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Issue

10. Average  
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# Variable Annuity Guaranteed Living Benefits Utilization

## 2016 Experience

### Guaranteed Minimum Accumulation Benefits (GMAB)

A Joint Study Sponsored by the  
Society of Actuaries and LIMRA

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# Variable Annuity Guaranteed Living Benefits Utilization

2016 EXPERIENCE

## Participants' Report About the Study

**LIMRA Secure Retirement Institute and Society of Actuaries Variable Annuity Guaranteed Living Benefit Utilization Study (VAGLBUS) — 2016 Experience** is an update of earlier investigations, conducted since 2006.

The study examines the GLB utilization of over 4.9 million contracts that were either issued during or in force as of 2016. Twenty insurance companies participated in this study. These 22 companies made up 67 percent of all GLB sales in 2016 and 69 percent of GLB assets at year-end, and thus provide a substantial representation of this business.

Few product innovations have transfigured the variable annuity (VA) industry as much as guaranteed living benefits (GLBs). Evolving from simple income benefits over a decade ago, they are now offered in a variety of forms on the vast majority of VA products sold today.

Research on GLBs generally focuses on sales and elections rather than on how annuity owners actually use their benefits. However, knowing more about benefit utilization — as well as the connection with behaviors such as persistency — can assist insurers with assessing and managing the long-term risks of these GLBs.

Note that confidentiality rules have been applied to the results displayed in all of the tabs in this report in order to ensure that no individual company data can be inferred by the users.

Click on the tabs at the top of the screen to move between pages. The buttons and menus on the right side of each screen allow you to filter results.

Access to this information is a benefit of LIMRA and SOA membership.  
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Guaranteed minimum accumulation benefit (GMAB) riders in variable annuities (VAs) guarantee that the contract owner will receive a minimum amount of the principal after a set period of time or waiting period — either the amount initially invested or the contract value with a locked-in guaranteed rate, or market gains locked in during the waiting period. The rider guarantees protection of the investment's value from a down market. The GMAB typically provides a one-time adjustment to the contract value on the benefit maturity date if the contract value is less than the guaranteed minimum accumulation value as stipulated in the contract. However, if the contract value is equal to or greater than the guaranteed minimum accumulation value, the rider ends without value and the insurance company pays no benefits.

Even though they are one of the simplest living benefits, GMABs differ from other GLB riders in terms of the nature of the guarantee. While GLWBs, GMWBs, and GMIBs offer guaranteed retirement income for life or for a certain period of time (at the owner's discretion), GMABs mainly guarantee protection of investments from market risk. GMABs are also different from other GLBs in terms of the risk posed to the insurer. With GLWBs, GMWBs, and GMIBs, the contract owner must choose to utilize the benefit. With GMABs, insurers are obligated to provide the guaranteed benefit to all GMAB owners where the guaranteed benefit base exceeds the contract value on their maturity date. This makes it even more important for companies to scrutinize the persistency patterns of contracts with these benefits.

### Buyer Age by Selected Characteristics

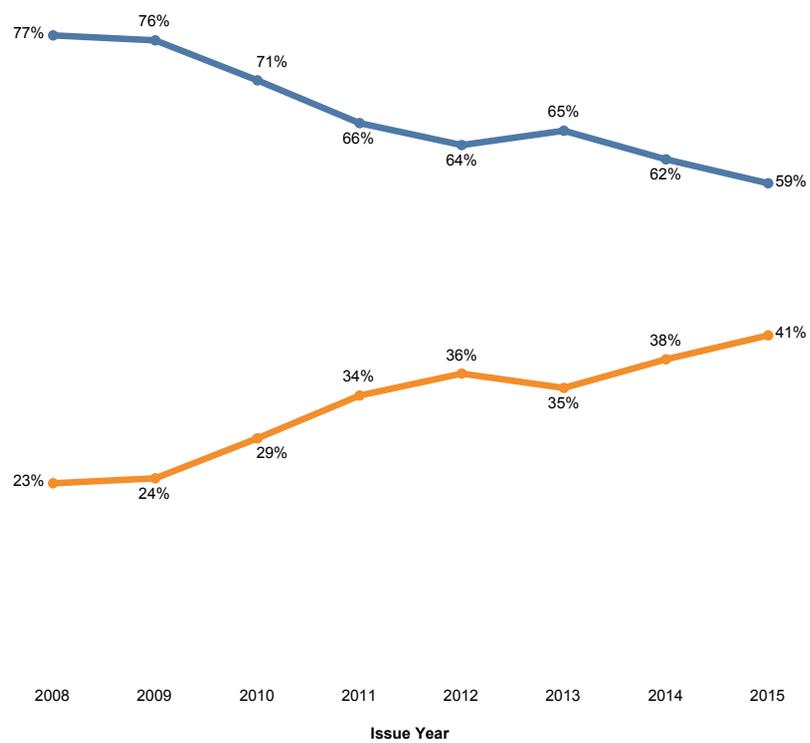
	Average	Lower Quartile	Median	Upper Quartile
2008	51	44	51	59
2009	51	44	52	59
2010	53	44	53	61
2011	54	47	55	62
2012	55	48	56	62
2013	55	47	55	62
2014	55	48	56	63
2015	56	50	57	63

Select Breakout

- Issue Year
- Gender
- Market Type
- Cost Structure
- Premium Size
- Distribution Channel

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## Percentage of Buyers Over Age 60 at Time of Purchase



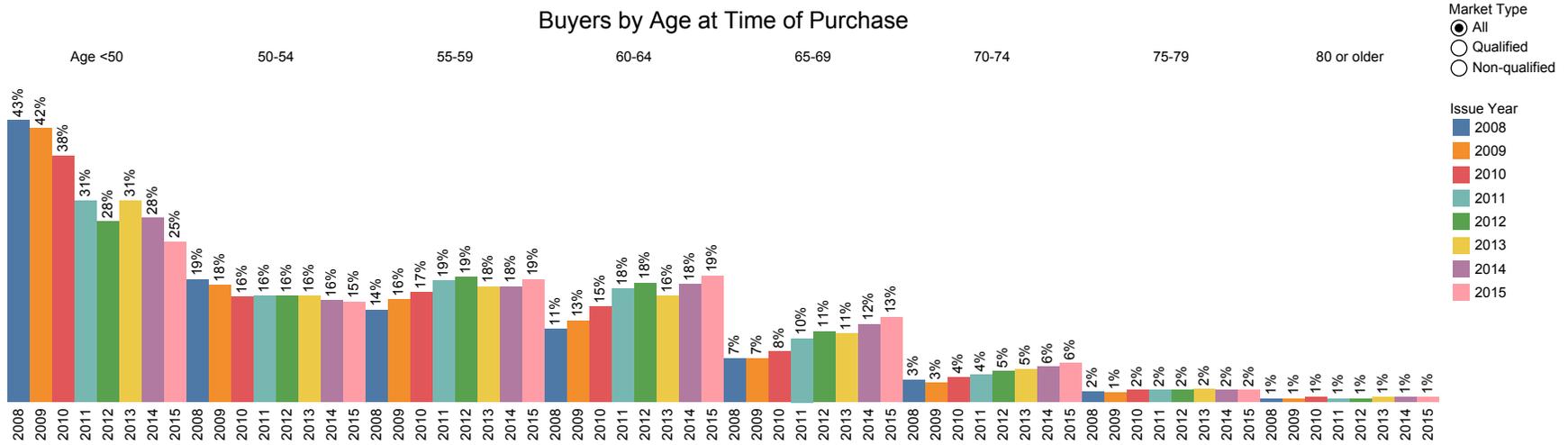
Buyer age has been generally increasing since 2008 with the percentage of buyers under age 60 declining and the percentage over age 60 increasing.

- Age Break
- Under age 60
  - Age 60 and older
- Market Type
- All
  - Qualified
  - Non-qualified

Age Break 60

Some issue years are suppressed due to confidentiality safe harbors.

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Qualified buyers continue to be generally younger than non-qualified buyers. Both types of business continue to shift gradually to older ages at purchase.

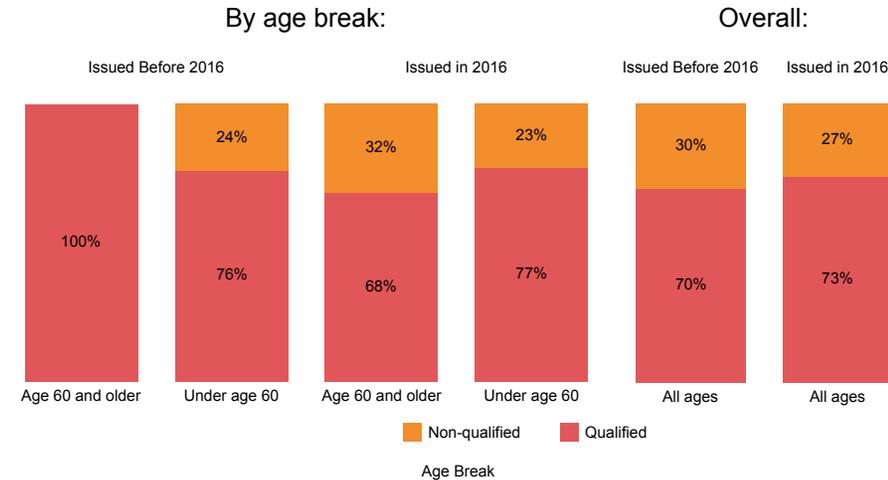
1. Welc..	2. Introduction	3. Buyer Profiles	4. Buyer Age Analysis 1	5. Buyer Age Analysis 2	6. Owner Profiles	7. Benefit Base/Contract Value Summary	8. Contract Value and Benefit Base by Quarter of Issue	9. Ratio of Benefit Base to Contract Value by Quarter of Issue	10. Average Contract Values and Benefit Base	11. Ratio of Benefit Ba..
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## Owner Profiles

This tab provides a summary of GMAB owner and contract characteristics at EOY 2016 for contracts issued in 2016 or before and still in force at the end of 2016.

Based on contracts issued in 2016 or earlier and still in force at EOY 2016, ownership of qualified annuities is largely concentrated in the hands of owners under age 60. Among those owners, three quarters fund their annuities with qualified money. In contrast, half of the owners aged 70 or over fund their GMAB annuities with non-qualified sources.

The table below provides a summary of GMAB owner and contract characteristics at EOY 2016.



Owner and Contract Characteristics				
	Issued Before 2016	Issued In 2016	Overall	Avg. Premium for Contracts Issued in 2016
60 to 64	18%	18%	18%	\$154,430
65 to 69	16%	11%	15%	\$141,530
70 to 74	10%	5%	10%	\$149,926
75 to 79	5%	2%	5%	\$156,444
80 or older	4%	0%	4%	\$143,942
Age 59 & under	48%	64%	48%	\$105,331

Select Breakout

- Age of Owner
- Qualified by Age
- Non-qualified by Age
- Gender
- Market Type
- Distribution Channel
- Cost Structure
- Contract Value EOY

2. Infr...	3. Buyer Profiles	4. Buyer Age Analysis 1	5. Buyer Age Analysis 2	6. Owner Profiles	<b>7. Benefit Base/Contract Value Summary</b>	8. Contract Value and Benefit Base by Quarter of Issue	9. Ratio of Benefit Base to Contract Value by Quarter of Issue	10. Average Contract Values and Benefit Base	11. Ratio of Benefit Base to Contract Value by Age	12. 2016 Withdrawal A..
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## Benefit Base and Contract Value Comparison

	Benefit Base	Contract Value	CV as % of BB	Time of Year
Sum	\$15,654,978,639	\$17,204,692,640	110.0%	<input checked="" type="radio"/> Beginning of Year <input type="radio"/> End of Year
Mean	\$86,940	\$95,546	110.0%	
Median	\$50,000	\$57,032	114.0%	Market Type <input checked="" type="radio"/> All <input type="radio"/> Qualified <input type="radio"/> Non-qualified

Percent of contracts where benefit base was greater than contract value:  
**28.7%**

### Historical ITM Trends by Calendar Year

	2009	2010	2011	2012	2013	2014	2015	2016
Number of Contracts Issued before Calendar Year	0.37M	0.37M	0.30M	0.27M	0.23M	0.25M	0.22M	0.24M
Percent of Contracts where Benefit Bases > Contract Values	86%	55%	24%	39%	18%	10%	10%	29%

At beginning-of-year (BOY) 2016, around 29 percent of contracts had a benefit base greater than the current contract value. The average GMAB contract value exceeded the average benefit base by 10 percent in total with the non-qualified ratio slightly lower than qualified at 9 percent vs. 10 percent respectively.

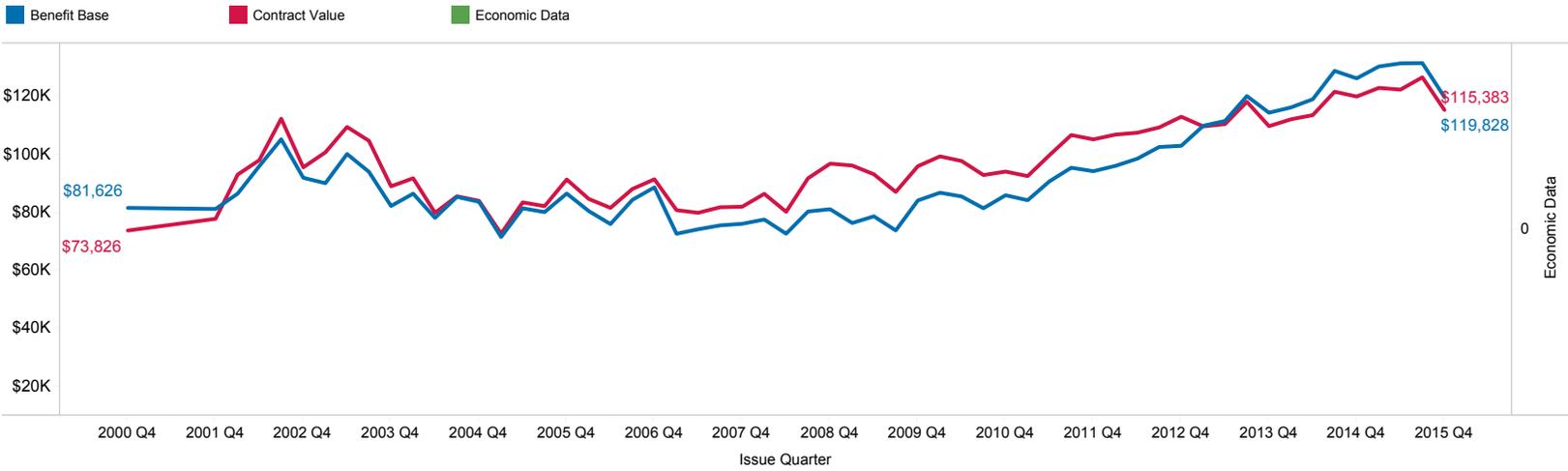
In 2016, the S&P 500 increased by 10 percent (excluding dividends). By EOY 2016, the average GMAB contract value was relatively flat, while the average benefit base fell 4 percent. As a result, in aggregate, only 18 percent of the GMAB contracts had benefit bases that were greater than the contract values at EOY.

3. Buyer Age Analysis 1	4. Buyer Age Analysis 2	5. Buyer Age Analysis 2	6. Owner Profiles	7. Benefit Base/Contract Value Summary	<b>8. Contract Value and Benefit Base by Quarter of Issue</b>	9. Ratio of Benefit Base to Contract Value by Quarter of Issue	10. Average Contract Values and Benefit Base	11. Ratio of Benefit Base to Contract Value by Age	12. 2016 Withdrawal Activity	13. Withdrawal Activity
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## Contract Value and Benefit Base by Quarter of Issue

One-third of GMAB contracts were issued in 2007 or prior, thus a large segment of the contracts went through considerable market volatility — involving both deep losses during the market crisis in 2008 to 2009 and significant gains from 2010 to 2015. The contracts issued in 2006, for example, experienced a brief period of market gains in 2006 to 2007, and had less of a setback during the last market crisis. At BOY 2016, median GMAB contract values were higher than the median benefit base from 2006 through 2012.

- Time of Year**
  - Beginning of Year
  - End of Year
- Economic Data**
  - None
  - 10-year Treasury Yield
  - S&P 500
- Average or Median**
  - Average
  - Median
  - Quartiles
- Market Type**
  - All
  - Qualified
  - Non-qualified



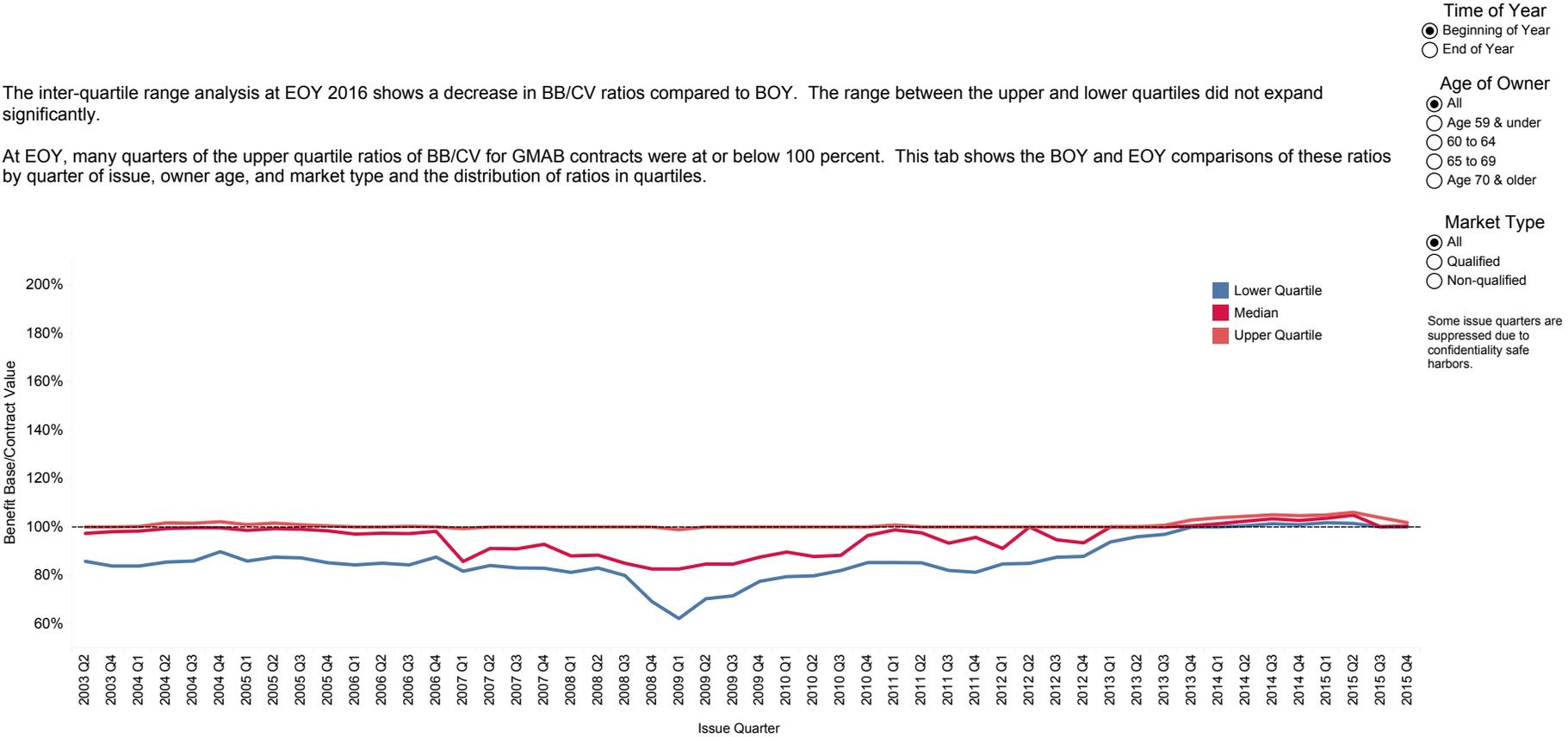
Source: Oxford Economics

4. Buyer Profile	5. Buyer Age Analysis 2	6. Owner Profiles	7. Benefit Base/Contract Value Summary	8. Contract Value and Benefit Base by Quarter of Issue	<b>9. Ratio of Benefit Base to Contract Value by Quarter of Issue</b>	10. Average Contract Values and Benefit Base	11. Ratio of Benefit Base to Contract Value by Age	12. 2016 Withdrawal Activity	13. Withdrawal Activity by Source of Funds and Age of Owner	14. Systematic Withdrawals
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## Benefit Base to Contract Value

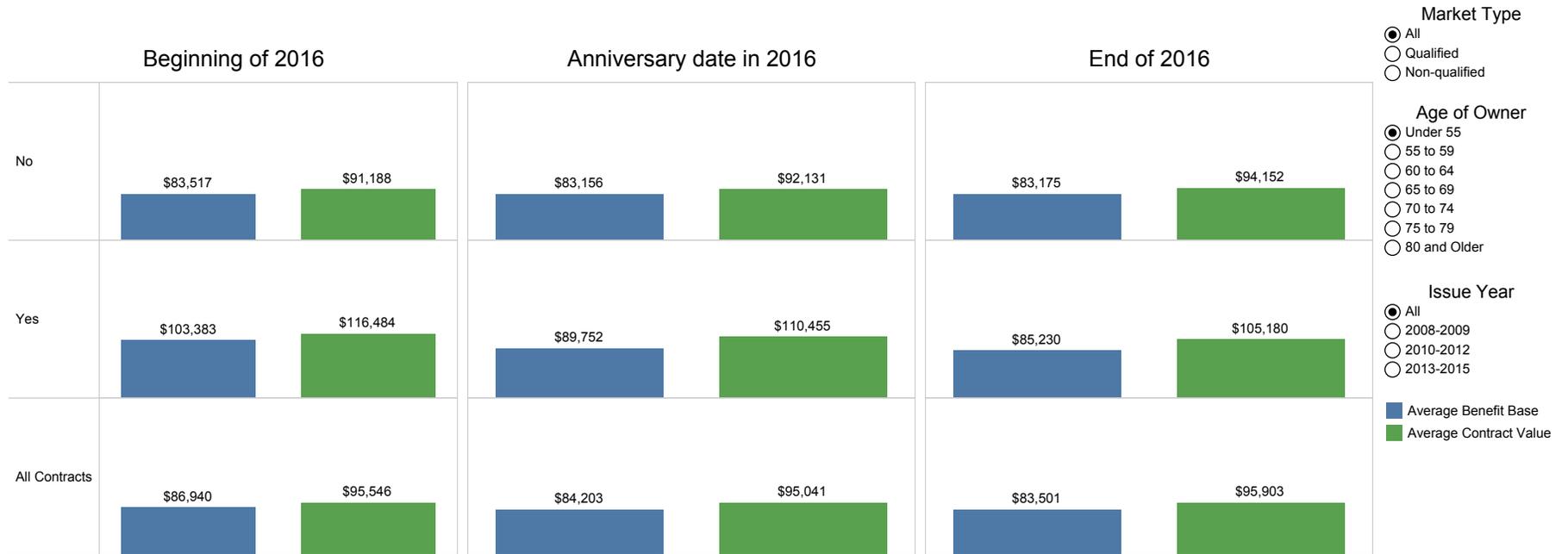
The inter-quartile range analysis at EOY 2016 shows a decrease in BB/CV ratios compared to BOY. The range between the upper and lower quartiles did not expand significantly.

At EOY, many quarters of the upper quartile ratios of BB/CV for GMAB contracts were at or below 100 percent. This tab shows the BOY and EOY comparisons of these ratios by quarter of issue, owner age, and market type and the distribution of ratios in quartiles.



5. Buyer..	6. Owner Profiles	7. Benefit Base/Contract Value Summary	8. Contract Value and Benefit Base by Quarter of Issue	9. Ratio of Benefit Base to Contract Value by Quarter of Issue	<b>10. Average Contract Values and Benefit Base</b>	11. Ratio of Benefit Base to Contract Value by Age	12. 2016 Withdrawal Activity	13. Withdrawal Activity by Source of Funds and Age of Owner	14. Systematic Withdrawal Activity	15. Average Withdrawal..
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## Average Contract Values and Benefit Base



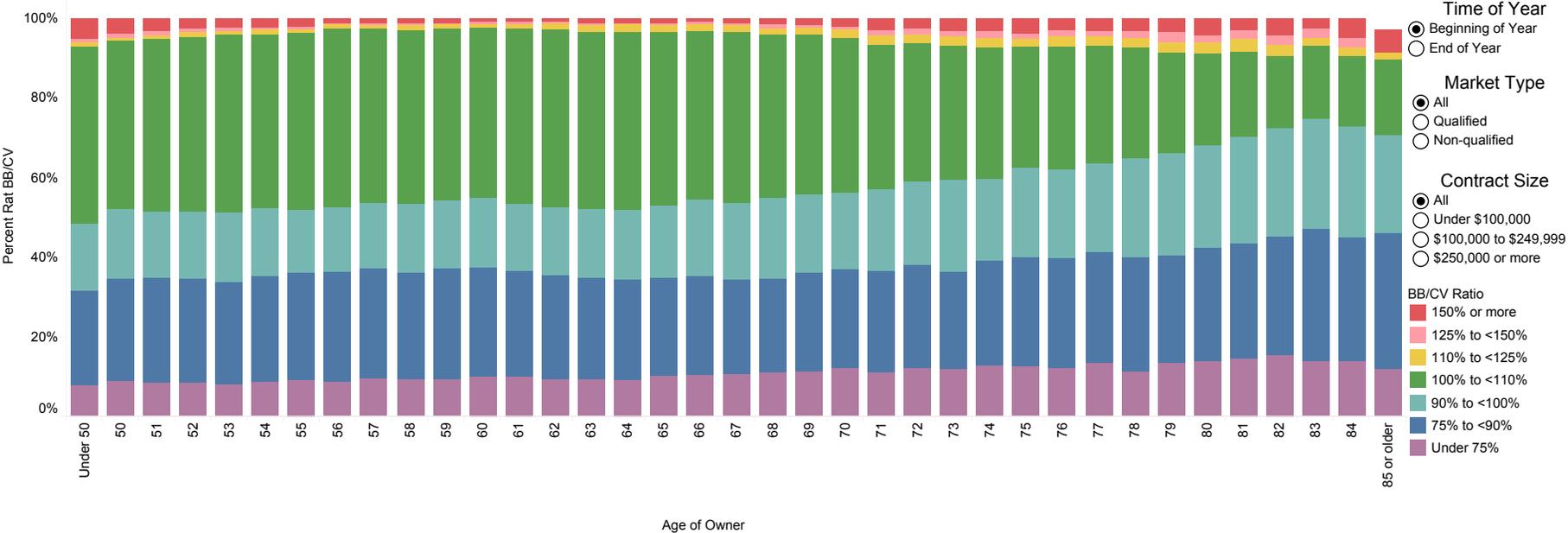
For GMAB contracts that incurred withdrawals in 2016, the average benefit base balance dropped 17 percent during the year. For contracts that did not take withdrawals during the year, the average benefit base remained flat. The average contract value remained flat over the year. Those contracts that did not take withdrawals show an average contract value increase of 3.3 percent while contracts taking withdrawals saw an average contract value decrease of 9.7 percent.

6. O w n e..	7. Benefit Base/Contract Value Summary	8. Contract Value and Benefit Base by Quarter of Issue	9. Ratio of Benefit Base to Contract Value by Quarter of Issue	10. Average Contract Values and Benefit Base	<b>11. Ratio of Benefit Base to Contract Value by Age</b>	12. 2016 Withdrawal Activity	13. Withdrawal Activity by Source of Funds and Age of Owner	14. Systematic Withdrawal Activity	15. Average Withdrawal Amount by Withdrawal Type	16. With draw al Ra tes ..
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## Ratio of Benefit Base to Contract Value by Age

We have expanded the analysis of BB/CV ratios to drill down on age or age cohorts to see if any risks can be linked to BB/CV ratios by age. This analysis shows that the BB/CV ratios differ by age, and provides insights related to risks associated with each age or age cohort and comparisons within the GMAB industry.

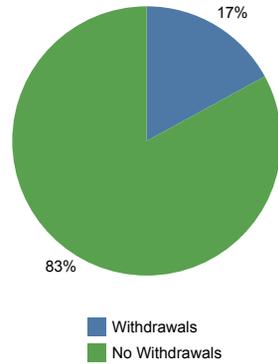
At BOY 2016, at age 60, 55 percent of contracts had a BB/CV ratio less than 100 percent while at age 80, 70 percent of contracts had a BB/CV ratio at less than 100 percent. And the percentages below 100 percent increased from BOY to EOY 2016.



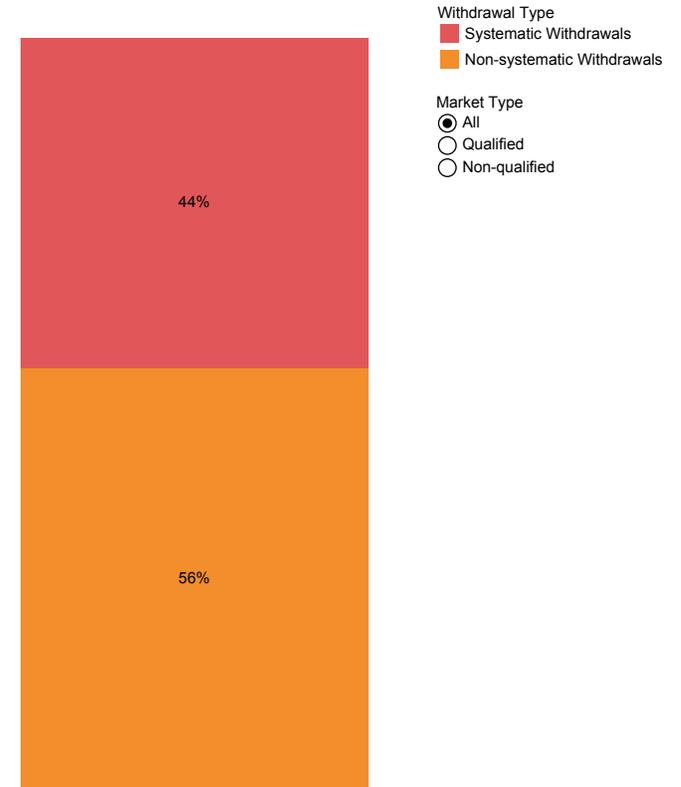
7. B e n e ..	8. Contract Value and Benefit Base by Quarter of Issue	9. Ratio of Benefit Base to Contract Value by Quarter of Issue	10. Average Contract Values and Benefit Base	11. Ratio of Benefit Base to Contract Value by Age	<b>12. 2016 Withdrawal Activity</b>	13. Withdrawal Activity by Source of Funds and Age of Owner	14. Systematic Withdrawal Activity	15. Average Withdrawal Amount by Withdrawal Type	16. Withdrawal Rates for Contracts In-the-Money vs. Not-In-the-Money	17. S umm ary o f Wit hdr..
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## 2016 Withdrawal Activity

Percent of owners who have taken withdrawals in 2016:



Of those taking withdrawals in 2016:



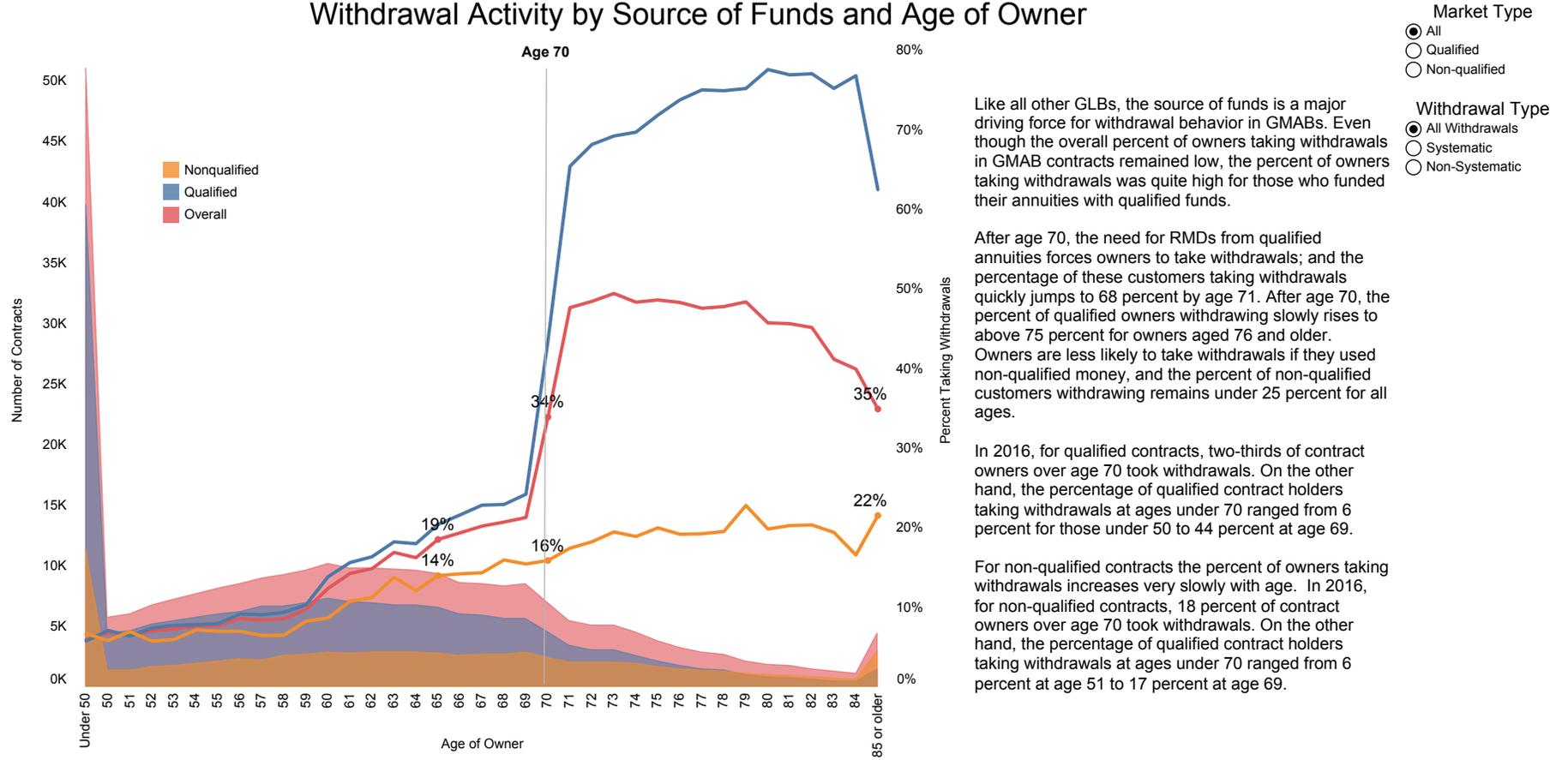
Withdrawal Type  
■ Systematic Withdrawals  
■ Non-systematic Withdrawals

Market Type  
 All  
 Qualified  
 Non-qualified

Despite the fact that GMAB contracts are not designed for owners to take withdrawals, and withdrawals cause the benefit base to be proportionately reduced, annuity customers do take withdrawals, to meet financial needs. For example, customers may take withdrawals for emergencies, or to satisfy RMDs. Among GMAB contracts issued before 2016 and still in force at EOY, 17 percent had some withdrawal activity during 2016, very similar to experience in prior years. For 44 percent of contracts, these withdrawals were systematic withdrawals. This percentage is materially lower than other guaranteed living benefits (GLWB, GMWB and GMIB).

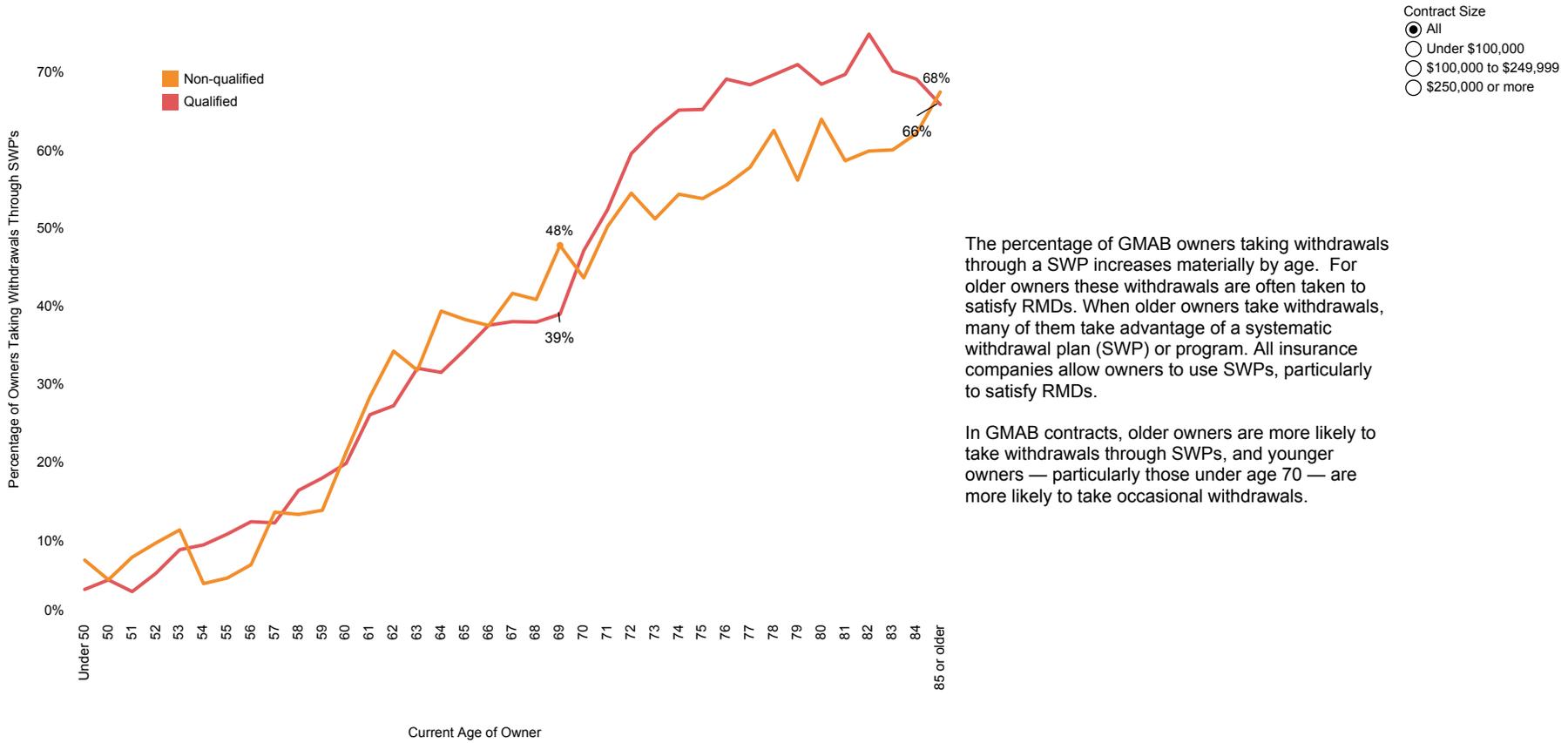
8. Contract...	9. Ratio of Benefit Base to Contract Value by Quarter of Issue	10. Average Contract Values and Benefit Base	11. Ratio of Benefit Base to Contract Value by Age	12. 2016 Withdrawal Activity	<b>13. Withdrawal Activity by Source of Funds and Age of Owner</b>	14. Systematic Withdrawal Activity	15. Average Withdrawal Amount by Withdrawal Type	16. Withdrawal Rates for Contracts In-the-Money vs. Not-In-the-Money	17. Summary of Withdrawal Rates by Selected Owner and Product Characteristics	18. Additional Premium...
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## Withdrawal Activity by Source of Funds and Age of Owner



9. Ratio	10. Average Contract Values and Benefit Base	11. Ratio of Benefit Base to Contract Value by Age	12. 2016 Withdrawal Activity	13. Withdrawal Activity by Source of Funds and Age of Owner	<b>14. Systematic Withdrawal Activity</b>	15. Average Withdrawal Amount by Withdrawal Type	16. Withdrawal Rates for Contracts In-the-Money vs. Not-In-the-Money	17. Summary of Withdrawal Rates by Selected Owner and Product Characteristics	18. Additional Premium	19. Net Flows
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## Systematic Withdrawal Activity



The percentage of GMAB owners taking withdrawals through a SWP increases materially by age. For older owners these withdrawals are often taken to satisfy RMDs. When older owners take withdrawals, many of them take advantage of a systematic withdrawal plan (SWP) or program. All insurance companies allow owners to use SWPs, particularly to satisfy RMDs.

In GMAB contracts, older owners are more likely to take withdrawals through SWPs, and younger owners — particularly those under age 70 — are more likely to take occasional withdrawals.

10. Average R...	11. Ratio of Benefit Base to Contract Value by Age	12. 2016 Withdrawal Activity	13. Withdrawal Activity by Source of Funds and Age of Owner	14. Systematic Withdrawal Activity	<b>15. Average Withdrawal Amount by Withdrawal Type</b>	16. Withdrawal Rates for Contracts In-the-Money vs. Not-In-the-Money	17. Summary of Withdrawal Rates by Selected Owner and Product Characteristics	18. Additional Premium	19. Net Flows	20. Surrender Rates b..
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## Average Withdrawal Amount by Withdrawal Type

### Average Withdrawal Amount

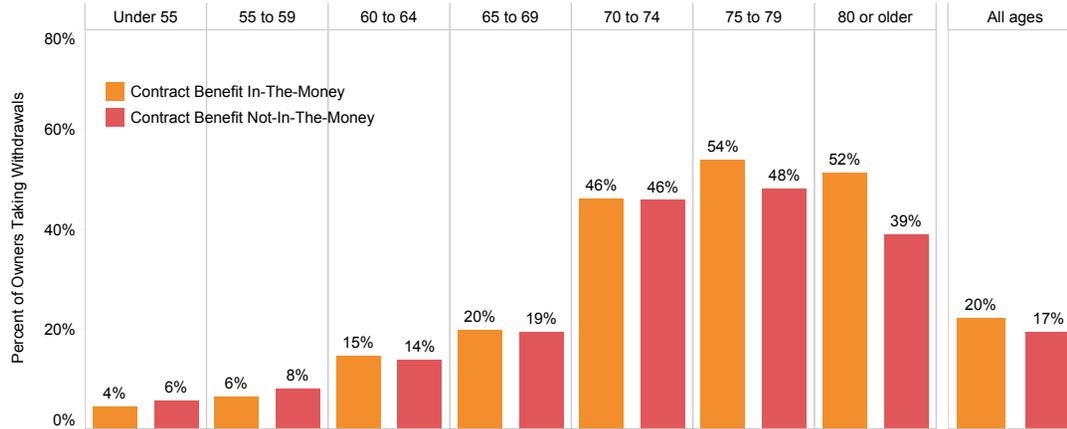
	Systematic				Occasional			
	Mean		Median		Mean		Median	
	Non-qualified	Qualified	Non-qualified	Qualified	Non-qualified	Qualified	Non-qualified	Qualified
Under age 60	\$12,675	\$10,944	\$9,179	\$7,613	\$30,721	\$22,047	\$11,669	\$11,400
Age 60-69	\$11,201	\$12,876	\$6,550	\$8,649	\$26,927	\$24,029	\$10,000	\$11,364
Age 70 or older	\$8,734	\$6,146	\$5,572	\$3,710	\$19,807	\$11,460	\$9,877	\$5,300
Grand Total	\$9,661	\$7,876	\$6,000	\$4,670	\$25,563	\$19,081	\$10,000	\$9,000

The average amount of withdrawals for GMAB qualified contracts was \$7,876 for those taking systematic withdrawals and \$19,081 for those taking occasional withdrawals. This data is based on contracts issued before 2016 that were in force at EOY 2016. Some owners in their 50s and 60s took average withdrawals of more than \$25,000 from their contracts.

Since these withdrawals by owners under age 70 were not for RMDs, the withdrawals will reduce the benefit amount on a pro-rata basis. Most of these withdrawals were likely partial surrenders of the contracts. A more reasonable withdrawal pattern and average withdrawal amount emerges for owners over age 70, commensurate with RMD needs.

11. Rat i..	12. 2016 Withdrawal Activity	13. Withdrawal Activity by Source of Funds and Age of Owner	14. Systematic Withdrawal Activity	15. Average Withdrawal Amount by Withdrawal Type	<b>16. Withdrawal Rates for Contracts In-the-Money vs. Not-In-the-Money</b>	17. Summary of Withdrawal Rates by Selected Owner and Product Characteristics	18. Additional Premium	19. Net Flows	20. Surrender Rates by Contract Year	21. Surrender Rates b..
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## Withdrawal Rates for Contracts In-The-Money vs. Not-In-the-Money

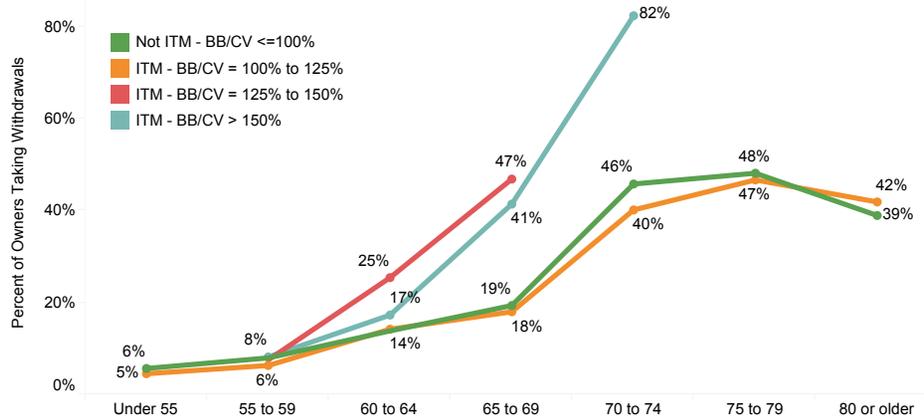


Market Type  
 All  
 Qualified  
 Non-qualified

Overall withdrawal rates for contracts in-the-money are slightly higher than for contracts not in-the-money (20 percent vs 17 percent respectively). The largest difference is seen at owner ages 75 and above.

Withdrawal rates generally increase with owner age, and withdrawal rates increase more dramatically with age as the level of in-the-moneyness increases.

For this tab, we define in-the-moneyness based on the ratio of benefit base to contract value (BB/CV) at the beginning of the experience year.



12	13. Withdrawal Activity by Source of Funds and Age of Owner	14. Systematic Withdrawal Activity	15. Average Withdrawal Amount by Withdrawal Type	16. Withdrawal Rates for Contracts In-the-Money vs. Not-In-the-Money	17. Summary of Withdrawal Rates by Selected Owner and Product Characteristics	18. Additional Premium	19. Net Flows	20. Surrender Rates by Contract Year	21. Surrender Rates by Timing of Surrender Charge Expiry	22. Surrender Rates by b..
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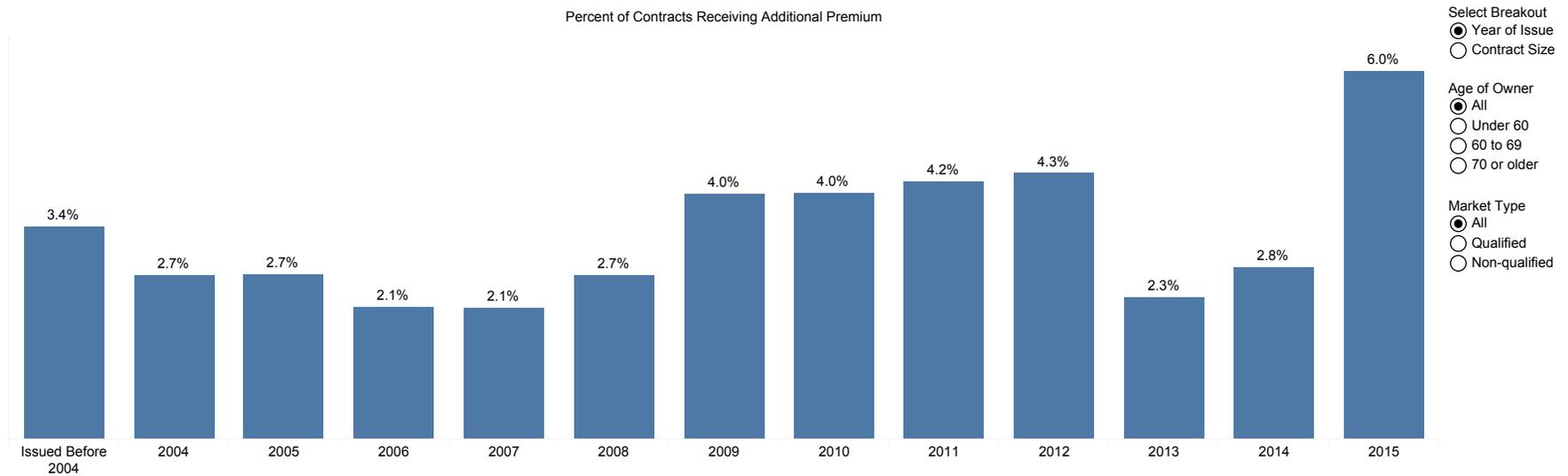
## Withdrawal Rates by Selected Characteristics

	<u>Unweighted</u>		<u>Weighted by BOY 2016 Contract Value</u>	
	Percent of Owners Taking Withdrawals	Percent of Owners Taking Withdrawals Through SWP's	Percent of Owners Taking Withdrawals	Percent of Owners Taking Withdrawals Through SWP's
<b>Gender</b>				
Male	17%	8%	22%	10%
Female	17%	7%	21%	9%
<b>Age of Owner</b>				
Under 50	5%	0%	7%	0%
50 to 54	6%	0%	8%	1%
55 to 59	8%	1%	10%	2%
60 to 64	14%	4%	19%	7%
65 to 69	19%	7%	24%	10%
70 to 74	45%	26%	47%	26%
75 to 79	49%	33%	47%	29%
80 or older	42%	28%	34%	20%
<b>Market Type</b>				
Non-qualified	12%	5%	15%	6%
Qualified	19%	9%	25%	11%
<b>Distribution Channel</b>				
Bank/S&L	20%	11%	22%	12%
Career Agent	15%	4%	21%	7%
Direct Response				
Full Service National B-D	15%	8%	17%	10%
Independent Agent				
Independent B-D				
<b>Contract Value (EOY)</b>				
Under \$25,000	16%	6%	26%	8%
\$25,000 to \$49,999	16%	7%	19%	8%
\$50,000 to \$99,999	16%	8%	19%	8%
\$100,000 to \$249,999	18%	8%	20%	9%
\$250,000 to \$499,999	22%	10%	24%	11%
\$500,000 or higher	23%	11%	24%	11%

13. Withdrawal Activity	14. Systematic Withdrawal Activity	15. Average Withdrawal Amount by Withdrawal Type	16. Withdrawal Rates for Contracts In-the-Money vs. Not-In-the-Money	17. Summary of Withdrawal Rates by Selected Owner and Product Characteristics	<b>18. Additional Premium</b>	19. Net Flows	20. Surrender Rates by Contract Year	21. Surrender Rates by Timing of Surrender Charge Expiry	22. Surrender Rates by Surrender Charge Level	23. Surrender Rates by Contract Year
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## Additional Premium

Percent of Contracts Receiving Additional Premium



Contracts with GMAB riders typically do not allow owners to add premium to the guaranteed portion after the first anniversary. Many contracts have strict provisions to allow additional premium only during the first 90 to 180 days after issue. Therefore we see most additional premium coming in the year of issue.

Among contracts issued in 2015 or earlier:

- For those issued in 2015, 6 percent received additional premium. This is down from 2014 when 9 percent of 2014 issues added premium in 2015.
- Younger owners were generally more likely to add premium than older owners.

14. Systems	15. Average Withdrawal Amount by Withdrawal Type	16. Withdrawal Rates for Contracts In-the-Money vs. Not-In-the-Money	17. Summary of Withdrawal Rates by Selected Owner and Product Characteristics	18. Additional Premium	<b>19. Net Flows</b>	20. Surrender Rates by Contract Year	21. Surrender Rates by Timing of Surrender Charge Expiry	22. Surrender Rates by Surrender Charge Level	23. Surrender Rates based on Timing of Withdrawals	24. Surrender Rates
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## Net Flows

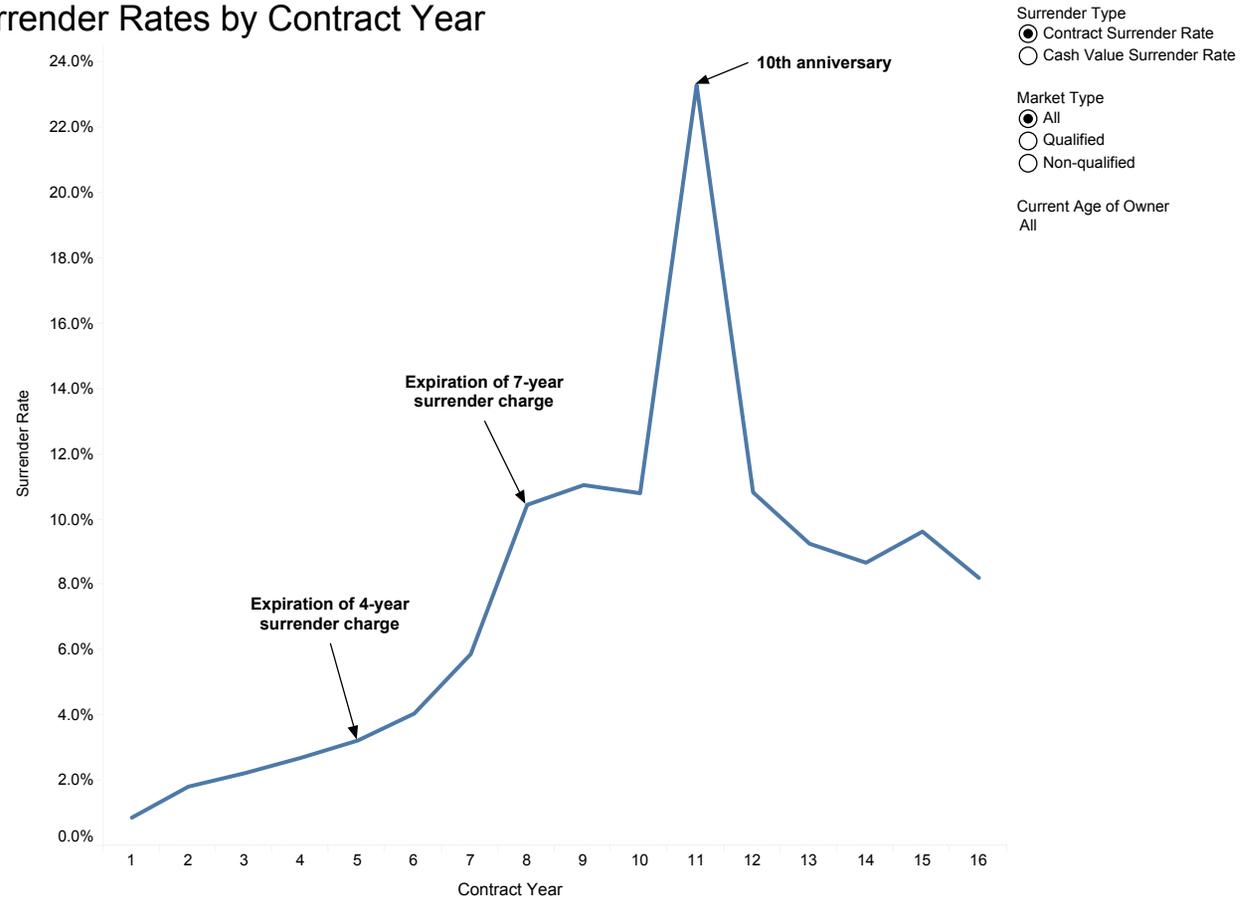
		Dollars (in billions)	Number of Contracts	Average Contract Size
	In-Force BOY	\$25.4B	256,419	\$99,223
Premium Received	Existing Contracts	\$0.2B		
	Newly Issued Contracts	\$1.3B	10,607	\$121,592
Benefits Paid	Annuitizations	\$0.0B	223	\$112,415
	Death/Disability	\$0.1B	1,362	\$103,806
	Full Surrenders	\$1.8B	19,585	\$89,831
	Partial Withdrawals	\$1.1B		
	Investment Growth	\$0.5B		
	In-Force EOY	\$27.2B	264,442	\$102,739

Premium received, new contracts issued, and investment growth outpaced the outflows associated with partial withdrawals, full surrenders, deaths, and annuitizations. The total number of GMAB contracts in force grew by 3 percent during 2016.

15 Average r..	16. Withdrawal Rates for Contracts In-the-Money vs. Not-In-the-Money	17. Summary of Withdrawal Rates by Selected Owner and Product Characteristics	18. Additional Premium	19. Net Flows	20. Surrender Rates by Contract Year	21. Surrender Rates by Timing of Surrender Charge Expiry	22. Surrender Rates by Surrender Charge Level	23. Surrender Rates based on Timing of Withdrawals	24. Surrender Rates by Withdrawal Method	25. Surrender Rates ..
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## Surrender Rates by Contract Year

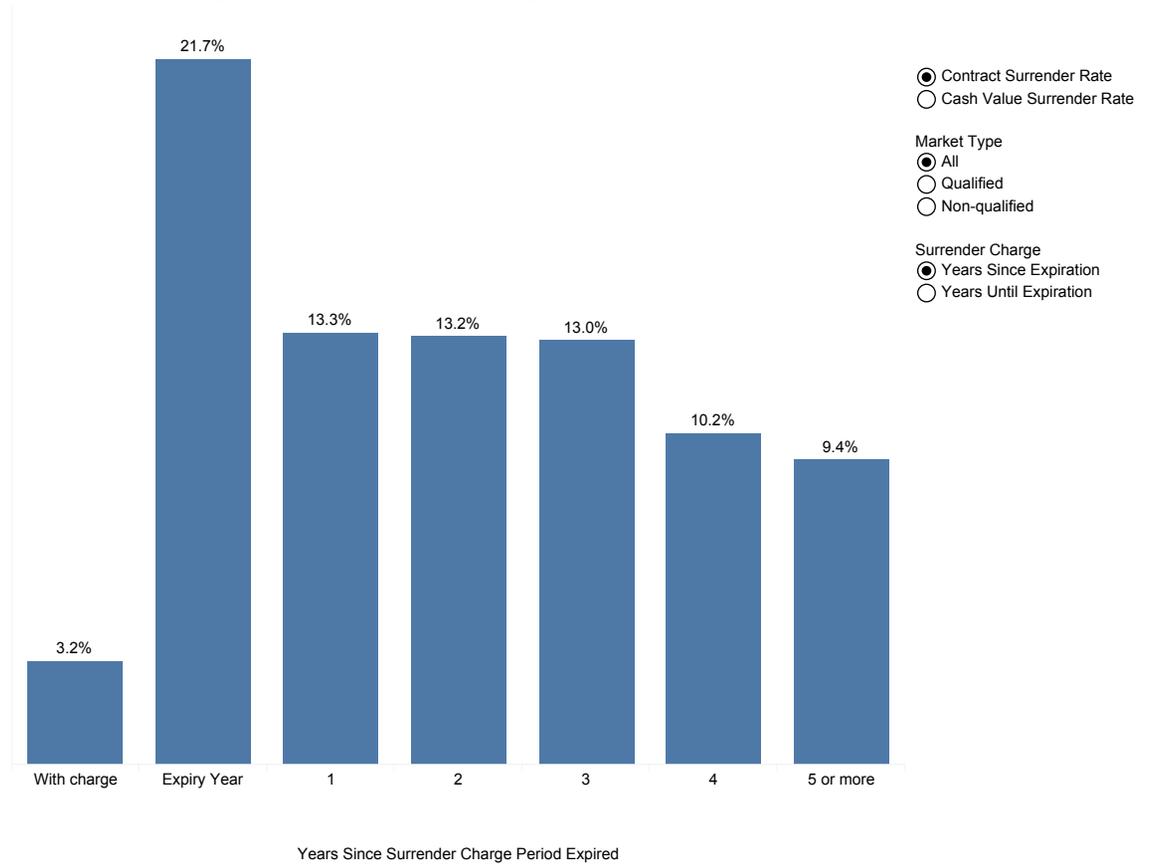
GMABs have the highest overall contract surrender rates compared with other GLBs. However, surrender rates are expected to be higher for GMAB contracts once the benefit maturity period is reached, as the typical contract does not continue any protection of principal, while some other traditional benefits of annuities — like guaranteed death benefits, tax deferral for non-qualified contracts, and guaranteed lifetime income through annuitization — remain in effect. Contract surrender rates were extremely high (13.2 percent) for GMAB contracts issued from 2002-2008. There is also a noticeable increase in surrender rates at the expiration of the B-share and L-share surrender charges as well as the expiration of the guaranteed benefit for some GMAB riders.



16	17. Summary of Withdrawal Rates by Selected Owner and Product Characteristics	18. Additional Premium	19. Net Flows	20. Surrender Rates by Contract Year	<b>21. Surrender Rates by Timing of Surrender Charge Expiry</b>	22. Surrender Rates by Surrender Charge Level	23. Surrender Rates based on Timing of Withdrawals	24. Surrender Rates by Withdrawal Method	25. Surrender Rates by Level of In-the-Moneyness	26. Surrender Rates by...
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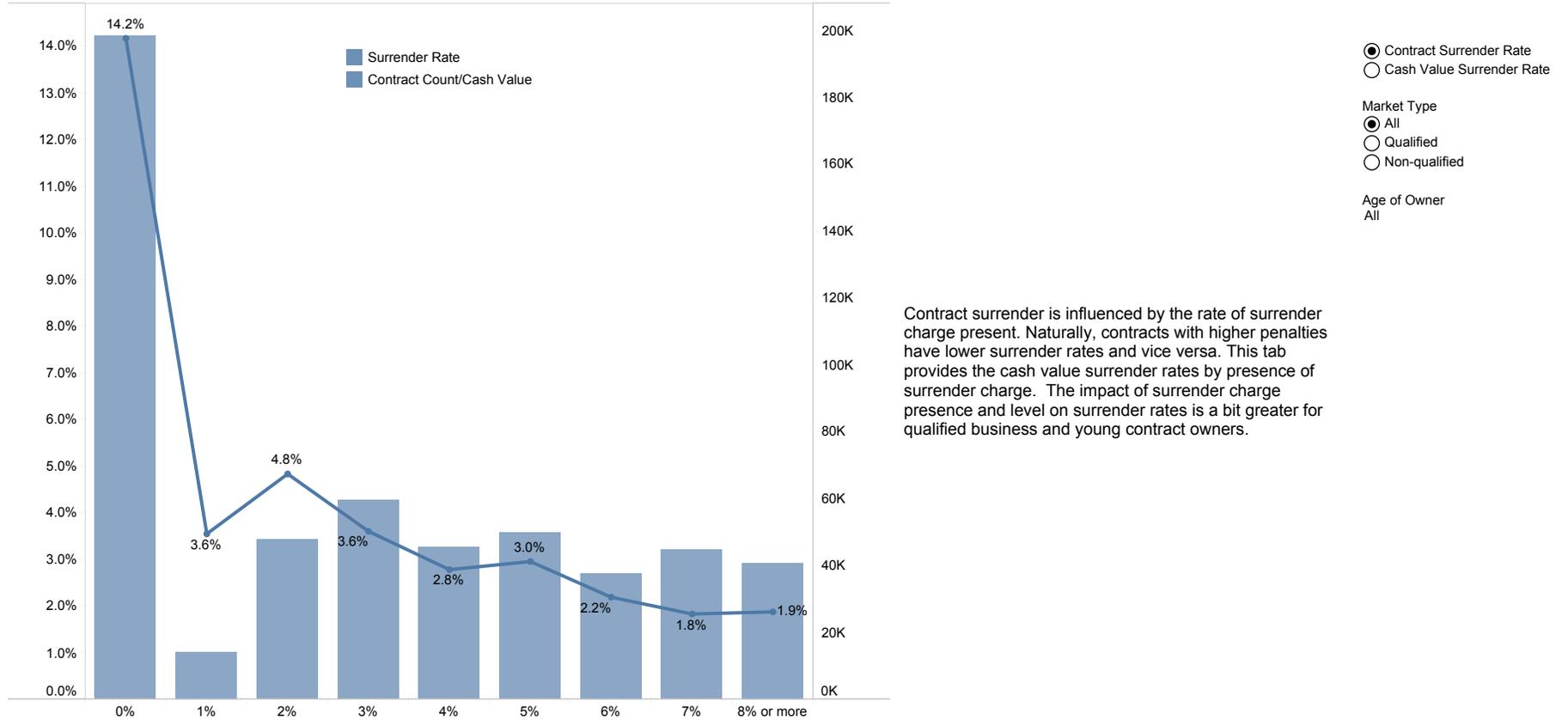
## Surrender Rates by Timing of Surrender Charge Expiry

Surrender rates among contracts with surrender charges were much lower than in contracts without surrender charges. Irrespective of share classes, the surrender rate for contracts where charges expired in 2015 was 22 percent on a contract basis — over five times the rate of contracts where charges exist (3.2 percent). The contract surrender rate for cases where the surrender charge expired in previous years was 13 percent. Just under two-thirds of GMAB contracts, B-share and L-share combined, were within the surrender charge period in 2016.



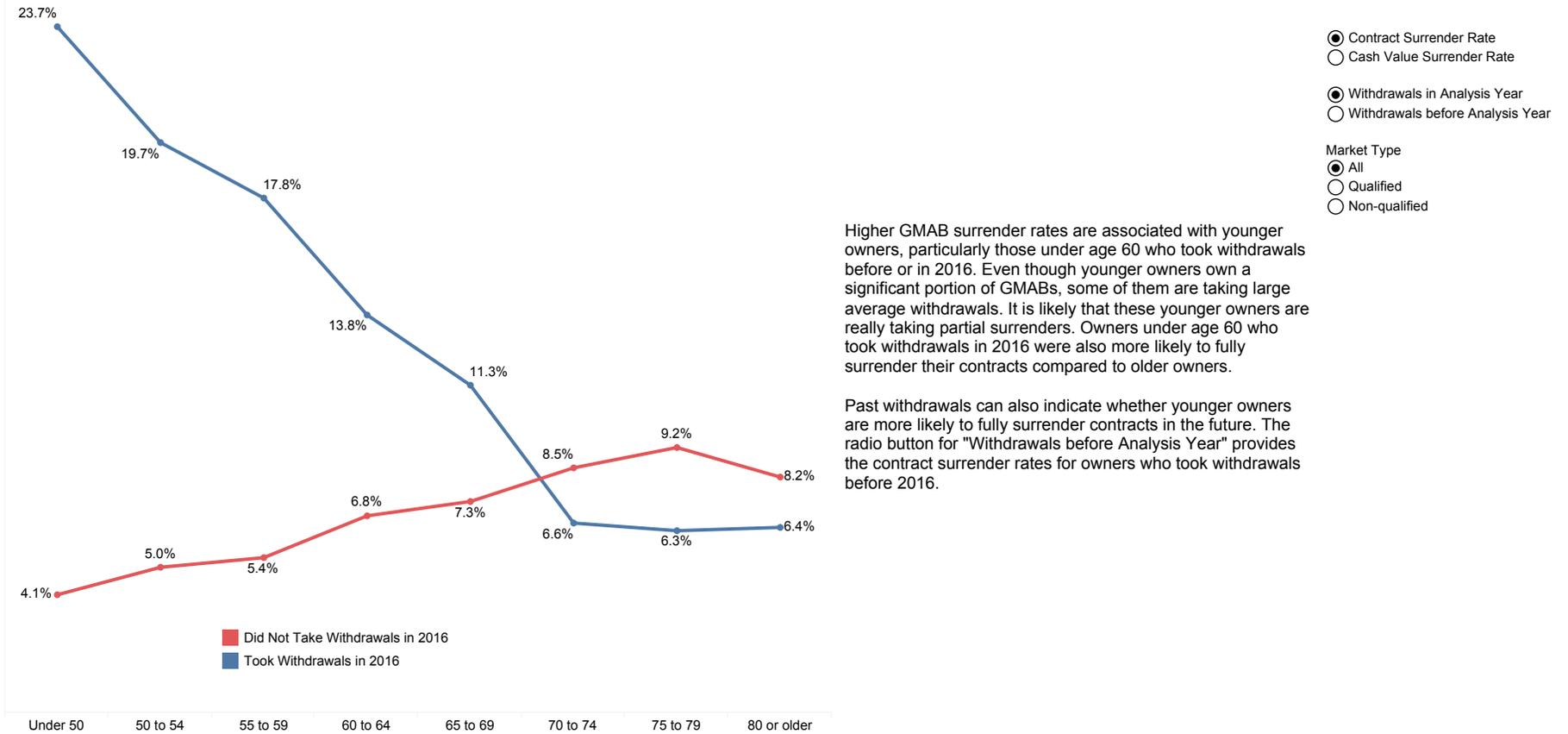
17. Surrender Rates	18. Additional Premium	19. Net Flows	20. Surrender Rates by Contract Year	21. Surrender Rates by Timing of Surrender Charge Expiry	<b>22. Surrender Rates by Surrender Charge Level</b>	23. Surrender Rates based on Timing of Withdrawals	24. Surrender Rates by Withdrawal Method	25. Surrender Rates by Level of In-the-Moneyness	26. Surrender Rates by Benefit Maturity Year	27. Surrender Rates by Contract Year
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## Surrender Rates by Surrender Charge Level



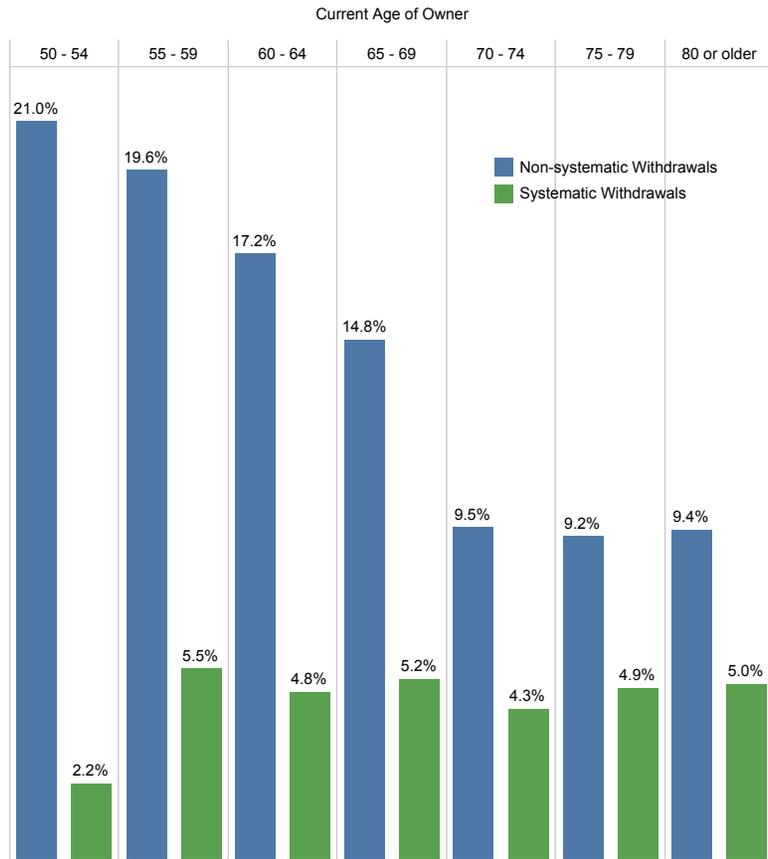
18	19. Net Flows	20. Surrender Rates by Contract Year	21. Surrender Rates by Timing of Surrender Charge Expiry	22. Surrender Rates by Surrender Charge Level	<b>23. Surrender Rates based on Timing of Withdrawals</b>	24. Surrender Rates by Withdrawal Method	25. Surrender Rates by Level of In-the-Moneyess	26. Surrender Rates by Benefit Maturity Year	27. Surrender Rates by Selected Owner and Product Characteristics	28. Product & Benefit ..
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## Surrender Rates based on Timing of Withdrawals



19. Net Flows	20. Surrender Rates by Contract Year	21. Surrender Rates by Timing of Surrender Charge Expiry	22. Surrender Rates by Surrender Charge Level	23. Surrender Rates based on Timing of Withdrawals	<b>24. Surrender Rates by Withdrawal Method</b>	25. Surrender Rates by Level of In-the-Moneyness	26. Surrender Rates by Benefit Maturity Year	27. Surrender Rates by Selected Owner and Product Characteristics	28. Product & Benefit Characteristics
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## Surrender Rates by Withdrawal Method



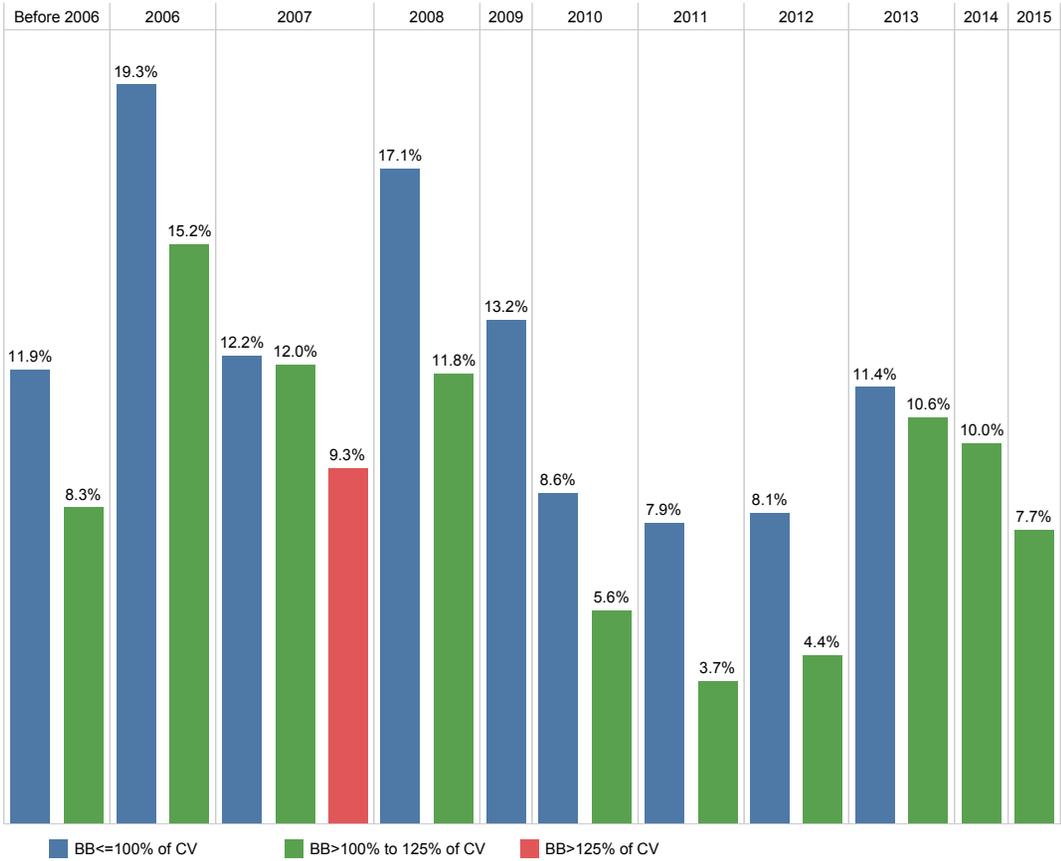
Surrender rates tend to be materially lower for those taking withdrawals on a systematic basis across contracts by age, source of funds and size of contract.

- Contract Surrender Rate
- Cash Value Surrender Rate

- Market Type
- All
- Qualified
- Non-qualified

- Contract Size
- All
- Under \$100,000
- \$100,000 to \$249,999
- \$250,000 or more

### Surrender Rates by Level of In-the-Moneyness



Another important analysis of surrender rates involves whether or not the GMAB benefit base amount exceeded the contract value. Controlling for year of issue, contracts where the contract value was greater than or equal to 100 percent of the benefit base generally had higher surrender activity. We would not expect a contract with a benefit base amount greater than the account value to make that much of a difference, because GMAB owners purchased the product to avoid loss of principal in market volatility during a fixed period of time. Unless their reasons for buying the rider have changed, they should typically hold on to their contract until its maturity date. Other issues such as the expqualification of the surrender charge or benefit maturity could explain some of the increased surrender activity.

- Contract Surrender Rate
- Cash Value Surrender Rate
- Age of Owner
- All
- Market Type
- All
- Qualified
- Non-qualified

19. Net Flows	20. Surrender Rates by Contract Year	21. Surrender Rates by Timing of Surrender Charge Expiry	22. Surrender Rates by Surrender Charge Level	23. Surrender Rates based on Timing of Withdrawals	24. Surrender Rates by Withdrawal Method	25. Surrender Rates by Level of In-the-Moneyness	<b>26. Surrender Rates by Benefit Maturity Year</b>	27. Surrender Rates by Selected Owner and Product Characteristics	28. Product & Benefit Characteristics
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### Surrender Rates by Benefit Maturity Year



Many of these GMAB owners may have surrendered the contracts because the contract benefit matured. Benefit maturity may be the driving force for high surrender rates, and this tab provides contract and cash value surrender rates in 2016 by year of benefit maturity. Surrender rates are elevated from benefit maturity years 2017 to 2019 and then slowly decline.

19. Net Flows	20. Surrender Rates by Contract Year	21. Surrender Rates by Timing of Surrender Charge Expiry	22. Surrender Rates by Surrender Charge Level	23. Surrender Rates based on Timing of Withdrawals	24. Surrender Rates by Withdrawal Method	25. Surrender Rates by Level of In-the-Moneyess	26. Surrender Rates by Benefit Maturity Year	<b>27. Surrender Rates by Selected Owner and Product Characteristics</b>	28. Product & Benefit Characteristics
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## Surrender Rates

- Year of Issue
- Age of Owner
- Contract Value BOY
- Gender
- Market Type
- Distribution Channel
- Cost Structure

	Contract Surrender Rate	Cash Value Surrender Rate
Before 2006	10.2%	8.9%
2006	19.4%	21.5%
2007	9.9%	9.7%
2008	10.2%	9.8%
2009	8.9%	8.9%
2010	4.9%	4.8%
2011	3.7%	2.9%
2012	2.8%	2.4%
2013	2.9%	2.4%
2014	2.0%	2.0%
2015	1.4%	0.9%

This tab provides GMAB contract and cash value surrender rates for various categories.

### Key Findings:

- Surrender activity is higher for older contracts and older owners.
- There is little difference between persistency in contracts funded by non-qualified and qualified money.
- L-share contracts have higher surrender rates than B-share contracts.

19. Net Flows	20. Surrender Rates by Contract Year	21. Surrender Rates by Timing of Surrender Charge Expiry	22. Surrender Rates by Surrender Charge Level	23. Surrender Rates based on Timing of Withdrawals	24. Surrender Rates by Withdrawal Method	25. Surrender Rates by Level of In-the-Moneyness	26. Surrender Rates by Benefit Maturity Year	27. Surrender Rates by Selected Owner and Product Characteristics	<b>28. Product &amp; Benefit Characteristics</b>
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## Product & Benefit Characteristics

### Average Charges and Number of Subaccounts by Issue Year

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Avg. Mortality and Expense Charge	1.28%	1.36%	1.37%	1.35%	1.34%	1.34%	1.38%	1.37%	1.37%	1.23%
Avg. Benefit Fee	0.71%	0.61%	0.72%	0.71%	0.81%	0.88%	0.85%	0.90%	0.97%	1.08%
Avg. Num Subacctts	74	78	76	73	61	56	55	62	59	59
Avg. Maximum Owner Age at Election	80	80	80	80	80	78	79	81	81	80

### Product Features – Distribution by Issue Year

	2008	2009	2010	2011	2012	2013	2014	2015
No	8%	10%	9%	12%	14%	15%	12%	8%
Yes	92%	90%	91%	88%	86%	85%	88%	92%

- Product has fixed account
- Product still available as of EOY
- Rider still available as of EOY
- Cap on benefits
- Benefit fee basis
- Asset allocation restrictions
- Step-up availability
- Impact on benefit base if excess withdrawals are taken
- GMAB benefit calculation method