Protection Gap Explorer: A Data-Driven Exploration of US Life Underinsurance

Who is Swiss Re?
- A market leader in reinsurance
- A thought leader for the larger insurance industry
- Mission: Make the world more resilient!

Who are the covered?
- Consumers
- Reinsurers
- Direct Companies

Why is this work important?
- The protection gap describes the difference between financial needs and the resources available to meet those needs if a primary wage-earner in a household dies.
  
<table>
<thead>
<tr>
<th>Financial Needs</th>
<th>Financial Resources</th>
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<tbody>
<tr>
<td>Lost Wages</td>
<td>Social Security</td>
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<td>Social Security</td>
<td>Life Insurance</td>
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<td>Debits</td>
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What is the Life Protection Gap?
The Protection Gap describes the difference between financial needs and the resources available to meet those needs if a primary wage-earner in a household dies.

Project Conclusions:
- Analysis finds under-insured low-income counties throughout the Midwest, and high-income counties in major metros.
- Multiple characteristics and behaviors are found to be associated with purchasing propensities.
- The gap is projected to grow most rapidly in major metropolitan regions.

Market Opportunity: Mapping the Gap

To map the protection gap at the state level, we combine estimates of the gap’s components: wage replacement, debts, social security benefits, and life insurance. To create finer resolution insights, we downsample coverage information to the county level.

1. Estimate wages, debts, and social security from data
2. Downsample life coverage to county level
3. Combine component projections to obtain spatial gap
4. Regress linear model on each county over time to obtain temporal gap
5. Upsample component projections to actual

Models Explored:
- Model classes: CART Trees
- k-Nearest Neighbors
- Gaussian Naïve Bayes
- SVM

Project Data:
- We sourced a number of datasets for this analysis:
  - Dataset Description
  - Features
  - ACI
    - Demographics
    - 98
  - BRFSS
    - Risk Behavior
    - 80
  - Google Trends
    - Search Behavior
    - 34
  - ACLI
    - Insurance Buying
    - 2

A household protection gap can lead to financial instability. Understanding the gap will help insurers create channels to currently unreached populations.

Consumer Understanding: Addressing the Gap

Optimization-based clustering approach controls for income, pairing clusters of states with:
- Maximally similar income distributions
- Maximally different purchasing distributions

Recommended to Swiss Re:
- Low-Income Underserved
- Reduce Systematic Purchasing Barriers
- Target Marketing

Un-penalized logistic regression is used to downsample state-level fiscal characteristics down to the county level.

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Next Step: Advocate for and collect policy-level data!