ACLI
Financial Security for Life

The Impact of Adverse Selection on Life Insurance Products

Jan M. Graeber, ASA, MAAA
jangraeber@acli.com
April 28, 2022

Risk Classification

A fundamental precept of any workable private, voluntary insurance system
Grouping individual risks with reasonably similar expectations of loss for the purpose of setting prices
Necessary to maintain a financially sound and equitable system
Enables the development of equitable insurance prices, which ensures the availability of needed coverage to the public.

Three Primary Purposes of Risk Classification

Enhance fairness to all policyholders

- Differences in prices among classes should reflect differences in expected costs with no intended redistribution or subsidy among the classes

Protect the insurance system's financial soundness

- Adverse selection is the biggest threat to a voluntary, private insurance market

Permit economic incentives to operate

- Economic incentive operates over time to favor classification systems that result in a price for each risk which most nearly equals the expected cost associated with the class to which that risk is assigned.
- Results in widespread availability of coverage

Adverse Selection in Life Insurance

- Biggest threat to insurers' financial soundness
- Adverse selection is essentially information asymmetry between the insurer and the applicant
  - Elements:
    - Individual is aware of the information predicting increased mortality risk
    - Individual uses knowledge to influence decision to apply & amount of coverage purchased
    - Insurer does not have information, because the consumer failed to disclose or insurer was not able to access
  - Outcome:
    - Without access to all relevant information, the premium has the potential to be too low for the actual risk insured.
    - Healthy insureds are likely to drop or forgo life insurance because the premiums are not worth it relative to the insured risk, further deteriorating the pool of risks.

Pricing Insurance Products

Insurance Products are Priced to be Actuarially Sound. This means that, at any time:

the Present Value of Net Premiums

plus

the Present Value of Investment Income

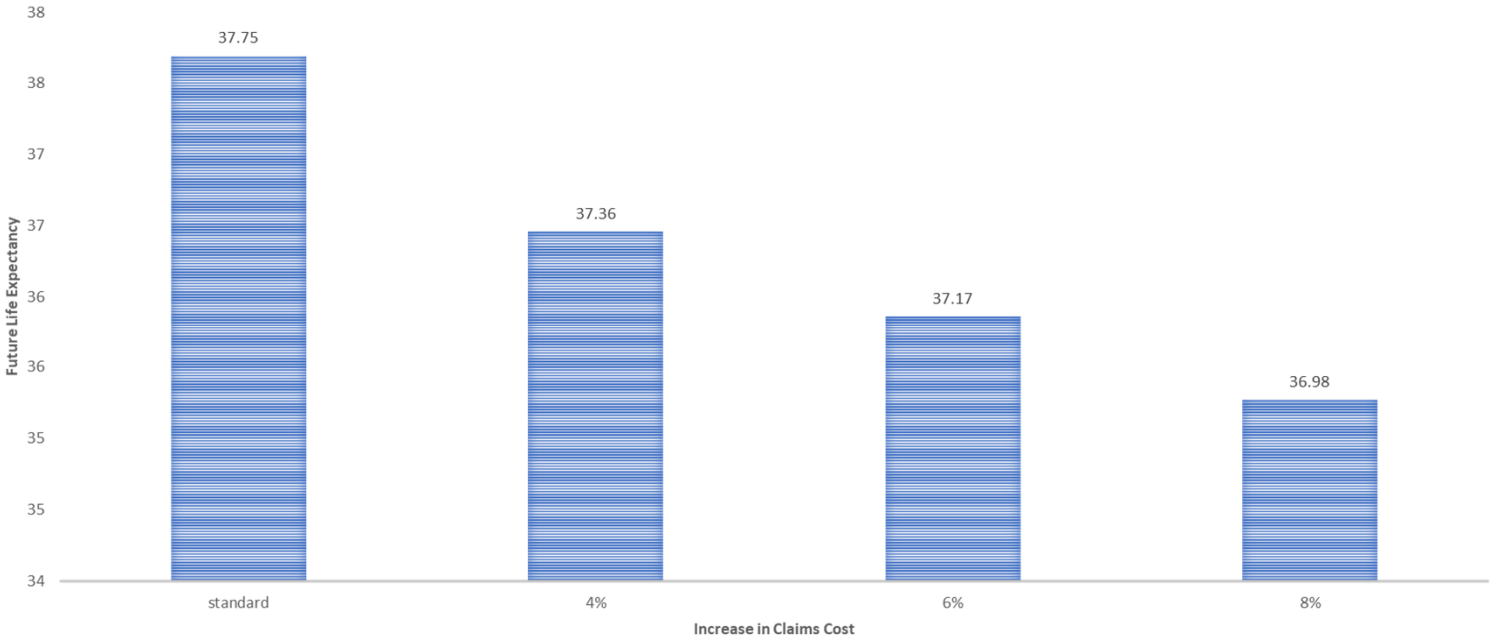
must be sufficient to cover

the Present Value of Future Benefits

plus

the Present Value of Future Expenses

Impact on Future Life Expectancy for a 45-Year-Old Male*



*Where only the applicant knows the results of genetic testing but both the applicant and the insurance company know the family history at time of underwriting, future increases in expected new business claim cost range from 4% to 8% overall.

*https://www.soa.org/globalassets/assets/Files/resources/research-report/2018/2018-impact-genetic-testing-report.pdf

Impact of an Increase in Claims Costs on Premium

30-Year Term Policy

Issue Age: 45-year-old Male

Death Benefit: $100,000

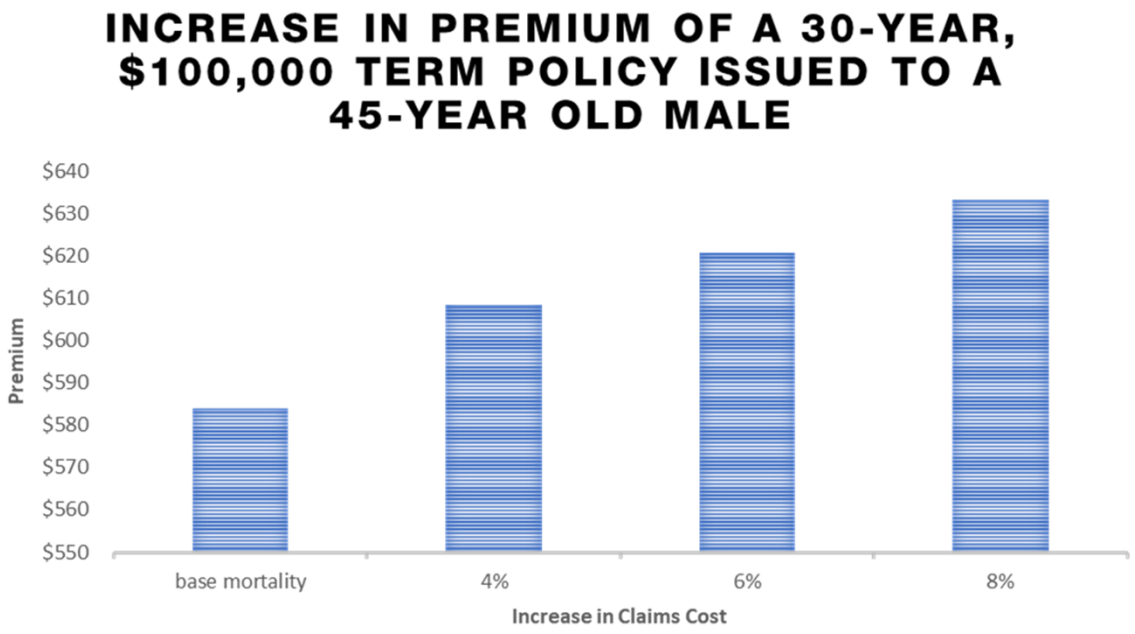
Interest Rate: 3.5%

Mortality Table: 2017 CSO Mortality Table

Future Life Expectancy: 37.75 years

Annual Net Premium Needed to Pay Future Benefits: $583

Impact of Information Asymmetry on Premium



Where only the applicant knows the results of genetic testing but both the applicant and the insurance company know the family history at time of underwriting, future increases in expected new business claim cost range from 4% to 8% overall.

*https://www.soa.org/globalassets/assets/Files/resources/research-report/2018/2018-impact-genetic-testing-report.pdf

A Simple Example of the Impact of Adverse Selection in Life Insurance

100 25-year old men each buy a $100,000, thirty-year term life insurance policy for $200 a year

A Simple Example of the Impact of Adverse Selection in Life Insurance

For simplicity, pricing is based on the assumption that no one dies until year 20. At year 20, 3 people die.

The insurer expects to have collected $399,400 in premiums and paid out $300,000 in death benefits.

A Simple Example of the Impact of Adverse Selection in Life Insurance

Now suppose a group of one-hundred 25-year old men has a higher mortality rate than anticipated by the insurer (2x the average mortality rate) – so 3 additional people die, for a total of 6 deaths; however, the insurer has charged the same premium as the previous group.

Instead of 3 people, 6 have died. The insurer has collected $398,800 in premiums and paid out $600,000 in death benefits.

Shortall = $201,200

A Simple Example of the Impact of Adverse Selection in Life Insurance

What if….the group were 1,000 instead of 100?

- 20 years later, 60 would have died.
- Total premium received = $3,988,000
- Death Benefit paid = $6,000,000
- **Shortfall = $2,012,000**
- As a result, the insurer raises premium rates to $310 for the next group of applicants; however, of the 1,000 applicants, 100 healthy individuals decide not to purchase coverage.
- **Shortfall = $438,600**

A Simple Example of the Impact of Adverse Selection in Life Insurance

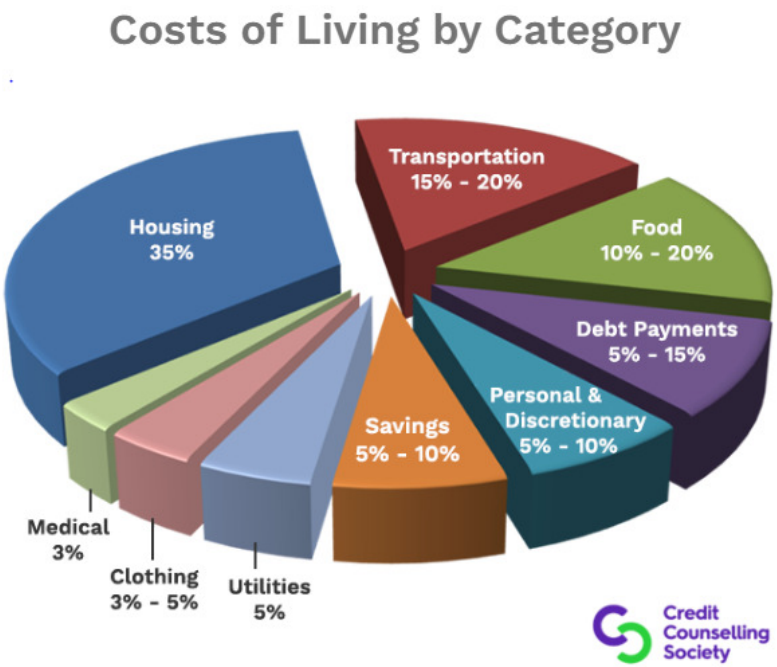
What if….the group were 10,000 instead of 100?

- 20 years later, 600 would have died.
- Total premium received = $39,880,000
- Death Benefit paid = $60,000,000
- **Shortfall = $20,120,000**
- As a result, the insurer raises premium rates to $310 for the next group of applicants; however, of the 10,000 applicants, 1,000 healthy individuals decide not to purchase coverage.
- **Shortfall = $4,386,000**

Result - Death Spiral

A death spiral occurs in insurance when premiums begin increasing rapidly as a result of changes in the covered population. It is the result of adverse selection in insurance policies in which lower risk policy holders choose to change policies or be uninsured.

Cost of Living By Category



Vermont Example

- According to census data, the average household income in Vermont = $63,477
- Discretionary Income = $4,760
- Average Life Insurance Death Benefit = $257,840*
- Sample annual premium for a 45-year old male, $250,000 30-year term policy = $1,460
  - 2.3 percent of income
  - 30.7 precent of discretionary income

- Source: ACLI tabulations of National Association of Insurance Commissioners (NAIC) data, used by permission. Notes: NAIC does not endorse any analysis or conclusions based on use of its data.

Vermont Example

- Resulting increase in premium that must be charged for the next group of new business = $1,583
  - 2.5 percent of income
  - 33.3 precent of discretionary income
- Five years later, the resulting increase in premium that must be charged for next group of new business = $1,717
  - 2.7 percent of income
  - 36.1 precent of discretionary income

Impact of SB 247 on Vermonters

- Low to middle income workers are very price sensitive
- Small increases in costs can have big impacts on consumer behavior
- Increases in the cost of coverage will mostly impact low to moderate income workers
- These are the people that need coverage and will most likely walk away