



LINCOLN INSTITUTE  
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# Are Property Taxes Equitable?

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## Renewed Focus on Property Tax Equity in the Academia.....

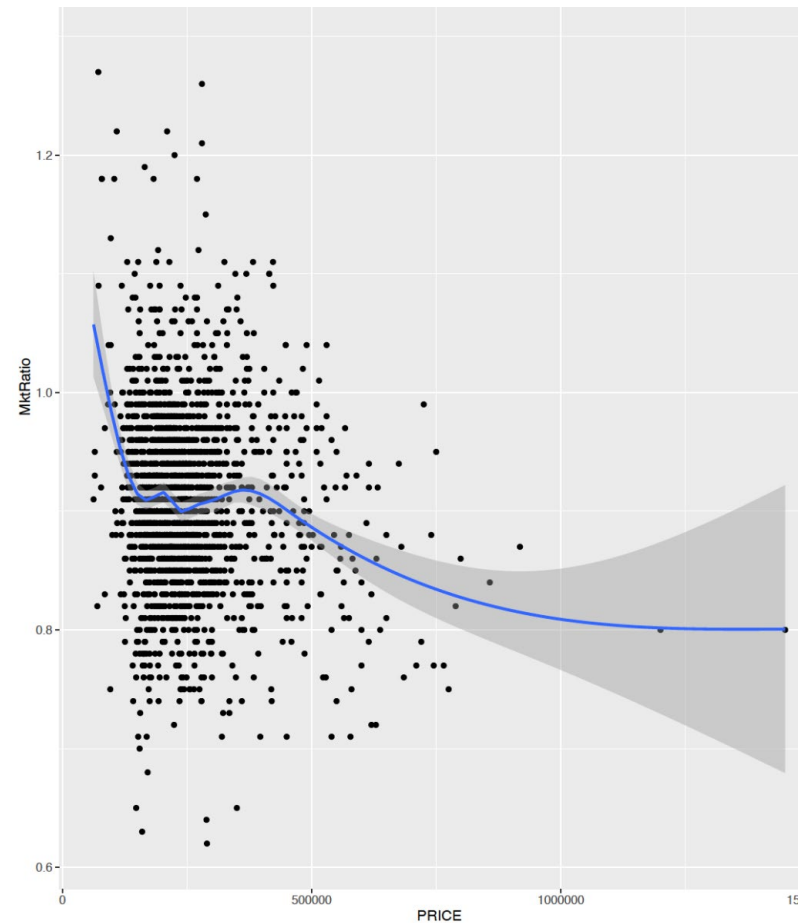
- ✓ *Reassessing the Property Tax*, Christopher Berry, The University of Chicago Harris School of Public Policy and the College. 2021
- ✓ *The Assessment Gap: Racial Inequalities in Property Taxation*. Carlos Avenancio-León, Indiana University and Troup Howard, University of California, Berkeley. 2020
- ✓ *Why are Residential Property Tax Rates Regressive?* Natee Amornsiripanitch, Federal Reserve Bank of Philadelphia. 2020



All find significant levels of *regressivity* in assessments using national datasets

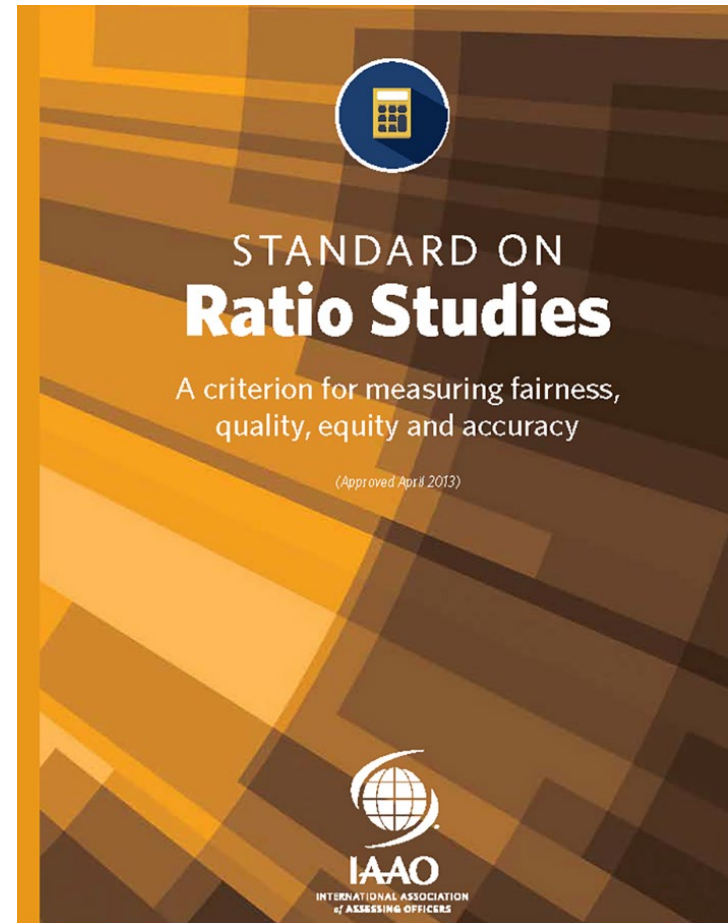
## What is Vertical Equity

- Vertical equity exists when sales ratios (assessment / sale price) are consistent between lower, middle, and upper-priced properties.
- Sale ratios should be uniform, regardless of price.
- If ratios do fluctuate across prices, vertical **inequity** is suggested to exist.
- Two types of vertical inequity:
  - **Regressivity: ratios are lower among higher-priced properties**
  - **Progressivity: ratios are lower among lower-priced properties**



## Measuring Vertical Equity

- Measuring vertical equity in assessments is challenging since the market value of any given property is unknown.
- Detailed guidance is provided by IAAO Standard on Sales Ratio Studies
- IAAO Vertical Equity Measures
  - **Price Related Differential – PRD**
  - **Coefficient of Price Related Bias - PRB**



## Price Related Differential - PRD

- The PRD as a vertical equity measure is useful but somewhat flawed.
  - Simple and easy to calculate, but
  - Results can be distorted by a few high-priced properties that can lead to a false indication of regressivity.
- The PRD can be a useful indicator that more analysis is necessary, but by itself it is not necessarily conclusive that vertical inequity exists.

## Coefficient of Price Related Bias - PRB

- More robust measure that is not as susceptible to the influence of outliers as the PRD, but.....
- The PRB is more difficult to calculate than the PRD.
- Some academic research has found that regression based vertical equity measures like the PRB may be prone to indicating a regressive distribution even if there is no bias present.

## Lincoln Institute's Vertical Equity App

- The notion of a single or best measure of vertical equity may be illusive.
- Instead, the best approach may be to calculate and evaluate several measures to develop a more complete picture of the vertical equity for a given distribution.
- The Lincoln Institute developed the [Vertical Equity App](#) with the Center for Appraisal Research and Technology to provide a tool measure and evaluate vertical equity.
  - PRD
  - PRB
  - Decile Analysis
  - Spearman's Rank
  - Gini Measures



Lincoln Institute of Land Policy Vertical Equity App

Get your report

Introduction Data **ASR** COD PRD PRB Spearman Gini Measures

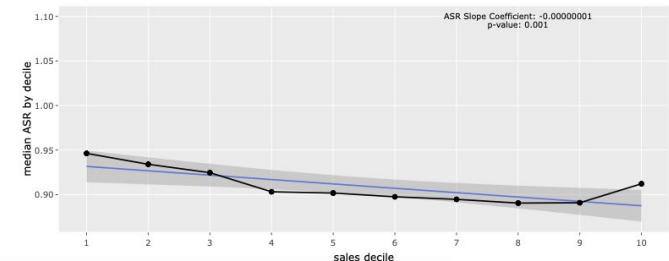
### Assessment to Sale Ratio

The overall assessment level is determined by the median assessment to sale ratio (ASR). The median ratio is preferred because it is less affected by extreme values than other measures of central tendency, such as averages. **The overall median ASR is 0.91.**

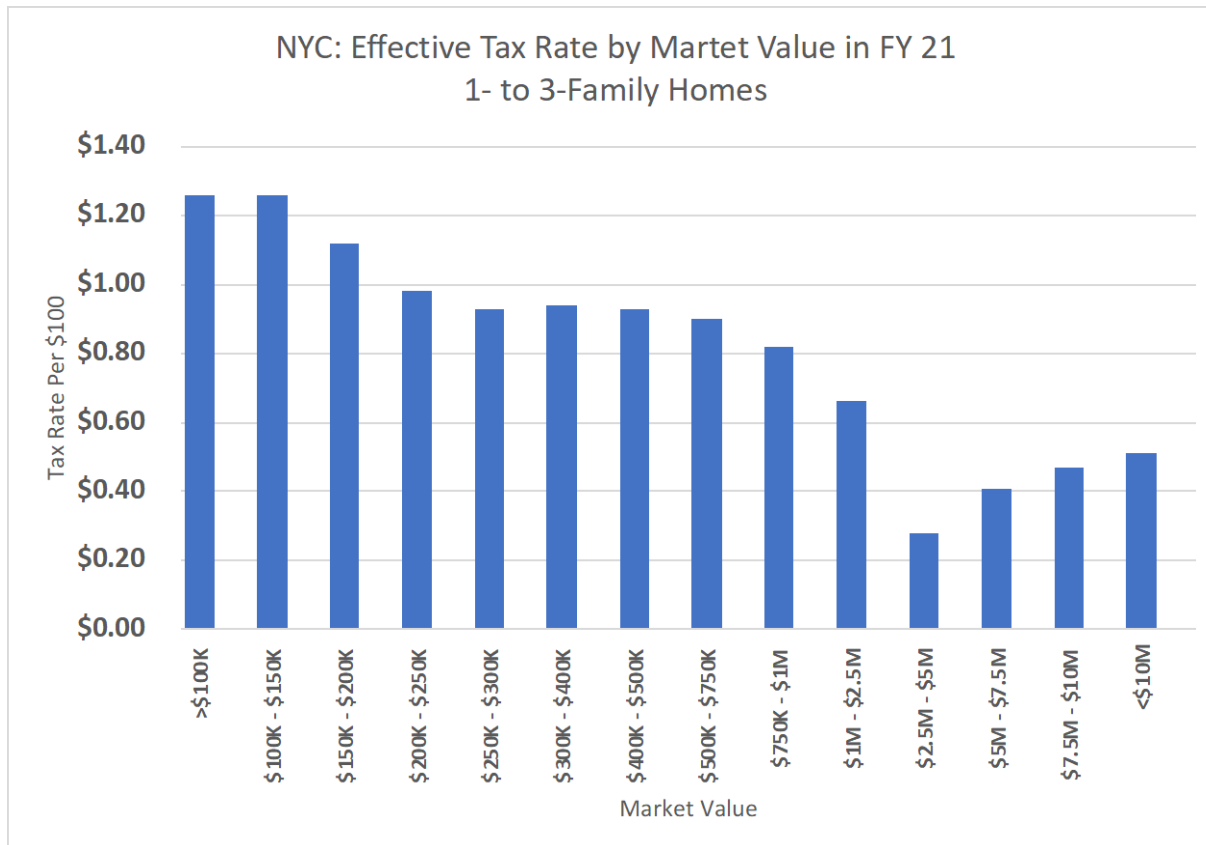
The median ASR can also be used to evaluate vertical equity when calculated for each sale price decile as provided in this following chart. The chart displays how the ASR changes as the sales price increases. **The range between median ASR for the lowest priced decile (0.946) and highest (0.912) decile is 0.034.** This suggests a trend toward lower ratios as sales prices increase, **a regressive trend.**

First Decile AS Ratio	Median AS Ratio	Tenth Decile AS Ratio
0.946	0.91	0.912

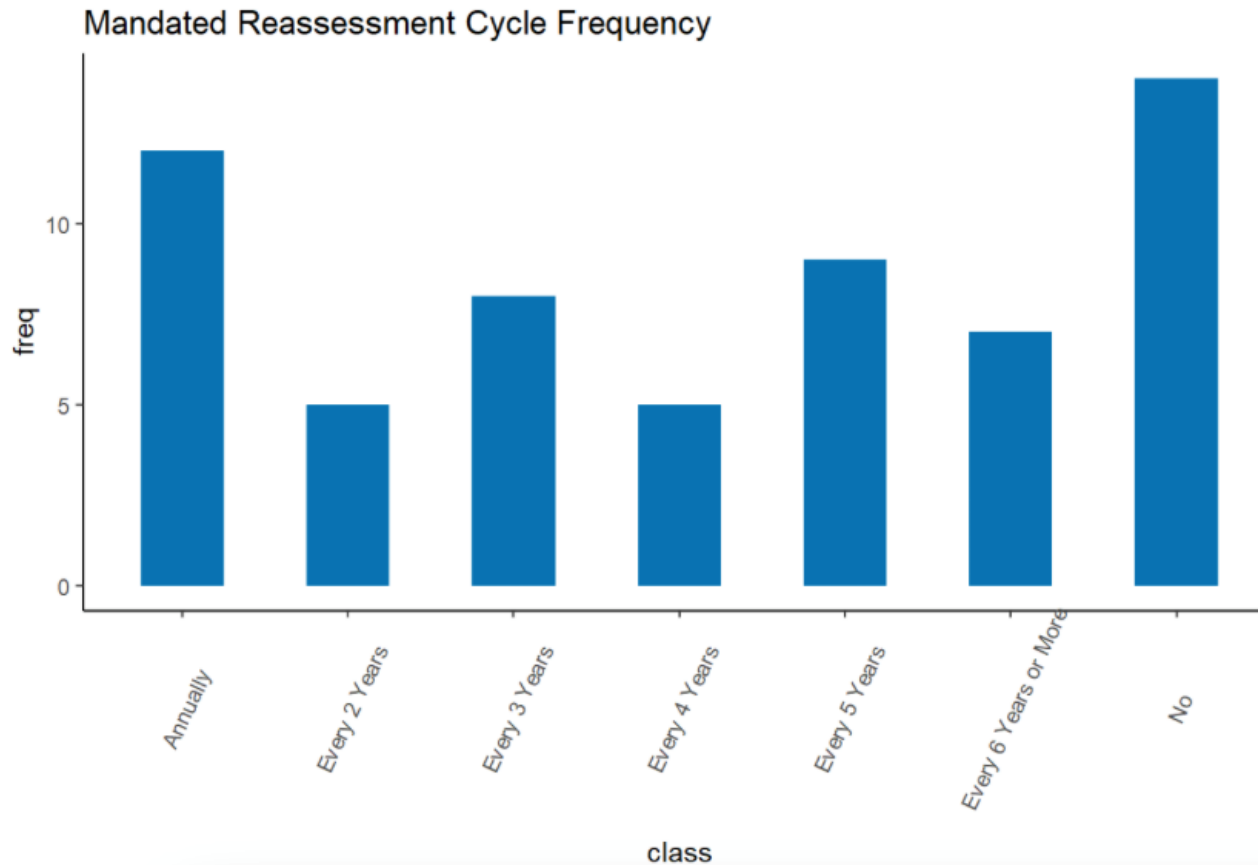
Median ASR by Sale Decile



## Assessment Policies that Contribute to Regressivity: Assessment Caps



## Assessment Policies that Contribute to Regressivity: Infrequent Revaluation





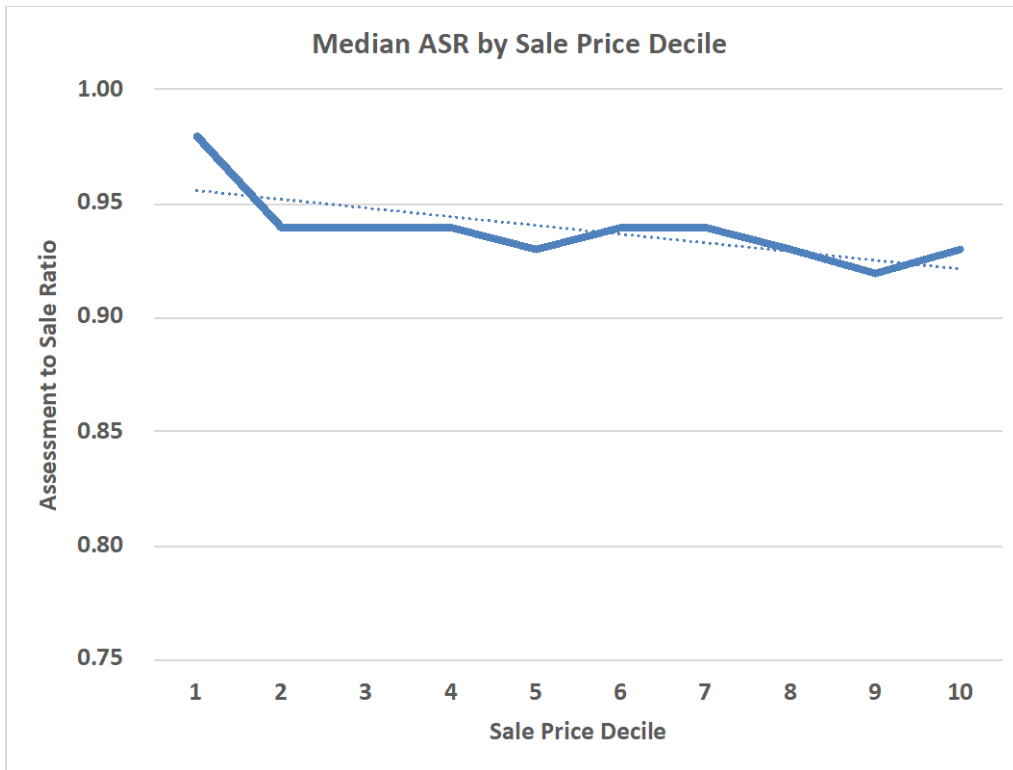
## Assessment Regressivity in a Well-Functioning Assessment Jurisdictions

Boston provides an example of an assessment jurisdiction that:

- Has no limits on assessments
- Adjusts assessments annually to reflect changes in the real estate market
- Uses AVMs, GIS and other mass appraisal tools to produce assessments



## Boston Vertical Equity Results



- All statistics are **well** within the IAAO Standards for Vertical Equity, but....
- Sales ratios by decile, PRD and PRB all indicate slightly regressive assessments.

Median ASR	PRD	PRB
0.938	1.011	-0.011

## Potential Causes of Regressivity in the Valuation Process

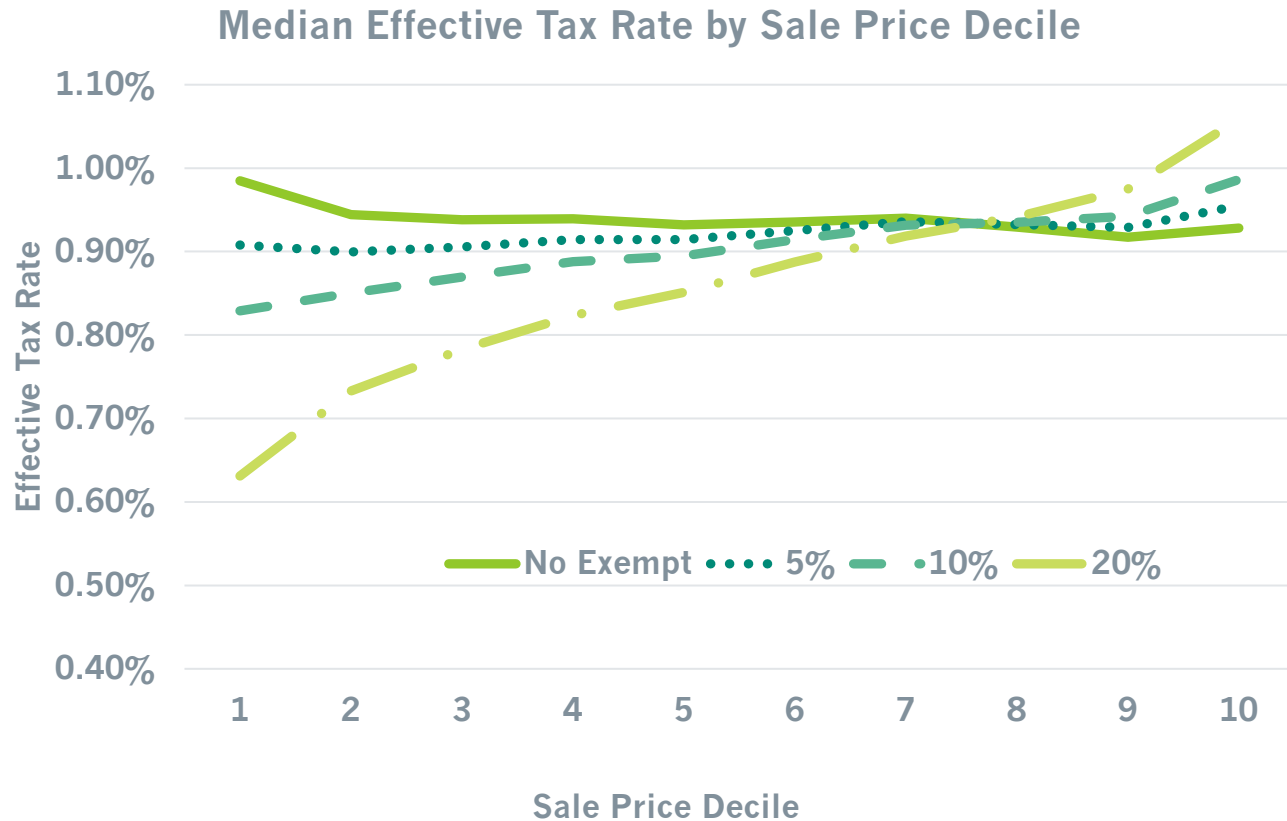
- **Failure to Capture Locational Influences on Value**
  - Neighborhood classification variables may miss more subtle locational influences
  - Geographically Weighted Regression and other valuation techniques can help, but may exceed technical capacity of many assessment offices
- **Shortcomings in Interior Data**
  - Interior elements require access to the interior of the home and are more difficult and expensive to collect
  - The lack of reliable interior data contributes to regressivity
    - the relatively poorer condition of low-valued properties
    - valuable interior amenities of high-valued properties
- **Unique Characteristics of the Lowest and Highest Priced Markets**
  - inherently more volatile and/or
  - have different market characteristics.

## Homestead Exemptions

- A broad-based exemption available to taxpayers that own and occupy a home
- Exempts a portion of a home's value from the property tax
- A “flat dollar” exemption provides more proportional relief to low- and moderate-valued properties – **a quality that can be leveraged to reduce the impact of any regressivity in assessments**

Homestead Exemption Example			
	Taxpayer 1	Taxpayer 2	Taxpayer 3
Assessment	250,000	500,000	1,000,000
Tax w/o Exemption	2,500	5,000	10,000
Exemption Amount	25,000	25,000	25,000
Tax w/ Exemption	2,250	4,750	9,750
Savings \$\$\$	250	250	250
Savings %	10%	5%	2.5%

# Homestead Exemption – Impact on Effective Tax Rate



## Wrap up and Takeaways

- Lower-valued properties often have slightly elevated ASRs when compared to higher-valued properties - *an issue that warrants further study.*
- There is no single, definitive vertical equity measure, so it is important to consider multiple measures.
- Leveraging technology and new valuation tools, improving the accuracy of assessment data, and better understanding of the markets for lowest- and highest-priced properties are key to reducing regressivity in assessments.
- Tax policy can play a key role in improving property tax equity.



## For more Information on Homestead Exemptions and Residential Property Tax Relief

[Property Tax Relief for Homeowners](#) – Lincoln Institute of Land Policy. 2021

*Comprehensive report on residential property tax relief programs that provides significant information on the homestead exemptions and preferred alternative methods of tax relief that includes circuit breakers, tax deferrals, and monthly tax payments.*

[How Homestead Exemptions Can Counteract Regressivity in Property Tax Assessments](#) –

Lincoln Institute of Land Policy. 2024.

*Working paper that provides greater detail on regressivity in assessments and the capacity for homestead exemptions to redress their impact.*

[Vertical Equity App](#)

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