

# The Role of Property Assessment Oversight in School Finance Inequality

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# Role of Assessments in School Finance Inequality

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School funding historically dependent on local (property) taxes → Funding gaps

Funding gaps across districts can be driven by

- Previous Work: Differences in property wealth and tax rates
  - Local amenities, market conditions, local government tax policy
  - Large education literature: School finance reforms that address these differences
- Our Paper: Differences in property assessment accuracy (determine tax base)
  - Local government capacity/governance
  - Local PF literature: Differences in property assessment accuracy, within/between
  - Hard to study link between assessments and school finance without intervention

**Contribution: Tie two literatures together by studying a cross-county property assessment intervention in Kentucky in early 1990s**

## Results Preview:

# Within-County Inequity Drove Between-County Inequity in Assessments, Despite Oversight

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### **Assessment Results (county-level admin data)**

- Increased total assessed property value by over 40 percent
  - Gini coefficient declined by nearly 10 percent
- Decreased inequity within counties by nearly 30 percent
  - Effects persisted 30 years later
- Median assessment-to-sales ratio unchanged
  - Systematic underassessment in left tail of ratio distribution

### **Local Revenues Results (district-level admin data)**

- Increased total local revenues by ~15 percent for all treatment areas (30 percent for tax rate constrained areas)
- Gini coefficient declined from 0.33 to 0.26

# Measuring Accuracy in Property Assessments

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## Ratio studies

- Each year, take set of properties that sell
- Divide assessed value by sales price to get assessment-to-sales ratio
  - Ratio = 100 => assessed value = sales price
- Compute two measures for each county
  - Median assessment-to-sales ratio - level of assessments for median property
  - Coefficient of dispersion (COD) - spread (inequity) of assessment ratios
    - Average deviation from median assessment-to-sales ratio
    - Ideally, COD = 0: All properties have the same ratio and pay the same effective tax rate
      - Assessment should be same percent of home price, regardless of how expensive

# How can inaccurate assessments lead to lower property revenues? Underassessment

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Mechanically: \$ Underassessed > \$ Overassessed, for a given tax rate

- Regressivity - a nationwide phenomenon  
(Berry 2021, Avenancio-Leon and Howard 2022)
- Distribution of assessment ratios biased below market values\*
- Can exist despite common oversight regime (indirect equalization)

In practice, inaccuracies come from capacity/governance issues

- Limitations in assessment methodology (Avenancio-Leon and Howard 2022)
- Disparities in appeals (Shybalkina 2021; Holz, Novdorodsky, and Simon 2023)
- Outright corruption (media reports from LA/Chicago to KY)

*Amplifies school funding inequality if more prevalent in poorer school districts*

# Assessment Inaccuracy and School Funding Inequality in Kentucky, Pre-Intervention (1989)

**“Sloppy records, out-of-date maps, understaffed** [assessor] offices and **political favoritism** led to frequent abuses of the property tax system -- the linchpin of local education finances.” Lexington Herald-Leader (1989)

“[A] good-old-boy-type network where if you know the right people, you'll get a break. They will do you a favor, and then you can return the favor sometime later.” Lexington Herald Leader (1989)



# Pre-Intervention Policy Context in Kentucky

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## Property Assessment Oversight - Indirect equalization

- Focus on between-county equalization
  - Examines assessment levels (uses median assessment-to-sales ratio)
- Ignores within-county equalization
  - Does not examine assessment spread using measures like the COD
  - Allows for skew in distribution of sales ratios to go unnoticed
- Over half of states use some form of indirect equalization

## School Finance - Dependent on local property taxes

- Some state funding, but not enough to equalize per pupil funding
- Key aspect of U.S. education finance system: still ~35 percent, despite reforms (Kenyon, Paquin, and Munteanu 2022)

# Policy Intervention in Kentucky

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School finance reform: wealth, tax rates, and assessments

**School Reform (1990):** More state \$ for districts with lower assessed property values

- Underassessment incentive in formula



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**Assessment Reform (1990-1994):** Property reassessment, technical upgrade

- Three groups of counties, varying levels of intervention
  - Emergency Reassessment (N=25), Technical Assistance (N=68), Untreated (N=27)
- Exception for legal cap on property revenue growth; imposed min tax rates
  - Limit crowd out (offsetting increased in assessments with lower tax rates)
    - Some districts were constrained in how much they could offset
- New oversight standards for CODs to help ensure longevity of intervention
  - Help address inaccuracies in spread of ratios (not just median)

# Pre-Intervention: Differences in Assessments and School Funding Across Treatment Groups

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	<b>Emergency</b>	<b>Technical</b>	<b>Untreated</b>
<b>Per Pupil Real Assessment (\$1,000, \$2012)</b>	<b>64</b>	<b>124</b>	<b>145</b>
Res. Median Assessment-to-Sales Ratio (level)	91	94	92
Res. Coefficient of Dispersion (COD) (spread)	50	28	26
Tax Rate (mills)	3.0	3.4	3.9
Tax Rate Constrained (< 3 mills) (count)	19	35	8
Total Per Pupil Real School Revenues	5,000	5,200	5,400
Count of School Districts	35	94	47

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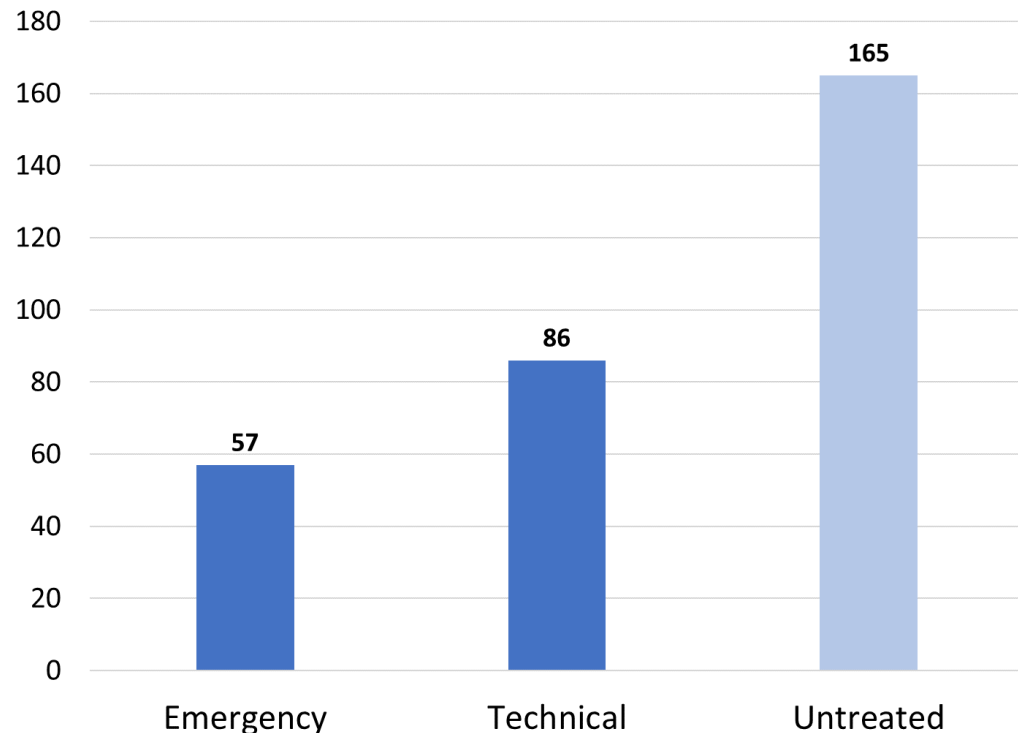
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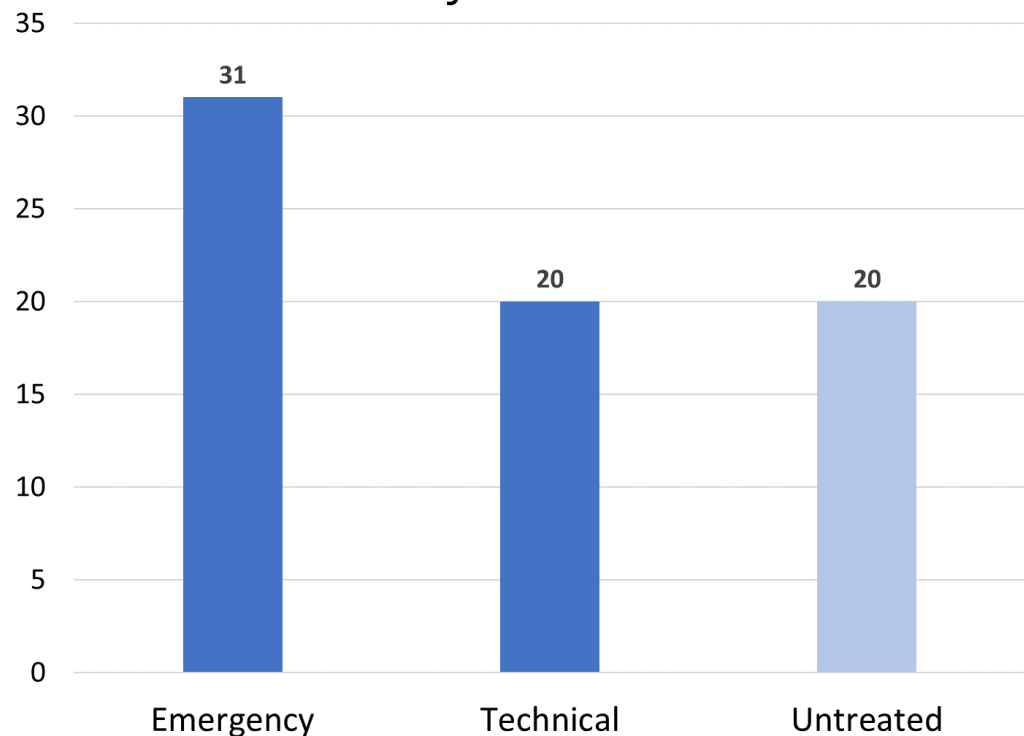
# But, Treatment Counties Pre-Disposed to Higher Inequity (CODs)

More rural, "depressed market areas" → Higher inequity in ratios

Population Density (people per mi<sup>2</sup>), 1990



Poverty Rate, 1989

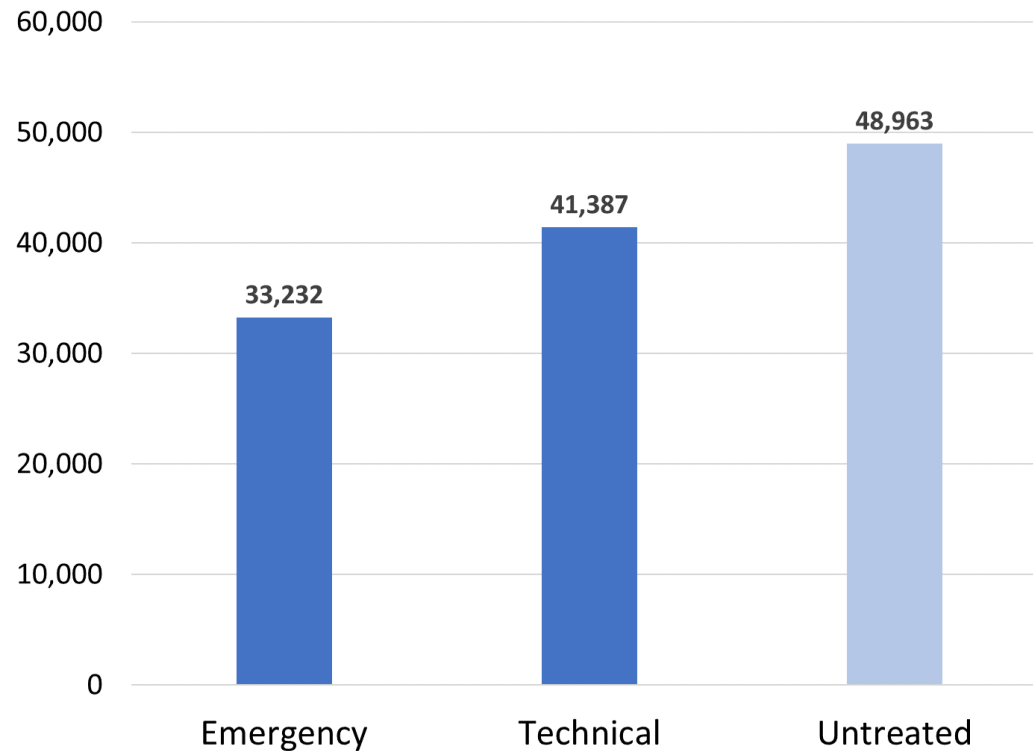




# Treatment Counties Also Pre-Disposed to Lower Assessments

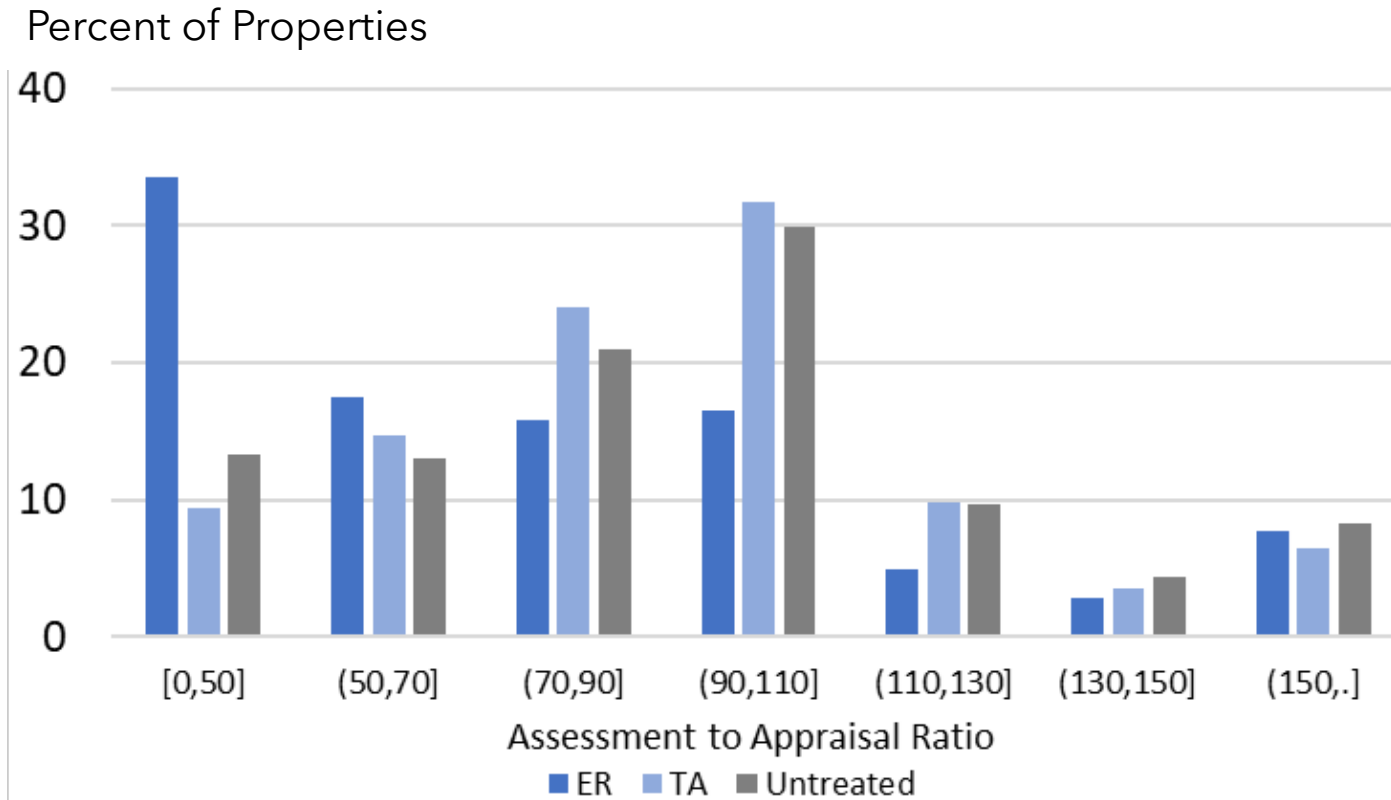
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Lower median home values → Lower assessments



# Audit Shows Skewed Distribution of Assessment Ratios in Treatment Counties Pre-Intervention

Distribution of Assessment/Appraisal Ratios by Treatment Group, Pre-Intervention



Source: Property Tax Assessment Equity And Quality: A Review Of Sixty Kentucky Property Valuation Administrators' Offices (1989)

# Empirical Method: Difference-in-Differences

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$$y_{it} = \delta_i + \alpha_t + \beta_{1t} \sum_{t \in T} (ER_i \times \alpha_t) + \beta_{2t} \sum_{t \in T} (TA_i \times \alpha_t) + \beta_3 X_{it} + \epsilon_{it}$$

Examine Effects On:

- Property Assessment, County-Level (KY Dept. of Revenue)  
Total assessed value (all types), res median assessment ratio, res coefficient of dispersion
- Total Local Revenues, School District-Level (KY Dept. of Education)

Estimate in calendar time; coefficient at end of intervention period (1994)

Controls

- County and year FE
- Identification challenge: Differential home price growth
  - Direct controls for education finance reform using pre-intervention levels (standard measures from literature, build on KY's funding formula)
  - Controls for local economic conditions (coal controls)

# “What About That New DID Literature?”

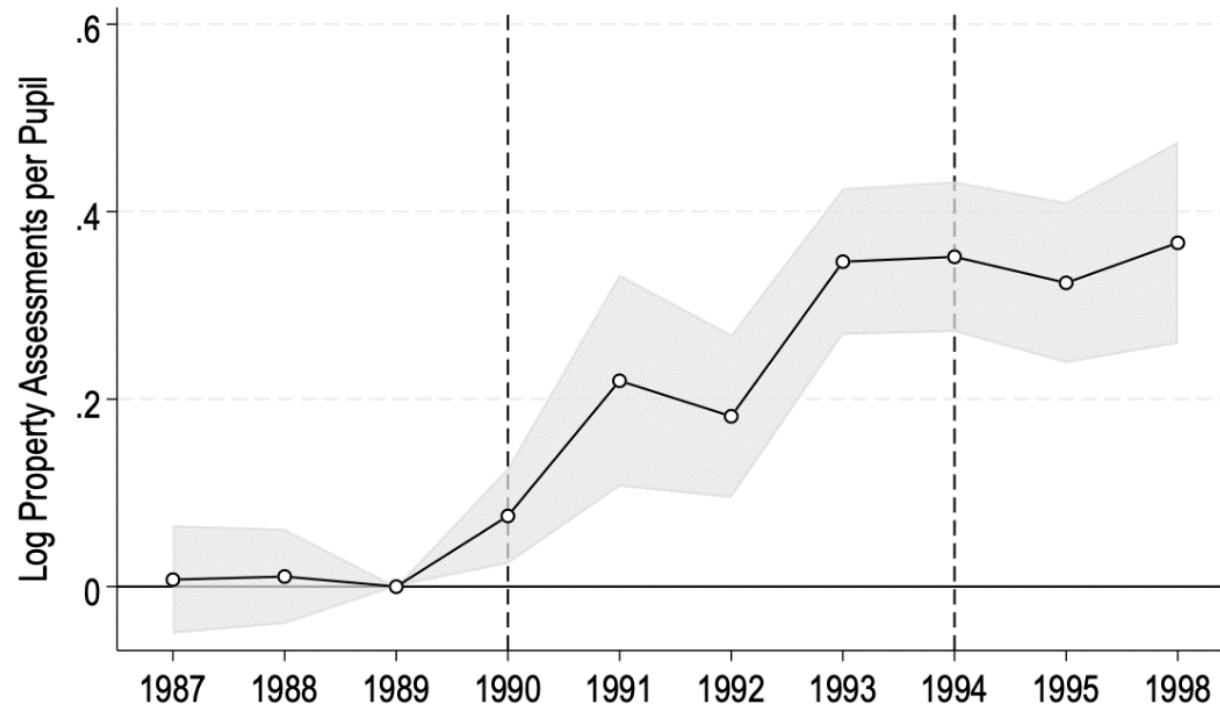
## - Engaged Seminar Participant

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- Avoid some of the issues with event studies by focusing on the coefficient in 1994 (collapses to a traditional 2x2 DID)
- But, another issue with dynamic treatment effects in recovering ATT
  - In 1994, some counties received 3+ years of treatment, others less than one
  - Coefficient is average of all of these
  - Run as event-studies instead of 2x2 DID and check for potential dynamic treatment effects post-1994

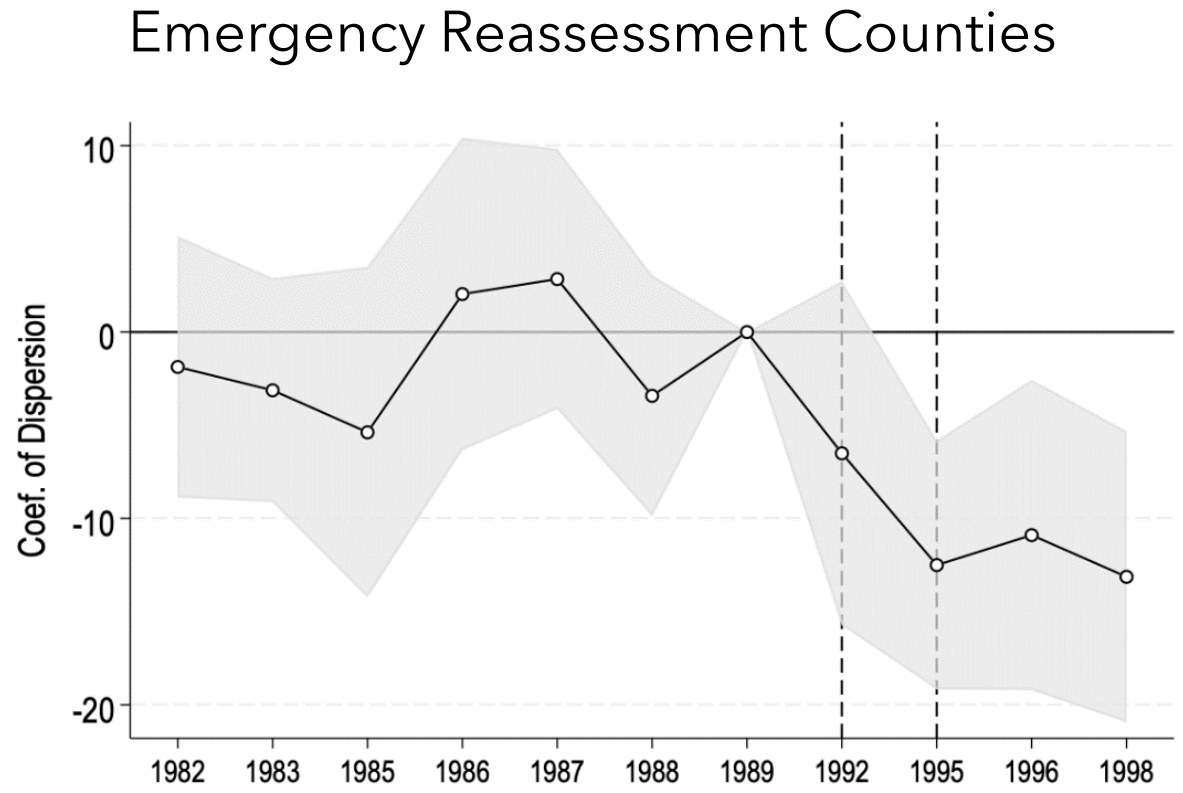
# Results: Total Assessed Property Value

## Emergency Reassessment Counties



**Reduced assessment gap by 25 percent in emergency counties**  
**Average Increase (\$2012): \$120,000,000**

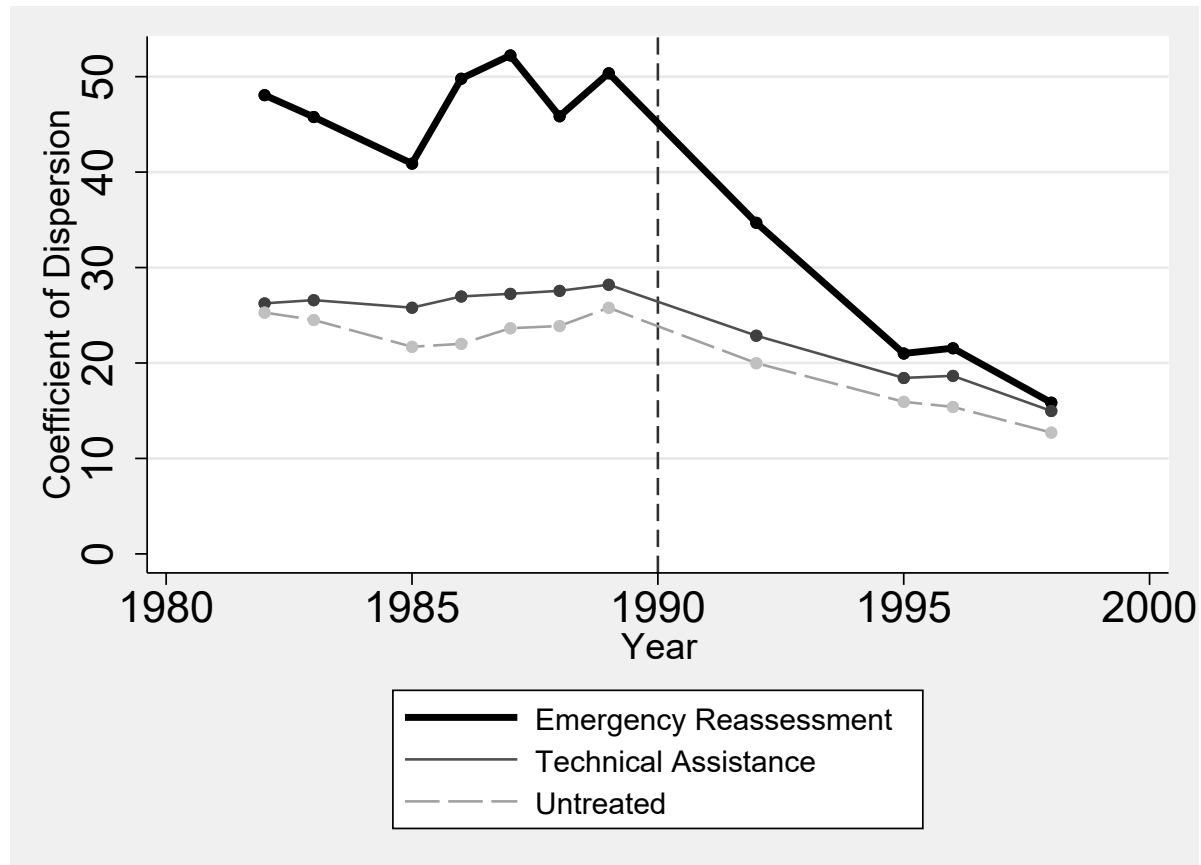
# Results: Assessment Inequity (COD) Decreased



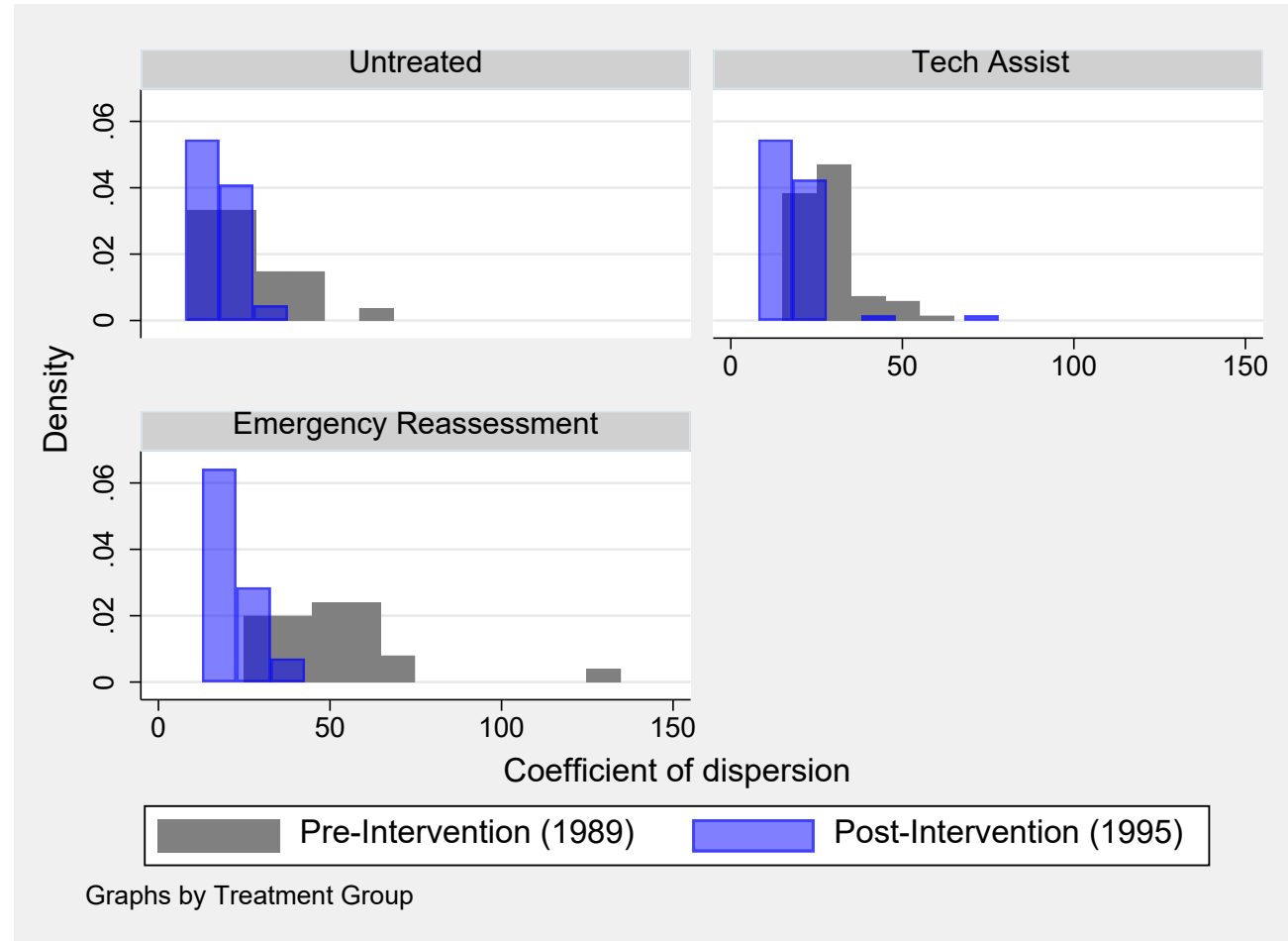
20 percent decline  
ER Pre-Intervention Average: 50  
Results broadly similar for commercial and farm property

# Results: Assessment Variability (COD) Decreased

Raw Mean of COD by Treatment Group



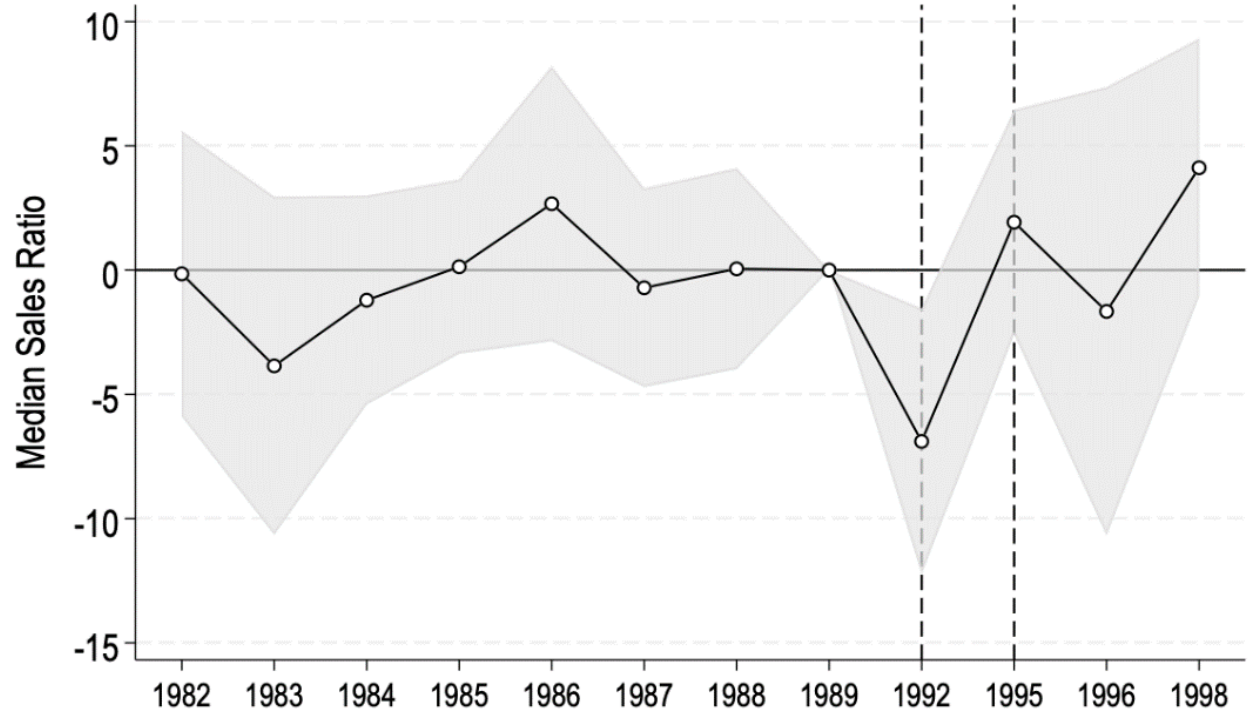
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# Results: Median Assessment-Sales Ratio Unchanged

Emergency Reassessment Counties

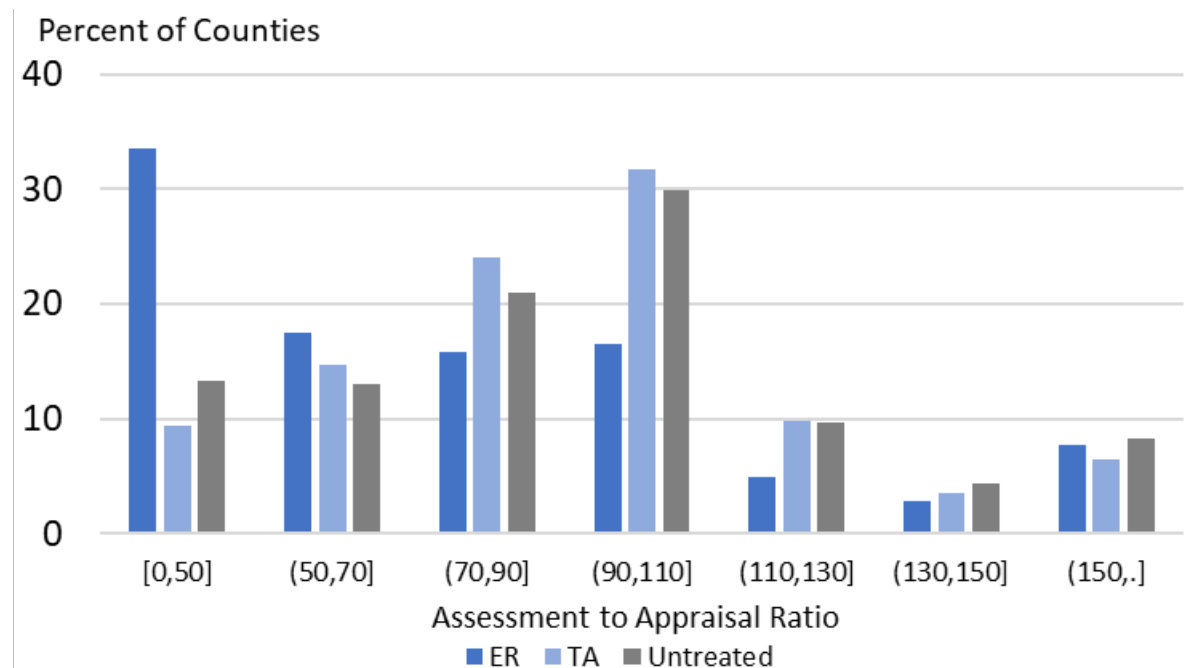


Results broadly similar for commercial and farm property

# What Happened?

## Inequity Within Counties Caused Underassessment Between Counties

- Increased assessments for properties with ratios below the median
  - Total assessed value increased
  - COD decreased
  - Median ratio unchanged
- Pre-intervention, counties “looked equal”
  - Median ratios were similar
- But counties were not equal
  - Underassessment in left tail



# Results Persisted 20-30 Years Later (Audit Studies)

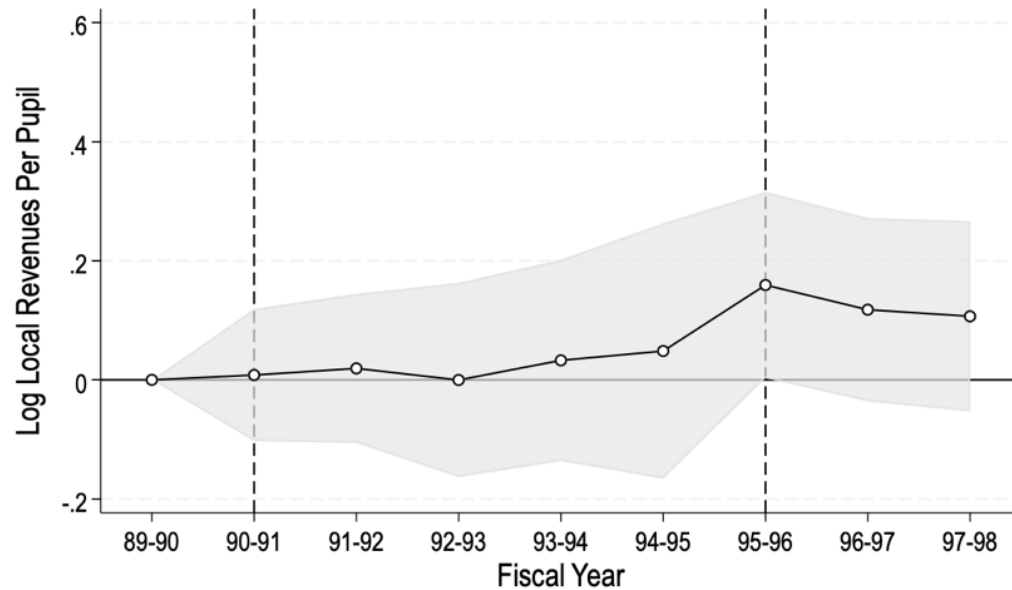
	(1)	(2)	(3)	(4)
	<b>Res COD</b>	<b>Farm COD</b>	Res Median	Farm Median
ER x year=2010	<b>-23.358**</b> (6.835)	<b>-27.191**</b> (8.378)	0.479 (2.960)	705.421 (689.127)
ER x year=2014	<b>-23.621***</b> (6.492)	<b>-28.065**</b> (8.836)	0.768 (3.426)	43.518 (41.341)
ER x year=2016	<b>-20.218**</b> (6.770)	<b>-29.266**</b> (9.544)	1.896 (3.092)	50.005 (41.360)
ER x year=2018	<b>-20.331**</b> (6.772)	<b>-24.658*</b> (9.997)	2.508 (3.244)	49.679 (41.977)
Constant	<b>33.800***</b> (1.496)	<b>40.957***</b> (1.769)	93.047*** (0.604)	90.686 (49.178)
Observations	<b>300</b>	<b>297</b>	300	297

Base year = 1989

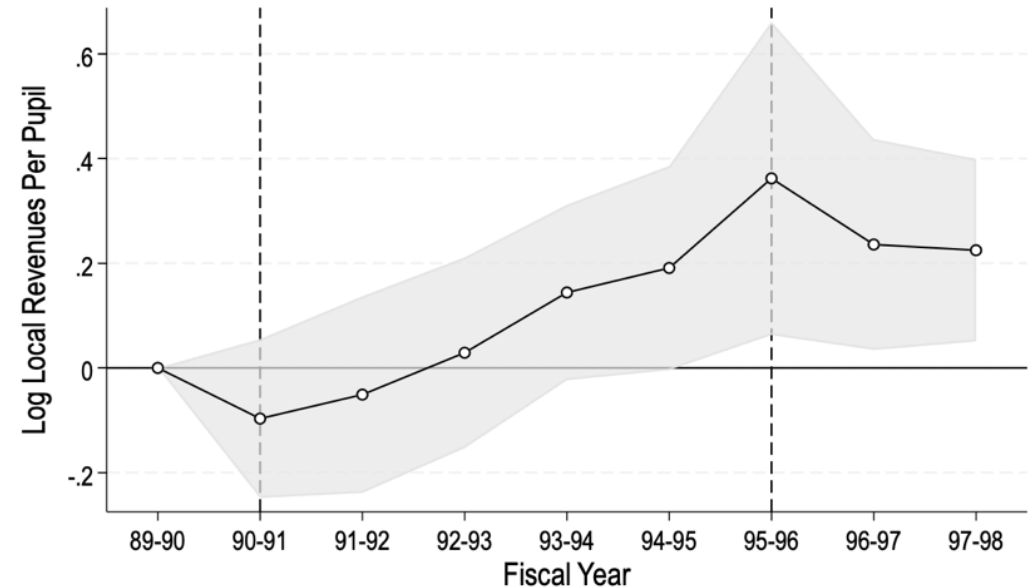
COD and ratio computed from assessment-to-appraisal ratios from state-lead audit studies

# Results: Total Local Revenue Increased in Constrained Districts

## School Districts in Emergency Counties

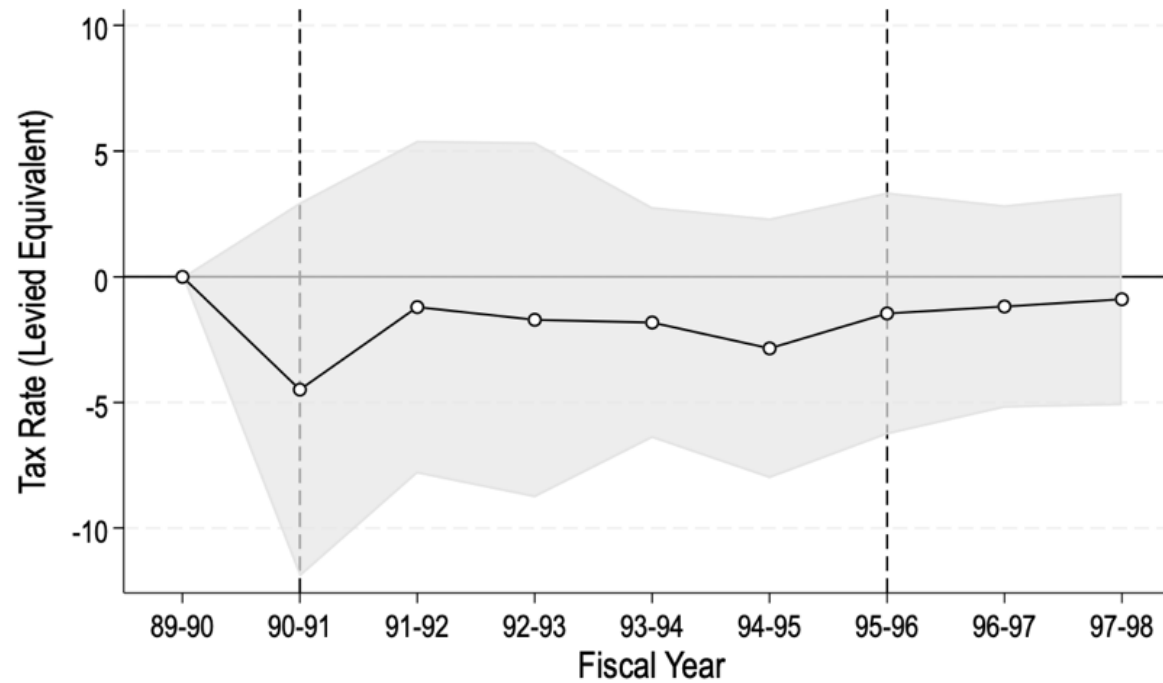


## Constrained School Districts in Emergency Counties



Gini coefficient for local revenues declined from 0.33 to 0.26

# Results: No Change to Tax Rates (Constrained)



# State Funding Formula Simulation

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## **Small increase in total funding for constrained, larger decrease for unconstrained**

- Two opposing effects
  - Increase in local funding (↑ local revenues from assessment program)
  - Decrease in state funding (↓ “overpaying” to underassessed districts)
- Use regression coefficients in funding formula to compute impact on funding
  - Constrained ER: small net increase in state + local funding of \$10 pp
  - Unconstrained ER: larger net decline in state + local funding of \$245 pp
- But overall, funding to ER increased by 50 percent after school finance reform

# Robustness Checks - Differential Home Price Growth

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Direct controls in main regressions

- Education finance reform (capitalized into home price growth)
- Local economic conditions - coal market fluctuations

Available home price data: Magnitudes are too small to explain effects

- KY statewide average real home price growth from 1989-1994 was just 3%
- Decennial Census home prices did not change differentially 1990-2000
- Limited county-year level data for rural counties in early 1990s

Differential Assessment and Home Price Growth in Treatment Counties, 1989-1994

	Real Assessment Growth (regression coefficient)	Real Home Price Growth
Emergency Counties	44%	2%
Technical Assistance Counties	12%	1.8%

# Conclusion

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## **Reduced underassessment, variability; decreased inequality in local revenues**

- Inequity within counties drove inequity across counties, despite oversight
- Reduced inequality in local revenues

## **Why?**

Favoritism/capacity issues identified by media played a role

- Text analysis shows treatment counties had more favoritism issues
- CODs declined, despite rurality of treatment counties

## **Who did the intervention affect?**

Likely well-connected people with higher-valued properties

- Effect size is large (increase of \$120,000,000 in \$2012)
  - Back of envelope: Bottom 25<sup>th</sup> percentile of homes ↑ ~\$10,000,000
- Media reports: Coal operators, factory owners; “fashionable neighborhoods”
- Regressivity is common

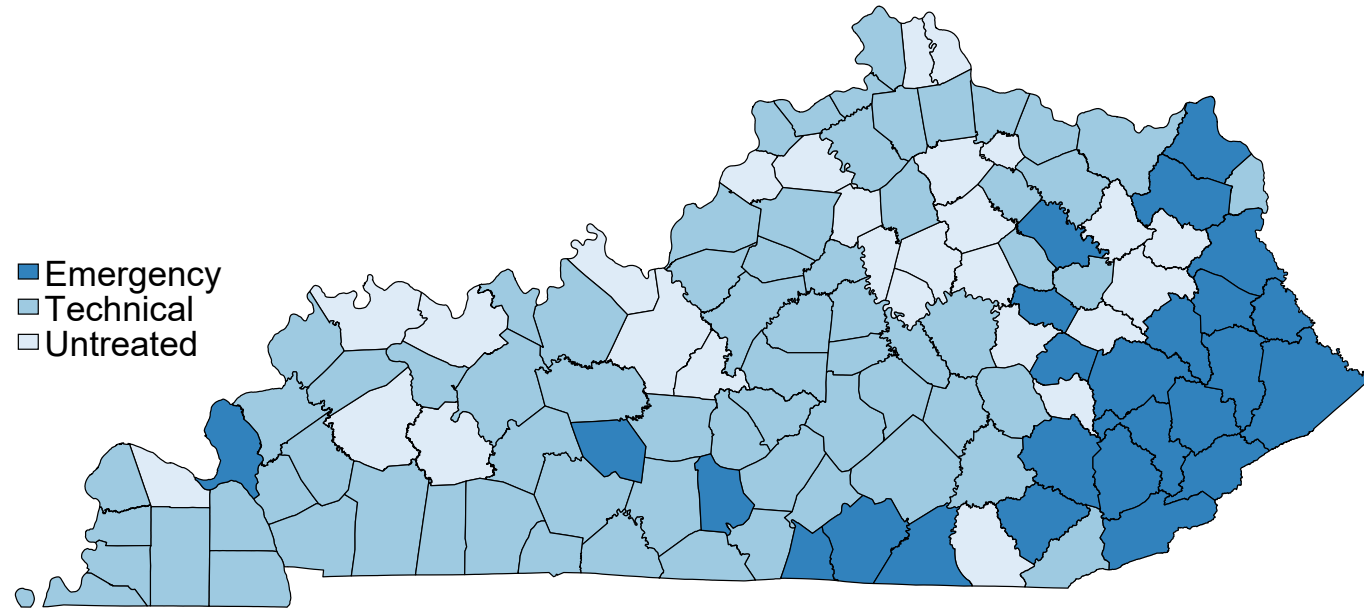


Thank You!

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# Location of Treatment Counties

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# Intervention Did Not Drive Migration

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	<u>Log Enrollment</u>
ER X 1987	0.012 (0.010)
ER X 1988	0.007 (0.008)
ER X 1989	0.004 (0.005)
ER X 1991	-0.009 (0.006)
ER X 1992	-0.010 (0.010)
ER X 1993	-0.023 (0.013)
ER X 1994	-0.025 (0.016)
ER X 1995	-0.026 (0.018)
ER X 1996	-0.035 (0.020)
ER X 1997	-0.021 (0.027)
ER X 1998	-0.030 (0.050)

- Increased assessments could have driven out-migration,  $\uparrow$  per-pupil values
- Comforting that enrollment did not increase from the school finance reform