

The Cook County Assessor's Property Tax Rate Simulator

Robert Ross

Chief Data Officer, Cook County Assessor's Office



What is the Property Tax Rate Simulator?

- Variation in tax bills comes from variation in:
 1. Levies
 2. Tax bases
 3. Individual assessments
- All three are difficult to predict.
- Suppose you had predictive models for each component – now what?
- Plug them into the simulator to simulate pre-exemption bills for residential properties, commercial apartments, and industrial & commercial properties.

Disclaimers

- This tool is for educational purposes only. The Assessor's office releases the tool without any representations or warranties of any kind, whether express or implied. Any data, figures, or amounts contained within the tool, used by the tool, or produced by the tool are solely for illustrative purposes. Any results produced by this workbook as distributed are not intended to be predictive and should not be relied upon for any business or commercial purpose. They merely demonstrate the workbook's features.
- The Assessor's office expressly disclaims any liability for any entity's reliance on this tool.
- We have made this tool as open as possible so that users can modify it for their purposes, including prediction.

Live demo

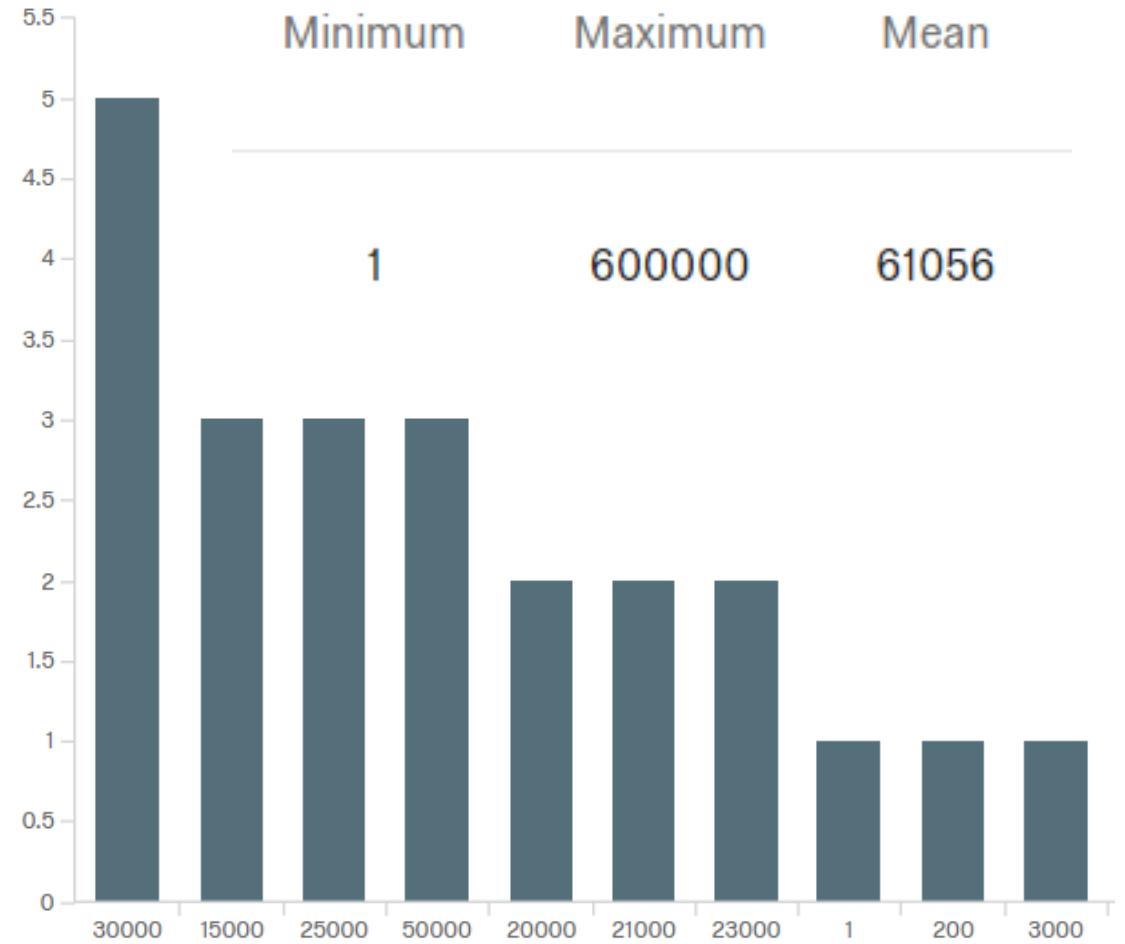


Simulating Historical Tax Bills



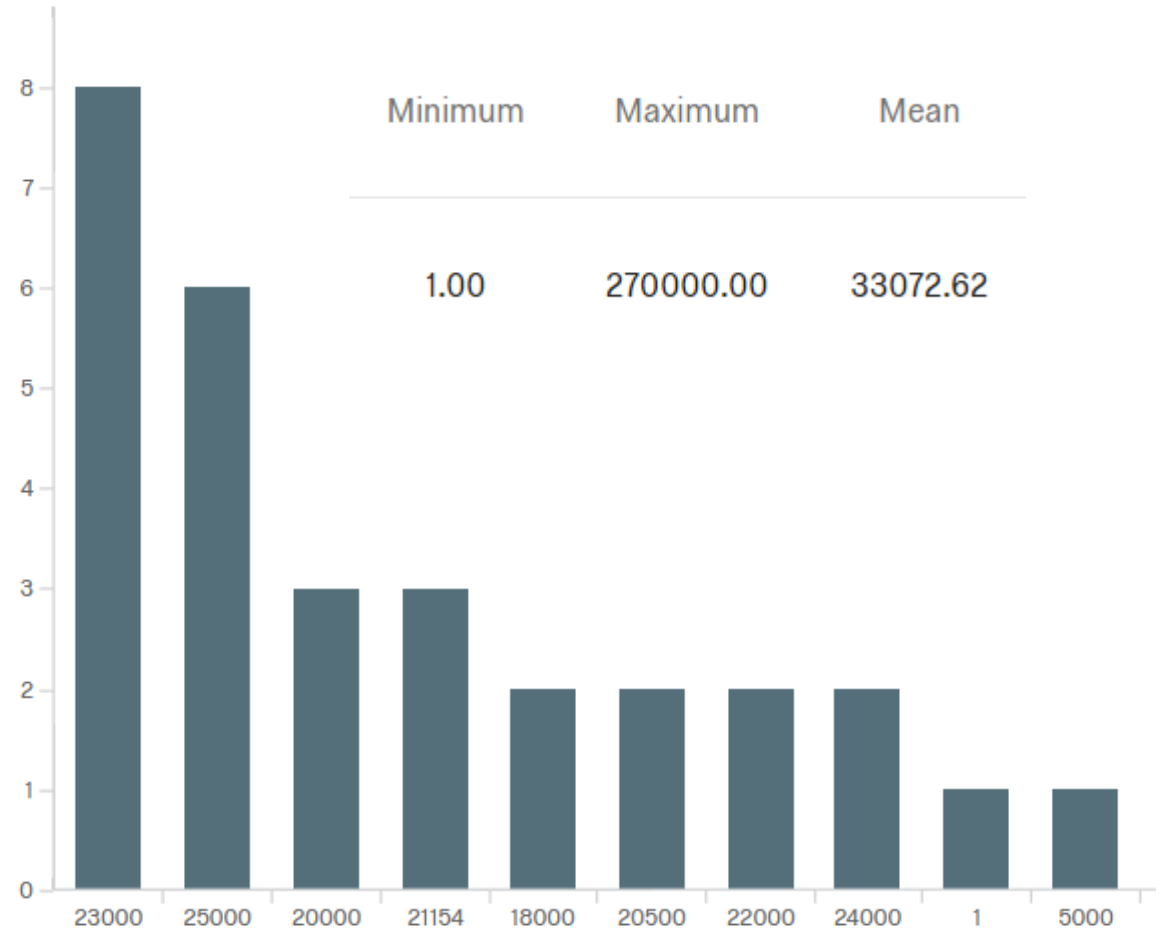
The Property: A \$1 mln apartment building

- Survey: N=39
- Guess: A Chicago property with an estimated market value of \$1 mln in 2017 and 2018. Guess its 2018 tax bill.
- Most common guess: \$30,000



The Property: A \$1 mln apartment building

- Second guess of 2018 Tax Bill, knowing its **2017** tax bill was **\$21,514**.
- Most common guess: **\$23,000**



2017-2018 Tax Bills: The Answer

- Levies in the City increased by \$255 million. This has an upward impact on tax bills.
- The Base for the City and the County increased (14.4% and 7% respectively). This has a downward effect on tax bills.
- Net decrease of -\$1,768

Property Class	
300 Class Commercial Apartments > 7 units	
Tax Year**	Property Value
2017	<u>\$1,000,000</u>
2018	<u>\$1,000,000</u>

**Remember, property taxes are billed one year in arrears. That means that in 2019 you will pay the bill for Tax Year 2018.

Holding assessed value constant.

Panel 2 - TAXING DISTRICT BREAKDOWN - TAXES		
	Your Tax Bill for Each Jurisdiction	
	2017	2018
Totals before exemptions [#]	\$21,514	\$19,746

Example \$1.2 mln property

Medium size courtyard apartment building on Chicago's North Side.

2018 Assessed Value	121,967
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Fair Cash Value = AV x 10 = \$1,219,670

2018 Total Tax Before Exemptions
24,092.61

Simulator says....

\$24,084

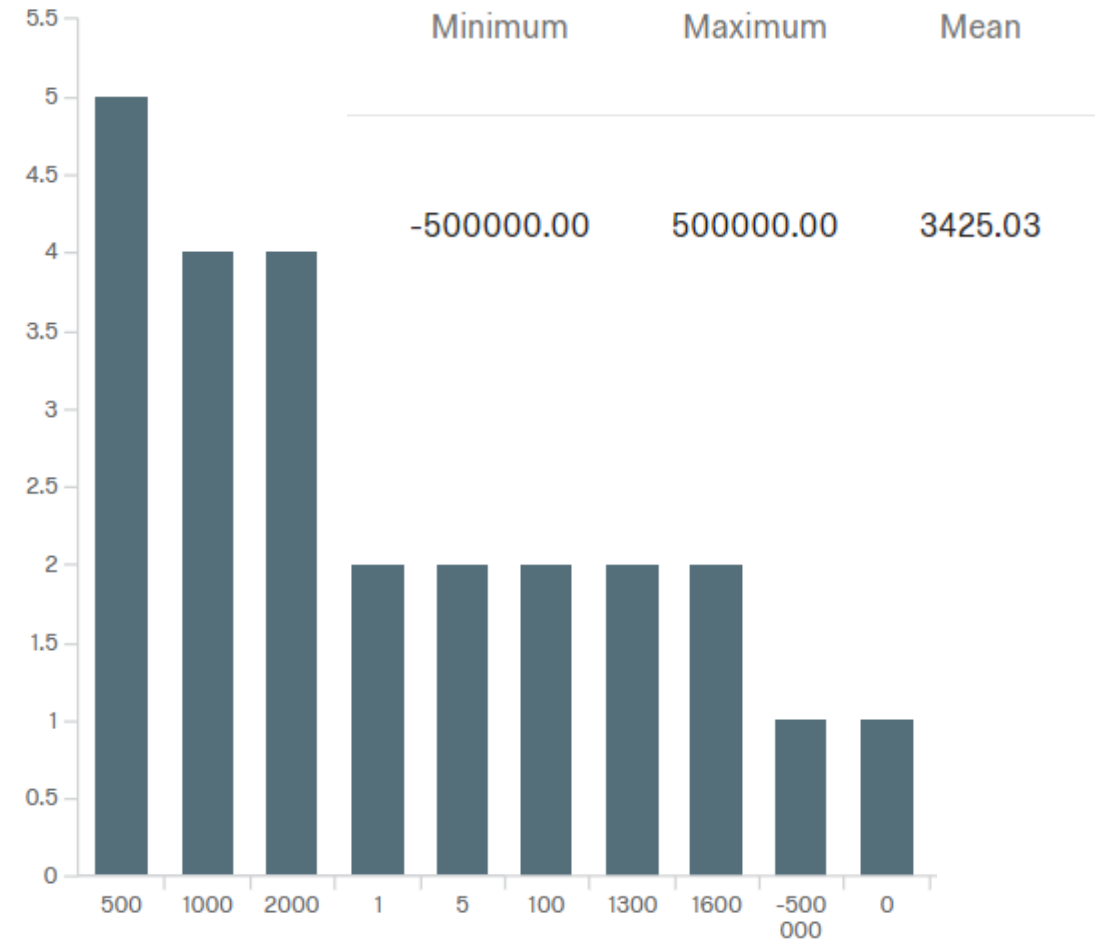


Simulating Scenarios



The Levy: +\$100 mln in City Revenues

- Survey results: Suppose the city added an additional \$100 million to its levy in 2018. How would this have impacted the property's 2018 bill?
- Most common guess: +\$500



The Answer: Tax Bill for alt 2018 Levy

- Instead of an additional \$255 million in total property tax revenues, we simulate \$355 million in 2018 revenues.
- \$100 mln in City revenues would have increased this property's tax bill by **\$338**.

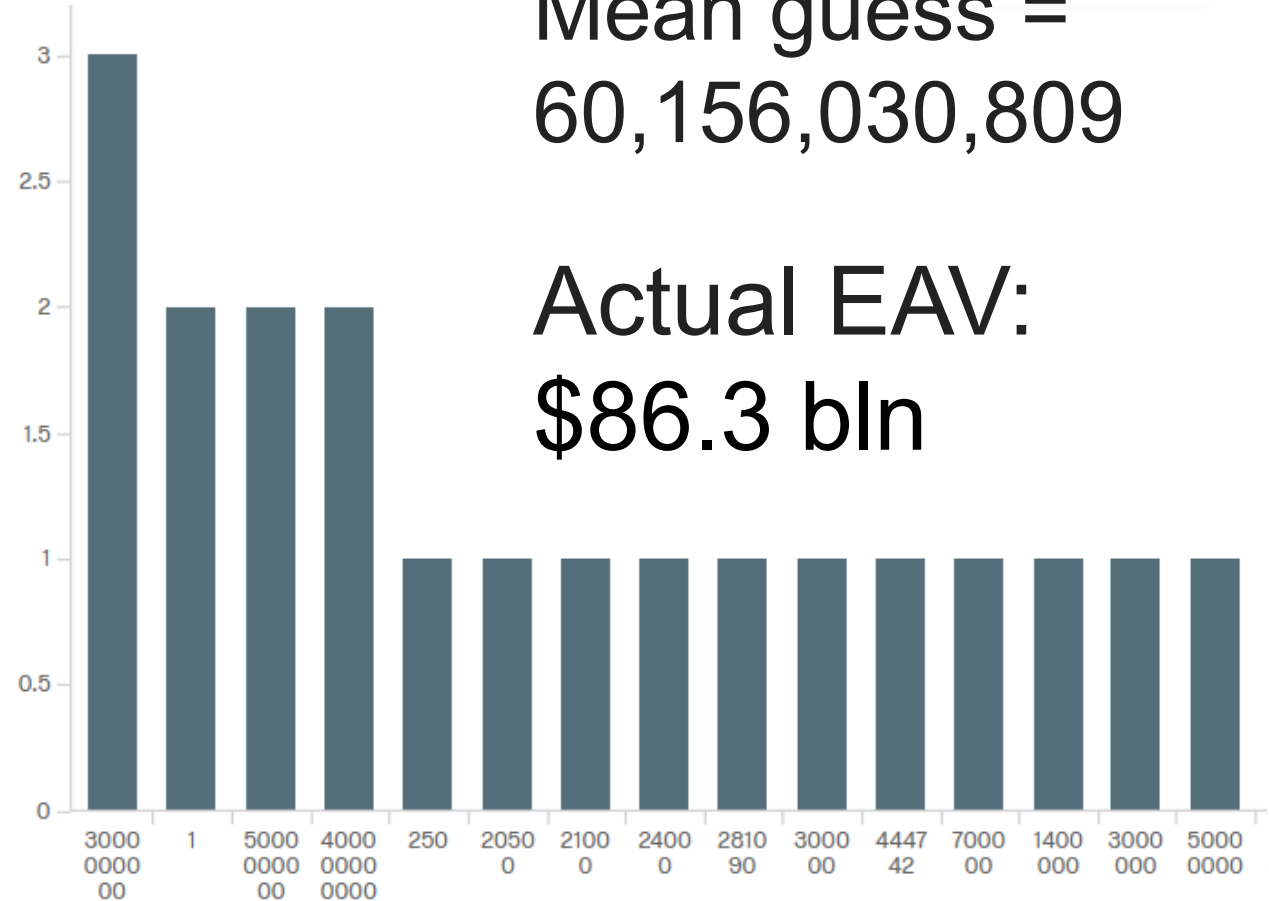
Scenario	
Scenario 1 - Increase in City taxes	
Property Class	
300 Class Commercial Apartments > 7 units	
Tax Year**	Property Value
actual 2018	\$1,000,000
alt 2018	\$1,000,000

Holding assessed value constant.

Your Tax Bill for Each Jurisdiction	
actual 2018	alt 2018
\$19,746	\$20,084

The Base

- Survey Results:
What was the
City's Tax Base in
2018?



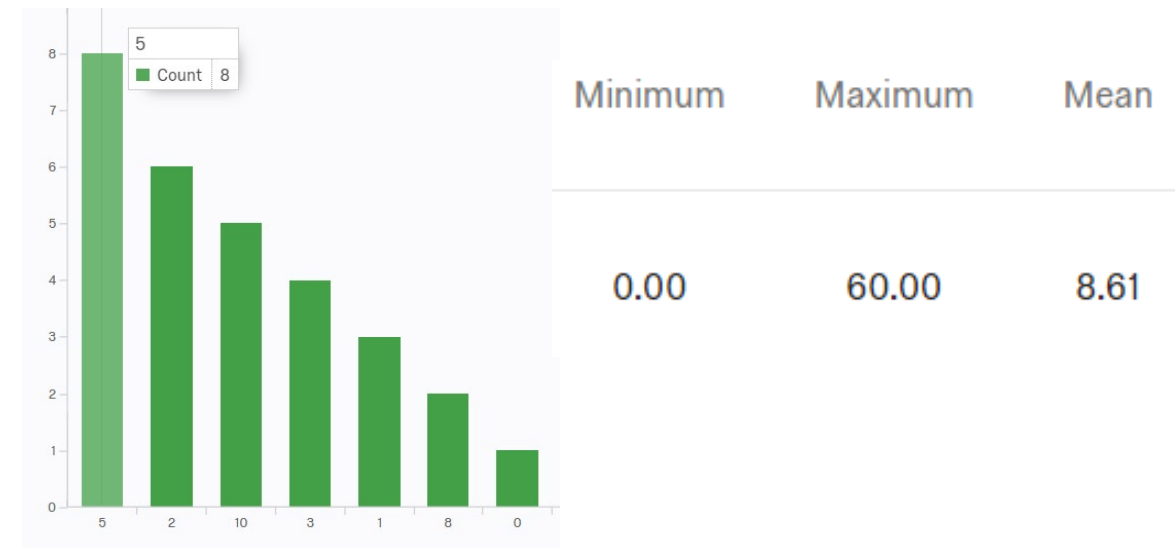
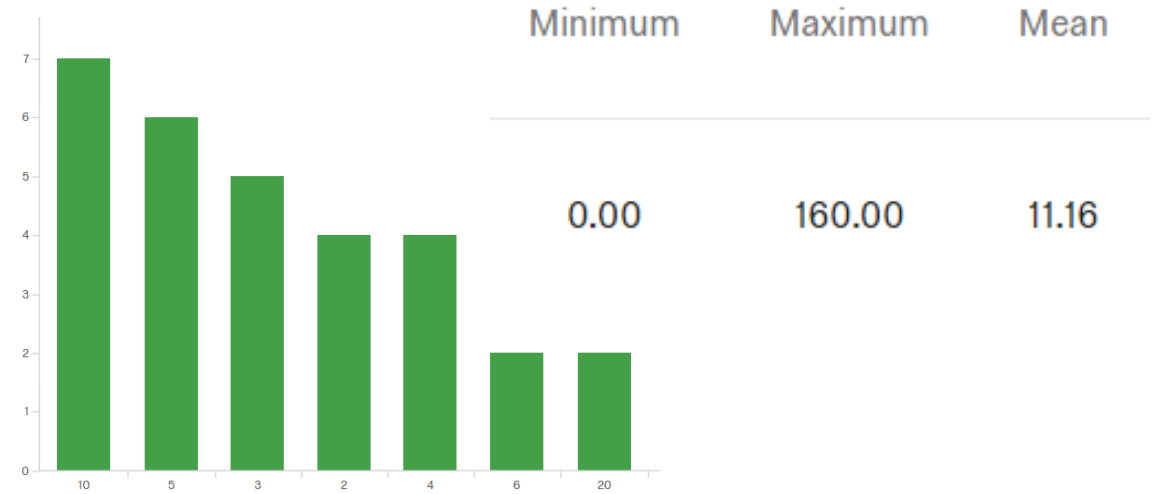
Mean guess =
60,156,030,809

Actual EAV:
\$86.3 bln

The Base: Growth Estimates

- Survey Results:
What was the growth rate for commercial apartments?

What was the growth rate for commercial property?



The Base

- 2017: \$25.8 bln in AV
 - X 2.9627 to get EAV
- 2018: \$29.6 bln in AV
 - X 2.9109 to get EAV
 - = ~\$86.3 bln in 2018
- ‘Growth Simulation’ allows users to select different growth rates by property class.
- Increases in the tax base, through re-assessment for example, lowers the tax rate.

Class	Class Description	Actual growth rate in gross EAV 17-18
1	Vacant Land	17.51%
2	Residential	12.93%
3	Commercial Apartments	20.88%
4	Non-Profit	-2.85%
5	Commercial and Industrial	14.88%
6	Industrial Incentive	27.24%
7	Commercial Incentive	41.38%
8	Commercial/Industrial Incentive	-4.71%
9	Commercial Apartment Incentive	37.22%

Total City Base Simulations

	2018 EAV
City of Chicago Tax Base on Agency Rate Report	\$ 86,326,178,932
<i>Actual 2018 Increment in City of Chicago</i>	\$ 12,271,689,081



The Base

- Simulated base with higher commercial growth rates: \$30.4 bln AV (\$88.6 bln in EAV)
- Simulate 25% growth in commercial apartments and IC properties.

Class	Class Description	Actual growth rate in gross EAV 17-18	Simulated growth rate in gross EAV 17-18
1	Vacant Land	17.51%	17.51%
2	Residential	12.93%	12.93%
3	Commercial Apartments	20.88%	25.00%
4	Non-Profit	-2.85%	-2.85%
5	Commercial and Industrial	14.88%	25.00%
6	Industrial Incentive	27.24%	27.24%
7	Commercial Incentive	41.38%	41.38%
8	Commercial/Industrial Incentive	-4.71%	-4.71%
9	Commercial Apartment Incentive	37.22%	37.22%
Simulated City of Chicago Tax Base Using Parameters in Parameter Table 1			
		\$ 88,676,463,300	2.7226%
	<i>Simulated City of Chicago TIF Increment</i>	\$ 11,913,456,194	-2.9192%

The Base

- Larger growth in commercial property values increases the size of the base.
- Property's bill would have been lower by \$474.

Scenario	
Scenario 2 - Increase in the Tax Base	
Property Class	
300 Class Commercial Apartments > 7 units	
Tax Year**	Property Value
actual 2018	\$1,000,000
alt 2018	\$1,000,000

↑
Holding assessed value constant.

Your Tax Bill for Each Jurisdiction	
actual 2018	alt 2018
\$19,746	\$19,272

The Base – Another Scenario

- \$13 bln in EAV in TIF increment.
- What if that entire amount was added back into the tax base?
- Adding \$13 bln to the tax base would have decreased this property's 2018 bill by \$1,972

Scenario	
Scenario 3 - TIF Increment Added to Base	
Property Class	
300 Class Commercial Apartments > 7 units	
Tax Year**	Property Value
actual 2018	\$1,000,000
alt 2018	\$1,000,000

Your Tax Bill for Each Jurisdiction	
actual 2018	alt 2018
\$19,746	\$17,775

↑
Holding assessed value constant.

Another Live Demo



Convinced? No?

That's ok....



Try it out for yourself!

- The Rate Simulator only simulates pre-exemption tax bills for properties in the City of Chicago, outside of a Special Service Area. Note that it uses taxing districts and TIFs in place for the 2017 and 2018 tax years.
- Pick a property at random using [Cook Viewer](#). Look up the 2nd installment tax bill for the PIN you picked on the [Treasurer's website](#).
- You want to note 5 numbers on this bill: 2017 Assessed Value, 2018 Assessed Value, 2017 Tax and 2018 Tax Before Exemptions, and the property class.

Populate with your own estimates of bases and levies

- Build models to predict levies and bases.
- Input those predictions into the Rate Simulator.
- Or, you can create your own tools based on the Rate Simulator's structure.

42	Scenario 3 - Choose your own adventure	Metro Water Reclamation Dist. of Chicago	1.00	1.00	1.00	1.00
43	Scenario 3 - Choose your own adventure	Parks-Museum/Aquarium Bond	1.00	1.00	1.00	1.00
44	Scenario 3 - Choose your own adventure	Chicago Park District	1.00	1.00	1.00	1.00
45	Scenario 3 - Choose your own adventure	Board of Education Chicago	1.00	1.00	1.00	1.00
46	Scenario 3 - Choose your own adventure	Chicago Community College District	1.00	1.00	1.00	1.00
47	Scenario 3 - Choose your own adventure	Chicago School Bldg & Imp Fund	1.00	1.00	1.00	1.00
48	Scenario 3 - Choose your own adventure	Chicago Library Fund	1.00	1.00	1.00	1.00
49	Scenario 3 - Choose your own adventure	City of Chicago	1.00	1.00	1.00	1.00
50	Scenario 3 - Choose your own adventure	Cook County Forest Preserve District	1.00	1.00	1.00	1.00
51	Scenario 3 - Choose your own adventure	County of Cook, Public Safety, & Health Facilities	1.00	1.00	1.00	1.00
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53						
54						
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Ready Cover Sheets Simulating Bills Simulating Scenarios Growth Simulation **Scenario Data** Base by Class Simulated EAVs Chicago CBD Base

Thank You

- Download the tool for yourself:
www.cookcountyassessor.com → Resources → Property Tax Rate Simulator
- Unlocked version to be released by next week.
- We will also be posting a how-to video in the coming weeks.
- We will create a Google group for users to discuss the tool.
- Please send us feedback:
ratesim@cookcountyassessor.com

Q & A

