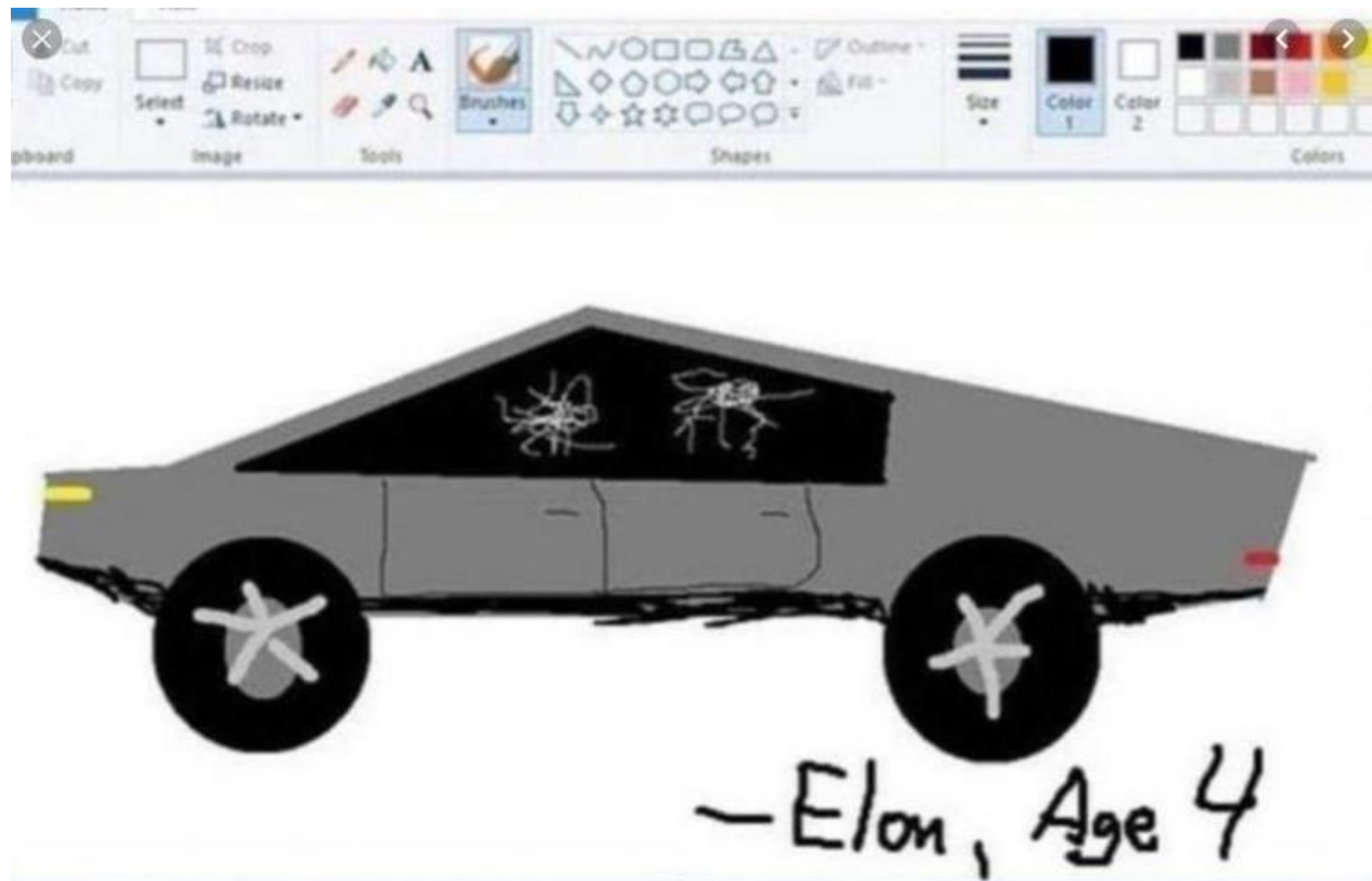




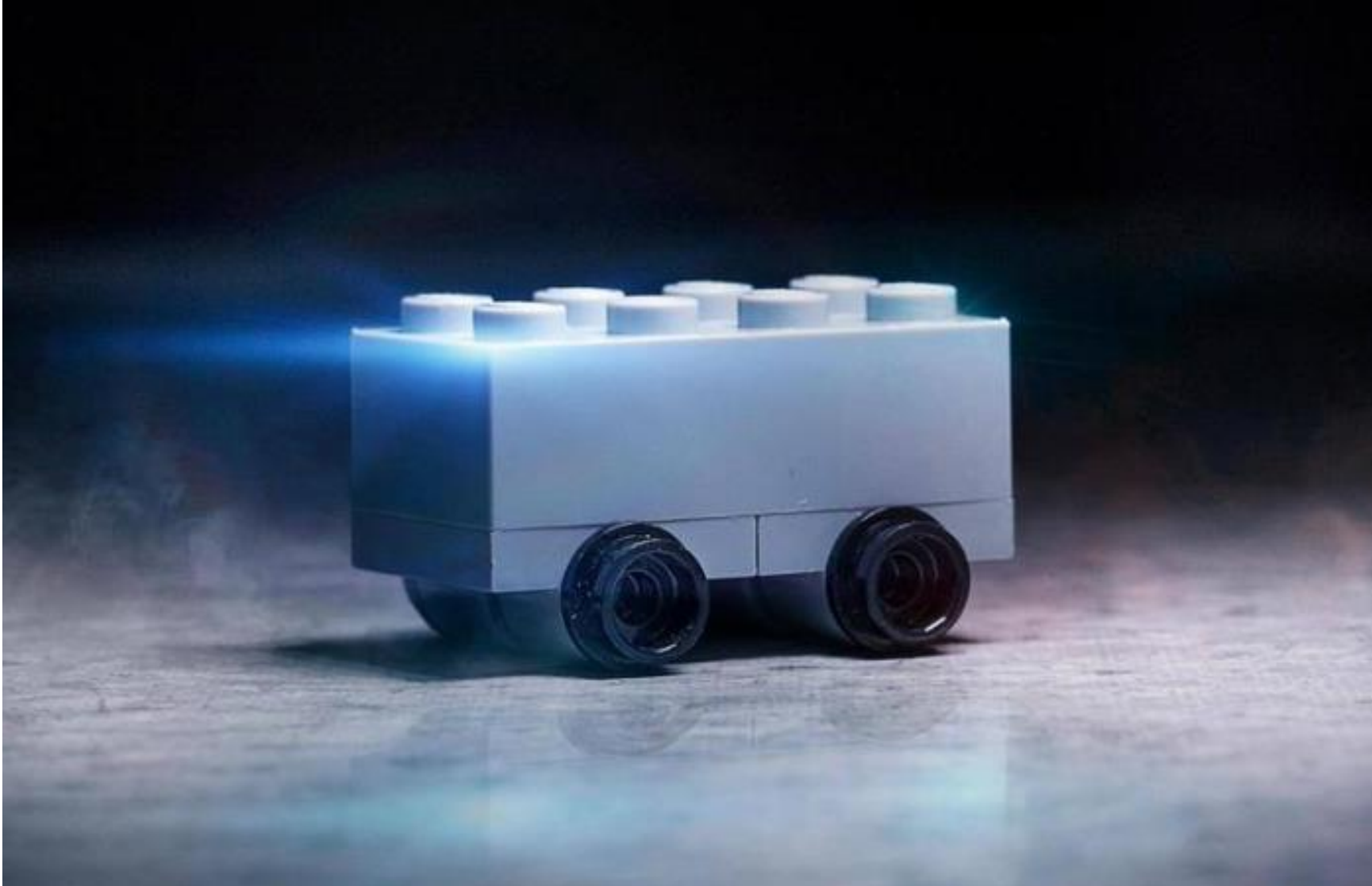
Real Estate Investing making use of some of the data







Lego, encouraged by Tesla, announces a new pickup

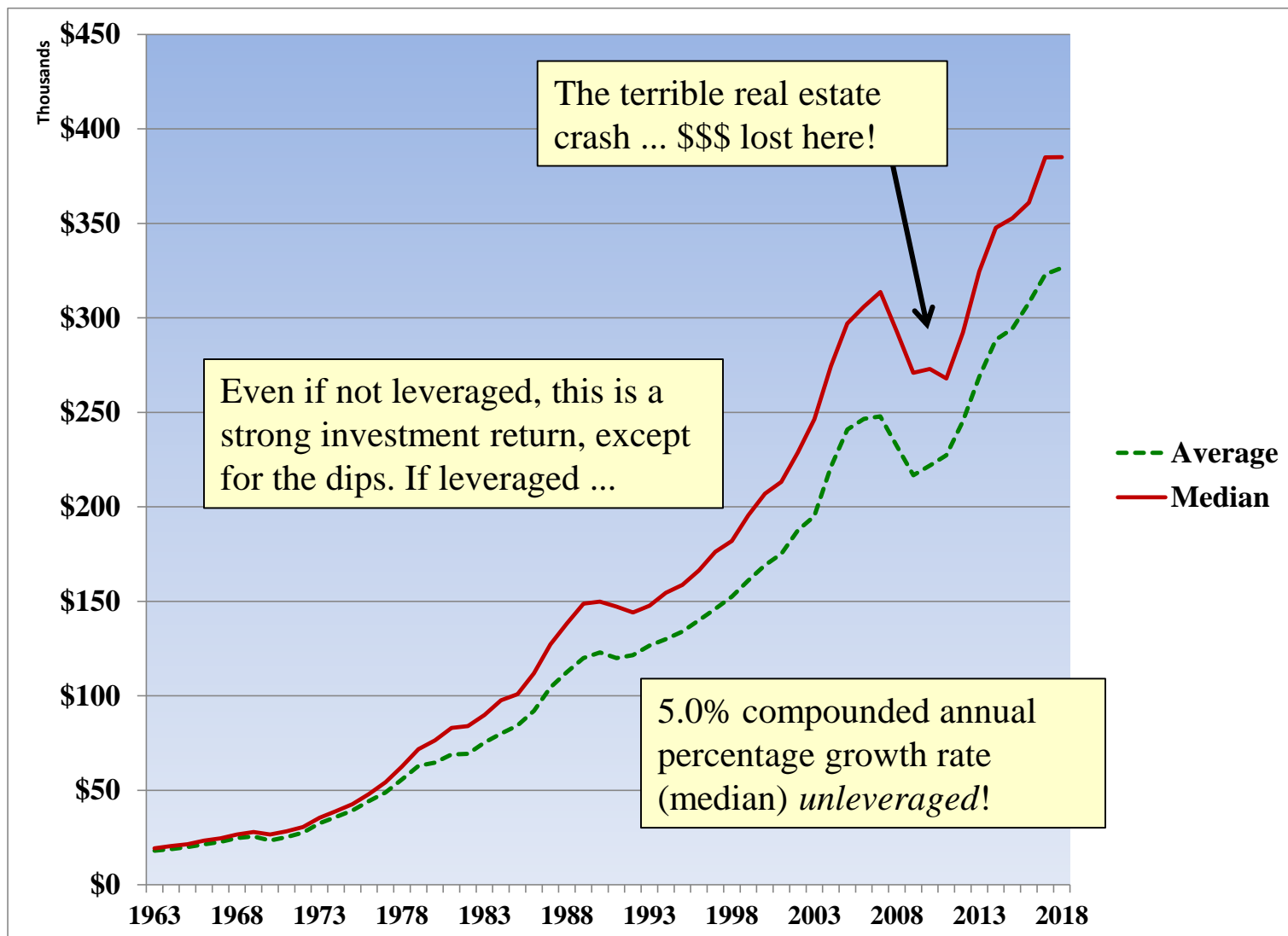


Summary of data that are revealing ...

1. Median prices
2. Days inventory
3. Housing starts
4. Owner-equivalent rent
5. Affordability indexes (regional)



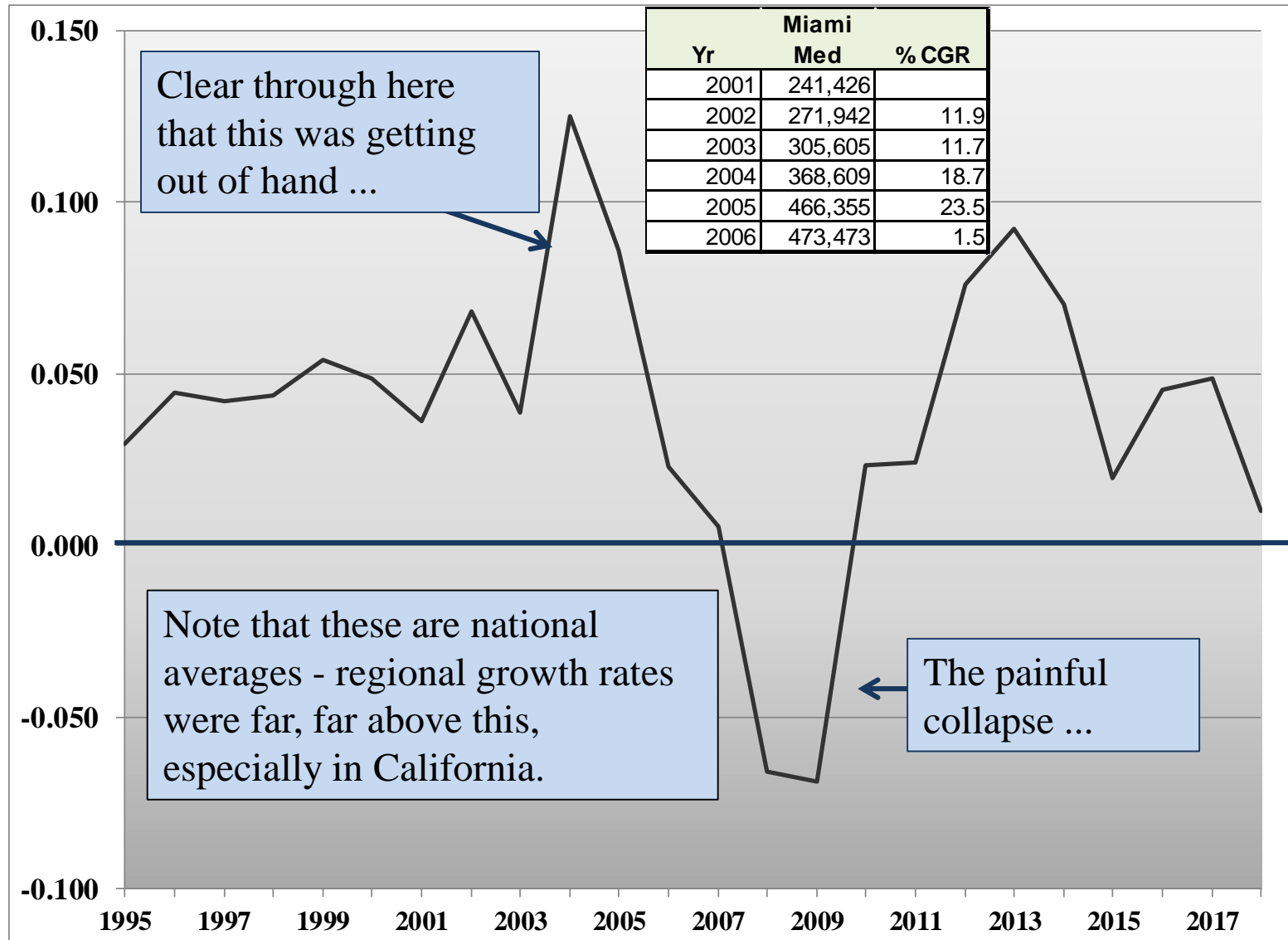
The Median and Average Prices for New Homes, U.S. all regions, 1963-2018



.. but national averages don't mean much. What about local?

Annual Continuous Growth Rates Median Prices through the heated years and the collapse: 1995 - 2018

Source: United States Census, Median and Average Sale Prices of Homes Sold in the United States, December 2019



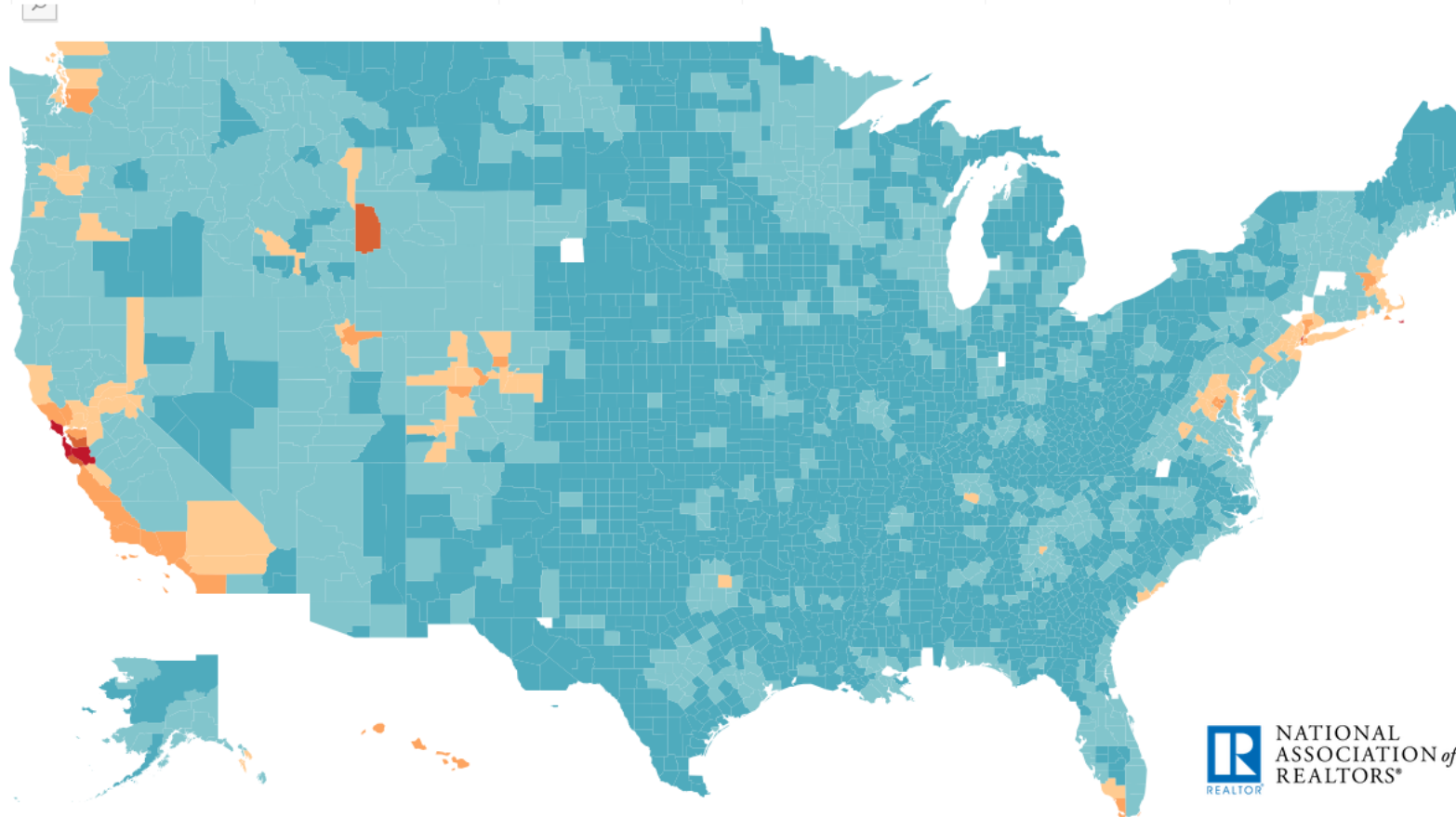
... but regional data matters more

Source: National Association of Realtors,
<https://www.nar.realtor/research-and-statistics/housing-statistics/county-median-home-prices-and-monthly-mortgage-payment>

County Median Home Prices

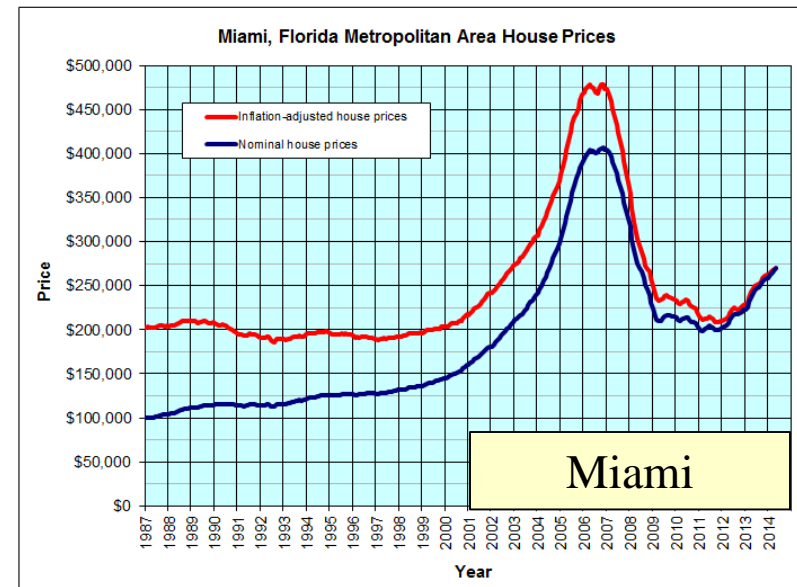
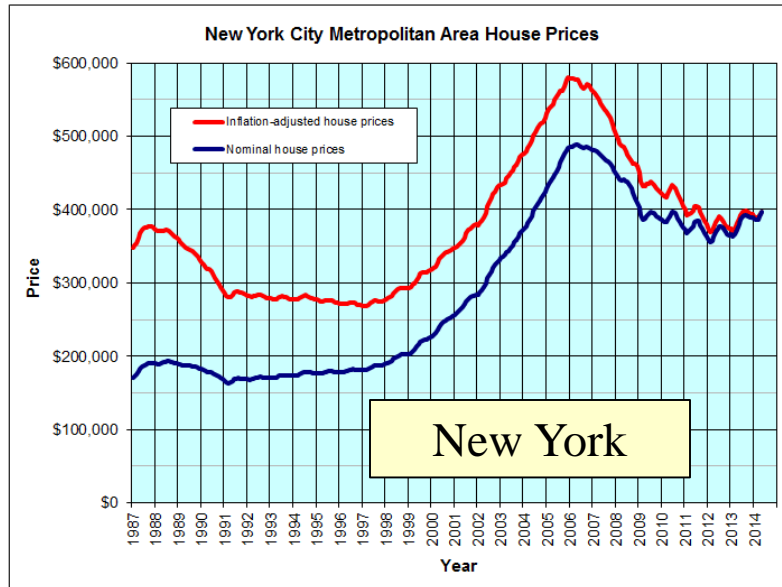
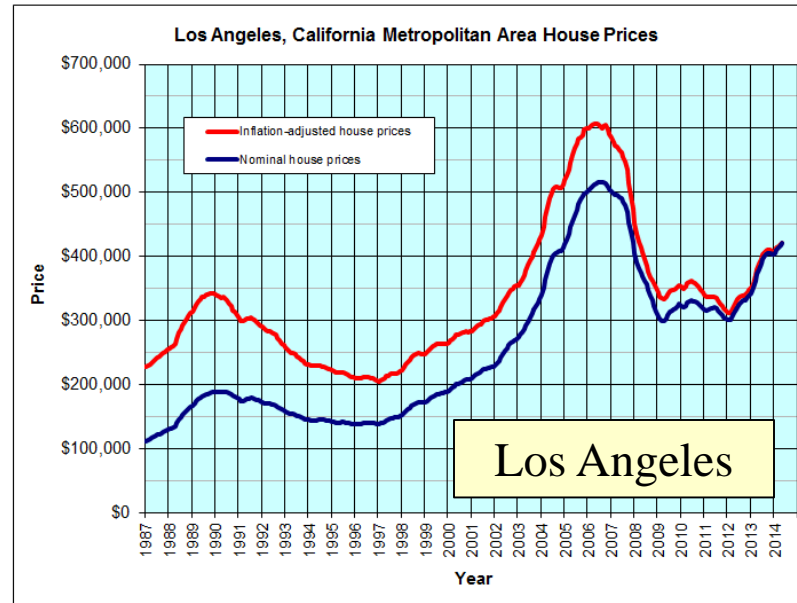
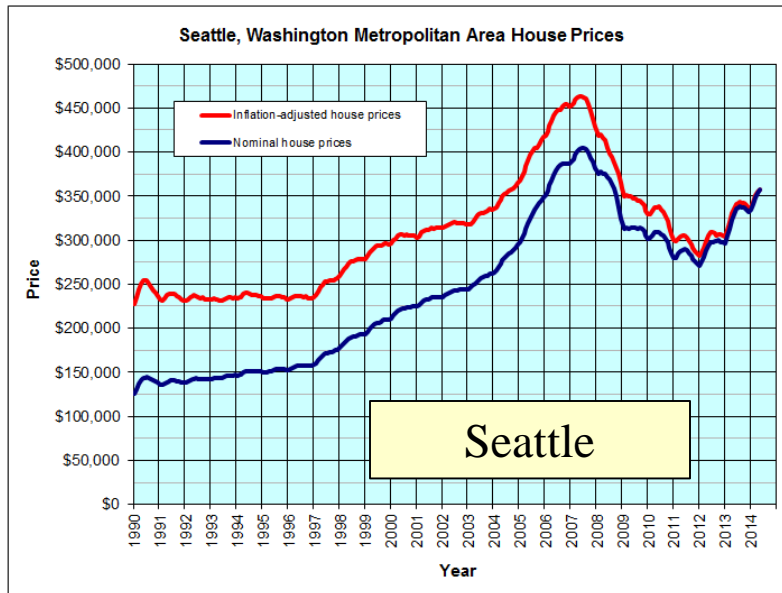
Hover over the bar to highlight. Click to filter. Press **ESC** to clear selection

Less than \$150,000 62.1%	\$150,000-\$350,000 33.5%	\$350,000-\$550,000 3.2%	\$550,000-\$750,000 0.9%	\$750,000-\$1,000,000 0.2%	\$1,000,000 and more 0.2%
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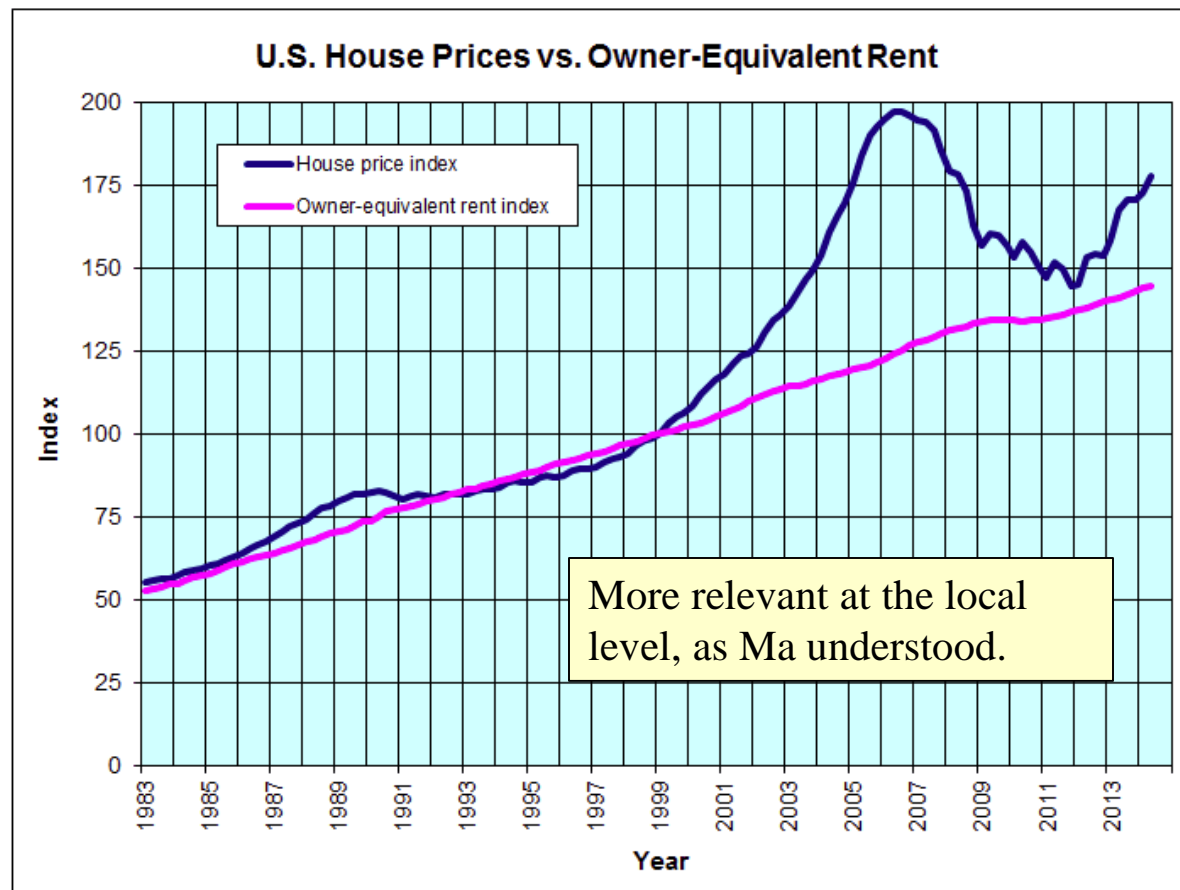
... and city data matters even more

(Historical maps based on data from National Association of Realtors)



Another Key Statistic to monitor: Owner-Equivalent Rent

Nominal house prices compared to owner-equivalent rents



This chart shows the change in nominal home prices vs. the change in nominal rents since 1983. Over the long run, home prices and rents should increase at roughly the same rate.

This matters a great deal regionally and was brought to my attention by a Mudd alumnus, Singer Ma '11 seeking to buy a home in the Santa Cruz after graduation. He cited this statistic as high for his area and also made an estimate of his Price-to-Rent ratio of 35, which he felt was very high. He also gave me a link to a Kiplinger article that included the slide on the next page. How is the OER calculated?: See

<http://www.bls.gov/cpi/cpifacnewrent.pdf>

Important stat: The price-rent ratio

See Smartasset, Where to Buy: Price-to-Rent Ratio in 84 U.S. Cities, Nick Wallace, March 4, 2019

<https://smartasset.com/mortgage/price-to-rent-ratio-in-us-cities>



The price-to-rent ratio measures the relative affordability of renting and buying in a given housing market. It's a good factor to consider if you're deciding whether to rent or buy. It's especially useful if you're considering a move, because it allows you to see what prices look like in your new city. As a general rule, a lower price-to-rent ratio indicates that a place is

more favorable to homebuyers. A higher ratio indicates a better environment for renters.

Thanks to Singer Ma, 2011

This is not normally published and must be calculated like Singer did it, taking median home price divided by median annual rent. Anything above 25 is stretching it, *but* seagull country is going to be high!!

Price-to-Rent Ratios by City		
City	Price-to-Rent Ratio	Home Price (for a \$1,000 Rental)
San Francisco, California	50.11	\$601,362
Oakland, California	41.05	\$492,611
Honolulu, Hawaii	39.50	\$474,014
Los Angeles, California	38.59	\$463,135
New York, New York	36.83	\$441,987
Long Beach, California	36.37	\$436,385
Seattle, Washington	36.07	\$432,862

Corpus Christi, Texas	12.14	\$145,670
Pittsburgh, Pennsylvania	11.14	\$133,622
Buffalo, New York	10.66	\$127,862
Toledo, Ohio	9.68	\$116,148
Memphis, Tennessee	9.53	\$114,368
Cleveland, Ohio	8.31	\$99,716
Detroit, Michigan	5.35	\$64,194

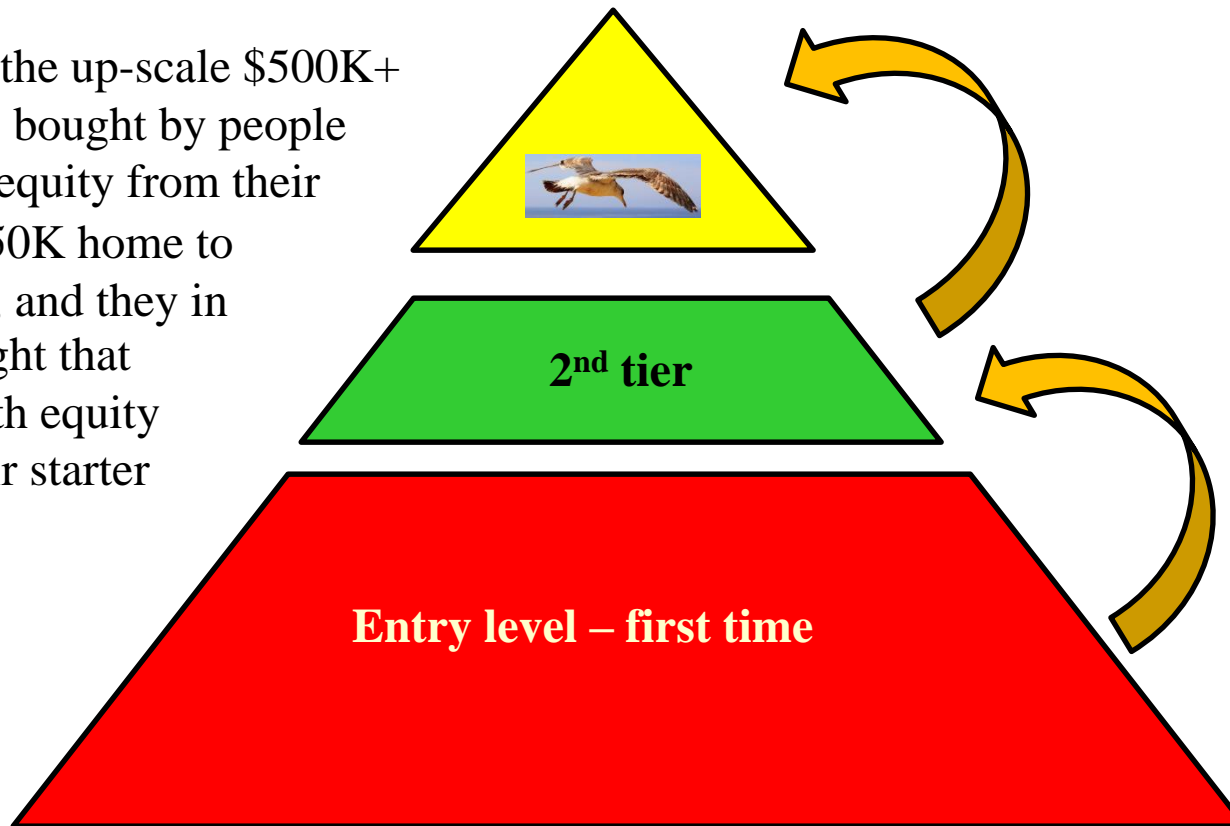
First-time affordability and general affordability

North?
or East?



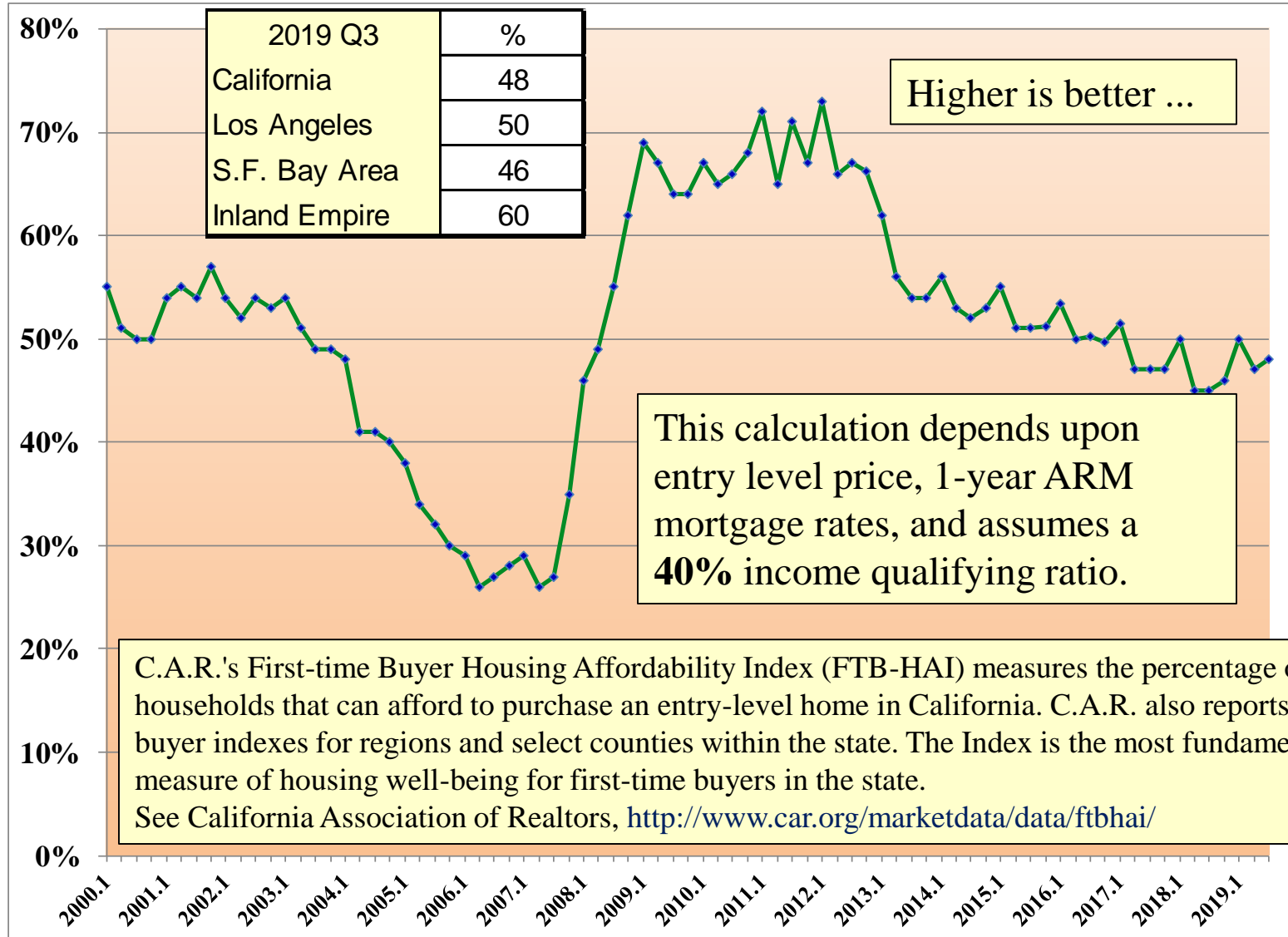
You can't have floating pyramids in real estate !!

Much of the up-scale \$500K+ market is bought by people who use equity from their older \$250K home to move up, and they in turn bought that home with equity from their starter home.



Therefore, if this entry level becomes unaffordable for 80% of first-time home buyers, the entire structure is threatened!!

The California Housing Affordability Index: First-Time Buyer



This measures the percentage of households in any region that can afford and entry-level home in the area.

Q32018	First Time Buyer Housing Affordability Index							
STATE/REGION/COUNTY	Q32018	Q22018		Q32017		Median Home Price	Monthly Payment Including Taxes & Insurance	Minimum Qualifying Income
S.F. Bay Area								
Alameda	43	40		35		\$782,000	\$4,040	\$121,200
Contra Costa	57	54		52		\$565,250	\$2,920	\$87,600
Marin	36	32		31		\$1,083,750	\$5,600	\$168,000
Napa	47	46		43		\$616,460	\$3,180	\$95,400
San Francisco	27	24		22		\$1,343,000	\$6,940	\$208,200
San Mateo	30	26		22		\$1,283,500	\$6,630	\$198,900
Santa Clara	38	34		32		\$1,054,000	\$5,450	\$163,500
Solano	64	64		58		\$391,000	\$2,020	\$60,600
Sonoma	48	47		41		\$572,260	\$2,960	\$88,800
Southern California								
Los Angeles	41	45		39		\$552,130	\$2,850	\$85,500
Orange	43	41		37		\$702,100	\$3,630	\$108,900
Riverside	58	57		57		\$357,000	\$1,840	\$55,200
San Bernardino	67	66		65		\$267,750	\$1,380	\$41,400
San Diego	48	46		42		\$548,250	\$2,830	\$84,900
Ventura	50	50		49		\$567,380	\$2,930	\$87,900

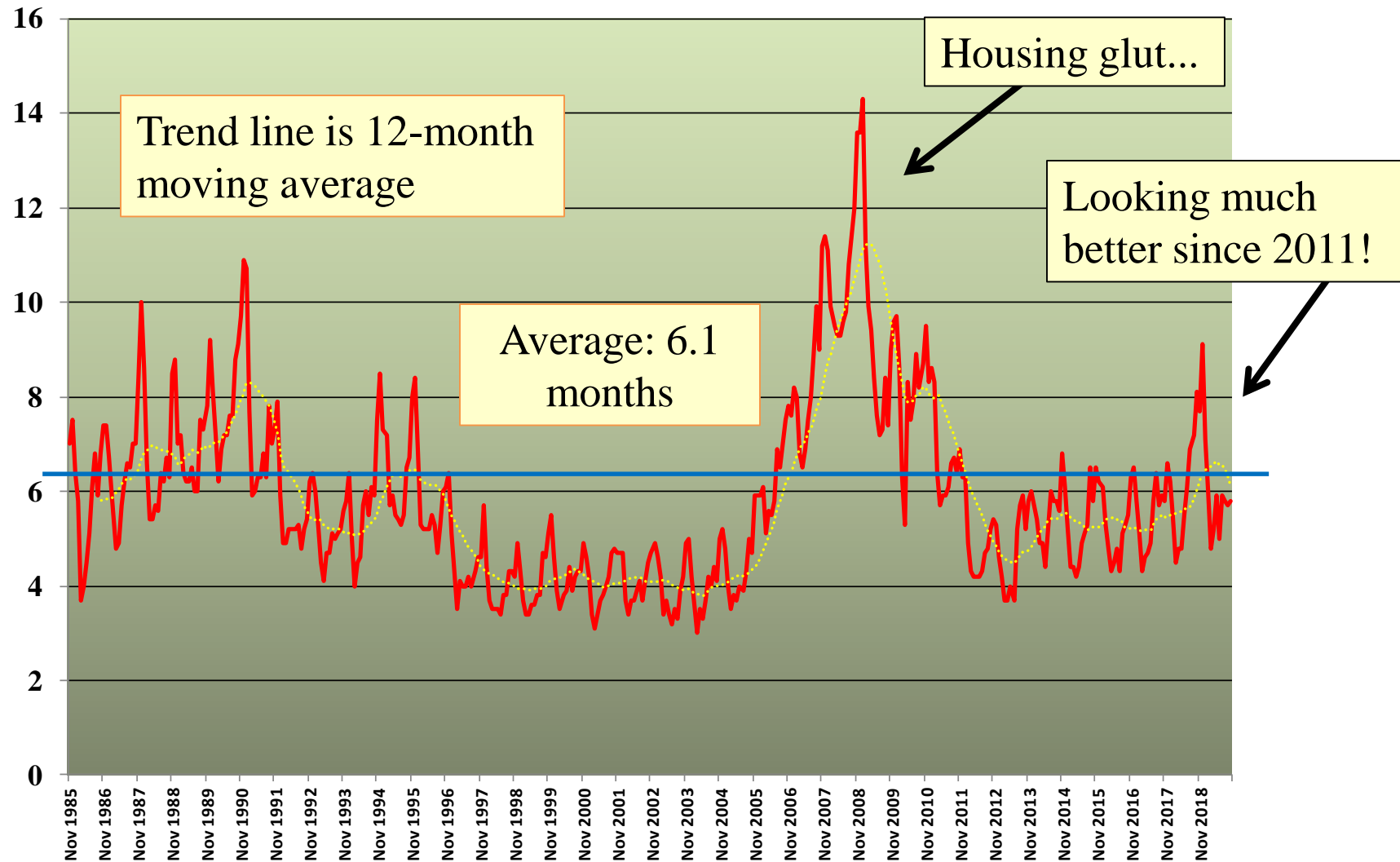
Source: California Association of Realtors: <https://www.car.org/marketdata/data/ftbhai/>

Recovery indicators (how to know when it is over)



National Days Inventory – 11/85 to 10/19

A condition that must return to normal before a recovery

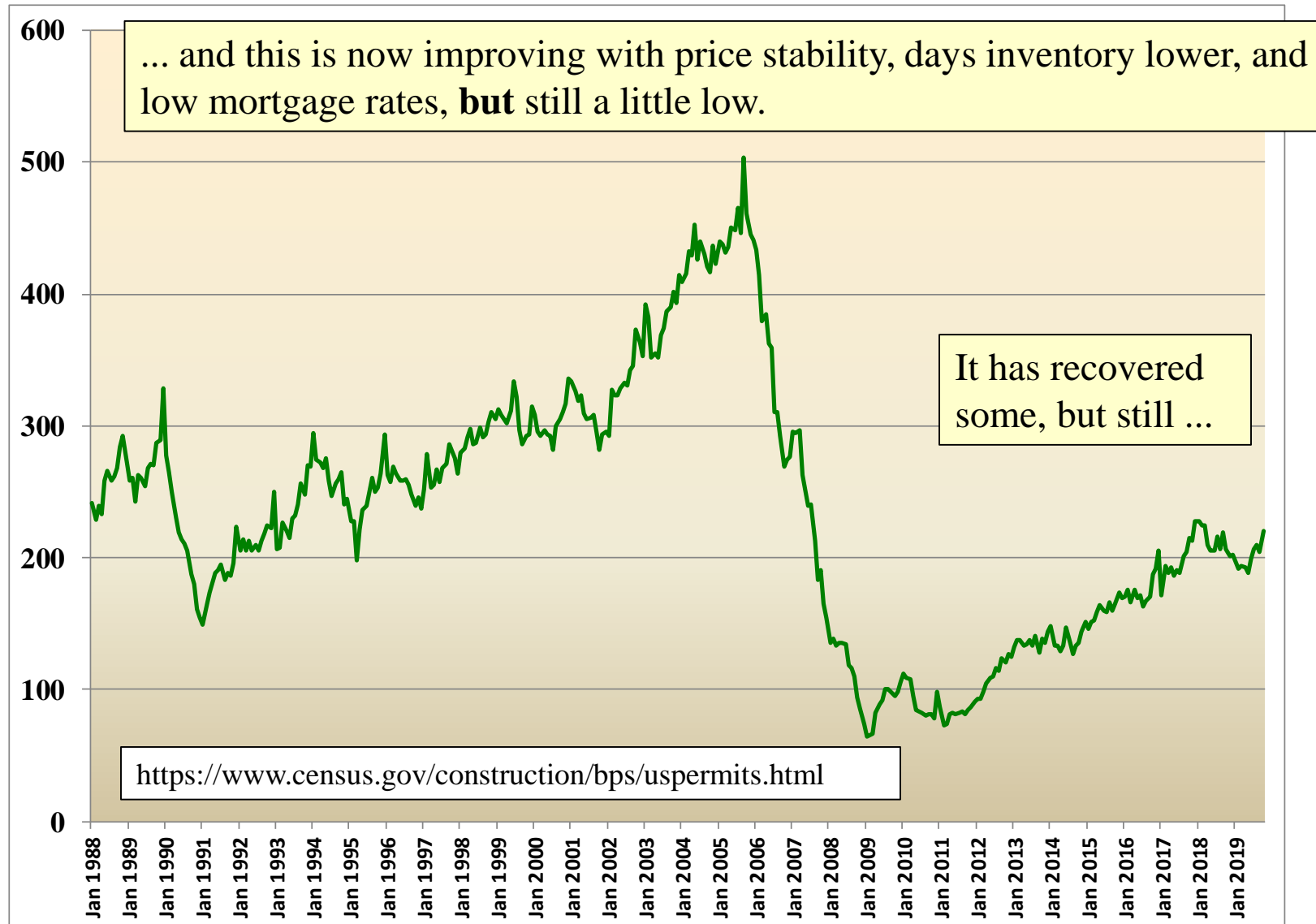


Source: U.S. Census Bureau, Houses for Sale by Region and Month's Supply at Current Sales Rate

New Housing Permits - single units, SA, Western Region

Jan 1988 - Oct 2019

Mudd Finance



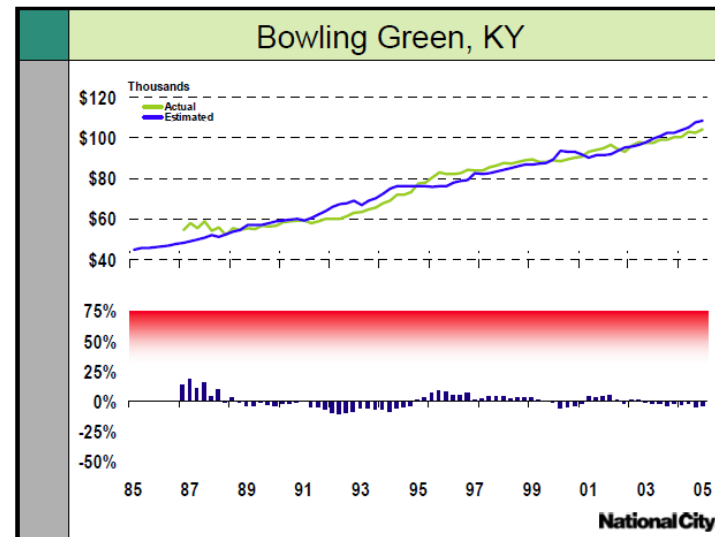
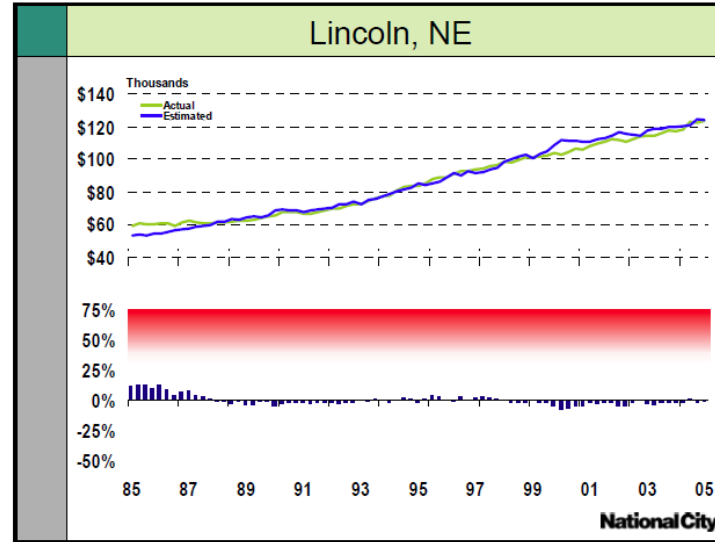
You do not see a restoration of strength in housing

Could anyone see trouble in 2005?:

Richard J. DeKaser, Chief Economist of National City

DeKaser and assistant John G. Charamonde compared housing-price-to-income ratios for 299 metropolitan areas for the period from 1985 to 2005, under the assumption that the numerator (housing prices) couldn't drift very far away from the denominator (income, the primary means of servicing mortgages) for any length of time. They discovered that in many cities the relationship was stable ...

Richard J. DeKayser and John G. Charamonde, "House Prices in America - Valuation Methodology & Findings," National City, July 2005



... but not everywhere ...

