

Senior Food Insecurity Analysis

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The Data

CPS (Current Population Survey):

- Contains census and survey data from around the midwest to analyze individuals.
- Aggregated onto the family level to analyze family food insecurity.
- CPS collects food insecurity measurements.

ACS (American Community Survey):

- Contains demographic data on Iowa individuals
- Aggregated onto the family level to predict food insecurity measurements.
- Includes PUMA identification for each family.

Modeling Processes

Lasso Regression

Method used to predict a dependent variable using a number of independent variables. Selects most influential variables and reduces the influence of less important ones.

Makes the model simpler, and more interpretable.

Used to predict food security status of household in past 30 days.

Clustering

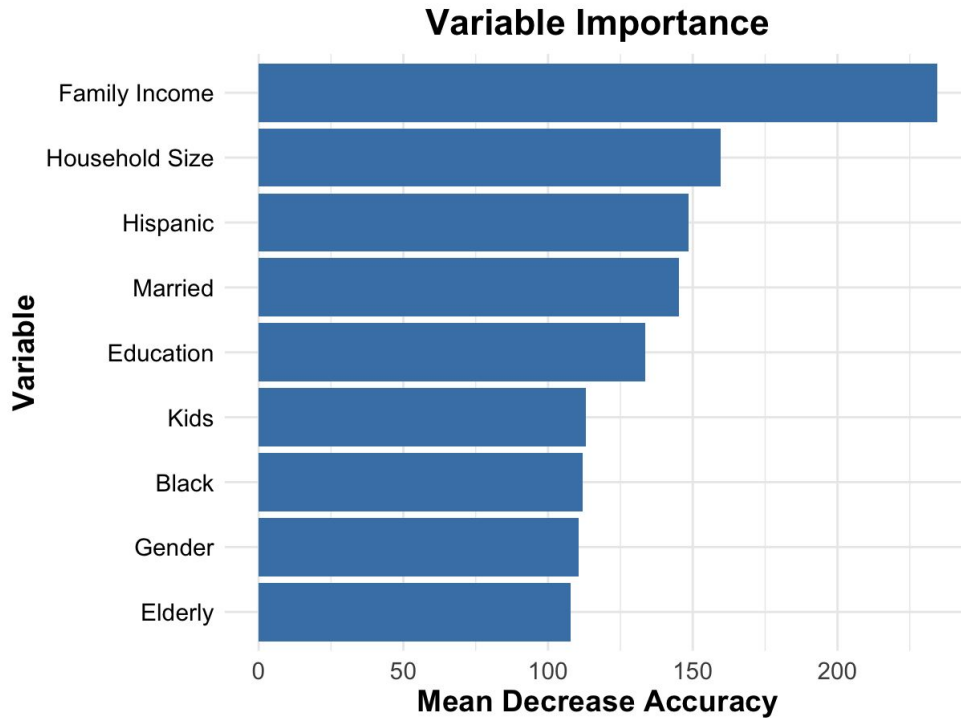
Method used to group similar items together.

Clusters contain items that are similar, items in different clusters are very different.

Makes predicting certain patterns simple.

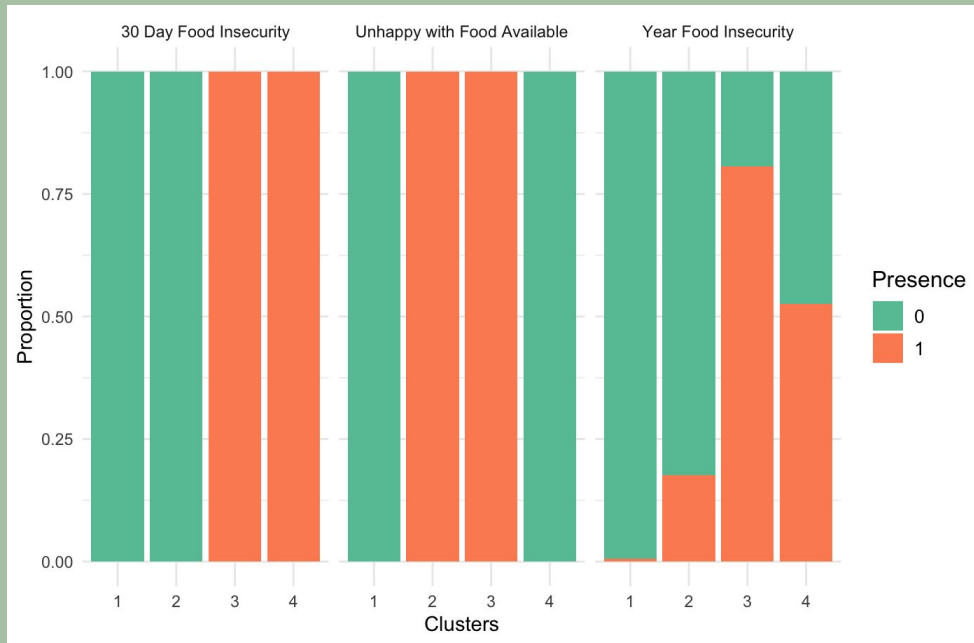
Used to predict if a household is “Food Insecure” using a cluster of different metrics.

Family Analysis



Influential Variables

- Family income is the leading factor in determining food insecurity status.
- Household size and hispanic are also influential factors.
- Gender and elderly individuals do not have a big influence food insecurity status.



Understanding Our Clusters

- Cluster 1: Food Secure
- Cluster 2: Food secure, but not the types of food they want
- **Cluster 3: Food insecure**
- Cluster 4: Has foods they want, but has been less secure in the last month.

Modeling Processes - Clustering

Clustering

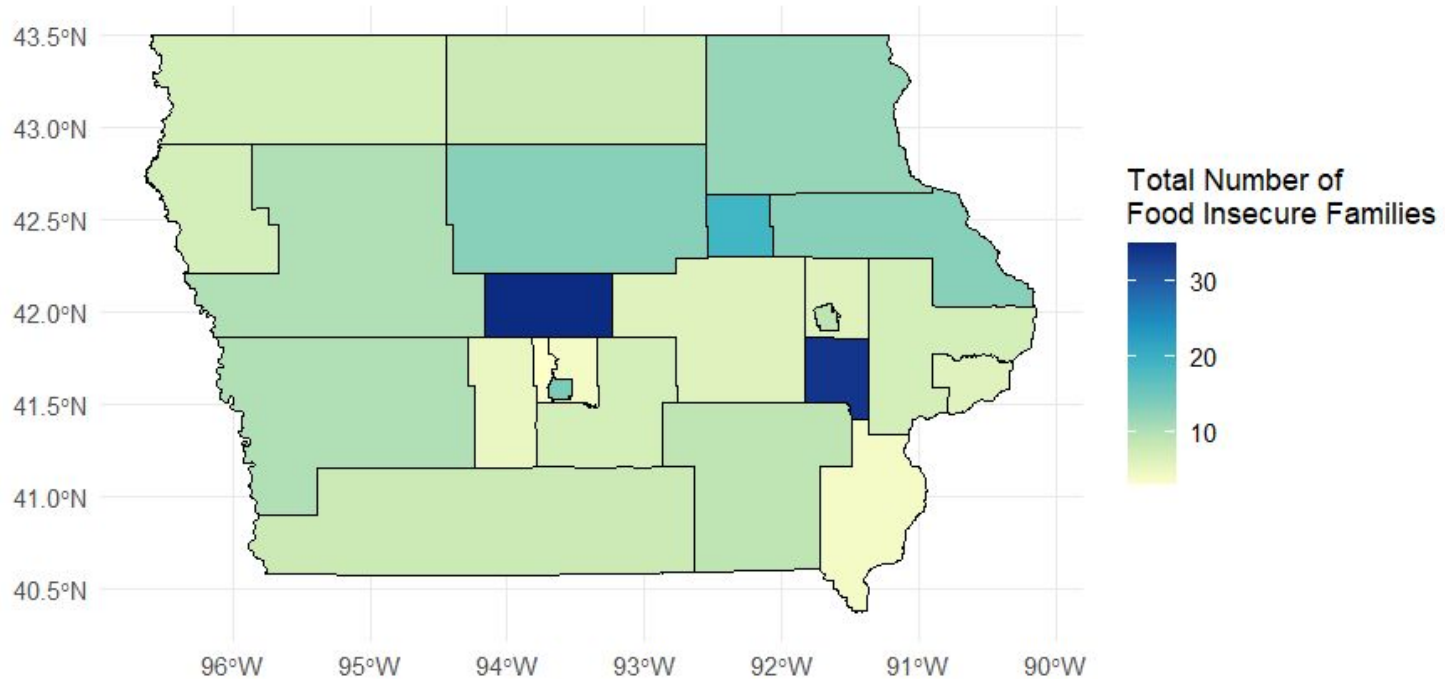
- Clustered Y variables:
 - Types of food
 - Food Security
 - Food Security in last 30 days
- Comparison across different approaches to handling missing values.

Missing Values

- Model 1:
 - Dropped missing values
- Model 2:
 - Imputed missing values using median and mode

Model 1 Omitted NA Values

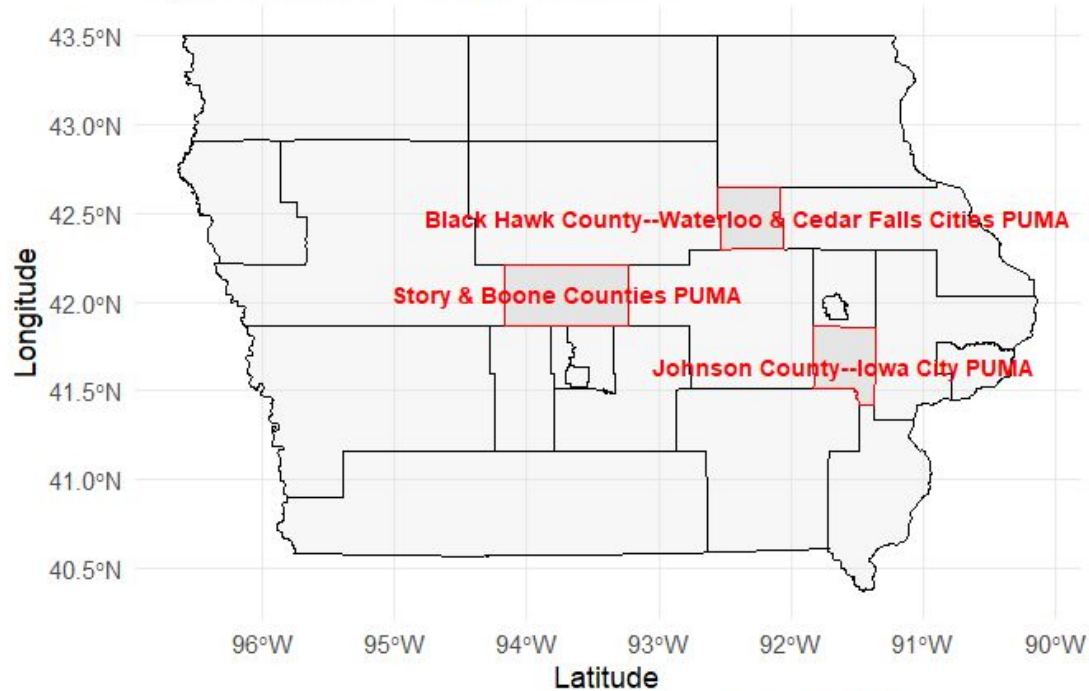
Food Insecure Families by PUMA



Model 1 Omitted NA Values

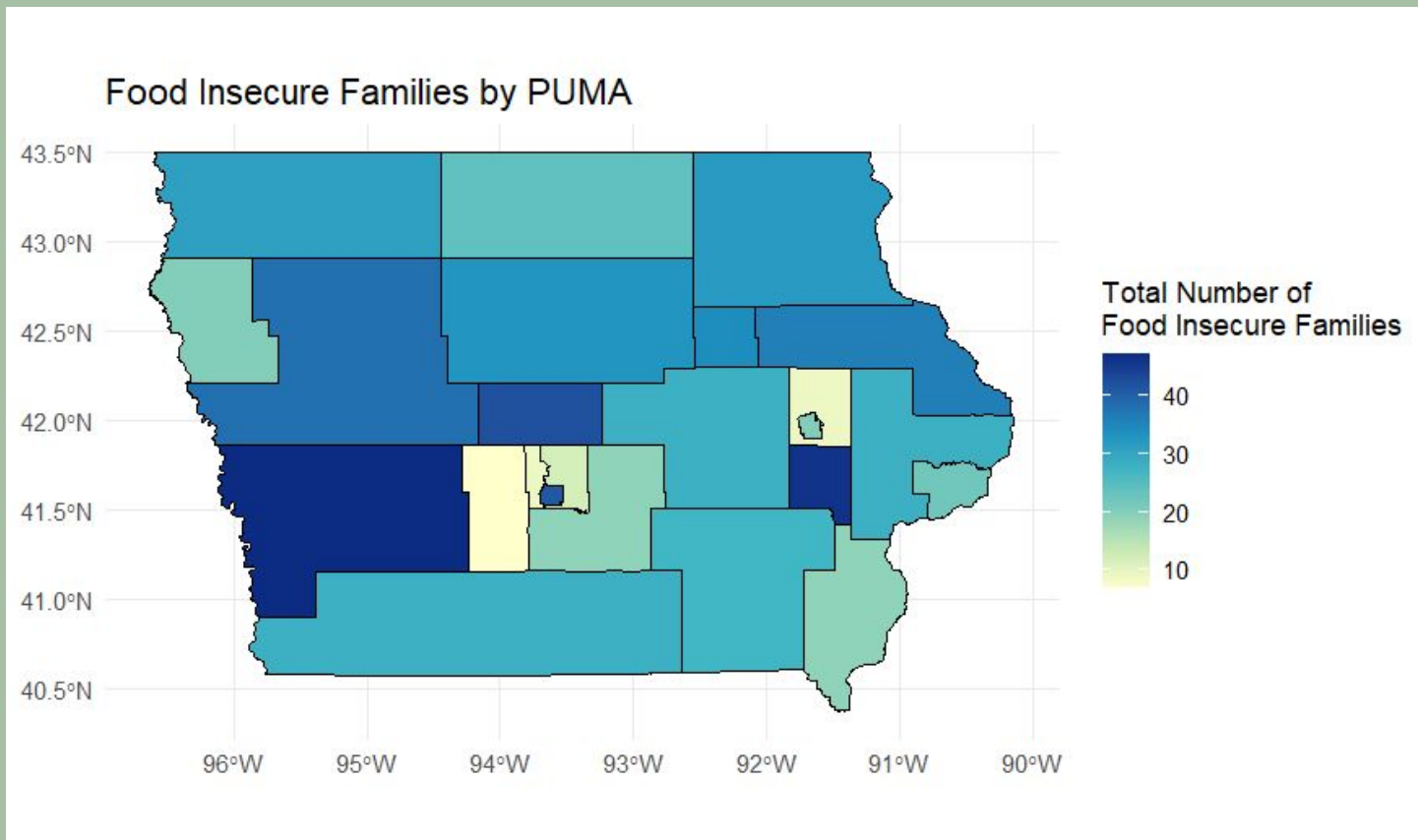
Food-Insecure Families by PUMA in Iowa

Top 3 PUMAs outlined in red and labeled



Source: Your Data & US Census Bureau

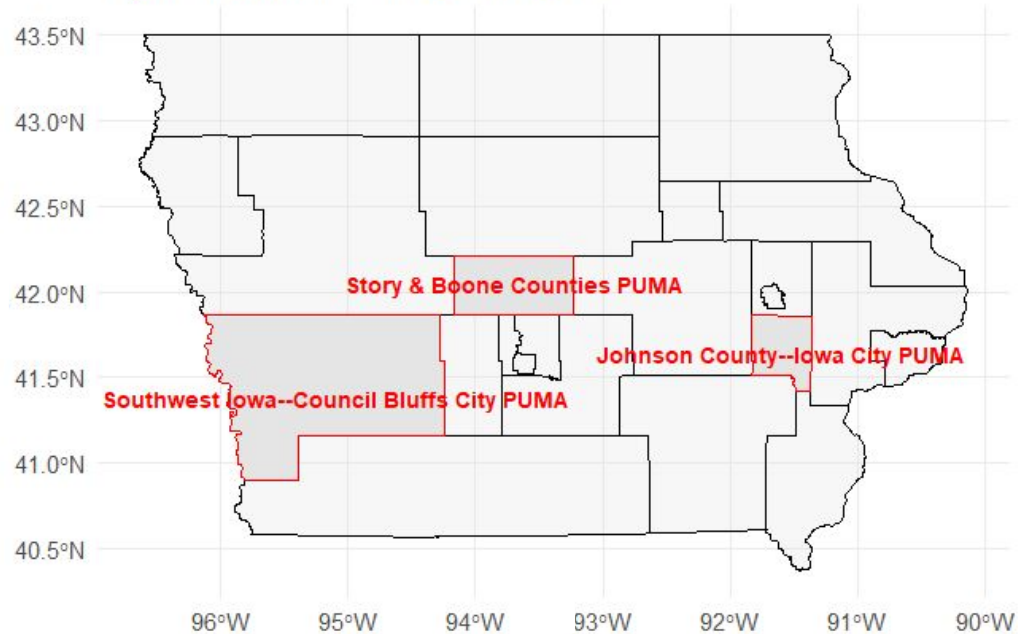
Model 2 Imputed NA values



Model 2 Imputed NA values

Food-Insecure Families by PUMA in Iowa

Top 3 PUMAs outlined in red and labeled



Source: Your Data & US Census Bureau

Important Insights (Model 2)

Education

For every increase in degree received by a family the probability of them being “Food Insecure” decreases by 29%

Married

Being Married decreases the probability of being “Food Insecure” by 32%

Senior Analysis

White Family of 4 - No Children

All Recieved Education

20.0% of a male senior within the family being food insecure within the last 30 days.



No Education

29.6% of a male senior within the family being food insecure within the last 30 days.

The probability of a senior living in a household where no-one received high-level education being food insecure is 9.6% higher than a family where everyone received a high-level education



White Family of 4 - Female vs Male Family

Female Family

25.3% of a female senior within an all female family being food insecure within the last 30 days.



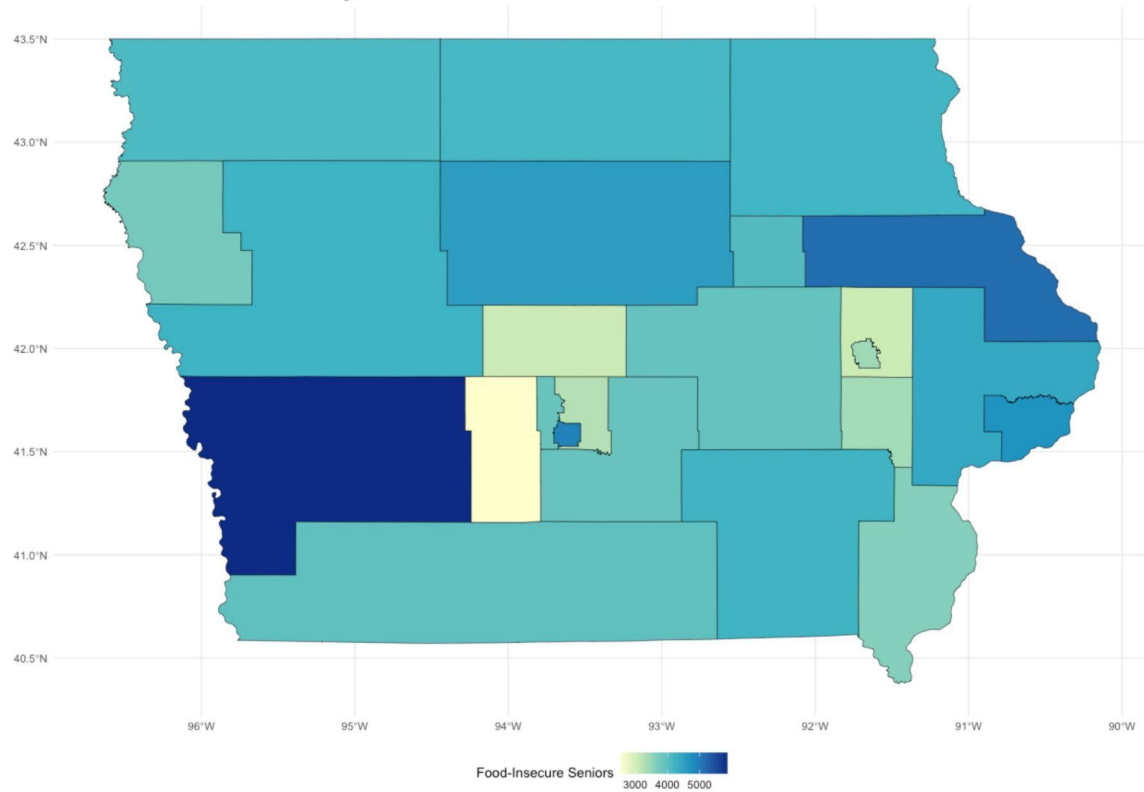
Male Family

20.1% of a male senior within an all male family being food insecure within the last 30 days.



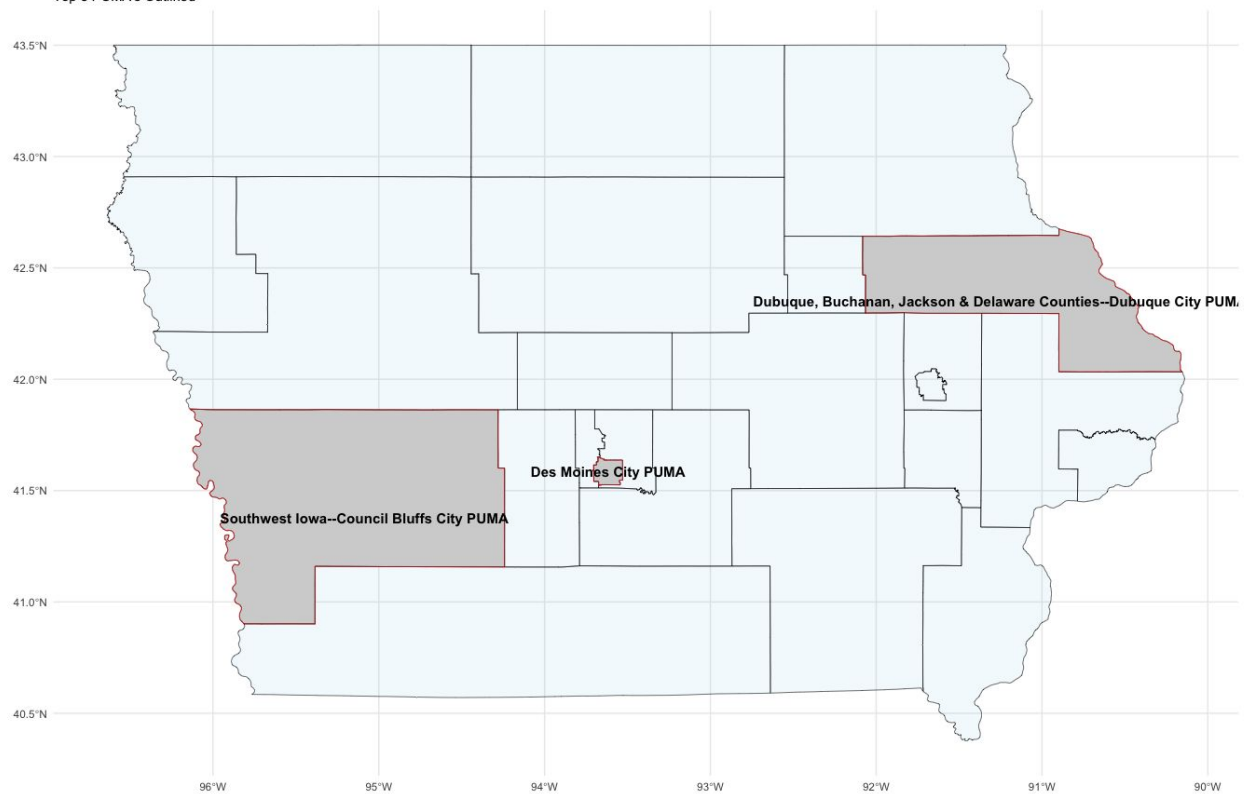
The probability of a female senior living in a household with all females being food insecure is 5.2% higher than a male senior living in a household with all men.

Food-Insecure Seniors by PUMA in Iowa



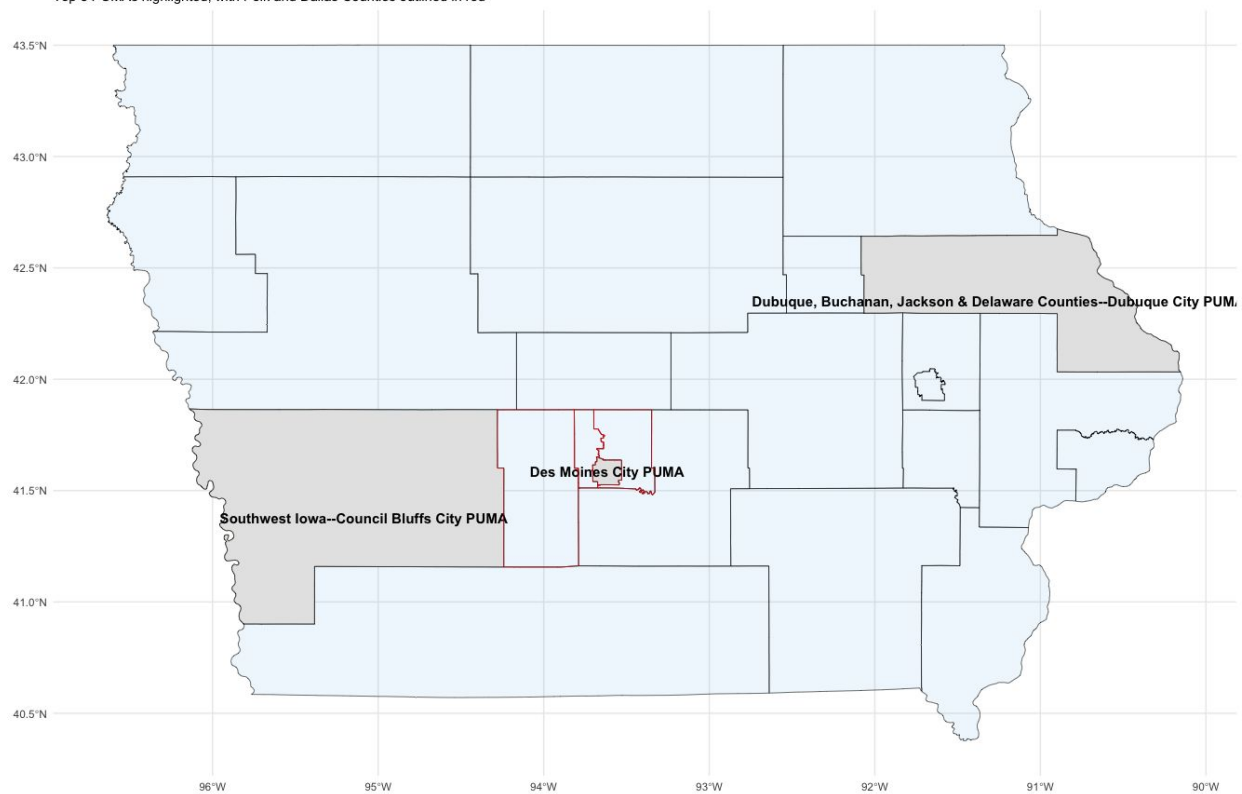
Food-Insecure Seniors by PUMA in Iowa

Top 3 PUMA's Outlined



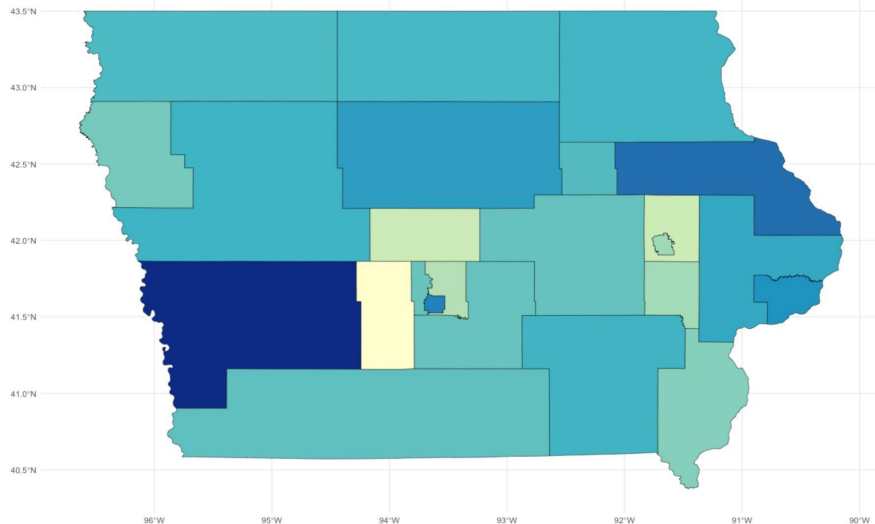
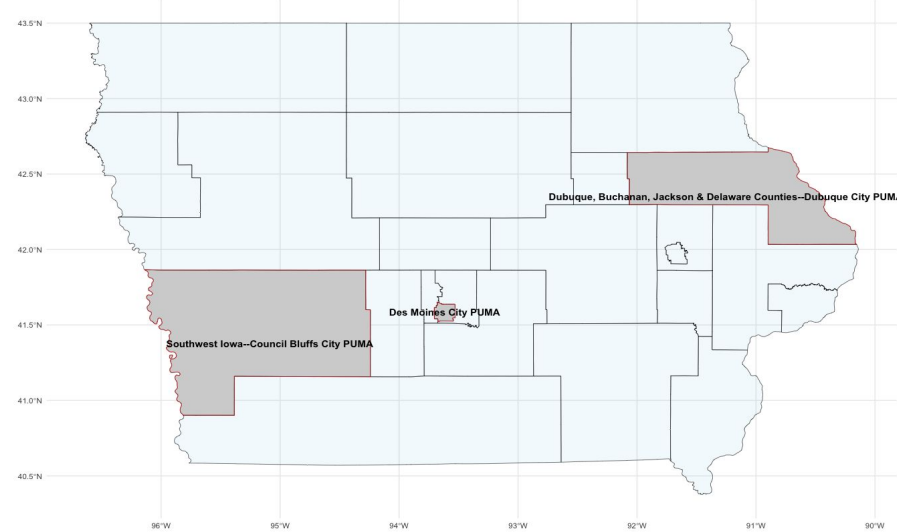
Food-Insecure Seniors by PUMA in Iowa

Top 3 PUMAs highlighted, with Polk and Dallas Counties outlined in red



Key Findings

- PUMA counties with the highest number of food insecure seniors in the past 30 days taking into account population of each county:
 - Southwest Iowa (5860)
 - Des Moines (4907)
 - Dubuque (4146)

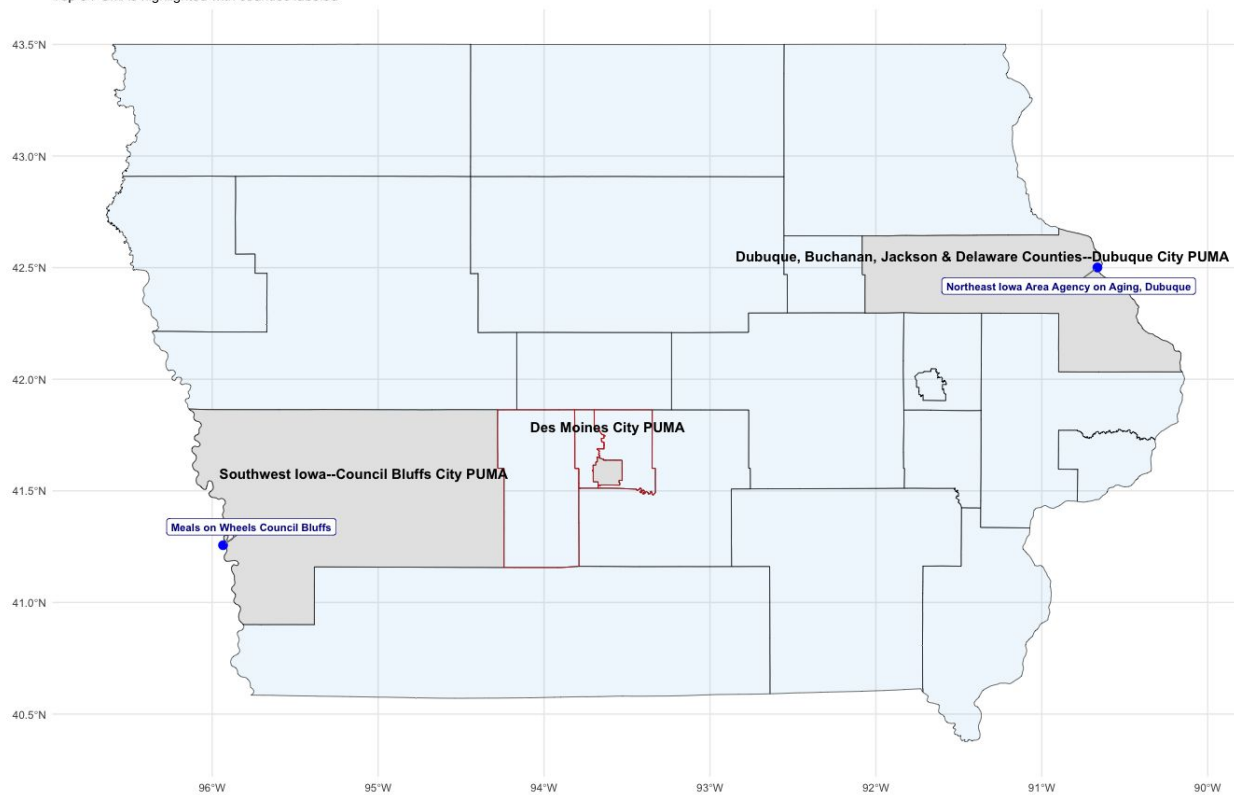


Final Recommendations

- We recommend Wesley Life **expand its operations West**, into Southwest Iowa - **Council Bluffs** City PUMA County.
 - All three models predicted this area of Iowa to have high food insecurity rates.
- There is currently another Meals on Wheels location in Council Bluffs, Iowa - this could be an opportunity to **partner with this program**.
- Continue feeding those in Polk and Dallas County - **Des Moines City is high in food insecure seniors and families as a whole**.
- If looking to expand further, **Dubuque, Iowa has high rates of food insecure seniors** - but no Meals on Wheels locations
 - Could look to expand into this area, or partner with **Northeast Iowa Area Agency on Aging**.

Food-Insecure Seniors by PUMA in Iowa

Top 3 PUMAs highlighted with counties labeled



**Thank
You**