Intro to Social Science Data Analysis

Week 11 Seminar: Simple Linear Regression

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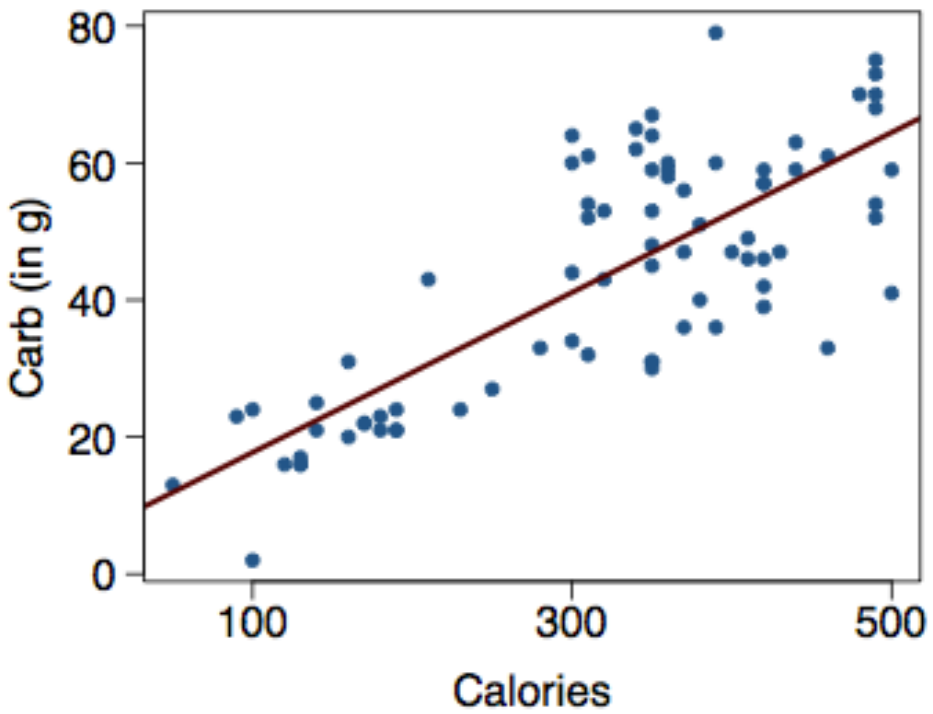
Interpretation

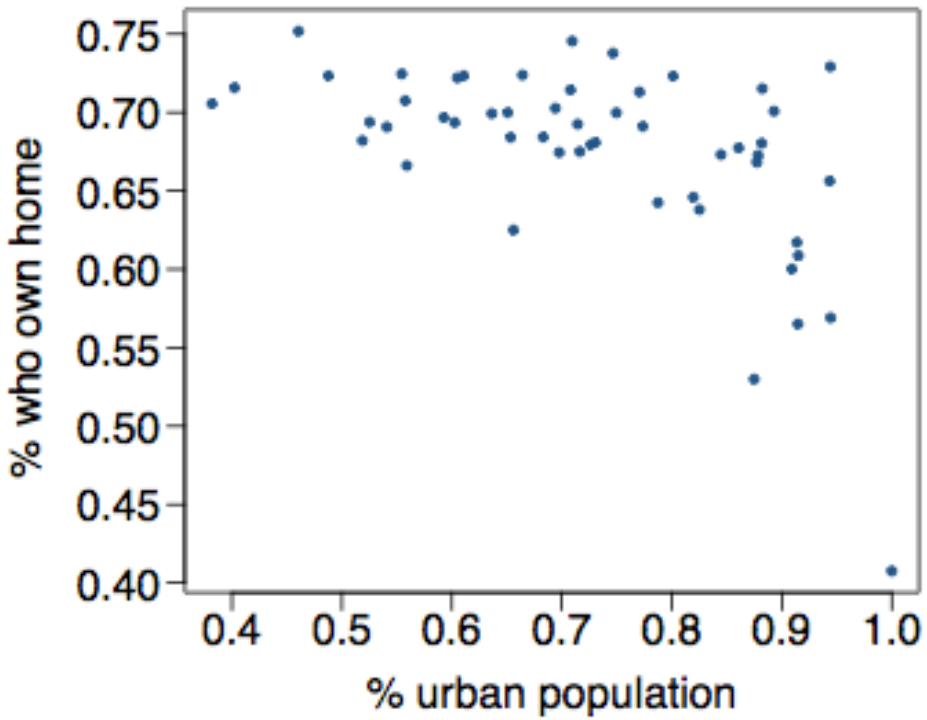
With a partner,

- describe the relationship between the number of calories a food item has and its carbohydrates,
- roughly estimate how many carbohydrates an item with 300 calories would have,
- what are the independent and dependent variables?



Outliers

This graph plots states in the United States.
The outlier on the bottom right is Washington, DC.
What should we do with the outlier?



Inference from Intercepts

What does the point estimate of α mean?

How interested are we in making inferences from $\hat{\alpha}$?

Load Data

Load data on 3143 US counties from the *openintro* package.

```
# Load library
library(openintro)

# Load Data
data(county)

# Show variable names
names(county)
```

```
##  [1] "name"           "state"
##  [3] "pop2000"        "pop2010"
##  [5] "fed_spend"      "poverty"
##  [7] "homeownership" "multiunit"
##  [9] "income"         "med_income"
```

Practice

Pick two continuous variables. Explore the relationship between the variables, including:

- their correlation,
- the direction of the relationship,
- the strength of the relationship,
- predict three values of one variable based on the value of the other,
- statistical inferences from a linear regression equation.

Could the two variables be causally related? Why/why not?

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