Regressivity in Cook County Property Taxes
The effect of appeals

City Lab
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Chicago Tribune

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Objectives

Recap on regressivity

- How does regressivity in property taxes look like?
  - By sales value of properties
  - By community area and census in Chicago

Analyze appeals and specific sources of regressivity

- What is the overall effect of the appealing process in the property taxes paid in Chicago?
- Who is appealing and how much are the value of reductions? Are these tax reductions because of overvaluation?
- Which are sources of regressivity?
  - Property types – condos
  - Cook County Assessors Office / Board of Reviews
  - Lawyer firms

How does regressivity look like?

Higher market value => Lower effective tax rates*

Effective tax rates, 2015 (%)

Sales price of properties (thousands of USD)
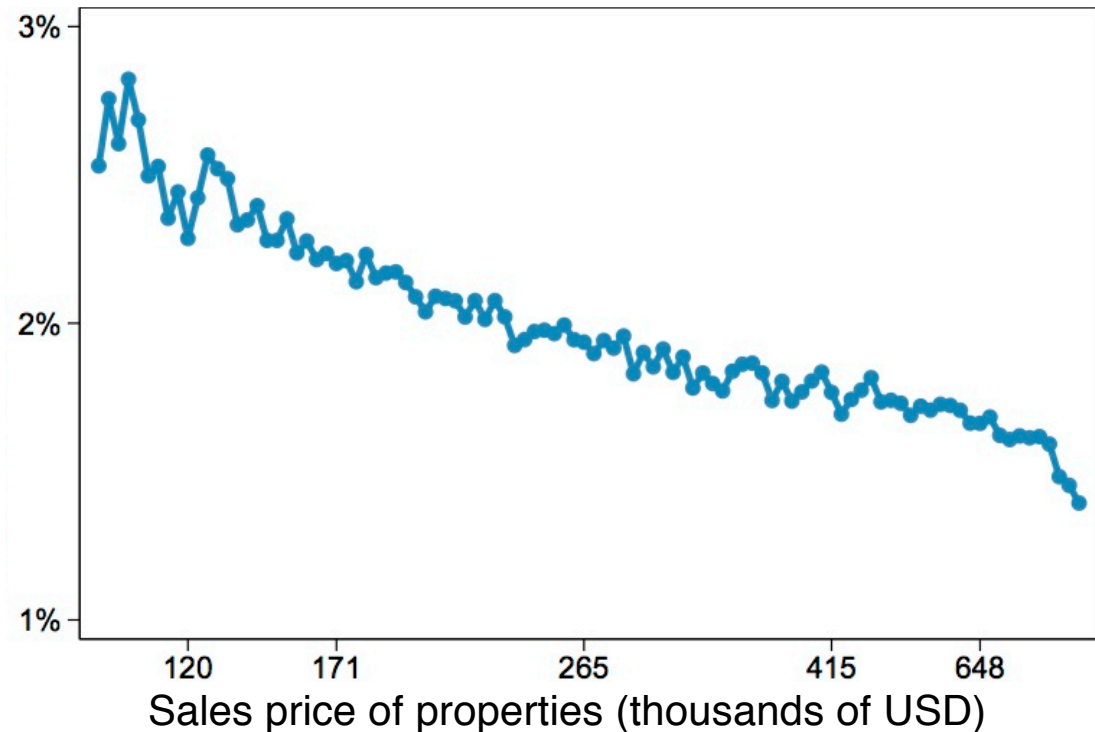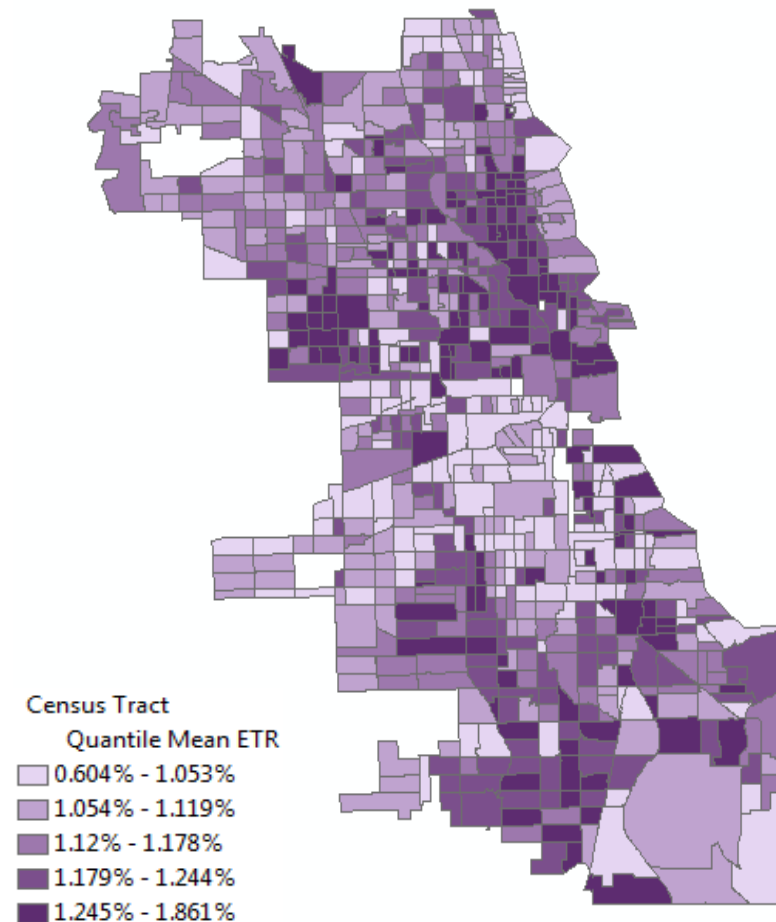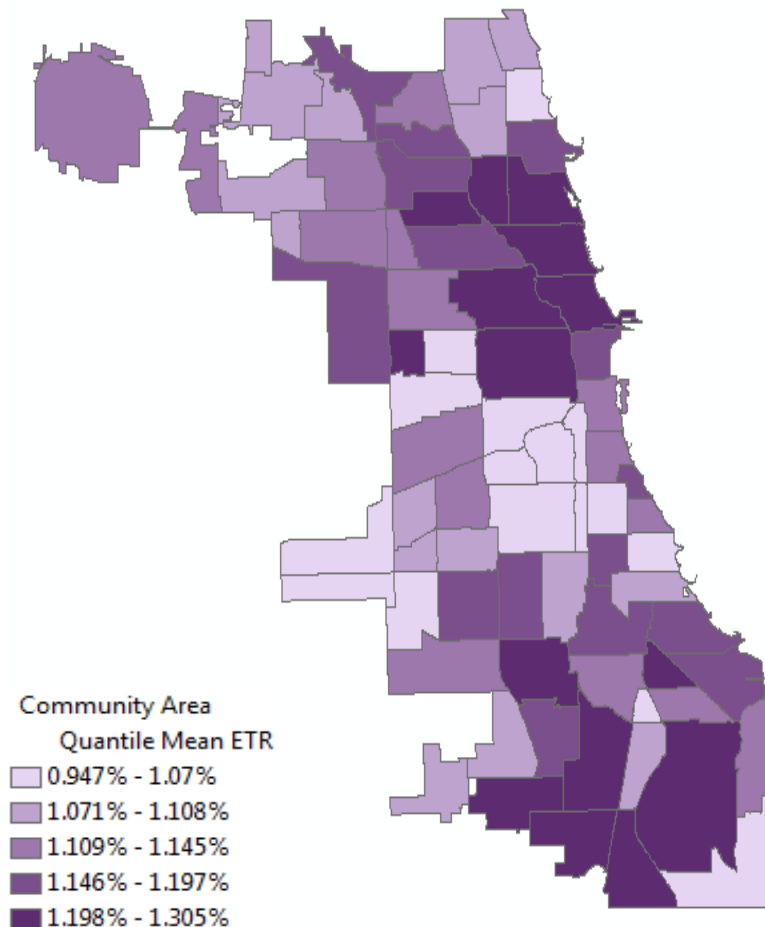
*Effective tax rates: tax paid divided by the sales price of a property. Sold properties were classified in 100 equal-sized bins. Every dot represents the average effective tax rate on each bin.
Source: 2015 Property Tax Bills and Sales Prices

2003: highest effective tax rates in the northeast and southwest of Chicago

Community Area
Quantile Mean ETR
- ☐ 0.947% - 1.07%
- ☐ 1.071% - 1.108%
- ☐ 1.109% - 1.145%
- ☐ 1.146% - 1.197%
- ☐ 1.198% - 1.305%

Census Tract
Quantile Mean ETR
- ☐ 0.604% - 1.053%
- ☐ 1.054% - 1.119%
- ☐ 1.12% - 1.178%
- ☐ 1.179% - 1.244%
- ☐ 1.245% - 1.861%

Source: 2003 Property Tax Bills, Sales Prices, and Appeals

2006: seemingly random tax rates

Community Area
ctmean_r
- 0.733% - 0.943%
- 0.944% - 1.023%
- 1.024% - 1.068%
- 1.069% - 1.101%
- 1.102% - 1.352%

Census Tract
Quantile Mean ETR
- 0.518% - 0.973%
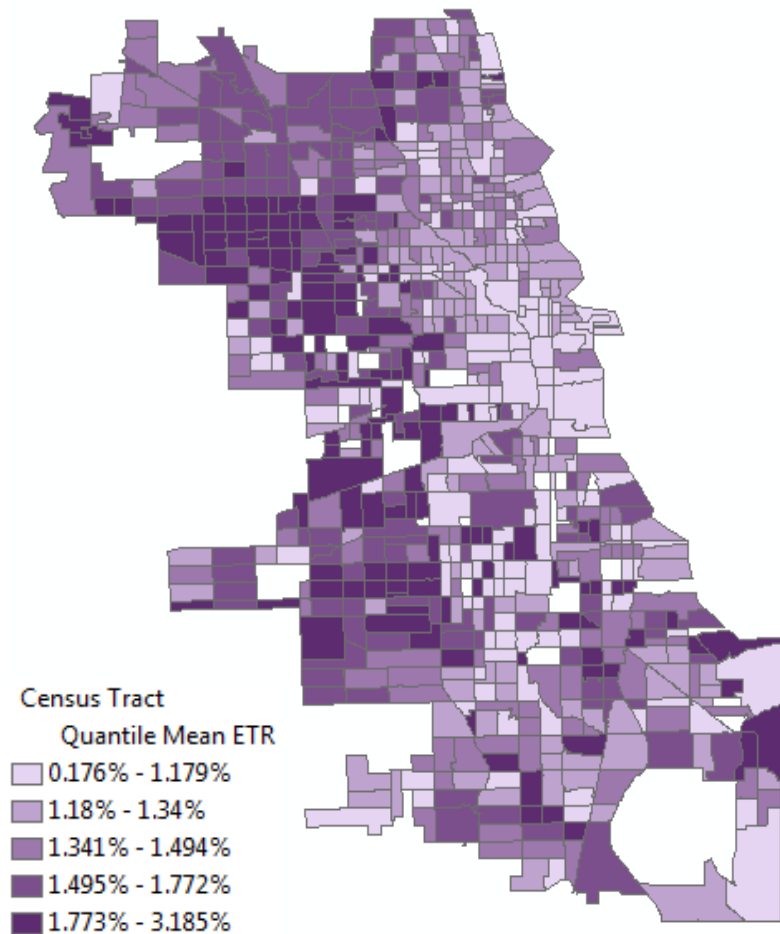- 0.974% - 1.032%
- 1.033% - 1.081%
- 1.082% - 1.131%
- 1.132% - 1.414%
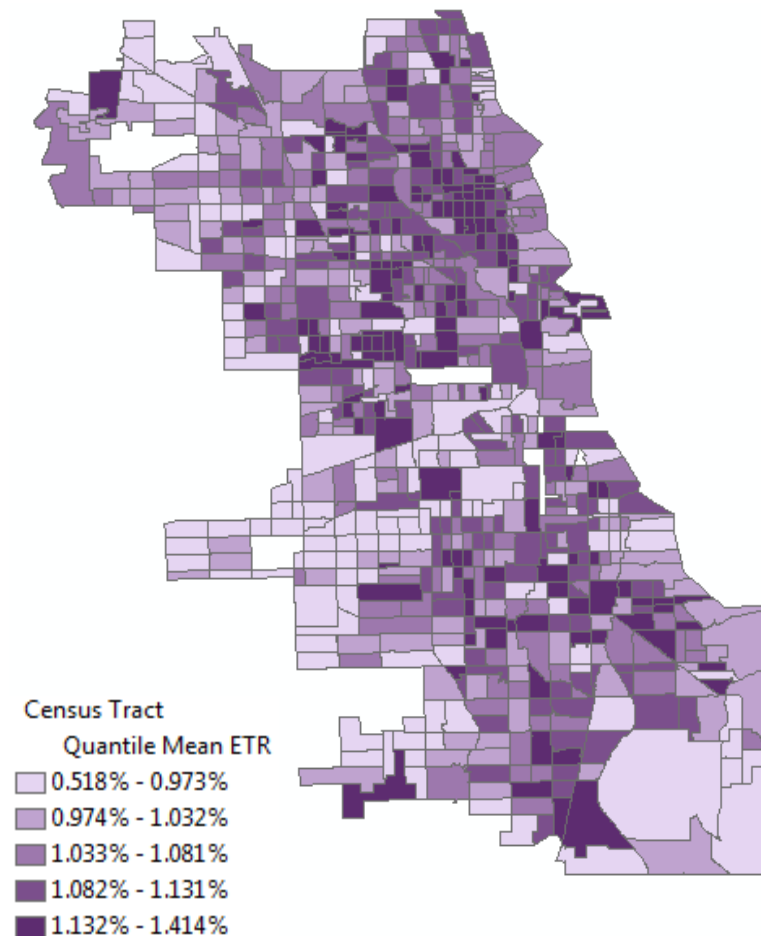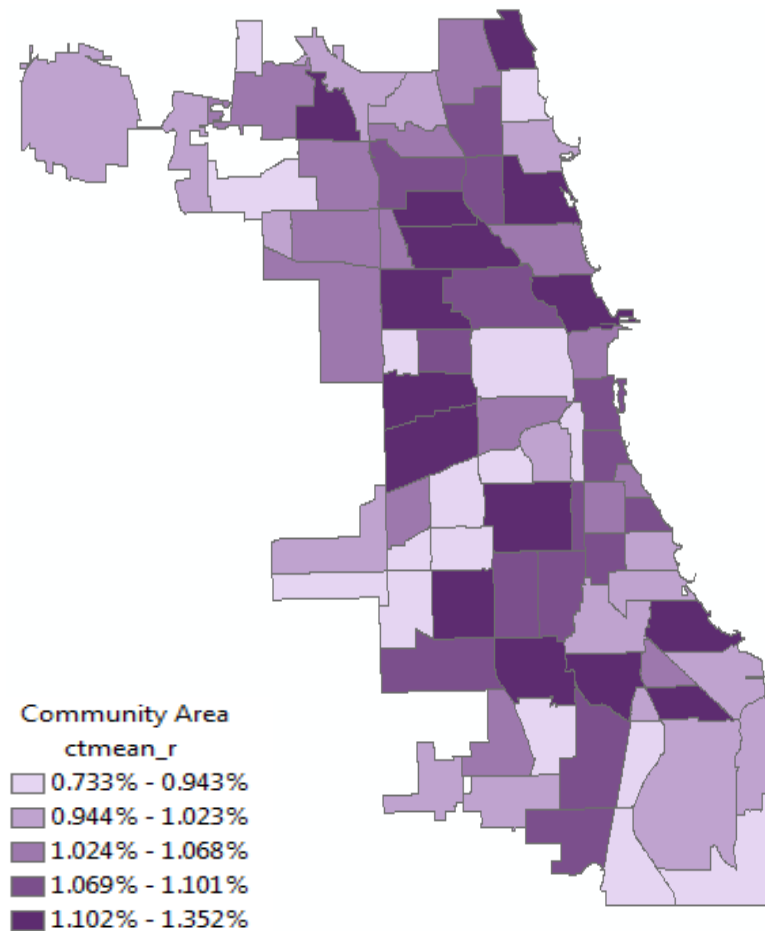
Source: 2006 Property Tax Bills, Sales Prices, and Appeals

2009: revision to assessment formula, higher taxes on the west + south

Community Area
Quantile Mean ETR
- ☐ 0.385% - 1.254%
- ☐ 1.255% - 1.356%
- ☐ 1.357% - 1.504%
- ☐ 1.505% - 1.638%
- ☐ 1.639% - 2.051%

Census Tract
Quantile Mean ETR
- ☐ 0.176% - 1.179%
- ☐ 1.18% - 1.34%
- ☐ 1.341% - 1.494%
- ☐ 1.495% - 1.772%
- ☐ 1.773% - 3.185%
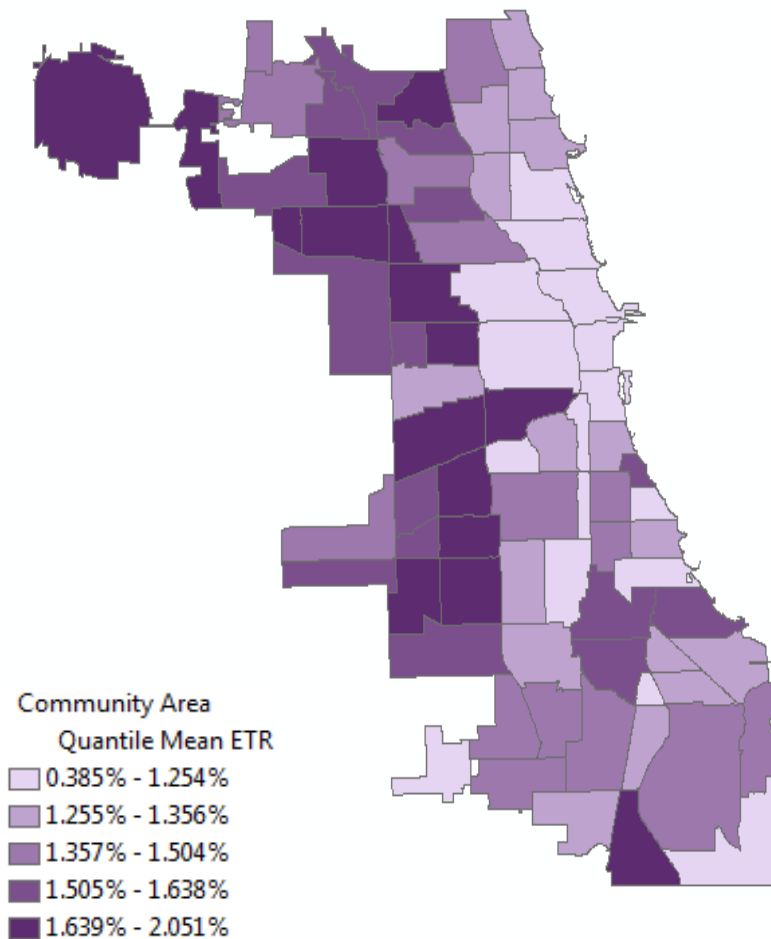
Source: 2009 Property Tax Bills, Sales Prices, and Appeals

2012: higher taxes on the west

Community Area
Quantile Mean ETR
- 1.153% - 1.495%
- 1.496% - 1.571%
- 1.572% - 1.672%
- 1.673% - 1.828%
- 1.829% - 2.498%

Census Tract
Quantile Mean ETR
- 0% - 1.394%
- 1.395% - 1.559%
- 1.56% - 1.71%
- 1.711% - 1.996%
- 1.997% - 3.635%
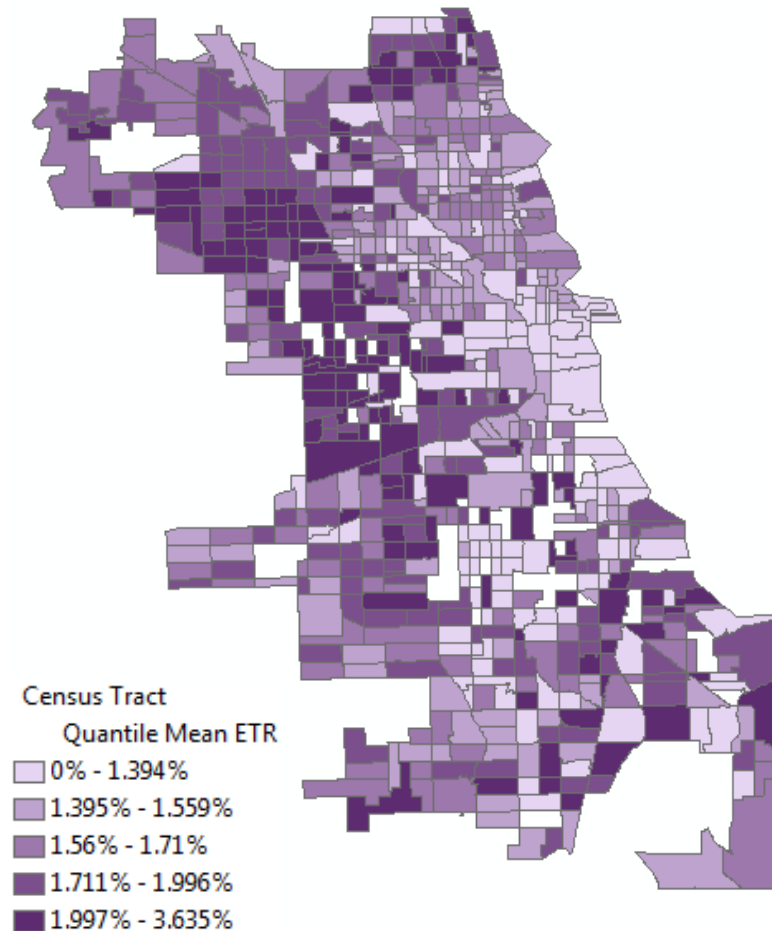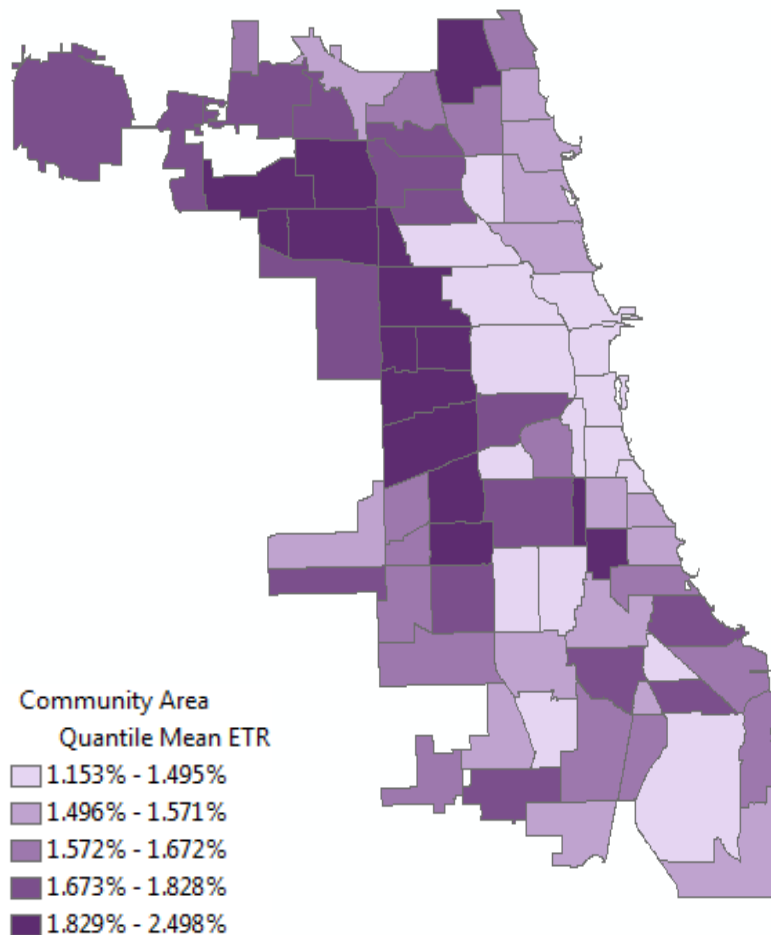
Source: 2012 Property Tax Bills, Sales Prices, and Appeals

2015: higher taxes on areas of lower household income. No sales in many areas.

Community Area
Quantile Mean ETR
- 0.305% - 1.268%
- 1.269% - 1.371%
- 1.372% - 1.435%
- 1.436% - 1.568%
- 1.569% - 2.618%

Census Tract
Quantile Mean ETR
- 0.295% - 1.237%
- 1.238% - 1.367%
- 1.368% - 1.45%
- 1.451% - 1.56%
- 1.561% - 2.618%
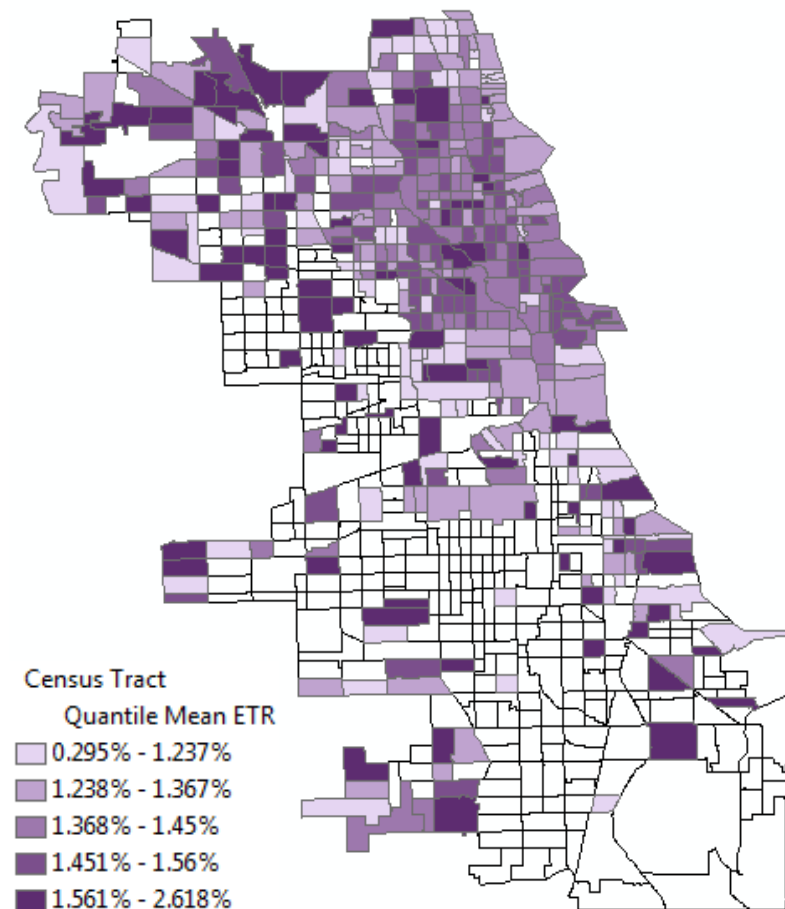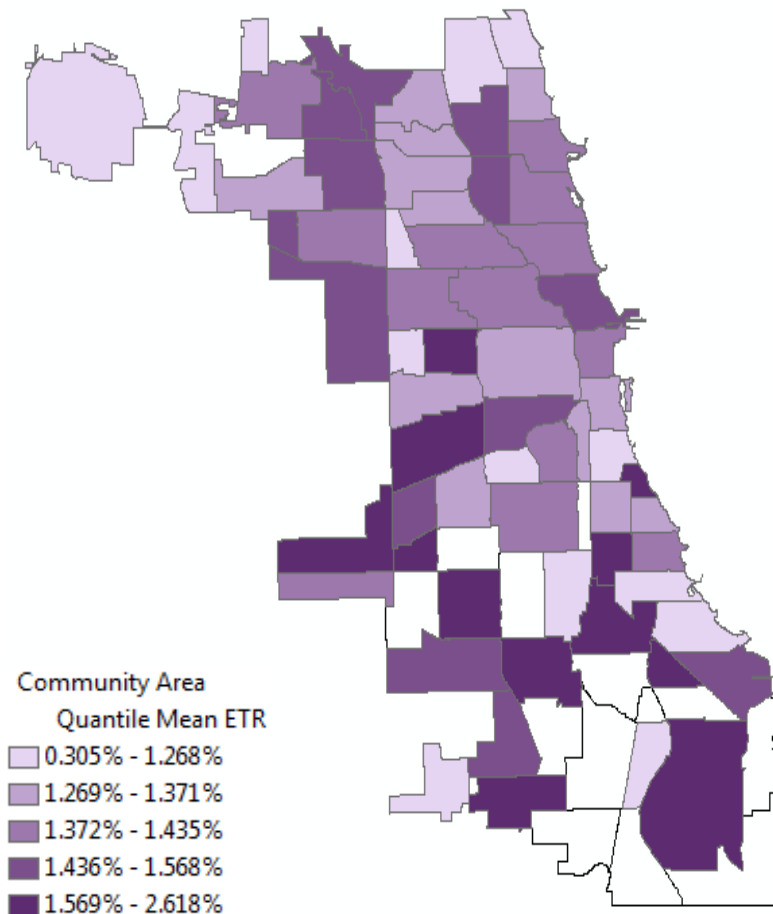
Source: 2015 Property Tax Bills, Sales Prices, and Appeals

Similar properties

Different taxes

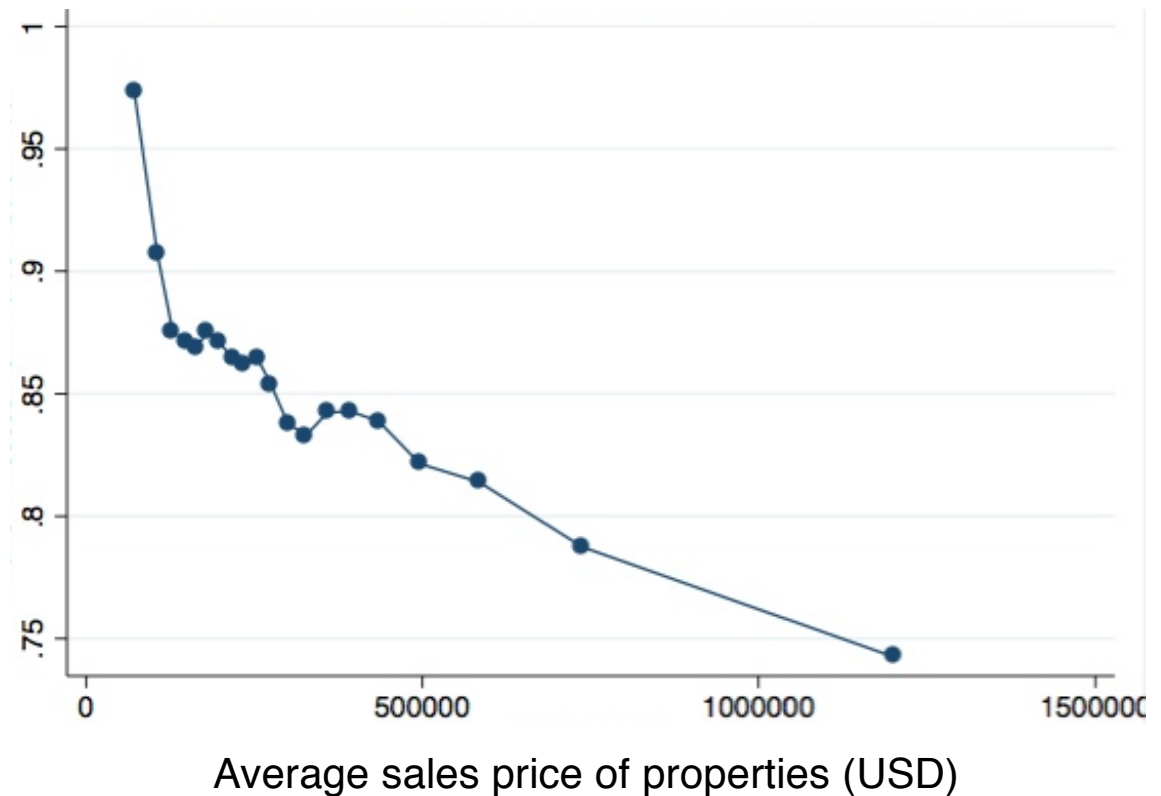|	La Royce T.	Sarah R.
Taxpayer	La Royce T.	Sarah R.
Address	5730 S. Narragansett	6601 N. Fairfield
Sales price	$154,000	$400,000
Property taxes paid (Effective rate)	$3,100 (2.01%)	$5,699 (1.42%)
Flat property taxes (Flat rate)	$2,504 (1.62%)	$6,506 (1.62%)
Excess taxes paid	**+$596**	**-$807**

Higher market value => Lower assessment value-to-sales price ratio

Average Assessment Value/Sales Price ratios, 2015

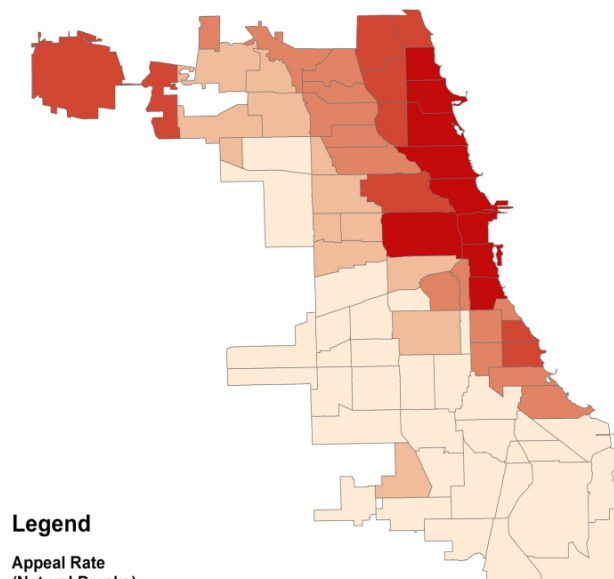Average sales price of properties (USD)

*Sold properties were classified in 20 equal-sized bins. Every dot represents the average value on each bin.
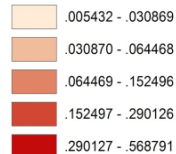Source: 2015 Property Tax Bills and Sales Prices
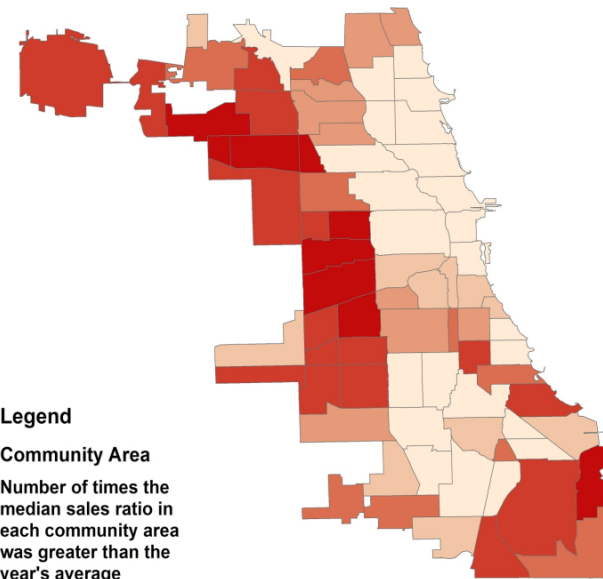
Over-assessed
≠
Appealing

Average appeal rates

Relative "over-assessment"

Legend

Appeal Rate (Natural Breaks)

.005432 - .030869
.030870 - .064468
.064469 - .152496
.152497 - .290126
.290127 - .568791

Darker areas have higher appeal rates
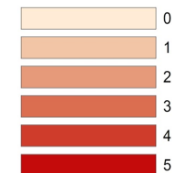
Legend

Community Area

Number of times the median sales ratio in each community area was greater than the year's average

0
1
2
3
4
5

Darker areas have higher relative assessments

*Considering only residential properties for 2011-2015
Source: 2011-2015 Property Tax Bills, Sales Prices, and Appeals

The effect of appeals

Appeals in Cook County

Total property value in 2015

5.4 BUSD (~10%)
Total value of revision

$60 BUSD

348,471 appeals

Revisions	Residential	Commercial
Total value (million USD)	$990	$3,850
Average (USD)	$3,300	$81,300
Median (USD)	$1,500	$7,300
As % of property value		
Average	10.8%	20.1%
Median	10.0%	16.0%
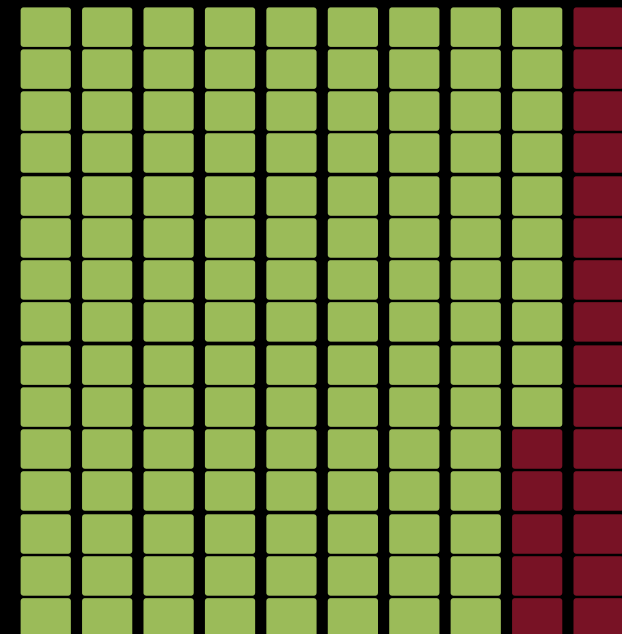
Residential
301,061
86%

Commercial
47,410
14%

Appeals in Cook County
Residential properties - Condos

Revisions	Residential	Condos	Other
Total value (million USD)	$990	$606 (62%)	$384 (38%)
Average (USD)	$3,300	$2,600	$5,400
Median (USD)	$1,500	$1,320	$2,100
As % of property value			
Average	10.8%	11.4%	9.1%
Median	10.0%	10.8%	6.8%
Appeals won (%)		89%	74%

Condos
230,464
77%

Other
70,597
23%
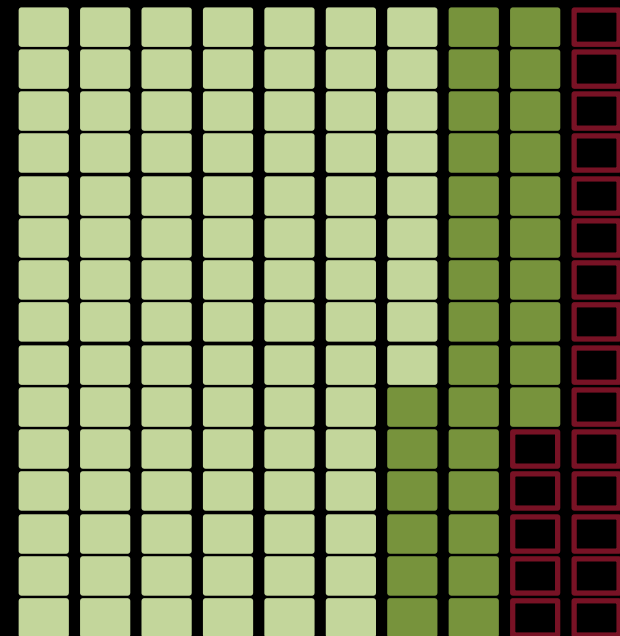
Residential
301,061

Higher market value

=

Lower assessment value-to-sales price ratio

(2002-2015)

Average Assessment Value/Sales Price ratios, 2012

Average sales price of properties (USD)

*Sold properties were classified in 20 equal-sized bins. Every dot represents the average value on each bin.
Source: 2002-2015 Property Tax Bills and Sales Prices

Where does this regressivity come from?

Condos
- Appeal rate in condos are higher than in non-condo properties
- 85% of the 2015 condo appeals were concentrated in 11 community areas
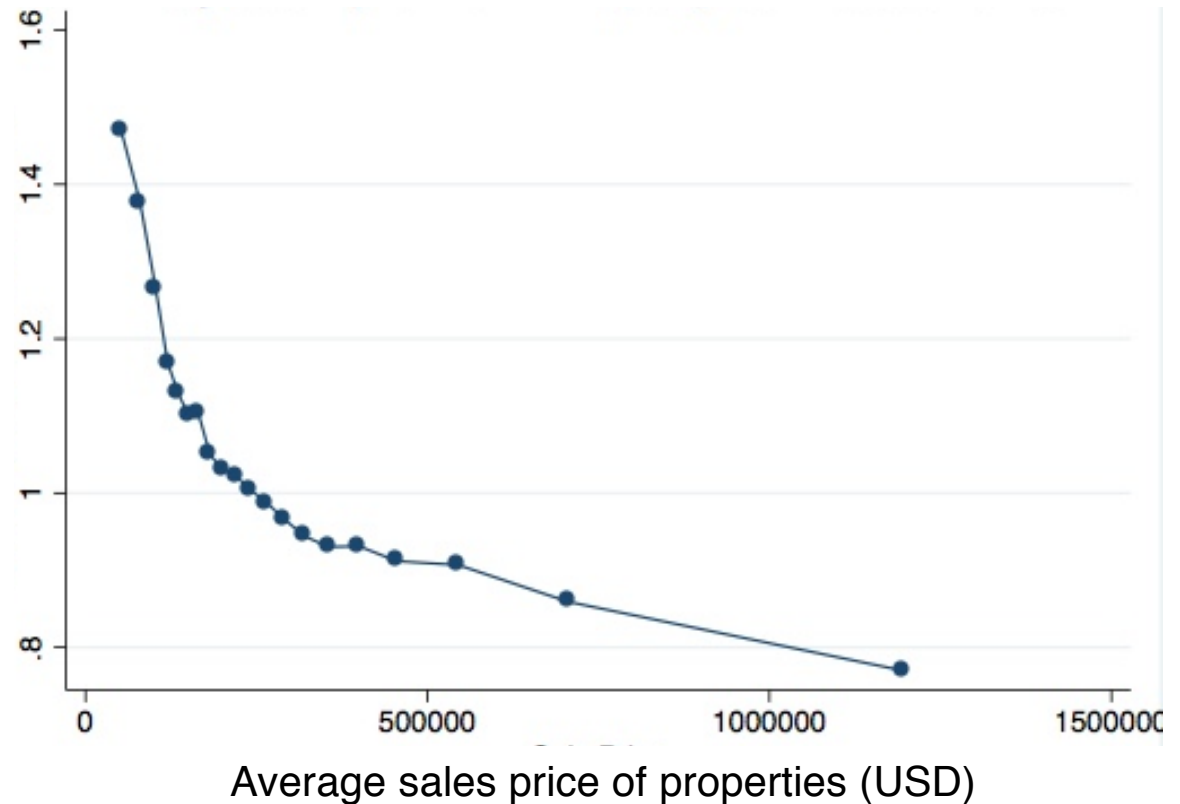- Condos have a higher probability of winning an appeal
- High appeal rates are positively correlated with: high median household income, high percentage of white population

CCAO + BOR
- The BOR increases regressivity in property assessment since 2008

Lawyer firms
- "Top 10" lawyers help the most at the BOR
- These lawyers do not help at the assessor's stage
- Condos are 30% more likely to hire Top 10
- The number of individuals self-representing peaked in 2015

Condos have higher % of residential appeals, as well as a higher probability of winning

Appeals
(thousands)

300
250
200
150
100
50
0

Non-condos

2011   2012   2013   2014   2015

71%   83%   71%   62%   87%
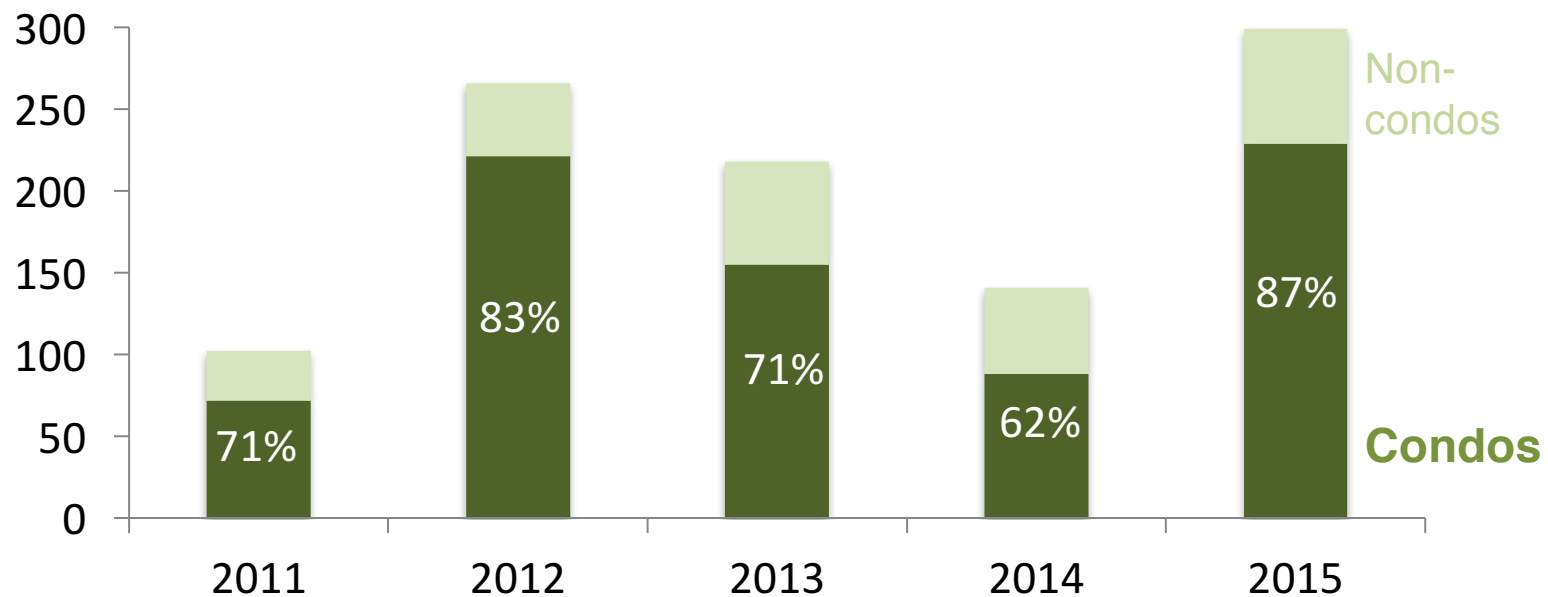
Condos

| Probability of winning appeals | 77% | 72% | 74% | 76% | 74% | Non-condos |
| | **74%** | **89%** | **79%** | 53% | **86%** | **Condos** |

*Considering only residential properties for 2011-2015
Source: 2011-2015 Property Tax Bills, Sales Prices, and Appeals

85% of the 2015 Condo Appeals were concentrated in 11 community areas

Total Condo Buildings

Number Condo Groups
- <10
- 10-100
- 100-300
- >300
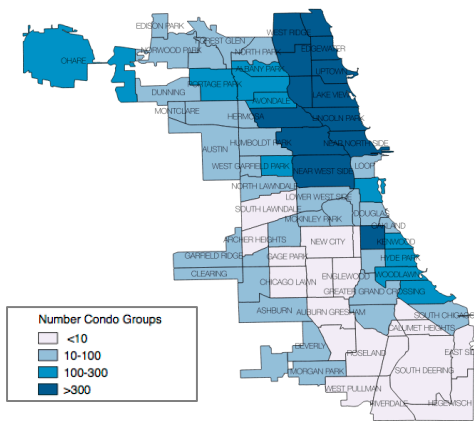
Relative size of Appeals

Relative Condo Appeals 2015
- <20%
- 20%-40%
- 40%-60%
- 60%-80%
- 80%-100%
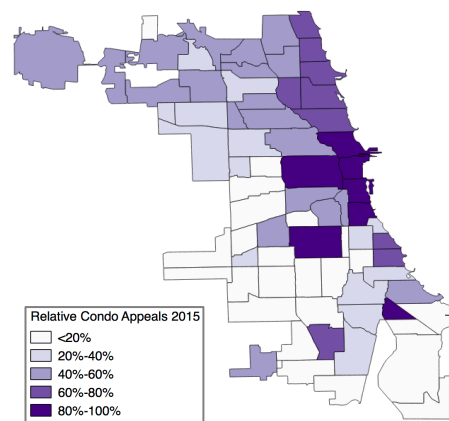
Appeals' Concentration

85%
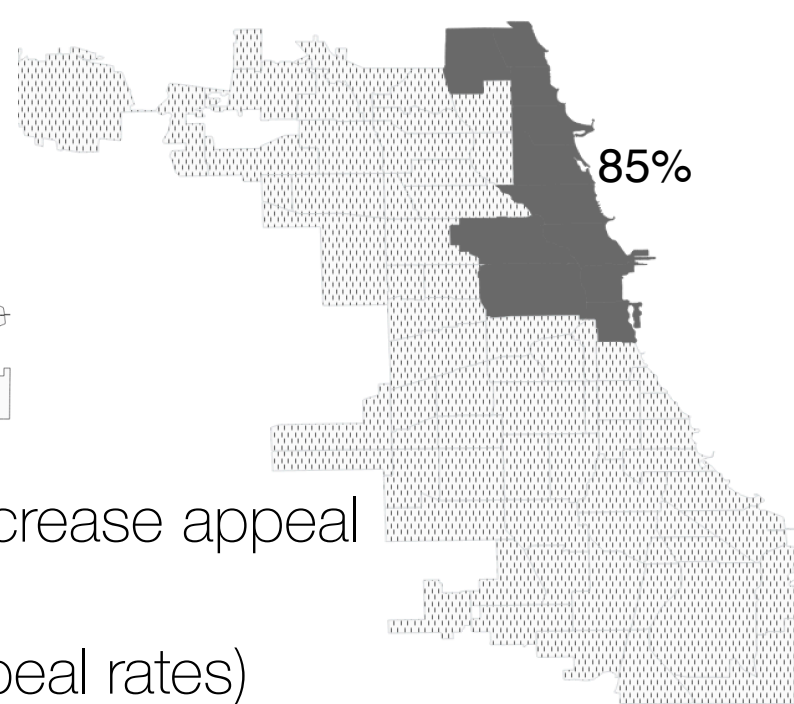
- High concentration of buildings (increase appeal rates)
- High income owners (increase appeal rates)
- High value properties (increase appeal rates)
- Top Law firms target (increase chances to win)

*Darker areas represent higher values
Source: 2015 Property Tax Bills, Sales Prices, and Appeals

Appeal rate, by income
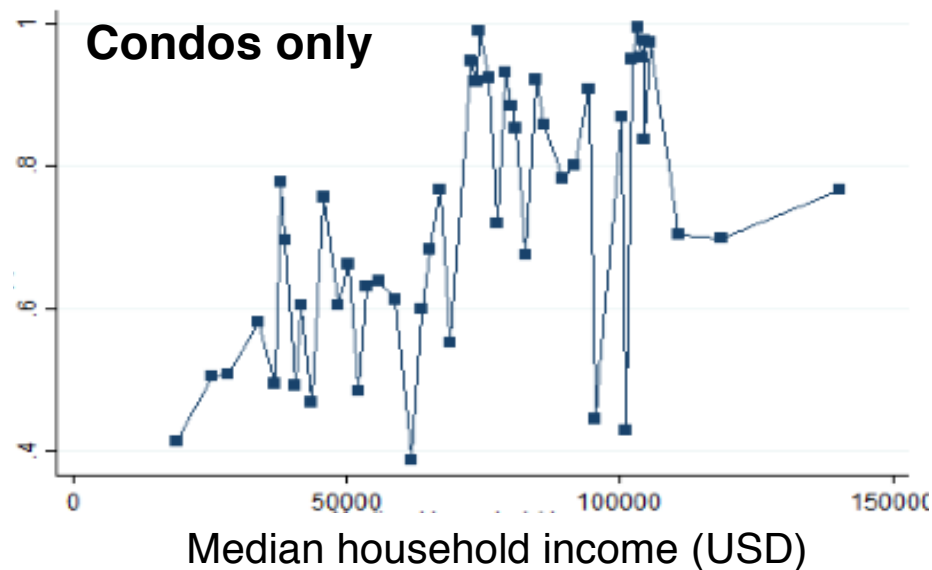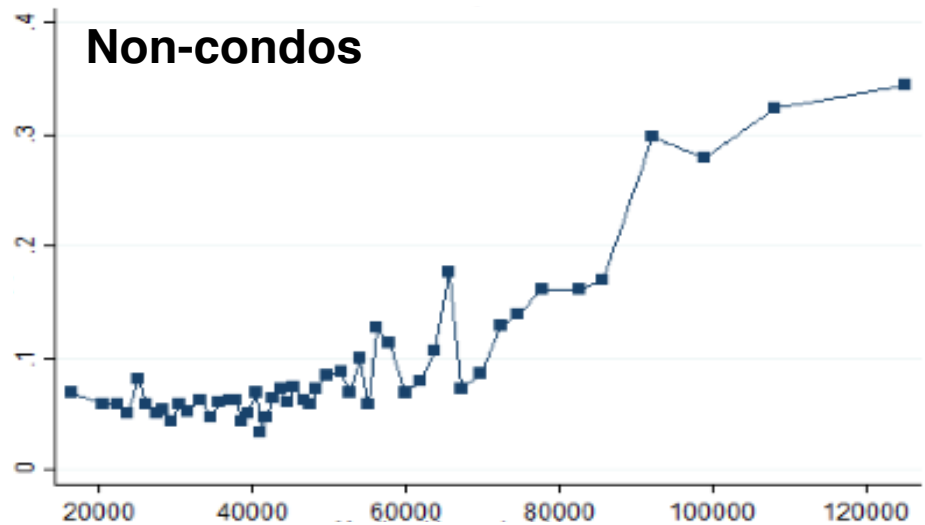
*Census tracts were classified in 50 equal-sized bins. Every dot represents the average value on each bin.
Source: 2015 Property Tax Bills and Appeals

Condo appeal rates
>
Non-condo appeal rates

High median household income
=
High appeal rates

Appeal rate, by race
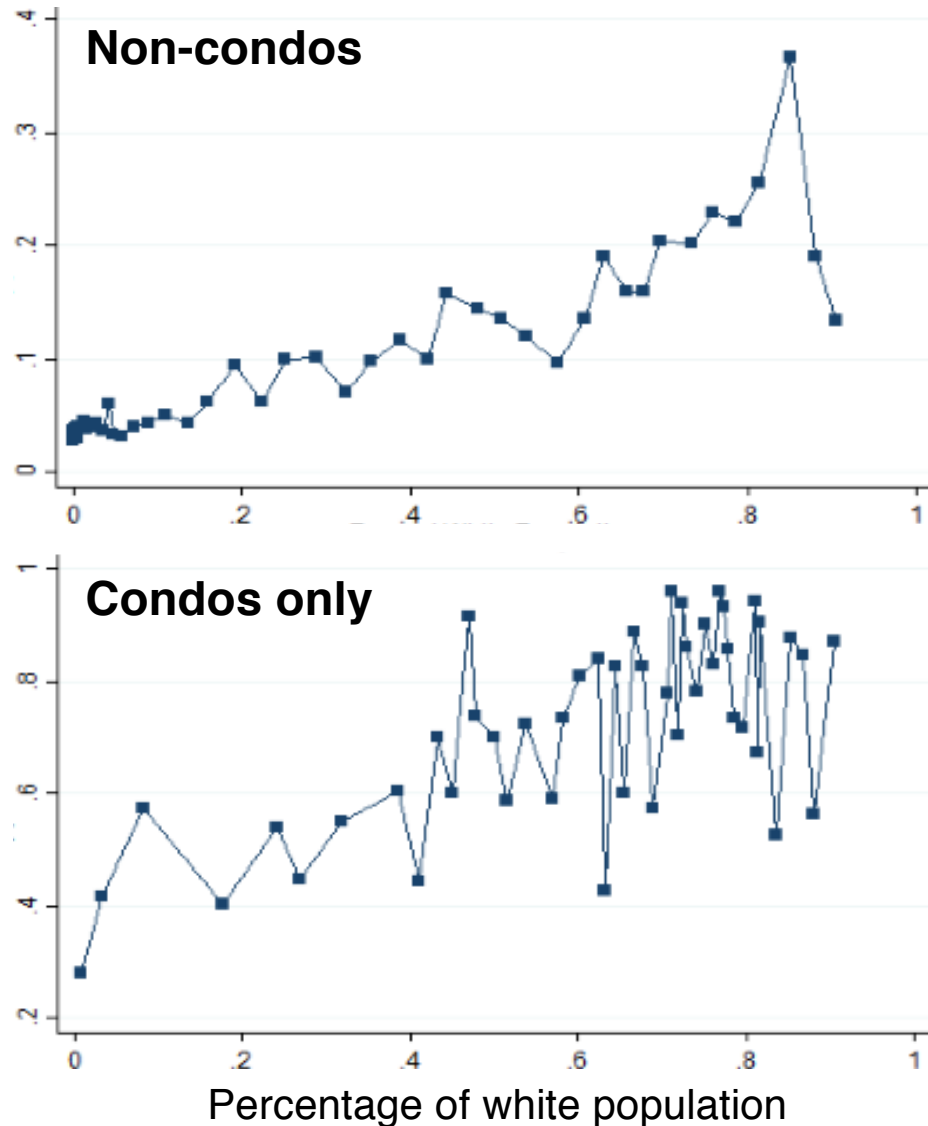
Non-condos

Condos only

Percentage of white population

*Census tracts were classified in 50 equal-sized bins. Every dot represents the average value on each bin.
Source: 2015 Property Tax Bills and Appeals

Condo appeal rates
>
Non-condo appeal rates

High % white population
=
High appeal rates

The Board of Review does not improve regressivity (2002-2015)

Average Assessment Value/Sales Price ratios, 2015

Average sales price of properties (USD)
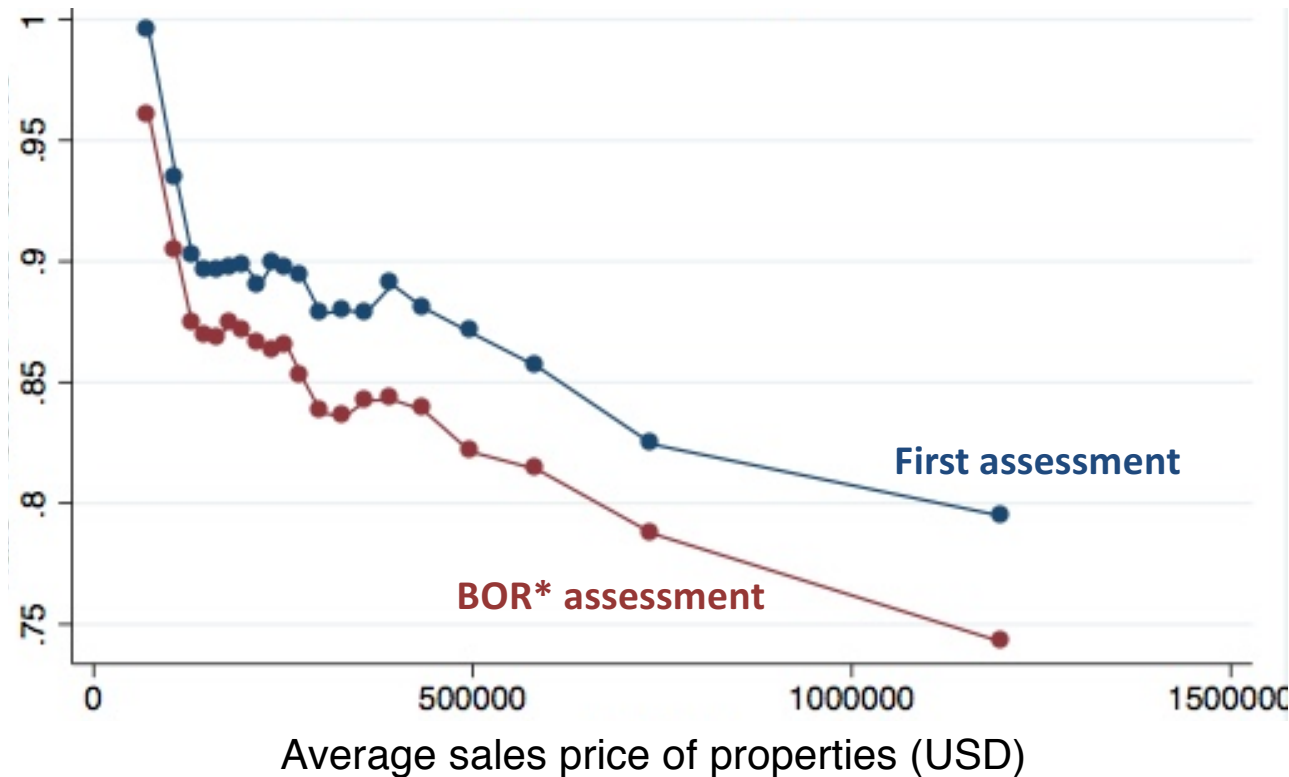
*BOR: Board of Review. Sold properties were classified in 20 equal-sized bins. Every dot is the average value on each bin.
Source: 2015 Property Tax Bills, Sales Prices, and Appeals

The Board of Review actually accentuates regressivity in property assessment

Price-Related Differential (PRD) – a higher value indicates higher regressivity
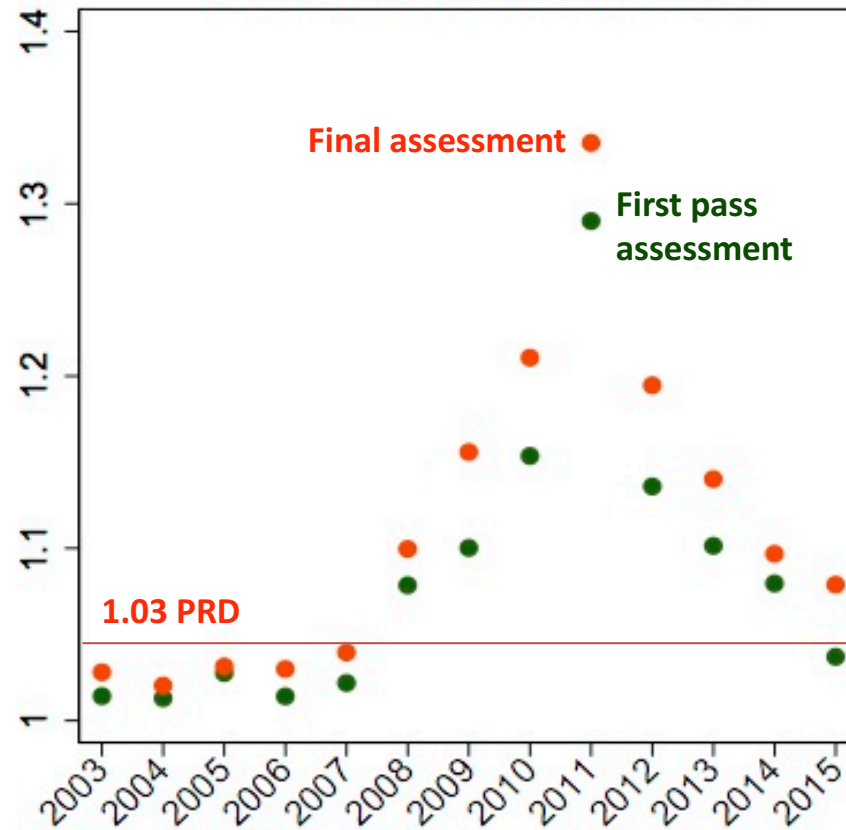
*The PDR is a commonly used assessor industry metric. PRD > 1.03 indicates regressivity of property assessments.
Source: 2002-2015 Property Tax Bills, Sales Prices, and Appeals

Takeaways from lawyer firm analysis

- Top 10" lawyers help the most at the BOR
- These lawyers do not help at the assessor's stage
- Condos are 30% more likely to hire Top 10
- The number of individuals self-representing peaked in 2015

*Controlling for over-assessed properties
Source: 2015 Property Tax Bills, Sales Prices, and Appeals

Crane and Norcross

- Has significantly helped clients to get greater reductions at the Assessor's stage
- Sometime reductions are greater than 40%

Worsek and Vihon

- Has significantly helped clients to win more with the Board of Reviews and the Assessor's office
- Reductions are not statistically different

Technical Annex

Effective Tax Rate Distribution 2003

Effective Tax Rate Distribution 2003
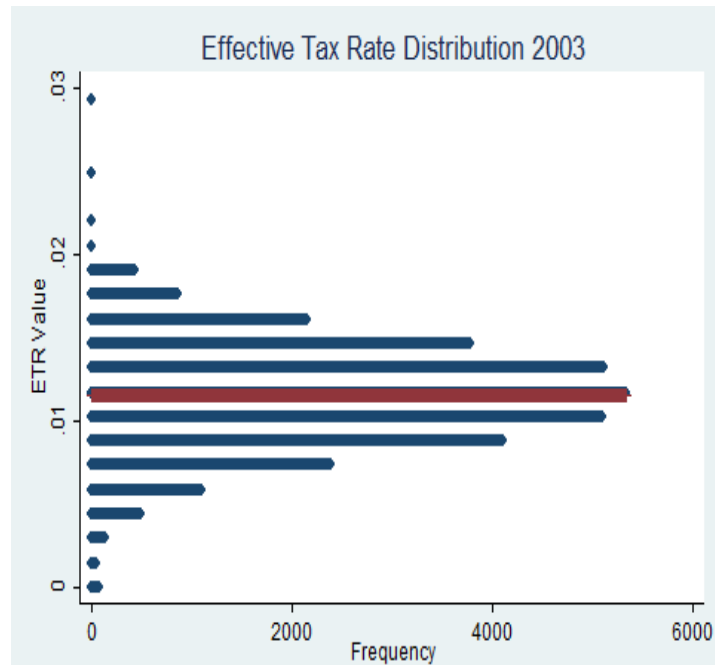
	Percentiles	Smallest		
1%	.0039038	0		
5%	.0063214	0		
10%	.0075374	0	Obs	31,081
25%	.0093493	0	Sum of Wgt.	31,081
50%	.0115915		Mean	.0115305
		Largest	Std. Dev.	.003174
75%	.0137619	.0201115		
90%	.0155618	.0223372	Variance	.0000101
95%	.0165847	.0244565	Skewness	-.1446416
99%	.018654	.0293271	Kurtosis	3.02934

Effective Tax Rate Distribution 2006

Effective Tax Rate Distribution 2006
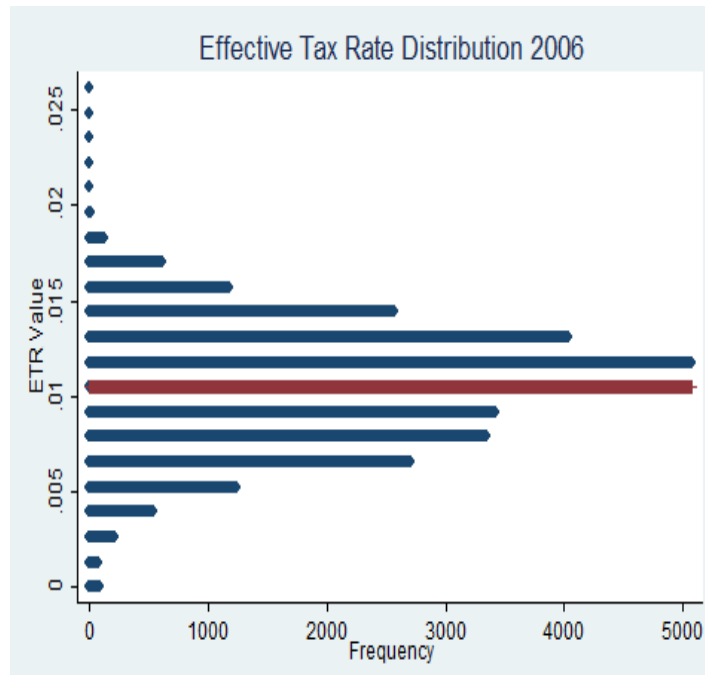
	erate			
	Percentiles	Smallest		
1%	.0028987	0		
5%	.0053052	0		
10%	.0063171	0	Obs	29,280
25%	.0081517	0	Sum of Wgt.	29,280
50%	.0108147		Mean	.0105164
		Largest	Std. Dev.	.0031812
75%	.0127926	.0221686		
90%	.0144308	.0230551	Variance	.0000101
95%	.0154725	.0248124	Skewness	-.2218112
99%	.0172586	.0261697	Kurtosis	2.800001

Effective Tax Rate Distribution 2009

Effective Tax Rate Distribution 2009
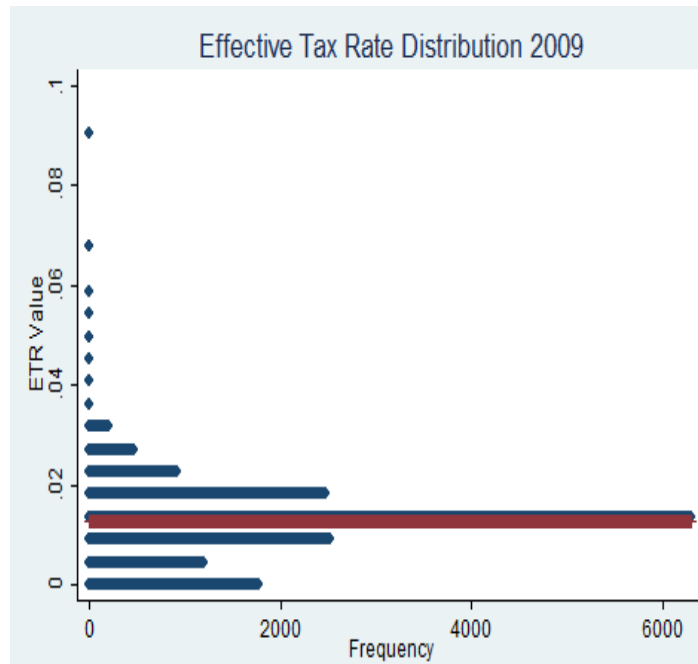
	erate			
	Percentiles	Smallest		
1%	.0008459	0		
5%	.0011897	0		
10%	.0019191	0	Obs	15,855
25%	.0093753	0	Sum of Wgt.	15,855
50%	.0131664		Mean	.0126713
		Largest	Std. Dev.	.0066348
75%	.0159658	.0588094		
90%	.0204197	.0609784	Variance	.000044
95%	.0241444	.0677525	Skewness	.3652665
99%	.0301741	.0905629	Kurtosis	5.289799

Effective Tax Rate Distribution 2012

Effective Tax Rate Distribution 2012
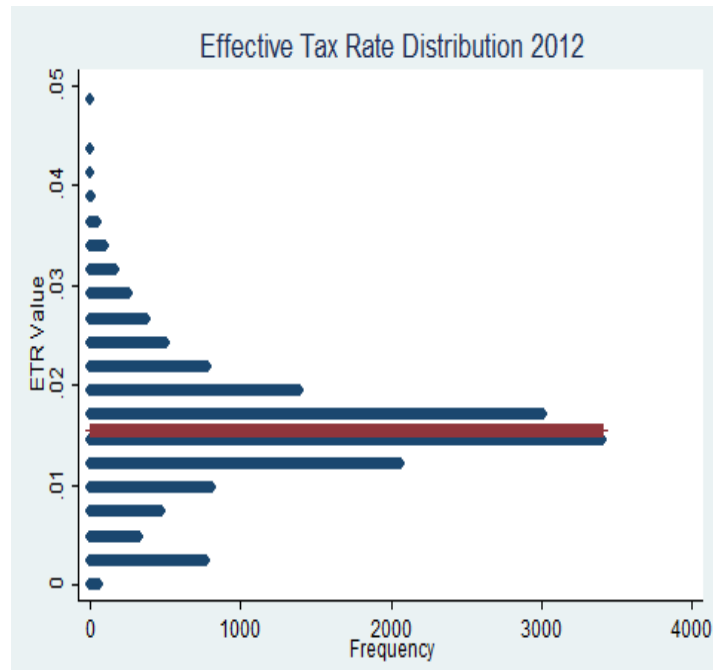
	erate			
	Percentiles	Smallest		
1%	.0017213	0		
5%	.0031219	0		
10%	.0076515	0	Obs	14,544
25%	.0125466	0	Sum of Wgt.	14,544
50%	.0153507		Mean	.0154686
		Largest	Std. Dev.	.0062185
75%	.0181819	.0389683		
90%	.0230733	.0422921	Variance	.0000387
95%	.0266975	.044075	Skewness	.2418316
99%	.0331227	.0485124	Kurtosis	4.082818

Effective Tax Rate Distribution 2015

Effective Tax Rate Distribution 2015
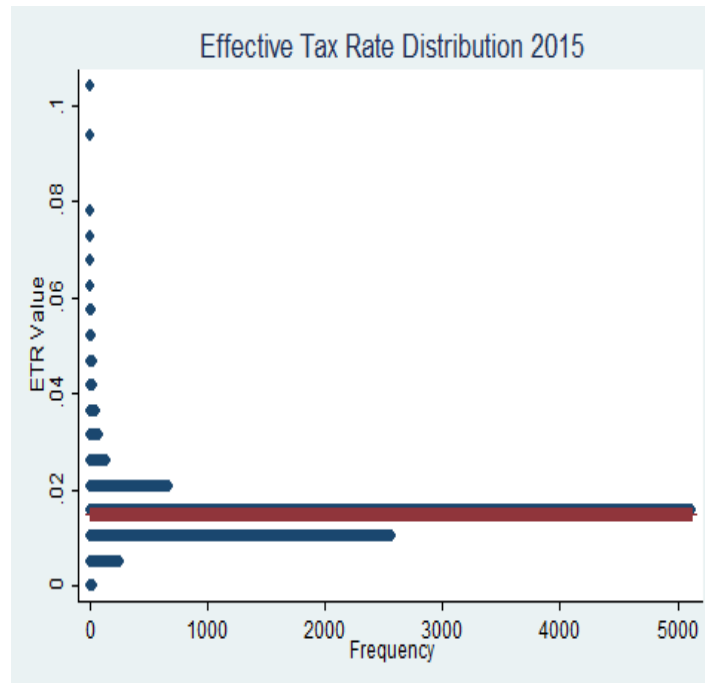
	Percentiles	Smallest		
			erate	
1%	.00514	.0002547		
5%	.0090579	.0005666		
10%	.0104975	.0006335	Obs	8,965
25%	.0124159	.0007838	Sum of Wgt.	8,965
50%	.0142298		Mean	.0148097
		Largest	Std. Dev.	.0053532
75%	.0161999	.0770652		
90%	.0184247	.0919574	Variance	.0000287
95%	.0215019	.0925443	Skewness	4.267668
99%	.0379662	.1042498	Kurtosis	41.47858

Backup slide

```
regress win condo condo_size

     Source |       SS          df       MS            Number of obs   =    277,326
------------+----------------------------------        F(2, 277323)    =    4890.92
      Model | 1118.59291          2  559.296456        Prob > F        =     0.0000
   Residual | 31713.0041     277,323  .114354035        R-squared       =     0.0341
------------+----------------------------------        Adj R-squared   =     0.0341
      Total | 32831.597      277,325   .11838672        Root MSE        =     .33816


        win |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
------------+----------------------------------------------------------------
      condo |   .0913144   .0020662    44.19   0.000     .0872647    .0953641
 condo_size |   .0007812   .0000205    38.14   0.000      .000741    .0008213
      _cons |    .749841   .0013869   540.66   0.000     .7471227    .7525593
```

- In 2015, a Condominium property had and estimated 9% greater probability of winning and appeal (respect to the rest of the residential properties)
- A difference of 100 units in condominuim means an estimated increase of 7.8% in the probability of winning the appeal.

- Condo is a binary variable that identifies if the property is a condo (classification=299)
- Condo_size is measured by the number of properties in a particular Condo building (PIN10 and Classification=299)

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