

Welcome	Introduction	1. Buyer Profiles	2. Summary of Withdrawal Activity	3. Utilization Rates by Study Year	4. Withdrawal Activity by Contract Year	5. Withdrawal Activity by Age of Owner	6. First Withdrawals by Issue Age and Contract Year	7. First Withdrawals Based on Proximity to Max Withdrawal Rate Increase	8. Withdrawal Amounts by Owner
----------------	--------------	-------------------	-----------------------------------	------------------------------------	---	--	---	---	--------------------------------

Variable Annuity Guaranteed Living Benefits Utilization

2018 Experience

Guaranteed Lifetime Withdrawal Benefits (GLWB)

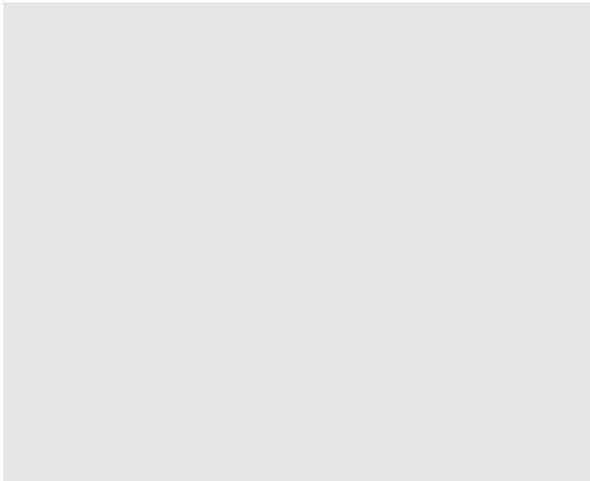
A Joint Study Sponsored by the Society of Actuaries and LIMRA

Welcome	Introduction	1. Buyer Profiles	2. Summary of Withdrawal Activity	3. Utilization Rates by Study Year	4. Withdrawal Activity by Contract Year	5. Withdrawal Activity by Age of Owner	6. First Withdrawals by Issue Age and Contract Year	7. First Withdrawals Based on Proximity to Max Withdrawal Rate Increase	8. Withdrawal Amounts by Owner
---------	---------------------	-------------------	-----------------------------------	------------------------------------	---	--	---	---	--------------------------------

Variable Annuity Guaranteed Living Benefits Utilization

2018 EXPERIENCE

About the Study



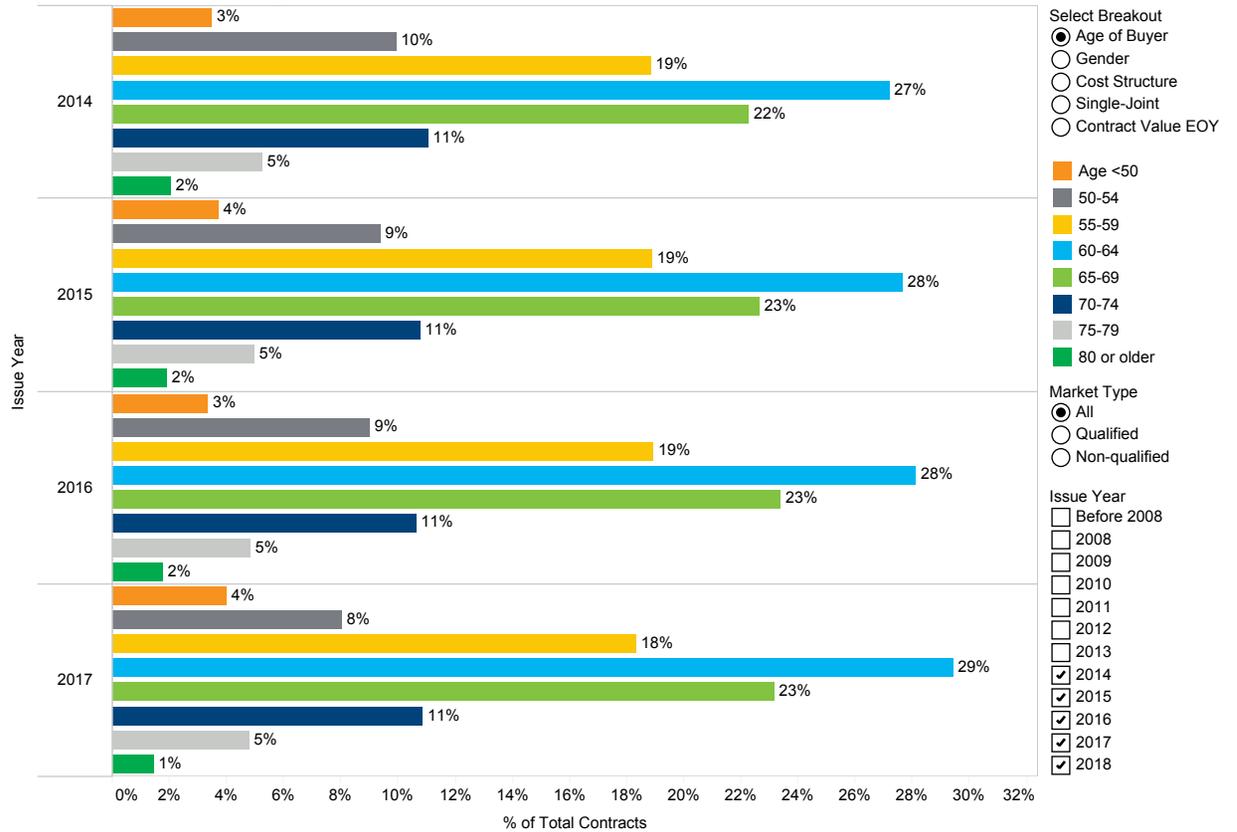
CONFIDENTIALITY: For industry results, confidentiality is protected with limits on filtered data. Each data point must have a minimum number of companies reporting. None of the individual companies can represent a majority of market share. Some results may not follow the trend because there is a relatively 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.

Access to this information is a benefit of LIMRA and SOA membership.

©2020 LL Global, Inc. and Society of Actuaries

Buyer Profiles



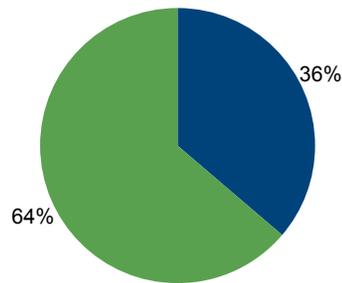
Comparing contracts issued in 2018 to those issued in 2017, each of the four oldest age groups gained market share at the expense of the four youngest age groups.

The distribution of GLWB cost structures has been shifting steadily since 2010. L-share contracts with short surrender periods have fallen out of favor, while B-share contracts with longer surrender periods have dominated the VA GLWB market.

Welcome	Introduction	1. Buyer Profiles	2. Summary of Withdrawal Activity	3. Utilization Rates by Study Year	4. Withdrawal Activity by Contract Year	5. Withdrawal Activity by Age of Owner	6. First Withdrawals by Issue Age and Contract Year	7. First Withdrawals Based on Proximity to Max Withdrawal Rate Increase	8. Withdrawal Amounts by Owner..
---------	--------------	-------------------	--	------------------------------------	---	--	---	---	----------------------------------

Summary of Withdrawal Activity

Percentage of owners who have taken withdrawals in 2018:



■ Withdrawals
 ■ No Withdrawals

Determining whether a contract owner has actively “used” a GLWB during the year is straightforward. If partial withdrawals have occurred, then benefit utilization has occurred. However, determining whether contract owners will continue to take withdrawals up to the maximum allowed under the terms of the benefit, or whether they will take benefits for life, is more difficult to determine. However, owners’ inclinations to take lifetime withdrawals are more obvious when they take withdrawals from a systematic withdrawal plan (SWP).

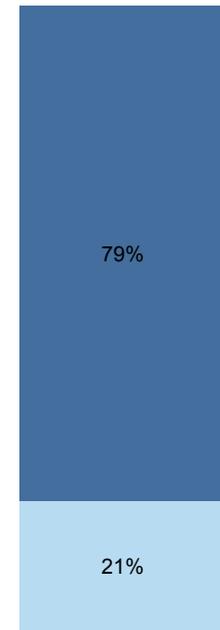
Much of the present study is based on a single calendar year. However, in some sections we analyzed withdrawal activity over time. To assess overall withdrawal behavior, we asked companies to provide cumulative total withdrawals prior to 2018 (not all companies could provide this information). In addition, some companies found it difficult to distinguish systematic withdrawals — which are more likely to be associated with utilization of GLWBs — from non-systematic withdrawals. So, LIMRA defined “utilization” of GLWBs as the presence of partial withdrawals during the year, with the caveat that benefit “use” may occur in other ways. In this report, we emphasize five key determinants that will guide companies in understanding the intention of owners to use withdrawals as a lifetime income stream:

- Age of customers taking withdrawals — At what ages are owners likely to take withdrawals and how many are likely to take withdrawals?
- Source of funding for their annuities and how this impacts withdrawal behavior
- When they take their first withdrawal —Are they likely to continue withdrawals once they start?
- Method for withdrawals — Are the customers taking withdrawals through an SWP or through occasional withdrawals?
- Amount of withdrawals — Are withdrawal amounts within the maximum annual income amount allowed in their contracts?

If customers take withdrawals on a continuous basis through SWPs, and withdrawal amounts remain within the maximum allowed, it is very likely they are utilizing the GLWB in their contracts. Our findings suggest that this is the case for most of these owners.

For VA contracts with GLWBs issued before 2018 and still in-force at the EOY 2018, one-third had some withdrawal activity. Just over three-quarters of those withdrawals were taken systematically.

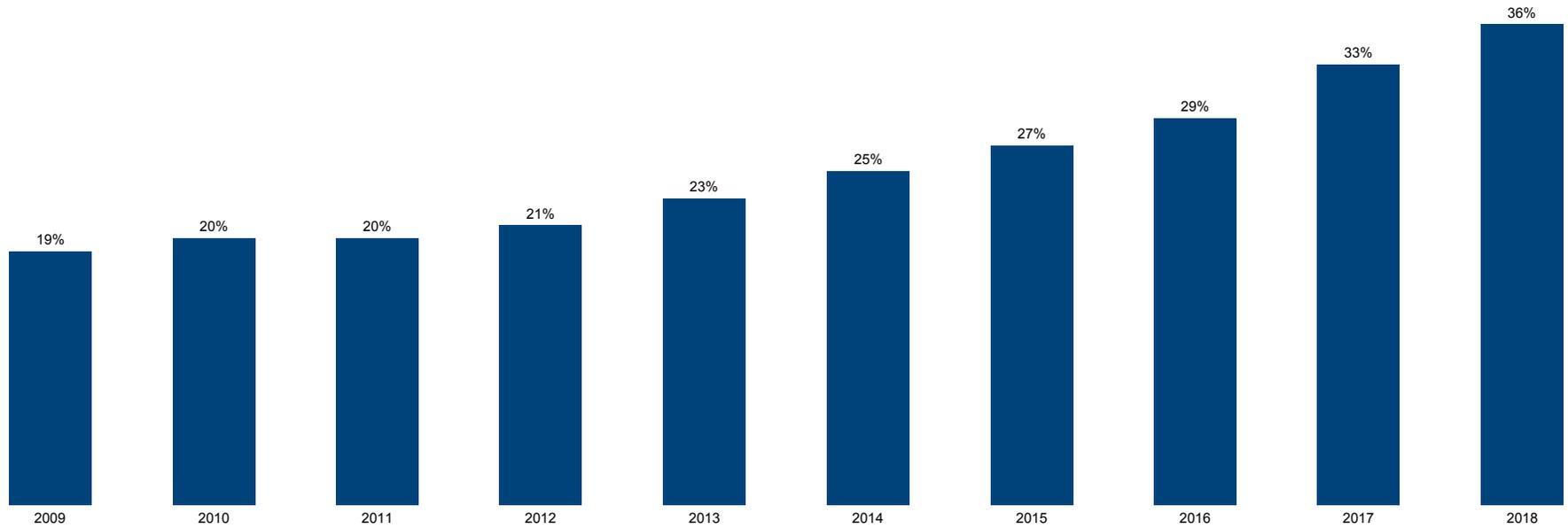
Of those taking withdrawals in 2018:



■ Systematic Withdrawals
 ■ Non-systematic Withdrawals

Welcome	Introduction	1. Buyer Profiles	2. Summary of Withdrawal Activity	3. Utilization Rates by Study Year	4. Withdrawal Activity by Contract Year	5. Withdrawal Activity by Age of Owner	6. First Withdrawals by Issue Age and Contract Year	7. First Withdrawals Based on Proximity to Max Withdrawal Rate Increase	8. Withdrawal Amounts by Owner
---------	--------------	-------------------	-----------------------------------	---	---	--	---	---	--------------------------------

Utilization Rates by Study Year



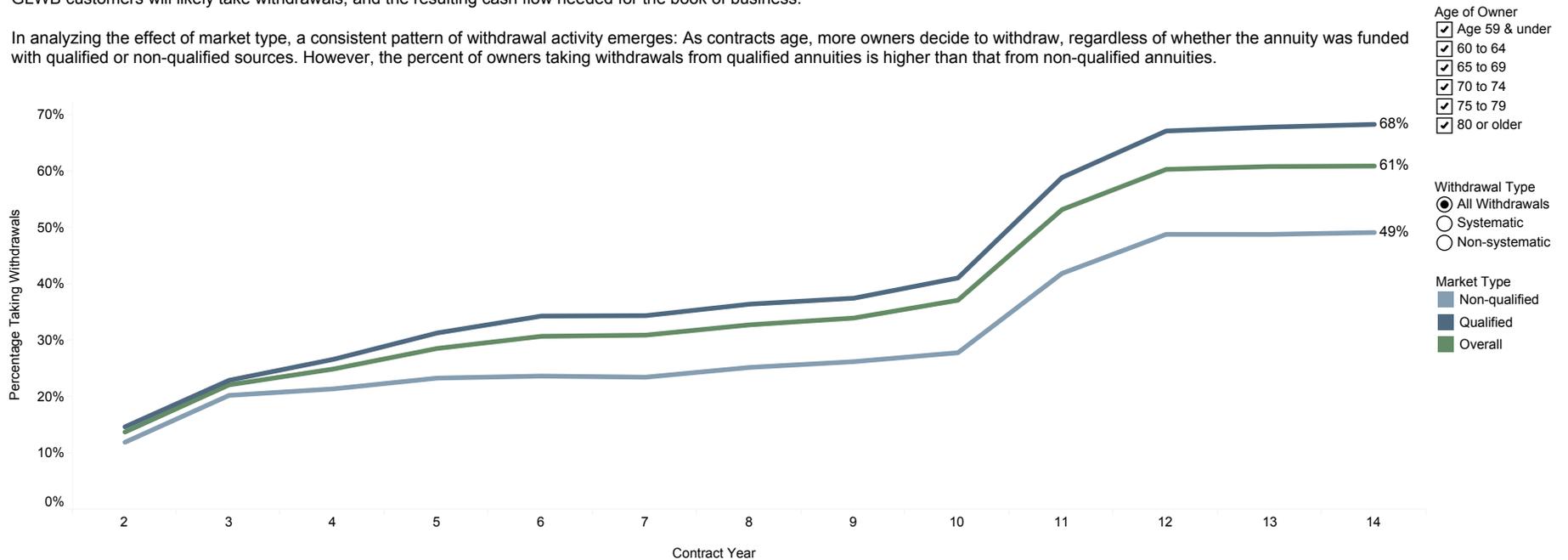
This chart shows overall utilization rates from study year 2009 to 2018. Note the increasing trend as the underlying population ages.

W e l c o m e	Introduction	1. Buyer Profiles	2. Summary of Withdrawal Activity	3. Utilization Rates by Study Year	4. Withdrawal Activity by Contract Year	5. Withdrawal Activity by Age of Owner	6. First Withdrawals by Issue Age and Contract Year	7. First Withdrawals Based on Proximity to Max Withdrawal Rate Increase	8. Withdrawal Amounts by Owner's Current Age	9. Withdrawal Activity f or ..
---------------------------------	--------------	-------------------	-----------------------------------	------------------------------------	--	--	---	---	--	--------------------------------

Withdrawal Activity by Contract Year

Contract duration (i.e., the number of years since contract purchase) is an important measure in determining what proportion of new buyers or existing owners take withdrawals from their annuities. In some cases, immediate utilization of the GLWB is appropriate for certain customers' retirement income needs, but there are also circumstances in which delaying withdrawals makes sense. By comparing their own withdrawal activity by contract duration to that of the industry, companies can facilitate internal forecasts by estimating when and how many of the GLWB customers will likely take withdrawals, and the resulting cash flow needed for the book of business.

In analyzing the effect of market type, a consistent pattern of withdrawal activity emerges: As contracts age, more owners decide to withdraw, regardless of whether the annuity was funded with qualified or non-qualified sources. However, the percent of owners taking withdrawals from qualified annuities is higher than that from non-qualified annuities.



Some data are suppressed for confidentiality reasons.

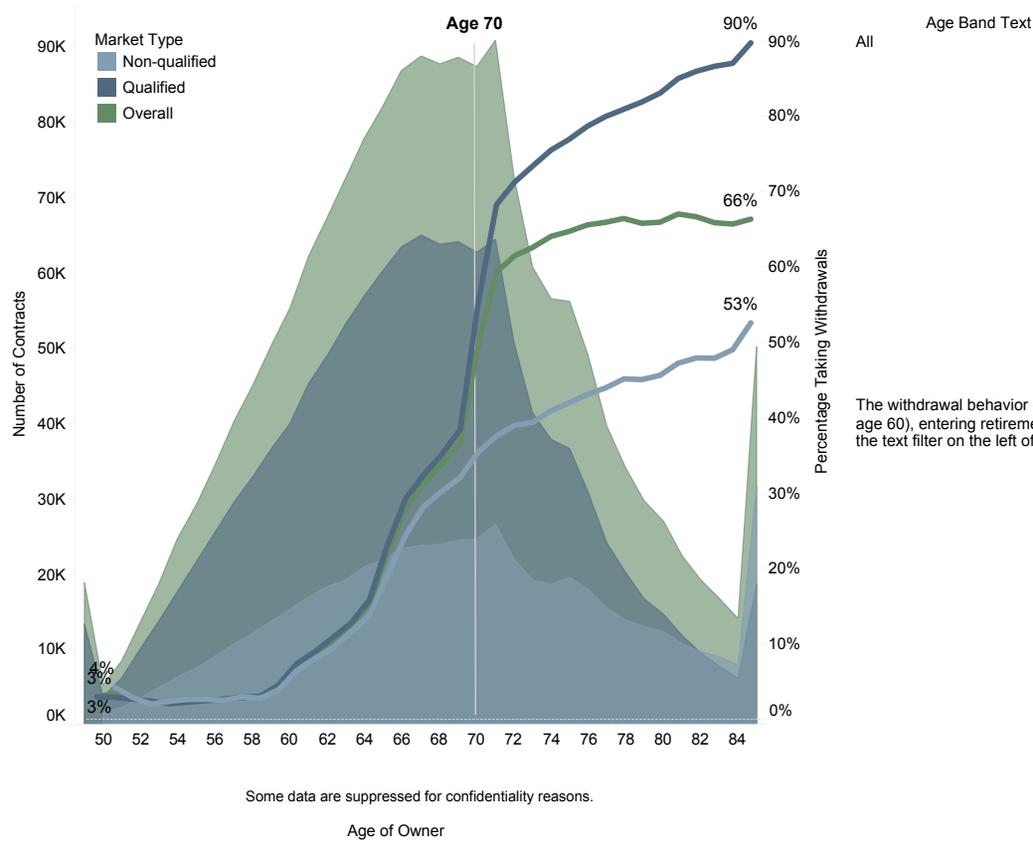
In tr o d u. .	1. Buyer Profiles	2. Summary of Withdrawal Activity	3. Utilization Rates by Study Year	4. Withdrawal Activity by Contract Year	5. Withdrawal Activity by Age of Owner	6. First Withdrawals by Issue Age and Contract Year	7. First Withdrawals Based on Proximity to Max Withdrawal Rate Increase	8. Withdrawal Amounts by Owner's Current Age	9. Withdrawal Activity for Contracts Issued in 2018	10. With draw als as a P erc..
-------------------------------	-------------------	-----------------------------------	------------------------------------	---	---	---	---	--	---	--

Withdrawal Activity by Age of Owner

Withdrawal Type
 All Withdrawals
 Systematic
 Non-systematic

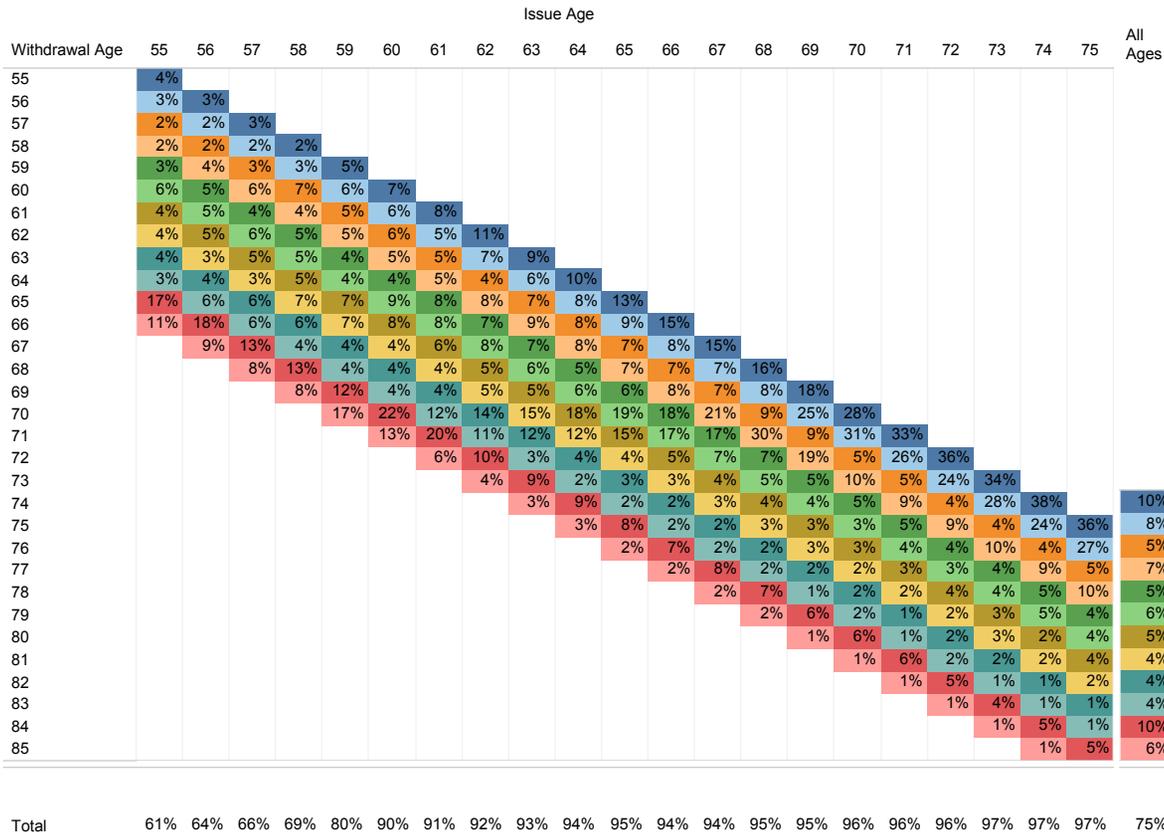
Single-Joint
 All

Contract Value (EOY)
 \$0 to \$24,999
 \$25,000 to \$49,999
 \$50,000 to \$99,999
 \$100,000 to \$249,999
 \$250,000 to \$499,999
 \$500,000 or higher



The withdrawal behavior of GLWB owners can be categorized into three life stages: pre-retirement (before age 60), entering retirement (ages 60 to 69), and Required Minimum Distribution (age 70 and older). Use the text filter on the left of the chart to look at each of the three age groups.

1. Buyer	2. Summary of Withdrawal Activity	3. Utilization Rates by Study Year	4. Withdrawal Activity by Contract Year	5. Withdrawal Activity by Age of Owner	6. First Withdrawals by Issue Age and Contract Year	7. First Withdrawals Based on Proximity to Max Withdrawal Rate Increase	8. Withdrawal Amounts by Owner's Current Age	9. Withdrawal Activity for Contracts Issued in 2018	10. Withdrawals as a Percentage of Annual Benefit Maximum	11. Withdrawals as a Percentage of Maximum Benefit
----------	-----------------------------------	------------------------------------	---	--	--	---	--	---	---	--



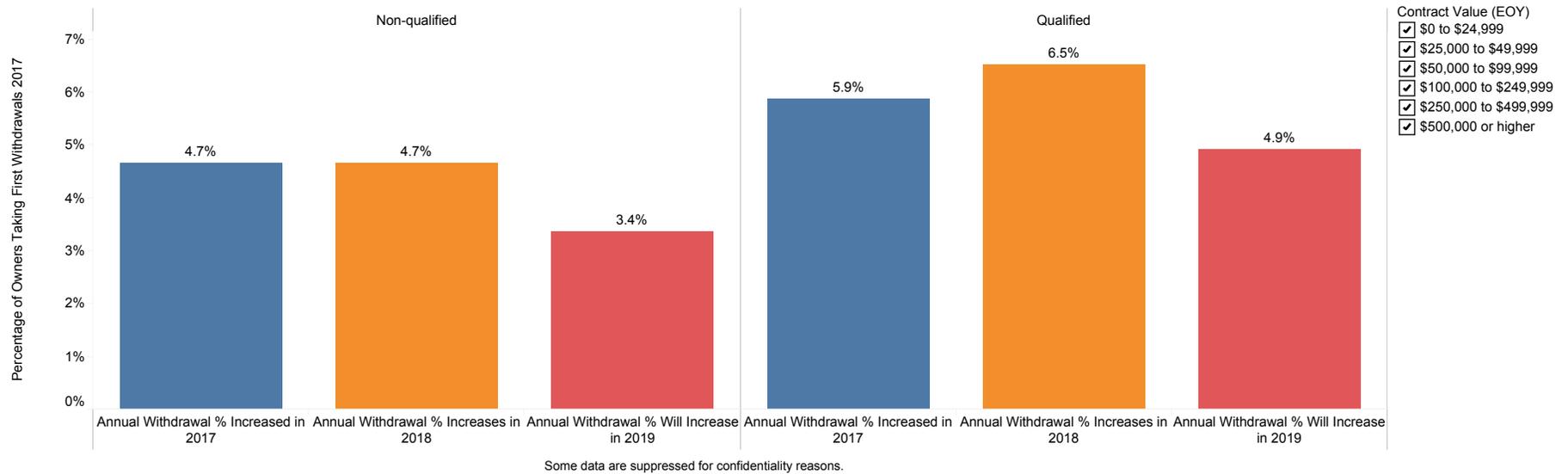
In order to get a clear and consistent picture of when owners first start to take withdrawals, and how many start to take their first withdrawals in the following years, we followed 2007 VA GLWB buyers and tracked their withdrawal behaviors.

This table shows the percentage of owners who took their first withdrawal in each year from 2007 to 2018.

- Select View
- First Withdrawals
 - Subsequent Withdrawals
- Issue Year
- 2007
 - 2008
 - 2009
 - 2010
- Market Type
- Qualified
 - Nonqualified
- Withdrawal Type
- All Withdrawals
 - Systematic
- Contract Year 1
 - Contract Year 2
 - Contract Year 3
 - Contract Year 4
 - Contract Year 5
 - Contract Year 6
 - Contract Year 7
 - Contract Year 8
 - Contract Year 9
 - Contract Year 10
 - Contract Year 11
 - Contract Year 12

2. Summary	3. Utilization Rates by Study Year	4. Withdrawal Activity by Contract Year	5. Withdrawal Activity by Age of Owner	6. First Withdrawals by Issue Age and Contract Year	7. First Withdrawals Based on Proximity to Max Withdrawal Rate Increase	8. Withdrawal Amounts by Owner's Current Age	9. Withdrawal Activity for Contracts Issued in 2018	10. Withdrawals as a Percentage of Annual Benefit Maximum	11. Withdrawals as a Percentage of Annual Benefit Maximum by Age	12. Ratio of Withdrawals ..
------------	------------------------------------	---	--	---	--	--	---	---	--	-----------------------------

First Withdrawals Based on Proximity to Max Withdrawal Rate Increase

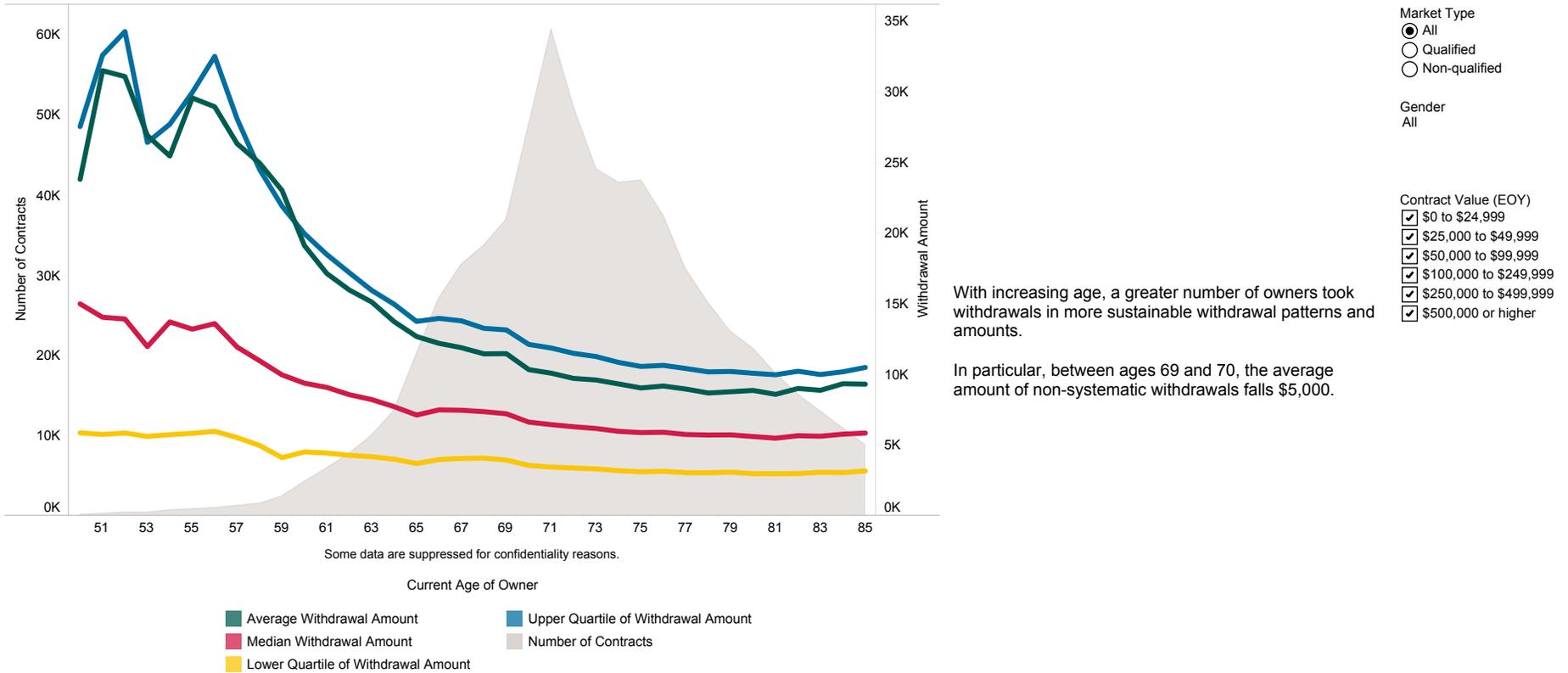


Most GLWB contracts provide owners with a step-up in guaranteed annual withdrawal rates based on certain age bands or owners reaching a certain age, e.g., age 60, 65, 70 or 75 — if they wait to initiate their first withdrawals until obtaining these ages. If owners are sensitive to the potential increase in maximum annual withdrawal percentage, then they will wait until after they have reached one of the ages where the maximum percentage increases. For example, if the owner reached age 65, they might be expected to initiate their first withdrawal activity after reaching age 65 to take advantage of the higher annual income. On the other hand, if an owner is currently aged 64, the owner may wait until they reach age 65 if a step-up in annual withdrawal percentage is to occur at age 65.

We looked at a subset of owners who are close to reaching an age threshold (one year before, current year, and one year after) where a step-up in annual guaranteed withdrawal rates can occur. Our analysis shows that some owners choose to wait until after their guaranteed withdrawal rate has increased to take their first withdrawal. This effect is particularly pronounced in contracts with an account value of \$100,000 or larger.

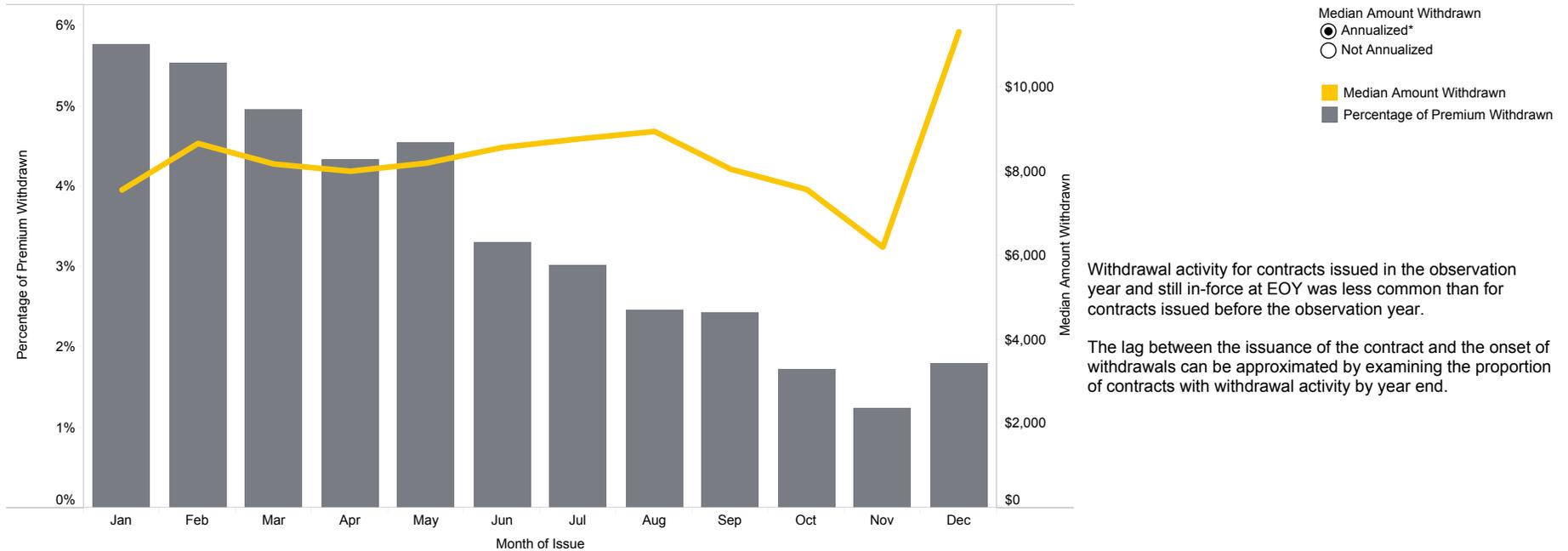
3. Utilization	4. Withdrawal Activity by Contract Year	5. Withdrawal Activity by Age of Owner	6. First Withdrawals by Issue Age and Contract Year	7. First Withdrawals Based on Proximity to Max Withdrawal Rate Increase	8. Withdrawal Amounts by Owner's Current Age	9. Withdrawal Activity for Contracts Issued in 2018	10. Withdrawals as a Percentage of Annual Benefit Maximum	11. Withdrawals as a Percentage of Annual Benefit Maximum by Age	12. Ratio of Withdrawals to Average Contract Value & Benefit Base	13. Ratio of Total Withdrawals
----------------	---	--	---	---	---	---	---	--	---	--------------------------------

Withdrawal Amounts by Owners' Current Age



4. Withdrawal Activity by Age of Owner	5. Withdrawal Activity by Age of Owner	6. First Withdrawals by Issue Age and Contract Year	7. First Withdrawals Based on Proximity to Max Withdrawal Rate Increase	8. Withdrawal Amounts by Owner's Current Age	9. Withdrawal Activity for Contracts Issued in 2018	10. Withdrawals as a Percentage of Annual Benefit Maximum	11. Withdrawals as a Percentage of Annual Benefit Maximum by Age	12. Ratio of Withdrawals to Average Contract Value & Benefit Base	13. Ratio of Total Withdrawals to Total Contract Value	14. Additional Premium
--	--	---	---	--	--	---	--	---	--	------------------------

Withdrawal Activity for Contracts Issued in 2018



Withdrawal activity for contracts issued in the observation year and still in-force at EOY was less common than for contracts issued before the observation year.

The lag between the issuance of the contract and the onset of withdrawals can be approximated by examining the proportion of contracts with withdrawal activity by year end.

Month of Issue	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Grand Total
Percent of Contracts Taking Withdrawals	25.9%	26.7%	26.2%	26.0%	26.4%	27.3%	23.6%	23.2%	23.5%	21.1%	20.7%	17.8%	24.3%

*Withdrawal amounts were annualized by multiplying them by 12/(13-months since BOY).

5. Withdrawals	6. First Withdrawals by Issue Age and Contract Year	7. First Withdrawals Based on Proximity to Max Withdrawal Rate Increase	8. Withdrawal Amounts by Owner's Current Age	9. Withdrawal Activity for Contracts Issued in 2018	10. Withdrawals as a Percentage of Annual Benefit Maximum	11. Withdrawals as a Percentage of Annual Benefit Maximum by Age	12. Ratio of Withdrawals to Average Contract Value & Benefit Base	13. Ratio of Total Withdrawals to Total Contract Value	14. Additional Premium	15. Net Flows
----------------	---	---	--	---	--	--	---	--	------------------------	---------------

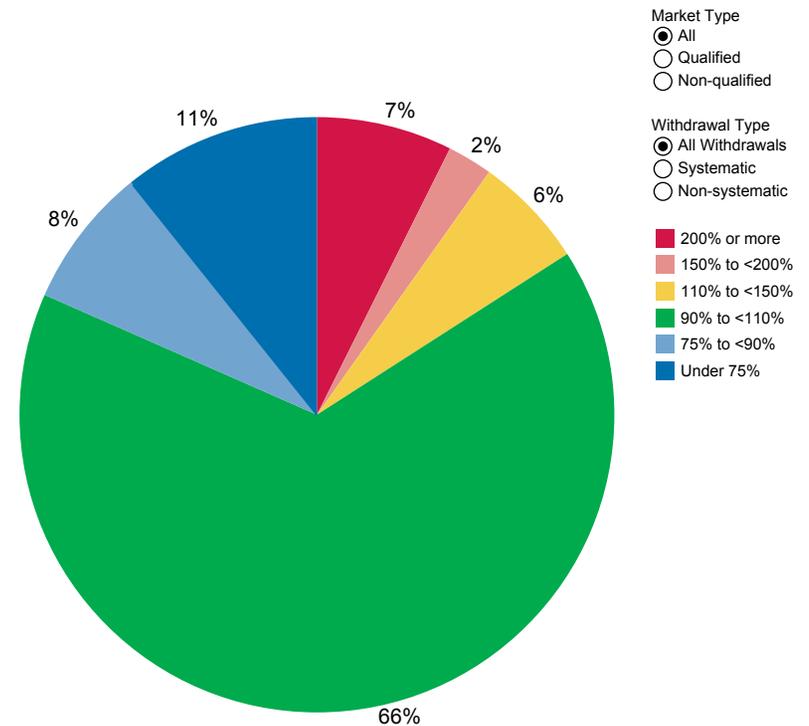
Withdrawals as a Percentage of Annual Benefit Maximum

GLWBs provide a specified maximum withdrawal amount annually for life, through periodic withdrawals from annuity contracts, thus ensuring protection against adverse market performance. However, if the owner withdraws more than the maximum allowed in a contract year, they have taken an excess withdrawal. Excess withdrawals trigger an adjustment of the benefit's guaranteed amount, which reduces the benefit base.

For percentage of benefit maximum withdrawn, we looked at the relationship of customers' actual withdrawal amounts in the calendar year to the maximum withdrawal amounts allowed in the contracts. Given that our study is done on a calendar-year basis, there is some imprecision in measuring the maximum annual withdrawal amounts because benefit bases can vary under certain circumstances during the year (e.g., if additional premium is received) and most benefit base increases occur on a contract anniversary. Accordingly, we used a conservative measure of excess withdrawals — if partial withdrawals exceeded the maximum annual withdrawal as of BOY by at least 10 percent, then we considered the contract to have exceeded the benefit maximum.

We asked participating companies to provide this allowed maximum amount as of the BOY. If companies did not provide the maximum withdrawal amount but provided the benefit base as well as the maximum percentage of this base that could be withdrawn each year, then we calculated an estimate of the percent of maximum annual benefit withdrawn in the following manner:

- If the company provided BOY maximum withdrawal amount, then it equals partial withdrawals divided by this amount.
- If the company did not provide BOY maximum withdrawal amount, then the percent of maximum annual benefit = partial withdrawals divided by (BOY maximum withdrawal percentage) x (BOY benefit base).
- If the company did not provide BOY maximum withdrawal amount or BOY maximum withdrawal percentage, the percent of maximum annual benefit = partial withdrawals divided by (maximum withdrawal percentage from rider specs) x (BOY benefit base).



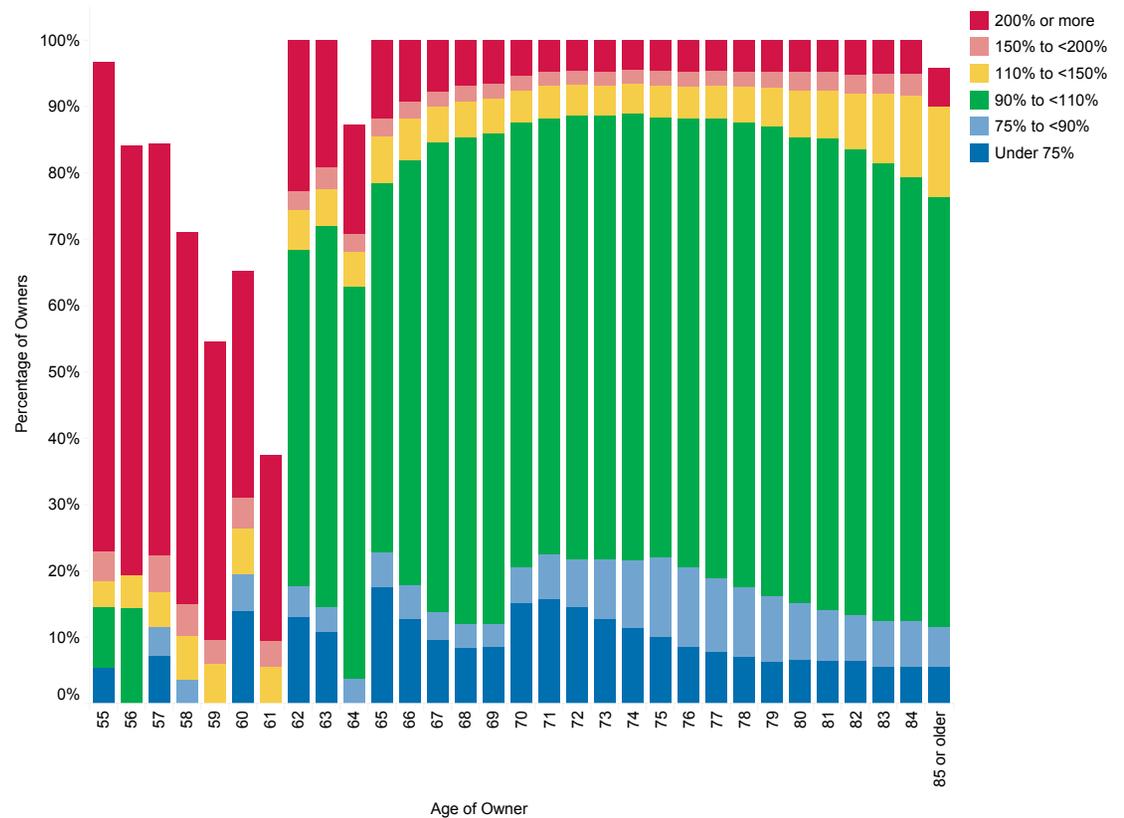
6. First Withdrawals	7. First Withdrawals Based on Proximity to Max Withdrawal Rate Increase	8. Withdrawal Amounts by Owner's Current Age	9. Withdrawal Activity for Contracts Issued in 2018	10. Withdrawals as a Percentage of Annual Benefit Maximum	11. Withdrawals as a Percentage of Annual Benefit Maximum by Age	12. Ratio of Withdrawals to Average Contract Value & Benefit Base	13. Ratio of Total Withdrawals to Total Contract Value	14. Additional Premium	15. Net Flows	16. Surrender Rates by Sel..
----------------------	---	--	---	---	---	---	--	------------------------	---------------	------------------------------

Withdrawals as a Percentage of Annual Benefit Maximum by Age

When we look at the age of owners and their withdrawal amounts in relation to maximum amounts allowed, we see that younger owners are more likely to take 150 percent or more of the maximum amount allowed.

There are some salient insights from the chart at right:

- The majority of owners taking withdrawals, as we have seen in previous sections, are typically aged 65 or older. There are very few instances where these older owners take more than the annual benefit maximum.
- Younger owners, particularly under age 60, are more likely to take 200 percent or more of the benefit maximum allowed in the contract. Over half of the owners under age 60 and taking withdrawals exceeded 200 percent or more of the benefit maximum. On the other hand, only 7 percent of owners aged 60 or over and taking withdrawals exceeded 200 percent or more of the benefit maximum.
- There is a noticeable increase at ages 70 and 71 in the percentage of owners taking withdrawals of less than 90 percent of the benefit maximum. This can be explained by the need for qualified owners to take RMDs, which are typically at a lower withdrawal rate.
- On the other hand, some qualified owners aged 75 or older are taking withdrawals in the range of 110 to 149 percent of the maximum benefit rate allowed in the contracts. They are apparently using higher RMD withdrawal rates applicable in these older ages, often without jeopardizing their benefit bases in the contract, as most insurance companies allow qualified owners to adhere to the

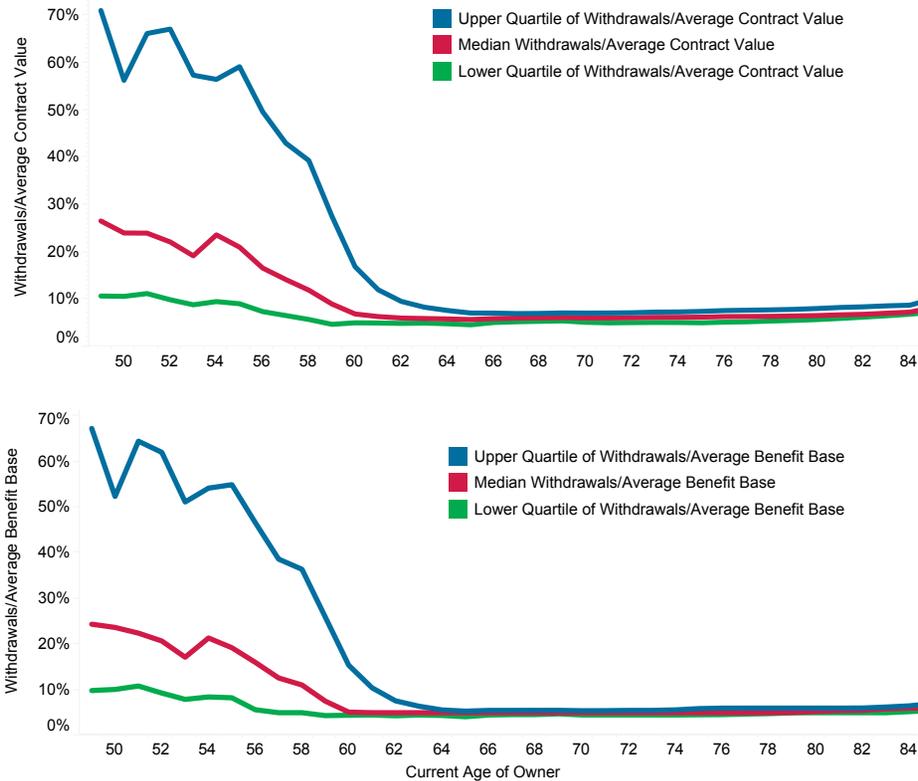


7. First Withdrawals	8. Withdrawal Amounts by Owner's Current Age	9. Withdrawal Activity for Contracts Issued in 2018	10. Withdrawals as a Percentage of Annual Benefit Maximum	11. Withdrawals as a Percentage of Annual Benefit Maximum by Age	12. Ratio of Withdrawals to Average Contract Value & Benefit Base	13. Ratio of Total Withdrawals to Total Contract Value	14. Additional Premium	15. Net Flows	16. Surrender Rates by Selected Owner and Product Characteristics	17. Surrender Rates by Sh..
----------------------	--	---	---	--	--	--	------------------------	---------------	---	-----------------------------

Market Type

- All
- Qualified
- Non-qualified

Ratio of Withdrawals to Average Contract Value & Average Benefit Base



Some data are suppressed for confidentiality reasons.

In order to provide some context, we assessed the withdrawal amount in relation to both contract value and the benefit base. Our figures show the median withdrawal amount for all ages and also the quartile distribution of the withdrawal amounts in 2018.

The distribution of the withdrawals as a percent of average contract value withdrawn shows that, for owners aged 65 or over, the median, the upper quartile, and the lower quartile values are almost identical. The pattern also indicates that the majority of older owners taking withdrawals do so at similar ratios from their contract values.

For owners under age 60, there is a wide difference between the median and the upper quartile values, indicating that the majority of these owners are taking more than the maximum allowed in the contracts. Only a small number of owners under age 60 — mostly below the lower quartile line — are withdrawing a sustainable rate without impairing the benefit base.

The distribution of withdrawal amount to the average benefit base ratio supports the same conclusion that we reached earlier: that the withdrawal amount is unduly weighted by very large withdrawals taken by a smaller number of younger owners.

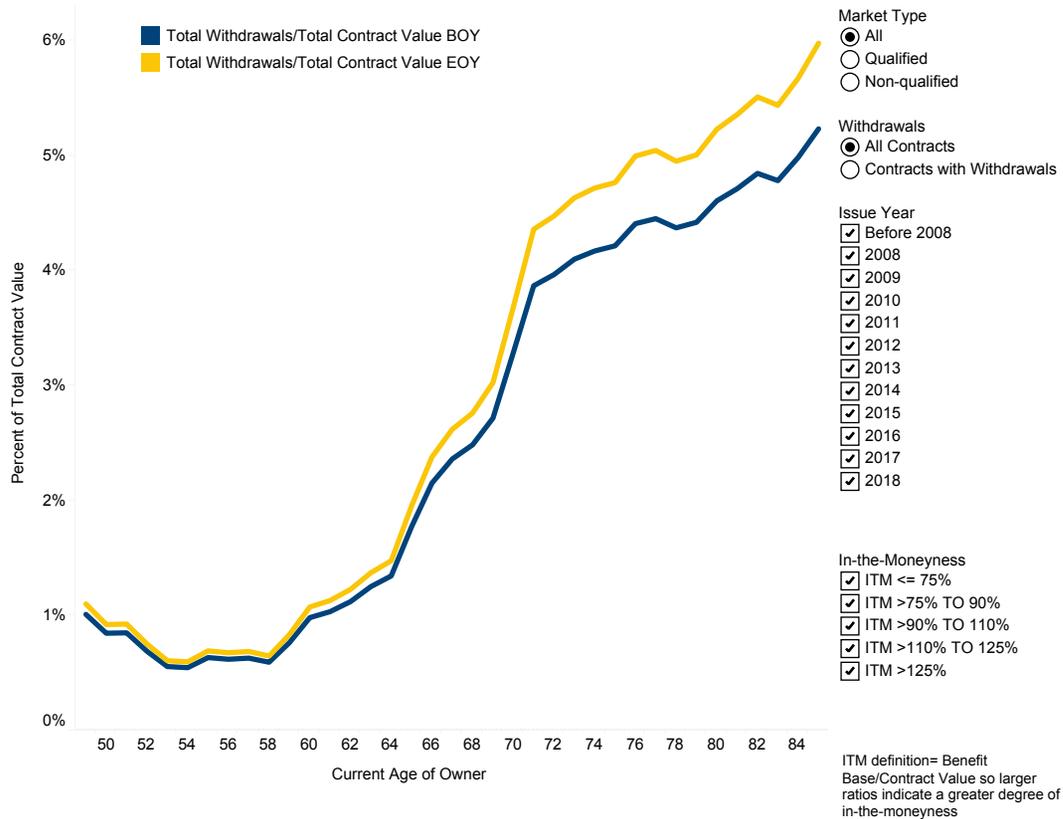
8. Withdrawal Activity for Contracts Issued in 2018	9. Withdrawals as a Percentage of Annual Benefit Maximum	10. Withdrawals as a Percentage of Annual Benefit Maximum by Age	11. Ratio of Withdrawals to Average Contract Value & Benefit Base	13. Ratio of Total Withdrawals to Total Contract Value	14. Additional Premium	15. Net Flows	16. Surrender Rates by Selected Owner and Product Characteristics	17. Surrender Rates by Share Class	18. Surrender Rates by Sur..
---	--	--	---	---	------------------------	---------------	---	------------------------------------	------------------------------

Ratio of Total Withdrawals to Total Contract Value

By comparing the ratio of total withdrawal amount to contract values at BOY and the ratio of total withdrawal amount to EOY contract values, we can ascertain another measure of GLWB risk originating in customer behavior. We calculate this measure at two levels.

First, total withdrawals during the observation year can be divided by total contract values at BOY and EOY, for all contracts in-force. Second, the same ratio can be computed for only the subset of contracts that experienced withdrawals in the observation year. The first measure provides a view of risk from withdrawals in terms of the total book of business, while the second provides an estimation of risk from withdrawals among the contracts that are in withdrawal mode.

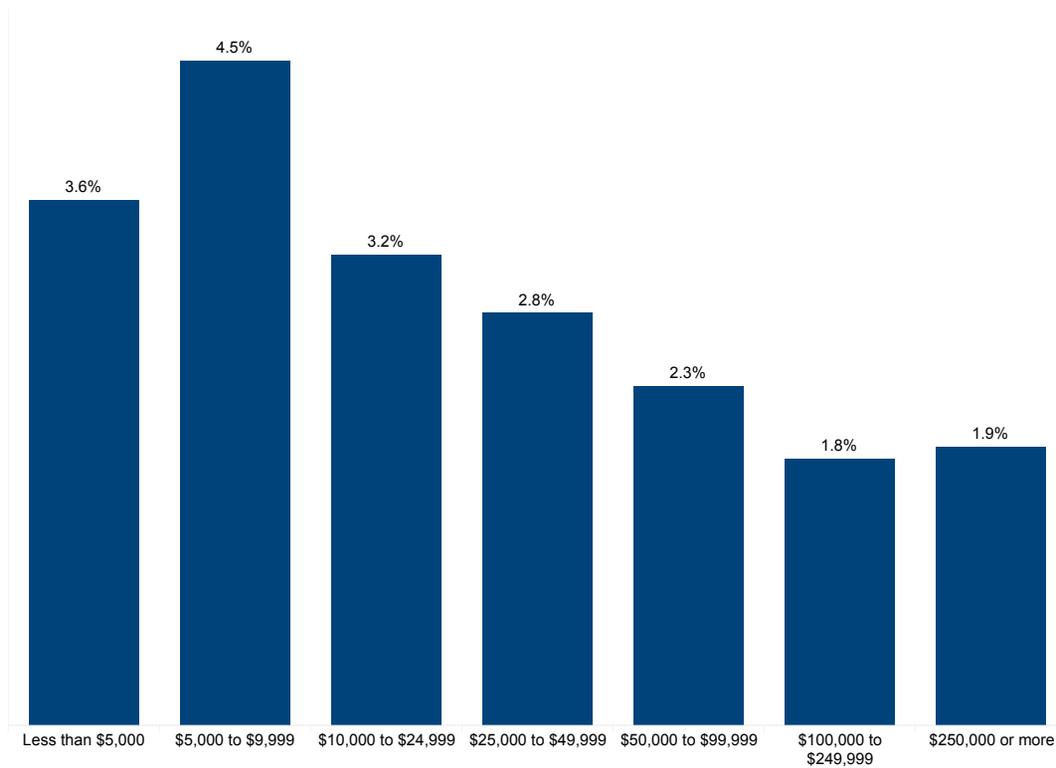
Withdrawal rates are lowest when the benefit base is similar in size to contract value, when In-The-Money (ITM) is between 90 and 125 percent. Much higher than that, and owners start to feel comfortable taking slightly larger withdrawals, considering they have a relatively large benefit base. However, when the benefit base falls below 90 percent of the contract value, owners tend to make sizeable withdrawals.



9. Withdrawals as a Percentage of Annual Benefit Maximum	10. Withdrawals as a Percentage of Annual Benefit Maximum by Age	11. Ratio of Withdrawals to Average Contract Value & Benefit Base	12. Ratio of Total Withdrawals to Total Contract Value	14. Additional Premium	15. Net Flows	16. Surrender Rates by Selected Owner and Product Characteristics	17. Surrender Rates by Share Class	18. Surrender Rates by Surrender Charge Level	19. Surrender Rates by Per..
--	--	---	--	-------------------------------	---------------	---	------------------------------------	---	------------------------------

Additional Premium

Percentage of Contracts Receiving Additional Premium in 2018



Many retail VAs allow owners to add premium after issue, though in practice most contracts do not receive ongoing deposits. For most GLWBs, the calculation of the benefit base incorporates premium received within a certain time period after contract issue.

- Select Breakout
- Contract Value EOY
 - Age of Owner
 - Market Type
 - Distribution Channel
 - In-the-Moneyness

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

- Issue Year
- Before 2008
 - 2008
 - 2009
 - 2010
 - 2011
 - 2012
 - 2013
 - 2014
 - 2015
 - 2016
 - 2017
 - 2018

10. Withdrawals as a Percentage of Annual Benefit Maximum by Age	11. Ratio of Withdrawals to Average Contract Value & Benefit Base	12. Ratio of Total Withdrawals to Total Contract Value	13. Additional Premium	15. Net Flows	16. Surrender Rates by Selected Owner and Product Characteristics	17. Surrender Rates by Share Class	18. Surrender Rates by Surrender Charge Level	19. Surrender Rates by Percentage of Annual Benefit Maximum Withdrawn	20. Surrender Rates by Wit..
--	---	--	------------------------	----------------------	---	------------------------------------	---	---	------------------------------

Net Flows

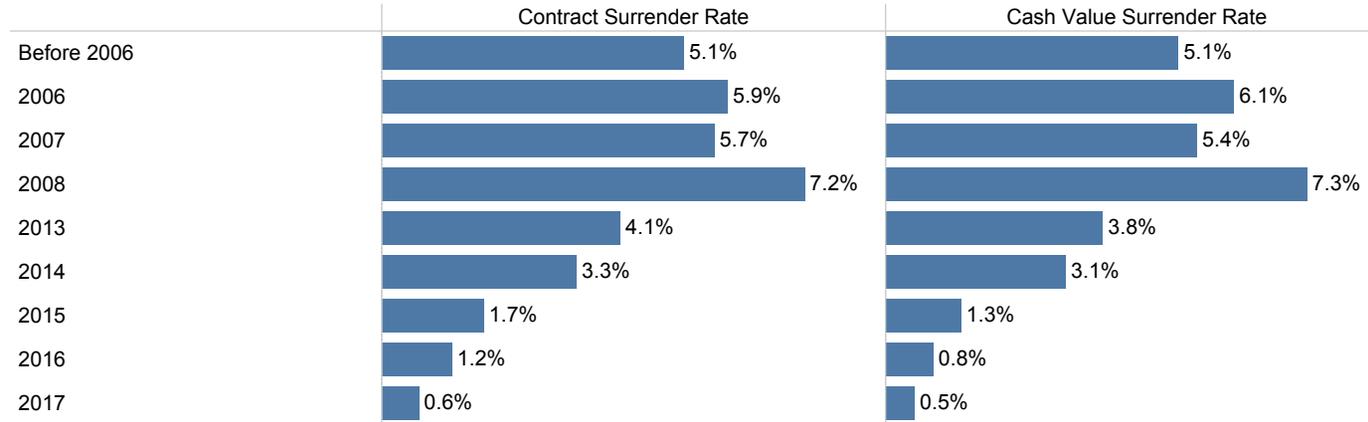
		Total Contract Value	Contract Count	Avg. Contract Value
In-Force BOY		\$355.0B	2,421,174	\$150,050
Premium Received	Existing Contracts	\$1.4B	2,366,129	
Benefits Paid	Annuitizations	\$0.2B	1,027	\$161,130
	Death/Disability	\$2.5B	18,356	\$135,105
	Full Surrenders	\$15.8B	111,208	\$142,098
Partial Withdrawals		\$9.5B		
Investment Growth		(\$35.5B)		
In-Force EOY		\$313.0B	2,290,582	\$136,664

The double-digit decrease in contract value is due, in large part, to declines in stock market investments late in the year.

11. Withdrawal	12. Ratio of Withdrawals to Average Contract Value & Benefit Base	13. Ratio of Total Withdrawals to Total Contract Value	14. Additional Premium	15. Net Flows	16. Surrender Rates by Selected Owner and Product Characteristics	17. Surrender Rates by Share Class	18. Surrender Rates by Surrender Charge Level	19. Surrender Rates by Percentage of Annual Benefit Maximum Withdrawn	20. Surrender Rates by Withdrawal Method	21. Benefit Base and C..
----------------	---	--	------------------------	---------------	--	------------------------------------	---	---	--	--------------------------

Surrender Rates by Selected Owner and Product Characteristics

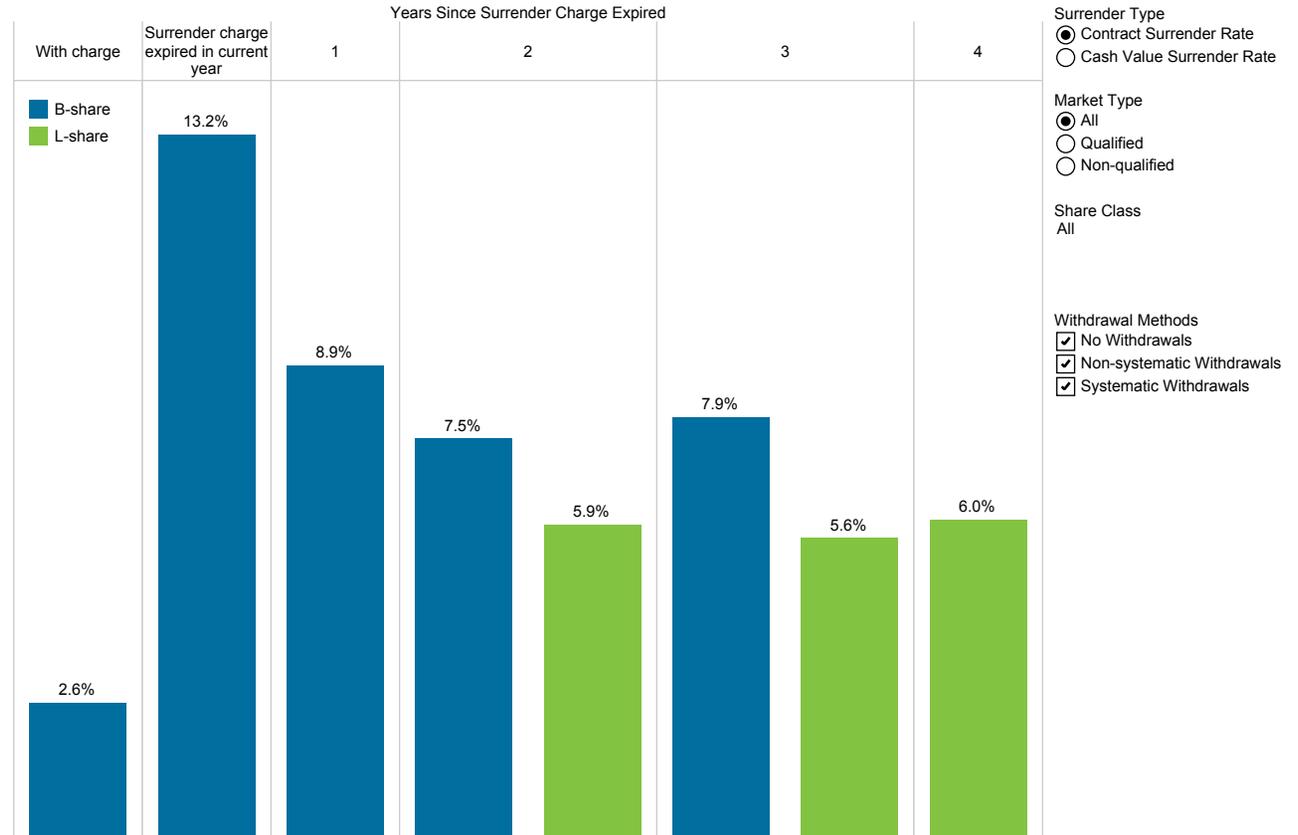
- Select Breakout
- Year of Issue
 - Age of Owner
 - Contract Value BOY
 - Market Type
 - Distribution Channel
 - Cost Structure



1	2.	13. Ratio of Total Withdrawals to Total Contract Value	14. Additional Premium	15. Net Flows	16. Surrender Rates by Selected Owner and Product Characteristics	17. Surrender Rates by Share Class	18. Surrender Rates by Surrender Charge Level	19. Surrender Rates by Percentage of Annual Benefit Maximum Withdrawn	20. Surrender Rates by Withdrawal Method	21. Benefit Base and Contract Value Summary	22. Contract Value and B..
---	----	--	------------------------	---------------	---	---	---	---	--	---	----------------------------

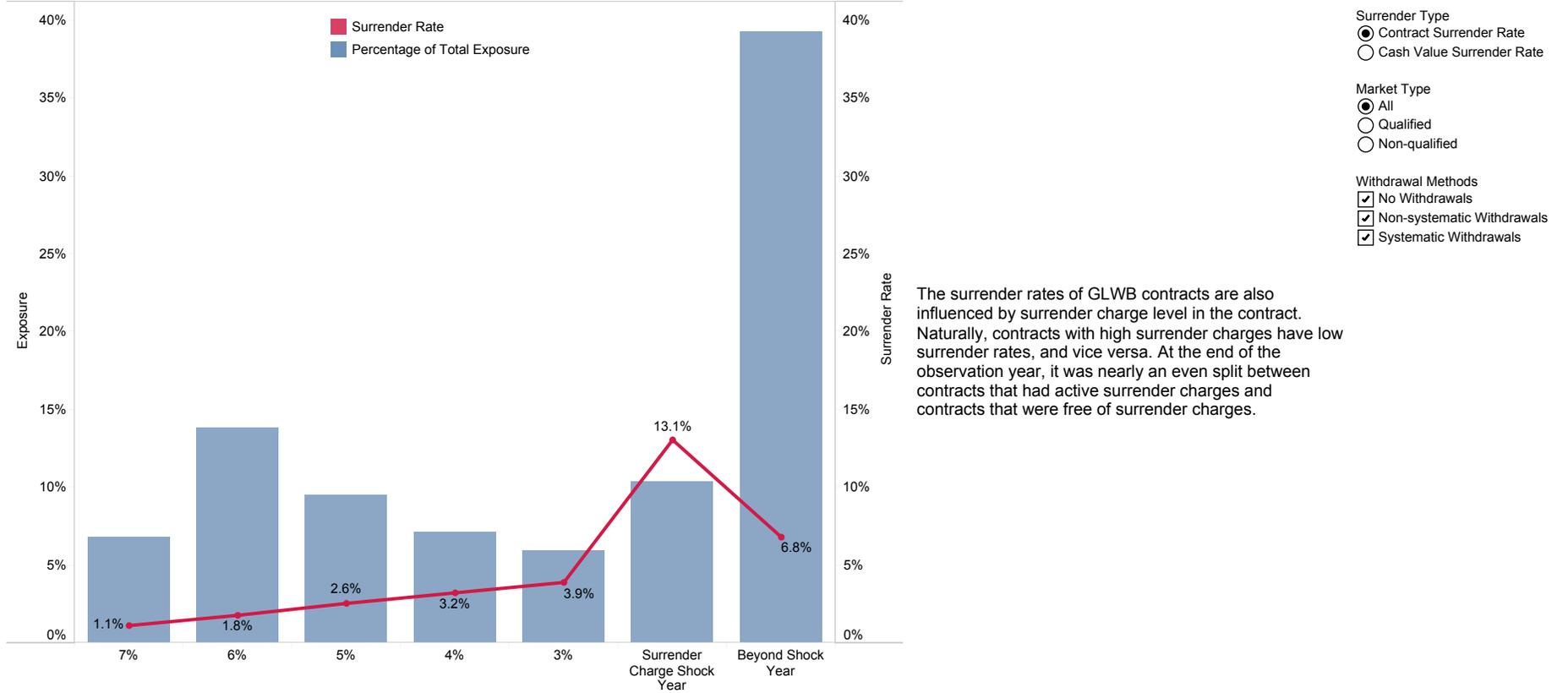
Surrender Rates by Share Class

Looking at the surrender rates by the presence of surrender charges shows that persistency among contracts with surrender charges was higher than for contracts without surrender charges. A majority of B-share contracts were within the surrender charge periods in 2018.



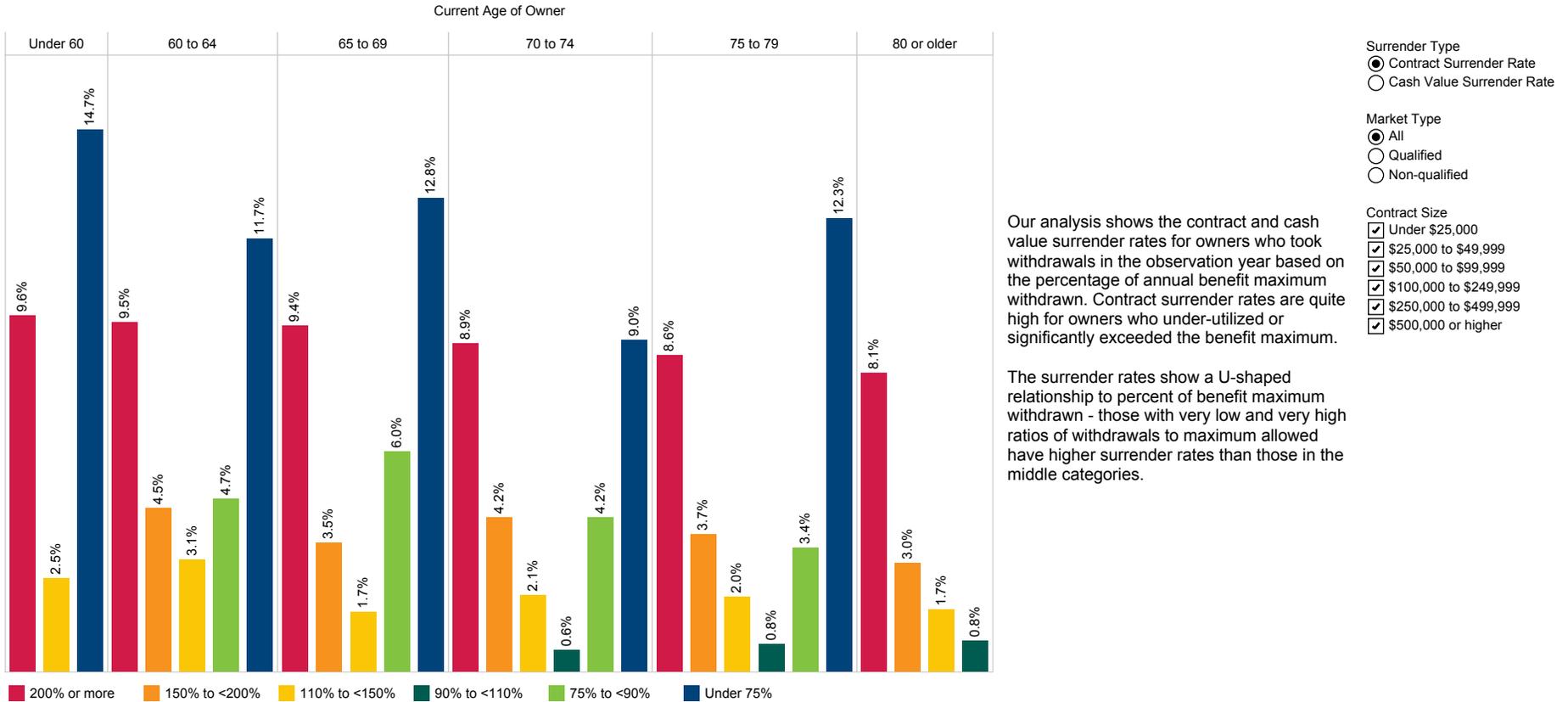
13. Ratio ..	14. Additional Premium	15. Net Flows	16. Surrender Rates by Selected Owner and Product Characteristics	17. Surrender Rates by Share Class	18. Surrender Rates by Surrender Charge Level	19. Surrender Rates by Percentage of Annual Benefit Maximum Withdrawn	20. Surrender Rates by Withdrawal Method	21. Benefit Base and Contract Value Summary	22. Contract Value and Benefit Base by Issue Quarter	23. Average Actuarial Pre..
--------------	------------------------	---------------	---	------------------------------------	--	---	--	---	--	-----------------------------

Surrender Rates by Surrender Charge Level



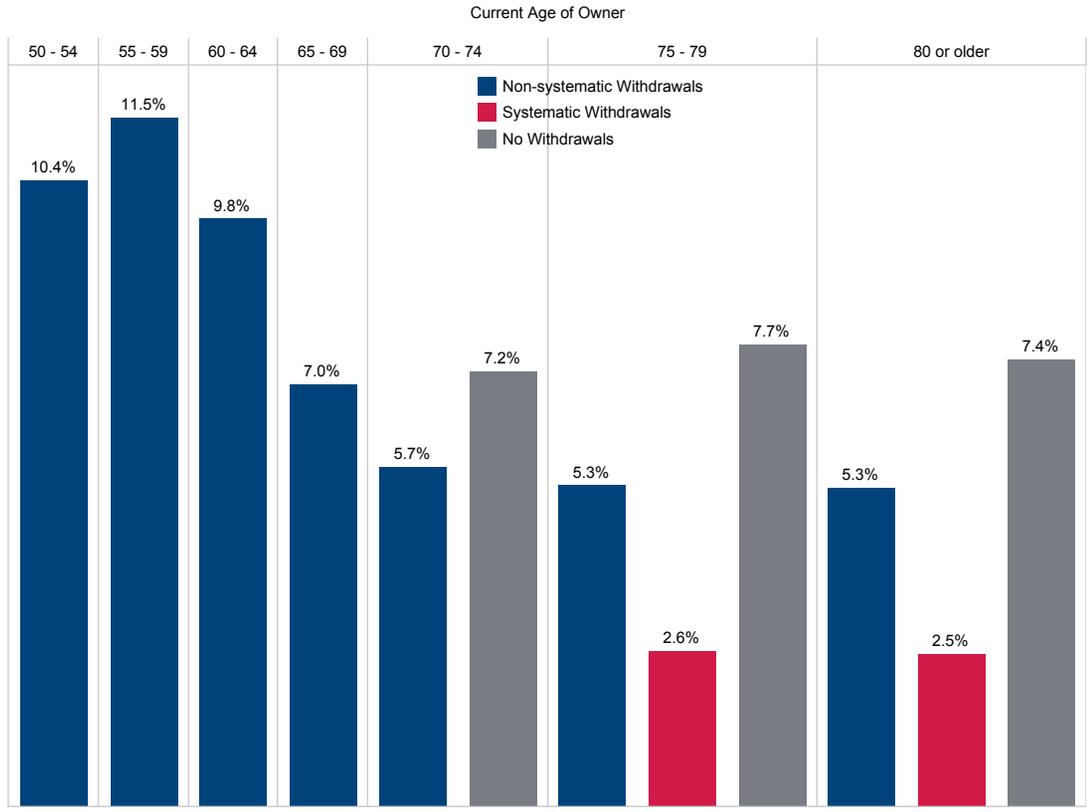
14. Addit..	15. Net Flows	16. Surrender Rates by Selected Owner and Product Characteristics	17. Surrender Rates by Share Class	18. Surrender Rates by Surrender Charge Level	19. Surrender Rates by Percentage of Annual Benefit Maximum Withdrawn	20. Surrender Rates by Withdrawal Method	21. Benefit Base and Contract Value Summary	22. Contract Value and Benefit Base by Issue Quarter	23. Average Actuarial Present Value vs. Average Contract Value by Age	24. Product & Benefit Ch..
-------------	---------------	---	------------------------------------	---	--	--	---	--	---	----------------------------

Surrender Rates by Percentage of Annual Benefit Maximum Withdrawn



15. Net FI ..	16. Surrender Rates by Selected Owner and Product Characteristics	17. Surrender Rates by Share Class	18. Surrender Rates by Surrender Charge Level	19. Surrender Rates by Percentage of Annual Benefit Maximum Withdrawn	20. Surrender Rates by Withdrawal Method	21. Benefit Base and Contract Value Summary	22. Contract Value and Benefit Base by Issue Quarter	23. Average Actuarial Present Value vs. Average Contract Value by Age	24. Product & Benefit Characteristics	25. Participant List
---------------	---	------------------------------------	---	---	---	---	--	---	---------------------------------------	----------------------

Surrender Rates by Withdrawal Method



Some data are suppressed for confidentiality reasons.

Another strong indicator of whether owners are likely to surrender their contracts is the type of withdrawal method they use — systematic or non-systematic.

Overall, the contract surrender rate among owners who took non-systematic or occasional withdrawals in the observation year was 6.0 percent; while the surrender rate among owners who withdrew systematically was a very low 2.5 percent. Non-systematic or occasional withdrawals do not always maximize their benefit withdrawals.

Owners taking non-systematic withdrawals accounted for just over a quarter of all owners taking withdrawals, but they account for 40 percent of surrenders, by count and by amount. Surrender rates among older owners who take non-systematic withdrawals are more than double the surrender rates of older owners who take systematic withdrawals. Owners who take systematic withdrawals are less likely to take more than the benefit maximum.

Surrender Type
 Contract Surrender Rate
 Cash Value Surrender Rate

Market Type
 All
 Qualified
 Non-qualified

Contract Size
 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

Presence of Surrender Charge
 All

16. Surrender Rates by Selection...	17. Surrender Rates by Share Class	18. Surrender Rates by Surrender Charge Level	19. Surrender Rates by Percentage of Annual Benefit Maximum Withdrawn	20. Surrender Rates by Withdrawal Method	21. Benefit Base and Contract Value Summary	22. Contract Value and Benefit Base by Issue Quarter	23. Average Actuarial Present Value vs. Average Contract Value by Age	24. Product & Benefit Characteristics	25. Participant List
-------------------------------------	------------------------------------	---	---	--	--	--	---	---------------------------------------	----------------------

Benefit Base and Contract Value Summary

	Benefit Base (BB) BOY	BB EOY	Contract Value (CV) BOY	CV EOY	CV/BB BOY	CV/BB EOY	Market Type
Total	\$317,409,571,961	\$327,928,042,237	\$287,808,606,159	\$258,644,606,517	90.7%	78.9%	<input checked="" type="radio"/> All <input type="radio"/> Qualified <input type="radio"/> Non-qualified
Average	\$161,324	\$166,670	\$146,279	\$131,457	90.7%	78.9%	<input checked="" type="checkbox"/> Before 2008 <input checked="" type="checkbox"/> 2008 <input checked="" type="checkbox"/> 2009 <input checked="" type="checkbox"/> 2010 <input checked="" type="checkbox"/> 2011 <input checked="" type="checkbox"/> 2012 <input checked="" type="checkbox"/> 2013 <input checked="" type="checkbox"/> 2014 <input checked="" type="checkbox"/> 2015 <input checked="" type="checkbox"/> 2016 <input checked="" type="checkbox"/> 2017
Median	\$111,303	\$114,761	\$101,972	\$91,118	91.6%	79.4%	

Percentage of contracts where benefit base was greater than contract value:

Beginning of Year **78.8%**

End of Year **98.2%**

GLWBs are complex products and insurers are exposed to the risk that the underlying investments may underperform before or during the withdrawal period, and that the account balances in the contracts may be insufficient to cover the lifetime withdrawal guarantee. With a guarantee of lifetime benefit option — particularly on joint lives — insurers also are exposed to longevity risk. The performance of underlying investments may remain vulnerable to the complex mixture of risk arising from equity, interest rates, and the correlation thereof.

Over the last several years, insurance companies have worked to better manage the volatility of the subaccounts by restricting the funds into which GLWB owners can invest. This has evolved from asset allocation funds to automatic asset transfer programs to managed volatility funds.

In 2018, a bear market in the fourth quarter caused contract values to decline. This combined with withdrawal activity caused contract values to fall more than 10% from the beginning of the year to the end. As a result, there were many more in-the-money contracts at the end of the year than there were at the beginning of the year.

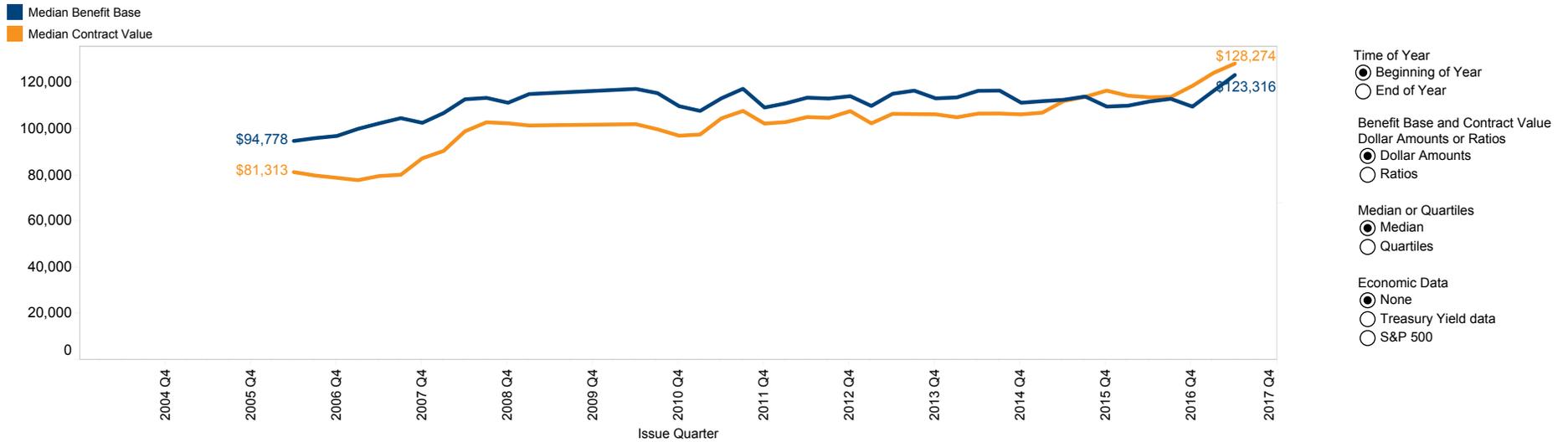
Withdrawal Activity
All

16. Surrender Rates by Selection...	17. Surrender Rates by Share Class	18. Surrender Rates by Surrender Charge Level	19. Surrender Rates by Percentage of Annual Benefit Maximum Withdrawn	20. Surrender Rates by Withdrawal Method	21. Benefit Base and Contract Value Summary	22. Contract Value and Benefit Base by Issue Quarter	23. Average Actuarial Present Value vs. Average Contract Value by Age	24. Product & Benefit Characteristics	25. Participant List
-------------------------------------	------------------------------------	---	---	--	---	---	---	---------------------------------------	----------------------

Contract Value and Benefit Base by Issue Quarter

When a contract was issued has an impact on if, and by how much, the benefit base might exceed the contract value. Some contracts have experienced considerable market volatility.

As one would expect, the inter-quartile range narrows with decreasing duration (more recently issued contracts tend to have a tighter distribution) because there has been less time for any group of contracts to pull far ahead (or fall far behind) the rest of the pack in terms of performance.

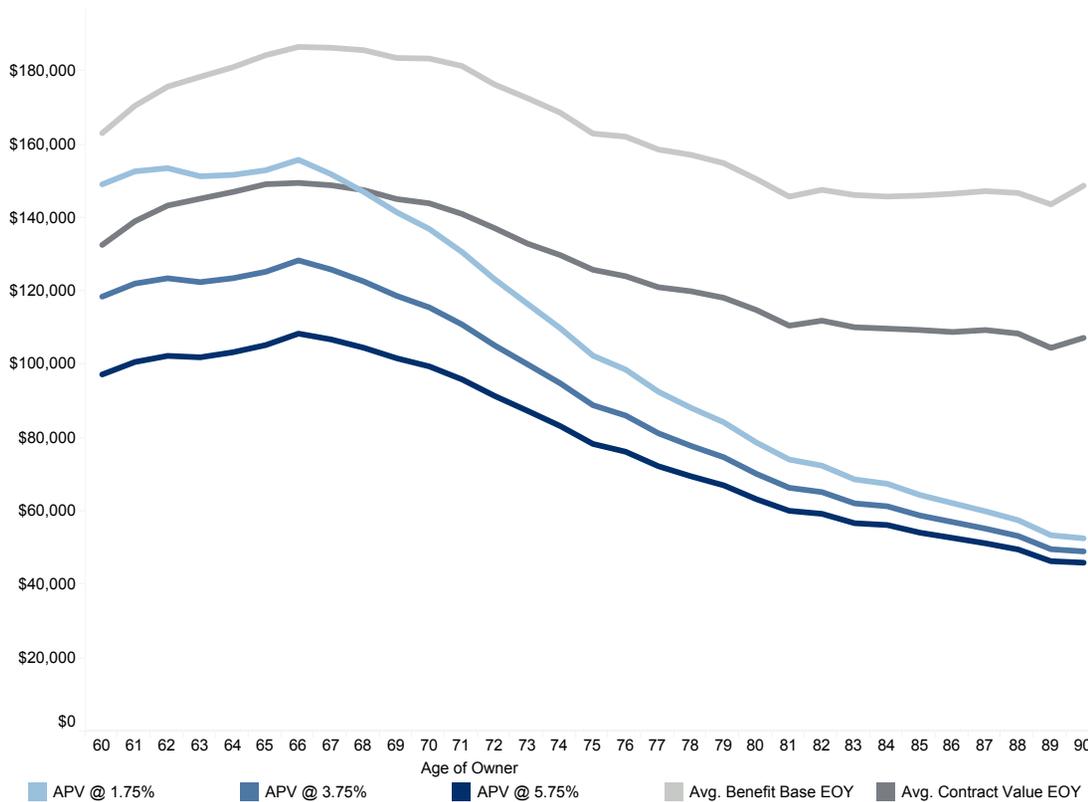


Source: Oxford Economics

Some data are suppressed for confidentiality reasons.

16. Surrender Rates by Selection...	17. Surrender Rates by Share Class	18. Surrender Rates by Surrender Charge Level	19. Surrender Rates by Percentage of Annual Benefit Maximum Withdrawn	20. Surrender Rates by Withdrawal Method	21. Benefit Base and Contract Value Summary	22. Contract Value and Benefit Base by Issue Quarter	23. Average Actuarial Present Value vs. Average Contract Value by Age	24. Product & Benefit Characteristics	25. Participant List
-------------------------------------	------------------------------------	---	---	--	---	--	--	---------------------------------------	----------------------

Average Actuarial Present Value vs. Average Contract Value by Age



The graph presents an actuarial present value (APV) analysis of benefit-maximum guaranteed withdrawals for the in-force block of business by age, and compares the average APV to average contract values at the EOY.

The analysis is based on the following assumptions:

- All contract owners eligible to take withdrawals as of EOY do so under the current terms of the riders. Withdrawals are taken at the beginning of each year of analysis, and contract owners are assumed to take the maximum guaranteed annual withdrawal amount, which equals the higher of a) the BOY maximum guaranteed annual withdrawal amount as specified by companies, or b) the BOY maximum annual withdrawal percentage multiplied by each contract's benefit base on its anniversary date or, if not available, as of the EOY. If companies did not specify the BOY annual withdrawal percentage at the contract level, we determined it based on the rider specifications, with appropriate adjustment to the contract owner's age.
- Annual withdrawals or payments continue until the owner's gender- and age-specific life expectancy, using the 2012 Individual Annuitant Basic Mortality Table with projection scale G2.
- We did not consider contract surrender activity or payment of guaranteed death benefits.
- APV analysis is based on an interest rate of 3.75 percent. We used two other interest rates at ± 200 basis points from this valuation rate (i.e., 1.75 and 5.75 percent) to assess the sensitivity of interest rate changes.
- We do not intend the industry to use this analysis as a measure of risk or efficiency of risk management in the industry, as we do not consider factors such as fees, lapse rates, effectiveness of hedging programs, asset allocation restrictions, and other related factors in the calculation.

16. Surrender Rates by Selection...	17. Surrender Rates by Share Class	18. Surrender Rates by Surrender Charge Level	19. Surrender Rates by Percentage of Annual Benefit Maximum Withdrawn	20. Surrender Rates by Withdrawal Method	21. Benefit Base and Contract Value Summary	22. Contract Value and Benefit Base by Issue Quarter	23. Average Actuarial Present Value vs. Average Contract Value by Age	24. Product & Benefit Characteristics	25. Participant List
-------------------------------------	------------------------------------	---	---	--	---	--	---	--	----------------------

Product & Benefit Characteristics

Average Charges and Number of Subaccounts by Issue Year

	Before 2008	2008	2013	2014	2015	2016	2017
Avg. Mortality and Expense Charge	1.40%	1.37%	1.23%	1.20%	1.17%	1.14%	1.14%
Avg. Benefit Fee	0.93%	1.03%	0.97%	0.98%	1.02%	1.03%	1.04%
Avg. Number of Subaccounts	78.21	75.65	57.49	55.53	56.41	55.83	59.83
Avg. Maximum Age at Election	83.34	83.47	83.65	82.08	82.44	82.75	82.94
Avg. Minimum Age at Onset	57.77	58.16	56.96	56.86	56.39	55.32	54.91
Avg. Maximum Age at Onset	90.47	92.01	92.88	80.53	81.70	76.71	94.38

Product Features - Distribution by Issue Year

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
No	17%	5%	2%	3%	4%	6%	5%	5%	5%	3%	15%
Yes	83%	95%	98%	97%	96%	94%	95%	95%	95%	97%	85%

- Product has fixed account
- Product still available as of EOY
- Rider still available as of EOY
- Cap on benefits
- Payments can continue to spouse after owner's death

16. Surrender Rates by Selection	17. Surrender Rates by Share Class	18. Surrender Rates by Surrender Charge Level	19. Surrender Rates by Percentage of Annual Benefit Maximum Withdrawn	20. Surrender Rates by Withdrawal Method	21. Benefit Base and Contract Value Summary	22. Contract Value and Benefit Base by Issue Quarter	23. Average Actuarial Present Value vs. Average Contract Value by Age	24. Product & Benefit Characteristics	25. Participant List
----------------------------------	------------------------------------	---	---	--	---	--	---	---------------------------------------	-----------------------------

Participants

AIG
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
Thrivent
Transamerica