

Where is the Science in Political Science?

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Some vocabulary we'll be using

- Causality
- Correlation
- Data set
- Hypothesis
- Mean
- Median
- Operationalize
- Regression
- Theory
- Variable
- X-axis
- Y-axis
- Scientific method

What is political science

- Political science is the scientific study of politics
 - Use of scientific method
- Political scientists try to find causes of phenomena in political world
 - How do economic factors affect political systems?
 - What factors lead to split ticket voting?
 - How does media consumption change people's political views?
- These are all relationships that we think are *causal*. We are investigating *causality*.

Hypotheses and Theories

- If we have an idea about causality, we might formulate it in a systematic way to explain what happen.
- In other words, we might create a testable **theory**.
 - The theory will have certain implications, small example of what we would expect if our theory is correct.
- These are **hypotheses**.
 - We can test the hypotheses.
 - Note: We do not aim to prove something correct. We aim to disprove our hypotheses.

What do we get from using science?

- Scientific study of politics generates ‘falsifiable statements’
- If a claim cannot be proven false, then it cannot be proven true – and it is not scientific
- Examples:
 - God loves you.
 - Bananas are better than apples.
 - The unexamined life is not worth living.

Yes, we're going to talk about math

- One key tool of political science: Statistical analysis
- Political science uses statistical analysis in order to test scientific statements about political phenomena
- Statistical analysis is a tool to better understand what data tells us
- Can we determine a pattern from information we have gathered?

Let's look at some data

- One column contains height of students
- The other column has the age of students
- Students identified by number

Here are data of first 18 units this dataset

Student Number	Age		Height (inches)	Height (inches)
	Height (inches)	(months)		
1	48	72	48	
2	52	75	52	
3	53	78	53	
4	55	79	55	
5	57	81	57	
6	59	78	59	
7	61	88	61	
8	63	98	63	
9	55	70	55	
10	57	67	57	
11	59	84	59	
12	54	81	54	
13	54	81	54	
14	55	82	55	
15	57	74	57	
16	52	78	52	
17	56	84	56	
18	48	72	48	

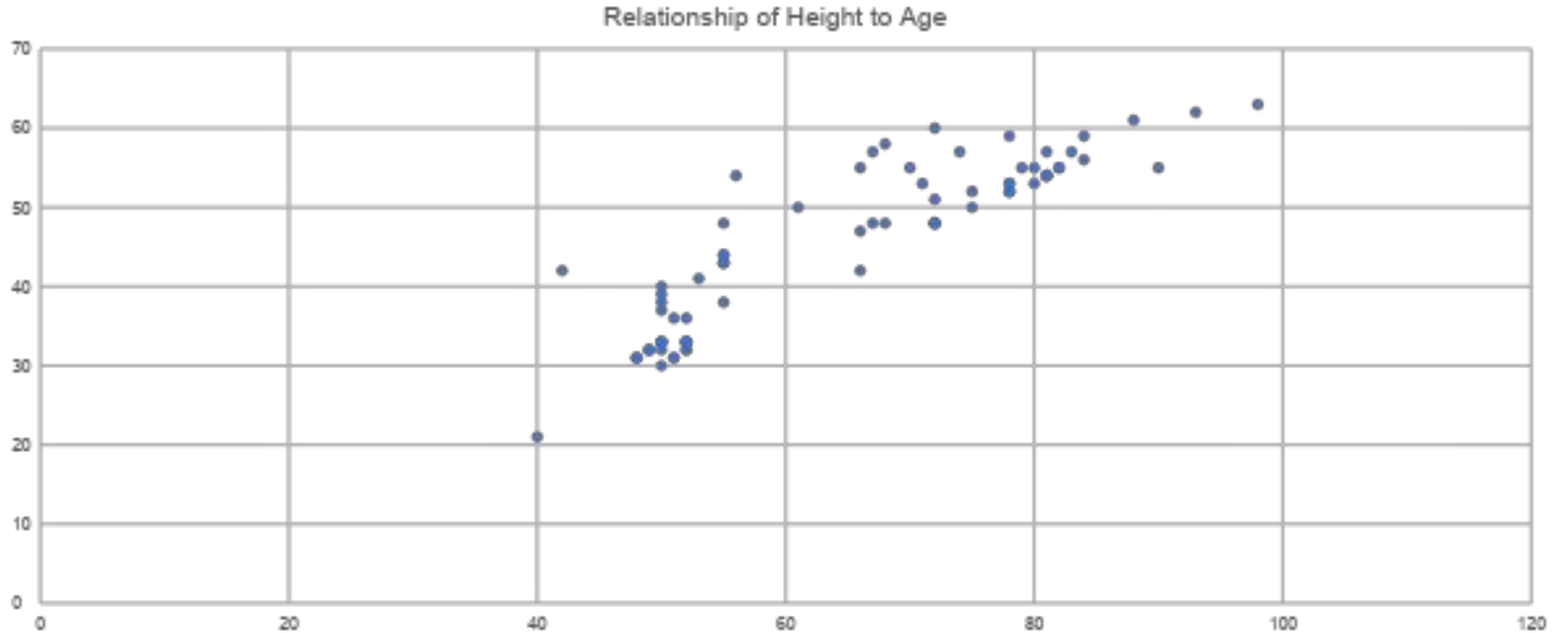
What do the numbers tell us?

- Is there a relationship here? What is it?
- Common sense tells us that children get taller as they get older.
- Is this the case? How much taller do they get?

Looking at the variables

- If we think age affects the height of the child, then the height is the *Dependent Variable* and the age is the *Independent Variable*.
- The height of the child depends on the child's age.
 - *Independent Variable* is plotted on the X-axis
 - *Dependent Variable* is plotted on the Y-axis

Do we see a pattern?



Examining relationships

- What is the relationship between the X & the Y variable?
- Is it **correlation**?
- Is it **causation**?
 - Correlation – Two variable move together, but we don't know if one variable causes the other.
 - Causation – One variable affects the other.
- Example: When it is raining, more people carry umbrellas. Do umbrellas cause precipitation?

Looking at data and their meaning

- OK, this is made up data.
- Let's ask some questions about politics and look at real data
- Let's talk about one of the public goods you have identified – and think about what provision of that public good might affect

Why do public goods matter?

- What dependent variable might an individual public good affect?
 - Effect of education on income?
 - Effect of environmental protection on life expectancy?
 - Effect of public health expenditure on life expectancy?
 - Effect of education on incidence of crime?
- What examples can you think of?
- We want to take an abstract concept and make it concrete, something measurable. In other words, we are looking to *operationalize* the variable.

Homework Assignment 1.

- In class, we have named and discussed public goods.
 1. Choose two examples of public goods.
 2. Name two dependent variables that would be affected by the provision of public goods.
 - Example: More public education could mean lower levels of illiteracy.
 3. Briefly describe the relationship of these two dependent variables to the two public goods you have chosen.
 4. Briefly describe how would you measure these variables.

Answering these questions should require a minimum of three short paragraphs and a maximum of five. Write no more than a page.