

Predicting Food Insecurity with Machine Learning

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Introduction

Inspiration for project:

- The Bok Choy local project
- 13.7 million households experienced food insecurity in 2019
- \$161 billion worth of food thrown out each year

Data:

- CPS Food Insecurity 2019 Data

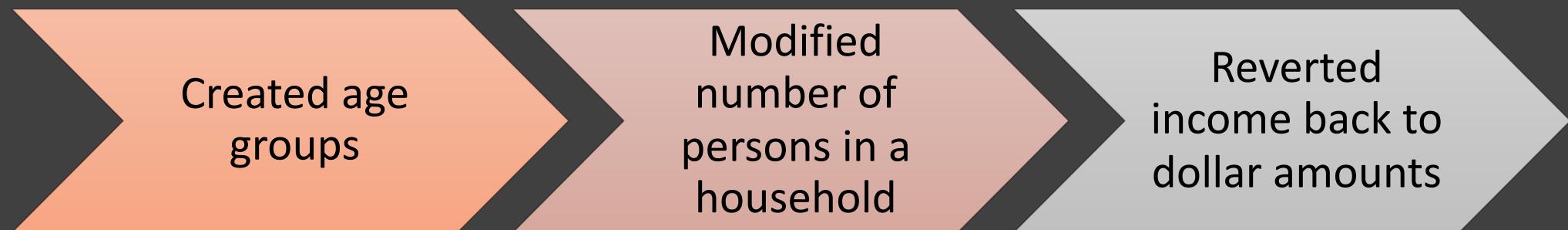
Question to answer:

- Can we predict whether someone will experience food insecurity or not.

Diving Deeper into the Data

- Data and data dictionary gathered from Census.gov under their food security data sets page
- Original data set contained over 500 columns and 138,000 rows
- Changed numerical values back to actual categorical values

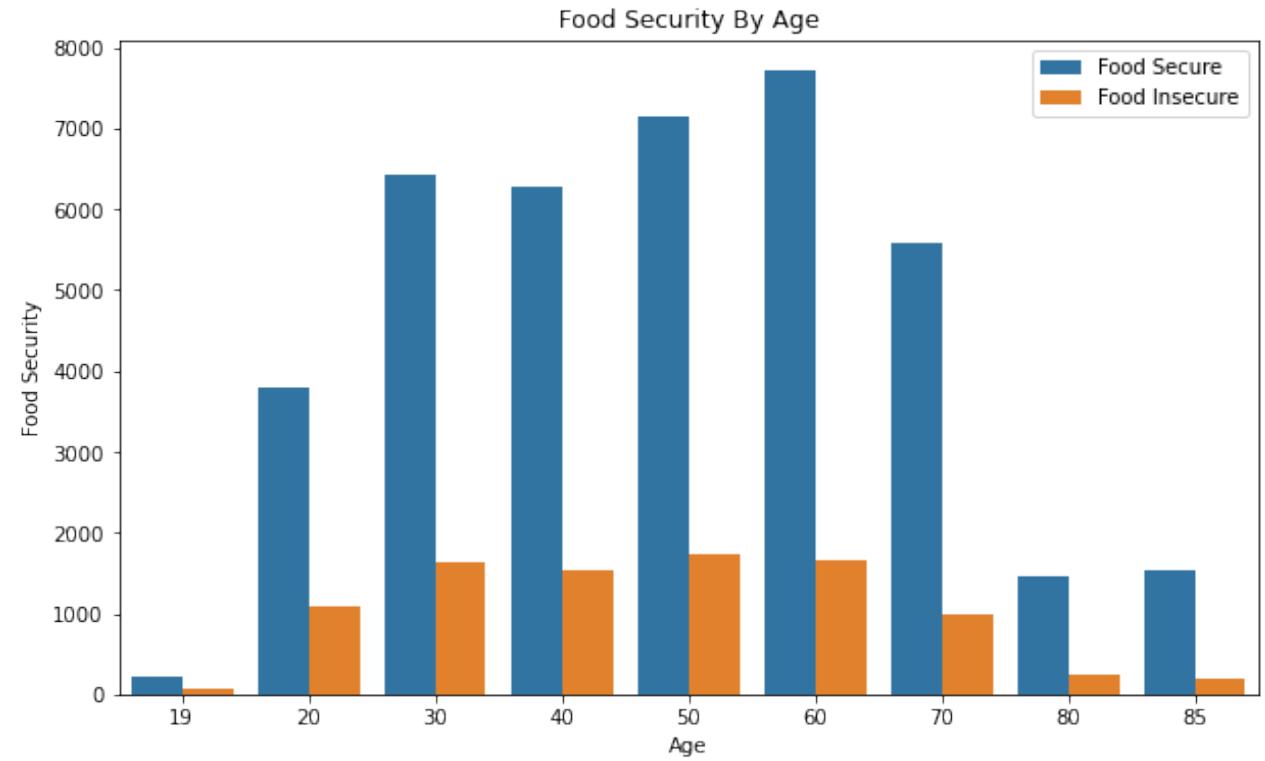
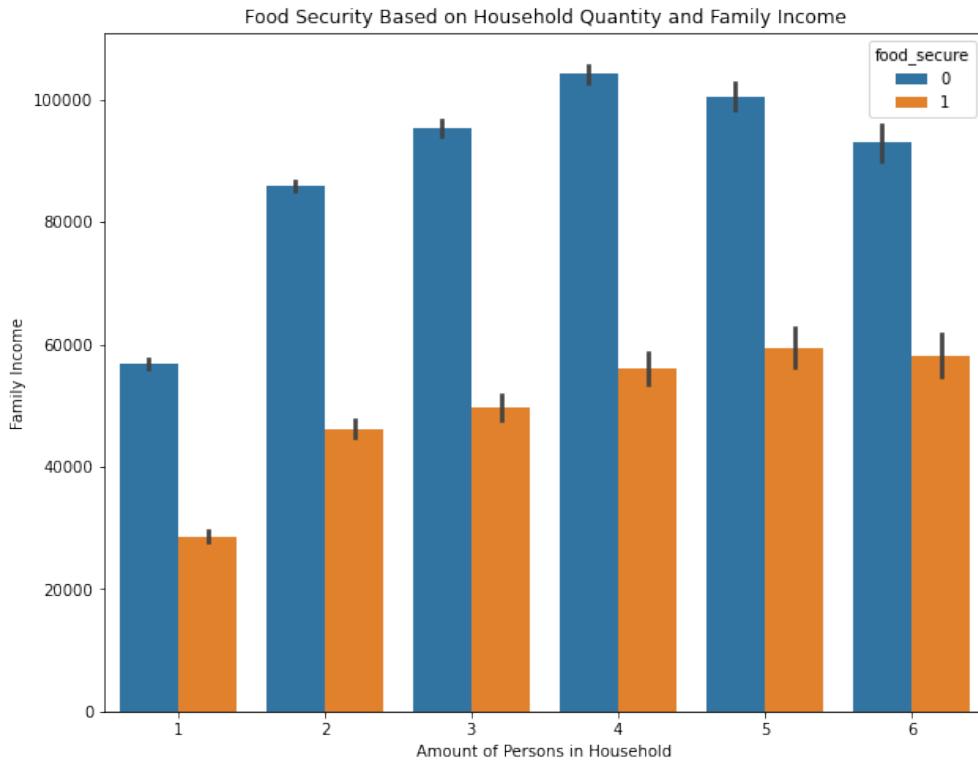
Variable Changes





Exploratory Data Analysis

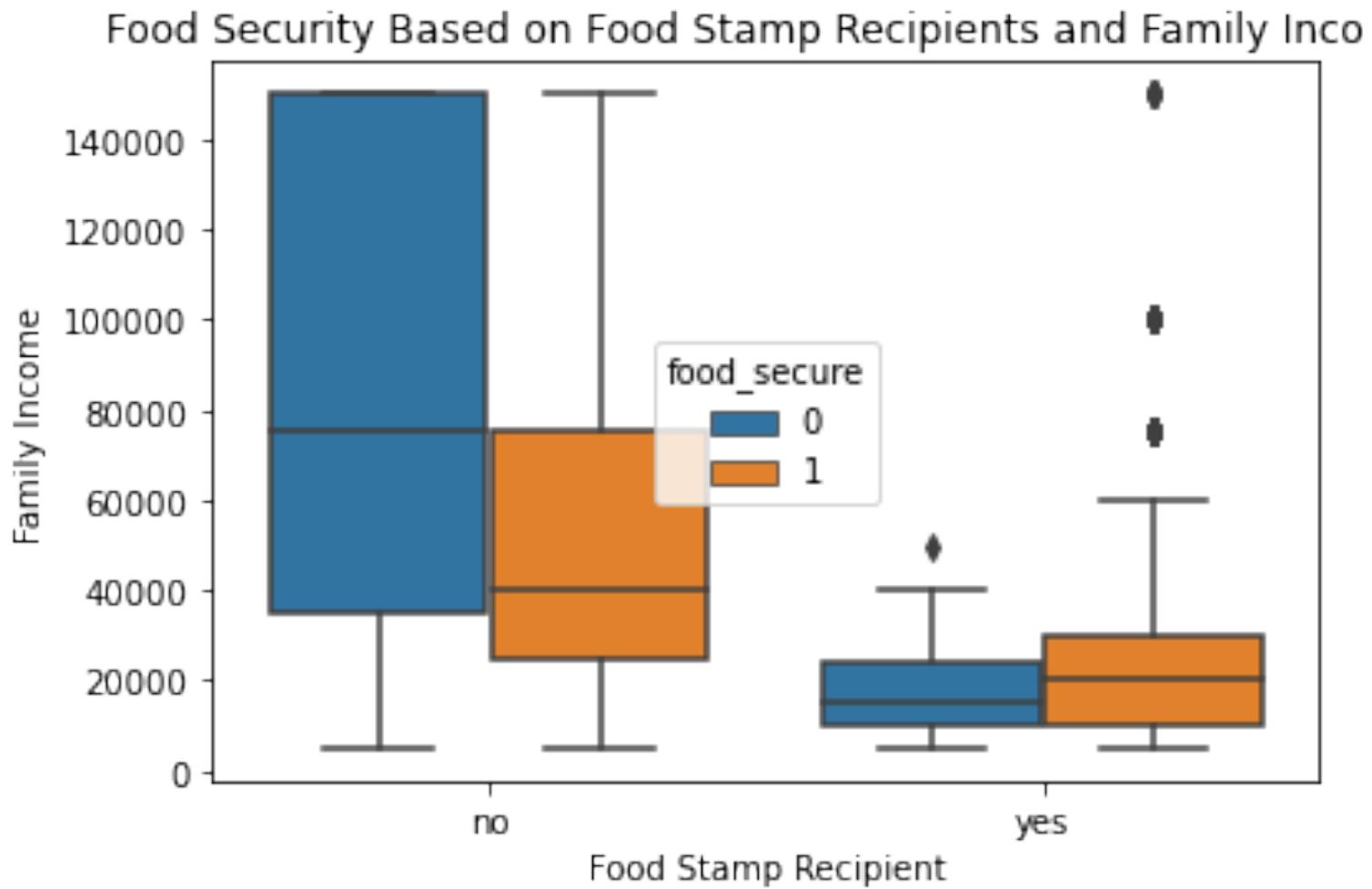
- Decoding census values even further
- Trends and key analysis explored
- Not a very diverse data set



Other Areas Explored

- Number of jobs and Food security
- Gender and Income based food security
 - Outliers found here
- Food pantry location unknown
- Family size and marital status in relation to food security
- Job type and food security levels

Food Stamp Recipient Analysis



Modeling Process

Question being asked → Classification modeling to answer

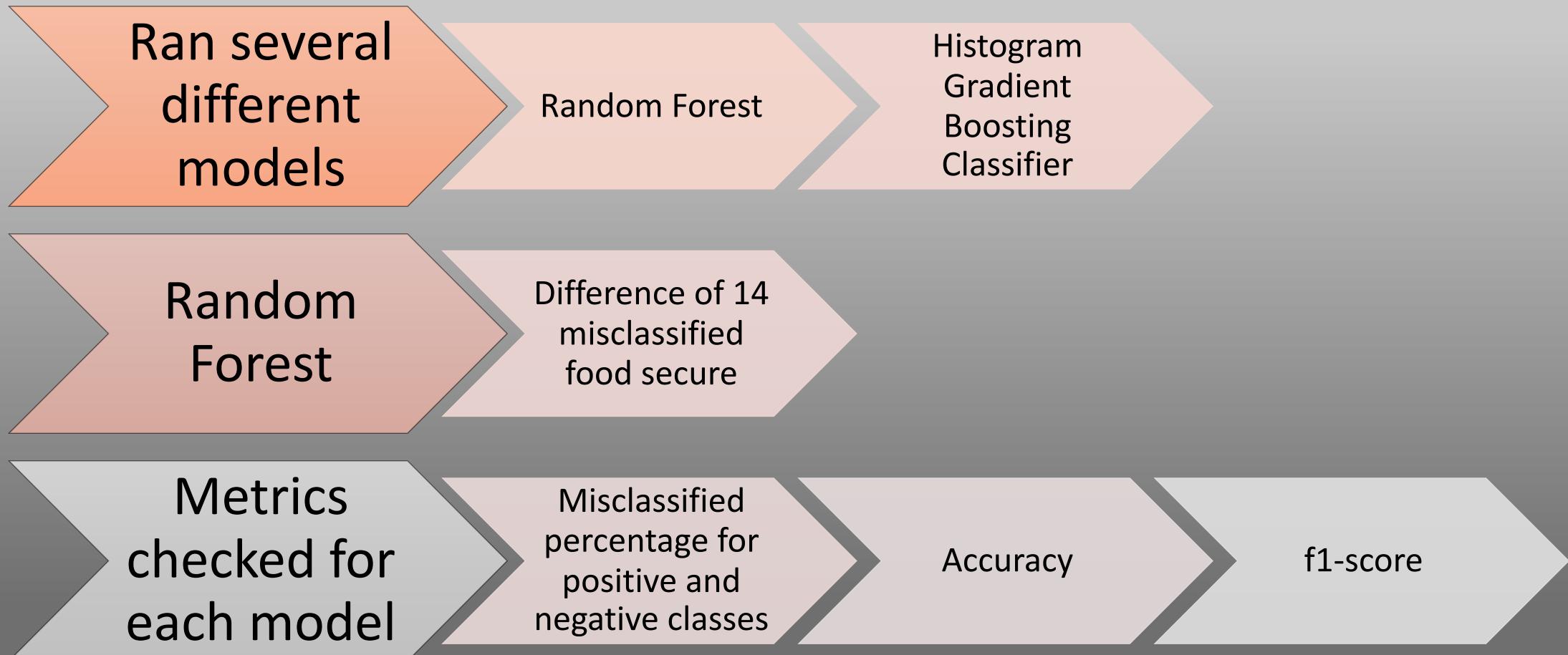
Final data cleaning steps

Pre-processing steps

Baseline score found

Wanted to minimize as many false negatives as I could

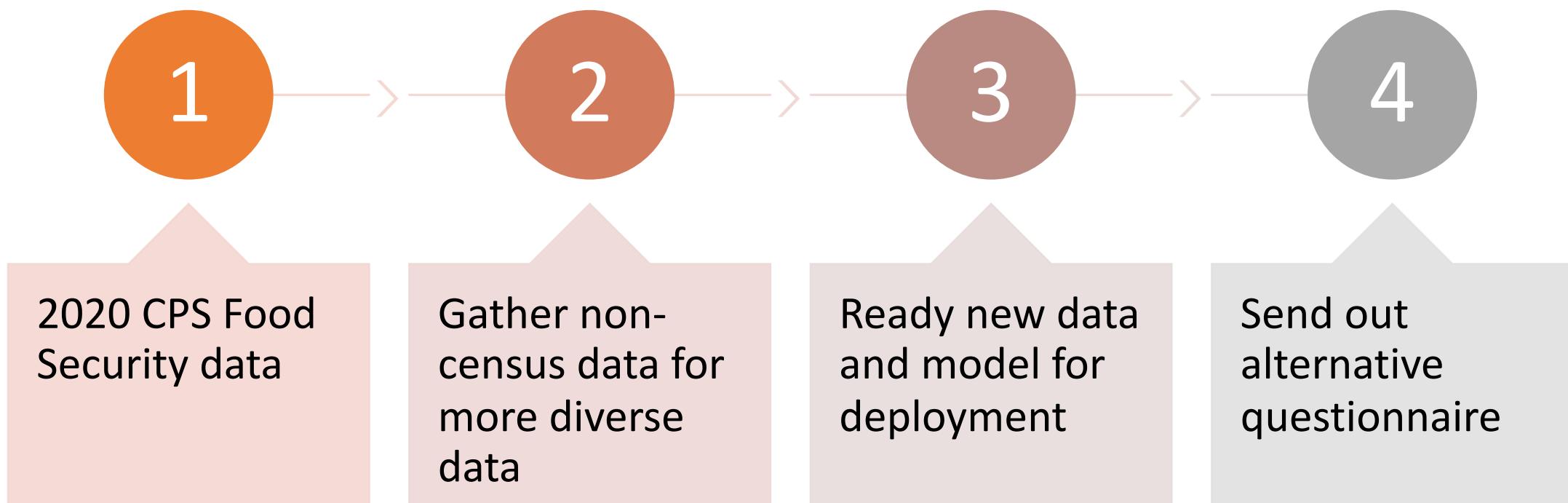
Modeling Process Cont.



Random Forest Model

- Well fit model
- Least amount of folks being misclassified as food secure when they are food insecure
- Highest f1 score for class 0 and class 1
- ROC-AUC score of 0.96

Next Steps



Any Questions? ☺

Cucumber

99¢

The fresh produce and flowers
are Responsibly Grown!

Yellow Squash

Grows in fallow

-Excellent yellow skin

-Sweet taste

-May be served raw or in a sliced

2.49
LB

The fresh produce and flowers
are Responsibly Grown!

Zucchini Squash

Grows in fallow

-Excellent taste

-Smooth skin

-Full of fiber

-A good source of vitamin C

2.49
LB

The fresh produce and flowers
are Responsibly Grown!

Belgian Endive

3.99

LB

Thai Chiles

4.99

LB

Poblano Chiles

4.99

LB

Jalapeño Chiles

4.99

LB

Anchovy Chiles

4.99

LB