Food Insecurity and Dollar Stores in the Contiguous United States
- Tracking your neighborhood Food Insecurity patterns -

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DS4A EMPOWERMENT

Background

Recent studies of food insecurity have shown that dollar stores are profiting off low income, and minority neighborhoods. (Institute for Local Self-Reliance)
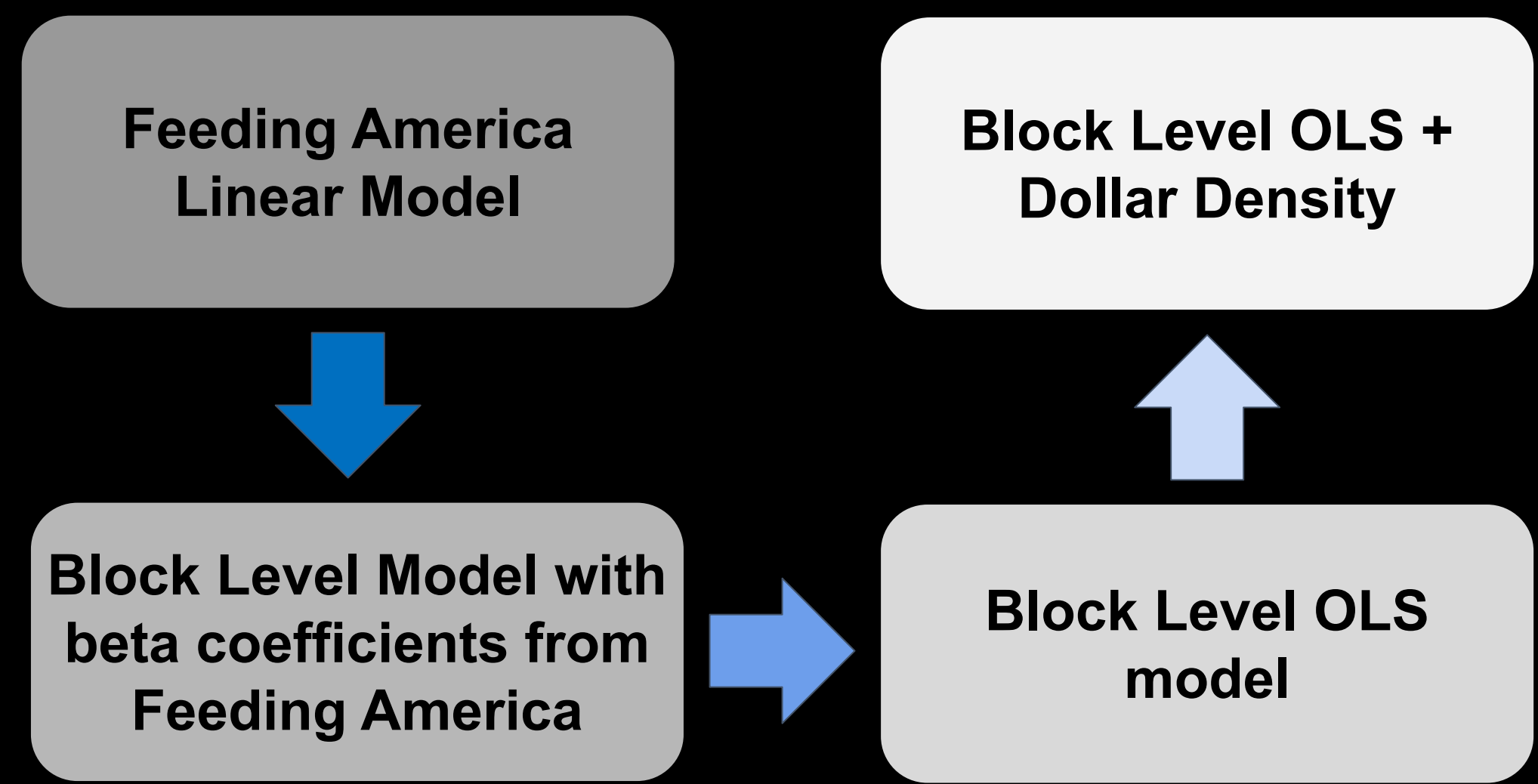
- Over 37 million Americans live in areas that lack access to healthy food (Feeding America).
- Dollar Stores have only been mapped against sociodemographic variables in select regions.
- Food insecurity models are available at a county level, but not at a block group level.

We developed a food insecurity model at the block level and mapped dollar stores nationally.

Data

USDA	Dollar Store Data
United States Census Bureau	Socio-Economic Data
CDC	Health Data
FEEDING AMERICA	Food Insecurity Model at county level

Models

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Feeding America        →    Block Level OLS +
Linear Model                Dollar Density
     ↓                           ↑
Block Level Model with  →   Block Level OLS
beta coefficients from      model
Feeding America
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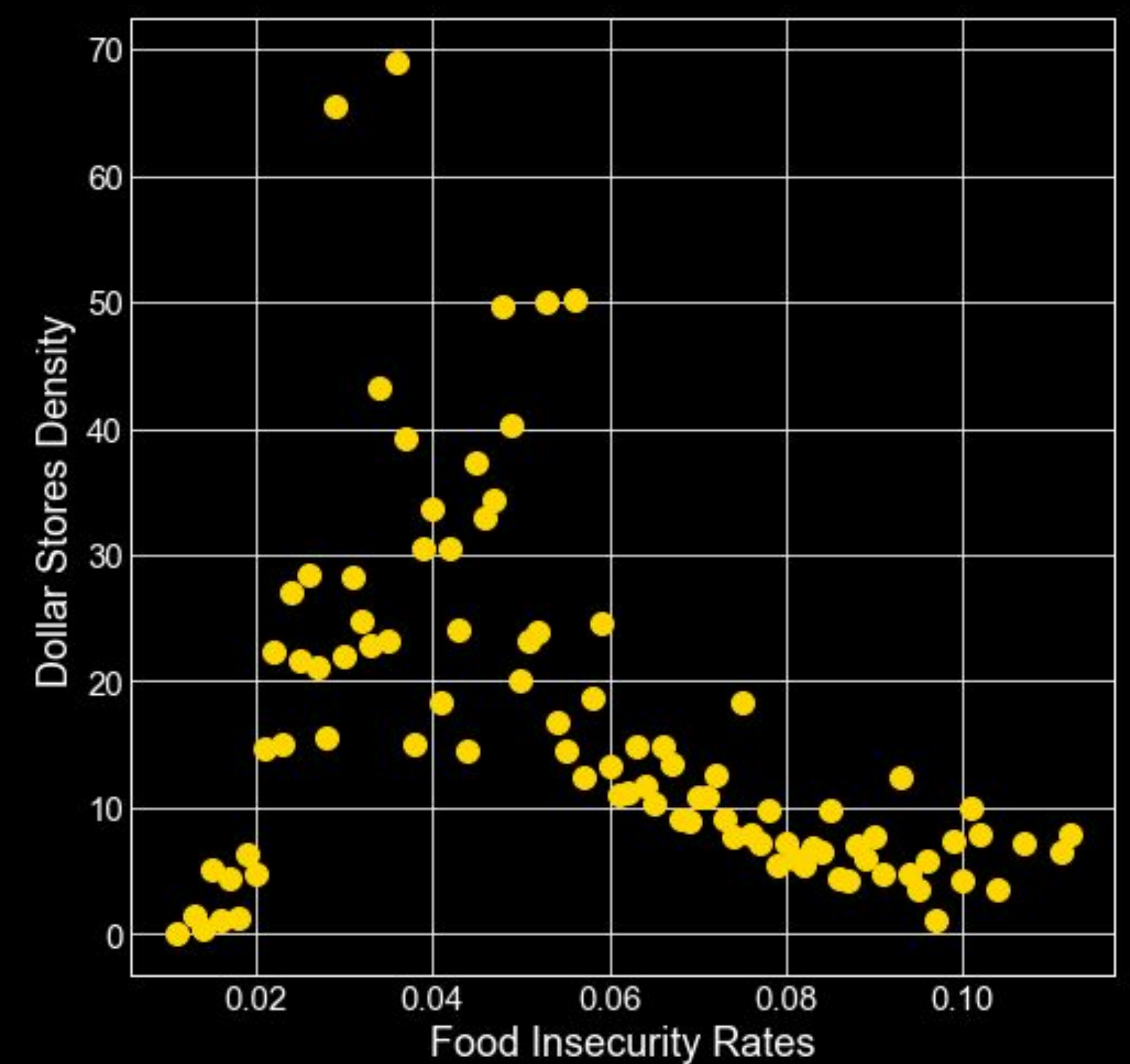
Impact

- **Our block group model provides refined information that was not available before.**
- **Local governments can use this dashboard to implement zoning and land use policies to prevent dollar stores from monopolizing the area. This would ideally increase the number of local grocery stores to that provide access to healthy, sustainable foods.**
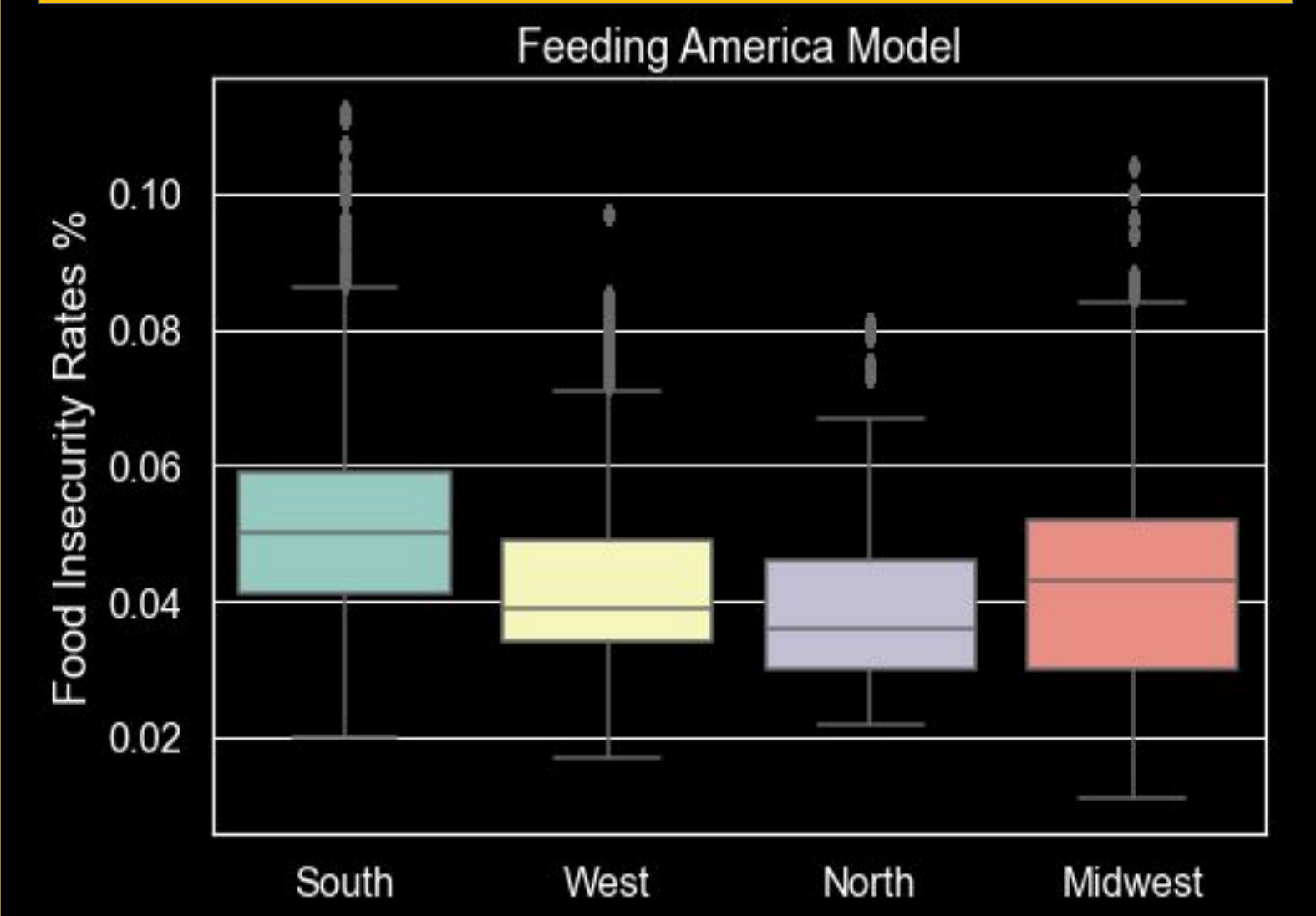
Question 1: As food security increases, does the density of dollar stores decrease?

There was no clear overall positive relationship between food insecurity and dollar store density, however we identified a threshold at which the relationship appears positive(between 0.02 and 0.06 food insecurity rates)
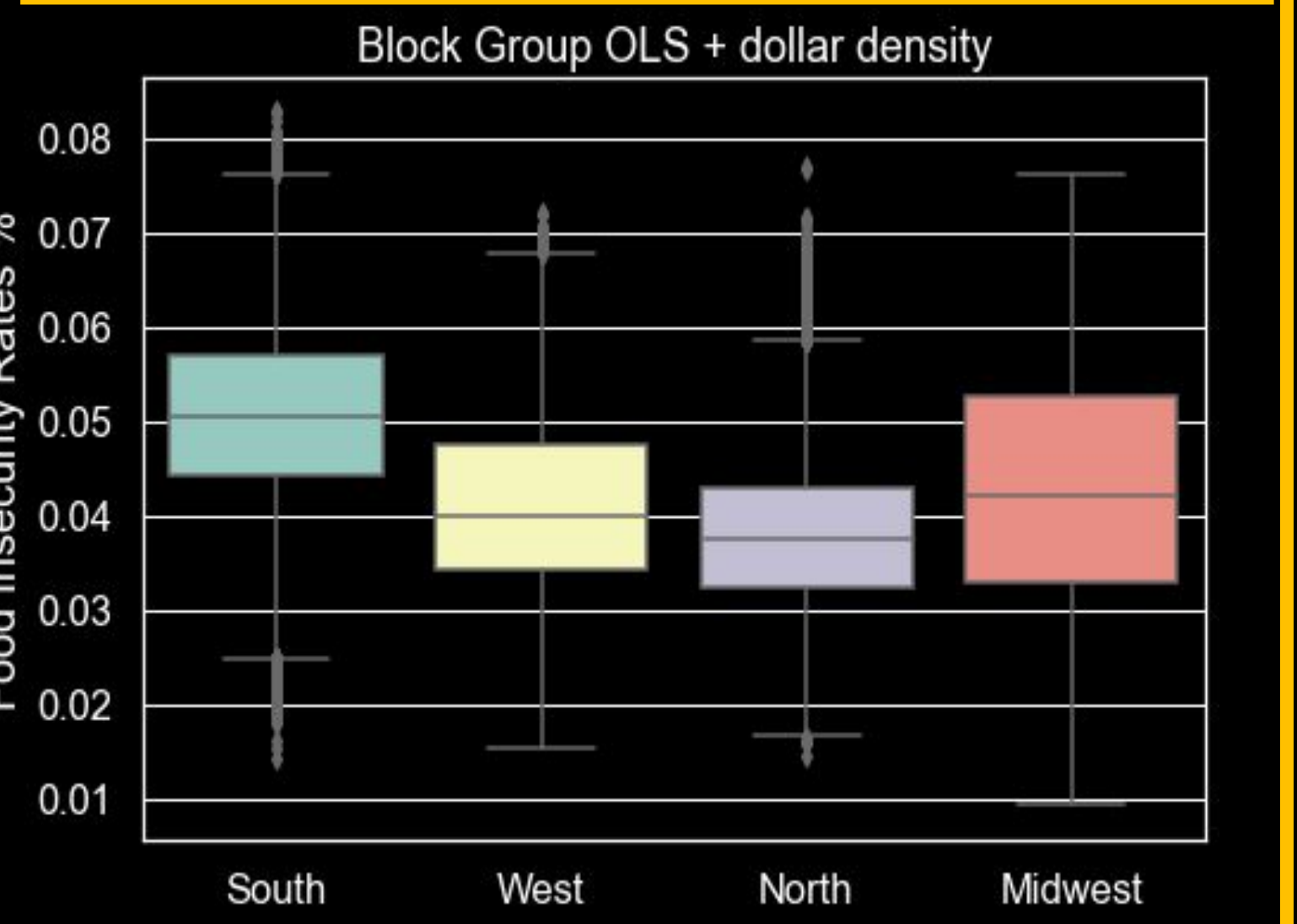
Question 3: How does public health relate to food insecurity in the Contiguous U.S.?

We found a positive relationship between chronic illnesses and food insecurity in all 4 major regions of the continuous US. The same relationship found with the feeding america county data. Except at the lowest and highest values of the distribution.

Question 2: Is the regional pattern of food insecurity rates in the block group level similar rates from *Feeding America at the county scale?*

Feeding America rates - Regional Patterns

Food for Good Model - Regional Patterns

When plotting the patterns from feeding america data we observed that food insecurity rates tend to be higher in the South region and lower in the North of the US.
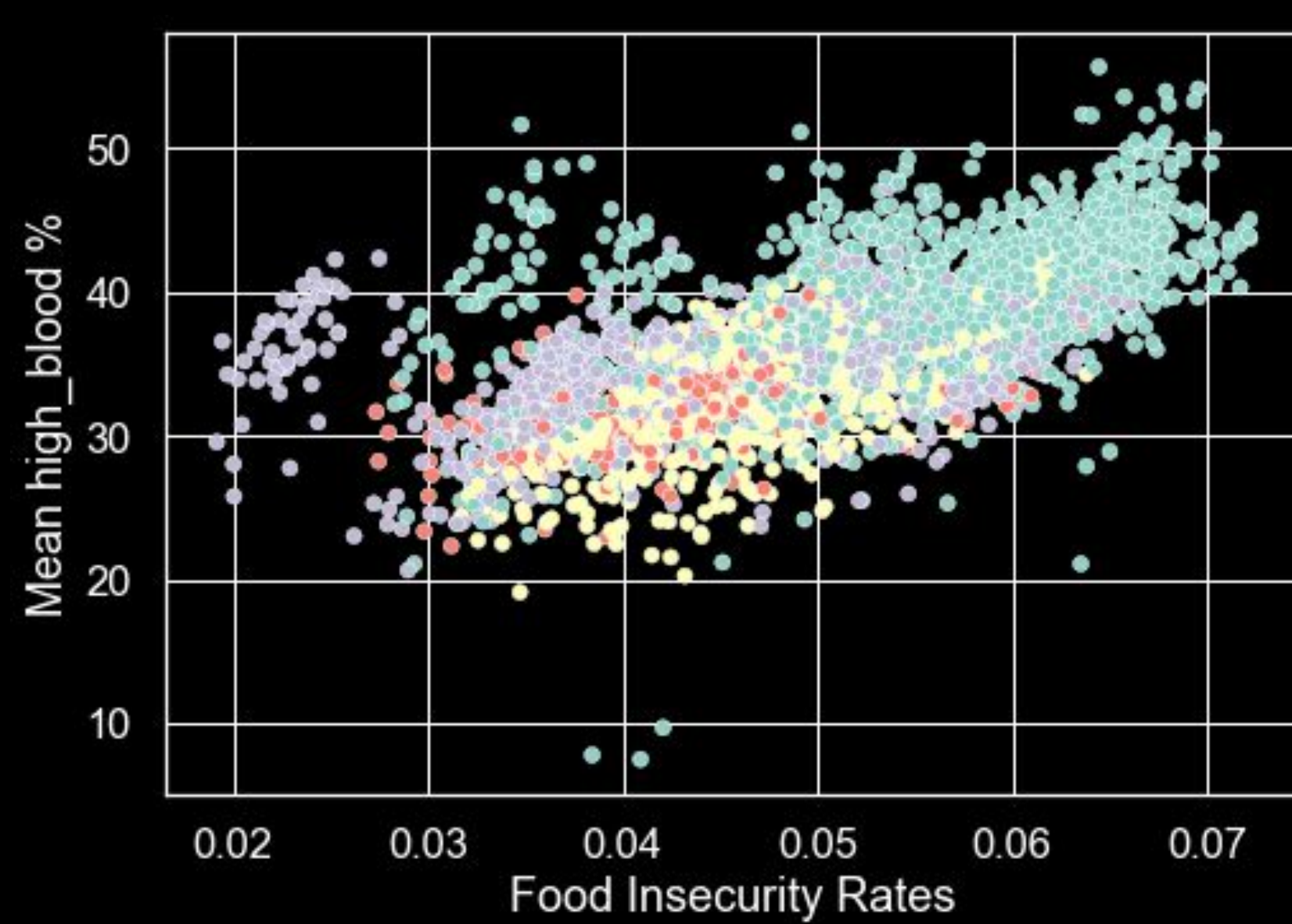
Our model was able to capture the regional true patterns, except for the extremes of the distribution and for the Midwest region. OLS + dollar density was the model with the highest adj. R2 and lowest RMSE.

Dashboard

Our interactive dashboard allows users to explore dollar store density and food insecurity rates per block group at a national level. It also allows for socio-economic and health factors exploration at the block level.

Multilayer Map of Food Insecurity Rates and Dollar Store Density per Block Group

HOME

Here you choose what map layer you want to see and filter it by State and County.
Dollar store density is the sum of dollar stores that are 4 or 10 miles away from a block group (your neighborhood block). The distance of impact of a dollar store differs in urban and rural areas. Based on research, we established a 10 miles radius of impact for dollar stores in rural areas while 4 miles radius of impact was established for dollar stores in urban areas.

State: AZ
County: Maricopa County

Dollar Store Density: 58
Avg. Food Insecurity Rates: 0.048

Food Insecurity Rates 0.036 — 0.069
Dollar Store Density 0 — 75

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