

**WHAT HAVE THEY BEEN THINKING?
HOME BUYER BEHAVIOR IN HOT AND COLD MARKETS:
A TEN-YEAR RETROSPECT**

Robert J. Shiller

Anne K. Thompson

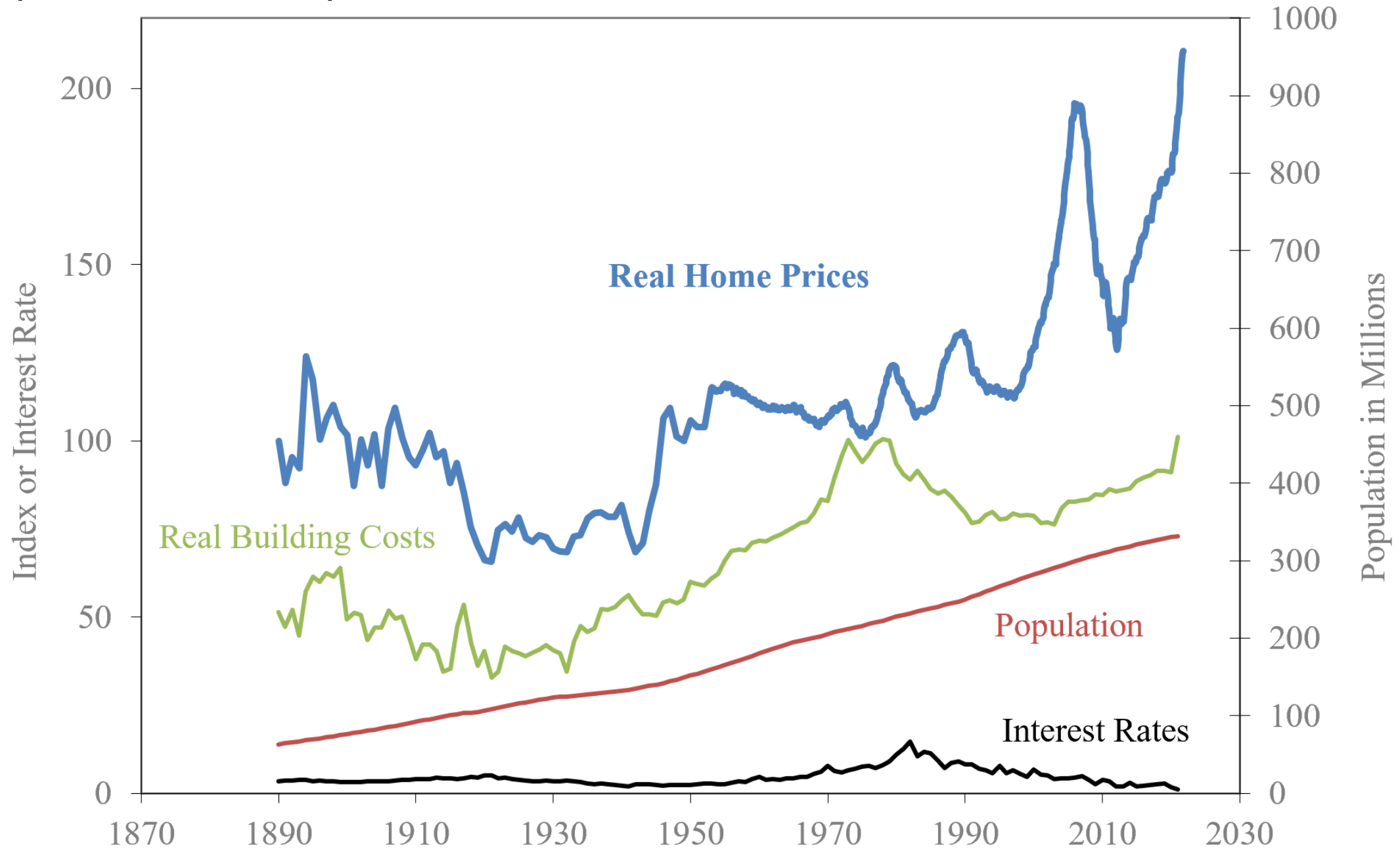
In Memory of Co-Author of our 2012 paper, Chip
Case (R), Inspiration for Our Work



Initial Inspiration for this Work 1986

- Karl E. Case, 1986. "[The market for single-family homes in the Boston area](#)," [New England Economic Review](#), Federal Reserve Bank of Boston, issue May, pages 38-48.

Updated Comparisons



www.homepricefutures.com

John Dolan

CME Case Shiller Home Price Index Futures CS 10-city

HCI

a/o 3/4/2022

Contract	Expires	Last*	Prices			Mkt % spot		Calendar Spreads		Implied YOY % Diff*		
HCI	Spot	297.67	Bid	Mid	Ask	Bid	Ask	Bid	Ask	Ask	Bid	
HCIK22	May '22	303.0	303.0	305.0	307.0	101.8%	103.1%					
HCIQ22	Aug '22	307.6	307.6	310.8	314.0	103.3%	105.5%					
HCIX22	Nov '22	308.6	308.6	312.1	315.6	103.7%	106.0%					
HCIG23	Feb '23	310.4	310.4	312.2	314.0	104.3%	105.5%					
HCIG24	Feb '24	319.0	319.0	322.5	326.0	107.2%	109.5%	G23/G24	-11.4	-8.6	2.75%	3.65%
HCIG25	Feb '25	324.0	324.0	329.5	335.0	108.8%	112.5%	G23/G25	-20.4	-13.6	2.15%	3.22%
HCIG26	Feb '26	328.4	328.4	335.8	343.2	110.3%	115.3%					

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* G23/G25 is annualized

* -Mid is shown where no CME contracts Last exists

a/o 3/4/2022

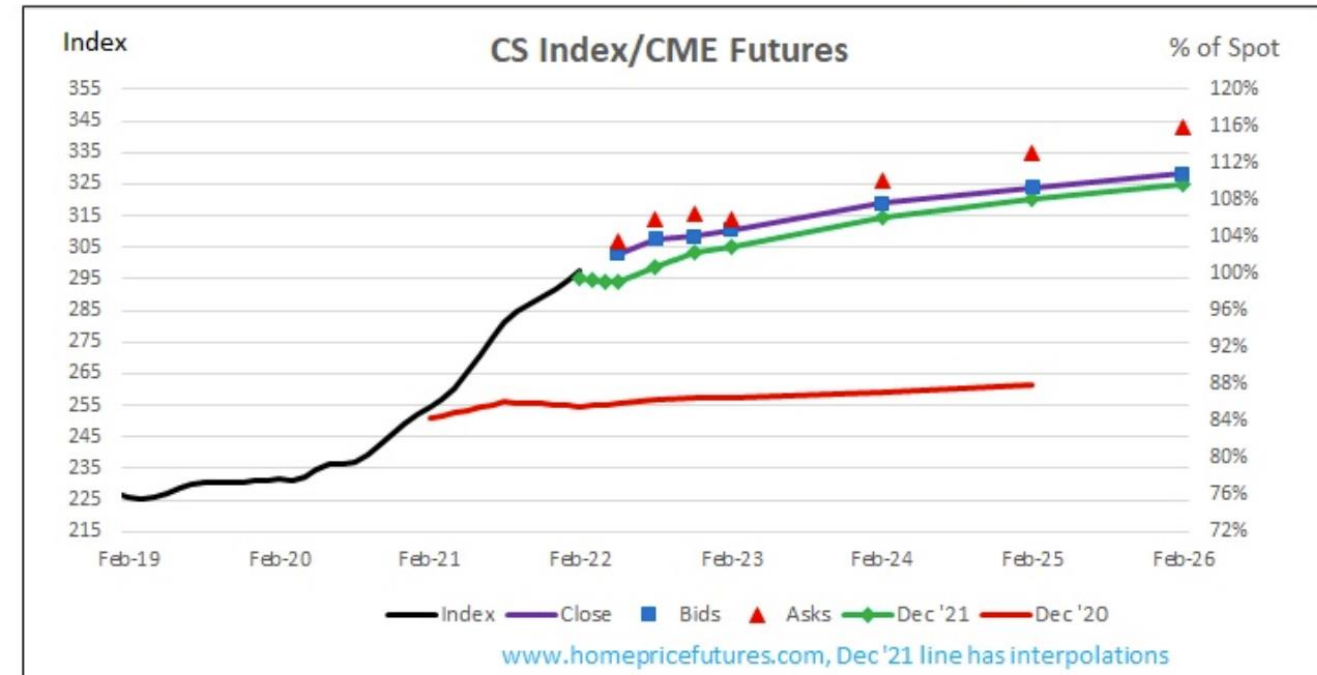


Figure 1. S&P/Case-Shiller Home Prices Indexes for the Four Survey Locations, 1987-2021

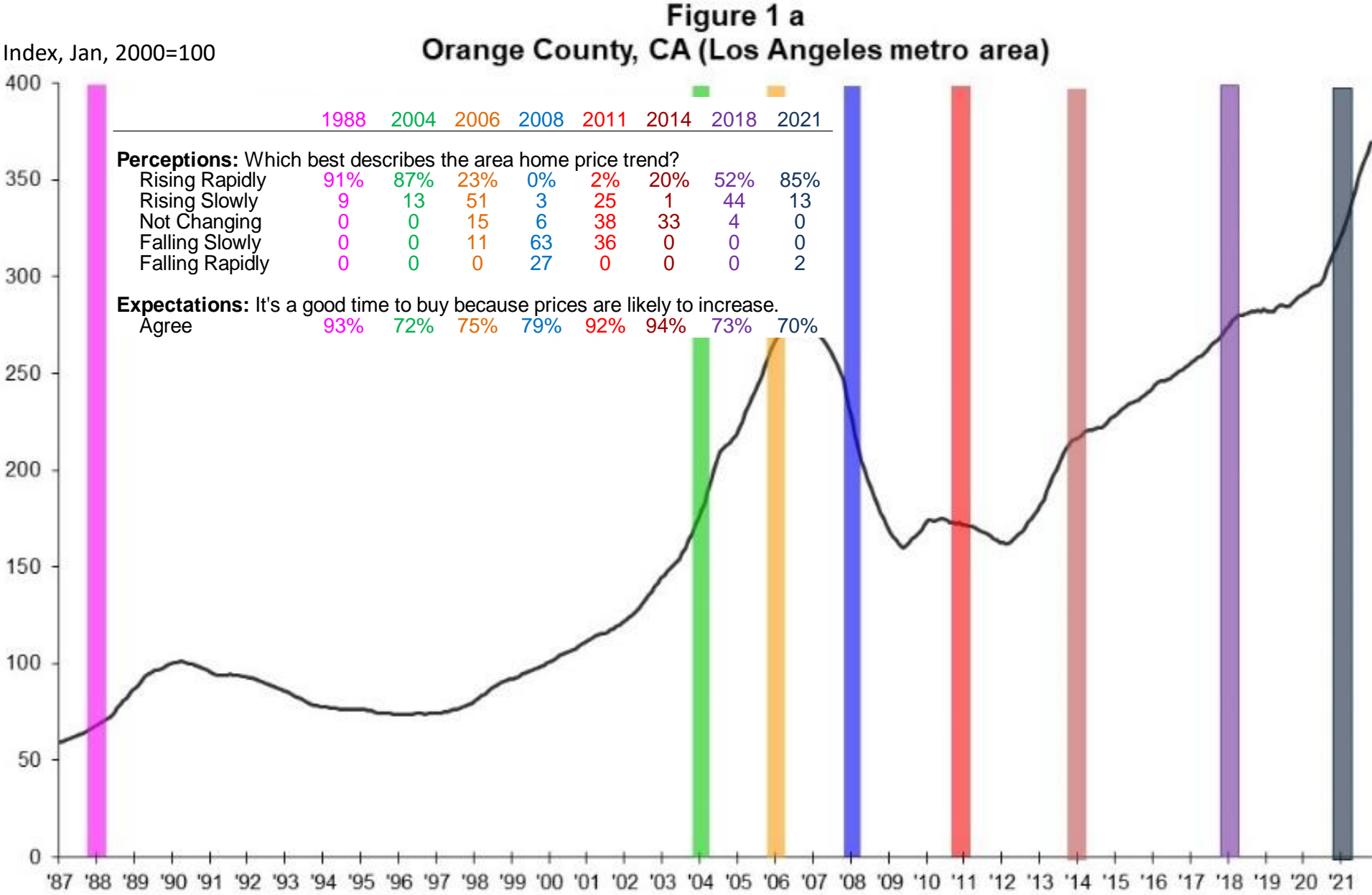


Figure 1b
Alameda County, (San Francisco metro area)

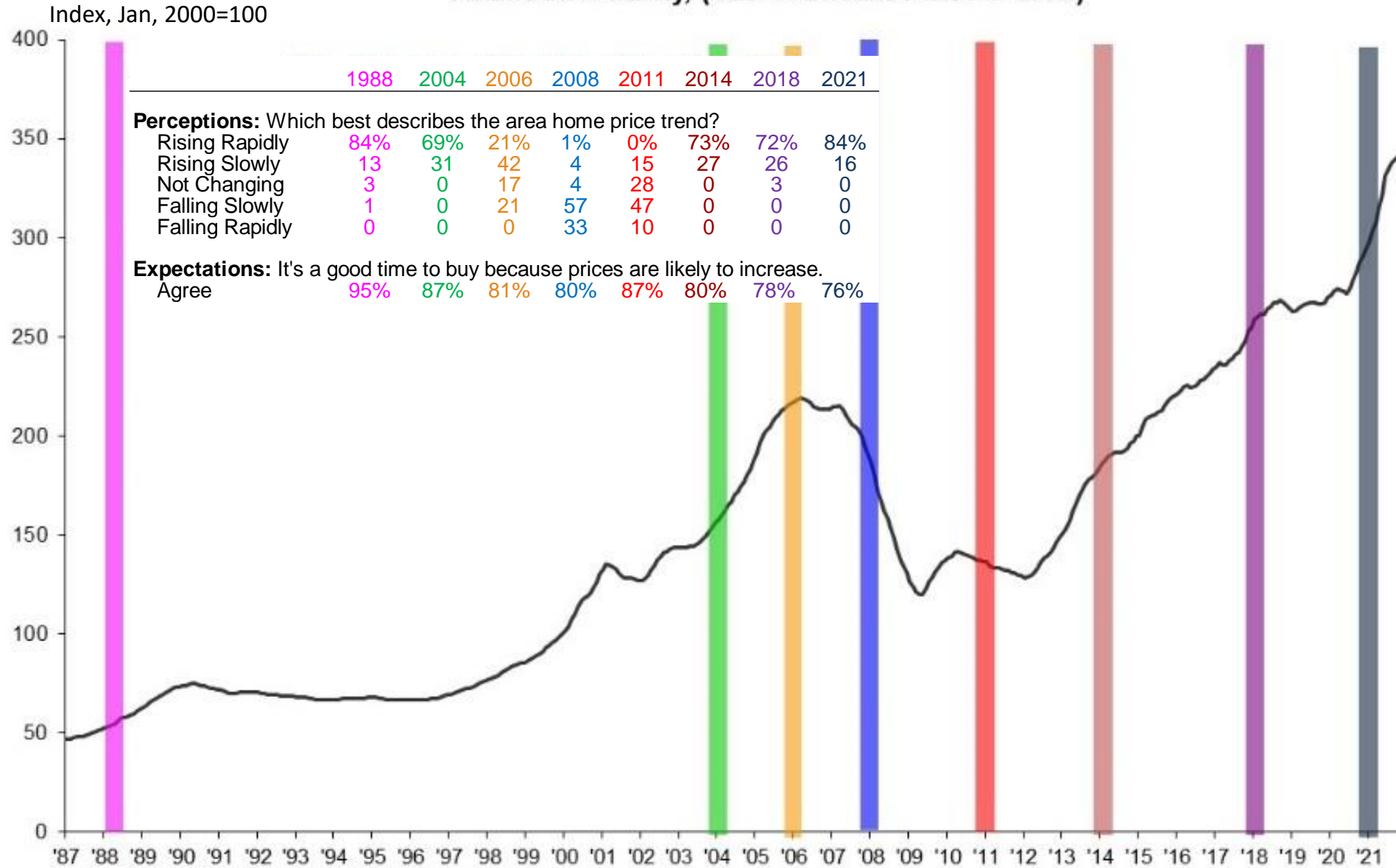


Figure 1c
Middlesex County, MA (Boston metro area)

Index, Jan, 2000=100

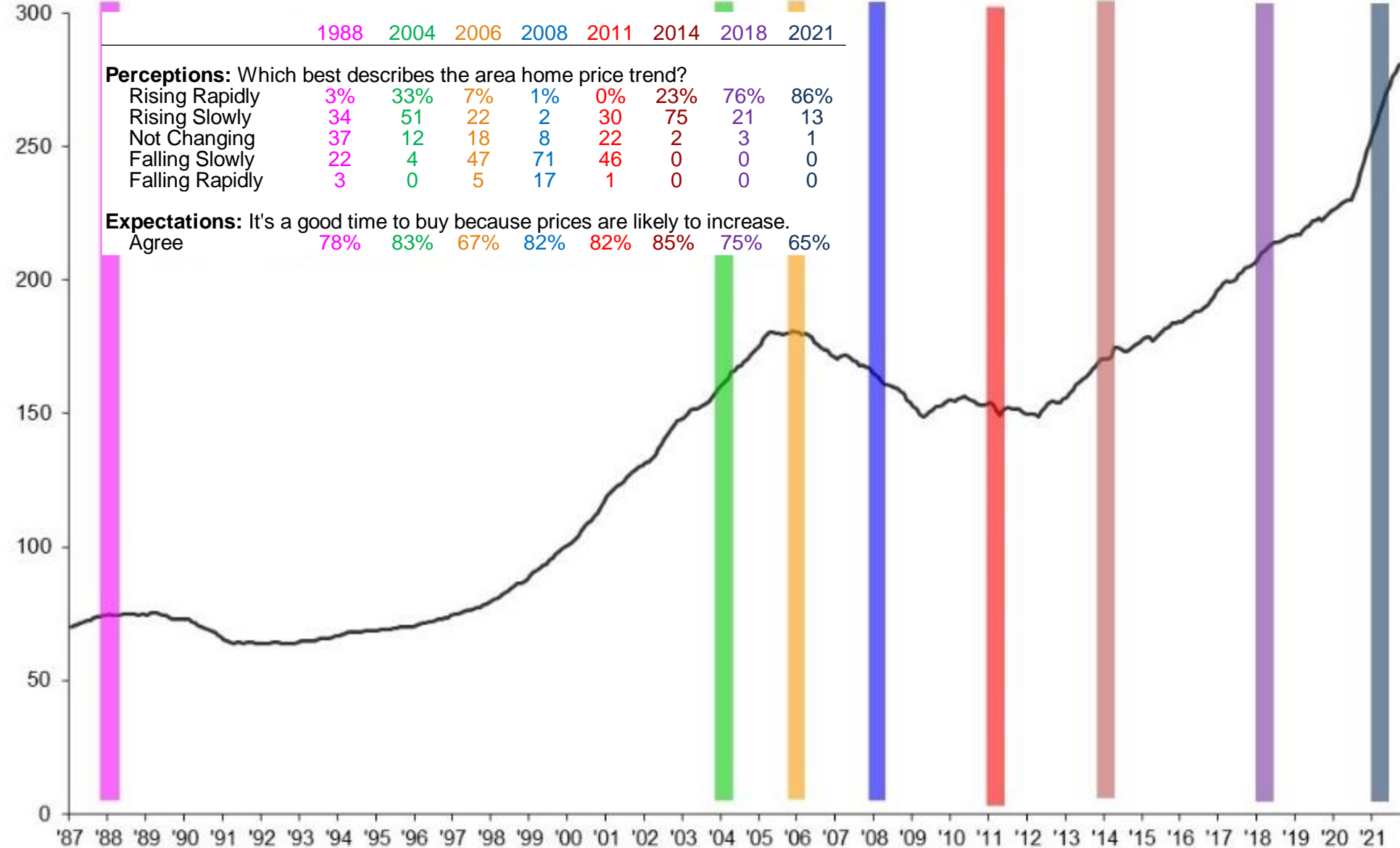


Figure 1d
Milwaukee County, WI

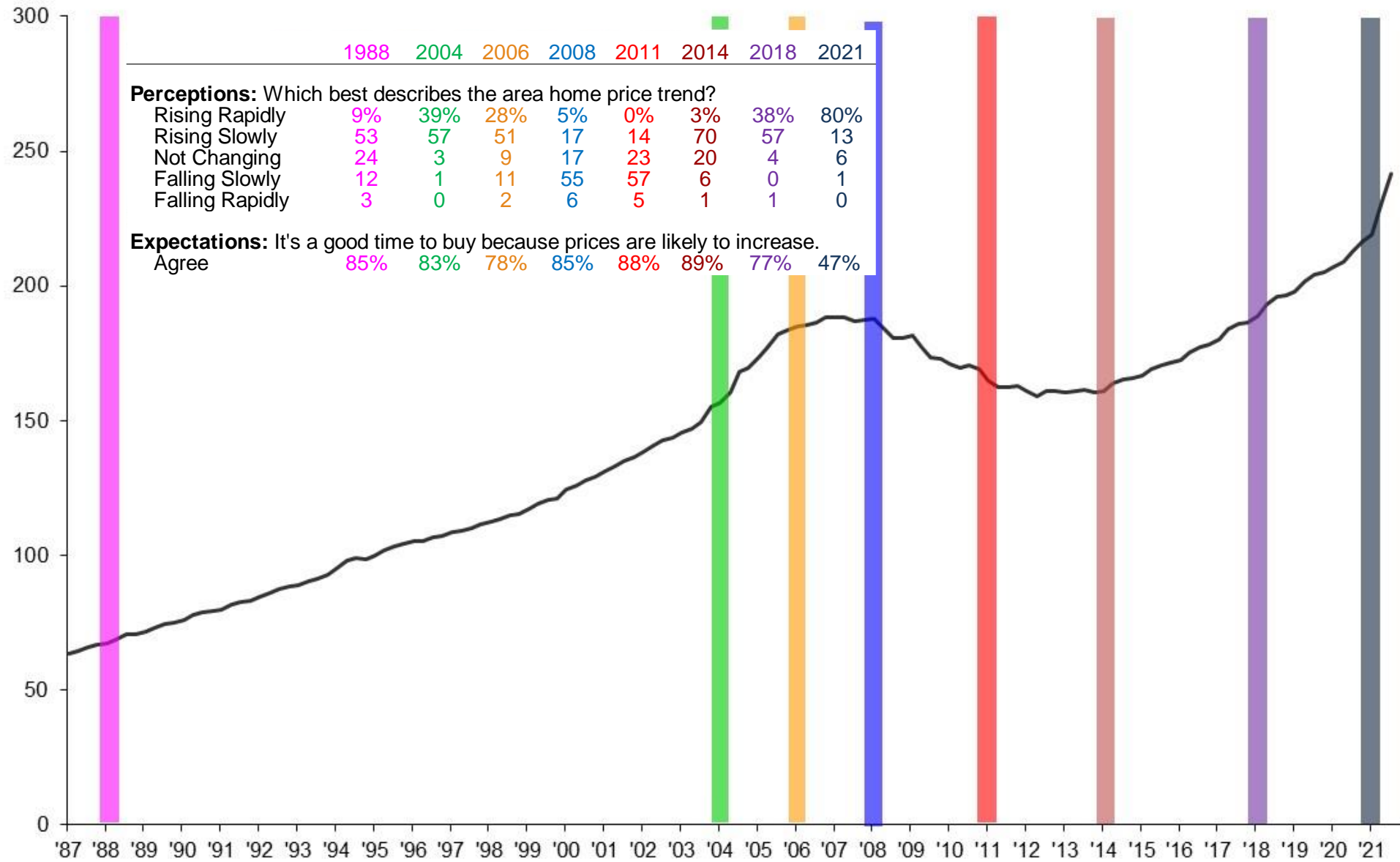
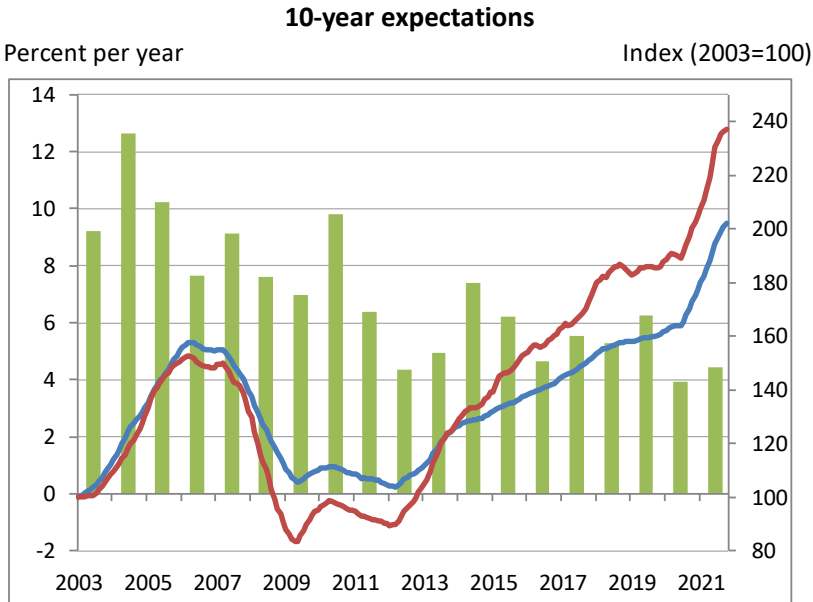
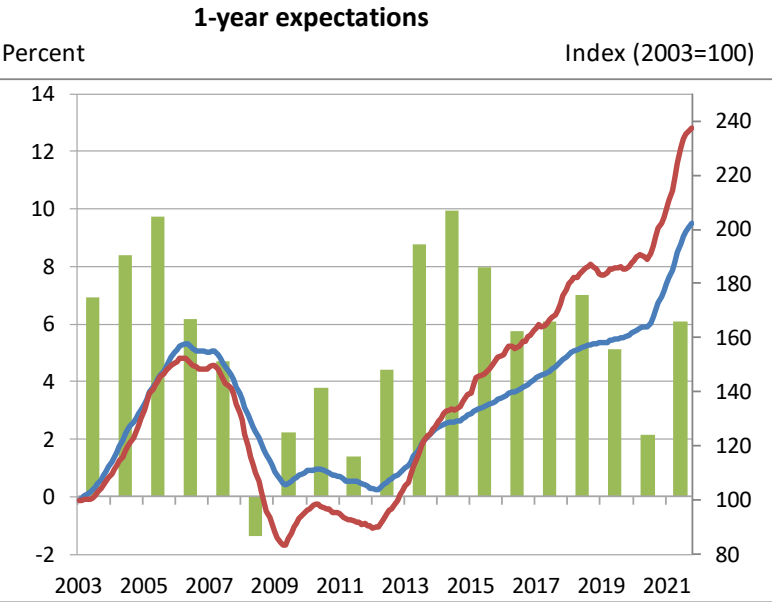


Figure 2: Expected Home Price Growth and Actual Home Prices in the Four Counties Surveyed, 2003-21

Alameda County



Expected growth - green bars (left scale)
Actual, U.S. - blue line (right scale)
Actual, local metro area, - red line (right scale)

Middlesex County

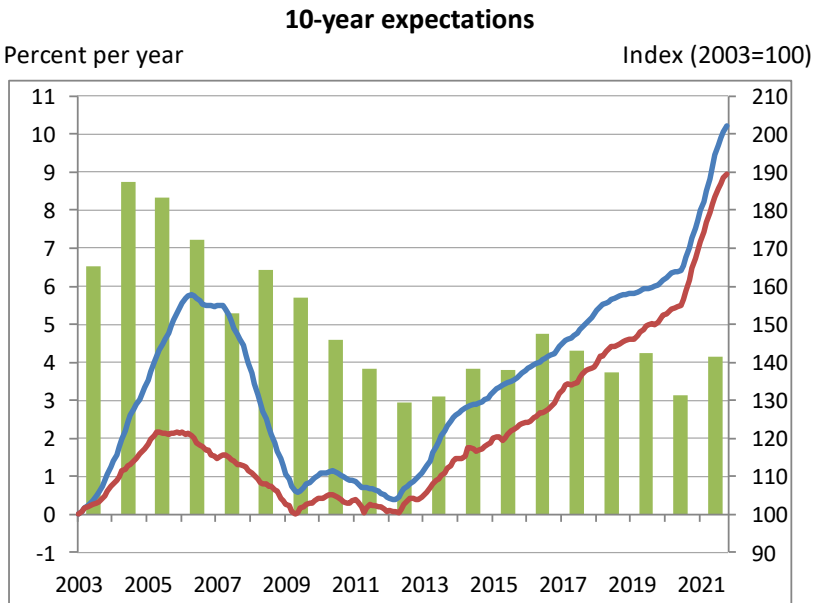
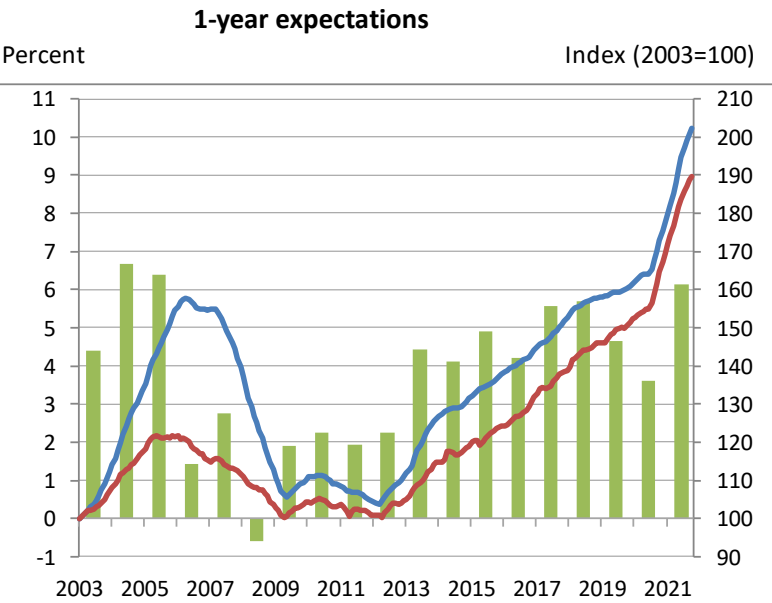
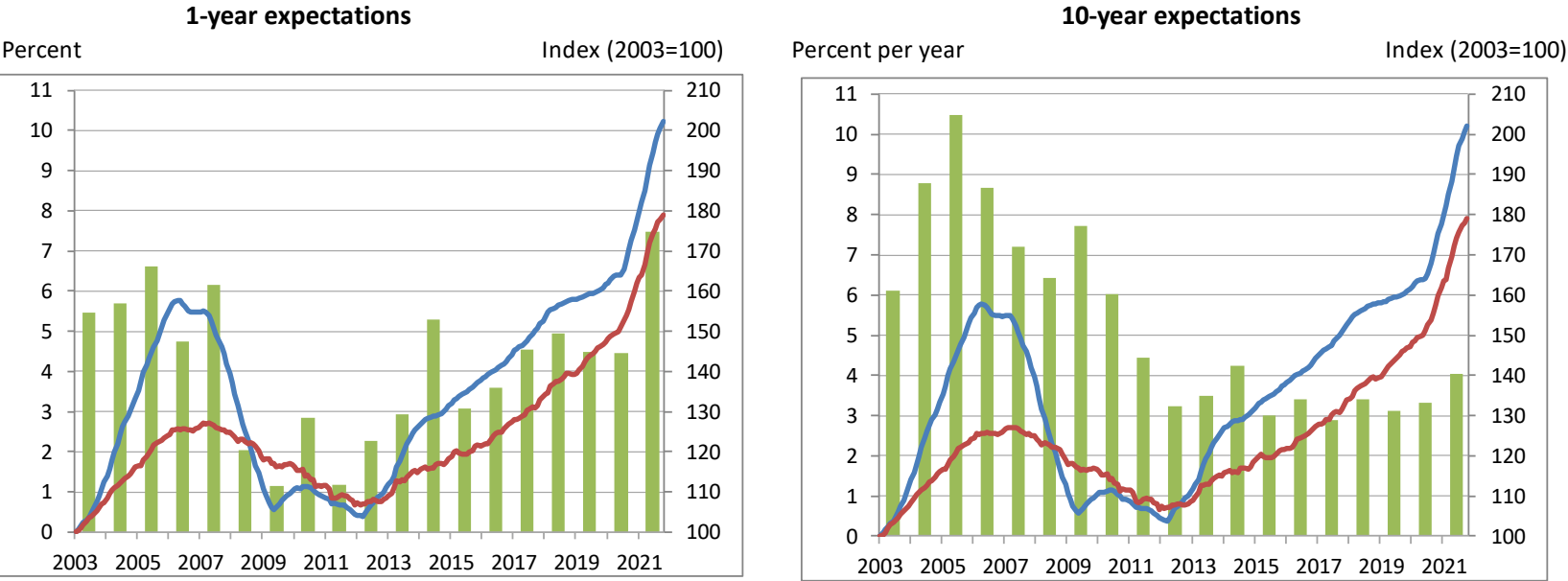


Figure 2: Expected Home Price Growth and Actual Home Prices in the Four Counties Surveyed, 2003-21

Milwaukee County



Expected growth - green bars (left scale)
Actual, U.S. - blue line (right scale)
Actual, local metro area, - red line (right scale)

Orange County

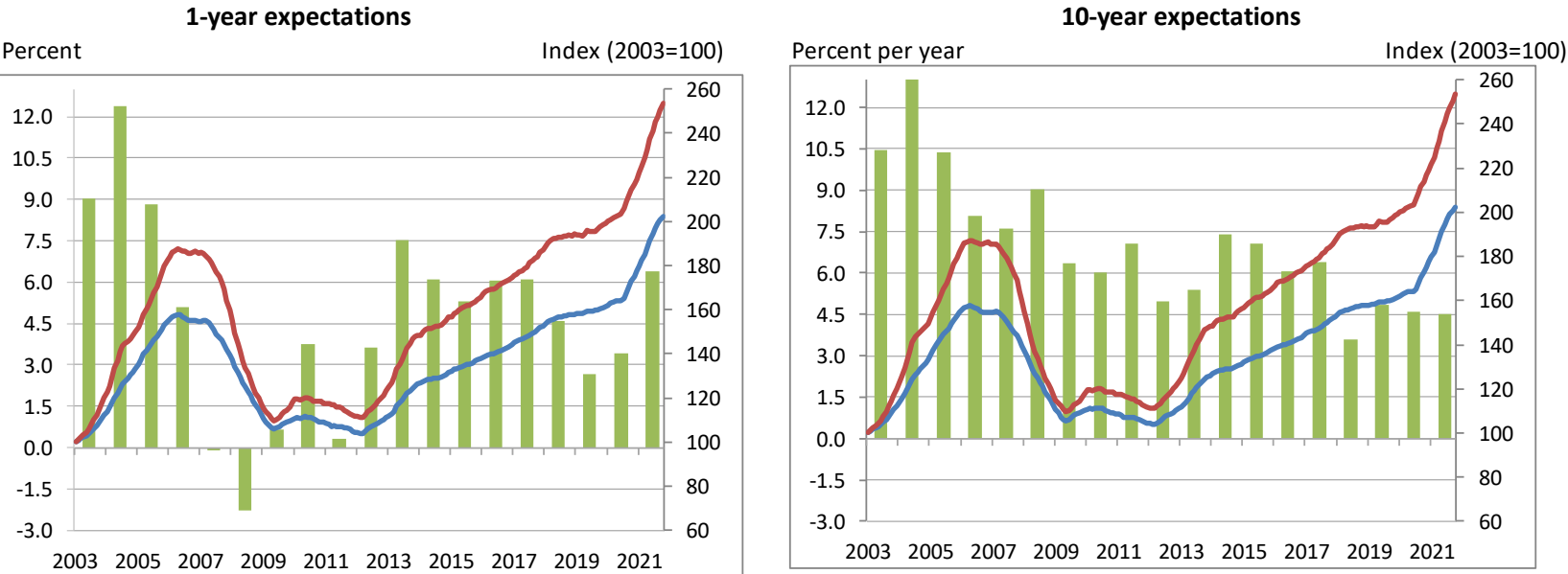


Table 5. Regressions Testing for Rational Expectations of One-Year Change in Home Prices^a

	Survey location				
	Alameda ^b	Middlesex	Milwaukee	Orange	
Independent Variable ^c	County	County	County	County	All
	Using S&P/CoreLogic/Case Shiller Home Prices Indexes				
Constant	-4.64 (6.41)	-2.39 (2.91)	-2.24 (2.88)	-6.68 (3.73)	-4.87 (1.94)
Trimmed-Mean Own-City Expected 12-Month Change (Q6)	1.84 (1.02)	1.57 (0.70)	1.32 (0.67)	2.64 (0.64)	2.07 (0.37)
Nobs	18	18	18	18	72
R Squared	0.17	0.24	0.19	0.51	0.31

Table 7. Regression of Expected One-Year Change in Home Prices on Lagged Actual Price Changes^d, 2003-2021

Independent Variable ^e	Survey location				All
	<i>Alameda</i> County	<i>Boston</i> County	<i>Milwaukee</i> County	<i>Orange</i> County	
Constant	4.53 (0.44)	2.85 (0.31)	3.25 (0.27)	3.20 (0.37)	3.49 (0.18)
Lagged Own-City Actual 12-Month Home Price Change (%)	0.18 (0.03)	0.25 (0.04)	0.27 (0.04)	0.24 (0.03)	0.22 (0.02)
Nobs	19	19	19	19	76
R Squared	0.67	0.67	0.71	0.84	0.72

a. Authors' regressions using data from S&P/CoreLogic/Case-Shiller Home Price Indices 2004-2021 and data from the homebuyer surveys 2003–2020.

b. Each column reports results of a single regression for a location.

c. The independent variable is the expected future 12-month price change (10% trimmed mean) from our surveys in the current year.

The dependent variable is the actual percentage home price change in the city from the second quarter of the year to the second quarter of the following (future) year.

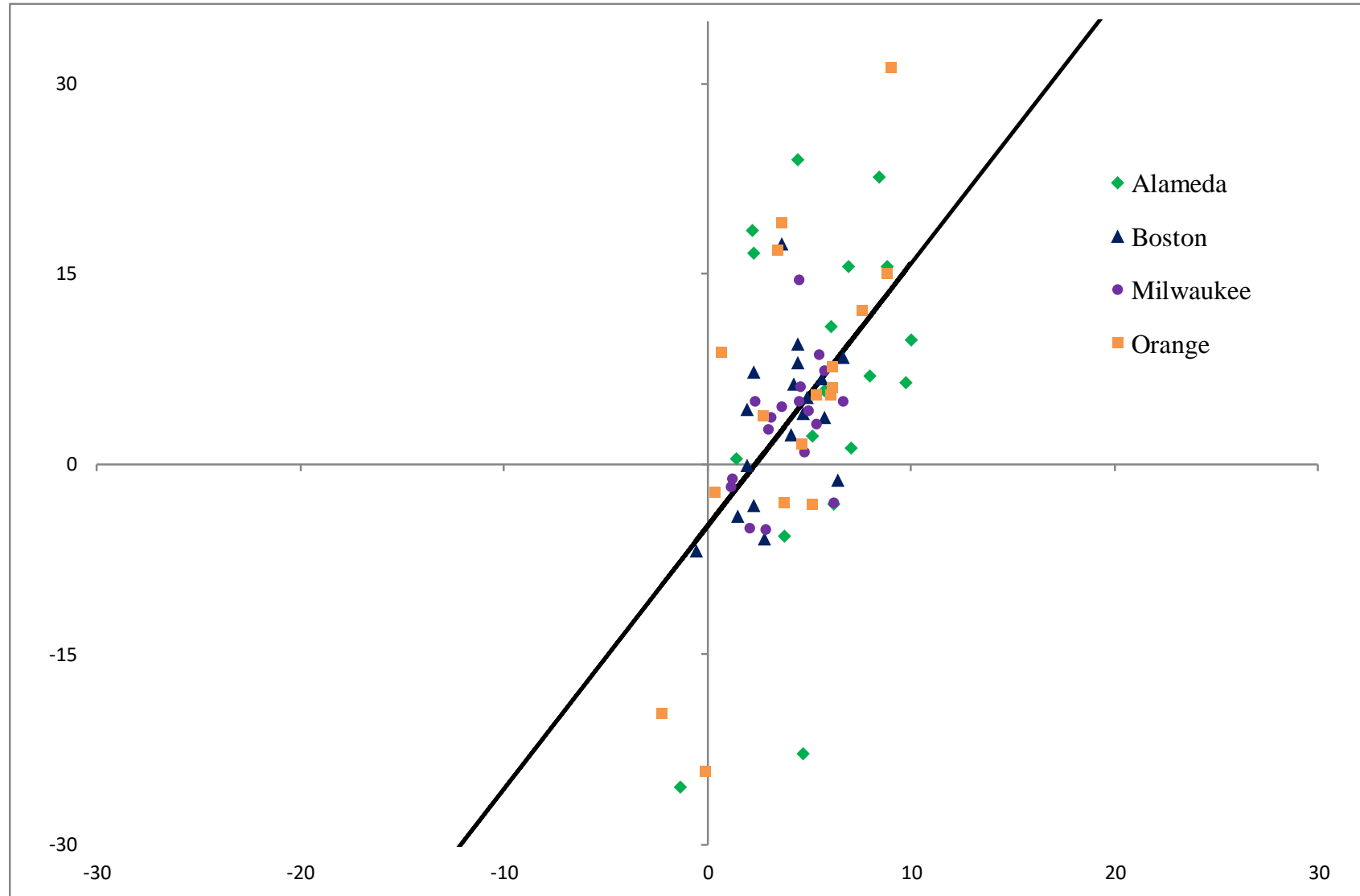
d. Authors' regressions using data from S&P/CoreLogic/Case-Shiller Home Price Indices and data from our the homebuyer surveys 2003–2020.

e. The independent variable is the actual percentage home price change in the city from the second quarter of the previous year to the second quarter of the current year.

The dependent variable is the trimmed mean of the expected 1-year change in home values in the indicated location.

Figure 3a: Expected vs. Actual Change in Value by Location

Actual change in Home Prices ^b (percent)



Expected change for the following year ^c (percent) - 10% Trimmed Mean

Source: S&P/Case-Shiller, and authors' calculations from survey data.

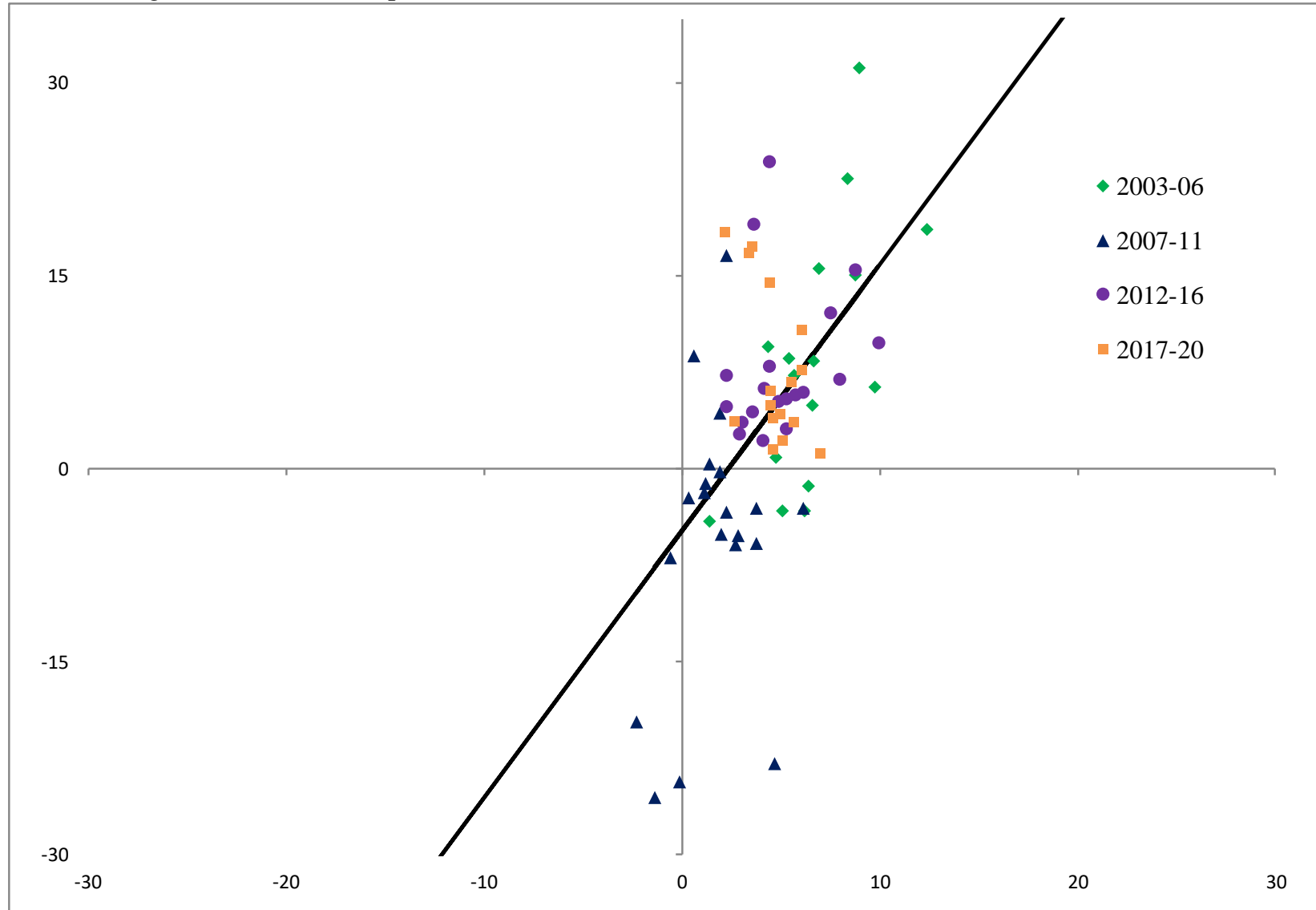
a. Each observation represents one of the four survey locations in a single year.

b. Actual change in metro-area home prices from the second quarter of the survey year to the second quarter of the next year.

c. Trimmed mean of respondents' expected change in home prices for the next year.

Figure 3b: Expected vs. Actual Change in Value by Time Period

Actual change in Home Prices^b (percent)



Expected change for the following year^c (percent) - 10% Trimmed Mean

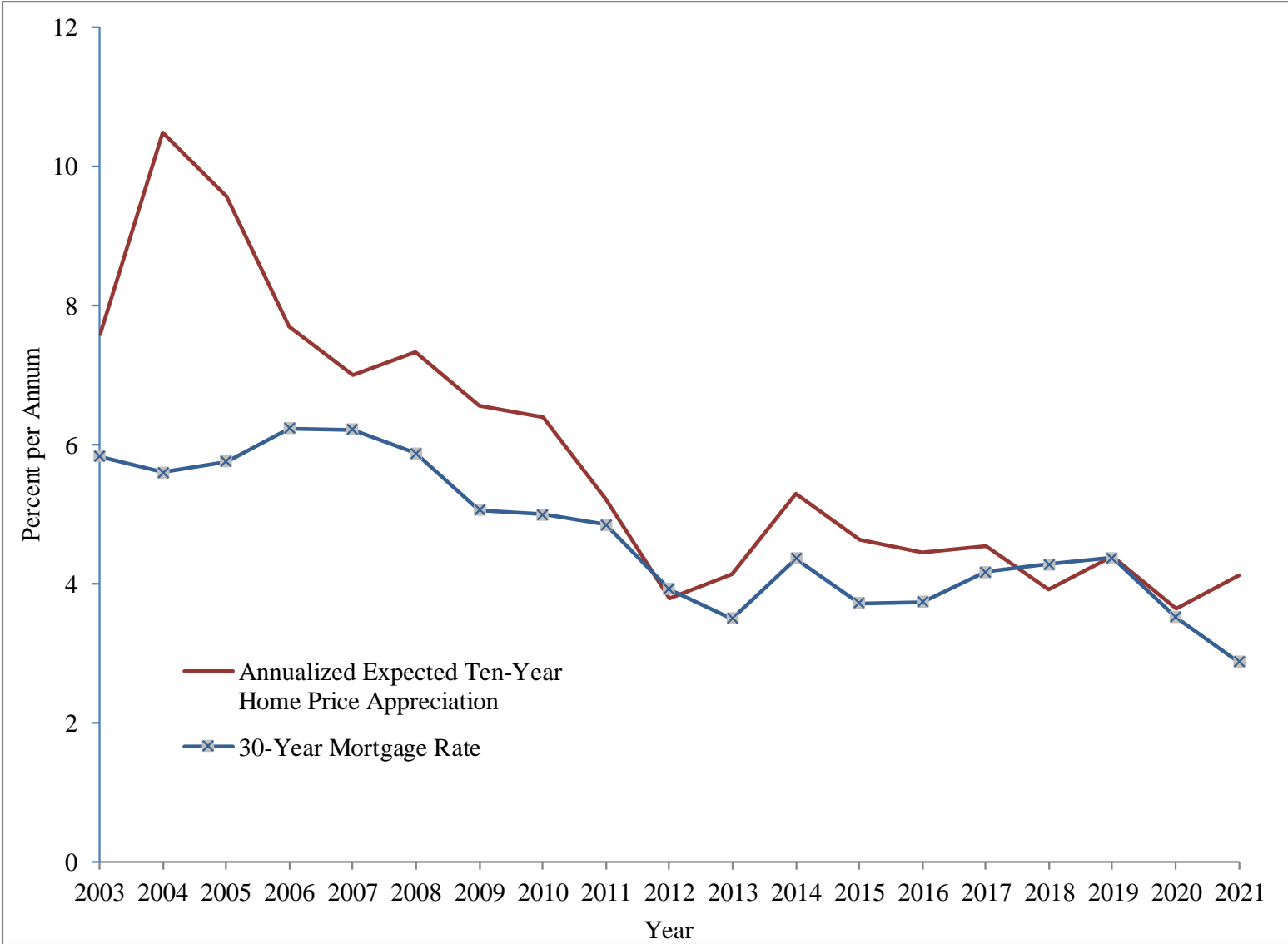
Source: S&P/Case-Shiller, and authors' calculations from survey data.

a. Each observation represents one of the four survey locations in a single year.

b. Actual change in metro-area home prices from the second quarter of the survey year to the second quarter of the next year.

c. Trimmed mean of respondents' expected change in home prices for the next year.

Figure 4: Ten-Year Annualized Home Price Expectations and Thirty-Year Mortgage Rate, 2003-21



Source: Authors' calculations annualized ten-year expectation is trimmed mean of responses to question in authors' survey.
Average of trimmed means for all survey respondents. Freddie Mac's Primary Mortgage Market Survey.

Figure 5: Expected One-Year and Annualized Ten-Year Value Change by County

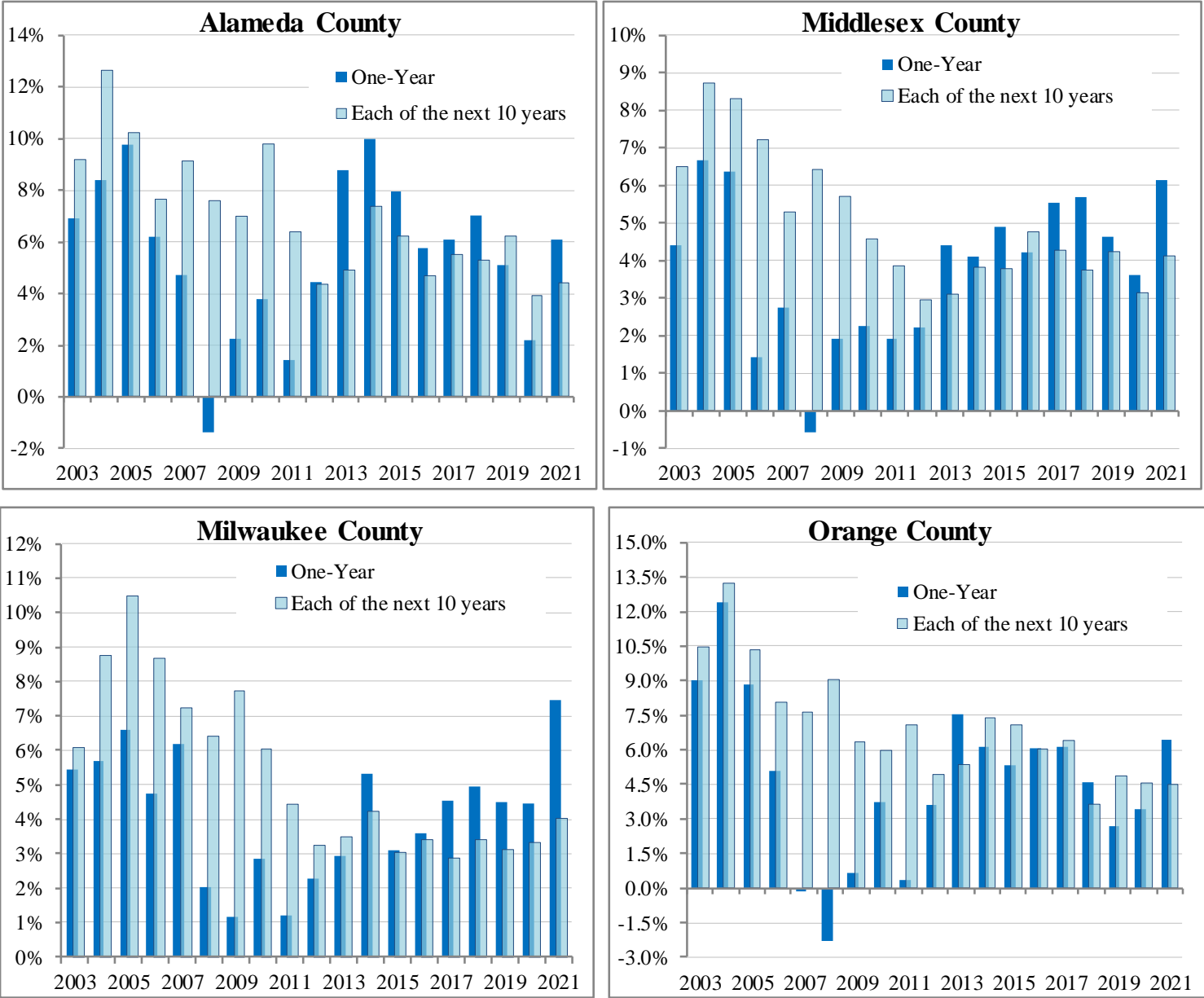
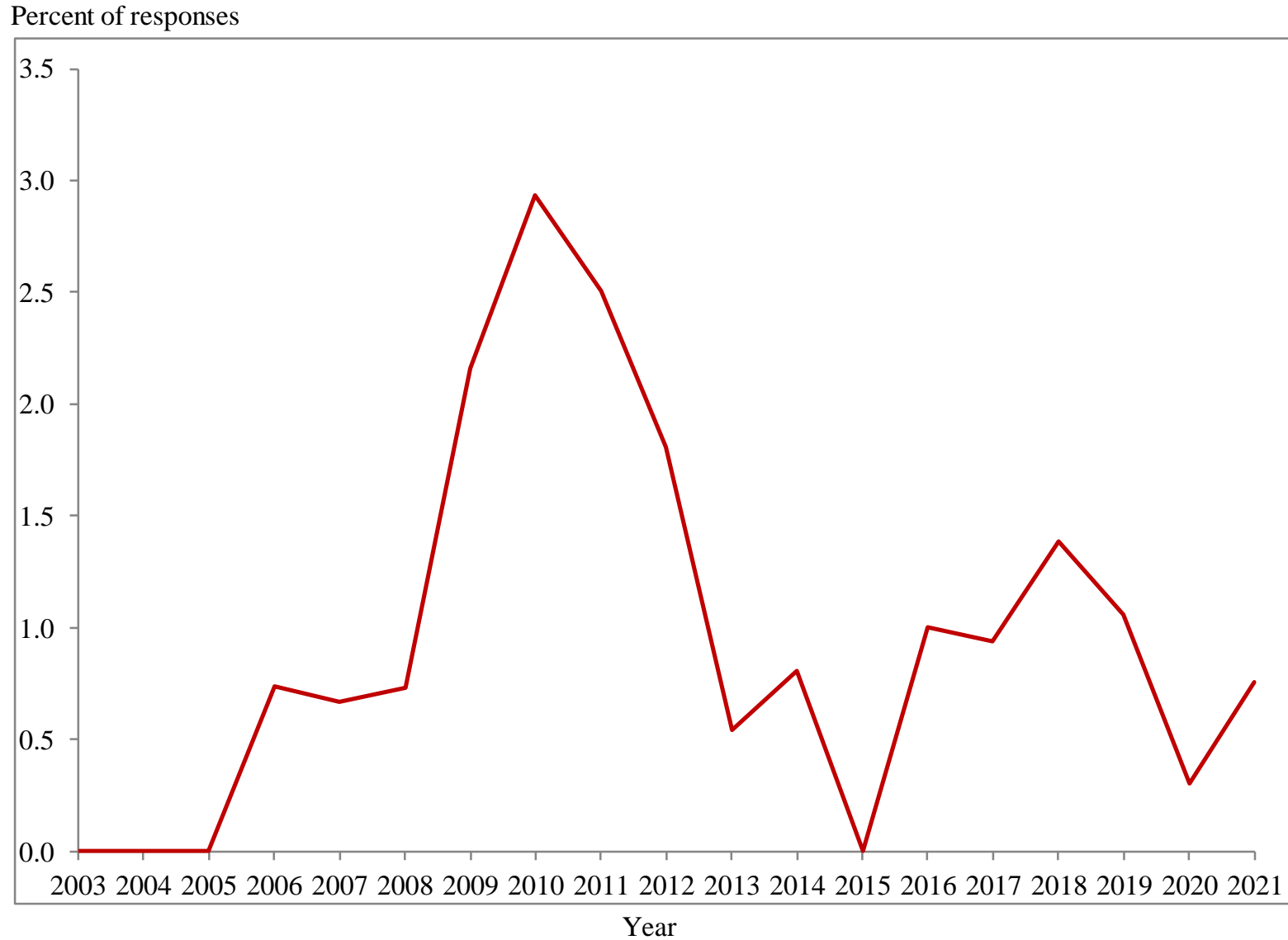


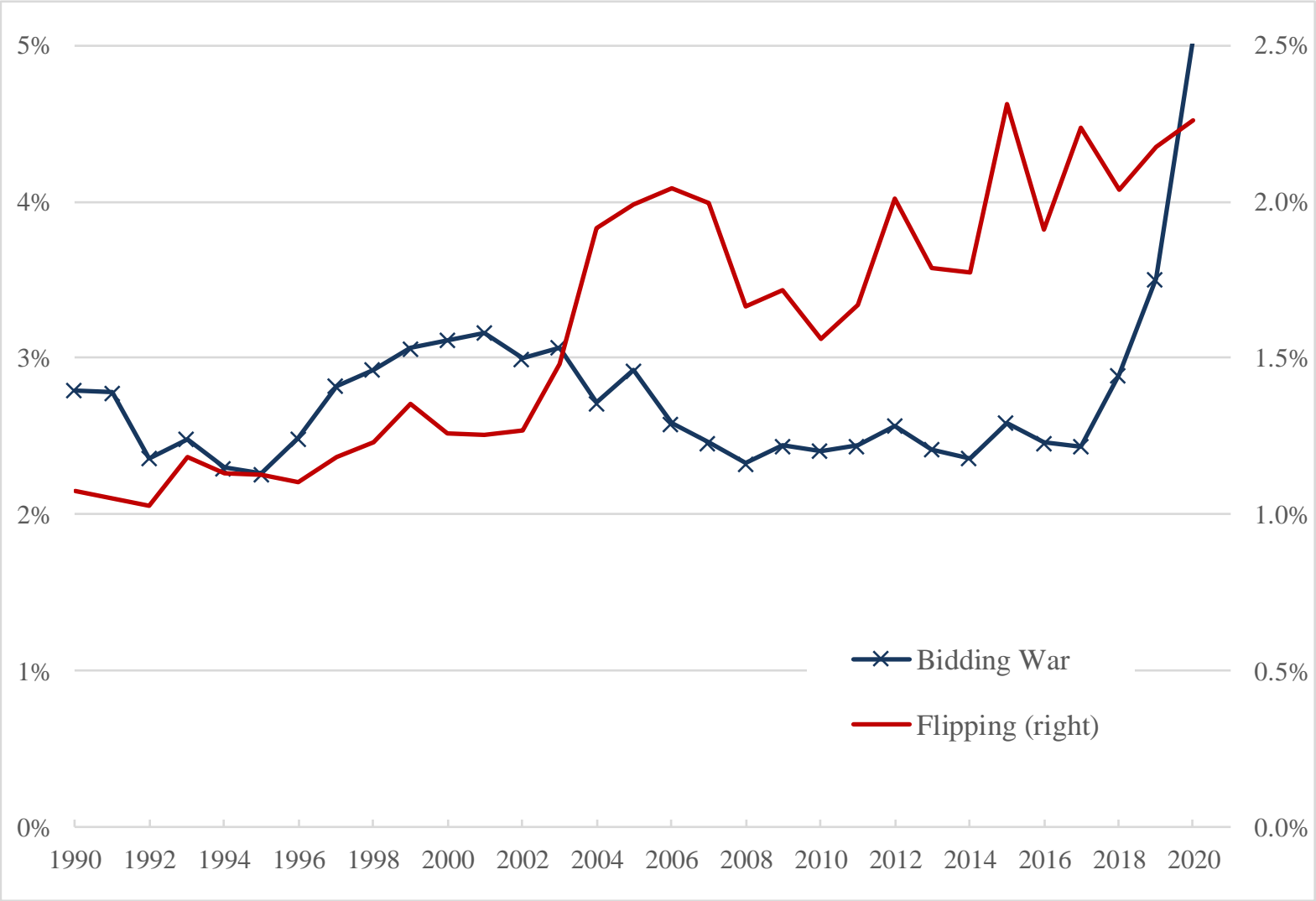
Figure 6: Appearance of "Housing Bubble" in Homebuyers Survey Responses, 2003-21^a



Source: Authors' calculations from homebuyer survey data.

a. Share of respondents who used the words "housing bubble" anywhere in their answers to the homebuyer survey.

Figure 7: ProQuest Web Search for Bidding War^a and House Flipping^b, 1991-2021

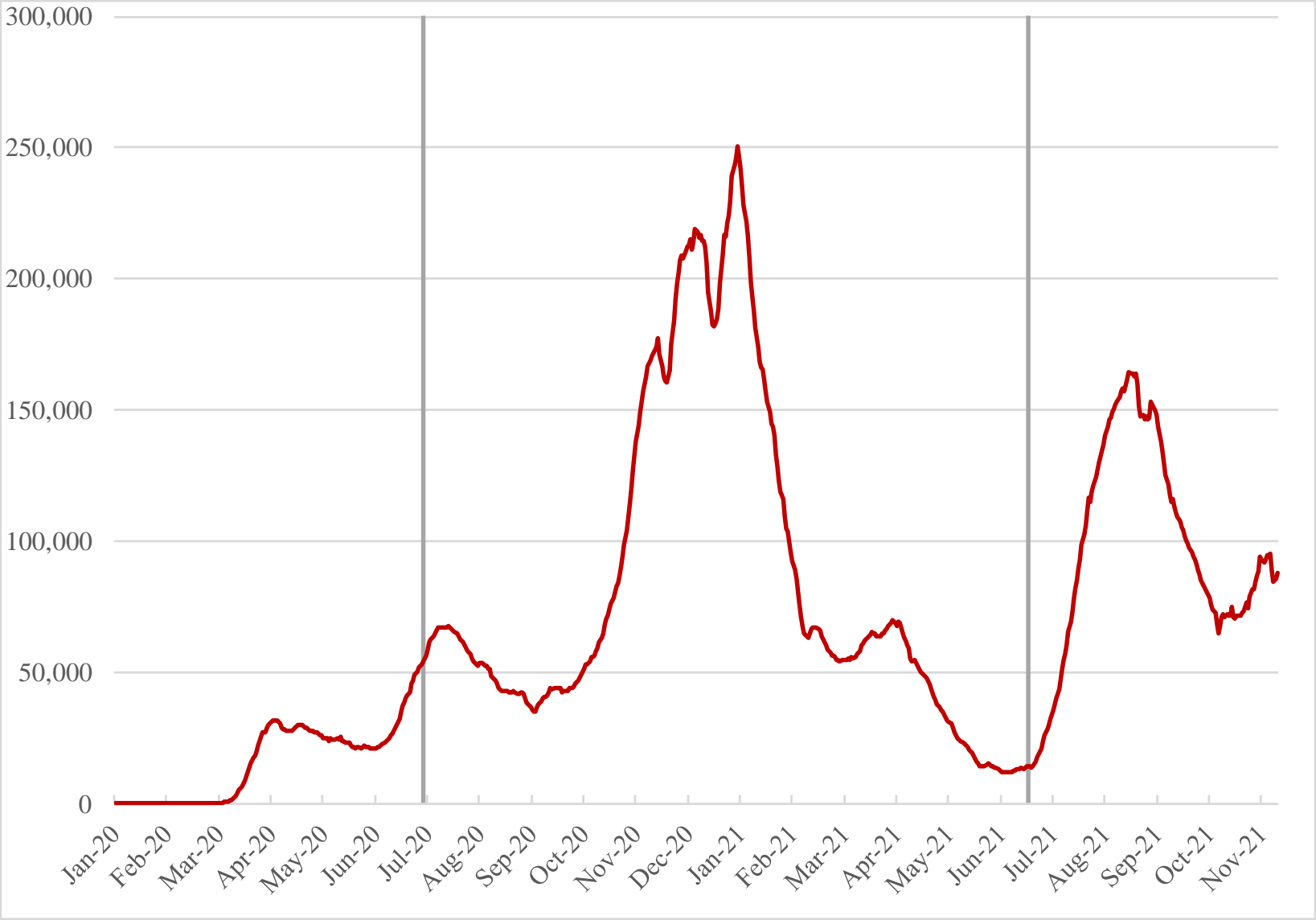


Source: <http://www.proquest.com>: ((home* or hous*) and (real estate*))

a. and (bid* war*)

b. and flip*

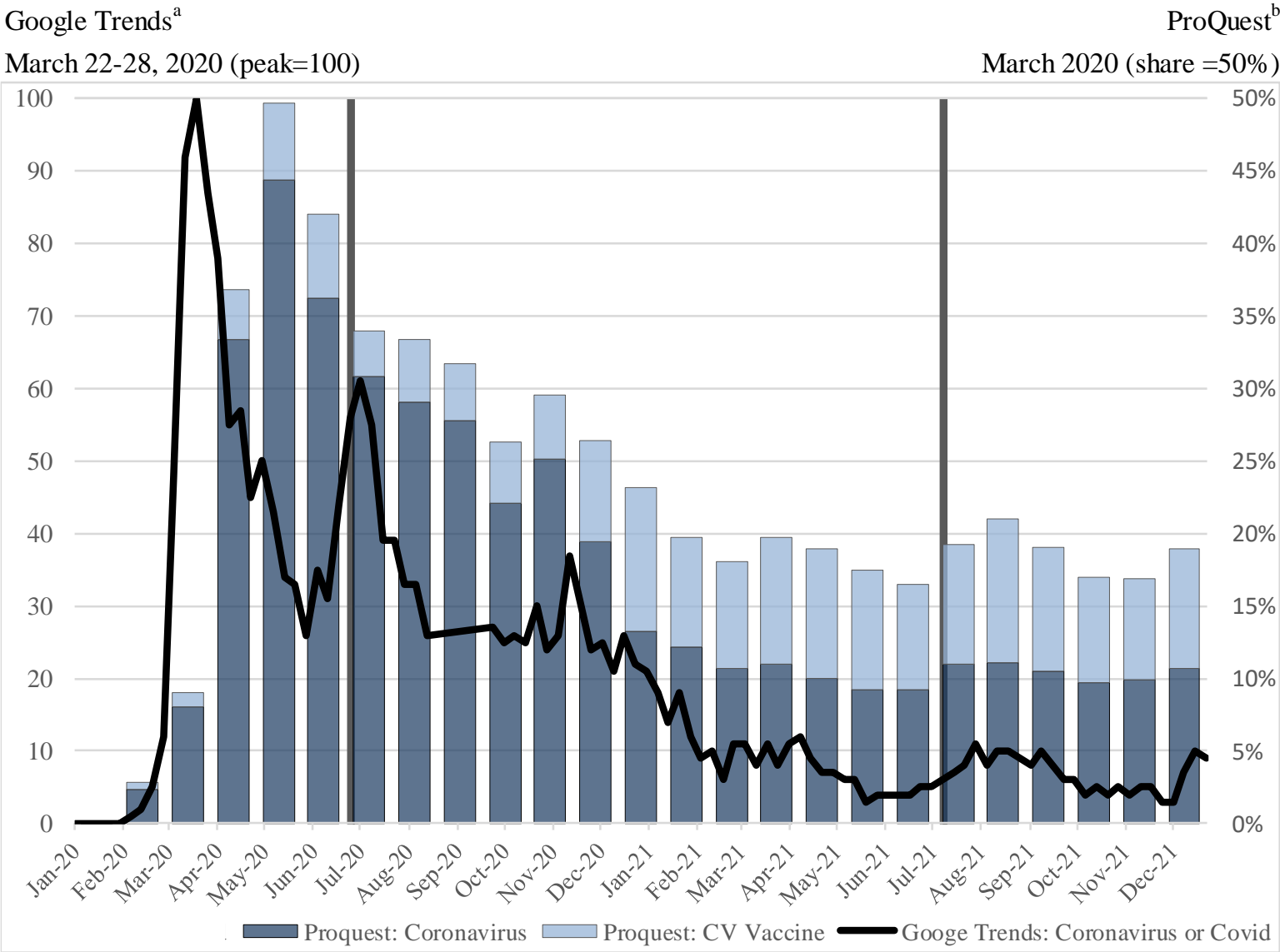
Figure 8: Number of Covid-19 Cases Reported per 100,000 Population^a and Survey Mailing Dates



Source: US Centers for Disease Control and Prevention

a. 7-day moving average

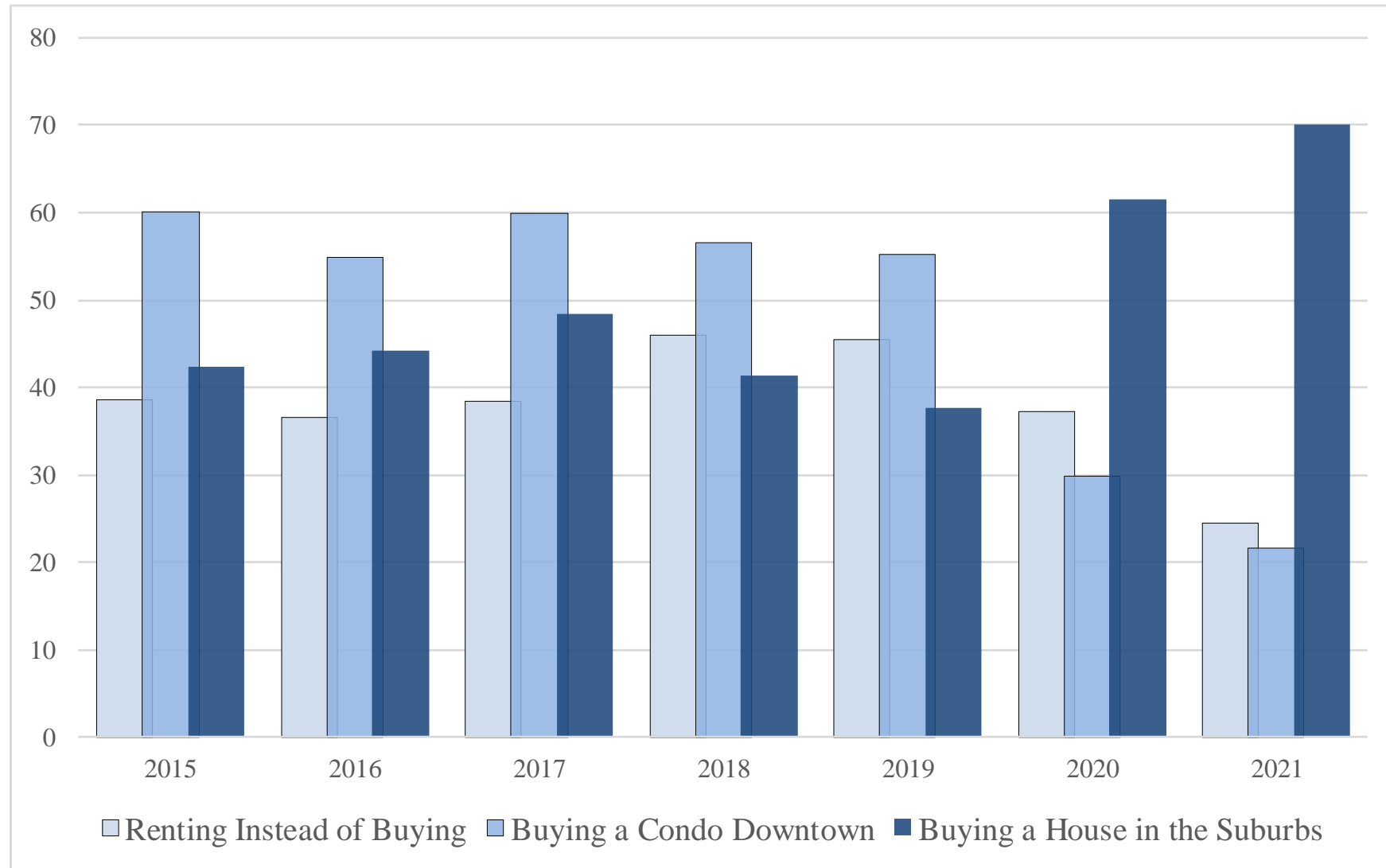
Figure 9: Google Trends Index of Searches and ProQuest Share of Searches for "Coronavirus" or "Covid"



a: Google Trends (<https://trends.google.com/trends/explore?date=all&geo=US&q=coronavirus%20or%20covid-19>)

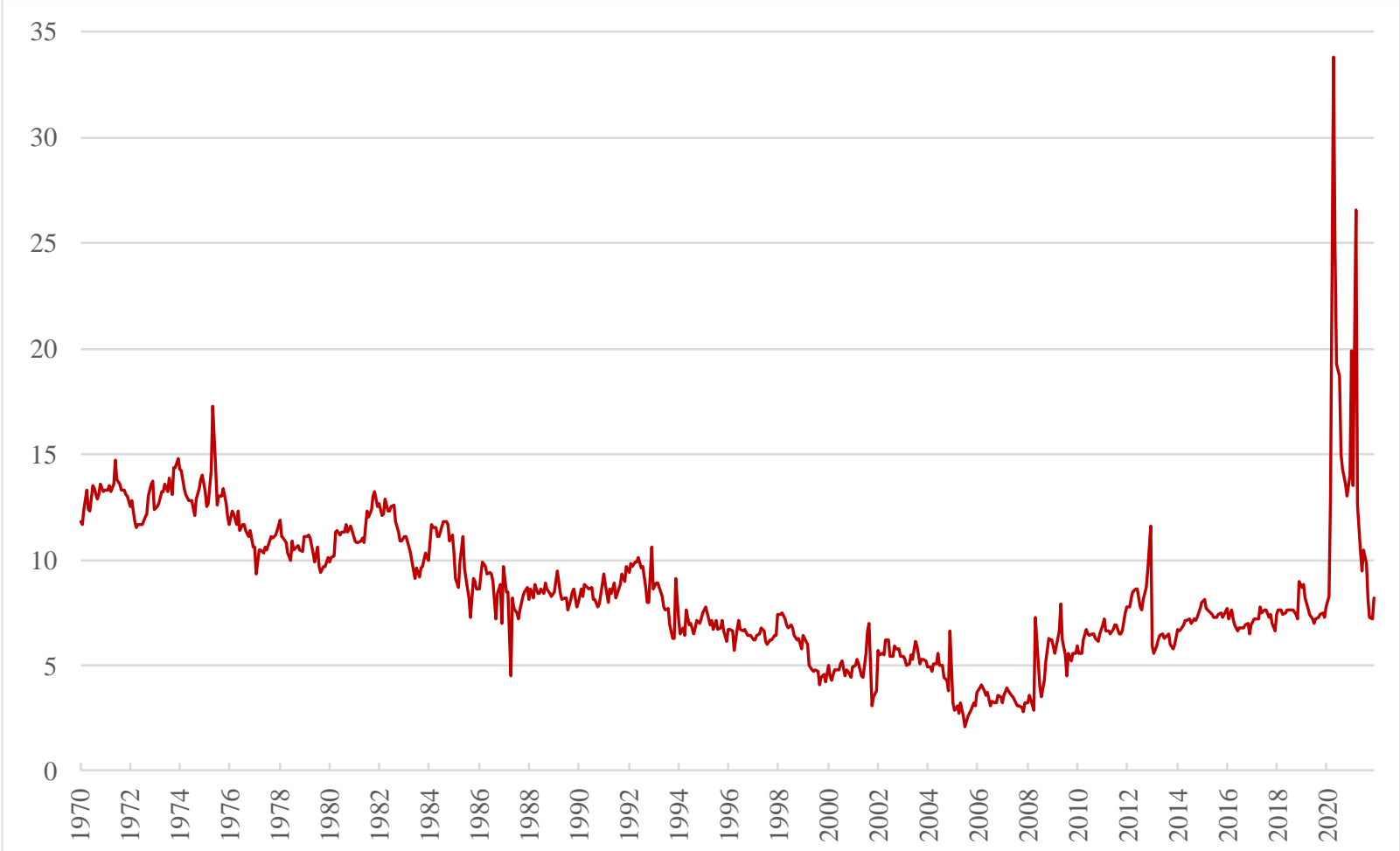
b: ProQuest (<https://www.proquest.com> (coronavirus* or covid*) / (coronavirus* or covid*) and (vaccine*))

Figure 10: Survey Questions 33-35 "I Think People are Becoming More Favorable to"...



Source: Authors' surveys Questions 33-35.

Figure 11: Personal Savings Rate, Percent, Monthly, Seasonally Adjusted Annual Rate



Source: U.S. Bureau of Economic Analysis

Covid Related Changes in Homebuyers ??.

2020

- At the start of Covid – Cases spike
- Recent spike in unemployment rate
- Respondents pessimistic about economy
- HPI growth relatively stable @ 5%
- One (3.4%) and Annual 10-year (3.7%) expectations lowest since 2012

2021

- In the midst of Covid, cases had fallen
- Vaccines available. 70% one dose / 60% fully vaccinated
- Unemployment rate steadily falling
- Respondents optimistic about economy/housing
- Real HPI gains approaching 20%
- One-year expectations (6.3%) highest since 2005, annual 10-year (4.1%) largest gap recorded

2020				2021		
Agree Strongly	Agree Somewhat	Do Not Agree		Agree Strongly	Agree Somewhat	Do Not Agree
23.2%	16.6%	60.2%	I/we chose to purchase a home further from the city center due to the Covid-19 pandemic.	7.4%	9.3%	83.3%
39.5%	42.6%	17.9%	My/our outlook on the economy has worsened since I/we purchased this home.	0.8%	17.1%	82.2%
13.6%	41.5%	44.9%	My/our expectations for the housing market have worsened since I/we purchased this home.	4.3%	16.1%	79.6%
4.4%	27.2%	68.4%	The impact of the coronavirus on the economy will be short lived with a recovery beginning by fall.	16.6%	51.4%	32.0%
44.1%	43.4%	12.5%	The effects of the coronavirus on the economy will continue for two or more years.	30.2%	49.8%	20.0%
48.1%	41.6%	10.3%	Among the general population, the desire to work from home is unlikely to go away.	62.2%	33.2%	4.6%
16.6%	44.1%	39.4%	Among the general population, the desire for social distancing won't go away for many years.	5.1%	34.2%	60.7%
21.4%	54.4%	24.2%	The coronavirus experience will raise suburban or rural home values relative to center-city values.	20.6%	54.5%	24.9%
			Fewer homes were on the market and potential sellers were reluctant to have people enter their homes to view them.	28.9%	45.7%	25.4%

What will happen in 2022? Most homebuyers have already purchased

Covid Related Changes in Homebuyers ??.

2021 Responses

2003-2021

First-time homebuyers (60%)

Paid over asking price (52%)

Good time to buy a home because prices are likely to rise (64%)

Most heavily reliant on media (63%)

Price trends - highest share rising rapidly (84%)

Frequently Discussing housing market conditions with friends (48%)

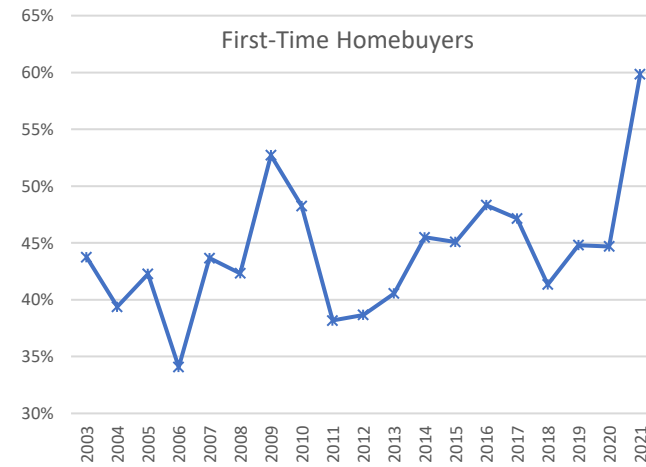
2017/2018 – 2021

Share respondents 35-44 (35%) – 60% FTHB / respondents 25-44 (68%)

Trade Up Size (41%)

Most with one or more offers rejected (54%)

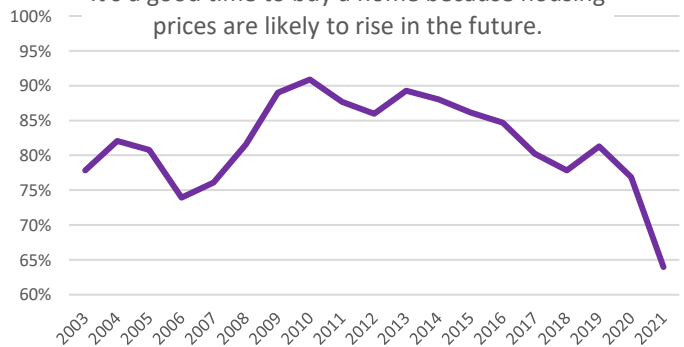
First-Time Homebuyers



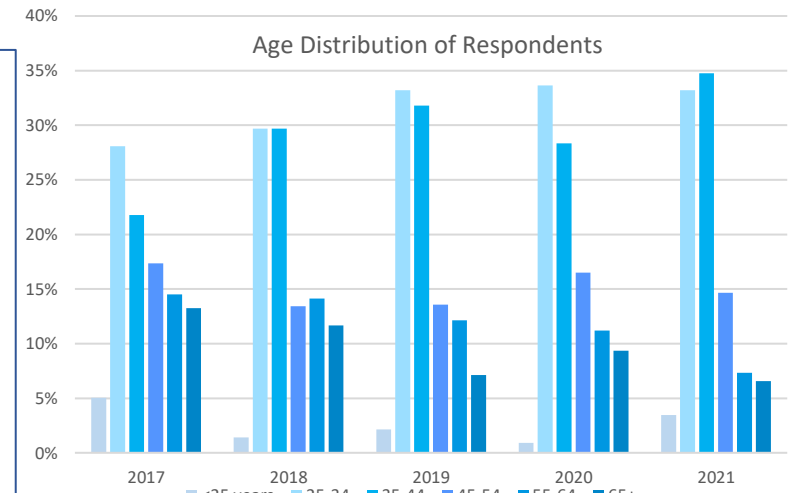
Paid Above Asking Price



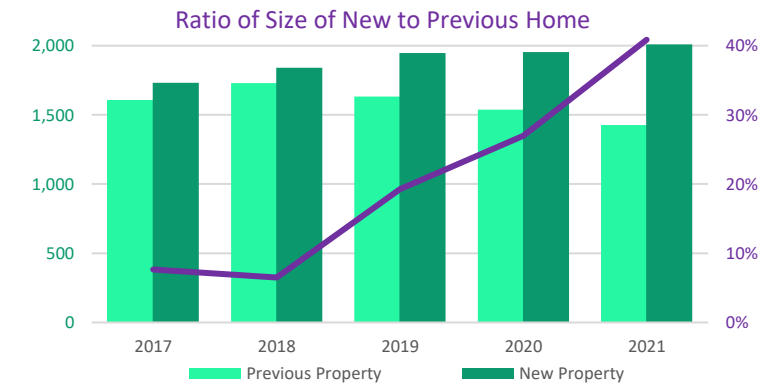
It's a good time to buy a home because housing prices are likely to rise in the future.



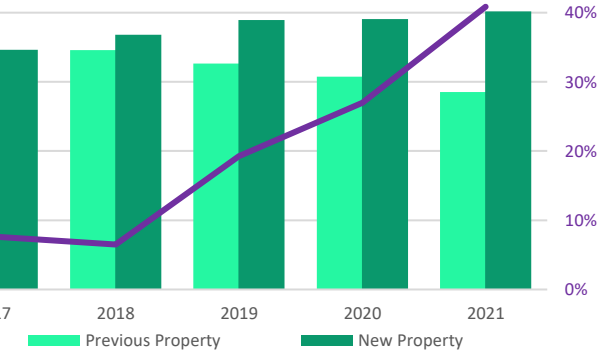
Age Distribution of Respondents



Average Size of Home (sf)



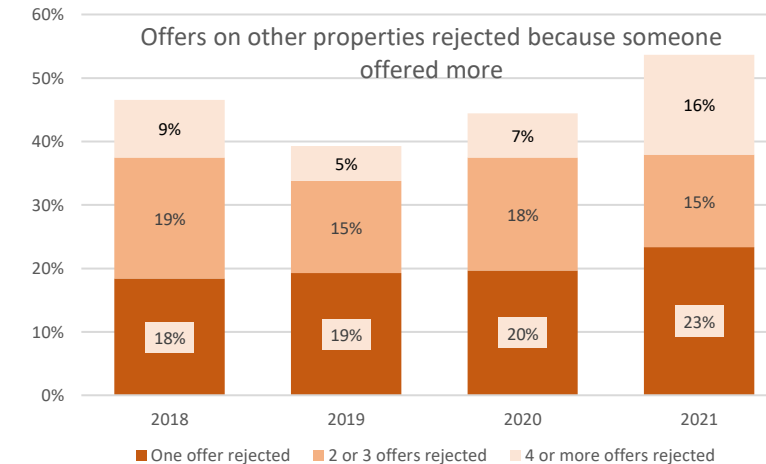
Ratio of Size of New to Previous Home

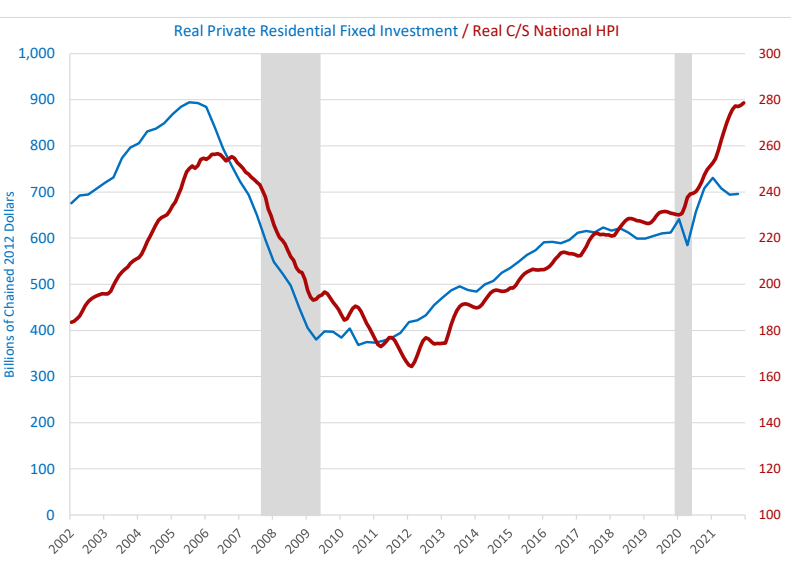


What will happen in 2022?

Most homebuyers have already purchased

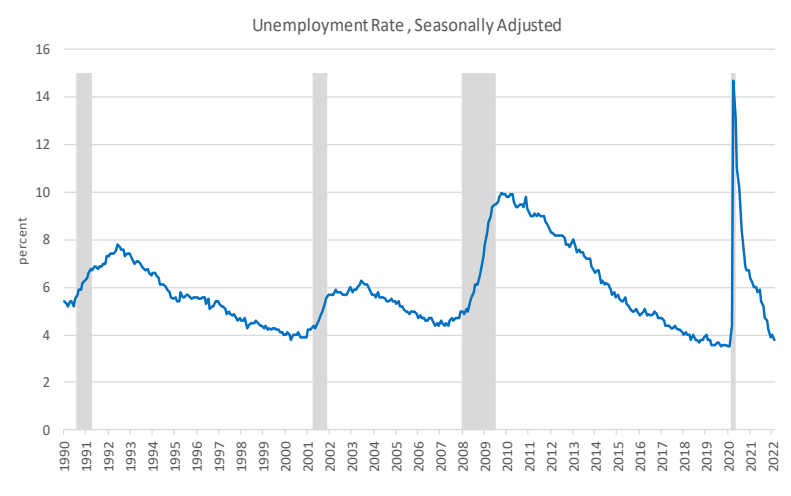
Offers on other properties rejected because someone offered more





Real Residential Fixed Investment is not as high as the bubble

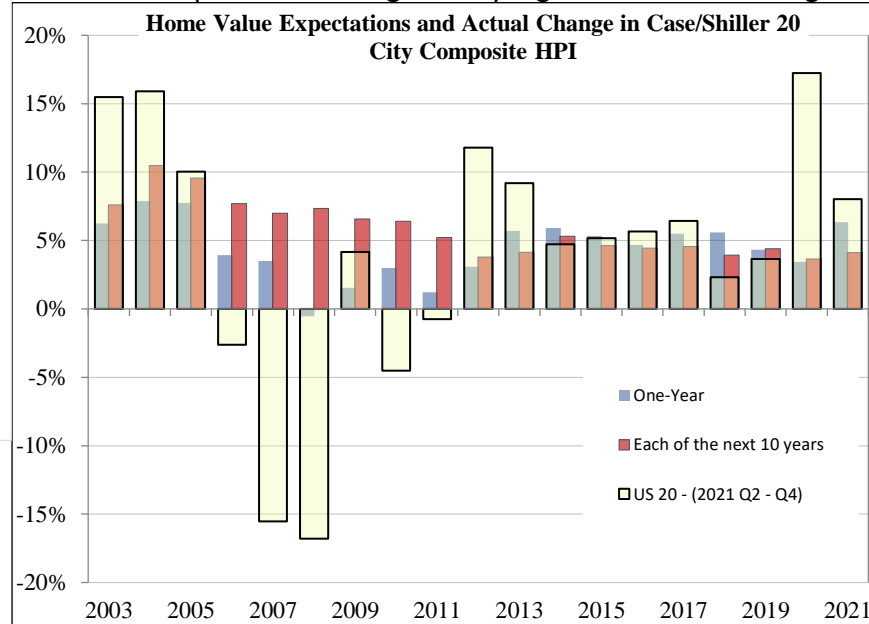
Covid caused a surge in unemployment rapidly evaporated bringing us back to pre-pandemic levels



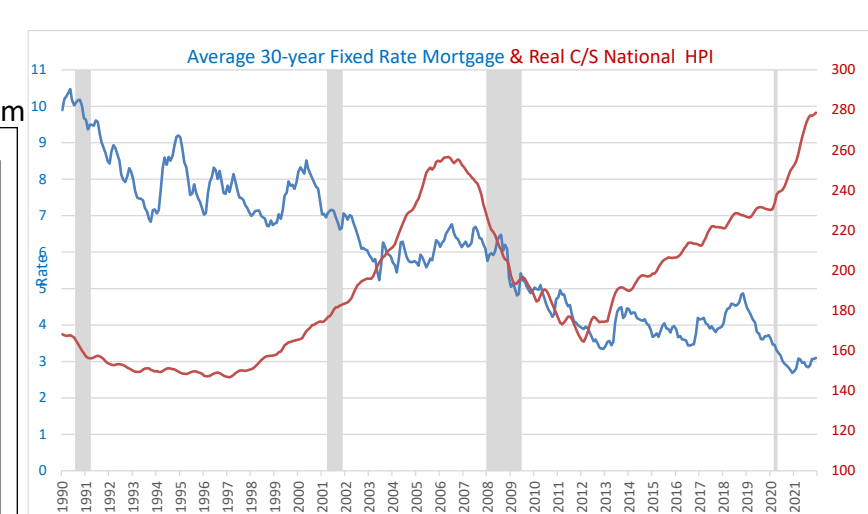
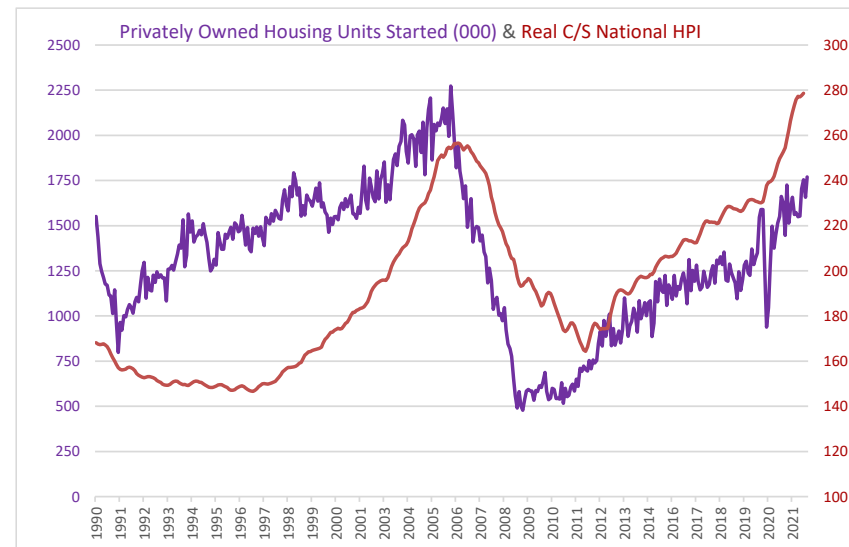
Source: U.S. Bureau of Labor Statistics

So where are we headed??

Short term expectations are generally higher than annual long-term

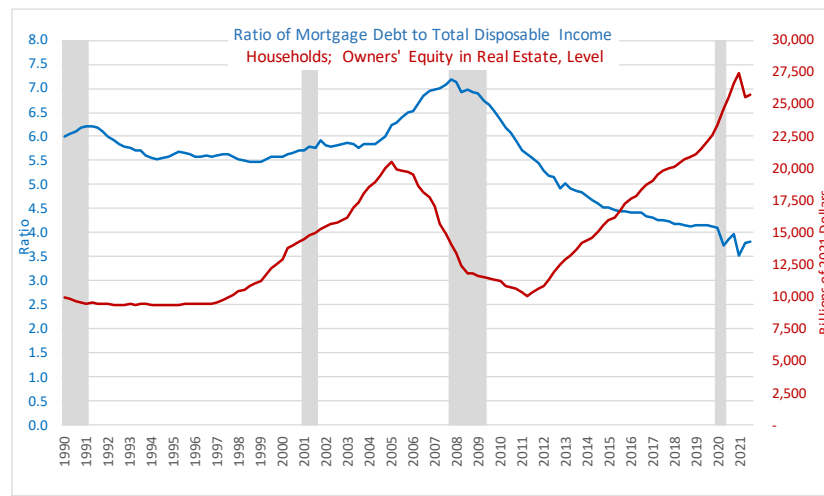


Housing starts are not near the level of the previous bubble.
Start for sale are even lower.



Rising mortgage rates don't typically cause a slump in home prices, even with a lag.

Mortgage debt burden low compared to history and homeowners equity in real estate is high.



Source: Board of Governors of the Federal Reserve System