1009CCJ Doing Criminology

Week 1: After-the-Fact (A-T-F) Method
Week 2: Before-And-After (B-A-a) Method 1
Week 3: Before-And-After (B-A-a) Method 2
Week 4: Control-Group Method 1
Week 5: Control-Group Method 2 + Falsifiability
Week 6: Scientific Question
*Week 7: Survey Research: How to Ask the Right Questions (Omitted***)**
Week 8: Sampling: From Whom (and How) do we collect Evidence/Info
Week 9: (Omitted)
Week 10: Correlation II and Wrap-up Assessment 2 Info
Week 11: Measurement Quality & Quantitative Methods
Week 12: Gathering Evidence Ethically

WEEK 1: AFTER-THE-FACT (A-T-F) METHOD

In a word… this course is about evidence

- Collecting and understanding evidence
- To provide info that will help to correctly answer important (scientifically-worded) questions

Scientific Questions

- Often about how different concepts relate to one another (or affect one another)
- E.g. how does *gender* affect *criminal offending*?
- These concepts are
    - Gender
    - Criminal offending

Concepts and Variables

Concept = briefly stated general idea

- Sometimes described as a "mental representation"
- Concepts can be of concrete physical things/ phenomena
    - Dogs
    - Houses
- But can also be abstract (not having a physical or concrete existence)
- Sometimes a summary of more concrete/ observable things that share certain characteristics
- It is not observable; but what is observable:
    - Rainfall
    - Windspeed
    - Temperature
    - Barometric pressure
    - Humidity
    - This is similar for 'crime'

Abstract Concept

- Unable to be directly observed or directly measured
    - Intelligence
    - Prejudice
- But we can sometimes observe a behaviour that results from the abstract concept
    - E.g. we can observe how prejudiced people behave. Prejudice people are more likely to commit hate crimes

Crime as a Concept

- 'Crime' or 'Criminal offending'

- There is no simple and universally accepted definition
- Crime is basically a summary of many behaviours that have been deemed socially harmful

Variables

- Like a concept, but more concrete
  - Able to be assigned an actual value
  - That can be different across different people/ units that we might study
  - Sometimes the different between a concept and a variable is blurred. They are sometimes close to being the same thing.

e.g.

Concept		**Corresponding Variable**
Weather	→	Daily Rainfall
	→	Wind Speed
	→	Temperature
Crime	→	Assaults
	→	Thefts

Variables

Two types of variables

1) Dependent Variable (DV): outcome
   - A variable that is affected or influenced by another variable
2) Independent Variable (IV): predictor/ cause
   - A variable that affects/ influences/ changes the Dependent Variable
   - The DV "depends" upon the IV

Scientific Research Questions

Example: Is there a different in recidivism between males and females?

In other words – is there a pattern/ relationship between gender and recidivism?

- Independent variable: **Gender**
- Dependent variable: **Recidivism**

Gender can affect recidivism, but recidivism cannot affect gender

Time-order should help establish this: IV come before DV

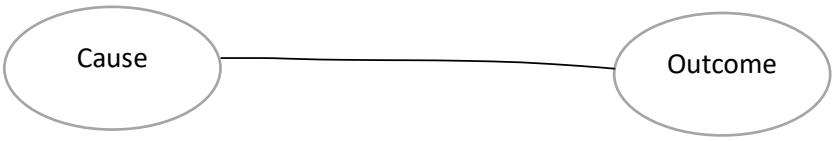
***Two types of diagrams in this course*:**

Time line Diagram

e.g.

Causal Diagram

e.g.



Notes

The cause is also called: X (or X1 X2) / Antecedent / Independent Variable (IV)

The outcome is also called: Y / Response / Dependent Variable (DV)

Traditionally, we often list / write a concept or variable inside a circle when placed in a diagram.

After the Fact Method of Investigation Part 1

1. Event Occurs (Outcome) → Time 2 (Later time)

- We can use ATF Method when an event occurs (the outcome) and we can trace back in time to try find why it may have occurred (the cause)
- For example, medial doctors use this frequently when patients come to them with something like stomach pain

2. Cause (of the event) → Time 1 (Earlier time)
    - Possible Causes = Appendicitis / Ulcer / Eating bad food

Probable causes are narrowed down by:

- Using accumulated knowledge
- Determining whether one possible cause is more likely than others
- Examining other tests or measurements

Summary

After-the-fact method is commonly used

- Observe something that's already occurred
- Consider probable causes
- Theory helps identify probable causes to examine
- What would be consistent and inconsistent with each possible cause
- Which causes are and are not consistent with the evidence

The After-the-Fact Method (A-T-F) Part 2

Goals start with: Determining all probable causes
Try to eliminate suspects until one remains
Hopefully, that is the real cause

After-the-Fact Method **Problems**:

- Are all probable causes considered?
- Conclusion will be wrong is actual cause is not considered
- Speculation about what came before the outcome
- Concentration on ruling out causes rather than proving
- Speculation narrowing down the "suspects"
- Can reach a false conclusion

After-the-Fact Method **Advantages**:

- No "before" measure required
- No pre-planning is required
- Easy to do
- Easy to understand
- It can often work well
- Concentrates on determining the cause of the outcome

Effect

- Understanding randomisation criminology helps us…
    - Prevent the outcome from occurring again (a way to change the outcome's future occurrence)
- Groups of people
    - Would everyone who ate the same food necessarily have stomach pain?
    - The fact that not everyone in a group is affected does not imply that an IV have not caused the DV
- Evidence about Causation versus Effect Size
    - These two concepts are different:
        - Quality of the Evidence about causation
        - Information about how powerful the cause is **"Effect Size"**
            - How many people are affected by the cause?

- How much was each person affected?
- Investigating Cause with groups of people
    - Multiple cases help us investigate suspected causes when the effect of the IV is less than 'perfect'
        - When less than 100% of the people are affected
        - The food may have been only a little spoiled and only made some people, but not all people sick

Summary

- After-the-Fact method is commonly used
    - Can be used when (IV) has already occurred
    - Easy and inexpensive to do
    - Focuses on causation
    - Useful for a case or a group of cases
    - These two concepts are different:
        - The quality of the evidence about causation
        - Effect size – how powerful is the cause?

WEEK 2: BEFORE-AND-AFTER (B-A-A) METHOD 1

Before-and-After Method

- Sometimes referred to as "pre-test, post-test"
- Better evidence than the After-the-fact method that one suspected cause is the actual cause
    - Quality of the evidence is better
- Instead of waiting until after an outcome occurs…
    - Test the effects of a single suspected cause by starting observations before anything happens – before both the suspected cause and the outcome
- Use with questions like, "I wonder what will happen if…"

Before-and-After Method Time Line Diagram:

BEFORE		**AFTER**
O (outcome, DV)	X (Suspected cause, IV)	O (outcome, DV)

Earlier Time Later

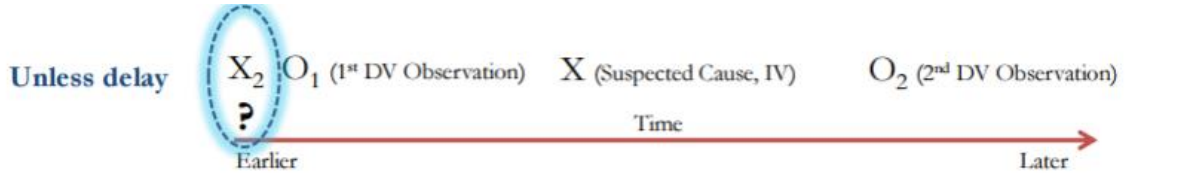
The notation O is also referred to as an 'observation' … just to confuse

Requires:

- Good idea (in advance) about what causes what…
    - A hypothesis (an educated guess)
        - We often call the suspected cause a manipulation, treatment or intervention

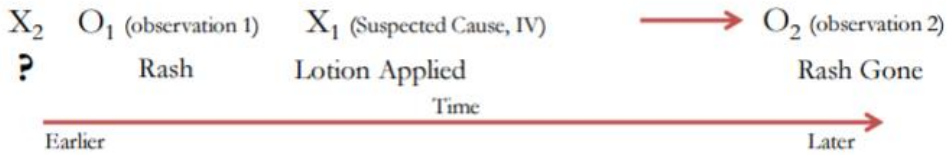
More accurate that the after-the-fact method

- Narrows consideration of causes to just one and test hypothesis to see if the hypothesis is right
- We control more of what's happening, can time introduction of suspected cause when fewer other probable causes are occurring
- Helps eliminate probable causes from consideration that come before the first observation of the outcome



Did the lotion really cause the rash to go away?

Example:



- It is possible that something came before (again if there was a delay)
- But, we've largely eliminated from consideration probable causes came before the first observation as the cause of the rash away.

Criminal Justice Examples:

- The city council wonders what will happen to the amount of crime in a suburb if they increase the number of street lights
- The council wonders what will happen to speed on a road if a surveillance camera is added
- A police commissioner wonders whether crime can be reduced by increasing police numbers
- A police supervisor wonders whether fewer suspects will physically resist the officers if the supervisor starts to pair male and female constables together
- All are examples of the types of questions that start with, "I wonder what will happen if…"

Effect Size

- How much benefit is there for our intervention?
- We often call how much change in the outcome occurs the 'effect-size'
    - How "strong" is the cause?
        - Getting hold of the good (legal) drugs
    - How much benefit does the treatment provide?
    - The larger the change, the large scientific the "effect-size"

Summary

- Can be used when we purposely apply a manipulation, treatment or intervention to see what happens afterwards
- Applied to questions starting with, "I wonder what will happen if"
- It is not usually 100% accurate, but it is usually more accurate than the After-the-fact Method
- To determine the "benefit" subtract the O2 measurement from the)1 measurement
- The treatment doesn't need to be 'perfect' to proclaim that there is some benefit

Common forms of everyday (non-scientific) evidence

- Personal experience (personal inquiry)
- Listening to an authority
- Tradition (special case of authority – authority of the past)
- "common sense"

Problems with over-reliance of personal experience as evidence

- Overgeneralisation
    - If the 5 people I know with red hair have bad tempers, then all people with red hair have bad tempers
- Selective observation

    - Taking special notice of someone or some event
- In accurate observation
    - You may forget
- Halo effect
    - Over generalise when the source is prestigious
        - Social psychology and halo effects of attractiveness on juridical decision
- Confirmation bias
    - Noticing evidence that confirms your belief and ignoring evidence that does not

Example of the Problem with Over-relying upon Personal Experience

- We are interested in answering a question about whether a new drug works to cure a disease
    - One-person states that all 10 of his friends who had the disease were cured by the drug – therefore the drug works.
    - A second person states that the drug did nothing to help 10 of her friends so the drug doesn't work.
    - Both people can't be right

Science based "research" is a better way

- What is con?
    - A concerted effort to understand (or understand better) phenomena
    - With observable physical evidence as the basis of that understanding
    - A way to produce knowledge
        - Systematic (i.e. agrees upon criteria, planned, etc)
    - The knowledge produced from that system
- Scientists believe
    - Important beliefs should rest on the best evidence possible, not tradition, authority, or "common-sense" alone
    - There are only a few types of beliefs that are not open to scientific research
    - Some types of evidence are better than others
    - There are rules one should follow for producing good evidence
- Advantages of science
    - Science attempts to safeguard from problems in logic (coming up with the wrong conclusion) by:
        - Using accurate measurement
        - Replication – retesting
        - Having colleagues criticize and suggest improvements
            - Publishing process
        - Always acknowledging that other explanations may exist
        - Following proven research strategies
- Science/ scientific method
    - Promotes scepticism over 'claims' of knowledge
        - Objective
        - Inter-subjectivity (shared understanding among other scientism)
        - Communication of results is important
        - Focus on testing
- Science doesn't always arrive at the right answer
    - We can't judge science on whether it's results are always right or not…
        - But rather whether it is more likely to arrive at the correct answer to an important question than a science alternative
        - Science is the use of methods that are more likely than alternatives to arrive at a correct answer
        - So, arguing that there is something that can so this better than science indicated that one doesn't understand science
- The limits of science

- A few things that science cannot do (these are generally ideological matters):
  - Make moral judgements
  - Make aesthetic judgments
  - Draw conclusions about supernatural explanations Is euthanasia the right thing to do? Is this a good painting?
    - Do gods exist?
- The term 'ideological' is not about the popularity of the statement, but its ability to be tested against empirical evidence using a scientific method

Is the distinction between science and ideology important?

- What current events indicate potentially serious problems with the confusion between ideology and science and the rejection of science?
  - Climate science denial
  - Vaccines cause autism?

WEEK 3: BEFORE-AND-AFTER (B-A-A) METHOD 2

Problems with this 'Before and After' Method:

The Four Rogues/ Problems (classes of events)

- There are four classes of events that might mislead
  - Historical (in the gap)
    - Did something happen between the start/finish that has caused a change?
    - Stray X's – might occur after the treatment
  - Maturational (time-tied)
    - Some outcomes change on their own time (as they mature)
    - Outcomes can change on their own
  - Instrument-decay (classic entry)
    - Make sure outcome is measured the EXACT same way
    - If was the measuring 'stick' 'elastic' and did the shape change?
    - Placebo effect, different doctor (tester)
    - Measurement can change (decay)
  - Testing (on stage)
    - Placebo effect (patients know they're being monitored)
    - Act differently around the testers – interviewing, observing, watching
    - People behaviour changes when they are being watched

WEEK 4: CONTROL-GROUP METHOD 1

The Control-Group Method

- Overview
  - Review of the Historical (in the gap) Rogue
  - Control group method basics

SEE HAND WRITTEN NOTES FOR MORE

Lecture Notes:

Before and After Method – "What would happen if…"

- good to mostly rule out X2 as actual cause … but potential problems = Rogues

Control Group Method

- interested in this comparison the score AFTER for each two groups
- what happens in between should affect each group equally, or in the same way

- both groups evaluated at same time
- one group get treatment
- the other group get no treatment (or placebo treatment)
    - group 1 – treatment group
    - group 2 – nontreatment group
- the same set of stray x's get into BOTH groups
- if stray x's affect the outcome they should do so equally for both groups
- if treatment didn't work the outcome for both should be the same
- if treatment did work, outcome should be different.

WEEK 5: CONTROL-GROUP METHOD 2 + FALSIFIABILITY

Control-Group Method Part 3

- Equal Groups at evaluation start
- When to include a before-treatment observation
- Outcomes need to start the same, for an accurate test
- Participants are signed to the groups using 'Random Assignment"
    - This is not the same thing as 'Random Selection"

Random Assignment

- Place names in a hat – shake – draw
    - Draw 1 – assigned to group 1
    - Draw 2 – assigned to group 2
    - Draw 3 – assigned to the group 1…

We need a reasonably large number of participants in order for outcomes to be equal before treatment begins (e.g. about 20-30 minimum)

Group 1	O1	X (Treatment)	→ O2 (compare these two)
Group 2	O1	X (Placebo)	→ O2

- Keep both O1 (the starting outcomes) the same
- O1 – O2= The Change

Criminal Example:

Group 1 = Average 6	OR	Group 1 = Average 5
Group 2 = Average 6		Group 2 = Average 6

- Even is the treatment doesn't do anything, if may incorrectly appear that there was a decrease in the outcome
- With larger groups, 1 person is less likely to throw off the average. Larger groups = more likely to have the same average.

Summary

- Having equal (or nearly equal) outcome at the start is important
- Best way to make equally likely is to randomly assign
- Many participants = equality (usually)
- The optional before – treatment observation can determine if group equality exists
- If no group equality, then the optional observation can help determine **change**

Control-Group Method Part 4
Random Assignment
2 reasons for this:

1. Group outcomes equal when study starts
2. Characteristics of the people in each group to be equal when the study starts

Common Characteristics in criminology
VARIABLES:

- Age
- Gender
- Socio-economic status
- Race/ ethnicity/ national-origin
- Education
- Marital status

Problems with Non-Random Assignment

- 2 reasons for random assignment:

1. Ideally, we don't want the outcomes for each group to be equal when the study starts
2. Ideally, we want characteristics of the people in each group to be equal hen the study starts

Will 4 Rogues Affect People the same way?

- Will all people change their behaviour in the same way?
- Will stray-x's affect all people in the same way?
- Will maturity affect all people in the same way?
- Will measurement problems (elastic rulers) stretch and contract for all people in same way?

Summary

- Control group methods provides best evidence possible that a suspected cause (also called intervention/ treatment) really is the true cause when an outcome is changes
- But even the control group method can mislead us about causation if we're not careful.
- Ideally, we should have a large group of research participants (or other units) assigned to 2 groups – a treatment and control group
- The assignment should be done randomly when possible
- Random assignment can also ensure that the characteristics of the people in the two groups are as similar as possible at the start of the study
- Random assignment can also ensure that the characteristics of the people in the 2 groups are as similar as possible
- A **blind study** (where participants don't know which group they're in) helps ensure equality across the groups
- A **double-blind study** (where even the person interacting with the participants doesn't know which group they're in) further ensures group equality
- When everything about the 2 groups is the same other than actual treatment, then is there is a difference in the outcomes, it's almost certainly due to the treatment and not something else

Ideographic vs. Nomothetic Evidence

- "Cause" – Different Definitions
- Verb – to make something happen
- Noun – A person or thing that gives rise to a phenomenon or condition

    - The "common-language" definition implies that there is only one cause of a phenomenon or condition
    - In the social sciences, (especially criminology), we usually have multiple causes of our outcome/ DV
- When researchers use term "cause", they sometimes are misunderstood…
    - Because the "common" language usage of the term usually implies…
        - "The only cause"
        - "Blameworthiness" – especially in the law

In social sciences (criminology), crime (and other DV's we study) almost always has multiple causes

- So when we say that an independent variable "causes" the dependent variable, we mean…
    - Is one of many causes…
        - In a "probabilistic" way **NOT** in a "deterministic" way

Probabilistic Causation

- When we say than an IV "causes" the DV, we mean…
    - That is the IV occurs then…
        - A DV is more (or less) likely to occur (probabilistic)
        - NOT that a DV will always (or never) occur (deterministic)
    - To minimise confusion, some researches have used these terms instead
        - Risk and/or protective factor
        - Causal Factor

The distinction between "probabilistic" and "deterministic" is related to the important distinction between…

- Ideographic explanations (evidence, methods, knowledge)
- Nomothetic explanations (evidence, methods, knowledge)

Ideographic vs. Nomothetic

Example:

- Got a poor mark in methods assessment
    - How do you explain why this occurred?

Your explanation may depend upon

- Your goal in answering the question
    - Your parents want to know why your mark was poor on the last exam
    - You want to know how you can score better on later exams

Ideographic

- Your parents want to know why your mark was bad
    - This likely calls for a complete explanation of a single cause
- Perhaps all 3 of the following occurred:
    - Didn't get any sleep the night before
    - Sick during the semester – missed a lot of classes
    - Dog ate your text book
- A "full" and detailed understanding of the occurrence of a single case that includes a conclusive list of reasons for the outcome

Nomothetic

- How to score better on future exams
    - This likely calls for a partial explanation that is applicable to your exams more generally
        - The more you study, the better you do on exams
        - The more you attend class, the better you do on exams
- A generalised understanding about what affects a group of cases (a group of people, organisations, etc)
    - The general goal is to find one or more causal factors that can help explain as much difference in the outcome as possible

Summary

- Researchers interested in the general patterns found in a large number of cases…
    - Will use nomothetic forms of explanation
        - To gain evidence about a few causal factors that explain/ predict/ cause an outcome (DV)
        - In other words, they will look for evidence about general patterns between IV and DV
            - This is usually the case in quantitative research
- Research interested in a more full, detailed and in-depth explanation of a single case (or small number of cases) …
    - Will often use ideographic forms of explanation (and evidence gathering)
        - To gain evidence about all or most of the causal factors of the one case (or a small number of cases)
        - This is usually the case in qualitative research

WEEK 6: SCIENTIFIC QUESTION

Useful Questions:
Which is associated with a properly worded scientific question?
A formal scientific question should be worded to potentially be able to be falsified

Evidence Quality: Depends Upon research method and details

Evidence Quality and the after-the-fact method

Trying to find the cause of the outcome by:

- Considering all possible causes
- Looking for evidence that rues out alternative causes
- Tries to find evidence for the remaining cause

Can mislead us:

- Because we can't positively know whether we have considered all possible causes
- Evidence quality can be improved with multiple cases

Evidence Quality and the before-and-after method

- Compare the outcome before the treatment (intervention or manipulation) with the outcome after the treatment and look for change
- Evidence of causation is better than the after-the-fact method, especially with multiple observations of the outcome before the treatment

- Evidence of causation is extremely good when the four "rogues" can be controlled/ prevented, but this usually can't occur in the social sciences as it can in physics and chemistry
- Evidence quality can also be improved with multiple cases/ multiple observations

Evidence Quality and the Control Group Method

Divide participants into two groups. Give one the treatment. Compare the outcome of the treatment and control groups (*before treatment observation/ measurement is optional)*

Evidence of causation better affected by the 4 "Rogues"

Provides best evidence about causation if the group assignment results in equality

The best "Evidence Quality" Triangle diagram

Theory: Developed with Basic Research to Expand Our Knowledge Base

What is applied research?

- Intended to provide an immediate answer to a specific question faced by a CJ agency

Examples:

- Head start – does the head start Pre-School Program assist Low-SES Children in their first year of school?
- Will the installation of lights at a local park reduce problems?

What is basic research?

- Intended to improve general knowledge (theory) about an issue and improve our ability to predict what changes different IV will make on various outcomes

Examples:

- Does age affect the distance offenders travel from their homes to commit offences
- Question: is the case study in Assessment 2 applied of basic research

What is theory?

- The term "theory" is used in two different ways:
- "common-language" way
    - An unproven guess or hunch about how something works
- "Science" way
    - A well-established explanation of some aspect of the world that can incorporate:
        - Facts
        - Laws
        - Inferences
        - Tested hypotheses

More simply, we might say that a theory is simply a compact way of understanding

- A very simple theory may consist of a single "if/then" (or the equivalent) statement about 2 variables

Theories help assist (social) scientists in explaining, predicting or controlling some phenomena (e.g. crime)

- Or perhaps we should say they help assist us store and communicate accumulates knowledge about how to explain, predict or control some phenomena

Criminology Theory Examples

- Rational Choice Theory
- Deterrence Theory
- Social Control Theory
- Strain Theory (Blocked opportunities theory)

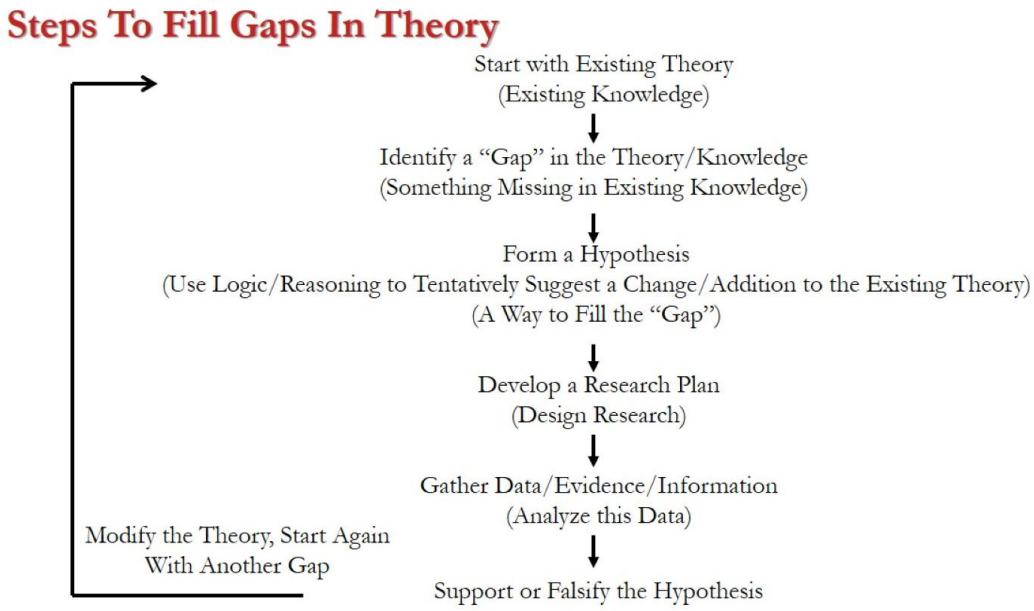
- Routine Activity Theory

Who uses theory?

- A theory or theoretical perspective is used by:
  - The observer (social scientists, student) to understand or explain what he/she sees/ measures/ observe
    - Correct "we can use rational choice theory to explain why people commit crime"
    - Incorrect "an offender uses rational choice theory to decide whether to commit a crime"

How do we develop better Theory?

- We search for gaps in existing theory
  - The parts we don't know yet
  - So we can figure out the missing parts
  - And plug the gap
  - To help make the theory better



Hypotheses in Basic and Applied Research

In basic research:

- A belief or proposed explanation made on the basis of limited evidence that might fill a "gap" in knowledge (theory) and act as a starting point for further investigation/ research

In applied research:

- A belief that a new program will work to create some benefit

What is a Hypothesis ?

A hypothesis is usually stated as an assumed relationship between two variables with a stated "direction" (positive or negative)

The two variables are the independent and dependent variables

There is usually only one dependent variable per research question (there might be more than one research question and sometimes several different questions are closely connected)

There sometimes are several independent variables per research question

Testing a Hypothesis

Examine evidence

In quantitative research, we examine numerical measurements

Example

Will a new program decrease crime

First step – operationalise crime

Operationalisation: Turning concepts into variables

- Start of the measuring process: Turning concepts into variables
  - Concept – a briefly stated idea – less concrete than a variable
  - Variable – similar to a concept, but something more concrete – something we assign a numeric value

Health

Operationalisation

Be very specific about what is (and is not) part of the final variable and exactly how the measurement is made

Important for several reasons including permitting someone else to "replicate" what the researcher has done

Health example:

- How can the concept "health" be operationalised?
  - Perhaps "health" should include things like
    - Tobacco smoking or not
    - The ratio of weight versus height
  - But should not include things like:
    - Hair colour
    - Age

What do you think matters the most about our decisions?
Hint: Think about the Instrument Decay (elastic Ruler) "Rogue"

Operationalisation – Crime

Operationalising crime is challenging if we include things that might not clearly be crime, but are closer to what some call "disorder"

- Loud music
  - ❖ What counts as "loud" ?
- Disorderly behavior
  - ❖ What exactly is "disorderly" ?
- Excessive alcohol use in public
  - ❖ How much alcohol use should be considered "excessive" ?

What kind of "instrument" could we use to measure these?

Combined Numeric Index: Often the Final Step in operationalisation
(Taking the total outcome from each question and adding them together)

Assault = 20 Robbery = 2 Drugs = 19
Total = 41

Summary

- The quality of our evidence about causation

    - Depends on the research method used
    - And a few details about how we use the method
    - And how likely it is that different rogues/problems may mislead us
- Theory – our accumulated knowledge
    - Developed with basic research
    - Altered by first testing a new hypothesis
- Operationalisation
    - Turning concepts into variables
    - Being very specific about how we're getting to assign variable numeric values
    - Final step is often creating a combined numeric index

WEEK 7: SURVEY RESEARCH: HOW TO ASK THE RIGHT QUESTIONS

WEEK 8: SAMPLING: FROM WHOM (AND HOW) DO WE COLLECT EVIDENCE/INFO

Lecture Notes

Overview:

- Survey Basics (Assessment 2, Part 4 deals with surveys)
    - Question types
    - Time-dimension
- Sampling
    - Populations
    - Samples
        - Probability samples
        - Non-probability samples

"Survey and "Questionnaire" ae synonymous terms

- Important survey characteristics
    - Standard "instrument"
    - Systematic administration
    - The same (or similar) data collected from everyone
    - Collect information from a relatively large number of people

Different levels of interaction b/w the participant and researcher

- Least interaction – self-complete survey
- Most interaction – in-person interview

Survey questions

- 3 types of questions:
    - Open-ended
    - Closed-ended
    - Contingency

Open-ended Questions

- Encourages a full and meaningful answer
    - *"what do you feel is the most serious crime problem in your city today"*

        - Pros
            - Permits a wide range of answers
        - Cons
            - Creating a numeric index takes much time
            - Takes longer for participants to complete

Closed-Ended Questions

- Select from a list of responses (answer-set)
    - What time of the day were you stopped by the police?
        - 12 midnight – 3am
        - 3.01am – 6am
        - 6.01am – 9am …etc
    - Response categories should be:
        - Exhaustive
        - Manually exclusive

Contingency Question

- Are asked only if a prior question is answered in a certain way
    - Have you ever been arrested?
        - No (proceed to q5)
        - Yes → If yes, please list the offence(s) you were arrested for…

The Time Dimension

Longitudinal Data

- Remember:
    - The before-and-after method provides higher evidence quality than after-the-fact
    - Before-and-after measures the dependent variable at two-time points
        - When we have this, we have "longitudinal data"

Cross-Sectional Data

- When we only have data (measurements/ observations) at one point in time…
    - We have "cross-sectional data"

Sampling

Intended (Target) Population

- An initial research step…
    - Decide exactly who is the group (people, items, events or other units) we want to know something about
        - We call that group the "Intended (or Target) Population"
- "Population" in "common language" usually refers to…
    - Everyone who lives in a particular place (like a country or city)
- In research language…
    - The group of people (items, events, or other units) a researcher wants to know something about, or intends to make a statement about or generalizing to
    - Also called: "Intended Population", "Population of Interest", or "Target Population"
- Example Population
    - A) Everyone who lives in QLD
    - B) All females in QLD
    - C) All males in QLD

    - D) All students at Griffith
    - E) All first-years students at Griffith
    - If I were a clothing manufacturer who made maternity clothes, in which of these example populations would I most likely interested?
- ***Criminology example:***
    - If I wer a criminologist who wanted to know whether a new treatment for juvenile offending in QLD worked…
        - Perhaps my target population would be:
            - Offenders b/w the ages of 10 and 18…
            - Who live in QLD

How many people do we survey?

- In an "ideal world" if we wanted to get the best answer to any research question about our intended (target) population…
    - We would want information about every person in our population
- When we can collect information about every person in the intended/target population, we call that the '**Census'**
- Practical Difficulties…
    - Expensive (Census example - $410 million)
    - Time consuming
- Is it possible (or fair) to collect information from everyone when the intended/target population is large?
- Although the most accurate answers come from the entire population… (is difficult and expensive for large populations). **Instead we get a good estimate about the population from a sample**

Samples

Sample – a subset of a population, selected in a way intended to give reasonably accurate information about the population of interest…

- From whom we actually collect information
- Who should be in the sample?
    - There are different ways to decide
    - Should we just collect information from the greatest number of people possible?

Estimating population information

- Problems with collecting information from many people in a large population
    - 1916 – literary Digest is one of the most respected US magazines
    - What went wrong:
        - They only surveyed those subscribed to the magazine
        - Owned phones with numbers in the phone book
        - Owned cars and their names on automobile registrations
    - Why?
        - The most convenient way for them to survey many people
    - The literary digest soon went out of business… (Bad timing- Great Depression)
- Better option: matching the major characteristics of the people in his sample with the major characteristics of the voting population

Selecting Good Samples

- The kinds of people in a sample are much more important than how many people are in the sample
- The goal is usually to give everyone an equal chance to be in the sample

Types of sampling Methods Called?

- Unsystematic way – not real rules
    - Convenience sampling / Haphazard/ Availability/ Volunteer
    - Easy to include
        - Accuracy can be low, there can be a great deal of error
        - Can easily mislead us
- The other extreme
    - Census- including everyone in the population of interest
        - Includes everyone… no really a sample
        - Perfect accuracy when it really is a true census that includes entire population
        - No error, if we collect perfectly accurate information

A samples ability to provide accurate information

- The principle about the kinds of people being more important than the number of people…
    - Received more attention after 1948 when all of the major polls (now using Gallops quota sampling) incorrectly predicted Dewey as winner over Truman
    - So, researchers started to get better samples to become more accurate when answering important research questions:
- Quota sampling is one type of non-probability sampling. It's better than the convenience sampling (also non-probability) but…
    - Its not as accurate as the different types of probability sampling

Probability Samples

- Are selected according to rules that…
    - Permit us to use math/ stats to determine how closely an estimate based on our sample is likely to match the real population parameter (in other words how accurate our estimate about something concerning the population likely is)
- Means that we know what the chances are of someone from the population being included
    - We usually would like everyone in the population to have an equal probability (equal chance) o be included in the sample.

Systematic Sample:

- May give everyone from the population an equal chance is the list has no particular order (is random)

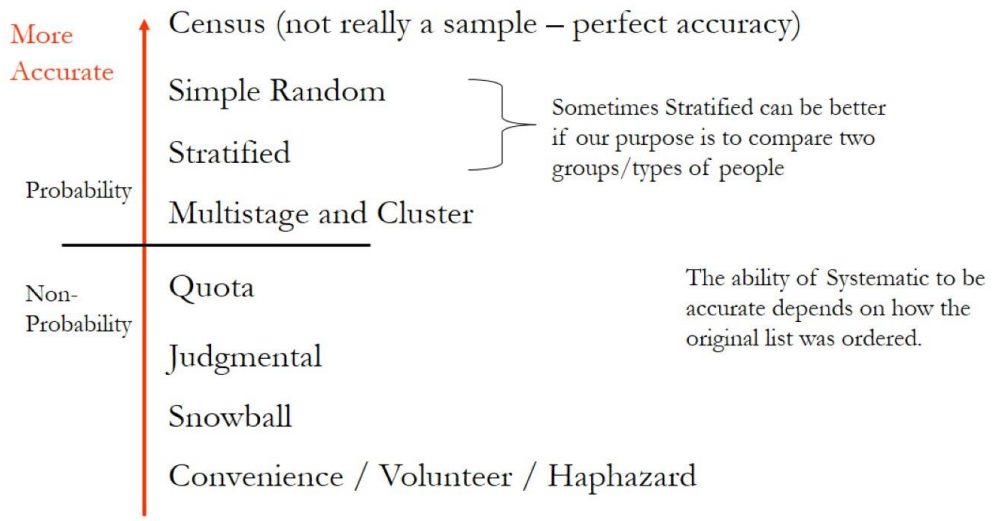
Random Selection versus Random Assignment

The terms "random selection of a sample" (from a population) is frequently confused with "random assignment into treatment and control groups" used with the "control-group method"

These are similar in many ways, but here are some differences:

Random Assignment into Treatment and Control Groups	Random Selection of Sample
Used in the control-group method (true-experiments)	Used to choose the people from whom we will collect data
Used to select who is each group when you want each person to have an equal-chance of being in each group	Used to select a sample when you want each person in the population to have an equal-chance of being selected
Used to make the characteristics of group 1 be equal to group 2 (on average) at the start of an experiment	Used to make the characteristics of the sample be (on average) equal to the population
Used after choosing a sample (to divide the participants into two groups)	Used to choose a sample (select the participants for the research)

Summary of Sample Accuracy

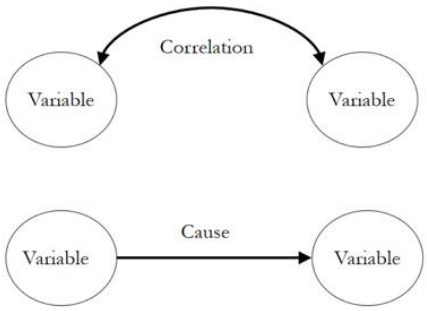


WEEK 10: CORRELATION II AND WRAP-UP ASSESSMENT 2 INFO

Key Reminders:

- When 2 phenomena occur together or in a particular pattern, we say the two phenomena are correlated
- We indicate correlation strength (size) with a "correlation coefficient", and a number between -1 and +1.
    - 0= No correlation (no ability to predict)
    - 1 (or -1) = Perfect Correlation (perfect ability to predict)
      Perfect = 100% accurate – no prediction error

- Positive correlation coefficient = positive correlation/ both go in the same direction (either up or down)
- Negative correlation coefficient = negative correlation/ the pattern is in a different direction
- Examples
    - Positive Correlation
        - High Income people tend to have higher rates of white collar crime
    - Negative correlation
        - High income people tend to have lower rates of violent crime
- There is a difference b/w correlation/ association and "cause" but the distinction is frequently misunderstood.
    - Important Question: "Will changing something matter?"
    - If we change the assumed cause and then see a change in the outcome = there is a causal relationship
- Correlation vs. Causation
    - Ice cream and Crime Rates. (circle diagram & curved line with arrows on both ends)
    - A factor not in the first diagram causes ice cream sales to increase and at the same time causes the crime rate to increase



Inferring Causation with Survey or Similar Data

- The challenges of determining causation
    - Usually cannot directly observe causal process, especially in social science
    - Usually must infer (conclude based upon evidence and reasoning) whether or not a relationship is causal using logic or rules of science
    - Minor differences of opinion exist about the rules (e.g. how much evidence do we need)

- Four requirements to infer causation
- (Experiments) than if we use survey or existing data)
    - Correlation
    - Temporal (Time) Order
        - The "cause" must come before the effect (Outcome) (**IV BEOFRE DV**)
    - Elimination of plausible Alternative causes
        - "No spuriousness" (No false causes)
    - Rational/ Logical Explanation (Proof/Evidence)
        - (Not Always mentioned)
- Easier to determine if these elements exist when we use the control-group method

Correlation

- With survey or similar data, proving correlation is easy
- Analyse data with computer programs, gives us the correlation coefficient b/w our suspected cause and the outcome (a number b/w -1 and +1)

Temporal Order

- Sometimes we can infer temporal order *logically*
- E.g. If we were interested in whether people strongly attached to their parents during childhood committed less crime as adults
- Attachment to one's parents during childhood clearly comes before anything one does as an adult
- Sometimes we need longitudinal data e.g.
    - Time 1 – measure how many delinquent acts occur each week in a primary school
    - Time 2 – new treatment program started
    - Time 3 – re-measure how many delinquent acts occur each week
- We know that he treatment came before the decrease in delinquent behaviour

Correlation and Temporal Order

- With longitudinal data, is what we have with the before-and-after method. (initial observation, and then a second observation)
- The control group method eliminates 3 plausible alternatives (stray x's, people changing behaviour because they are being watched, and outcome changing on its own)

Elimination of Plausible Alternative Causes

- When using survey or existing data methods, we can eliminate plausible alternative causes if we have measures of all possible alternative causes (almost impossible)
- Computers (and statistics) can ensure we are not mislead, using advanced maths/ stats to "account for" the alternatives
- When using survey or existing data methods
    - If we have measures of the most likely possible alternative causes, computers and stats help ensure we are not mislead

Rational/ Logical Explanation

- Often mentioned as required, the role of existing accumulated knowledge (theory)
- A rational/ logical explanation doesn't occur if the correlation is simply a coincidence

Summary

- It's not terribly difficult to establish that there is a correlation b/w 2 variables
- Longitudinal data (before and after) and sometimes logic can help establish temporal order.
- Its sometimes difficult to eliminate plausible causes
    - Control group method works best
    - Computers help ensure we are mislead by the most likely possible alternative causes when using survey or similar data
- A rational/ logical explanation – the role of existing knowledge (theory)

WEEK 11: MEASUREMENT QUALITY & QUANTITATIVE METHODS

Measurement Quality

2 Main criteria needed for good measurement of variables

- Validity

    - Does it measure what we intended to measure?
- Reliability
    - Consistency of the measurement
    - E.g. if we did it again, would we get a similar response?

Validity

- The extent that we are measuring what we think we are measuring
- What are we REALLY measuring with the following question?
    - Which of the following describes your college status?
        - Could be measuring something about cultural background or socio-economic status instead of educations/ English aptitude
        - Measuring how much we know about USA TV instead of what we think we are measuring.
        - Culturally biased IQ test

Validity (Crime Examples)

- In the past 12 months: Have you ever hit someone? Vs. In the past 12 months: Did you get into a physical fight with a stranger or acquaintance?
- For any crimes that are being self-reported?
    - Could we really be measuring honesty, memory, social desirability preferences
- For any crime measure with police data
    - Could we really be measuring the degree to which the crime is:
        - Likely to be reported to the police (whether crime victims have confidence in the police)
        - Likely to be discovered (policing practices)
        - Whether the police record it accurately
- How could we tell how much validity we have in the measurement?
    - Drug use example: Compare self-reported drug use with: 'blood test, urine test, hair follicle test'
    - Other crime example: compare self-reported crime with: 'police data'

Something to think about: Can we measure age with a tape measure?
To a certain extent you **can** with children

Reliability

- Does the same measurement tool/ technique yield stable and consistent results when repeated over time?
    - E.g. if we measure a piece of wood with tape measure, do we get the same length each time?
        - First measurement of 80cm, do it again, get 80cm, do it again, get 80cm
        - Does "reliability" matter if the tape measure is "accurate"
    - Strange Example: Is a clock that ran out of batteries reliable?
- Reliability does not ensure accuracy
    - The speedometer in a car may be a reliable instrument for measuring speed
        - But it is not uncommon for this to be somewhat inaccurate (e.g. GPS speed is often different)

        - Thus, we might have a consistent/ reliable, but inaccurate way to measure our travelling speed
- Measurement reliability is often a problem with indicators used in criminal justice research
    - Rate of burglary declined in an US city following changes to how burglaries were investigated
    - Detectives investigated burglaries that were previously investigated by patrol officers. Reason for the decline?
        - Some patrol officers counted some crimes as burglaries that did not meet the official definition
        - Smaller group of investigators were more consistent in applying definition
- Measurement reliability is a concern when a single observer is the source of the measurement
    - We can't guard against that observer's subjectivity
    - We can't tell whether variation represents true variation and how much is due to observer's unique perceptions
    - Reliability also an issue with more than one observer
        - Different coders might code the same issue differently

How do we create reliable measure?

- Test-retest technique to determine reliability
    - Sometimes appropriate to take the same measurement more than once (expect to see the same response both times)
    - Farrington & West (1977) interviews 411 males about a variety of aspects of their lives (education, leisure etc)
        - Compared responses at 18 with those provided at 16
        - The responses were consistent, however, they suggested minor differences due to memory issues, not intentional lying by youth
- Interrater reliability technique to determine reliability
    - Compare measurement from multiple rater's

Field Research

- Observing life in it natural habitat
    - Going where the action is and watching
- Field research encompasses 2 different methods of obtaining data
    - Making direct observations & Asking questions
- Many research methods are designed to produce data appropriate for quantitative (statistical) analysis
    - Surveys provide data to calculate things like:
        - The proportion (%) of crime victims, mean value of property stolen in burglaries (stats that describe a single variable at a time)
        - Correlations/ patterns b/w 2 (or more variables) at the same time
- Field research tends to yield qualitative data
    - Observations not easily reduced to numbers
    - Often produces information that can b later tested by collecting quantitative data

Qualitive Observation

- Observation involves looking and listening very carefully. We all watch other people sometimes, but we don't usually watch them in order to discover particular info about their behaviour. This is what observation in social science (including criminology) involves.

Unobtrusive Observation

- Being, or pretending to be, a genuine participant in a situation one observes.
- Observation of others with or without their knowledge
- No participation in behaviours or activities by the observers/ researcher
- Naturalness of setting yields valuable information about social world
- Ethical implications?

Participant observation: Observer-as-participant & participant-as-observer

- Observer-as-participant
    - Being primarily a self-professed observer, while occasionally participating in the situation
- Participant-as-observer
    - Being primarily a participant, while admitting an observer status
- Observations made where the observer is a part of the social setting and others know being observed
- Active participation can bring information that otherwise may not be aware of
- HOWEVER
    - Subject reactivity
    - Researcher influence outcomes/ processes being studied
    - Although fewer, ethical concerns remain

Covert participant observation

- Researcher becomes full participant in research setting
- Being an observer of a situation without becoming part of it
- Plays an active role, but other people in the setting are unaware that collecting observations, or of the research agenda
- Raises serious ethical and moral dilemmas, as well as at physical risk

Advantages of Qualitative Observation

- Flexible
- Can allow for the "unanticipated"
- Forces observer to become familiar
- Allows previously unnoticed to be seen
- Relies on both behaviour as well as spoken
- Can be unobtrusive

Disadvantages of Qualitative Observation

- Limitations of human ability to process information
- Researcher recall and biases
- Desired events to be observed may not occur
- Subject reactivity
- Open to critiques about lack of validity and reliability

WEEK 12: GATHERING EVIDENCE ETHICALLY

JPOLL – week 12 tutorial

Review:

"Theory" as used in scientific discussions - **Probabilistic** in the social sciences

A characteristic of **applied research** is used to address and specific practical problem

A characteristic of **basic research** is designed to increase our general knowledge and improve our understanding of a specific problem