

UNDERSTANDING VARIABLE ANNUITY POLICYHOLDER BEHAVIOR



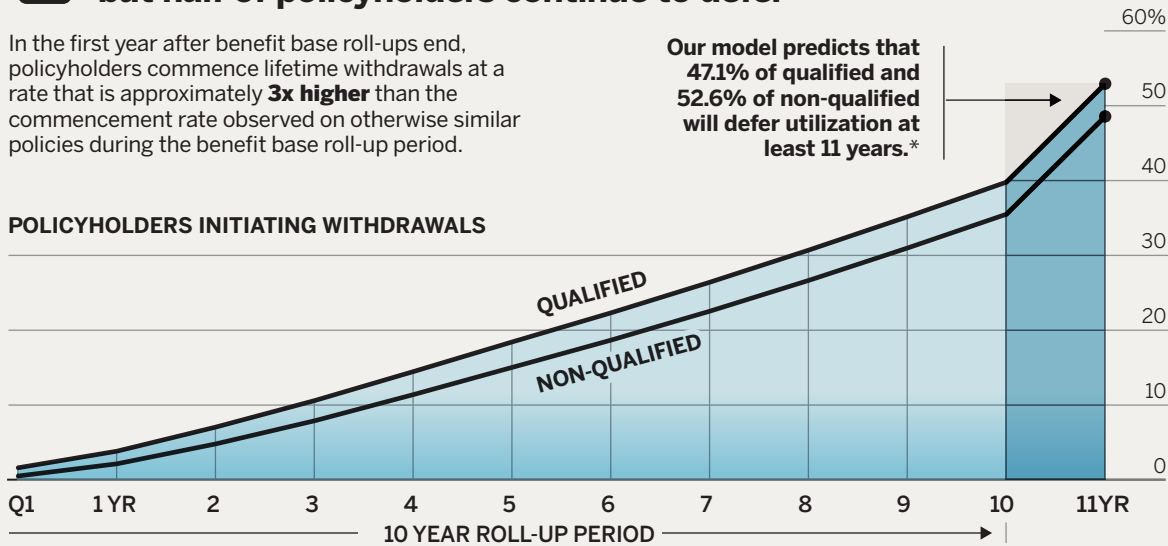
PREDICTIVE ANALYTICS PROVIDES ACTIONABLE INTEL FOR GLWB CONTRACTS

As variable annuity policies continue to mature, Milliman is using predictive analytics to help the life insurance industry understand the behavior of its customers. The infographic below depicts key insights about VA policyholder behavior over the past decade.

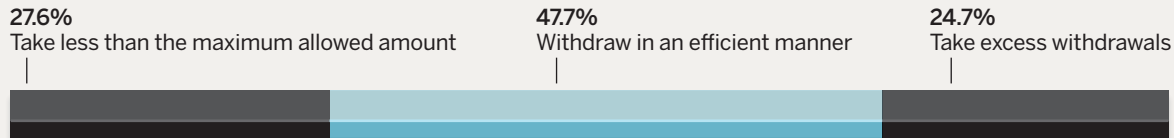
As roll-up period ends, GLWB commencement rate is high, but half of policyholders continue to defer

In the first year after benefit base roll-ups end, policyholders commence lifetime withdrawals at a rate that is approximately **3x higher** than the commencement rate observed on otherwise similar policies during the benefit base roll-up period.

Our model predicts that **47.1% of qualified and 52.6% of non-qualified** will defer utilization at least 11 years.*



Most policyholders don't use their benefits efficiently



Data update

NUMBER OF POLICIES SOLD

3

MILLION

ASSETS UNDER MANAGEMENT

\$335

BILLION

POLICIES ISSUED FROM

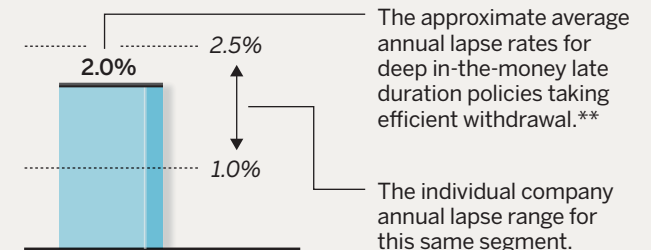
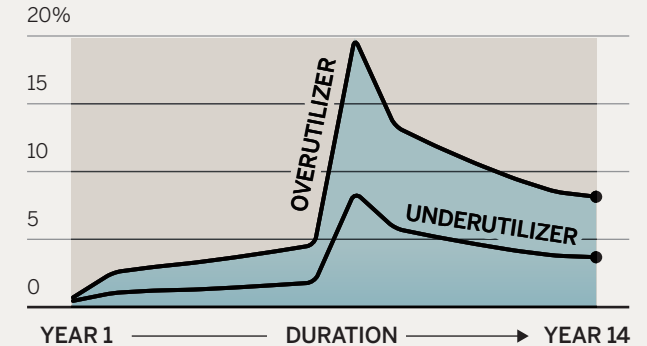
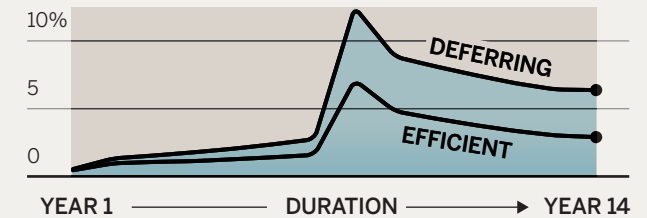
2003

TO

2017

Utilization behavior is predictive of future lapse behavior

Inefficient utilization behavior is associated with elevated subsequent lapse behavior, and efficient utilization behavior is associated with lower subsequent lapse behavior. These figures represent stylized policyholders who begin at-the-money and face moderate investment returns over time.



* 10Y ROLL-UP, SINGLE LIFE POLICIES ISSUED TO 55-YEAR-OLD POLICYHOLDERS

** THIS RATE CONSIDERS POLICIES IN DURATION 9+ THAT ARE 150% OR MORE IN THE MONEY WHEN MEASURED WITH BB/AV METRIC