

# Assessment Persistence

Daniel McMillen and Ruchi Singh

Presented by: Daniel McMillen

University of Illinois, Chicago

Discussed by:

William Hoyt

University of Kentucky

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Martin School of Public Policy and Administration

# A few initial thoughts

- I enjoyed reading and thinking about this paper
  - As it is the 1<sup>st</sup> to consider this issue (persistence in assessments), it probably generates as many questions as it answers, a good thing
- As McMillen & Singh note there is an extensive literature focused on regressivity in assessments
- What has not been considered until M&S is how persistent are these assessments
- While they find evidence of persistence, it is limited
- And it varies by value of home – at least lowest value homes vs others

# A few initial questions

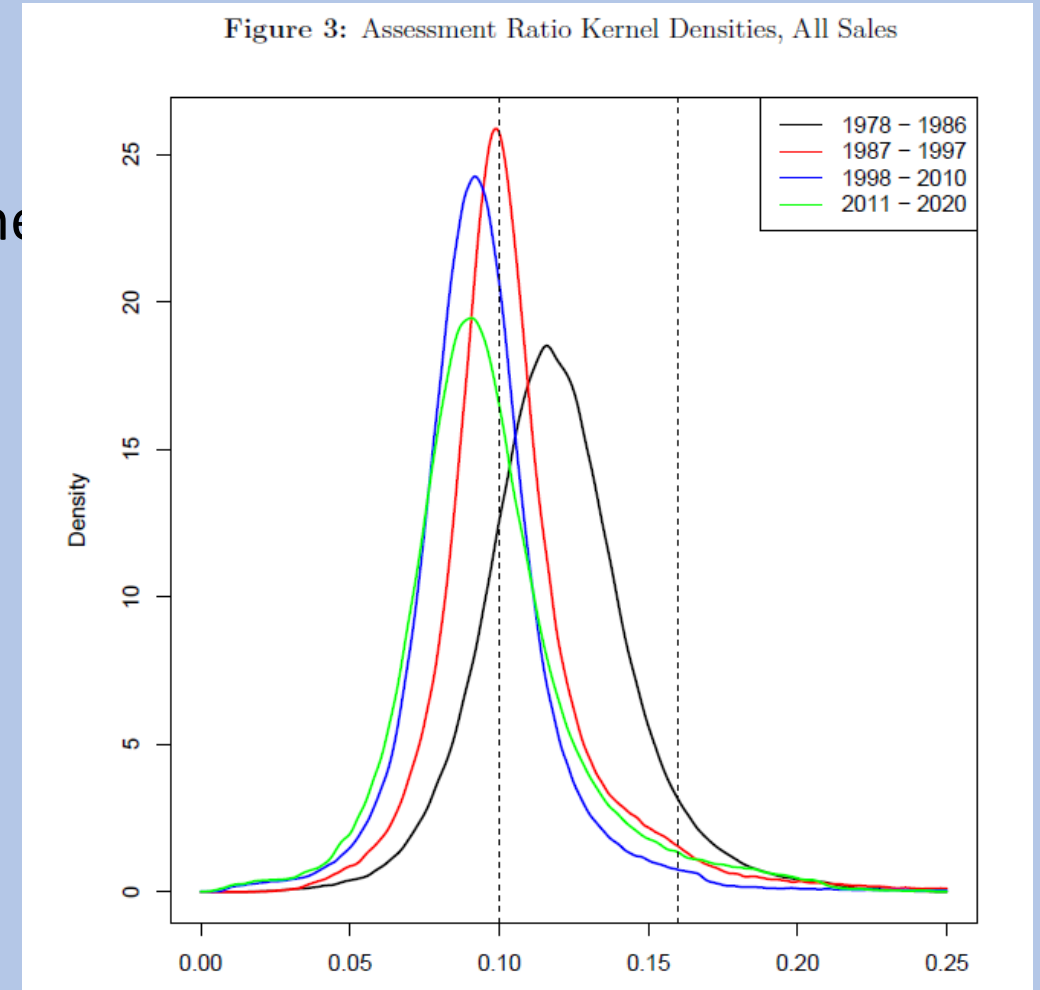
- M&S are documenting lack of persistence
- But “why”?
- Why the lack of persistence in these Chicago assessments?
- What does this say about the assessment practices in Chicago?
- Why the pronounced difference in persistence between lowest-valued homes and the rest?

# A few initial questions (2)

- Some questions about policy and welfare:
- Persistence: good or bad for homeowners?
- How might the lack of persistence affect the policies that we might consider to address regressivity in assessments?
- Is there a difference in the implications of persistence across sales (and owners) & persistence within assessment cycles for a single owner
  - If so, how might this influence policy choices

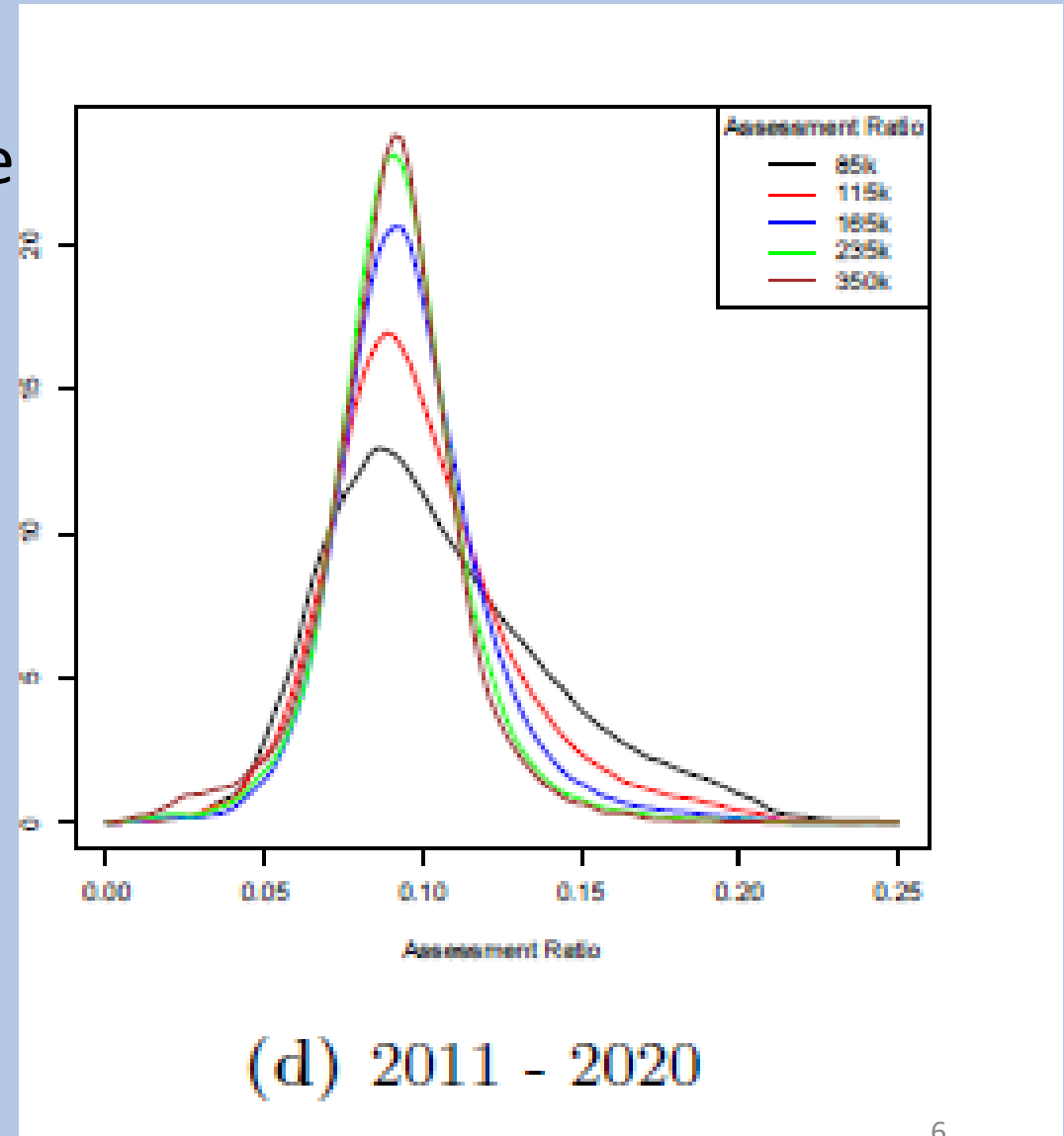
# Variation in Assessment Ratios over time

- M & S 1<sup>st</sup> examine how much variation there is in assessment ratios
  - Variation (and ratio) have changed over time (Figure 3) – high in 1978 – 1986 & increase in 2011-2020



# Variation in Assessment Ratios based on Value

- M & S 1<sup>st</sup> examine how much variation there is in assessment ratios across value
  - Reduces as value increase
- I find this result somewhat surprising – heteroskedasticity alone would seem to have suggested otherwise
- Why?



# Assessment Persistence Across Sales

- Examines this 1<sup>st</sup> using a contingency table
- Quantifies the extent of persistence & when assessment ratios change (relative to median) how they change (broadly)
- A few considerations:
  - Is there symmetry in changes in assessment
    - Is the probability of an under-assessed property being over-assessed same as an under-assessed being over-assessed?
- Revising, somewhat, the table we have:

# An Alternative Characterization of the Contingency Table

		2 <sup>nd</sup> Sale (A/S-1) (% of Sales)					
		-80 to -15	-15 to -5	-5 to 0	0 to 5	5 to 15	15 to 80
1 <sup>st</sup> Sale (A/S-1) (% of Sales)	-80 to -15	0.39	0.22	0.10	0.08	0.10	0.11
		0.21	0.21	0.13	0.12	0.16	0.17
	-15 to 5	0.23	0.26	0.14	0.12	0.14	0.12
		0.21	0.21	0.13	0.12	0.16	0.17
	-5 to 0	0.17	0.24	0.15	0.14	0.17	0.14
		0.21	0.21	0.13	0.12	0.16	0.17
	0 to 5	0.15	0.21	0.15	0.14	0.19	0.16
		0.21	0.21	0.13	0.12	0.16	0.17
	5 to 15	0.13	0.19	0.13	0.14	0.21	0.19
		0.21	0.21	0.13	0.12	0.16	0.17
15 to 80	0.16	0.16	0.11	0.11	0.19	0.27	
	0.21	0.21	0.13	0.12	0.16	0.17	



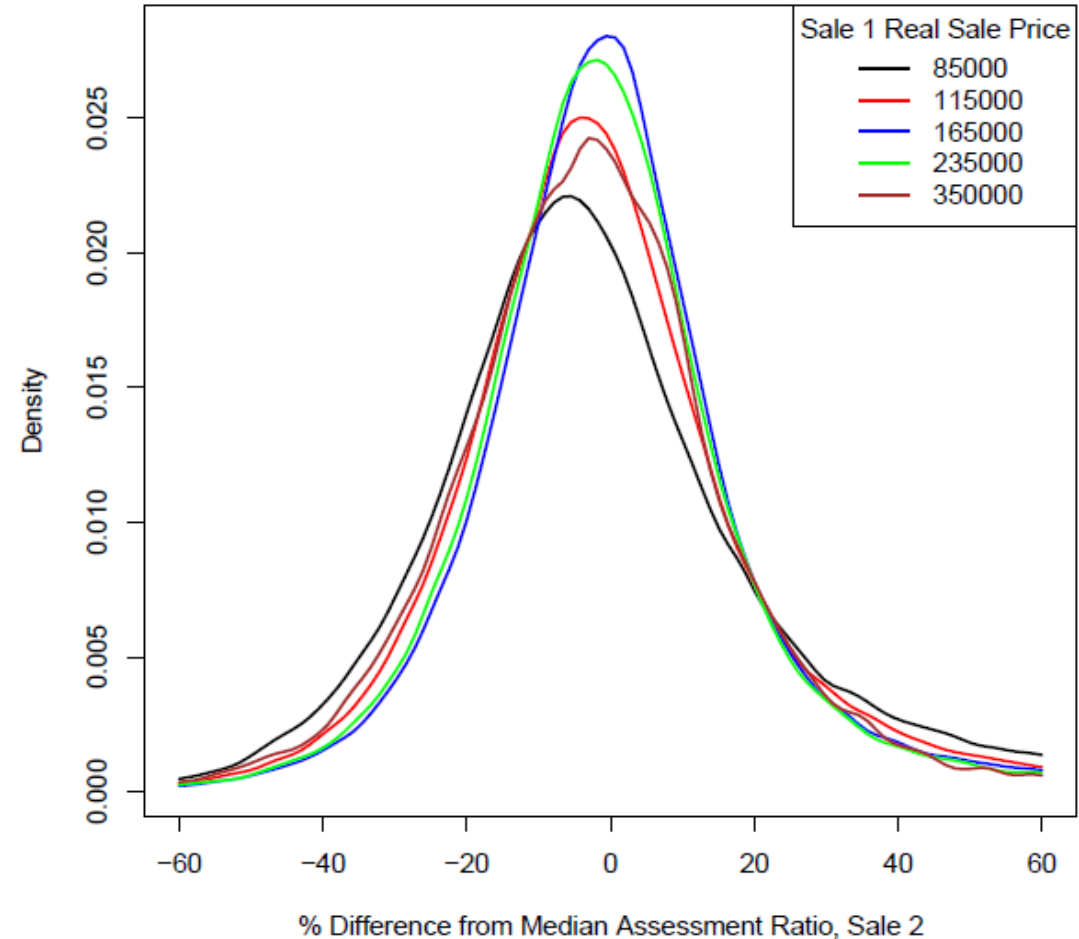
# A Less Refined Contingency: From Over-Assessed to Under-Assessed & Under-Assessed to Over-Assessed? Symmetry?

	-80 to -5	-5 to 5	5 to 80
-80 to -5	0.55	0.22	0.23
	0.42	0.25	0.33
-5 to 5	0.38	0.29	0.33
	0.42	0.25	0.33
5 to 80	0.32	0.25	0.43
	0.42	0.25	0.33

From text (p. 19): *Overall, Figure 8 suggests that the rate of persistence of assessment ratios is not highly correlated with sale price: low-priced homes may be more likely to have high assessment ratios at a point in time, but they are not more likely than a comparably over-assessed high-priced home to have high assessment ratios in later years.*

- Not sure I follow how this relates to persistence. Unlike Figure 7 that shows the relationship between assessment ratio for sales 1 and distribution of assessment ratio for sales 2 this does not say anything directly about whether property was under or over-assessed from sale 1

**Figure 8:** Densities for the Percentage Difference from Median Assessment Ratio in Sale 2 Assessment Year Conditional on the Sale 1 Real Sale Price



# How does the persistence vary with value? (and why?)

- What we know so far:
  - Declines in assessment ratios over time
  - Low value houses are more likely to be over-assessed
  - Limited persistence in assessments
- What would we (that is, I) like to know:
  - Does persistence vary with the value of the home?
- This is addressed in Table 2:
  - Regression of Sale 2 Difference in Assessment Ratios and Sale 1 Ratios

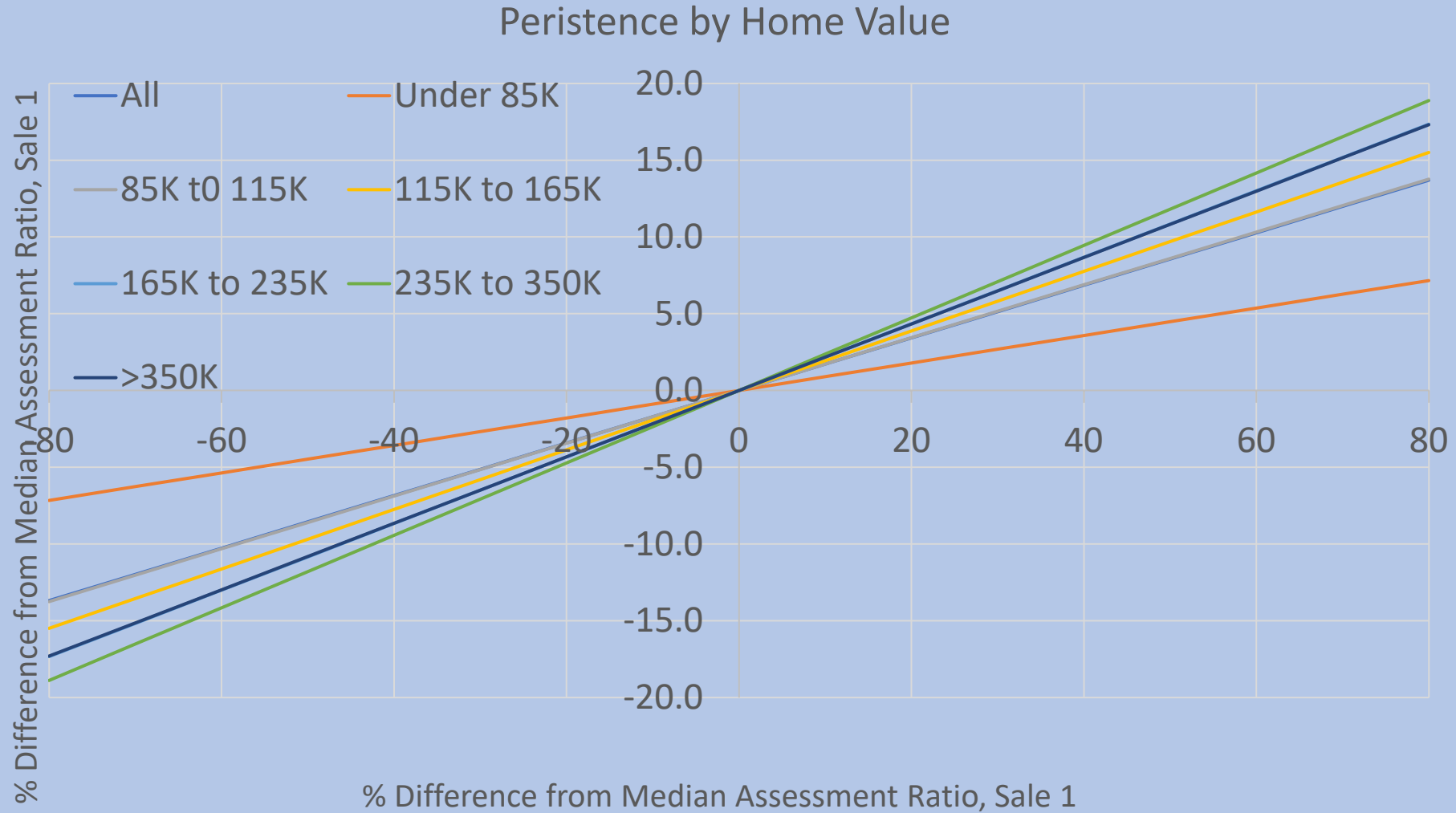
- Weak link positive relationship between assessment differences for across property values.
- But a significant difference between the coefficient for <85K (.0816) and the rest > .17. Why
- Anything to do with <85K is where significant over-assessment occurs?

**Table 2:** Estimated Regression Coefficients for Sale 1 Difference of Assessment Ratio from the Median

Sample	(1)	(2)	(3)
All Observations (n = 599,672)	0.2155	0.2146	0.1712
s.e.	0.0013	0.0013	0.0013
$R^2$	0.0460	0.0504	0.0895
Sale 1 Real Price Under 85k (n = 47,291)	0.1350	0.1379	0.0816
s.e.	0.0044	0.0044	0.0046
$R^2$	0.0191	0.0843	0.1829
Sale 1 Real Price 85k to 115k (n = 81,637)	0.2126	0.2147	0.1720
s.e.	0.0035	0.0035	0.0039
$R^2$	0.0424	0.0733	0.1377
Sale 1 Real Price 115k to 165k (n = 165,826)	0.2385	0.2401	0.1938
s.e.	0.0025	0.0026	0.0028
$R^2$	0.0501	0.0701	0.1231
Sale 1 Real Price 165k to 235k (n = 156,856)	0.2565	0.2544	0.2168
s.e.	0.0026	0.0027	0.0028
$R^2$	0.0568	0.0651	0.1194
Sale 1 Real Price 235k to 350k (n = 92,552)	0.2669	0.2708	0.2361
s.e.	0.0033	0.0033	0.0034
$R^2$	0.0671	0.0960	0.1525
Sale 1 Real Price Over 350k (n = 55,410)	0.2495	0.2575	0.2164
s.e.	0.0040	0.0039	0.0040
$R^2$	0.0667	0.1508	0.2087
Controls	None	Assessment Year	Assessment Year and Census Tract

Note. The dependent variable is the percentage difference of the sale 2 assessment ratio from the median. The regressions in (2) and (3) include controls for the assessment year of the second sale. The column (3) regression also includes controls for the census tract.

# An Alternative View of Table 2



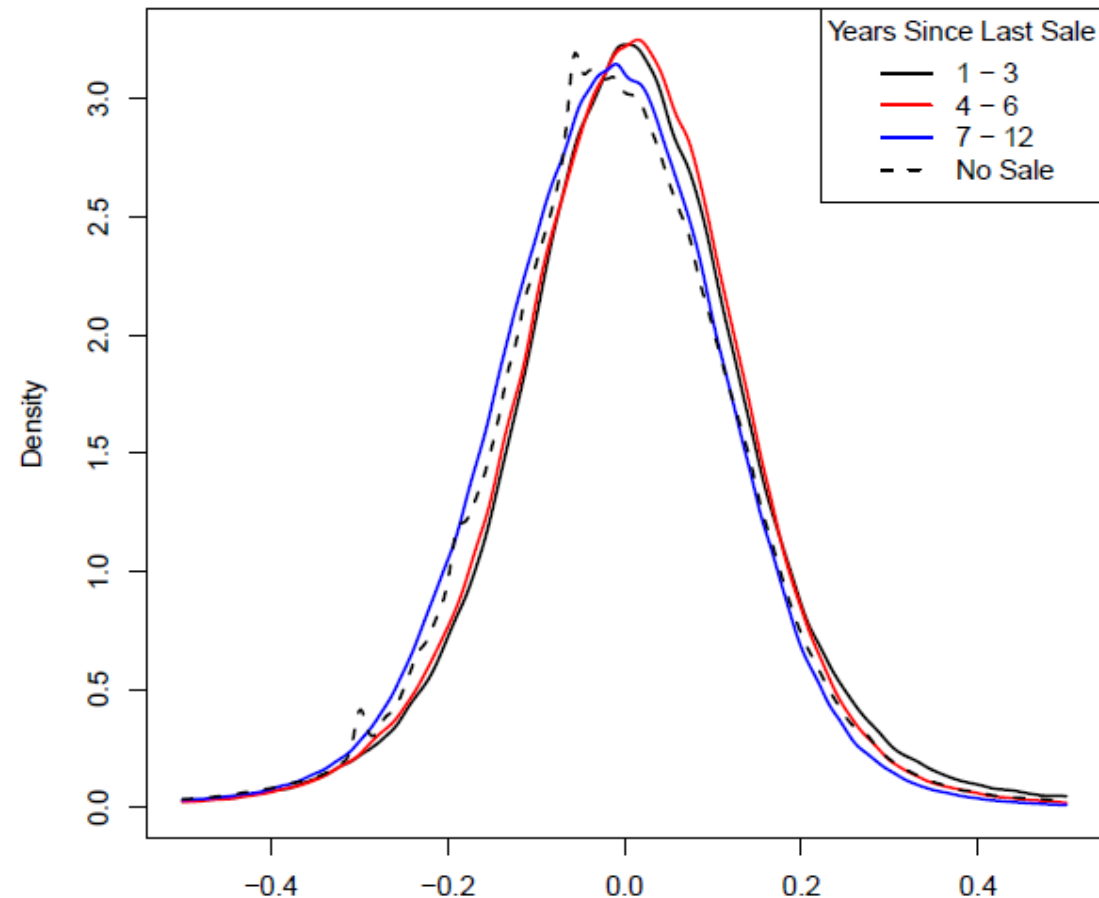
## Panel Data, 1998 - 2020

- Data includes triennial assessment for class 2 sales
  - Can be used to compare changes in assessed values for properties that do not sell as well as repeated sales
- Questions:
  - Are changes in assessed value higher for properties that previously had high assessment ratios?
    - Clarification: By this do you mean greater in absolute value or more positive?
  - How does a recent sale or, alternatively, long tenure affect assessment?
  - And, importantly, what do we learn about persistence in the absence of sale vs. when a sale occurs

# How do recent sales affect assessments?

- Answer: Not much
- But why or why not?
  - No binding assessment limits
  - Strict use of regression-determined assessment?

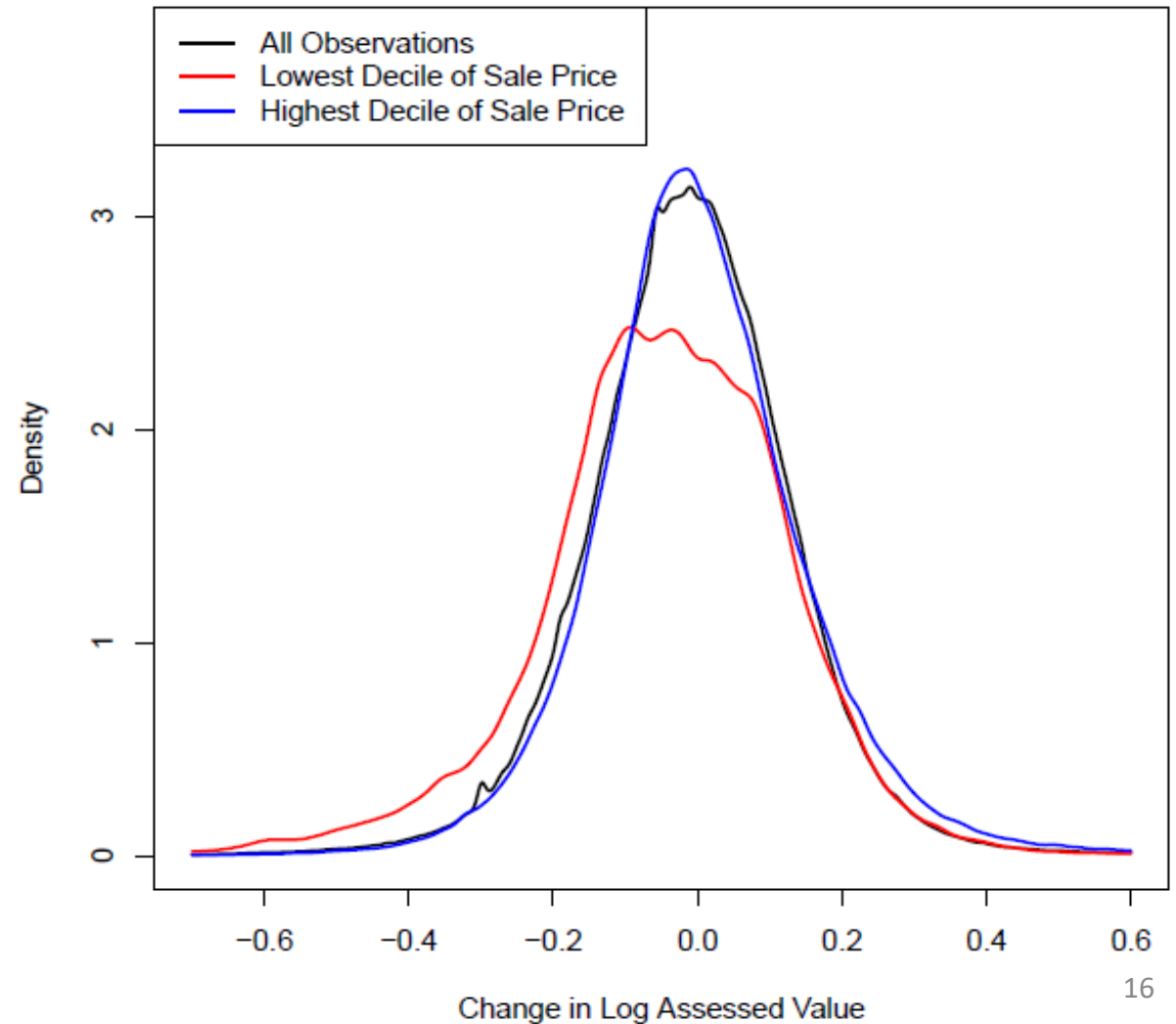
Figure 11: Densities for Difference in Log Assessments by Years since Last Sale



# Regressivity in Assessments

- From text: (p. 25): **Very low-priced homes are much more likely to have decreases in their real assessed values than other properties.**
- Is this surprising? Are these properties that “fell into” the lowest decile – didn’t appreciate as much as other sales?

Figure 13: Densities for Difference in Log Assessments by for Sales Prices in the Lowest and Highest Deciles





# Sales & Assessment

Table 3: Regression

	(6)
Sale 1-3 Years Before Assessment	0.013077 (0.00032)
Sale 4-6 Years Before Assessment	-0.008062 (0.000308)
Sale More than 6 Years Before Assessment	-0.003089 (0.000168)
% Difference of Ratio from Median, Difference < 0	0.008411 (0.000246)
% Difference of Ratio from Median, Difference > 0	-0.0136 (0.000248)
Real Sale Price in Lowest Decile	-0.000281 (0.000359)
Real Sale Price in Highest Decile	-0.003373 (0.000348)
$R^2$	0.185698
No. Obs.	6775524

Notes. Standard errors are in parentheses. The regressions (4) - (6) also include controls for the census tract.

- Dependent Variable: log (real assessed value)
- Omitted category: No sale
- Question: Why the small (1%) difference in assessment for recent sales if based on hedonic?
- Given magnitude perhaps the real answer is there isn't much difference.
- **Back to the question of persistence during a period of ownership vs. between sales**
  - Does this suggest sales don't have much impact on persistence
  - Is the variation in assessment ratios we saw in the earlier analysis, what is applied to variation under a single owner?

## How might persistence (or the lack of it) suggest for policy?

- The analysis suggests limited persistence – over-assessed property one cycle might well be under-assessed the next cycle
  - This seems to be true across the distribution of housing values and perhaps more so at the lower end
- But for the lowest valued properties we have, on average, over-assessment (relative to median)
- Does limited persistence and high variation in assessment ratios reduce concerns over higher (on average) assessment ratios?
- Most of the focus has seemed to be on vertical equity but what of horizontal equity – perhaps limited persistence reduces these concerns.

# Persistence (Certainty) vs. Over-Assessment

- In the introduction (and similar language in conclusion):
  - “Although regressivity in any assessment cycle causes undue financial burdens for owners of low-priced homes, the problem is more serious if assessment rates are persistent over time.”
- While the possibility of lower future assessments are good for the owner of the current over-assessed home, the opposite is true for the owner of the current under-assessed home
- With risk-averse homeowners, we expect value in persistence – given an expected (average) assessment ratio, the more persistence the better
- Limited persistence would seem to spread costs of over-assessment across the population (increase horizontal equity) but also increase risk

# What might be next?

- McMillen & Singh document the extent of persistence assessment ratios, suggesting it is limited
  - Done with Chicago data and institutions
- Next steps? Other considerations
  - Understanding more about why the lack of persistence and why is it lower with the lowest valued homes?
  - As authors note, with binding assessment limits the results might be quite different,
    - But how might the results differ with how assessments are determined? (In Lexington comparable sales are the base)
  - How might the lack of persistence (predictability) in assessments affect market values – is it capitalized into property values as uncertainty about schools might be (Cheshire and Sheppard (2004))