

Welcome	Introduction	1. Buyer Profiles	2. Summary of Withdrawal Activity	3. Withdrawal Activity by Age of Owner	4. Average Withdrawal Amount by Withdrawal Type	5. Additional Premium	6. Net Flows	7. Surrender Rates by Selected Owner and Product Characteristics	8. Surrender Rates by Share ..
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Variable Annuity Guaranteed Living Benefits Utilization

2017 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

2017 EXPERIENCE

About the Study

LIMRA Secure Retirement Institute and Society of Actuaries Variable Annuity Guaranteed Living Benefit Utilization Study (VAGLBUS) — 2017 Experience is an update of earlier investigations, conducted since 2006.

The study examines the GLB utilization of over 4.3 million contracts that were either issued during or in force as of 2017. Eighteen insurance companies participated in this study. These 18 companies made up 65 percent of all GLB sales in 2017 and 68 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, they are now offered in a variety of forms on the vast majority of VA products sold today.

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.

Companies should use the data provided in this tool as a basis for monitoring the following:

- Customer mix versus the industry
- Risks associated with providing a guarantee to younger buyers —both short- and long-term — including growth in benefit base relative to cash value, customer withdrawal deferral periods, sources of funds used to purchase the annuity, percentage of customers begin to take withdrawals due to the required minimum distribution (RMD) rule, and the persistency of their contracts.
- Competitiveness of the maximum payout rates that are typically set by age bands
- Customer behavior in general and how it changes the dynamics of a company's in-force book of business

CONFIDENTIALITY: For industry results, confidentiality is protected with limits on filtered data. Each data point must have a minimum number of companies reporting. None of the individual companies can represent a majority of market share. Some results may not follow the trend because there is a relatively small number of contracts being reported. Hover over a data point to see how many contracts are being reported.

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.

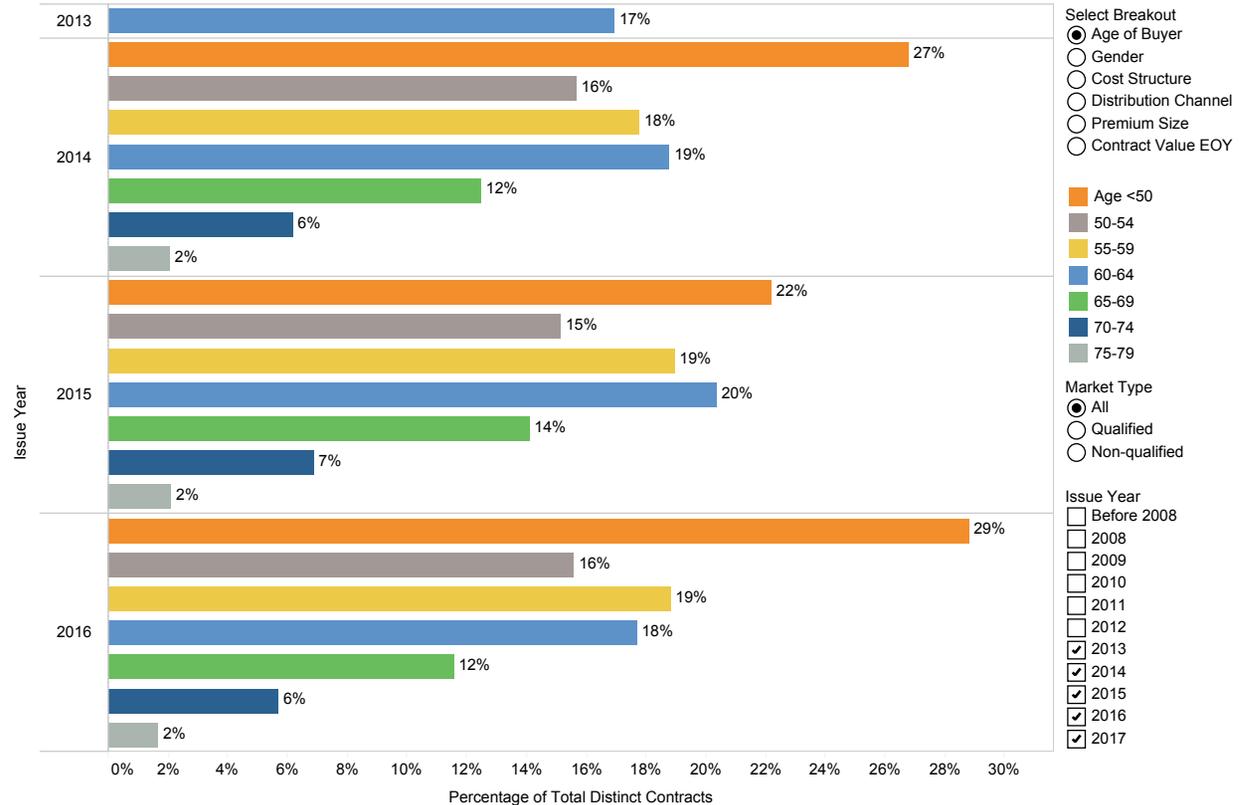
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Buyer Profiles

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.

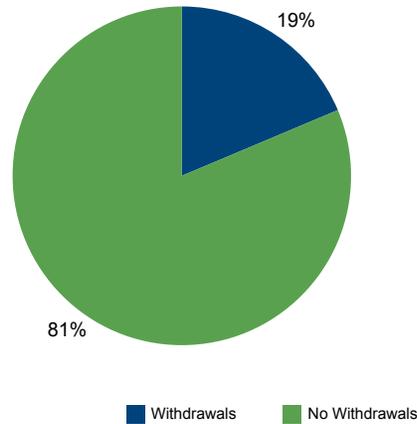


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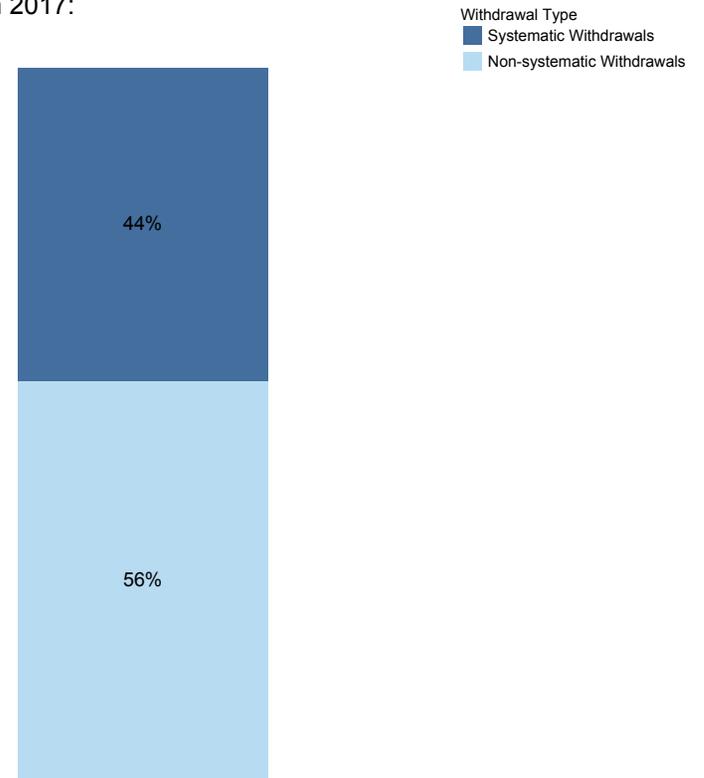
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Summary of Withdrawal Activity

Percentage of owners who have taken withdrawals in 2017:

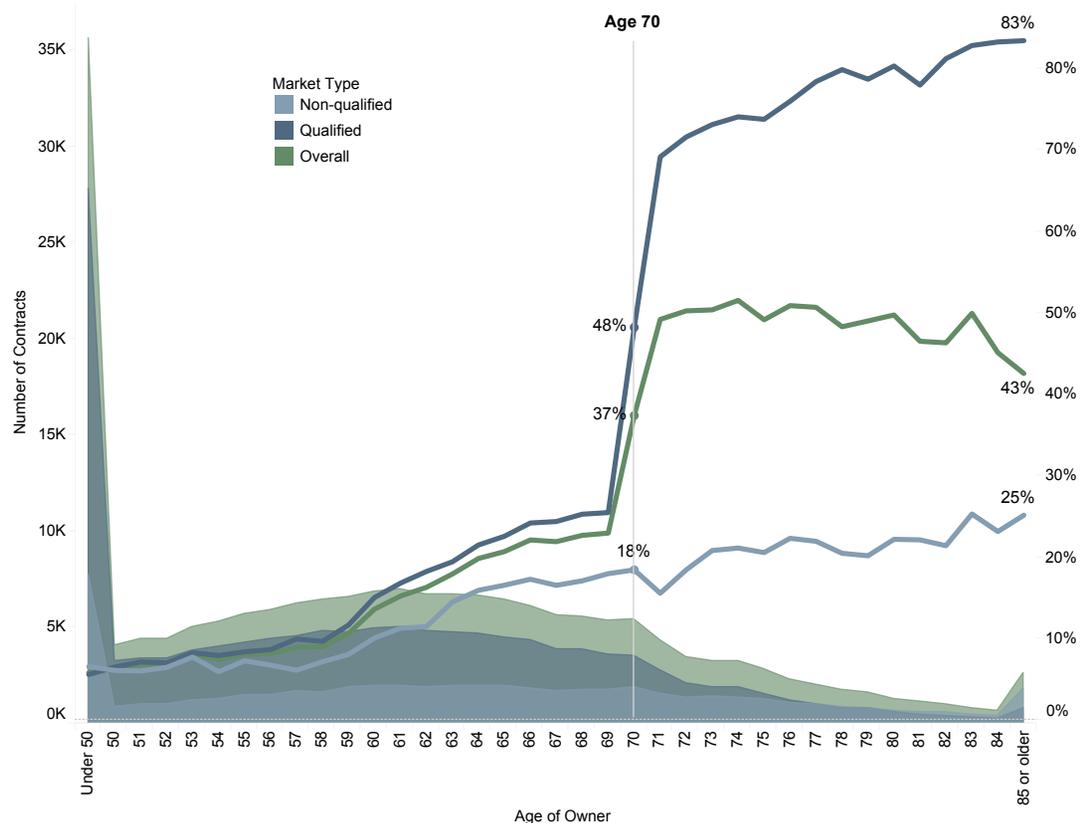


Of those taking withdrawals in 2017:



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 2017 and still in force at EOY, 19 percent had some withdrawal activity during 2017, 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).

Withdrawal Activity by Age of Owner



Some data are suppressed for confidentiality reasons.

Like all other GLBs, the source of funds is a major driving force for withdrawal behavior in GMABs. Even though the overall percent of owners taking withdrawals in GMAB contracts remained low, the percent of owners taking withdrawals was quite high for those who funded their annuities with qualified funds.

After age 70, the need for RMDs from qualified annuities forces owners to take withdrawals; and the percentage of these customers taking withdrawals quickly jumps to 66 percent by age 71. After age 70, the percent of qualified owners withdrawing slowly rises to above 75 percent for owners aged 76 and older. Owners are less likely to take withdrawals if they used non-qualified money, and the percent of non-qualified customers withdrawing remains around or under 25 percent for all ages.

In 2017, for qualified contracts, more than two-thirds of contract owners over age 70 took withdrawals. On the other hand, the percentage of qualified contract holders taking withdrawals at ages under 70 ranged from 8 percent for those under 50 to 26 percent at age 69.

For non-qualified contracts the percent of owners taking withdrawals increases very slowly with age. In 2017, for non-qualified contracts, 20 percent of contract owners over age 70 took withdrawals.

- Withdrawal Type**
- All Withdrawals
 - Systematic
 - Non-Systematic
- Contract Value (EOY)**
- Under \$25,000
 - \$25,000 to \$49,999
 - \$50,000 to \$99,999
 - \$100,000 to \$249,999
 - \$250,000 to \$499,999
 - \$500,000 or higher
- Distribution Channel**
- Bank/S&L
 - Career Agent
 - Full Service National B-D
 - Independent Agent
 - Independent B-D
- In-the-Moneyness**
- ITM <= 75%
 - ITM >75% TO 90%
 - ITM >90% TO 110%
 - ITM >110% TO 125%
 - ITM >125%
- ITM definition= Benefit Base/Contract Value so larger ratios indicate a greater degree of in-the-moneyness

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Average Withdrawal Amount by Withdrawal Type

	Systematic				Non-systematic			
	Mean		Median		Mean		Median	
	Non-qualified	Qualified	Non-qualified	Qualified	Non-qualified	Qualified	Non-qualified	Qualified
Under Age 60	15,949	10,913	10,309	7,572	36,900	25,999	14,882	13,000
Age 60 to 69	12,156	12,767	6,766	8,400	30,928	28,907	12,000	13,500
Age 70 or older	9,024	6,369	5,626	3,887	30,175	13,047	11,111	5,470
Grand Total	10,294	8,036	6,000	4,844	32,470	23,083	12,025	10,000

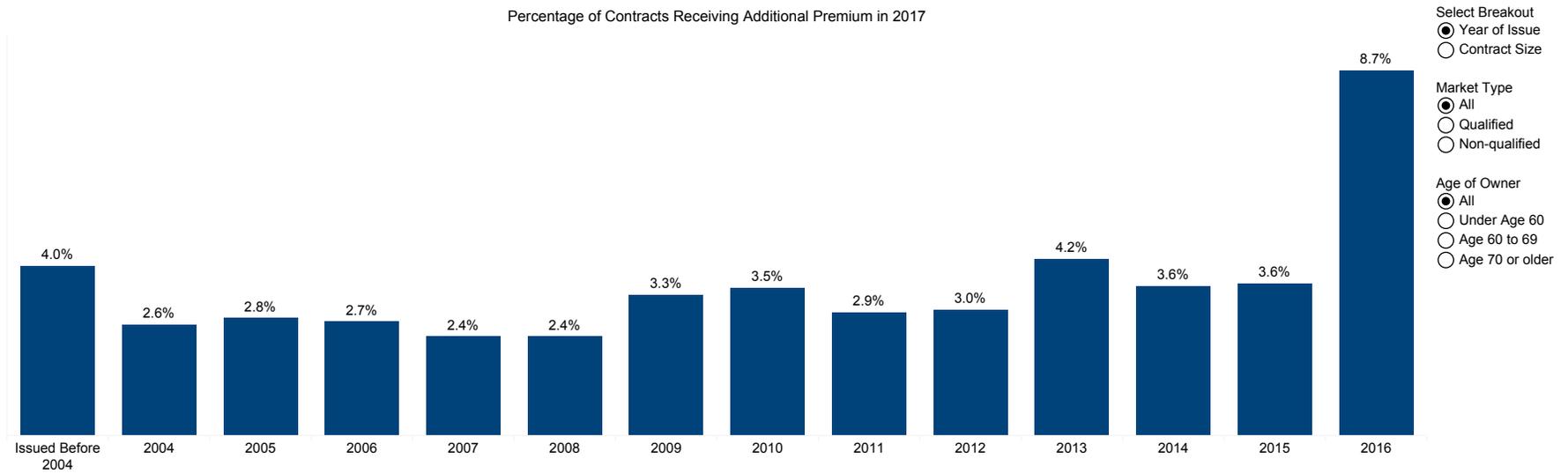
The average amount of withdrawals for GMAB qualified contracts was \$8,041 for those taking systematic withdrawals and \$23,046 for those taking occasional withdrawals. This data is based on contracts issued before 2017 that were in force at EOY 2017. Some owners in their 50s and 60s took average withdrawals 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.

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Additional Premium

Percentage of Contracts Receiving Additional Premium in 2017



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.

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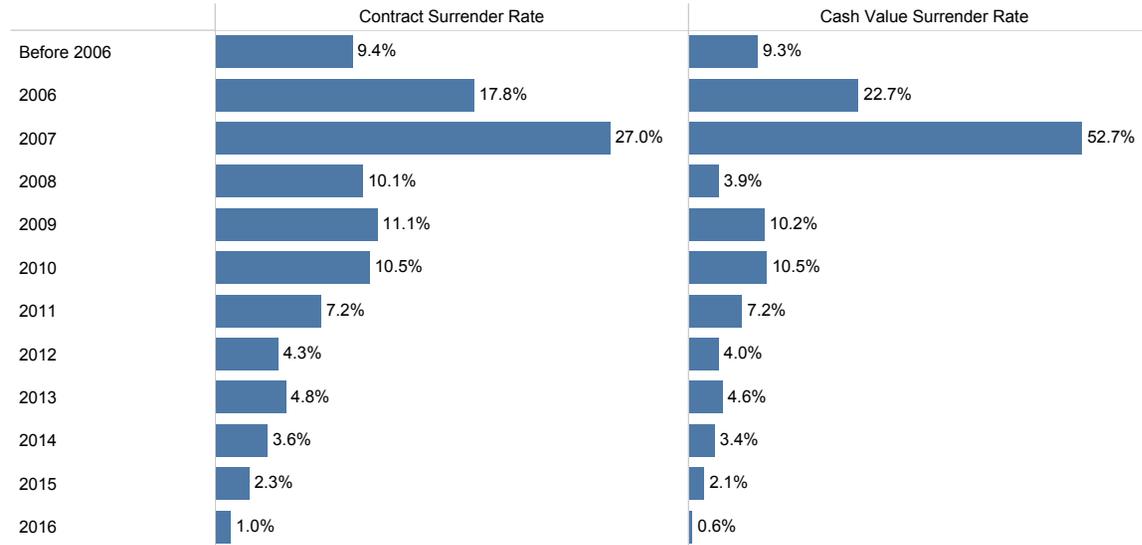
Net Flows

		Total Contract Size	Number of Contracts	Average Contract Size
	In-Force BOY	\$17.5B	174,684	\$100,245
Premium Received	Existing Contracts	\$0.1B		
	Newly Issued Contracts	\$0.3B	1,920	\$152,488
Benefits Paid	Annuitizations	\$0.0B	87	\$95,781
	Death/Disability	\$0.1B	1,021	\$107,075
	Full Surrenders	\$1.8B	18,439	\$96,042
	Partial Withdrawals	\$1.1B		
	Investment Growth	\$1.3B		
	In-Force EOY	\$19.2B	173,282	\$110,949

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 dropped by just under 1 percent during 2017.

Surrender Rates by Selected Owner and Product Characteristics

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

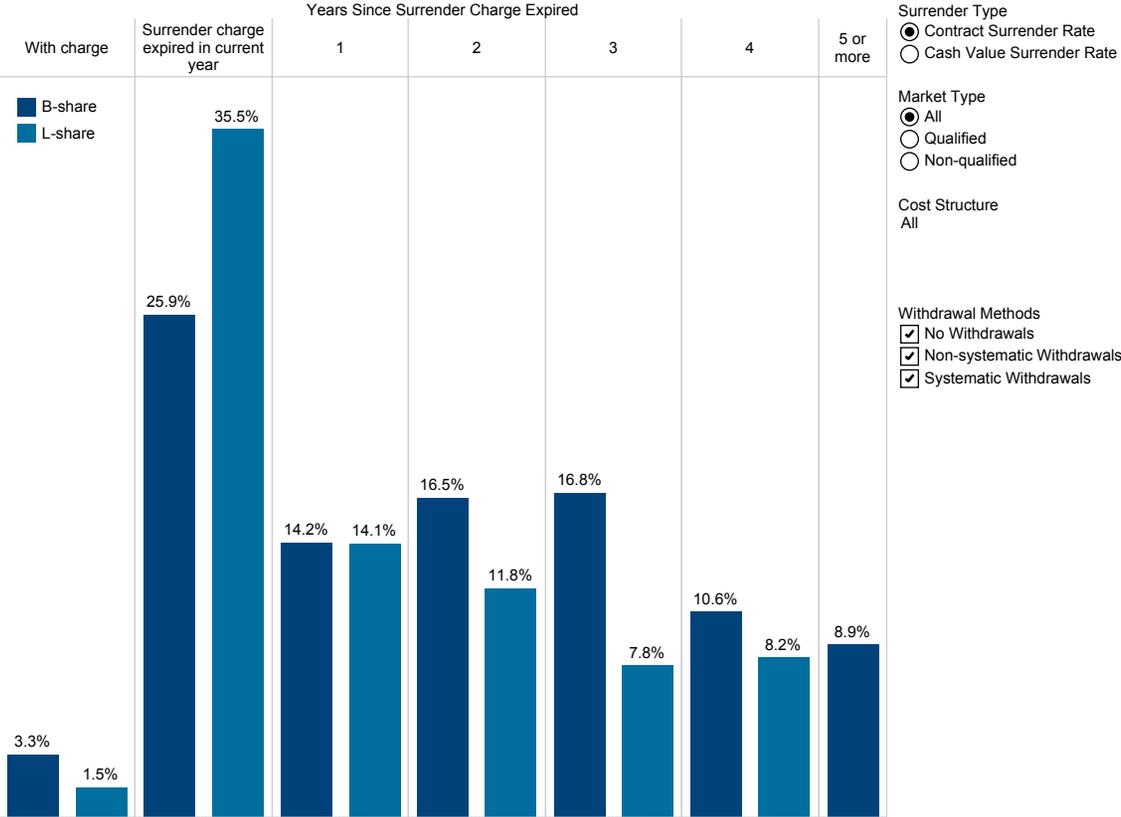


This tab provides GMAB contract and cash value surrender rates for various categories.

3. Withdrawal Amount	4. Average Withdrawal Amount by Withdrawal Type	5. Additional Premium	6. Net Flows	7. Surrender Rates by Selected Owner and Product Characteristics	8. Surrender Rates by Share Class	9. Surrender Rates by Surrender Charge Level	10. Surrender Rates Based on Timing of Withdrawals	11. Surrender Rates by Withdrawal Method	12. Surrender Rates by Amount Benefit Base Exceeds Contract Value	13. Surrender Rates by Withdrawal Method
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Surrender Rates by Share Class

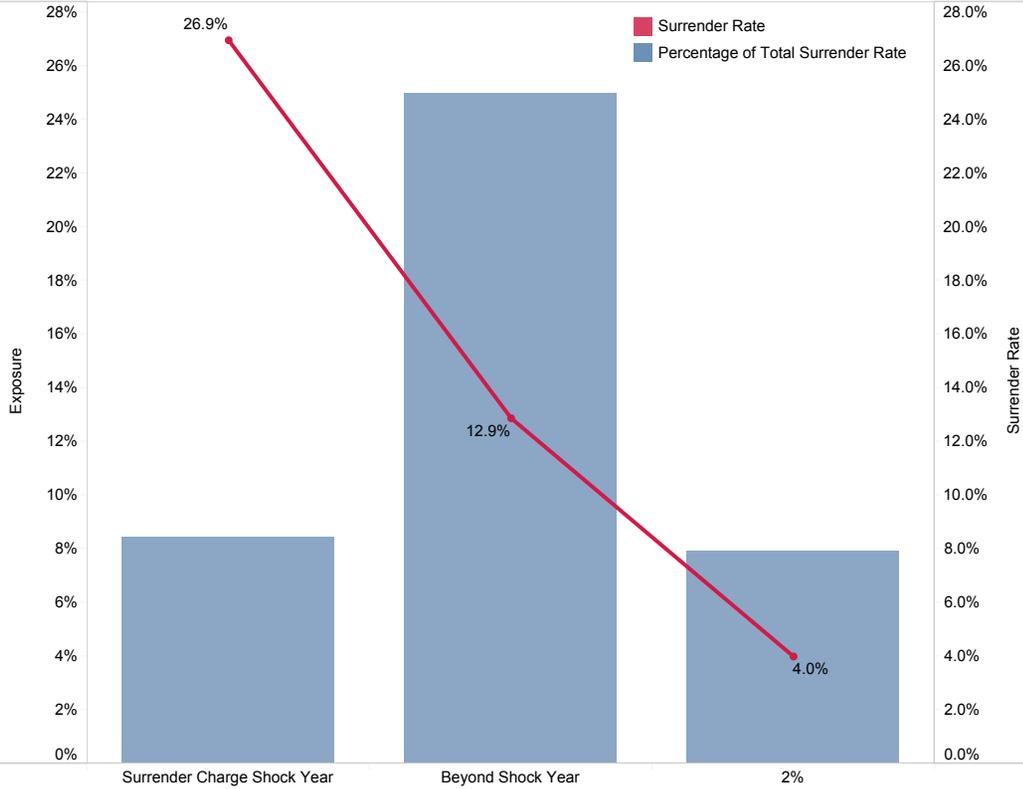
Surrender rates among contracts with surrender charges were much lower than in contracts without surrender charges. Irrespective of share classes, the surrender rate for contracts where charges expired in 2017 was 25 percent on a contract basis — over five times the rate of contracts where charges exist.



Some data are suppressed for confidentiality reasons.

4. Average Rate	5. Additional Premium	6. Net Flows	7. Surrender Rates by Selected Owner and Product Characteristics	8. Surrender Rates by Share Class	9. Surrender Rates by Surrender Charge Level	10. Surrender Rates Based on Timing of Withdrawals	11. Surrender Rates by Withdrawal Method	12. Surrender Rates by Amount Benefit Base Exceeds Contract Value	13. Surrender Rates by Benefit Maturity Year	14. Benefit Base and C...
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Surrender Rates by Surrender Charge Level



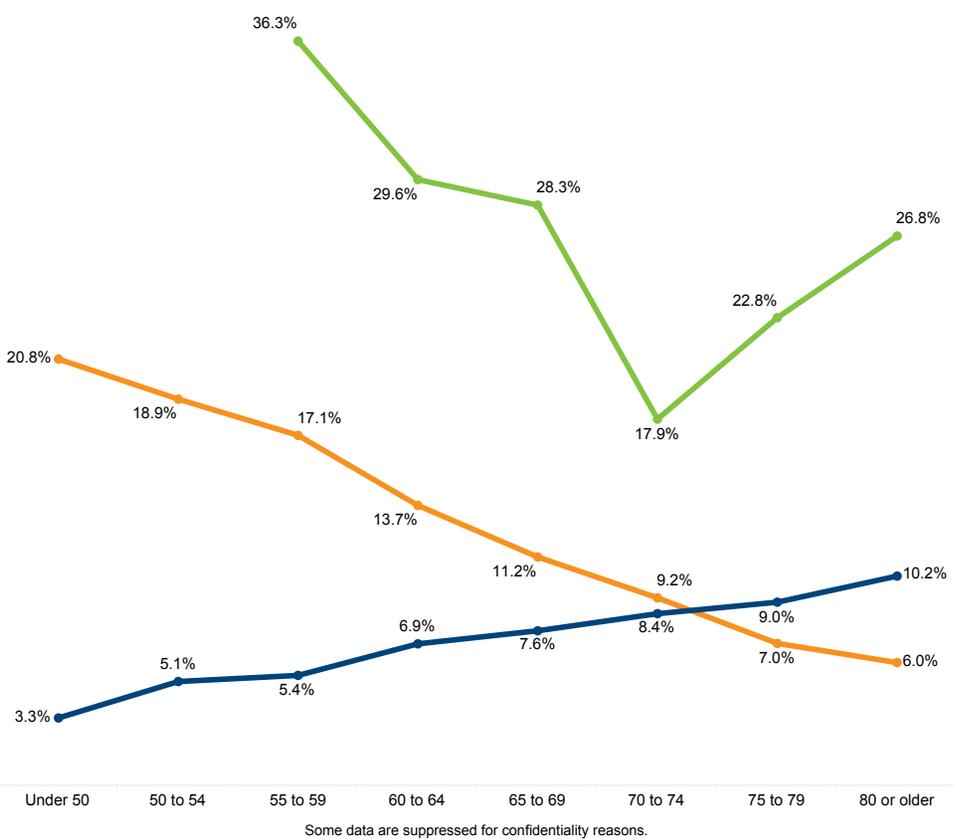
Some data are suppressed for confidentiality reasons.

Contract surrender is influenced by the rate of surrender charge present. Naturally, contracts with higher penalties have lower surrender rates and vice versa. This tab provides the cash value surrender rates by presence of surrender charge. The impact of surrender charge presence and level on surrender rates is a bit greater for qualified business and young contract owners.

- Surrender Type
 - Contract Surrender Rate
 - Cash Value Surrender Rate
- Market Type
 - All
 - Qualified
 - Non-qualified
- Age of Owner
 - All
- Withdrawal Methods
 - No Withdrawals
 - Non-systematic Withdrawals
 - Systematic Withdrawals

5. Addit..	6. Net Flows	7. Surrender Rates by Selected Owner and Product Characteristics	8. Surrender Rates by Share Class	9. Surrender Rates by Surrender Charge Level	10. Surrender Rates Based on Timing of Withdrawals	11. Surrender Rates by Withdrawal Method	12. Surrender Rates by Amount Benefit Base Exceeds Contract Value	13. Surrender Rates by Benefit Maturity Year	14. Benefit Base and Contract Value Summary	15. Contract Value and..
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Surrender Rates Based on Timing of Withdrawals



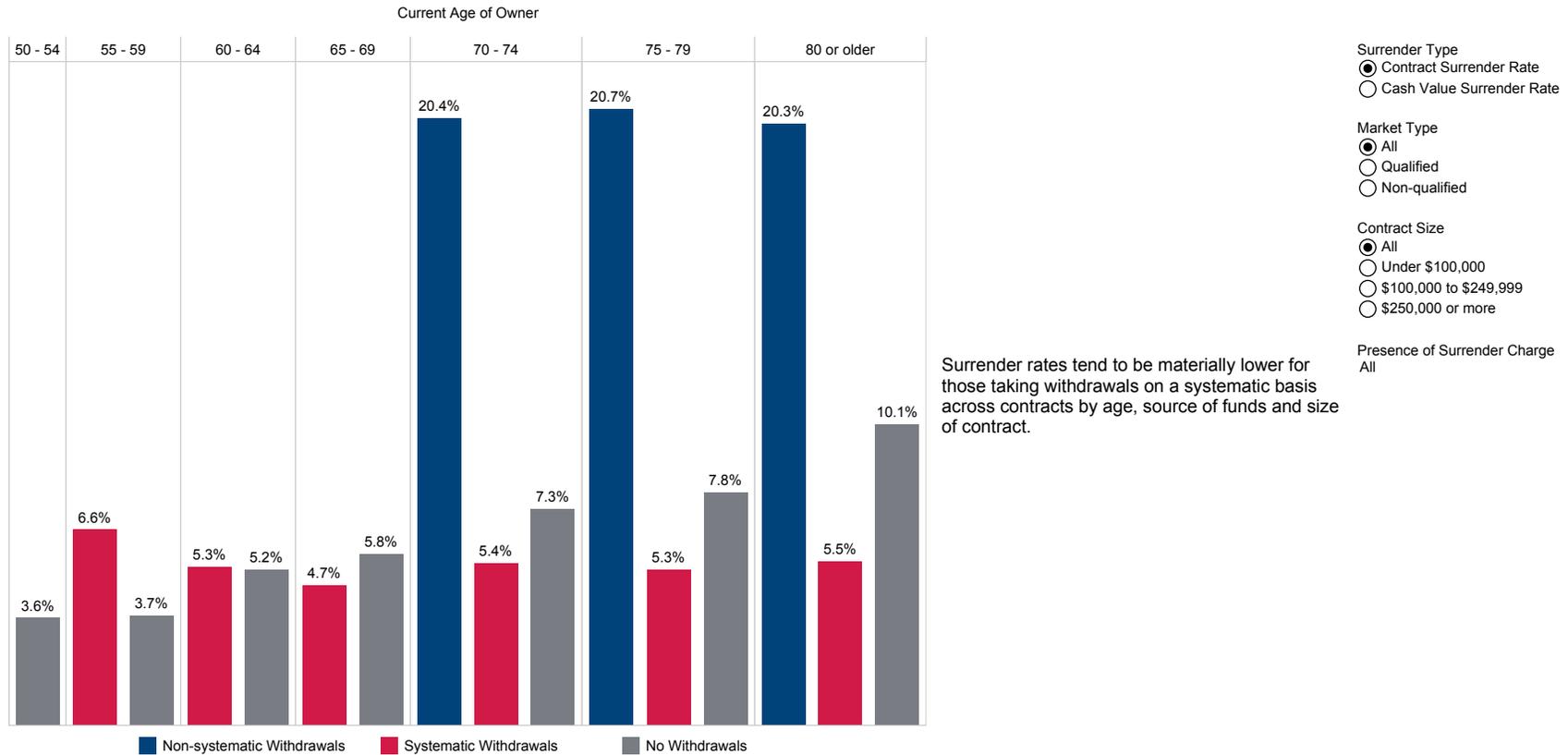
Higher GMAB surrender rates are associated with younger owners, particularly those under age 70 who took withdrawals before or in 2017. Even though younger owners own a significant portion of GMABs, some of them are taking large average withdrawals. It is likely that these younger owners are really taking partial surrenders. Owners under age 70 who took withdrawals in 2017 were also more likely to fully surrender their contracts compared to older owners.

Past withdrawals can also indicate whether younger owners are more likely to fully surrender contracts in the future. The radio button for "Withdrawals before Analysis Year" provides the contract surrender rates for owners who took withdrawals before 2017.

- Surrender Type
 - Contract Surrender Rate
 - Cash Value Surrender Rate
- Market Type
 - All
 - Qualified
 - Non-qualified
- Withdrawal Status
 - Never Took Withdrawals
 - Took First Withdrawals in 2017
 - Took Withdrawals in the Past

6. Net FI ..	7. Surrender Rates by Selected Owner and Product Characteristics	8. Surrender Rates by Share Class	9. Surrender Rates by Surrender Charge Level	10. Surrender Rates Based on Timing of Withdrawals	11. Surrender Rates by Withdrawal Method	12. Surrender Rates by Amount Benefit Base Exceeds Contract Value	13. Surrender Rates by Benefit Maturity Year	14. Benefit Base and Contract Value Summary	15. Contract Value and Benefit Base by Issue Quarter	16. Benefit Base to Co..
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Surrender Rates by Withdrawal Method

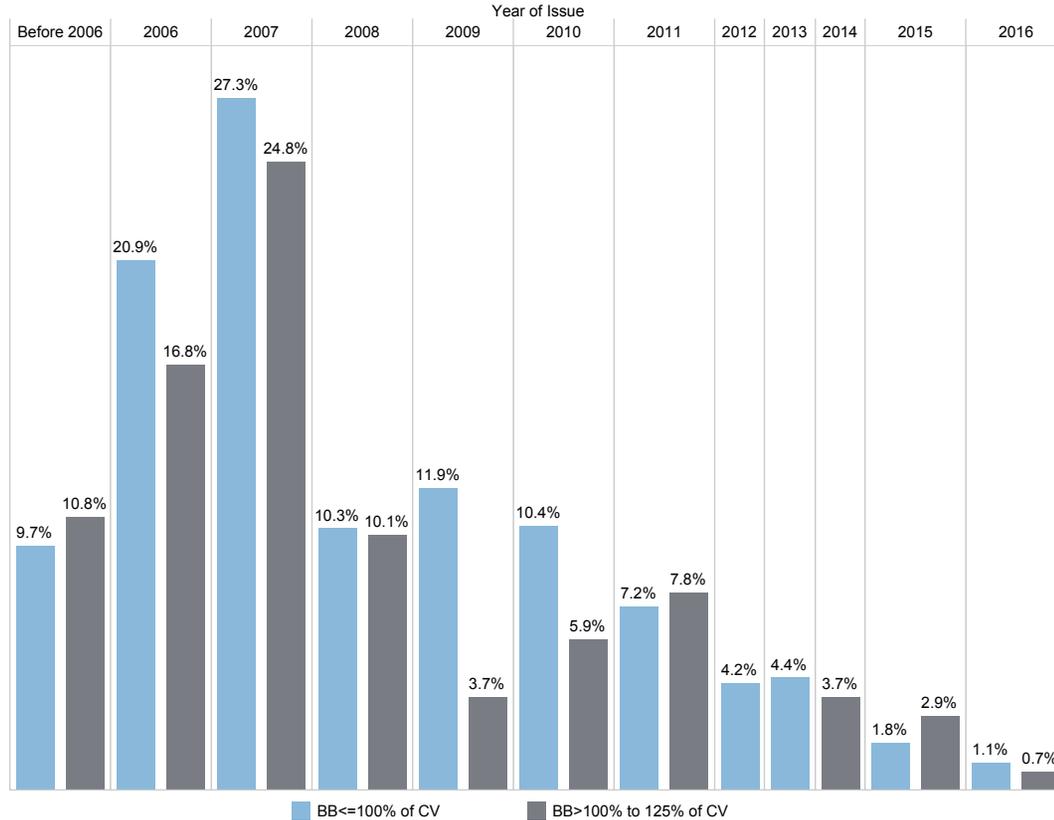


Surrender rates tend to be materially lower for those taking withdrawals on a systematic basis across contracts by age, source of funds and size of contract.

Some data are suppressed for confidentiality reasons.

7. Surrender Rates by Share Class	8. Surrender Rates by Share Class	9. Surrender Rates by Surrender Charge Level	10. Surrender Rates Based on Timing of Withdrawals	11. Surrender Rates by Withdrawal Method	12. Surrender Rates by Amount Benefit Base Exceeds Contract Value	13. Surrender Rates by Benefit Maturity Year	14. Benefit Base and Contract Value Summary	15. Contract Value and Benefit Base by Issue Quarter	16. Benefit Base to Contract Value Ratios by Age	17. Product & Benefit ..
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Surrender Rates by Amount Benefit Base Exceeds Contract Value



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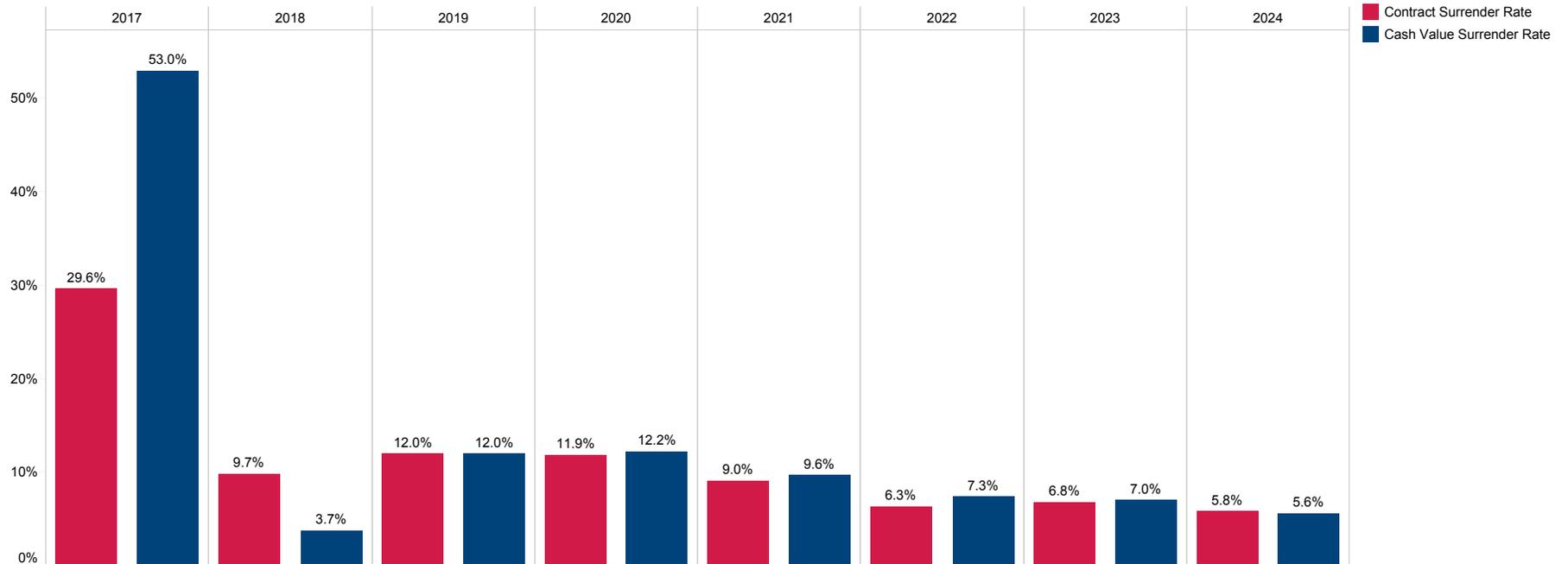
Another important analysis of surrender rates involves whether or not the GMAB benefit base amount exceeded the contract value. We would not expect a contract with a benefit base amount greater than the account value to make that much of a difference, because GMAB owners purchased the product to avoid 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 expiration of the surrender charge or benefit maturity could explain some of the increased surrender activity.

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

ITM definition= Benefit Base/Contract Value
so larger ratios indicate a greater degree of in-the-moneyness

8. Surrender Rates	9. Surrender Rates by Surrender Charge Level	10. Surrender Rates Based on Timing of Withdrawals	11. Surrender Rates by Withdrawal Method	12. Surrender Rates by Amount Benefit Base Exceeds Contract Value	13. Surrender Rates by Benefit Maturity Year	14. Benefit Base and Contract Value Summary	15. Contract Value and Benefit Base by Issue Quarter	16. Benefit Base to Contract Value Ratios by Age	17. Product & Benefit Characteristics	18. Participant List
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Surrender Rates by Benefit Maturity Year



Some data are suppressed for confidentiality reasons.

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 2017 by year of benefit maturity. Surrender rates are elevated from benefit maturity years 2017 to 2020 and then slowly decline.

9. Surrender Rates by Surren..	10. Surrender Rates Based on Timing of Withdrawals	11. Surrender Rates by Withdrawal Method	12. Surrender Rates by Amount Benefit Base Exceeds Contract Value	13. Surrender Rates by Benefit Maturity Year	14. Benefit Base and Contract Value Summary	15. Contract Value and Benefit Base by Issue Quarter	16. Benefit Base to Contract Value Ratios by Age	17. Product & Benefit Characteristics	18. Participant List
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Benefit Base and Contract Value Summary

	Benefit Base (BB) BOY	BB EOY	Contract Value (CV) BOY	CV EOY	CV/BB BOY	CV/BB EOY
Total	\$15,492,287,984	\$15,075,428,836	\$16,267,203,609	\$17,598,754,121	105.0%	116.7%
Average	\$98,293	\$95,648	\$103,210	\$111,658	105.0%	116.7%
Median	\$55,372	\$54,174	\$60,014	\$64,570	108.4%	119.2%

Market Type
 All
 Qualified
 Non-qualified
 Age of Owner
 All

Percentage of contracts where benefit base was greater than contract value:
 Beginning of Year **15.8%**
 End of Year **5.4%**

Issue Year
 Before 2008
 2008
 2009
 2010
 2011
 2012
 2013
 2014
 2015
 2016

At beginning-of-year (BOY) 2017, around 16 percent of contracts had a benefit base greater than the current contract value. The average GMAB contract value exceeded the average benefit base by 11.5 percent in total - nearly the same for qualified and non-qualified business.

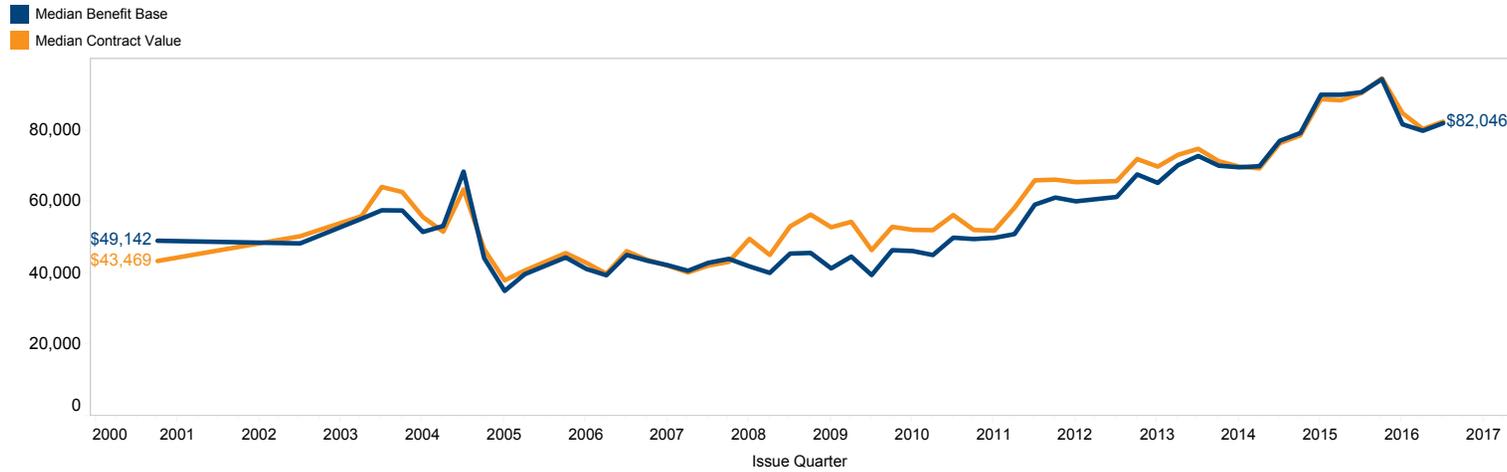
In 2017, the S&P 500 increased by 19 percent (excluding dividends). As a result, in aggregate, only 5 percent of the GMAB contracts had benefit bases that were greater than the contract values at EOY.

Withdrawal Activity
 All

9. Surrender Rates by Surren..	10. Surrender Rates Based on Timing of Withdrawals	11. Surrender Rates by Withdrawal Method	12. Surrender Rates by Amount Benefit Base Exceeds Contract Value	13. Surrender Rates by Benefit Maturity Year	14. Benefit Base and Contract Value Summary	15. Contract Value and Benefit Base by Issue Quarter	16. Benefit Base to Contract Value Ratios by Age	17. Product & Benefit Characteristics	18. Participant List
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Contract Value and Benefit Base by Issue Quarter

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 and in 2017. 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 2017, median GMAB contract values were higher than the median benefit base for contracts issued between the fourth quarter of 2017 and the fourth quarter of 2013.



Some data are suppressed for confidentiality reasons.

Source: Oxford Economics

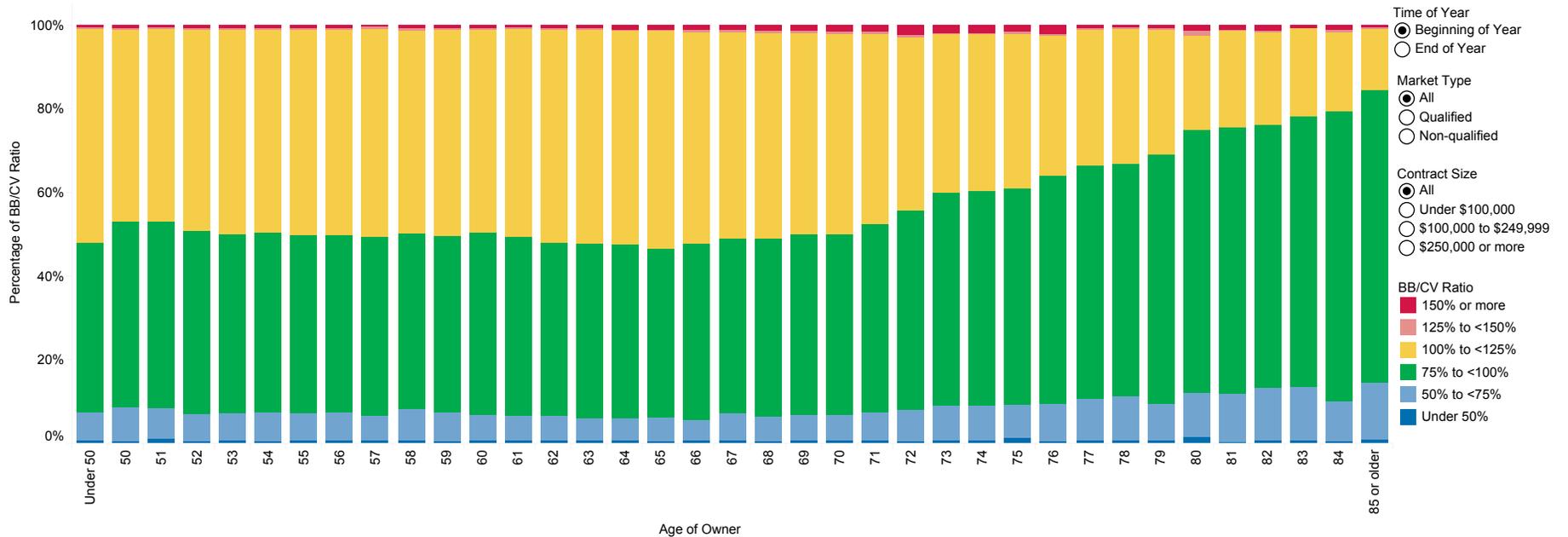
- Time of Year
 - Beginning of Year
 - End of Year
- Benefit Base and Contract Value Dollar Amounts or Ratios
 - Dollar Amounts
 - Ratios
- Median or Quartiles
 - Median
 - Quartiles
- Market Type
 - All
 - Qualified
 - Non-qualified
- Economic Data
 - None
 - 10-year Treasury Yield
 - S&P 500

9. Surrender Rates by Surren..	10. Surrender Rates Based on Timing of Withdrawals	11. Surrender Rates by Withdrawal Method	12. Surrender Rates by Amount Benefit Base Exceeds Contract Value	13. Surrender Rates by Benefit Maturity Year	14. Benefit Base and Contract Value Summary	15. Contract Value and Benefit Base by Issue Quarter	16. Benefit Base to Contract Value Ratios by Age	17. Product & Benefit Characteristics	18. Participant List
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Benefit Base to Contract Value Ratios 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 2017, at age 60, 50 percent of contracts had a BB/CV ratio less than 100 percent while at age 80, 75 percent of contracts had a BB/CV ratio at less than 100 percent. And the percentages below 100 percent increased from BOY to EOY 2017.



9. Surrender Rates by Surren..	10. Surrender Rates Based on Timing of Withdrawals	11. Surrender Rates by Withdrawal Method	12. Surrender Rates by Amount Benefit Base Exceeds Contract Value	13. Surrender Rates by Benefit Maturity Year	14. Benefit Base and Contract Value Summary	15. Contract Value and Benefit Base by Issue Quarter	16. Benefit Base to Contract Value Ratios by Age	17. Product & Benefit Characteristics	18. Participant List
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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	2016
Average Mortality and Expense Charge	1.35%	1.30%	1.36%	1.36%	1.39%	1.40%	1.46%	1.39%	1.39%	1.23%	1.34%
Average Benefit Fee	1.18%	1.09%	1.14%	1.03%	1.07%	1.01%	1.09%	1.23%	1.14%	1.23%	1.13%
Average Number of Subaccounts	70	68	72	72	71	73	73	67	64	64	64
Average Maximum Age at Election	76	77	79	79	80	81	82	85	85	85	85

Some data are suppressed for confidentiality reasons.

Product Features – Distribution by Issue Year

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
No	13%	20%	20%	24%	24%	17%	15%	10%	12%	32%
Yes	87%	80%	80%	76%	76%	83%	85%	90%	88%	68%

- 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

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Participants

AIG
Ameritas
Brighthouse
CUNA Mutual
Equitable Financial
Lincoln National
MetLife
Nassau Re
Nationwide
New York Life
Pacific Life
Principal Financial
Protective
Prudential
RiverSource Annuities
Securian/Minnesota Life
Security Benefit
Transamerica