

Gov 99r: Lecture 5

Ashley Anderson

Harvard University

October 16, 2014

Outline

- 1 Introduction
- 2 Hypotheses
- 3 Data
- 4 Process Tracing
- 5 Next Time

Methodology: A Basic Primer

In general, methodology is often difficult to teach quickly, due to a multiplicity of perspectives

Methodology: A Basic Primer

In general, methodology is often difficult to teach quickly, due to a multiplicity of perspectives

- Qualitative vs Quantitative

Methodology: A Basic Primer

In general, methodology is often difficult to teach quickly, due to a multiplicity of perspectives

- Qualitative vs Quantitative
- Frequentist vs. Bayesian

Methodology: A Basic Primer

In general, methodology is often difficult to teach quickly, due to a multiplicity of perspectives

- Qualitative vs Quantitative
- Frequentist vs. Bayesian
- Positivist vs. Normativist vs. Interpretivist

Methodology: A Basic Primer

In general, methodology is often difficult to teach quickly, due to a multiplicity of perspectives

- Qualitative vs Quantitative
- Frequentist vs. Bayesian
- Positivist vs. Normativist vs. Interpretivist
- etc

Thus, possible better to ignore differences and focus on **least common denominators**

Types of Research

There are however two main goals/types of research that should be distinguished

Types of Research

There are however two main goals/types of research that should be distinguished

- 1 Descriptive inference

Types of Research

There are however two main goals/types of research that should be distinguished

- 1 Descriptive inference
- 2 Causal Inference

Types of Research

There are however two main goals/types of research that should be distinguished

- 1 Descriptive inference
- 2 Causal Inference

Basics of Causal Research

- 1 Based on **developing** and/or **evaluating** the efficacy of hypotheses to explain phenomena

Basics of Causal Research

- 1 Based on **developing** and/or **evaluating** the efficacy of hypotheses to explain phenomena
- 2 Tries to determine the causal effect that the IV has on the DV and provide linkages

Basics of Causal Research

- 1 Based on **developing** and/or **evaluating** the efficacy of hypotheses to explain phenomena
- 2 Tries to determine the causal effect that the IV has on the DV and provide linkages
- 3 Evaluates hypotheses against plausible counterfactuals

Basics of Causal Research

- 1 Based on **developing** and/or **evaluating** the efficacy of hypotheses to explain phenomena
- 2 Tries to determine the causal effect that the IV has on the DV and provide linkages
- 3 Evaluates hypotheses against plausible counterfactuals

Causal Inference in Experimentation

How does exposure to soft media coverage of female candidates affect young women's desire to run for office?

Causal Inference in Experimentation

How does exposure to soft media coverage of female candidates affect young women's desire to run for office?

- Starts with a hypothesis:

Causal Inference in Experimentation

How does exposure to soft media coverage of female candidates affect young women's desire to run for office?

- **Starts with a hypothesis:** Young women exposed to soft media coverage will be less likely to want to run for office

Causal Inference in Experimentation

How does exposure to soft media coverage of female candidates affect young women's desire to run for office?

- **Starts with a hypothesis:** Young women exposed to soft media coverage will be less likely to want to run for office
- **Establishes (at least one) counterfactual**

Causal Inference in Experimentation

How does exposure to soft media coverage of female candidates affect young women's desire to run for office?

- Starts with a hypothesis: Young women exposed to soft media coverage will be less likely to want to run for office
- Establishes (at least one) counterfactual
 - 1 Young women not exposed to any media coverage are more likely to want to run for office

Causal Inference in Experimentation

How does exposure to soft media coverage of female candidates affect young women's desire to run for office?

- **Starts with a hypothesis:** Young women exposed to soft media coverage will be less likely to want to run for office
- **Establishes (at least one) counterfactual**
 - 1 Young women not exposed to any media coverage are more likely to want to run for office
 - 2 Young women exposed to hard media coverage are more likely to want to run for office

Causal Inference in Experimentation

How does exposure to soft media coverage of female candidates affect young women's desire to run for office?

- **Starts with a hypothesis:** Young women exposed to soft media coverage will be less likely to want to run for office
- **Establishes (at least one) counterfactual**
 - 1 Young women not exposed to any media coverage are more likely to want to run for office
 - 2 Young women exposed to hard media coverage are more likely to want to run for office

Causal Inference in Experimentation

How does exposure to soft media coverage of female candidates affect young women's desire to run for office?

- Select a sample of individuals from the target population

Causal Inference in Experimentation

How does exposure to soft media coverage of female candidates affect young women's desire to run for office?

- Select a sample of individuals from the target population
- **Randomly** assign them to groups

Causal Inference in Experimentation

How does exposure to soft media coverage of female candidates affect young women's desire to run for office?

- Select a sample of individuals from the target population
- **Randomly** assign them to groups

D_i : Indicator of whether **treatment** received by unit i

$D_i =$

$$\begin{cases} 2 & \text{if unit } i \text{ received treatment 2} \\ 1 & \text{if unit } i \text{ received treatment 1} \\ 0 & \text{otherwise} \end{cases}$$

Causal Inference in Experimentation

How does exposure to soft media coverage of female candidates affect young women's desire to run for office?

- Select a sample of individuals from the target population
- **Randomly** assign them to groups

D_i : Indicator of whether **treatment** received by unit i

$D_i =$

$$\begin{cases} 2 & \text{if unit } i \text{ received treatment 2} \\ 1 & \text{if unit } i \text{ received treatment 1} \\ 0 & \text{otherwise} \end{cases}$$

- Estimate the causal effect of treatment

Causal Inference in Qualitative Studies

Why did left leaning parties manage to consolidate neoliberal reforms in some locations but not in others?

Causal Inference in Qualitative Studies

Why did left leaning parties manage to consolidate neoliberal reforms in some locations but not in others?

- Starts with a hypothesis:

Causal Inference in Qualitative Studies

Why did left leaning parties manage to consolidate neoliberal reforms in some locations but not in others?

- **Starts with a hypothesis:** In countries where the use of side payments is prevalent, the individualization of decision-making prevents the collective ideology necessary for neoliberal consolidation

Causal Inference in Qualitative Studies

Why did left leaning parties manage to consolidate neoliberal reforms in some locations but not in others?

- Starts with a hypothesis: In countries where the use of side payments is prevalent, the individualization of decision-making prevents the collective ideology necessary for neoliberal consolidation
- Establishes (at least one) counterfactual

Causal Inference in Qualitative Studies

Why did left leaning parties manage to consolidate neoliberal reforms in some locations but not in others?

- **Starts with a hypothesis:** In countries where the use of side payments is prevalent, the individualization of decision-making prevents the collective ideology necessary for neoliberal consolidation
- **Establishes (at least one) counterfactual** Consolidation of reforms occurred where the left was weak

Causal Inference in Qualitative Studies

Why did left leaning parties manage to consolidate neoliberal reforms in some locations but not in others?

- **Starts with a hypothesis:** In countries where the use of side payments is prevalent, the individualization of decision-making prevents the collective ideology necessary for neoliberal consolidation
- **Establishes (at least one) counterfactual** Consolidation of reforms occurred where the left was weak
- **Select a sample of cases from the target population:**

Causal Inference in Qualitative Studies

Why did left leaning parties manage to consolidate neoliberal reforms in some locations but not in others?

- **Starts with a hypothesis:** In countries where the use of side payments is prevalent, the individualization of decision-making prevents the collective ideology necessary for neoliberal consolidation
- **Establishes (at least one) counterfactual** Consolidation of reforms occurred where the left was weak
- **Select a sample of cases from the target population:** Chile and Argentina

Causal Inference in Qualitative Studies

Why did left leaning parties manage to consolidate neoliberal reforms in some locations but not in others?

- **Starts with a hypothesis:** In countries where the use of side payments is prevalent, the individualization of decision-making prevents the collective ideology necessary for neoliberal consolidation
- **Establishes (at least one) counterfactual** Consolidation of reforms occurred where the left was weak
- **Select a sample of cases from the target population:** Chile and Argentina
- Eliminates counterfactuals and supports proposed hypotheses through evidence and inference

Causal Inference in Qualitative Studies

Why did left leaning parties manage to consolidate neoliberal reforms in some locations but not in others?

- **Starts with a hypothesis:** In countries where the use of side payments is prevalent, the individualization of decision-making prevents the collective ideology necessary for neoliberal consolidation
- **Establishes (at least one) counterfactual** Consolidation of reforms occurred where the left was weak
- **Select a sample of cases from the target population:** Chile and Argentina
- Eliminates counterfactuals and supports proposed hypotheses through evidence and inference

Causal Inference: Pitfalls

No causal inference is perfect; even experiments fall prey to the **fundamental problem of causal inference**

Causal Inference: Pitfalls

No causal inference is perfect; even experiments fall prey to the [fundamental problem of causal inference](#)

Thus, the goal should be to design experiments/studies/research designs which allow us to plausibly defend or refute our hypotheses against counterfactual explanations of the phenomenon

Hypotheses

Hypotheses are clearly the foundation of causal inference (and all scientific investigation). All hypotheses **must**:

Hypotheses

Hypotheses are clearly the foundation of causal inference (and all scientific investigation). All hypotheses **must**:

- Be theoretically grounded

Hypotheses

Hypotheses are clearly the foundation of causal inference (and all scientific investigation). All hypotheses **must**:

- Be theoretically grounded
- Involve causal mechanisms (spells out the pathway by which $X \rightarrow Y$)

Hypotheses

Hypotheses are clearly the foundation of causal inference (and all scientific investigation). All hypotheses **must**:

- Be theoretically grounded
- Involve causal mechanisms (spells out the pathway by which $X \rightarrow Y$)
- Have a plausible counterfactual

Hypotheses

Hypotheses are clearly the foundation of causal inference (and all scientific investigation). All hypotheses **must**:

- Be theoretically grounded
- Involve causal mechanisms (spells out the pathway by which $X \rightarrow Y$)
- Have a plausible counterfactual

Types of Data

Think of data as evidence: information you will find that can support or refute your hypotheses

Types of Data

Think of data as evidence: information you will find that can support or refute your hypotheses

Two types of observations that can be used as data:

Types of Data

Think of data as evidence: information you will find that can support or refute your hypotheses

Two types of observations that can be used as data:

- Dataset Observations (DSOs)

Types of Data

Think of data as evidence: information you will find that can support or refute your hypotheses

Two types of observations that can be used as data:

- Dataset Observations (DSOs)
- Causal Process Observations (CSOs)

Types of Data


Think of data as evidence: information you will find that can support or refute your hypotheses

Two types of observations that can be used as data:

- Dataset Observations (DSOs)
- Causal Process Observations (CSOs)

Dataset Observations


Dataset Observations



Dataset Observations

Country	Month				
Tunisia	2000				
Tunisia	2001				
Tunisia	2002				
Tunisia	2003				
Tunisia	2004				
Tunisia	2005				
Tunisia	2006				
Tunisia	2007				
Tunisia	2008				
Tunisia	2009				
Tunisia	2010				
Tunisia	2011				
Morocco	2000				

Dataset Observations



Country	Month				
Tunisia	2000				
Tunisia	2001				
Tunisia	2002				
Tunisia	2003				
Tunisia	2004				
Tunisia	2005				
Tunisia	2006				
Tunisia	2007				
Tunisia	2008				
Tunisia	2009				
Tunisia	2010				
Tunisia	2011				
Morocco	2000				

Dataset Observations

Country	Month	Protest	Union Density	Wages	Political Party
Tunisia	2000	234	11	201	0
Tunisia	2001	458	11	221	0
Tunisia	2002	847	20	223	1
Tunisia	2003	98	3	267	0
Tunisia	2004	345	12	284	0
Tunisia	2005	726	18	286	0
Tunisia	2006				
Tunisia	2007				
Tunisia	2008				
Tunisia	2009				
Tunisia	2010				
Tunisia	2011				
Morocco	2000				

Causal Process Observations

A **causal process observation (CPO)** is “an insight or piece of data that provides information about context, process or mechanism, and that contributes distinctive leverage in causal inference” - Collier, Brady and Seawright

Causal Process Observations

A **causal process observation (CPO)** is “an insight or piece of data that provides information about context, process or mechanism, and that contributes distinctive leverage in causal inference” - Collier, Brady and Seawright

Three types of causal process observations:

Causal Process Observations

A **causal process observation (CPO)** is “an insight or piece of data that provides information about context, process or mechanism, and that contributes distinctive leverage in causal inference” - Collier, Brady and Seawright

Three types of causal process observations:

- Independent Variable CPOs

Causal Process Observations

A **causal process observation (CPO)** is “an insight or piece of data that provides information about context, process or mechanism, and that contributes distinctive leverage in causal inference” - Collier, Brady and Seawright

Three types of causal process observations:

- Independent Variable CPOs
- Mechanism CPOs

Causal Process Observations

A **causal process observation (CPO)** is “an insight or piece of data that provides information about context, process or mechanism, and that contributes distinctive leverage in causal inference” - Collier, Brady and Seawright

Three types of causal process observations:

- Independent Variable CPOs
- Mechanism CPOs
- Auxiliary Outcome CPOs

Causal Process Observations

A **causal process observation (CPO)** is “an insight or piece of data that provides information about context, process or mechanism, and that contributes distinctive leverage in causal inference” - Collier, Brady and Seawright

Three types of causal process observations:

- Independent Variable CPOs
- Mechanism CPOs
- Auxiliary Outcome CPOs

Process Tracing

- Process tracing is concerned primarily with finding and using CPOs to validate or invalidate hypotheses and counterfactuals.

Process Tracing

- Process tracing is concerned primarily with finding and using CPOs to validate or invalidate hypotheses and counterfactuals.
- It uses analysis (usually historical) to trace how decisions are made or how outcomes come about in a sequence of (causal) steps

Process Tracing

- Process tracing is concerned primarily with finding and using CPOs to validate or invalidate hypotheses and counterfactuals.
- It uses analysis (usually historical) to trace how decisions are made or how outcomes come about in a sequence of (causal) steps
- Note that hypotheses are rarely if ever *proven*, but they can be *supported*

Process Tracing

- Process tracing is concerned primarily with finding and using CPOs to validate or invalidate hypotheses and counterfactuals.
- It uses analysis (usually historical) to trace how decisions are made or how outcomes come about in a sequence of (causal) steps
- Note that hypotheses are rarely if ever *proven*, but they can be *supported*

Process Tracing: An Example

Why did left leaning parties manage to consolidate neoliberal reforms in some locations but not in others?

Process Tracing: An Example

Why did left leaning parties manage to consolidate neoliberal reforms in some locations but not in others?

Hypothesis: In countries where the use of side payments is prevalent, the individualization of decision-making prevents the development of collective ideology necessary for neoliberal consolidation

Process Tracing: An Example

Why did left leaning parties manage to consolidate neoliberal reforms in some locations but not in others?

Hypothesis: In countries where the use of side payments is prevalent, the individualization of decision-making prevents the development of collective ideology necessary for neoliberal consolidation

Side payments → Individual decisionmaking → Lack of ideology → No consolidation of reforms

Process Tracing: An Example

Why did left leaning parties manage to consolidate neoliberal reforms in some locations but not in others?

Hypothesis: In countries where the use of side payments is prevalent, the individualization of decision-making prevents the development of collective ideology necessary for neoliberal consolidation

Side payments → Individual decisionmaking → Lack of ideology → No consolidation of reforms

Process Tracing: An Example

Hypothesized Process: Side payments → Individual decisionmaking
→ Lack of ideology → No consolidation of reforms

Process Tracing: An Example

Hypothesized Process: Side payments → Individual decisionmaking
→ Lack of ideology → No consolidation of reforms

Thus, we definitely need:

Process Tracing: An Example

Hypothesized Process: Side payments → Individual decisionmaking
→ Lack of ideology → No consolidation of reforms

Thus, we definitely need:

- Independent Variable CPO to prove side payments exist (and same for other variables)

Process Tracing: An Example

Hypothesized Process: Side payments → Individual decisionmaking
→ Lack of ideology → No consolidation of reforms

Thus, we definitely need:

- Independent Variable CPO to prove side payments exist (and same for other variables)
- Mechanism CPO to suggest that side payments lead to individualization, individualization to lack of ideology and so on.

Process Tracing: An Example

Hypothesized Process: Side payments → Individual decisionmaking
→ Lack of ideology → No consolidation of reforms

Thus, we definitely need:

- Independent Variable CPO to prove side payments exist (and same for other variables)
- Mechanism CPO to suggest that side payments lead to individualization, individualization to lack of ideology and so on.
- Mechanism CPOs that suggest that no other causal process is at work or is somehow less likely or relevant

Process Tracing: An Example

Hypothesized Process: Side payments → Individual decisionmaking
→ Lack of ideology → No consolidation of reforms

Thus, we definitely need:

- Independent Variable CPO to prove side payments exist (and same for other variables)
- Mechanism CPO to suggest that side payments lead to individualization, individualization to lack of ideology and so on.
- Mechanism CPOs that suggest that no other causal process is at work or is somehow less likely or relevant

Process Tracing: An Example

Hypothesized Process: Side payments → Individual decisionmaking
→ Lack of ideology → No consolidation of reforms

Process Tracing: An Example

Hypothesized Process: Side payments → Individual decisionmaking
→ Lack of ideology → No consolidation of reforms

Might be good to have:

Process Tracing: An Example

Hypothesized Process: Side payments → Individual decisionmaking
→ Lack of ideology → No consolidation of reforms

Might be good to have:

- Auxiliary Outcomes that provide evidence of the causal process working in other areas or phenomena

Process Tracing: An Example

Hypothesized Process: Side payments → Individual decisionmaking
→ Lack of ideology → No consolidation of reforms

Might be good to have:

- Auxiliary Outcomes that provide evidence of the causal process working in other areas or phenomena

Process Tracing: Final Words

Process tracing is about using CPOs to "test" your theory of how X causes Y

Process Tracing: Final Words

Process tracing is about using CPOs to "test" your theory of how X causes Y

- Must spell out exactly how $X \rightarrow Y$, with all intervening variables and implications of the theory clear

Process Tracing: Final Words

Process tracing is about using CPOs to "test" your theory of how X causes Y

- Must spell out exactly how $X \rightarrow Y$, with all intervening variables and implications of the theory clear
- Must also spell out the counterfactual hypotheses, i.e. how $W \rightarrow Y$, with intervening variables and mechanisms

Process Tracing: Final Words

Process tracing is about using CPOs to "test" your theory of how X causes Y

- Must spell out exactly how $X \rightarrow Y$, with all intervening variables and implications of the theory clear
- Must also spell out the counterfactual hypotheses, i.e. how $W \rightarrow Y$, with intervening variables and mechanisms
- Uses CPOs (facts, data, interview information) to validate or invalidate both your hypothesized causal process and counterfactual processes, but does not "cherrypick" evidence

Process Tracing: Final Words

Process tracing is about using CPOs to "test" your theory of how X causes Y

- Must spell out exactly how $X \rightarrow Y$, with all intervening variables and implications of the theory clear
- Must also spell out the counterfactual hypotheses, i.e. how $W \rightarrow Y$, with intervening variables and mechanisms
- Uses CPOs (facts, data, interview information) to validate or invalidate both your hypothesized causal process and counterfactual processes, but does not "cherrypick" evidence

May definitively prove causality, but unlikely to do so. It usually just validates a theory.

Next Class

Next Class we'll go a bit more deeply into specific methods

Next Class

Next Class we'll go a bit more deeply into specific methods

- (Case selection)
- Regression
- Experiment
- Content Analysis