\% & 30\% \\
\hline Share of Residential Area in Housing Projects & 1\% & 0\% & 0\% & 6\% & 9\% \\
\hline
\end{tabular}

Average Block Size (hectares)


Share of Area Within Walking Distance of Arterial Road (625m)


Share of Roads Less Than 4-meters Wide


\section*{Istanbul, Turkey (Western Asia 1899 - 2013)}


1899


1990


1960


\begin{tabular}{llllll} 
Urban Layout Metrics & Pre- & \(1899-\) & \(1934-\) & \(1960-\) & \(1990-\) \\
\hline
\end{tabular}
\begin{tabular}{|lcccccc|}
\hline & Roads & & & & \\
\hline Share of Built-up Area Occupied by Roads & \(24 \%\) & \(27 \%\) & \(29 \%\) & \(25 \%\) & \(30 \%\) \\
\hline Share of Built-up Area That Is Gridded & \(13 \%\) & \(15 \%\) & \(3 \%\) & \(10 \%\) & \(5 \%\) \\
\hline Share of Roads Less Than 4 Meters Wide & \(15 \%\) & \(6 \%\) & \(10 \%\) & \(7 \%\) & \(15 \%\) \\
\hline Share of Roads More Than 16 Meters Wide & \(6 \%\) & \(13 \%\) & \(13 \%\) & \(6 \%\) & \(7 \%\) \\
\hline
\end{tabular}
\begin{tabular}{lcccccc} 
Arterial Roads & & & \\
\hline Total Area of Zone \(\left(\mathrm{km}^{2}\right)\) & 32 & 58 & 86 & 426 & 1319 \\
\hline Total Length of Arterial Roads \(\left(\mathrm{km}^{2}\right)\) & 50 & 87 & 114 & 538 & 2989 \\
\hline Density of All Arterial Roads \(\left(\mathrm{km} / \mathrm{km}^{2}\right)\) & 1.59 & 1.50 & 1.32 & 1.26 & 1.69 \\
\hline Average Beeline Distance to All Arterial Roads (meters) & 256 & 309 & 308 & 592 & 263 \\
\hline Share of Area within Walking Distance of All Arterial Roads & \(93 \%\) & \(88 \%\) & \(88 \%\) & \(80 \%\) & \(90 \%\) \\
\hline
\end{tabular}
\begin{tabular}{lcccccc|}
\multicolumn{1}{c|}{ Block Size, Plot Size, Intersection Density, and Walkability } & & & \\
\hline Share of Intersections that are 4-Way & \(21 \%\) & \(17 \%\) & \(16 \%\) & \(17 \%\) & \(6 \%\) \\
\hline Average Block Size (ha) & 1.2 & 2.5 & 2.6 & 2.1 & 4.8 \\
\hline 4-Way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 57 & 26 & 24 & 36 & 15 \\
\hline Walkability Ratio & 1.6 & 1.8 & 1.8 & 1.7 & 2.0 \\
\hline
\end{tabular}

Average Plot Size in Informal Land Subdivisions
\(\begin{array}{lllll}\text { Average Plot Size in Formal Land Subdivisions } & 473 & 446 & 235 & 318\end{array}\)
Stages in the Evolution of Residential Layouts
\begin{tabular}{lcccccc|}
\hline Share of Built-up Area That Is Residential & \(48 \%\) & \(50 \%\) & \(46 \%\) & \(48 \%\) & \(36 \%\) \\
\hline Share of Residential Areas Not Laid Out Before Development & \(59 \%\) & \(42 \%\) & \(28 \%\) & \(39 \%\) & \(25 \%\) \\
\hline Share of Residential Areas Laid Out Before Development & \(41 \%\) & \(58 \%\) & \(72 \%\) & \(61 \%\) & \(75 \%\) \\
\hline Share of Residential Area in Informal Land Subdivisions & \(0 \%\) & \(0 \%\) & \(0 \%\) & \(0 \%\) & \(16 \%\) \\
\hline Share of Residential Area in Formal Land Subdivisions & \(40 \%\) & \(55 \%\) & \(59 \%\) & \(50 \%\) & \(31 \%\) \\
\hline Share of Residential Area in Housing Projects & \(2 \%\) & \(3 \%\) & \(13 \%\) & \(10 \%\) & \(29 \%\) \\
\hline
\end{tabular}

Average Block Size (hectares)


Share of Area Within Walking Distance of Arterial Road (625m)


Share of Roads Less Than 4-meters Wide


Jeddah, Saudi Arabia (Western Asia and North Africa 1900 - 2013)


1900


1990


1925


2000


1964


2013


\section*{ \\ \(\longrightarrow\)}
\begin{tabular}{|c|c|c|c|c|c|}
\hline Urban Layout Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1900
\end{aligned}
\] & \[
\begin{gathered}
1900- \\
1925
\end{gathered}
\] & \[
\begin{gathered}
1925- \\
1964
\end{gathered}
\] & \[
1964 \text { - }
\] & \[
\begin{gathered}
1990- \\
2013
\end{gathered}
\] \\
\hline \multicolumn{6}{|l|}{Roads} \\
\hline Share of Built-up Area Occupied by Roads & 19\% & & 31\% & 30\% & 28\% \\
\hline Share of Built-up Area That Is Gridded & 0\% & & 16\% & 5\% & 3\% \\
\hline Share of Roads Less Than 4 Meters Wide & 14\% & & 8\% & 5\% & 14\% \\
\hline Share of Roads More Than 16 Meters Wide & 24\% & & 21\% & 41\% & 15\% \\
\hline \multicolumn{6}{|l|}{Arterial Roads} \\
\hline Total Area of Zone (km²) & 0.4 & & 35 & 249 & 798 \\
\hline Total Length of Arterial Roads ( \(\mathrm{km}^{2}\) ) & 1 & & 108 & 1107 & 804 \\
\hline Density of All Arterial Roads (km/km²) & 3.67 & & 3.08 & 4.44 & 1.18 \\
\hline Average Beeline Distance to All Arterial Roads (meters) & 70 & & 127 & 124 & 505 \\
\hline Share of Area within Walking Distance of All Arterial Roads & 100\% & & 100\% & 98\% & 77\% \\
\hline \multicolumn{6}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-Way & 6\% & & 24\% & 13\% & 12\% \\
\hline Average Block Size (ha) & 3.2 & & 2.6 & 3.9 & 4.0 \\
\hline 4-Way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 3 & & 51 & 21 & 22 \\
\hline Walkability Ratio & 1.9 & & 1.5 & 1.6 & 1.7 \\
\hline \multicolumn{6}{|l|}{Average Plot Size in Informal Land Subdivisions} \\
\hline Average Plot Size in Formal Land Subdivisions & & & 496 & 583 & \\
\hline \multicolumn{6}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-up Area That Is Residential & 36\% & & 38\% & 33\% & 27\% \\
\hline Share of Residential Areas Not Laid Out Before Development & 67\% & & 44\% & 8\% & 11\% \\
\hline Share of Residential Areas Laid Out Before Development & 33\% & & 56\% & 92\% & 89\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & & 0\% & 4\% & 18\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 33\% & & 53\% & 39\% & 67\% \\
\hline Share of Residential Area in Housing Projects & 0\% & & 3\% & 16\% & 4\% \\
\hline
\end{tabular}

Average Block Size (hectares)


Share of Area Within Walking Distance of Arterial Road (625m)


Share of Roads Less Than 4-meters Wide


Johannesburg, South Africa (Sub-Saharan Africa 1900 - 2013)


CBD


Study area
Water
No data

\begin{tabular}{|c|c|c|c|c|c|}
\hline Urban Layout Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1900
\end{aligned}
\] & \[
\begin{array}{r}
1900-1938 \\
\hline
\end{array}
\] & \[
\begin{gathered}
1938 \text { - } \\
1957
\end{gathered}
\] & \[
\begin{gathered}
1957- \\
1990
\end{gathered}
\] & \[
\begin{gathered}
1990- \\
2013
\end{gathered}
\] \\
\hline \multicolumn{6}{|l|}{Roads} \\
\hline Share of Built-up Area Occupied by Roads & 29\% & 23\% & 24\% & 24\% & 17\% \\
\hline Share of Built-up Area That Is Gridded & 52\% & 30\% & 10\% & 3\% & 3\% \\
\hline Share of Roads Less Than 4 Meters Wide & 6\% & 5\% & 5\% & 10\% & 24\% \\
\hline Share of Roads More Than 16 Meters Wide & 38\% & 31\% & 37\% & 25\% & 4\% \\
\hline \multicolumn{6}{|l|}{Arterial Roads} \\
\hline Total Area of Zone (km²) & 23 & 372 & 198 & 1424 & 2880 \\
\hline Total Length of Arterial Roads ( \(\mathrm{km}^{2}\) ) & 91 & 1075 & 525 & 2807 & 1827 \\
\hline Density of All Arterial Roads (km/km \({ }^{\text {2 }}\) ) & 3.95 & 2.89 & 2.65 & 1.97 & 0.53 \\
\hline Average Beeline Distance to All Arterial Roads (meters) & 107 & 187 & 166 & 287 & 582 \\
\hline Share of Area within Walking Distance of All Arterial Roads & 100\% & 95\% & 98\% & 89\% & 64\% \\
\hline \multicolumn{6}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-Way & 38\% & 30\% & 20\% & 6\% & 10\% \\
\hline Average Block Size (ha) & 4.9 & 7.4 & 9.0 & 10.4 & 4.9 \\
\hline 4-Way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 42 & 18 & 9 & 6 & 16 \\
\hline Walkability Ratio & 1.5 & 1.7 & 1.6 & 1.7 & 2.3 \\
\hline Average Plot Size in Informal Land Subdivisions & & & & 230 & 205 \\
\hline Average Plot Size in Formal Land Subdivisions & 560 & 1034 & 1136 & 960 & 493 \\
\hline \multicolumn{6}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-up Area That Is Residential & 26\% & 52\% & 47\% & 57\% & 64\% \\
\hline Share of Residential Areas Not Laid Out Before Development & 2\% & 0\% & 0\% & 1\% & 18\% \\
\hline Share of Residential Areas Laid Out Before Development & 98\% & 100\% & 100\% & 99\% & 82\% \\
\hline Share of Residential Area in Informal Land Subdivisions & & 6\% & & 11\% & 41\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 98\% & 88\% & 89\% & 74\% & 38\% \\
\hline Share of Residential Area in Housing Projects & 0\% & 6\% & 11\% & 14\% & 3\% \\
\hline
\end{tabular}

Average Block Size (hectares)


Share of Area Within Walking Distance of Arterial Road ( 625 m )


Share of Roads Less Than 4-meters Wide


\section*{Kolkata, India (South and Central Asia 1883 - 2014)}


1883


1990


1931


2003


1961


2014



\begin{tabular}{|c|c|c|c|c|c|}
\hline Urban Layout Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1883
\end{aligned}
\] & \[
\begin{aligned}
& 1883- \\
& 1931
\end{aligned}
\] & \[
\begin{gathered}
1931- \\
1961
\end{gathered}
\] & \[
\begin{gathered}
1961- \\
1990
\end{gathered}
\] & \[
\begin{array}{r}
1990 \\
2014
\end{array}
\] \\
\hline \multicolumn{6}{|l|}{Roads} \\
\hline Share of Built-up Area Occupied by Roads & 19\% & 13\% & 11\% & 9\% & 10\% \\
\hline Share of Built-up Area That Is Gridded & 0\% & 3\% & 0\% & 3\% & 3\% \\
\hline Share of Roads Less Than 4 Meters Wide & 29\% & 31\% & 46\% & 58\% & 60\% \\
\hline Share of Roads More Than 16 Meters Wide & 12\% & 5\% & 3\% & 1\% & 2\% \\
\hline \multicolumn{6}{|l|}{Arterial Roads} \\
\hline Total Area of Zone (km²) & 28 & 13 & 211 & 398 & 989 \\
\hline Total Length of Arterial Roads ( \(\mathrm{km}^{2}\) ) & 72 & 15 & 124 & 190 & 794 \\
\hline Density of All Arterial Roads (km/km²) & 2.57 & 1.13 & 0.59 & 0.48 & 0.57 \\
\hline Average Beeline Distance to All Arterial Roads (meters) & 179 & 466 & 1151 & 1595 & 650 \\
\hline Share of Area within Walking Distance of All Arterial Roads & 96\% & 73\% & 49\% & 36\% & 62\% \\
\hline \multicolumn{6}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-Way & 19\% & 8\% & 7\% & 4\% & 4\% \\
\hline Average Block Size (ha) & 2.8 & 3.9 & 5.0 & 9.8 & 4.8 \\
\hline 4-Way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 24 & 8 & 8 & 4 & 6 \\
\hline Walkability Ratio & 1.4 & 1.7 & 1.8 & 1.6 & 1.6 \\
\hline Average Plot Size in Informal Land Subdivisions & & & & & 217 \\
\hline Average Plot Size in Formal Land Subdivisions & 141 & 263 & 318 & 351 & \\
\hline \multicolumn{6}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-up Area That Is Residential & 62\% & 64\% & 61\% & 73\% & 67\% \\
\hline Share of Residential Areas Not Laid Out Before Development & 91\% & 91\% & 90\% & 96\% & 73\% \\
\hline Share of Residential Areas Laid Out Before Development & 9\% & 9\% & 10\% & 4\% & 27\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 0\% & 0\% & 0\% & 16\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 9\% & 4\% & 5\% & 3\% & 3\% \\
\hline Share of Residential Area in Housing Projects & 1\% & 5\% & 5\% & 1\% & 8\% \\
\hline
\end{tabular}

Average Block Size (hectares)


Share of Area Within Walking Distance of Arterial Road (625m)


Share of Roads Less Than 4-meters Wide


Kuwait City, Kuwait (Western Asia and North Africa1900-2013)



1900


1990


1922


2000


1963


2013


\begin{tabular}{|c|c|c|c|c|c|}
\hline Urban Layout Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1900
\end{aligned}
\] & \[
\begin{array}{r}
1900 \\
1922
\end{array}
\] & \[
\begin{gathered}
1922- \\
1963
\end{gathered}
\] & \[
\begin{gathered}
1963- \\
1990
\end{gathered}
\] & \[
\begin{array}{r}
1990- \\
2013
\end{array}
\] \\
\hline \multicolumn{6}{|l|}{Roads} \\
\hline Share of Built-up Area Occupied by Roads & 22\% & 30\% & 30\% & 21\% & 27\% \\
\hline Share of Built-up Area That Is Gridded & 0\% & 5\% & 0\% & 0\% & 0\% \\
\hline Share of Roads Less Than 4 Meters Wide & 7\% & 17\% & 8\% & 6\% & 7\% \\
\hline Share of Roads More Than 16 Meters Wide & 35\% & 46\% & 31\% & 16\% & 11\% \\
\hline \multicolumn{6}{|l|}{Arterial Roads} \\
\hline Total Area of Zone ( \(\mathrm{km}^{2}\) ) & 3 & 1 & 37 & 508 & 565 \\
\hline Total Length of Arterial Roads ( \(\mathrm{km}^{2}\) ) & 8 & 2 & 103 & 945 & 1175 \\
\hline Density of All Arterial Roads (km/km²) & 2.77 & 2.13 & 2.78 & 1.86 & 2.08 \\
\hline Average Beeline Distance to All Arterial Roads (meters) & 113 & 101 & 117 & 542 & 248 \\
\hline Share of Area within Walking Distance of All Arterial Roads & 100\% & 100\% & 100\% & 83\% & 91\% \\
\hline \multicolumn{6}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-Way & 26\% & 38\% & 14\% & 5\% & 7\% \\
\hline Average Block Size (ha) & 8.0 & 9.8 & 6.3 & 9.1 & 3.6 \\
\hline 4-Way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 8 & 5 & 6 & 2 & 13 \\
\hline Walkability Ratio & 1.6 & 2.1 & 1.8 & 2.0 & 2.1 \\
\hline \multicolumn{6}{|l|}{Average Plot Size in Informal Land Subdivisions} \\
\hline Average Plot Size in Formal Land Subdivisions & & & 615 & 639 & \\
\hline \multicolumn{6}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-up Area That Is Residential & 9\% & 13\% & 30\% & 33\% & 28\% \\
\hline Share of Residential Areas Not Laid Out Before Development & 0\% & 0\% & 0\% & 0\% & 4\% \\
\hline Share of Residential Areas Laid Out Before Development & 100\% & 100\% & 100\% & 100\% & 96\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 0\% & 0\% & 4\% & 19\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 28\% & 100\% & 97\% & 94\% & 73\% \\
\hline Share of Residential Area in Housing Projects & 24\% & 0\% & 18\% & 7\% & 4\% \\
\hline
\end{tabular}

Average Block Size (hectares)


Share of Area Within Walking Distance of Arterial Road (625m)


Share of Roads Less Than 4-meters Wide


Lagos, Nigeria (West Africa 1900 - 2013)


1900


1984


1920


2000


1962


2013

\begin{tabular}{|c|}
\hline \multirow[t]{2}{*}{Lagos, Nigeria 1900-2013} \\
\hline \\
\hline
\end{tabular}
\begin{tabular}{l}
\(\square\) \\
\(\square\) \\
\(\square\) \\
\hline
\end{tabular}
1900
1920
1962
* CBD

Study area
Water
No data
\begin{tabular}{|c|c|c|c|c|c|}
\hline Urban Layout Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1900
\end{aligned}
\] & \[
\begin{gathered}
1900- \\
1920
\end{gathered}
\] & \[
\begin{array}{r}
1920- \\
1962
\end{array}
\] & \[
\begin{gathered}
1962- \\
1984
\end{gathered}
\] & \[
\begin{array}{r}
1984 \\
2013
\end{array}
\] \\
\hline \multicolumn{6}{|l|}{Roads} \\
\hline Share of Built-up Area Occupied by Roads & 23\% & 17\% & 16\% & 17\% & 17\% \\
\hline Share of Built-up Area That Is Gridded & 0\% & 43\% & 20\% & 5\% & 0\% \\
\hline Share of Roads Less Than 4 Meters Wide & 17\% & 5\% & 5\% & 6\% & 25\% \\
\hline Share of Roads More Than 16 Meters Wide & 10\% & 12\% & 10\% & 9\% & 3\% \\
\hline \multicolumn{6}{|l|}{Arterial Roads} \\
\hline Total Area of Zone (km²) & 4 & 5 & 66 & 250 & 830 \\
\hline Total Length of Arterial Roads ( \(\mathrm{km}^{2}\) ) & 2 & 9 & 57 & 242 & 509 \\
\hline Density of All Arterial Roads (km/km²) & 0.52 & 1.66 & 0.87 & 0.97 & 0.42 \\
\hline Average Beeline Distance to All Arterial Roads (meters) & 476 & 247 & 472 & 1750 & 787 \\
\hline Share of Area within Walking Distance of All Arterial Roads & 68\% & 93\% & 72\% & 59\% & 52\% \\
\hline \multicolumn{6}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-Way & 28\% & 32\% & 9\% & 7\% & 2\% \\
\hline Average Block Size (ha) & 1.9 & 6.5 & 7.0 & 5.6 & 4.7 \\
\hline 4-Way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 49 & 10 & 7 & 5 & 3 \\
\hline Walkability Ratio & 1.4 & 1.6 & 1.6 & 1.8 & 1.8 \\
\hline Average Plot Size in Informal Land Subdivisions & & & & 648 & \\
\hline Average Plot Size in Formal Land Subdivisions & & & 399 & 610 & \\
\hline \multicolumn{6}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-up Area That Is Residential & 45\% & 28\% & 43\% & 62\% & 60\% \\
\hline Share of Residential Areas Not Laid Out Before Development & 84\% & 20\% & 58\% & 58\% & 52\% \\
\hline Share of Residential Areas Laid Out Before Development & 16\% & 80\% & 42\% & 42\% & 48\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 3\% & 16\% & 9\% & 23\% & 41\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 13\% & 43\% & 29\% & 13\% & 0\% \\
\hline Share of Residential Area in Housing Projects & 0\% & 21\% & 4\% & 6\% & 6\% \\
\hline
\end{tabular}

Average Block Size (hectares)


Share of Area Within Walking Distance of Arterial Road (625m)


Share of Roads Less Than 4-meters Wide


\section*{London, United Kingdom (Europe \& Japan 1880-2013)}


1880


1989


1929


2000


1955


2013


\begin{tabular}{|c|c|c|c|c|c|}
\hline Urban Layout Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1880
\end{aligned}
\] & \[
\begin{gathered}
1880- \\
1929
\end{gathered}
\] & \[
\begin{gathered}
1929- \\
1955
\end{gathered}
\] & \[
\begin{gathered}
1955- \\
1989
\end{gathered}
\] & \[
\begin{gathered}
1989- \\
2013
\end{gathered}
\] \\
\hline \multicolumn{6}{|l|}{Roads} \\
\hline Share of Built-up Area Occupied by Roads & 21\% & 18\% & 18\% & 20\% & 10\% \\
\hline Share of Built-up Area That Is Gridded & 0\% & 0\% & 0\% & 0\% & 0\% \\
\hline Share of Roads Less Than 4 Meters Wide & 5\% & 8\% & 9\% & 12\% & 18\% \\
\hline Share of Roads More Than 16 Meters Wide & 10\% & 9\% & 12\% & 7\% & 4\% \\
\hline \multicolumn{6}{|l|}{Arterial Roads} \\
\hline Total Area of Zone (km²) & 376 & 307 & 455 & 1719 & 838 \\
\hline Total Length of Arterial Roads ( \(\mathrm{km}^{2}\) ) & 558 & 323 & 399 & 626 & 1527 \\
\hline Density of All Arterial Roads (km/km²) & 1.48 & 1.05 & 0.88 & 0.36 & 1.62 \\
\hline Average Beeline Distance to All Arterial Roads (meters) & 281 & 366 & 554 & 1477 & 207 \\
\hline Share of Area within Walking Distance of All Arterial Roads & 90\% & 83\% & 71\% & 40\% & 95\% \\
\hline \multicolumn{6}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-Way & 15\% & 17\% & 16\% & 2\% & 4\% \\
\hline Average Block Size (ha) & 3.3 & 5.6 & 8.6 & 17.2 & 8.2 \\
\hline 4-Way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 15 & 10 & 6 & 2 & 10 \\
\hline Walkability Ratio & 1.6 & 1.9 & 1.6 & 1.7 & 1.7 \\
\hline \multicolumn{6}{|l|}{Average Plot Size in Informal Land Subdivisions} \\
\hline Average Plot Size in Formal Land Subdivisions & 404 & 491 & 528 & 698 & 612 \\
\hline \multicolumn{6}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-up Area That Is Residential & 57\% & 65\% & 60\% & 52\% & 43\% \\
\hline Share of Residential Areas Not Laid Out Before Development & 0\% & 0\% & 0\% & 9\% & 13\% \\
\hline Share of Residential Areas Laid Out Before Development & 100\% & 100\% & 100\% & 91\% & 87\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 0\% & 0\% & 0\% & 0\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 24\% & 46\% & 67\% & 42\% & 87\% \\
\hline Share of Residential Area in Housing Projects & 76\% & 54\% & 33\% & 49\% & 0\% \\
\hline
\end{tabular}

Average Block Size (hectares)


Share of Area Within Walking Distance of Arterial Road ( 625 m )


Share of Roads Less Than 4-meters Wide


Los Angeles, United States (Land-Rich Developed Countries 1907 - 2014)



1907


1990


1937


2000


1970


2014

\begin{tabular}{|c|c|c|c|c|c|}
\hline Urban Layout Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1907
\end{aligned}
\] & \[
1907 \text { - }
\] & \[
\begin{array}{r}
1930- \\
1970
\end{array}
\] & \[
\begin{gathered}
1970- \\
1990
\end{gathered}
\] & \[
\begin{gathered}
1990- \\
2014
\end{gathered}
\] \\
\hline \multicolumn{6}{|l|}{Roads} \\
\hline Share of Built-up Area Occupied by Roads & 27\% & 24\% & 23\% & 22\% & 26\% \\
\hline Share of Built-up Area That Is Gridded & 33\% & 53\% & 28\% & 0\% & 0\% \\
\hline Share of Roads Less Than 4 Meters Wide & 7\% & 5\% & 7\% & 6\% & 18\% \\
\hline Share of Roads More Than 16 Meters Wide & 50\% & 48\% & 41\% & 44\% & 21\% \\
\hline \multicolumn{6}{|l|}{Arterial Roads} \\
\hline Total Area of Zone (km²) & 89 & 900 & 948 & 84 & 1298 \\
\hline Total Length of Arterial Roads ( \(\mathrm{km}^{2}\) ) & 706 & 5167 & 3774 & 321 & 1665 \\
\hline Density of All Arterial Roads (km/km²) & 7.90 & 5.74 & 3.98 & 3.82 & 1.04 \\
\hline Average Beeline Distance to All Arterial Roads (meters) & 72 & 122 & 177 & 120 & 461 \\
\hline Share of Area within Walking Distance of All Arterial Roads & 99\% & 97\% & 94\% & 100\% & 78\% \\
\hline \multicolumn{6}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-Way & 33\% & 45\% & 19\% & 10\% & 6\% \\
\hline Average Block Size (ha) & 4.5 & 3.8 & 9.2 & 10.6 & 6.5 \\
\hline 4-Way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 23 & 29 & 16 & 5 & 8 \\
\hline Walkability Ratio & 1.7 & 1.4 & 1.7 & 1.8 & 2.0 \\
\hline \multicolumn{6}{|l|}{Average Plot Size in Informal Land Subdivisions} \\
\hline Average Plot Size in Formal Land Subdivisions & 665 & 689 & 780 & 921 & 789 \\
\hline \multicolumn{6}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-up Area That Is Residential & 38\% & 59\% & 53\% & 59\% & 48\% \\
\hline Share of Residential Areas Not Laid Out Before Development & 7\% & 0\% & 0\% & 2\% & 20\% \\
\hline Share of Residential Areas Laid Out Before Development & 93\% & 100\% & 100\% & 98\% & 80\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 0\% & 0\% & 1\% & 3\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 89\% & 95\% & 92\% & 88\% & 62\% \\
\hline Share of Residential Area in Housing Projects & 4\% & 5\% & 8\% & 9\% & 15\% \\
\hline
\end{tabular}

Average Block Size (hectares)


Share of Area Within Walking Distance of Arterial Road (625m)


Share of Roads Less Than 4-meters Wide


Manila, Philippines (Southeast Asia 1898 - 2014)

\begin{tabular}{|c|c|c|c|c|c|}
\hline Urban Layout Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1898
\end{aligned}
\] & \[
\begin{gathered}
1898-1945
\end{gathered}
\] & \[
\begin{gathered}
1945- \\
1971
\end{gathered}
\] & \[
\begin{gathered}
1971 \text { - } \\
1990
\end{gathered}
\] & \[
\begin{array}{r}
1990 \\
2014
\end{array}
\] \\
\hline \multicolumn{6}{|l|}{Roads} \\
\hline Share of Built-up Area Occupied by Roads & 25\% & 23\% & 19\% & 15\% & 23\% \\
\hline Share of Built-up Area That Is Gridded & 35\% & 20\% & 8\% & 0\% & 0\% \\
\hline Share of Roads Less Than 4 Meters Wide & 10\% & 9\% & 10\% & 17\% & 26\% \\
\hline Share of Roads More Than 16 Meters Wide & 14\% & 18\% & 13\% & 1\% & 1\% \\
\hline \multicolumn{6}{|l|}{Arterial Roads} \\
\hline Total Area of Zone (km²) & 6 & 69 & 67 & 752 & 1112 \\
\hline Total Length of Arterial Roads ( \(\mathrm{km}^{2}\) ) & 7 & 131 & 139 & 476 & 1681 \\
\hline Density of All Arterial Roads (km/km²) & 1.28 & 1.89 & 2.08 & 0.63 & 1.05 \\
\hline Average Beeline Distance to All Arterial Roads (meters) & 169 & 219 & 186 & 1014 & 372 \\
\hline Share of Area within Walking Distance of All Arterial Roads & 100\% & 96\% & 98\% & 52\% & 81\% \\
\hline \multicolumn{6}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-Way & 25\% & 31\% & 20\% & 10\% & 10\% \\
\hline Average Block Size (ha) & 2.0 & 2.3 & 4.5 & 3.5 & 2.8 \\
\hline 4-Way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 51 & 34 & 19 & 11 & 29 \\
\hline Walkability Ratio & 1.4 & 1.5 & 1.7 & 1.6 & 1.7 \\
\hline Average Plot Size in Informal Land Subdivisions & & & & & 94 \\
\hline Average Plot Size in Formal Land Subdivisions & 308 & 260 & 471 & 247 & 97 \\
\hline \multicolumn{6}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-up Area That Is Residential & 45\% & 45\% & 47\% & 62\% & 55\% \\
\hline Share of Residential Areas Not Laid Out Before Development & 39\% & 46\% & 40\% & 58\% & 36\% \\
\hline Share of Residential Areas Laid Out Before Development & 61\% & 54\% & 60\% & 42\% & 64\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 2\% & 0\% & 0\% & 0\% & 33\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 59\% & 54\% & 57\% & 42\% & 25\% \\
\hline Share of Residential Area in Housing Projects & 0\% & 0\% & 3\% & 0\% & 6\% \\
\hline
\end{tabular}

Average Block Size (hectares)


Share of Area Within Walking Distance of Arterial Road (625m)


Share of Roads Less Than 4-meters Wide


Mexico City, Mexico (Latin America \& the Caribbean 1886 - 2014)


1886


1990


1929


2000


1970


2014


\begin{tabular}{|c|c|c|c|c|c|}
\hline Urban Layout Metrics & \[
\begin{gathered}
\text { Pre- } \\
1886
\end{gathered}
\] & \[
\begin{array}{r}
1886-1929
\end{array}
\] & \[
\begin{gathered}
1929- \\
1970
\end{gathered}
\] & \[
\begin{gathered}
1970- \\
1990
\end{gathered}
\] & \[
\begin{array}{r}
1990- \\
2014
\end{array}
\] \\
\hline \multicolumn{6}{|l|}{Roads} \\
\hline Share of Built-up Area Occupied by Roads & 20\% & 31\% & 27\% & 23\% & 23\% \\
\hline Share of Built-up Area That Is Gridded & 63\% & 75\% & 50\% & 28\% & 8\% \\
\hline Share of Roads Less Than 4 Meters Wide & 7\% & 4\% & 5\% & 6\% & 18\% \\
\hline Share of Roads More Than 16 Meters Wide & 14\% & 32\% & 25\% & 14\% & 4\% \\
\hline \multicolumn{6}{|l|}{Arterial Roads} \\
\hline Total Area of Zone (km²) & 12 & 35 & 88 & 1205 & 572 \\
\hline Total Length of Arterial Roads ( \(\mathrm{km}^{2}\) ) & 32 & 141 & 299 & 1826 & 876 \\
\hline Density of All Arterial Roads (km/km²) & 2.64 & 4.01 & 3.41 & 1.52 & 0.77 \\
\hline Average Beeline Distance to All Arterial Roads (meters) & 155 & 97 & 123 & 480 & 418 \\
\hline Share of Area within Walking Distance of All Arterial Roads & 99\% & 100\% & 99\% & 77\% & 77\% \\
\hline \multicolumn{6}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-Way & 45\% & 53\% & 43\% & 27\% & 13\% \\
\hline Average Block Size (ha) & 1.9 & 2.6 & 2.2 & 4.8 & 3.1 \\
\hline 4-Way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 45 & 50 & 52 & 29 & 26 \\
\hline Walkability Ratio & 1.4 & 1.4 & 1.5 & 1.7 & 1.7 \\
\hline Average Plot Size in Informal Land Subdivisions & & & & & 132 \\
\hline Average Plot Size in Formal Land Subdivisions & 109 & 199 & 172 & 247 & 196 \\
\hline \multicolumn{6}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-up Area That Is Residential & 35\% & 45\% & 47\% & 52\% & 48\% \\
\hline Share of Residential Areas Not Laid Out Before Development & 2\% & 3\% & 2\% & 9\% & 27\% \\
\hline Share of Residential Areas Laid Out Before Development & 98\% & 97\% & 98\% & 91\% & 73\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 0\% & 0\% & 8\% & 34\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 98\% & 97\% & 97\% & 78\% & 34\% \\
\hline Share of Residential Area in Housing Projects & 0\% & 1\% & 1\% & 5\% & 4\% \\
\hline
\end{tabular}

Average Block Size (hectares)


Share of Area Within Walking Distance of Arterial Road (625m)


Share of Roads Less Than 4-meters Wide


Moscow, The Russian Federation (Europe \& Japan 1893 - 2014)


1893


1991


1939


2001


1957


2014

\begin{tabular}{|c|c|c|c|c|c|}
\hline Urban Layout Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1893
\end{aligned}
\] & \[
\begin{gathered}
1893 \\
1939
\end{gathered}
\] & \[
\begin{gathered}
1939- \\
1957
\end{gathered}
\] & \[
\begin{gathered}
1957- \\
1991
\end{gathered}
\] & \[
\begin{array}{r}
1991- \\
2014
\end{array}
\] \\
\hline \multicolumn{6}{|l|}{Roads} \\
\hline Share of Built-up Area Occupied by Roads & 22\% & 20\% & 20\% & 18\% & 15\% \\
\hline Share of Built-up Area That Is Gridded & 0\% & 5\% & 0\% & 8\% & 3\% \\
\hline Share of Roads Less Than 4 Meters Wide & 3\% & 8\% & 10\% & 9\% & 32\% \\
\hline Share of Roads More Than 16 Meters Wide & 31\% & 30\% & 34\% & 15\% & 3\% \\
\hline \multicolumn{6}{|l|}{Arterial Roads} \\
\hline Total Area of Zone (km²) & 68 & 100 & 193 & 1253 & 2109 \\
\hline Total Length of Arterial Roads ( \(\mathrm{km}^{2}\) ) & 294 & 272 & 486 & 1519 & 1202 \\
\hline Density of All Arterial Roads (km/km²) & 4.35 & 2.73 & 2.52 & 1.21 & 0.48 \\
\hline Average Beeline Distance to All Arterial Roads (meters) & 87 & 144 & 152 & 761 & 981 \\
\hline Share of Area within Walking Distance of All Arterial Roads & 100\% & 98\% & 99\% & 68\% & 48\% \\
\hline \multicolumn{6}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-Way & 21\% & 18\% & 16\% & 8\% & 11\% \\
\hline Average Block Size (ha) & 5.0 & 9.4 & 6.2 & 4.5 & 4.8 \\
\hline 4-Way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 10 & 6 & 13 & 7 & 22 \\
\hline Walkability Ratio & 1.7 & 1.6 & 1.6 & 1.6 & 2.1 \\
\hline Average Plot Size in Informal Land Subdivisions & & & & & 1099 \\
\hline Average Plot Size in Formal Land Subdivisions & & & & & 962 \\
\hline \multicolumn{6}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-up Area That Is Residential & 31\% & 41\% & 34\% & 38\% & 73\% \\
\hline Share of Residential Areas Not Laid Out Before Development & 0\% & 0\% & 0\% & 15\% & 0\% \\
\hline Share of Residential Areas Laid Out Before Development & 100\% & 100\% & 100\% & 85\% & 100\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 6\% & 0\% & 21\% & 75\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 89\% & 56\% & 48\% & 28\% & 11\% \\
\hline Share of Residential Area in Housing Projects & 11\% & 38\% & 52\% & 36\% & 14\% \\
\hline
\end{tabular}

Average Block Size (hectares)


Share of Area Within Walking Distance of Arterial Road (625m)


Share of Roads Less Than 4-meters Wide

```

Mumbai, India (South and Central Asia 1909 - 2014)

```


1909


1991


1931


2000


1968


2014


\begin{tabular}{|c|c|c|c|c|c|}
\hline Urban Layout Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1909
\end{aligned}
\] & \[
\begin{gathered}
1909- \\
1931
\end{gathered}
\] & \[
1931 \text { - }
\] & \[
\begin{gathered}
1968- \\
1991
\end{gathered}
\] & \[
\begin{gathered}
1991 \text { - } \\
2014
\end{gathered}
\] \\
\hline \multicolumn{6}{|c|}{Roads} \\
\hline Share of Built-up Area Occupied by Roads & 18\% & 14\% & 13\% & 15\% & 21\% \\
\hline Share of Built-up Area That Is Gridded & 0\% & 0\% & 0\% & 3\% & 3\% \\
\hline Share of Roads Less Than 4 Meters Wide & 9\% & 8\% & 19\% & 14\% & 24\% \\
\hline Share of Roads More Than 16 Meters Wide & 16\% & 20\% & 16\% & 21\% & 11\% \\
\hline \multicolumn{6}{|c|}{Arterial Roads} \\
\hline Total Area of Zone (km²) & 15 & 29 & 23 & 382 & 713 \\
\hline Total Length of Arterial Roads ( \(\mathrm{km}^{2}\) ) & 40 & 75 & 48 & 567 & 897 \\
\hline Density of All Arterial Roads (km/km²) & 2.58 & 2.62 & 2.16 & 1.48 & 0.90 \\
\hline Average Beeline Distance to All Arterial Roads (meters) & 153 & 155 & 225 & 398 & 447 \\
\hline Share of Area within Walking Distance of All Arterial Roads & 99\% & 99\% & 92\% & 83\% & 75\% \\
\hline \multicolumn{6}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-Way & 15\% & 20\% & 6\% & 11\% & 8\% \\
\hline Average Block Size (ha) & 3.0 & 6.0 & 7.9 & 7.2 & 4.4 \\
\hline 4-Way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 17 & 9 & 4 & 4 & 12 \\
\hline Walkability Ratio & 1.5 & 1.6 & 1.5 & 1.6 & 1.8 \\
\hline
\end{tabular}

Average Plot Size in Informal Land Subdivisions
\begin{tabular}{lllllll|}
\hline Average Plot Size in Formal Land Subdivisions & & 535 & 496 & 779 & \\
Stages in the Evolution of Residential Layouts & & & \\
\hline Share of Built-up Area That Is Residential & \(45 \%\) & \(47 \%\) & \(41 \%\) & \(60 \%\) & \(42 \%\) \\
\hline Share of Residential Areas Not Laid Out Before Development & \(69 \%\) & \(65 \%\) & \(68 \%\) & \(66 \%\) & \(61 \%\) \\
\hline Share of Residential Areas Laid Out Before Development & \(31 \%\) & \(35 \%\) & \(32 \%\) & \(34 \%\) & \(39 \%\) \\
\hline Share of Residential Area in Informal Land Subdivisions & \(0 \%\) & \(0 \%\) & \(0 \%\) & \(0 \%\) & \(0 \%\) \\
\hline Share of Residential Area in Formal Land Subdivisions & \(29 \%\) & \(18 \%\) & \(16 \%\) & \(17 \%\) & \(14 \%\) \\
\hline Share of Residential Area in Housing Projects & \(2 \%\) & \(17 \%\) & \(16 \%\) & \(17 \%\) & \(25 \%\) \\
\hline
\end{tabular}

Average Block Size (hectares)


Share of Area Within Walking Distance of Arterial Road ( 625 m )


Share of Roads Less Than 4-meters Wide


Nairobi, Kenya (East Africa 1906 - 2010)



1906


1988


1926


2000


1964


2010

\begin{tabular}{|c|c|c|c|c|c|}
\hline \multicolumn{4}{|l|}{Nairobi, Kenya (East Africa 1906 - 2010)} & & \\
\hline Urban Layout Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1906
\end{aligned}
\] & \[
1906 \text { - }
\] & \[
\begin{gathered}
1926- \\
1964
\end{gathered}
\] & \[
\begin{array}{r}
1964- \\
1988
\end{array}
\] & \[
\begin{gathered}
1988- \\
2010
\end{gathered}
\] \\
\hline \multicolumn{6}{|l|}{Roads} \\
\hline Share of Built-up Area Occupied by Roads & 27\% & 19\% & 17\% & 17\% & 19\% \\
\hline Share of Built-up Area That Is Gridded & 0\% & 3\% & 3\% & 0\% & 0\% \\
\hline Share of Roads Less Than 4 Meters Wide & 5\% & 5\% & 4\% & 13\% & 34\% \\
\hline Share of Roads More Than 16 Meters Wide & 25\% & 23\% & 28\% & 4\% & 3\% \\
\hline \multicolumn{6}{|l|}{Arterial Roads} \\
\hline Total Area of Zone (km²) & 2 & 22 & 69 & 563 & 788 \\
\hline Total Length of Arterial Roads ( \(\mathrm{km}^{2}\) ) & 9 & 80 & 118 & 426 & 638 \\
\hline Density of All Arterial Roads (km/km²) & 5.29 & 3.62 & 1.71 & 0.76 & 0.81 \\
\hline Average Beeline Distance to All Arterial Roads (meters) & 65 & 109 & 271 & 646 & 521 \\
\hline Share of Area within Walking Distance of All Arterial Roads & 100\% & 100\% & 90\% & 63\% & 72\% \\
\hline \multicolumn{6}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-Way & 28\% & 10\% & 6\% & 4\% & 6\% \\
\hline Average Block Size (ha) & 5.0 & 7.3 & 17.5 & 16.8 & 9.5 \\
\hline 4-Way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 23 & 6 & 3 & 3 & 10 \\
\hline Walkability Ratio & 2.0 & 1.6 & 1.5 & 1.5 & 1.6 \\
\hline Average Plot Size in Informal Land Subdivisions & & & & 2053 & \\
\hline Average Plot Size in Formal Land Subdivisions & 357 & 402 & 2600 & 1005 & \\
\hline \multicolumn{6}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-up Area That Is Residential & 24\% & 37\% & 59\% & 51\% & 54\% \\
\hline Share of Residential Areas Not Laid Out Before Development & 0\% & 3\% & 5\% & 32\% & 19\% \\
\hline Share of Residential Areas Laid Out Before Development & 100\% & 97\% & 95\% & 68\% & 81\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 15\% & 16\% & 25\% & 57\% & 68\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 70\% & 57\% & 32\% & 8\% & 10\% \\
\hline Share of Residential Area in Housing Projects & 14\% & 19\% & 18\% & 3\% & 3\% \\
\hline
\end{tabular}

Average Block Size (hectares)


Share of Area Within Walking Distance of Arterial Road (625m)


Share of Roads Less Than 4-meters Wide


Paris, France (Europe \& Japan 1900 - 2014)


1900


1987


1928


2000


1955


2014


Esri, HERE E and the GISuser community

\begin{tabular}{|c|c|c|c|c|c|}
\hline Urban Layout Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1900
\end{aligned}
\] & \[
\begin{array}{r}
1900-1928 \\
\hline
\end{array}
\] & \[
\begin{gathered}
1928-1955 \\
\hline
\end{gathered}
\] & \[
\begin{array}{r}
1955- \\
1987
\end{array}
\] & \[
\begin{gathered}
1987- \\
2014
\end{gathered}
\] \\
\hline \multicolumn{6}{|l|}{Roads} \\
\hline Share of Built-up Area Occupied by Roads & 26\% & 19\% & 18\% & 19\% & 15\% \\
\hline Share of Built-up Area That Is Gridded & 5\% & 10\% & 8\% & 3\% & 0\% \\
\hline Share of Roads Less Than 4 Meters Wide & 7\% & 12\% & 8\% & 12\% & 28\% \\
\hline Share of Roads More Than 16 Meters Wide & 21\% & 11\% & 6\% & 5\% & 5\% \\
\hline \multicolumn{6}{|l|}{Arterial Roads} \\
\hline Total Area of Zone (km²) & 231 & 92 & 359 & 28 & 1130 \\
\hline Total Length of Arterial Roads ( \(\mathrm{km}^{2}\) ) & 514 & 95 & 204 & 19 & 2538 \\
\hline Density of All Arterial Roads (km/km \({ }^{\text {2 }}\) ) & 2.23 & 1.03 & 0.57 & 0.66 & 1.89 \\
\hline Average Beeline Distance to All Arterial Roads (meters) & 276 & 618 & 883 & 1476 & 206 \\
\hline Share of Area within Walking Distance of All Arterial Roads & 87\% & 68\% & 55\% & 44\% & 93\% \\
\hline \multicolumn{6}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-Way & 27\% & 32\% & 17\% & 7\% & 10\% \\
\hline Average Block Size (ha) & 2.7 & 3.8 & 4.7 & 7.9 & 6.7 \\
\hline 4-Way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 24 & 22 & 14 & 7 & 10 \\
\hline Walkability Ratio & 1.5 & 1.6 & 1.6 & 1.8 & 1.6 \\
\hline \multicolumn{6}{|l|}{Average Plot Size in Informal Land Subdivisions} \\
\hline Average Plot Size in Formal Land Subdivisions & 333 & 469 & 450 & 565 & 545 \\
\hline \multicolumn{6}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-up Area That Is Residential & 57\% & 60\% & 61\% & 51\% & 49\% \\
\hline Share of Residential Areas Not Laid Out Before Development & 12\% & 37\% & 10\% & 32\% & 29\% \\
\hline Share of Residential Areas Laid Out Before Development & 88\% & 63\% & 90\% & 68\% & 61\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 0\% & 0\% & 0\% & 2\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 76\% & 43\% & 79\% & 53\% & 667\% \\
\hline Share of Residential Area in Housing Projects & 12\% & 21\% & 16\% & 15\% & 1\% \\
\hline
\end{tabular}

Average Block Size (hectares)


Share of Area Within Walking Distance of Arterial Road (625m)


Share of Roads Less Than 4-meters Wide


Santiago, Chile (Latin America \& the Caribbean 1900 - 2014)


Santiago, Chile
\begin{tabular}{cccccc}
\multicolumn{4}{c}{\(1900-2014\)} & \\
\\
0 & 5 & 10 & & 20 & km
\end{tabular}


Arterial Roads
\(\star\) CBD
Study area
Water
No data
\begin{tabular}{|c|c|c|c|c|c|}
\hline Urban Layout Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1900
\end{aligned}
\] & \[
\begin{array}{r}
1900- \\
1930
\end{array}
\] & \[
\begin{array}{r}
1930- \\
1970
\end{array}
\] & \[
\begin{array}{r}
1970- \\
1990
\end{array}
\] & \[
\begin{gathered}
1990 \\
2014
\end{gathered}
\] \\
\hline \multicolumn{6}{|l|}{Roads} \\
\hline Share of Built-up Area Occupied by Roads & 26\% & 25\% & 25\% & 23\% & 18\% \\
\hline Share of Built-up Area That Is Gridded & 60\% & 35\% & 25\% & 30\% & 5\% \\
\hline Share of Roads Less Than 4 Meters Wide & 4\% & 3\% & 3\% & 6\% & 16\% \\
\hline Share of Roads More Than 16 Meters Wide & 27\% & 36\% & 31\% & 18\% & 10\% \\
\hline \multicolumn{6}{|l|}{Arterial Roads} \\
\hline Total Area of Zone (km \({ }^{\text {2 }}\) ) & 161 & 48 & 42 & 448 & 761 \\
\hline Total Length of Arterial Roads ( \(\mathrm{km}^{2}\) ) & 54 & 272 & 183 & 1282 & 1346 \\
\hline Density of All Arterial Roads (km/km \({ }^{\text {2 }}\) ) & 3.36 & 5.66 & 4.39 & 2.86 & 1.04 \\
\hline Average Beeline Distance to All Arterial Roads (meters) & 108 & 69 & 86 & 195 & 474 \\
\hline Share of Area within Walking Distance of All Arterial Roads & 100\% & 100\% & 100\% & 95\% & 79\% \\
\hline \multicolumn{6}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-Way & 54\% & 32\% & 35\% & 21\% & 14\% \\
\hline Average Block Size (ha) & 2.4 & 3.2 & 3.2 & 5.7 & 6.5 \\
\hline 4-Way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 39 & 26 & 29 & 25 & 20 \\
\hline Walkability Ratio & 1.4 & 1.5 & 1.5 & 1.7 & 2.0 \\
\hline \multicolumn{6}{|l|}{Average Plot Size in Informal Land Subdivisions} \\
\hline Average Plot Size in Formal Land Subdivisions & & 273 & 385 & 713 & 282 \\
\hline \multicolumn{6}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-up Area That Is Residential & 34\% & 45\% & 47\% & 46\% & 50\% \\
\hline Share of Residential Areas Not Laid Out Before Development & 1\% & 0\% & 0\% & 2\% & 16\% \\
\hline Share of Residential Areas Laid Out Before Development & 99\% & 100\% & 100\% & 98\% & 84\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 0\% & 0\% & 0\% & 5\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 93\% & 92\% & 96\% & 74\% & 63\% \\
\hline Share of Residential Area in Housing Projects & 6\% & 8\% & 4\% & 18\% & 15\% \\
\hline
\end{tabular}

Average Block Size (hectares)


Share of Area Within Walking Distance of Arterial Road (625m)


Share of Roads Less Than 4-meters Wide


São Paulo, Brazil (Latin America \& the Caribbean 1905 - 2014)



\begin{tabular}{|c|c|c|c|c|c|}
\hline Urban Layout Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1905
\end{aligned}
\] & \[
\begin{gathered}
1905- \\
1929
\end{gathered}
\] & \[
\begin{gathered}
1929- \\
1974
\end{gathered}
\] & \[
\begin{gathered}
1974- \\
1988
\end{gathered}
\] & \[
\begin{array}{r}
1988- \\
2014
\end{array}
\] \\
\hline \multicolumn{6}{|l|}{Roads} \\
\hline Share of Built-up Area Occupied by Roads & 25\% & 24\% & 26\% & 23\% & 23\% \\
\hline Share of Built-up Area That Is Gridded & 33\% & 25\% & 23\% & 8\% & 3\% \\
\hline Share of Roads Less Than 4 Meters Wide & 3\% & 4\% & 5\% & 4\% & 10\% \\
\hline Share of Roads More Than 16 Meters Wide & 29\% & 30\% & 18\% & 11\% & 2\% \\
\hline \multicolumn{6}{|l|}{Arterial Roads} \\
\hline Total Area of Zone (km²) & 24 & 80 & 168 & 1655 & 843 \\
\hline Total Length of Arterial Roads ( \(\mathrm{km}^{2}\) ) & 34 & 87 & 168 & 1037 & 1133 \\
\hline Density of All Arterial Roads (km/km \({ }^{\text {2 }}\) ) & 1.44 & 1.10 & 1.01 & 0.63 & 0.84 \\
\hline Average Beeline Distance to All Arterial Roads (meters) & 248 & 310 & 393 & 969 & 539 \\
\hline Share of Area within Walking Distance of All Arterial Roads & 95\% & 88\% & 80\% & 54\% & 68\% \\
\hline \multicolumn{6}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-Way & 37\% & 40\% & 22\% & 18\% & 7\% \\
\hline Average Block Size (ha) & 2.7 & 3.0 & 2.7 & 4.3 & 6.2 \\
\hline 4-Way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 25 & 27 & 20 & 18 & 6 \\
\hline Walkability Ratio & 1.5 & 1.6 & 1.7 & 1.7 & 1.7 \\
\hline \multicolumn{6}{|l|}{Average Plot Size in Informal Land Subdivisions} \\
\hline Average Plot Size in Formal Land Subdivisions & 223 & 213 & 399 & 279 & \\
\hline \multicolumn{6}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-up Area That Is Residential & 38\% & 50\% & 53\% & 47\% & 53\% \\
\hline Share of Residential Areas Not Laid Out Before Development & 0\% & 0\% & 1\% & 3\% & 21\% \\
\hline Share of Residential Areas Laid Out Before Development & 100\% & 100\% & 99\% & 97\% & 79\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 0\% & 0\% & 7\% & 24\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 97\% & 96\% & 96\% & 88\% & 49\% \\
\hline Share of Residential Area in Housing Projects & 3\% & 4\% & 3\% & 2\% & 6\% \\
\hline
\end{tabular}

Average Block Size (hectares)


Share of Area Within Walking Distance of Arterial Road (625m)


Share of Roads Less Than 4-meters Wide


Shanghai, China (Eastern Asia \& the Pacific 1902 - 2015)
\(\lambda_{* *}^{*}\)


1902


1991


1944


2000


1973


2015

Shanghai, China 1902-2015
\(\square\)
1902
1944
1973

\section*{Shanghai, China (Eastern Asia \& the Pacific 1902 - 2015)}
\begin{tabular}{|c|c|c|c|c|c|}
\hline Urban Layout Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1902
\end{aligned}
\] & \[
\begin{array}{r}
1902- \\
1944
\end{array}
\] & \[
\begin{gathered}
1944- \\
1973
\end{gathered}
\] & \[
\begin{gathered}
1973 \\
1991
\end{gathered}
\] & \[
\begin{gathered}
1991 \text { - } \\
2015
\end{gathered}
\] \\
\hline \multicolumn{6}{|l|}{Roads} \\
\hline Share of Built-up Area Occupied by Roads & 28\% & 29\% & 25\% & 26\% & 20\% \\
\hline Share of Built-up Area That Is Gridded & 5\% & 0\% & 8\% & 0\% & 8\% \\
\hline Share of Roads Less Than 4 Meters Wide & 13\% & 7\% & 12\% & 13\% & 40\% \\
\hline Share of Roads More Than 16 Meters Wide & 27\% & 38\% & 22\% & 23\% & 18\% \\
\hline \multicolumn{6}{|l|}{Arterial Roads} \\
\hline Total Area of Zone (km²) & 19 & 51 & 32 & 1278 & 600 \\
\hline Total Length of Arterial Roads ( \(\mathrm{km}^{2}\) ) & 65 & 144 & 105 & 3356 & 700 \\
\hline Density of All Arterial Roads (km/km²) & 3.47 & 2.85 & 3.27 & 2.63 & 0.65 \\
\hline Average Beeline Distance to All Arterial Roads (meters) & 95 & 142 & 131 & 206 & 1286 \\
\hline Share of Area within Walking Distance of All Arterial Roads & 100\% & 98\% & 98\% & 93\% & 63\% \\
\hline \multicolumn{6}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-Way & 32\% & 27\% & 17\% & 15\% & 15\% \\
\hline Average Block Size (ha) & 3.1 & 6.5 & 5.7 & 7.5 & 6.4 \\
\hline 4-Way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 24 & 22 & 22 & 15 & 8 \\
\hline Walkability Ratio & 1.4 & 1.5 & 1.4 & 1.8 & 1.7 \\
\hline \multicolumn{6}{|l|}{Average Plot Size in Informal Land Subdivisions} \\
\hline Average Plot Size in Formal Land Subdivisions & & & 379 & 319 & \\
\hline \multicolumn{6}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-up Area That Is Residential & 44\% & 48\% & 43\% & 30\% & 28\% \\
\hline Share of Residential Areas Not Laid Out Before Development & 0\% & 4\% & 8\% & 25\% & 34\% \\
\hline Share of Residential Areas Laid Out Before Development & 100\% & 96\% & 92\% & 75\% & 66\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 0\% & 0\% & 0\% & 25\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 71\% & 51\% & 36\% & 18\% & 9\% \\
\hline Share of Residential Area in Housing Projects & 29\% & 44\% & 56\% & 57\% & 31\% \\
\hline
\end{tabular}

Average Block Size (hectares)


Share of Area Within Walking Distance of Arterial Road (625m)


Share of Roads Less Than 4-meters Wide


\section*{Sydney, Australia (Land-Rich Developed Countries 1895 - 2014)}


Sydney, Australia 1895-2014 \(\xrightarrow[40 \mathrm{~km}]{ }\) \(\square\) 1895
1945
1975
\(\star\) CBD
Study area
Water
No data

\begin{tabular}{|c|c|c|c|c|c|}
\hline Urban Layout Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1895
\end{aligned}
\] & \[
\begin{array}{r}
1895- \\
1945
\end{array}
\] & \[
\begin{array}{r}
1945- \\
1975
\end{array}
\] & \[
\begin{gathered}
1975- \\
1991
\end{gathered}
\] & \[
\begin{gathered}
1991 \\
2014
\end{gathered}
\] \\
\hline \multicolumn{6}{|l|}{Roads} \\
\hline Share of Built-up Area Occupied by Roads & 31\% & 27\% & 23\% & 24\% & 20\% \\
\hline Share of Built-up Area That Is Gridded & 20\% & 10\% & 3\% & 3\% & 3\% \\
\hline Share of Roads Less Than 4 Meters Wide & 5\% & 3\% & 4\% & 8\% & 8\% \\
\hline Share of Roads More Than 16 Meters Wide & 37\% & 54\% & 59\% & 54\% & 16\% \\
\hline \multicolumn{6}{|l|}{Arterial Roads} \\
\hline Total Area of Zone (km \({ }^{2}\) ) & 10 & 201 & 314 & 676 & 1645 \\
\hline Total Length of Arterial Roads ( \(\mathrm{km}^{2}\) ) & 26 & 1107 & 1601 & 2251 & 2114 \\
\hline Density of All Arterial Roads (km/km²) & 2.66 & 5.50 & 5.09 & 3.33 & 0.91 \\
\hline Average Beeline Distance to All Arterial Roads (meters) & 203 & 102 & 110 & 155 & 400 \\
\hline Share of Area within Walking Distance of All Arterial Roads & 92\% & 98\% & 98\% & 98\% & 79\% \\
\hline \multicolumn{6}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-Way & 30\% & 19\% & 17\% & 8\% & 4\% \\
\hline Average Block Size (ha) & 2.2 & 4.4 & 6.4 & 9.6 & 6.2 \\
\hline 4-Way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 34 & 13 & 6 & 3 & 3 \\
\hline Walkability Ratio & 1.5 & 1.7 & 1.8 & 1.7 & 1.8 \\
\hline \multicolumn{6}{|l|}{Average Plot Size in Informal Land Subdivisions} \\
\hline Average Plot Size in Formal Land Subdivisions & 331 & 479 & 688 & 694 & 707 \\
\hline \multicolumn{6}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-up Area That Is Residential & 39\% & 52\% & 60\% & 62\% & 61\% \\
\hline Share of Residential Areas Not Laid Out Before Development & 0\% & 0\% & 0\% & 0\% & 13\% \\
\hline Share of Residential Areas Laid Out Before Development & 100\% & 100\% & 100\% & 100\% & 87\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 0\% & 0\% & 0\% & 0\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 81\% & 96\% & 98\% & 95\% & 80\% \\
\hline Share of Residential Area in Housing Projects & 19\% & 4\% & 2\% & 5\% & 7\% \\
\hline
\end{tabular}

Average Block Size (hectares)


Share of Area Within Walking Distance of Arterial Road ( 625 m )


Share of Roads Less Than 4-meters Wide


Tehran, Iran (Western Asia and North Africa 1899 - 2010)


Tehran, Iran 1899-2010

1991
2000
2010
\begin{tabular}{|c|c|c|c|c|c|}
\hline Urban Layout Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1899
\end{aligned}
\] & \[
\begin{aligned}
& 1899- \\
& 1925
\end{aligned}
\] & \[
\begin{gathered}
1925- \\
1956
\end{gathered}
\] & \[
\begin{gathered}
1956 \\
1991
\end{gathered}
\] & \[
\begin{aligned}
& 1991-1 \\
& 2010
\end{aligned}
\] \\
\hline \multicolumn{6}{|c|}{Roads} \\
\hline Share of Built-up Area Occupied by Roads & 13\% & 20\% & 22\% & 28\% & 25\% \\
\hline Share of Built-up Area That Is Gridded & 0\% & 5\% & 20\% & 18\% & 0\% \\
\hline Share of Roads Less Than 4 Meters Wide & 42\% & 17\% & 15\% & 6\% & 24\% \\
\hline Share of Roads More Than 16 Meters Wide & 22\% & 18\% & 20\% & 22\% & 14\% \\
\hline \multicolumn{6}{|c|}{Arterial Roads} \\
\hline Total Area of Zone (km \({ }^{2}\) ) & 5 & 23 & 27 & 535 & 784 \\
\hline Total Length of Arterial Roads ( \(\mathrm{km}^{2}\) ) & 14 & 61 & 60 & 1141 & 1488 \\
\hline Density of All Arterial Roads ( \(\mathrm{km} / \mathrm{km}^{2}\) ) & 2.98 & 2.63 & 2.17 & 2.13 & 1.90 \\
\hline Average Beeline Distance to All Arterial Roads (meters) & 126 & 125 & 199 & 221 & 255 \\
\hline Share of Area within Walking Distance of All Arterial Roads & 100\% & 100\% & 96\% & 94\% & 91\% \\
\hline \multicolumn{6}{|c|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-Way & 8\% & 18\% & 25\% & 22\% & 11\% \\
\hline Average Block Size (ha) & 3.2 & 2.2 & 2.6 & 7.0 & 4.6 \\
\hline 4-Way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 8 & 24 & 32 & 23 & 16 \\
\hline Walkability Ratio & 1.6 & 1.5 & 1.5 & 1.5 & 1.9 \\
\hline
\end{tabular}
Average Plot Size in Informal Land Subdivisions
Average Plot Size in Formal Land Subdivisions
\(306 \quad 222 \quad 270\)
Stages in the Evolution of Residential Layouts
\begin{tabular}{lcccccc|}
\hline Share of Built-up Area That Is Residential & \(70 \%\) & \(59 \%\) & \(57 \%\) & \(40 \%\) & \(33 \%\) \\
\hline Share of Residential Areas Not Laid Out Before Development & \(92 \%\) & \(12 \%\) & \(7 \%\) & \(10 \%\) & \(11 \%\) \\
\hline Share of Residential Areas Laid Out Before Development & \(8 \%\) & \(88 \%\) & \(93 \%\) & \(90 \%\) & \(89 \%\) \\
\hline Share of Residential Area in Informal Land Subdivisions & \(0 \%\) & \(0 \%\) & \(0 \%\) & \(0 \%\) & \(16 \%\) \\
\hline Share of Residential Area in Formal Land Subdivisions & \(8 \%\) & \(88 \%\) & \(90 \%\) & \(75 \%\) & \(46 \%\) \\
\hline Share of Residential Area in Housing Projects & \(0 \%\) & \(0 \%\) & \(3 \%\) & \(15 \%\) & \(26 \%\) \\
\hline
\end{tabular}

Average Block Size (hectares)


Share of Area Within Walking Distance of Arterial Road ( 625 m )


Share of Roads Less Than 4-meters Wide


Tel Aviv, Israel (Western Asia and North Africa 1917 - 2014)


1917


1987


1929


2000


1956


2014


Tel Aviv, Israel 1917-2014


\begin{tabular}{|c|c|c|c|c|c|}
\hline Urban Layout Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1917
\end{aligned}
\] & \[
\begin{gathered}
1917- \\
1929
\end{gathered}
\] & \[
\begin{gathered}
1929- \\
1956
\end{gathered}
\] & \[
\begin{gathered}
1956- \\
1987
\end{gathered}
\] & \[
\begin{gathered}
1987 \\
2014
\end{gathered}
\] \\
\hline \multicolumn{6}{|l|}{Roads} \\
\hline Share of Built-up Area Occupied by Roads & 23\% & 27\% & 25\% & 21\% & 19\% \\
\hline Share of Built-up Area That Is Gridded & 0\% & 0\% & 0\% & 3\% & 0\% \\
\hline Share of Roads Less Than 4 Meters Wide & 8\% & 4\% & 3\% & 5\% & 16\% \\
\hline Share of Roads More Than 16 Meters Wide & 9\% & 8\% & 23\% & 16\% & 15\% \\
\hline \multicolumn{6}{|l|}{Arterial Roads} \\
\hline Total Area of Zone (km²) & 1 & 2 & 33 & 316 & 602 \\
\hline Total Length of Arterial Roads ( \(\mathrm{km}^{2}\) ) & 1 & 4 & 58 & 611 & 692 \\
\hline Density of All Arterial Roads (km/km²) & 0.69 & 1.8 & 1.77 & 1.93 & 0.95 \\
\hline Average Beeline Distance to All Arterial Roads (meters) & 389 & 160 & 135 & 381 & 435 \\
\hline Share of Area within Walking Distance of All Arterial Roads & 72\% & 99\% & 100\% & 82\% & 76\% \\
\hline \multicolumn{6}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-Way & 34\% & 46\% & 18\% & 25\% & 10\% \\
\hline Average Block Size (ha) & 2.6 & 0.9 & 3.6 & 4.0 & 6.1 \\
\hline 4-Way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 63 & 87 & 22 & 16 & 8 \\
\hline Walkability Ratio & 1.4 & 1.4 & 1.5 & 1.6 & 2.0 \\
\hline Average Plot Size in Informal Land Subdivisions & & & & & 554 \\
\hline Average Plot Size in Formal Land Subdivisions & 438 & 413 & 482 & 461 & 844 \\
\hline \multicolumn{6}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-up Area That Is Residential & 62\% & 59\% & 59\% & 50\% & 45\% \\
\hline Share of Residential Areas Not Laid Out Before Development & 60\% & 14\% & 7\% & 24\% & 15\% \\
\hline Share of Residential Areas Laid Out Before Development & 40\% & 86\% & 93\% & 74\% & 85\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 0\% & 0\% & 0\% & 20\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 37\% & 86\% & 87\% & 55\% & 57\% \\
\hline Share of Residential Area in Housing Projects & 3\% & 0\% & 6\% & 21\% & 7\% \\
\hline
\end{tabular}

Average Block Size (hectares)


Share of Area Within Walking Distance of Arterial Road (625m)


Share of Roads Less Than 4-meters Wide


Tokyo, Japan ( Europe \& Japan 1892 - 2014)


1892


1990


1929


2000


1954


2014


\begin{tabular}{|c|c|c|c|c|c|}
\hline Urban Layout Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1892
\end{aligned}
\] & \[
\begin{gathered}
1892- \\
1929
\end{gathered}
\] & \[
\begin{gathered}
1929- \\
1954
\end{gathered}
\] & \[
\begin{gathered}
1954- \\
1990
\end{gathered}
\] & \[
\begin{gathered}
1990- \\
2014
\end{gathered}
\] \\
\hline \multicolumn{6}{|l|}{Roads} \\
\hline Share of Built-up Area Occupied by Roads & 32\% & 21\% & 21\% & 22\% & 25\% \\
\hline Share of Built-up Area That Is Gridded & 26\% & 6\% & 14\% & 10\% & 3\% \\
\hline Share of Roads Less Than 4 Meters Wide & 26\% & 48\% & 35\% & 44\% & 51\% \\
\hline Share of Roads More Than 16 Meters Wide & 18\% & 5\% & 10\% & 4\% & 3\% \\
\hline \multicolumn{6}{|l|}{Arterial Roads} \\
\hline Total Area of Zone (km²) & 68 & 314 & 201 & 133 & 632 \\
\hline Total Length of Arterial Roads ( \(\mathrm{km}^{2}\) ) & 296 & 5690 & 313 & 140 & 1415 \\
\hline Density of All Arterial Roads (km/km²) & 4.34 & 1.82 & 1.56 & 1.06 & 1.73 \\
\hline Average Beeline Distance to All Arterial Roads (meters) & 91 & 284 & 394 & 543 & 198 \\
\hline Share of Area within Walking Distance of All Arterial Roads & 100\% & 91\% & 80\% & 70\% & 93\% \\
\hline \multicolumn{6}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-Way & 27\% & 25\% & 25\% & 20\% & 16\% \\
\hline Average Block Size (ha) & 1.8 & 1.5 & 3.0 & 2.7 & 2.5 \\
\hline 4-Way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 71 & 70 & 56 & 41 & 47 \\
\hline Walkability Ratio & 1.4 & 1.4 & 1.5 & 1.6 & 1.4 \\
\hline \multicolumn{6}{|l|}{Average Plot Size in Informal Land Subdivisions} \\
\hline Average Plot Size in Formal Land Subdivisions & 289 & 166 & 150 & 224 & 230 \\
\hline \multicolumn{6}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-up Area That Is Residential & 34\% & 53\% & 48\% & 53\% & 35\% \\
\hline Share of Residential Areas Not Laid Out Before Development & 24\% & 63\% & 56\% & 52\% & 47\% \\
\hline Share of Residential Areas Laid Out Before Development & 76\% & 37\% & 44\% & 48\% & 53\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 0\% & 0\% & 0\% & 2\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 75\% & 34\% & 39\% & 40\% & 49\% \\
\hline Share of Residential Area in Housing Projects & 1\% & 3\% & 5\% & 9\% & 2\% \\
\hline
\end{tabular}

Average Block Size (hectares)


Share of Area Within Walking Distance of Arterial Road ( 625 m )


Share of Roads Less Than 4-meters Wide


\section*{Warsaw, Poland (Europe \& Japan 1888 - 2013)}
\(\square\)


1888


1992


1936


2000


1958


2013

\begin{tabular}{|c|c|c|c|c|c|}
\hline Urban Layout Metrics & \[
\begin{aligned}
& \text { Pre- } \\
& 1888
\end{aligned}
\] & \[
\begin{gathered}
1888-1936
\end{gathered}
\] & \[
\begin{gathered}
1936-1 \\
\hline
\end{gathered}
\] & \[
\begin{gathered}
1958-1 \\
1992
\end{gathered}
\] & \[
\begin{gathered}
1992 \\
2013
\end{gathered}
\] \\
\hline \multicolumn{6}{|l|}{Roads} \\
\hline Share of Built-up Area Occupied by Roads & 28\% & 25\% & 19\% & 16\% & 15\% \\
\hline Share of Built-up Area That Is Gridded & 3\% & 3\% & 0\% & 13\% & 5\% \\
\hline Share of Roads Less Than 4 Meters Wide & 4\% & 6\% & 7\% & 11\% & 28\% \\
\hline Share of Roads More Than 16 Meters Wide & 42\% & 38\% & 19\% & 8\% & 1\% \\
\hline \multicolumn{6}{|l|}{Arterial Roads} \\
\hline Total Area of Zone (km²) & 13 & 24 & 96 & 417 & 746 \\
\hline Total Length of Arterial Roads ( \(\mathrm{km}^{2}\) ) & 46 & 71 & 140 & 361 & 866 \\
\hline Density of All Arterial Roads (km/km²) & 3.52 & 2.91 & 1.46 & 0.86 & 0.86 \\
\hline Average Beeline Distance to All Arterial Roads (meters) & 89 & 125 & 344 & 1004 & 347 \\
\hline Share of Area within Walking Distance of All Arterial Roads & 100\% & 99\% & 86\% & 57\% & 83\% \\
\hline \multicolumn{6}{|l|}{Block Size, Plot Size, Intersection Density, and Walkability} \\
\hline Share of Intersections that are 4-Way & 25\% & 21\% & 17\% & 18\% & 13\% \\
\hline Average Block Size (ha) & 5.7 & 5.6 & 6.9 & 7.1 & 6.4 \\
\hline 4-Way Intersection Density (number per \(\mathrm{km}^{2}\) ) & 13 & 10 & 10 & 10 & 8 \\
\hline Walkability Ratio & 1.6 & 1.6 & 1.6 & 1.5 & 1.6 \\
\hline Average Plot Size in Informal Land Subdivisions & & & & 798 & 1401 \\
\hline Average Plot Size in Formal Land Subdivisions & & & 764 & 774 & 751 \\
\hline \multicolumn{6}{|l|}{Stages in the Evolution of Residential Layouts} \\
\hline Share of Built-up Area That Is Residential & 31\% & 42\% & 45\% & 52\% & 62\% \\
\hline Share of Residential Areas Not Laid Out Before Development & 5\% & 2\% & 0\% & 14\% & 18\% \\
\hline Share of Residential Areas Laid Out Before Development & 95\% & 98\% & 100\% & 86\% & 82\% \\
\hline Share of Residential Area in Informal Land Subdivisions & 0\% & 0\% & 11\% & 25\% & 39\% \\
\hline Share of Residential Area in Formal Land Subdivisions & 63\% & 79\% & 67\% & 51\% & 35\% \\
\hline Share of Residential Area in Housing Projects & 31\% & 19\% & 22\% & 10\% & 7\% \\
\hline
\end{tabular}

Average Block Size (hectares)


Share of Area Within Walking Distance of Arterial Road (625m)


Share of Roads Less Than 4-meters Wide


\section*{Tables}

The tables in this section provide a consolidated report of all the metrics listed in the previous pages for individual cities. Table 1 reports on blocks and roads metrics for 200 cities: pre-1990 and 1990-2014. Table 2: reports on blocks and roads metrics for 30 cities for five periods: from the pre-1900 period to the 1990-2014 period. Cities are listed in alphabetical order in rows and their values for various metrics are listed in columns.

TABLE 1:
Blocks and Roads metrics for 200 cities: Pre-1990 and 1990-2014
\begin{tabular}{|c|c|c|c|c|c|c|c|}
\hline \multirow{2}{*}{City Name} & \multirow{2}{*}{Country} & \multirow{2}{*}{Region} & \multicolumn{2}{|l|}{CBD Location} & \multicolumn{3}{|c|}{Land Cover Dates} \\
\hline & & & Latitude & Longitude & T1 & T2 & T3 \\
\hline Accra & Ghana & Sub-Saharan Africa & 5.615 & -0.159 & 1/1/91 & 2/1/00 & 3/1/14 \\
\hline Addis Ababa & Ethiopia & Sub-Saharan Africa & 9.001 & 38.756 & 1/1/86 & 12/1/00 & 12/1/10 \\
\hline Ahmedabad & India & South and Central Asia & 23.037 & 72.589 & 12/1/89 & 10/1/00 & 10/1/13 \\
\hline Ahvaz & Iran & South and Central Asia & 31.320 & 48.665 & 11/1/91 & 9/1/00 & 9/1/13 \\
\hline Alexandria & Egypt & Western Asia and North Africa & 31.152 & 29.884 & 10/1/87 & 4/1/99 & 7/1/13 \\
\hline Algiers & Algeria & Western Asia and North Africa & 36.732 & 3.140 & 8/1/87 & 6/1/00 & 7/1/14 \\
\hline Anqing, Anhui & China & East Asia and the Pacific & 30.536 & 117.050 & 9/1/90 & 4/1/00 & 10/1/13 \\
\hline Antwerp & Belgium & Europe and Japan & 51.220 & 4.403 & 7/1/90 & 8/1/00 & 9/1/13 \\
\hline Arusha & Tanzania & Sub-Saharan Africa & -3.373 & 36.679 & 10/1/88 & 9/1/00 & 10/1/13 \\
\hline Astrakhan & Russia & Europe and Japan & 46.340 & 48.020 & 7/1/88 & 9/1/03 & 3/1/14 \\
\hline Auckland & New Zealand & Land-Rich Developed Countries & -36.915 & 174.786 & 6/1/89 & 9/1/01 & 4/1/14 \\
\hline Bacolod & Philippines & Southeast Asia & 10.664 & 122.961 & 12/1/92 & 9/1/00 & 3/1/15 \\
\hline Baghdad & Iraq & Western Asia and North Africa & 33.320 & 44.379 & 8/1/90 & 8/1/00 & 8/1/13 \\
\hline Baku & Azerbaijan & Western Asia and North Africa & 40.400 & 49.881 & 7/1/89 & 1/1/00 & 8/1/14 \\
\hline Bamako & Mali & Sub-Saharan Africa & 12.650 & -8.000 & 1/1/90 & 10/1/00 & 11/1/13 \\
\hline Bangkok & Thailand & Southeast Asia & 13.778 & 100.538 & 3/1/88 & 1/1/02 & 1/1/15 \\
\hline Beijing, Beijing & China & East Asia and the Pacific & 39.920 & 116.370 & 12/1/88 & 7/1/99 & 10/1/13 \\
\hline Beira & Mozambique & Sub-Saharan Africa & -19.831 & 34.860 & 3/1/91 & 5/1/01 & 7/1/13 \\
\hline Belgaum & India & South and Central Asia & 15.850 & 74.506 & 11/1/89 & 11/1/00 & 4/1/14 \\
\hline Belgrade & Serbia & Europe and Japan & 44.798 & 20.447 & 8/1/88 & 7/1/00 & 3/1/14 \\
\hline Belo Horizonte & Brazil & Latin America and the Caribbean & -19.904 & -44.005 & 6/1/89 & 6/1/00 & 5/1/13 \\
\hline Berezniki & Russia & Europe and Japan & 59.415 & 56.795 & 7/1/89 & 5/1/00 & 7/1/10 \\
\hline Berlin & Germany & Europe and Japan & 52.502 & 13.453 & 8/1/90 & 8/1/00 & 12/1/13 \\
\hline Bicheng, Chongqing & China & East Asia and the Pacific & 29.595 & 106.231 & 9/1/88 & 7/1/00 & 6/1/13 \\
\hline Bogota & Colombia & Latin America and the Caribbean & 4.644 & -74.129 & 12/1/89 & 1/1/01 & 1/1/10 \\
\hline Budapest & Hungary & Europe and Japan & 47.484 & 19.090 & 7/1/92 & 6/1/02 & 7/1/13 \\
\hline Buenos Aires & Argentina & Latin America and the Caribbean & -34.652 & -58.547 & 5/1/89 & 12/1/01 & 3/1/14 \\
\hline Bukhara & Uzbekistan & South and Central Asia & 39.763 & 64.465 & 4/1/91 & 7/1/00 & 8/1/13 \\
\hline Busan & Korea Rep. & East Asia and the Pacific & 35.167 & 129.036 & 2/1/91 & 10/1/00 & 9/1/13 \\
\hline Cabimas & Venezuela & Latin America and the Caribbean & 10.284 & -71.370 & 12/1/89 & 1/1/00 & 1/1/14 \\
\hline Cairo & Egypt & Western Asia and North Africa & 30.034 & 31.282 & 8/1/92 & 4/1/03 & 5/1/13 \\
\hline Caracas & Venezuela & Latin America and the Caribbean & 10.479 & -66.897 & 5/1/91 & 3/1/01 & 1/1/14 \\
\hline Cebu City & Philippines & Southeast Asia & 10.322 & 123.907 & 8/1/93 & 8/1/00 & 2/1/14 \\
\hline Changzhi, Hunan & China & East Asia and the Pacific & 36.192 & 113.116 & 10/1/92 & 10/1/00 & 6/1/14 \\
\hline Changzhou, Jingsu & China & East Asia and the Pacific & 31.775 & 119.970 & 10/1/89 & 3/1/00 & 3/1/14 \\
\hline Chengdu, Sichuan & China & East Asia and the Pacific & 30.667 & 104.051 & 5/1/88 & 5/1/00 & 3/1/09 \\
\hline Chengguan, Guizhou & China & East Asia and the Pacific & 26.680 & 105.769 & 8/1/90 & 11/1/00 & 6/1/13 \\
\hline Cheonan & Korea Rep. & East Asia and the Pacific & 36.826 & 127.144 & 2/1/91 & 8/1/00 & 9/1/14 \\
\hline Chicago & United States & Land-Rich Developed Countries & 41.860 & -87.864 & 6/1/89 & 9/1/01 & 9/1/14 \\
\hline Cirebon & Indonesia & Southeast Asia & -6.702 & 108.497 & 10/1/89 & 10/1/00 & 6/1/14 \\
\hline Cleveland & United States & Land-Rich Developed Countries & 41.470 & -81.636 & 4/1/90 & 3/1/00 & 6/1/13 \\
\hline Cochabamba & Bolivia & Latin America and the Caribbean & -17.391 & -66.170 & 7/1/90 & 6/1/00 & 7/1/13 \\
\hline Coimbatore & India & South and Central Asia & 11.015 & 76.973 & 1/1/92 & 10/1/00 & 2/1/14 \\
\hline Cordoba & Argentina & Latin America and the Caribbean & -31.381 & -64.216 & 12/1/91 & 11/1/01 & 7/1/14 \\
\hline Culiacan & Mexico & Latin America and the Caribbean & 24.798 & -107.402 & 1/1/90 & 1/1/00 & 3/1/14 \\
\hline Curitiba & Brazil & Latin America and the Caribbean & -25.463 & -49.254 & 9/1/90 & 7/1/00 & 1/1/14 \\
\hline Dhaka & Bangladesh & South and Central Asia & 23.766 & 90.418 & 11/1/89 & 10/1/99 & 3/1/14 \\
\hline Dzerzhinsk & Russia & Europe and Japan & 56.241 & 43.455 & 8/1/89 & 4/1/00 & 7/1/10 \\
\hline Florianopolis & Brazil & Latin America and the Caribbean & -27.595 & -48.613 & 5/1/90 & 5/1/00 & 1/1/14 \\
\hline Fukuoka & Japan & Europe and Japan & 33.598 & 130.437 & 5/1/93 & 5/1/01 & 4/1/14 \\
\hline
\end{tabular}

Accra - Fukuoka
\begin{tabular}{|c|c|c|c|c|c|c|c|c|}
\hline \multirow{2}{*}{City Name} & \multicolumn{2}{|l|}{Share of Built-up Area Occupied by Roads} & \multicolumn{2}{|l|}{Average Road Width (meters)} & \multicolumn{2}{|l|}{Share of Roads Less Than 4 Meters Wide} & \multicolumn{2}{|l|}{Share of Roads More Than 16 Meters Wide} \\
\hline & Pre-1990 & \[
\begin{gathered}
1990- \\
2014
\end{gathered}
\] & Pre-1990 & \[
\begin{gathered}
1990- \\
2014
\end{gathered}
\] & Pre-1990 & \[
\begin{gathered}
1990- \\
2014
\end{gathered}
\] & Pre-1990 & \[
\begin{gathered}
1990- \\
2014
\end{gathered}
\] \\
\hline Accra & 16\% & 14\% & 9.0 & 6.6 & 8\% & 26\% & 8\% & 3\% \\
\hline Addis Ababa & 18\% & 22\% & 9.0 & 8.1 & 13\% & 15\% & 13\% & 8\% \\
\hline Ahmedabad & 23\% & 24\% & 7.2 & 8.4 & 37\% & 18\% & 9\% & 9\% \\
\hline Ahvaz & 27\% & 23\% & 10.9 & 8.5 & 12\% & 20\% & 18\% & 10\% \\
\hline Alexandria & 16\% & 23\% & 7.5 & 9.1 & 21\% & 27\% & 8\% & 14\% \\
\hline Algiers & 23\% & 25\% & 9.5 & 6.6 & 13\% & 19\% & 14\% & 3\% \\
\hline Anqing, Anhui & 24\% & 25\% & 8.3 & 9.3 & 24\% & 35\% & 14\% & 14\% \\
\hline Antwerp & 14\% & 13\% & 7.9 & 7.1 & 22\% & 21\% & 6\% & 2\% \\
\hline Arusha & 21\% & 10\% & 8.7 & 4.7 & 21\% & 65\% & 11\% & 5\% \\
\hline Astrakhan & 23\% & 20\% & 7.4 & 5.3 & 8\% & 29\% & 4\% & 1\% \\
\hline Auckland & 18\% & 19\% & 14.2 & 10.3 & 8\% & 20\% & 43\% & 19\% \\
\hline Bacolod & 26\% & 21\% & 8.9 & 5.7 & 23\% & 28\% & 27\% & 1\% \\
\hline Baghdad & 24\% & 24\% & 9.3 & 6.4 & 10\% & 26\% & 11\% & 3\% \\
\hline Baku & 19\% & 18\% & 8.3 & 6.7 & 17\% & 18\% & 12\% & 5\% \\
\hline Bamako & 19\% & 20\% & 8.5 & 6.5 & 8\% & 19\% & 5\% & 3\% \\
\hline Bangkok & 18\% & 22\% & 9.5 & 7.0 & 16\% & 23\% & 13\% & 5\% \\
\hline Beijing, Beijing & 25\% & 26\% & 10.4 & 7.3 & 27\% & 43\% & 20\% & 11\% \\
\hline Beira & 14\% & 11\% & 7.6 & 6.5 & 26\% & 29\% & 9\% & 5\% \\
\hline Belgaum & 22\% & 23\% & 9.2 & 8.0 & 8\% & 9\% & 13\% & 6\% \\
\hline Belgrade & 23\% & 14\% & 8.5 & 5.7 & 22\% & 37\% & 10\% & 4\% \\
\hline Belo Horizonte & 23\% & 20\% & 9.5 & 7.3 & 11\% & 17\% & 9\% & 3\% \\
\hline Berezniki & 23\% & 32\% & 7.8 & 6.0 & 17\% & 36\% & 5\% & 2\% \\
\hline Berlin & 25\% & 18\% & 10.7 & 8.8 & 13\% & 17\% & 17\% & 11\% \\
\hline Bicheng, Chongqing & 33\% & 28\% & 8.7 & 10.2 & 21\% & 20\% & 13\% & 18\% \\
\hline Bogota & 25\% & 23\% & 10.9 & 8.8 & 14\% & 16\% & 17\% & 11\% \\
\hline Budapest & 20\% & 16\% & 9.1 & 7.7 & 7\% & 15\% & 6\% & 3\% \\
\hline Buenos Aires & 26\% & 15\% & 11.9 & 5.9 & 3\% & 13\% & 18\% & 1\% \\
\hline Bukhara & 19\% & 15\% & 10.3 & 8.6 & 11\% & 15\% & 15\% & 10\% \\
\hline Busan & 22\% & 29\% & 6.5 & 6.9 & 37\% & 39\% & 7\% & 9\% \\
\hline Cabimas & 16\% & 21\% & 8.7 & 7.1 & 4\% & 14\% & 5\% & 5\% \\
\hline Cairo & 26\% & 24\% & 10.2 & 9.5 & 19\% & 25\% & 21\% & 16\% \\
\hline Caracas & 20\% & 21\% & 11.4 & 6.5 & 9\% & 25\% & 19\% & 3\% \\
\hline Cebu City & 13\% & 14\% & 9.0 & 5.2 & 21\% & 43\% & 9\% & 3\% \\
\hline Changzhi, Hunan & 24\% & 23\% & 9.1 & 6.8 & 38\% & 51\% & 17\% & 10\% \\
\hline Changzhou, Jingsu & 22\% & 27\% & 9.6 & 10.4 & 32\% & 32\% & 20\% & 18\% \\
\hline Chengdu, Sichuan & 25\% & 21\% & 8.9 & 9.4 & 29\% & 31\% & 16\% & 17\% \\
\hline Chengguan, Guizhou & 16\% & 12\% & 8.9 & 7.9 & 22\% & 28\% & 17\% & 4\% \\
\hline Cheonan & 23\% & 26\% & 7.0 & 6.7 & 25\% & 37\% & 7\% & 8\% \\
\hline Chicago & 27\% & 25\% & 11.6 & 10.0 & 8\% & 27\% & 42\% & 30\% \\
\hline Cirebon & 13\% & 14\% & 5.4 & 5.8 & 40\% & 32\% & 2\% & 4\% \\
\hline Cleveland & 19\% & 16\% & 10.8 & 21.8 & 18\% & 13\% & 26\% & 26\% \\
\hline Cochabamba & 24\% & 19\% & 10.4 & 8.5 & 7\% & 25\% & 17\% & 2\% \\
\hline Coimbatore & 18\% & 24\% & 8.1 & 6.5 & 11\% & 17\% & 9\% & 6\% \\
\hline Cordoba & 23\% & 21\% & 10.2 & 7.5 & 5\% & 15\% & 8\% & 5\% \\
\hline Culiacan & 23\% & 29\% & 10.1 & 7.0 & 10\% & 26\% & 12\% & 6\% \\
\hline Curitiba & 26\% & 16\% & 12.5 & 6.6 & 7\% & 17\% & 27\% & 2\% \\
\hline Dhaka & 15\% & 12\% & 6.8 & 4.3 & 40\% & 56\% & 10\% & 2\% \\
\hline Dzerzhinsk & 21\% & 17\% & 6.5 & 5.2 & 27\% & 31\% & 6\% & 2\% \\
\hline Florianopolis & 23\% & 19\% & 9.3 & 6.3 & 6\% & 18\% & 6\% & 0\% \\
\hline Fukuoka & 25\% & 29\% & 5.4 & 5.1 & 48\% & 46\% & 4\% & 2\% \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|c|c|c|c|c|}
\hline \multirow[t]{2}{*}{City Name} & \multicolumn{2}{|l|}{\begin{tabular}{l}
Density of All Arterial \\
Roads (km/km)
\end{tabular}} & \multicolumn{2}{|l|}{Average Beeline Distance to All Arterial Roads (meters)} & \multicolumn{2}{|l|}{Share of Area within Walking Distance of All Arterial Roads} & \multicolumn{2}{|l|}{Share of Area within Walking Distance of Wide Arterial Roads} \\
\hline & Pre-1990 & \[
\begin{gathered}
1990- \\
2014
\end{gathered}
\] & Pre-1990 & \[
\begin{gathered}
1990- \\
2014
\end{gathered}
\] & Pre-1990 & \[
\begin{gathered}
1990- \\
2014
\end{gathered}
\] & Pre-1990 & \[
\begin{gathered}
1990- \\
2014
\end{gathered}
\] \\
\hline Accra & 1.90 & 0.82 & 199 & 575 & 96\% & 68\% & 77\% & 49\% \\
\hline Addis Ababa & 2.68 & 1.65 & 123 & 257 & 99\% & 90\% & 94\% & 84\% \\
\hline Ahmedabad & 1.86 & 1.61 & 185 & 218 & 97\% & 95\% & 93\% & 90\% \\
\hline Ahvaz & 2.03 & 1.64 & 197 & 253 & 96\% & 91\% & 95\% & 87\% \\
\hline Alexandria & 2.71 & 1.45 & 162 & 356 & 97\% & 81\% & 83\% & 70\% \\
\hline Algiers & 1.68 & 1.09 & 267 & 376 & 89\% & 80\% & 87\% & 68\% \\
\hline Anqing, Anhui & 1.57 & 1.23 & 251 & 336 & 92\% & 85\% & 91\% & 86\% \\
\hline Antwerp & 1.65 & 1.40 & 228 & 248 & 93\% & 91\% & 61\% & 49\% \\
\hline Arusha & 2.86 & 0.99 & 104 & 219 & 100\% & 95\% & 100\% & 84\% \\
\hline Astrakhan & 1.16 & 0.84 & 334 & 371 & 84\% & 80\% & 69\% & 63\% \\
\hline Auckland & 1.62 & 1.52 & 233 & 244 & 93\% & 92\% & 92\% & 91\% \\
\hline Bacolod & 2.35 & 1.36 & 160 & 264 & 98\% & 90\% & 89\% & 83\% \\
\hline Baghdad & 1.69 & 1.49 & 313 & 349 & 86\% & 84\% & 79\% & 74\% \\
\hline Baku & 1.80 & 1.37 & 251 & 317 & 90\% & 84\% & 81\% & 68\% \\
\hline Bamako & 1.87 & 1.02 & 178 & 376 & 98\% & 80\% & 87\% & 65\% \\
\hline Bangkok & 1.07 & 0.78 & 353 & 520 & 83\% & 70\% & 77\% & 62\% \\
\hline Beijing, Beijing & 1.63 & 0.67 & 271 & 573 & 89\% & 71\% & 87\% & 58\% \\
\hline Beira & 1.15 & 0.62 & 336 & 803 & 83\% & 58\% & 77\% & 55\% \\
\hline Belgaum & 2.62 & 1.50 & 138 & 307 & 100\% & 87\% & 97\% & 74\% \\
\hline Belgrade & 2.02 & 1.64 & 182 & 245 & 97\% & 93\% & 83\% & 77\% \\
\hline Belo Horizonte & 2.00 & 1.74 & 204 & 242 & 95\% & 92\% & 83\% & 76\% \\
\hline Berezniki & 0.25 & 0.30 & 1,129 & 1,000 & 30\% & 37\% & 32\% & 30\% \\
\hline Berlin & 2.21 & 1.72 & 150 & 207 & 98\% & 95\% & 95\% & 73\% \\
\hline Bicheng, Chongqing & 2.38 & 1.15 & 148 & 229 & 100\% & 93\% & 100\% & 92\% \\
\hline Bogota & 2.69 & 2.37 & 145 & 176 & 98\% & 96\% & 87\% & 84\% \\
\hline Budapest & 1.80 & 1.38 & 205 & 267 & 96\% & 90\% & 69\% & 53\% \\
\hline Buenos Aires & 2.57 & 2.14 & 147 & 194 & 98\% & 95\% & 78\% & 71\% \\
\hline Bukhara & 1.58 & 0.84 & 291 & 579 & 89\% & 69\% & 87\% & 64\% \\
\hline Busan & 2.91 & 2.07 & 213 & 289 & 91\% & 87\% & 87\% & 82\% \\
\hline Cabimas & 1.80 & 1.43 & 179 & 241 & 97\% & 92\% & 83\% & 75\% \\
\hline Cairo & 1.53 & 1.51 & 328 & 406 & 83\% & 78\% & 81\% & 70\% \\
\hline Caracas & 2.12 & 1.87 & 227 & 255 & 92\% & 90\% & 82\% & 78\% \\
\hline Cebu City & 1.71 & 1.34 & 237 & 295 & 91\% & 86\% & 78\% & 63\% \\
\hline Changzhi, Hunan & 2.11 & 1.34 & 178 & 317 & 98\% & 86\% & 98\% & 74\% \\
\hline Changzhou, Jingsu & 2.24 & 1.41 & 154 & 313 & 99\% & 86\% & 99\% & 84\% \\
\hline Chengdu, Sichuan & 2.46 & 0.44 & 151 & 3,004 & 98\% & 31\% & 98\% & 31\% \\
\hline Chengguan, Guizhou & 1.98 & 1.85 & 114 & 139 & 100\% & 100\% & 96\% & 95\% \\
\hline Cheonan & 3.29 & 0.50 & 94 & 331 & 100\% & 82\% & 100\% & 82\% \\
\hline Chicago & 1.41 & 1.41 & 241 & 258 & 93\% & 92\% & 80\% & 79\% \\
\hline Cirebon & 1.72 & 0.91 & 229 & 435 & 97\% & 77\% & 95\% & 66\% \\
\hline Cleveland & 1.63 & 1.21 & 225 & 258 & 95\% & 91\% & 90\% & 51\% \\
\hline Cochabamba & 2.42 & 1.24 & 164 & 378 & 97\% & 82\% & 96\% & 72\% \\
\hline Coimbatore & 1.77 & 1.42 & 196 & 238 & 96\% & 93\% & 79\% & 65\% \\
\hline Cordoba & 2.30 & 1.81 & 190 & 235 & 95\% & 92\% & 86\% & 82\% \\
\hline Culiacan & 2.20 & 1.54 & 159 & 297 & 98\% & 86\% & 88\% & 79\% \\
\hline Curitiba & 2.22 & 1.59 & 173 & 262 & 98\% & 90\% & 96\% & 81\% \\
\hline Dhaka & 2.27 & 1.50 & 162 & 261 & 97\% & 90\% & 88\% & 68\% \\
\hline Dzerzhinsk & 1.46 & 1.30 & 471 & 494 & 75\% & 73\% & 83\% & 82\% \\
\hline Florianopolis & 1.99 & 1.40 & 206 & 344 & 96\% & 85\% & 73\% & 61\% \\
\hline Fukuoka & 2.31 & 2.09 & 174 & 185 & 97\% & 97\% & 76\% & 70\% \\
\hline
\end{tabular}

Accra - Fukuoka
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|}
\hline \multirow[t]{2}{*}{City Name} & \multicolumn{2}{|l|}{Average Block Size (ha)} & \multicolumn{2}{|l|}{3-Way Intersection Density (number per \(\mathrm{km}^{2}\)} & \multicolumn{2}{|l|}{4-Way Intersection Density (number per
\[
\left.\mathrm{km}^{2}\right)
\]} & \multicolumn{2}{|l|}{Share of Intersections that are 4-Way} & \multicolumn{2}{|l|}{Walkability Ratio} \\
\hline & Pre-1990 & \[
\begin{array}{r}
1990- \\
2014
\end{array}
\] & Pre-1990 & \[
\begin{array}{r}
1990- \\
2014
\end{array}
\] & Pre-1990 & \[
\begin{array}{r}
1990- \\
2014
\end{array}
\] & Pre-1990 & \[
\begin{array}{r}
1990- \\
2014
\end{array}
\] & Pre-1990 & \[
\begin{array}{r}
1990- \\
2014
\end{array}
\] \\
\hline Accra & 6.2 & 3.9 & 47.3 & 117.3 & 14.3 & 8.9 & 19\% & 5\% & 1.8 & 1.7 \\
\hline Addis Ababa & 3.1 & 3.2 & 104.4 & 176.3 & 10.1 & 28.2 & 8\% & 13\% & 1.8 & 1.6 \\
\hline Ahmedabad & 2.4 & 4.2 & 297.5 & 139.4 & 35.1 & 27.9 & 9\% & 17\% & 1.8 & 1.6 \\
\hline Ahvaz & 2.2 & 3.5 & 96.8 & 106.4 & 23.6 & 19.1 & 17\% & 14\% & 1.6 & 2.0 \\
\hline Alexandria & 1.9 & 5.2 & 120.4 & 198.5 & 22.3 & 26.4 & 10\% & 9\% & 1.8 & 2.0 \\
\hline Algiers & 4.5 & 6.7 & 61.8 & 140.0 & 16.2 & 14.1 & 9\% & 6\% & 1.9 & 1.8 \\
\hline Anqing, Anhui & 3.8 & 4.8 & 191.0 & 121.2 & 23.8 & 14.6 & 9\% & 8\% & 1.8 & 1.5 \\
\hline Antwerp & 7.1 & 14.7 & 62.3 & 55.2 & 5.1 & 6.4 & 8\% & 9\% & 1.8 & 1.4 \\
\hline Arusha & 4.8 & 5.0 & 111.4 & 127.6 & 17.8 & 11.4 & 14\% & 5\% & 1.6 & 1.6 \\
\hline Astrakhan & 2.0 & 2.8 & 159.7 & 195.8 & 21.3 & 27.1 & 11\% & 13\% & 1.8 & 1.6 \\
\hline Auckland & 9.3 & 8.1 & 32.9 & 54.2 & 3.1 & 5.8 & 7\% & 9\% & 1.6 & 1.6 \\
\hline Bacolod & 4.2 & 2.9 & 96.2 & 158.6 & 43.9 & 19.4 & 42\% & 11\% & 2.1 & 2.2 \\
\hline Baghdad & 3.1 & 4.1 & 129.8 & 203.9 & 17.6 & 17.3 & 11\% & 4\% & 1.7 & 1.9 \\
\hline Baku & 3.1 & 3.9 & 107.3 & 117.3 & 13.4 & 6.7 & 10\% & 5\% & 1.9 & 1.7 \\
\hline Bamako & 2.2 & 1.6 & 111.5 & 184.3 & 43.8 & 45.6 & 28\% & 20\% & 1.6 & 1.5 \\
\hline Bangkok & 5.8 & 5.4 & 60.3 & 91.1 & 10.3 & 9.5 & 11\% & 6\% & 1.7 & 2.2 \\
\hline Beijing, Beijing & 6.2 & 4.5 & 105.9 & 147.0 & 15.3 & 34.6 & 10\% & 11\% & 1.6 & 1.8 \\
\hline Beira & 5.2 & 10.4 & 57.6 & 42.0 & 17.4 & 7.6 & 15\% & 11\% & 1.6 & 1.5 \\
\hline Belgaum & 2.6 & 2.7 & 112.7 & 152.1 & 11.9 & 21.9 & 8\% & 10\% & 1.7 & 1.6 \\
\hline Belgrade & 3.1 & 7.1 & 120.0 & 69.2 & 17.3 & 6.9 & 12\% & 7\% & 1.8 & 1.6 \\
\hline Belo Horizonte & 3.0 & 5.9 & 94.5 & 77.8 & 23.5 & 8.7 & 21\% & 14\% & 1.7 & 1.8 \\
\hline Berezniki & 4.4 & 1.2 & 114.9 & 327.6 & 10.5 & 30.8 & 6\% & 6\% & 1.9 & 1.7 \\
\hline Berlin & 3.4 & 5.6 & 97.3 & 83.8 & 23.5 & 14.4 & 23\% & 17\% & 1.9 & 1.9 \\
\hline Bicheng, Chongqing & 0.9 & 6.3 & 248.0 & 105.3 & 86.0 & 11.1 & 26\% & 7\% & 1.4 & 1.9 \\
\hline Bogota & 1.9 & 4.2 & 167.1 & 154.6 & 38.4 & 39.8 & 18\% & 13\% & 1.7 & 1.9 \\
\hline Budapest & 3.5 & 5.3 & 92.8 & 71.1 & 19.1 & 14.3 & 20\% & 26\% & 1.7 & 1.5 \\
\hline Buenos Aires & 2.4 & 3.5 & 83.1 & 68.1 & 29.2 & 41.5 & 58\% & 38\% & 1.4 & 1.6 \\
\hline Bukhara & 4.0 & 10.0 & 72.9 & 55.4 & 6.2 & 3.2 & 8\% & 5\% & 1.6 & 1.7 \\
\hline Busan & 2.5 & 2.8 & 161.8 & 185.4 & 32.8 & 18.3 & 14\% & 10\% & 1.7 & 1.7 \\
\hline Cabimas & 3.7 & 4.4 & 81.5 & 105.6 & 12.5 & 22.3 & 15\% & 17\% & 1.6 & 1.7 \\
\hline Cairo & 2.5 & 4.1 & 101.7 & 144.4 & 31.6 & 30.5 & 20\% & 12\% & 1.6 & 1.8 \\
\hline Caracas & 4.6 & 6.3 & 39.8 & 47.7 & 8.3 & 2.8 & 13\% & 2\% & 1.9 & 1.8 \\
\hline Cebu City & 6.5 & 4.4 & 79.4 & 114.9 & 7.4 & 1.0 & 8\% & 1\% & 2.1 & 2.2 \\
\hline Changzhi, Hunan & 4.4 & 5.7 & 153.0 & 139.5 & 38.1 & 22.1 & 14\% & 11\% & 1.8 & 1.7 \\
\hline Changzhou, Jingsu & 4.3 & 5.7 & 96.4 & 131.3 & 14.4 & 14.4 & 9\% & 11\% & 1.5 & 1.8 \\
\hline Chengdu, Sichuan & 3.4 & 8.0 & 173.6 & 64.1 & 21.2 & 10.7 & 12\% & 8\% & 1.8 & 1.9 \\
\hline Chengguan, Guizhou & 5.5 & 15.9 & 67.2 & 20.3 & 12.3 & 2.7 & 11\% & 4\% & 1.8 & 1.6 \\
\hline Cheonan & 1.7 & 4.4 & 172.1 & 149.4 & 59.1 & 15.2 & 22\% & 6\% & 1.3 & 1.5 \\
\hline Chicago & 7.4 & 3.9 & 61.2 & 73.9 & 37.6 & 11.8 & 33\% & 9\% & 1.5 & 1.7 \\
\hline Cirebon & 2.0 & 6.7 & 178.6 & 122.6 & 29.0 & 11.4 & 12\% & 5\% & 1.7 & 1.8 \\
\hline Cleveland & 5.3 & 7.7 & 82.0 & 99.3 & 10.5 & 10.9 & 11\% & 9\% & 1.7 & 1.7 \\
\hline Cochabamba & 2.1 & 5.6 & 125.8 & 133.2 & 26.5 & 26.4 & 19\% & 17\% & 1.7 & 1.6 \\
\hline Coimbatore & 4.5 & 3.9 & 130.1 & 182.4 & 12.6 & 19.1 & 9\% & 8\% & 2.0 & 1.9 \\
\hline Cordoba & 2.3 & 5.7 & 70.5 & 80.0 & 55.3 & 25.2 & 42\% & 21\% & 1.4 & 1.7 \\
\hline Culiacan & 2.8 & 2.8 & 77.3 & 183.1 & 51.0 & 35.4 & 37\% & 15\% & 1.8 & 2.0 \\
\hline Curitiba & 4.1 & 5.3 & 57.3 & 70.2 & 26.1 & 19.6 & 37\% & 18\% & 1.5 & 1.7 \\
\hline Dhaka & 3.3 & 5.8 & 131.0 & 149.4 & 15.3 & 7.6 & 10\% & 6\% & 1.6 & 1.5 \\
\hline Dzerzhinsk & 4.0 & 8.7 & 155.5 & 83.1 & 20.2 & 9.5 & 9\% & 9\% & 2.0 & 2.1 \\
\hline Florianopolis & 3.6 & 5.7 & 73.5 & 54.2 & 18.0 & 11.7 & 19\% & 11\% & 1.8 & 1.9 \\
\hline Fukuoka & 1.6 & 1.9 & 254.5 & 288.2 & 56.8 & 54.9 & 17\% & 15\% & 1.5 & 1.5 \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|c|c|c|c|c|}
\hline \multirow[t]{2}{*}{City Name} & \multicolumn{2}{|l|}{\begin{tabular}{l}
Share of Built-up Area \\
That Is Residential
\end{tabular}} & \multicolumn{2}{|l|}{Share of Residential Areas Laid Out Before Development} & \multicolumn{2}{|l|}{Share of Residential Areas Not Laid Out Before Development} & \multicolumn{2}{|l|}{Share of Built-up Area That Is Gridded} \\
\hline & Pre-1990 & \[
\begin{gathered}
1990- \\
2014
\end{gathered}
\] & Pre-1990 & \[
\begin{gathered}
1990- \\
2014
\end{gathered}
\] & Pre-1990 & \[
\begin{gathered}
1990- \\
2014
\end{gathered}
\] & Pre-1990 & \[
\begin{gathered}
1990- \\
2014
\end{gathered}
\] \\
\hline Accra & 70\% & 79\% & 51\% & 52\% & 43\% & 48\% & 24\% & 10\% \\
\hline Addis Ababa & 56\% & 73\% & 35\% & 58\% & 65\% & 42\% & 3\% & 30\% \\
\hline Ahmedabad & 72\% & 74\% & 80\% & 86\% & 20\% & 14\% & 0\% & 0\% \\
\hline Ahvaz & 78\% & 61\% & 100\% & 92\% & 0\% & 8\% & 15\% & 0\% \\
\hline Alexandria & 64\% & 82\% & 95\% & 80\% & 5\% & 20\% & 15\% & 0\% \\
\hline Algiers & 62\% & 60\% & 35\% & 67\% & 60\% & 33\% & 2\% & 8\% \\
\hline Anqing, Anhui & 47\% & 60\% & 61\% & 65\% & 39\% & 35\% & 0\% & 3\% \\
\hline Antwerp & 65\% & 71\% & 84\% & 14\% & 16\% & 86\% & & 0\% \\
\hline Arusha & 58\% & 79\% & 65\% & 15\% & 35\% & 85\% & 18\% & 0\% \\
\hline Astrakhan & 60\% & 73\% & 98\% & 80\% & 2\% & 20\% & 3\% & 5\% \\
\hline Auckland & 82\% & 79\% & 100\% & 93\% & 0\% & 7\% & 0\% & 0\% \\
\hline Bacolod & 98\% & 70\% & 78\% & 67\% & 43\% & 33\% & 10\% & 8\% \\
\hline Baghdad & 79\% & 80\% & 88\% & 45\% & 12\% & 55\% & 5\% & 0\% \\
\hline Baku & 57\% & 78\% & 68\% & 56\% & 32\% & 44\% & 4\% & 3\% \\
\hline Bamako & 66\% & 84\% & 100\% & 78\% & 0\% & 22\% & 33\% & 18\% \\
\hline Bangkok & 56\% & 54\% & 23\% & 60\% & 73\% & 40\% & 4\% & 3\% \\
\hline Beijing, Beijing & 51\% & 54\% & 65\% & 89\% & 19\% & 11\% & 3\% & 3\% \\
\hline Beira & 78\% & 76\% & 33\% & 17\% & 67\% & 83\% & 14\% & 8\% \\
\hline Belgaum & 72\% & 79\% & 49\% & 77\% & 51\% & 23\% & 0\% & 3\% \\
\hline Belgrade & 52\% & 82\% & 81\% & 64\% & 19\% & 36\% & 3\% & 3\% \\
\hline Belo Horizonte & 81\% & 85\% & 85\% & 89\% & 15\% & 11\% & 10\% & 3\% \\
\hline Berezniki & 64\% & 72\% & 97\% & 100\% & 3\% & 0\% & 3\% & 0\% \\
\hline Berlin & 74\% & 77\% & 100\% & 97\% & 0\% & 3\% & 13\% & 0\% \\
\hline Bicheng, Chongqing & 93\% & 38\% & 99\% & 74\% & 1\% & 26\% & 0\% & 0\% \\
\hline Bogota & 64\% & 76\% & 99\% & 95\% & 1\% & 5\% & 23\% & 10\% \\
\hline Budapest & 80\% & 90\% & 97\% & 89\% & 3\% & 11\% & 8\% & 15\% \\
\hline Buenos Aires & 81\% & 83\% & 93\% & 97\% & 2\% & 3\% & 88\% & 73\% \\
\hline Bukhara & 73\% & 78\% & 83\% & 93\% & 17\% & 7\% & 0\% & 0\% \\
\hline Busan & 60\% & 40\% & 73\% & 49\% & 27\% & 51\% & 8\% & 0\% \\
\hline Cabimas & 79\% & 83\% & 100\% & 72\% & 0\% & 28\% & 3\% & 8\% \\
\hline Cairo & 70\% & 75\% & 69\% & 57\% & 22\% & 43\% & 13\% & 8\% \\
\hline Caracas & 73\% & 74\% & 64\% & 48\% & 36\% & 52\% & 3\% & 0\% \\
\hline Cebu City & 62\% & 78\% & 37\% & 20\% & 63\% & 80\% & 0\% & 0\% \\
\hline Changzhi, Hunan & 52\% & 46\% & 94\% & 100\% & 6\% & 0\% & 3\% & 3\% \\
\hline Changzhou, Jingsu & 45\% & 43\% & 76\% & 32\% & 24\% & 68\% & 0\% & 0\% \\
\hline Chengdu, Sichuan & 47\% & 51\% & 93\% & 60\% & 7\% & 40\% & 3\% & 3\% \\
\hline Chengguan, Guizhou & 78\% & 70\% & 26\% & 21\% & 75\% & 79\% & 0\% & 0\% \\
\hline Cheonan & 69\% & 51\% & 64\% & 44\% & 36\% & 56\% & 18\% & 0\% \\
\hline Chicago & 80\% & 83\% & 82\% & 81\% & 2\% & 19\% & 57\% & 0\% \\
\hline Cirebon & 75\% & 82\% & 52\% & 39\% & 48\% & 61\% & 0\% & 0\% \\
\hline Cleveland & 67\% & 78\% & 92\% & 85\% & 8\% & 15\% & 5\% & 0\% \\
\hline Cochabamba & 67\% & 63\% & 99\% & 70\% & 1\% & 30\% & 18\% & 0\% \\
\hline Coimbatore & 59\% & 58\% & 80\% & 76\% & 20\% & 24\% & 3\% & 0\% \\
\hline Cordoba & 79\% & 76\% & 97\% & 90\% & 3\% & 10\% & 48\% & 15\% \\
\hline Culiacan & 66\% & 66\% & 97\% & 96\% & 3\% & 4\% & 35\% & 8\% \\
\hline Curitiba & 70\% & 72\% & 99\% & 82\% & 1\% & 18\% & 45\% & 18\% \\
\hline Dhaka & 75\% & 71\% & 30\% & 9\% & 68\% & 91\% & 0\% & 0\% \\
\hline Dzerzhinsk & 49\% & 94\% & 96\% & 99\% & 4\% & 1\% & & 0\% \\
\hline Florianopolis & 61\% & 88\% & 96\% & 85\% & 4\% & 15\% & 8\% & 0\% \\
\hline Fukuoka & 64\% & 59\% & 81\% & 69\% & 19\% & 31\% & 0\% & 0\% \\
\hline
\end{tabular}

Accra - Fukuoka
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|}
\hline \multirow[t]{2}{*}{City Name} & \multicolumn{2}{|l|}{\begin{tabular}{l}
Share of Residential \\
Area in Informal Land Subdivisions
\end{tabular}} & \multicolumn{2}{|l|}{\begin{tabular}{l}
Share of Residential \\
Area in Formal Land Subdivisions
\end{tabular}} & \multicolumn{2}{|l|}{Share of Residential Area in Housing Projects} & \multicolumn{2}{|l|}{Average Plot Size in Informal Land Subdivisions} & \multicolumn{2}{|l|}{Average Plot Size in Formal Land Subdivisions} \\
\hline & Pre-1990 & \[
\begin{array}{r}
1990- \\
2014
\end{array}
\] & Pre-1990 & \[
\begin{array}{r}
1990- \\
2014
\end{array}
\] & Pre-1990 & \[
\begin{array}{r}
1990- \\
2014
\end{array}
\] & Pre-1990 & \[
\begin{array}{r}
1990- \\
2014
\end{array}
\] & Pre-1990 & \[
\begin{array}{r}
1990- \\
2014
\end{array}
\] \\
\hline Accra & 34\% & 47\% & 13\% & 5\% & 10\% & 0\% & 22 & 949 & 555 & 636 \\
\hline Addis Ababa & 15\% & 44\% & 18\% & 2\% & 1\% & 13\% & & 244 & 675 & 187 \\
\hline Ahmedabad & 31\% & 31\% & 36\% & 10\% & 14\% & 44\% & 342 & 100 & 389 & 120 \\
\hline Ahvaz & 16\% & 29\% & 75\% & 42\% & 9\% & 21\% & 181 & 295 & 207 & 217 \\
\hline Alexandria & 15\% & 55\% & 73\% & 3\% & 7\% & 22\% & & & 354 & \\
\hline Algiers & 3\% & 16\% & 23\% & 25\% & 14\% & 26\% & & & 356 & 225 \\
\hline Anqing, Anhui & 5\% & 14\% & 23\% & 7\% & 33\% & 45\% & & & & \\
\hline Antwerp & 0\% & 0\% & 81\% & 14\% & 3\% & 0\% & & & & 1,448 \\
\hline Arusha & 35\% & 12\% & 29\% & 2\% & 2\% & 1\% & 553 & 369 & 456 & 654 \\
\hline Astrakhan & 59\% & 80\% & 19\% & 0\% & 19\% & 0\% & 473 & 991 & & \\
\hline Auckland & 0\% & 0\% & 96\% & 85\% & 4\% & 7\% & & & 580 & 454 \\
\hline Bacolod & 6\% & 44\% & 64\% & 20\% & 8\% & 2\% & 23 & 383 & 363 & 409 \\
\hline Baghdad & 31\% & 39\% & 53\% & 5\% & 5\% & 1\% & 125 & & 300 & \\
\hline Baku & 23\% & 48\% & 27\% & 5\% & 18\% & 3\% & & 637 & 728 & \\
\hline Bamako & 99\% & 78\% & 0\% & 0\% & 0\% & 1\% & 651 & 467 & & \\
\hline Bangkok & 2\% & 15\% & 20\% & 9\% & 5\% & 36\% & & 279 & 224 & 196 \\
\hline Beijing, Beijing & 9\% & 40\% & 13\% & 20\% & 59\% & 30\% & 21 & & 421 & \\
\hline Beira & 16\% & 17\% & 10\% & 0\% & 7\% & 0\% & 420 & & 778 & \\
\hline Belgaum & 38\% & 51\% & 4\% & 26\% & 7\% & 0\% & & 177 & & 405 \\
\hline Belgrade & 0\% & 27\% & 60\% & 33\% & 21\% & 4\% & & & & \\
\hline Belo Horizonte & 9\% & 18\% & 74\% & 70\% & 2\% & 1\% & 182 & & 388 & 194 \\
\hline Berezniki & 60\% & 50\% & 29\% & 0\% & 8\% & 50\% & 796 & 365 & 1,040 & \\
\hline Berlin & 7\% & 11\% & 72\% & 71\% & 21\% & 14\% & 309 & 278 & 454 & 909 \\
\hline Bicheng, Chongqing & 0\% & 3\% & 83\% & 33\% & 16\% & 38\% & & & & \\
\hline Bogota & 9\% & 26\% & 63\% & 18\% & 27\% & 51\% & & & 130 & \\
\hline Budapest & 6\% & 26\% & 84\% & 62\% & 6\% & 0\% & & 868 & 644 & 719 \\
\hline Buenos Aires & 28\% & 87\% & 69\% & 4\% & 1\% & 5\% & 168 & 372 & 254 & 484 \\
\hline Bukhara & 40\% & 57\% & 41\% & 23\% & 2\% & 12\% & 1,499 & & 565 & 2,653 \\
\hline Busan & 1\% & 0\% & 45\% & 24\% & 27\% & 25\% & & & 166 & 228 \\
\hline Cabimas & 16\% & 44\% & 82\% & 19\% & 3\% & 9\% & & & 906 & 456 \\
\hline Cairo & 17\% & 18\% & 58\% & 13\% & 3\% & 26\% & 82 & 595 & 525 & 473 \\
\hline Caracas & 6\% & 4\% & 52\% & 24\% & 6\% & 20\% & & & 550 & \\
\hline Cebu City & 25\% & 16\% & 11\% & 0\% & 0\% & 4\% & & & 243 & \\
\hline Changzhi, Hunan & 5\% & 27\% & 77\% & 59\% & 13\% & 13\% & & 561 & 269 & 394 \\
\hline Changzhou, Jingsu & 1\% & 5\% & 40\% & 1\% & 35\% & 25\% & & & & \\
\hline Chengdu, Sichuan & 0\% & 9\% & 71\% & 23\% & 22\% & 28\% & & & & \\
\hline Chengguan, Guizhou & 0\% & 1\% & 24\% & 4\% & 1\% & 17\% & & & & \\
\hline Cheonan & 0\% & 8\% & 54\% & 11\% & 10\% & 25\% & & & 170 & \\
\hline Chicago & 2\% & 0\% & 89\% & 64\% & 8\% & 17\% & & & 637 & 1,795 \\
\hline Cirebon & 0\% & 16\% & 51\% & 22\% & 2\% & 0\% & & & & 270 \\
\hline Cleveland & 0\% & 3\% & 85\% & 75\% & 7\% & 6\% & & & 840 & 1,381 \\
\hline Cochabamba & 33\% & 55\% & 66\% & 14\% & 1\% & 1\% & & 319 & 356 & 347 \\
\hline Coimbatore & 45\% & 70\% & 32\% & 2\% & 3\% & 5\% & 209 & 174 & 315 & 220 \\
\hline Cordoba & 16\% & 54\% & 80\% & 24\% & 1\% & 13\% & 344 & 789 & 326 & 768 \\
\hline Culiacan & 36\% & 24\% & 62\% & 67\% & 0\% & 5\% & 265 & 152 & 161 & 132 \\
\hline Curitiba & 0\% & 30\% & 97\% & 48\% & 2\% & 4\% & & 370 & 325 & 376 \\
\hline Dhaka & 18\% & 5\% & 8\% & 0\% & 6\% & 3\% & 270 & 349 & 379 & \\
\hline Dzerzhinsk & 61\% & 94\% & 28\% & 4\% & 7\% & 0\% & 683 & & & \\
\hline Florianopolis & 5\% & 23\% & 82\% & 60\% & 9\% & 2\% & 345 & 233 & 326 & 241 \\
\hline Fukuoka & 4\% & 9\% & 76\% & 59\% & 1\% & 1\% & 230 & 229 & 248 & 257 \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|c|c|c|c|}
\hline \multirow{2}{*}{City Name} & \multirow{2}{*}{Country} & \multirow{2}{*}{Region} & \multicolumn{2}{|l|}{CBD Location} & \multicolumn{3}{|c|}{Land Cover Dates} \\
\hline & & & Latitude & Longitude & T1 & T2 & T3 \\
\hline Gainesville, FL & United States & Land-Rich Developed Countries & 29.661 & -82.377 & 7/1/90 & 10/1/00 & 10/1/13 \\
\hline Gaoyou, Jiangsu & China & East Asia and the Pacific & 32.792 & 119.430 & 10/1/90 & 1/1/00 & 4/1/16 \\
\hline Gombe & Nigeria & Sub-Saharan Africa & 10.290 & 11.167 & 12/1/90 & 4/1/00 & 5/1/13 \\
\hline Gomel & Belarus & Europe and Japan & 52.432 & 30.972 & 5/1/90 & 9/1/00 & 5/1/13 \\
\hline Gorgan & Iran & South and Central Asia & 36.843 & 54.436 & 6/1/91 & 10/1/00 & 9/1/14 \\
\hline Guadalajara & Mexico & Latin America and the Caribbean & 20.660 & -103.357 & 3/1/90 & 11/1/99 & 4/1/14 \\
\hline Guangzhou, Guangdong & China & East Asia and the Pacific & 22.936 & 113.608 & 2/1/91 & 9/1/00 & 10/1/14 \\
\hline Guatemala City & Guatemala & Latin America and the Caribbean & 14.605 & -90.542 & 1/1/90 & 1/1/01 & 11/1/13 \\
\hline Guixi, Chongqing & China & East Asia and the Pacific & 30.332 & 107.348 & 6/1/88 & 7/1/01 & 6/1/16 \\
\hline Gwangju & Korea Rep. & East Asia and the Pacific & 35.146 & 126.919 & 10/1/89 & 3/1/00 & 5/1/15 \\
\hline Haikou, Hainan & China & East Asia and the Pacific & 20.028 & 110.329 & 10/1/91 & 7/1/01 & 12/1/13 \\
\hline Halle & Germany & Europe and Japan & 51.487 & 11.970 & 8/1/90 & 9/1/99 & 7/1/10 \\
\hline Hangzhou, Zhejiang & China & East Asia and the Pacific & 30.305 & 120.168 & 10/1/90 & 5/1/00 & 4/1/13 \\
\hline Hindupur & India & South and Central Asia & 13.838 & 77.488 & 2/1/89 & 3/1/00 & 3/1/14 \\
\hline Ho Chi Minh City & Vietnam & Southeast Asia & 10.830 & 106.713 & 1/1/89 & 12/1/99 & 1/1/15 \\
\hline Holguin & Cuba & Latin America and the Caribbean & 20.883 & -76.263 & 7/1/87 & 5/1/01 & 1/1/14 \\
\hline Hong Kong, Hong Kong & China & East Asia and the Pacific & 22.346 & 114.183 & 11/1/89 & 1/1/00 & 10/1/13 \\
\hline Houston & United States & Land-Rich Developed Countries & 29.780 & -95.386 & 11/1/90 & 9/1/00 & 5/1/14 \\
\hline Hyderabad & India & South and Central Asia & 17.422 & 78.484 & 3/1/90 & 7/1/99 & 5/1/14 \\
\hline Ibadan & Nigeria & Sub-Saharan Africa & 7.388 & 3.896 & 12/1/84 & 2/1/00 & 12/1/13 \\
\hline llheus & Brazil & Latin America and the Caribbean & -14.803 & -39.045 & 7/1/93 & 5/1/01 & 12/1/13 \\
\hline Ipoh & Malaysia & Southeast Asia & 4.590 & 101.077 & 12/1/90 & 3/1/03 & 2/1/15 \\
\hline Istanbul & Turkey & Western Asia and North Africa & 40.981 & 29.065 & 11/1/90 & 6/1/02 & 7/1/13 \\
\hline Jaipur & India & South and Central Asia & 26.911 & 75.787 & 10/1/89 & 10/1/00 & 9/1/14 \\
\hline Jalna & India & South and Central Asia & 19.851 & 75.878 & 10/1/89 & 10/1/00 & 10/1/14 \\
\hline Jequie & Brazil & Latin America and the Caribbean & -13.862 & -40.085 & 8/1/92 & 4/1/01 & 4/1/14 \\
\hline Jinan, Shandong & China & East Asia and the Pacific & 36.682 & 117.020 & 9/1/91 & 9/1/00 & 7/1/13 \\
\hline Jinju & Korea Rep. & East Asia and the Pacific & 35.187 & 128.107 & 4/1/88 & 4/1/00 & 5/1/14 \\
\hline Johannesburg & South Africa & Sub-Saharan Africa & 6.842 & 3.634 & 3/1/90 & 7/1/98 & 6/1/13 \\
\hline Kabul & Afghanistan & South and Central Asia & 34.529 & 69.172 & 11/1/87 & 8/1/00 & 9/1/14 \\
\hline Kaiping, Guangdong & China & East Asia and the Pacific & 22.380 & 112.688 & 4/1/90 & 9/1/00 & 11/1/14 \\
\hline Kairouan & Tunisia & Western Asia and North Africa & 35.673 & 10.096 & 5/1/92 & 5/1/00 & 6/1/10 \\
\hline Kampala & Uganda & Sub-Saharan Africa & 0.315 & 32.585 & 3/1/88 & 2/1/03 & 2/1/15 \\
\hline Kanpur & India & South and Central Asia & 26.457 & 80.310 & 12/1/91 & 2/1/99 & 9/1/14 \\
\hline Karachi & Pakistan & South and Central Asia & 24.900 & 67.075 & 2/1/91 & 10/1/00 & 10/1/13 \\
\hline Kaunas & Lithuania & Europe and Japan & 54.903 & 23.925 & 8/1/90 & 9/1/00 & 3/1/14 \\
\hline Kayseri & Turkey & Western Asia and North Africa & 38.724 & 35.480 & 10/1/87 & 6/1/00 & 8/1/13 \\
\hline Khartoum & Sudan & Western Asia and North Africa & 15.552 & 32.532 & 12/1/88 & 4/1/00 & 3/1/14 \\
\hline Kigali & Rwanda & Sub-Saharan Africa & 9.927 & 8.880 & 2/1/87 & 7/1/99 & 10/1/14 \\
\hline Killeen & United States & Land-Rich Developed Countries & 31.112 & -97.732 & 8/1/90 & 5/1/00 & 8/1/13 \\
\hline Kinshasa & Congo Dem. Rep. & Sub-Saharan Africa & -4.374 & 15.320 & 8/1/94 & 9/1/00 & 7/1/13 \\
\hline Kolkata & India & South and Central Asia & 22.533 & 88.356 & 11/1/90 & 11/1/03 & 4/1/14 \\
\hline Kozhikode & India & South and Central Asia & 11.254 & 75.803 & 2/1/91 & 3/1/01 & 2/1/14 \\
\hline Lagos & Nigeria & Sub-Saharan Africa & 6.210 & 7.063 & 12/1/84 & 2/1/00 & 12/1/13 \\
\hline Lahore & Pakistan & South and Central Asia & 31.514 & 74.314 & 11/1/91 & 10/1/00 & 10/1/13 \\
\hline Lausanne & Switzerland & Europe and Japan & 46.516 & 6.633 & 4/1/87 & 3/1/01 & 8/1/15 \\
\hline Le Mans & France & Europe and Japan & 47.989 & 0.199 & 5/1/92 & 8/1/99 & 7/1/13 \\
\hline Leon & Nicaragua & Latin America and the Caribbean & 12.438 & -86.878 & 7/1/93 & 4/1/00 & 1/1/10 \\
\hline Leshan, Sichuan & China & East Asia and the Pacific & 29.591 & 103.754 & 7/1/90 & 7/1/01 & 8/1/14 \\
\hline London & United Kingdom & Europe and Japan & 51.506 & -0.139 & 5/1/89 & 6/1/00 & 7/1/13 \\
\hline
\end{tabular}

Gainsville - London
\begin{tabular}{|c|c|c|c|c|c|c|c|c|}
\hline \multirow{2}{*}{City Name} & \multicolumn{2}{|l|}{Share of Built-up Area Occupied by Roads} & \multicolumn{2}{|l|}{Average Street Width (meters)} & \multicolumn{2}{|l|}{Share of Roads Less Than 4 m . Wide} & \multicolumn{2}{|l|}{Share of Roads More Than 16 m . Wide} \\
\hline & Pre-1990 & \[
\begin{gathered}
1990- \\
2014
\end{gathered}
\] & Pre-1990 & \[
\begin{gathered}
1990- \\
2014
\end{gathered}
\] & Pre-1990 & \[
\begin{gathered}
1990- \\
2014
\end{gathered}
\] & Pre-1990 & \[
\begin{gathered}
1990- \\
2014
\end{gathered}
\] \\
\hline Gainesville, FL & 19\% & 18\% & 8.5 & 9.9 & 18\% & 13\% & 14\% & 14\% \\
\hline Gaoyou, Jiangsu & 13\% & 23\% & 7.0 & 8.6 & 33\% & 25\% & 9\% & 16\% \\
\hline Gombe & 21\% & 21\% & 7.5 & 8.2 & 17\% & 23\% & 7\% & 6\% \\
\hline Gomel & 20\% & 16\% & 6.9 & 6.5 & 23\% & 26\% & 8\% & 5\% \\
\hline Gorgan & 23\% & 24\% & 8.6 & 8.6 & 15\% & 20\% & 10\% & 9\% \\
\hline Guadalajara & 27\% & 27\% & 12.4 & 9.3 & 6\% & 10\% & 18\% & 10\% \\
\hline Guangzhou, Guangdong & 19\% & 19\% & 8.6 & 7.9 & 27\% & 34\% & 12\% & 12\% \\
\hline Guatemala City & 20\% & 20\% & 8.3 & 6.9 & 12\% & 12\% & 10\% & 3\% \\
\hline Guixi, Chongqing & 18\% & 18\% & 10.2 & 9.5 & 17\% & 38\% & 19\% & 18\% \\
\hline Gwangju & 23\% & 25\% & 7.6 & 6.7 & 30\% & 43\% & 11\% & 7\% \\
\hline Haikou, Hainan & 23\% & 21\% & 11.7 & 7.9 & 19\% & 24\% & 22\% & 9\% \\
\hline Halle & 18\% & 15\% & 6.4 & 5.0 & 37\% & 40\% & 6\% & 0\% \\
\hline Hangzhou, Zhejiang & 32\% & 27\% & 9.9 & 8.1 & 25\% & 38\% & 16\% & 13\% \\
\hline Hindupur & 18\% & 20\% & 6.5 & 5.1 & 26\% & 39\% & 3\% & 2\% \\
\hline Ho Chi Minh City & 18\% & 15\% & 9.0 & 7.2 & 23\% & 34\% & 13\% & 7\% \\
\hline Holguin & 16\% & 21\% & 6.2 & 7.0 & 18\% & 19\% & 3\% & 9\% \\
\hline Hong Kong, Hong Kong & 25\% & 20\% & 11.3 & 9.4 & 14\% & 25\% & 23\% & 16\% \\
\hline Houston & 21\% & 20\% & 10.6 & 10.0 & 11\% & 12\% & 20\% & 14\% \\
\hline Hyderabad & 19\% & 21\% & 6.8 & 6.2 & 19\% & 23\% & 4\% & 3\% \\
\hline Ibadan & 12\% & 12\% & 6.0 & 3.2 & 22\% & 69\% & 2\% & 0\% \\
\hline Ilheus & 23\% & 21\% & 9.0 & 8.7 & 13\% & 7\% & 10\% & 5\% \\
\hline Ipoh & 32\% & 30\% & 10.8 & 8.6 & 5\% & 9\% & 15\% & 6\% \\
\hline Istanbul & 27\% & 28\% & 9.2 & 7.8 & 9\% & 14\% & 10\% & 6\% \\
\hline Jaipur & 22\% & 27\% & 8.0 & 7.4 & 19\% & 18\% & 10\% & 8\% \\
\hline Jalna & 19\% & 18\% & 6.3 & 7.2 & 21\% & 29\% & 1\% & 6\% \\
\hline Jequie & 24\% & 26\% & 7.6 & 5.6 & 21\% & 29\% & 4\% & 1\% \\
\hline Jinan, Shandong & 25\% & 22\% & 9.5 & 9.5 & 35\% & 42\% & 15\% & 17\% \\
\hline Jinju & 24\% & 17\% & 7.5 & 4.8 & 31\% & 54\% & 10\% & 2\% \\
\hline Johannesburg & 25\% & 18\% & 13.2 & 7.4 & 6\% & 22\% & 32\% & 7\% \\
\hline Kabul & 17\% & 20\% & 8.2 & 6.3 & 35\% & 30\% & 10\% & 3\% \\
\hline Kaiping, Guangdong & 18\% & 24\% & 5.1 & 8.4 & 52\% & 33\% & 6\% & 13\% \\
\hline Kairouan & 26\% & 25\% & 7.7 & 5.8 & 14\% & 35\% & 8\% & 3\% \\
\hline Kampala & 13\% & 12\% & 6.7 & 4.5 & 20\% & 42\% & 4\% & 1\% \\
\hline Kanpur & 20\% & 23\% & 6.8 & 5.7 & 24\% & 38\% & 5\% & 4\% \\
\hline Karachi & 22\% & 23\% & 8.3 & 7.4 & 30\% & 30\% & 12\% & 9\% \\
\hline Kaunas & 17\% & 12\% & 7.9 & 5.4 & 26\% & 31\% & 10\% & 1\% \\
\hline Kayseri & 31\% & 27\% & 9.4 & 9.1 & 17\% & 28\% & 13\% & 17\% \\
\hline Khartoum & 24\% & 23\% & 9.3 & 7.3 & 5\% & 21\% & 9\% & 6\% \\
\hline Kigali & 17\% & 14\% & 7.9 & 5.5 & 18\% & 32\% & 7\% & 1\% \\
\hline Killeen & 24\% & 23\% & 10.6 & 18.8 & 12\% & 13\% & 24\% & 31\% \\
\hline Kinshasa & 14\% & 13\% & 9.5 & 5.2 & 28\% & 37\% & 4\% & 3\% \\
\hline Kolkata & 13\% & 10\% & 5.8 & 4.0 & 38\% & 60\% & 5\% & 2\% \\
\hline Kozhikode & 15\% & 8\% & 6.3 & 4.8 & 26\% & 44\% & 3\% & 3\% \\
\hline Lagos & 17\% & 16\% & 10.1 & 7.1 & 6\% & 20\% & 10\% & 3\% \\
\hline Lahore & 20\% & 24\% & 7.3 & 6.4 & 32\% & 32\% & 9\% & 6\% \\
\hline Lausanne & 21\% & 24\% & 18.3 & 6.2 & 17\% & 21\% & 14\% & 1\% \\
\hline Le Mans & 21\% & 21\% & 6.7 & 5.5 & 25\% & 34\% & 4\% & 2\% \\
\hline Leon & 18\% & 19\% & 7.8 & 5.5 & 9\% & 19\% & 2\% & 1\% \\
\hline Leshan, Sichuan & 27\% & 18\% & 10.8 & 7.6 & 10\% & 27\% & 18\% & 8\% \\
\hline London & 19\% & 10\% & 9.5 & 7.5 & 9\% & 18\% & 9\% & 4\% \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|c|c|c|c|c|}
\hline \multirow[t]{2}{*}{City Name} & \multicolumn{2}{|l|}{\begin{tabular}{l}
Density of All Arterial \\
Roads ( \(\mathrm{km} / \mathrm{km}^{2}\) )
\end{tabular}} & \multicolumn{2}{|l|}{Average Beeline Distance to All Arterial Roads (meters)} & \multicolumn{2}{|l|}{Share of Area within Walking Distance of All Arterial Roads} & \multicolumn{2}{|l|}{Share of Area within Walking Distance of Wide Arterial Roads} \\
\hline & Pre-1990 & \[
\begin{aligned}
& 1990- \\
& 2014
\end{aligned}
\] & Pre-1990 & \[
\begin{gathered}
1990- \\
2014
\end{gathered}
\] & Pre-1990 & \[
\begin{gathered}
1990- \\
2014
\end{gathered}
\] & Pre-1990 & \[
\begin{gathered}
1990- \\
2014
\end{gathered}
\] \\
\hline Gainesville, FL & 1.71 & 1.45 & 197 & 233 & 97\% & 93\% & 96\% & 93\% \\
\hline Gaoyou, Jiangsu & 1.47 & 1.47 & 334 & 310 & 83\% & 91\% & 83\% & 91\% \\
\hline Gombe & 2.19 & 1.22 & 170 & 336 & 97\% & 81\% & 89\% & 67\% \\
\hline Gomel & 0.77 & 0.72 & 448 & 475 & 72\% & 71\% & 72\% & 70\% \\
\hline Gorgan & 1.90 & 1.50 & 169 & 236 & 99\% & 93\% & 98\% & 90\% \\
\hline Guadalajara & 2.28 & 1.59 & 165 & 298 & 97\% & 86\% & 93\% & 78\% \\
\hline Guangzhou, Guangdong & 2.19 & 0.59 & 175 & 912 & 97\% & 70\% & 97\% & 69\% \\
\hline Guatemala City & 2.03 & 1.53 & 187 & 250 & 95\% & 90\% & 81\% & 68\% \\
\hline Guixi, Chongqing & 0.95 & 1.05 & 214 & 264 & 100\% & 89\% & 100\% & 96\% \\
\hline Gwangju & 4.63 & 2.77 & 69 & 199 & 100\% & 92\% & 100\% & 90\% \\
\hline Haikou, Hainan & 2.04 & 1.60 & 192 & 249 & 96\% & 92\% & 96\% & 92\% \\
\hline Halle & 2.17 & 1.87 & 155 & 187 & 98\% & 96\% & 90\% & 76\% \\
\hline Hangzhou, Zhejiang & 2.97 & 0.74 & 129 & 1,556 & 99\% & 66\% & 99\% & 63\% \\
\hline Hindupur & 2.35 & 1.28 & 115 & 219 & 100\% & 95\% & 92\% & 95\% \\
\hline Ho Chi Minh City & 2.57 & 1.17 & 146 & 362 & 97\% & 82\% & 95\% & 64\% \\
\hline Holguin & 1.65 & 1.50 & 235 & 250 & 92\% & 92\% & 69\% & 67\% \\
\hline Hong Kong, Hong Kong & 3.88 & 3.22 & 105 & 132 & 99\% & 97\% & 98\% & 94\% \\
\hline Houston & 1.99 & 0.83 & 181 & 396 & 97\% & 80\% & 95\% & 73\% \\
\hline Hyderabad & 1.92 & 1.31 & 184 & 279 & 98\% & 90\% & 77\% & 63\% \\
\hline Ibadan & 1.04 & 0.71 & 353 & 596 & 82\% & 65\% & 49\% & 34\% \\
\hline llheus & 2.34 & 1.71 & 156 & 264 & 98\% & 88\% & 95\% & 78\% \\
\hline Ipoh & 1.05 & 0.81 & 387 & 479 & 79\% & 71\% & 68\% & 58\% \\
\hline Istanbul & 3.30 & 2.25 & 115 & 202 & 99\% & 94\% & 93\% & 82\% \\
\hline Jaipur & 1.95 & 1.38 & 185 & 272 & 96\% & 90\% & 94\% & 88\% \\
\hline Jalna & 1.65 & 1.50 & 190 & 241 & 96\% & 93\% & 63\% & 66\% \\
\hline Jequie & 1.20 & 1.02 & 332 & 383 & 83\% & 79\% & 68\% & 65\% \\
\hline Jinan, Shandong & 1.45 & 1.15 & 332 & 500 & 86\% & 76\% & 86\% & 76\% \\
\hline Jinju & 2.35 & 1.27 & 172 & 404 & 97\% & 80\% & 94\% & 51\% \\
\hline Johannesburg & 1.51 & 0.52 & 238 & 835 & 93\% & 49\% & 93\% & 46\% \\
\hline Kabul & 1.60 & 1.25 & 301 & 346 & 85\% & 82\% & 68\% & 63\% \\
\hline Kaiping, Guangdong & 1.97 & 1.35 & 161 & 235 & 100\% & 92\% & 100\% & 89\% \\
\hline Kairouan & 2.25 & 1.95 & 156 & 196 & 99\% & 96\% & 99\% & 96\% \\
\hline Kampala & 2.05 & 1.10 & 157 & 346 & 98\% & 84\% & 58\% & 37\% \\
\hline Kanpur & 1.81 & 1.47 & 187 & 261 & 97\% & 91\% & 94\% & 84\% \\
\hline Karachi & 3.11 & 2.59 & 130 & 158 & 99\% & 98\% & 94\% & 89\% \\
\hline Kaunas & 1.28 & 1.21 & 275 & 281 & 90\% & 90\% & 81\% & 78\% \\
\hline Kayseri & 2.93 & 1.81 & 125 & 218 & 99\% & 93\% & 99\% & 89\% \\
\hline Khartoum & 1.76 & 1.18 & 281 & 516 & 89\% & 74\% & 88\% & 72\% \\
\hline Kigali & 2.22 & 1.17 & 179 & 318 & 95\% & 86\% & 72\% & 58\% \\
\hline Killeen & 1.11 & 0.95 & 470 & 472 & 76\% & 75\% & 75\% & 73\% \\
\hline Kinshasa & 1.26 & 0.84 & 327 & 709 & 84\% & 65\% & 41\% & 35\% \\
\hline Kolkata & 1.63 & 1.11 & 245 & 335 & 92\% & 84\% & 62\% & 54\% \\
\hline Kozhikode & 2.16 & 0.74 & 189 & 314 & 98\% & 88\% & 100\% & 67\% \\
\hline Lagos & 1.25 & 0.76 & 336 & 543 & 85\% & 70\% & 73\% & 50\% \\
\hline Lahore & 3.21 & 2.46 & 119 & 167 & 99\% & 97\% & 94\% & 88\% \\
\hline Lausanne & 3.10 & 2.58 & 95 & 125 & 100\% & 99\% & 73\% & 60\% \\
\hline Le Mans & 2.87 & 2.78 & 117 & 122 & 100\% & 99\% & 85\% & 84\% \\
\hline Leon & 3.02 & 2.01 & 119 & 188 & 99\% & 96\% & 66\% & 66\% \\
\hline Leshan, Sichuan & 2.44 & 0.79 & 166 & 747 & 97\% & 61\% & 85\% & 55\% \\
\hline London & 2.21 & 1.39 & 163 & 439 & 98\% & 78\% & 75\% & 37\% \\
\hline
\end{tabular}

Gainsville - London
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|}
\hline \multirow[t]{2}{*}{City Name} & \multicolumn{2}{|l|}{Average Block Size (ha)} & \multicolumn{2}{|l|}{3-Way Intersection Density (number per km \({ }^{2}\)} & \multicolumn{2}{|l|}{4-Way Intersection Density (number per \(\mathrm{km}^{2}\) )} & \multicolumn{2}{|l|}{Share of Intersections that are 4-Way} & \multicolumn{2}{|l|}{Walkability Ratio} \\
\hline & Pre-1990 & \[
\begin{array}{r}
1990- \\
2014
\end{array}
\] & Pre-1990 & \[
\begin{array}{r}
1990- \\
2014
\end{array}
\] & Pre-1990 & \[
\begin{array}{r}
1990- \\
2014
\end{array}
\] & Pre-1990 & \[
\begin{array}{r}
1990- \\
2014
\end{array}
\] & Pre-1990 & \[
\begin{array}{r}
1990- \\
2014
\end{array}
\] \\
\hline Gainesville, FL & 3.8 & 7.6 & 91.6 & 69.3 & 17.0 & 4.9 & 13\% & 6\% & 1.8 & 2.4 \\
\hline Gaoyou, Jiangsu & 5.3 & 8.0 & 79.9 & 58.9 & 11.5 & 14.5 & 10\% & 15\% & 1.5 & 1.5 \\
\hline Gombe & 1.6 & 2.5 & 193.1 & 248.1 & 55.2 & 36.5 & 22\% & 10\% & 1.5 & 1.7 \\
\hline Gomel & 3.4 & 5.1 & 163.9 & 79.4 & 19.6 & 16.7 & 14\% & 14\% & 2.0 & 1.8 \\
\hline Gorgan & 2.1 & 7.0 & 170.8 & 109.4 & 15.8 & 15.2 & 8\% & 7\% & 1.8 & 1.7 \\
\hline Guadalajara & 3.0 & 3.2 & 100.0 & 142.0 & 43.6 & 19.2 & 28\% & 11\% & 1.7 & 1.8 \\
\hline Guangzhou, Guangdong & 3.6 & 5.2 & 123.2 & 123.6 & 10.3 & 9.7 & 6\% & 6\% & 1.8 & 1.8 \\
\hline Guatemala City & 2.1 & 2.0 & 89.5 & 97.5 & 42.0 & 21.1 & 31\% & 10\% & 1.6 & 1.8 \\
\hline Guixi, Chongqing & 4.1 & 7.9 & 68.8 & 47.4 & 17.1 & 5.8 & 28\% & 6\% & 1.4 & 1.7 \\
\hline Gwangju & 2.3 & 4.3 & 149.6 & 188.7 & 38.0 & 18.9 & 18\% & 11\% & 1.5 & 1.7 \\
\hline Haikou, Hainan & 3.7 & 4.6 & 99.3 & 136.0 & 7.4 & 6.8 & 11\% & 5\% & 1.8 & 1.7 \\
\hline Halle & 2.5 & 4.3 & 214.1 & 154.7 & 26.8 & 11.0 & 9\% & 3\% & 1.7 & 1.6 \\
\hline Hangzhou, Zhejiang & 2.4 & 3.6 & 258.8 & 153.9 & 42.2 & 23.9 & 13\% & 13\% & 1.7 & 1.7 \\
\hline Hindupur & 1.7 & 2.5 & 193.2 & 279.2 & 24.8 & 56.0 & 13\% & 16\% & 1.5 & 1.7 \\
\hline Ho Chi Minh City & 3.0 & 5.3 & 117.6 & 87.5 & 22.4 & 6.8 & 14\% & 6\% & 1.7 & 1.8 \\
\hline Holguin & 4.2 & 8.5 & 96.3 & 116.6 & 32.4 & 13.6 & 21\% & 7\% & 1.5 & 1.8 \\
\hline Hong Kong, Hong Kong & 4.6 & 3.7 & 55.0 & 26.7 & 12.3 & 7.9 & 11\% & 18\% & 1.9 & 1.7 \\
\hline Houston & 5.9 & 6.7 & 81.1 & 53.3 & 12.7 & 8.9 & 14\% & 12\% & 1.8 & 1.9 \\
\hline Hyderabad & 2.2 & 3.0 & 188.7 & 204.2 & 25.0 & 43.3 & 10\% & 15\% & 1.7 & 1.5 \\
\hline Ibadan & 5.7 & 4.2 & 69.8 & 196.2 & 5.3 & 14.0 & 4\% & 8\% & 1.8 & 1.7 \\
\hline llheus & 3.3 & 3.3 & 107.4 & 78.6 & 17.0 & 17.5 & 13\% & 14\% & 1.6 & 1.7 \\
\hline Ipoh & 2.7 & 3.2 & 150.5 & 146.4 & 15.6 & 8.1 & 8\% & 3\% & 2.0 & 1.6 \\
\hline Istanbul & 2.0 & 4.3 & 143.4 & 160.4 & 30.5 & 14.8 & 17\% & 7\% & 1.7 & 2.0 \\
\hline Jaipur & 2.4 & 2.2 & 197.1 & 242.1 & 18.7 & 17.2 & 11\% & 7\% & 1.7 & 1.7 \\
\hline Jalna & 3.0 & 5.3 & 161.7 & 178.5 & 15.4 & 28.2 & 9\% & 11\% & 1.6 & 1.6 \\
\hline Jequie & 2.3 & 3.1 & 180.8 & 254.5 & 38.3 & 46.8 & 19\% & 18\% & 1.9 & 1.6 \\
\hline Jinan, Shandong & 3.7 & 7.2 & 157.9 & 110.5 & 13.5 & 14.5 & 5\% & 14\% & 2.0 & 1.6 \\
\hline Jinju & 2.4 & 5.5 & 159.5 & 108.5 & 40.8 & 20.6 & 20\% & 15\% & 1.4 & 1.6 \\
\hline Johannesburg & 7.6 & 5.3 & 47.7 & 109.0 & 18.4 & 14.2 & 23\% & 10\% & 1.6 & 2.2 \\
\hline Kabul & 3.1 & 2.5 & 108.1 & 171.9 & 11.5 & 17.8 & 11\% & 10\% & 1.7 & 1.9 \\
\hline Kaiping, Guangdong & 1.0 & 2.5 & 311.1 & 266.8 & 84.3 & 49.5 & 16\% & 8\% & 1.5 & 1.6 \\
\hline Kairouan & 1.7 & 2.9 & 305.1 & 348.1 & 43.9 & 52.3 & 11\% & 9\% & 1.5 & 1.7 \\
\hline Kampala & 6.0 & 7.5 & 74.0 & 105.1 & 6.0 & 5.3 & 6\% & 4\% & 1.8 & 1.6 \\
\hline Kanpur & 3.3 & 3.4 & 206.3 & 289.2 & 22.4 & 33.5 & 9\% & 9\% & 1.6 & 1.6 \\
\hline Karachi & 3.2 & 2.4 & 220.3 & 226.1 & 50.2 & 74.0 & 13\% & 21\% & 1.7 & 1.7 \\
\hline Kaunas & 4.9 & 5.5 & 90.3 & 79.6 & 17.0 & 7.2 & 14\% & 9\% & 2.0 & 1.5 \\
\hline Kayseri & 1.7 & 3.3 & 205.0 & 201.5 & 26.4 & 37.2 & 14\% & 13\% & 1.6 & 1.6 \\
\hline Khartoum & 1.4 & 1.7 & 167.8 & 225.6 & 50.8 & 60.3 & 21\% & 18\% & 1.5 & 1.5 \\
\hline Kigali & 5.7 & 4.6 & 64.9 & 99.4 & 7.1 & 4.7 & 6\% & 3\% & 2.3 & 1.7 \\
\hline Killeen & 2.9 & 5.4 & 109.0 & 51.7 & 19.8 & 6.9 & 19\% & 9\% & 1.8 & 1.7 \\
\hline Kinshasa & 2.1 & 2.7 & 122.6 & 115.7 & 36.1 & 25.4 & 22\% & 12\% & 1.7 & 1.7 \\
\hline Kolkata & 5.2 & 4.8 & 85.5 & 107.8 & 9.5 & 5.7 & 8\% & 4\% & 1.6 & 1.6 \\
\hline Kozhikode & 1.7 & 7.5 & 176.0 & 110.9 & 8.6 & 10.0 & 4\% & 5\% & 1.4 & 1.6 \\
\hline Lagos & 5.8 & 4.8 & 61.4 & 82.8 & 12.0 & 4.4 & 10\% & 4\% & 1.7 & 1.7 \\
\hline Lahore & 2.3 & 1.9 & 207.9 & 209.2 & 31.1 & 23.0 & 11\% & 11\% & 1.5 & 1.9 \\
\hline Lausanne & 4.1 & 6.6 & 119.6 & 106.6 & 13.7 & 6.7 & 14\% & 5\% & 1.9 & 1.6 \\
\hline Le Mans & 2.7 & 6.3 & 184.4 & 137.9 & 22.2 & 13.9 & 8\% & 8\% & 2.0 & 1.7 \\
\hline Leon & 2.7 & 5.8 & 78.8 & 155.3 & 34.5 & 57.0 & 36\% & 20\% & 1.6 & 1.6 \\
\hline Leshan, Sichuan & 3.3 & 4.9 & 98.8 & 78.2 & 17.1 & 6.0 & 16\% & 3\% & 1.7 & 1.4 \\
\hline London & 8.4 & 8.2 & 50.9 & 60.8 & 10.0 & 10.4 & 13\% & 4\% & 1.7 & 1.7 \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|c|c|c|c|c|}
\hline \multirow[t]{2}{*}{City Name} & \multicolumn{2}{|l|}{Share of Built-up Area That Is Residential} & \multicolumn{2}{|l|}{Share of Residential Areas Laid Out Before Development} & \multicolumn{2}{|l|}{Share of Residential Areas Not Laid Out Before Development} & \multicolumn{2}{|l|}{Share of Built-up Are That Is Gridded} \\
\hline & Pre-1990 & \[
\begin{gathered}
1990- \\
2014
\end{gathered}
\] & Pre-1990 & \[
\begin{gathered}
1990- \\
2014
\end{gathered}
\] & Pre-1990 & \[
\begin{gathered}
1990- \\
2014
\end{gathered}
\] & Pre-1990 & \[
\begin{gathered}
1990- \\
2014
\end{gathered}
\] \\
\hline Gainesville, FL & 71\% & 74\% & 96\% & 89\% & 4\% & 11\% & 0\% & 0\% \\
\hline Gaoyou, Jiangsu & 70\% & 51\% & 60\% & 56\% & 40\% & 44\% & & \\
\hline Gombe & 77\% & 74\% & 91\% & 58\% & 9\% & 42\% & 8\% & 0\% \\
\hline Gomel & 59\% & 78\% & 99\% & 94\% & 1\% & 6\% & 0\% & 0\% \\
\hline Gorgan & 66\% & 69\% & 88\% & 93\% & 12\% & 7\% & 0\% & 0\% \\
\hline Guadalajara & 61\% & 76\% & 100\% & 98\% & 0\% & 2\% & 28\% & 8\% \\
\hline Guangzhou, Guangdong & 51\% & 50\% & 54\% & 50\% & 46\% & 50\% & & 0\% \\
\hline Guatemala City & 73\% & 72\% & 68\% & 84\% & 26\% & 16\% & 49\% & 3\% \\
\hline Guixi, Chongqing & 67\% & 62\% & 46\% & 37\% & 54\% & 63\% & 0\% & 0\% \\
\hline Gwangju & 62\% & 31\% & 75\% & 62\% & 25\% & 38\% & 3\% & 0\% \\
\hline Haikou, Hainan & 55\% & 60\% & 75\% & 59\% & 25\% & 41\% & 0\% & 0\% \\
\hline Halle & 57\% & 69\% & 96\% & 77\% & 4\% & 23\% & 0\% & 0\% \\
\hline Hangzhou, Zhejiang & 46\% & 56\% & 76\% & 78\% & 24\% & 22\% & 3\% & 3\% \\
\hline Hindupur & 77\% & 75\% & 99\% & 75\% & 1\% & 25\% & 0\% & 0\% \\
\hline Ho Chi Minh City & 67\% & 68\% & 50\% & 43\% & 50\% & 57\% & 8\% & 3\% \\
\hline Holguin & 73\% & 69\% & 68\% & 44\% & 32\% & 56\% & 13\% & 0\% \\
\hline Hong Kong, Hong Kong & 51\% & 44\% & 84\% & 69\% & 16\% & 31\% & 0\% & 3\% \\
\hline Houston & 65\% & 83\% & 96\% & 87\% & 4\% & 13\% & 5\% & 0\% \\
\hline Hyderabad & 68\% & 66\% & 90\% & 86\% & 10\% & 14\% & 3\% & 0\% \\
\hline Ibadan & 71\% & 76\% & 64\% & 25\% & 36\% & 75\% & 5\% & 0\% \\
\hline llheus & 75\% & 79\% & 97\% & 94\% & 4\% & 6\% & 0\% & 10\% \\
\hline Ipoh & 70\% & 82\% & 100\% & 90\% & 0\% & 10\% & 3\% & 3\% \\
\hline Istanbul & 74\% & 68\% & 53\% & 76\% & 42\% & 24\% & 10\% & 5\% \\
\hline Jaipur & 70\% & 76\% & 87\% & 85\% & 13\% & 15\% & 0\% & 0\% \\
\hline Jalna & 55\% & 55\% & 50\% & 70\% & 50\% & 30\% & 0\% & 0\% \\
\hline Jequie & 69\% & 70\% & 100\% & 85\% & 0\% & 15\% & 10\% & 11\% \\
\hline Jinan, Shandong & 38\% & 48\% & 93\% & 87\% & 7\% & 13\% & 0\% & 0\% \\
\hline Jinju & 58\% & 31\% & 80\% & 23\% & 20\% & 77\% & 18\% & 0\% \\
\hline Johannesburg & 85\% & 83\% & 93\% & 86\% & 1\% & 14\% & 25\% & 3\% \\
\hline Kabul & 74\% & 75\% & 68\% & 83\% & 32\% & 17\% & 8\% & 5\% \\
\hline Kaiping, Guangdong & 83\% & 48\% & 93\% & 90\% & 7\% & 10\% & 0\% & 0\% \\
\hline Kairouan & 79\% & 62\% & 94\% & 83\% & 6\% & 17\% & 0\% & 0\% \\
\hline Kampala & 72\% & 69\% & 51\% & 33\% & 49\% & 67\% & 0\% & 0\% \\
\hline Kanpur & 73\% & 74\% & 81\% & 52\% & 19\% & 48\% & 0\% & 3\% \\
\hline Karachi & 71\% & 71\% & 75\% & 72\% & 25\% & 28\% & 5\% & 13\% \\
\hline Kaunas & 61\% & 73\% & 75\% & 75\% & 25\% & 25\% & 0\% & 0\% \\
\hline Kayseri & 49\% & 68\% & 90\% & 77\% & 10\% & 23\% & 5\% & 0\% \\
\hline Khartoum & 75\% & 87\% & 97\% & 94\% & 3\% & 6\% & & 8\% \\
\hline Kigali & 58\% & 79\% & 56\% & 31\% & 44\% & 69\% & 0\% & 0\% \\
\hline Killeen & 74\% & 93\% & 100\% & 91\% & 0\% & 9\% & 0\% & 3\% \\
\hline Kinshasa & 85\% & 85\% & 81\% & 63\% & 19\% & 37\% & 10\% & 5\% \\
\hline Kolkata & 76\% & 84\% & 15\% & 27\% & 84\% & 73\% & 1\% & 3\% \\
\hline Kozhikode & 44\% & 87\% & 0\% & 45\% & 100\% & 55\% & 0\% & 0\% \\
\hline Lagos & 70\% & 77\% & 51\% & 61\% & 47\% & 39\% & 13\% & 0\% \\
\hline Lahore & 82\% & 70\% & 64\% & 89\% & 36\% & 11\% & 0\% & 0\% \\
\hline Lausanne & 65\% & 77\% & 92\% & 73\% & 8\% & 27\% & 0\% & 0\% \\
\hline Le Mans & 62\% & 55\% & 86\% & 56\% & 14\% & 44\% & 0\% & 0\% \\
\hline Leon & 74\% & 82\% & 93\% & 89\% & 7\% & 11\% & 23\% & 13\% \\
\hline Leshan, Sichuan & 66\% & 52\% & 59\% & 24\% & 41\% & 76\% & 0\% & 0\% \\
\hline London & 73\% & 72\% & 95\% & 87\% & 2\% & 13\% & 0\% & 0\% \\
\hline
\end{tabular}

Gainsville - London
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|}
\hline \multirow[t]{2}{*}{City Name} & \multicolumn{2}{|l|}{Share of Residential Areas in Informal Land Subdivisions} & \multicolumn{2}{|l|}{Share of Residential Areas in Formal Land Subdivisions} & \multicolumn{2}{|l|}{Share of Residential Areas in Housing Projects} & \multicolumn{2}{|l|}{Average Plot Size in Informal Land Subdivisions} & \multicolumn{2}{|l|}{Average Plot Size in Formal Land Subdivisions} \\
\hline & Pre-1990 & \[
\begin{array}{r}
1990- \\
2014
\end{array}
\] & Pre-1990 & \[
\begin{array}{r}
1990- \\
2014
\end{array}
\] & Pre-1990 & \[
\begin{array}{r}
1990- \\
2014
\end{array}
\] & Pre-1990 & \[
\begin{array}{r}
1990- \\
2014
\end{array}
\] & Pre-1990 & \[
\begin{array}{r}
1990- \\
2014
\end{array}
\] \\
\hline Gainesville, FL & 0\% & 0\% & 90\% & 74\% & 7\% & 15\% & & & 1,037 & 1,009 \\
\hline Gaoyou, Jiangsu & 1\% & 0\% & 35\% & 39\% & 23\% & 17\% & & & & 674 \\
\hline Gombe & 85\% & 52\% & 5\% & 4\% & 0\% & 2\% & & 599 & & 806 \\
\hline Gomel & 38\% & 81\% & 41\% & 8\% & 20\% & 5\% & & 847 & 731 & 806 \\
\hline Gorgan & 7\% & 75\% & 78\% & 15\% & 2\% & 3\% & & & 259 & \\
\hline Guadalajara & 15\% & 40\% & 79\% & 45\% & 6\% & 13\% & & & & \\
\hline Guangzhou, Guangdong & 0\% & 26\% & 38\% & 11\% & 16\% & 13\% & & 168 & & \\
\hline Guatemala City & 7\% & 36\% & 63\% & 41\% & 4\% & 7\% & & & 392 & 187 \\
\hline Guixi, Chongqing & 0\% & 4\% & 44\% & 8\% & 2\% & 25\% & & & & \\
\hline Gwangju & 0\% & 4\% & 41\% & 33\% & 33\% & 25\% & & & 189 & 236 \\
\hline Haikou, Hainan & 2\% & 11\% & 51\% & 16\% & 21\% & 32\% & & & & \\
\hline Halle & 1\% & 13\% & 67\% & 62\% & 28\% & 1\% & & 325 & 405 & 674 \\
\hline Hangzhou, Zhejiang & 1\% & 38\% & 23\% & 18\% & 52\% & 22\% & & & 162 & 592 \\
\hline Hindupur & 99\% & 74\% & 0\% & 0\% & 0\% & 1\% & 155 & 141 & & \\
\hline Ho Chi Minh City & 0\% & 23\% & 50\% & 20\% & 0\% & 1\% & & & & 193 \\
\hline Holguin & 44\% & 42\% & 15\% & 0\% & 9\% & 2\% & 134 & & 241 & \\
\hline Hong Kong, Hong Kong & 0\% & 0\% & 32\% & 9\% & 52\% & 60\% & & & 1,098 & \\
\hline Houston & 0\% & 0\% & 86\% & 73\% & 10\% & 14\% & & & 800 & 852 \\
\hline Hyderabad & 3\% & 65\% & 83\% & 20\% & 3\% & 2\% & 95 & 159 & 213 & 190 \\
\hline Ibadan & 56\% & 25\% & 6\% & 0\% & 2\% & 0\% & & & 677 & \\
\hline llheus & 28\% & 51\% & 67\% & 42\% & 1\% & 1\% & & 500 & & 253 \\
\hline Ipoh & 5\% & 5\% & 68\% & 29\% & 27\% & 56\% & & & 358 & 336 \\
\hline Istanbul & 0\% & 13\% & 51\% & 35\% & 7\% & 28\% & & & 355 & 318 \\
\hline Jaipur & 40\% & 68\% & 42\% & 11\% & 5\% & 6\% & 246 & 195 & 233 & 212 \\
\hline Jalna & 32\% & 62\% & 17\% & 7\% & 1\% & 0\% & 145 & & 141 & \\
\hline Jequie & 59\% & 58\% & 36\% & 16\% & 4\% & 11\% & 202 & 173 & 132 & 274 \\
\hline Jinan, Shandong & 22\% & 29\% & 45\% & 13\% & 26\% & 45\% & & & & \\
\hline Jinju & 0\% & 0\% & 56\% & 4\% & 25\% & 19\% & & & & \\
\hline Johannesburg & 4\% & 46\% & 87\% & 38\% & 8\% & 2\% & 230 & 290 & 965 & 509 \\
\hline Kabul & 53\% & 83\% & 12\% & 0\% & 4\% & 0\% & 548 & 339 & 366 & \\
\hline Kaiping, Guangdong & 31\% & 57\% & 50\% & 11\% & 12\% & 23\% & & & & \\
\hline Kairouan & 21\% & 36\% & 69\% & 47\% & 3\% & 0\% & & & 422 & 168 \\
\hline Kampala & 47\% & 32\% & 2\% & 0\% & 2\% & 0\% & & & & \\
\hline Kanpur & 49\% & 46\% & 22\% & 4\% & 10\% & 2\% & 158 & & 262 & 169 \\
\hline Karachi & 26\% & 61\% & 46\% & 7\% & 3\% & 5\% & 83 & & 464 & 343 \\
\hline Kaunas & 18\% & 27\% & 41\% & 39\% & 16\% & 9\% & 1,567 & 990 & 741 & 784 \\
\hline Kayseri & 10\% & 19\% & 77\% & 28\% & 3\% & 31\% & & & 561 & 275 \\
\hline Khartoum & 88\% & 94\% & 5\% & 0\% & 4\% & 0\% & 534 & 345 & & \\
\hline Kigali & 34\% & 30\% & 22\% & 0\% & 0\% & 1\% & & 444 & & \\
\hline Killeen & 0\% & 0\% & 68\% & 85\% & 32\% & 6\% & & & 742 & 770 \\
\hline Kinshasa & 73\% & 59\% & 9\% & 2\% & 0\% & 3\% & 444 & 124 & & \\
\hline Kolkata & 7\% & 16\% & 7\% & 3\% & 3\% & 8\% & & 217 & 271 & \\
\hline Kozhikode & 0\% & 45\% & 0\% & 0\% & 0\% & 1\% & & & & \\
\hline Lagos & 28\% & 53\% & 20\% & 4\% & 5\% & 4\% & 28 & 669 & 538 & 679 \\
\hline Lahore & 21\% & 31\% & 42\% & 54\% & 1\% & 3\% & & & 394 & 440 \\
\hline Lausanne & 0\% & 0\% & 78\% & 68\% & 14\% & 5\% & & & & 1,231 \\
\hline Le Mans & 0\% & 0\% & 72\% & 54\% & 14\% & 2\% & & & 647 & 720 \\
\hline Leon & 15\% & 63\% & 78\% & 24\% & 0\% & 2\% & & & 143 & 355 \\
\hline Leshan, Sichuan & 4\% & 7\% & 30\% & 11\% & 24\% & 7\% & & & & \\
\hline London & 0\% & 0\% & 45\% & 87\% & 53\% & 0\% & & & 550 & 612 \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|c|c|c|c|}
\hline \multirow{2}{*}{City Name} & \multirow{2}{*}{Country} & \multirow{2}{*}{Region} & \multicolumn{2}{|l|}{CBD Location} & \multicolumn{3}{|c|}{Land Cover Dates} \\
\hline & & & Latitude & Longitude & T1 & T2 & т3 \\
\hline Los Angeles & United States & Land-Rich Developed Countries & 33.971 & -117.969 & 5/1/90 & 5/1/00 & 10/1/14 \\
\hline Luanda & Angola & Sub-Saharan Africa & -8.825 & 13.260 & 6/1/91 & 6/1/00 & 5/1/14 \\
\hline Lubumbashi & Congo Dem. Rep. & Sub-Saharan Africa & -11.677 & 27.480 & 7/1/90 & 9/1/98 & 8/1/13 \\
\hline Madrid & Spain & Europe and Japan & 40.413 & -3.707 & 5/1/91 & 6/1/02 & 5/1/10 \\
\hline Malatya & Turkey & Western Asia and North Africa & 38.350 & 38.270 & 8/1/90 & 7/1/00 & 3/1/14 \\
\hline Malegaon & India & South and Central Asia & 20.562 & 74.520 & 2/1/91 & 3/1/00 & 10/1/14 \\
\hline Manchester & United Kingdom & Europe and Japan & 53.470 & -2.474 & 5/1/89 & 9/1/02 & 10/1/10 \\
\hline Manila & Philippines & Southeast Asia & 14.579 & 121.028 & 12/1/90 & 4/1/00 & 2/1/14 \\
\hline Marrakesh & Morocco & Western Asia and North Africa & 31.636 & -8.021 & 3/1/88 & 6/1/02 & 8/1/14 \\
\hline Medan & Indonesia & Southeast Asia & 3.596 & 98.651 & 6/1/89 & 6/1/01 & 6/1/13 \\
\hline Mexico City & Mexico & Latin America and the Caribbean & 19.446 & -99.123 & 3/1/90 & 2/1/00 & 4/1/14 \\
\hline Milan & Italy & Europe and Japan & 45.608 & 9.222 & 9/1/88 & 8/1/03 & 8/1/13 \\
\hline Minneapolis & United States & Land-Rich Developed Countries & 44.959 & -93.256 & 5/1/90 & 4/1/00 & 10/1/14 \\
\hline Modesto & United States & Land-Rich Developed Countries & 37.649 & -120.993 & 7/1/92 & 7/1/00 & 8/1/14 \\
\hline Montreal & Canada & Land-Rich Developed Countries & 45.534 & -73.658 & 8/1/90 & 9/1/00 & 8/1/13 \\
\hline Moscow & Russia & Europe and Japan & 55.743 & 37.645 & 5/1/91 & 5/1/01 & 9/1/14 \\
\hline Mumbai & India & South and Central Asia & 19.115 & 72.913 & 12/1/91 & 12/1/01 & 10/1/14 \\
\hline Myeik & Myanmar & Southeast Asia & 12.448 & 98.618 & 2/1/91 & 12/1/03 & 1/1/14 \\
\hline Nakuru & Kenya & Sub-Saharan Africa & -0.294 & 36.058 & 3/1/89 & 2/1/00 & 2/1/14 \\
\hline Ndola & Zambia & Sub-Saharan Africa & -12.981 & 28.634 & 6/1/89 & 5/1/02 & 6/1/14 \\
\hline New York & United States & Land-Rich Developed Countries & 40.842 & -73.798 & 5/1/91 & 10/1/00 & 5/1/11 \\
\hline Nikolaev & Ukraine & Europe and Japan & 46.974 & 32.029 & 5/1/89 & 9/1/00 & 8/1/13 \\
\hline Okayama & Japan & Europe and Japan & 34.657 & 133.949 & 5/1/90 & 5/1/00 & 5/1/14 \\
\hline Oldenburg & Germany & Europe and Japan & 53.148 & 8.207 & 8/1/90 & 8/1/99 & 10/1/13 \\
\hline Osaka & Japan & Europe and Japan & 34.718 & 135.389 & 5/1/89 & 10/1/01 & 3/1/14 \\
\hline Oyo & Nigeria & Sub-Saharan Africa & 6.818 & 3.916 & 12/1/90 & 2/1/00 & 2/1/14 \\
\hline Palembang & Indonesia & Southeast Asia & -2.958 & 104.736 & 4/1/90 & 7/1/01 & 6/1/13 \\
\hline Palermo & Italy & Europe and Japan & 38.135 & 13.330 & 7/1/87 & 5/1/00 & 7/1/13 \\
\hline Palmas & Brazil & Latin America and the Caribbean & -10.189 & -48.330 & 4/1/90 & 6/1/00 & 8/1/13 \\
\hline Parbhani & India & South and Central Asia & 19.280 & 76.765 & 3/1/91 & 10/1/02 & 12/1/14 \\
\hline Parepare & Indonesia & Southeast Asia & -7.772 & 112.195 & 8/1/94 & 8/1/00 & 7/1/14 \\
\hline Paris & France & Europe and Japan & 48.863 & 2.315 & 5/1/87 & 8/1/00 & 5/1/14 \\
\hline Pematangtiantar & Indonesia & Southeast Asia & 2.962 & 99.074 & 7/1/94 & 7/1/01 & 2/1/14 \\
\hline Philadelphia & United States & Land-Rich Developed Countries & 40.015 & -75.168 & 6/1/90 & 5/1/00 & 4/1/14 \\
\hline Pingxiang, Jiangxi & China & East Asia and the Pacific & 27.643 & 113.851 & 2/1/89 & 12/1/99 & 9/1/13 \\
\hline Pokhara & Nepal & South and Central Asia & 28.220 & 83.980 & 4/1/89 & 1/1/00 & 5/1/13 \\
\hline Port Elizabeth & South Africa & Sub-Saharan Africa & 13.052 & 5.230 & 6/1/90 & 7/1/01 & 7/1/13 \\
\hline Portland, OR & United States & Land-Rich Developed Countries & 45.520 & -122.666 & 9/1/90 & 9/1/00 & 8/1/14 \\
\hline Pune & India & South and Central Asia & 18.524 & 73.864 & 2/1/91 & 4/1/01 & 1/1/11 \\
\hline Pyongyang & Korea Dem. Rep. & East Asia and the Pacific & 39.045 & 125.767 & 3/1/90 & 5/1/00 & 3/1/14 \\
\hline Qingdao, Shandong & China & East Asia and the Pacific & 36.220 & 120.403 & 5/1/90 & 1/1/00 & 8/1/13 \\
\hline Qom & Iran & South and Central Asia & 34.640 & 50.876 & 1/1/90 & 7/1/01 & 5/1/10 \\
\hline Quito & Ecuador & Latin America and the Caribbean & -0.135 & -78.443 & 6/1/88 & 12/1/00 & 6/1/13 \\
\hline Rajshahi & Bangladesh & South and Central Asia & 24.367 & 88.600 & 5/1/90 & 11/1/00 & 1/1/10 \\
\hline Raleigh & United States & Land-Rich Developed Countries & 35.807 & -78.675 & 10/1/90 & 11/1/00 & 5/1/13 \\
\hline Rawang & Malaysia & Southeast Asia & 3.330 & 101.577 & 6/1/89 & 9/1/01 & 3/1/14 \\
\hline Reynosa & Mexico & Latin America and the Caribbean & 26.063 & -98.302 & 7/1/91 & 6/1/00 & 7/1/13 \\
\hline Ribeirao Preto & Brazil & Latin America and the Caribbean & -21.172 & -47.798 & 12/1/90 & 3/1/01 & 3/1/14 \\
\hline Riyadh & Saudi Arabia & Western Asia and North Africa & 24.686 & 46.742 & 8/1/90 & 8/1/00 & 8/1/13 \\
\hline Rovno & Ukraine & Europe and Japan & 50.624 & 26.248 & 5/1/90 & 5/1/00 & 5/1/14 \\
\hline
\end{tabular}

Los Angeles - Rovno
\begin{tabular}{|c|c|c|c|c|c|c|c|c|}
\hline \multirow{2}{*}{City Name} & \multicolumn{2}{|l|}{Share of Built-up Area Occupied by Roads} & \multicolumn{2}{|l|}{Average Street Width (meters)} & \multicolumn{2}{|l|}{Share of Roads Less Than 4 m . Wide} & \multicolumn{2}{|l|}{Share of Roads More Than 16 m . Wide} \\
\hline & Pre-1990 & \[
\begin{gathered}
1990- \\
2014
\end{gathered}
\] & Pre-1990 & \[
\begin{gathered}
1990- \\
2014
\end{gathered}
\] & Pre-1990 & \[
\begin{gathered}
1990- \\
2014
\end{gathered}
\] & Pre-1990 & \[
\begin{gathered}
1990- \\
2014
\end{gathered}
\] \\
\hline Los Angeles & 25\% & 26\% & 15.1 & 15.8 & 6\% & 18\% & 46\% & 21\% \\
\hline Luanda & 15\% & 17\% & 7.9 & 6.4 & 17\% & 31\% & 7\% & 5\% \\
\hline Lubumbashi & 16\% & 16\% & 9.1 & 5.6 & 9\% & 33\% & 10\% & 2\% \\
\hline Madrid & 28\% & 29\% & 13.2 & 11.3 & 12\% & 22\% & 25\% & 28\% \\
\hline Malatya & 28\% & 28\% & 9.2 & 9.3 & 11\% & 20\% & 12\% & 15\% \\
\hline Malegaon & 20\% & 27\% & 5.3 & 4.6 & 37\% & 40\% & 2\% & 1\% \\
\hline Manchester & 20\% & 19\% & 7.4 & 6.3 & 25\% & 35\% & 4\% & 3\% \\
\hline Manila & 20\% & 22\% & 9.2 & 5.8 & 11\% & 23\% & 11\% & 1\% \\
\hline Marrakesh & 22\% & 26\% & 8.5 & 8.7 & 27\% & 20\% & 14\% & 12\% \\
\hline Medan & 12\% & 11\% & 6.5 & 5.1 & 25\% & 37\% & 5\% & 0\% \\
\hline Mexico City & 26\% & 23\% & 12.5 & 8.0 & 6\% & 15\% & 20\% & 4\% \\
\hline Milan & 21\% & 18\% & 8.4 & 5.0 & 18\% & 40\% & 10\% & 1\% \\
\hline Minneapolis & 23\% & 21\% & 9.5 & 8.8 & 16\% & 16\% & 15\% & 7\% \\
\hline Modesto & 25\% & 29\% & 10.6 & 10.2 & 18\% & 22\% & 18\% & 19\% \\
\hline Montreal & 20\% & 19\% & 9.4 & 16.1 & 11\% & 12\% & 8\% & 11\% \\
\hline Moscow & 20\% & 15\% & 9.7 & 5.6 & 10\% & 32\% & 25\% & 3\% \\
\hline Mumbai & 17\% & 20\% & 11.6 & 8.6 & 11\% & 24\% & 18\% & 11\% \\
\hline Myeik & 15\% & 13\% & 5.1 & 5.3 & 32\% & 36\% & 1\% & 3\% \\
\hline Nakuru & 24\% & 21\% & 10.8 & 5.5 & 14\% & 31\% & 20\% & 2\% \\
\hline Ndola & 17\% & 13\% & 8.9 & 4.9 & 16\% & 44\% & 13\% & 2\% \\
\hline New York & 20\% & 13\% & 10.8 & 8.9 & 8\% & 14\% & 12\% & 8\% \\
\hline Nikolaev & 19\% & 15\% & 8.6 & 5.6 & 10\% & 26\% & 8\% & 1\% \\
\hline Okayama & 26\% & 23\% & 5.7 & 4.4 & 51\% & 61\% & 6\% & 3\% \\
\hline Oldenburg & 18\% & 18\% & 7.6 & 6.6 & 17\% & 24\% & 4\% & 3\% \\
\hline Osaka & 21\% & 26\% & 5.7 & 5.5 & 47\% & 40\% & 6\% & 3\% \\
\hline Oyo & 12\% & 15\% & 7.6 & 6.7 & 13\% & 23\% & 3\% & 3\% \\
\hline Palembang & 13\% & 14\% & 5.8 & 4.4 & 34\% & 50\% & 5\% & 2\% \\
\hline Palermo & 21\% & 19\% & 7.2 & 5.4 & 29\% & 39\% & 8\% & 1\% \\
\hline Palmas & 30\% & 37\% & 9.6 & 8.3 & 27\% & 19\% & 17\% & 9\% \\
\hline Parbhani & 23\% & 27\% & 6.5 & 3.8 & 16\% & 47\% & 3\% & 0\% \\
\hline Parepare & 13\% & 11\% & 7.6 & 6.3 & 10\% & 15\% & 0\% & 0\% \\
\hline Paris & 21\% & 15\% & 9.2 & 6.2 & 10\% & 28\% & 11\% & 5\% \\
\hline Pematangtiantar & 11\% & 14\% & 6.1 & 5.0 & 26\% & 37\% & 1\% & 0\% \\
\hline Philadelphia & 22\% & 15\% & 17.8 & 8.1 & 15\% & 15\% & 11\% & 7\% \\
\hline Pingxiang, Jiangxi & 14\% & 12\% & 6.5 & 4.0 & 39\% & 64\% & 8\% & 2\% \\
\hline Pokhara & 16\% & 17\% & 6.0 & 4.8 & 29\% & 42\% & 2\% & 0\% \\
\hline Port Elizabeth & 22\% & 17\% & 10.3 & 7.0 & 11\% & 20\% & 14\% & 3\% \\
\hline Portland, OR & 23\% & 20\% & 10.1 & 10.0 & 18\% & 10\% & 15\% & 8\% \\
\hline Pune & 21\% & 21\% & 9.9 & 7.8 & 6\% & 13\% & 13\% & 6\% \\
\hline Pyongyang & 22\% & 18\% & 7.1 & 4.5 & 30\% & 55\% & 7\% & 2\% \\
\hline Qingdao, Shandong & 27\% & 24\% & 10.1 & 8.3 & 21\% & 23\% & 19\% & 10\% \\
\hline Qom & 26\% & 29\% & 9.3 & 10.5 & 14\% & 12\% & 14\% & 16\% \\
\hline Quito & 23\% & 22\% & 12.0 & 7.8 & 6\% & 11\% & 20\% & 4\% \\
\hline Rajshahi & 9\% & 12\% & 4.8 & 4.9 & 48\% & 44\% & 3\% & 2\% \\
\hline Raleigh & 20\% & 19\% & 9.1 & 9.5 & 7\% & 13\% & 10\% & 8\% \\
\hline Rawang & 24\% & 29\% & 7.8 & 9.2 & 13\% & 13\% & 6\% & 14\% \\
\hline Reynosa & 27\% & 30\% & 9.8 & 8.7 & 10\% & 16\% & 10\% & 6\% \\
\hline Ribeirao Preto & 28\% & 27\% & 11.3 & 8.0 & 7\% & 13\% & 16\% & 5\% \\
\hline Riyadh & 35\% & 35\% & 16.3 & 15.5 & 4\% & 6\% & 37\% & 38\% \\
\hline Rovno & 20\% & 15\% & 7.6 & 5.8 & 28\% & 34\% & 9\% & 3\% \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|c|c|c|c|c|}
\hline \multirow[t]{2}{*}{City Name} & \multicolumn{2}{|l|}{\begin{tabular}{l}
Density of All Arterial \\
Roads (km/km)
\end{tabular}} & \multicolumn{2}{|l|}{Average Beeline Distance to All Arterial Roads (meters)} & \multicolumn{2}{|l|}{Share of Area within Walking Distance of All Arterial Roads} & \multicolumn{2}{|l|}{Share of Area within Walking Distance of Wide Arterial Roads} \\
\hline & Pre-1990 & \[
\begin{gathered}
1990- \\
2014
\end{gathered}
\] & Pre-1990 & \[
\begin{gathered}
1990- \\
2014
\end{gathered}
\] & Pre-1990 & \[
\begin{gathered}
1990- \\
2014
\end{gathered}
\] & Pre-1990 & \[
\begin{gathered}
1990- \\
2014
\end{gathered}
\] \\
\hline Los Angeles & 2.05 & 0.28 & 187 & 2,340 & 96\% & 21\% & 96\% & 20\% \\
\hline Luanda & 1.05 & 0.63 & 412 & 698 & 78\% & 58\% & 67\% & 52\% \\
\hline Lubumbashi & 1.64 & 0.99 & 259 & 428 & 90\% & 74\% & 65\% & 46\% \\
\hline Madrid & 1.80 & 1.36 & 204 & 266 & 96\% & 90\% & 94\% & 80\% \\
\hline Malatya & 1.94 & 1.34 & 228 & 354 & 90\% & 79\% & 86\% & 73\% \\
\hline Malegaon & 1.06 & 0.84 & 343 & 391 & 82\% & 78\% & 72\% & 70\% \\
\hline Manchester & 1.80 & 1.73 & 187 & 194 & 97\% & 97\% & 59\% & 56\% \\
\hline Manila & 1.92 & 1.51 & 202 & 265 & 95\% & 90\% & 72\% & 61\% \\
\hline Marrakesh & 2.28 & 1.44 & 176 & 360 & 97\% & 85\% & 92\% & 80\% \\
\hline Medan & 1.33 & 0.71 & 284 & 645 & 88\% & 68\% & 70\% & 42\% \\
\hline Mexico City & 2.37 & 0.77 & 162 & 418 & 98\% & 77\% & 97\% & 55\% \\
\hline Milan & 1.52 & 1.47 & 234 & 244 & 94\% & 92\% & 53\% & 31\% \\
\hline Minneapolis & 1.75 & 1.48 & 213 & 250 & 95\% & 92\% & 92\% & 88\% \\
\hline Modesto & 1.91 & 1.54 & 196 & 242 & 96\% & 92\% & 90\% & 82\% \\
\hline Montreal & 2.30 & 2.10 & 165 & 187 & 97\% & 96\% & 82\% & 77\% \\
\hline Moscow & 1.13 & 0.33 & 385 & 1,191 & 79\% & 35\% & 75\% & 28\% \\
\hline Mumbai & 1.59 & 1.25 & 272 & 347 & 91\% & 84\% & 88\% & 79\% \\
\hline Myeik & 0.35 & 0.41 & 422 & 599 & 69\% & 63\% & 0\% & 0\% \\
\hline Nakuru & 0.96 & 0.62 & 546 & 916 & 65\% & 60\% & 64\% & 59\% \\
\hline Ndola & 1.19 & 0.97 & 332 & 392 & 85\% & 79\% & 85\% & 79\% \\
\hline New York & 1.75 & 0.74 & 226 & 393 & 93\% & 78\% & 62\% & 41\% \\
\hline Nikolaev & 0.90 & 0.80 & 481 & 531 & 72\% & 67\% & 71\% & 65\% \\
\hline Okayama & 1.63 & 1.57 & 314 & 320 & 89\% & 89\% & 53\% & 50\% \\
\hline Oldenburg & 1.45 & 1.36 & 239 & 252 & 92\% & 92\% & 87\% & 80\% \\
\hline Osaka & 1.76 & 1.07 & 220 & 550 & 95\% & 69\% & 75\% & 46\% \\
\hline Oyo & 1.11 & 0.81 & 269 & 428 & 94\% & 78\% & 49\% & 52\% \\
\hline Palembang & 0.90 & 0.45 & 400 & 783 & 80\% & 58\% & 64\% & 44\% \\
\hline Palermo & 2.32 & 1.86 & 165 & 197 & 97\% & 95\% & 85\% & 64\% \\
\hline Palmas & 2.18 & 1.14 & 189 & 590 & 96\% & 68\% & 96\% & 84\% \\
\hline Parbhani & 1.13 & 0.93 & 332 & 376 & 85\% & 80\% & 64\% & 60\% \\
\hline Parepare & 2.44 & 1.69 & 142 & 179 & 99\% & 98\% & 40\% & 30\% \\
\hline Paris & 3.34 & 0.89 & 110 & 973 & 99\% & 46\% & 79\% & 24\% \\
\hline Pematangtiantar & 0.70 & 0.59 & 529 & 544 & 64\% & 64\% & 75\% & 77\% \\
\hline Philadelphia & 1.79 & 0.86 & 223 & 394 & 93\% & 79\% & 70\% & 36\% \\
\hline Pingxiang, Jiangxi & 1.09 & 0.67 & 510 & 771 & 66\% & 63\% & 46\% & 54\% \\
\hline Pokhara & 1.99 & 1.43 & 190 & 253 & 94\% & 89\% & 77\% & 76\% \\
\hline Port Elizabeth & 1.06 & 0.89 & 370 & 601 & 81\% & 71\% & 78\% & 72\% \\
\hline Portland, OR & 1.96 & 1.70 & 189 & 218 & 96\% & 95\% & 92\% & 87\% \\
\hline Pune & 2.07 & 1.36 & 167 & 264 & 98\% & 91\% & 90\% & 73\% \\
\hline Pyongyang & 2.15 & 1.91 & 172 & 195 & 97\% & 95\% & 86\% & 80\% \\
\hline Qingdao, Shandong & 2.14 & 1.18 & 168 & 380 & 98\% & 83\% & 97\% & 80\% \\
\hline Qom & 2.79 & 1.97 & 127 & 218 & 100\% & 94\% & 100\% & 96\% \\
\hline Quito & 3.14 & 1.57 & 101 & 367 & 100\% & 83\% & 94\% & 68\% \\
\hline Rajshahi & 4.22 & 1.60 & 59 & 204 & 100\% & 94\% & 100\% & 72\% \\
\hline Raleigh & 1.81 & 1.19 & 182 & 338 & 97\% & 85\% & 90\% & 59\% \\
\hline Rawang & 1.15 & 0.72 & 341 & 558 & 82\% & 65\% & 66\% & 55\% \\
\hline Reynosa & 1.15 & 0.91 & 384 & 478 & 78\% & 70\% & 77\% & 68\% \\
\hline Ribeirao Preto & 2.24 & 1.80 & 171 & 200 & 99\% & 96\% & 93\% & 90\% \\
\hline Riyadh & 2.24 & 1.57 & 178 & 304 & 96\% & 87\% & 96\% & 87\% \\
\hline Rovno & 2.05 & 1.42 & 179 & 313 & 97\% & 86\% & 88\% & 75\% \\
\hline
\end{tabular}

Los Angeles - Rovno
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|}
\hline \multirow[t]{2}{*}{City Name} & \multicolumn{2}{|l|}{Average Block Size (ha)} & \multicolumn{2}{|l|}{3-Way Intersection Density (number per km \({ }^{2}\)} & \multicolumn{2}{|l|}{4-Way Intersection
Density (number per
\(\mathrm{km}^{2}\) )} & \multicolumn{2}{|l|}{Share of Intersections that are 4-Way} & \multicolumn{2}{|l|}{Walkability Ratio} \\
\hline & Pre-1990 & \[
\begin{array}{r}
1990- \\
2014
\end{array}
\] & Pre-1990 & \[
\begin{array}{r}
1990- \\
2014
\end{array}
\] & Pre-1990 & \[
\begin{array}{r}
1990- \\
2014
\end{array}
\] & Pre-1990 & \[
\begin{array}{r}
1990- \\
2014
\end{array}
\] & Pre-1990 & \[
\begin{array}{r}
1990- \\
2014
\end{array}
\] \\
\hline Los Angeles & 6.5 & 6.5 & 46.8 & 74.0 & 19.2 & 8.2 & 27\% & 6\% & 1.6 & 2.0 \\
\hline Luanda & 3.2 & 2.4 & 96.1 & 139.1 & 17.3 & 29.3 & 15\% & 15\% & 1.7 & 1.7 \\
\hline Lubumbashi & 5.7 & 3.3 & 60.9 & 170.4 & 25.6 & 30.3 & 30\% & 18\% & 1.6 & 1.6 \\
\hline Madrid & 3.8 & 5.5 & 108.2 & 80.3 & 34.0 & 25.9 & 19\% & 21\% & 1.6 & 1.8 \\
\hline Malatya & 1.4 & 5.9 & 203.8 & 120.8 & 35.3 & 14.2 & 15\% & 8\% & 1.5 & 1.8 \\
\hline Malegaon & 1.2 & 1.7 & 292.2 & 422.4 & 52.1 & 54.9 & 12\% & 10\% & 1.5 & 1.5 \\
\hline Manchester & 5.3 & 11.1 & 150.0 & 75.7 & 21.7 & 8.3 & 10\% & 6\% & 2.0 & 1.8 \\
\hline Manila & 3.1 & 2.7 & 82.5 & 189.4 & 28.5 & 26.5 & 20\% & 10\% & 1.6 & 1.8 \\
\hline Marrakesh & 2.7 & 4.8 & 158.8 & 171.8 & 21.0 & 26.9 & 12\% & 14\% & 1.7 & 1.5 \\
\hline Medan & 5.2 & 7.6 & 75.8 & 54.9 & 10.3 & 4.1 & 9\% & 5\% & 1.7 & 1.5 \\
\hline Mexico City & 2.7 & 3.5 & 68.3 & 149.4 & 37.2 & 24.8 & 39\% & 14\% & 1.6 & 1.7 \\
\hline Milan & 3.9 & 7.1 & 93.4 & 101.2 & 12.7 & 14.0 & 11\% & 9\% & 2.1 & 2.0 \\
\hline Minneapolis & 3.8 & 10.5 & 101.8 & 52.3 & 17.3 & 5.4 & 18\% & 6\% & 1.8 & 1.6 \\
\hline Modesto & 2.5 & 5.1 & 128.0 & 139.1 & 15.6 & 26.5 & 13\% & 14\% & 1.9 & 2.1 \\
\hline Montreal & 4.1 & 5.0 & 84.3 & 67.0 & 8.7 & 6.6 & 11\% & 5\% & 2.5 & 2.2 \\
\hline Moscow & 6.1 & 4.8 & 42.9 & 102.4 & 8.3 & 22.0 & 14\% & 11\% & 1.6 & 2.1 \\
\hline Mumbai & 5.8 & 4.9 & 61.5 & 88.9 & 11.8 & 13.0 & 12\% & 10\% & 1.6 & 1.7 \\
\hline Myeik & 1.7 & 6.5 & 160.8 & 89.8 & 57.1 & 19.8 & 26\% & 11\% & 1.5 & 1.7 \\
\hline Nakuru & 4.4 & 5.8 & 102.5 & 165.5 & 17.9 & 16.8 & 16\% & 10\% & 1.6 & 1.7 \\
\hline Ndola & 5.1 & 3.0 & 101.8 & 148.2 & 13.0 & 22.3 & 10\% & 11\% & 1.9 & 1.7 \\
\hline New York & 5.1 & 6.7 & 45.2 & 46.8 & 14.4 & 1.8 & 22\% & 1\% & 1.6 & 1.8 \\
\hline Nikolaev & 3.7 & 5.3 & 101.1 & 128.5 & 13.1 & 15.8 & 13\% & 14\% & 1.9 & 1.5 \\
\hline Okayama & 1.6 & 2.3 & 278.3 & 270.4 & 58.6 & 38.2 & 16\% & 10\% & 1.5 & 1.7 \\
\hline Oldenburg & 3.4 & 4.9 & 99.0 & 109.5 & 8.7 & 9.9 & 7\% & 8\% & 1.8 & 1.7 \\
\hline Osaka & 1.7 & 2.4 & 200.5 & 195.7 & 55.1 & 38.0 & 22\% & 18\% & 1.4 & 1.6 \\
\hline Oyo & 5.6 & 5.4 & 53.8 & 77.4 & 5.2 & 5.7 & 10\% & 9\% & 1.7 & 1.6 \\
\hline Palembang & 4.1 & 6.1 & 104.1 & 71.2 & 16.1 & 6.9 & 9\% & 3\% & 1.6 & 1.5 \\
\hline Palermo & 3.1 & 6.3 & 155.9 & 105.4 & 19.5 & 10.2 & 7\% & 7\% & 1.7 & 2.0 \\
\hline Palmas & 3.4 & 2.9 & 89.2 & 173.9 & 22.9 & 43.0 & 27\% & 20\% & 1.5 & 1.6 \\
\hline Parbhani & 1.5 & 1.2 & 241.8 & 500.2 & 24.4 & 104.4 & 9\% & 17\% & 1.8 & 1.7 \\
\hline Parepare & 4.9 & 8.5 & 65.3 & 75.0 & 9.5 & 19.8 & 9\% & 10\% & 1.7 & 1.6 \\
\hline Paris & 4.5 & 6.7 & 71.8 & 77.7 & 21.2 & 9.9 & 21\% & 10\% & 1.6 & 1.6 \\
\hline Pematangtiantar & 5.6 & 7.7 & 74.2 & 108.4 & 16.5 & 6.8 & 14\% & 4\% & 1.6 & 1.8 \\
\hline Philadelphia & 3.6 & 9.9 & 109.7 & 27.6 & 16.5 & 5.2 & 14\% & 8\% & 1.8 & 1.6 \\
\hline Pingxiang, Jiangxi & 6.5 & 6.6 & 53.6 & 101.7 & 11.5 & 26.5 & 9\% & 9\% & 1.5 & 1.3 \\
\hline Pokhara & 3.5 & 5.4 & 99.7 & 114.9 & 9.9 & 6.9 & 10\% & 5\% & 1.7 & 1.7 \\
\hline Port Elizabeth & 4.8 & 3.3 & 89.5 & 93.4 & 11.1 & 16.5 & 8\% & 13\% & 1.8 & 1.8 \\
\hline Portland, OR & 4.3 & 4.9 & 97.8 & 60.3 & 20.8 & 4.4 & 17\% & 4\% & 1.6 & 1.8 \\
\hline Pune & 3.1 & 5.1 & 113.7 & 96.2 & 13.8 & 4.5 & 11\% & 3\% & 1.6 & 2.0 \\
\hline Pyongyang & 4.2 & 6.7 & 130.6 & 92.0 & 8.6 & 3.6 & 5\% & 2\% & 1.8 & 2.2 \\
\hline Qingdao, Shandong & 3.5 & 4.7 & 159.6 & 168.0 & 32.7 & 51.0 & 17\% & 14\% & 1.5 & 1.5 \\
\hline Qom & 1.8 & 4.2 & 164.4 & 139.1 & 26.4 & 14.5 & 14\% & 12\% & 1.6 & 1.7 \\
\hline Quito & 2.8 & 3.5 & 93.5 & 119.8 & 24.5 & 19.8 & 19\% & 14\% & 1.6 & 1.8 \\
\hline Rajshahi & 3.3 & 11.0 & 93.0 & 49.4 & 16.8 & 4.0 & 12\% & 7\% & 1.5 & 1.6 \\
\hline Raleigh & 4.9 & 9.2 & 82.0 & 55.9 & 11.0 & 5.7 & 11\% & 7\% & 2.0 & 1.8 \\
\hline Rawang & 2.3 & 3.5 & 162.5 & 140.8 & 16.7 & 13.8 & 7\% & 5\% & 2.9 & 2.1 \\
\hline Reynosa & 2.7 & 2.2 & 113.7 & 141.2 & 42.5 & 50.7 & 29\% & 26\% & 1.9 & 1.9 \\
\hline Ribeirao Preto & 3.7 & 6.9 & 94.8 & 90.7 & 46.1 & 16.1 & 33\% & 12\% & 1.8 & 1.8 \\
\hline Riyadh & 3.3 & 5.8 & 149.9 & 111.0 & 16.3 & 4.9 & 9\% & 4\% & 1.6 & 1.8 \\
\hline Rovno & 3.9 & 6.5 & 132.3 & 86.2 & 14.5 & 11.8 & 7\% & 10\% & 1.7 & 1.6 \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|c|c|c|c|c|}
\hline \multirow[t]{2}{*}{City Name} & \multicolumn{2}{|l|}{\begin{tabular}{l}
Share of Built-up Area \\
That Is Residential
\end{tabular}} & \multicolumn{2}{|l|}{Share of Residential Areas Laid Out Before Development} & \multicolumn{2}{|l|}{Share of Residential Areas Not Laid Out Before Development} & \multicolumn{2}{|l|}{Share of Built-up Are That Is Gridded} \\
\hline & Pre-1990 & \[
\begin{gathered}
1990- \\
2014
\end{gathered}
\] & Pre-1990 & \[
\begin{gathered}
1990- \\
2014
\end{gathered}
\] & Pre-1990 & \[
\begin{gathered}
1990- \\
2014
\end{gathered}
\] & Pre-1990 & \[
\begin{gathered}
1990- \\
2014
\end{gathered}
\] \\
\hline Los Angeles & 86\% & 87\% & 92\% & 80\% & 3\% & 20\% & 29\% & 0\% \\
\hline Luanda & 70\% & 75\% & 42\% & 47\% & 58\% & 53\% & 10\% & 0\% \\
\hline Lubumbashi & 84\% & 84\% & 92\% & 70\% & 8\% & 30\% & 23\% & 0\% \\
\hline Madrid & 67\% & 71\% & 96\% & 87\% & 4\% & 13\% & 8\% & 5\% \\
\hline Malatya & 73\% & 80\% & 97\% & 72\% & 3\% & 28\% & 3\% & 0\% \\
\hline Malegaon & 65\% & 68\% & 64\% & 51\% & 36\% & 49\% & 0\% & 0\% \\
\hline Manchester & 64\% & 59\% & 98\% & 79\% & 2\% & 21\% & 0\% & 0\% \\
\hline Manila & 70\% & 77\% & 50\% & 68\% & 45\% & 32\% & 13\% & 0\% \\
\hline Marrakesh & 63\% & 76\% & 80\% & 77\% & 20\% & 23\% & 3\% & 0\% \\
\hline Medan & 70\% & 76\% & 90\% & 30\% & 10\% & 70\% & 0\% & 0\% \\
\hline Mexico City & 66\% & 64\% & 91\% & 74\% & 5\% & 26\% & 54\% & 8\% \\
\hline Milan & 58\% & 66\% & 96\% & 61\% & 4\% & 39\% & 3\% & 0\% \\
\hline Minneapolis & 72\% & 84\% & 94\% & 71\% & 6\% & 29\% & 15\% & 0\% \\
\hline Modesto & 71\% & 66\% & 94\% & 97\% & 6\% & 3\% & 3\% & 0\% \\
\hline Montreal & 75\% & 79\% & 99\% & 93\% & 1\% & 7\% & 0\% & 0\% \\
\hline Moscow & 74\% & 85\% & 78\% & 100\% & 6\% & 0\% & 3\% & 3\% \\
\hline Mumbai & 66\% & 70\% & 36\% & 37\% & 60\% & 63\% & 1\% & 3\% \\
\hline Myeik & 78\% & 62\% & 77\% & 34\% & 23\% & 66\% & 0\% & 0\% \\
\hline Nakuru & 55\% & 76\% & 99\% & 83\% & 1\% & 17\% & 0\% & 0\% \\
\hline Ndola & 84\% & 73\% & 95\% & 81\% & 5\% & 19\% & & 0\% \\
\hline New York & 82\% & 83\% & 97\% & 88\% & 3\% & 12\% & & 0\% \\
\hline Nikolaev & 73\% & 85\% & 87\% & 91\% & 13\% & 9\% & 5\% & 0\% \\
\hline Okayama & 58\% & 54\% & 74\% & 68\% & 26\% & 32\% & 0\% & 0\% \\
\hline Oldenburg & 72\% & 83\% & 100\% & 94\% & 0\% & 6\% & 0\% & 0\% \\
\hline Osaka & 52\% & 61\% & 70\% & 59\% & 30\% & 41\% & 15\% & 0\% \\
\hline Oyo & 90\% & 84\% & 28\% & 69\% & 72\% & 31\% & 0\% & 0\% \\
\hline Palembang & 73\% & 57\% & 67\% & 22\% & 33\% & 78\% & 0\% & 0\% \\
\hline Palermo & 56\% & 59\% & 84\% & 63\% & 16\% & 37\% & 5\% & 0\% \\
\hline Palmas & 64\% & 86\% & 100\% & 96\% & 0\% & 4\% & 23\% & 0\% \\
\hline Parbhani & 79\% & 85\% & 97\% & 73\% & 3\% & 27\% & 0\% & 0\% \\
\hline Parepare & 76\% & 86\% & 39\% & 39\% & 61\% & 61\% & 0\% & 0\% \\
\hline Paris & 76\% & 73\% & 70\% & 71\% & 22\% & 29\% & 6\% & 0\% \\
\hline Pematangtiantar & 75\% & 62\% & 59\% & 78\% & 41\% & 22\% & 10\% & 0\% \\
\hline Philadelphia & 75\% & 85\% & 92\% & 90\% & 8\% & 10\% & 8\% & 0\% \\
\hline Pingxiang, Jiangxi & 67\% & 84\% & 20\% & 6\% & 80\% & 94\% & 0\% & 0\% \\
\hline Pokhara & 60\% & 67\% & 18\% & 34\% & 82\% & 66\% & 0\% & 0\% \\
\hline Port Elizabeth & 73\% & 84\% & 99\% & 92\% & 1\% & 8\% & 3\% & 0\% \\
\hline Portland, OR & 73\% & 90\% & 97\% & 72\% & 3\% & 28\% & 13\% & 0\% \\
\hline Pune & 71\% & 56\% & 77\% & 72\% & 23\% & 28\% & 0\% & 0\% \\
\hline Pyongyang & 47\% & 30\% & 54\% & 48\% & 46\% & 52\% & 0\% & 0\% \\
\hline Qingdao, Shandong & 50\% & 57\% & 95\% & 100\% & 5\% & 0\% & 0\% & 0\% \\
\hline Qom & 75\% & 78\% & 91\% & 98\% & 9\% & 2\% & 0\% & 0\% \\
\hline Quito & 56\% & 76\% & 98\% & 87\% & 2\% & 13\% & 8\% & 3\% \\
\hline Rajshahi & 85\% & 84\% & 0\% & 15\% & 100\% & 85\% & 0\% & 0\% \\
\hline Raleigh & 83\% & 89\% & 93\% & 96\% & 7\% & 4\% & 3\% & 0\% \\
\hline Rawang & 62\% & 54\% & 97\% & 96\% & 3\% & 4\% & 0\% & 0\% \\
\hline Reynosa & 68\% & 80\% & 94\% & 96\% & 6\% & 4\% & 30\% & 5\% \\
\hline Ribeirao Preto & 77\% & 82\% & 97\% & 92\% & 3\% & 8\% & 43\% & 5\% \\
\hline Riyadh & 76\% & 54\% & 98\% & 95\% & 2\% & 5\% & 0\% & 0\% \\
\hline Rovno & 54\% & 74\% & 79\% & 52\% & 21\% & 48\% & 0\% & 0\% \\
\hline
\end{tabular}

Los Angeles - Rovno
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|}
\hline \multirow[t]{2}{*}{City Name} & \multicolumn{2}{|l|}{\begin{tabular}{l}
Share of Residential \\
Areas in Informal Land Subdivisions
\end{tabular}} & \multicolumn{2}{|l|}{Share of Residential Areas in Formal Land Subdivisions} & \multicolumn{2}{|l|}{Share of Residential Areas in Housing Projects} & \multicolumn{2}{|l|}{Average Plot Size in Informal Land Subdivisions} & \multicolumn{2}{|l|}{Average Plot Size in Formal Land Subdivisions} \\
\hline & Pre-1990 & \[
\begin{gathered}
1990- \\
2014
\end{gathered}
\] & Pre-1990 & \[
\begin{array}{r}
1990- \\
2014
\end{array}
\] & Pre-1990 & \[
\begin{array}{r}
1990- \\
2014
\end{array}
\] & Pre-1990 & \[
\begin{array}{r}
1990- \\
2014
\end{array}
\] & Pre-1990 & \[
\begin{array}{r}
1990- \\
2014
\end{array}
\] \\
\hline Los Angeles & 0\% & 3\% & 90\% & 62\% & 7\% & 15\% & & & 752 & 789 \\
\hline Luanda & 33\% & 37\% & 9\% & 3\% & 0\% & 7\% & 255 & 387 & 291 & \\
\hline Lubumbashi & 88\% & 67\% & 5\% & 2\% & 0\% & 2\% & 611 & 839 & 1,452 & \\
\hline Madrid & 0\% & 0\% & 80\% & 68\% & 16\% & 19\% & & & 565 & 546 \\
\hline Malatya & 10\% & 12\% & 77\% & 31\% & 10\% & 29\% & & & & \\
\hline Malegaon & 38\% & 48\% & 25\% & 1\% & 1\% & 2\% & 170 & 130 & & \\
\hline Manchester & 0\% & 0\% & 98\% & 79\% & 0\% & 0\% & & & 489 & 321 \\
\hline Manila & 2\% & 27\% & 53\% & 34\% & 1\% & 7\% & & 94 & 329 & 312 \\
\hline Marrakesh & 3\% & 13\% & 62\% & 33\% & 15\% & 31\% & 136 & 1,226 & 194 & 478 \\
\hline Medan & 38\% & 25\% & 51\% & 5\% & 1\% & 0\% & & & 483 & \\
\hline Mexico City & 4\% & 27\% & 90\% & 42\% & 2\% & 5\% & & 132 & 211 & 181 \\
\hline Milan & 0\% & 0\% & 84\% & 44\% & 11\% & 17\% & & & & \\
\hline Minneapolis & 0\% & 0\% & 80\% & 61\% & 14\% & 10\% & & & 925 & 1,091 \\
\hline Modesto & 1\% & 1\% & 88\% & 90\% & 6\% & 7\% & & & 620 & 581 \\
\hline Montreal & 0\% & 0\% & 92\% & 74\% & 7\% & 19\% & & & 556 & 593 \\
\hline Moscow & 9\% & 75\% & 54\% & 11\% & 31\% & 14\% & & 1,099 & & 962 \\
\hline Mumbai & 1\% & 0\% & 25\% & 15\% & 14\% & 22\% & & & 655 & \\
\hline Myeik & 69\% & 34\% & 8\% & 0\% & 0\% & 0\% & 165 & 182 & 298 & \\
\hline Nakuru & 81\% & 80\% & 2\% & 2\% & 15\% & 1\% & 302 & 626 & 2,240 & \\
\hline Ndola & 71\% & 80\% & 22\% & 0\% & 2\% & 1\% & 742 & 373 & 1,810 & 424 \\
\hline New York & 0\% & 0\% & 93\% & 87\% & 4\% & 2\% & & & 712 & 400 \\
\hline Nikolaev & 50\% & 62\% & 25\% & 26\% & 12\% & 3\% & 501 & & 484 & \\
\hline Okayama & 3\% & 11\% & 72\% & 57\% & 0\% & 0\% & & & 189 & 283 \\
\hline Oldenburg & 4\% & 0\% & 86\% & 87\% & 10\% & 6\% & & & & 536 \\
\hline Osaka & 0\% & 5\% & 68\% & 52\% & 2\% & 2\% & & & 143 & 227 \\
\hline Oyo & 27\% & 66\% & 1\% & 0\% & 0\% & 3\% & 558 & 393 & & \\
\hline Palembang & 27\% & 12\% & 37\% & 3\% & 3\% & 6\% & 189 & & 185 & 244 \\
\hline Palermo & 1\% & 21\% & 81\% & 42\% & 2\% & 0\% & & 867 & 1,119 & 444 \\
\hline Palmas & 8\% & 41\% & 89\% & 55\% & 2\% & 0\% & 395 & 350 & 342 & 306 \\
\hline Parbhani & 81\% & 73\% & 16\% & 0\% & 0\% & 0\% & 216 & & 411 & \\
\hline Parepare & 2\% & 13\% & 37\% & 25\% & 0\% & 1\% & & & & \\
\hline Paris & 0\% & 2\% & 63\% & 67\% & 15\% & 1\% & & & 447 & 545 \\
\hline Pematangtiantar & 12\% & 58\% & 47\% & 20\% & 0\% & 0\% & & & & \\
\hline Philadelphia & 0\% & 0\% & 85\% & 85\% & 8\% & 5\% & & & 709 & 986 \\
\hline Pingxiang, Jiangxi & 5\% & 4\% & 8\% & 0\% & 7\% & 3\% & & & 170 & \\
\hline Pokhara & 15\% & 29\% & 1\% & 0\% & 1\% & 6\% & & & & \\
\hline Port Elizabeth & 6\% & 20\% & 83\% & 70\% & 10\% & 2\% & 297 & 290 & 646 & 755 \\
\hline Portland, OR & 0\% & 0\% & 88\% & 64\% & 9\% & 8\% & & & 640 & 842 \\
\hline Pune & 0\% & 23\% & 73\% & 31\% & 4\% & 18\% & & & 316 & 270 \\
\hline Pyongyang & 9\% & 45\% & 32\% & 0\% & 13\% & 2\% & & 289 & & \\
\hline Qingdao, Shandong & 11\% & 24\% & 21\% & 12\% & 63\% & 64\% & & & & \\
\hline Qom & 3\% & 14\% & 84\% & 58\% & 4\% & 26\% & & & & 166 \\
\hline Quito & 0\% & 17\% & 90\% & 68\% & 9\% & 1\% & & 543 & 336 & 374 \\
\hline Rajshahi & 0\% & 14\% & 0\% & 0\% & 0\% & 0\% & & 360 & & \\
\hline Raleigh & 0\% & 0\% & 78\% & 78\% & 15\% & 18\% & & & 1,166 & 521 \\
\hline Rawang & 14\% & 14\% & 66\% & 35\% & 17\% & 46\% & 376 & & 319 & 1,175 \\
\hline Reynosa & 31\% & 31\% & 56\% & 14\% & 7\% & 51\% & 377 & 178 & 260 & 157 \\
\hline Ribeirao Preto & 0\% & 17\% & 90\% & 71\% & 6\% & 5\% & & 3,208 & 303 & 513 \\
\hline Riyadh & 4\% & 5\% & 87\% & 78\% & 7\% & 12\% & & & 448 & 432 \\
\hline Rovno & 0\% & 34\% & 49\% & 17\% & 30\% & 1\% & & 1,326 & 776 & 1,071 \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|c|c|c|c|}
\hline \multirow{2}{*}{City Name} & \multirow{2}{*}{Country} & \multirow{2}{*}{Region} & \multicolumn{2}{|l|}{CBD Location} & \multicolumn{3}{|c|}{Land Cover Dates} \\
\hline & & & Latitude & Longitude & T1 & T2 & т3 \\
\hline Saidpur & Bangladesh & South and Central Asia & 25.802 & 88.881 & 11/1/90 & 11/1/01 & 4/1/14 \\
\hline Saint Petersburg & Russia & Europe and Japan & 59.911 & 30.348 & 7/1/90 & 5/1/00 & 5/1/14 \\
\hline San Salvador & El Salvador & Latin America and the Caribbean & 13.700 & -89.201 & 3/1/91 & 10/1/99 & 1/1/14 \\
\hline Sana & Yemen & Western Asia and North Africa & 15.363 & 44.208 & 9/1/89 & 5/1/00 & 11/1/14 \\
\hline Santiago & Chile & Latin America and the Caribbean & -33.491 & -70.670 & 1/1/90 & 1/1/00 & 4/1/14 \\
\hline Sao Paulo & Brazil & Latin America and the Caribbean & -23.534 & -46.615 & 9/1/88 & 4/1/00 & 7/1/14 \\
\hline Seoul & Korea Rep. & East Asia and the Pacific & 37.495 & 126.939 & 8/1/91 & 5/1/00 & 5/1/14 \\
\hline Shanghai, Shanghai & China & East Asia and the Pacific & 31.250 & 121.440 & 1/1/91 & 8/1/00 & 8/1/15 \\
\hline Sheffield & United Kingdom & Europe and Japan & 53.454 & -1.356 & 5/1/92 & 9/1/02 & 11/1/13 \\
\hline Shenzhen, Guangdong & China & East Asia and the Pacific & 24.316 & 116.112 & 10/1/87 & 1/1/00 & 10/1/13 \\
\hline Shymkent & Kazakhstan & South and Central Asia & 42.315 & 69.630 & 8/1/93 & 9/1/00 & 10/1/13 \\
\hline Sialkot & Pakistan & South and Central Asia & 32.508 & 74.524 & 11/1/92 & 10/1/00 & 10/1/14 \\
\hline Singapore & Singapore & Southeast Asia & 1.290 & 103.850 & 4/1/90 & 10/1/02 & 4/1/13 \\
\hline Singrauli & India & South and Central Asia & 82.671 & 24.200 & 1/1/90 & 2/1/00 & 2/1/10 \\
\hline Sitapur & India & South and Central Asia & 27.568 & 80.692 & 2/1/89 & 4/1/00 & 3/1/14 \\
\hline Springfield, MA & United States & Land-Rich Developed Countries & 37.190 & -93.293 & 9/1/91 & 9/1/00 & 10/1/14 \\
\hline Suining, Sichuan & China & East Asia and the Pacific & 30.524 & 105.564 & 9/1/88 & 7/1/00 & 8/1/13 \\
\hline Suva & Fiji & East Asia and the Pacific & -18.142 & 178.441 & 8/1/91 & 10/1/99 & 5/1/14 \\
\hline Sydney & Australia & Land-Rich Developed Countries & -33.854 & 150.998 & 4/1/91 & 2/1/00 & 8/1/14 \\
\hline Taipei, Taiwan & China & East Asia and the Pacific & 25.047 & 121.546 & 7/1/90 & 3/1/01 & 1/1/14 \\
\hline Tangshan, Hebei & China & East Asia and the Pacific & 39.648 & 118.190 & 9/1/90 & 7/1/00 & 7/1/13 \\
\hline Tashkent & Uzbekistan & South and Central Asia & 41.297 & 69.233 & 8/1/90 & 10/1/99 & 9/1/13 \\
\hline Tebessa & Algeria & Western Asia and North Africa & 35.416 & 8.108 & 5/1/88 & 6/1/01 & 8/1/14 \\
\hline Tehran & Iran & South and Central Asia & 35.705 & 51.384 & 6/1/91 & 7/1/00 & 6/1/10 \\
\hline Tel Aviv & Israel & Western Asia and North Africa & 32.077 & 34.839 & 8/1/87 & 5/1/00 & 8/1/14 \\
\hline Thessaloniki & Greece & Europe and Japan & 40.650 & 22.916 & 8/1/90 & 3/1/00 & 9/1/11 \\
\hline Tianjin, Tianjin & China & East Asia and the Pacific & 39.142 & 117.189 & 10/1/90 & 6/1/00 & 9/1/13 \\
\hline Tijuana & Mexico & Latin America and the Caribbean & 32.499 & -116.970 & 4/1/89 & 4/1/00 & 5/1/14 \\
\hline Tokyo & Japan & Europe and Japan & 35.682 & 139.649 & 12/1/90 & 9/1/00 & 5/1/14 \\
\hline Toledo & United States & Land-Rich Developed Countries & 41.655 & -83.602 & 8/1/90 & 9/1/00 & 6/1/14 \\
\hline Tyumen & Russia & Europe and Japan & 57.160 & 65.551 & 4/1/90 & 8/1/99 & 9/1/11 \\
\hline Ulaanbaatar & Mongolia & East Asia and the Pacific & 47.930 & 106.889 & 9/1/90 & 8/1/01 & 6/1/14 \\
\hline Valledupar & Colombia & Latin America and the Caribbean & 10.464 & -73.261 & 12/1/89 & 10/1/01 & 2/1/11 \\
\hline Victoria & Canada & Land-Rich Developed Countries & 48.456 & -123.401 & 8/1/90 & 7/1/00 & 9/1/13 \\
\hline Vienna & Austria & Europe and Japan & 48.124 & 16.346 & 6/1/91 & 9/1/00 & 8/1/13 \\
\hline Vijayawada & India & South and Central Asia & 16.515 & 80.641 & 11/1/91 & 10/1/00 & 6/1/14 \\
\hline Vinh Long & Vietnam & Southeast Asia & 10.250 & 105.967 & 4/1/89 & 11/1/00 & 1/1/14 \\
\hline Warsaw & Poland & Europe and Japan & 52.234 & 21.024 & 5/1/92 & 8/1/00 & 9/1/13 \\
\hline Wuhan, Hubei & China & East Asia and the Pacific & 30.576 & 114.295 & 9/1/90 & 9/1/00 & 9/1/13 \\
\hline Xingping, Shaanxi & China & East Asia and the Pacific & 34.308 & 108.463 & 7/1/92 & 6/1/00 & 6/1/13 \\
\hline Xucheng, Jiangsu & China & East Asia and the Pacific & 33.004 & 118.507 & 10/1/90 & 9/1/00 & 8/1/13 \\
\hline Yamaguchi & Japan & Europe and Japan & 34.155 & 131.458 & 9/1/90 & 3/1/99 & 5/1/14 \\
\hline Yanggu, Shandong & China & East Asia and the Pacific & 36.116 & 115.786 & 9/1/90 & 9/1/00 & 4/1/14 \\
\hline Yiyang, Hunan & China & East Asia and the Pacific & 28.587 & 112.356 & 7/1/94 & 9/1/99 & 10/1/13 \\
\hline Yucheng, Zhejiang & China & East Asia and the Pacific & 28.125 & 121.247 & 12/1/90 & 1/1/00 & 12/1/14 \\
\hline Yulin, Guangxi & China & East Asia and the Pacific & 22.611 & 110.139 & 10/1/91 & 10/1/00 & 1/1/09 \\
\hline Zhengzhou, Henan & China & East Asia and the Pacific & 34.756 & 113.637 & 10/1/92 & 8/1/00 & 9/1/15 \\
\hline Zhuji, Zhejiang & China & East Asia and the Pacific & 29.725 & 120.237 & 6/1/90 & 5/1/00 & 4/1/13 \\
\hline Zunyi, Guizhou & China & East Asia and the Pacific & 27.696 & 106.925 & 6/1/88 & 4/1/01 & 12/1/13 \\
\hline Zwolle & Netherlands & Europe and Japan & 52.513 & 6.090 & 4/1/90 & 5/1/00 & 3/1/14 \\
\hline
\end{tabular}

Saidpur - Zwolle
\begin{tabular}{|c|c|c|c|c|c|c|c|c|}
\hline \multirow{2}{*}{City Name} & \multicolumn{2}{|l|}{Share of Built-up Area Occupied by Roads} & \multicolumn{2}{|l|}{Average Street Width (meters)} & \multicolumn{2}{|l|}{Share of Roads Less Than 4 m . Wide} & \multicolumn{2}{|l|}{Share of Roads More Than 16m. Wide} \\
\hline & Pre-1990 & \[
\begin{gathered}
1990- \\
2014
\end{gathered}
\] & Pre-1990 & \[
\begin{gathered}
1990- \\
2014
\end{gathered}
\] & Pre-1990 & \[
\begin{gathered}
1990- \\
2014
\end{gathered}
\] & Pre-1990 & \[
\begin{gathered}
1990- \\
2014
\end{gathered}
\] \\
\hline Saidpur & 9\% & 15\% & 3.6 & 4.7 & 65\% & 46\% & 0\% & 0\% \\
\hline Saint Petersburg & 26\% & 21\% & 9.3 & 8.1 & 14\% & 20\% & 14\% & 9\% \\
\hline San Salvador & 25\% & 23\% & 10.4 & 8.1 & 7\% & 21\% & 14\% & 9\% \\
\hline Sana & 29\% & 28\% & 10.7 & 7.8 & 15\% & 33\% & 16\% & 10\% \\
\hline Santiago & 25\% & 18\% & 12.6 & 7.9 & 5\% & 16\% & 27\% & 10\% \\
\hline Sao Paulo & 24\% & 22\% & 9.9 & 7.2 & 5\% & 11\% & 19\% & 1\% \\
\hline Seoul & 22\% & 20\% & 7.6 & 5.6 & 33\% & 45\% & 10\% & 4\% \\
\hline Shanghai, Shanghai & 27\% & 22\% & 9.7 & 8.2 & 16\% & 41\% & 25\% & 14\% \\
\hline Sheffield & 19\% & 17\% & 8.0 & 7.5 & 24\% & 24\% & 6\% & 5\% \\
\hline Shenzhen, Guangdong & 27\% & 25\% & 10.7 & 8.4 & 21\% & 33\% & 17\% & 15\% \\
\hline Shymkent & 14\% & 17\% & 8.5 & 7.7 & 14\% & 18\% & 8\% & 7\% \\
\hline Sialkot & 17\% & 17\% & 7.1 & 5.1 & 46\% & 45\% & 12\% & 4\% \\
\hline Singapore & 24\% & 26\% & 11.7 & 9.1 & 7\% & 22\% & 24\% & 15\% \\
\hline Singrauli & 28\% & 19\% & 8.5 & 6.2 & 7\% & 28\% & 7\% & 5\% \\
\hline Sitapur & 17\% & 25\% & 5.5 & 5.0 & 46\% & 42\% & 5\% & 0\% \\
\hline Springfield, MA & 18\% & 16\% & 8.1 & 7.9 & 19\% & 13\% & 9\% & 3\% \\
\hline Suining, Sichuan & 28\% & 28\% & 10.8 & 11.0 & 7\% & 9\% & 20\% & 19\% \\
\hline Suva & 24\% & 13\% & 10.9 & 8.4 & 7\% & 19\% & 17\% & 9\% \\
\hline Sydney & 26\% & 20\% & 15.7 & 9.9 & 5\% & 8\% & 51\% & 16\% \\
\hline Taipei, Taiwan & 22\% & 18\% & 8.5 & 5.3 & 22\% & 44\% & 12\% & 3\% \\
\hline Tangshan, Hebei & 20\% & 17\% & 6.7 & 5.7 & 33\% & 43\% & 7\% & 5\% \\
\hline Tashkent & 16\% & 12\% & 8.8 & 5.6 & 13\% & 30\% & 11\% & 2\% \\
\hline Tebessa & 24\% & 23\% & 7.8 & 6.2 & 29\% & 32\% & 10\% & 7\% \\
\hline Tehran & 22\% & 28\% & 11.2 & 9.5 & 16\% & 19\% & 19\% & 15\% \\
\hline Tel Aviv & 23\% & 22\% & 11.8 & 9.4 & 7\% & 19\% & 19\% & 14\% \\
\hline Thessaloniki & 23\% & 21\% & 8.5 & 7.0 & 21\% & 23\% & 10\% & 9\% \\
\hline Tianjin, Tianjin & 22\% & 23\% & 9.2 & 8.4 & 24\% & 30\% & 12\% & 13\% \\
\hline Tijuana & 23\% & 26\% & 11.3 & 9.3 & 7\% & 8\% & 18\% & 8\% \\
\hline Tokyo & 37\% & 25\% & 5.4 & 5.0 & 46\% & 51\% & 3\% & 3\% \\
\hline Toledo & 21\% & 18\% & 8.6 & 9.3 & 25\% & 14\% & 17\% & 22\% \\
\hline Tyumen & 20\% & 19\% & 7.7 & 6.7 & 18\% & 20\% & 7\% & 6\% \\
\hline Ulaanbaatar & 15\% & 12\% & 7.1 & 4.2 & 25\% & 51\% & 8\% & 0\% \\
\hline Valledupar & 21\% & 26\% & 8.9 & 6.9 & 8\% & 15\% & 9\% & 2\% \\
\hline Victoria & 19\% & 17\% & 9.8 & 7.3 & 9\% & 22\% & 12\% & 4\% \\
\hline Vienna & 22\% & 18\% & 7.8 & 6.6 & 24\% & 22\% & 9\% & 1\% \\
\hline Vijayawada & 20\% & 18\% & 7.0 & 5.8 & 20\% & 32\% & 8\% & 4\% \\
\hline Vinh Long & 16\% & 10\% & 7.7 & 6.1 & 19\% & 46\% & 4\% & 8\% \\
\hline Warsaw & 22\% & 15\% & 9.3 & 6.3 & 8\% & 24\% & 12\% & 1\% \\
\hline Wuhan, Hubei & 21\% & 23\% & 10.1 & 7.3 & 27\% & 41\% & 17\% & 11\% \\
\hline Xingping, Shaanxi & 16\% & 17\% & 9.8 & 7.4 & 18\% & 29\% & 20\% & 8\% \\
\hline Xucheng, Jiangsu & 20\% & 24\% & 8.5 & 9.2 & 21\% & 35\% & 22\% & 18\% \\
\hline Yamaguchi & 27\% & 29\% & 5.5 & 5.8 & 48\% & 45\% & 4\% & 4\% \\
\hline Yanggu, Shandong & 23\% & 15\% & 8.6 & 3.3 & 32\% & 75\% & 17\% & 3\% \\
\hline Yiyang, Hunan & 17\% & 16\% & 10.7 & 6.8 & 17\% & 48\% & 19\% & 10\% \\
\hline Yucheng, Zhejiang & 19\% & 20\% & 6.7 & 6.0 & 43\% & 49\% & 11\% & 7\% \\
\hline Yulin, Guangxi & 17\% & 15\% & 8.6 & 6.9 & 31\% & 46\% & 16\% & 9\% \\
\hline Zhengzhou, Henan & 22\% & 20\% & 8.1 & 8.5 & 33\% & 31\% & 16\% & 14\% \\
\hline Zhuji, Zhejiang & 23\% & 23\% & 6.1 & 6.8 & 39\% & 34\% & 5\% & 8\% \\
\hline Zunyi, Guizhou & 20\% & 17\% & 7.6 & 7.2 & 28\% & 32\% & 11\% & 10\% \\
\hline Zwolle & 22\% & 26\% & 4.7 & 6.6 & 49\% & 34\% & 4\% & 8\% \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|c|c|c|c|c|}
\hline \multirow[t]{2}{*}{City Name} & \multicolumn{2}{|l|}{\begin{tabular}{l}
Density of All Arterial \\
Roads (km/km)
\end{tabular}} & \multicolumn{2}{|l|}{Average Beeline Distance to All Arterial Roads (meters)} & \multicolumn{2}{|l|}{Share of Area within Walking Distance of All Arterial Roads} & \multicolumn{2}{|l|}{Share of Area within Walking Distance of Wide Arterial Roads} \\
\hline & Pre-1990 & \[
\begin{gathered}
1990- \\
2014
\end{gathered}
\] & Pre-1990 & \[
\begin{gathered}
1990- \\
2014
\end{gathered}
\] & Pre-1990 & \[
\begin{gathered}
1990- \\
2014
\end{gathered}
\] & Pre-1990 & \[
\begin{gathered}
1990- \\
2014
\end{gathered}
\] \\
\hline Saidpur & 2.81 & 1.90 & 98 & 173 & 100\% & 96\% & 15\% & 43\% \\
\hline Saint Petersburg & 1.19 & 0.90 & 433 & 523 & 78\% & 70\% & 76\% & 61\% \\
\hline San Salvador & 2.84 & 2.02 & 155 & 212 & 96\% & 93\% & 82\% & 74\% \\
\hline Sana & 2.25 & 0.96 & 219 & 767 & 92\% & 70\% & 90\% & 69\% \\
\hline Santiago & 3.01 & 2.37 & 126 & 199 & 99\% & 94\% & 99\% & 90\% \\
\hline Sao Paulo & 2.36 & 0.53 & 162 & 1,268 & 99\% & 39\% & 78\% & 23\% \\
\hline Seoul & 2.51 & 0.79 & 177 & 478 & 95\% & 71\% & 93\% & 47\% \\
\hline Shanghai, Shanghai & 1.72 & 0.65 & 229 & 1,286 & 93\% & 63\% & 93\% & 60\% \\
\hline Sheffield & 1.65 & 1.54 & 220 & 234 & 94\% & 93\% & 46\% & 44\% \\
\hline Shenzhen, Guangdong & 2.75 & 0.97 & 148 & 444 & 97\% & 80\% & 97\% & 80\% \\
\hline Shymkent & 1.18 & 0.92 & 461 & 469 & 75\% & 74\% & 65\% & 58\% \\
\hline Sialkot & 1.76 & 1.03 & 181 & 379 & 99\% & 81\% & 88\% & 70\% \\
\hline Singapore & 1.74 & 1.42 & 243 & 513 & 93\% & 83\% & 92\% & 83\% \\
\hline Singrauli & 0.02 & 0.62 & 1,182 & 678 & 21\% & 54\% & 21\% & 58\% \\
\hline Sitapur & 1.95 & 1.69 & 175 & 251 & 96\% & 90\% & 78\% & 75\% \\
\hline Springfield, MA & 1.94 & 1.36 & 246 & 275 & 92\% & 89\% & 75\% & 48\% \\
\hline Suining, Sichuan & 2.64 & 1.77 & 117 & 190 & 100\% & 96\% & 100\% & 94\% \\
\hline Suva & 2.90 & 1.39 & 83 & 253 & 100\% & 90\% & 100\% & 90\% \\
\hline Sydney & 2.30 & 1.28 & 163 & 357 & 97\% & 82\% & 97\% & 76\% \\
\hline Taipei, Taiwan & 4.62 & 3.06 & 83 & 134 & 99\% & 98\% & 96\% & 82\% \\
\hline Tangshan, Hebei & 1.37 & 0.76 & 318 & 840 & 86\% & 63\% & 84\% & 59\% \\
\hline Tashkent & 1.03 & 0.90 & 412 & 445 & 79\% & 76\% & 77\% & 72\% \\
\hline Tebessa & 1.74 & 1.24 & 205 & 305 & 95\% & 85\% & 86\% & 81\% \\
\hline Tehran & 2.36 & 1.90 & 176 & 255 & 96\% & 91\% & 96\% & 90\% \\
\hline Tel Aviv & 2.03 & 1.13 & 178 & 376 & 97\% & 81\% & 96\% & 78\% \\
\hline Thessaloniki & 2.91 & 2.09 & 138 & 198 & 98\% & 94\% & 89\% & 78\% \\
\hline Tianjin, Tianjin & 2.32 & 0.77 & 173 & 522 & 97\% & 69\% & 96\% & 61\% \\
\hline Tijuana & 1.94 & 1.55 & 172 & 233 & 98\% & 93\% & 81\% & 73\% \\
\hline Tokyo & 2.75 & 1.73 & 129 & 198 & 99\% & 93\% & 84\% & 58\% \\
\hline Toledo & 1.42 & 1.17 & 258 & 340 & 91\% & 84\% & 74\% & 57\% \\
\hline Tyumen & 1.32 & 1.07 & 312 & 392 & 86\% & 79\% & 85\% & 76\% \\
\hline Ulaanbaatar & 1.60 & 1.18 & 272 & 394 & 89\% & 78\% & 81\% & 67\% \\
\hline Valledupar & 3.30 & 2.36 & 107 & 209 & 99\% & 90\% & 97\% & 86\% \\
\hline Victoria & 1.99 & 1.56 & 185 & 260 & 96\% & 89\% & 88\% & 75\% \\
\hline Vienna & 2.01 & 1.75 & 169 & 207 & 98\% & 95\% & 84\% & 71\% \\
\hline Vijayawada & 2.05 & 1.65 & 161 & 221 & 99\% & 94\% & 92\% & 87\% \\
\hline Vinh Long & 3.63 & 1.03 & 74 & 321 & 100\% & 84\% & 90\% & 67\% \\
\hline Warsaw & 1.92 & 1.58 & 185 & 214 & 96\% & 94\% & 79\% & 65\% \\
\hline Wuhan, Hubei & 1.77 & 0.40 & 246 & 994 & 91\% & 67\% & 90\% & 66\% \\
\hline Xingping, Shaanxi & 1.63 & 0.82 & 193 & 453 & 99\% & 75\% & 99\% & 77\% \\
\hline Xucheng, Jiangsu & 1.82 & 1.31 & 136 & 259 & 100\% & 92\% & 100\% & 91\% \\
\hline Yamaguchi & 1.65 & 1.52 & 243 & 241 & 90\% & 92\% & 79\% & 71\% \\
\hline Yanggu, Shandong & 0.92 & 0.62 & 451 & 836 & 69\% & 59\% & 69\% & 58\% \\
\hline Yiyang, Hunan & 1.64 & 0.83 & 263 & 481 & 91\% & 77\% & 91\% & 71\% \\
\hline Yucheng, Zhejiang & 1.78 & 0.97 & 324 & 591 & 83\% & 71\% & 96\% & 60\% \\
\hline Yulin, Guangxi & 1.77 & 0.98 & 208 & 616 & 97\% & 72\% & 97\% & 66\% \\
\hline Zhengzhou, Henan & 1.98 & 0.77 & 181 & 527 & 98\% & 80\% & 98\% & 76\% \\
\hline Zhuji, Zhejiang & 0.68 & 0.59 & 662 & 876 & 60\% & 57\% & 50\% & 47\% \\
\hline Zunyi, Guizhou & 2.17 & 1.44 & 163 & 234 & 100\% & 92\% & 100\% & 77\% \\
\hline Zwolle & 1.66 & 1.50 & 214 & 242 & 95\% & 93\% & 92\% & 90\% \\
\hline
\end{tabular}

Saidpur - Zwolle
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|}
\hline \multirow[t]{2}{*}{City Name} & \multicolumn{2}{|l|}{Average Block Size (ha)} & \multicolumn{2}{|l|}{3-Way Intersection Density (number per
\[
\mathrm{km}^{2}
\]} & \multicolumn{2}{|l|}{4-Way Intersection Density (number per
\[
\left.\mathrm{km}^{2}\right)
\]} & \multicolumn{2}{|l|}{Share of Intersections that are 4-Way} & \multicolumn{2}{|l|}{Walkability Ratio} \\
\hline & Pre-1990 & \[
\begin{array}{r}
1990- \\
2014
\end{array}
\] & Pre-1990 & \[
\begin{array}{r}
1990- \\
2014
\end{array}
\] & Pre-1990 & \[
\begin{array}{r}
1990- \\
2014
\end{array}
\] & Pre-1990 & \[
\begin{array}{r}
1990- \\
2014
\end{array}
\] & Pre-1990 & \[
\begin{array}{r}
1990- \\
2014
\end{array}
\] \\
\hline Saidpur & 2.8 & 9.7 & 103.0 & 77.0 & 17.3 & 6.1 & 8\% & 6\% & 1.4 & 1.5 \\
\hline Saint Petersburg & 3.3 & 5.3 & 133.0 & 77.1 & 19.9 & 6.1 & 12\% & 6\% & 1.7 & 1.8 \\
\hline San Salvador & 2.1 & 4.8 & 93.8 & 104.0 & 21.8 & 28.1 & 18\% & 12\% & 1.6 & 1.8 \\
\hline Sana & 2.3 & 3.5 & 171.7 & 217.5 & 25.9 & 15.4 & 13\% & 5\% & 1.7 & 1.7 \\
\hline Santiago & 3.5 & 6.5 & 60.7 & 116.5 & 26.5 & 19.9 & 34\% & 14\% & 1.6 & 2.0 \\
\hline Sao Paulo & 3.5 & 6.7 & 66.6 & 82.6 & 17.8 & 5.4 & 26\% & 6\% & 1.8 & 1.7 \\
\hline Seoul & 2.4 & 6.3 & 131.8 & 95.6 & 29.2 & 14.9 & 16\% & 9\% & 1.8 & 1.5 \\
\hline Shanghai, Shanghai & 6.1 & 6.8 & 67.3 & 80.9 & 17.8 & 10.2 & 20\% & 13\% & 1.6 & 1.7 \\
\hline Sheffield & 3.4 & 6.2 & 97.6 & 62.6 & 10.3 & 6.4 & 7\% & 6\% & 1.6 & 1.5 \\
\hline Shenzhen, Guangdong & 3.0 & 3.3 & 132.3 & 251.2 & 11.8 & 82.4 & 7\% & 18\% & 1.8 & 1.7 \\
\hline Shymkent & 6.4 & 5.6 & 43.9 & 65.2 & 8.0 & 13.3 & 14\% & 15\% & 1.7 & 1.8 \\
\hline Sialkot & 2.4 & 5.1 & 149.7 & 153.9 & 15.6 & 19.4 & 9\% & 6\% & 1.6 & 1.8 \\
\hline Singapore & 4.5 & 3.9 & 78.2 & 100.3 & 4.7 & 16.2 & 5\% & 15\% & 2.2 & 2.0 \\
\hline Singrauli & 3.4 & 6.0 & 180.4 & 137.0 & 19.8 & 12.0 & 8\% & 5\% & 1.5 & 1.7 \\
\hline Sitapur & 2.6 & 4.8 & 202.8 & 132.3 & 26.4 & 6.8 & 10\% & 6\% & 1.8 & 1.3 \\
\hline Springfield, MA & 3.8 & 7.2 & 96.7 & 45.1 & 8.5 & 8.5 & 8\% & 5\% & 1.6 & 1.6 \\
\hline Suining, Sichuan & 2.2 & 5.6 & 209.3 & 139.5 & 17.9 & 15.2 & 7\% & 6\% & 1.4 & 1.9 \\
\hline Suva & 5.2 & 8.4 & 141.9 & 31.9 & 5.0 & 1.3 & 1\% & 2\% & 1.5 & 1.6 \\
\hline Sydney & 5.8 & 6.2 & 61.2 & 35.9 & 17.4 & 3.1 & 17\% & 4\% & 1.7 & 1.8 \\
\hline Taipei, Taiwan & 2.9 & 7.7 & 134.9 & 96.0 & 24.1 & 7.9 & 13\% & 3\% & 1.6 & 1.9 \\
\hline Tangshan, Hebei & 3.0 & 5.5 & 203.8 & 151.3 & 30.7 & 19.5 & 10\% & 9\% & 1.6 & 1.6 \\
\hline Tashkent & 5.7 & 5.9 & 61.2 & 46.4 & 7.8 & 7.3 & 8\% & 12\% & 1.8 & 1.7 \\
\hline Tebessa & 1.4 & 2.5 & 249.5 & 283.2 & 44.2 & 57.2 & 12\% & 13\% & 1.7 & 1.6 \\
\hline Tehran & 4.1 & 4.2 & 80.5 & 162.0 & 27.8 & 23.5 & 16\% & 14\% & 1.5 & 2.1 \\
\hline Tel Aviv & 4.0 & 5.7 & 76.2 & 64.8 & 109.8 & 7.7 & 21\% & 10\% & 1.6 & 2.1 \\
\hline Thessaloniki & 5.1 & 9.1 & 159.4 & 83.9 & 46.2 & 9.5 & 23\% & 10\% & 1.7 & 2.3 \\
\hline Tianjin, Tianjin & 3.0 & 5.7 & 119.0 & 99.6 & 18.3 & 15.9 & 12\% & 14\% & 1.9 & 1.9 \\
\hline Tijuana & 3.5 & 3.0 & 82.7 & 110.7 & 17.2 & 27.9 & 17\% & 21\% & 1.7 & 1.8 \\
\hline Tokyo & 1.6 & 2.5 & 169.0 & 194.1 & 40.9 & 47.2 & 18\% & 16\% & 1.5 & 1.4 \\
\hline Toledo & 2.4 & 6.9 & 126.3 & 75.1 & 25.3 & 3.3 & 18\% & 4\% & 1.7 & 1.6 \\
\hline Tyumen & 5.2 & 3.8 & 109.2 & 126.4 & 12.5 & 18.5 & 10\% & 16\% & 1.8 & 1.7 \\
\hline Ulaanbaatar & 5.6 & 4.4 & 84.9 & 91.4 & 4.2 & 9.6 & 3\% & 8\% & 1.8 & 1.7 \\
\hline Valledupar & 1.3 & 2.2 & 119.2 & 182.7 & 68.4 & 90.9 & 38\% & 33\% & 1.4 & 1.7 \\
\hline Victoria & 7.5 & 13.5 & 68.1 & 22.2 & 11.5 & 3.5 & 19\% & 3\% & 1.8 & 1.3 \\
\hline Vienna & 2.8 & 4.9 & 198.2 & 102.7 & 40.1 & 16.5 & 19\% & 10\% & 1.7 & 2.1 \\
\hline Vijayawada & 1.8 & 6.8 & 157.7 & 130.3 & 34.4 & 17.2 & 15\% & 6\% & 1.7 & 1.8 \\
\hline Vinh Long & 1.9 & 14.4 & 92.4 & 32.9 & 23.4 & 6.3 & 22\% & 2\% & 1.4 & 1.3 \\
\hline Warsaw & 6.0 & 6.9 & 29.4 & 79.2 & 19.4 & 17.4 & 20\% & 14\% & 1.6 & 1.6 \\
\hline Wuhan, Hubei & 5.7 & 5.3 & 91.9 & 172.7 & 8.5 & 23.6 & 6\% & 7\% & 1.7 & 1.7 \\
\hline Xingping, Shaanxi & 5.5 & 6.9 & 63.0 & 80.3 & 7.5 & 15.0 & 12\% & 16\% & 1.5 & 1.7 \\
\hline Xucheng, Jiangsu & 3.7 & 7.4 & 52.5 & 105.5 & 10.0 & 12.6 & 10\% & 8\% & 1.4 & 1.6 \\
\hline Yamaguchi & 2.8 & 2.4 & 203.8 & 282.3 & 30.9 & 42.0 & 10\% & 12\% & 1.6 & 1.5 \\
\hline Yanggu, Shandong & 3.0 & 3.8 & 146.6 & 177.9 & 20.9 & 31.9 & 10\% & 17\% & 1.7 & 1.5 \\
\hline Yiyang, Hunan & 10.4 & 13.1 & 40.2 & 62.8 & 5.4 & 5.1 & 11\% & 6\% & 1.7 & 1.3 \\
\hline Yucheng, Zhejiang & 2.7 & 5.8 & 187.0 & 155.6 & 24.0 & 18.5 & 9\% & 7\% & 1.6 & 1.5 \\
\hline Yulin, Guangxi & 4.5 & 5.1 & 72.8 & 91.1 & 9.2 & 6.3 & 10\% & 6\% & 1.8 & 1.7 \\
\hline Zhengzhou, Henan & 4.1 & 5.7 & 141.8 & 110.6 & 14.2 & 16.3 & 10\% & 8\% & 1.9 & 1.6 \\
\hline Zhuji, Zhejiang & 5.3 & 5.8 & 144.5 & 110.3 & 20.9 & 17.7 & 7\% & 8\% & 1.5 & 1.8 \\
\hline Zunyi, Guizhou & 7.3 & 7.2 & 117.3 & 67.8 & 9.0 & 6.6 & 5\% & 5\% & 2.5 & 1.9 \\
\hline Zwolle & 1.9 & 4.1 & 328.9 & 207.2 & 42.8 & 47.0 & 11\% & 16\% & 1.8 & 1.8 \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|}
\hline \multirow[t]{2}{*}{City Name} & \multicolumn{2}{|l|}{Share of Residential Areas in Informal Land Subdivisions} & \multicolumn{2}{|l|}{Share of Residential Areas in Formal Land Subdivisions} & \multicolumn{2}{|l|}{Share of Residential Areas in Housing Projects} & \multicolumn{2}{|l|}{Average Plot Size in Informal Land Subdivisions} & \multicolumn{2}{|l|}{Average Plot Size in Formal Land Subdivisions} \\
\hline & Pre-1990 & \[
\begin{array}{r}
1990- \\
2014
\end{array}
\] & Pre-1990 & \[
\begin{array}{r}
1990- \\
2014
\end{array}
\] & Pre-1990 & \[
\begin{array}{r}
1990- \\
2014
\end{array}
\] & Pre-1990 & \[
\begin{array}{r}
1990- \\
2014
\end{array}
\] & Pre-1990 & \[
\begin{array}{r}
1990- \\
2014
\end{array}
\] \\
\hline Saidpur & 10\% & 3\% & 0\% & 0\% & 0\% & 12\% & & & & \\
\hline Saint Petersburg & 19\% & 34\% & 43\% & 25\% & 26\% & 11\% & & & & 736 \\
\hline San Salvador & 17\% & 25\% & 62\% & 40\% & 2\% & 8\% & & 77 & 91 & 157 \\
\hline Sana & 17\% & 36\% & 49\% & 8\% & 3\% & 0\% & & 221 & 193 & 407 \\
\hline Santiago & 0\% & 5\% & 90\% & 63\% & 8\% & 15\% & & & 493 & 282 \\
\hline Sao Paulo & 4\% & 24\% & 92\% & 50\% & 4\% & 5\% & & & 286 & \\
\hline Seoul & 2\% & 6\% & 54\% & 7\% & 36\% & 21\% & & & 242 & \\
\hline Shanghai, Shanghai & 6\% & 17\% & 39\% & 10\% & 44\% & 28\% & & & 302 & \\
\hline Sheffield & 0\% & 3\% & 90\% & 78\% & 7\% & 13\% & & & 525 & 144 \\
\hline Shenzhen, Guangdong & 0\% & 4\% & 51\% & 40\% & 40\% & 17\% & & 158 & 302 & 214 \\
\hline Shymkent & 23\% & 62\% & 46\% & 21\% & 12\% & 3\% & 1,144 & 959 & 729 & 879 \\
\hline Sialkot & 18\% & 16\% & 24\% & 7\% & 1\% & 7\% & & & 332 & 234 \\
\hline Singapore & 0\% & 0\% & 38\% & 14\% & 58\% & 72\% & & & & 520 \\
\hline Singrauli & 0\% & 33\% & 22\% & 4\% & 77\% & 30\% & & 236 & 226 & \\
\hline Sitapur & 70\% & 79\% & 3\% & 0\% & 0\% & 20\% & 108 & 93 & 149 & \\
\hline Springfield, MA & 0\% & 0\% & 86\% & 66\% & 4\% & 2\% & & & 950 & 1,508 \\
\hline Suining, Sichuan & 0\% & 14\% & 98\% & 30\% & 0\% & 30\% & & & & \\
\hline Suva & 0\% & 15\% & 69\% & 42\% & 2\% & 3\% & & & & \\
\hline Sydney & 0\% & 0\% & 93\% & 80\% & 7\% & 7\% & & & 575 & 707 \\
\hline Taipei, Taiwan & 0\% & 1\% & 70\% & 36\% & 7\% & 8\% & & & 209 & \\
\hline Tangshan, Hebei & 42\% & 68\% & 45\% & 13\% & 13\% & 7\% & & 308 & & 374 \\
\hline Tashkent & 37\% & 89\% & 37\% & 0\% & 10\% & 3\% & 962 & 1,104 & & \\
\hline Tebessa & 45\% & 52\% & 33\% & 2\% & 15\% & 26\% & 251 & 178 & 330 & 240 \\
\hline Tehran & 0\% & 19\% & 74\% & 41\% & 6\% & 16\% & & & 258 & \\
\hline Tel Aviv & 1\% & 17\% & 73\% & 59\% & 12\% & 7\% & & 554 & 487 & 772 \\
\hline Thessaloniki & 1\% & 31\% & 91\% & 54\% & 3\% & 6\% & & & & \\
\hline Tianjin, Tianjin & 9\% & 25\% & 16\% & 19\% & 71\% & 51\% & & & & \\
\hline Tijuana & 10\% & 50\% & 85\% & 28\% & 1\% & 16\% & 315 & & 259 & 155 \\
\hline Tokyo & 0\% & 2\% & 49\% & 49\% & 4\% & 2\% & 350 & & 200 & 230 \\
\hline Toledo & 0\% & 0\% & 89\% & 59\% & 9\% & 8\% & & & 625 & 1,238 \\
\hline Tyumen & 38\% & 86\% & 20\% & 11\% & 27\% & 3\% & 471 & 900 & 1,104 & 1,185 \\
\hline Ulaanbaatar & 65\% & 71\% & 5\% & 0\% & 6\% & 3\% & 643 & 629 & & \\
\hline Valledupar & 23\% & 56\% & 76\% & 1\% & 0\% & 39\% & & 90 & & \\
\hline Victoria & 0\% & 6\% & 84\% & 57\% & 8\% & 3\% & & & 778 & 725 \\
\hline Vienna & 1\% & 0\% & 83\% & 81\% & 15\% & 7\% & & & 575 & 587 \\
\hline Vijayawada & 26\% & 60\% & 52\% & 5\% & 1\% & 0\% & 281 & 195 & 233 & 69 \\
\hline Vinh Long & 0\% & 2\% & 54\% & 0\% & 0\% & 0\% & & & & \\
\hline Warsaw & 8\% & 37\% & 67\% & 41\% & 20\% & 7\% & 22 & 1,401 & 772 & 751 \\
\hline Wuhan, Hubei & 1\% & 12\% & 18\% & 0\% & 41\% & 48\% & & & & \\
\hline Xingping, Shaanxi & 8\% & 76\% & 84\% & 2\% & 1\% & 16\% & & & & \\
\hline Xucheng, Jiangsu & 0\% & 38\% & 0\% & 1\% & 11\% & 16\% & & & & \\
\hline Yamaguchi & 0\% & 25\% & 30\% & 30\% & 1\% & 0\% & & & 293 & 292 \\
\hline Yanggu, Shandong & 51\% & 98\% & 26\% & 0\% & 23\% & 2\% & 440 & 474 & 331 & \\
\hline Yiyang, Hunan & 7\% & 24\% & 24\% & 3\% & 6\% & 2\% & & & & \\
\hline Yucheng, Zhejiang & 1\% & 11\% & 27\% & 8\% & 15\% & 8\% & & & 433 & \\
\hline Yulin, Guangxi & 12\% & 11\% & 31\% & 11\% & 6\% & 8\% & & 187 & 305 & 141 \\
\hline Zhengzhou, Henan & 0\% & 45\% & 51\% & 2\% & 35\% & 24\% & & 333 & & 357 \\
\hline Zhuji, Zhejiang & 10\% & 12\% & 11\% & 12\% & 9\% & 17\% & & 206 & 275 & 275 \\
\hline Zunyi, Guizhou & 3\% & 12\% & 39\% & 11\% & 30\% & 23\% & & & & \\
\hline Zwolle & 0\% & 4\% & 31\% & 46\% & 61\% & 30\% & & & 646 & 1,219 \\
\hline
\end{tabular}

Saidpur - Zwolle
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|}
\hline \multirow[t]{2}{*}{City Name} & \multicolumn{2}{|l|}{Share of Residential Areas in Informal Land Subdivisions} & \multicolumn{2}{|l|}{Share of Residential Areas in Formal Land Subdivisions} & \multicolumn{2}{|l|}{Share of Residential Areas in Housing Projects} & \multicolumn{2}{|l|}{Average Plot Size in Informal Land Subdivisions} & \multicolumn{2}{|l|}{Average Plot Size in Formal Land Subdivisions} \\
\hline & Pre-1990 & \[
\begin{array}{r}
1990- \\
2014
\end{array}
\] & Pre-1990 & \[
\begin{array}{r}
1990- \\
2014
\end{array}
\] & Pre-1990 & \[
\begin{array}{r}
1990- \\
2014
\end{array}
\] & Pre-1990 & \[
\begin{array}{r}
1990- \\
2014
\end{array}
\] & Pre-1990 & \[
\begin{array}{r}
1990- \\
2014
\end{array}
\] \\
\hline Saidpur & 10\% & 3\% & 0\% & 0\% & 0\% & 12\% & & & & \\
\hline Saint Petersburg & 19\% & 34\% & 43\% & 25\% & 26\% & 11\% & & & & 736 \\
\hline San Salvador & 17\% & 25\% & 62\% & 40\% & 2\% & 8\% & & 77 & 91 & 157 \\
\hline Sana & 17\% & 36\% & 49\% & 8\% & 3\% & 0\% & & 221 & 193 & 407 \\
\hline Santiago & 0\% & 5\% & 90\% & 63\% & 8\% & 15\% & & & 493 & 282 \\
\hline Sao Paulo & 4\% & 24\% & 92\% & 50\% & 4\% & 5\% & & & 286 & \\
\hline Seoul & 2\% & 6\% & 54\% & 7\% & 36\% & 21\% & & & 242 & \\
\hline Shanghai, Shanghai & 6\% & 17\% & 39\% & 10\% & 44\% & 28\% & & & 302 & \\
\hline Sheffield & 0\% & 3\% & 90\% & 78\% & 7\% & 13\% & & & 525 & 144 \\
\hline Shenzhen, Guangdong & 0\% & 4\% & 51\% & 40\% & 40\% & 17\% & & 158 & 302 & 214 \\
\hline Shymkent & 23\% & 62\% & 46\% & 21\% & 12\% & 3\% & 1,144 & 959 & 729 & 879 \\
\hline Sialkot & 18\% & 16\% & 24\% & 7\% & 1\% & 7\% & & & 332 & 234 \\
\hline Singapore & 0\% & 0\% & 38\% & 14\% & 58\% & 72\% & & & & 520 \\
\hline Singrauli & 0\% & 33\% & 22\% & 4\% & 77\% & 30\% & & 236 & 226 & \\
\hline Sitapur & 70\% & 79\% & 3\% & 0\% & 0\% & 20\% & 108 & 93 & 149 & \\
\hline Springfield, MA & 0\% & 0\% & 86\% & 66\% & 4\% & 2\% & & & 950 & 1,508 \\
\hline Suining, Sichuan & 0\% & 14\% & 98\% & 30\% & 0\% & 30\% & & & & \\
\hline Suva & 0\% & 15\% & 69\% & 42\% & 2\% & 3\% & & & & \\
\hline Sydney & 0\% & 0\% & 93\% & 80\% & 7\% & 7\% & & & 575 & 707 \\
\hline Taipei, Taiwan & 0\% & 1\% & 70\% & 36\% & 7\% & 8\% & & & 209 & \\
\hline Tangshan, Hebei & 42\% & 68\% & 45\% & 13\% & 13\% & 7\% & & 308 & & 374 \\
\hline Tashkent & 37\% & 89\% & 37\% & 0\% & 10\% & 3\% & 962 & 1,104 & & \\
\hline Tebessa & 45\% & 52\% & 33\% & 2\% & 15\% & 26\% & 251 & 178 & 330 & 240 \\
\hline Tehran & 0\% & 19\% & 74\% & 41\% & 6\% & 16\% & & & 258 & \\
\hline Tel Aviv & 1\% & 17\% & 73\% & 59\% & 12\% & 7\% & & 554 & 487 & 772 \\
\hline Thessaloniki & 1\% & \(31 \%\) & 91\% & 54\% & 3\% & 6\% & & & & \\
\hline Tianjin, Tianjin & 9\% & 25\% & 16\% & 19\% & 71\% & 51\% & & & & \\
\hline Tijuana & 10\% & 50\% & 85\% & 28\% & 1\% & 16\% & 315 & & 259 & 155 \\
\hline Tokyo & 0\% & 2\% & 49\% & 49\% & 4\% & 2\% & 350 & & 200 & 230 \\
\hline Toledo & 0\% & 0\% & 89\% & 59\% & 9\% & 8\% & & & 625 & 1,238 \\
\hline Tyumen & 38\% & 86\% & 20\% & 11\% & 27\% & 3\% & 471 & 900 & 1,104 & 1,185 \\
\hline Ulaanbaatar & 65\% & 71\% & 5\% & 0\% & 6\% & 3\% & 643 & 629 & & \\
\hline Valledupar & 23\% & 56\% & 76\% & 1\% & 0\% & 39\% & & 90 & & \\
\hline Victoria & 0\% & 6\% & 84\% & 57\% & 8\% & 3\% & & & 778 & 725 \\
\hline Vienna & 1\% & 0\% & 83\% & 81\% & 15\% & 7\% & & & 575 & 587 \\
\hline Vijayawada & 26\% & 60\% & 52\% & 5\% & 1\% & 0\% & 281 & 195 & 233 & 69 \\
\hline Vinh Long & 0\% & 2\% & 54\% & 0\% & 0\% & 0\% & & & & \\
\hline Warsaw & 8\% & 37\% & 67\% & 41\% & 20\% & 7\% & 22 & 1,401 & 772 & 751 \\
\hline Wuhan, Hubei & 1\% & 12\% & 18\% & 0\% & 41\% & 48\% & & & & \\
\hline Xingping, Shaanxi & 8\% & 76\% & 84\% & 2\% & 1\% & 16\% & & & & \\
\hline Xucheng, Jiangsu & 0\% & 38\% & 0\% & 1\% & 11\% & 16\% & & & & \\
\hline Yamaguchi & 0\% & 25\% & 30\% & 30\% & 1\% & 0\% & & & 293 & 292 \\
\hline Yanggu, Shandong & 51\% & 98\% & 26\% & 0\% & 23\% & 2\% & 440 & 474 & 331 & \\
\hline Yiyang, Hunan & 7\% & 24\% & 24\% & 3\% & 6\% & 2\% & & & & \\
\hline Yucheng, Zhejiang & 1\% & 11\% & 27\% & 8\% & 15\% & 8\% & & & 433 & \\
\hline Yulin, Guangxi & 12\% & 11\% & 31\% & 11\% & 6\% & 8\% & & 187 & 305 & 141 \\
\hline Zhengzhou, Henan & 0\% & 45\% & 51\% & 2\% & 35\% & 24\% & & 333 & & 357 \\
\hline Zhuji, Zhejiang & 10\% & 12\% & 11\% & 12\% & 9\% & 17\% & & 206 & 275 & 275 \\
\hline Zunyi, Guizhou & 3\% & 12\% & 39\% & 11\% & 30\% & 23\% & & & & \\
\hline Zwolle & 0\% & 4\% & 31\% & 46\% & 61\% & 30\% & & & 646 & 1,219 \\
\hline
\end{tabular}

TABLE 2:
Blocks and Roads metrics for 30 cities for five periods: From the pre-1900 period to the 1990-2014 period
\begin{tabular}{|c|c|c|c|c|}
\hline \multirow{2}{*}{City Name} & \multirow{2}{*}{Country} & \multirow{2}{*}{Region} & \multicolumn{2}{|l|}{CBD Location} \\
\hline & & & Latitude & Longitude \\
\hline Accra & Ghana & Sub-Saharan Africa & 5.615 & -0.159 \\
\hline Algiers & Algeria & Western Asia and North Africa & 36.732 & 3.140 \\
\hline Bangkok & Thailand & Southeast Asia & 13.778 & 100.538 \\
\hline Beijing, Beijing & China & East Asia and the Pacific & 39.920 & 116.370 \\
\hline Buenos Aires & Argentina & Latin America and the Caribbean & -34.652 & -58.547 \\
\hline Cairo & Egypt & Western Asia and North Africa & 30.034 & 31.282 \\
\hline Chicago & United States & Land-Rich Developed Countries & 41.860 & -87.864 \\
\hline Guatemala City & Guatemala & Latin America and the Caribbean & 14.605 & -90.542 \\
\hline Istanbul & Turkey & Western Asia and North Africa & 40.981 & 29.065 \\
\hline Jeddah & Saudi Arabia & Western Asia and North Africa & 21.543 & 39.173 \\
\hline Johannesburg & South Africa & Sub-Saharan Africa & 6.842 & 3.634 \\
\hline Kolkata & India & South and Central Asia & 22.533 & 88.356 \\
\hline Kuwait City & Kuwait & Western Asia and North Africa & 29.382 & 47.977 \\
\hline Lagos & Nigeria & Sub-Saharan Africa & 6.210 & 7.063 \\
\hline London & United Kingdom & Europe and Japan & 51.506 & -0.139 \\
\hline Los Angeles & United States & Land-Rich Developed Countries & 33.971 & -117.969 \\
\hline Manila & Philippines & Southeast Asia & 14.579 & 121.028 \\
\hline Mexico City & Mexico & Latin America and the Caribbean & 19.446 & -99.123 \\
\hline Moscow & Russia & Europe and Japan & 55.743 & 37.645 \\
\hline Mumbai & India & South and Central Asia & 19.115 & 72.913 \\
\hline Nairobi & Kenya & Sub-Saharan Africa & -1.230 & 36.738 \\
\hline Paris & France & Europe and Japan & 48.863 & 2.315 \\
\hline Santiago & Chile & Latin America and the Caribbean & -33.491 & -70.670 \\
\hline Sao Paulo & Brazil & Latin America and the Caribbean & -23.534 & -46.615 \\
\hline Shanghai, Shanghai & China & East Asia and the Pacific & 31.250 & 121.440 \\
\hline Sydney & Australia & Land-Rich Developed Countries & -33.854 & 150.998 \\
\hline Tehran & Iran & South and Central Asia & 35.705 & 51.384 \\
\hline Tel Aviv & Israel & Western Asia and North Africa & 32.077 & 34.839 \\
\hline Tokyo & Japan & Europe and Japan & 35.682 & 139.649 \\
\hline Warsaw & Poland & Europe and Japan & 52.234 & 21.024 \\
\hline
\end{tabular}

Accra - Warsaw
\begin{tabular}{|c|c|c|c|c|c|}
\hline \multirow{2}{*}{City Name} & \multicolumn{5}{|c|}{Map Periods} \\
\hline & Period 1 & Period 2 & Period 3 & Period 4 & Period 5 \\
\hline Accra & Pre-1903 & 1903-1929 & 1929-1966 & 1966-1991 & 1991-2014 \\
\hline Algiers & Pre-1903 & 1903-1929 & 1929-1972 & 1972-1987 & 1987-2014 \\
\hline Bangkok & Pre-1900 & 1900-1922 & 1922-1953 & 1953-1988 & 1988-2015 \\
\hline Beijing, Beijing & Pre-1900 & 1900-1929 & 1929-1959 & 1959-1988 & 1988-2013 \\
\hline Buenos Aires & Pre-1887 & 1887-1918 & 1918-1964 & 1964-1989 & 1989-2014 \\
\hline Cairo & Pre-1897 & 1897-1927 & 1927-1960 & 1960-1992 & 1992-2013 \\
\hline Chicago & Pre-1893 & 1893-1945 & 1945-1967 & 1967-1989 & 1989-2014 \\
\hline Guatemala City & Pre-1900 & 1900-1936 & 1936-1976 & 1976-1990 & 1990-2013 \\
\hline Istanbul & Pre-1899 & 1899-1934 & 1934-1960 & 1960-1990 & 1990-2013 \\
\hline Jeddah & Pre-1900 & 1900-1925 & 1925-1964 & 1964-1990 & 1990-2013 \\
\hline Johannesburg & Pre-1900 & 1900-1938 & 1938-1957 & 1957-1990 & 1990-2013 \\
\hline Kolkata & Pre-1883 & 1883-1931 & 1931-1961 & 1961-1990 & 1990-2014 \\
\hline Kuwait City & Pre-1900 & 1900-1922 & 1922-1963 & 1963-1990 & 1990-2013 \\
\hline Lagos & Pre-1900 & 1900-1920 & 1920-1962 & 1962-1984 & 1984-2013 \\
\hline London & Pre-1880 & 1880-1929 & 1929-1955 & 1955-1989 & 1989-2013 \\
\hline Los Angeles & Pre-1907 & 1907-1937 & 1937-1970 & 1970-1990 & 1990-2014 \\
\hline Manila & Pre-1898 & 1898-1945 & 1945-1971 & 1971-1990 & 1990-2014 \\
\hline Mexico City & Pre-1886 & 1886-1929 & 1929-1970 & 1970-1990 & 1990-2014 \\
\hline Moscow & Pre-1893 & 1893-1939 & 1939-1957 & 1957-1991 & 1991-2014 \\
\hline Mumbai & Pre-1909 & 1909-1931 & 1931-1968 & 1968-1991 & 1991-2014 \\
\hline Nairobi & Pre-1906 & 1906-1926 & 1926-1964 & 1964-1988 & 1988-2010 \\
\hline Paris & Pre-1900 & 1900-1928 & 1928-1955 & 1955-1987 & 1987-2014 \\
\hline Santiago & Pre-1900 & 1900-1930 & 1930-1970 & 1970-1990 & 1990-2014 \\
\hline Sao Paulo & Pre-1905 & 1905-1929 & 1929-1974 & 1974-1988 & 1988-2014 \\
\hline Shanghai, Shanghai & Pre-1902 & 1902-1944 & 1944-1973 & 1973-1991 & 1991-2015 \\
\hline Sydney & Pre-1895 & 1895-1945 & 1945-1975 & 1975-1991 & 1991-2014 \\
\hline Tehran & Pre-1899 & 1899-1925 & 1925-1956 & 1956-1991 & 1991-2010 \\
\hline Tel Aviv & Pre-1917 & 1917-1929 & 1929-1956 & 1956-1987 & 1987-2014 \\
\hline Tokyo & Pre-1892 & 1892-1929 & 1929-1954 & 1954-1990 & 1990-2014 \\
\hline Warsaw & Pre-1888 & 1888-1936 & 1936-1958 & 1958-1992 & 1992-2013 \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|}
\hline \multirow{2}{*}{City Name} & \multicolumn{5}{|c|}{Density of All Arterial Roads ( \(\mathrm{km} / \mathrm{km}^{2}\) )} & \multicolumn{5}{|l|}{Average Beeline Distance to All Arterial Roads (meters)} \\
\hline & \multicolumn{5}{|l|}{Period 1 Period 2 Period 3 Period 4 Period 5} & \multicolumn{5}{|l|}{Period 1 Period 2 Period 3 Period 4 Period 5} \\
\hline Accra & & 0.8 & 1.0 & 0.9 & 0.6 & & 254 & 364 & 471 & 673 \\
\hline Algiers & 1.8 & 1.6 & 1.1 & 1.2 & 0.9 & 249 & 288 & 278 & 509 & 431 \\
\hline Bangkok & 2.5 & 2.2 & 1.4 & 0.9 & 0.5 & 138 & 221 & 240 & 549 & 921 \\
\hline Beijing, Beijing & 3.7 & 3.9 & 3.3 & 1.3 & 0.7 & 103 & 102 & 123 & 791 & 573 \\
\hline Buenos Aires & 3.0 & 1.3 & 0.9 & 0.6 & 1.2 & 104 & 352 & 468 & 809 & 349 \\
\hline Cairo & 2.9 & 4.1 & 4.2 & 2.4 & 1.1 & 137 & 100 & 97 & 488 & 584 \\
\hline Chicago & 9.9 & 9.1 & 4.3 & 2.8 & 0.8 & 49 & 67 & 241 & 410 & 358 \\
\hline Guatemala City & 1.9 & 3.2 & 1.5 & 0.8 & 0.9 & 323 & 181 & 352 & 504 & 390 \\
\hline Istanbul & 1.6 & 1.5 & 1.3 & 1.3 & 1.7 & 256 & 309 & 308 & 592 & 263 \\
\hline Jeddah & 3.7 & & 3.1 & 4.4 & 1.2 & 70 & & 127 & 124 & 505 \\
\hline Johannesburg & 3.9 & 2.9 & 2.6 & 2.0 & 0.5 & 107 & 187 & 166 & 287 & 582 \\
\hline Kolkata & 2.6 & 1.1 & 0.6 & 0.5 & 0.6 & 179 & 466 & 1,151 & 1,595 & 650 \\
\hline Kuwait City & 2.8 & 2.1 & 2.8 & 1.9 & 2.1 & 113 & 101 & 116 & 542 & 248 \\
\hline Lagos & 0.5 & 1.7 & 0.9 & 1.0 & 0.4 & 476 & 247 & 472 & 1,750 & 787 \\
\hline London & 1.5 & 1.1 & 0.9 & 0.4 & 1.6 & 281 & 366 & 554 & 1,477 & 207 \\
\hline Los Angeles & 7.9 & 5.7 & 4.0 & 3.8 & 1.0 & 72 & 122 & 177 & 120 & 461 \\
\hline Manila & 1.3 & 1.9 & 2.1 & 0.6 & 1.1 & 169 & 219 & 186 & 1,014 & 372 \\
\hline Mexico City & 2.6 & 4.0 & 3.4 & 1.5 & 0.8 & 155 & 97 & 123 & 480 & 418 \\
\hline Moscow & 4.3 & 2.7 & 2.5 & 1.2 & 0.5 & 87 & 144 & 152 & 760 & 981 \\
\hline Mumbai & 2.6 & 2.6 & 2.2 & 1.5 & 0.9 & 153 & 155 & 225 & 398 & 447 \\
\hline Nairobi & 5.3 & 3.6 & 1.7 & 0.8 & 0.8 & 65 & 109 & 271 & 646 & 521 \\
\hline Paris & 2.2 & 1.0 & 0.6 & 0.7 & 1.9 & 276 & 618 & 883 & 1,476 & 206 \\
\hline Santiago & 3.4 & 5.7 & 4.4 & 2.9 & 1.0 & 108 & 69 & 86 & 195 & 474 \\
\hline Sao Paulo & 1.4 & 1.1 & 1.0 & 0.6 & 0.8 & 248 & 310 & 393 & 968 & 539 \\
\hline Shanghai, Shanghai & 3.5 & 2.9 & 3.3 & 2.6 & 0.7 & 95 & 142 & 131 & 206 & 1,286 \\
\hline Sydney & 2.7 & 5.5 & 5.1 & 3.3 & 0.9 & 203 & 102 & 110 & 155 & 400 \\
\hline Tehran & 3.0 & 2.6 & 2.2 & 2.1 & 1.9 & 126 & 125 & 199 & 221 & 255 \\
\hline Tel Aviv & 0.7 & 1.8 & 1.8 & 1.9 & 1.0 & 389 & 160 & 135 & 381 & 435 \\
\hline Tokyo & 4.3 & 1.8 & 1.6 & 1.1 & 1.7 & 91 & 284 & 394 & 543 & 198 \\
\hline Warsaw & 3.5 & 2.9 & 1.5 & 0.9 & 0.9 & 89 & 124 & 344 & 1,004 & 347 \\
\hline
\end{tabular}

Accra - Warsaw
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|}
\hline \multirow{2}{*}{City Name} & \multicolumn{5}{|l|}{Share of Area within Walking Distance of All Arterial Roads} & \multicolumn{5}{|c|}{Average Block Size (ha)} \\
\hline & \multicolumn{5}{|l|}{Period 1 Period 2 Period 3 Period 4 Period 5} & \multicolumn{5}{|l|}{Period 1 Period 2 Period 3 Period 4 Period 5} \\
\hline Accra & & 95\% & 82\% & 71\% & 60\% & & 4.0 & 5.7 & 7.0 & 3.5 \\
\hline Algiers & 94\% & 87\% & 93\% & 76\% & 75\% & 1.1 & 3.1 & 4.3 & 6.8 & 6.7 \\
\hline Bangkok & 99\% & 94\% & 95\% & 69\% & 49\% & 4.1 & 6.4 & 6.3 & 9.0 & 5.8 \\
\hline Beijing, Beijing & 100\% & 100\% & 99\% & 67\% & 71\% & 4.7 & 3.7 & 8.4 & 9.4 & 4.3 \\
\hline Buenos Aires & 100\% & 82\% & 73\% & 52\% & 82\% & 1.8 & 2.8 & 1.8 & 3.5 & 3.5 \\
\hline Cairo & 100\% & 100\% & 100\% & 81\% & 68\% & 1.1 & 1.9 & 2.6 & 5.0 & 4.3 \\
\hline Chicago & 100\% & 100\% & 90\% & 77\% & 81\% & 3.2 & 2.5 & 8.6 & 20.8 & 3.9 \\
\hline Guatemala City & 82\% & 94\% & 80\% & 69\% & 78\% & 1.6 & 1.9 & 1.5 & 2.9 & 2.3 \\
\hline Istanbul & 93\% & 88\% & 88\% & 80\% & 90\% & 1.2 & 2.5 & 2.6 & 2.1 & 4.8 \\
\hline Jeddah & 100\% & & 100\% & 98\% & 77\% & 3.2 & & 2.6 & 3.9 & 4.0 \\
\hline Johannesburg & 100\% & 95\% & 98\% & 89\% & 64\% & 4.9 & 7.4 & 9.0 & 10.3 & 4.9 \\
\hline Kolkata & 96\% & 73\% & 49\% & 36\% & 62\% & 2.8 & 3.9 & 5.0 & 9.8 & 4.8 \\
\hline Kuwait City & 100\% & 100\% & 100\% & 83\% & 91\% & 8.0 & 9.8 & 6.3 & 9.1 & 3.6 \\
\hline Lagos & 68\% & 93\% & 72\% & 59\% & 52\% & 1.9 & 6.5 & 7.0 & 5.6 & 4.7 \\
\hline London & 90\% & 83\% & 71\% & 40\% & 95\% & 3.3 & 5.6 & 8.6 & 17.2 & 8.2 \\
\hline Los Angeles & 99\% & 97\% & 94\% & 100\% & 78\% & 4.4 & 3.8 & 9.2 & 10.6 & 6.5 \\
\hline Manila & 100\% & 96\% & 98\% & 52\% & 81\% & 2.0 & 2.3 & 4.5 & 3.5 & 2.8 \\
\hline Mexico City & 99\% & 100\% & 99\% & 77\% & 77\% & 1.9 & 2.6 & 2.2 & 4.8 & 3.1 \\
\hline Moscow & 100\% & 98\% & 99\% & 68\% & 48\% & 5.0 & 9.4 & 6.2 & 4.5 & 4.8 \\
\hline Mumbai & 99\% & 99\% & 92\% & 83\% & 75\% & 3.0 & 6.0 & 7.9 & 7.2 & 4.4 \\
\hline Nairobi & 100\% & 100\% & 90\% & 63\% & 72\% & 5.0 & 7.3 & 17.4 & 16.8 & 9.5 \\
\hline Paris & 87\% & 68\% & 55\% & 44\% & 93\% & 2.7 & 3.8 & 4.7 & 7.9 & 6.7 \\
\hline Santiago & 100\% & 100\% & 100\% & 95\% & 79\% & 2.4 & 3.2 & 3.2 & 5.7 & 6.5 \\
\hline Sao Paulo & 95\% & 88\% & 80\% & 54\% & 68\% & 2.7 & 3.0 & 2.7 & 4.3 & 6.2 \\
\hline Shanghai, Shanghai & 100\% & 98\% & 98\% & 93\% & 63\% & 3.1 & 6.5 & 5.7 & 7.5 & 6.4 \\
\hline Sydney & 92\% & 98\% & 98\% & 98\% & 79\% & 2.2 & 4.4 & 6.4 & 9.6 & 6.2 \\
\hline Tehran & 100\% & 100\% & 96\% & 94\% & 91\% & 3.2 & 2.2 & 2.6 & 7.0 & 4.6 \\
\hline Tel Aviv & 72\% & 99\% & 100\% & 82\% & 76\% & 2.6 & 0.9 & 3.6 & 4.0 & 6.1 \\
\hline Tokyo & 100\% & 91\% & 80\% & 70\% & 93\% & 1.8 & 1.5 & 3.0 & 2.7 & 2.5 \\
\hline Warsaw & 100\% & 99\% & 86\% & 57\% & 83\% & 5.7 & 5.6 & 6.9 & 7.1 & 6.4 \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|}
\hline \multirow{2}{*}{City Name} & \multicolumn{5}{|l|}{3-Way Intersection Density (number per km2)} & \multicolumn{5}{|l|}{4-Way Intersection Density (number per km2 )} \\
\hline & \multicolumn{5}{|l|}{Period 1 Period 2 Period 3 Period 4 Period 5} & \multicolumn{5}{|l|}{Period 1 Period 2 Period 3 Period 4 Period 5} \\
\hline Accra & & 40 & 39 & 63 & 142 & & 29 & 15 & 9 & 13 \\
\hline Algiers & 203 & 139 & 74 & 84 & 146 & 49 & 32 & 14 & 13 & 16 \\
\hline Bangkok & 69 & 59 & 42 & 58 & 70 & 13 & 4 & 5 & 5 & 7 \\
\hline Beijing, Beijing & 79 & 110 & 81 & 117 & 148 & 10 & 14 & 6 & 12 & 36 \\
\hline Buenos Aires & 11 & 45 & 51 & 55 & 68 & 58 & 46 & 54 & 37 & 42 \\
\hline Cairo & 248 & 129 & 139 & 96 & 131 & 44 & 46 & 49 & 20 & 36 \\
\hline Chicago & 85 & 68 & 50 & 40 & 74 & 64 & 51 & 15 & 7 & 12 \\
\hline Guatemala City & 63 & 73 & 55 & 79 & 90 & 62 & 70 & 48 & 22 & 14 \\
\hline Istanbul & 199 & 123 & 132 & 170 & 163 & 57 & 26 & 24 & 36 & 15 \\
\hline Jeddah & 51 & & 186 & 104 & & 3 & & 51 & 21 & 22 \\
\hline Johannesburg & 52 & 45 & 40 & 64 & 118 & 42 & 18 & 9 & 6 & 16 \\
\hline Kolkata & 104 & 80 & 102 & 93 & 108 & 24 & 8 & 8 & 4 & 6 \\
\hline Kuwait City & 38 & 8 & 72 & 54 & 151 & 8 & 5 & 6 & 2 & 13 \\
\hline Lagos & 118 & 35 & 62 & 54 & 102 & 49 & 10 & 7 & 5 & 2 \\
\hline London & 86 & 51 & 32 & 62 & 61 & 15 & 10 & 6 & 2 & 10 \\
\hline Los Angeles & 37 & 34 & 45 & 25 & 74 & 23 & 29 & 16 & 5 & 8 \\
\hline Manila & 124 & 70 & 60 & 98 & 204 & 51 & 34 & 19 & 11 & 29 \\
\hline Mexico City & 57 & 53 & 59 & 77 & 169 & 45 & 50 & 52 & 29 & 26 \\
\hline Moscow & 41 & 34 & 44 & 69 & 102 & 10 & 6 & 13 & 7 & 22 \\
\hline Mumbai & 74 & 35 & 45 & 38 & 88 & 17 & 9 & 4 & 4 & 12 \\
\hline Nairobi & 58 & 46 & 37 & 74 & 118 & 23 & 6 & 3 & 3 & 10 \\
\hline Paris & 68 & 53 & 60 & 70 & 78 & 24 & 22 & 14 & 7 & 10 \\
\hline Santiago & 39 & 59 & 54 & 83 & 117 & 39 & 26 & 29 & 25 & 20 \\
\hline Sao Paulo & 49 & 48 & 74 & 72 & & 25 & 27 & 20 & 18 & 6 \\
\hline Shanghai, Shanghai & 71 & 59 & 108 & 83 & & 24 & 22 & 22 & 15 & 8 \\
\hline Sydney & 74 & 57 & 29 & 44 & 36 & 34 & 12 & 6 & 3 & 3 \\
\hline Tehran & 76 & 105 & 105 & 90 & 124 & 8 & 24 & 32 & 23 & 16 \\
\hline Tel Aviv & 129 & 104 & 86 & 43 & 62 & 63 & 87 & 22 & 16 & 8 \\
\hline Tokyo & 156 & 209 & 147 & 152 & 194 & 71 & 70 & 56 & 41 & 47 \\
\hline Warsaw & 43 & 44 & 47 & 45 & 85 & 13 & 10 & 10 & 10 & 8 \\
\hline
\end{tabular}

Accra - Warsaw
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|}
\hline \multirow{2}{*}{City Name} & \multicolumn{5}{|c|}{Share of Intersections that are 4-Way} & \multicolumn{5}{|c|}{Walkability Ratio} \\
\hline & \multicolumn{5}{|l|}{Period 1 Period 2 Period 3 Period 4 Period 5} & \multicolumn{5}{|l|}{Period 1 Period 2 Period 3 Period 4 Period 5} \\
\hline Accra & & 40\% & 25\% & 10\% & 8\% & & 1.6 & 1.8 & 1.5 & 1.7 \\
\hline Algiers & 18\% & 12\% & 10\% & 10\% & 7\% & 1.4 & 1.6 & 1.9 & 1.7 & 1.7 \\
\hline Bangkok & 14\% & 7\% & 10\% & 9\% & 5\% & 1.5 & 1.6 & 1.7 & 1.5 & 2.0 \\
\hline Beijing, Beijing & 13\% & 15\% & 9\% & 7\% & 12\% & 1.5 & 1.4 & 1.6 & 1.7 & 1.8 \\
\hline Buenos Aires & 86\% & 50\% & 54\% & 41\% & 38\% & 1.3 & 1.4 & 1.4 & 1.5 & 1.6 \\
\hline Cairo & 14\% & 25\% & 26\% & 14\% & 13\% & 1.5 & 1.6 & 1.6 & 1.6 & 1.7 \\
\hline Chicago & 45\% & 43\% & 18\% & 15\% & 9\% & 1.5 & 1.5 & 1.6 & 1.4 & 1.7 \\
\hline Guatemala City & 49\% & 46\% & 31\% & 16\% & 8\% & 1.5 & 1.4 & 1.6 & 1.7 & 1.9 \\
\hline Istanbul & 21\% & 17\% & 16\% & 17\% & 6\% & 1.6 & 1.8 & 1.8 & 1.7 & 2.0 \\
\hline Jeddah & 6\% & & 24\% & 13\% & 12\% & 1.9 & & 1.5 & 1.6 & 1.7 \\
\hline Johannesburg & 38\% & 30\% & 20\% & 6\% & 10\% & 1.5 & 1.7 & 1.6 & 1.7 & 2.3 \\
\hline Kolkata & 19\% & 8\% & 7\% & 4\% & 4\% & 1.4 & 1.7 & 1.8 & 1.6 & 1.6 \\
\hline Kuwait City & 26\% & 38\% & 14\% & 5\% & 7\% & 1.6 & 2.1 & 1.8 & 2.0 & 2.1 \\
\hline Lagos & 28\% & 32\% & 9\% & 7\% & 2\% & 1.4 & 1.6 & 1.6 & 1.8 & 1.8 \\
\hline London & 15\% & 17\% & 16\% & 2\% & 4\% & 1.6 & 1.9 & 1.6 & 1.7 & 1.7 \\
\hline Los Angeles & 33\% & 45\% & 19\% & 10\% & 6\% & 1.7 & 1.4 & 1.7 & 1.8 & 2.0 \\
\hline Manila & 25\% & 31\% & 20\% & 10\% & 10\% & 1.4 & 1.5 & 1.7 & 1.6 & 1.7 \\
\hline Mexico City & 45\% & 53\% & 43\% & 27\% & 13\% & 1.4 & 1.4 & 1.5 & 1.7 & 1.7 \\
\hline Moscow & 21\% & 18\% & 16\% & 8\% & 11\% & 1.7 & 1.6 & 1.6 & 1.6 & 2.1 \\
\hline Mumbai & 15\% & 20\% & 6\% & 11\% & 8\% & 1.5 & 1.6 & 1.5 & 1.5 & 1.8 \\
\hline Nairobi & 28\% & 10\% & 6\% & 4\% & 6\% & 2.0 & 1.6 & 1.5 & 1.5 & 1.6 \\
\hline Paris & 27\% & 32\% & 17\% & 7\% & 10\% & 1.5 & 1.6 & 1.6 & 1.8 & 1.6 \\
\hline Santiago & 54\% & 32\% & 35\% & 21\% & 14\% & 1.4 & 1.5 & 1.5 & 1.7 & 2.0 \\
\hline Sao Paulo & 37\% & 40\% & 22\% & 18\% & 7\% & 1.5 & 1.6 & 1.7 & 1.7 & 1.7 \\
\hline Shanghai, Shanghai & 32\% & 27\% & 17\% & 15\% & 15\% & 1.4 & 1.5 & 1.4 & 1.8 & 1.7 \\
\hline Sydney & 30\% & 19\% & 17\% & 8\% & 4\% & 1.5 & 1.7 & 1.8 & 1.7 & 1.8 \\
\hline Tehran & 8\% & 18\% & 25\% & 22\% & 11\% & 1.5 & 1.4 & 1.5 & 1.5 & 1.9 \\
\hline Tel Aviv & 34\% & 46\% & 18\% & 25\% & 10\% & 1.4 & 1.4 & 1.5 & 1.6 & 2.0 \\
\hline Tokyo & 27\% & 25\% & 25\% & 20\% & 16\% & 1.4 & 1.4 & 1.5 & 1.6 & 1.4 \\
\hline Warsaw & 25\% & 21\% & 17\% & 18\% & 13\% & 1.6 & 1.6 & 1.6 & 1.5 & 1.6 \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|}
\hline \multirow{2}{*}{City Name} & \multicolumn{5}{|l|}{Share of Built-up Area That Is Residential} & \multicolumn{5}{|l|}{Share of Residential Areas Not Laid Out Before Development} \\
\hline & \multicolumn{5}{|l|}{Period 1 Period 2 Period 3 Period 4 Period 5} & \multicolumn{5}{|l|}{Period 1 Period 2 Period 3 Period 4 Period 5} \\
\hline Accra & & 43\% & 59\% & 71\% & 80\% & & 42\% & 40\% & 65\% & 45\% \\
\hline Algiers & 68\% & 40\% & 51\% & 52\% & 49\% & 41\% & 40\% & 88\% & 64\% & 31\% \\
\hline Bangkok & 49\% & 55\% & 55\% & 58\% & 42\% & 87\% & 94\% & 93\% & 61\% & 35\% \\
\hline Beijing, Beijing & 55\% & 35\% & 39\% & 37\% & 27\% & 35\% & 26\% & 5\% & 20\% & 11\% \\
\hline Buenos Aires & 58\% & 68\% & 83\% & 67\% & 78\% & 0\% & 4\% & 2\% & 0\% & 3\% \\
\hline Cairo & 75\% & 59\% & 64\% & 50\% & 58\% & 58\% & 7\% & 4\% & 35\% & 41\% \\
\hline Chicago & 57\% & 66\% & 57\% & 70\% & 78\% & 0\% & 0\% & 7\% & 2\% & 19\% \\
\hline Guatemala City & 50\% & 36\% & 57\% & 71\% & 68\% & 11\% & 24\% & 46\% & 28\% & 16\% \\
\hline Istanbul & 62\% & 62\% & 61\% & 64\% & 47\% & 59\% & 42\% & 28\% & 39\% & 25\% \\
\hline Jeddah & 35\% & & 53\% & 50\% & 27\% & 67\% & & 44\% & 8\% & 11\% \\
\hline Johannesburg & 40\% & 66\% & 63\% & 72\% & 68\% & 2\% & 0\% & 0\% & 1\% & 18\% \\
\hline Kolkata & 72\% & 70\% & 68\% & 81\% & 74\% & 91\% & 91\% & 90\% & 96\% & 73\% \\
\hline Kuwait City & 12\% & 18\% & 45\% & 43\% & 36\% & 0\% & 0\% & 0\% & 0\% & 4\% \\
\hline Lagos & 57\% & 29\% & 50\% & 71\% & 71\% & 84\% & 20\% & 58\% & 58\% & 52\% \\
\hline London & 72\% & 79\% & 73\% & 64\% & 49\% & 0\% & 0\% & 0\% & 9\% & 13\% \\
\hline Los Angeles & 51\% & 77\% & 71\% & 76\% & 72\% & 7\% & 0\% & 0\% & 2\% & 20\% \\
\hline Manila & 53\% & 57\% & 60\% & 75\% & 73\% & 39\% & 46\% & 40\% & 58\% & 36\% \\
\hline Mexico City & 44\% & 66\% & 66\% & 67\% & 59\% & 2\% & 3\% & 2\% & 9\% & 27\% \\
\hline Moscow & 38\% & 52\% & 42\% & 51\% & 83\% & 0\% & 0\% & 0\% & 15\% & 0\% \\
\hline Mumbai & 54\% & 56\% & 45\% & 70\% & 51\% & 69\% & 65\% & 68\% & 66\% & 61\% \\
\hline Nairobi & 34\% & 45\% & 69\% & 55\% & 70\% & 0\% & 7\% & 5\% & 32\% & 19\% \\
\hline Paris & 74\% & 74\% & 75\% & 58\% & 58\% & 12\% & 37\% & 10\% & 32\% & 29\% \\
\hline Santiago & 45\% & 60\% & 62\% & 59\% & 57\% & 1\% & 0\% & 0\% & 8\% & 16\% \\
\hline Sao Paulo & 51\% & 66\% & 69\% & 60\% & 53\% & 0\% & 0\% & 1\% & 3\% & 21\% \\
\hline Shanghai, Shanghai & 58\% & 65\% & 54\% & 40\% & 28\% & 0\% & 4\% & 8\% & 25\% & 34\% \\
\hline Sydney & 55\% & 71\% & 79\% & 79\% & 74\% & 0\% & 0\% & 0\% & 0\% & 13\% \\
\hline Tehran & 79\% & 74\% & 74\% & 54\% & 42\% & 92\% & 12\% & 7\% & 10\% & 11\% \\
\hline Tel Aviv & 70\% & 85\% & 80\% & 59\% & 50\% & 60\% & 14\% & 7\% & 24\% & 15\% \\
\hline Tokyo & 47\% & 67\% & 60\% & 64\% & 49\% & 24\% & 63\% & 56\% & 52\% & 47\% \\
\hline Warsaw & 42\% & 54\% & 56\% & 62\% & 72\% & 5\% & 2\% & 0\% & 14\% & 18\% \\
\hline
\end{tabular}

Accra - Warsaw
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|}
\hline \multirow{2}{*}{City Name} & \multicolumn{5}{|c|}{Share of Built-up Area That Is Gridded} & \multicolumn{5}{|l|}{Share of Residential Area in Informal Land Subdivisions} \\
\hline & \multicolumn{5}{|l|}{Period 1 Period 2 Period 3 Period 4 Period 5} & \multicolumn{5}{|l|}{Period 1 Period 2 Period 3 Period 4 Period 5} \\
\hline Accra & & 41\% & 23\% & 15\% & 20\% & & 24\% & 27\% & 31\% & 48\% \\
\hline Algiers & 6\% & 0\% & 0\% & 3\% & 15\% & 0\% & 0\% & 0\% & 1\% & 15\% \\
\hline Bangkok & 8\% & 0\% & 3\% & 8\% & 5\% & 0\% & 0\% & 0\% & 0\% & 13\% \\
\hline Beijing, Beijing & 3\% & 4\% & 3\% & 3\% & 0\% & 0\% & 0\% & 0\% & 33\% & 37\% \\
\hline Buenos Aires & 100\% & 90\% & 90\% & 70\% & 80\% & 0\% & 6\% & 45\% & 65\% & 87\% \\
\hline Cairo & 15\% & 13\% & 17\% & 5\% & 10\% & 5\% & 14\% & 22\% & 35\% & 24\% \\
\hline Chicago & 83\% & 80\% & 30\% & 8\% & 0\% & 0\% & 0\% & 3\% & 8\% & 0\% \\
\hline Guatemala City & 84\% & 78\% & 58\% & 14\% & 5\% & 1\% & 29\% & 3\% & 14\% & 46\% \\
\hline Istanbul & 13\% & 15\% & 3\% & 10\% & 10\% & 0\% & 0\% & 0\% & 0\% & 16\% \\
\hline Jeddah & 0\% & & 16\% & 5\% & 3\% & 0\% & & 0\% & 4\% & 18\% \\
\hline Johannesburg & 52\% & 30\% & 10\% & 3\% & 5\% & 0\% & 6\% & 0\% & 11\% & 41\% \\
\hline Kolkata & 0\% & 3\% & 0\% & 3\% & 5\% & 0\% & 0\% & 0\% & 0\% & 16\% \\
\hline Kuwait City & 0\% & 0\% & 5\% & 0\% & 0\% & 25\% & 0\% & 0\% & 4\% & 19\% \\
\hline Lagos & 0\% & 43\% & 20\% & 5\% & 0\% & 3\% & 16\% & 9\% & 23\% & 41\% \\
\hline London & 0\% & 0\% & 0\% & 0\% & 0\% & 0\% & 0\% & 0\% & 0\% & 0\% \\
\hline Los Angeles & 33\% & 53\% & 28\% & 0\% & 0\% & 0\% & 0\% & 0\% & 1\% & 3\% \\
\hline Manila & 35\% & 20\% & 8\% & 0\% & 0\% & 2\% & 0\% & 0\% & 0\% & 33\% \\
\hline Mexico City & 63\% & 75\% & 50\% & 28\% & 15\% & 0\% & 0\% & 0\% & 8\% & 34\% \\
\hline Moscow & 0\% & 5\% & 0\% & 8\% & 0\% & 0\% & 6\% & 0\% & 21\% & 75\% \\
\hline Mumbai & 0\% & 0\% & 0\% & 3\% & 5\% & 0\% & 0\% & 0\% & 0\% & 0\% \\
\hline Nairobi & 0\% & 3\% & 3\% & 0\% & 0\% & 15\% & 16\% & 25\% & 57\% & 68\% \\
\hline Paris & 5\% & 10\% & 8\% & 3\% & 0\% & 0\% & 0\% & 0\% & 0\% & 2\% \\
\hline Santiago & 60\% & 35\% & 25\% & 30\% & 5\% & 0\% & 0\% & 0\% & 0\% & 5\% \\
\hline Sao Paulo & 33\% & 25\% & 23\% & 8\% & 3\% & 0\% & 0\% & 0\% & 7\% & 24\% \\
\hline Shanghai, Shanghai & 5\% & 0\% & 8\% & 0\% & 8\% & 0\% & 0\% & 0\% & 0\% & 25\% \\
\hline Sydney & 20\% & 10\% & 3\% & 3\% & 0\% & 0\% & 0\% & 0\% & 0\% & 0\% \\
\hline Tehran & 0\% & 5\% & 20\% & 18\% & 0\% & 0\% & 0\% & 0\% & 0\% & 16\% \\
\hline Tel Aviv & 0\% & 0\% & 0\% & 3\% & 0\% & 0\% & 0\% & 0\% & 0\% & 20\% \\
\hline Tokyo & 26\% & 6\% & 14\% & 10\% & 5\% & 0\% & 0\% & 0\% & 0\% & 2\% \\
\hline Warsaw & 3\% & 3\% & 0\% & 13\% & 10\% & 0\% & 0\% & 11\% & 25\% & 39\% \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|}
\hline \multirow{2}{*}{City Name} & \multicolumn{5}{|l|}{Share of Residential Area in Formal Land Subdivisions} & \multicolumn{5}{|l|}{Share of Residential Area in Housing Projects} \\
\hline & \multicolumn{5}{|l|}{Period 1 Period 2 Period 3 Period 4 Period 5} & \multicolumn{5}{|l|}{Period 1 Period 2 Period 3 Period 4 Period 5} \\
\hline Accra & & 18\% & 16\% & 4\% & 7\% & & 16\% & 17\% & 0\% & 0\% \\
\hline Algiers & 58\% & 53\% & 6\% & 14\% & 28\% & 2\% & 7\% & 6\% & 20\% & 25\% \\
\hline Bangkok & 13\% & 6\% & 5\% & 27\% & 9\% & 0\% & 1\% & 2\% & 11\% & 43\% \\
\hline Beijing, Beijing & 21\% & 6\% & 23\% & 4\% & 18\% & 44\% & 68\% & 72\% & 43\% & 34\% \\
\hline Buenos Aires & 100\% & 89\% & 51\% & 34\% & 4\% & 0\% & 1\% & 2\% & 1\% & 5\% \\
\hline Cairo & 36\% & 78\% & 70\% & 25\% & 9\% & 2\% & 1\% & 4\% & 6\% & 26\% \\
\hline Chicago & 94\% & 98\% & 78\% & 72\% & 64\% & 6\% & 2\% & 11\% & 18\% & 17\% \\
\hline Guatemala City & 86\% & 48\% & 52\% & 53\% & 30\% & 1\% & 0\% & 0\% & 6\% & 9\% \\
\hline Istanbul & 40\% & 55\% & 59\% & 50\% & 31\% & 2\% & 3\% & 13\% & 10\% & 29\% \\
\hline Jeddah & 33\% & & 53\% & 72\% & 67\% & 0\% & & 3\% & 16\% & 4\% \\
\hline Johannesburg & 98\% & 88\% & 89\% & 74\% & 38\% & 0\% & 6\% & 11\% & 14\% & 3\% \\
\hline Kolkata & 9\% & 4\% & 5\% & 3\% & 3\% & 1\% & 5\% & 5\% & 1\% & 8\% \\
\hline Kuwait City & 51\% & 100\% & 97\% & 94\% & 73\% & 24\% & 0\% & 3\% & 2\% & 4\% \\
\hline Lagos & 13\% & 43\% & 29\% & 13\% & 0\% & 0\% & 21\% & 4\% & 6\% & 6\% \\
\hline London & 24\% & 46\% & 67\% & 42\% & 87\% & 76\% & 54\% & 33\% & 49\% & 0\% \\
\hline Los Angeles & 89\% & 95\% & 92\% & 88\% & 62\% & 4\% & 5\% & 8\% & 9\% & 15\% \\
\hline Manila & 59\% & 54\% & 57\% & 42\% & 25\% & 0\% & 0\% & 3\% & 0\% & 6\% \\
\hline Mexico City & 98\% & 97\% & 97\% & 78\% & 34\% & 0\% & 1\% & 1\% & 5\% & 4\% \\
\hline Moscow & 89\% & 56\% & 48\% & 28\% & 11\% & 11\% & 38\% & 52\% & 36\% & 14\% \\
\hline Mumbai & 29\% & 18\% & 16\% & 17\% & 14\% & 2\% & 17\% & 16\% & 17\% & 25\% \\
\hline Nairobi & 70\% & 57\% & 52\% & 8\% & 10\% & 14\% & 19\% & 18\% & 3\% & 3\% \\
\hline Paris & 76\% & 43\% & 79\% & 53\% & 67\% & 12\% & 21\% & 11\% & 15\% & 1\% \\
\hline Santiago & 93\% & 92\% & 96\% & 74\% & 63\% & 6\% & 8\% & 4\% & 18\% & 15\% \\
\hline Sao Paulo & 97\% & 96\% & 96\% & 88\% & 49\% & 3\% & 4\% & 3\% & 2\% & 6\% \\
\hline Shanghai, Shanghai & 71\% & 51\% & 36\% & 18\% & 9\% & 29\% & 44\% & 56\% & 57\% & 31\% \\
\hline Sydney & 81\% & 96\% & 98\% & 95\% & 80\% & 19\% & 4\% & 2\% & 5\% & 7\% \\
\hline Tehran & 8\% & 88\% & 90\% & 75\% & 46\% & 0\% & 0\% & 3\% & 15\% & 26\% \\
\hline Tel Aviv & 37\% & 86\% & 87\% & 55\% & 57\% & 3\% & 0\% & 6\% & 21\% & 7\% \\
\hline Tokyo & 75\% & 34\% & 39\% & 40\% & 49\% & 1\% & 3\% & 5\% & 9\% & 2\% \\
\hline Warsaw & 63\% & 79\% & 67\% & 51\% & 35\% & 31\% & 19\% & 22\% & 10\% & 7\% \\
\hline
\end{tabular}

Accra - Warsaw
\begin{tabular}{|c|c|c|c|c|c|c|c|c|c|c|}
\hline \multirow{2}{*}{City Name} & \multicolumn{5}{|c|}{Average Plot Size in Informal Land Subdivisions} & \multicolumn{5}{|l|}{Average Plot Size in Formal Land Subdivisions} \\
\hline & \multicolumn{5}{|l|}{Period 1 Period 2 Period 3 Period 4 Period 5} & \multicolumn{5}{|l|}{Period 1 Period 2 Period 3 Period 4 Period 5} \\
\hline Accra & & 417 & 688 & 757 & 949 & & 583 & 528 & & 905 \\
\hline Algiers & & & & & & 469 & & 353 & 267 & 225 \\
\hline Bangkok & & & & & & & & 295 & 216 & \\
\hline Beijing, Beijing & \multicolumn{5}{|c|}{377} & \multicolumn{5}{|c|}{421} \\
\hline Buenos Aires & & 332 & 277 & & 372 & 168 & 197 & 311 & 324 & 484 \\
\hline Cairo & 128 & 148 & 87 & 77 & 595 & 332 & 665 & 618 & 486 & 418 \\
\hline Chicago & & & & & & 374 & 463 & 812 & 1,348 & 1,795 \\
\hline Guatemala City & & & & & & & & & 748 & 143 \\
\hline Istanbul & & & & & & & 472 & 446 & 235 & 318 \\
\hline Jeddah & & & & & & & & 496 & 583 & \\
\hline Johannesburg & & & & 230 & 205 & 560 & 1,034 & 1,136 & 960 & 493 \\
\hline Kolkata & & & & & 217 & 142 & 263 & 318 & 351 & \\
\hline Kuwait City & & & & & & & & 615 & 639 & 442 \\
\hline Lagos & \multicolumn{5}{|c|}{648} & \multicolumn{5}{|c|}{399610} \\
\hline London & & & & & & 404 & 491 & 528 & 698 & 612 \\
\hline Los Angeles & & & & & & 665 & 689 & 780 & 921 & 789 \\
\hline Manila & & & & & 94 & 308 & 259 & 471 & 247 & 97 \\
\hline Mexico City & & & & & 132 & 109 & 199 & 172 & 247 & 196 \\
\hline Moscow & & & & & 1,099 & & & & & 962 \\
\hline Mumbai & & & & & & 716 & 534 & 496 & 779 & \\
\hline Nairobi & \multicolumn{5}{|c|}{2,053} & \multicolumn{5}{|c|}{357 402 2,600 1,005} \\
\hline Paris & & & & & & 333 & 469 & 450 & 565 & 545 \\
\hline Santiago & & & & & & & 273 & 385 & 713 & 282 \\
\hline Sao Paulo & & & & & & 223 & 213 & 399 & 279 & \\
\hline Shanghai, Shanghai & & & & & & & & 379 & 319 & \\
\hline Sydney & & & & & & 331 & 479 & 688 & 694 & 707 \\
\hline Tehran & & & & & & & & 306 & 222 & 270 \\
\hline Tel Aviv & \multicolumn{5}{|r|}{554} & 438 & 413 & 482 & 460 & 844 \\
\hline Tokyo & \multicolumn{5}{|l|}{} & 289 & 166 & 150 & 224 & 230 \\
\hline Warsaw & & & & 798 & 1,401 & & & 764 & 774 & 751 \\
\hline
\end{tabular}

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This earlier study of the sample of 120 cities continued with a second set of studies in 2009-2012 involving the creation of a set of metrics for measuring urban spatial structure and a python script for calculating these metrics with ArcGIS software. These studies included the collection, geo-referencing, and digitizing of maps at 20-25 year intervals for the 1800-2000 period for a representative sample of 30 cities; the statistical modeling of the results of all the phases; the preparation of several working papers as well as papers in peer-reviewed journals; the drafting of the Lincoln Institute's Policy Focus Report titled Making Room for a Planet of Cities (Angel, S. et al., 2011); and the preparation and publication of two companion volumes: the Atlas of Urban Expansion (Angel, S. et al., 2012) and Planet of Cities (Angel, S. 2012). Work on these studies was undertaken by Shlomo Angel, Jason Parent, Daniel Civco, and Alejandro Blei. All work on these studies benefited from the generous support of the Lincoln Institute of Land Policy and the direct assistance of Gregory K. Ingram, its president, and Ann LeRoyer, its director of publications at the time.

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\section*{ABOUT THE RESEARCH PARTNERSHIP}

The Atlas of Urban Expansion - 2016 Edition is the product of a collaboration between three partners: The NYU Urban Expansion Program at New York University, the United Nations Human Settlements Programme (UN-Habitat), and the Lincoln Institute of Land Policy. All three institutional partners contributed funds and expertise to the creation of the Atlas and all its associated products. They share the rights to these products, and are all committed to keeping these results in the public realm for all to use with proper citation, without requiring permission.

The NYU Urban Expansion Program is a research and action program based at the Marron Institute of Urban Management and the Stern School of Business at New York University. The program was initiated in 2012 with the primary mission of lending direct assistance to municipalities of rapidly growing cities so that they can make room, using four practical steps, for their expansion. Direct assistance is provided in partnership with municipalities, focused on capacity building, empowerment, training, and regular review, rather than on providing consultancy services. The program has active urban expansion initiatives in Ethiopia and Colombia, begun as pilot projects, and now extends to a national scale. The secondary mission of the program is to monitor the quantity and quality of global urban expansion on a regular basis, focused on a stratified global sample of 200 cities. A primer describing it may be found at http://urbanizationproject.org/uploads/blog/UEPrimer2014.pdf.

UN-Habitat, the United Nations Human Settlements Programme, is working toward a better urban future. Its mission is to promote socially and environmentally sustainable human settlements development and achievement of adequate shelter for all. Mandated by the UN General Assembly in 1978 to address the issues of urban growth, it is a knowledgeable institution on urban development processes and understands the aspirations of cities and their residents. For close to forty years, UN Habitat has been working in human settlements throughout the world, focusing on building a brighter future for villages, towns, and cities of all sizes. Because of these four decades of extensive experience, from the highest levels of policy to a range of specific technical issues, UN-Habitat has gained a unique and a universally acknowledged expertise in all things urban. This has placed UN-Habitat in the best position to provide answers and achievable solutions to the current challenges faced by our cities. UN-Habitat is capitalizing on its experience and position to work with partners in order to formulate the urban vision of tomorrow. It works to ensure that cities become inclusive and affordable drivers of economic growth and social
development. UN-Habitat and its projects and programs is described in detail at www.unhabitat.org.
The Lincoln Institute of Land Policy is an independent, nonpartisan organization whose mission is to help solve global economic, social, and environmental challenges to improve the quality of life through creative approaches to the use, taxation, and stewardship of land. As a private operating foundation whose origins date to 1946, the Lincoln Institute seeks to inform public dialogue and decisions about land policy through research, training, and effective communication. By bringing together scholars, practitioners, public officials, policy makers, journalists, and involved citizens, the Lincoln Institute integrates theory and practice and provides a forum for multidisciplinary perspectives on public policy concerning land, both in the United States and internationally. The Institute, its education and research projects, databases and publications are described in detail at http:/ /www.lincolninst.edu.

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[^0]:    ${ }^{1}$ UN General Assembly, Universal Declaration of Human Rights, Article 13, 10 December 1948, 217 A (III), available at: http://www.un.org/en/documents/udhr/ [accessed 13 August 2015].

