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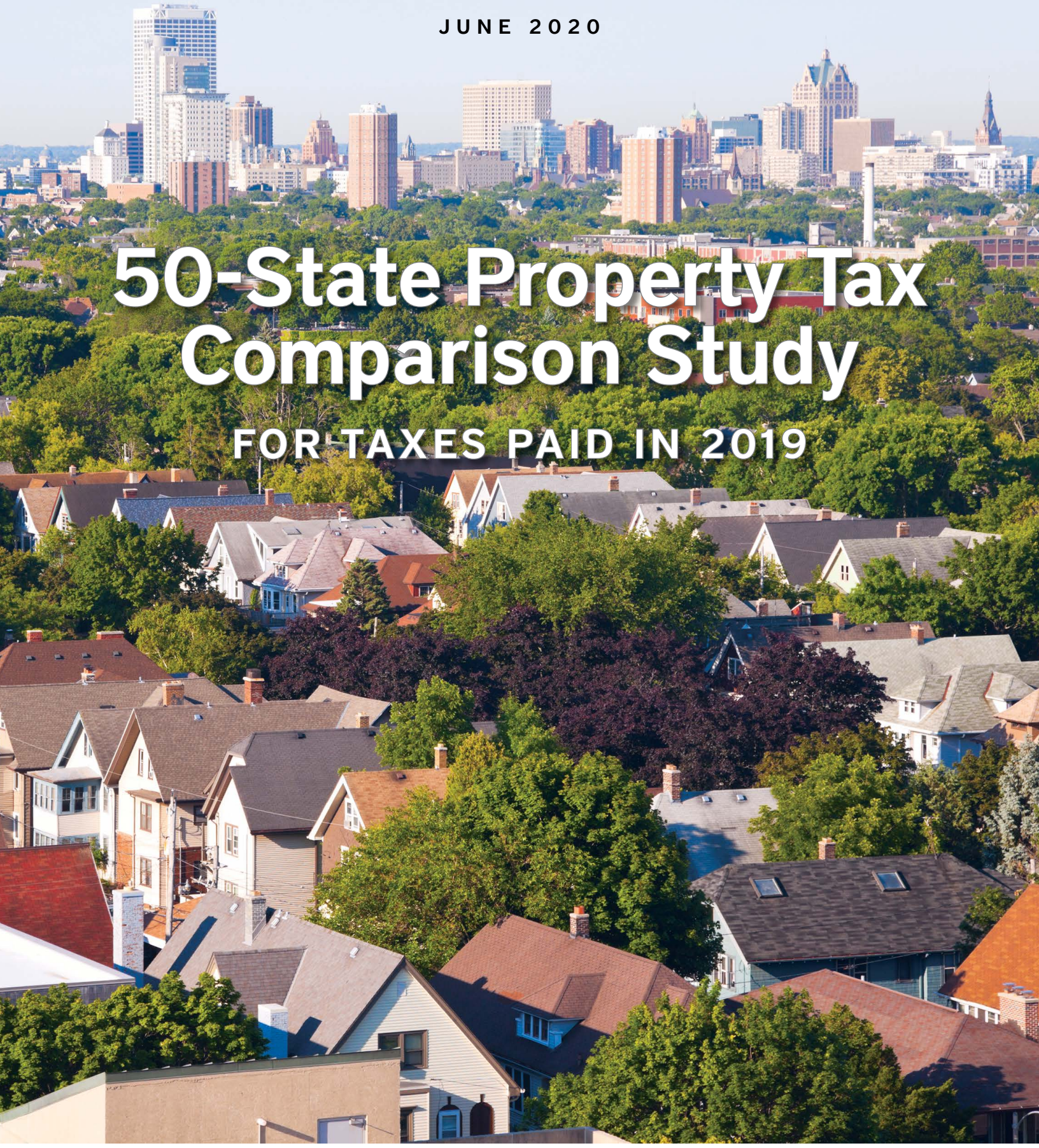
50-State Property Tax Comparison Study

FOR TAXES PAID IN 2019



LINCOLN INSTITUTE OF LAND POLICY

MINNESOTA CENTER for Fiscal Excellence

Sound tax policy. Efficient spending. Accountable government.

For information contact:
Lincoln Institute of Land Policy
Department of Valuation and Taxation
113 Brattle Street
Cambridge, MA 02138
617-661-3016

Minnesota Center for Fiscal Excellence
85 East 7th Place, Suite 250
Saint Paul, Minnesota 55101
651-224-7477

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[1] Lincoln Institute of Land Policy
[2] Minnesota Center for Fiscal Excellence

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Executive Summary

As the largest source of revenue raised by local governments, a well-functioning property tax system is critical for promoting municipal fiscal health. This report documents the wide range of property tax rates in more than 100 U.S. cities and helps explain why they vary so widely. This context is important because high property tax rates usually reflect some combination of heavy property tax reliance with low sales and income taxes, low home values that drive up the tax rate needed to raise enough revenue, or higher local government spending and better public services. In addition, some cities use property tax classification, which can result in considerably higher tax rates on business and apartment properties than on homesteads.

This report provides the most meaningful data available to compare cities' property taxes by calculating the *effective tax rate*: the tax bill as a percent of a property's market value. Data are available for 73 large U.S. cities and a rural municipality in each state, with information on four different property types (homestead, commercial, industrial, and apartment properties), and statistics on both net tax *bills* (i.e. $3,000) and effective tax *rates* (i.e. 1.5 percent). These data have important implications for cities because the property tax is a key part of the package of taxes and public services that affects cities' competitiveness and quality of life.

Why Property Tax Rates Vary Across Cities

To understand why property tax rates are high or low in a particular city, it is critical to know why property taxes vary so much across cities. This report uses statistical analysis to identify four key factors that explain most of the variation in property tax rates.

Property tax reliance is one of the main reasons why tax rates vary across cities. While some cities raise most of their revenue from property taxes, others rely more on alternative revenue sources. Cities with high local sales or income taxes do not need to raise as much revenue from the property tax, and thus have lower property tax rates on average. For example, this report shows that Bridgeport (CT) has one of the highest effective tax rates on a median valued home, while Birmingham (AL) has one of the lowest rates. However, in Bridgeport, city residents pay no local sales or income taxes, whereas Birmingham residents pay both sales and income taxes to local governments. Consequently, despite the fact that Bridgeport has much higher property taxes, total local taxes are considerably higher in Birmingham ($2,899 vs. $2,188 per capita).

Property values are the other crucial factor explaining differences in property tax rates. Cities with high property values can impose a lower tax rate and still raise at least as much property tax revenue as a city with low property values. For example, consider San Francisco and Detroit, which have the highest and lowest median home values in this study. After accounting for assessment limits, the average property tax bill on a median valued home for the large cities in this report is $3,206. To raise that amount from a median valued home, the effective tax rate would need to be 23 times higher in Detroit than in San Francisco – 6.21 percent versus 0.27 percent.

Two additional factors that help explain variation in tax rates are the level of local government spending and whether cities tax homesteads at lower rates than other types of property (referred to as "classification"). Holding all else equal, cities with higher spending will need to have

higher property tax rates. Classification imposes lower property taxes on homesteads, but higher property taxes on business and apartment properties.

Homestead Property Taxes

There are wide variations across the country in property taxes on owner-occupied primary residences, otherwise known as homesteads. An analysis of the largest city in each state shows that the average effective tax rate on a median valued homestead was 1.395 percent in 2019 for this group of 53 cities.[1] At that rate, a home worth $200,000 would owe $2,790 in property taxes (1.395% x $200,000). On the high end, there are four cities with effective tax rates that are at least 2 times higher than the average – Aurora (IL), Bridgeport (CT), Newark (NJ), and Detroit. Conversely, there are seven cities where tax rates are half of the study average or less – Honolulu, Boston, Charleston (SC), Denver, Cheyenne (WY), Birmingham (AL), and Nashville.

Highest and Lowest Effective Property Tax Rates on a Median Valued Home (2019)

Highest Property Tax Rates				**Lowest Property Tax Rates**			
1	Aurora (IL)	3.30%	*Why:* High property tax reliance	49	Cheyenne (WY)	0.65%	*Why:* Low property tax reliance
2	Bridgeport (CT)	3.21%	*Why:* High property tax reliance	50	Denver (CO)	0.56%	*Why:* Low property tax reliance, classification, high home values
3	Newark (NJ)	3.02%	*Why:* High property tax reliance	51	Charleston (SC)	0.52%	*Why:* Classification shifts tax to business, High home values
4	Detroit (MI)	2.93%	*Why:* Low property values	52	Boston (MA)	0.49%	*Why:* High home values, Classification shifts tax to business
5	Portland (OR)	2.46%	*Why:* Assessment limit shifts tax to newly built homes	53	Honolulu (HI)	0.31%	*Why:* High home values, low local gov't spending, classification

Note: Data for all cities: Figure 2 (page 19), Appendix Table 1a (page 52), and Appendix Table 2a (page 60).

The average tax rate for these cities fell 3.5 percent between 2018 and 2019, from 1.446 percent to 1.395 percent, with decreases in 32 cities and increases in 21 cities. The largest increases were in Fargo and Indianapolis at 11 percent, followed by Charleston (WV) at 10.5 percent. New Orleans, Louisville, and Oklahoma City all exceeded a 5 percent increase. The three largest decreases were in Providence (28 percent), Atlanta (20 percent), and Anchorage (15.5 percent) as all three cities increased homestead exemptions in 2019. Providence dropped eight places from 14th to 22nd; Atlanta dropped six places from 35th to 41st; and Anchorage dropped seven places from 21st to 28th. The next largest percentage declines were in Nashville, Seattle, and Kansas City. Although the Los Angeles effective tax rate dropped just 1.8 percent, that was enough to drop 6 places from the 27th to 33rd highest rate.

Note that differences in property values across cities mean that some cities with high tax *rates* can still have low tax *bills* on a median valued home if they have low home values, and vice versa. For example, New York City and Wichita both have effective tax rates of 1.18 percent on median valued homes, but because the median valued home is worth so much more in New York ($645k vs. $140k), the tax bill is far higher in New York (3rd highest) than in Wichita (47th highest).

[1] The largest cities in each state includes 53 cities, because it includes Washington (DC) plus two cities in Illinois and New York since property taxes in Chicago and New York City are so different than the rest of the state.

Effective tax rates rise with home values in about half of the cities (26 of 53), and this pattern has a progressive impact on the property tax distribution. Usually, this relationship occurs because of homestead exemptions that are set to a fixed dollar amount. For example, a $20,000 exemption provides a 20 percent tax cut on a $100,000 home, a 10 percent cut on a $200,000 home, and a 5 percent cut on a $400,000 home. The increase in effective tax rates with home values is steepest in Boston, Atlanta, Honolulu, New Orleans, and Washington (DC).

Commercial Property Taxes

There are also significant variations across cities in commercial property taxes, which include taxes on office buildings and similar properties. In 2019, the effective tax rate on a commercial property worth $1 million averaged 1.921 percent across the largest cities in each state. The highest rates were in Detroit, Providence (RI), Chicago, and Bridgeport (CT), all having effective tax rates that were more than two-thirds higher than the average for these 53 cities. Des Moines (IA) and Aurora (IL) also had effective tax rates higher than 3 percent. On the other hand, rates were less than half of the average in Charlotte (NC), Seattle, and Cheyenne (WY).

Highest and Lowest Effective Property Tax Rates on $1-Million Commercial Property

Highest Property Tax Rates				**Lowest Property Tax Rates**			
1	Detroit	3.77%	*Why:* Low property values	49	Honolulu (HI)	1.02%	*Why:* High property values, Low local gov't spending
2	Providence (RI)	3.61%	*Why:* High property tax reliance	50	Virginia Beach (VA)	0.99%	*Why:* Low local gov't spending, High property values
3	Chicago (IL)	3.51%	*Why:* High local gov't spending, Classification shifts tax to business	51	Charlotte (NC)	0.95%	*Why:* Low property tax reliance
4	Bridgeport (CT)	3.30%	*Why:* High property tax reliance	52	Seattle (WA)	0.77%	*Why:* High property values, Low property tax reliance
5	Des Moines (IA)	3.02%	*Why:* Low property values, High property tax reliance	53	Cheyenne (WY)	0.69%	*Why:* Low property tax reliance

Note: Analysis includes an additional $200k in fixtures (office equipment, etc.)
Data for all cities: Figure 3 (page 24), Appendix Table 1b (page 55), and Appendix Table 3a (page 76).

Wilmington (DE) had the largest decline at 25 percent, dropping them from 35th to 47th. Rates also fell more than 10 percent in Seattle, Nashville, and Columbus. Nashville dropped five places from 43rd to 48th and Columbus dropped four places from 21st to 25th.

Double digit increases were found in New York City (15.6%), Indianapolis (12.9%), Fargo (11.1%), and Charleston (WV) at 10.5 percent. The next greatest increases (between 5% and 10%) belong to Cheyenne (WY), Minneapolis, Louisville, and Burlington (VT). Notable increases in rankings include Indianapolis (13th to 7th), New York City (47th to 38th), Fargo (50th to 45th), and Louisville (41st to 37th).

Preferential Treatment for Homeowners

Many cities have preferences built into their property tax systems that result in lower effective tax rates for certain classes of property, with these features usually designed to benefit homeowners. The "classification ratio" describes these preferences by comparing the effective tax rate on land and buildings for two types of property. For example, if a city has a 3.0%

effective tax rate on commercial properties and a 1.5% effective tax rate on homestead properties, then the commercial-homestead classification ratio is 2.0 (3.0% divided by 1.5%).

An analysis of the largest cities in each state shows an average commercial-homestead classification ratio of 1.71, meaning that on average commercial properties experience an effective tax rate that is 71% higher than homesteads. Over a quarter of the cities (16 of 53) have classification ratios above 2.0, meaning that commercial properties face an effective tax rate that is at least double that for homesteads.

Preferential Treatment of Homeowners: Ratio of Effective Tax Rate on Commercial and Apartment Properties to the Rate on Homestead Properties (2019)

Commercial vs. Homestead Ratio			**Apartment vs. Homestead Ratio**		
1	Boston (MA)	4.37	1	Charleston (SC)	4.07
2	Charleston (SC)	4.07	2	New York (NY)	2.48
3	Denver (CO)	3.99	3	Indianapolis (IN)	2.47
4	Honolulu (HI)	3.97	4	Jacksonville (FL)	2.36
5	New York (NY)	3.14	5	Birmingham (AL)	2.19

Note: Commercial-homestead ratio compares rate on $1 million commercial building to median valued home. Apartment-homestead ratio compares rate on $600k apartment building to median valued home. Ratios compare taxes on real property and exclude personal property.
Data for all cities: Figures 6a and 6b (Pages 38-39), Appendix Table 6a (Pg. 102), and Appendix Table 6b (Pg. 104).

The average apartment-homestead classification ratio is significantly lower (1.34), with apartments, resulting in an effective tax rate that is 34% higher than homesteads on average. There are six cities where apartments face an effective tax rate that is more than double that for homesteads, with Charleston (SC) being an outlier with a tax rate on apartments that is over four times higher than the rate on a median valued home. It is important to note that while renters do not pay property tax bills directly, they do pay property taxes indirectly since landlords are able to pass through some or all of their property taxes in the form of higher rents.

There are four types of statutory preferences built into property tax systems that can lead to lower effective tax rates on homesteads than other property types: the assessment ratio, the nominal tax rate, exemptions and credits, and differences in assessment limits. In total, 40 of the 53 cities have statutory preferences that favor homesteads over commercial properties. 21 of these 40 cities benefit homeowners using at least two of these four statutory preferences. In 11 cities preferential treatment for homeowners is delivered through exemptions or credits alone, while in 8 cities preferences are delivered exclusively through differences in assessment ratios or nominal tax rates. Similarly, 36 cities have statutory preferences favoring homesteads relative to apartments, but only 12 offer more than one preference. Seven cities have preferential assessment ratios and/or nominal tax rates only, while 17 cities offer homestead exemptions or credits alone.

Property Tax Assessment Limits

Since the late 1970s, an increasing number of states have adopted property tax limits, including constraints on tax rates, tax levies, and assessed values. This report accounts for the impact of limits on tax rates and levies implicitly, because of how these laws impact cities' tax rates, but it is necessary to use an explicit modeling strategy to account for assessment limits.

Assessment limits typically restrict growth in the assessed value for individual parcels and then reset the taxable value of properties when they are sold. Therefore, the level of tax savings provided from assessment limits largely depends on two factors: how long a homeowner has owned her home and appreciation of the home's *market value* relative to the allowable growth of its *assessed value*. As a result, assessment limits can lead to major differences in property tax bills between owners of nearly identical homes based on how long they have owned their home.

This report estimates the impact of assessment limits by calculating the difference in taxes between newly purchased homes and homes that have been owned for the average duration in each city, for median valued homes. For example, in Los Angeles, the average home has been owned for 14 years and the median home value is $682,400. Because of the state's assessment limit, someone who has owned their home for 14 years would pay 45 percent less in property taxes than the owner of a newly purchased home, even though both homes are worth $682,400. The largest discrepancy is in New York City, which has an assessment limit that has capped growth in assessed values for residential properties since 1981, and unlike most assessment limits does not reset when the property is sold. As a result, the owner of a newly built, median valued home would face an effective tax rate 57 percent higher than the owner of a home built prior to 1981, even though the two homes have identical values ($645,100). Assessment limits reduce taxes by 30% or more in New York City, the eight California cities studied, the two Florida cities studied, Detroit, and Portland (OR). Of the 29 cities in this report that are affected by parcel-specific assessment limits, new homeowners face higher property tax bills than existing homeowners in 22 cities. In 2019, no home value was sheltered in Chicago and six Texas cities: Arlington, Austin, Dallas, El Paso, Houston, and San Antonio.

Conclusion

Property taxes range widely across cities in the United States. This report not only shows which cities have high or low effective property tax rates, but also explains why. Cities will tend to have higher property tax rates if they have high property tax reliance, low property values, or high local government expenditures. In addition, some cities use property tax classification, which can result in considerably higher tax rates on business and apartment properties than on homesteads. By calculating the effective property tax rate, this report provides the most meaningful data available to compare cities' property tax burdens. These data have important implications for cities because the property tax is a key part of the package of taxes and public services that affects cities' competitiveness and quality of life.

Introduction

The property tax is one of the largest taxes paid by American households and businesses and funds many essential public services, including K-12 education, police and fire protection, and a wide range of critical infrastructure. Yet it is surprisingly difficult to get good data on property taxes that are comparable across cities. This report provides the necessary data by accounting for several key features of major cities' property tax systems and then calculating the *effective tax rate*: the tax bill as a percent of a property's market value.

High or low effective property tax rates do not in themselves indicate that tax systems are "good" or "bad." Evaluating a property tax system requires a broader understanding of the pros and cons of the property tax, the implications of high or low property tax rates, and the method by which property tax rates are set. These key issues are outlined below.

The property tax has key strengths as a revenue instrument for local governments: it is the most stable tax source, it is more progressive than alternative revenue options, and it promotes local autonomy. Property taxes are more stable over the business cycle than sales and especially income taxes, so greater property tax reliance helps local governments avoid major revenue shortfalls during recessions. It also helps localities maintain revenue stability in the face of fluctuating state and federal aid.[2] In addition, the property tax is relatively progressive compared to the sales tax, which is the other main source of tax revenue for local governments. Whereas the property tax is largely neutral, the sales tax is highly regressive.[3]

The property tax is particularly appropriate for local governments because it is imposed on an immobile tax base. While it is often easy to cross borders in search of a lower sales tax rate, those who wish to live or locate their business in a particular location cannot avoid paying the property tax. Thus, local governments have limited ability to charge different sales tax rates than their neighbors, but have greater control over setting their property tax rate.

A drawback of any local tax is that the tax base can vary widely across communities, but these disparities can be offset with state aid to local governments. For example, there are significant differences in property values across communities, just as there are wide disparities in retail sales and incomes across localities. State government grants to local governments can help offset these differences to ensure everyone has access to necessary services at affordable tax prices regardless of where they live. In addition, state-funded circuit breaker programs can help households whose property taxes are particularly high relative to their income.[4]

Property taxes are one part of the package of taxes and public services that affects competitiveness and quality of life. This report shows that many of the cities with high property tax rates have relatively low sales and income taxes for local governments, so the total local tax

[2] Ronald C. Fisher. 2009. "What Policy Makers Should Know About Property Taxes." *Land Lines*. Cambridge, MA: Lincoln Institute of Land Policy.
[3] Institute on Taxation and Economic Policy. 2015. "Who Pays? A Distributional Analysis of the Tax Systems in All 50 States."
[4] Bowman, John H., Daphne A. Kenyon, Adam Langley, and Bethany P. Paquin. 2009. "Property Tax Circuit Breakers: Fair and Cost-Effective Relief for Taxpayers." Cambridge, MA: Lincoln Institute of Land Policy.

burden for residents and business could still be attractive. Furthermore, state aid may reduce local property taxes, but this reduction may be offset by higher state taxes.

Similarly, if higher property taxes are used to pay for better public services, then high property tax rates may not affect competitiveness or quality of life. Many homeowners are willing to pay higher property taxes to have better public schools and safer neighborhoods. The bottom line is that it is the total state-local tax burden relative to the quality of public services that determines competitiveness and quality of life.

Property tax rates are set differently than other tax rates and reflect decisions about local government spending. Income and sales tax rates usually do not vary much from year-to-year, which leads to significant revenue fluctuations over the business cycle. In contrast, property tax rates are usually established *after* the local government budget is determined by elected officials and/or voters and the rate is then set to raise the targeted revenue level. However, flexibility in setting property tax rates can be constrained by state tax limits or political concerns about property tax burdens. The process for determining property tax rates varies across jurisdictions.

This report allows for meaningful comparisons of cities' property taxes by calculating the effective property tax rate—the tax bill as a percent of a property's market value. For most taxpayers, the effective tax rate will be significantly different from the nominal or official tax rate that appears on their tax bill. There are several reasons for this difference. First, many states only tax a certain percentage of a property's market value. For example, New Mexico assesses all property at 33.3 percent of market value for tax purposes, which means that a $300,000 home would be taxed as if it were worth $100,000. In addition, many states and cities use exemptions and/or credits to reduce property taxes. For example, a $50,000 homestead exemption would mean a $200,000 home would be taxed as if it were worth $150,000. Cities also vary in the accuracy of their assessments of property values for tax purposes. Finally, an analysis of property tax burdens requires consideration of property taxes paid to all local governments, including overlying counties and school districts, rather than simply comparing municipal tax rates. This report accounts for all of these differences in cities' property tax systems, which is essential for meaningful comparisons of their tax rates.

This study calculates effective tax rates by analyzing several key features of each city's property tax system; it is not a parcel-level analysis of property tax liabilities. The Methodology section of this report provides details on how effective tax rates are calculated. First, data are collected for the key elements of property tax systems that determine effective tax rates:

- *Total local property tax rate*: The nominal tax rate that is most prevalent in the city for each class of property (a.k.a. statutory tax rate), including taxes paid to the state, city or township, county, school district, and special taxing districts.
- *Assessment ratio (a.k.a. classification rate):* The percentage of market value used to establish a property's assessed value. For example, a 60 percent assessment ratio means a $100,000 home would be taxed as if it were worth $60,000.
- *Sales ratio:* The sales ratio measures the accuracy of assessments by comparing assessed values to actual sales prices. For example, a 98 percent sales ratio means a $100,000 home would be "on the books" as if it were worth $98,000. This study uses a median or average sales ratio for all properties in each class in each city. The data come primarily

from sales ratio studies and sometimes from state equalization studies. Those studies are most often performed either by state government agencies or by contractors on behalf of state agencies and are usually publicly available.

- *Exemptions:* This study accounts for exemptions that reduce the amount of property value subject to taxation for the majority of properties in a class for each city. For example, a $20,000 exemption means a $100,000 home would be taxed as if it were worth $80,000.
- *Credits:* This study accounts for credits that reduce the tax bill for the majority of properties in a class for each city. For example, Arkansas has a $350 credit that reduces the tax bill by $350 for all homesteads in the state. The report also accounts for early payment discounts that can reduce tax bills in some cities.

With this information, it is possible to calculate typical tax bills in each city for four classes of property (residential, commercial, industrial, apartments) and several different market values:

$$\text{Net Tax Bill} = \{[(\text{Market Value x Sales Ratio}) - \text{Exemptions}] \text{ x Assessment Ratio x Tax Rate}\} - \text{Credits}$$

First the taxable value is determined, with the market value of the property adjusted using the sales ratio, then exemptions are subtracted, and then the assessment ratio is applied.[5] Next that taxable value is multiplied by the total property tax rate, and any credits are subtracted. Finally, the effective tax rate is calculated by dividing the net tax bill by the market value of the property.

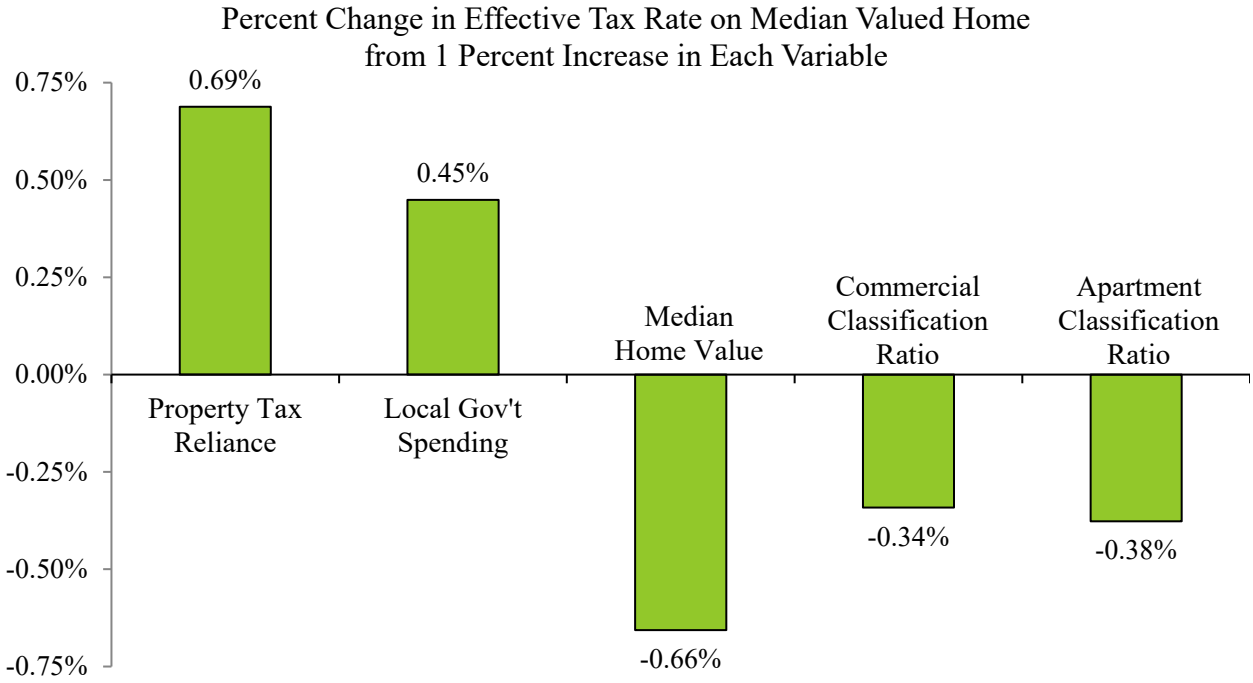
It is important to note that this study provides typical effective tax rates, assuming that the median or average sales ratio represents a typical value for all properties in each class. In practice, the accuracy of assessments varies across properties, so some parcels will have higher effective tax rates than reported in this study and some will have lower tax rates. In addition, this study does not account for exemptions or credits that are available for a minority of taxpayers in a city, such as exemptions available solely for seniors or veterans, or tax incentives available to just some businesses or homeowners.

[5] Note that exemptions based on assessed valued are subtracted after the assessment ratio is applied.

Why Property Tax Rates Vary Across Cities

This report demonstrates that effective property tax rates vary widely across U.S. cities. This section explores why some cities have relatively high property tax rates while others have much lower rates. Statistical analysis shows that four key factors explain more than two-thirds of the variation in property tax rates. The two most important reasons why tax rates vary across cities are the extent to which cities rely on the property tax as opposed to other revenue sources, and the level of property values in each jurisdiction. Two additional factors that help explain variation in tax rates are the level of local government spending and whether cities tax homesteads at lower rates than other types of property (referred to as "classification").

Figure 1: Key Factors Explaining Differences in Property Tax Rates



Appendix 1 shows how these variables affect tax rates on homestead and commercial properties for each large city included in this report and details the methodology used for this analysis. This section focuses on homestead property taxes, but our analysis shows that tax rates on business and apartment properties are driven by the same four key factors.

Property Tax Reliance

One of the main reasons why tax rates vary across cities is that some cities raise most of their revenue from the property tax, while others rely more on alternative revenue sources.[6] Cities

[6] One way to measure the "importance" of each factor is to look at squared semi-partial correlations, which are analogous to estimating the R-square between the effective tax rate on a median valued home and each factor, controlling for the effect of the other factors. For the first regression of Appendix Table 1c, 19% of the variation in effective tax rates is explained by property tax reliance, 37% is explained by median home values, 4% by local government spending, 5% by the commercial-homestead classification ratio, and 3% by the apartment-homestead classification ratios.

with high local sales or income taxes do not need to raise as much revenue from the property tax, and thus have lower property tax rates on average. Figure 1 shows that a 1 percent increase in the share of revenue raised by local governments from property taxes is associated with a 0.69 percent increase in the effective tax rate on a median valued home.

To see how property tax reliance impacts tax rates, compare Bridgeport (CT) and Birmingham (AL). Bridgeport has the 2nd highest effective tax rate on a median valued home in large part because it has the highest property tax reliance of any large city included in this report. So, while Bridgeport has high property taxes ($2,149 per capita), city residents pay no local sales or income taxes. In contrast, Birmingham has the 12th lowest effective tax rate on a median valued home, but also has the fourth lowest reliance on the property tax.[7] As a result, Birmingham residents have low property taxes ($880 per capita), but also pay a host of other taxes to local governments, including sales taxes ($1,081 per capita), income taxes ($425 per capita), and other local taxes ($334 per capita).[8] Consequently, total local taxes are considerably higher in Birmingham despite the fact that it has much lower property taxes than Bridgeport ($2,899 per capita vs. $2,188 per capita).

It is important to note that the ability of local governments to tap alternative revenue sources that would reduce property tax reliance is normally constrained by state law. State governments usually determine which taxes local governments are authorized to use and set the maximum tax rate localities are allowed to impose.[9]

The data on property tax reliance and local government spending that is used for this analysis is for *fiscally standardized cities* (FiSCs) rather than for city municipal governments alone. FiSCs provide estimates of revenues raised from city residents and businesses and spending on their behalf, whether done by the city government or by overlying county governments, independent school districts, or special purpose districts. This approach is similar to the methodology used in this report, which includes property taxes paid to the city government, county government, and the largest independent school district in each city. The FiSC database is available on the website of the Lincoln Institute of Land Policy.[10]

Property Values

Home values are the other crucial factor explaining differences in property tax rates. Cities with high property values can impose a lower tax rate and still raise at least as much property tax revenue as a city with low property values. For example, Figure 1 shows that a 1 percent increase in the median home value is associated with a 0.66 percent decrease in the effective tax rate on a median valued home.

For example, consider San Francisco and Detroit, which have the highest and lowest median home values in this study – $1,195,700 and $51,600 respectively. After accounting for assessment limits, the average property tax bill on a median valued home in the 73 large cities in

[7] Appendix Table 1a.
[8] Data on per capita tax collections in 2017 is from the Lincoln Institute's *Fiscally Standardized Cities* database.
[9] Michael A. Pagano and Christopher W. Hoene. 2010. "States and the Fiscal Policy Space of Cities." In *The Property Tax and Local Autonomy*, ed. Michael E. Bell, David Brunori, and Joan Youngman, 243-277. Cambridge, MA: Lincoln Institute of Land Policy.
[10] https://www.lincolninst.edu/research-data/data-toolkits/fiscally-standardized-cities

this report is $3,206. To raise that amount from a median valued home, the effective tax rate would need to be 23 times higher in Detroit than in San Francisco – 6.21 percent versus 0.27 percent. The effective tax rate on a median valued home is actually just 3.1 times higher in Detroit than San Francisco (1.92% vs. 0.63%), which means San Francisco collects 7.5 times more in property taxes from a median valued home ($7,478 vs. $991). This is typical – higher property values usually lead cities to have both lower tax rates and to raise more revenue for public services. While the difference between San Francisco and Detroit is extreme, it is common for there to be dramatic differences in property wealth across communities within a state or region. State government grants to local governments can be used to offset these differences to help ensure everyone has access to necessary services at affordable property tax prices regardless of where they live.

This analysis uses the median home value in each city, but no one measure fully captures all differences in cities' property wealth. For example, even with identical tax rates on homes and businesses, cities with larger business tax bases will be able to have lower residential property tax rates since it usually costs more to provide public services to households than to businesses.[11] In addition, the median does not provide any information about the distribution of home values. Cities with larger concentrations of high value homes (relative to the median in that city) will be able to have lower tax rates on a median valued home for any given level of public expenditures.

Local Government Spending

The level of local government spending is another reason why property tax rates vary across cities, although its effect is considerably less than property tax reliance or home values. Holding all else equal, cities with higher spending will need to have higher property tax rates. For example, Figure 1 shows that a 1 percent increase in local government spending per capita is associated with a 0.45 percent increase in the effective tax rate on a median valued home.

Just as property tax rates are driven by a number of key variables, there are several factors that influence local government spending. In particular, spending is driven by needs, revenue capacity, costs, and preferences. For example, expenditure needs are higher in cities with larger shares of school age children or higher crime rates, because local governments in those cities will need to spend more on K-12 education and police protection to provide the same quality of education and public safety as cities with fewer children or lower crime. Spending will often be higher in cities with greater revenue capacity since cities with larger tax bases can raise more revenue without needing higher tax rates, as discussed above in the section on property values. Costs also play a role, because cities with higher costs of living and higher private sector wages will need to pay higher salaries to attract qualified teachers, police, and other local government employees. Finally, residents in some cities have a higher preference for public spending – which also means higher taxes – than in other cities.[12]

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[11] Ernst & Young LLP and Council on State Taxation. 2017. "Total State and Local Business Taxes: State-by-State Estimates for Fiscal Year 2016." Pg. 15-18.

[12] For an analysis that looks at the factors that drive differences in spending and revenue across states, see "Assessing Fiscal Capacities of States: A Representative Revenue System-Representative Expenditure System Approach, Fiscal Year 2012" by Tracy Gordon, Richard C. Auxier, and John Iselin published by the Urban Institute (March 8, 2016). For an analysis that looks at cities, see "The Fiscal Health of U.S. Cities" by Howard Chernick and Andrew Reschovsky in *Is Your City Healthy? Measuring Urban Fiscal Health* published by the Institute on Municipal Finance and Governance.

Classification and Preferential Treatment of Homestead Properties

Classification is the fourth factor that helps to explain differences across cities in property tax rates on homesteads. Under classified property tax systems, states and cities build preferences into their tax systems that result in lower effective tax rates for certain classes of property, with these features usually designed to benefit homeowners.

The "classification ratio" describes these preferences by comparing the effective tax rate for two types of property. For example, if a city has a 3.0% effective tax rate on commercial properties and a 1.5% effective tax rate on homestead properties, then the commercial-homestead classification ratio is 2.0 (3.0% divided by 1.5%). An increase in the classification ratio will be associated with a decrease in the tax rate on homestead properties, because it means that homeowners are collectively bearing a smaller share of the property tax burden while businesses and/or renters pay more. For example, Figure 1 shows that a 1 percent increase in the commercial-homestead classification ratio is associated with a 0.34 percent decrease in the effective tax rate on a median valued home, and a 1 percent increase in the apartment-homestead classification ratio is associated with a 0.38 percent decrease.

Charleston (SC) has the highest classification ratio for apartment buildings relative to homesteads, and the second highest commercial-homestead classification ratio. This means that commercial buildings and apartments are taxed at a dramatically higher percentage of market value than owner-occupied residences. In Charleston, a $1 million commercial property and a $600,000 apartment building both face effective tax rates on their land and buildings that are 4.1 times higher than a median valued home. As a result, while among the largest cities in each state Charleston has the 20th highest tax rate on apartments and the 26th highest rate on commercial properties, it has a much lower tax rate – the 2nd lowest tax rate – on a median valued home.[13] Such findings demonstrate that in Charleston, homeowners are heavily subsidized at the expense of renters and businesses.

The Charleston example shows the other side of the classification equation: favoring homeowners by definition means higher property taxes on businesses and apartment buildings. Regression analysis shows that a 1 percent increase in the commercial-homestead classification ratio is associated with a 0.47 percent increase in the commercial property tax rate, and a 1 percent increase in the apartment-homestead classification ratio is associated with a 0.40 percent increase in the apartment tax rate.[14]

Note that while renters do not pay property tax bills directly, they do pay property taxes indirectly since landlords are able to pass through some of their property taxes by increasing rents.[15] Since renters have lower incomes than homeowners on average, preferences given to

[13] Appendix tables 2b, 5a, and 3a.

[14] Results for commercial properties are shown in Appendix Table 1d. The analysis with effective tax rates on apartments as the dependent variable uses the same set of explanatory variables; the R-square is similar (0.580) and each variable has the same level of statistical significance as in Appendix table 1d with the exception that the coefficient on the apartment-homestead classification ratio is also significant at the 1% level.

[15] Bowman, John H., Daphne A. Kenyon, Adam Langley, and Bethany P. Paquin. 2009. "Property Tax Circuit Breakers: Fair and Cost-Effective Relief for Taxpayers." Cambridge, MA: Lincoln Institute of Land Policy. Pg. 32.

homesteads relative to apartment buildings will tend to make the property tax system more regressive.

Other Factors

The four key factors described above explain nearly three-quarters of the variation in cities' effective tax rates on median valued homes and are thus the most important causes of differences in tax rates across cities. However, there are other factors that also play a role. For example, two variables that could affect property tax rates are the level of state and federal aid and local governments' share of total state and local government spending in each state. However, the impact of these variables will depend on how exactly the state government structures aid or takes on service responsibilities otherwise provided by local governments.

It is reasonable to expect that higher state aid will allow local governments to reduce their reliance on property taxes and thus lead to lower property tax rates. But in fact, research shows that the impact of state aid on local property taxes is ambiguous and depends on how state aid is structured. Some state aid formulas can limit local spending, in which case state aid is likely to reduce property taxes. However, other aid formulas like matching grants can encourage higher local spending, and thus state aid may not reduce property taxes in those cases.[16]

Similarly, if the state government bears a larger share of state and local government expenditures, it makes sense that local government spending and the need for property taxes might decline. That would be the case if the state assumes responsibility for public services that would otherwise be provided by local governments, such as in Hawaii where there is a single statewide school district and thus no local expenditures on K-12 education. But it is also possible that state expenditures are higher because the state government spends more on traditional state responsibilities, like higher education or public welfare, in which case higher state spending would not lead to lower local government expenditures.

The regression analysis used for this section considered these two other variables, but they were not found to be related with effective tax rates at a statistically significant level. This finding is not surprising since the expected impact of these variables depends on institutional details that are not captured by a single measure of state aid or state expenditures.

[16] Kenyon, Daphne A. 2007. *The Property Tax-School Funding Dilemma*. Cambridge, MA: Lincoln Institute of Land Policy. Page 50.

Homestead Property Taxes

Figure 2 shows property taxes on a median valued home for the largest city in each state. The analysis looks at homesteads, which are owner-occupied primary residences. The average effective tax rate on median valued homesteads for the 53 cities in Figure 2 is 1.395 percent. At that rate, a home worth $200,000 would owe $2,790 in property taxes (1.395% x $200,000).

Tax rates vary widely across the 53 cities. The four cities at the top of the chart – Aurora (IL), Bridgeport (CT), Newark (NJ), and Detroit – have effective tax rates on a median valued home that are more than two times higher than the 53-city average. In five other cities, the effective property tax rate is between 1.5 and 2 times the average. Conversely, the bottom seven cities – Honolulu, Boston, Charleston (SC), Denver, Cheyenne (WY), Birmingham (AL), and Nashville – all have effective tax rates that are less than half of the study average.

Overall, the average effective tax rate for all cities fell somewhat between 2018 and 2019, from 1.446 percent of value to 1.395 percent. The effective tax rate on the median valued homestead climbed in 21 cities and fell in 32 cities. Fargo, Indianapolis and Charleston (WV) all had increases over 10 percent; and New Orleans, Louisville and Oklahoma City exceeded 5 percent. (listed from largest increase to the smallest).

Effective rates on median valued homes fell the farthest in Providence (RI), with a 28.1 percent decline, from 1.797 percent to 1.292 percent; and Atlanta, which had a 20.3 percent decline from 1.098 percent of value to 0.876 percent. Providence exempted 40 percent of homestead value. Atlanta did two things: in addition to expanding its school exemption, Atlanta instituted a "floating exemption" for the city portion of the tax based on the consumer price index. This reduced the taxable value on a median value home ($302,000) by about $28,000 in its first year. Other cities with declines of at least 10 percent include: Anchorage, Nashville, Seattle, Kansas City, Philadelphia, and Detroit (listed from largest percent decrease to the smallest).

Note that in addition to effective tax rates, Figure 2 also reports the tax bill on a median valued home for each city. Because of significant variations in home values across these cities, some cities with modest tax *rates* can still have high tax *bills* on a median valued home relative to other cities, and vice versa. For example, New York City and Wichita have similar tax rates on a median valued home, but because the median valued home is worth so much more in New York ($645k vs. $140k), the tax bill is far higher in New York (3rd highest) than in Wichita (47th highest). In general, cities with high home values can raise considerable property tax revenue from a median valued home despite modest tax rates, whereas cities with low home values may have fairly low tax bills even with high tax rates. The table on the next page shows cities with the largest differences in their ranking in terms of effective tax rates versus tax bills on a median valued home.

Cities with Largest Differences in Ranking on Effective Tax Rate vs. Tax Bill for a Median Valued Home (2019)

High Home Values Cities with high tax bills despite low tax rates			**Low Home Values** Cities with low tax bills despite high tax rates		
City	**Tax Rate**	**Tax Bill**	**City**	**Tax Rate**	**Tax Bill**
Seattle (WA)	44	7	Detroit (MI)	4	50
Washington (DC)	45	12	Buffalo (NY)	15	49
Los Angeles (CA)	33	2	Jackson (MS)	21	51
New York (NY)	31	3	Wilmington (DE)	18	35
Boston (MA)	52	25	Wichita (KS)	30	47

Appendix Table 2b is similar to Table 2a except that it accounts for the effect of assessment limits, which restrict growth in the assessed value of individual parcels for property tax purposes. These limits reduce estimates of homestead property taxes for 10 of the 53 cities, with the largest impacts on New York City, Los Angeles, and Jacksonville (FL). Overall, accounting for assessment limits reduces the average property tax bill for the 53 cities by 5.9 percent. For more details on the impact of assessment limits, see that section of this report.

Appendix Table 2c shows how effective tax rates on homestead properties vary based on their value, showing tax rates for properties worth $150,000 and $300,000 for the largest city in each state. As the table notes, effective tax rates vary with property value about half of the time (26 of 53 cities). Usually, effective tax rates rise with homestead value because of homestead exemptions and property tax credits that are set to a fixed dollar amount. Under these programs, the percentage reduction in property taxes falls as home values rise. For example, a $20,000 exemption provides a 20 percent tax cut on a $100,000 home, a 10 percent cut on a $200,000 home, and a 5 percent cut on a $400,000 home.[17] However, other design elements can create the same effect. For example, Minnesota uses a tiered assessment system, where 1% of a home's market value is taxable up through $500,000 of value, while 1.5% of value above that is taxable.

Value-driven differences in effective tax rates make the biggest difference in Boston, which in 2019 offered a homestead exemption equal to the lesser of $257,980 or 90 percent of a property's market value. This results in ultra-low effective tax rates of 0.096% on a $150,000 home and on a $300,000 home, versus 0.49% for a median valued home ($575,000). In prior years, the $300,000 home had a slighter higher effective tax rate than the $150,000 home, but in 2019 it also hit the 90 percent threshold. Other cities with the largest differentials in the effective rates between a $150,000-valued and a $300,000-valued home also offer substantial homestead exemptions: Atlanta (effectively over $100,000 of market value), Honolulu ($80,000 exemption), New Orleans (effectively $75,000 of market value), and Washington, DC ($73,350 exemption). Readers should use some caution when interpreting the results in Appendix Tables 2c, 2f, and 2h; see the box on comparing property taxes calculated with fixed property values (page 23).

Appendix Tables 2d through 2f show effective tax rates on homestead properties for a different set of cities. Whereas Tables 2a through 2c focus on the largest city for each state, Tables 2d

[17] For information on homestead exemptions in each state, see "How Do States Spell Relief: A National Study of Homestead Exemptions and Property Tax Credits" by Adam H. Langley in *Land Lines* (April 2015).

through 2f show the 50 largest cities in the country regardless of their state. There is considerable overlap between the two groups of cities, but some significant differences as well. In this set of tables, California has eight cities, Texas has seven, Arizona has three, and five states have two cities each (CO, FL, NC, OK, and TN). There are 21 states without any cities in the top 50. As with the tables for the largest city in each state, there are two sets of tables for median valued homes: one before and one after accounting for the effects of assessment limitations (Tables 2d and 2e respectively).

This year, the average effective tax rate for median valued homes in the 50 largest cities (Table 2d at 1.398%) slightly exceeds the rate for the largest cities in each state (Table 2a at 1.395%). That shift is mainly due to a higher number of the most significant tax rate reductions taking place in cities that do not appear in the 50 largest city group (Providence, RI; Aurora, IL; Bridgeport, CT; and Anchorage). These reductions were all more than 0.22 percentage points and ranged up to .51 percentage points. Memphis is the only city with a significant drop in effective tax rate (0.2 percentage points) that appears in the 50 largest city group, but not in the group that includes the largest city in each state. When comparing median valued homes after accounting for assessment limitations, however, the 50 largest cities drop to 7.8% below the group of largest cities in each state, with an average effective tax rate of 1.22% (Table 2e) compared to 1.32% (Table 2b). This is because 20 cities of the 50 largest in the country saw reductions from assessment limits in 2019, and only 10 cities of the 53 that make up the largest cities in each state did so.

Effective tax rates can be rather homogenous across large cities in a single state. For example, consider the effective rates on median valued homes in the two largest states shown in Table 2d:

- In the eight California cities, the highest effective tax rate is Oakland (20th highest) and the lowest is Sacramento (36th). California accounts for seven of the 14 cities ranked from 20th to 33rd, with effective tax rates clustering in the 1.2 to 1.4 percent range due to the effect of California's Proposition 13 limitations on tax rates.
- In the seven Texas cities, the highest effective tax rate is El Paso (2nd highest) and the lowest is Houston (13th), with Texas accounting for five of the eight cities ranked from 2nd to 9th. It is more difficult to point to a single feature of Texas' property tax system to explain this clustering. However, it likely reflects the fact that local governments in these six Texas cities have relatively high reliance on property taxes and that Texas has a uniform property tax system that does not allow for different tax rates or assessment ratios on different types of property.

However, in other cases there can be considerable differences in effective tax rates between cities within the same state. For example, Table 2d shows some noticeable differences in effective tax rates and rankings for median valued homes between these sets of same-state cities:

- In Tennessee: Memphis has the 15th highest tax rate (1.609%), while Nashville has the 47th highest (0.669%) – a 32 place differential.
- In Arizona: Phoenix has the 23rd highest tax rate (1.249%) and Tucson has the 35th highest tax rate (1.152%), while Mesa has the 44th highest (0.829%) – a 21 place differential between the neighboring cities of Phoenix and Mesa.

Appendix Tables 2g and 2h provide additional information about how effective property tax rates vary across states by looking at a rural community in each state. The rural analysis includes county seats with populations between 2,500 and 10,000 located in nonmetropolitan counties.

The average effective tax rate on median valued homes in the 50 rural communities in this report is 1.330% for taxes paid in 2019, down from 1.343 in 2018. As with large cities, the rates for rural municipalities vary considerably around that average. In three municipalities – Warsaw (NY), Maurice River Township (NJ), and Hartford (VT) – the effective tax rates on median valued homes are at least 2 times the average. In contrast, nine municipalities feature effective tax rates of less than half of the average, with the lowest rates in Kauai (HI), Pocahontas (AR), Monroeville (AL), Natchitoches (LA), and Elkins (WV).

Comparing Tables 2a and 2g shows that effective tax rates on median valued homesteads are around 5 percent lower in rural municipalities than in large cities on average. There are two major reasons why rates are lower in rural communities: lower nominal tax rates and homestead exemptions that apply to a fixed amount of value across the state and therefore exempt higher proportions of homestead value from taxation in rural areas, where home values are generally much lower than in large cities.

In 31 states, the effective tax rate on the median valued home is higher in the largest city[18] than in the rural municipality. Arkansas has the biggest difference; the 1.122% rate in Little Rock is 3.4 times the 0.326% rate in Pocahontas. In four other states the tax rate in the largest city is essentially two or more times higher than in the rural community: Delaware, Florida, Louisiana, and Oregon (listed alphabetically).

On the other hand, in 19 states the effective tax rate on median valued homes is higher in the rural municipality than in the largest city in the state. The biggest difference is in Massachusetts, where the effective tax rate in Adams is 4.3 times higher than the rate in Boston (2.096% vs. 0.486%), largely because of Boston's unique (within Massachusetts) homestead exemption. Other states where the tax rate in the rural community is at least 1.5 times higher than the largest city are Georgia, Kansas, New York, Pennsylvania, and South Carolina (listed alphabetically).

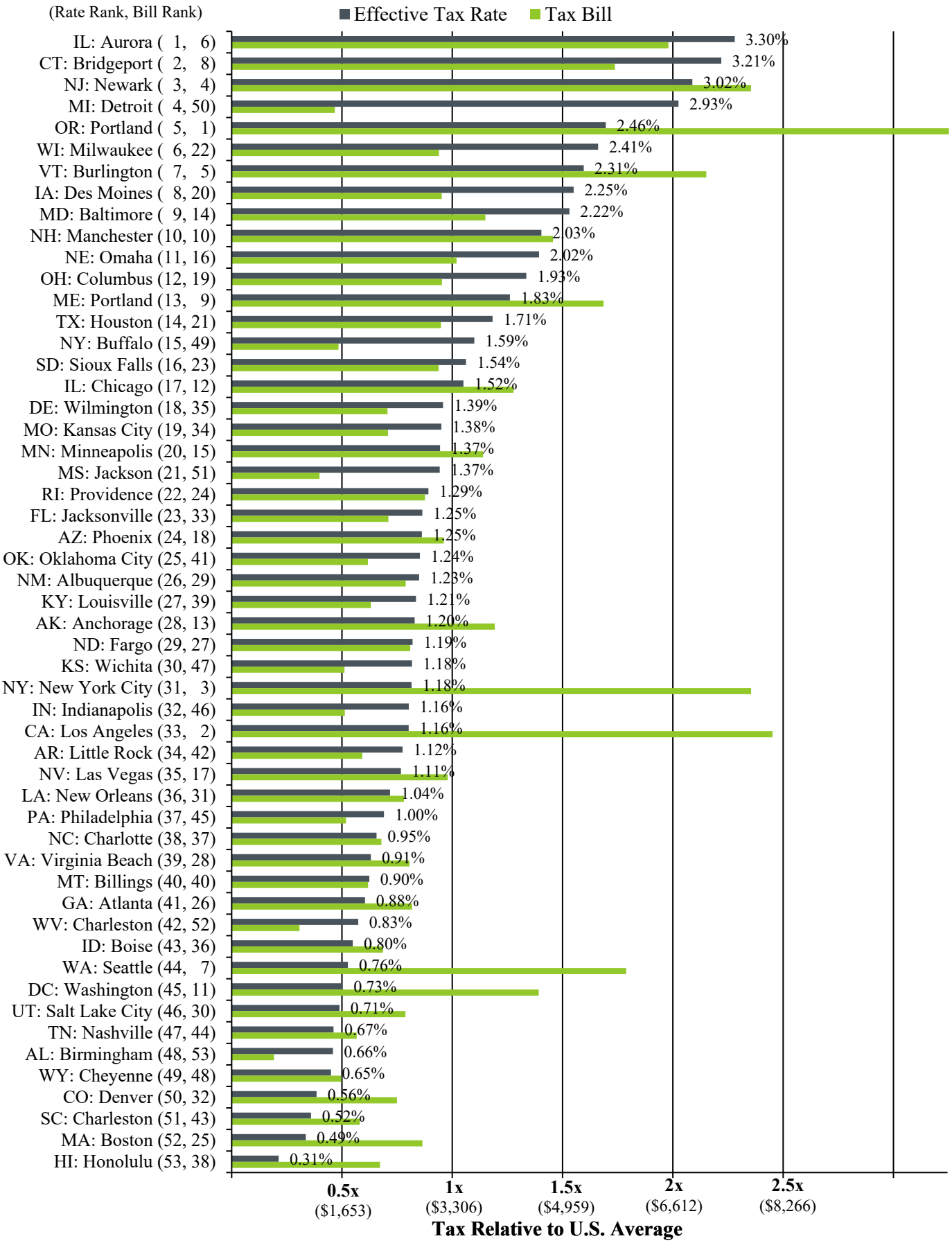
Some readers may want to use findings on effective tax rates from one specific table to reach conclusions on property taxes throughout an entire state. The small differences in tax rates across cities in California and Texas (Appendix Tables 2d-2f) show that the largest city in each state can serve as a proxy for property tax rates throughout an entire state. However, the large differences between the two largest cities in Tennessee and Arizona show that caution is needed when extrapolating findings for a single city to an entire state.

Readers wishing to determine whether taxes in a state are high, low, or somewhere in between are best served by comparing the rankings for urban and rural municipalities. For example, in six states (Illinois[19], Michigan, New Hampshire, New Jersey, and Vermont) the effective tax rate on

[18] Excluding Washington (DC), which has no rural analogue, and Chicago (IL) and New York (NY), which have property tax systems that differ substantially from those in the remainder of the state. In Illinois and New York, the differentials are calculated between the rural municipality and the state's second-largest city.
[19] Aurora only.

the median valued home is among the ten highest in both a rural and an urban setting – suggesting that these states are most likely to have the highest homestead property taxes. Alabama, Colorado, Hawaii, Idaho, Utah, and West Virginia are the six states where effective tax rates on median valued homes are among the ten lowest in both urban and rural settings – suggesting that these states are most likely to have the lowest homestead property taxes.

Figure 2: Property Taxes on Median Valued Home for Largest City in Each State (2019)



Commercial Property Taxes

Figure 3 shows effective property tax rates for commercial properties worth $1 million dollars for the largest city in each state. This analysis looks specifically at taxes on office buildings and other commercial properties without inventory on site. Tax rates for other types of commercial property will often be similar, but will vary in cities where personal property is taxed differently than real property. The analysis assumes each property has an additional $200,000 worth of fixtures, which includes items such as office furniture, equipment, display racks, and tools. Different types of commercial property will have different proportions of real and personal property. Therefore, effective tax rates will change between different types of commercial property in cities where personal property is taxed differently from real property.[20]

The average effective tax rate on commercial properties for the 53 cities in Figure 3 is 1.921 percent. A property worth $1 million with $200,000 in fixtures would thus owe $23,052 in property taxes (1.921% x $1.2m).

Tax rates vary widely across the 53 cities. The top four cities of Detroit, Providence (RI), Chicago, and Bridgeport (CT) all have effective tax rates that are at least two-thirds higher than the average for these cities. Des Moines (IA) and Aurora (IL) also have an effective tax rate over 3 percent. On the other hand, Cheyenne (WY), Seattle, and Charlotte (NC) have tax rates that are less than half of the average. Virginia Beach also comes in with an effective tax rate under 1 percent.

A few of the cities had significant changes in their effective tax rates from 2018 to 2019. After having the largest increase last year, Wilmington (DE) showed a dramatic decline of 34%, moving from 1.43% down to 1.06%[21]. In a year of steep declines, three other cities had effective tax rate reductions between 10% and 15% (Seattle; Nashville; and Columbus, OH), and an additional nine cities had reductions between 5% and 10%. These 13 cities drove the average rate for all 53 cities down from 1.95% to 1.92% in 2019.

New York City had the largest increase in effective tax rates on commercial properties from 2018 to 2019, with a 13.5% increase driving their ranking up from 47th to 38th. But more notable ranking changes were nearer to the top with Indianapolis moving from 13th to 7th as the city's effective tax rate rose from 2.58% to 2.91%. Similarly, after dropping four spots down to 12th last year, Minneapolis bounced back up to 10th with an increase from 2.61% to 2.77%. Baltimore

[20] For an analysis that looks at how effective tax rates vary between different types of commercial property, see "The Effects of State Personal Property Taxation on Effective Tax Rates for Commercial Property" by Aaron Twait, published by the Lincoln Institute of Land Policy (April 2018). The paper finds that average effective tax rates for payable 2016 exceeded 1.9% for hospitals, restaurants, and office space while wholesale trade facilities encountered rates roughly half as large. The paper also finds the current study assumptions realistically model the property taxes payable on the most common type of commercial property – office property.

[21] Wilmington's large increase in 2018 was attributed to "improved assessment quality," which we noted might mean that improved assessment practices were better capturing changes in local commercial real estate markets. However, the large decline in 2019 puts Wilmington back to 2017 levels and raises further questions. Delaware uses a "base year" system for assessing property where values for all property are pegged to a base year, with assessments factored back to that year based on a variety of formulae. The base year varies by county – for Wilmington (New Castle County) that base year is 1983.

went from 10th to 8th (2.72% to 2.80%) and Burlington (VT) went from 16th to 14th (2.42% to 2.54%).

Appendix Table 3a shows how effective tax rates on commercial properties vary based on their value, showing tax rates for properties worth $100,000, $1 million, and $25 million (all have fixtures worth 20% of the real property value). Effective tax rates for commercial properties generally do not vary based on property values, unlike homestead properties, where exemptions or other tax relief programs often create significantly lower rates on lower valued properties.

Only 11 of the 53 cities have effective tax rates that vary based on their value. Value-driven differences in effective tax rates make the biggest difference in rankings in Philadelphia. Philadelphia has among the lowest tax rates for commercial properties worth $100,000 (1.143%, 42nd highest), but is above average for commercial properties worth $25 million (2.125%, 22nd highest). The city offers property owners a credit against the first $2,000 of Business Use and Occupancy Tax (effectively, a property tax imposed only on business properties) assessed against individual properties, and this credit creates this large differential. The credit reduces the tax on a $100,000-valued property by 46%, but by only 0.3% for a property worth $25 million.

Other cities where the rankings vary significantly (by at least ten places between the $100,000-valued and $25 million-valued parcels) because of beneficial tax treatment provided to lower-valued properties through credits, exemptions, or preferential assessment practices include:

- Minneapolis (27th highest for $100k, 7th highest for $25m)
- Washington, DC (38th highest for $100k, 26th highest for $25m)
- Des Moines (15th highest for $100k, 5th highest for $25m)
- Phoenix (20th highest for $100k, 13th highest for $25m)

Appendix Table 3b shows effective tax rates on commercial properties for a different set of cities. Whereas Table 3a has the largest city for each state, Table 3b shows the 50 largest cities in the country regardless of their state. There is considerable overlap between the two groups of cities, but some significant differences as well. In Table 3b, California has eight cities, Texas has seven cities, Arizona has three cities, and six states (CO, FL, NC, OK, and TN) have two cities each. There are 21 states without any cities in the top 50 shown in Table 3b. Appendix Table 3b also shows effective tax rates on commercial properties worth $100,000, $1 million, and $25 million (with fixtures worth 20% of the real property value).

The average effective tax rates for commercial properties are slightly lower for the 50 largest cities shown in Table 3b than the cities shown in Table 3a at roughly 1 to 1.5 percent lower for the three property values analyzed.

In some states, tax rates do not vary too much across the largest cities. For example, consider tax rates for commercial properties worth $1 million in the two largest states:

- For California's eight cities, the highest tax rate is in Oakland (33rd highest) and the lowest is in Sacramento (44th). California accounts for 7 of the 8 cities ranked from 37th to 44th.
- For Texas's seven cities, the highest tax rate is in El Paso (4th highest) and the lowest is in Austin (20th). Texas accounts for four of the six cities ranked from 11th to 16th.

Interestingly, some states with just two or three cities in the study show a greater variance in rates:

- In Arizona: Phoenix has the 18th highest tax rate, while neighboring Mesa has the 29th highest.
- In Tennessee: Memphis has the 12th highest tax rate, while Nashville has the 46th highest.
- In Colorado: Denver has the 17th highest tax rate, while Colorado Springs has the 22nd highest.

Appendix Table 3c provides additional information about how effective property tax rates vary across states by looking at a rural community in each state. The rural analysis includes county seats with populations between 2,500 and 10,000 that are located in nonmetropolitan counties.

On average, commercial tax rates are more than 8 percent lower for the 50 rural communities than the largest cities in each state. For a property worth $1 million, the average effective tax rate is 1.76% for the rural cities versus 1.92% for the urban cities shown in Appendix Table 3a. For 31 states, the effective tax rate on a $1-million valued commercial property is lower in the selected rural municipality than in the state's largest city.[22]

The state with the biggest difference in the tax rate between the largest city and the rural municipality is Delaware, where the tax rate on a commercial property worth $1 million in Georgetown is less than half the rate in Wilmington (0.48% vs. 1.06%). Other states where the tax rate in the rural community is significantly lower than the largest city include Oregon (53% lower), West Virginia (44% lower), Hawaii (44% lower), Rhode Island (41% lower), and Arkansas (41% lower).

On the other hand, in 20 states the tax rate is higher in the rural municipality than in the largest city in the state. The biggest difference is in Kansas, where the tax rate on a commercial property worth $1 million in Iola is twice the rate in Wichita (5.10% vs. 2.56%). Other states where the tax rate in the rural municipality is significantly higher than the largest city include South Carolina (56% higher); Washington (49% higher); South Dakota (43% higher); New York (37% higher), and Florida (32% higher).

Variation in tax rates across the 50 rural cities is very similar to variation across the largest cities in each state.

Some readers may want to use findings on effective tax rates from one specific table to reach conclusions on property taxes throughout an entire state. The small differences in tax rates across cities in California and Texas (Appendix Table 3b) show that the largest city in each state can serve as a proxy for property tax rates throughout an entire state. However, the large differences between the largest cities in Tennessee, Arizona, and Colorado show that caution is needed when extrapolating findings for a single city to an entire state.

[22] Excluding Washington (DC), which has no rural analogue, and Chicago (IL) and New York (NY), which have property tax systems that differ substantially from those in the remainder of the state. In Illinois and New York, the differentials are calculated between the rural municipality and the state's second-largest city.

Readers wishing to determine whether local property taxes in a state are high, low, or somewhere in between are best served by comparing the rankings for urban and rural municipalities. For example, five states (Indiana, Iowa, Kansas, Michigan, and Minnesota) have at least one top ten ranking in both an urban and rural setting – suggesting that these states are most likely to have the highest commercial property taxes. Conversely, five states (California, Delaware, Hawaii, Virginia, and Wyoming) have multiple bottom ten rankings in both urban and rural settings.

Comparing Property Taxes Calculated with Fixed Property Values

This report uses fixed property values (i.e. $1 million in all cities) to control for the impact local real estate conditions have on relative tax burdens. However, differences in property values – driven largely by differences in land values – mean identically valued properties often look very different across the country. For example, a $1 million property in Detroit is very different from a $1 million parcel in New York City. For two properties with different values but identical characteristics (i.e. similar square footage, amenities, etc.) in two cities with the same effective tax rates, the property tax bill will be higher in dollar terms in the city with high property values than the city with low values.

For taxes on commercial, industrial, and apartment properties, the report solely uses fixed property values. As a result, if the goal is to compare taxes due on properties with similar characteristics (i.e. 5,000 square feet in the central business district), the net tax *bills* (i.e. $3,000) will be underestimated in cities with high property values and overestimated in cities with low property values. In contrast, data on effective tax *rates* (i.e. 1.5 percent) will be largely unaffected by the property value chosen for the analysis, because effective tax rates usually do not increase with property values for business properties. For this reason, it is better to use data on effective tax *rates* when making cross-city comparisons for taxes on commercial, industrial, and apartment properties.

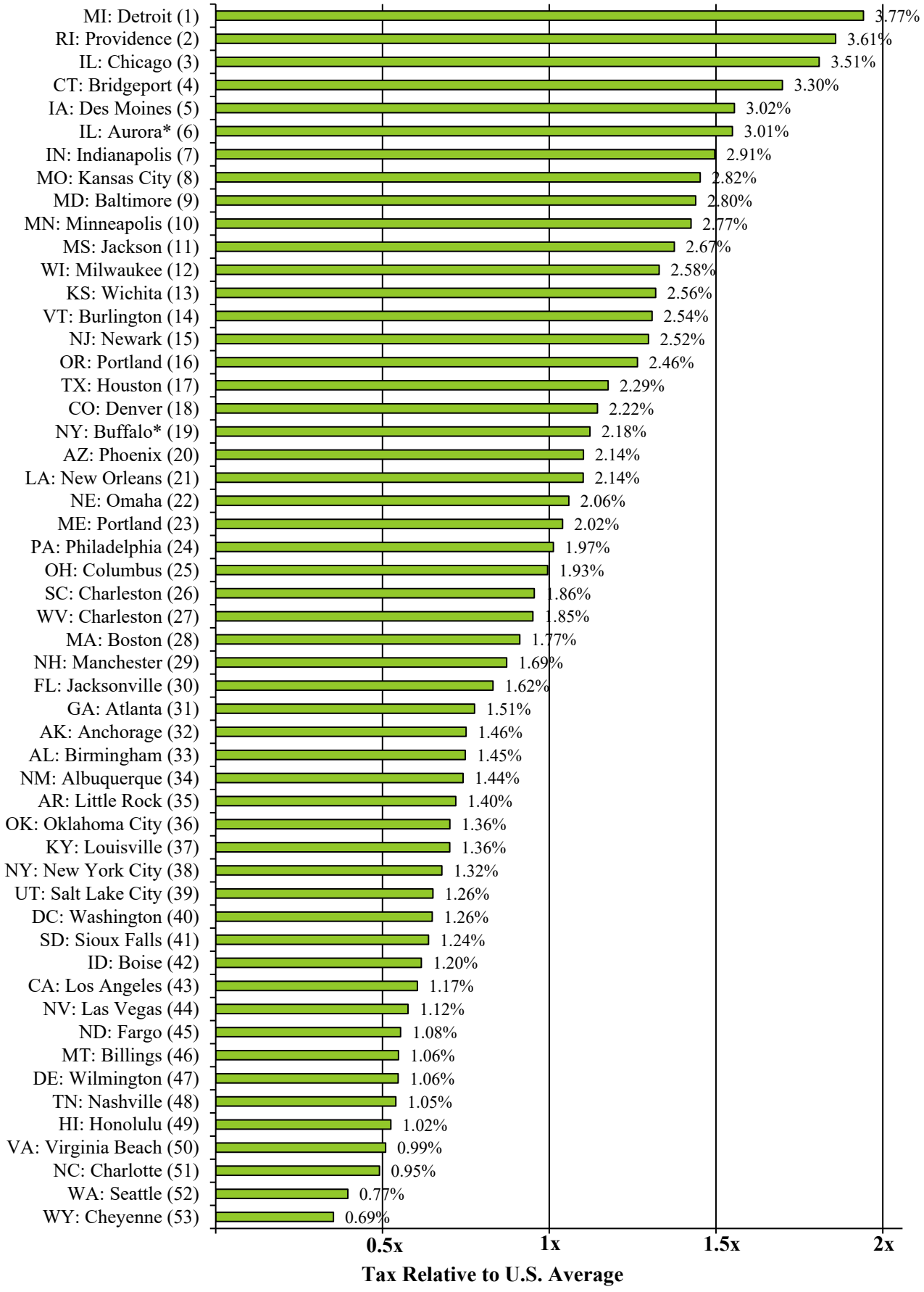
In addition, fixed property values are not problematic from the perspective of a real estate investor looking to invest a certain amount of money – whether it's a $1 million condo in New York or a $1 million apartment complex in Detroit.

Note that the use of fixed property values also makes year-to-year comparisons of effective tax rates or tax bills challenging because property values change over time. A $1 million property in 1995 looks very different than a $1 million property in 2019 in most cities.

For homestead property taxes, the report analyzes property taxes on median valued homes, which adjusts for differences in property values, and thus allows for comparisons of property taxes on a "typical" home across cities and over time.

Figure 3: Commercial Property Taxes for Largest City in Each State (2019)

Effective Tax Rate for $1-Million Valued Property (plus $200k in Fixtures)



Industrial Property Taxes

Figure 4 shows effective property tax rates for industrial properties with $1 million worth of real property for the largest city in each state. This analysis looks specifically at taxes on manufacturing properties. We assume that each property has an additional $1 million of personal property, consisting of $500,000 of machinery and equipment, $400,000 of inventories, and $100,000 of fixtures. Differences in personal property taxation have significant impacts on effective tax rates for industrial properties, as described in the box on the next page. Readers should use some caution when interpreting these results; see the box on comparing property taxes calculated with fixed property values for guidance (page 23).

The average effective tax rate on industrial properties at this value for the 53 cities in Figure 4 is 1.395 percent. A parcel with a real property value of $1 million that has an additional $1 million in personal property would thus owe $27,900 in property taxes (1.395% x $2m total parcel value). For shorthand, this section refers to parcels based on their real property values.

Tax rates vary widely across the 53 cities. The top five cities of Jackson (MS), Charleston (SC), Indianapolis, Houston, and Kansas City all have effective tax rates that are at least 60% higher than the average for these cities. The bottom seven cities of Virginia Beach, New York City, Honolulu, Seattle, Wilmington, Fargo, and Cheyenne all have tax rates that are less than half of the average.

Some cities had significant changes in their effective tax rates from 2018 to 2019. The city with the largest decline in its industrial property tax rate was Wilmington (DE), with a 25.5% decrease. Already low in the rankings at 45th highest, Wilmington dropped to 49th. They were joined by three other cities with a more than 10% decrease (Detroit, Seattle and Charlotte NC). Most notably, Detroit's 18.4% decrease saw them drop from 2nd to the 6th highest rate. An additional 11 cities saw declines of between 5% and 10% in effective tax rates. In that group, Providence (RI) dropped from 9th to 11th; Aurora (IL) from 11th to 13th; and Wichita (KS) from 23rd to 28th.

After rising several places last year, Indianapolis rose four more places from 7th to 3rd highest with a group-high 13% increase in effective tax rate – rising from 2.10% to 2.37%. Others with increases above 5% were Fargo (ND), Charleston, (WV), Minneapolis and Louisville, with Charleston exhibiting the biggest ranking change, moving from 16th to 12th. Oklahoma City (26th to 22nd) and Louisville (48th to 44th) also moved up four places. Portland moved up from 12th to 9th even though the rate increase was only 0.001%.

Appendix Table 4a shows how effective tax rates on industrial properties vary based on their value, showing tax rates for properties worth $100,000, $1 million, and $25 million (all have personal property worth 100% of the real property value). As the table notes, effective tax rates for industrial properties generally do not vary based on property values, unlike homestead properties, where exemptions or other tax relief programs often create significantly lower rates on lower valued properties.

Taxes on Personal Property

Property taxes are often imposed differently on real property (the value of land and buildings) versus personal property (the value of machinery and equipment, inventories, and fixtures). For example, Appendix Table 4g shows how three categories of personal property are taxed in the largest cities in each state:

- **Machinery and equipment**, which includes things like assembly robots and milling machines, is fully exempt from taxation in 21 cities. In another 10 cities, the property tax system provides preferential treatment to machinery and equipment over real property. In contrast, real property is treated preferentially relative to personal property in at least once instance in five cities.
- **Manufacturers' inventories**, which include raw materials, supplies, unfinished products, and similar items, are fully exempt from taxation in 43 cities. In another 4 cities, inventories receive preferential treatment relative to real property, while the reverse is true in 2 cities.
- **Fixtures**, which include office furniture, equipment, display racks, and tools, are fully exempt from taxation in 15 cities. In another 8 cities, the property tax system provides preferential treatment to fixtures relative to real property, while fixtures are taxed more heavily than real property in at least one instance in 10 cities.

Because personal property is often taxed at a lower rate than real property, the effective tax rate on business properties usually depends on the share of a parcel's total value (i.e. real property + personal property) that comes from personal property. That means estimates of effective tax rates depend on assumptions about the split of total parcel value between real and personal property.

However, the split between real and personal property varies by industry and location. Our modeling indicates that personal property's share of total parcel value ranges from a low of 29.8% for apparel manufacturers to a high of 69.1% for motor vehicle manufacturers. After applying state-specific weights for each manufacturing type, the median state has 54% of total industrial parcel value in personal property with the minimum amount being 50% (Massachusetts) and the maximum being 59% (Michigan).[23]

Because estimates of effective tax rates are sensitive to assumptions about personal property's share of total parcel value, we present two sets of estimates for industrial properties: personal property accounts for 50% of total parcel value in one set of estimates and 60% in the other set. The first set will be a better reflection of effective tax rates for industries and states where personal property accounts for a smaller share of total parcel value (like apparel manufacturers and Massachusetts), while the second set will be better when personal property accounts for a larger share of total parcel value (like motor vehicle manufacturers and Michigan).

Only 12 of the 53 cities have effective tax rates that vary based on their value. Value-driven differences in effective tax rates make the biggest difference in rankings in Washington, D.C. The District of Columbia has one of the lowest tax rates for industrial properties worth $100,000

[23] To determine personal property's share of total parcel value, we replicate the methodology used by the Minnesota Department of Revenue's Research Division in their biennial *Tax Incidence Study*. These studies are available on their website: http://www.revenue.state.mn.us/research_stats/Pages/Tax_Incidence_Studies.aspx.

(0.757%, 42nd highest), but is substantially above average for industrial properties worth $25 million (1.835%, 14th highest). The city exempts the first $225,000 of business personal property, which is effectively a complete personal property exemption for the $100,000-valued parcel but only exempts 0.9% of the personal property associated with the $25 million-valued parcel. The exemption reduces the total tax on a $100,000-valued property by nearly 60% but by less than 1% for a property worth $25 million.

Other cities where rankings vary notably because of beneficial tax treatment provided to lower-valued properties through credits, exemptions, or preferential assessment practices include:

- Phoenix (27th highest for $100k, 8th highest for $25m)
- Minneapolis (34th highest for $100k, 18th highest for $25m)
- Billings (MT) (51st highest for $100k, 32nd highest for $25m)
- Des Moines (IA) (25th highest for $100k, 11th highest for $25m)
- Philadelphia (44th highest for $100k, 31st highest for $25m)

Appendix Table 4c shows effective tax rates on industrial properties for a different set of cities. Whereas Table 4a has the largest city for each state, Table 4c shows the 50 largest cities in the country regardless of their state. There is considerable overlap between the two groups of cities, but some significant differences as well. In Table 4c, California has eight cities, Texas has seven cities, Arizona has three cities, and five states (CO, FL, NC, OK, and TN) have two cities each. There are 21 states without any cities in the top 50 shown in Table 4c. Appendix Table 4c also shows effective tax rates on industrial properties worth $100,000, $1 million, and $25 million (again with personal property equal to 100% of the real property value).

The average effective tax rate for industrial properties is 9 to 9.5 percent higher for the 50 largest cities shown in Table 4c than the cities shown in Table 4a, regardless of which of the three property values is analyzed.

In some states, tax rates do not vary too much across the largest cities. For example, consider tax rates for industrial properties worth $1 million in the two largest states:

- For California's eight cities, the highest tax rate is in Oakland (34th highest) and the lowest is in Sacramento (43rd). California accounts for 8 of the 10 cities ranked between 34th and 43rd.
- For Texas's seven cities, the highest tax rate is in San Antonio (highest among the 50) and the lowest is in Austin (12th). Texas accounts for all five top cities and six of the top eight.

However, in other cases there can be considerable differences in effective tax rates between cities within the same state. Consider these noticeable differences in ranking (with the associated effective tax rates) for the $1 million-valued industrial properties in states with two or three cities among the nation's largest fifty:

- In Tennessee: Memphis has the 6th highest tax rate (2.383%), while Nashville has the 37th highest (1.008%).
- In Florida: Miami has the 21st highest tax rate (1.555%), while Jacksonville has the 30th highest (1.312%).

- In Arizona: Phoenix has the 15th highest tax rate (1.899%), while neighboring Mesa has the 29th highest (1.387%).

Appendix Table 4e provides additional information about how effective property tax rates vary across states by looking at a rural community in each state. The rural analysis includes county seats with populations between 2,500 and 10,000 that are located in nonmetropolitan counties.

On average, industrial tax rates are about 7 to 8 percent lower for the 50 rural communities than the largest cities in each state. For a property worth $1 million, the average effective tax rate is 1.297% for the rural cities shown in Appendix Table 4e versus 1.395% for the urban cities shown in Appendix Table 4a. For 28 states, the effective tax rate on a $1-million valued industrial property is lower in the selected rural municipality than in the state's largest city.[24]

The state with the biggest difference in the tax rate between the largest city and the rural municipality is Delaware, where the tax rate on an industrial property worth $1 million in Georgetown is 55% lower than the rate in Wilmington (0.29% vs. 0.64%). Other states where the tax rate in the rural municipality is significantly lower than the largest city include Oregon (53% lower), West Virginia (43% lower), Alaska (42% lower), and Arkansas (41% lower).

On the other hand, in 22 states the tax rate is higher in the rural municipality than in the largest city in the state. The biggest difference is in Kansas, where the tax rate on an industrial property worth $1 million in Iola is more than twice the rate in Wichita (2.81% vs. 1.39%). Other states where the tax rate in the rural municipality is significantly higher than the largest city include South Carolina (58% higher), Virginia (56% higher), Washington (50% higher), and South Dakota (43% higher).

Variation in industrial tax rates across the 50 rural cities is very similar to variation across the largest cities in each state.

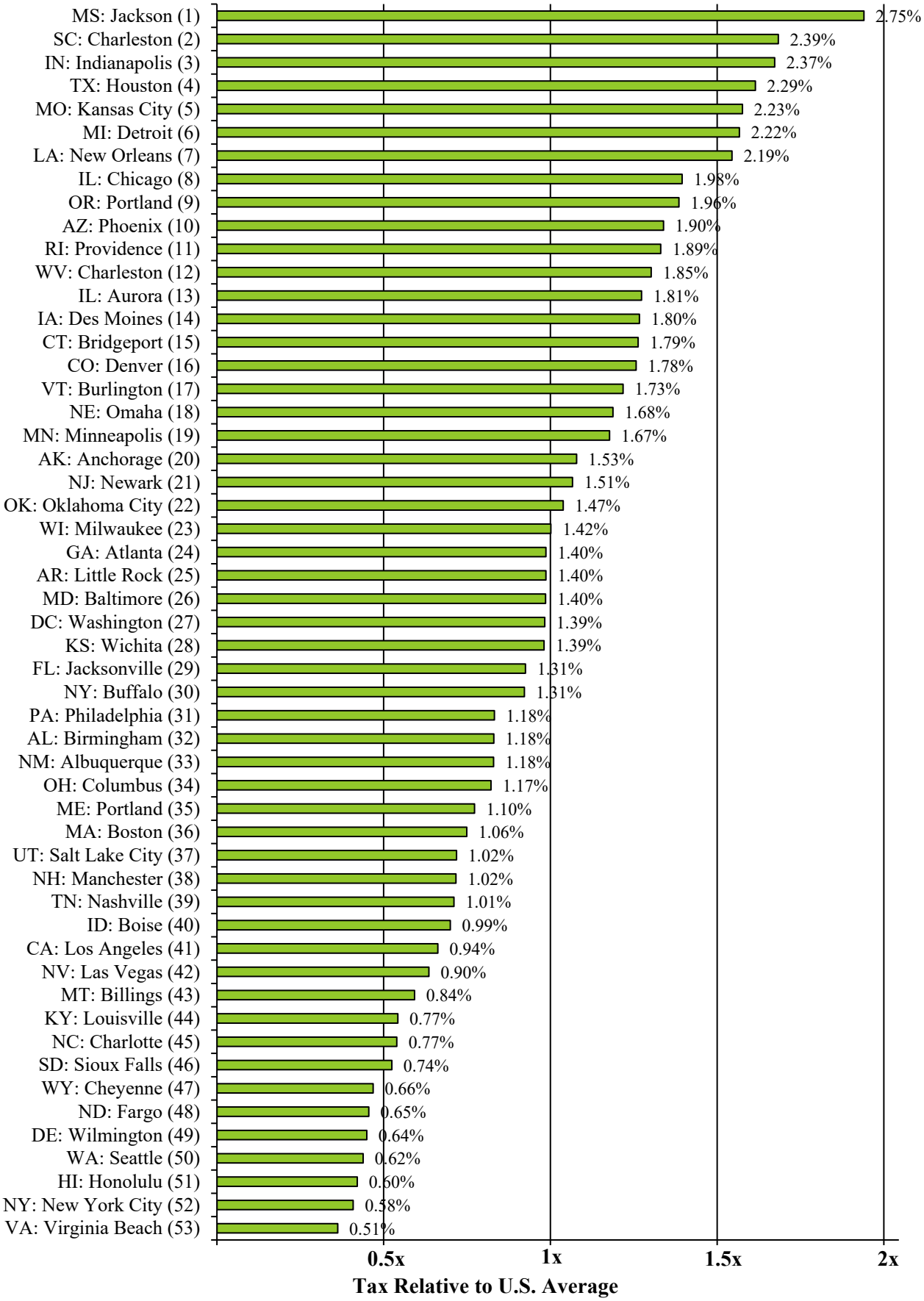
Some readers may want to use findings on effective tax rates from one specific table to reach conclusions on property taxes throughout an entire state. The small differences in tax rates across cities in California and Texas (Appendix Table 4c) show that the largest city in each state can serve as a proxy for property tax rates throughout an entire state. However, the large differences between the two or three largest cities in Tennessee, Arizona, and Colorado show that caution is needed when extrapolating findings for a single city to an entire state.

Readers wishing to determine whether taxes in a state are high, low, or somewhere in between are best served by comparing the rankings for urban and rural municipalities. For example, six states (Indiana, Michigan, Mississippi, Missouri, South Carolina, and Texas) have multiple top ten rankings in both an urban and rural setting under both sets of assumptions – suggesting that these states are most likely to have the highest industrial property taxes. Delaware, Hawaii, Kentucky, North Dakota, Virginia, and Wyoming are the six states that most often have bottom ten rankings in both urban and rural settings.

[24] Excluding Washington (DC), which has no rural analogue, and Chicago (IL) and New York (NY), which have property tax systems that differ substantially from those in the remainder of the state. In Illinois and New York, the differentials are calculated between the rural municipality and the state's second-largest city.

Figure 4: Industrial Property Taxes for Largest City in Each State (2019)

Effective Tax Rate for $1-Million Valued Property (plus $1 Million in Personal Property)



Apartment Property Taxes

Figure 5 shows effective property tax rates for apartment buildings worth $600,000 for the largest city in each state. The analysis assumes each property has an additional $30,000 worth of fixtures, which includes items such as stoves, refrigerators, garbage disposals, air conditioners, drapes, and lawn care equipment. Readers should use some caution when interpreting these results; see the box on comparing property taxes calculated with fixed property values for guidance (page 23).

The average effective tax rate on apartment properties for the 53 cities in Figure 5 is 1.647 percent. A property worth $600,000 with $30,000 in personal property would thus owe $10,375 in property taxes (1.647% x $630,000 total parcel value).

Tax rates vary widely across the 53 cities. The top two cities of Detroit and Aurora (IL) have effective tax rates that are more than 2 times higher than the average for these cities. The next three cities (Newark, NJ; Bridgeport, CT; and Des Moines, IA) have effective tax rates that are slightly more than two-thirds higher than the average for these cities. Conversely, there are six cities where tax rates on apartments are less than half the average, with the lowest rates in Honolulu, Cheyenne, Denver, Salt Lake City, Washington (DC), and Seattle.

Some cities had significant changes in their effective tax rates from 2018 to 2019. Six cities saw effective tax rates decline from 10% to 15%, led by Nashville and followed by Seattle, Bridgeport (CT), Des Moines (IA), Kansas City and Columbus (OH). Despite 14% and 13% declines, Bridgeport and Des Moines were each only able to drop one place: from 3rd to 4th and from 4th to 5th. Kansas City, on the other hand, was able to drop from 25th to 33rd, and Columbus (OH) dropped from 10th to 14th. Other notable declines in rank included: Nashville (38th to 43rd); Boise (32nd to 37th); Chicago (23rd to 27th); Portland, ME (14th to 17th); and Manchester, NH (15th to 18th).

The effective tax rate on apartments increased by at least 11 percent between 2018 and 2019 in four cities: Providence (RI), Charleston (WV), Indianapolis, and Fargo (ND). Providence moved up from 16th to 12th with a rise in effective tax rate from 1.98% to 2.32%. Indianapolis rose from 18th to 15th, and Charleston (WV) from 21st to 19th. Other cities with notable increases in rank belonged to Oklahoma City (37th to 31st); New Orleans (28th to 23rd); and Birmingham (29th to 25th).

Appendix Table 5b shows effective tax rates on apartment properties for a different set of cities. Whereas Table 5a has the largest city for each state, Table 5b shows the 50 largest cities in the country regardless of their state. There is considerable overlap between the two groups of cities, but some significant differences as well. In Table 5b, California has eight cities, Texas has seven cities, Arizona has three cities, and five states (CO, FL, NC, OK, and TN) have two cities each. There are 21 states without any cities in the top 50 shown in Table 5b.

The average effective tax rates for apartment properties is 3.6 percent lower for the 50 largest cities shown in Table 5b than the cities shown in Table 5a. In some states, tax rates do not vary too much across the largest cities. For example, consider tax rates for apartment properties worth $600,000 in the two largest states:

- For California's eight cities, the highest tax rate is in Oakland (23rd highest) and the lowest is in Sacramento (39th highest). There is a clustering effect as California accounts for 7 of the 10 cities ranked from 30th to 39th.

- For Texas's seven cities, the highest tax rate is in Fort Worth (2nd highest) and the lowest is in Austin (14th). Texas accounts for four of the top five cities and five of the top 8.

However, in some states there are considerable differences in effective tax rates between different cities. Consider these notable differences in rankings and effective tax rates between the cities in these states:

- In Tennessee: Memphis has the 7th highest tax rate (2.556%), while Nashville has the 41st highest (1.064%).
- In Oklahoma: Tulsa has the 20th highest tax rate (1.501%), while Oklahoma City has the 25th highest (1.325%).
- In Arizona: Phoenix and Tucson have the 24th and 32nd highest rates (1.329% and 1.242%, respectively), while Mesa has the 44th highest (0.926%).

Appendix Table 5c provides additional information about how effective property tax rates vary across states by looking at a rural community in each state. The rural analysis includes county seats with populations between 2,500 and 10,000 that are located in nonmetropolitan counties.

On average, apartment tax rates are about 3 percent lower for the 50 rural communities than the largest cities in each state. For the $600,000-valued apartment property, the average effective tax rate is 1.598% for the rural cities versus 1.647% for the large cities shown in Appendix Table 5a. For 26 states, the effective tax rate on a $600,000-valued apartment property is lower in the selected rural municipality than in the state's largest city.[25]

The state where the tax rate in the largest city is the lowest vis-à-vis the rate for the rural municipality is Delaware, where the tax rate on a $600,000-valued apartment property in Georgetown is 58% lower than the rate in Wilmington (0.55% vs. 1.32%). Other states where the tax rate in the rural municipality is significantly lower than the largest city include Oregon (53% lower), Alabama (44% lower), and Arkansas (41% lower).

On the other hand, in 24 states the tax rate is higher in the rural municipality than in the largest city in the state. The biggest difference is in Massachusetts, where the tax rate on an apartment property worth $600,000 in Adams is nearly 120 percent higher than the rate in Boston (2.00% vs. 0.91%). Other states where the tax rate in the rural municipality is significantly higher than in the largest city include Kansas (83% higher), Hawaii (75% higher), Pennsylvania (72% higher), and South Carolina (56% higher).

Variation in apartment tax rates across the 50 rural municipalities is very similar to variation across the largest cities in each state.

Some readers may want to use findings on effective tax rates from one specific table to reach conclusions on property taxes throughout an entire state. The small differences in tax rates across cities in California and Texas (Appendix Table 5b) show that the largest city in each state can serve as a proxy for property tax rates throughout an entire state. However, the larger differences

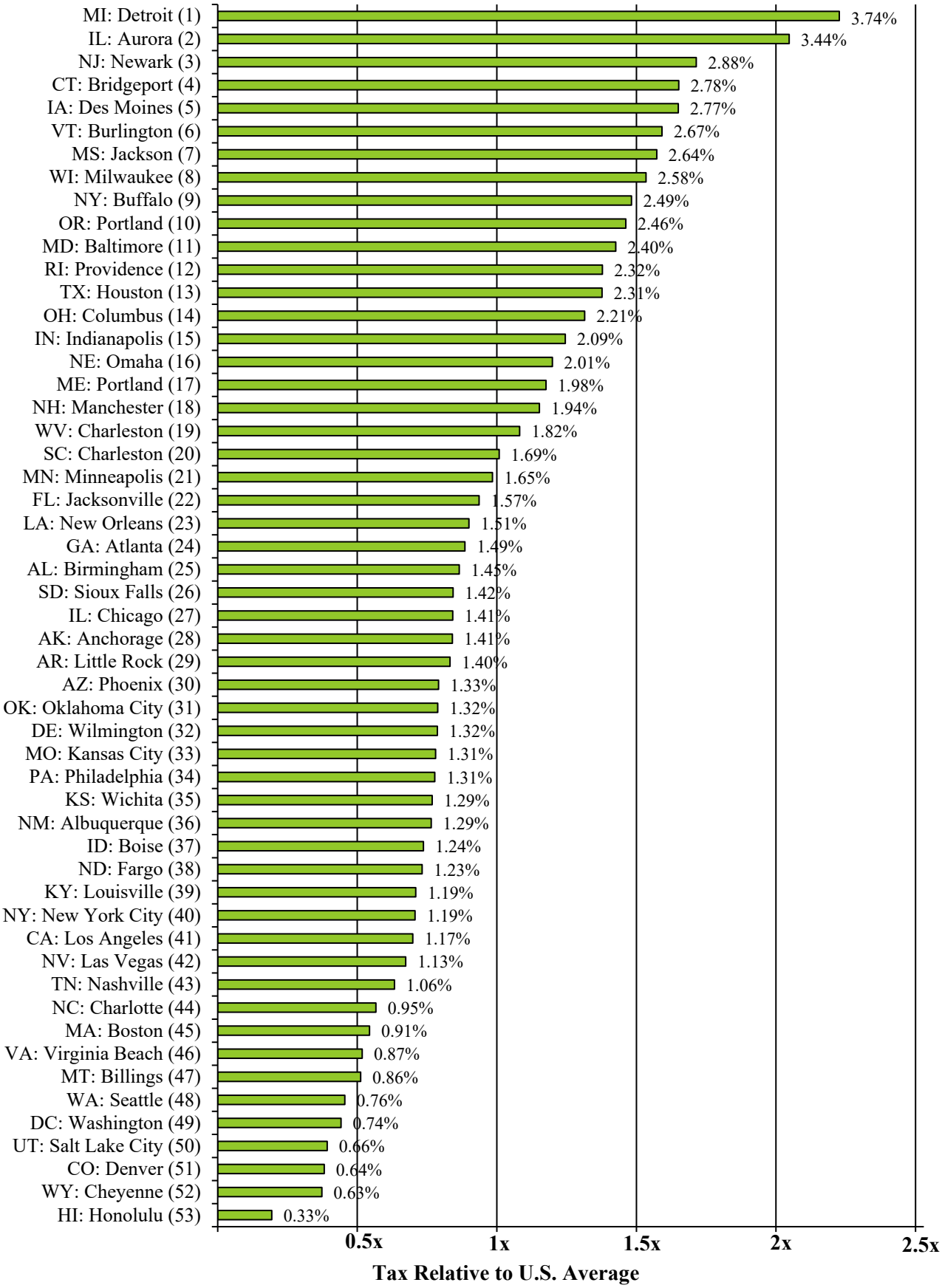
[25] Excluding Washington (DC), which has no rural analogue. In Illinois and New York, the differentials are calculated between the rural municipality and the state's second-largest city.

between the largest cities in Tennessee, Oklahoma, and Arizona show that caution is needed when extrapolating findings for a single city to an entire state.

Readers wishing to determine whether taxes in a state are high, low, or somewhere in between are best served by comparing the rankings for urban and rural municipalities. For example, four states (Michigan, New Jersey, New York, and Vermont) have top ten rankings in both an urban and rural setting – suggesting that these states are most likely to have the highest apartment property taxes. Colorado, Hawaii, Utah, Virginia, and Wyoming are the five states that have bottom ten rankings in both urban and rural settings.

Figure 5: Apartment Property Taxes for Largest City in Each State (2019)

Effective Tax Rate for $600,000 Valued Property (plus $30,000 of Fixtures)



Classification and Preferential Treatment of Homestead Properties

Many cities have preferences built into their property tax systems that result in lower effective tax rates for certain classes of property, with these features usually designed to benefit homeowners. The "classification ratio" describes these preferences by comparing the effective tax rate for two types of property. For example, if a city has a 3.0% effective tax rate on commercial properties and a 1.5% effective tax rate on homestead properties, then the commercial-homestead classification ratio is 2.0 (3.0% divided by 1.5%).

In a property tax system that treats all properties similarly, the classification ratio would be 1.0, because the effective rates on all properties would be the same. Therefore, the classification ratio provides a summary measure of the degree to which one type of property subsidizes lower property taxes on another class of properties. There are four main features of property tax systems that lead to different effective tax rates for different classes of property: the assessment ratio, the nominal tax rate, exemptions and credits, and the sales ratio.[26]

First, states may have different assessment ratios for different classes of property, which is the percentage of market value used to determine taxable values. For example, a state may have a 100% assessment ratio for commercial property and a 70% assessment ratio for residential property, which means a $100,000 commercial property would be taxed on its full market value but a $100,000 residential property would be taxed as if it were worth $70,000.

Second, cities may have different nominal tax rates for different classes of property, which is the tax rate applied to the taxable value to determine the tax bill. The nominal tax rate is also known as the statutory tax rate or millage rate.

Third, states or cities may have exemptions or credits that are only available to certain types of properties. The most common are homestead exemptions, which reduce the amount of property value subject to taxation, but are usually restricted to owner-occupied homes and unavailable to businesses or renters. For example, a $50,000 homestead exemption would mean a $200,000 home would be taxed as if it were worth $150,000, assuming there is a 100% assessment ratio.[27]

Fourth, the sales ratio may vary across property classes. The sales ratio measures the accuracy of assessments by comparing assessments to actual sales. For example, if the sales ratio for homesteads is 95%, then a home worth $100,000 would be "on the books" as if it were worth $95,000. Unlike the three other causes of classification, differences in sales ratios across classes are not written into law and are normally unintentional. Nonetheless, differences in the quality of assessments across property classes can produce a *de facto* classification system.

[26] For details on classification in each state, see the Property Tax Classification table on the Lincoln Institute of Land Policy's *Significant Features of the Property Tax* website (https://www.lincolninst.edu/subcenters/significant-features-property-tax/Report_Property_Tax_Classification.aspx).

[27] For information on homestead exemptions in each state, see "How Do States Spell Relief: A National Study of Homestead Exemptions and Property Tax Credits" by Adam H. Langley in *Land Lines* (April 2015).

Commercial-Homestead Classification Ratio

Figure 6a shows the commercial-homestead classification ratio for the largest city in each state, by comparing the effective tax rate on a $1 million commercial property to the effective tax rate on a median-value homestead property.[28] Note that because homeowners' household goods are not taxable, we exclude commercial fixtures and instead compare only the effective rates on real property (land and buildings).

The average classification ratio for the 53 cities shown in Figure 6a is 1.713, which means that on average commercial properties experience an effective tax rate that is 71% higher than homesteads.

The commercial-homestead classification ratio varies widely across the 53 cities. The top five cities of Boston, Charleston (SC), Denver, Honolulu, and New York City all have classification ratios greater than 3.0. Over a quarter of all cities (16 of 53) have classification ratios above 2.0, meaning that commercial properties face an effective tax rate that is at least double that for homesteads.

There are four cities where the classification ratio is below one, meaning that their classification system favors commercial properties over homesteads: Wilmington (DE), Virginia Beach, Sioux Falls (SD), and Bridgeport (CT). The property tax systems in these cities are not structured to favor commercial properties, but the sales ratio results in a *de facto* classification system since commercial properties are under-assessed relative to homestead properties.

Appendix Table 6a provides additional information about the commercial-homestead classification ratio in each city. Of the 53 cities, 17 have a higher assessment ratio for commercial properties, 14 have a higher nominal tax rate on commercial properties, 29 have exemptions or credits that favor homesteads over commercial properties, and five offer homesteads parcel-specific assessment limits not available to commercial properties. Property tax systems often combine these features – in 21 of these cities homeowners benefit from at least two of these four features (in Albuquerque, Charleston (SC), Minneapolis, and New York City, homeowners benefit from three of the four). In 11 cities preferential treatment for homeowners is delivered through exemptions or credits alone, while in 8 cities preferences are delivered exclusively through differences in assessment ratios or nominal tax rates.

On average, tax disparities between commercial and homestead properties rose significantly in 2019: increasing from 1.666 in 2018 to 1.713 in 2019. The ratio was last this large in 2014 when it was also 1.71. The commercial-homestead classification ratio declined in 21 cities, with the largest drops in Wilmington, DE (-0.272); Chicago (-0.172); Wichita, KS (-0.153); and Columbus, OH (-0.121). From 2018 to 2019, new homestead exemptions had the biggest impact on short-term changes in classification ratios. Differences in sales ratios between commercial and homestead properties can be a significant factor for calculating changes in this ratio. Assessment practices can also be an underlying factor. From a rankings perspective, Wilmington fell 23 places, from 30th to 53rd highest, Sioux Falls (SD) fell 11 places from 40th to 51st, and Wichita dropped 5 places to move from the 8th to 13th highest ratio.

[28] See the methodology section for more detail on how these calculations are performed.

The classification ratio increased in 26 cities, with the largest increases in Providence, RI (0.538); New York City (0.373); Atlanta (0.333); Jacksonville, FL (0.261); Philadelphia (0.255); and Kansas City, MO (0.230). Two of the largest increases were driven by new homestead exemptions, as Providence (RI) moved up from 17th to 7th, and Atlanta rose from 25th to 21st highest. New York City's ranking moved up from 6th to 4th highest; Jacksonville rose from 13th to 9th; Philadelphia from 12th to 10th; and Kansas City from 18th to 15th.

Figure 6c shows the longer-term picture, with trends in the commercial-homestead classification ratio going back to 1998. The 1.713 figure for 2019 is a noticeable increase compared to 1.666 in 2018. Locations where residential and commercial properties have "statutory classification"[29] and are treated differently in state law increased more than the overall average, rising from 1.87 to 1.95.

Apartment-Homestead Classification Ratio

Figure 6b shows the apartment-homestead classification ratio for the largest city in each state, by comparing the effective tax rate on a $600,000 apartment building to the effective tax rate on a median-value homestead.[30] This classification ratio shows the degree of subsidy provided to homeowners at the expense of renters. The apartment-homestead classification ratio shows that apartments subsidize homestead property taxes at about half the rate that commercial properties do, with apartments facing an effective tax rate that is 34% higher than homesteads on average. In nearly all locations studied, the apartment-homestead classification ratio is smaller than or equal to the commercial-homestead classification ratio, with the exceptions of (in alphabetical order): Detroit, Houston, Las Vegas, and Wilmington (DE).

Charleston (SC) is an outlier in the apartment-homestead classification ratio, with an effective tax rate on apartments that is more than four times higher than the median valued home. There are six other cities with classification ratios above or near 2.0: New York (NY), Indianapolis, Jacksonville (FL), Birmingham, Charleston (WV), and Boston. On the other hand, there are six cities with a classification ratio below 1.0, with the lowest ratios in Bridgeport (CT), Virginia Beach, and Cheyenne (WY). The preference given to apartments in these cities is not the result of statutory provisions, but is simply the result of greater underassessment for apartments relative to homesteads.

Appendix Table 6b provides more details about the apartment-homestead classification ratio in each city. As with commercial properties, a large majority of cities have higher effective tax rates on apartments than homesteads. However, the preferences given to homesteads relative to apartments are caused more by homestead exemptions and credits than by differences in assessment ratios or nominal tax rates. In total, 35 of the 53 cities have statutory preferences for homesteads relative to apartments, but only 12 offer more than one preference (Charleston, SC and New York City are the only cities to offer three preferences). Six cities have preferential assessment ratios and/or nominal tax rates only, while 17 cities offer homestead exemptions or credits alone.

[29] To identify cities with statutory classification, we ignore the sales ratio. This group only includes cities where classification is written into law with the assessment ratio, nominal tax rate, or exemptions/credits.
[30] See the methodology section for more detail on how these calculations are performed.

On average, tax disparities between apartments and homesteads rose a half of a percent in 2019, rising from 1.308 in 2018 to 1.344 in 2019. The apartment-homestead classification ratio declined in 21 cities, with the largest drops in Des Moines, IA (-0.156); Chicago (-0.143); Columbus, OH (-0.121); Sioux Falls, SD (-0.084), and Bridgeport, CT (-0.080). The classification ratio increased in 23 cities. Providence, RI (at 0.667) and Atlanta (at 0.333) exhibit the largest increases in ratio due to substantial new homestead exemptions, followed by Jacksonville, FL (0.261); Philadelphia (0.148); and Anchorage, AK (0.140). As with the commercial-homestead ratios, relative changes in sales ratio have the biggest impact in year-to-year changes in the apartment-homestead ratios. However, policymakers' decisions influenced some changes in the apartment-homestead classification ratios, particularly in Providence, Atlanta, and Anchorage as assessment level changes and expanded homestead exemptions affected commercial and apartment ratios to the same degree.

Figure 6d provides information on how the apartment-homestead classification ratio has changed since 1998.

Figure 6a: Commercial-Homestead Classification Ratio for Largest City in Each State (2019)

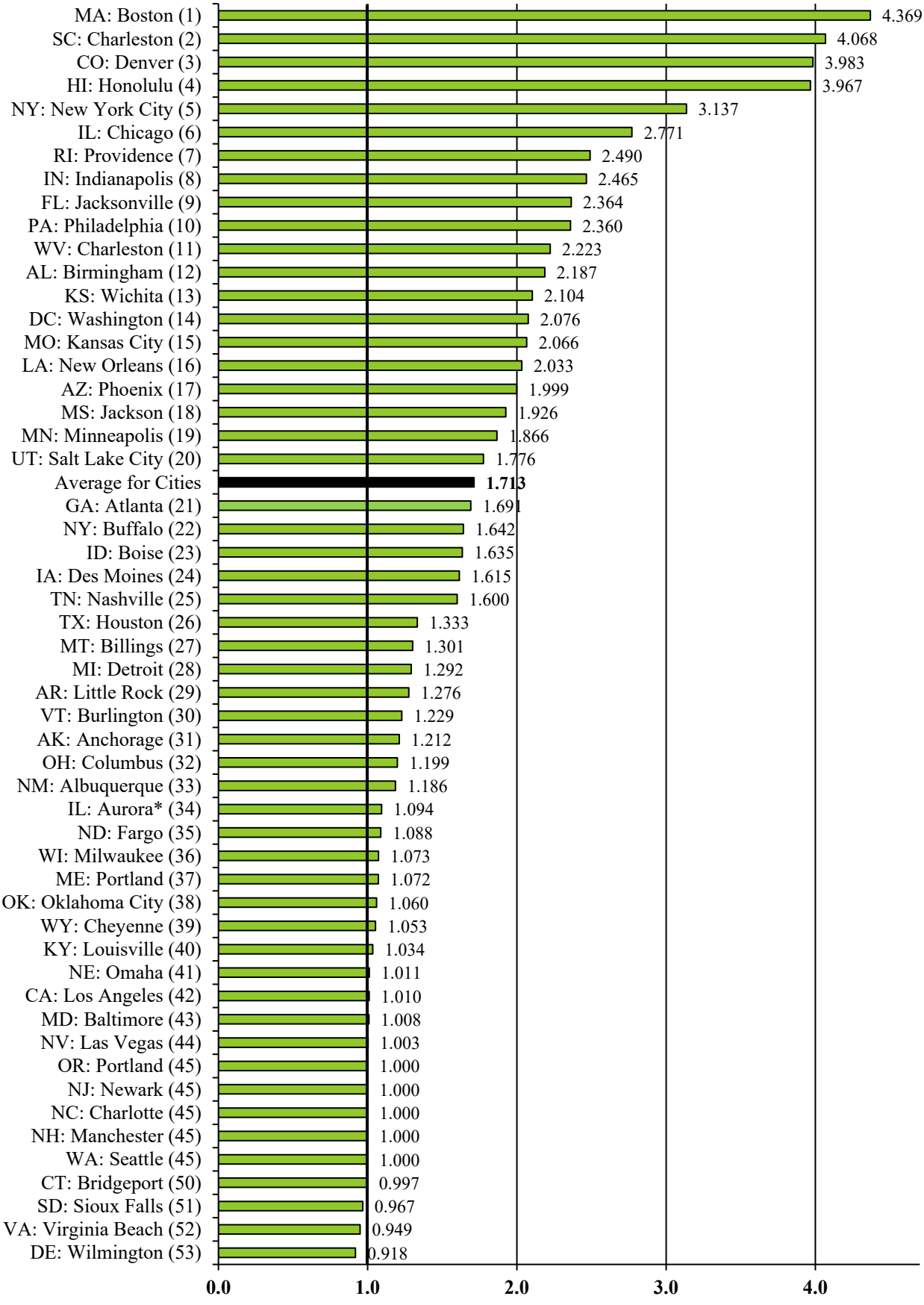


Figure 6b: Apartment-Homestead Classification Ratio for Largest City in Each State (2019)

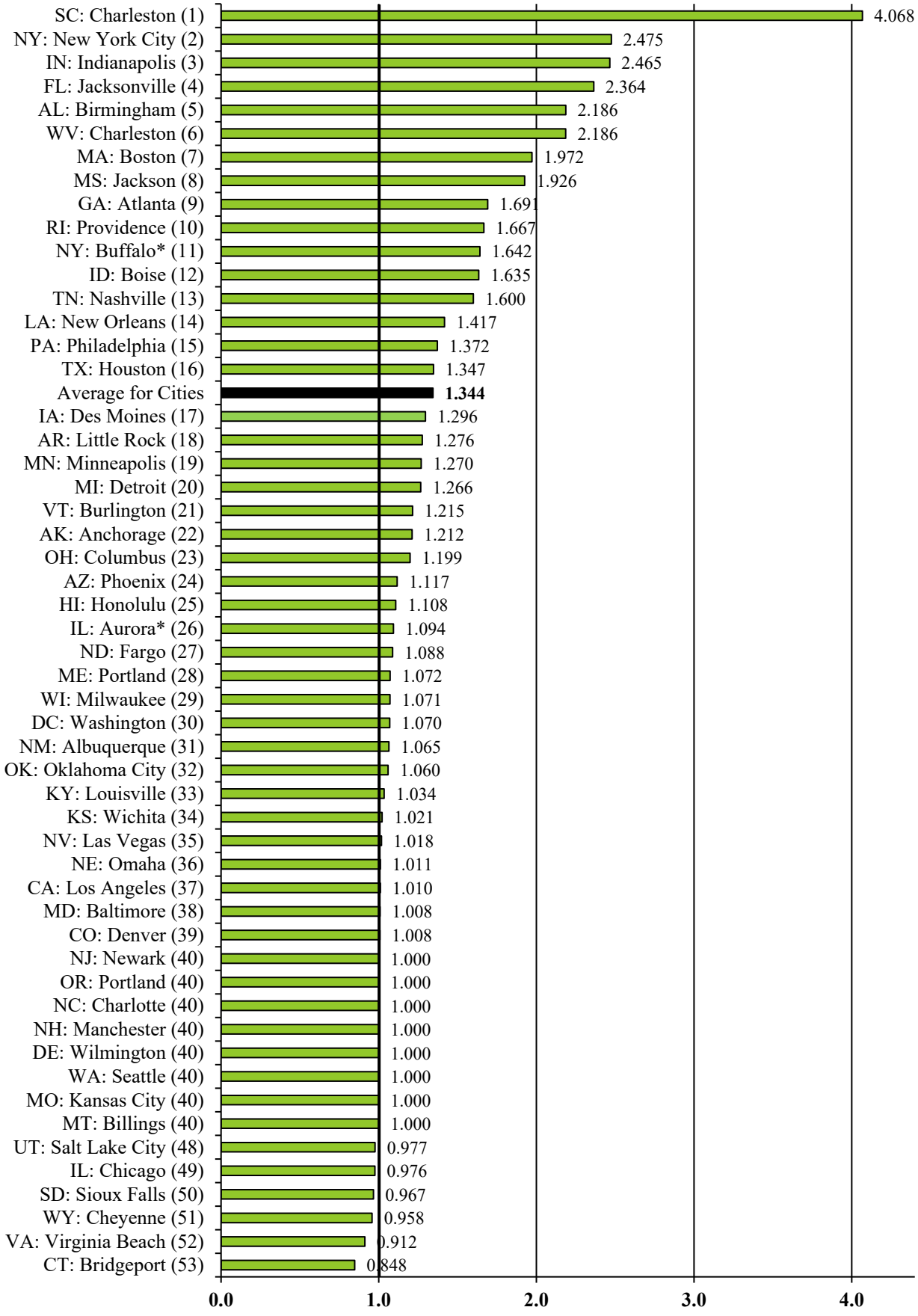
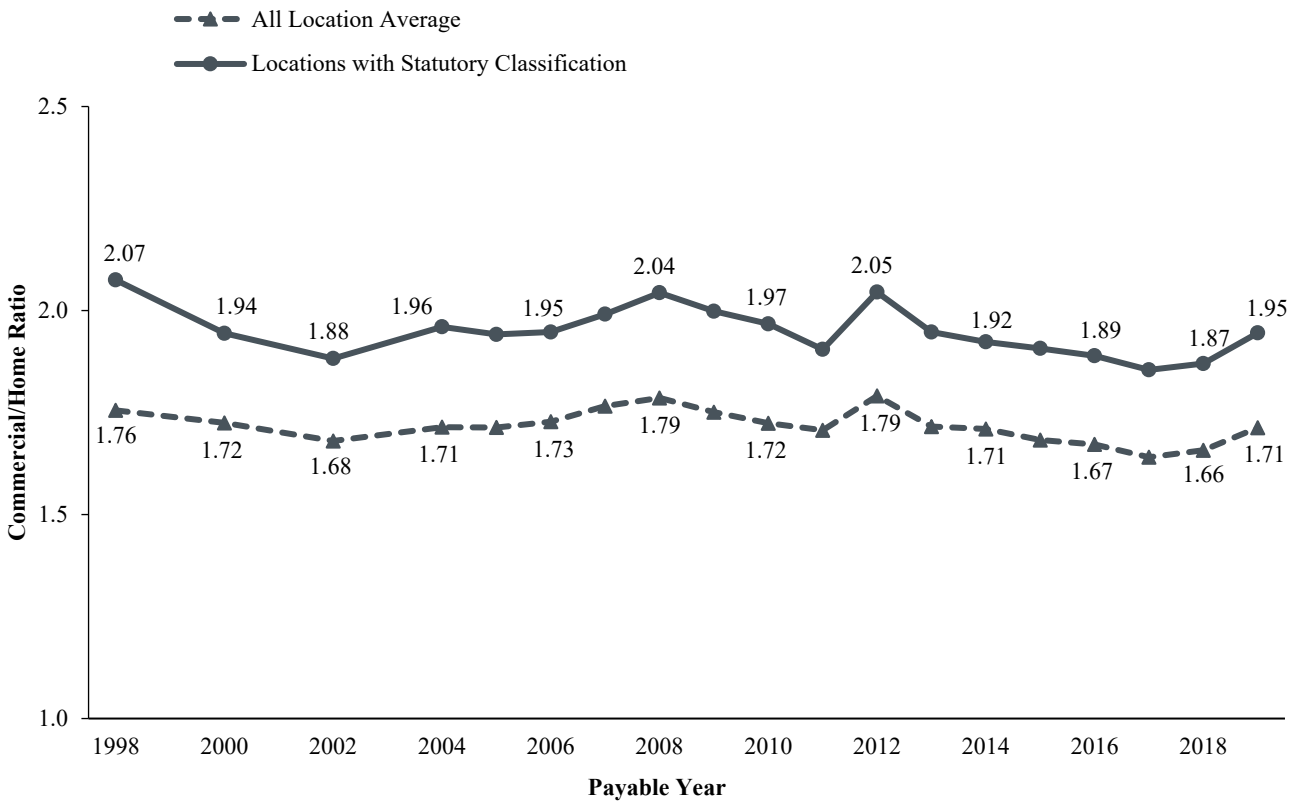


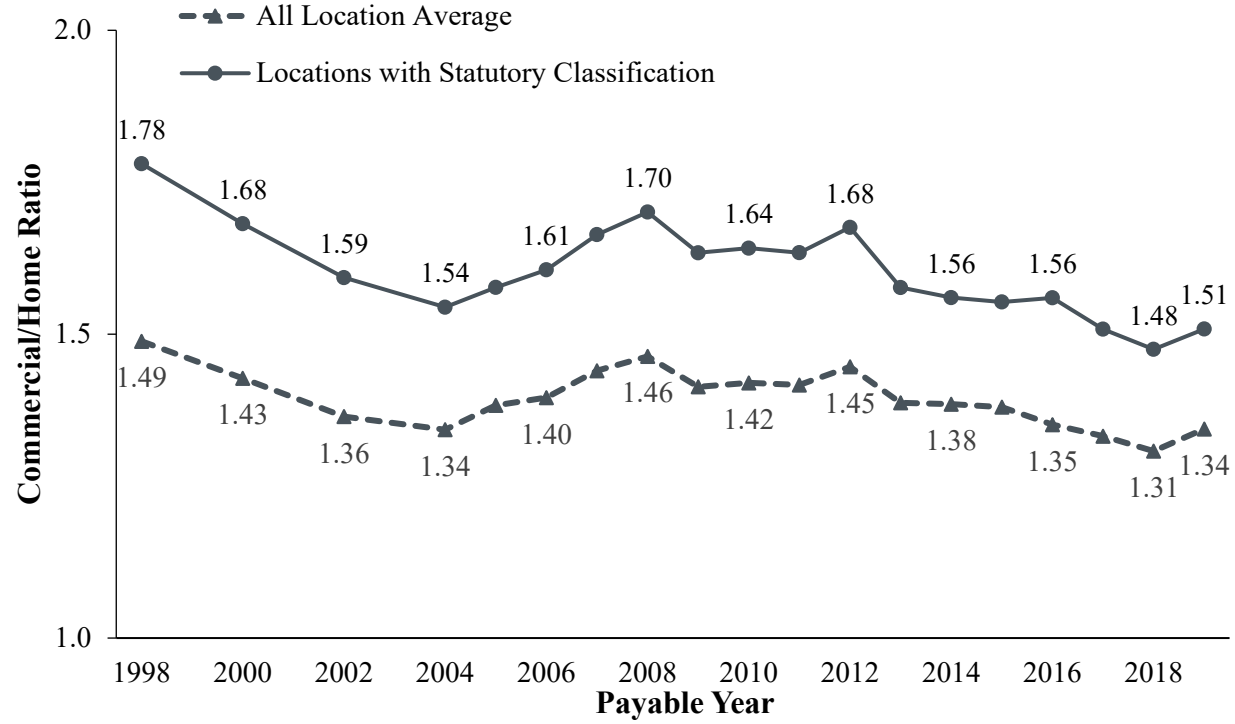
Figure 6c: Commercial-Homestead Classification Ratio for Largest City in Each State (1998 – 2019)



Note: 1.0 denotes unclassified property tax system.

Note: "Statutory classification" is the group of cities where classification is written into law with the assessment ratio, nominal tax rate, or exemptions/credits. Identification of this group ignores the sales ratio.

Figure 6d: Apartment-Homestead Classification Ratio for Largest City in Each State (1998 – 2019)



Note: 1.0 denotes unclassified property tax

Property Tax Assessment Limits

Property tax limitations have become an increasingly important feature of the local government finance landscape since the late 1970s, when rapid property value growth provoked Californians to adopt the now-iconic Proposition 13. Since that time, limitations on property taxes have become increasingly popular, especially during the late 1990s and early 2000s, when property values again appreciated significantly.[31]

There are many different types of property tax limits, including constraints on tax rates, tax levies, and assessed values.[32] This report accounts for the impact of limits on tax rates and levies implicitly, because of how these laws impact cities' tax rates. However, accounting for the impact of assessment limits requires an explicit modeling strategy.

Assessment limits typically restrict growth in the assessed value for individual parcels and then reset the taxable value of properties when they are sold. Therefore, the level of tax savings provided from assessment limits largely depends on two factors: how long a homeowner has owned her home and appreciation of the home's *market value* relative to the allowable growth of its *assessed value*.[33]

This report estimates the amount of tax relief provided by assessment limits for the average homeowner in a particular city by estimating the amount of value growth these limits exclude from taxation over an average tenure of ownership (See Methodology section for details).[34] One key difference between assessment limits and other types of property tax limits, however, is that tax savings from assessment limits vary widely across individual taxpayers within the same city. Tax savings will be greater than average for homeowners whose home values have grown faster than average for the city and have owned their homes longer than average. States with parcel-specific assessment limits include Arizona, Arkansas, California, Florida, Illinois (Cook County only), Michigan, New Mexico, New York (New York City and Nassau County only), Oklahoma, Oregon, South Carolina, and Texas.

Figure 7 shows the impact of assessment limits for a median valued home in the 29 cities modeled. The impact of assessment limits varies widely across cities. The largest effect is in New York City, which has an assessment limit that has capped growth in assessed values for residential properties since 1981, even when a property is sold. Because most homes in New York were built prior to 1981, the average home in New York City has been subject to assessment limits for 38 years. However, effective tax rates on newly built homes are far higher

[31] Paquin, Bethany P. 2015. "Chronicle of the 161-Year History of State-Imposed Property Tax Limitations." Cambridge, MA: Lincoln Institute of Land Policy.
[32] The Lincoln Institute of Land Policy maintains a comprehensive database of property tax limits on its website: https://www.lincolninst.edu/subcenters/significant-features-property-tax/Report_Tax_Limits.aspx.
[33] Haveman, Mark and Terri A. Sexton. 2008. *Property Tax Assessment Limits: Lessons from Thirty Years of Experience*. Cambridge, MA: Lincoln Institute of Land Policy.
[34] Unlike most locales, assessment limits effective in New York City and Portland (OR) do not reset upon sale of a property. Therefore, for those two cities the duration of the assessment limitation is set to the lesser of the average age of an owner-occupied home (i.e. number of years since average home was constructed, which is 67 years in New York City and 65 years in Portland) or the period during which assessment limits have been in place (since 1981 in New York City and 1996 in Portland).

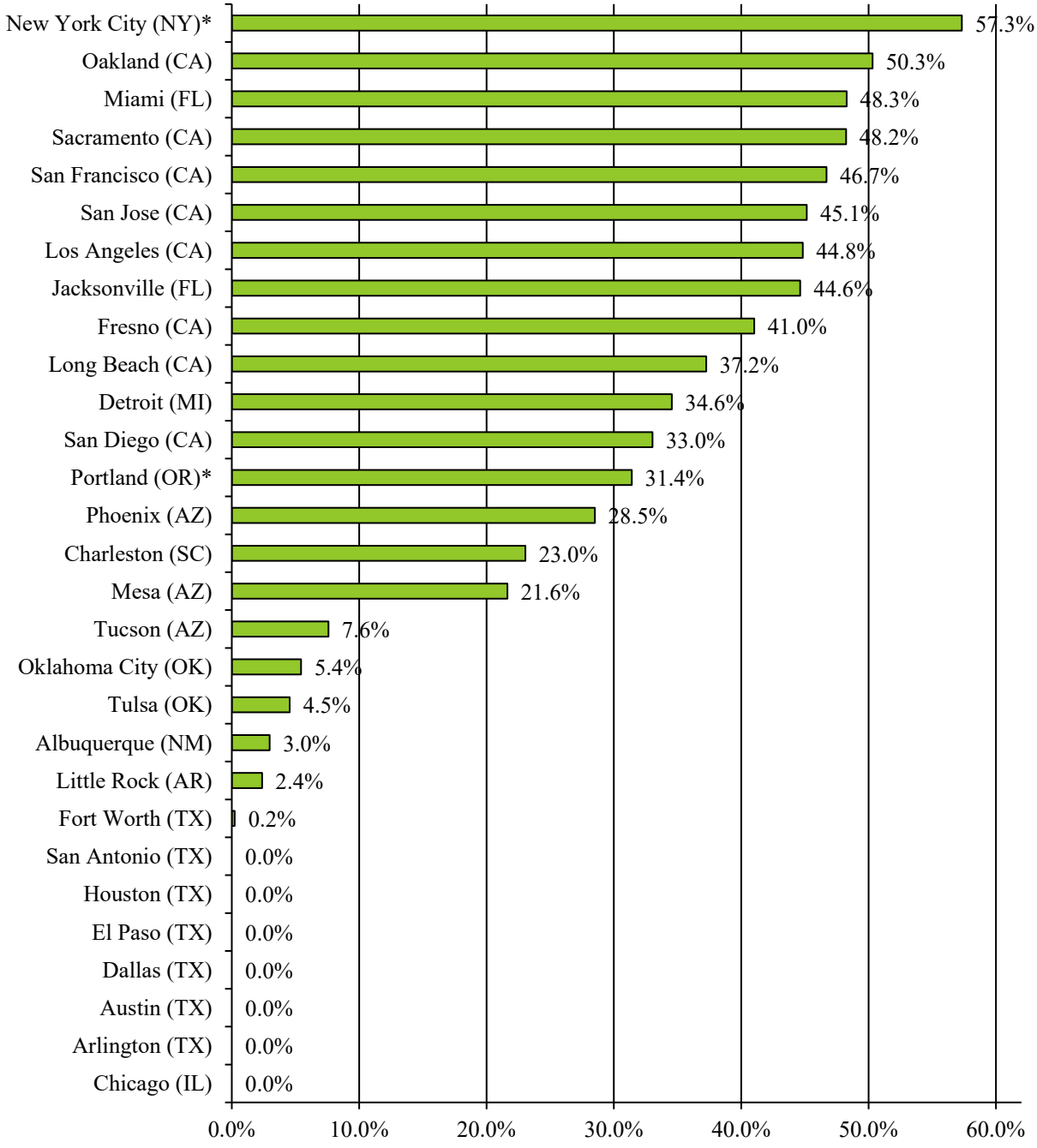
because they do not benefit from the assessment limit. In fact, the owner of a median valued home in New York City ($645,100) built prior to 1981 would face less than half the effective tax rate than the owner of a newly built median valued home despite them having identical values. Assessment limits also have large impacts in Oakland, Miami, Sacramento, San Francisco, San Jose, Los Angeles, and Jacksonville (FL), where effective tax rates are 44 – 50% lower for homes that have been owned for the average duration in each city than for newly purchased homes. In contrast, six Texas cities and Chicago have assessment limits that yielded no impact on taxes for the average homeowner in 2019, either because growth in market values was less than allowable growth under the assessment limit (Texas), or due to the behavior of the assessment cycle (Chicago).

Appendix Table 7 also shows the impact of assessment limits in terms of the dollar difference in taxes between newly purchased homes and homes subject to the average assessment limitation in each city, for median valued homes. In 12 cities, the difference in tax bills is at least $1,000 – with differences reaching as high as $6,550 in San Francisco.

Accounting for assessment limits can lead to major differences in city tax rate rankings. For example, consider effective tax rates for median valued homes in the largest city in each state (See Appendix Tables 2a and 2b). New York City has the 31st highest effective tax rate for new homeowners, but drops to 50th highest once adjusting for assessment limits. Other cities with large changes include Los Angeles (33rd to 48th); Jacksonville, FL (23rd to 44th); Phoenix (24th to 37th); Portland, OR (5th to 14th); and Detroit (4th to 11th).

Figure 7: Impact of Assessment Limits

Difference in Property Taxes between a Newly Purchased Home and a Home that Has Been Owned for the Average Duration for the City (For Median Valued Home)



Notes: See Methodology section for details on calculation.

* New York City and Portland (OR) have unique assessment limits, because they do not reset when a property is sold like in other cities. For these cities, figure 7 shows the difference in property taxes on a newly-built home and a home built prior to the implementation of assessment limits (1981 in New York City; 1996 in Portland).
(See footnote 38 on page 50 for details on the methodology for these two cities)

Methodology

This study updates the *50-State Property Tax Comparison Study: Payable Year 2018*. It examines four distinct classes of property using a standard set of assumptions about their "true" market values and the split between real and personal property. The report calculates property taxes for parcels with a range of property values in three sets of cities:

- the largest city in each state and the District of Columbia along with Aurora, Illinois and Buffalo, New York;
- the largest fifty cities in the United States; and
- a rural municipality in each state.

This section first describes how property taxes are calculated, then describes data collection and the selection of cities, next defines the four property classes included in this study, and finally describes the methodology used to estimate the impact of assessment limits.

A. Components of the Property Tax Calculation

As an aid in reviewing the remaining assumptions of this study, it is helpful to think of the property tax calculation as having six distinct components:

(1) a "true" market value (TMV),
(2) a local sales ratio (SR),
(3) applicable exemptions that reduce taxable value (E),
(4) a statutory classification system (classification rate) or other provisions that effectively determine the proportion of the assessor's estimated market value that is taxable (CR),
(5) the total local property tax rate (TR), and
(6) applicable property tax credits (C).

Accordingly, the net local property tax for a given parcel of property is written:

$$\textbf{Net Property Tax} = \{[(TMV \times SR) - E] \times CR \times TR\} - C$$

Component 1: True Market Value (TMV)

The calculations for this study start with an assumption about the true market value of the four classes of property. This is the market value of a parcel of property as determined in a local real estate market consisting of arm-length transactions between willing buyers and sellers. This is in contrast to "assessed value" or "estimated market value," which is generally the starting point for tax calculations.

This study assumes the true market values are consistent across all locations in the study. For example, the ranking of property taxes on a residential homestead parcel with a true market value of $150,000 assumes that the parcel is actually worth $150,000 in the local real estate market in each location in each state, regardless of what the local assessor may think the property is worth.

For some locations, the assumed true market value may be very atypical (a $150,000 home in Boston, for example). Nevertheless, this study assumes the property exists there. Essentially, this study is meant to compare the effects of property tax structures. Using fixed values allows the isolated effects of tax structures to be observed. That is, the report compares property taxes, not local real estate markets. However, as previously discussed the report does include tables that show the residential tax burdens where the home value is set equal to local median values.

Component 2: Sales Ratios (SR)

A unique aspect of this study is that it includes the effects of assessment practices on relative tax burdens. It would be much simpler to start the calculations by fixing the assessor's "estimated market value" for each property. However, in every state, the quality of property tax assessments is a significant aspect of the local property tax scene. Omission of this aspect of the property tax calculation would make this study much less useful.

Sales ratios are simply a measure of the accuracy of assessments. The sales ratio is determined by comparing assessments to actual sales. A sales ratio of 100% indicates that assessments are equal to market value. Sales ratios of less than 100% indicate that assessments are less than market value; sales ratios of over 100% indicate that assessments are higher than market value. In some states, state aid formulas use sales ratios to adjust assessors' values when local property wealth is used as a measure of local fiscal capacity. While sales ratios are generally not used in calculating an individual's actual property tax bill, some states do use sales data to equalize values as part of the property tax process.

By applying sales ratios, this study recognizes that our $150,000 residential homestead may be "on the books" at $155,000 in one location, and $140,000 in another, and that the actual tax on the property will be based on these "estimates" of market value. For example, if the relevant sales ratio in a given location is 93%, we convert the $150,000 true market value to $139,500 ($150,000 x .93) before applying the provisions of the local property tax. In this way, the study presents tax liabilities that represent the actual experience of property owners.

Sales ratio data is provided either at the city or county level, depending on the state. We use city-level data where appropriate; otherwise we default to county data. Our preference is to use sales ratio data that differentiates between different types of property. However, in many locations only one ratio is reported, covering all types of property. In those cases, we apply the same ratio to all of that location's examples in the study.

In the case of personal property, sales ratios are generally not used. Many states do not have sales ratios for personal property or assume they are 100%. Where states report personal property sales ratios, we include them in this study.

Component 3: Exemptions (E)

Many states provide exemptions that reduce the amount of property value subject to taxation. In some cases, these exemptions are provided on a blanket basis across a state; in other cases, the exemptions are a local option. Because exemptions are subtracted from assessed value, we apply

them after first applying the sales ratio to true market value, since the exemption will not incorporate any of the assessment error to which properties may be subject.

Note: in some cases, the exemption is subtracted from taxable value instead of assessed value. In those cases, we apply the exemption after applying the classification rate.

Component 4: Classification Rates (CR)

The fourth component of the property tax calculation involves subjecting the parcel's taxable value to classification (or assessment) rates, which convert assessed value to taxable value. In many cases, these classification rates are 100%, meaning that taxable value is equal to assessed value. However, governments often use differential rates to affect the distribution of property tax levies – to provide tax relief for a selected class of classes of properties at the expense of others.

In most states, state legislatures set the classification schemes. In a few states, local governments have some autonomy over classification rates.

Because of the wide variation in the quality of assessments across the states, particularly across classes of property, many states have no classification scheme in statute and may, in fact, have significant classification via uneven assessments across classes of property. (In some cases, this may violate state constitutional provisions on uniform assessments.) Some states, like Minnesota, enforce strict standards of assessment quality (sales ratio studies, state orders adjusting values, state certification of assessors, etc.) and put their classification policy in statute.

Component 5: Total Local Tax Rate (TR)

The study defines "payable 2019 tax rate" as the rate used to calculate the property taxes with a lien date in 2019, regardless of the date(s) on which payments are due. In some cities, there are multiple combinations of taxing jurisdictions (namely, the state, cities, counties, school districts, and special taxing districts). For instance, a city may be located in multiple school districts and therefore rates will differ based on which school district a parcel is located in. This study uses the rate that is most prevalent in a city.

This study excludes special assessments since they are more in the nature of user charges, do not affect a majority of parcels, and are usually not sources of general revenue.

Component 6: Credits (C)

The final step in the tax calculation is to recognize any general deductions from the gross property tax calculations (credits). The study includes any credits that apply to a majority of parcels of the specified type. Certain states provide credits based on early payment; the study assumes that taxpayers take advantage of the credit by making the early payment.

Effective Tax Rates (ETRs)

Effective tax rates are used to express the relationship between net property taxes and the true market value of a property. This contrasts with the millage rates or other rates that are applied to

taxable value to determine a parcel's tax burden. By including the effects of all statutory tax provisions as well as the effects of local assessment practices, effective tax rates have the virtue of allowing more meaningful comparisons across states and property types.

B. Data Collection

Data for the property tax calculations was collected in one of two ways. Where possible, we collect property tax data directly from various state and local websites. Otherwise, we collect data using a contact-verification approach in which we ask state and local tax experts to provide information. In both cases, this information served as the basis for calculations by the Minnesota Center for Fiscal Excellence.

Selection of Additional Urban Cities

In Cook County (Chicago) and in New York City, the property tax system (notably, the assessment ratios) is substantially different from the system used in the remainder of Illinois and New York, respectively. We include the second-largest cities in those states (Buffalo and Aurora) to represent the property tax structures in the remainder of those states. In essence, the Urban analysis is a comparison of 53 different property tax structures.

Selection of Rural Cities

Rural cities generally must meet three criteria to be included in the study:

- the city has a population of between 2,500 and 10,000 (controlling for size);
- the city is a county seat (controlling, as best as possible, for economic conditions and type of services delivered); and
- the city is located in a county coded as a "6" or "7"[35] on the U.S. Department rural-urban measurement continuum (controlling for geographical relationships to urban areas).

In five states (Connecticut, Delaware, Hawaii, New Jersey, and Rhode Island), there were no counties coded 6 or 7 on the USDA's continuum. In the case of Massachusetts, the only code 6 or 7 county included Nantucket Island, which does not seem comparable to rural counties in other states. In these six cases, we selected the county seat in the most rural county available.

Data on Median Valued Homes

This study compares homeowner property taxes using a "median value analysis", which sets the home value in each city equal to the median value of owner-occupied housing units in the city, or for smaller cities, in the relevant county. This data comes from the one-year or five-year data in the Census Bureau's *American Community Survey* for 2018, as appropriate. We intend this comparison to show how differences in local real estate markets affect residential property taxes.

[35] Counties coded "6" are nonmetro counties with urban population of 2,500 to 19,999 that are adjacent to a metro area; counties coded "7" are nonmetro counties within the same population range that are not adjacent to a metro area.

Note that the payable 2014 edition of this study was the first to use ACS data on median home values. Prior to that, median home value data came from metropolitan-area data provided by the National Association of Realtors. Readers should make time-trend comparisons of tax burdens on median valued homes before and after this methodological change with care.

Special Property Tax Provisions

"Special property tax provisions" are provisions that, in practice, apply to less than half of all taxpayers for a given class of property. Special provisions are normally triggered by special circumstances or attributes of the taxpayer or property. Examples include senior tax deferrals, and special valuation exclusions based on age, health or special use.

Because the goal of this study is to compare the actual tax experience of the largest number of taxpayers in the selected jurisdictions, this study excludes special property tax provisions.

C. Property Classes and Assumptions About Value

This report studies hypothetical properties in four property classes (1) residential homesteads, (2) commercial property, (3) industrial property, and (4) apartments. Except for apartments, the study calculates taxes for all properties based on multiple values that are fixed across states. All classes of business property (commercial, industrial, and apartments) have a corresponding set of assumptions regarding the amount of personal property each parcel has.

These four classes were selected for a variety of reasons. First, they represent the vast majority of property value across the country. In Minnesota, these four classes represent nearly 70% of market value. It is likely that this figure is similar in other states and may be even higher in states that do not have substantial agricultural operations. Second, these are the classes of property that policymakers tend to focus time and attention on. Third, most omitted classes of property are either not relevant to all fifty states (cabin properties, for example) or require more complex work to develop assumptions about value (public utilities and farms, for example).

Selection of Fixed Values

This report compares the tax burdens various property tax systems across the nation impose on a fixed amount of value. Holding property values constant across all jurisdictions controls for the effects differences in property values have on effective tax rates. The specific fixed values the study uses for homes, commercial, and industrial properties were largely chosen between 1995 and 2000 to represent a low-valued[36], medium-valued, and high-valued parcel.

Over time we have added or eliminated property values when appropriate. However, to preserve the usefulness of time-trend comparisons we have not changed any fixed values after their first appearance in the report.

[36] Note that the study no longer includes the $70,000 "low-valued" home.

Importantly, in most locations the effective tax rates for commercial and industrial properties do not vary much with value. Therefore, with few exceptions the specific fixed values selected for inclusion in the report are not of major consequence.

Real and Personal Property

The treatment of personal property is a significant part of each state's property tax regime. Because personal property exemptions (or lack thereof) vary from state to state, creating accurate property tax comparisons will depend in large part on making accurate assumptions about personal property. This is especially true with regard to industrial parcels, which have much higher proportions of personal property than do commercial properties in general.

Making these assumptions is challenging because the specific mix of real and personal property obviously varies by industry and location. With the permission of the Minnesota Department of Revenue's Research Division, we have borrowed the methodology they use to determine shares of real and personal business property in their biennial *Tax Incidence Study*.[37] Using that methodology, we have calculated state-specific real property, machinery and equipment, fixtures, and inventory shares for industrial parcels. The findings this model generates indicate that the median split for industrial parcels nationwide is 45.6% land and buildings (real property) and 54.4% personal property. Overall, the split ranges from 41.3% real/58.7% personal (Michigan) to 49.6% real/50.4% personal (Massachusetts).

PROPERTY CLASSES AND TRUE MARKET VALUES

Class	Values of Property				
	Real	**Mach. & Equip.**	**Inventories**	**Fixtures**	**Total**
Homestead	$150,000	$0	$0	$0	**$150,000**
	$300,000	$0	$0	$0	**$300,000**
Apartments	$600,000	$0	$0	$30,000	**$630,000**
Commercial	$100,000	$0	$0	$20,000	**$120,000**
	$1,000,000	$0	$0	$200,000	**$1,200,000**
	$25,000,000	$0	$0	$5,000,000	**$30,000,000**
Industrial (50% Personal)	$100,000	$50,000	$40,000	$10,000	**$200,000**
	$1,000,000	$500,000	$400,000	$100,000	**$2,000,000**
	$25,000,000	$12,500,000	$10,000,000	$2,500,00	**$50,000,000**
Industrial (60% Personal)	$100,000	$75,000	$60,000	$15,000	**$250,000**
	$1,000,000	$750,000	$600,000	$150,000	**$2,500,000**
	$25,000,000	$18,750,000	$15,000,000	$3,750,000	**$62,500,000**

These results suggest a two-assumption approach, with one set of rankings assuming 40% real property/60% personal property and a second set of rankings assuming 50% real property/50% personal property. The following table summarizes the assumed true market values and assessed value of personal property used for each property class.

[37] *Tax Incidence Studies* are available on the website of the Minnesota Department of Revenue: http://www.revenue.state.mn.us/research_stats/Pages/Tax_Incidence_Studies.aspx.

This study does not include intangibles such as bank balances or financial securities in the property tax calculations.

Definitions of Real and Personal Property

The types of property found in this study are defined as follows:

- **Real Property:** consists of land and buildings not classified as personal property for tax purposes.
- **Machinery and Equipment:** includes large and ponderous equipment, generally not portable and often mounted on special foundations. Examples include large printing presses and assembly robots.
- **Inventories:** includes raw materials, unfinished products, supplies, and similar items used by manufacturers. Does not include any inventory retailers hold for sale.
- **Fixtures:** includes items such as office furnishings, display racks, tools and similar items, but not motor vehicles. In the case of apartments, it includes such things as stoves, refrigerators, garbage disposals, air conditioners, drapes, and lawn care equipment.

D. Estimates of Assessment Limitation Effects

This study estimates the effect that provisions have which deliver property tax relief for homeowners by limiting increases in home value or property taxes at the parcel level. Generally, the value of parcel-specific assessment limitations results from a combination of the length of homeowner tenure and changes in the market value of the parcel relative to the provisions of the applicable limitation. This study uses data from the Census Bureau's *American Community Survey* to estimate that average length of homeowner tenure for locations where assessment limitation provisions are in effect. ZIP5 data from the Federal Housing Finance Agency's *House Price Index for All Transactions* is used to estimate the average change in residential property value for each individual city where assessment limitation provisions are in effect. We then model the average change in residential property value over the average length of homeowner tenure in each of these locations and compare that change to the allowable growth in homestead value and/or taxes during that period to determine the amount of excluded value or property tax relief these provisions afford.

One final key assumption: in most instances the model represents the experience of a homeowner with an "average" length of tenure.[38] Therefore, if the model returns no excluded value, then we assume that the provision does not apply to half or more of homeowners and thus does not apply.

MCFE prepared a working paper for the Lincoln Institute of Land Policy on this subject where there is considerably more detailed information on the methodology underlying this analysis.[39]

[38] Except for New York City and Portland (OR), which have unique assessment limits that do not reset assessed values when a property is sold. To measure the impact of assessment limits in these cities, we compare the difference in effective tax rates on a newly-built home and a home built prior to the implementation of assessment limits (1981 in New York City; 1996 in Portland). The average home was built 67 years ago in New York City and 65 years ago in Portland, and thus have had growth in their assessed value constrained since the limits were implemented. The analysis compares a newly-built and older home with identical market values (the median valued home is $609,500 in New York City and $427,500 in Portland).

E. Classification Ratios

This report measures two "classification ratios" – the ratio of the effective tax rates between a median valued home and the real portion of a $1 million commercial property ("commercial-homestead classification ratio") and between a median valued home and the real portion of a $600,000 apartment property ("apartment-homestead classification ratio"). Both measures are designed to offer perspective on the level of homeowner tax preferences that are built into a property tax system. For example, a city with a 3% effective tax rate on commercial property and a 1.5% effective tax rate on homesteads will have a classification ratio of 2.0 – meaning that commercial property is taxed at twice the rate as homes are. A property tax system with no homeowner preferences will have a classification ratio of 1.0; in other words, the effective tax rates for homes will be the same as the rates for other types of properties.

In most of the property tax jurisdictions this report studies and reports on, parcel-specific assessment limitations either do not exist or else do not apply equally to all classes of property; such as California's Proposition 13 limit which restrict growth for any parcel in the state to 2% per year. For these properties, we calculate the classification ratio using homestead property tax burdens based on full market value taxation (Appendix Table 2a) to ensure similar assessment limitation treatment across properties in the same property tax systems.

However, there are six property tax systems – Arkansas; Florida; Cook County, Illinois; New Mexico; New York, New York; South Carolina, and Texas – where assessment limitations either affect homesteads only, or are applied differently to different types of property. For cities located in these jurisdictions, for the payable 2019 report we are calculating the classification ratio using the assessment limited homestead tax burdens (Appendix Table 2b) to reflect the reality that homesteads are subject to different value capping requirements than other types of property.

[39] Twait, Aaron. 2012. "Property Assessment Limits: Effects on Homestead Property Tax Burdens and National Property Tax Rankings." Cambridge, MA: Lincoln Institute of Land Policy. April.

Appendix Table 1a: Factors Correlated with Homestead Property Tax Rates in Large U.S. Cities

(Effective Tax Rate for Median Valued Home, with Assessment Limits)

		Tax Rate		Property Tax Reliance		Median Home Value		Local Gov't Spending		Classification Ratio		
State	City	Rank (1-73)	Tax Rate	Rank (1-73)	Impact on Tax Rate	Rank (1-73)	Impact on Tax Rate	Rank (1-73)	Impact on Tax Rate	Commercial Rank (1-73)	Apartments Rank (1-73)	Impact on Tax Rate
Alabama	Birmingham	62	0.66	69	-0.44	72	0.68	30	0.02	17	6	-0.33
Alaska	Anchorage	32	1.20	7	0.62	19	-0.22	39	-0.02	36	27	0.09
Arizona	Mesa	64	0.65	51	-0.18	36	-0.02	62	-0.15	14	29	-0.10
Arizona	Phoenix	47	0.89	41	-0.08	33	-0.04	58	-0.13	21	32	-0.04
Arizona	Tucson	40	1.06	35	0.00	53	0.25	67	-0.17	22	30	-0.04
Arkansas	Little Rock	39	1.10	65	-0.40	51	0.24	53	-0.11	34	21	0.06
California	Fresno	56	0.72	43	-0.11	31	-0.06	22	0.06	52	44	0.17
California	Long Beach	54	0.75	57	-0.30	10	-0.68	8	0.21	54	48	0.18
California	Los Angeles	65	0.64	48	-0.17	6	-0.78	5	0.25	57	51	0.18
California	Oakland	60	0.67	55	-0.27	4	-0.81	4	0.35	58	52	0.18
California	Sacramento	67	0.58	60	-0.33	17	-0.30	15	0.10	53	46	0.17
California	San Diego	51	0.82	29	0.04	7	-0.74	27	0.03	55	49	0.18
California	San Francisco	66	0.63	53	-0.20	1	-1.18	2	0.77	61	56	0.18
California	San Jose	59	0.69	38	-0.01	2	-1.03	17	0.09	60	55	0.18
Colorado	Colorado Springs	69	0.51	54	-0.21	23	-0.15	51	-0.09	5	66	-0.40
Colorado	Denver	68	0.56	68	-0.44	13	-0.45	6	0.22	3	54	-0.41
Connecticut	Bridgeport	2	3.21	1	1.02	50	0.22	38	-0.01	69	73	0.22
DC	Washington	55	0.73	63	-0.36	9	-0.70	1	1.01	18	39	-0.05
Delaware	Wilmington	25	1.39	33	0.01	57	0.26	18	0.08	73	57	0.20
Florida	Jacksonville	58	0.69	28	0.05	48	0.18	44	-0.05	11	4	-0.40

How to Interpret Each Factor's Impact on a City's Tax Rate

The columns labeled "Impact on Tax Rate" shows how each factor is expected to affect the tax rate in that city relative to a scenario where the city had the average value for that variable—a positive value means that factor increases the city's tax rate, while a negative value means that factor decreases the city's tax rate.

For example, consider Birmingham, Alabama. The city has the 69th highest property tax reliance (5th lowest), which is predicted to decrease the city's tax rate on a median valued home by 0.44 percentage points relative to a city with average property tax reliance. An alternative way to interpret this data is that if Birmingham had the average property tax reliance and all other characteristics of the city were unchanged (home values, government spending, etc.), then the city's tax rate would be 0.44 percentage points higher, which at 1.10% would be 38th highest. Birmingham also has the 72nd highest median home value (2nd lowest), which is expected to increase their tax rate by 0.68 percentage points relative to a scenario where the city had the average home value for all cities in this analysis. Local government spending per capita is slightly above average in Birmingham (30th highest), which is expected to increase the city's tax rate by 0.02 percentage points relative to a city with average spending. Finally, Birmingham has significantly higher tax rates for commercial properties and apartments than for homestead properties; the classification ratio is 17th highest for commercial properties and 6th highest for apartments. The city's classification ratios are predicted to decrease the property tax rate on a median valued home by 0.33 percentage points compared to a city with the average classification ratio.

		Tax Rate		Property Tax Reliance		Median Home Value		Local Gov't Spending		Classification Ratio		
State	**City**	Rank (1-73)	Tax Rate	Rank (1-73)	Impact on Tax Rate	Rank (1-73)	Impact on Tax Rate	Rank (1-73)	Impact on Tax Rate	Commercial	Apartments	Impact
Florida	Miami	49	0.87	37	-0.01	18	-0.29	28	0.02	16	5	-0.34
Georgia	Atlanta	48	0.88	34	0.01	20	-0.18	12	0.14	25	10	-0.12
Hawaii	Honolulu*	73	0.31	16	0.26	5	-0.80	73	-0.23	4	33	-0.43
Idaho	Boise	52	0.80	14	0.29	26	-0.12	72	-0.23	27	13	-0.09
Illinois	Aurora	1	3.30	4	0.77	45	0.14	57	-0.12	43	35	0.14
Illinois	Chicago	24	1.52	36	-0.01	28	-0.10	9	0.18	7	68	-0.16
Indiana	Indianapolis	37	1.16	58	-0.32	63	0.37	48	-0.07	9	3	-0.45
Iowa	Des Moines	8	2.25	15	0.26	65	0.40	47	-0.07	28	19	-0.01
Kansas	Wichita	35	1.18	32	0.03	64	0.38	61	-0.15	13	45	-0.07
Kentucky	Louisville	31	1.21	47	-0.17	52	0.25	66	-0.16	51	43	0.17
Louisiana	New Orleans	41	1.04	59	-0.33	35	-0.02	55	-0.11	20	16	-0.12
Maine	Portland	18	1.83	8	0.55	22	-0.17	45	-0.05	46	37	0.15
Maryland	Baltimore	9	2.22	31	0.03	53	0.25	21	0.06	59	53	0.18
Massachusetts	Boston	71	0.49	3	0.82	11	-0.65	33	0.01	1	8	-0.71
Michigan	Detroit	16	1.92	71	-0.51	73	1.11	35	0.01	33	23	0.06
Minnesota	Minneapolis	27	1.37	40	-0.06	29	-0.10	11	0.15	10	22	-0.16
Mississippi	Jackson	28	1.37	9	0.55	71	0.67	71	-0.20	23	9	-0.22
Missouri	Kansas City	26	1.38	67	-0.42	56	0.26	34	0.01	19	57	-0.03
Montana	Billings	46	0.90	20	0.16	39	0.05	68	-0.18	32	57	0.12
Nebraska	Omaha	14	2.02	24	0.11	58	0.27	37	-0.01	56	50	0.18
Nevada	Las Vegas	38	1.11	56	-0.27	25	-0.14	46	-0.07	62	47	0.18
New Hampshire	Manchester	13	2.03	6	0.63	37	0.01	65	-0.16	63	57	0.18
New Jersey	Newark*	3	3.02	2	0.98	32	-0.05	49	-0.07	63	57	0.18
New Mexico	Albuquerque	33	1.19	49	-0.18	43	0.10	69	-0.19	39	41	0.13
New York	Buffalo	22	1.59	70	-0.48	70	0.64	16	0.09	26	12	-0.09
New York	New York City	70	0.50	46	-0.15	8	-0.73	3	0.57	6	2	-0.58
North Carolina	Charlotte	44	0.95	66	-0.42	38	0.02	13	0.12	63	57	0.18
North Carolina	Raleigh	43	0.98	17	0.22	30	-0.09	60	-0.13	63	57	0.18
North Dakota	Fargo	34	1.19	44	-0.11	40	0.05	40	-0.03	44	36	0.14
Ohio	Columbus	15	1.93	45	-0.13	60	0.29	32	0.01	38	28	0.10

*Honolulu and Newark do not have data on property tax reliance or local government spending in the Fiscally Standardized Cities database, so statewide data on all local governments is used instead (Source: U.S. Census Bureau, 2017 Census of Government Finances).

		Tax Rate		Property Tax Reliance		Median Home Value		Local Gov't Spending		Classification Ratio		
State	**City**	Rank (1-73)	Tax Rate	Rank (1-73)	Impact on Tax Rate	Rank (1-73)	Impact on Tax Rate	Rank (1-73)	Impact on Tax Rate	Commercial	Apartments	Impact
Oklahoma	Oklahoma City	36	1.17	52	-0.19	59	0.28	70	-0.19	49	42	0.16
Oklahoma	Tulsa	29	1.35	50	-0.18	62	0.36	63	-0.15	47	40	0.15
Oregon	Portland	20	1.68	22	0.12	12	-0.47	29	0.02	63	57	0.18
Pennsylvania	Philadelphia	42	1.00	72	-0.55	55	0.25	14	0.11	12	17	-0.17
Rhode Island	Providence	30	1.29	5	0.75	41	0.05	42	-0.04	8	11	-0.27
South Carolina	Charleston	72	0.40	42	-0.09	15	-0.31	54	-0.11	2	1	-1.14
South Dakota	Sioux Falls	23	1.54	26	0.11	44	0.13	64	-0.16	70	69	0.20
Tennessee	Memphis	21	1.61	30	0.04	69	0.60	19	0.07	30	15	-0.08
Tennessee	Nashville	61	0.67	21	0.14	27	-0.11	25	0.05	29	14	-0.08
Texas	Arlington	11	2.09	13	0.29	47	0.16	59	-0.13	48	24	0.11
Texas	Austin	17	1.85	10	0.38	14	-0.32	23	0.05	41	31	0.13
Texas	Dallas	12	2.09	25	0.11	42	0.09	31	0.01	37	20	0.07
Texas	El Paso	4	2.63	23	0.12	66	0.43	52	-0.09	71	71	0.21
Texas	Fort Worth	10	2.16	12	0.29	46	0.16	50	-0.09	42	25	0.10
Texas	Houston	19	1.71	11	0.35	49	0.20	43	-0.04	31	18	0.03
Texas	San Antonio	5	2.45	18	0.20	61	0.30	26	0.04	40	34	0.13
Utah	Salt Lake City	57	0.71	39	-0.05	16	-0.31	24	0.05	24	67	0.03
Vermont	Burlington	7	2.31	64	-0.39	21	-0.18	20	0.07	35	26	0.09
Virginia	Virginia Beach	45	0.91	19	0.19	24	-0.14	56	-0.12	72	72	0.21
Washington	Seattle	53	0.76	61	-0.33	3	-0.85	7	0.21	63	57	0.18
West Virginia	Charleston	50	0.83	62	-0.35	68	0.50	41	-0.04	15	7	-0.34
Wisconsin	Milwaukee	6	2.41	27	0.10	67	0.46	36	0.00	45	38	0.15
Wyoming	Cheyenne	63	0.65	73	-0.66	34	-0.03	10	0.16	50	70	0.18

Appendix Table 1b: Factors Correlated with Commercial Property Tax Rates in Large U.S. Cities

(Effective Tax Rate for $1-Million Valued Commercial Property, with $200k in Fixtures)

		Tax Rate		Property Tax Reliance		Median Home Value		Local Gov't Spending		Classification Ratio*	
State	City	Rank (1-73)	Tax Rate	Rank (1-73)	Impact on Tax Rate	Rank (1-73)	Impact on Tax Rate	Rank (1-73)	Impact on Tax Rate	Rank (1-73)	Impact on Tax Rate
Alabama	Birmingham	45	1.45	69	-0.41	72	0.84	30	0.03	17	0.23
Alaska	Anchorage	44	1.46	7	0.58	19	-0.28	39	-0.04	36	-0.14
Arizona	Mesa	41	1.58	51	-0.17	36	-0.02	62	-0.27	14	0.25
Arizona	Phoenix	26	2.14	41	-0.08	33	-0.05	58	-0.22	21	0.16
Arizona	Tucson	34	1.92	35	0.00	53	0.31	67	-0.30	22	0.14
Arkansas	Little Rock	47	1.40	65	-0.37	51	0.29	53	-0.19	34	-0.12
California	Fresno	55	1.25	43	-0.10	31	-0.08	22	0.10	52	-0.21
California	Long Beach	58	1.21	57	-0.28	10	-0.84	8	0.37	54	-0.22
California	Los Angeles	61	1.17	48	-0.16	6	-0.96	5	0.44	57	-0.22
California	Oakland	48	1.37	55	-0.26	4	-1.00	4	0.63	58	-0.22
California	Sacramento	62	1.14	60	-0.31	17	-0.38	15	0.17	53	-0.22
California	San Diego	57	1.23	29	0.04	7	-0.92	27	0.05	55	-0.22
California	San Francisco	60	1.18	53	-0.18	1	-1.46	2	1.37	61	-0.22
California	San Jose	52	1.27	38	-0.01	2	-1.27	17	0.16	60	-0.22
Colorado	Colorado Springs	30	2.04	54	-0.20	23	-0.18	51	-0.17	5	0.91
Colorado	Denver	24	2.22	68	-0.41	13	-0.55	6	0.40	3	0.92
Connecticut	Bridgeport	4	3.30	1	0.96	50	0.27	38	-0.03	69	-0.22
DC	Washington	54	1.26	63	-0.33	9	-0.87	1	1.81	18	0.19
Delaware	Wilmington	66	1.06	33	0.01	57	0.33	18	0.15	73	-0.25
Florida	Jacksonville	40	1.62	28	0.05	48	0.23	44	-0.08	11	0.30

*Table shows impact of the commercial-homestead classification ratio

How to Interpret Each Factor's Impact on a City's Tax Rate

The columns labeled "Impact on Tax Rate" shows how each factor is expected to affect the tax rate in that city relative to a scenario where the city had the average value for that variable—a positive value means that factor increases the city's tax rate, while a negative value means that factor decreases the city's tax rate.

For example, consider Birmingham, Alabama. The city has the 69th highest property tax reliance (5th lowest), which is predicted to decrease the city's commercial property tax rate by 0.41 percentage points relative to a city with average property tax reliance. An alternative way to interpret this data is that if Birmingham had the average property tax reliance and all other characteristics of the city were unchanged (home values, government spending, etc.), then the city's commercial tax rate would be 0.41 percentage points higher. Birmingham also has the 72nd highest median home value (2nd lowest), which is expected to increase their tax rate by 0.84 percentage points relative to a scenario where the city had the average home value for all cities in this analysis. Local government spending per capita is slightly above average in Birmingham (30th highest), and thus is expected to increase the city's tax rate by 0.03 percentage points relative to a city with average spending. Finally, Birmingham has the 17th highest commercial-homestead classification ratio, which is predicted to increase the commercial property tax rate by 0.23 percentage points compared to a city with the average classification ratio.

		Tax Rate		Property Tax Reliance		Median Home Value		Local Gov't Spending		Classification Ratio*	
State	**City**	Rank (1-73)	Tax Rate	Rank (1-73)	Impact on Tax Rate	Rank (1-73)	Impact on Tax Rate	Rank (1-73)	Impact on Tax Rate	Rank (1-73)	Tax Rate
Florida	Miami	35	1.91	37	-0.01	18	-0.36	28	0.04	16	0.24
Georgia	Atlanta	42	1.51	34	0.01	20	-0.22	12	0.25	25	0.04
Hawaii	Honolulu**	68	1.02	16	0.24	5	-0.99	73	-0.42	4	0.92
Idaho	Boise	59	1.20	14	0.27	26	-0.15	72	-0.41	27	0.02
Illinois	Aurora	6	3.01	4	0.73	45	0.18	57	-0.22	43	-0.19
Illinois	Chicago	3	3.51	36	0.00	28	-0.13	9	0.32	7	0.46
Indiana	Indianapolis	7	2.91	58	-0.30	63	0.45	48	-0.12	9	0.34
Iowa	Des Moines	5	3.02	15	0.25	65	0.49	47	-0.12	28	0.01
Kansas	Wichita	12	2.69	32	0.02	64	0.47	61	-0.26	13	0.25
Kentucky	Louisville	50	1.36	47	-0.16	52	0.30	66	-0.29	51	-0.21
Louisiana	New Orleans	27	2.14	59	-0.31	35	-0.03	55	-0.20	20	0.17
Maine	Portland	31	2.02	8	0.52	22	-0.21	45	-0.08	46	-0.20
Maryland	Baltimore	10	2.80	31	0.03	53	0.31	21	0.11	59	-0.22
Massachusetts	Boston	38	1.77	3	0.77	11	-0.80	33	0.01	1	1.07
Michigan	Detroit	1	3.77	71	-0.48	73	1.37	35	0.01	33	-0.11
Minnesota	Minneapolis	11	2.77	40	-0.06	29	-0.12	11	0.26	10	0.33
Mississippi	Jackson	13	2.67	9	0.51	71	0.83	71	-0.35	23	0.13
Missouri	Kansas City	9	2.82	67	-0.40	56	0.32	34	0.01	19	0.19
Montana	Billings	65	1.06	20	0.15	39	0.06	68	-0.32	32	-0.11
Nebraska	Omaha	29	2.06	24	0.11	58	0.33	37	-0.02	56	-0.22
Nevada	Las Vegas	63	1.12	56	-0.26	25	-0.17	46	-0.12	62	-0.22
New Hampshire	Manchester	39	1.69	6	0.59	37	0.02	65	-0.29	63	-0.22
New Jersey	Newark**	18	2.52	2	0.92	32	-0.06	49	-0.12	63	-0.22
New Mexico	Albuquerque	46	1.44	49	-0.17	43	0.12	69	-0.34	39	-0.15
New York	Buffalo	25	2.18	70	-0.45	70	0.79	16	0.16	26	0.02
New York	New York City	51	1.32	46	-0.14	8	-0.91	3	1.01	6	0.60
North Carolina	Charlotte	71	0.95	66	-0.40	38	0.02	13	0.20	63	-0.22
North Carolina	Raleigh	69	1.01	17	0.21	30	-0.12	60	-0.24	63	-0.22
North Dakota	Fargo	64	1.08	44	-0.10	40	0.06	40	-0.06	44	-0.19
Ohio	Columbus	33	1.93	45	-0.12	60	0.35	32	0.02	38	-0.15

*Table shows impact of the commercial-homestead classification ratio

**Honolulu and Newark do not have data on property tax reliance or local government spending in the Fiscally Standardized Cities database, so statewide data on all local governments is used instead (Source: U.S. Census Bureau, 2017 Census of Government Finances).

		Tax Rate		Property Tax Reliance		Median Home Value		Local Gov't Spending		Classification Ratio*	
State	**City**	Rank (1-73)	Tax Rate	Rank (1-73)	Impact on Tax Rate	Rank (1-73)	Impact on Tax Rate	Rank (1-73)	Impact on Tax Rate	Rank (1-73)	Tax Rate
Oklahoma	Oklahoma City	49	1.36	52	-0.18	59	0.34	70	-0.34	49	-0.20
Oklahoma	Tulsa	43	1.48	50	-0.17	62	0.45	63	-0.27	47	-0.20
Oregon	Portland	20	2.46	22	0.11	12	-0.58	29	0.04	63	-0.22
Pennsylvania	Philadelphia	32	1.97	72	-0.52	55	0.31	14	0.20	12	0.30
Rhode Island	Providence	2	3.61	5	0.70	41	0.07	42	-0.07	8	0.35
South Carolina	Charleston	36	1.86	42	-0.09	15	-0.38	54	-0.19	2	0.96
South Dakota	Sioux Falls	56	1.24	26	0.10	44	0.16	64	-0.28	70	-0.24
Tennessee	Memphis	19	2.51	30	0.04	69	0.74	19	0.13	30	0.01
Tennessee	Nashville	67	1.05	21	0.13	27	-0.13	25	0.09	29	0.01
Texas	Arlington	23	2.28	13	0.28	47	0.20	59	-0.23	48	-0.20
Texas	Austin	28	2.08	10	0.36	14	-0.39	23	0.10	41	-0.18
Texas	Dallas	16	2.56	25	0.10	42	0.11	31	0.02	37	-0.14
Texas	El Paso	14	2.63	23	0.11	66	0.53	52	-0.17	71	-0.24
Texas	Fort Worth	21	2.46	12	0.28	46	0.20	50	-0.16	42	-0.18
Texas	Houston	22	2.29	11	0.33	49	0.25	43	-0.08	31	-0.09
Texas	San Antonio	8	2.83	18	0.19	61	0.38	26	0.07	40	-0.17
Utah	Salt Lake City	53	1.26	39	-0.05	16	-0.38	24	0.09	24	0.08
Vermont	Burlington	17	2.54	64	-0.37	21	-0.22	20	0.13	35	-0.13
Virginia	Virginia Beach	70	0.99	19	0.17	24	-0.17	56	-0.21	72	-0.24
Washington	Seattle	72	0.77	61	-0.31	3	-1.05	7	0.38	63	-0.22
West Virginia	Charleston	37	1.85	62	-0.33	68	0.61	41	-0.06	15	0.25
Wisconsin	Milwaukee	15	2.58	27	0.09	67	0.56	36	0.00	45	-0.19
Wyoming	Cheyenne	73	0.69	73	-0.62	34	-0.04	10	0.28	50	-0.20

*Table shows impact of the commercial-homestead classification ratio

Appendix Table 1c: Correlates of Cities' Effective Tax Rates on Homestead Properties

	(1)	(2)	Mean	St. Dev.	Data
Tax Rate on Median Valued Home	N/A	N/A	1.310	0.665	Effective tax rate on median valued home, with assessment limits Source: *50-State Property Tax Comparison Study* (Appendix Tables 2b, 2e)
Median Home Value	-0.657*** (0.064)	-0.731*** (0.112)	283,490	205,979	Median home value in city Source: 2018 American Community Survey (U.S. Census Bureau)
Business Classification Ratio	-0.342*** (0.087)	-0.198*** (0.052)	1.579	0.809	Commercial-homestead classification ratio, with taxes on personal property excluded for commercial properties Source: *50-State Property Tax Comparison Study*
Apartments Classification Ratio	-0.377** (0.144)	-0.231 (0.157)	1.287	0.508	Apartment-homestead classification ratio, with taxes on personal property excluded for apartments Source: *50-State Property Tax Comparison Study*
Property Tax Reliance	0.688*** (0.108)	0.0254*** (0.005)	40.6	13.9	Property taxes as a percent of own source revenue for the fiscally standardized city (FiSC) Source: Lincoln Institute of Land Policy. FiSC database (2017).
Local Gov't Spending Per Capita (1000s)	0.449*** (0.129)	0.0696*** (0.025)	6.462	2.224	Direct expenditures per capita for the fiscally standardized city (FiSC) Source: Lincoln Institute of Land Policy. FiSC database (2017).
State and Federal Aid as % Local Gov't Budget	-0.103 (0.131)	-0.0016 (0.006)	33.9	10.9	Intergovernmental revenue as a percent of general revenue for the fiscally standardized city (FiSC) Source: Lincoln Institute of Land Policy. FiSC database (2017).
Local as % State-Local Spending	-0.0696 (0.314)	0.00549 (0.009)	49.5	7.8	Local government direct expenditures as a percent of state and local direct expenditures (State-level variable) Source: 2017 Survey of State and Local Gov't Finances (U.S. Census Bureau)
Constant	0.44 (1.254)	9.259*** (1.269)			
N	69	69			
R-sq	0.691	0.62			
adj. R-sq	0.656	0.577			
F	35.88	14.58			

* p < 0.10, ** p < 0.05, *** p < 0.01; robust standard errors in parenthesis.

Regression #1 shows elasticities with all variables measured in natural logs; these coefficients are reported in figure 1.

Regression #2 measures all variables in levels except for median home value, which is measured as the natural log; these coefficients are used in appendix table 1a.

Notes: Washington, DC and New York City were excluded from the regression because they have very atypical revenue structures, and as major outliers they significantly altered the coefficient estimates and weakened the overall fit for the model. Honolulu and Newark were excluded because they do not have data in the FiSC database on property tax reliance or state and federal aid as a percent of the local government budget. The means and standard deviations shown in the table also exclude these four cities.

Appendix Table 1d: Correlates of Cities' Effective Tax Rates on Commercial Properties

	(1)	(2)	Mean	St. Dev.	Data
Tax Rate on Commercial Property	N/A	N/A	1.910	0.749	Effective tax rate on $1-Million Commercial Property Source: *50-State Property Tax Comparison Study* (Appendix Tables 3a, 3b)
Median Home Value	-0.457*** (0.074)	-0.902*** (0.165)	283,490	205,979	Median home value in city Source: 2018 American Community Survey (U.S. Census Bureau)
Business Classification Ratio	0.474*** (0.081)	0.385*** (0.106)	1.579	0.809	Commercial-homestead classification ratio, with taxes on personal property excluded for commercial properties Source: *50-State Property Tax Comparison Study*
Apartments Classification Ratio	-0.243* (0.138)	-0.229 (0.156)	1.287	0.508	Apartment-homestead classification ratio, with taxes on personal property excluded for apartments Source: *50-State Property Tax Comparison Study*
Property Tax Reliance	0.562*** (0.117)	0.0238*** (0.005)	40.6	13.9	Property taxes as a percent of own source revenue for the fiscally standardized city (FiSC) Source: Lincoln Institute of Land Policy. FiSC database (2017).
Local Gov't Spending Per Capita (1000s)	0.484*** (0.142)	0.124*** (0.037)	6.462	2.224	Direct expenditures per capita for the fiscally standardized city (FiSC) Source: Lincoln Institute of Land Policy. FiSC database (2017).
State and Federal Aid as % Local Gov't Budget	0.0627 (0.107)	0.00501 (0.007)	33.9	10.9	Intergovernmental revenue as a percent of general revenue for the fiscally standardized city (FiSC) Source: Lincoln Institute of Land Policy. FiSC database (2017).
Local as % State-Local Spending	0.137 (0.304)	0.0087 (0.011)	49.5	7.8	Local government direct expenditures as a percent of state and local direct expenditures (State-level variable) Source: 2017 Survey of State and Local Gov't Finances (U.S. Census Bureau)
Constant	-2.021 (1.220)	10.39*** (2.038)			
N	69	69			
R-sq	0.543	0.515			
adj. R-sq	0.49	0.459			
F	14.34	9.635			

* p < 0.10, ** p < 0.05, *** p < 0.01; robust standard errors in parenthesis.

Regression #1 shows elasticities with all variables measured in natural logs.

Regression #2 measures all variables in levels except for median home value, which is measured as the natural log; these coefficients are used in appendix table 1b.

Notes: Washington, DC and New York City were excluded from the regression because they have very atypical revenue structures, and as major outliers they significantly altered the coefficient estimates and weakened the overall fit for the model. Honolulu and Newark were excluded because they do not have data in the FiSC database on property tax reliance or state and federal aid as a percent of the local government budget. The means and standard deviations shown in the table also exclude these four cities.

Appendix Table 2a: Homestead Property Taxes for Largest City in Each State: Median Valued Homes

		Tax Rate (%)			Tax Bill ($)			Median Home Value
State	City	Rate	Rank	Change from '18	Amount	Rank	Change from '18	
Alabama	Birmingham	0.665%	48	-	621	53	-	93,400
Alaska	Anchorage	1.201%	28	7 ↓	3,859	13	2 ↓	321,300
Arizona	Phoenix	1.249%	24	-	3,111	18	6 ↑	249,100
Arkansas	Little Rock	1.122%	34	1 ↓	1,917	42	1 ↓	170,800
California	Los Angeles	1.162%	33	6 ↓	7,931	2	-	682,400
Colorado	Denver	0.557%	50	-	2,424	32	2 ↑	435,100
Connecticut	Bridgeport	3.215%	2	-	5,619	8	1 ↓	174,800
DC	Washington	0.729%	45	2 ↑	4,503	11	1 ↑	617,900
Delaware	Wilmington	1.388%	18	2 ↑	2,285	35	7 ↓	164,600
Florida	Jacksonville	1.251%	23	3 ↑	2,299	33	-	183,700
Georgia	Atlanta	0.876%	41	6 ↓	2,646	26	9 ↓	302,200
Hawaii	Honolulu	0.309%	53	-	2,176	38	2 ↓	705,400
Idaho	Boise	0.795%	43	-	2,218	36	3 ↑	278,800
Illinois	Aurora*	3.303%	1	-	6,404	6	-	193,900
Illinois	Chicago	1.522%	17	-	4,134	12	1 ↑	271,600
Indiana	Indianapolis	1.163%	32	5 ↑	1,659	46	2 ↑	142,700
Iowa	Des Moines	2.245%	8	-	3,081	20	-	137,200
Kansas	Wichita	1.184%	30	2 ↓	1,655	47	1 ↓	139,800
Kentucky	Louisville	1.210%	27	4 ↑	2,041	39	5 ↑	168,700
Louisiana	New Orleans	1.040%	36	3 ↑	2,526	31	4 ↑	242,900
Maine	Portland	1.827%	13	-	5,453	9	-	298,500
Maryland	Baltimore	2.217%	9	-	3,721	14	1 ↑	167,800
Massachusetts	Boston	0.486%	52	1 ↓	2,798	25	1 ↑	575,200
Michigan	Detroit	2.933%	4	1 ↓	1,514	50	5 ↓	51,600
Minnesota	Minneapolis	1.368%	20	3 ↑	3,687	15	1 ↑	269,500
Mississippi	Jackson	1.366%	21	1 ↑	1,288	51	1 ↓	94,300
Missouri	Kansas City	1.377%	19	1 ↓	2,291	34	4 ↓	166,400
Montana	Billings	0.904%	40	-	2,000	40	3 ↓	221,300
Nebraska	Omaha	2.018%	11	-	3,298	16	2 ↑	163,400
Nevada	Las Vegas	1.111%	35	3 ↓	3,167	17	8 ↑	285,000
New Hampshire	Manchester	2.033%	10	-	4,713	10	-	231,800
New Jersey	Newark	3.025%	3	1 ↑	7,616	4	-	251,800
New Mexico	Albuquerque	1.231%	26	1 ↓	2,551	29	-	207,300
New York	Buffalo*	1.593%	15	1 ↑	1,566	49	2 ↓	98,300
New York	New York City	1.181%	31	1 ↓	7,618	3	-	645,100
AVERAGE		**1.395%**			**3,306**			**268,351**

		Tax Rate (%)			Tax Bill ($)			Median Home Value
State	**City**	**Rate**	**Rank**	**Change from '18**	**Amount**	**Rank**	**Change from '18**	
North Carolina	Charlotte	0.951%	38	-	2,196	37	1 ↑	230,900
North Dakota	Fargo	1.188%	29	7 ↑	2,618	27	4 ↑	220,400
Ohio	Columbus	1.935%	12	-	3,084	19	3 ↑	159,400
Oklahoma	Oklahoma City	1.235%	25	4 ↑	1,998	41	1 ↑	161,700
Oregon	Portland	2.456%	5	1 ↑	11,077	1	-	451,000
Pennsylvania	Philadelphia	1.000%	37	3 ↓	1,677	45	2 ↓	167,700
Rhode Island	Providence	1.292%	22	8 ↓	2,835	24	10 ↓	219,500
South Carolina	Charleston	0.521%	51	1 ↑	1,878	43	8 ↑	360,800
South Dakota	Sioux Falls	1.538%	16	3 ↑	3,036	23	-	197,400
Tennessee	Nashville	0.669%	47	3 ↓	1,833	44	4 ↓	274,100
Texas	Houston	1.713%	14	1 ↑	3,068	21	-	179,100
Utah	Salt Lake City	0.708%	46	-	2,549	30	2 ↑	359,800
Vermont	Burlington	2.311%	7	-	6,961	5	-	301,200
Virginia	Virginia Beach	0.914%	39	2 ↑	2,608	28	1 ↓	285,400
Washington	Seattle	0.763%	44	2 ↓	5,786	7	1 ↑	758,200
West Virginia	Charleston	0.831%	42	3 ↑	994	52	-	119,600
Wisconsin	Milwaukee	2.406%	6	1 ↓	3,039	22	3 ↓	126,300
Wyoming	Cheyenne	0.652%	49	-	1,606	48	1 ↑	246,500
AVERAGE		**1.395%**			**3,306**			**268,351**

* Illinois and New York have two cities included in this table, because the tax systems in Chicago and New York City are significantly different from the rest of the state.
Source for median home values: *2018 American Community Survey*, 1-year data

Appendix Table 2b: Homestead Property Taxes for Largest City in Each State: Median Valued Homes, with Assessment Limits

		Tax Rate (%)			Tax Bill ($)			Median Home Value
State	**City**	**Rate**	**Rank**	**Change from '18**	**Amount**	**Rank**	**Change from '18**	
Alabama	Birmingham	0.665%	46	1 ↑	621	53	-	93,400
Alaska	Anchorage	1.201%	24	3 ↓	3,859	12	3 ↓	321,300
Arizona	Phoenix	0.893%	37	-	2,225	34	-	249,100
Arkansas	Little Rock	1.096%	31	1 ↑	1,871	41	1 ↑	170,800
California	Los Angeles	0.641%	48	2 ↓	4,375	10	-	682,400
Colorado	Denver	0.557%	49	-	2,424	31	1 ↑	435,100
Connecticut	Bridgeport	3.215%	2	-	5,619	6	1 ↓	174,800
DC	Washington	0.729%	42	3 ↑	4,503	9	2 ↑	617,900
Delaware	Wilmington	1.388%	18	2 ↑	2,285	33	6 ↓	164,600
Florida	Jacksonville	0.693%	44	3 ↓	1,273	50	3 ↓	183,700
Georgia	Atlanta	0.876%	38	8 ↓	2,646	25	9 ↓	302,200
Hawaii	Honolulu	0.309%	53	1 ↓	2,176	37	2 ↓	705,400
Idaho	Boise	0.795%	40	-	2,218	35	3 ↑	278,800
Illinois	Aurora*	3.303%	1	-	6,404	4	-	193,900
Illinois	Chicago	1.522%	17	2 ↑	4,134	11	1 ↑	271,600
Indiana	Indianapolis	1.163%	29	4 ↑	1,659	44	2 ↑	142,700
Iowa	Des Moines	2.245%	6	1 ↑	3,081	19	-	137,200
Kansas	Wichita	1.184%	27	2 ↓	1,655	45	1 ↓	139,800
Kentucky	Louisville	1.210%	23	3 ↑	2,041	38	3 ↑	168,700
Louisiana	New Orleans	1.040%	32	3 ↑	2,526	29	4 ↑	242,900
Maine	Portland	1.827%	12	-	5,453	7	-	298,500
Maryland	Baltimore	2.217%	7	1 ↑	3,721	13	1 ↑	167,800
Massachusetts	Boston	0.486%	51	-	2,798	24	1 ↑	575,200
Michigan	Detroit	1.920%	11	6 ↓	991	52	2 ↓	51,600
Minnesota	Minneapolis	1.368%	20	3 ↑	3,687	14	1 ↑	269,500
Mississippi	Jackson	1.366%	21	1 ↑	1,288	49	-	94,300
Missouri	Kansas City	1.377%	19	2 ↓	2,291	32	3 ↓	166,400
Montana	Billings	0.904%	36	-	2,000	39	3 ↓	221,300
Nebraska	Omaha	2.018%	9	1 ↑	3,298	15	2 ↑	163,400
Nevada	Las Vegas	1.111%	30	3 ↓	3,167	17	7 ↑	285,000
New Hampshire	Manchester	2.033%	8	1 ↑	4,713	8	-	231,800
New Jersey	Newark	3.025%	3	-	7,616	1	1 ↑	251,800
New Mexico	Albuquerque	1.194%	25	1 ↓	2,476	30	2 ↓	207,300
New York	Buffalo*	1.593%	15	1 ↑	1,566	47	2 ↓	98,300
New York	New York City	0.504%	50	-	3,251	16	5 ↑	645,100
AVERAGE		**1.317%**			**3,033**			**268,351**

		Tax Rate (%)			Tax Bill ($)			Median Home Value
State	**City**	**Rate**	**Rank**	**Change from '18**	**Amount**	**Rank**	**Change from '18**	
North Carolina	Charlotte	0.951%	34	-	2,196	36	1 ↑	230,900
North Dakota	Fargo	1.188%	26	5 ↑	2,618	26	4 ↑	220,400
Ohio	Columbus	1.935%	10	1 ↑	3,084	18	4 ↑	159,400
Oklahoma	Oklahoma City	1.168%	28	-	1,889	40	3 ↑	161,700
Oregon	Portland	1.685%	14	1 ↑	7,598	2	1 ↓	451,000
Pennsylvania	Philadelphia	1.000%	33	4 ↓	1,677	43	3 ↓	167,700
Rhode Island	Providence	1.292%	22	9 ↓	2,835	23	10 ↓	219,500
South Carolina	Charleston	0.401%	52	1 ↑	1,445	48	3 ↑	360,800
South Dakota	Sioux Falls	1.538%	16	2 ↑	3,036	22	1 ↑	197,400
Tennessee	Nashville	0.669%	45	3 ↓	1,833	42	3 ↓	274,100
Texas	Houston	1.713%	13	1 ↑	3,068	20	-	179,100
Utah	Salt Lake City	0.708%	43	1 ↑	2,549	28	3 ↑	359,800
Vermont	Burlington	2.311%	5	1 ↑	6,961	3	-	301,200
Virginia	Virginia Beach	0.914%	35	3 ↑	2,608	27	1 ↓	285,400
Washington	Seattle	0.763%	41	2 ↓	5,786	5	1 ↑	758,200
West Virginia	Charleston	0.831%	39	4 ↑	994	51	1 ↑	119,600
Wisconsin	Milwaukee	2.406%	4	-	3,039	21	3 ↓	126,300
Wyoming	Cheyenne	0.652%	47	1 ↑	1,606	46	2 ↑	246,500
AVERAGE		**1.317%**			**3,033**			**268,351**

* Illinois and New York have two cities included in this table, because the tax systems in Chicago and New York City are significantly different from the rest of the state.
Source for median home values: *2018 American Community Survey*, 1-year data

Appendix Table 2c: Homestead Property Taxes for Largest City in Each State: Homes worth $150,000 and $300,000

		$150,000 Property Value				$300,000 Property Value				Tax Rate Varies with Property Value
State	City	Tax Rate	Tax Bill	Rank	Change from '18	Tax Rate	Tax Bill	Rank	Change from '18	
Alabama	Birmingham	0.686%	1,029	44	3 ↑	0.704%	2,112	46	1 ↑	X
Alaska	Anchorage	1.165%	1,747	31	9 ↓	1.183%	3,549	32	9 ↓	X
Arizona	Phoenix	1.249%	1,874	22	1 ↑	1.249%	3,747	25	1 ↑	
Arkansas	Little Rock	1.094%	1,641	34	2 ↓	1.211%	3,632	27	1 ↑	X
California	Los Angeles	1.119%	1,679	32	1 ↓	1.147%	3,441	34	3 ↓	X
Colorado	Denver	0.557%	836	48	1 ↑	0.557%	1,671	50	-	
Connecticut	Bridgeport	3.215%	4,822	1	1 ↑	3.215%	9,644	2	-	
DC	Washington	0.414%	621	50	-	0.622%	1,865	49	-	X
Delaware	Wilmington	1.388%	2,082	18	2 ↑	1.388%	4,164	20	1 ↑	
Florida	Jacksonville	1.165%	1,747	30	4 ↓	1.401%	4,204	19	3 ↑	X
Georgia	Atlanta	0.254%	381	51	5 ↓	0.871%	2,613	41	6 ↓	X
Hawaii	Honolulu	0.162%	242	52	-	0.255%	765	52	-	X
Idaho	Boise	0.643%	965	47	3 ↓	0.830%	2,490	43	3 ↓	X
Illinois	Aurora*	3.212%	4,818	2	1 ↓	3.412%	10,236	1	-	X
Illinois	Chicago	1.319%	1,979	20	1 ↑	1.546%	4,637	17	-	X
Indiana	Indianapolis	1.166%	1,750	29	6 ↑	1.204%	3,611	29	9 ↑	X
Iowa	Des Moines	2.260%	3,389	7	-	2.336%	7,008	7	-	X
Kansas	Wichita	1.186%	1,779	28	1 ↓	1.201%	3,604	30	-	X
Kentucky	Louisville	1.210%	1,815	26	3 ↑	1.210%	3,630	28	4 ↑	
Louisiana	New Orleans	0.771%	1,157	41	2 ↑	1.123%	3,368	36	-	X
Maine	Portland	1.697%	2,545	13	3 ↑	1.828%	5,483	13	-	X
Maryland	Baltimore	2.217%	3,326	8	-	2.217%	6,652	9	-	
Massachusetts	Boston	0.096%	144	53	-	0.096%	288	53	-	
Michigan	Detroit	2.933%	4,400	4	1 ↓	2.933%	8,800	4	1 ↓	
Minnesota	Minneapolis	1.226%	1,839	24	1 ↑	1.386%	4,158	21	3 ↑	X
Mississippi	Jackson	1.484%	2,227	17	1 ↑	1.584%	4,753	16	2 ↑	X
Missouri	Kansas City	1.377%	2,065	19	2 ↓	1.377%	4,130	22	3 ↓	
Montana	Billings	0.904%	1,356	39	1 ↓	0.904%	2,711	40	1 ↑	
Nebraska	Omaha	2.018%	3,028	10	1 ↑	2.018%	6,055	11	-	
Nevada	Las Vegas	1.111%	1,667	33	3 ↓	1.111%	3,334	37	4 ↓	
New Hampshire	Manchester	2.033%	3,050	9	-	2.033%	6,099	10	-	
New Jersey	Newark	3.025%	4,537	3	1 ↑	3.025%	9,074	3	1 ↑	
New Mexico	Albuquerque	1.215%	1,823	25	1 ↓	1.243%	3,730	26	1 ↓	X
New York	Buffalo*	1.687%	2,530	14	-	1.776%	5,329	15	1 ↓	X
New York	New York City	1.025%	1,537	35	1 ↑	1.126%	3,379	35	1 ↓	X
AVERAGE		**1.338%**	**2,007**			**1.411%**	**4,233**			**N = 26**

		$150,000 Property Value				$300,000 Property Value				Tax Rate Varies with Property Value
State	**City**	**Tax Rate**	**Tax Bill**	**Rank**	**Change from '18**	**Tax Rate**	**Tax Bill**	**Rank**	**Change from '18**	
North Carolina	Charlotte	0.951%	1,427	37	-	0.951%	2,854	38	1 ↑	
North Dakota	Fargo	1.188%	1,782	27	7 ↑	1.188%	3,563	31	6 ↑	
Ohio	Columbus	1.935%	2,902	11	1 ↑	1.935%	5,804	12	-	
Oklahoma	Oklahoma City	1.230%	1,845	23	5 ↑	1.269%	3,808	24	5 ↑	X
Oregon	Portland	2.456%	3,684	5	1 ↑	2.456%	7,368	6	-	
Pennsylvania	Philadelphia	0.956%	1,434	36	3 ↓	1.164%	3,492	33	6 ↓	X
Rhode Island	Providence	1.292%	1,937	21	8 ↓	1.292%	3,875	23	7 ↓	
South Carolina	Charleston	0.521%	781	49	2 ↑	0.521%	1,562	51	-	
South Dakota	Sioux Falls	1.538%	2,307	16	3 ↑	1.538%	4,615	18	2 ↑	
Tennessee	Nashville	0.669%	1,003	45	4 ↓	0.669%	2,006	47	3 ↓	
Texas	Houston	1.682%	2,523	15	-	1.782%	5,346	14	1 ↑	X
Utah	Salt Lake City	0.708%	1,063	43	2 ↑	0.708%	2,125	45	1 ↑	
Vermont	Burlington	1.918%	2,877	12	2 ↓	2.310%	6,930	8	-	X
Virginia	Virginia Beach	0.914%	1,371	38	1 ↑	0.914%	2,741	39	3 ↑	
Washington	Seattle	0.763%	1,145	42	2 ↓	0.763%	2,289	44	1 ↓	
West Virginia	Charleston	0.831%	1,246	40	2 ↑	0.831%	2,492	42	3 ↑	
Wisconsin	Milwaukee	2.435%	3,653	6	1 ↓	2.512%	7,535	5	-	X
Wyoming	Cheyenne	0.652%	977	46	2 ↑	0.652%	1,955	48	-	
AVERAGE		**1.338%**	**2,007**			**1.411%**	**4,233**			**N = 26**

* Illinois and New York have two cities included in this table, because the tax systems in Chicago and New York City are significantly different from the rest of the state.

Appendix Table 2d: Homestead Property Taxes for the Largest Fifty U.S. Cities: Median Valued Homes

		Tax Rate (%)			Tax Bill ($)			Median Home Value
State	**City**	**Rate**	**Rank**	**Change from '18**	**Amount**	**Rank**	**Change from '18**	
Arizona	Mesa	0.829%	44	1 ↑	2,010	41	-	242,500
Arizona	Phoenix	1.249%	23	2 ↓	3,111	25	2 ↑	249,100
Arizona	Tucson	1.152%	35	5 ↓	1,932	43	3 ↑	167,800
California	Fresno	1.213%	27	2 ↓	3,120	24	4 ↑	257,200
California	Long Beach	1.196%	29	3 ↓	7,183	8	-	600,700
California	Los Angeles	1.163%	33	6 ↓	7,934	6	1 ↓	682,400
California	Oakland	1.355%	20	1 ↓	9,728	4	-	717,700
California	Sacramento	1.115%	36	1 ↑	3,995	16	-	358,300
California	San Diego	1.219%	26	5 ↑	7,980	5	2 ↑	654,700
California	San Francisco	1.173%	32	1 ↑	14,028	1	-	1,195,700
California	San Jose	1.258%	21	1 ↑	12,184	2	-	968,500
Colorado	Colorado Springs	0.512%	49	-	1,476	50	-	288,400
Colorado	Denver	0.557%	48	-	2,424	35	1 ↑	435,100
DC	Washington	0.729%	46	1 ↑	4,503	12	-	617,900
Florida	Jacksonville	1.251%	22	2 ↑	2,299	36	1 ↓	183,700
Florida	Miami	1.689%	14	2 ↑	5,918	10	1 ↑	350,400
Georgia	Atlanta	0.876%	43	5 ↓	2,646	30	8 ↓	302,200
Illinois	Chicago	1.522%	16	1 ↓	4,134	14	1 ↓	271,600
Indiana	Indianapolis	1.163%	34	5 ↑	1,659	47	2 ↑	142,700
Kansas	Wichita	1.184%	30	2 ↓	1,655	48	-	139,800
Kentucky	Louisville	1.210%	28	6 ↑	2,041	39	5 ↑	168,700
Louisiana	New Orleans	1.040%	38	3 ↑	2,526	34	3 ↑	242,900
Maryland	Baltimore	2.217%	6	1 ↑	3,721	19	1 ↑	167,800
Massachusetts	Boston	0.486%	50	-	2,798	29	1 ↑	575,200
Michigan	Detroit	2.933%	1	-	1,514	49	2 ↓	51,600
Minnesota	Minneapolis	1.368%	19	1 ↑	3,687	20	1 ↑	269,500
Missouri	Kansas City	1.377%	18	1 ↓	2,291	37	4 ↓	166,400
Nebraska	Omaha	2.018%	10	-	3,298	22	1 ↑	163,400
Nevada	Las Vegas	1.111%	37	2 ↓	3,167	23	6 ↑	285,000
New Mexico	Albuquerque	1.231%	25	2 ↓	2,551	33	1 ↓	207,300
New York	New York City	1.181%	31	1 ↑	7,618	7	1 ↓	645,100
North Carolina	Charlotte	0.951%	41	1 ↓	2,196	38	-	230,900
North Carolina	Raleigh	0.979%	40	2 ↑	2,631	31	3 ↑	268,900
Ohio	Columbus	1.935%	11	-	3,084	26	-	159,400
Oklahoma	Oklahoma City	1.235%	24	5 ↑	1,998	42	-	161,700
AVERAGE		**1.398%**			**4,085**			**326,392**

		Tax Rate (%)			Tax Bill ($)			Median Home Value
State	**City**	**Rate**	**Rank**	**Change from '18**	**Amount**	**Rank**	**Change from '18**	
Oklahoma	Tulsa	1.412%	17	1 ↑	2,035	40	1 ↓	144,100
Oregon	Portland	2.456%	3	1 ↑	11,077	3	-	451,000
Pennsylvania	Philadelphia	1.000%	39	3 ↓	1,677	45	2 ↓	167,700
Tennessee	Memphis	1.609%	15	2 ↓	1,668	46	1 ↓	103,700
Tennessee	Nashville	0.669%	47	1 ↓	1,833	44	4 ↓	274,100
Texas	Arlington	2.089%	8	1 ↑	3,944	17	1 ↑	188,800
Texas	Austin	1.846%	12	-	6,746	9	-	365,500
Texas	Dallas	2.086%	9	1 ↓	4,373	13	1 ↑	209,700
Texas	El Paso	2.629%	2	-	3,442	21	2 ↓	130,900
Texas	Fort Worth	2.167%	7	1 ↓	4,102	15	-	189,300
Texas	Houston	1.713%	13	1 ↑	3,068	27	2 ↓	179,100
Texas	San Antonio	2.453%	4	1 ↑	3,817	18	1 ↓	155,600
Virginia	Virginia Beach	0.914%	42	1 ↑	2,608	32	1 ↓	285,400
Washington	Seattle	0.763%	45	1 ↓	5,786	11	1 ↓	758,200
Wisconsin	Milwaukee	2.406%	5	2 ↓	3,039	28	4 ↓	126,300
AVERAGE		**1.398%**			**4,085**			**326,392**

Source for median home values: *2018 American Community Survey*, 1-year data

Appendix Table 2e: Homestead Property Taxes for the Largest Fifty U.S. Cities: Median Valued Homes, with Assessment Limits

		Tax Rate (%)			Tax Bill ($)			Median Home Value
State	City	Rate	Rank	Change from '18	Amount	Rank	Change from '18	
Arizona	Mesa	0.649%	43	1 ↑	1,575	47	1 ↓	242,500
Arizona	Phoenix	0.893%	31	-	2,225	34	-	249,100
Arizona	Tucson	1.064%	25	1 ↑	1,786	42	2 ↑	167,800
California	Fresno	0.716%	38	1 ↑	1,840	40	3 ↑	257,200
California	Long Beach	0.750%	36	2 ↑	4,508	8	2 ↑	600,700
California	Los Angeles	0.641%	44	1 ↓	4,377	10	2 ↓	682,400
California	Oakland	0.674%	41	1 ↑	4,834	7	1 ↓	717,700
California	Sacramento	0.577%	46	-	2,068	36	-	358,300
California	San Diego	0.816%	34	3 ↑	5,344	6	1 ↑	654,700
California	San Francisco	0.625%	45	-	7,478	2	-	1,195,700
California	San Jose	0.690%	40	-	6,683	4	-	968,500
Colorado	Colorado Springs	0.512%	48	1 ↑	1,476	48	1 ↑	288,400
Colorado	Denver	0.557%	47	-	2,424	32	-	435,100
DC	Washington	0.729%	37	4 ↑	4,503	9	-	617,900
Florida	Jacksonville	0.693%	39	4 ↓	1,273	49	1 ↓	183,700
Florida	Miami	0.874%	33	1 ↑	3,061	24	2 ↑	350,400
Georgia	Atlanta	0.876%	32	7 ↓	2,646	27	8 ↓	302,200
Illinois	Chicago	1.522%	15	1 ↑	4,134	12	-	271,600
Indiana	Indianapolis	1.163%	23	4 ↑	1,659	45	2 ↑	142,700
Kansas	Wichita	1.184%	21	1 ↓	1,655	46	1 ↓	139,800
Kentucky	Louisville	1.210%	19	2 ↑	2,041	37	3 ↑	168,700
Louisiana	New Orleans	1.040%	26	3 ↑	2,526	30	3 ↑	242,900
Maryland	Baltimore	2.217%	4	1 ↑	3,721	16	1 ↑	167,800
Massachusetts	Boston	0.486%	50	-	2,798	26	1 ↑	575,200
Michigan	Detroit	1.920%	10	6 ↓	991	50	-	51,600
Minnesota	Minneapolis	1.368%	17	1 ↑	3,687	17	1 ↑	269,500
Missouri	Kansas City	1.377%	16	1 ↓	2,291	33	3 ↓	166,400
Nebraska	Omaha	2.018%	8	1 ↑	3,298	19	1 ↑	163,400
Nevada	Las Vegas	1.111%	24	2 ↓	3,167	21	4 ↑	285,000
New Mexico	Albuquerque	1.194%	20	1 ↓	2,476	31	2 ↓	207,300
New York	New York City	0.504%	49	1 ↓	3,251	20	3 ↑	645,100
North Carolina	Charlotte	0.951%	29	1 ↓	2,196	35	-	230,900
North Carolina	Raleigh	0.979%	28	2 ↑	2,631	28	3 ↑	268,900
Ohio	Columbus	1.935%	9	1 ↑	3,084	22	2 ↑	159,400
Oklahoma	Oklahoma City	1.168%	22	1 ↑	1,889	39	3 ↑	161,700
AVERAGE		**1.221%**			**3,225**			**326,392**

		Tax Rate (%)			Tax Bill ($)			Median Home Value
State	**City**	**Rate**	**Rank**	**Change from '18**	**Amount**	**Rank**	**Change from '18**	
Oklahoma	Tulsa	1.348%	18	1 ↓	1,942	38	-	144,100
Oregon	Portland	1.685%	13	1 ↑	7,598	1	-	451,000
Pennsylvania	Philadelphia	1.000%	27	3 ↓	1,677	43	4 ↓	167,700
Tennessee	Memphis	1.609%	14	2 ↓	1,668	44	3 ↓	103,700
Tennessee	Nashville	0.669%	42	6 ↓	1,833	41	4 ↓	274,100
Texas	Arlington	2.089%	6	2 ↑	3,944	14	1 ↑	188,800
Texas	Austin	1.846%	11	-	6,746	3	-	365,500
Texas	Dallas	2.086%	7	-	4,373	11	-	209,700
Texas	El Paso	2.629%	1	-	3,442	18	2 ↓	130,900
Texas	Fort Worth	2.162%	5	1 ↑	4,093	13	-	189,300
Texas	Houston	1.713%	12	1 ↑	3,068	23	1 ↓	179,100
Texas	San Antonio	2.453%	2	1 ↑	3,817	15	1 ↓	155,600
Virginia	Virginia Beach	0.914%	30	2 ↑	2,608	29	1 ↓	285,400
Washington	Seattle	0.763%	35	2 ↓	5,786	5	-	758,200
Wisconsin	Milwaukee	2.406%	3	1 ↓	3,039	25	4 ↓	126,300
AVERAGE		**1.221%**			**3,225**			**326,392**

Source for median home values: *2018 American Community Survey*, 1-year data

Appendix Table 2f: Homestead Property Taxes for the Largest Fifty U.S. Cities: Homes worth $150,000 and $300,000

		$150,000 Property Value				$300,000 Property Value				Tax Rate Varies with Property Value
State	City	Rate	Tax Bill	Rank	Change from '18	Tax Rate	Tax Bill	Rank	Change from '18	
Arizona	Mesa	0.829%	1,243	42	1 ↑	0.829%	2,486	44	1 ↑	
Arizona	Phoenix	1.249%	1,874	20	-	1.249%	3,747	23	-	
Arizona	Tucson	1.152%	1,727	32	4 ↓	1.152%	3,455	34	3 ↓	
California	Fresno	1.189%	1,783	26	1 ↓	1.218%	3,654	26	-	X
California	Long Beach	1.153%	1,730	31	2 ↓	1.182%	3,545	31	2 ↓	X
California	Los Angeles	1.120%	1,680	34	2 ↓	1.147%	3,442	35	5 ↓	X
California	Oakland	1.305%	1,957	19	1 ↓	1.337%	4,011	21	-	X
California	Sacramento	1.084%	1,626	36	-	1.111%	3,332	39	2 ↓	X
California	San Diego	1.174%	1,762	28	5 ↑	1.203%	3,610	29	4 ↑	X
California	San Francisco	1.125%	1,688	33	1 ↑	1.153%	3,458	33	2 ↑	X
California	San Jose	1.208%	1,812	25	3 ↓	1.238%	3,713	25	1 ↓	X
Colorado	Colorado Springs	0.512%	768	47	1 ↑	0.512%	1,536	49	-	
Colorado	Denver	0.557%	836	46	1 ↑	0.557%	1,671	48	-	
DC	Washington	0.414%	621	48	1 ↑	0.622%	1,865	47	-	X
Florida	Jacksonville	1.165%	1,747	30	6 ↓	1.401%	4,204	18	1 ↑	X
Florida	Miami	1.364%	2,046	17	2 ↑	1.648%	4,944	14	2 ↑	X
Georgia	Atlanta	0.254%	381	49	3 ↓	0.871%	2,613	43	5 ↓	X
Illinois	Chicago	1.319%	1,979	18	2 ↓	1.546%	4,637	16	1 ↓	X
Indiana	Indianapolis	1.166%	1,750	29	8 ↑	1.204%	3,611	28	12 ↑	X
Kansas	Wichita	1.186%	1,779	27	1 ↓	1.201%	3,604	30	2 ↓	X
Kentucky	Louisville	1.210%	1,815	24	6 ↑	1.210%	3,630	27	5 ↑	
Louisiana	New Orleans	0.771%	1,157	43	2 ↑	1.123%	3,368	37	2 ↑	X
Maryland	Baltimore	2.217%	3,326	6	1 ↑	2.217%	6,652	7	2 ↑	
Massachusetts	Boston	0.096%	144	50	-	0.096%	288	50	-	
Michigan	Detroit	2.933%	4,400	1	-	2.933%	8,800	1	-	
Minnesota	Minneapolis	1.226%	1,839	22	1 ↑	1.386%	4,158	19	1 ↑	X
Missouri	Kansas City	1.377%	2,065	16	1 ↓	1.377%	4,130	20	3 ↓	
Nebraska	Omaha	2.018%	3,028	10	-	2.018%	6,055	10	-	
Nevada	Las Vegas	1.111%	1,667	35	4 ↓	1.111%	3,334	38	4 ↓	
New Mexico	Albuquerque	1.215%	1,823	23	2 ↓	1.243%	3,730	24	2 ↓	X
New York	New York City	1.025%	1,537	37	1 ↑	1.126%	3,379	36	-	X
North Carolina	Charlotte	0.951%	1,427	40	1 ↓	0.951%	2,854	41	-	
North Carolina	Raleigh	0.979%	1,468	38	2 ↑	0.979%	2,936	40	2 ↑	
Ohio	Columbus	1.935%	2,902	11	-	1.935%	5,804	11	-	
Oklahoma	Oklahoma City	1.230%	1,845	21	6 ↑	1.269%	3,808	22	5 ↑	X
AVERAGE		**1.335%**	**2,003**			**1.408%**	**4,223**			**N = 30**

		$150,000 Property Value				$300,000 Property Value				Tax Rate Varies with Property Value
State	**City**	**Rate**	**Tax Bill**	**Rank**	**Change from '18**	**Tax Rate**	**Tax Bill**	**Rank**	**Change from '18**	
Oklahoma	Tulsa	1.416%	2,124	15	2 ↑	1.462%	4,385	17	1 ↑	X
Oregon	Portland	2.456%	3,684	3	1 ↑	2.456%	7,368	5	-	
Pennsylvania	Philadelphia	0.956%	1,434	39	4 ↓	1.164%	3,492	32	7 ↓	X
Tennessee	Memphis	1.609%	2,413	14	2 ↓	1.609%	4,826	15	1 ↓	
Tennessee	Nashville	0.669%	1,003	45	1 ↓	0.669%	2,006	46	-	
Texas	Arlington	2.045%	3,067	8	-	2.153%	6,459	8	1 ↓	X
Texas	Austin	1.733%	2,600	12	1 ↑	1.829%	5,486	12	-	X
Texas	Dallas	2.027%	3,041	9	-	2.130%	6,389	9	1 ↓	X
Texas	El Paso	2.667%	4,000	2	-	2.796%	8,388	2	-	X
Texas	Fort Worth	2.123%	3,184	7	1 ↓	2.229%	6,688	6	-	X
Texas	Houston	1.682%	2,523	13	1 ↑	1.777%	5,331	13	-	X
Texas	San Antonio	2.444%	3,666	4	1 ↑	2.572%	7,717	3	1 ↑	X
Virginia	Virginia Beach	0.914%	1,371	41	-	0.914%	2,741	42	1 ↑	
Washington	Seattle	0.763%	1,145	44	2 ↓	0.763%	2,289	45	1 ↓	
Wisconsin	Milwaukee	2.435%	3,653	5	2 ↓	2.512%	7,535	4	1 ↓	X
AVERAGE		**1.335%**	**2,003**			**1.408%**	**4,223**			**N = 30**

Appendix Table 2g: Homestead Property Taxes for Selected Rural Municipalities: Median Valued Homes

		Tax Rate (%)			Tax Bill ($)			Median Home Value
State	City	Rate	Rank	Change from '18	Amount	Rank	Change from '18	
Alabama	Monroeville	0.371%	48	-	462	47	2 ↑	124,500
Alaska	Ketchikan	1.103%	27	1 ↑	2,621	13	1 ↓	237,700
Arizona	Safford	0.813%	36	-	1,108	32	1 ↓	136,200
Arkansas	Pocahontas	0.326%	49	-	254	50	-	77,900
California	Yreka	1.007%	29	3 ↑	1,535	22	2 ↑	152,400
Colorado	Walsenburg	0.554%	45	-	534	46	-	96,300
Connecticut	Litchfield	2.031%	14	1 ↓	6,965	1	-	343,000
Delaware	Georgetown	0.581%	44	-	1,271	28	2 ↑	218,900
Florida	Moore Haven	0.629%	43	4 ↓	390	49	1 ↓	62,100
Georgia	Fitzgerald	1.437%	19	-	1,193	30	2 ↓	83,000
Hawaii	Kauai	0.204%	50	-	1,020	35	1 ↓	499,500
Idaho	Saint Anthony	0.640%	42	1 ↓	767	40	1 ↓	119,900
Illinois	Galena	2.247%	5	1 ↑	3,353	7	1 ↓	149,200
Indiana	North Vernon	0.941%	33	-	853	38	-	90,700
Iowa	Hampton	1.751%	16	1 ↓	1,464	25	2 ↓	83,600
Kansas	Iola	2.184%	6	8 ↑	1,777	18	3 ↑	81,400
Kentucky	Morehead	1.167%	23	8 ↑	2,149	15	3 ↑	184,100
Louisiana	Natchitoches	0.485%	47	-	756	41	1 ↑	156,000
Maine	Rockland	2.176%	7	5 ↑	3,590	5	2 ↑	165,000
Maryland	Denton	1.728%	17	-	3,197	8	1 ↑	185,000
Massachusetts	Adams	2.096%	13	6 ↓	3,159	9	1 ↓	150,700
Michigan	Manistique	2.130%	10	1 ↓	1,259	29	2 ↓	59,100
Minnesota	Glencoe	1.236%	22	-	1,720	19	1 ↑	139,200
Mississippi	Philadelphia	1.002%	30	-	801	39	4 ↓	79,900
Missouri	Boonville	0.994%	32	5 ↓	1,133	31	2 ↓	114,000
Montana	Glasgow	1.002%	31	2 ↓	1,390	27	5 ↓	138,800
Nebraska	Sidney	2.155%	8	2 ↑	2,455	14	3 ↓	113,900
Nevada	Fallon	1.252%	21	-	1,802	17	-	144,000
New Hampshire	Lancaster	2.512%	4	3 ↓	3,585	6	1 ↓	142,700
New Jersey	Maurice River Twp	2.792%	2	1 ↑	4,346	4	-	155,700
New Mexico	Santa Rosa	0.842%	35	1 ↓	719	43	3 ↓	85,400
New York	Warsaw	3.007%	1	1 ↑	3,151	10	-	104,800
North Carolina	Edenton	1.089%	28	3 ↓	1,638	21	4 ↑	150,400
North Dakota	Devils Lake	1.259%	20	6 ↑	1,456	26	7 ↑	115,600
Ohio	Bryan	1.570%	18	-	1,490	24	2 ↑	94,900
AVERAGE		**1.330%**			**1,882**			**141,420**

		Tax Rate (%)			Tax Bill ($)			Median Home Value
State	**City**	**Rate**	**Rank**	**Change from '18**	**Amount**	**Rank**	**Change from '18**	
Oklahoma	Mangum	0.736%	37	-	417	48	1 ↓	56,600
Oregon	Tillamook	1.158%	24	-	2,103	16	1 ↓	181,600
Pennsylvania	Ridgway	2.123%	11	7 ↓	1,697	20	4 ↓	79,900
Rhode Island	Hopkinton	2.145%	9	2 ↑	5,654	3	-	263,600
South Carolina	Mullins	0.887%	34	1 ↑	623	44	1 ↑	70,200
South Dakota	Vermillion	1.869%	15	1 ↑	2,700	11	3 ↑	144,500
Tennessee	Savannah	0.690%	39	3 ↑	754	42	1 ↑	109,300
Texas	Fort Stockton	1.127%	26	3 ↓	1,048	34	3 ↑	93,000
Utah	Richfield	0.671%	41	1 ↓	1,090	33	1 ↓	162,400
Vermont	Hartford	2.625%	3	2 ↑	5,958	2	-	227,000
Virginia	Wise	0.681%	40	3 ↑	902	37	4 ↑	132,400
Washington	Okanogan	1.134%	25	5 ↓	1,532	23	4 ↓	135,100
West Virginia	Elkins	0.514%	46	-	578	45	1 ↓	112,500
Wisconsin	Rice Lake	2.104%	12	4 ↓	2,676	12	1 ↑	127,200
Wyoming	Worland	0.709%	38	-	994	36	-	140,200
AVERAGE		**1.330%**			**1,882**			**141,420**

Source for median home values: *2018 American Community Survey*, 5-year data

Appendix Table 2h: Homestead Property Taxes for Selected Rural Municipalities: Homes worth $150,000 and $300,000

		$150,000 Property Value				$300,000 Property Value				Tax Rate Varies with Property Value
State	**City**	**Tax Rate**	**Tax Bill**	**Rank**	**Change from '18**	**Tax Rate**	**Tax Bill**	**Rank**	**Change from '18**	
Alabama	Monroeville	0.379%	568	49	-	0.397%	1,190	49	-	X
Alaska	Ketchikan	1.103%	1,654	29	1 ↑	1.103%	3,308	29	1 ↑	
Arizona	Safford	0.813%	1,220	38	-	0.813%	2,440	38	1 ↑	
Arkansas	Pocahontas	0.542%	812	46	1 ↑	0.658%	1,975	45	1 ↓	X
California	Yreka	1.007%	1,510	31	2 ↑	1.031%	3,093	31	2 ↑	X
Colorado	Walsenburg	0.554%	832	45	-	0.554%	1,663	47	-	
Connecticut	Litchfield	2.031%	3,046	14	1 ↓	2.031%	6,092	14	1 ↓	
Delaware	Georgetown	0.581%	871	44	-	0.581%	1,742	46	-	
Florida	Moore Haven	1.534%	2,300	20	1 ↓	1.853%	5,560	17	2 ↓	X
Georgia	Fitzgerald	1.549%	2,323	19	1 ↑	1.618%	4,854	19	-	X
Hawaii	Kauai	0.050%	75	50	-	0.139%	418	50	-	X
Idaho	Saint Anthony	0.640%	959	43	2 ↓	0.777%	2,330	39	1 ↓	X
Illinois	Galena	2.249%	3,373	4	2 ↑	2.402%	7,207	4	1 ↑	X
Indiana	North Vernon	0.941%	1,412	34	-	0.941%	2,823	34	-	
Iowa	Hampton	1.846%	2,769	16	1 ↓	1.905%	5,716	15	3 ↓	X
Kansas	Iola	2.209%	3,314	6	8 ↑	2.225%	6,674	8	6 ↑	X
Kentucky	Morehead	1.167%	1,751	26	6 ↑	1.167%	3,502	26	6 ↑	
Louisiana	Natchitoches	0.466%	699	48	-	0.713%	2,138	40	3 ↑	X
Maine	Rockland	2.146%	3,219	9	3 ↑	2.311%	6,933	5	3 ↑	X
Maryland	Denton	1.728%	2,592	17	-	1.728%	5,184	18	1 ↓	
Massachusetts	Adams	2.096%	3,144	13	6 ↓	2.096%	6,289	13	6 ↓	
Michigan	Manistique	2.130%	3,195	12	3 ↓	2.130%	6,391	12	3 ↓	
Minnesota	Glencoe	1.264%	1,896	21	2 ↑	1.449%	4,347	21	-	X
Mississippi	Philadelphia	1.178%	1,766	25	-	1.278%	3,833	23	1 ↑	X
Missouri	Boonville	0.994%	1,491	33	4 ↓	0.994%	2,983	33	4 ↓	
Montana	Glasgow	1.002%	1,503	32	1 ↓	1.002%	3,005	32	1 ↓	
Nebraska	Sidney	2.155%	3,233	8	2 ↑	2.155%	6,465	10	-	
Nevada	Fallon	1.252%	1,878	24	-	1.252%	3,755	25	-	
New Hampshire	Lancaster	2.512%	3,769	3	1 ↓	2.512%	7,537	3	-	
New Jersey	Maurice River Twp	2.792%	4,187	2	2 ↑	2.792%	8,375	2	2 ↑	
New Mexico	Santa Rosa	0.871%	1,307	36	1 ↓	0.890%	2,670	35	-	X
New York	Warsaw	3.184%	4,776	1	-	3.389%	10,167	1	-	X
North Carolina	Edenton	1.089%	1,634	30	3 ↓	1.089%	3,267	30	3 ↓	
North Dakota	Devils Lake	1.259%	1,889	22	6 ↑	1.259%	3,778	24	4 ↑	
Ohio	Bryan	1.570%	2,355	18	-	1.570%	4,710	20	-	
AVERAGE		**1.359%**	**2,039**			**1.405%**	**4,216**			**N = 21**

		$150,000 Property Value				$300,000 Property Value				Tax Rate Varies with Property Value
State	**City**	**Tax Rate**	**Tax Bill**	**Rank**	**Change from '18**	**Tax Rate**	**Tax Bill**	**Rank**	**Change from '18**	
Oklahoma	Mangum	0.816%	1,223	37	1 ↓	0.840%	2,519	37	1 ↓	X
Oregon	Tillamook	1.158%	1,737	27	1 ↓	1.158%	3,475	27	1 ↓	
Pennsylvania	Ridgway	2.232%	3,348	5	2 ↓	2.294%	6,881	6	4 ↓	X
Rhode Island	Hopkinton	2.145%	3,217	10	1 ↑	2.145%	6,435	11	-	
South Carolina	Mullins	0.887%	1,330	35	2 ↑	0.887%	2,660	36	1 ↑	
South Dakota	Vermillion	1.869%	2,803	15	1 ↑	1.869%	5,606	16	-	
Tennessee	Savannah	0.690%	1,035	40	2 ↑	0.690%	2,070	42	-	
Texas	Fort Stockton	1.255%	1,883	23	1 ↓	1.360%	4,079	22	-	X
Utah	Richfield	0.671%	1,007	42	2 ↓	0.671%	2,014	44	3 ↓	
Vermont	Hartford	2.185%	3,278	7	2 ↓	2.284%	6,852	7	11 ↑	X
Virginia	Wise	0.681%	1,022	41	2 ↑	0.681%	2,044	43	2 ↑	
Washington	Okanogan	1.134%	1,701	28	7 ↓	1.134%	3,401	28	5 ↓	
West Virginia	Elkins	0.514%	771	47	1 ↓	0.514%	1,541	48	-	
Wisconsin	Rice Lake	2.135%	3,203	11	3 ↓	2.222%	6,666	9	3 ↓	X
Wyoming	Worland	0.709%	1,063	39	-	0.709%	2,127	41	1 ↓	
AVERAGE		**1.359%**	**2,039**			**1.405%**	**4,216**			**N = 21**

Appendix Table 3a: Commercial Property Taxes for Largest City in Each State

State	City	Land and Building Value: $100,000			Land and Building Value: $1 Million			Land and Building Value: $25 Million			Tax Rate Varies with Property Value	Lower Tax Rate on Personal Property
		Tax Rate	Tax Bill	Rank	Tax Rate	Tax Bill	Rank	Tax Rate	Tax Bill	Rank		
Alabama	Birmingham	1.454%	1,744	30 (1 ↑)	1.454%	17,444	33 (1 ↑)	1.454%	436,088	34 (2 ↑)		
Alaska	Anchorage	1.213%	1,456	40 (-)	1.458%	17,502	32 (-)	1.485%	445,401	33 (1 ↓)	X	X
Arizona	Phoenix	2.080%	2,496	20 (2 ↓)	2.142%	25,701	20 (2 ↓)	2.574%	772,230	13 (1 ↓)	X	X
Arkansas	Little Rock	1.398%	1,678	32 (1 ↑)	1.398%	16,779	35 (1 ↑)	1.398%	419,475	36 (2 ↑)		
California	Los Angeles	1.174%	1,409	41 (1 ↑)	1.174%	14,091	43 (1 ↑)	1.174%	352,284	43 (2 ↑)		
Colorado	Denver	2.223%	2,668	17 (2 ↑)	2.223%	26,676	18 (2 ↑)	2.223%	666,906	19 (1 ↑)		
Connecticut	Bridgeport	3.301%	3,961	4 (-)	3.301%	39,607	4 (-)	3.301%	990,177	4 (-)		
DC	Washington	1.261%	1,513	38 (1 ↑)	1.261%	15,131	40 (2 ↑)	1.925%	577,633	26 (-)	X	X
Delaware	Wilmington	1.062%	1,275	46 (14 ↓)	1.062%	12,748	47 (12 ↓)	1.062%	318,706	47 (10 ↓)		X
Florida	Jacksonville	1.365%	1,638	33 (1 ↑)	1.615%	19,380	30 (-)	1.649%	494,797	31 (1 ↓)	X	X
Georgia	Atlanta	1.508%	1,809	29 (-)	1.508%	18,091	31 (-)	1.508%	452,272	32 (1 ↑)		
Hawaii	Honolulu	1.020%	1,224	48 (1 ↑)	1.020%	12,239	49 (-)	1.020%	305,970	49 (-)		X
Idaho	Boise	1.084%	1,300	44 (1 ↓)	1.198%	14,371	42 (4 ↓)	1.307%	392,115	40 (5 ↓)	X	X
Illinois	Aurora*	3.010%	3,611	5 (-)	3.010%	36,115	6 (1 ↓)	3.010%	902,874	6 (-)		X
Illinois	Chicago	3.514%	4,217	3 (-)	3.514%	42,173	3 (-)	3.514%	1,054,336	3 (-)		X
Indiana	Indianapolis	2.907%	3,488	6 (5 ↑)	2.907%	34,882	7 (6 ↑)	2.907%	872,046	8 (6 ↑)		
Iowa	Des Moines	2.300%	2,760	15 (-)	3.021%	36,252	5 (1 ↑)	3.272%	981,693	5 (-)	X	X
Kansas	Wichita	2.562%	3,074	10 (1 ↓)	2.562%	30,744	13 (2 ↓)	2.562%	768,611	14 (1 ↓)		
Kentucky	Louisville	1.363%	1,635	35 (3 ↑)	1.363%	16,352	37 (4 ↑)	1.363%	408,805	38 (4 ↑)		
Louisiana	New Orleans	2.140%	2,568	19 (2 ↑)	2.140%	25,679	21 (1 ↑)	2.140%	641,984	21 (2 ↑)		
Maine	Portland	2.020%	2,424	21 (1 ↑)	2.020%	24,242	23 (-)	2.020%	606,060	24 (-)		
Maryland	Baltimore	2.795%	3,354	8 (-)	2.795%	33,544	9 (1 ↑)	2.795%	838,600	10 (1 ↑)		
Massachusetts	Boston	1.771%	2,125	26 (1 ↓)	1.771%	21,250	28 (1 ↓)	1.771%	531,250	29 (1 ↓)		X
Michigan	Detroit	3.772%	4,527	1 (1 ↑)	3.772%	45,267	1 (1 ↑)	3.772%	1,131,686	1 (1 ↑)		X
Minnesota	Minneapolis	1.734%	2,081	27 (1 ↑)	2.768%	33,219	10 (2 ↑)	2.919%	875,604	7 (2 ↑)	X	X
Mississippi	Jackson	2.671%	3,205	9 (2 ↓)	2.671%	32,055	11 (3 ↓)	2.671%	801,373	11 (3 ↓)		
Missouri	Kansas City	2.822%	3,386	7 (1 ↓)	2.822%	33,858	8 (1 ↓)	2.822%	846,458	9 (2 ↓)		X
Montana	Billings	0.980%	1,176	50 (3 ↓)	1.064%	12,771	46 (1 ↓)	1.145%	343,501	44 (1 ↓)	X	X
Nebraska	Omaha	1.888%	2,265	23 (-)	2.056%	24,677	22 (2 ↑)	2.074%	622,322	23 (2 ↑)	X	X
Nevada	Las Vegas	1.120%	1,344	43 (2 ↑)	1.120%	13,441	44 (2 ↑)	1.120%	336,016	45 (1 ↑)		
New Hampshire	Manchester	1.694%	2,033	28 (2 ↓)	1.694%	20,332	29 (1 ↓)	1.694%	508,288	30 (1 ↓)		X
New Jersey	Newark	2.520%	3,025	13 (1 ↓)	2.520%	30,246	15 (1 ↓)	2.520%	756,149	16 (1 ↓)		X
New Mexico	Albuquerque	1.440%	1,729	31 (1 ↓)	1.440%	17,285	34 (1 ↓)	1.440%	432,133	35 (1 ↓)		
New York	Buffalo*	2.179%	2,615	18 (1 ↓)	2.179%	26,151	19 (-)	2.179%	653,771	20 (1 ↓)		X
New York	New York City	1.317%	1,581	36 (10 ↑)	1.317%	15,806	38 (9 ↑)	1.317%	395,138	39 (8 ↑)		X
AVERAGE		**1.854%**	**2,225**		**1.921%**	**23,052**		**1.957%**	**587,222**		**N = 11**	**N = 26**

		Land and Building Value: $100,000			Land and Building Value: $1 Million			Land and Building Value: $25 Million			Tax Rate Varies with Property Value	Lower Tax Rate on Personal Property
State	**City**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**		
North Carolina	Charlotte	0.954%	1,144	51 (3 ↓)	0.954%	11,442	51 (3 ↓)	0.954%	286,050	51 (3 ↓)		
North Dakota	Fargo	1.077%	1,292	45 (5 ↑)	1.077%	12,919	45 (5 ↑)	1.077%	322,963	46 (4 ↑)		X
Ohio	Columbus	1.933%	2,319	22 (2 ↓)	1.933%	23,193	25 (4 ↓)	1.933%	579,814	25 (4 ↓)		X
Oklahoma	Oklahoma City	1.364%	1,636	34 (2 ↑)	1.364%	16,363	36 (3 ↑)	1.364%	409,063	37 (3 ↑)		
Oregon	Portland	2.456%	2,947	14 (1 ↓)	2.456%	29,473	16 (1 ↓)	2.456%	736,835	17 (1 ↓)		
Pennsylvania	Philadelphia	1.143%	1,372	42 (2 ↑)	1.967%	23,599	24 (1 ↑)	2.125%	637,486	22 (-)	X	X
Rhode Island	Providence	3.610%	4,333	2 (1 ↓)	3.610%	43,325	2 (1 ↓)	3.610%	1,083,128	2 (1 ↓)		
South Carolina	Charleston	1.855%	2,227	24 (-)	1.855%	22,265	26 (-)	1.855%	556,628	27 (-)		
South Dakota	Sioux Falls	1.239%	1,487	39 (4 ↓)	1.239%	14,873	41 (4 ↓)	1.239%	371,829	42 (3 ↓)		X
Tennessee	Nashville	1.049%	1,259	47 (6 ↓)	1.049%	12,591	48 (5 ↓)	1.049%	314,774	48 (4 ↓)		X
Texas	Houston	2.286%	2,743	16 (-)	2.286%	27,427	17 (-)	2.286%	685,683	18 (-)		
Utah	Salt Lake City	1.265%	1,518	37 (-)	1.265%	15,179	39 (1 ↑)	1.265%	379,483	41 (-)		
Vermont	Burlington	2.541%	3,050	11 (3 ↑)	2.541%	30,496	14 (2 ↑)	2.541%	762,412	15 (2 ↑)		X
Virginia	Virginia Beach	0.989%	1,187	49 (2 ↑)	0.989%	11,871	50 (1 ↑)	0.989%	296,778	50 (1 ↑)		
Washington	Seattle	0.769%	923	52 (-)	0.769%	9,233	52 (-)	0.769%	230,828	52 (-)		
West Virginia	Charleston	1.847%	2,216	25 (2 ↑)	1.847%	22,162	27 (2 ↑)	1.847%	554,054	28 (3 ↑)		
Wisconsin	Milwaukee	2.533%	3,039	12 (2 ↓)	2.583%	30,994	12 (3 ↓)	2.588%	776,459	12 (2 ↓)	X	
Wyoming	Cheyenne	0.686%	823	53 (-)	0.686%	8,231	53 (-)	0.686%	205,770	53 (-)		
AVERAGE		**1.854%**	**2,225**		**1.921%**	**23,052**		**1.957%**	**587,222**		**N = 11**	**N = 26**

***** Illinois and New York have two cities included in this table, because the tax systems in Chicago and New York City are significantly different from the rest of the state.

Note: $100,000-valued property has an additional $20,000 worth of fixtures; $1 million-valued property has an additional $200,000 worth of fixtures; $25 million-valued property has an additional $5 million worth of fixtures.

Appendix Table 3b: Commercial Property Taxes for the Largest Fifty U.S. Cities

		Land and Building Value: $100,000			Land and Building Value: $1 Million			Land and Building Value: $25 Million			Tax Rate Varies with Property Value	Lower Tax Rate on Personal Property
State	**City**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**		
Arizona	Mesa	1.540%	1,848	27 (1 ↓)	1.584%	19,005	29 (-)	1.891%	567,297	28 (1 ↓)	X	X
Arizona	Phoenix	2.080%	2,496	19 (3 ↓)	2.142%	25,701	18 (1 ↓)	2.574%	772,230	11 (1 ↓)	X	X
Arizona	Tucson	1.861%	2,233	23 (2 ↓)	1.916%	22,997	25 (4 ↓)	2.305%	691,545	16 (1 ↓)	X	X
California	Fresno	1.247%	1,497	38 (1 ↓)	1.247%	14,965	39 (1 ↓)	1.247%	374,126	39 (1 ↓)		
California	Long Beach	1.210%	1,452	40 (1 ↓)	1.210%	14,519	41 (1 ↓)	1.210%	362,978	41 (1 ↓)		
California	Los Angeles	1.175%	1,410	42 (2 ↓)	1.175%	14,097	43 (2 ↓)	1.175%	352,419	43 (2 ↓)		
California	Oakland	1.369%	1,643	31 (1 ↑)	1.369%	16,426	33 (-)	1.369%	410,640	34 (-)		
California	Sacramento	1.137%	1,365	44 (2 ↑)	1.137%	13,645	44 (2 ↑)	1.137%	341,130	44 (2 ↑)		
California	San Diego	1.232%	1,478	39 (2 ↑)	1.232%	14,784	40 (2 ↑)	1.232%	369,597	40 (2 ↑)		
California	San Francisco	1.180%	1,416	41 (1 ↑)	1.180%	14,161	42 (1 ↑)	1.180%	354,030	42 (1 ↑)		
California	San Jose	1.267%	1,521	36 (-)	1.267%	15,206	37 (-)	1.267%	380,160	38 (1 ↓)		
Colorado	Colorado Springs	2.039%	2,447	20 (2 ↑)	2.039%	24,471	22 (3 ↑)	2.039%	611,764	24 (2 ↑)		
Colorado	Denver	2.223%	2,668	16 (1 ↑)	2.223%	26,676	17 (1 ↑)	2.223%	666,906	19 (-)		
DC	Washington	1.261%	1,513	37 (2 ↓)	1.261%	15,131	38 (2 ↓)	1.925%	577,633	27 (2 ↓)	X	X
Florida	Jacksonville	1.365%	1,638	32 (1 ↓)	1.615%	19,380	28 (-)	1.649%	494,797	30 (-)	X	X
Florida	Miami	1.610%	1,932	26 (1 ↑)	1.909%	22,911	26 (-)	1.950%	585,062	25 (3 ↑)	X	X
Georgia	Atlanta	1.508%	1,809	28 (-)	1.508%	18,091	30 (-)	1.508%	452,272	31 (-)		
Illinois	Chicago	3.514%	4,217	2 (-)	3.514%	42,173	2 (-)	3.514%	1,054,336	2 (-)		X
Indiana	Indianapolis	2.907%	3,488	3 (8 ↑)	2.907%	34,882	3 (9 ↑)	2.907%	872,046	4 (9 ↑)		
Kansas	Wichita	2.691%	3,229	7 (1 ↑)	2.691%	32,292	8 (1 ↑)	2.691%	807,297	8 (3 ↑)		
Kentucky	Louisville	1.363%	1,635	34 (-)	1.363%	16,352	35 (-)	1.363%	408,805	36 (-)		
Louisiana	New Orleans	2.140%	2,568	17 (3 ↑)	2.140%	25,679	19 (3 ↑)	2.140%	641,984	20 (3 ↑)		
Maryland	Baltimore	2.795%	3,354	6 (1 ↑)	2.795%	33,544	6 (2 ↑)	2.795%	838,600	7 (2 ↑)		
Massachusetts	Boston	1.771%	2,125	24 (-)	1.771%	21,250	27 (-)	1.771%	531,250	29 (-)		X
Michigan	Detroit	3.772%	4,527	1 (-)	3.772%	45,267	1 (-)	3.772%	1,131,686	1 (-)		X
Minnesota	Minneapolis	1.734%	2,081	25 (-)	2.768%	33,219	7 (4 ↑)	2.919%	875,604	3 (4 ↑)	X	X
Missouri	Kansas City	2.822%	3,386	5 (1 ↓)	2.822%	33,858	5 (1 ↓)	2.822%	846,458	6 (2 ↓)		X
Nebraska	Omaha	1.888%	2,265	22 (1 ↑)	2.056%	24,677	21 (2 ↑)	2.074%	622,322	23 (1 ↑)	X	X
Nevada	Las Vegas	1.120%	1,344	45 (1 ↓)	1.120%	13,441	45 (1 ↓)	1.120%	336,016	45 (1 ↓)		
New Mexico	Albuquerque	1.440%	1,729	30 (-)	1.440%	17,285	32 (-)	1.440%	432,133	33 (-)		
New York	New York City	1.317%	1,581	35 (10 ↑)	1.317%	15,806	36 (9 ↑)	1.317%	395,138	37 (8 ↑)		X
North Carolina	Charlotte	0.954%	1,144	49 (2 ↓)	0.954%	11,442	49 (2 ↓)	0.954%	286,050	49 (2 ↓)		
North Carolina	Raleigh	1.009%	1,210	47 (1 ↑)	1.009%	12,104	47 (1 ↑)	1.009%	302,589	47 (1 ↑)		
Ohio	Columbus	1.933%	2,319	21 (3 ↓)	1.933%	23,193	24 (5 ↓)	1.933%	579,814	26 (6 ↓)		X
Oklahoma	Oklahoma City	1.364%	1,636	33 (-)	1.364%	16,363	34 (-)	1.364%	409,063	35 (-)		
AVERAGE		**1.838%**	**2,206**		**1.894%**	**22,724**		**1.938%**	**581,298**		**N = 10**	**N = 18**

		Land and Building Value: $100,000			Land and Building Value: $1 Million			Land and Building Value: $25 Million			Tax Rate Varies with Property Value	Lower Tax Rate on Personal Property
State	**City**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**		
Oklahoma	Tulsa	1.484%	1,781	29 (-)	1.484%	17,813	31 (-)	1.484%	445,315	32 (-)		X
Oregon	Portland	2.456%	2,947	12 (1 ↑)	2.456%	29,473	13 (1 ↑)	2.456%	736,835	14 (2 ↑)		
Pennsylvania	Philadelphia	1.143%	1,372	43 (-)	1.967%	23,599	23 (1 ↑)	2.125%	637,486	21 (-)	X	X
Tennessee	Memphis	2.510%	3,012	11 (5 ↓)	2.510%	30,124	12 (6 ↓)	2.510%	753,101	13 (7 ↓)		X
Tennessee	Nashville	1.049%	1,259	46 (8 ↓)	1.049%	12,591	46 (7 ↓)	1.049%	314,774	46 (7 ↓)		X
Texas	Arlington	2.281%	2,737	15 (-)	2.281%	27,370	16 (-)	2.281%	684,258	18 (-)		
Texas	Austin	2.084%	2,501	18 (1 ↑)	2.084%	25,012	20 (-)	2.084%	625,293	22 (-)		
Texas	Dallas	2.562%	3,074	9 (1 ↑)	2.562%	30,742	11 (1 ↓)	2.562%	768,547	12 (-)		
Texas	El Paso	2.626%	3,151	8 (5 ↓)	2.626%	31,511	9 (6 ↓)	2.626%	787,785	9 (6 ↓)		
Texas	Fort Worth	2.456%	2,947	13 (1 ↓)	2.456%	29,467	14 (1 ↓)	2.456%	736,681	15 (1 ↓)		
Texas	Houston	2.286%	2,743	14 (-)	2.286%	27,427	15 (-)	2.286%	685,683	17 (-)		
Texas	San Antonio	2.831%	3,397	4 (1 ↑)	2.831%	33,972	4 (1 ↑)	2.831%	849,307	5 (-)		
Virginia	Virginia Beach	0.989%	1,187	48 (1 ↑)	0.989%	11,871	48 (1 ↑)	0.989%	296,778	48 (1 ↑)		
Washington	Seattle	0.769%	923	50 (-)	0.769%	9,233	50 (-)	0.769%	230,828	50 (-)		
Wisconsin	Milwaukee	2.533%	3,039	10 (1 ↓)	2.583%	30,994	10 (3 ↓)	2.588%	776,459	10 (2 ↓)	X	
AVERAGE		**1.838%**	**2,206**		**1.894%**	**22,724**		**1.938%**	**581,298**		**N = 10**	**N = 18**

Note: $100,000-valued property has an additional $20,000 worth of fixtures; $1 million-valued property has an additional $200,000 worth of fixtures; $25 million-valued property has an additional $5 million worth of fixtures.

Appendix Table 3c: Commercial Property Taxes for Selected Rural Municipalities

		Land and Building Value: $100,000			Land and Building Value: $1 Million			Land and Building Value: $25 Million			Tax Rate Varies with Property Value	Lower Tax Rate on Personal Property
State	**City**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**		
Alabama	Monroeville	0.904%	1,085	44 (1 ↑)	0.904%	10,851	44 (1 ↑)	0.904%	271,277	44 (1 ↑)		
Alaska	Ketchikan	0.919%	1,103	43 (-)	1.088%	13,056	39 (1 ↑)	1.111%	333,355	38 (2 ↑)	X	X
Arizona	Safford	1.333%	1,600	30 (13 ↓)	1.377%	16,524	29 (13 ↓)	1.687%	506,210	27 (18 ↓)	X	X
Arkansas	Pocahontas	0.828%	994	47 (-)	0.828%	9,937	47 (-)	0.828%	248,428	47 (-)		
California	Yreka	1.056%	1,267	40 (1 ↑)	1.056%	12,670	41 (1 ↑)	1.056%	316,740	41 (1 ↑)		
Colorado	Walsenburg	2.295%	2,754	8 (2 ↑)	2.295%	27,538	11 (1 ↑)	2.295%	688,457	12 (2 ↑)		
Connecticut	Litchfield	2.140%	2,568	11 (16 ↑)	2.140%	25,682	13 (15 ↑)	2.140%	642,044	15 (15 ↑)		
Delaware	Georgetown	0.484%	581	50 (-)	0.484%	5,808	50 (-)	0.484%	145,207	50 (-)		X
Florida	Moore Haven	1.811%	2,173	22 (1 ↑)	2.133%	25,594	15 (-)	2.177%	653,093	13 (2 ↑)	X	X
Georgia	Fitzgerald	1.693%	2,032	25 (1 ↓)	1.693%	20,321	26 (-)	1.693%	508,019	26 (-)		
Hawaii	Kauai	0.574%	689	49 (-)	0.574%	6,885	49 (-)	0.574%	172,125	49 (-)		X
Idaho	Saint Anthony	1.123%	1,347	37 (3 ↓)	1.248%	14,981	34 (2 ↓)	1.369%	410,691	31 (3 ↓)	X	X
Illinois	Galena	2.130%	2,556	14 (-)	2.130%	25,556	17 (2 ↑)	2.130%	638,900	17 (2 ↑)		X
Indiana	North Vernon	2.898%	3,477	3 (1 ↑)	2.898%	34,770	3 (1 ↑)	2.898%	869,250	3 (1 ↑)		
Iowa	Hampton	1.413%	1,696	27 (1 ↑)	2.134%	25,604	14 (4 ↑)	2.385%	715,490	8 (2 ↑)	X	X
Kansas	Iola	5.095%	6,114	1 (-)	5.095%	61,143	1 (-)	5.095%	1,528,582	1 (-)		
Kentucky	Morehead	1.349%	1,619	29 (6 ↑)	1.349%	16,193	30 (5 ↑)	1.349%	404,828	32 (3 ↑)		
Louisiana	Natchitoches	1.402%	1,682	28 (4 ↑)	1.402%	16,823	28 (6 ↑)	1.402%	420,581	29 (5 ↑)		
Maine	Rockland	2.476%	2,971	6 (3 ↑)	2.476%	29,712	7 (3 ↑)	2.476%	742,800	7 (5 ↑)		
Maryland	Denton	2.059%	2,471	19 (7 ↓)	2.059%	24,714	22 (9 ↓)	2.059%	617,847	22 (5 ↓)		
Massachusetts	Adams	2.074%	2,489	17 (2 ↓)	2.074%	24,892	20 (-)	2.074%	622,300	20 (-)		X
Michigan	Manistique	2.867%	3,440	5 (3 ↓)	2.867%	34,400	5 (3 ↓)	2.867%	860,004	5 (3 ↓)		X
Minnesota	Glencoe	1.708%	2,050	24 (1 ↑)	2.704%	32,451	6 (-)	2.855%	856,451	6 (1 ↓)	X	X
Mississippi	Philadelphia	2.066%	2,480	18 (5 ↓)	2.066%	24,797	21 (4 ↓)	2.066%	619,920	21 (3 ↓)		
Missouri	Boonville	2.081%	2,497	16 (2 ↑)	2.081%	24,967	19 (3 ↑)	2.081%	624,184	19 (3 ↑)		X
Montana	Glasgow	1.202%	1,442	33 (-)	1.302%	15,624	31 (-)	1.398%	419,418	30 (1 ↓)	X	X
Nebraska	Sidney	2.133%	2,560	12 (8 ↑)	2.315%	27,775	9 (5 ↑)	2.334%	700,178	9 (7 ↑)	X	X
Nevada	Fallon	1.287%	1,545	31 (-)	1.287%	15,445	32 (1 ↑)	1.287%	386,130	33 (-)		
New Hampshire	Lancaster	2.094%	2,512	15 (8 ↓)	2.094%	25,124	18 (10 ↓)	2.094%	628,103	18 (10 ↓)		X
New Jersey	Maurice River Twp	2.326%	2,792	7 (1 ↑)	2.326%	27,915	8 (1 ↑)	2.326%	697,883	10 (1 ↑)		X
New Mexico	Santa Rosa	1.034%	1,241	42 (2 ↓)	1.034%	12,407	43 (2 ↓)	1.034%	310,186	43 (2 ↓)		
New York	Warsaw	2.995%	3,594	2 (1 ↑)	2.995%	35,945	2 (1 ↑)	2.995%	898,618	2 (1 ↑)		X
North Carolina	Edenton	1.109%	1,331	38 (1 ↓)	1.109%	13,310	38 (1 ↓)	1.109%	332,762	39 (2 ↓)		
North Dakota	Devils Lake	1.191%	1,430	34 (5 ↑)	1.191%	14,296	35 (4 ↑)	1.191%	357,390	35 (4 ↑)		X
Ohio	Bryan	1.645%	1,974	26 (-)	1.645%	19,738	27 (-)	1.645%	493,448	28 (1 ↓)		X
AVERAGE		**1.701%**	**2,042**		**1.756%**	**21,067**		**1.776%**	**532,813**		**N = 9**	**N = 24**

		Land and Building Value: $100,000			Land and Building Value: $1 Million			Land and Building Value: $25 Million			Tax Rate Varies with Property Value	Lower Tax Rate on Personal Property
State	**City**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**		
Oklahoma	Mangum	0.840%	1,007	46 (2 ↓)	0.840%	10,074	46 (2 ↓)	0.840%	251,860	46 (2 ↓)		X
Oregon	Tillamook	1.158%	1,390	35 (1 ↑)	1.158%	13,899	36 (-)	1.158%	347,483	36 (-)		
Pennsylvania	Ridgway	1.963%	2,356	21 (15 ↓)	1.963%	23,555	24 (17 ↓)	1.963%	588,886	24 (17 ↓)		X
Rhode Island	Hopkinton	2.132%	2,559	13 (6 ↑)	2.132%	25,586	16 (7 ↑)	2.132%	639,650	16 (7 ↑)		
South Carolina	Mullins	2.895%	3,474	4 (1 ↑)	2.895%	34,744	4 (1 ↑)	2.895%	868,590	4 (2 ↑)		
South Dakota	Vermillion	1.771%	2,126	23 (1 ↓)	1.771%	21,256	25 (-)	1.771%	531,389	25 (-)		X
Tennessee	Savannah	1.058%	1,270	39 (3 ↑)	1.058%	12,696	40 (3 ↑)	1.058%	317,400	40 (3 ↑)		X
Texas	Fort Stockton	2.003%	2,404	20 (1 ↑)	2.003%	24,040	23 (1 ↑)	2.003%	601,000	23 (1 ↑)		
Utah	Richfield	1.264%	1,517	32 (2 ↓)	1.264%	15,170	33 (3 ↓)	1.264%	379,260	34 (2 ↓)		
Vermont	Hartford	2.145%	2,573	10 (6 ↑)	2.145%	25,734	12 (9 ↑)	2.145%	643,356	14 (7 ↑)		X
Virginia	Wise	0.879%	1,055	45 (1 ↑)	0.879%	10,552	45 (1 ↑)	0.879%	263,799	45 (1 ↑)		
Washington	Okanogan	1.148%	1,377	36 (7 ↓)	1.148%	13,774	37 (8 ↓)	1.148%	344,360	37 (6 ↓)		
West Virginia	Elkins	1.036%	1,244	41 (3 ↓)	1.036%	12,438	42 (4 ↓)	1.036%	310,945	42 (4 ↓)		
Wisconsin	Rice Lake	2.245%	2,695	9 (2 ↑)	2.302%	27,629	10 (1 ↑)	2.308%	692,545	11 (2 ↑)	X	
Wyoming	Worland	0.731%	877	48 (-)	0.731%	8,769	48 (-)	0.731%	219,217	48 (-)		
AVERAGE		**1.701%**	**2,042**		**1.756%**	**21,067**		**1.776%**	**532,813**		**N = 9**	**N = 24**

Note: $100,000-valued property has an additional $20,000 worth of fixtures; $1 million-valued property has an additional $200,000 worth of fixtures; $25 million-valued property has an additional $5 million worth of fixtures.

Appendix Table 4a: Industrial Property Taxes for Largest City in Each State (Personal Property = 50% of Total Parcel Value)

		Land and Building Value: $100,000			Land and Building Value: $1 Million			Land and Building Value: $25 Million			Tax Rate Varies with Property Value
State	**City**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**	
Alabama	Birmingham	1.177%	2,355	28 (2 ↑)	1.177%	23,548	32 (2 ↑)	1.177%	588,700	33 (3 ↑)	
Alaska	Anchorage	1.382%	2,765	24 (3 ↓)	1.529%	30,590	20 (1 ↓)	1.545%	772,601	21 (-)	X
Arizona	Phoenix	1.248%	2,496	27 (-)	1.899%	37,983	10 (-)	2.159%	1,079,292	8 (2 ↓)	X
Arkansas	Little Rock	1.399%	2,798	20 (4 ↑)	1.399%	27,979	25 (2 ↑)	1.399%	699,475	26 (1 ↑)	
California	Los Angeles	0.939%	1,879	38 (-)	0.939%	18,788	41 (-)	0.939%	469,712	42 (-)	
Colorado	Denver	1.783%	3,565	14 (1 ↓)	1.783%	35,651	16 (1 ↓)	1.783%	891,264	17 (1 ↓)	
Connecticut	Bridgeport	1.791%	3,583	13 (1 ↓)	1.791%	35,828	15 (1 ↓)	1.791%	895,694	16 (2 ↓)	
DC	Washington	0.757%	1,513	42 (1 ↑)	1.394%	27,881	27 (2 ↓)	1.835%	917,633	14 (1 ↑)	X
Delaware	Wilmington	0.637%	1,275	48 (7 ↓)	0.637%	12,748	49 (4 ↓)	0.637%	318,706	49 (4 ↓)	
Florida	Jacksonville	1.119%	2,238	31 (-)	1.312%	26,241	29 (-)	1.333%	666,304	29 (1 ↓)	X
Georgia	Atlanta	1.399%	2,798	19 (3 ↑)	1.399%	27,980	24 (-)	1.399%	699,508	25 (-)	
Hawaii	Honolulu	0.597%	1,194	50 (-)	0.597%	11,937	51 (1 ↓)	0.597%	298,437	51 (1 ↓)	
Idaho	Boise	0.650%	1,300	46 (-)	0.992%	19,845	40 (3 ↓)	1.058%	528,955	38 (3 ↓)	X
Illinois	Aurora*	1.806%	3,611	12 (2 ↓)	1.806%	36,115	13 (2 ↓)	1.806%	902,874	15 (3 ↓)	
Illinois	Chicago	1.978%	3,957	7 (1 ↑)	1.978%	39,566	8 (-)	1.978%	989,150	9 (1 ↑)	
Indiana	Indianapolis	2.372%	4,744	3 (3 ↑)	2.372%	47,442	3 (4 ↑)	2.372%	1,186,045	3 (6 ↑)	
Iowa	Des Moines	1.364%	2,728	25 (8 ↓)	1.797%	35,934	14 (1 ↓)	1.947%	973,725	11 (3 ↓)	X
Kansas	Wichita	1.391%	2,782	22 (3 ↓)	1.391%	27,825	28 (5 ↓)	1.391%	695,619	28 (4 ↓)	
Kentucky	Louisville	0.769%	1,538	40 (5 ↑)	0.769%	15,384	44 (4 ↑)	0.769%	384,605	44 (4 ↑)	
Louisiana	New Orleans	2.190%	4,381	6 (1 ↓)	2.190%	43,809	7 (1 ↓)	2.190%	1,095,224	7 (-)	
Maine	Portland	1.096%	2,191	32 (-)	1.096%	21,911	35 (-)	1.096%	547,785	36 (1 ↑)	
Maryland	Baltimore	1.398%	2,795	21 (4 ↑)	1.398%	27,952	26 (2 ↑)	1.398%	698,802	27 (2 ↑)	
Massachusetts	Boston	1.063%	2,125	33 (1 ↑)	1.063%	21,250	36 (2 ↑)	1.063%	531,250	37 (2 ↑)	
Michigan	Detroit	1.914%	3,827	9 (5 ↓)	2.222%	44,434	6 (4 ↓)	2.222%	1,110,858	6 (4 ↓)	X
Minnesota	Minneapolis	1.046%	2,092	34 (3 ↑)	1.670%	33,399	19 (1 ↑)	1.761%	880,255	18 (2 ↑)	X
Mississippi	Jackson	2.752%	5,503	1 (-)	2.752%	55,031	1 (-)	2.752%	1,375,782	1 (-)	
Missouri	Kansas City	2.235%	4,470	5 (1 ↓)	2.235%	44,697	5 (-)	2.235%	1,117,418	5 (-)	
Montana	Billings	0.588%	1,176	51 (2 ↓)	0.840%	16,809	43 (-)	1.190%	594,903	32 (1 ↑)	X
Nebraska	Omaha	1.583%	3,166	16 (-)	1.684%	33,682	18 (-)	1.695%	847,464	20 (2 ↓)	X
Nevada	Las Vegas	0.902%	1,803	39 (-)	0.902%	18,030	42 (-)	0.902%	450,753	43 (-)	
New Hampshire	Manchester	1.017%	2,033	36 (1 ↓)	1.017%	20,332	38 (1 ↑)	1.017%	508,288	40 (-)	
New Jersey	Newark	1.512%	3,025	17 (1 ↑)	1.512%	30,246	21 (1 ↑)	1.512%	756,149	22 (1 ↑)	
New Mexico	Albuquerque	1.176%	2,353	29 (-)	1.176%	23,529	33 (1 ↓)	1.176%	588,236	34 (-)	
New York	Buffalo*	1.308%	2,615	26 (-)	1.308%	26,151	30 (-)	1.308%	653,771	30 (-)	
New York	New York City	0.580%	1,159	52 (-)	0.580%	11,591	52 (-)	0.580%	289,768	52 (-)	
AVERAGE		**1.315%**	**2,631**		**1.395%**	**27,898**		**1.423%**	**711,619**		**N = 12**

		Land and Building Value: $100,000			Land and Building Value: $1 Million			Land and Building Value: $25 Million			Tax Rate Varies with Property Value
State	**City**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**	
North Carolina	Charlotte	0.765%	1,530	41 (1 ↓)	0.765%	15,302	45 (1 ↓)	0.765%	382,550	45 (1 ↓)	
North Dakota	Fargo	0.646%	1,292	47 (4 ↑)	0.646%	12,919	48 (3 ↑)	0.646%	322,963	48 (3 ↑)	
Ohio	Columbus	1.165%	2,331	30 (2 ↓)	1.165%	23,308	34 (3 ↓)	1.165%	582,696	35 (4 ↓)	
Oklahoma	Oklahoma City	1.473%	2,945	18 (5 ↑)	1.473%	29,453	22 (4 ↑)	1.473%	736,313	23 (3 ↑)	
Oregon	Portland	1.965%	3,930	8 (3 ↑)	1.965%	39,298	9 (3 ↑)	1.965%	982,447	10 (3 ↑)	
Pennsylvania	Philadelphia	0.686%	1,372	44 (3 ↑)	1.180%	23,599	31 (2 ↑)	1.275%	637,486	31 (1 ↑)	X
Rhode Island	Providence	1.887%	3,775	10 (1 ↓)	1.887%	37,745	11 (2 ↓)	1.887%	943,628	12 (1 ↓)	
South Carolina	Charleston	2.388%	4,775	2 (1 ↑)	2.388%	47,753	2 (2 ↑)	2.388%	1,193,820	2 (2 ↑)	
South Dakota	Sioux Falls	0.744%	1,487	43 (1 ↓)	0.744%	14,873	46 (-)	0.744%	371,829	46 (-)	
Tennessee	Nashville	1.008%	2,016	37 (4 ↓)	1.008%	20,163	39 (3 ↓)	1.008%	504,074	41 (3 ↓)	
Texas	Houston	2.290%	4,579	4 (2 ↓)	2.290%	45,795	4 (1 ↓)	2.290%	1,144,864	4 (1 ↓)	
Utah	Salt Lake City	1.019%	2,038	35 (1 ↑)	1.019%	20,378	37 (3 ↑)	1.019%	509,443	39 (2 ↑)	
Vermont	Burlington	1.727%	3,455	15 (-)	1.727%	34,546	17 (-)	1.727%	863,644	19 (-)	
Virginia	Virginia Beach	0.514%	1,027	53 (-)	0.514%	10,271	53 (-)	0.514%	256,778	53 (-)	
Washington	Seattle	0.622%	1,244	49 (5 ↓)	0.622%	12,438	50 (3 ↓)	0.622%	310,947	50 (3 ↓)	
West Virginia	Charleston	1.847%	3,694	11 (3 ↑)	1.847%	36,937	12 (4 ↑)	1.847%	923,423	13 (4 ↑)	
Wisconsin	Milwaukee	1.390%	2,780	23 (3 ↓)	1.420%	28,406	23 (2 ↓)	1.423%	711,749	24 (2 ↓)	X
Wyoming	Cheyenne	0.664%	1,328	45 (3 ↑)	0.664%	13,285	47 (2 ↑)	0.664%	332,120	47 (2 ↑)	
AVERAGE		**1.315%**	**2,631**		**1.395%**	**27,898**		**1.423%**	**711,619**		**N = 12**

* Illinois and New York have two cities included in this table, because the tax systems in Chicago and New York City are significantly different from the rest of the state.

Note:
$100,000-valued property has an additional $50,000 worth of machinery and equipment, an additional $40,000 worth of inventories, and an additional $10,000 worth of fixtures.
$1 million-valued property has an additional $500,000 worth of machinery and equipment, an additional $400,000 worth of inventories, and an additional $100,000 worth of fixtures.
$25 million-valued property has an additional $12.5 million worth of machinery and equipment, an additional $10 million worth of inventories, and an additional $2.5 million worth of fixtures.

Appendix Table 4b: Industrial Property Taxes for Largest City in Each State (Personal Property = 60% of Total Parcel Value)

		Land and Building Value: $100,000			Land and Building Value: $1 Million			Land and Building Value: $25 Million			Tax Rate Varies with Property Value
State	**City**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**	
Alabama	Birmingham	1.116%	2,790	26 (2 ↑)	1.116%	27,898	31 (-)	1.116%	697,450	32 (1 ↑)	
Alaska	Anchorage	1.433%	3,583	18 (2 ↓)	1.551%	38,770	15 (2 ↑)	1.563%	977,101	16 (2 ↑)	X
Arizona	Phoenix	0.999%	2,496	30 (1 ↑)	1.888%	47,195	8 (-)	2.095%	1,309,589	7 (2 ↓)	X
Arkansas	Little Rock	1.399%	3,498	19 (-)	1.399%	34,979	22 (-)	1.399%	874,475	23 (1 ↓)	
California	Los Angeles	0.892%	2,231	35 (-)	0.892%	22,311	39 (-)	0.892%	557,783	40 (-)	
Colorado	Denver	1.695%	4,238	9 (1 ↑)	1.695%	42,381	11 (-)	1.695%	1,059,533	12 (1 ↑)	
Connecticut	Bridgeport	1.509%	3,772	14 (-)	1.509%	37,717	17 (1 ↓)	1.509%	942,935	18 (1 ↑)	
DC	Washington	0.605%	1,513	43 (3 ↑)	1.523%	38,081	16 (3 ↑)	1.876%	1,172,633	9 (-)	X
Delaware	Wilmington	0.510%	1,275	49 (7 ↓)	0.510%	12,748	50 (4 ↓)	0.510%	318,706	50 (4 ↓)	
Florida	Jacksonville	1.101%	2,753	27 (-)	1.255%	31,386	25 (1 ↓)	1.272%	794,934	25 (-)	X
Georgia	Atlanta	1.383%	3,457	20 (-)	1.383%	34,568	23 (-)	1.383%	864,195	24 (1 ↓)	
Hawaii	Honolulu	0.477%	1,194	50 (-)	0.477%	11,937	51 (1 ↓)	0.477%	298,437	51 (1 ↓)	
Idaho	Boise	0.520%	1,300	47 (-)	0.958%	23,950	35 (1 ↓)	1.011%	631,585	35 (3 ↓)	X
Illinois	Aurora*	1.445%	3,611	17 (4 ↓)	1.445%	36,115	20 (6 ↓)	1.445%	902,874	21 (4 ↓)	
Illinois	Chicago	1.583%	3,957	12 (-)	1.583%	39,566	14 (1 ↓)	1.583%	989,150	15 (-)	
Indiana	Indianapolis	2.271%	5,677	3 (3 ↑)	2.271%	56,769	3 (4 ↑)	2.271%	1,419,213	3 (5 ↑)	
Iowa	Des Moines	1.091%	2,728	28 (5 ↓)	1.437%	35,934	21 (3 ↓)	1.558%	973,725	17 (5 ↓)	X
Kansas	Wichita	1.171%	2,928	23 (2 ↓)	1.171%	29,285	29 (3 ↓)	1.171%	732,115	30 (2 ↓)	
Kentucky	Louisville	0.673%	1,682	41 (3 ↑)	0.673%	16,818	45 (3 ↑)	0.673%	420,455	45 (3 ↑)	
Louisiana	New Orleans	2.206%	5,514	5 (-)	2.206%	55,140	5 (1 ↑)	2.206%	1,378,499	5 (2 ↑)	
Maine	Portland	0.923%	2,308	34 (-)	0.923%	23,077	38 (-)	0.923%	576,923	39 (-)	
Maryland	Baltimore	1.230%	3,075	21 (3 ↑)	1.230%	30,748	26 (2 ↑)	1.230%	768,701	26 (3 ↑)	
Massachusetts	Boston	0.850%	2,125	37 (1 ↑)	0.850%	21,250	41 (1 ↑)	0.850%	531,250	42 (1 ↑)	
Michigan	Detroit	1.593%	3,981	11 (4 ↓)	1.962%	49,056	7 (5 ↓)	1.962%	1,226,401	8 (6 ↓)	X
Minnesota	Minneapolis	0.837%	2,092	38 (2 ↑)	1.336%	33,399	24 (3 ↑)	1.408%	880,255	22 (2 ↑)	X
Mississippi	Jackson	2.776%	6,939	1 (-)	2.776%	69,392	1 (-)	2.776%	1,734,788	1 (-)	
Missouri	Kansas City	2.113%	5,283	6 (2 ↓)	2.113%	52,826	6 (1 ↓)	2.113%	1,320,638	6 (-)	
Montana	Billings	0.470%	1,176	51 (2 ↓)	0.794%	19,838	43 (1 ↑)	1.194%	746,351	28 (1 ↓)	X
Nebraska	Omaha	1.536%	3,841	13 (2 ↑)	1.617%	40,437	13 (2 ↑)	1.626%	1,016,321	13 (3 ↑)	X
Nevada	Las Vegas	0.859%	2,147	36 (-)	0.859%	21,472	40 (-)	0.859%	536,805	41 (-)	
New Hampshire	Manchester	0.813%	2,033	39 (-)	0.813%	20,332	42 (1 ↑)	0.813%	508,288	43 (1 ↑)	
New Jersey	Newark	1.210%	3,025	22 (3 ↑)	1.210%	30,246	27 (2 ↑)	1.210%	756,149	27 (3 ↑)	
New Mexico	Albuquerque	1.129%	2,821	25 (1 ↑)	1.129%	28,213	30 (-)	1.129%	705,314	31 (-)	
New York	Buffalo*	1.046%	2,615	29 (1 ↑)	1.046%	26,151	32 (1 ↑)	1.046%	653,771	33 (2 ↑)	
New York	New York City	0.464%	1,159	52 (-)	0.464%	11,591	52 (-)	0.464%	289,768	52 (-)	
AVERAGE		**1.188%**	**2,969**		**1.274%**	**31,844**		**1.299%**	**811,691**		**N = 12**

		Land and Building Value: $100,000			Land and Building Value: $1 Million			Land and Building Value: $25 Million			Tax Rate Varies with Property Value
State	**City**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**	
North Carolina	Charlotte	0.728%	1,820	40 (3 ↓)	0.728%	18,197	44 (3 ↓)	0.728%	454,925	44 (2 ↓)	
North Dakota	Fargo	0.517%	1,292	48 (3 ↑)	0.517%	12,919	49 (2 ↑)	0.517%	322,963	49 (2 ↑)	
Ohio	Columbus	0.932%	2,331	33 (1 ↓)	0.932%	23,308	37 (2 ↓)	0.932%	582,696	38 (2 ↓)	
Oklahoma	Oklahoma City	1.505%	3,763	16 (2 ↑)	1.505%	37,634	19 (2 ↑)	1.505%	940,844	20 (1 ↑)	
Oregon	Portland	1.867%	4,667	7 (1 ↑)	1.867%	46,666	9 (-)	1.867%	1,166,656	10 (-)	
Pennsylvania	Philadelphia	0.549%	1,372	46 (2 ↑)	0.944%	23,599	36 (1 ↑)	1.020%	637,486	34 (3 ↑)	X
Rhode Island	Providence	1.621%	4,054	10 (1 ↓)	1.621%	40,535	12 (2 ↓)	1.621%	1,013,378	14 (3 ↓)	
South Carolina	Charleston	2.268%	5,671	4 (1 ↓)	2.268%	56,706	4 (-)	2.268%	1,417,661	4 (-)	
South Dakota	Sioux Falls	0.595%	1,487	44 (1 ↓)	0.595%	14,873	47 (-)	0.595%	371,829	47 (-)	
Tennessee	Nashville	0.996%	2,490	31 (2 ↓)	0.996%	24,895	33 (1 ↓)	0.996%	622,387	36 (2 ↓)	
Texas	Houston	2.291%	5,727	2 (-)	2.291%	57,274	2 (1 ↑)	2.291%	1,431,852	2 (1 ↑)	
Utah	Salt Lake City	0.971%	2,428	32 (1 ↑)	0.971%	24,277	34 (2 ↑)	0.971%	606,913	37 (1 ↑)	
Vermont	Burlington	1.508%	3,769	15 (2 ↑)	1.508%	37,693	18 (2 ↑)	1.508%	942,313	19 (1 ↑)	
Virginia	Virginia Beach	0.443%	1,107	53 (-)	0.443%	11,071	53 (-)	0.443%	276,778	53 (-)	
Washington	Seattle	0.594%	1,484	45 (4 ↓)	0.594%	14,841	48 (3 ↓)	0.594%	371,036	48 (3 ↓)	
West Virginia	Charleston	1.847%	4,617	8 (3 ↑)	1.847%	46,171	10 (2 ↑)	1.847%	1,154,278	11 (3 ↑)	
Wisconsin	Milwaukee	1.164%	2,910	24 (2 ↓)	1.188%	29,700	28 (3 ↓)	1.191%	744,104	29 (3 ↓)	X
Wyoming	Cheyenne	0.631%	1,578	42 (3 ↑)	0.631%	15,776	46 (3 ↑)	0.631%	394,393	46 (3 ↑)	
AVERAGE		**1.188%**	**2,969**		**1.274%**	**31,844**		**1.299%**	**811,691**		**N = 12**

***** Illinois and New York have two cities included in this table, because the tax systems in Chicago and New York City are significantly different from the rest of the state.

Note:
$100,000-valued property has an additional $75,000 worth of machinery and equipment, an additional $60,000 worth of inventories, and an additional $15,000 worth of fixtures.
$1 million-valued property has an additional $750,000 worth of machinery and equipment, an additional $600,000 worth of inventories, and an additional $150,000 worth of fixtures.
$25 million-valued property has an additional $18.75 million worth of machinery and equipment, an additional $15 million worth of inventories, and an additional $3.75 million worth of fixtures.

Appendix Table 4c: Industrial Property Taxes for the Largest Fifty U.S. Cities (Personal Property = 50% of Total Parcel Value)

		Land and Building Value: $100,000			Land and Building Value: $1 Million			Land and Building Value: $25 Million			Tax Rate Varies with Property Value
State	**City**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**	
Arizona	Mesa	0.924%	1,848	40 (1 ↓)	1.387%	27,733	29 (2 ↓)	1.571%	785,497	23 (2 ↓)	X
Arizona	Phoenix	1.248%	2,496	25 (1 ↓)	1.899%	37,983	15 (1 ↓)	2.159%	1,079,292	12 (2 ↓)	X
Arizona	Tucson	1.117%	2,233	29 (2 ↓)	1.702%	34,040	17 (1 ↓)	1.935%	967,621	16 (1 ↓)	X
California	Fresno	0.998%	1,995	35 (1 ↓)	0.998%	19,953	38 (-)	0.998%	498,835	38 (-)	
California	Long Beach	0.968%	1,936	37 (2 ↓)	0.968%	19,359	40 (1 ↓)	0.968%	483,970	40 (1 ↓)	
California	Los Angeles	0.940%	1,880	39 (2 ↓)	0.940%	18,796	42 (2 ↓)	0.940%	469,892	42 (2 ↓)	
California	Oakland	1.095%	2,190	30 (1 ↑)	1.095%	21,901	34 (1 ↑)	1.095%	547,520	34 (1 ↑)	
California	Sacramento	0.910%	1,819	41 (1 ↑)	0.910%	18,194	43 (1 ↑)	0.910%	454,840	43 (1 ↑)	
California	San Diego	0.986%	1,971	36 (2 ↑)	0.986%	19,712	39 (2 ↑)	0.986%	492,796	39 (2 ↑)	
California	San Francisco	0.944%	1,888	38 (2 ↑)	0.944%	18,882	41 (1 ↑)	0.944%	472,040	41 (1 ↑)	
California	San Jose	1.014%	2,028	33 (-)	1.014%	20,275	36 (1 ↑)	1.014%	506,880	36 (1 ↑)	
Colorado	Colorado Springs	1.649%	3,298	16 (-)	1.649%	32,982	20 (1 ↓)	1.649%	824,552	21 (1 ↑)	
Colorado	Denver	1.783%	3,565	15 (-)	1.783%	35,651	16 (1 ↑)	1.783%	891,264	18 (-)	
DC	Washington	0.757%	1,513	46 (1 ↓)	1.394%	27,881	28 (2 ↓)	1.835%	917,633	17 (-)	X
Florida	Jacksonville	1.119%	2,238	28 (1 ↑)	1.312%	26,241	30 (-)	1.333%	666,304	30 (1 ↓)	X
Florida	Miami	1.325%	2,650	24 (1 ↑)	1.555%	31,108	21 (-)	1.580%	789,988	22 (1 ↑)	X
Georgia	Atlanta	1.399%	2,798	21 (-)	1.399%	27,980	26 (1 ↓)	1.399%	699,508	28 (1 ↓)	
Illinois	Chicago	1.978%	3,957	12 (1 ↑)	1.978%	39,566	13 (-)	1.978%	989,150	14 (-)	
Indiana	Indianapolis	2.372%	4,744	7 (5 ↑)	2.372%	47,442	7 (5 ↑)	2.372%	1,186,045	7 (6 ↑)	
Kansas	Wichita	1.469%	2,937	19 (1 ↓)	1.469%	29,372	23 (-)	1.469%	734,305	25 (-)	
Kentucky	Louisville	0.769%	1,538	44 (3 ↑)	0.769%	15,384	46 (2 ↑)	0.769%	384,605	46 (2 ↑)	
Louisiana	New Orleans	2.190%	4,381	10 (1 ↑)	2.190%	43,809	11 (-)	2.190%	1,095,224	11 (1 ↑)	
Maryland	Baltimore	1.398%	2,795	22 (1 ↑)	1.398%	27,952	27 (2 ↑)	1.398%	698,802	29 (1 ↑)	
Massachusetts	Boston	1.063%	2,125	31 (1 ↑)	1.063%	21,250	35 (1 ↑)	1.063%	531,250	35 (1 ↑)	
Michigan	Detroit	1.914%	3,827	14 (6 ↓)	2.222%	44,434	10 (7 ↓)	2.222%	1,110,858	10 (7 ↓)	X
Minnesota	Minneapolis	1.046%	2,092	32 (4 ↑)	1.670%	33,399	19 (1 ↑)	1.761%	880,255	19 (1 ↑)	X
Missouri	Kansas City	2.235%	4,470	9 (-)	2.235%	44,697	9 (-)	2.235%	1,117,418	9 (-)	
Nebraska	Omaha	1.583%	3,166	17 (-)	1.684%	33,682	18 (-)	1.695%	847,464	20 (1 ↓)	X
Nevada	Las Vegas	0.902%	1,803	42 (1 ↓)	0.902%	18,030	44 (1 ↓)	0.902%	450,753	44 (1 ↓)	
New Mexico	Albuquerque	1.176%	2,353	26 (2 ↑)	1.176%	23,529	32 (-)	1.176%	588,236	32 (1 ↑)	
New York	New York City	0.580%	1,159	49 (-)	0.580%	11,591	49 (-)	0.580%	289,768	49 (-)	
North Carolina	Charlotte	0.765%	1,530	45 (2 ↓)	0.765%	15,302	47 (2 ↓)	0.765%	382,550	47 (2 ↓)	
North Carolina	Raleigh	0.837%	1,674	43 (1 ↑)	0.837%	16,739	45 (1 ↑)	0.837%	418,479	45 (1 ↑)	
Ohio	Columbus	1.165%	2,331	27 (1 ↓)	1.165%	23,308	33 (2 ↓)	1.165%	582,696	33 (2 ↓)	
Oklahoma	Oklahoma City	1.473%	2,945	18 (4 ↑)	1.473%	29,453	22 (6 ↑)	1.473%	736,313	24 (4 ↑)	
AVERAGE		**1.439%**	**2,877**		**1.525%**	**30,498**		**1.552%**	**776,077**		**N = 11**

		Land and Building Value: $100,000			Land and Building Value: $1 Million			Land and Building Value: $25 Million			Tax Rate Varies with Property Value
State	**City**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**	
Oklahoma	Tulsa	1.439%	2,877	20 (-)	1.439%	28,774	24 (-)	1.439%	719,355	26 (-)	
Oregon	Portland	1.965%	3,930	13 (1 ↑)	1.965%	39,298	14 (1 ↑)	1.965%	982,447	15 (1 ↑)	
Pennsylvania	Philadelphia	0.686%	1,372	47 (1 ↑)	1.180%	23,599	31 (2 ↑)	1.275%	637,486	31 (1 ↑)	X
Tennessee	Memphis	2.383%	4,766	6 (1 ↓)	2.383%	47,658	6 (-)	2.383%	1,191,460	6 (-)	
Tennessee	Nashville	1.008%	2,016	34 (4 ↓)	1.008%	20,163	37 (3 ↓)	1.008%	504,074	37 (3 ↓)	
Texas	Arlington	2.407%	4,813	5 (1 ↑)	2.407%	48,133	5 (2 ↑)	2.407%	1,203,337	5 (2 ↑)	
Texas	Austin	2.135%	4,270	11 (1 ↓)	2.135%	42,696	12 (2 ↓)	2.135%	1,067,393	13 (2 ↓)	
Texas	Dallas	2.653%	5,306	3 (-)	2.653%	53,059	3 (1 ↑)	2.653%	1,326,472	3 (1 ↑)	
Texas	El Paso	2.824%	5,649	2 (1 ↓)	2.824%	56,486	2 (1 ↓)	2.824%	1,412,148	2 (1 ↓)	
Texas	Fort Worth	2.582%	5,164	4 (-)	2.582%	51,639	4 (1 ↑)	2.582%	1,290,985	4 (1 ↑)	
Texas	Houston	2.290%	4,579	8 (1 ↓)	2.290%	45,795	8 (-)	2.290%	1,144,864	8 (-)	
Texas	San Antonio	2.944%	5,887	1 (1 ↑)	2.944%	58,871	1 (1 ↑)	2.944%	1,471,772	1 (1 ↑)	
Virginia	Virginia Beach	0.514%	1,027	50 (-)	0.514%	10,271	50 (-)	0.514%	256,778	50 (-)	
Washington	Seattle	0.622%	1,244	48 (2 ↓)	0.622%	12,438	48 (1 ↓)	0.622%	310,947	48 (1 ↓)	
Wisconsin	Milwaukee	1.390%	2,780	23 (4 ↓)	1.420%	28,406	25 (3 ↓)	1.423%	711,749	27 (3 ↓)	X
AVERAGE		**1.439%**	**2,877**		**1.525%**	**30,498**		**1.552%**	**776,077**		**N = 11**

Note:
$100,000-valued property has an additional $50,000 worth of machinery and equipment, an additional $40,000 worth of inventories, and an additional $10,000 worth of fixtures.
$1 million-valued property has an additional $500,000 worth of machinery and equipment, an additional $400,000 worth of inventories, and an additional $100,000 worth of fixtures.
$25 million-valued property has an additional $12.5 million worth of machinery and equipment, an additional $10 million worth of inventories, and an additional $2.5 million worth of fixtures.

Appendix Table 4d: Industrial Property Taxes for the Largest Fifty U.S. Cities (Personal Property = 60% of Total Parcel Value)

		Land and Building Value: $100,000			Land and Building Value: $1 Million			Land and Building Value: $25 Million			Tax Rate Varies with Property Value
State	**City**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**	
Arizona	Mesa	0.739%	1,848	43 (1 ↑)	1.371%	34,279	25 (-)	1.519%	949,146	21 (1 ↓)	X
Arizona	Phoenix	0.999%	2,496	28 (-)	1.888%	47,195	13 (-)	2.095%	1,309,589	12 (3 ↓)	X
Arizona	Tucson	0.893%	2,233	36 (4 ↓)	1.693%	42,322	16 (1 ↓)	1.879%	1,174,679	14 (-)	X
California	Fresno	0.948%	2,369	31 (2 ↑)	0.948%	23,695	35 (1 ↑)	0.948%	592,367	36 (1 ↑)	
California	Long Beach	0.920%	2,299	34 (-)	0.920%	22,989	39 (1 ↓)	0.920%	574,715	39 (1 ↓)	
California	Los Angeles	0.893%	2,232	37 (2 ↓)	0.893%	22,320	41 (2 ↓)	0.893%	557,996	41 (2 ↓)	
California	Oakland	1.040%	2,601	27 (2 ↑)	1.040%	26,007	32 (1 ↑)	1.040%	650,180	32 (1 ↑)	
California	Sacramento	0.864%	2,160	38 (2 ↑)	0.864%	21,605	42 (2 ↑)	0.864%	540,123	42 (2 ↑)	
California	San Diego	0.936%	2,341	32 (4 ↑)	0.936%	23,408	37 (3 ↑)	0.936%	585,195	37 (3 ↑)	
California	San Francisco	0.897%	2,242	35 (2 ↑)	0.897%	22,422	40 (1 ↑)	0.897%	560,548	40 (1 ↑)	
California	San Jose	0.963%	2,408	30 (1 ↑)	0.963%	24,077	34 (1 ↑)	0.963%	601,920	35 (1 ↑)	
Colorado	Colorado Springs	1.575%	3,937	16 (1 ↑)	1.575%	39,366	19 (1 ↑)	1.575%	984,142	20 (1 ↑)	
Colorado	Denver	1.695%	4,238	13 (1 ↑)	1.695%	42,381	15 (1 ↑)	1.695%	1,059,533	17 (-)	
DC	Washington	0.605%	1,513	46 (1 ↑)	1.523%	38,081	20 (1 ↓)	1.876%	1,172,633	15 (-)	X
Florida	Jacksonville	1.101%	2,753	26 (-)	1.255%	31,386	27 (1 ↓)	1.272%	794,934	27 (-)	X
Florida	Miami	1.306%	3,264	21 (-)	1.490%	37,255	22 (1 ↓)	1.510%	943,682	22 (-)	X
Georgia	Atlanta	1.383%	3,457	20 (-)	1.383%	34,568	24 (-)	1.383%	864,195	26 (1 ↓)	
Illinois	Chicago	1.583%	3,957	15 (-)	1.583%	39,566	18 (1 ↓)	1.583%	989,150	19 (1 ↓)	
Indiana	Indianapolis	2.271%	5,677	8 (3 ↑)	2.271%	56,769	8 (4 ↑)	2.271%	1,419,213	8 (5 ↑)	
Kansas	Wichita	1.233%	3,083	22 (-)	1.233%	30,832	28 (-)	1.233%	770,801	28 (1 ↑)	
Kentucky	Louisville	0.673%	1,682	45 (1 ↑)	0.673%	16,818	47 (1 ↑)	0.673%	420,455	47 (1 ↑)	
Louisiana	New Orleans	2.206%	5,514	9 (1 ↑)	2.206%	55,140	9 (2 ↑)	2.206%	1,378,499	9 (3 ↑)	
Maryland	Baltimore	1.230%	3,075	23 (1 ↑)	1.230%	30,748	29 (1 ↑)	1.230%	768,701	29 (1 ↑)	
Massachusetts	Boston	0.850%	2,125	40 (1 ↑)	0.850%	21,250	44 (1 ↑)	0.850%	531,250	44 (1 ↑)	
Michigan	Detroit	1.593%	3,981	14 (2 ↓)	1.962%	49,056	12 (5 ↓)	1.962%	1,226,401	13 (6 ↓)	X
Minnesota	Minneapolis	0.837%	2,092	41 (2 ↑)	1.336%	33,399	26 (3 ↑)	1.408%	880,255	25 (1 ↑)	X
Missouri	Kansas City	2.113%	5,283	11 (3 ↓)	2.113%	52,826	11 (2 ↓)	2.113%	1,320,638	11 (1 ↓)	
Nebraska	Omaha	1.536%	3,841	17 (1 ↓)	1.617%	40,437	17 (1 ↑)	1.626%	1,016,321	18 (1 ↑)	X
Nevada	Las Vegas	0.859%	2,147	39 (1 ↓)	0.859%	21,472	43 (1 ↓)	0.859%	536,805	43 (1 ↓)	
New Mexico	Albuquerque	1.129%	2,821	25 (-)	1.129%	28,213	31 (-)	1.129%	705,314	31 (-)	
New York	New York City	0.464%	1,159	49 (-)	0.464%	11,591	49 (-)	0.464%	289,768	49 (-)	
North Carolina	Charlotte	0.728%	1,820	44 (5 ↓)	0.728%	18,197	46 (3 ↓)	0.728%	454,925	46 (3 ↓)	
North Carolina	Raleigh	0.809%	2,022	42 (-)	0.809%	20,216	45 (1 ↑)	0.809%	505,396	45 (1 ↑)	
Ohio	Columbus	0.932%	2,331	33 (3 ↓)	0.932%	23,308	38 (4 ↓)	0.932%	582,696	38 (4 ↓)	
Oklahoma	Oklahoma City	1.505%	3,763	18 (-)	1.505%	37,634	21 (1 ↑)	1.505%	940,844	23 (-)	
AVERAGE		**1.355%**	**3,387**		**1.454%**	**36,340**		**1.475%**	**922,133**		**N = 11**

		Land and Building Value: $100,000			Land and Building Value: $1 Million			Land and Building Value: $25 Million			Tax Rate Varies with Property Value
State	**City**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**	
Oklahoma	Tulsa	1.425%	3,563	19 (-)	1.425%	35,625	23 (-)	1.425%	890,630	24 (-)	
Oregon	Portland	1.867%	4,667	12 (1 ↑)	1.867%	46,666	14 (-)	1.867%	1,166,656	16 (-)	
Pennsylvania	Philadelphia	0.549%	1,372	48 (-)	0.944%	23,599	36 (1 ↑)	1.020%	637,486	33 (2 ↑)	X
Tennessee	Memphis	2.345%	5,862	6 (-)	2.345%	58,617	6 (-)	2.345%	1,465,435	6 (-)	
Tennessee	Nashville	0.996%	2,490	29 (2 ↓)	0.996%	24,895	33 (1 ↓)	0.996%	622,387	34 (2 ↓)	
Texas	Arlington	2.444%	6,111	5 (-)	2.444%	61,110	5 (-)	2.444%	1,527,762	5 (-)	
Texas	Austin	2.150%	5,375	10 (1 ↓)	2.150%	53,748	10 (-)	2.150%	1,343,705	10 (1 ↑)	
Texas	Dallas	2.680%	6,701	3 (-)	2.680%	67,007	3 (-)	2.680%	1,675,175	3 (-)	
Texas	El Paso	2.884%	7,210	2 (1 ↓)	2.884%	72,095	2 (1 ↓)	2.884%	1,802,375	2 (1 ↓)	
Texas	Fort Worth	2.620%	6,550	4 (-)	2.620%	65,497	4 (-)	2.620%	1,637,425	4 (-)	
Texas	Houston	2.291%	5,727	7 (-)	2.291%	57,274	7 (1 ↑)	2.291%	1,431,852	7 (1 ↑)	
Texas	San Antonio	2.977%	7,443	1 (1 ↑)	2.977%	74,432	1 (1 ↑)	2.977%	1,860,812	1 (1 ↑)	
Virginia	Virginia Beach	0.443%	1,107	50 (-)	0.443%	11,071	50 (-)	0.443%	276,778	50 (-)	
Washington	Seattle	0.594%	1,484	47 (2 ↓)	0.594%	14,841	48 (1 ↓)	0.594%	371,036	48 (1 ↓)	
Wisconsin	Milwaukee	1.164%	2,910	24 (1 ↓)	1.188%	29,700	30 (3 ↓)	1.191%	744,104	30 (2 ↓)	X
AVERAGE		**1.355%**	**3,387**		**1.454%**	**36,340**		**1.475%**	**922,133**		**N = 11**

Note:
$100,000-valued property has an additional $75,000 worth of machinery and equipment, an additional $60,000 worth of inventories, and an additional $15,000 worth of fixtures.
$1 million-valued property has an additional $750,000 worth of machinery and equipment, an additional $600,000 worth of inventories, and an additional $150,000 worth of fixtures.
$25 million-valued property has an additional $18.75 million worth of machinery and equipment, an additional $15 million worth of inventories, and an additional $3.75 million worth of fixtures.

Appendix Table 4e: Industrial Property Taxes for Selected Rural Municipalities (Personal Property = 50% of Total Parcel Value)

		Land and Building Value: $100,000			Land and Building Value: $1 Million			Land and Building Value: $25 Million			Tax Rate Varies with Property Value
State	**City**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**	
Alabama	Monroeville	0.707%	1,413	47 (1 ↑)	0.707%	14,131	48 (-)	0.707%	353,277	48 (-)	
Alaska	Ketchikan	0.754%	1,509	43 (3 ↓)	0.885%	17,696	40 (1 ↓)	0.899%	449,355	40 (2 ↓)	X
Arizona	Safford	0.800%	1,600	41 (20 ↓)	1.265%	25,298	21 (10 ↓)	1.450%	725,137	14 (8 ↓)	X
Arkansas	Pocahontas	0.821%	1,642	39 (3 ↑)	0.821%	16,419	43 (-)	0.821%	410,469	43 (-)	
California	Yreka	0.845%	1,689	37 (-)	0.845%	16,893	41 (-)	0.845%	422,320	41 (-)	
Colorado	Walsenburg	1.836%	3,672	6 (-)	1.836%	36,718	7 (1 ↓)	1.836%	917,943	7 (-)	
Connecticut	Litchfield	1.185%	2,371	22 (21 ↑)	1.185%	23,708	25 (19 ↑)	1.185%	592,694	26 (18 ↑)	
Delaware	Georgetown	0.290%	581	50 (-)	0.290%	5,808	50 (-)	0.290%	145,207	50 (-)	
Florida	Moore Haven	1.473%	2,946	12 (-)	1.721%	34,427	11 (3 ↓)	1.748%	873,919	11 (2 ↓)	X
Georgia	Fitzgerald	1.505%	3,010	11 (1 ↓)	1.505%	30,101	13 (1 ↑)	1.505%	752,531	13 (1 ↑)	
Hawaii	Kauai	0.377%	753	49 (-)	0.377%	7,533	49 (-)	0.377%	188,325	49 (-)	
Idaho	Saint Anthony	0.674%	1,347	48 (3 ↓)	1.051%	21,010	30 (3 ↓)	1.123%	561,431	29 (2 ↓)	X
Illinois	Galena	1.278%	2,556	16 (3 ↑)	1.278%	25,556	18 (5 ↑)	1.278%	638,900	20 (4 ↑)	
Indiana	North Vernon	2.339%	4,677	4 (-)	2.339%	46,770	4 (-)	2.339%	1,169,250	4 (-)	
Iowa	Hampton	0.848%	1,696	36 (2 ↑)	1.280%	25,604	17 (4 ↑)	1.431%	715,490	17 (1 ↑)	X
Kansas	Iola	2.812%	5,624	2 (1 ↑)	2.812%	56,244	2 (1 ↑)	2.812%	1,406,099	2 (1 ↑)	
Kentucky	Morehead	0.768%	1,536	42 (4 ↑)	0.768%	15,363	45 (1 ↑)	0.768%	384,065	45 (1 ↑)	
Louisiana	Natchitoches	1.434%	2,868	13 (3 ↑)	1.434%	28,683	14 (4 ↑)	1.434%	717,071	16 (4 ↑)	
Maine	Rockland	1.269%	2,539	17 (-)	1.269%	25,388	19 (-)	1.269%	634,700	22 (1 ↓)	
Maryland	Denton	1.038%	2,076	28 (2 ↓)	1.038%	20,764	31 (2 ↓)	1.038%	519,097	32 (2 ↓)	
Massachusetts	Adams	1.245%	2,489	19 (1 ↑)	1.245%	24,892	23 (1 ↑)	1.245%	622,300	24 (1 ↑)	
Michigan	Manistique	1.578%	3,157	10 (1 ↑)	1.760%	35,205	9 (1 ↑)	1.760%	880,131	10 (1 ↑)	X
Minnesota	Glencoe	1.097%	2,194	25 (5 ↑)	1.739%	34,774	10 (3 ↑)	1.833%	916,615	8 (4 ↑)	X
Mississippi	Philadelphia	2.066%	4,133	5 (-)	2.066%	41,328	5 (-)	2.066%	1,033,200	5 (-)	
Missouri	Boonville	1.696%	3,391	9 (-)	1.696%	33,912	12 (-)	1.696%	847,801	12 (1 ↑)	
Montana	Glasgow	0.721%	1,442	45 (4 ↓)	1.021%	20,426	33 (1 ↓)	1.437%	718,330	15 (1 ↑)	X
Nebraska	Sidney	1.764%	3,528	8 (-)	1.873%	37,461	6 (1 ↑)	1.885%	942,331	6 (2 ↑)	X
Nevada	Fallon	1.028%	2,057	29 (-)	1.028%	20,569	32 (1 ↑)	1.028%	514,230	33 (-)	
New Hampshire	Lancaster	1.256%	2,512	18 (4 ↓)	1.256%	25,124	22 (6 ↓)	1.256%	628,103	23 (6 ↓)	
New Jersey	Maurice River Twp	1.396%	2,792	14 (1 ↑)	1.396%	27,915	15 (2 ↑)	1.396%	697,883	18 (1 ↑)	
New Mexico	Santa Rosa	0.835%	1,670	38 (2 ↓)	0.835%	16,701	42 (2 ↓)	0.835%	417,526	42 (2 ↓)	
New York	Warsaw	1.797%	3,594	7 (-)	1.797%	35,945	8 (1 ↑)	1.797%	898,618	9 (1 ↑)	
North Carolina	Edenton	0.908%	1,815	35 (1 ↓)	0.908%	18,150	39 (2 ↓)	0.908%	453,762	39 (2 ↓)	
North Dakota	Devils Lake	0.715%	1,430	46 (1 ↑)	0.715%	14,296	47 (-)	0.715%	357,390	47 (-)	
Ohio	Bryan	1.227%	2,454	21 (2 ↑)	1.227%	24,543	24 (1 ↑)	1.227%	613,571	25 (1 ↑)	
AVERAGE		**1.239%**	**2,478**		**1.297%**	**25,943**		**1.317%**	**658,321**		**N = 10**

		Land and Building Value: $100,000			Land and Building Value: $1 Million			Land and Building Value: $25 Million			Tax Rate Varies with Property Value
State	**City**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**	
Oklahoma	Mangum	0.971%	1,943	31 (-)	0.971%	19,429	35 (1 ↓)	0.971%	485,730	35 (1 ↓)	
Oregon	Tillamook	0.927%	1,853	34 (1 ↓)	0.927%	18,532	38 (2 ↓)	0.927%	463,311	38 (2 ↓)	
Pennsylvania	Ridgway	1.178%	2,356	23 (10 ↓)	1.178%	23,555	26 (11 ↓)	1.178%	588,886	27 (12 ↓)	
Rhode Island	Hopkinton	1.176%	2,352	24 (1 ↑)	1.176%	23,518	27 (1 ↑)	1.176%	587,950	28 (1 ↑)	
South Carolina	Mullins	3.774%	7,548	1 (-)	3.774%	75,485	1 (-)	3.774%	1,887,120	1 (-)	
South Dakota	Vermillion	1.063%	2,126	26 (2 ↓)	1.063%	21,256	28 (2 ↓)	1.063%	531,389	30 (2 ↓)	
Tennessee	Savannah	0.966%	1,932	32 (-)	0.966%	19,320	36 (1 ↓)	0.966%	483,000	36 (1 ↓)	
Texas	Fort Stockton	2.437%	4,874	3 (1 ↓)	2.437%	48,738	3 (1 ↓)	2.437%	1,218,450	3 (1 ↓)	
Utah	Richfield	1.011%	2,023	30 (5 ↑)	1.011%	20,227	34 (4 ↑)	1.011%	505,680	34 (5 ↑)	
Vermont	Hartford	1.307%	2,613	15 (3 ↑)	1.307%	26,131	16 (4 ↑)	1.307%	653,271	19 (3 ↑)	
Virginia	Wise	0.801%	1,602	40 (1 ↓)	0.801%	16,022	44 (2 ↓)	0.801%	400,549	44 (2 ↓)	
Washington	Okanogan	0.932%	1,865	33 (6 ↓)	0.932%	18,650	37 (7 ↓)	0.932%	466,240	37 (6 ↓)	
West Virginia	Elkins	1.055%	2,109	27 (1 ↑)	1.055%	21,090	29 (2 ↑)	1.055%	527,255	31 (1 ↑)	
Wisconsin	Rice Lake	1.232%	2,464	20 (2 ↑)	1.266%	25,320	20 (2 ↑)	1.270%	634,827	21 (2 ↑)	X
Wyoming	Worland	0.727%	1,453	44 (-)	0.727%	14,534	46 (1 ↓)	0.727%	363,338	46 (1 ↓)	
AVERAGE		**1.239%**	**2,478**		**1.297%**	**25,943**		**1.317%**	**658,321**		**N = 10**

$100,000-valued property has an additional $50,000 worth of machinery and equipment, an additional $40,000 worth of inventories, and an additional $10,000 worth of fixtures.
$1 million-valued property has an additional $500,000 worth of machinery and equipment, an additional $400,000 worth of inventories, and an additional $100,000 worth of fixtures.
$25 million-valued property has an additional $12.5 million worth of machinery and equipment, an additional $10 million worth of inventories, and an additional $2.5 million worth of fixtures.

Appendix Table 4f: Industrial Property Taxes for Selected Rural Municipalities (Personal Property = 60% of Total Parcel Value)

		Land and Building Value: $100,000			Land and Building Value: $1 Million			Land and Building Value: $25 Million			Tax Rate Varies with Property Value
State	**City**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**	
Alabama	Monroeville	0.664%	1,659	44 (-)	0.664%	16,591	47 (1 ↓)	0.664%	414,777	47 (1 ↓)	
Alaska	Ketchikan	0.743%	1,857	40 (1 ↓)	0.847%	21,176	40 (1 ↓)	0.858%	536,355	39 (-)	X
Arizona	Safford	0.640%	1,600	45 (20 ↓)	1.275%	31,881	15 (6 ↓)	1.424%	889,697	16 (10 ↓)	X
Arkansas	Pocahontas	0.819%	2,047	36 (4 ↑)	0.819%	20,470	41 (2 ↑)	0.819%	511,744	41 (2 ↑)	
California	Yreka	0.802%	2,006	38 (2 ↓)	0.802%	20,060	43 (2 ↓)	0.802%	501,505	43 (2 ↓)	
Colorado	Walsenburg	1.744%	4,360	6 (-)	1.744%	43,602	7 (1 ↓)	1.744%	1,090,057	7 (-)	
Connecticut	Litchfield	0.988%	2,469	23 (20 ↑)	0.988%	24,695	27 (18 ↑)	0.988%	617,369	28 (17 ↑)	
Delaware	Georgetown	0.232%	581	50 (-)	0.232%	5,808	50 (-)	0.232%	145,207	50 (-)	
Florida	Moore Haven	1.443%	3,608	11 (1 ↓)	1.642%	41,052	8 (-)	1.663%	1,039,538	8 (1 ↑)	X
Georgia	Fitzgerald	1.469%	3,672	9 (-)	1.469%	36,715	11 (1 ↑)	1.469%	917,876	11 (1 ↑)	
Hawaii	Kauai	0.301%	753	49 (-)	0.301%	7,533	49 (-)	0.301%	188,325	49 (-)	
Idaho	Saint Anthony	0.539%	1,347	48 (1 ↓)	1.021%	25,532	23 (3 ↓)	1.079%	674,486	19 (-)	X
Illinois	Galena	1.022%	2,556	19 (3 ↑)	1.022%	25,556	22 (4 ↑)	1.022%	638,900	24 (3 ↑)	
Indiana	North Vernon	2.231%	5,577	4 (1 ↓)	2.231%	55,770	4 (1 ↓)	2.231%	1,394,250	4 (1 ↓)	
Iowa	Hampton	0.678%	1,696	42 (-)	1.024%	25,604	21 (4 ↑)	1.145%	715,490	17 (3 ↑)	X
Kansas	Iola	2.348%	5,869	3 (2 ↑)	2.348%	58,694	3 (2 ↑)	2.348%	1,467,340	3 (2 ↑)	
Kentucky	Morehead	0.669%	1,673	43 (3 ↑)	0.669%	16,728	46 (1 ↑)	0.669%	418,196	46 (1 ↑)	
Louisiana	Natchitoches	1.444%	3,610	10 (2 ↑)	1.444%	36,095	12 (2 ↑)	1.444%	902,377	13 (3 ↑)	
Maine	Rockland	1.062%	2,654	15 (3 ↑)	1.062%	26,542	17 (4 ↑)	1.062%	663,550	21 (2 ↑)	
Maryland	Denton	0.910%	2,274	30 (4 ↓)	0.910%	22,739	35 (5 ↓)	0.910%	568,472	35 (5 ↓)	
Massachusetts	Adams	0.996%	2,489	21 (3 ↑)	0.996%	24,892	25 (3 ↑)	0.996%	622,300	26 (3 ↑)	
Michigan	Manistique	1.299%	3,248	13 (-)	1.517%	37,932	10 (1 ↑)	1.517%	948,306	10 (1 ↑)	X
Minnesota	Glencoe	0.877%	2,194	33 (4 ↑)	1.391%	34,774	14 (1 ↑)	1.467%	916,615	12 (3 ↑)	X
Mississippi	Philadelphia	2.066%	5,166	5 (1 ↓)	2.066%	51,660	5 (1 ↓)	2.066%	1,291,500	5 (1 ↓)	
Missouri	Boonville	1.625%	4,062	8 (-)	1.625%	40,621	9 (1 ↑)	1.625%	1,015,513	9 (1 ↑)	
Montana	Glasgow	0.577%	1,442	46 (1 ↓)	0.961%	24,027	31 (2 ↓)	1.437%	898,398	15 (2 ↓)	X
Nebraska	Sidney	1.702%	4,255	7 (-)	1.789%	44,725	6 (1 ↑)	1.798%	1,123,945	6 (2 ↑)	X
Nevada	Fallon	0.976%	2,441	26 (1 ↑)	0.976%	24,412	30 (1 ↑)	0.976%	610,305	31 (-)	
New Hampshire	Lancaster	1.005%	2,512	20 (5 ↓)	1.005%	25,124	24 (7 ↓)	1.005%	628,103	25 (7 ↓)	
New Jersey	Maurice River Twp	1.117%	2,792	14 (2 ↑)	1.117%	27,915	16 (2 ↑)	1.117%	697,883	18 (3 ↑)	
New Mexico	Santa Rosa	0.797%	1,992	39 (4 ↓)	0.797%	19,921	44 (4 ↓)	0.797%	498,031	44 (4 ↓)	
New York	Warsaw	1.438%	3,594	12 (1 ↓)	1.438%	35,945	13 (-)	1.438%	898,618	14 (-)	
North Carolina	Edenton	0.871%	2,178	34 (-)	0.871%	21,780	38 (-)	0.871%	544,512	38 (-)	
North Dakota	Devils Lake	0.572%	1,430	47 (1 ↑)	0.572%	14,296	48 (-)	0.572%	357,390	48 (-)	
Ohio	Bryan	0.982%	2,454	25 (3 ↑)	0.982%	24,543	29 (3 ↑)	0.982%	613,571	30 (2 ↑)	
AVERAGE		**1.115%**	**2,787**		**1.175%**	**29,371**		**1.193%**	**745,818**		**N = 10**

		Land and Building Value: $100,000			Land and Building Value: $1 Million			Land and Building Value: $25 Million			Tax Rate Varies with Property Value
State	**City**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**	**Tax Rate**	**Tax Bill**	**Rank**	
Oklahoma	Mangum	0.993%	2,483	22 (1 ↑)	0.993%	24,826	26 (1 ↑)	0.993%	620,655	27 (1 ↑)	
Oregon	Tillamook	0.880%	2,201	32 (-)	0.880%	22,007	37 (1 ↓)	0.880%	550,182	37 (1 ↓)	
Pennsylvania	Ridgway	0.942%	2,356	28 (14 ↓)	0.942%	23,555	33 (17 ↓)	0.942%	588,886	33 (16 ↓)	
Rhode Island	Hopkinton	0.982%	2,455	24 (5 ↑)	0.982%	24,552	28 (5 ↑)	0.982%	613,800	29 (4 ↑)	
South Carolina	Mullins	3.586%	8,964	1 (-)	3.586%	89,638	1 (-)	3.586%	2,240,955	1 (-)	
South Dakota	Vermillion	0.850%	2,126	35 (4 ↓)	0.850%	21,256	39 (4 ↓)	0.850%	531,389	40 (5 ↓)	
Tennessee	Savannah	0.938%	2,346	29 (1 ↑)	0.938%	23,460	34 (-)	0.938%	586,500	34 (-)	
Texas	Fort Stockton	2.437%	6,092	2 (-)	2.437%	60,923	2 (-)	2.437%	1,523,063	2 (-)	
Utah	Richfield	0.961%	2,402	27 (6 ↑)	0.961%	24,020	32 (5 ↑)	0.961%	600,495	32 (5 ↑)	
Vermont	Hartford	1.045%	2,613	17 (4 ↑)	1.045%	26,131	20 (4 ↑)	1.045%	653,271	23 (3 ↑)	
Virginia	Wise	0.813%	2,034	37 (1 ↑)	0.813%	20,337	42 (-)	0.813%	508,424	42 (-)	
Washington	Okanogan	0.892%	2,231	31 (12 ↓)	0.892%	22,306	36 (14 ↓)	0.892%	557,651	36 (12 ↓)	
West Virginia	Elkins	1.060%	2,650	16 (1 ↑)	1.060%	26,498	18 (1 ↑)	1.060%	662,448	22 (-)	
Wisconsin	Rice Lake	1.032%	2,579	18 (2 ↑)	1.059%	26,475	19 (4 ↑)	1.062%	663,686	20 (5 ↑)	X
Wyoming	Worland	0.686%	1,716	41 (-)	0.686%	17,161	45 (1 ↓)	0.686%	429,018	45 (1 ↓)	
AVERAGE		**1.115%**	**2,787**		**1.175%**	**29,371**		**1.193%**	**745,818**		**N = 10**

$100,000-valued property has an additional $75,000 worth of machinery and equipment, an additional $60,000 worth of inventories, and an additional $15,000 worth of fixtures.
$1 million-valued property has an additional $750,000 worth of machinery and equipment, an additional $600,000 worth of inventories, and an additional $150,000 worth of fixtures.
$25 million-valued property has an additional $18.75 million worth of machinery and equipment, an additional $15 million worth of inventories, and an additional $3.75 million worth of fixtures.

Appendix Table 4g: Preferential Treatment of Personal Property, Largest City in Each State (2019)

State	City	Machinery & Equipment		Manufacturers' Inventories		Fixtures		Rural Municipality
		Full Exemption	Preferential Treatment	Full Exemption	Preferential Treatment	Full Exemption	Preferential Treatment	Are preferences for personal property the same as in the state's rural municipality?
Alabama	Birmingham			X	X			Yes
Alaska	Anchorage		X		X		X	No - See note below
Arizona	Phoenix		X	X	X		X	Yes
Arkansas	Little Rock							No - See note below
California	Los Angeles			X	X			Yes
Colorado	Denver			X	X			Yes
Connecticut	Bridgeport	X	X	X	X			Yes
DC	Washington		***	X	X		***	Yes
Delaware	Wilmington	X	X	X	X	X	X	Yes
Florida	Jacksonville		X	X	X		X	Yes
Georgia	Atlanta				X			Yes
Hawaii	Honolulu	X	X	X	X	X	X	Yes
Idaho	Boise		X	X	X		X	Yes
Illinois	Aurora*	X	X	X	X	X	X	Yes
Illinois	Chicago	X	X	X	X	X	X	Yes
Indiana	Indianapolis			X	X			Yes
Iowa	Des Moines	X	X	X	X	X	X	Yes
Kansas	Wichita	X	X	X	X			Yes
Kentucky	Louisville		X		X		-	Yes
Louisiana	New Orleans		-		-		-	Yes
Maine	Portland	X	X	X	X			Yes
Maryland	Baltimore	X	X	X	X		-	Yes
Massachusetts	Boston	X	X	X	X	X	X	Yes
Michigan	Detroit		X	X	X		X	Yes
Minnesota	Minneapolis	X	X	X	X	X	X	Yes
Mississippi	Jackson							Yes
Missouri	Kansas City		X	X	X		X	Yes
Montana	Billings		***	X	X		***	Yes
Nebraska	Omaha		***	X	X		***	Yes
Nevada	Las Vegas			X	X			Yes
New Hampshire	Manchester	X	X	X	X	X	X	Yes
New Jersey	Newark	X	X	X	X	X	X	Yes
New Mexico	Albuquerque			X	X			No - See note below
New York	Buffalo*	X	X	X	X	X	X	Yes
New York	New York City	X	X	X	X	X	X	Yes
	Number of Cities	**21**	**31**	**43**	**47**	**15**	**23**	**No = 7**

State	City	Machinery & Equipment		Manufacturers' Inventories		Fixtures		Rural Municipality
		Full Exemption	Preferential Treatment	Full Exemption	Preferential Treatment	Full Exemption	Preferential Treatment	Are preferences for personal property the same as in the state's rural municipality?
North Carolina	Charlotte			X	X			Yes
North Dakota	Fargo	X	X	X	X	X	X	Yes
Ohio	Columbus	X	X	X	X	X	X	Yes
Oklahoma	Oklahoma City		-		-		-	Yes
Oregon	Portland			X	X			Yes
Pennsylvania	Philadelphia	X	X	X	X	X	X	Yes
Rhode Island	Providence	X	X	X	X		-	No - See note below
South Carolina	Charleston			X	X			Yes
South Dakota	Sioux Falls	X	X	X	X	X	X	Yes
Tennessee	Nashville		X		X		X	Yes
Texas	Houston							Yes
Utah	Salt Lake City			X	X			Yes
Vermont	Burlington		X	X	X		X	No - See note below
Virginia	Virginia Beach		X	X	X		-	No - See note below
Washington	Seattle			X	X			Yes
West Virginia	Charleston							Yes
Wisconsin	Milwaukee	X	X	X	X		-	Yes
Wyoming	Cheyenne			X	X			No - See note below
	Number of Cities	**21**	**31**	**43**	**47**	**15**	**23**	**No = 7**

* Preferential treatment means there are statutory provisions that result in lower property taxes on personal property than on real property, which could be due to exemptions/credits, the nominal tax rate, or the assessment ratio. Preferences are usually fairly uniform within a state.
** A dash ("-") indicates that real property is treated preferentially to personal property.
*** In the District of Columbia and Nebraska, there is a personal property exemption which is capped at a fixed value amount. This provides personal property with preferential treatment for a $100,000-valued property but the non-preferential treatment embedded in the tax system overwhelms that benefit at higher values.
*** In Montana, whether personal property is treated preferentially to real property depends on the total value of a parcel. At low values, machinery and equipment and fixtures are taxed preferentially, because of Montana's exemption of the first $100,000 of property value. But at high values, personal property is being taxed more heavily than real property because the state has a system of tiered assessment ratios.

Differences in Preferential Treatment in Rural Municipalities
-Alaska: Ketchikan has a full exemption for manufacturers' inventories.
-Arkansas: Pocahontas has preferential treatment for manufacturers' inventories.
-New Mexico: Santa Rosa has preferential treatment for machinery/equipment and fixtures.
-Rhode Island: Hopkinton does not treat real property preferentially to fixtures.
-Vermont: Hartford has a full exemption for machinery/equipment and fixtures.
-Virginia: Wise treats real property preferentially to machinery/equipment.
-Wyoming: Worland does not have preferential treatment for manufacturers' inventories.

Appendix Table 5a: Apartment Property Taxes for Largest City in Each State

		Land and Building Value: $600,000				Lower Tax Rate on Personal Property
State	**City**	**Tax Rate**	**Tax Bill**	**Rank**	**Change from '18**	
Alabama	Birmingham	1.453%	9,157	25	4 ↑	X
Alaska	Anchorage	1.412%	8,898	28	1 ↓	X
Arizona	Phoenix	1.329%	8,373	30	3 ↑	X
Arkansas	Little Rock	1.398%	8,807	29	1 ↑	
California	Los Angeles	1.174%	7,398	41	1 ↓	
Colorado	Denver	0.642%	4,042	51	-	
Connecticut	Bridgeport	2.775%	17,483	4	1 ↓	
DC	Washington	0.742%	4,677	49	-	X
Delaware	Wilmington	1.322%	8,328	32	1 ↓	X
Florida	Jacksonville	1.574%	9,913	22	-	X
Georgia	Atlanta	1.488%	9,376	24	2 ↑	
Hawaii	Honolulu	0.326%	2,051	53	-	X
Idaho	Boise	1.238%	7,802	37	5 ↓	X
Illinois	Aurora*	3.440%	21,669	2	-	X
Illinois	Chicago	1.415%	8,913	27	4 ↓	X
Indiana	Indianapolis	2.092%	13,179	15	3 ↑	X
Iowa	Des Moines	2.772%	17,466	5	1 ↓	X
Kansas	Wichita	1.291%	8,131	35	1 ↑	
Kentucky	Louisville	1.192%	7,510	39	3 ↑	X
Louisiana	New Orleans	1.512%	9,525	23	5 ↑	
Maine	Portland	1.976%	12,448	17	3 ↓	
Maryland	Baltimore	2.396%	15,094	11	2 ↑	
Massachusetts	Boston	0.913%	5,755	45	-	X
Michigan	Detroit	3.741%	23,570	1	-	
Minnesota	Minneapolis	1.654%	10,420	21	1 ↓	X
Mississippi	Jackson	2.643%	16,648	7	1 ↓	
Missouri	Kansas City	1.311%	8,260	33	8 ↓	X
Montana	Billings	0.861%	5,423	47	1 ↓	X
Nebraska	Omaha	2.014%	12,690	16	1 ↑	X
Nevada	Las Vegas	1.132%	7,130	42	1 ↑	
New Hampshire	Manchester	1.936%	12,199	18	3 ↓	X
New Jersey	Newark	2.881%	18,148	3	2 ↑	X
New Mexico	Albuquerque	1.285%	8,096	36	2 ↓	
New York	Buffalo*	2.491%	15,691	9	-	X
New York	New York City	1.188%	7,484	40	1 ↓	X
AVERAGE		**1.647%**	**10,375**			**N = 29**

		Land and Building Value: $600,000				Lower Tax Rate on Personal Property
State	**City**	**Tax Rate**	**Tax Bill**	**Rank**	**Change from '18**	
North Carolina	Charlotte	0.952%	5,997	44	-	
North Dakota	Fargo	1.230%	7,751	38	3 ↑	X
Ohio	Columbus	2.209%	13,916	14	4 ↓	X
Oklahoma	Oklahoma City	1.325%	8,345	31	6 ↑	
Oregon	Portland	2.456%	15,474	10	1 ↑	
Pennsylvania	Philadelphia	1.307%	8,232	34	1 ↑	X
Rhode Island	Providence	2.316%	14,589	12	4 ↑	
South Carolina	Charleston	1.694%	10,673	20	1 ↓	
South Dakota	Sioux Falls	1.416%	8,924	26	2 ↓	X
Tennessee	Nashville	1.064%	6,703	43	5 ↓	X
Texas	Houston	2.313%	14,575	13	1 ↓	
Utah	Salt Lake City	0.659%	4,151	50	-	X
Vermont	Burlington	2.674%	16,848	6	2 ↑	X
Virginia	Virginia Beach	0.870%	5,479	46	2 ↑	
Washington	Seattle	0.765%	4,819	48	1 ↓	
West Virginia	Charleston	1.818%	11,450	19	2 ↑	
Wisconsin	Milwaukee	2.578%	16,240	8	1 ↓	
Wyoming	Cheyenne	0.627%	3,951	52	-	
AVERAGE		**1.647%**	**10,375**			**N = 29**

* Illinois and New York have two cities included in this table, because the tax systems in Chicago and New York City are significantly different from the rest of the state.

Note: Property has an additional $30,000 worth of fixtures.

Appendix Table 5b: Apartment Property Taxes for the Largest Fifty U.S. Cities

		Land and Building Value: $600,000				Lower Tax Rate on Personal Property
State	**City**	**Tax Rate**	**Tax Bill**	**Rank**	**Change from '18**	
Arizona	Mesa	0.926%	5,833	44	-	X
Arizona	Phoenix	1.329%	8,373	24	1 ↑	X
Arizona	Tucson	1.242%	7,822	32	1 ↓	X
California	Fresno	1.247%	7,857	31	2 ↑	
California	Long Beach	1.210%	7,623	34	-	
California	Los Angeles	1.175%	7,401	38	2 ↓	
California	Oakland	1.369%	8,623	23	1 ↑	
California	Sacramento	1.137%	7,164	39	-	
California	San Diego	1.232%	7,762	33	4 ↑	
California	San Francisco	1.180%	7,435	37	1 ↑	
California	San Jose	1.267%	7,983	30	1 ↓	
Colorado	Colorado Springs	0.579%	3,650	50	-	
Colorado	Denver	0.642%	4,042	49	-	
DC	Washington	0.742%	4,677	48	-	X
Florida	Jacksonville	1.574%	9,913	18	-	X
Florida	Miami	1.857%	11,697	16	-	X
Georgia	Atlanta	1.488%	9,376	21	1 ↑	
Illinois	Chicago	1.415%	8,913	22	3 ↓	X
Indiana	Indianapolis	2.092%	13,179	13	2 ↑	X
Kansas	Wichita	1.291%	8,131	28	-	
Kentucky	Louisville	1.192%	7,510	35	5 ↑	X
Louisiana	New Orleans	1.512%	9,525	19	4 ↑	
Maryland	Baltimore	2.396%	15,094	10	2 ↑	
Massachusetts	Boston	0.913%	5,755	45	-	X
Michigan	Detroit	3.741%	23,570	1	-	
Minnesota	Minneapolis	1.654%	10,420	17	-	X
Missouri	Kansas City	1.311%	8,260	26	5 ↓	X
Nebraska	Omaha	2.014%	12,690	15	1 ↓	X
Nevada	Las Vegas	1.132%	7,130	40	1 ↑	
New Mexico	Albuquerque	1.285%	8,096	29	3 ↓	
New York	New York City	1.188%	7,484	36	1 ↓	X
North Carolina	Charlotte	0.952%	5,997	43	1 ↓	
North Carolina	Raleigh	0.987%	6,219	42	1 ↑	
Ohio	Columbus	2.209%	13,916	12	3 ↓	X
Oklahoma	Oklahoma City	1.325%	8,345	25	5 ↑	
AVERAGE		**1.590%**	**10,017**			**N = 21**

		Land and Building Value: $600,000				Lower Tax Rate on Personal Property
State	**City**	**Tax Rate**	**Tax Bill**	**Rank**	**Change from '18**	
Oklahoma	Tulsa	1.501%	9,454	20	-	X
Oregon	Portland	2.456%	15,474	9	1 ↑	
Pennsylvania	Philadelphia	1.307%	8,232	27	-	X
Tennessee	Memphis	2.556%	16,102	7	3 ↓	X
Tennessee	Nashville	1.064%	6,703	41	9 ↓	X
Texas	Arlington	2.633%	16,591	5	1 ↑	X
Texas	Austin	2.091%	13,173	14	1 ↓	
Texas	Dallas	2.680%	16,885	4	4 ↑	
Texas	El Paso	2.472%	15,572	8	6 ↓	
Texas	Fort Worth	2.713%	17,091	2	3 ↑	X
Texas	Houston	2.313%	14,575	11	-	
Texas	San Antonio	2.701%	17,018	3	-	
Virginia	Virginia Beach	0.870%	5,479	46	1 ↑	
Washington	Seattle	0.765%	4,819	47	1 ↓	
Wisconsin	Milwaukee	2.578%	16,240	6	1 ↑	
AVERAGE		**1.590%**	**10,017**			**N = 21**

Note: Property has an additional $30,000 worth of fixtures.

Appendix Table 5c: Apartment Property Taxes for Selected Rural Municipalities

		Land and Building Value: $600,000				Lower Tax Rate on Personal Property
State	**City**	**Tax Rate**	**Tax Bill**	**Rank**	**Change from '18**	
Alabama	Monroeville	0.820%	5,166	44	1 ↓	
Alaska	Ketchikan	1.059%	6,673	35	1 ↑	X
Arizona	Safford	0.908%	5,719	41	1 ↓	X
Arkansas	Pocahontas	0.831%	5,233	43	1 ↑	X
California	Yreka	1.056%	6,652	36	2 ↓	
Colorado	Walsenburg	0.652%	4,107	48	-	
Connecticut	Litchfield	2.035%	12,819	18	2 ↑	X
Delaware	Georgetown	0.553%	3,485	50	-	X
Florida	Moore Haven	2.087%	13,148	15	-	X
Georgia	Fitzgerald	1.689%	10,641	24	1 ↑	
Hawaii	Kauai	0.570%	3,594	49	-	X
Idaho	Saint Anthony	1.283%	8,084	26	-	X
Illinois	Galena	2.434%	15,334	7	3 ↑	X
Indiana	North Vernon	1.827%	11,508	22	1 ↑	X
Iowa	Hampton	2.035%	12,822	17	12 ↓	X
Kansas	Iola	2.359%	14,865	9	7 ↑	
Kentucky	Morehead	1.203%	7,579	29	9 ↑	X
Louisiana	Natchitoches	0.985%	6,204	37	4 ↑	
Maine	Rockland	2.308%	14,540	10	1 ↑	
Maryland	Denton	1.789%	11,273	23	2 ↓	
Massachusetts	Adams	1.996%	12,577	20	2 ↓	X
Michigan	Manistique	3.035%	19,118	2	-	X
Minnesota	Glencoe	1.251%	7,880	28	6 ↓	X
Mississippi	Philadelphia	2.066%	13,018	16	1 ↑	
Missouri	Boonville	0.947%	5,965	39	4 ↓	X
Montana	Glasgow	0.954%	6,011	38	1 ↓	X
Nebraska	Sidney	2.284%	14,389	12	2 ↑	X
Nevada	Fallon	1.278%	8,048	27	1 ↑	
New Hampshire	Lancaster	2.393%	15,074	8	4 ↓	X
New Jersey	Maurice River Twp	2.659%	16,749	3	3 ↑	X
New Mexico	Santa Rosa	0.917%	5,777	40	1 ↓	
New York	Warsaw	3.423%	21,567	1	-	X
North Carolina	Edenton	1.095%	6,897	33	1 ↓	
North Dakota	Devils Lake	1.361%	8,577	25	4 ↑	X
Ohio	Bryan	1.880%	11,843	21	3 ↑	X
AVERAGE		**1.598%**	**10,064**			**N = 30**

		Land and Building Value: $600,000				Lower Tax Rate on Personal Property
State	**City**	**Tax Rate**	**Tax Bill**	**Rank**	**Change from '18**	
Oklahoma	Mangum	0.874%	5,505	42	-	
Oregon	Tillamook	1.158%	7,297	30	-	
Pennsylvania	Ridgway	2.243%	14,133	13	10 ↓	X
Rhode Island	Hopkinton	2.141%	13,490	14	5 ↑	X
South Carolina	Mullins	2.635%	16,600	4	3 ↑	
South Dakota	Vermillion	2.024%	12,753	19	6 ↓	X
Tennessee	Savannah	1.091%	6,872	34	1 ↓	X
Texas	Fort Stockton	2.437%	15,352	6	2 ↑	
Utah	Richfield	0.662%	4,172	47	1 ↓	X
Vermont	Hartford	2.598%	16,370	5	4 ↑	X
Virginia	Wise	0.732%	4,614	45	2 ↑	
Washington	Okanogan	1.138%	7,168	31	4 ↓	
West Virginia	Elkins	1.099%	6,922	32	1 ↓	X
Wisconsin	Rice Lake	2.297%	14,469	11	1 ↑	
Wyoming	Worland	0.723%	4,558	46	1 ↓	
AVERAGE		**1.598%**	**10,064**			**N = 30**

Note: Property has an additional $30,000 worth of fixtures.

Appendix Table 6a: Commercial-Homestead Classification Ratio for Largest City in Each State

		Classification Ratio			Causes of Preferential Treatment of Homesteads				
State	**City**	**Rank**	**Ratio**	**Change from '18**	**Assessment Ratio**	**Nominal Tax Rate**	**Exemptions & Credits**	**Assessment Limits**	**Sales Ratio**
Alabama	Birmingham	12	2.187	0.004	X		X		+
Alaska	Anchorage	31	1.212	0.140			X		
Arizona	Phoenix	17	1.999	-0.077	X	X			-
Arkansas	Little Rock	29	1.276	-0.058			X	X	+
California	Los Angeles	42	1.010	-0.001			X		
Colorado	Denver	3	3.983	0.099	X				-
Connecticut	Bridgeport	50	0.997	0.012					-
DC	Washington	14	2.076	-0.051		X	X		-
Delaware	Wilmington	53	0.918	-0.272					-
Florida	Jacksonville	9	2.364	0.261			X	X	
Georgia	Atlanta	21	1.691	0.333			X		
Hawaii	Honolulu	4	3.967	-0.006		X	X		-
Idaho	Boise	23	1.635	-0.049			X		+
Illinois	Aurora*	34	1.094	-0.002			X		
Illinois	Chicago	6	2.771	-0.172	X		X		
Indiana	Indianapolis	8	2.465	0.041			X		-
Iowa	Des Moines	24	1.615	-0.013	X		-		+
Kansas	Wichita	13	2.104	-0.153	X		X		-
Kentucky	Louisville	40	1.034	0.023					+
Louisiana	New Orleans	16	2.033	-0.055	X		X		+
Maine	Portland	37	1.072	-0.002			X		
Maryland	Baltimore	43	1.008	0.017					+
Massachusetts	Boston	1	4.369	-0.056		X	X		-
Michigan	Detroit	28	1.292	0.119		X			+
Minnesota	Minneapolis	19	1.866	0.072	X	X	X		-
Mississippi	Jackson	18	1.926	-0.027	X		X		+
Missouri	Kansas City	15	2.066	0.230	X	X			+
Montana	Billings	27	1.301	-0.044	X				-
Nebraska	Omaha	41	1.011	0.011					+
Nevada	Las Vegas	44	1.003	0.006					+
New Hampshire	Manchester	45	1.000	0.000					
New Jersey	Newark	45	1.000	0.000					
New Mexico	Albuquerque	33	1.186	-0.003		X	X	X	
New York	Buffalo*	22	1.642	0.020		X	X		
New York	New York City	5	3.137	0.373	X	-	X	X	-

		Classification Ratio			Causes of Preferential Treatment of Homesteads				
State	**City**	**Rank**	**Ratio**	**Change from '18**	**Assessment Ratio**	**Nominal Tax Rate**	**Exemptions & Credits**	**Assessment Limits**	**Sales Ratio**
North Carolina	Charlotte	45	1.000	0.000					
North Dakota	Fargo	35	1.088	0.001	X				-
Ohio	Columbus	32	1.199	-0.121		X	X		-
Oklahoma	Oklahoma City	38	1.060	-0.001			X		
Oregon	Portland	45	1.000	0.000					
Pennsylvania	Philadelphia	10	2.360	0.255		X	X		
Rhode Island	Providence	7	2.490	0.538	X	X			
South Carolina	Charleston	2	4.068	0.949	X		X	X	
South Dakota	Sioux Falls	51	0.967	-0.084		X			-
Tennessee	Nashville	25	1.600	0.000	X				
Texas	Houston	26	1.333	-0.009			X		-
Utah	Salt Lake City	20	1.776	0.029			X		-
Vermont	Burlington	30	1.229	0.073	X	-	X		-
Virginia	Virginia Beach	52	0.949	0.034					-
Washington	Seattle	45	1.000	0.000					
West Virginia	Charleston	11	2.223	0.001		X			+
Wisconsin	Milwaukee	36	1.073	0.011			X		
Wyoming	Cheyenne	39	1.053	0.099					+
TOTAL/AVERAGE			**1.713**	**0.047**	**17**	**14**	**29**	**5**	**14 (+), 19 (-)**

*For sales ratio, "+" indicates that the sales ratio is higher for commercial properties and thus increases the classification ratio, while "-" indicates that the sales ratio is lower for commercial properties and thus decreases the classification ratio. For a few cities, one of the other three features of the property tax system favors commercial properties over homesteads, and this is also indicated with a "-".

Appendix Table 6b: Apartment-Homestead Classification Ratio for Largest City in Each State

		Classification Ratio			Causes of Preferential Treatment of Homesteads				
State	**City**	**Rank**	**Ratio**	**Change from '18**	**Assessment Ratio**	**Nominal Tax Rate**	**Exemptions & Credits**	**Assessment Limits**	**Sales Ratio**
Alabama	Birmingham	5	2.186	0.003	X		X		+
Alaska	Anchorage	22	1.212	0.140			X		
Arizona	Phoenix	24	1.117	-0.002		X			
Arkansas	Little Rock	18	1.276	-0.058			X	X	+
California	Los Angeles	37	1.010	-0.001			X		
Colorado	Denver	39	1.008	0.023					+
Connecticut	Bridgeport	53	0.848	-0.080					-
DC	Washington	30	1.070	-0.026			X		-
Delaware	Wilmington	40	1.000	0.000					
Florida	Jacksonville	4	2.364	0.261			X	X	
Georgia	Atlanta	9	1.691	0.333			X		
Hawaii	Honolulu	25	1.108	-0.002			X		-
Idaho	Boise	12	1.635	-0.049			X		+
Illinois	Aurora*	26	1.094	-0.002			X		
Illinois	Chicago	49	0.976	-0.143	-		X		
Indiana	Indianapolis	3	2.465	0.041			X		-
Iowa	Des Moines	17	1.296	-0.156	X		X		-
Kansas	Wichita	34	1.021	-0.001			X		
Kentucky	Louisville	33	1.034	0.023					+
Louisiana	New Orleans	14	1.417	-0.030			X		
Maine	Portland	28	1.072	-0.002			X		
Maryland	Baltimore	38	1.008	0.017					+
Massachusetts	Boston	7	1.972	0.002			X		
Michigan	Detroit	20	1.266	0.005		X			
Minnesota	Minneapolis	19	1.270	-0.026	X		X		-
Mississippi	Jackson	8	1.926	-0.027	X		X		+
Missouri	Kansas City	40	1.000	0.000					
Montana	Billings	40	1.000	0.000					
Nebraska	Omaha	36	1.011	0.011					+
Nevada	Las Vegas	35	1.018	0.052					+
New Hampshire	Manchester	40	1.000	0.000					
New Jersey	Newark	40	1.000	0.000					
New Mexico	Albuquerque	31	1.065	0.005			X	X	
New York	Buffalo*	11	1.642	0.020		X	X		
New York	New York City	2	2.475	-0.074	X	-	X	X	-

		Classification Ratio			Causes of Preferential Treatment of Homesteads				
State	**City**	**Rank**	**Ratio**	**Change from '18**	**Assessment Ratio**	**Nominal Tax Rate**	**Exemptions & Credits**	**Assessment Limits**	**Sales Ratio**
North Carolina	Charlotte	40	1.000	0.000					
North Dakota	Fargo	27	1.088	0.001	X				-
Ohio	Columbus	23	1.199	-0.121		X	X		-
Oklahoma	Oklahoma City	32	1.060	-0.001			X		
Oregon	Portland	40	1.000	0.000					
Pennsylvania	Philadelphia	15	1.372	0.148			X		
Rhode Island	Providence	10	1.667	0.667	X				
South Carolina	Charleston	1	4.068	0.949	X		X	X	
South Dakota	Sioux Falls	50	0.967	-0.084		X			-
Tennessee	Nashville	13	1.600	0.000	X				
Texas	Houston	16	1.347	-0.009			X		-
Utah	Salt Lake City	48	0.977	0.016					-
Vermont	Burlington	21	1.215	0.030	X	-	X		-
Virginia	Virginia Beach	52	0.912	0.041					-
Washington	Seattle	40	1.000	0.000					
West Virginia	Charleston	6	2.186	0.038		X			+
Wisconsin	Milwaukee	29	1.071	0.011			X		
Wyoming	Cheyenne	51	0.958	-0.005					-
TOTAL/AVERAGE			**1.344**	**0.036**	**10**	**6**	**29**	**5**	**10 (+), 15 (-)**

* For sales ratio, "+" indicates that the sales ratio is higher for apartments and thus increases the classification ratio, while "-" indicates that the sales ratio is lower for apartments and thus decreases the classification ratio. For a few cities, one of the other three features of the property tax system favors apartments over homesteads, and this is also indicated with a "-".

Appendix Table 7: Impact of Assessment Limits

Difference in Property Taxes between a Newly Purchased Home and a Home Subject to that Has Been Owned for the Average Duration for the City (For Median Valued Home)

		Tax Rate on Median Valued Home			Tax Bill on Median Valued Home			
State	City	Newly Purchased Home	Home Owned for Average Duration in City	Difference	Newly Purchased Home	Home Owned for Average Duration in City	Difference	% Difference
Arizona	Mesa	0.829%	0.649%	0.179%	2,010	1,575	435	21.6%
Arizona	Phoenix	1.249%	0.893%	0.356%	3,111	2,225	887	28.5%
Arizona	Tucson	1.152%	1.064%	0.087%	1,932	1,786	147	7.6%
Arkansas	Little Rock	1.122%	1.096%	0.027%	1,917	1,871	46	2.4%
California	Fresno	1.213%	0.716%	0.498%	3,120	1,840	1,280	41.0%
California	Long Beach	1.196%	0.750%	0.445%	7,183	4,508	2,676	37.2%
California	Los Angeles	1.163%	0.641%	0.521%	7,934	4,377	3,558	44.8%
California	Oakland	1.355%	0.674%	0.682%	9,728	4,834	4,894	50.3%
California	Sacramento	1.115%	0.577%	0.538%	3,995	2,068	1,927	48.2%
California	San Diego	1.219%	0.816%	0.403%	7,980	5,344	2,636	33.0%
California	San Francisco	1.173%	0.625%	0.548%	14,028	7,478	6,550	46.7%
California	San Jose	1.258%	0.690%	0.568%	12,184	6,683	5,501	45.1%
Florida	Jacksonville	1.251%	0.693%	0.559%	2,299	1,273	1,026	44.6%
Florida	Miami	1.689%	0.874%	0.815%	5,918	3,061	2,857	48.3%
Illinois	Chicago	1.522%	1.522%	0.000%	4,134	4,134	0	0.0%
Michigan	Detroit	2.933%	1.920%	1.014%	1,514	991	523	34.6%
New Mexico	Albuquerque	1.231%	1.194%	0.037%	2,551	2,476	76	3.0%
New York	New York City*	1.181%	0.504%	0.677%	7,618	3,251	4,367	57.3%
Oklahoma	Oklahoma City	1.235%	1.168%	0.067%	1,998	1,889	109	5.4%
Oklahoma	Tulsa	1.412%	1.348%	0.064%	2,035	1,942	92	4.5%
Oregon	Portland*	2.456%	1.685%	0.771%	11,077	7,598	3,479	31.4%
South Carolina	Charleston	0.521%	0.401%	0.120%	1,878	1,445	433	23.0%
Texas	Arlington	2.089%	2.089%	0.000%	3,944	3,944	0	0.0%
Texas	Austin	1.846%	1.846%	0.000%	6,746	6,746	0	0.0%
Texas	Dallas	2.086%	2.086%	0.000%	4,373	4,373	0	0.0%
Texas	El Paso	2.629%	2.629%	0.000%	3,442	3,442	0	0.0%
Texas	Fort Worth	2.167%	2.162%	0.005%	4,102	4,093	9	0.2%
Texas	Houston	1.713%	1.713%	0.000%	3,068	3,068	0	0.0%
Texas	San Antonio	2.453%	2.453%	0.000%	3,817	3,817	0	0.0%
AVERAGE		**1.533%**	**1.223%**	**0.310%**	**5,022**	**3,522**	**1,500**	**29.9%**

Notes: Table is for states with parcel-specific assessment limits. Taxes on newly purchased homes come from Appendix Tables 2a and 2d, which ignore assessment limits. Taxes on homes owned for the average duration in each city come from Appendix Tables 2b and 2e, which do account for assessment limits. See Methodology section for details.

* New York City and Portland (OR) have unique assessment limits, because they do not reset when a property is sold like in other cities. For these cities, table 7 shows the difference in property taxes for a newly-built home versus a home built prior to the implementation of assessment limits (1981 in New York City; 1996 in Portland). (See footnote 38 on page 50 for details on the methodology for these two cities).