Protection Gap Explorer:

A Data-Driven Exploration of US Life Underinsurance

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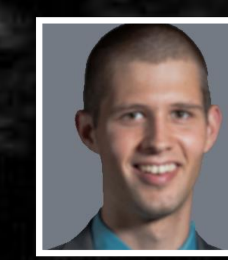
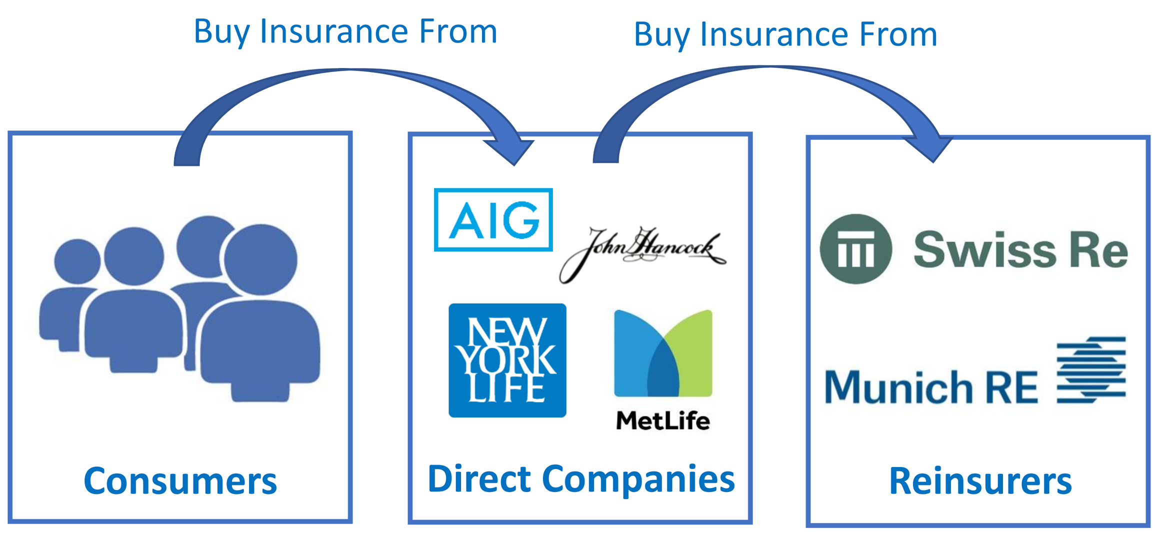


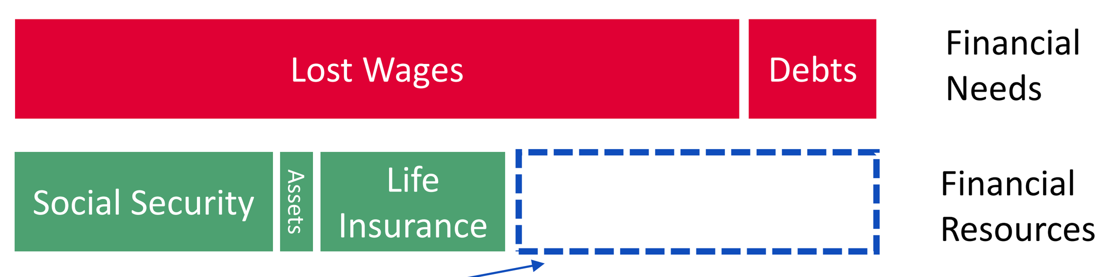
Who is Swiss Re?

- A market leader in reinsurance
- A thought leader for the larger insurance industry
- Mission: *Make the world more resilient!*



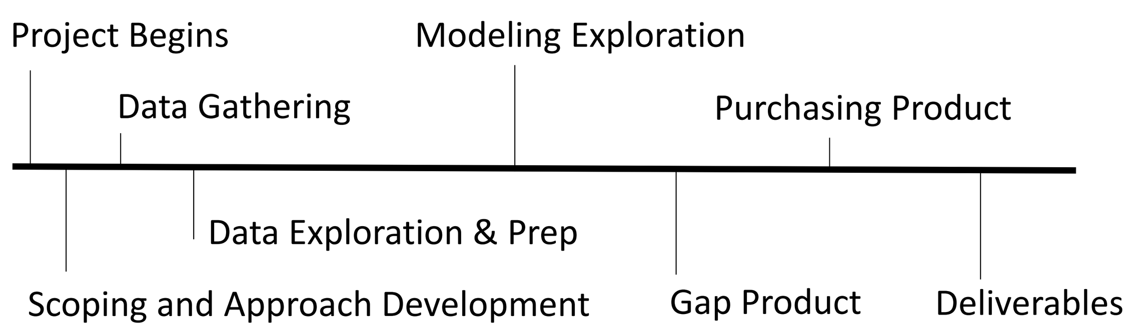
Project Goals:
1. Map the life protection gap
2. Uncover characteristics of insurance purchasers

What is the Life Protection Gap?



The **Protection Gap** is the difference between financial needs and the resources available if a household wage-earner dies.

$22 Trillion – Estimated 2017 US Life Protection Gap



Project Data:

Dataset	Description	Features
ACS	Demographics	98
BRFSS	Risk Behavior	80
Google Trends	Search Behavior	34
ACLI	Insurance Buying	2

Techniques Explored:

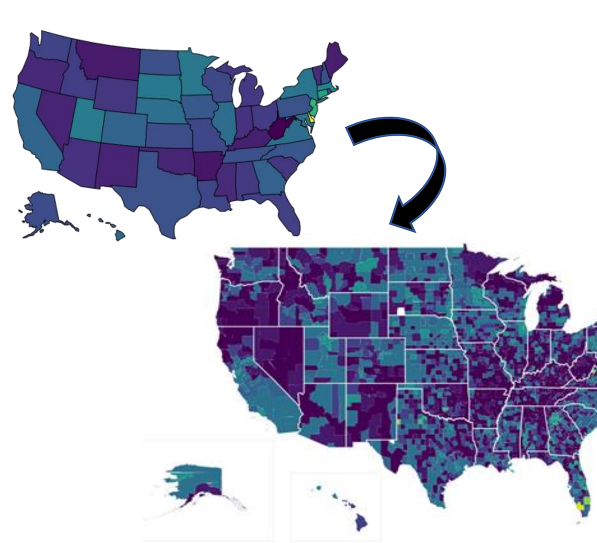
- Gradient Boosting
- Random Forest
- Optimal Trees
- LASSO and Logistic Regressions
- CART Trees
- k-Nearest Neighbors
- Gaussian Naïve Bayes
- SVM
- PCA

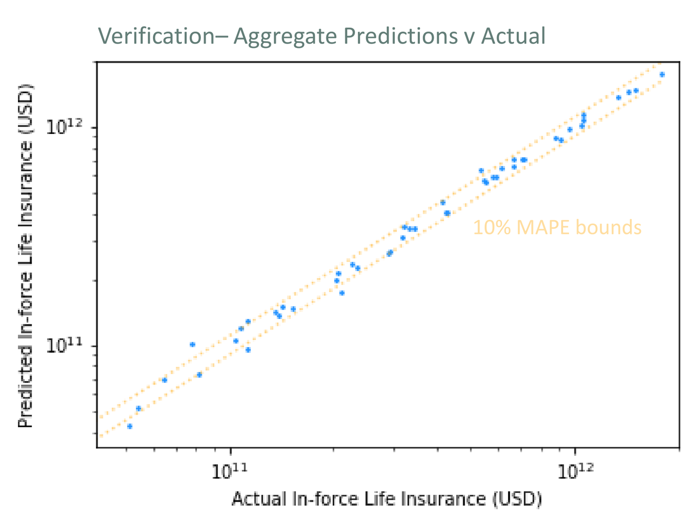
Motivation:
1. Protect vulnerable households
2. Expand insurance pool

Market Opportunity: Mapping the Gap

1. Estimate wages, debts, and Social Security benefits from data

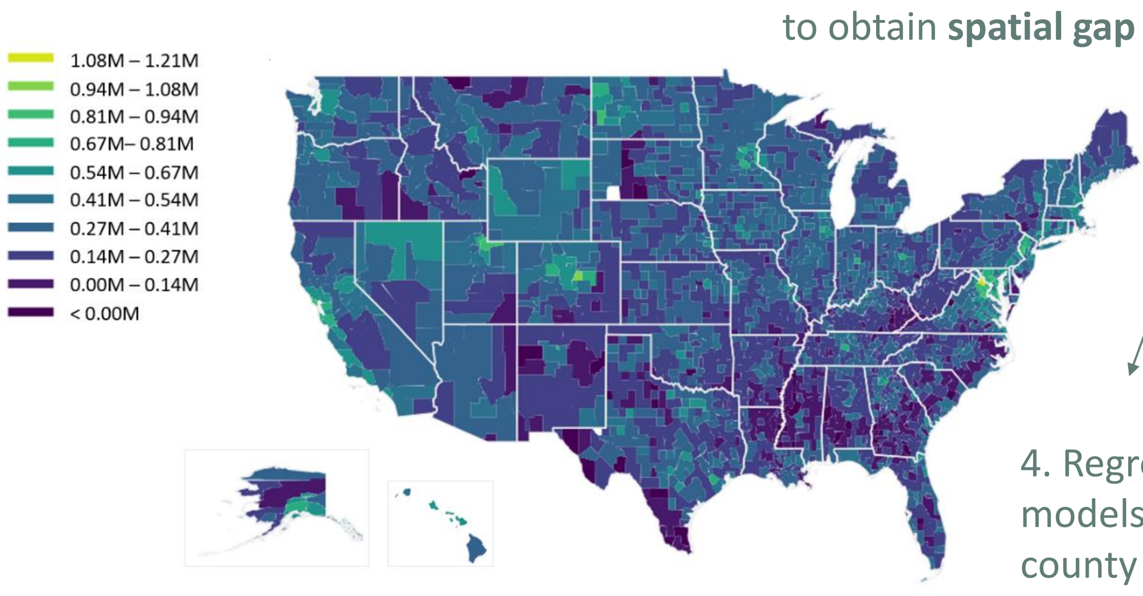
2. **Downsample** life coverage to county level





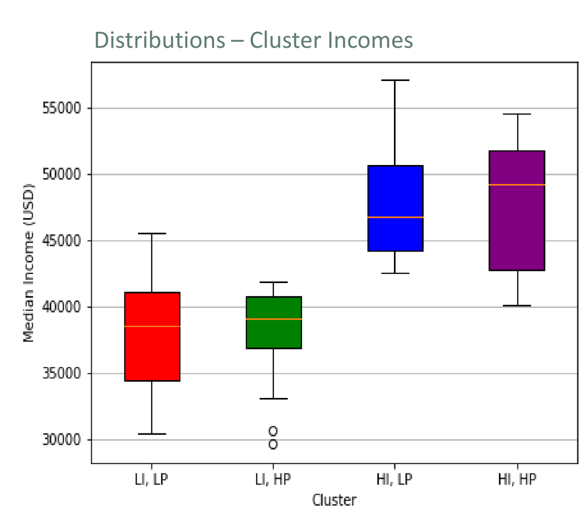
Auxiliary data available at both state and county level is used to train a machine learning model.

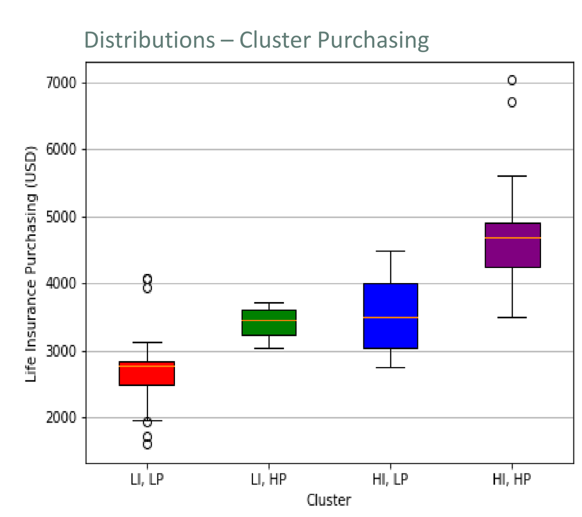
3. Combine component projections to obtain **spatial gap**



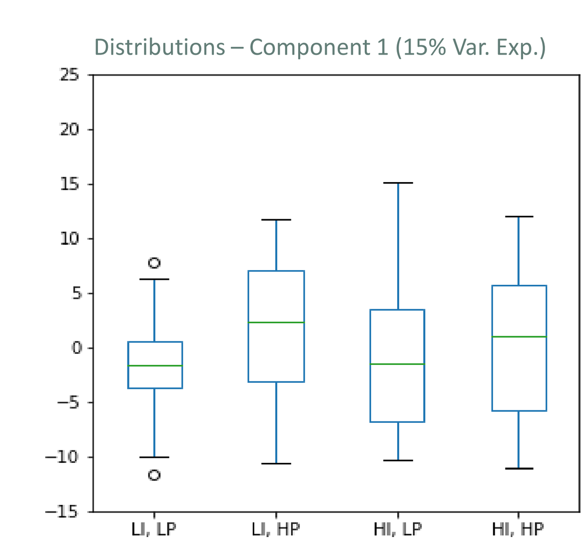
4. Regress linear models on each county over time to obtain **temporal gap**

Consumer Understanding: Addressing the Gap



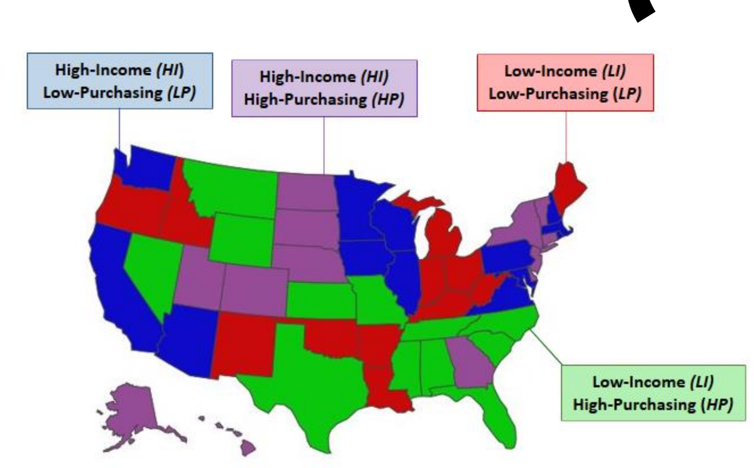


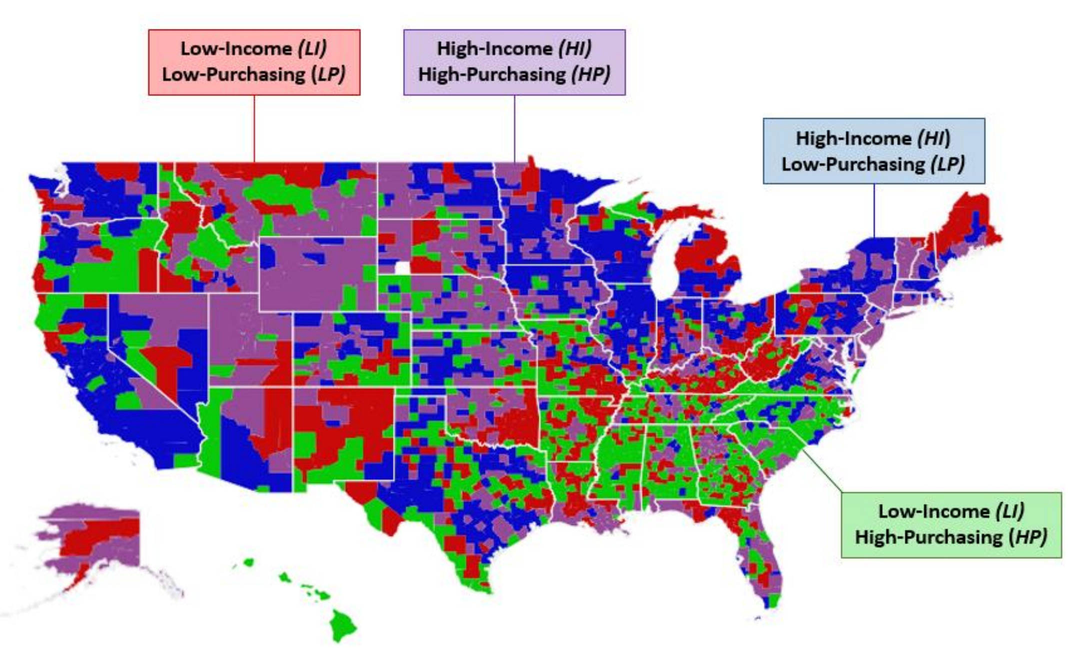
Optimization-based clustering approach controls for income.



Over **200** demographic and behavioral features are condensed using **Principal Component Analysis**.

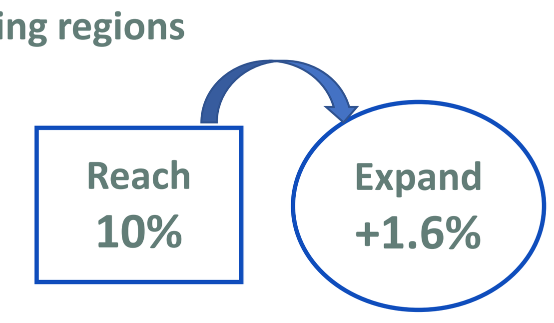
Component distributions within each cluster are compared to uncover purchaser characteristics.

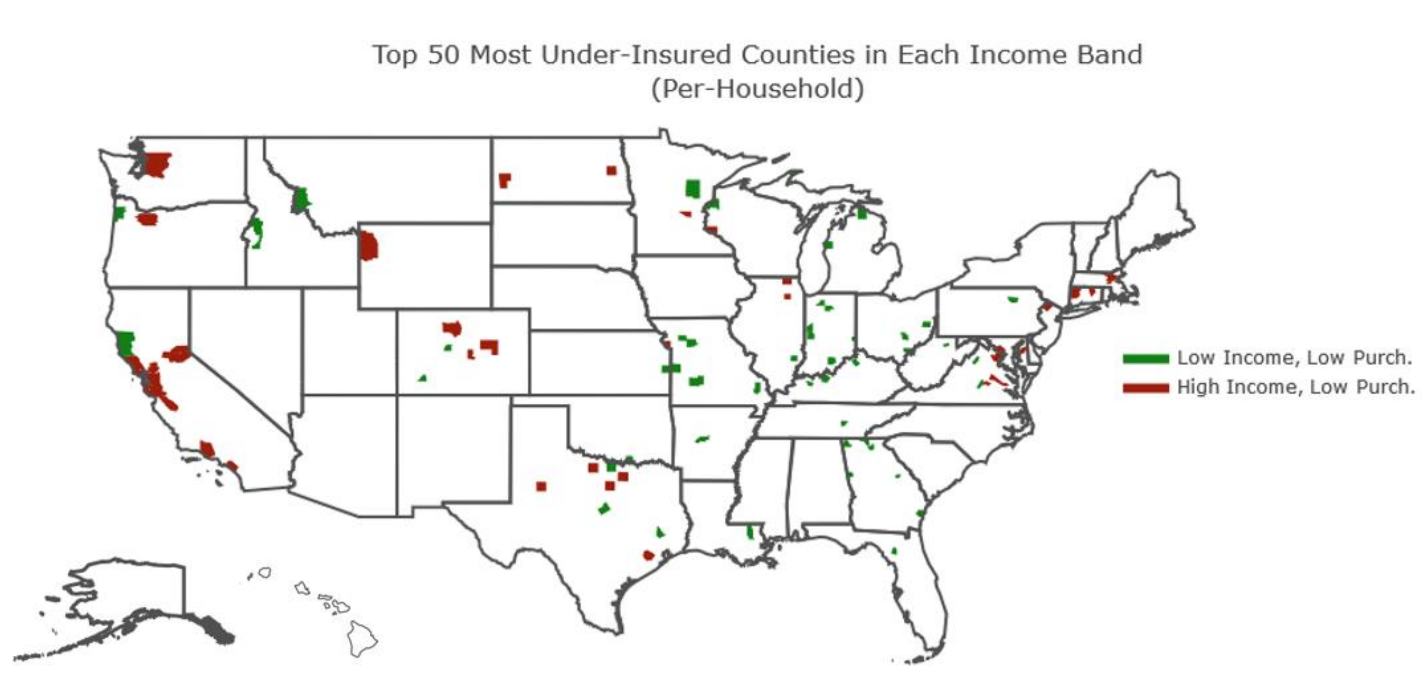


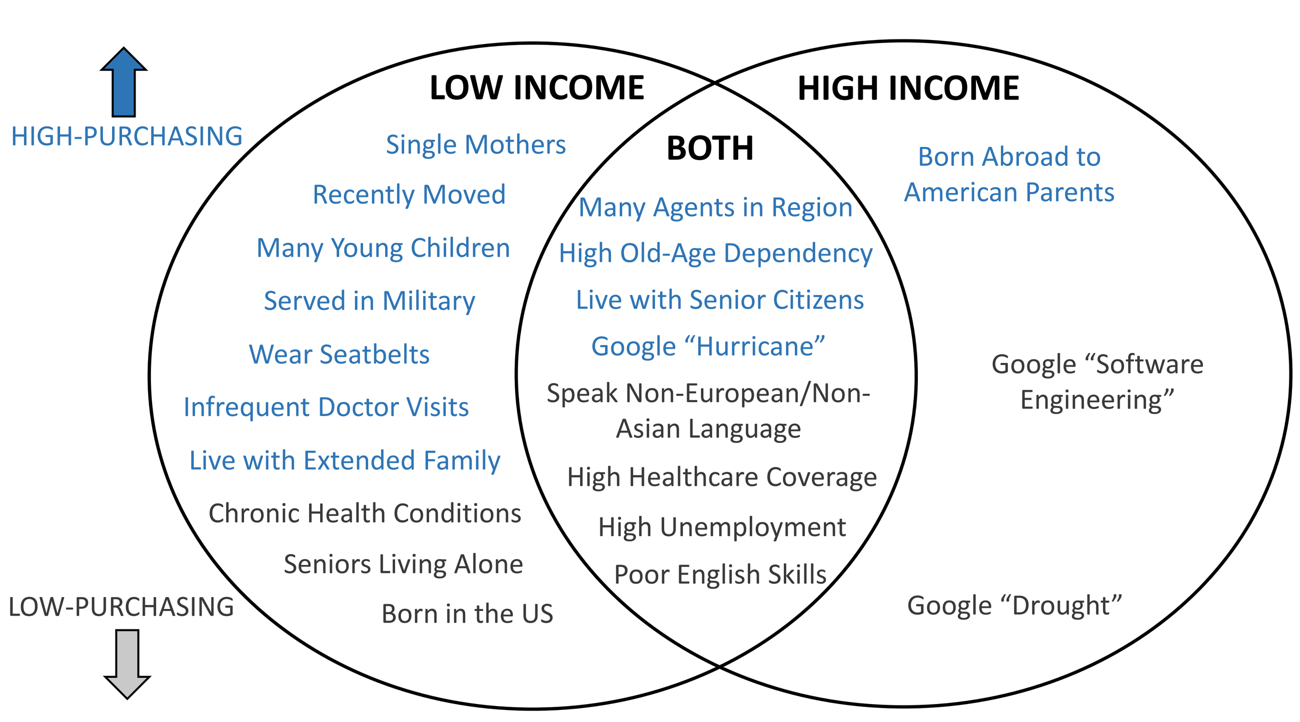


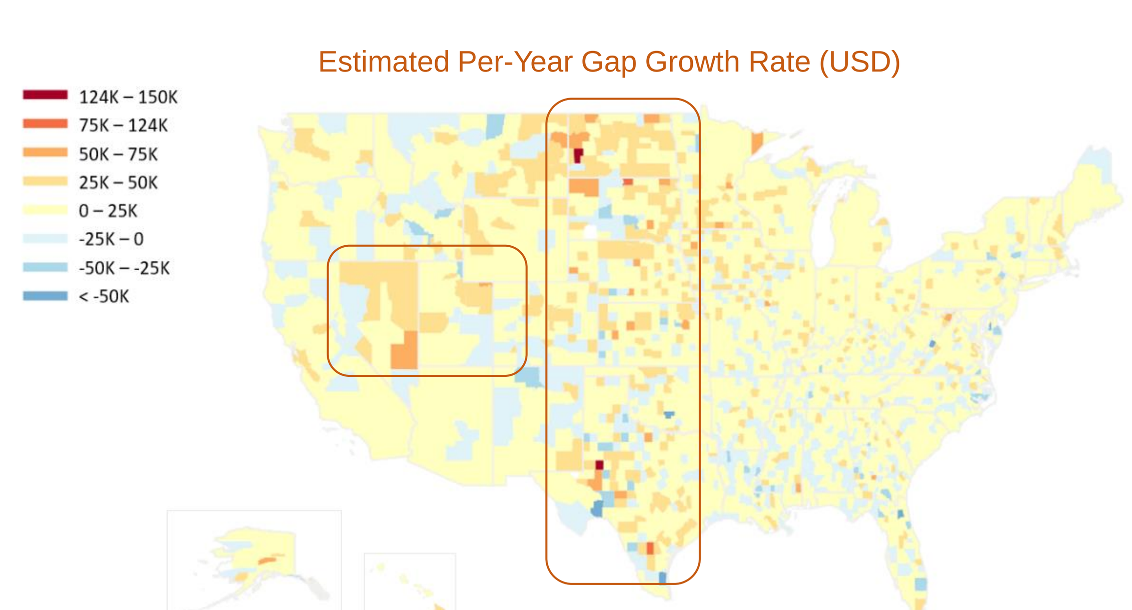
Project Conclusions:

- **Rust Belt** and **major metros** are underinsured
- Gap is growing most rapidly in **mining** and **oil-drilling regions**









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Recommended to Swiss Re:

Low-Income Underserved: Reduce Systematic Purchasing Barriers

- Bolster **policy-design** efforts for the chronically ill
- Lead **outreach campaigns** for non-fluent English speakers

Mid-Market Underserved: Targeted Marketing

- Verify causality through **marketing tests**
- **Form campaigns** that reach the middle-market geographies identified here

Next Step: Advocate for and collect policy-level data