# Estimating Idaho county level health indicators using small area estimation and spatial microsimulation

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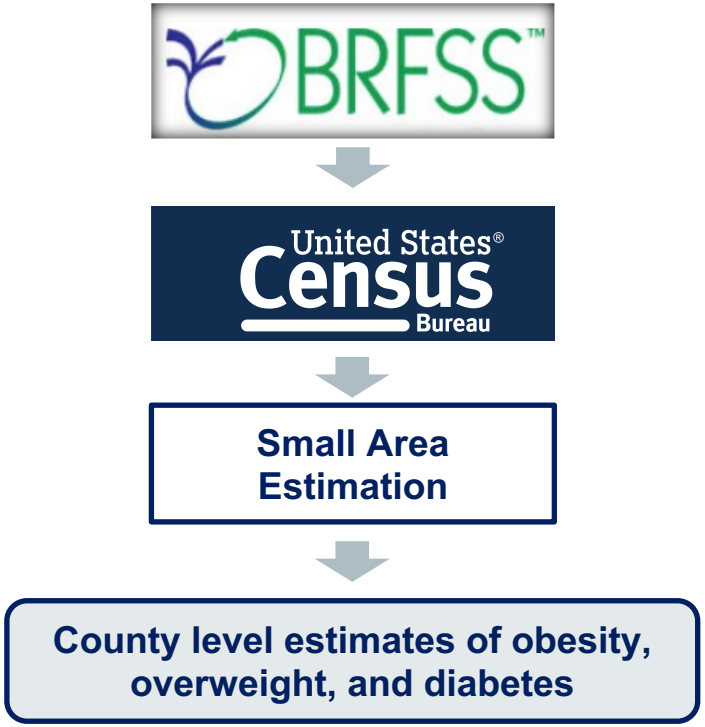
# Project Overview

Utilizing the CDC's **Behavioral Risk Factor Surveillance Survey** (BRFSS), in combination with US Census data, to generate Idaho county-based prevalence estimates for:

- **obesity**,
- **overweight**, and
- **diabetes**



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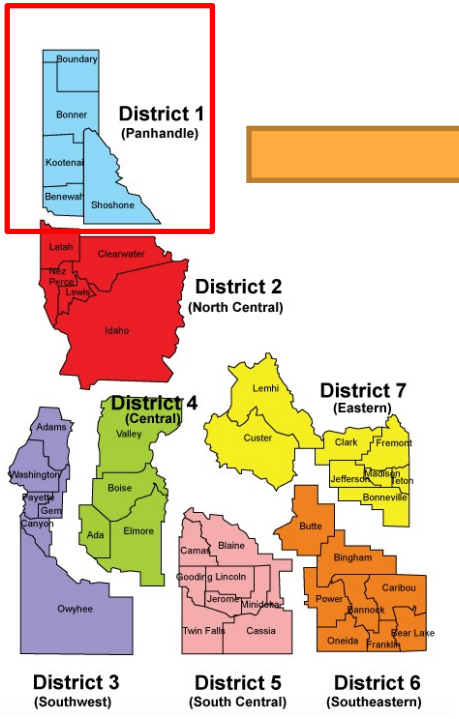
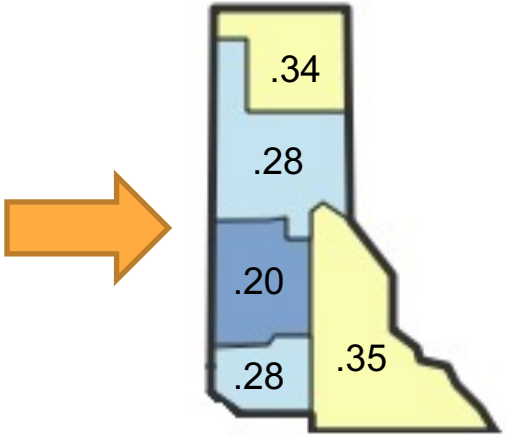
# Project Overview

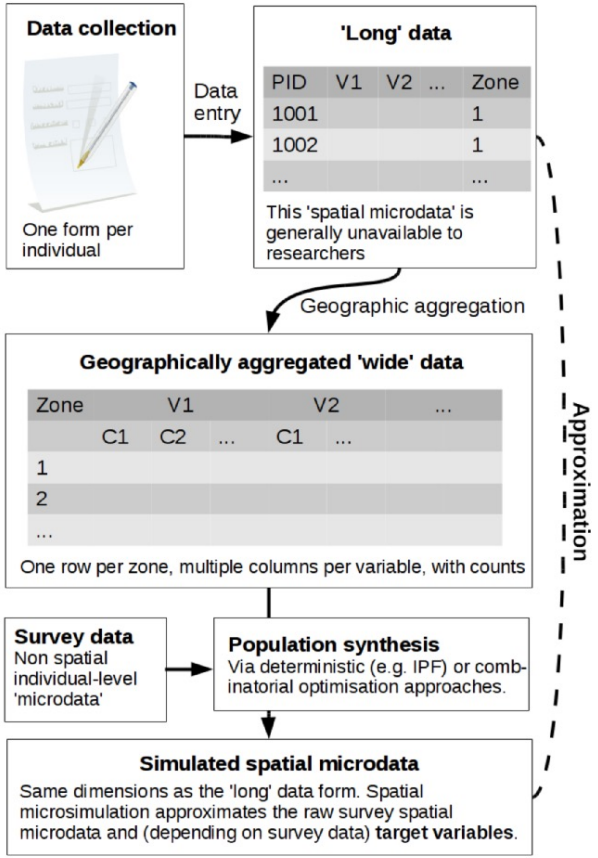



**Small Area Estimation Techniques**

ACS Population Data
*Age*
*Sex*
*Race*
*Education*

BRFSS Survey Data
*Obesity*
*Overweight*
*Diabetes*






# Modeling Approach

- Small area estimation (SAE)
- Spatial microsimulation
  - Iterative Proportional Fitting

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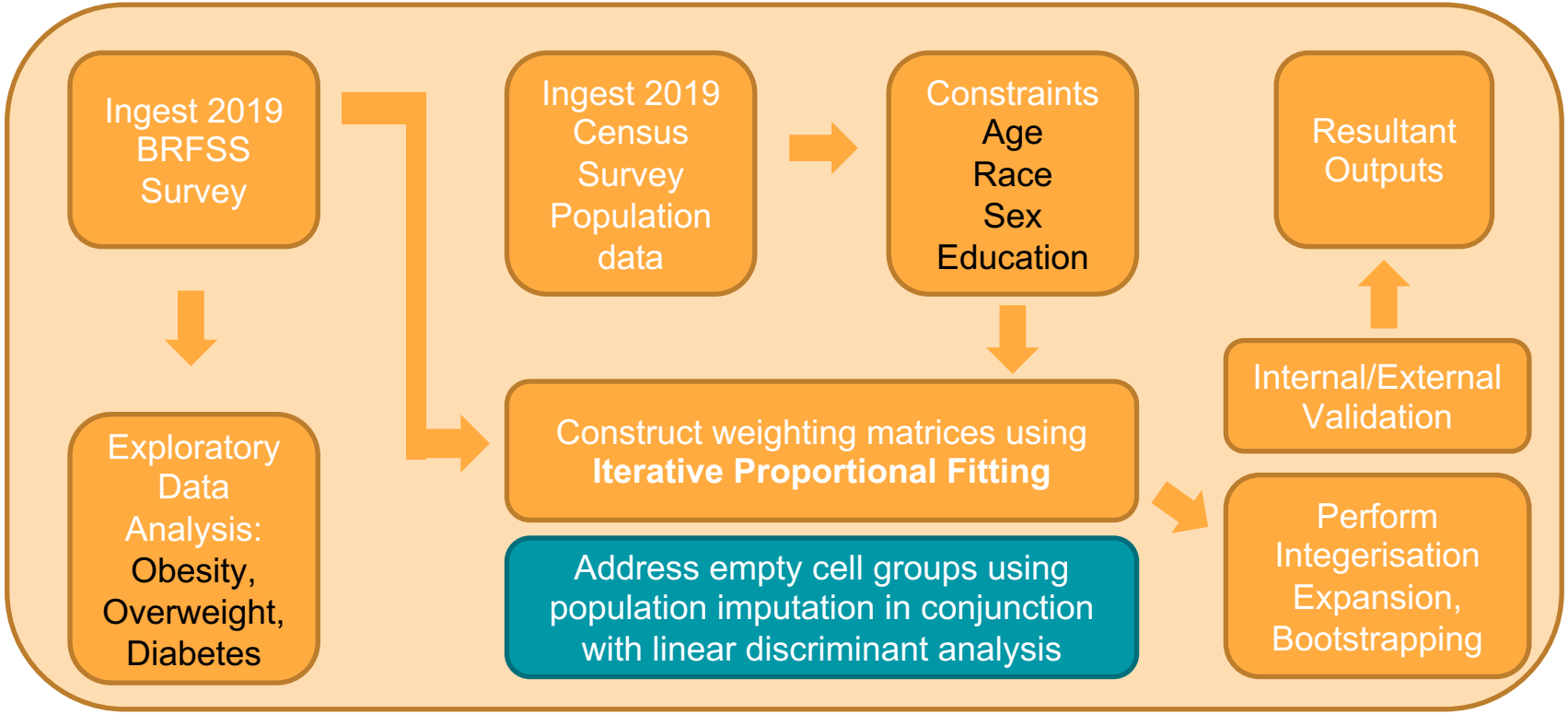
# Methods

**Model Variants**



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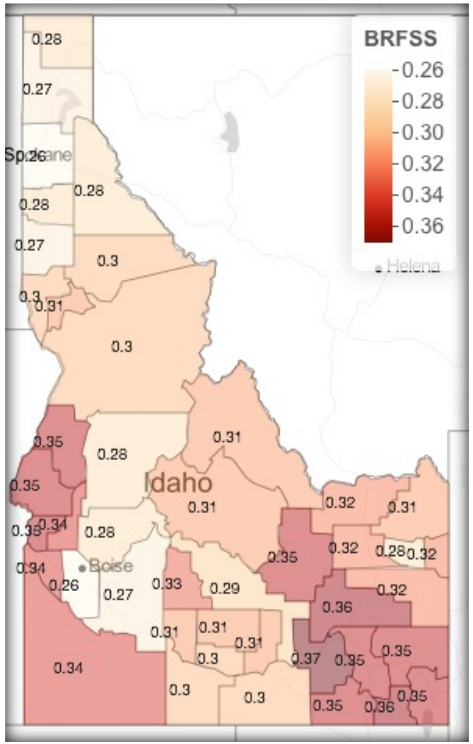
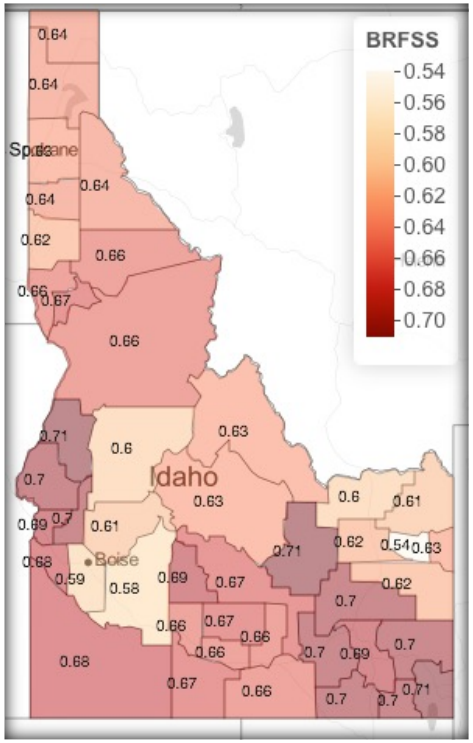
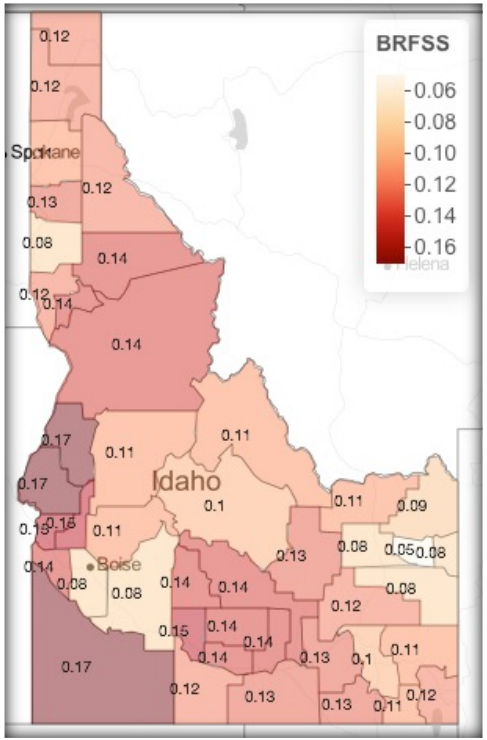
Obesity




Overweight




Diabetes




**Final Model:**

Significant Constraints With No Grouping

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# Discussion

- **Iterative Proportional Fitting Model strengths**
  - Allows for internal/external model validation
  - Addresses fractionalization

- **Challenges/Limitations**
  - Dependent on sampling strategy (underrepresentation for some regions)
  - Determining group separations for constraints requires more sophistication
  - Alternative constraint variables may be significant in simulating survey variables (eg. income)

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# Moving Forward

- Expand IPF/SM for other key Idaho health risk indicators
- Explore alterative  model techniques (e.g. combinatorial optimization)
- Inform future BRFSS questions, sampling strategies

- Expand approach for multi modeling efforts

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# Acknowledgements

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| | |
|---|---|
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