

# Diet Compositions and Obesity

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## Introduction

A staggering number of 37.3% of the US population is obese,

The USDA Center for Nutrition Policy and Promotion recommends a very simple daily diet intake guideline: 30% grains, 40% vegetables, 10% fruits, and 20% protein. [1] [2]

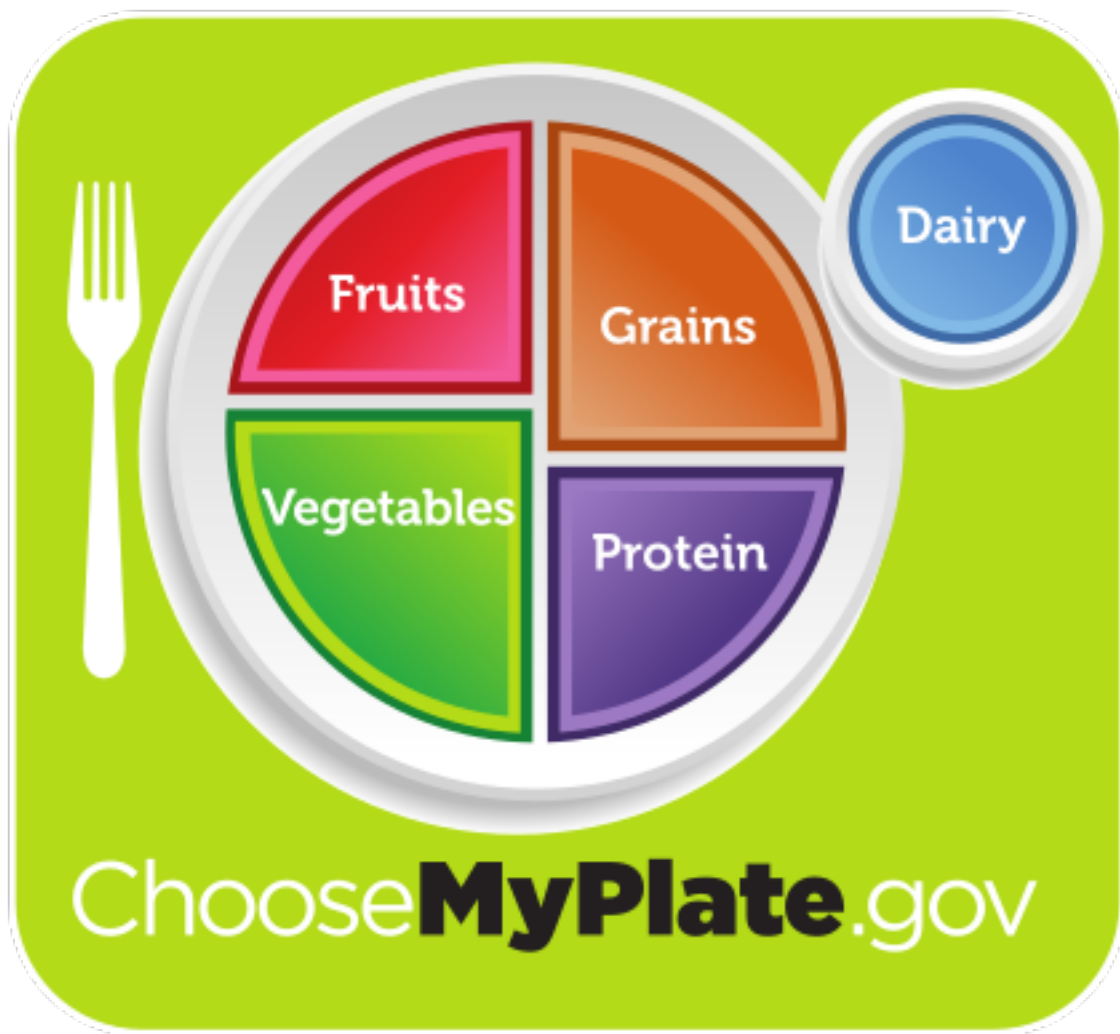


Figure 1: MyPlate Guidelines

# Data

## Data Cleaning

### Missing Data Imputation

In my analysis, I encountered missing values in certain food groups across countries. Removing these entries would significantly reduce the dataset entries, leaving only 100 out of 174 countries with 45 degrees of freedom for model fitting (if all columns are utilized for the model). This approach would not be ideal for accurately representing global patterns or obtaining robust model estimates.

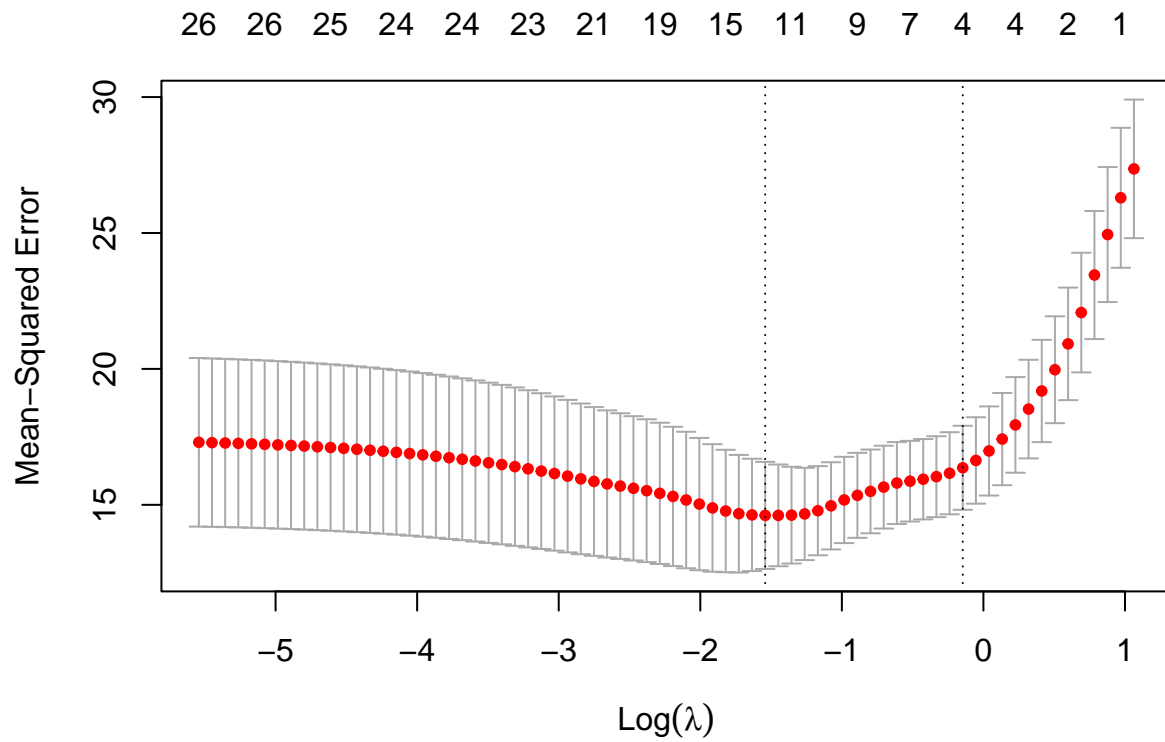
To address this challenge, I opted for imputation using the “predictive mean matching”(PMM) method from the `mice` package. PMM ensures that imputed values are drawn from observed values with similar predicted values, preserving the distributional characteristics of the data. This method allows us to utilize the full dataset, providing a more comprehensive and representative view of the relationships between food supply patterns and obesity death rates across diverse countries. Imputing missing values with PMM contributes to the validity of our inferences and enhances the generalizability of my findings to a broader global context.

EDA

## Methodology

Simple Linear Regression Model

Lasso Regression Model



Model Comparison

Final Model

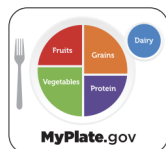
## Results

	Coefficient
(Intercept)	6.710
Miscellaneous	0.000
Alcohol	0.000
Animal.fat	0.000
Vegetable.oils	0.000
Oilcrops	0.009
Fish.and.seafood	-0.023
Sugar.crops	0.005
Sugar.sweeteners	0.002
Starchy.roots	0.000
Meat.other	0.000
Meat.sheep.and.goat	0.015
Meat.pig	-0.004
Meat.poultry	0.024
Meat.beef	-0.017
Eggs	0.000
Milk	0.000
Nuts	0.000
Fruit	0.000
Vegetables	0.000
Pulses	0.000
Cereals.other	0.000
Barley	0.000
Maize	0.000
Rice	0.000
Wheat	0.006
Income.groupLow-income countries	-2.196
Income.groupLower-middle-income countries	0.000
Income.groupUpper-middle-income countries	1.659

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## Conclusion



## Start simple with MyPlate Plan

The benefits of healthy eating add up over time, bite by bite. Small changes matter. Start Simple with MyPlate.

A healthy eating routine is important at every stage of life and can have positive effects that add up over time. It's important to eat a variety of fruits, vegetables, grains, protein foods, and dairy or fortified soy alternatives. When deciding what to eat or drink, choose options that are full of nutrients. Make every bite count.








Food Group Amounts for 2,400 Calories a Day for Ages 14+ Years				
				
<b>2 cups</b>	<b>3 cups</b>	<b>8 ounces</b>	<b>6½ ounces</b>	<b>3 cups</b>
<b>Focus on whole fruits</b> Focus on whole fruits that are fresh, frozen, canned, or dried.	<b>Vary your veggies</b> Choose a variety of colorful fresh, frozen, and canned vegetables—make sure to include dark green, red, and orange choices.	<b>Make half your grains whole grains</b> Find whole-grain foods by reading the Nutrition Facts label and ingredients list.	<b>Vary your protein routine</b> Mix up your protein foods to include seafood; beans, peas, and lentils; unsalted nuts and seeds; soy products; eggs; and lean meats and poultry.	<b>Move to low-fat or fat-free dairy milk or yogurt (or lactose-free dairy or fortified soy versions)</b> Look for ways to include dairy or fortified soy alternatives at meals and snacks throughout the day.
 <b>Limit</b> Choose foods and beverages with less added sugars, saturated fat, and sodium. <b>Limit:</b> <ul style="list-style-type: none"> <li>Added sugars to <b>less than 60 grams</b> a day.</li> <li>Saturated fat to <b>less than 27 grams</b> a day.</li> <li>Sodium to <b>less than 2,300 milligrams</b> a day.</li> </ul>		 <b>Be active your way:</b> Children 6 to 17 years old should move <b>60 minutes</b> every day. Adults should be physically active at least <b>2½ hours</b> per week.		

Figure 2: MyPlate Plan

## Limitations

- 1) supply, not consumption. assuming consumption is proportional to supply.

## Citations

[1] <https://www.dietaryguidelines.gov/>

[2] <https://www.myplate.gov/>