Examining Relationships

Chapter 3 Section 1

Scatterplots

Response Variable and Explanatory Variable

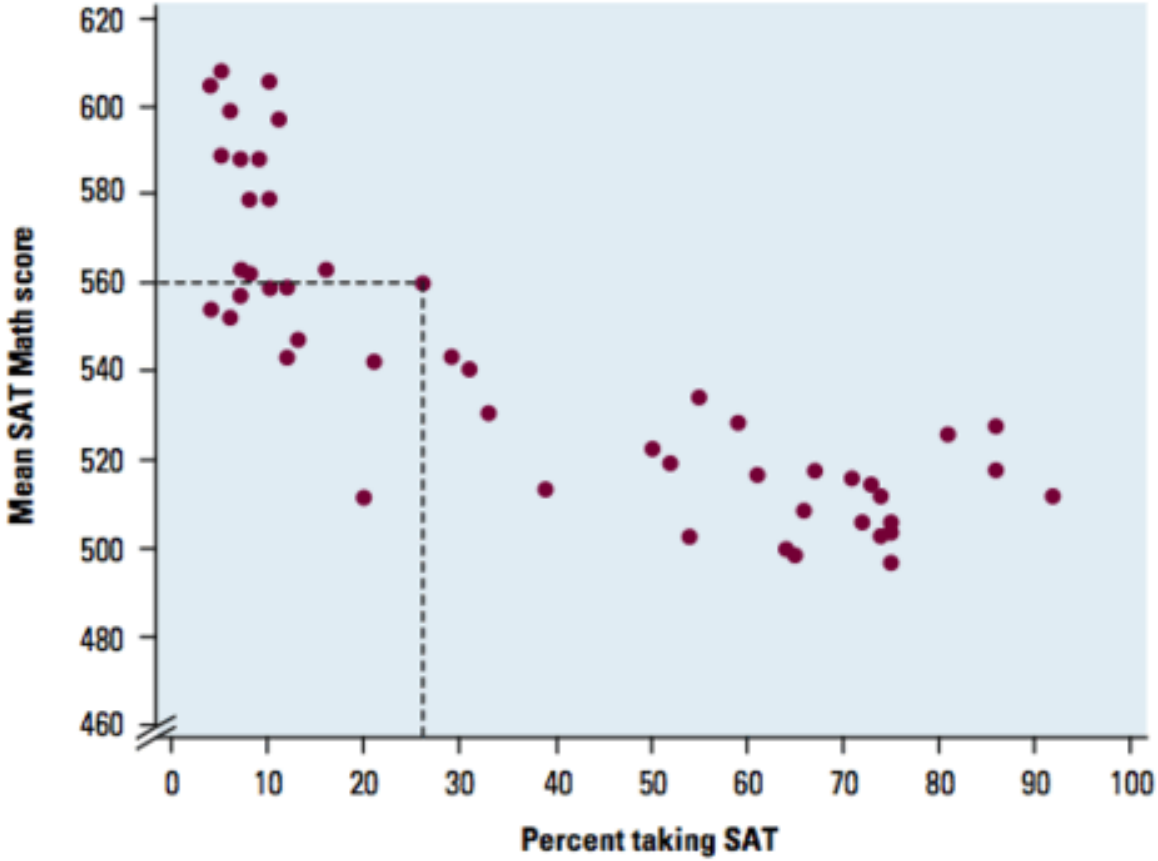
- **Response variable** measures an outcome.
- **Explanatory variable** helps explain or influences changes in a response variable.
- Examples –
  - Time spent studying and test scores
  - Number of sneezes and number of brain cells lost! Ha ha ha
  - Height and wingspan
  - Height and test score

Identifying Variables

- Mean SAT Math Scores and SAT Verbal Scores for 50 states
- Jim doesn't think they're related…no identifying of variables
- Julie asks "Can I predict a state's mean math score if I know its mean verbal score?"
  - Which is which?

Scatterplot

- Plot of points with one variable on the x-axis and the other on the y-axis.
- Normally we put the variable we suspect to be explanatory on the x-axis.

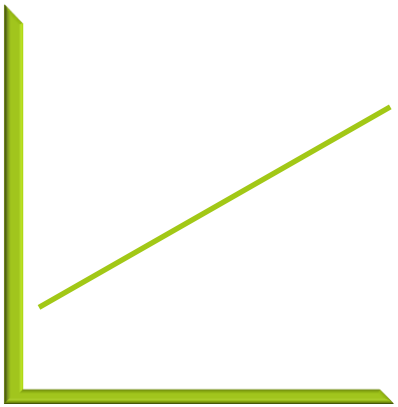


- Label axes
- Good Scale
- Use uniform scale

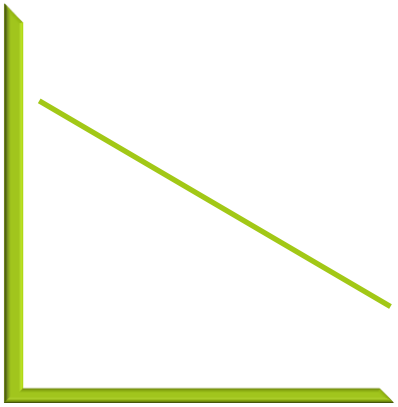
- Direction
  - Association (+/-)
- Form
  - Linear/Curved
  - Clusters
- Strength
- Outliers

Association

Positive:

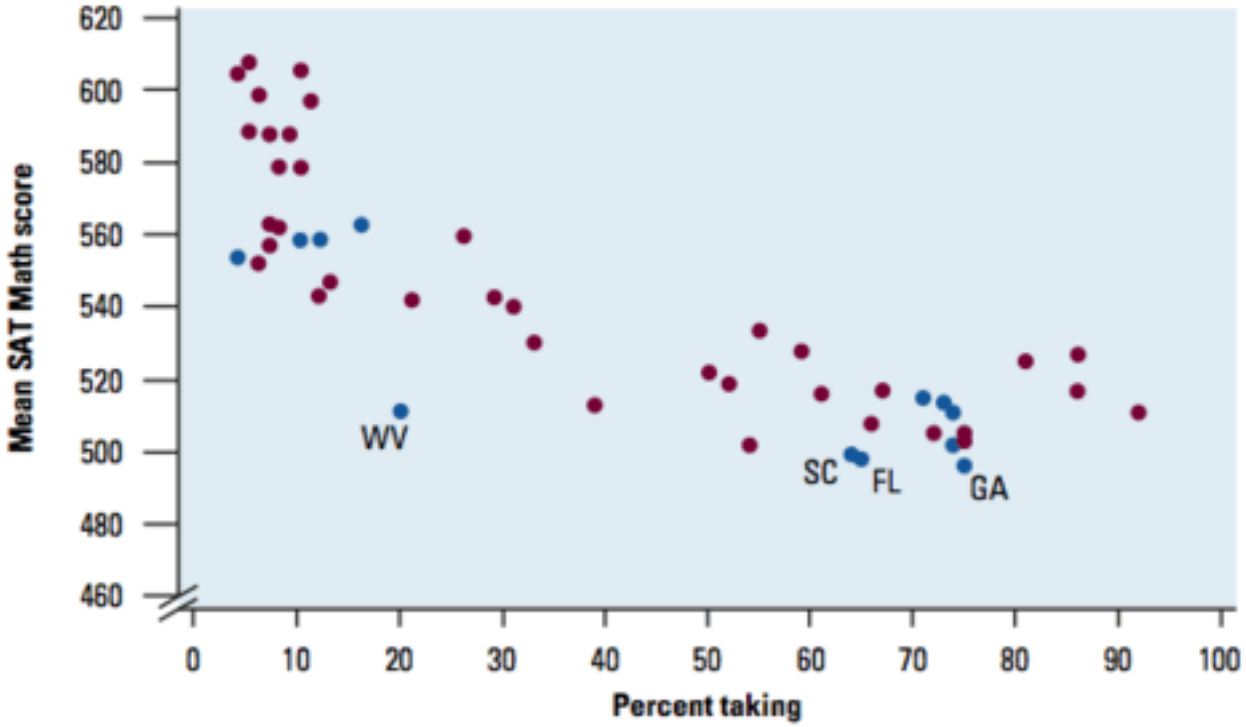


Negative:



"SORRY, MA'AM, OUR PRICES GO UP WITH THE TEMPERATURE."

Categorical Variables



GapMinder

http://www.gapminder.org/

In Summary…

- Explanatory and Response Variables
- Scatterplots
  - Direction, Form, Strength