

# Reverse Mortgage Market Index (Q3 2015 RMMI)

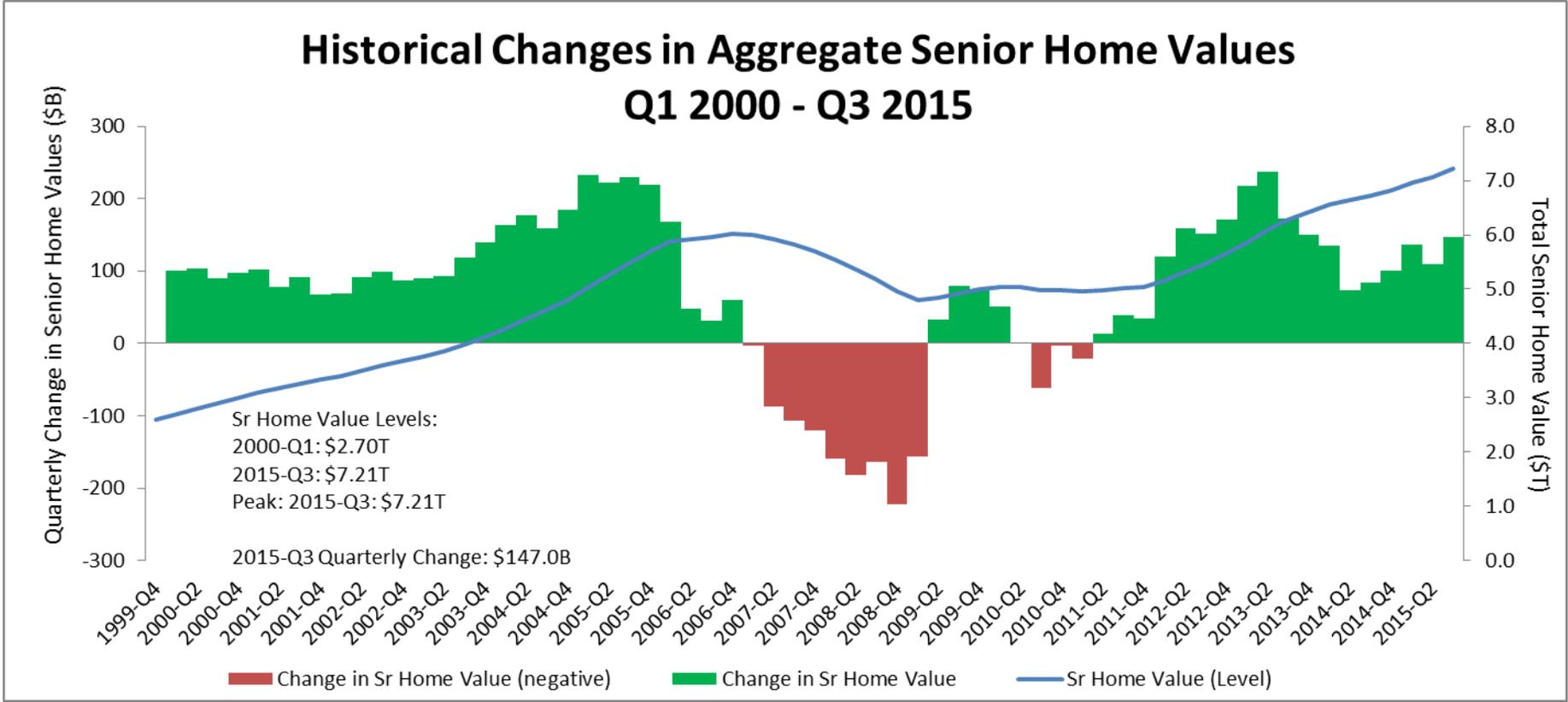


**NRMLA/RiskSpan**  
**December 22, 2015**

## Presentation Outline

- Trends in Senior Housing
  - Aggregate Home Values (Q1 2000 – Q3 2015)
  - Aggregate Mortgage Debt Levels (Q1 2000 – Q3 2015)
  - Aggregate Equity (Q1 2000 – Q3 2015)
  - Reverse Mortgage Market Index (RMMI) (Q1 2000 – Q3 2015)
  - Historical Summary of key RMMI components (Q1 2013 – Q3 2015)
- Overview of RMMI Data Sources
- Overview of new methodology

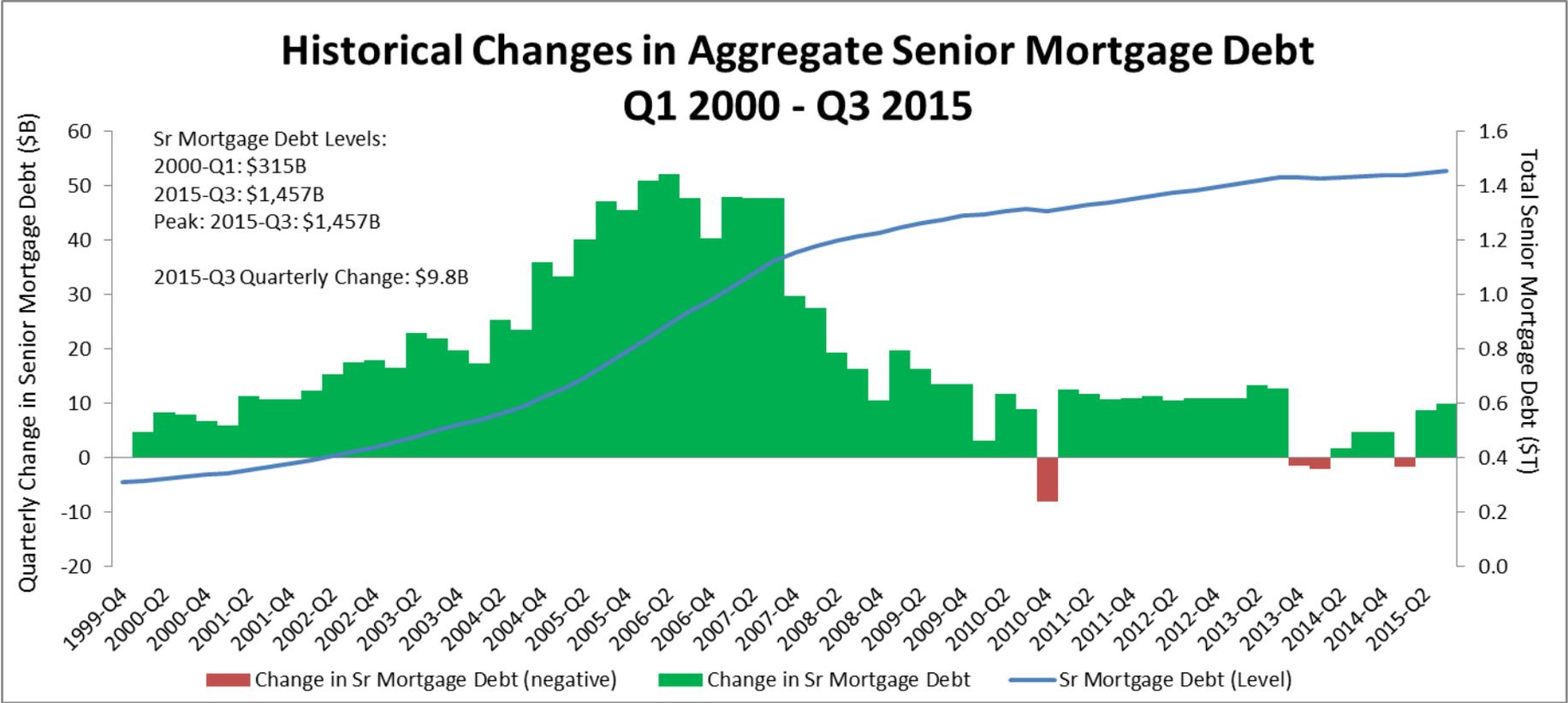
# Quarter over quarter changes in senior home values



Prepared by RiskSpan, Inc.

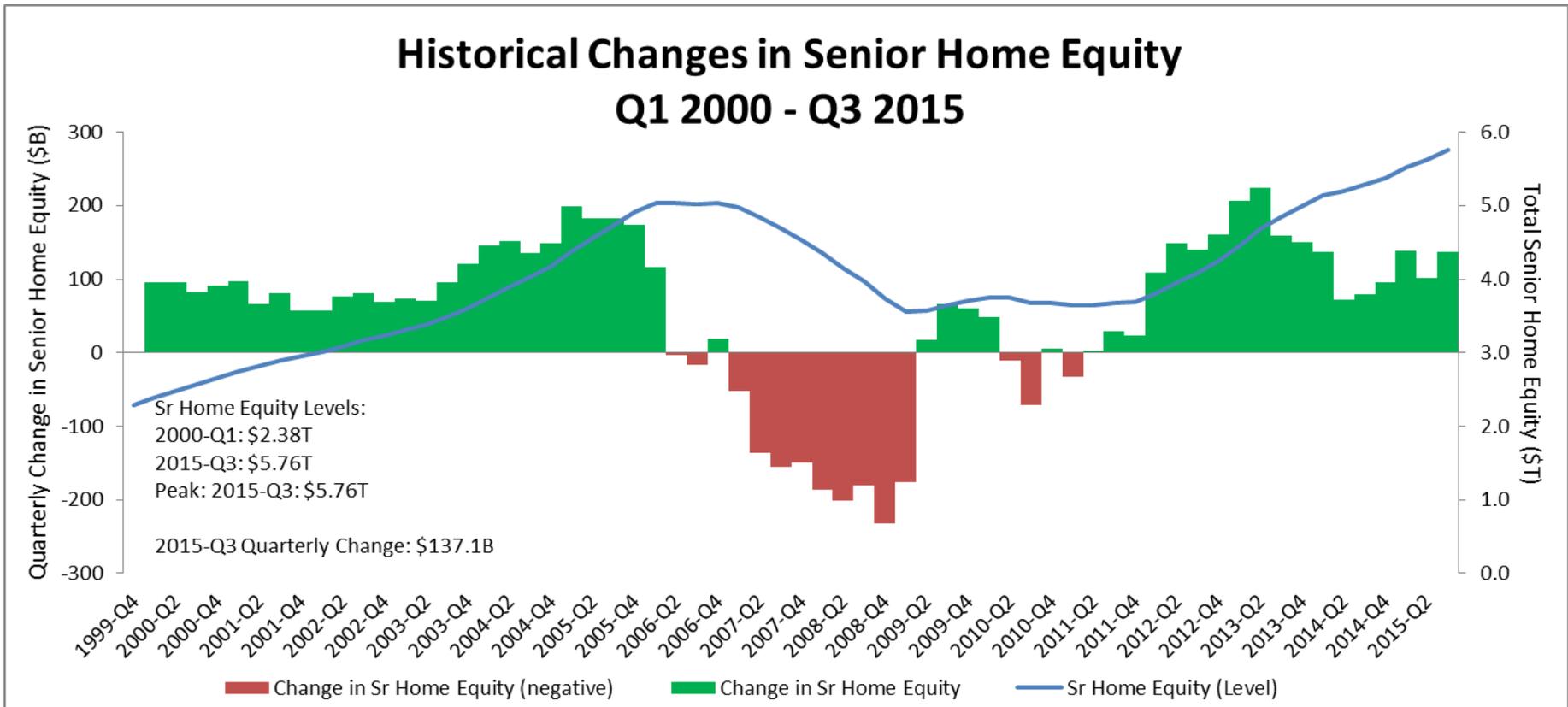
Data sources: American Community Survey, Census, FHFA

# Quarter over quarter changes in senior mortgage debt levels



Prepared by RiskSpan, Inc.  
 Data sources: Federal Reserve

# Quarter over quarter changes in senior home equity



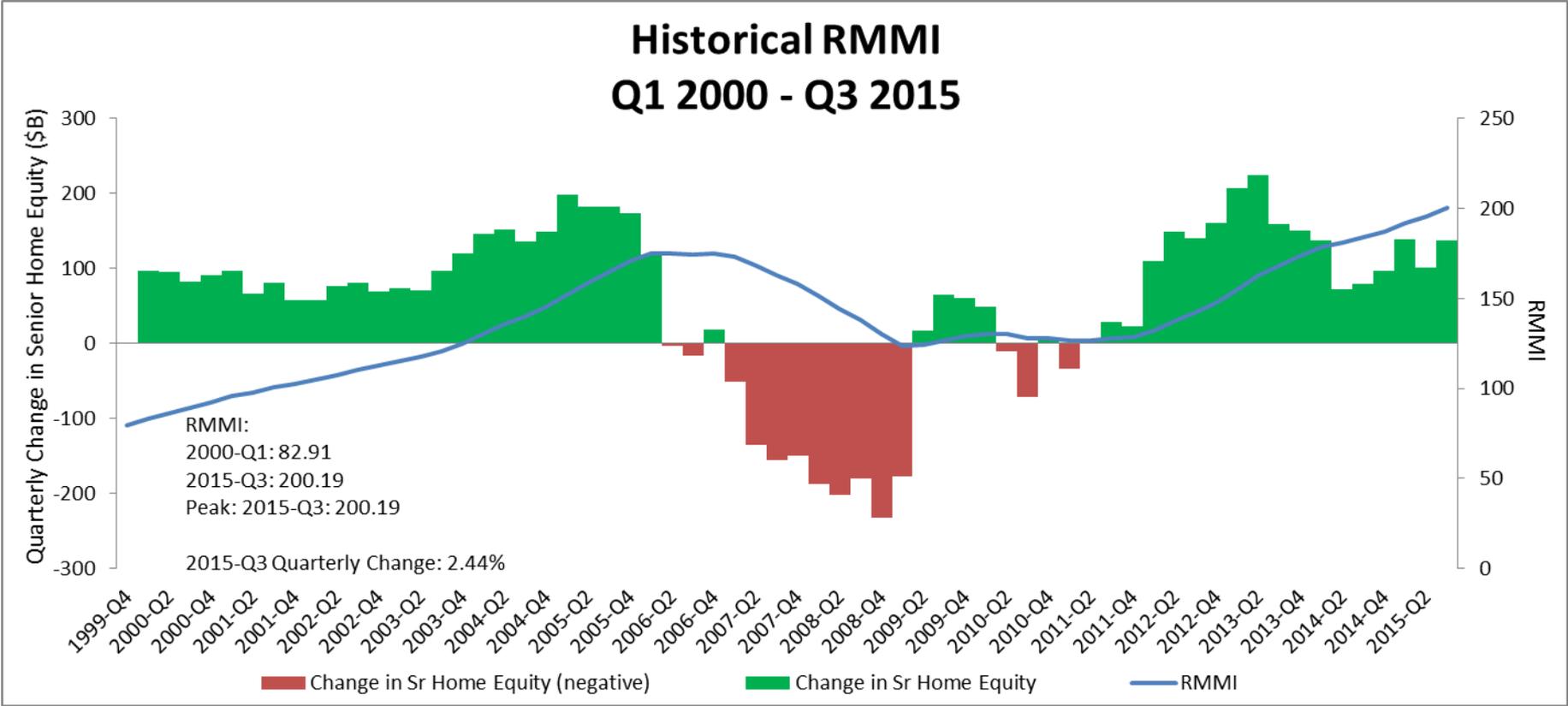
Prepared by RiskSpan, Inc.

Data sources: American Community Survey, Census, FHFA, Federal Reserve

$$\text{RMMI (Q3 2015)} = \frac{\$5.76\text{T}}{\$2.38\text{T}} * 100 * 0.83 = 200.19$$

Note: The 0.83 re-indexing factor is explained on slide 10

# Quarter over quarter changes in RMMI



Prepared by RiskSpan, Inc.  
 Data sources: American Community Survey, Census, FHFA, Federal Reserve

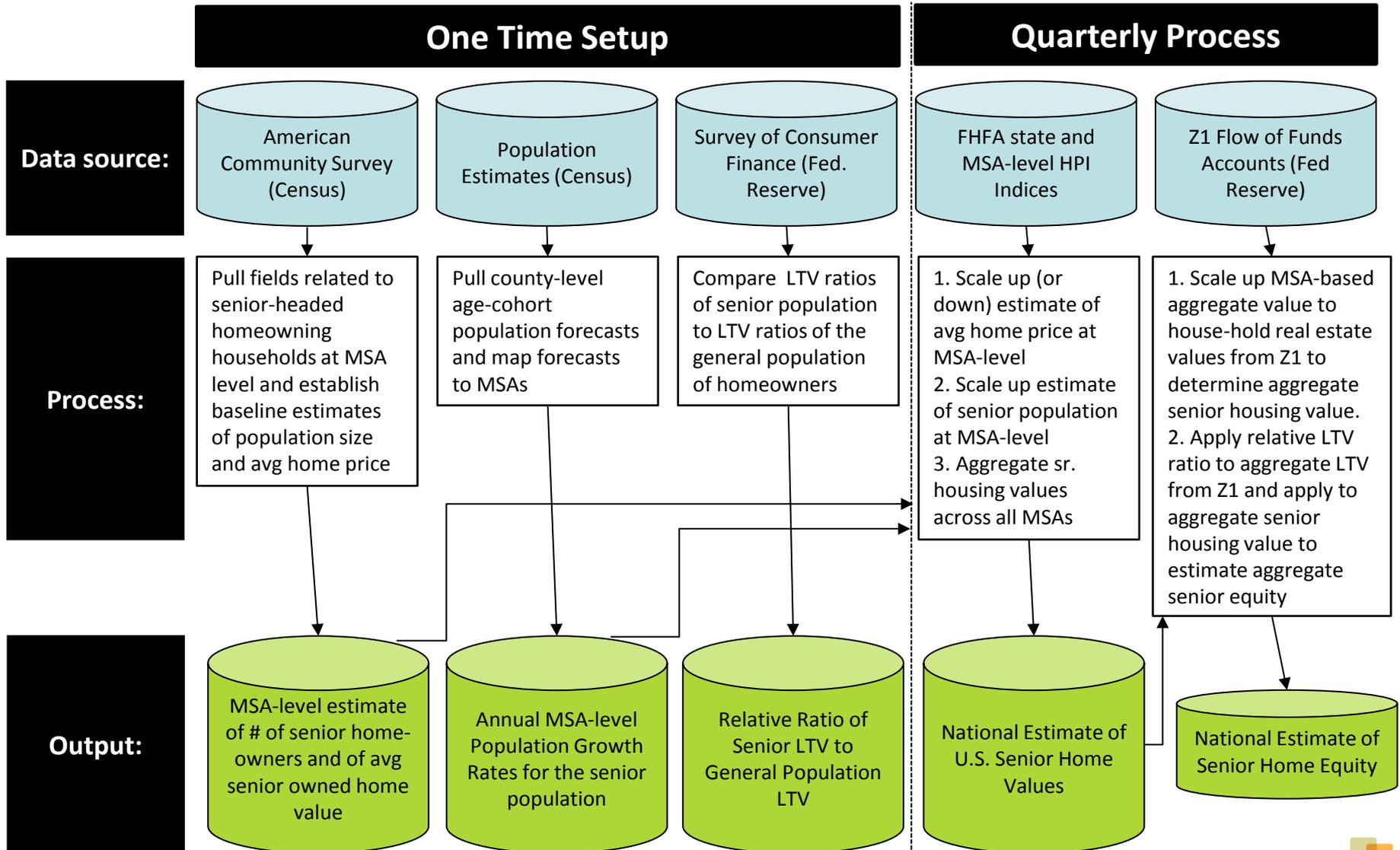
## Historical RMMI

Quarter	Sr. home Value (\$T)	Senior Mortgage Debt (\$T)	Sr. home Equity (\$T)	RMMI	Quarterly Change
2013-Q2	6.11	1.42	4.69	162.93	5.03%
2013-Q3	6.28	1.43	4.84	168.47	3.40%
2013-Q4	6.43	1.43	5.00	173.72	3.11%
2014-Q1	6.56	1.43	5.13	178.47	2.73%
2014-Q2	6.63	1.43	5.20	180.95	1.39%
2014-Q3	6.72	1.44	5.28	183.72	1.53%
2014-Q4	6.82	1.44	5.38	187.07	1.82%
2015-Q1	6.96	1.44	5.52	191.90	2.58%
2015-Q2	7.07	1.45	5.62	195.42	1.83%
2015-Q3	7.21	1.46	5.76	200.19	2.44%

Prepared by RiskSpan, Inc.

Data sources: American Community Survey, Census, FHFA, Federal Reserve

# Overview of RMMI Data Sources and Calculation Steps



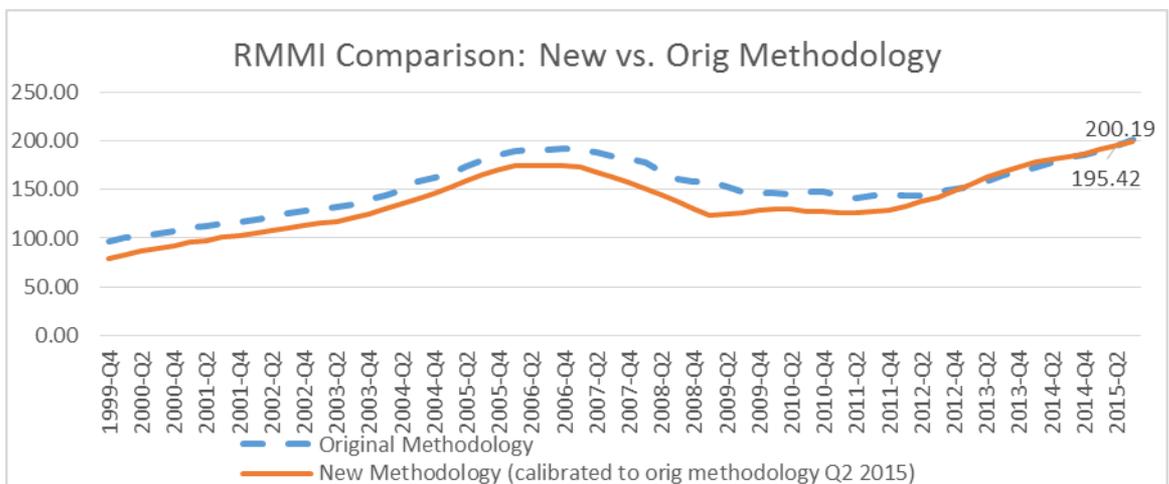
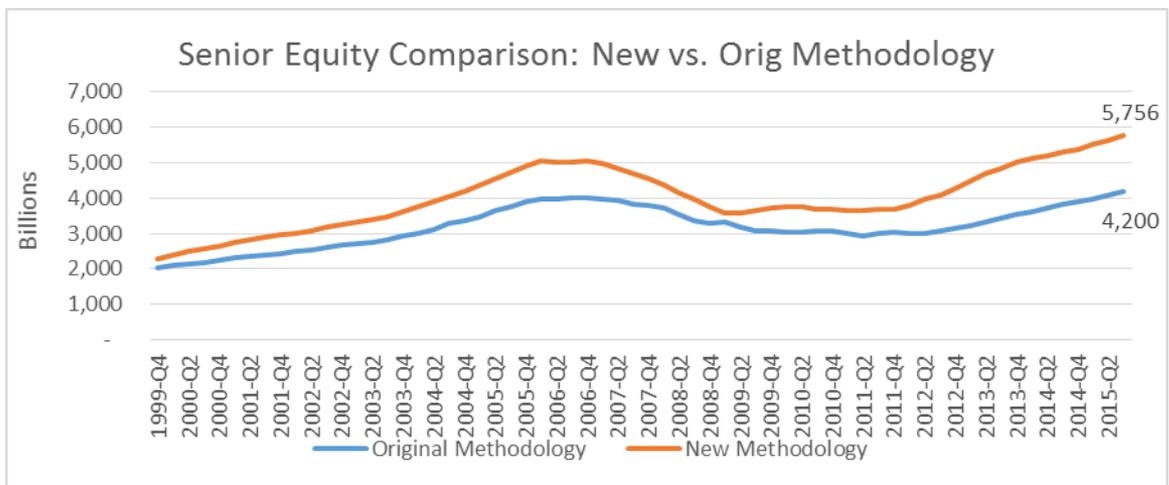
## Schedule of RMMI Release Dates

The reverse mortgage market index is updated quarterly, about two and a half months after the close of the quarter. This timing is based on scheduled releases of public data used by RiskSpan to update the different components of the index.

The quarterly updates of the index are based on three components: changes in senior population (at the local MSA level); changes in house prices (at the MSA and national level); changes in total mortgage debt (at the national level). The quarterly population change estimates are based on forecasts made by the Census bureau based on the last Census. Updates for this component are thus not dependent on release by an external source. House price change estimates are based on the FHFA indices released quarterly (about 7 weeks after the close of the quarter). Changes in national mortgage debt levels are based on the Federal Reserve's Z1 Flow of Funds Accounts released quarterly (about 9 weeks after the close of the quarter).

- HPI Release Dates:
  - <http://www.fhfa.gov/DataTools/Downloads/Pages/House-Price-Index.aspx#ReleaseDates>
    - Q4 2015: February 25, 2016
    - Q1 2016: May 25, 2016
    - Q2 2016: August 24, 2016
    - Q3 2016: November 23, 2016
- Federal Reserve Z1 Flow of Funds Report Release Dates:
  - <http://www.federalreserve.gov/releases/z1/>
    - Q4 2015: March 10, 2016

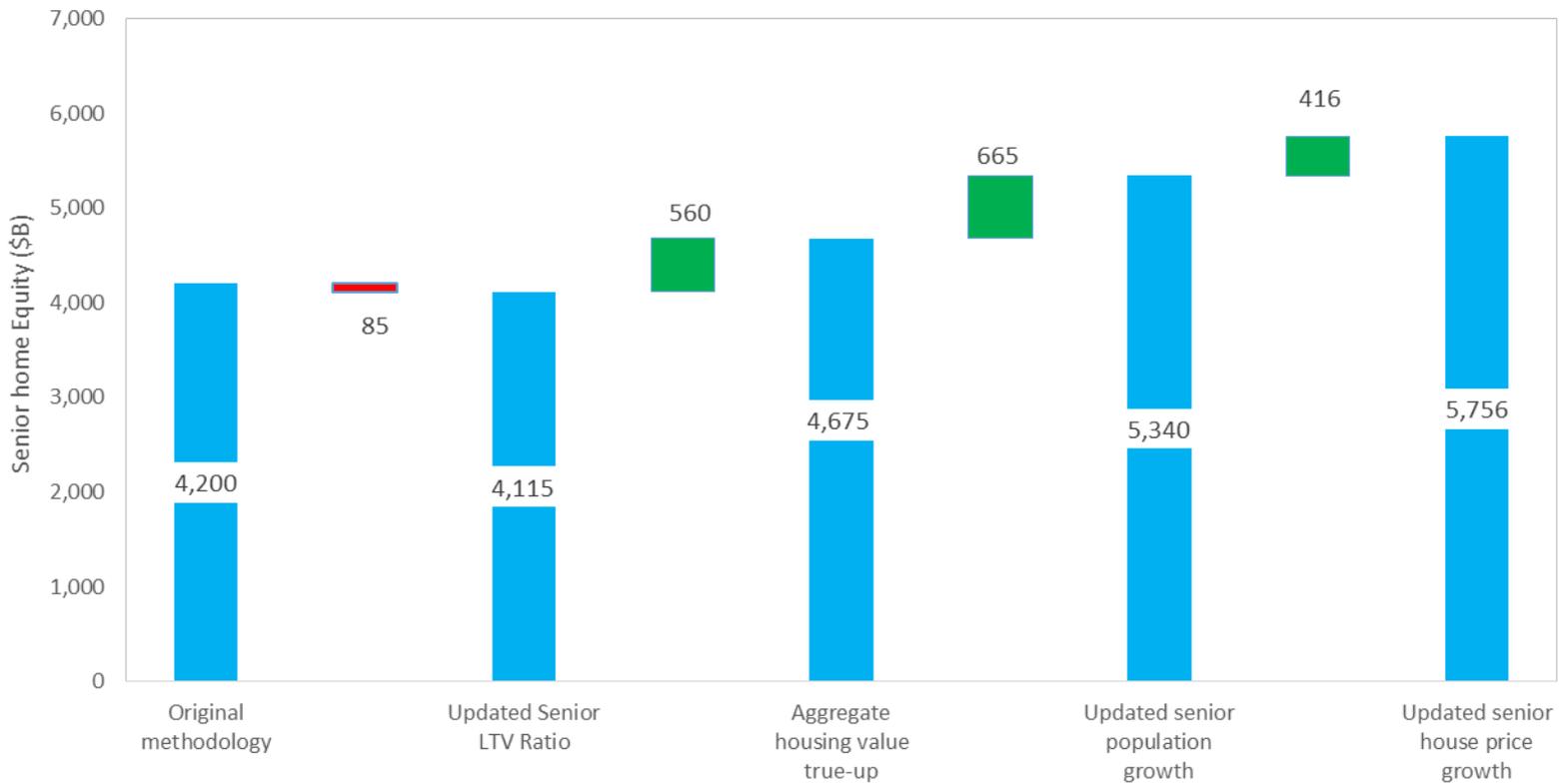
# Senior Equity Estimates and RMMI comparisons using the old and new methodology



The first step for calculating the index in the new methodology is identical to the old methodology. The current senior home equity level is divided by the senior home equity level in Q1 2000 and multiplied by 100. However, the new methodology takes an additional step of multiplying by a re-indexing factor of 0.83 to set the Q2 2015 index using the new methodology equal to the Q2 2015 RMMI level (195.42) using the original methodology.

# Overview of four changes to methodology (quantitative)

## Senior Home Equity Crosswalk with Methodology Updates (Q3 2015)



C:\Users\sanderson\Documents\RiskSpan Files\Clients\reverse mortgage\RMML\index models\[index engine (q3 15) (new methodology)

## Overview of four changes to methodology (qualitative)

Below is a summary of the four updates to our methodology.

- We updated the ratio of the senior LTV to aggregate LTV based on the most recent data from the Federal Reserve's 2013 Survey of Consumer Finance. Senior LTV levels continue to rise relative to the total population as seniors become more comfortable with mortgage debt and baby boomers enter the senior age cohorts with higher mortgage debt levels. But these debt levels remain well below the levels of the total population. The average LTV ratio of senior home-owners increased from 19.1% in the 2010 Survey to 20.4% in the 2013 Survey while the average LTV ratio for the total population of home-owners actually fell slightly, from 44.1% to 43.8%. This resulted in an increase in the Senior LTV factor applied to the aggregate LTV ratio, which drove a \$85 billion (or 8%) increase in our estimate of senior mortgage debt levels and a corresponding \$85 billion decline in our estimate of senior home equity. The three other changes to the methodology all resulted in increases to our estimate of senior home equity.
- The second update to our methodology was to introduce a new step that rolls up the MSA level estimates of total population's housing value and compares that MSA roll-up figure to the Federal Reserve's estimate of value of real estate owned by households (published quarterly in the Z1 Flow of Funds Report). Since 2000, the Federal Reserve's estimate has been on average 12% higher than the roll-up method. The main difference between the two methods is that the roll-up figure includes only MSAs whereas the Fed figure includes households in the rural areas outside of MSAs. Additionally, the MSA roll-up method implicitly assumes the housing stock and home ownership rates remain unchanged from the date of our last snapshot from the American Community Survey (ACS). The MSA roll-up method uses as a starting point the ACS's MSA-level estimates of the aggregate value of housing for the total population and for seniors and then scales those aggregate values by age cohort population growth forecasts (as opposed to forecasts for the number of home owners) and FHFA HPI indices (which show house price changes for an existing housing). Trueing up to the Fed figures should adjust for the recent declines in home ownership rates and any new home purchases. Additionally, the aggregate values pulled from the ACS are collected over multiple quarters so trueing up to the Fed figure should correct for imprecision in aligning those estimates to a given quarter. As of Q3 2015, the Fed figure is 10.6% than the roll-up method. Scaling up the estimate of senior housing values by 10.6% adds \$560 billion to our estimate of senior housing value and drives a corresponding \$560 billion increase in our estimate of senior housing.
- The third and fourth factors are related to our use of the 2013 American Community Survey for an updated MSA-level estimate of the number of senior home-owners and the value of their housing.
  - These estimates show that the number of senior homeowners has increased faster relative to the aggregate population of homeowners than our prior estimates indicated, resulting in an increase in the share of overall housing owned by seniors and a \$665 billion increase in the estimate of senior home equity.
  - These estimates also show that senior housing values outperformed housing owned by the general population (i.e., they either increased at a faster rate, or in some MSAs hard hit by the Great Recession, were more resilient to declines). This outperformance resulting in an increase in the share of housing value growth attributed to seniors and a \$416 billion increase in the estimate of senior home equity.