

- The plan for today
 - Information about the course – the syllabus
 - Variables and causal explanations
 - How do we evaluate causal claims?
 - Group work: exercises on the 4 hurdles

1

- Political science
 - = scientific study of political phenomena
- Why it's important to learn how political scientists do research
 - → better understand political science readings for other classes
 - → become a better consumer of information
 - → get over the first step towards becoming a producer of scientific research

2

Defining key concepts

- Variable
 - = a concept of interest
 - Independent variable v. dependent variable
- Theory
 - = a tentative explanation of a phenomenon of interest

3

Key concepts (continued)

- Hypothesis
 - = a theory-based statement about a relationship that we expect to observe
 - *Null hypothesis* = a theory-based statement about what we expect to observe if our theory was incorrect
 - *Hypothesis testing* = a process in which scientists evaluate systematically collected evidence to make a judgment of whether the evidence favors their hypothesis or the null hypothesis

4

- Thinking about the world in terms of theoretical models vs. “just learning the facts”
 - What is the problem with “just learning the facts”?

5

The road to scientific knowledge

▫ Figure 1.1 (p. 4)

- Skepticism
- Q: Do lawyers and scientists differ in the way they approach evidence? If yes, how?

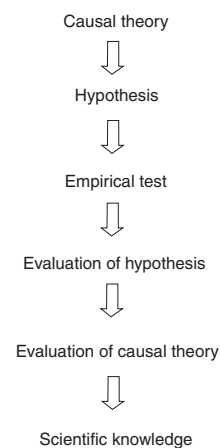


Figure 1.1. The road to scientific knowledge.

6

Variables and causal explanations

- Variable label
 - Description of what the variable is
 - Values of a variable
 - = denominations in which the variable occurs
-

- Fill in variables:

_____ causes _____

- Fill in variable values:
 - higher _____ causes higher _____
 - (or: higher _____ causes lower _____)
- Provide a causal explanation

7

Variables and causal explanations

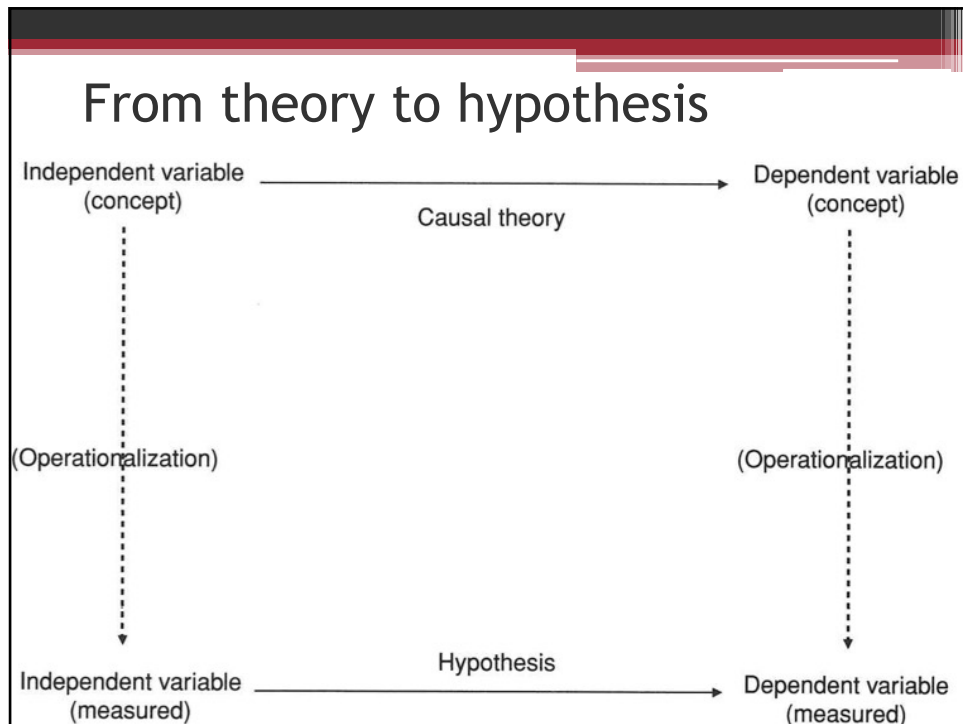
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- Fill in variables:

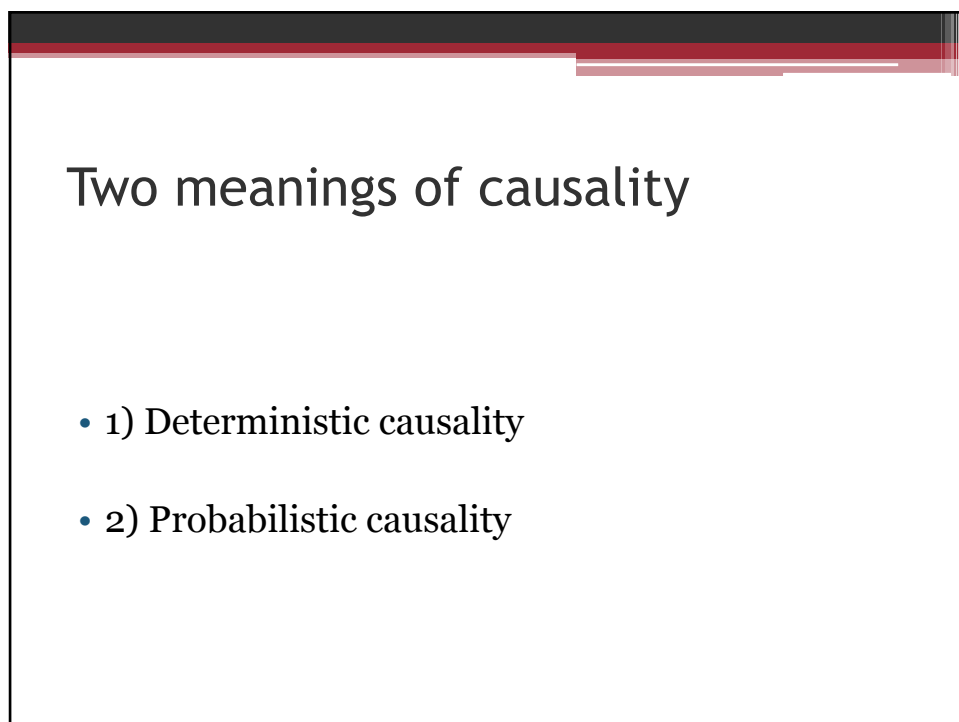
Natural resources causes civil war

- Fill in variable values:
 - more natural resources causes higher likelihood of civil war
 - (or: higher _____ causes lower _____)
- Provide a causal explanation

8



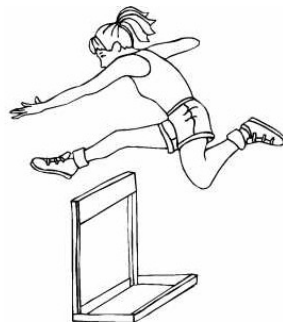
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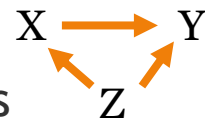
Evaluating causal relationships:

Four hurdles on the way to establishing causal relationships



11

Four hurdles on the way to establishing causal relationships



1. Is there a credible *causal mechanism* that connects X to Y
2. Could Y cause X?
3. Is there covariation between X and Y?
4. Is there some confounding variable Z that is related to both X and Y and that makes the observed association between X and Y spurious?

12

Getting over the four hurdles

- What is a selection effect?
 - When a Z variable causes bias in the data
 - Example: examining the effects of a school-choice program
 - Some variable Z causes only a nonrandom subset of eligible pupils to participate in the school-choice program

13

Practicing clearing the four hurdles

- Work in groups
 - Does Facebook make us unhappy?
 - Write down your answers
 - Be prepared to share your answers with the class

14