Introduction to Social Science Methods: An Overview of Quantitative and Qualitative Methods

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Introduction to Social Science Methods: An Overview of Qualitative and Quantitative Methods

- Part I: Research Design
- Part II: Quantitative Research
- Part III: Qualitative Research
Part I: Research Design
Research Design

- Identify the problem to be studied
Research Design

- Identify the problem to be studied
  - Transform problem into a testable hypothesis/hypotheses
  - An idea that will be tested through systematic investigation
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- Determine the appropriate set of instruments to collect data
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- Collect data
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- Collect data

- Analyze data
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  - Identify the sample you can reasonably access to gather data

- Determine the appropriate method for data collection

- Determine the appropriate set of instruments to collect data

- Collect data

- Analyze data

- Interpret results
Research Design

- Unit of analysis/observation
  - Individuals or aggregates
    - Groups, institutions, organizations
Research Design

- Unit of analysis/observation
  - Individuals or aggregates
    - Groups, institutions, organizations

- Primary v. secondary data
Research Design

- Unit of analysis/observation
  - Individuals or aggregates
    - Groups, institutions, organizations

- Primary v. secondary data
  - Will you be collecting your own data or using preexisting data?
    - Often easier to use secondary data:
      - International data
      - Can’t get a large enough sample size
      - Can’t get nationally representative sample
      - Time constraints
Methods

Depending on:

- Type of data you want/need
- Sample size
- Access
- Location
- Time – qual. Often requires periods of months/years of intensive study, moving, embedding, etc.
- Resources
Methods

- Depending on:
  - **Type of data you want/need**
    - Cross-sectional, longitudinal
    - Quantitative or qualitative
  - Sample size
  - Access
  - Location
  - Time
  - Resources
Methods

- Depending on:
  - Type of data you want/need
  - **Sample size**
    - Generalizability
    - Small- or large-N
  - Access
  - Location
  - Time
  - Resources
Methods

- Depending on:
  - Type of data you want/need
  - Sample size
  - Access
    - Is it a protected population? (e.g. minors/students)
    - Can you gain access?
    - Human subjects
  - Location
  - Time
  - Resources
Methods

- Depending on:
  - Type of data you want/need
  - Sample size
  - Access
  - Location
    - local, state, national, international
  - Time
  - Resources
Methods

- Depending on:
  - Type of data you want/need
  - Sample size
  - Access
  - Location
  - Time
    - Timeline for data collection
  - Resources
Methods

- Depending on:
  - Type of data you want/need
  - Sample size
  - Access
  - Location
  - Time

- Resources
  - Are you conducting the research alone? (do you have RAs)
  - Cost of instrument design
  - Cost of data collection
  - Cost of analysis
Part II: Quantitative Methods
Quantitative Research

- Systematic empirical investigation of observable phenomena using statistical (computational) techniques

- Aims at causal explanation - answering “Why”

- Numeric analysis and measurement are the key parts of quantitative research that state the fundamental connection between observation and analytic statement(s)

- Quantitative methods are mostly used to justify the hypotheses and draw a general conclusion on selected hypotheses

- Statistics, tables and graphs, are often used to present the results of these methods
Quantitative Research

- Based on the idea that aspects of environment can be quantified, measured and expressed numerically

- The information about a phenomenon of environment is expressed in numeric terms that can be analysed by statistical and spatial methods

- The observations can be directly numeric information or can be classified into numeric variables
Quantitative Research

- Systematic empirical investigation of observable phenomena using statistical (computational) techniques

- Aims at causal explanation
  - Primarily answering “Why”

- Characteristics of quant research
  - Scientific
  - Positivist
  - Objective
  - Experimental
  - Macros (events/processes/relations)
  - Deductive
  - Hard/factual
  - Representative/generalizable
  - Apolitical
  - Realist
<table>
<thead>
<tr>
<th>Designs &amp; Techniques</th>
<th>Methods</th>
<th>Details</th>
<th>Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Experimental Designs</strong></td>
<td>Lab Experiment</td>
<td>Applying scientific method to experimentally examine an intervention in a controlled setting</td>
<td>2 or more groups</td>
</tr>
<tr>
<td></td>
<td>Field Experiment</td>
<td>Applying the scientific method to experimentally examine an intervention in a real world setting</td>
<td>2 or more groups</td>
</tr>
<tr>
<td></td>
<td>Quasi-Experimental</td>
<td>Selecting a group to test a variable w. out random pre-selection processes</td>
<td>2 or more groups</td>
</tr>
<tr>
<td><strong>Descriptive Designs</strong></td>
<td>Survey/Questionnaire</td>
<td>Series of ques &amp; other prompts to gather info from respondents</td>
<td>Large (most often), representative, often random sample</td>
</tr>
<tr>
<td></td>
<td>Meta-Analysis</td>
<td>Statistical method for combining the results from a set of studies that address related hypotheses</td>
<td>2 or more pre-existing studies</td>
</tr>
<tr>
<td></td>
<td>Case Study</td>
<td>In-depth investigation of an individual, group or event</td>
<td>At least 1 individual, group or event</td>
</tr>
<tr>
<td></td>
<td>Applied Behavioral Analysis</td>
<td>An examination of individual responses to an intervention(s)</td>
<td>At least 1 individual</td>
</tr>
<tr>
<td><strong>Longitudinal</strong></td>
<td>Experiments, surveys, case-study, applied-behavioral analysis</td>
<td>Applying a specific method &amp; corresponding instruments to a sample over time</td>
<td>Individuals, groups or institutions over time (may be the same or similar)</td>
</tr>
<tr>
<td><strong>Pre-Test Designs</strong></td>
<td>Pilot Study</td>
<td>Small scale preliminary study conducted before main research to check feasibility of research design, time line, instruments, etc … &amp; make necessary changes</td>
<td>Small group who can inform/comment on research design</td>
</tr>
<tr>
<td></td>
<td>Usability Testing</td>
<td>Evaluating a product (i.e. instrument) by testing it on a sample of potential users</td>
<td>Small group who can inform/comment on validity and reliability of instrument</td>
</tr>
</tbody>
</table>
EXPERIMENTAL DESIGNS
Experimental Research

- Compare two or more groups that are similar except for one factor or variable
- Can occur in lab or field (natural setting)
- Conditions can be highly controlled; variables can be manipulated by the researcher
- Tend to use randomized samples
- 2 groups – treatment & control
Quant Research - Experiments

- How does a factor influence the behavior of an individual or a group?

- Lab experiments
  - Require lab settings
  - Controlled environment
  - Results highly reliable
  - Develop cause & effect relationships
  - Can only use small samples – often too costly for large-N
  - Can only study snapshot of present (not past)

- Field experiments
  - Occur in naturally occurring environments
  - Examining an intervention in the real world
  - Subjects don’t always know they are involved in experiment
  - Seen as having higher degree of external validity since occur in real world
Experiments - Examples

- **Lab**
  - Milgram exp
  - **Zimbardo** Prison exp

- **Field**
  - Drug/pharmaceutical trials
  - Poyner on reducing theft in public spaces
DESCRIPTIVE DESIGNS
DESCRIPTIVE DESIGNS
SURVEYS
Survey Research

- Use set of predetermined, standardized, questions
- Collect answers from representative sample
- Answers are categorized and analyzed so tendencies can be discerned
Quant Research - Survey

- Used to assess thoughts, opinions, feelings, habits, activity logs

- Primary v. secondary data
  - Developing survey instruments to conduct primary data can be difficult – may require piloting questionnaire
  - Order of the questions is v. important
  - Often easier to use secondary survey data or instruments
    - Instruments have been proven reliable

- Can be issues or reliability & validity relating to self-reports
  - Response bias
  - Can be checked/corrected by test-retest of questions and standardization procedures
Survey - Examples

- General Social Survey
- US Census
DESCRIPTIVE DESIGNS
META-ANALYSIS
Meta-Analysis

- Numerous experimental studies with reported statistical analysis are compared
- Distinguishes trends
- Effect size (the influence of the independent variable on the dependent variable) can be compared
- Similar studies can yield a common truth
- Conducting research about previous research
Quant Research – Meta-Analysis

- Using a statistical approach to combine the results from multiple studies in an effort to increase power (vs. individual studies)
- Improves estimates of effect size
- Can also resolve uncertainty when reports disagree
- Can only be used if a common statistical measure is included across studies
- Results generalizable to larger population
- Precision & accuracy of estimates can be improved as you add more data
- Hypothesis testing can be applied to summary estimates
- Does not predict the results of a single, larger study
- Can’t control for sources of bias – a meta-analysis of badly designed studies will produce bad statistics
Meta-Analysis - Examples

Study 1

Study 2

Study 3

Study 4

Overall Effect Size
Meta-Analysis - Examples

Includes both published and unpublished studies

STUDY 1

STUDY 2

STUDY 3

STUDY 4

Rigorous analysis and appraisal of individual studies

Systematic Review
Meta-Analysis - Examples

- # Records identified through database searching
- # Records identified through other sources
- # Records after duplicates removed
- # Records screened for relevance
- # Full-text articles assessed for eligibility
- # Studies included in qualitative synthesis
- # Studies included in quantitative synthesis (meta-analysis), if any
- # Records excluded
- # Records excluded with reasons for exclusion
Meta-Analysis - Examples

**Keyword Search**
- 1,570 publications identified by original keyword search
  - 22 publications tentatively met study inclusion criteria
    - 8 excluded, 14 coded

**Hand Search**
- About 15,000 titles identified in bibliographies of coded publications
  - 254 publications tentatively met study inclusion criteria
    - 145 excluded, 109 coded

- 22,115 titles citing an eligible publication
  - 473 publications tentatively met study inclusion criteria
    - 256 excluded, 211 coded

**Total pool of 334 publications for meta-analyses of stressful life events and all-cause mortality**

- 95 publications included in meta-analysis of singlehood and mortality
- 74 publications included in meta-analysis of group participation and mortality
- 262 publications included in meta-analysis of network size and mortality
- 103 publications included in meta-analysis of social contact and mortality
- 50 publications included in meta-analysis of emotional support and mortality
DESCRIPTIVE DESIGNS
CASE STUDIES
Quant Research - Case Study

- Also called single case design
- Describes numerically a specific case (can be organization, group, event, action or individual)
- May test or generate hypotheses
- Results often presented with tables and graphs
Quant Research – Case Study

- Up-close, detailed examination of a subject & related contextual conditions
  - an empirical inquiry that investigates a phenomenon within its real world contexts

- Holistic approach

- Not to be confused w. qualitative research – can be a mix of quantitative and qualitative data

- No random sample – information oriented sampling
  - Outlier cases may reveal more than a representative case

- Types of cases:
  - Explanatory
  - Exploratory
  - Multiple-case study
  - Intrinsic
  - Instrumental
  - Collective
# Case Study - Examples

<table>
<thead>
<tr>
<th>Case study type</th>
<th>Details</th>
<th>Example</th>
<th>Small N</th>
<th>Large N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explanatory</td>
<td>Seeking an answer to a question on the causal links in real life interventions that may be too complex for survey or experimental strategies</td>
<td>Analyzing a web-based e-commerce site in Colombia</td>
<td></td>
<td>✔</td>
</tr>
<tr>
<td>Exploratory</td>
<td>Explore situations when intervention has no clear, single set of outcomes</td>
<td>An observational study of the development and implementation of a teacher-student relationship</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Multiple-case</td>
<td>Explore differences between &amp; within cases – goal is to replicate findings across cases</td>
<td>Studying various units within identifiable cases – examining/comparison different social services available to violent crime victims</td>
<td></td>
<td>✔</td>
</tr>
<tr>
<td>Intrinsic</td>
<td>When intent is to better understand the case, it's particularities and ordinariness</td>
<td>An examination of how Alzheimer’s effects couples</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Instrumental</td>
<td>Provides insight into an issue or helps to refine a theory – the actual case is of secondary interest (unlike intrinsic)</td>
<td>Examining the components of individual behavior that indicate the potential for domestic violence</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Collective</td>
<td>Similar to multiple-case</td>
<td>A collective case study of stress among HS math teachers</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>
DESCRIPTIVE DESIGNS
APPLIED BEHAVIORAL ANALYSIS
Quant Research - Applied Behavior Analysis

- Developing and analyzing procedures that produce effective and beneficial changes in behavior
- Examine the individual’s responses in different situations (conditions) across time
- Usually conducted in experimental form
- Also known as behavior modification
Quant Research – Applied Behavioral Analysis

- All studies require:
  - At least 1 participant
  - At least 1 behavior (dependent variable)
  - At least 1 setting
  - A system for measuring the behavior
  - At least 1 treatment/intervention
  - Manipulations of the independent variable so that its effects on the dependent variable may be analyzed
  - A beneficial intervention (for the participant)

- Usually small-N studies

- Require manipulation and control of method
### Applied Behavior Analysis - Example

- **Testing interventions for autistic students**

<table>
<thead>
<tr>
<th>STRUCTURED TEACHING TECHNIQUES (DTT = Discrete Trial Teaching)</th>
<th>NATURALISTIC TEACHING TECHNIQUES (PRT = Pivotal Response Treatment)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Teaching motor imitation:</strong></td>
<td><strong>Teaching motor imitation:</strong></td>
</tr>
<tr>
<td>Prompt imitation of actions (e.g. clap hands)</td>
<td>A child likes cars. Prompt imitation of actions using</td>
</tr>
<tr>
<td></td>
<td>preferred toy (e.g. drive car)</td>
</tr>
<tr>
<td>reinforce correct response with edible or preferred toy</td>
<td>reinforce correct response with car toy</td>
</tr>
<tr>
<td><strong>Teaching identification of colours:</strong></td>
<td><strong>Teaching identification of colours:</strong></td>
</tr>
<tr>
<td>Using shapes in different colours</td>
<td>A child likes manipulating play-dough</td>
</tr>
<tr>
<td></td>
<td>Use play-dough with different colour pieces</td>
</tr>
<tr>
<td>reinforce correct colour with edible or preferred toy</td>
<td>reinforce correct colour by offering the playdough of the colour</td>
</tr>
<tr>
<td></td>
<td>identified</td>
</tr>
<tr>
<td><strong>Teaching identification of familiar people:</strong></td>
<td><strong>Teaching identification of familiar people:</strong></td>
</tr>
<tr>
<td>Using flashcards with photos of familiar people</td>
<td>Play with familiar people</td>
</tr>
<tr>
<td></td>
<td>reinforce correct name with edible or preferred toy</td>
</tr>
<tr>
<td></td>
<td>reinforce correct name with tickles or cuddles from that person</td>
</tr>
</tbody>
</table>
LONGITUDINAL DESIGNS
Quant Research - Longitudinal

- Individual or group research conducted across time, often decades
- Cohort Study: data is gathered from the same subjects repeatedly, over time
- Panel study: data is gathered from similar subjects, over time
- May be conducted using other methods (surveys, case studies)
- Studying developmental trends, the lifespan
Quant Research - Longitudinal

- Subject attrition is major problem
  - “missing data”
  - Replacing with participants w. similar characteristics

- Preserving confidentiality is also difficult

- Specific standardized tools may change over time

- Mostly observational – observe the state of things w.out manipulation → may have less causal power than experiments

  **BUT** the inclusion of repeated observations at the individual level → more power than cross-sectional observational studies

- Exclude time invariant unobserved differences

- Include temporally ordered events

- Allow researchers to distinguish short v. long term phenomena
Longitudinal - Example

- Survey Data
  - National Longitudinal Survey of Youth (ages 12-16 in 1997)

- Case Study
  - “UP” – British documentary of 14 British children starting in 1964
Quant Methods - Instruments

- Printed images, paper/pencil
- Online
  - Survey Monkey
  - Zoomerang
  - Poll Daddy
    - Additional online survey instruments
- Electronic devices: Smart phones, ipads, bio-physio readers, computers
1. What is your student ID #?

2. Did you parents graduate from college?
   - Yes, both parents graduated from college
   - Yes, 1 parent graduated from college
   - No, my parents did not graduate from college
   - No, 1 or both of my parents did not graduate from college, but they did attend

3. Did you take Algebra before 9th grade?
   - Yes
   - No
   - Don't know/remember

4. Were any of your HS courses honors?
   - Yes
   - No
   - Don't know/remember
+ Quant Methods - Instruments

- Online
- Survey Monkey

### Q2

Did you parents graduate from college?

Answered: 100  Skipped: 0

<table>
<thead>
<tr>
<th>Answer Choices</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes, both parents...</td>
<td>57.00%</td>
</tr>
<tr>
<td>Yes, 1 parent graduated from...</td>
<td>6.00%</td>
</tr>
<tr>
<td>No, my parents did not...</td>
<td>27.00%</td>
</tr>
<tr>
<td>No, 1 or both of my parent...</td>
<td>10.00%</td>
</tr>
</tbody>
</table>

Total: 100
+ Quant Methods - Instruments

- Online
- Survey Monkey

**Q3**

**Did you take Algebra before 9th grade?**

<table>
<thead>
<tr>
<th>Answer Choices</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>94.00%</td>
</tr>
<tr>
<td>No</td>
<td>4.00%</td>
</tr>
<tr>
<td>Don't know/remember</td>
<td>2.00%</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
</tr>
</tbody>
</table>
Quant Methods - Instruments

- Electronic devices: Smart phones, ipads, bio-physio readers, computers
METHOD SELECTED, NOW WHAT?
MEASUREMENT CRITERIA
Measurement Criteria

- Objectivity
- Accuracy
- Precision
- Reliability
- Validity
Measurement Criteria

- Objectivity - researchers stand outside the phenomena they study. Data collected are free from bias

- Accuracy – Are the methods adequate to answer your questions; reveal credible information; convey important information?
Measurement Criteria

- **Objectivity** - researchers stand outside the phenomena they study
  - Data collected are free from bias

- **Accuracy** – Are the methods adequate to answer your questions?
  - Do they reveal credible information?
  - Do they convey important information?

- **Precision** – How trustable are the measure?
  - How confident is the result?
  - Pilot testing & Usability testing
Measurement Criteria

- **Objectivity** - researchers stand outside the phenomena they study. Data collected are free from bias.

- **Accuracy** – Are the methods adequate to answer your questions; reveal credible information; convey important information?

- **Precision** – How trustable are the measure; how confident is the result?
  - Pilot testing & Usability testing

- **Reliability** - if something was measured again using the same instrument, would it produce the same or nearly the same results?
  - Yielding consistent results over time or under similar conditions
Measurement Criteria

- Objectivity - researchers stand outside the phenomena they study. Data collected are free from bias.

- Accuracy – Are the methods adequate to answer your questions; reveal credible information; convey important information?

- Precision – How trustable are the measure; how confident is the result?
  - Pilot testing & Usability testing

- Reliability - if something was measured again using the same instrument, would it produce the same or nearly the same results?
  - Yielding consistent results over time or under similar conditions

- Validity – do the measures reflect all the facets you are attempting to study?
Content Validity

- The extent to which the items on a testing tool (that being used to measure the dependent variable) reflect all of the facets being studied

- All aspects are sampled
Criterion-Related Validity

- Also called predictive validity

- The extent to which a testing tool yields data that allow the researcher to make accurate predictions about the dependent variable
Construct Validity

- The extent to which the testing tool measures what it is supposed to measure

- Relationship between the items on the tool and the dependent variable

- Also relates to actual (physical) construction of a written tool (e.g. Dean’s Survey) and how this impacts the accuracy of the results
Internal Validity

- Relates to the internal aspects of a study and their effect on the outcome:
  - Researcher planning and preparation
  - Judgment – participants should feel free of judgment
  - Control for potential confounding variables
External Validity

- Relates to the extent to which findings can generalize beyond the actual study participants

- “How valid are these results for a different group of people, a different setting, or other conditions of testing, etc.?”
METHOD SELECTED ✔
MEASUREMENT CRITERIA ✔
ANALYSIS
Quantitative Research

- Summarizing data
  - variables; simple statistics; effect statistics and statistical models; complex models
Quantitative Research

- Summarizing data
  - variables; simple statistics; effect statistics and statistical models; complex models

- Generalizing from sample to population
  - precision of estimate, confidence limits, statistical significance, p value, errors
+ Quantitative Research

- Summarizing data
  - variables; simple statistics; effect statistics and statistical models; complex models

- Generalizing from sample to population
  - precision of estimate, confidence limits, statistical significance, p value, errors

- Data are a set of values of one or more variables
Quantitative Research

- Summarizing data
  - variables; simple statistics; effect statistics and statistical models; complex models

- Generalizing from sample to population
  - precision of estimate, confidence limits, statistical significance, p value, errors

- Data are a set of values of one or more variables
  - A variable is something that has different values.
    - Values can be numbers or names, depending on the variable:
      - Numeric – year of birth
      - Counting - number of natural disasters
      - Ordinal – highest level of education (values are numbers or names/labels)
      - Nominal – gender (values are names/labels)
Independent Variable

- The variable that is controlled or manipulated by the researcher.
- The variable that is thought to have some effect upon the dependent variable.
- The one difference between the treatment (experimental) and control groups.
Dependent Variable

- That which is measured
- The outcome
- That which is influenced or affected by the dependent variable
## Quantitative Research

<table>
<thead>
<tr>
<th>Y (dep variable)</th>
<th>X (ind variable)</th>
<th>Model/Test</th>
<th>Effect statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numeric</td>
<td>Numeric</td>
<td>Regression</td>
<td>Slope, intercept, correlation</td>
</tr>
<tr>
<td>Numeric</td>
<td>Nominal</td>
<td>T-test, ANOVA</td>
<td>Mean difference</td>
</tr>
<tr>
<td>Nominal</td>
<td>Nominal</td>
<td>Chi-square</td>
<td>Frequency difference or ratio</td>
</tr>
<tr>
<td>Nominal</td>
<td>Numeric</td>
<td>Categorical</td>
<td>Frequency ratio per ...</td>
</tr>
</tbody>
</table>
Analysis Programs

- Software (all except SAS available on D-Lab machines)
  - Stata
  - R
  - Python
  - GIS
  - Excel
  - SPSS
  - SAS
Pros of Quantitative Research?

- Clear interpretations
- Make sense of and organize perceptions
- Careful scrutiny (logical, sequential, controlled)
- Reduce researcher bias
- Results may be understood by individuals in other disciplines
Cons of Quantitative Research?

- Can not assist in understanding issues in which basic variables have not been identified or clarified

- Only 1 or 2 questions can be studied at a time, rather than the whole of an event or experience

- Complex issues (emotional response, personal values, etc.) can not always be reduced to numbers

- Difficulties in distinguishing opinions and facts from surveys

- Results from surveys sometime have serious limitations

- People’s perceptions and scientific observation may contradict
Best Practices – Sample Size

- Sample size
  - Data collection – a large enough sample so that missing data won’t become an issue
  - Sample size calculator - how to generalize to population
Best Practices – Things to Consider

- **Time constraints**
  - Choose the method that best suits your research time
    - 1 year is not enough for a longitudinal study

- **Resource constraints**
  - Choose the method that best suits your budget and resources available
    - If you don’t have access to a lab, a lab experiment is unrealistic

- **Access**
  - Do you have access to a generalizable sample?
Best Practices

- Ethics
  - Maintaining respect for participants
  - Can participants opt out at any point?
  - Balancing benefit & harm
    - Will participation cause harm?
    - Does the potential benefit outweigh any potential harm (psychological effects, stress, anxiety, time)
  - Will the method allow protection of anonymity?
    - Anonymity – pseudonyming is key!!
  - How involved will the researcher be – will he/she bias results?
Part III: Qualitative Methods
Agenda

I. What is qualitative research? Why use qualitative methods?

II. Review of the range of qualitative methods

III. Planning your qualitative study
Qualitative Research

- Research based on data converted to words or text
  - Original data may be observations, conversations, audio/video/visual

- Primary qualitative data: Words or text are compiled by the researcher
  - Researcher is able to define the questions asked of the data
  - E.g. Observation, interviews

- Secondary qualitative data: Words or text were constructed with no knowledge of the research project at hand
  - Were often compiled for a completely different purpose
  - E.g. Documents, social media, media (broadly), archives
Why Do Qualitative Research?

- To study action or behavior
  - Can observe action or behavior first hand
  - Can get accounts of action or behavior from the people involved
  - Can analyze accounts of action or behavior that others documented

- To study beliefs or meaning
  - Can get accounts of beliefs or meanings from the people who hold them
  - Can analyze accounts of beliefs or meanings that others documented
Drawbacks of Using Qualitative Methods

- Usually get a “small” sample size in comparison to quantitative methods
  - Conclusions may be challenged depending on the size of your N

- Dealing with a lot of data at the end of the process
  - One hour long interview can produce 20-40 pages of text

- Can be time consuming to collect depending on your method
  - Particularly the case when involves getting access and recruitment

- Analysis usually involves a fair amount of interpretation
  - Some level of subjective decision-making that you have to convince others is legitimate
<table>
<thead>
<tr>
<th>Type</th>
<th>Methods</th>
<th>Description</th>
<th>Resulting Data</th>
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<tr>
<td>Observations</td>
<td>Ethnography</td>
<td>Observations and informal interviews over longer time periods as a member of observed group</td>
<td>Field notes, photos, audio/video</td>
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<td></td>
<td>Participant observation</td>
<td>Observations over shorter time periods as member of observed group</td>
<td>Field notes, photos, audio/video</td>
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<td></td>
<td>Non-participant observation</td>
<td>Observations over shorter time period as outsider to observed group</td>
<td>Field notes, photos, audio/video</td>
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<tr>
<td>Interviews</td>
<td>Structured interviewing</td>
<td>Ordered interview questions with precise wording used for every interview</td>
<td>Transcripts, field notes, audio/video</td>
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<td>Semi-structured interviewing</td>
<td>Interview questions and order are not necessarily the same for every interview</td>
<td>Transcripts, field notes, audio/video</td>
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<tr>
<td></td>
<td>Unstructured interviewing</td>
<td>No predetermined interview questions</td>
<td>Transcripts, field notes, audio/video</td>
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<tr>
<td>Documents</td>
<td>Historic</td>
<td>Older electronic or paper textual or visual files</td>
<td>Pdfs, photos</td>
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<td>Current</td>
<td>Recently created electronic or paper textual or visual files</td>
<td>Pdfs, photos, text files</td>
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<td>Social Media</td>
<td>Webscraping</td>
<td>Textual data from websites such as Twitter, Facebook, or blogs</td>
<td>Text segments, metadata</td>
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Qualitative Methods are NOT Mutually Exclusive!

- Can use any of these qualitative methods in the same study

- Examples:
  - Observe action and interview research subjects about that action
  - Interview people involved in a process and analyze documentation of a process
  - Interview individuals about a social event and analyze social media around that same social event
OBSERVATIONS
Observation

- **What does it entail?**
  - Being a witness to the process/phenomenon/situation of interest
  - May also include interviewing or taking to the involved parties
  - Used for studying social interactions, patterns of behavior, events, organizational processes/systems, etc.

- **Benefits?**
  - You actually observe what happened – not just getting reports of it
  - Real time data collection can mean more accurate data

- **Challenges?**
  - Some spaces are hard to get access to
  - Observer effects including insider v. outsider – potentially not recognizing what you see as data v. not knowing enough to understand what you’re seeing; also how you’re treated in the space will vary
  - Social desirability in responses
  - Can require extended interaction

- **What kind of data do you end up with?**
  - Field notes – start as jottings then expanded to narrative
  - May also end up with audio/video files and photos
Observation: Ethnography

- Ethnography is observations conducted when living in a community
  - Traditional anthropological research design
  - Often includes interviews which can be both formal and informal
  - Usually for at least 6 months
    - Researcher often transitions from outsider to insider during this time

- Example: Studying gentrification in West Oakland
  - Relocate to live in the neighborhood
  - Data collection:
    - Talking to neighbors and business owners in the neighborhood
    - Attending neighborhood meetings
    - Documenting visual changes in the neighborhood included new development, building renovations, new neighbors, etc.
Observation: Participant Observation

- Participant observation is observation conducted without living in the community of interest
  - Often used for organizational/institutional studies –
    - The researcher can’t usually live in the company that they’re studying
  - The researcher is a participant in the setting of interest though meaning that they are not just observing but also interacting with individuals
  - Formal interviews may or may not be a part of this approach
  - Can be conducted over a shorter time frame –
    - In fact, this type of study is usually reported as a number of observations over X period of time

- Example: Studying hierarchy in tech start ups
  - Get a job at a tech start up company
  - Data collection:
    - Observe interactions among colleagues
    - Talk to colleagues and supervisors
Observation: Non-Participant Observation

- Non-participant observation is observation conducted without living in the community of interest where the researcher does not participate in the setting
- The researcher is not “tainting” the observational setting by intervening, speaking up, or even asking questions
- Interviews may or may not be a part of this approach
- Can be conducted over a shorter period of time -
  - In fact, this type of study is usually reported as a number of observations over X period of time

Example: Studying the role of community organizations in local politics

Data collection:
- Attend City Council meetings to see who testifies and for what side of a cause
Observation: Best Practices

- Taking notes quickly after field work
  - Jottings to fully fleshed field notes
  - Aiming for a narrative of what happened or what is often called “thick description”
  - Starts with notes about anything and everything, but focus becomes narrow once the subject of study is clearly defined

- Being reflexive about your position and characteristics and how that influences what you’re able to observe and what your research subjects share with you
  - Think through how you’re an insider AND outsider in various ways

- Analyze while collecting data
  - Helps to narrow the subject of study
  - Includes reflection memos either within or separate from field notes
Observation: Deciding What Kind

- Can you physically relocate to the central location where the process/phenomenon/situation of interest takes place?

- Can you gain access to the location?

- How would your participation in the process/phenomenon/situation of interest affect your data and findings?

- How might participation in the process/phenomenon/situation of interest increase your access to information about that process/phenomenon/situation of interest?

- What are the expectations in your field about how observation data is collected?
INTERVIEWS
**Interview**

- **What does it entail?**
  - Asking research participants to provide information about the process/phenomenon/situation of interest
  - Self-reported data
  - Used to collect data about feelings, reactions, perceptions, interpretations, motivations, experiences, etc.

- **Benefits?**
  - Can get information about feelings, reactions, perceptions, interpretations, and motivations directly from the individual
  - Can formulate questions to best extract that information
  - Can find out about past events that don't have access to observe

- **Challenges?**
  - Recall bias
  - Socially desirable responses
  - Interviewer effects (insider v. outsider) – hard to overcome in short interactions

- **What kind of data do you end up with?**
  - Audio files, video files, notes from interviews, transcripts of interviews
Interview: Structured Interviews

- Ask respondents the same questions (verbatim) in the same order for each interview
  - Similar to having an open-ended survey question
  - Requires a clear sense of how to ask questions (perhaps gained through pilot interviews)
  - Have to think carefully through the order in which you ask questions

- In theory, this creates consistent delivery for each interview

- Example: Studying interpretation of new policy
  - Data collection:
    - Interview implementers of new policy in several locations
    - Provide sections of new policy and ask for their interpretation of each section
Interview: Semi-Structured Interviews

- Develop a set of interview questions that form a loose guide to interviews
  - You may not ask the questions in the same order for each interview
  - You can rephrase questions to get more accurate responses
  - You can add additional probes to get more information on a topic

- Resulting interview should get to all the relevant questions and gather all relevant information, but will vary in when they do over the course of the interview

- Perk is that you can easily adjust the questions as you gain a better sense of what you want to be able to write about
  - This does mean that you often have more incomplete data for earlier interviews than later interviews
  - Could be addressed by increasing the sample size

- Example: Studying experiences of racial discrimination
  - Data collection:
    - Interview research subjects of various races about their personal experiences with racial discrimination
Interview: Unstructured Interviews

- Interviews are conducted without any interview guide
  - These are often more free flowing conversations between the respondent and the interviewer

- Can be a helpful way to approach interviews when you don’t quite know what questions to ask
  - Oftentimes, researchers who use unstructured interviews develop an interview protocol based on what they are learning from their unstructured interviews

- Can potentially mean having very different information across each interview

- Example: Studying undergraduates’ motivations for going to college
  - Data collection:
    - Interview new college students
    - Might start with a broad question about why they decided to go to college
    - Eventually might lead to questions about why they chose a particular major, etc.
Interview: Best Practices

- Write and revise an interview protocol
  - Test your questions on real people even if they’re not research subjects (especially important for structured interviews), but also revise questions as you get experience with actual research subjects
  - Avoid yes/no questions

- Being reflexive about your position and characteristics and how that influences what your research subjects share with you
  - Think through how you’re an insider AND outsider in various ways

- Take notes about each interview after the fact
  - Short summary of the interview and any non-recordable information about the interview

- Transcribe and begin analysis while collecting data
  - Can influence new questions to ask and rephrasing of questions to better get at your interests

- Memo about potential exciting directions based on collecting and analyzing data

- Interview until reach “saturation”
Interview: Deciding What Kind

- How much do you know about what you’re studying to be able to predefine questions?

- How similar/different do you expect responses to be across research subjects?

- How big is your possible sample size?

- What are the expectations in your field for how interview data is collected?
DOCUMENTS
Documents

- What does it entail?
  - Collecting documents relevant to the process/phenomenon/situation of interest

- Benefits?
  - Potentially more accurate information about the past than other options
  - Some documents are easily accessible through the internet

- Challenges?
  - Limits to what is available including that there may be non-random exclusions from the documents available
  - Policy and practice do not always align

- What kind of data do you end up with?
  - Hard paper copies, photographs of documents, pdfs, Word documents, Excel spreadsheets, etc.
**Documents: Historic**

- “Older” documents compiled in an archive
  - Could be an electronic archive stored on a website or through a database available online through the library
  - Could be stored hard copy in an archive facility that involves travel to review in person
  - Could be requested through Freedom of Information Law (FOIL) requests

- Either way, decisions are made about what kinds of documents are available
  - Documents can be excluded due to confidentiality, controversy, or mismanagement

- **Example:** Studying the development of the Federal Housing Act of 1934
  - **Data collection:**
    - Collect documents from the National Archives including congressional hearing notes, presidential memorandum, etc.
Documents: Current

- “Recently” created documents
  - These might be collected directly from the individuals/organizations that created them
  - May be hard copy documents or electronic files
  - Some of these documents will be available through websites
  - Some you will get directly from individuals/organizations through direct correspondence or freedom of information requests

- Decisions are made about what kinds of documents are available
  - Documents can be excluded due to confidentiality, controversy, or mismanagement

- Example: Studying changes to sexual harassment protocol at Berkeley
  - Data collection:
    - Compiling documentation of new protocol distributed on campus through email and internal memos
Documents: Best Practices

- Carefully document what you collect and what you don’t, especially for archival research
  - Which boxes did you look through? How did you decide which documents were relevant?

- Reflect on what kinds of evidence or documents you were unable to access
  - What types of documents were not in the archives? What types of documents were you told you couldn’t have access to?
  - What seems to be missing from the documents you collected?
  - How does that skew your data?

- Follow references to other documents

- Take notes about each document

- Begin analysis while collecting data
  - Can help you identify what kind of data you’re missing

- Memo about potential exciting directions based on collecting and analyzing data
When did the process/phenomenon/situation you’re studying occur?
SOCIAL MEDIA
Social Media

- What does it entail?
  - Collecting data from social media outlets such as Twitter, Facebook, comments sections of websites, etc.

- Benefits?
  - Potentially real time reactions to social processes/phenomenon/situations
    - See what’s on people’s mind in real time
    - Can see conversations around a topic

- Challenges?
  - Privacy, confidentiality, and consent – people posting in public spaces are not necessarily consenting to research
    - The use of public comments may make the individual posting easily identifiable even when anonymizing information
  - Shorter passages of text that may lack context
  - Know less about your research subjects

- What kind of data do you end up with?
  - Short passages of text and sometimes with meta-data (when a post was put up, who posted it, etc.)
Example: Studying responses to Trump’s candidacy

Data collection:

- Compile Twitter posts about Trump including data from a number of key hashtags you’ve identified
Social Media: Best Practices

- Carefully document your procedures for identifying relevant data

- Keep data excerpts closely connected to metadata as much as possible
  - Including which posts are part of a chain in a conversation
PLANNING YOUR QUALITATIVE STUDY
Steps to Qualitative Research

1. Identify a puzzle/problem/question to be studied

2. Identify what kind of data would be best suited to answer your question
   - Consider accessibility of the ideal data source

3. Determine a target sample/location for data collection
   - Most qualitative data is NOT collected for a population or universe

4. Collect data

5. Analyze data
Identifying Data Sources: 1

- Does the ideal data source exist?
  - Can you observe the process/phenomenon/situation you want to study?
    - Constraints: must be something happening in the present
  - Are there relevant stakeholders that you could interview about the topic?
    - Constraints: must be alive and able to communicate
  - Are there documents about the process/phenomenon/situation you want to study?
    - Constraints: what documents were preserved?
  - Has there been a public discussion in social media about the process/phenomenon/situation you want to study?
    - Constraints: who was discussing it publicly?
Identifying Data Sources: 2

- Can you gain access to the ideal data source?
  - Gatekeepers?
    - Do you need additional permission beyond IRB?
  - Other barriers to access?
    - Physical distance
Identifying Data Sources: 3

- Are there any ethical considerations?
  - Protected population of interest?
    - This includes children, people with mental disabilities, pregnant women, and incarcerated individuals in general.
    - May also apply in cases where your research could be viewed as coercion (e.g., paying someone living in poverty for an interview).
  - Human subjects required?
    - Generally a requirement when collecting data from people, but there are some exceptions.
  - Collecting data that individuals did not make available for research?
    - Consider if it’s possible to identify research subjects in your data – e.g., Twitter posts are Google-able
Identifying Data Sources: 4

- What kind of resources will it take to collect?
  - Do you need to incentivize participation?
    - Many interview studies pay participants for their time, although paying too much money is seen as coercion.
  - Do you need to travel and live somewhere else to gain access?
    - In this case, you need to find funding to support your travel and living elsewhere.

- What’s your timeline and how does your ideal data source correspond with your timeline?
  - Observation data, particularly for ethnography, can take longer to collect than other data sources.
  - Interviewing can take a long time if you have trouble locating appropriate subjects.
  - But don’t be fooled! You can collect so many documents in a short period of time that it becomes a lot to process and analyze.
## Pros/Cons

<table>
<thead>
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<th>Type</th>
<th>Pros</th>
<th>Cons</th>
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<td>• Can require extended fieldwork/interaction</td>
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<td>• Know less about your research subjects</td>
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</table>
Identifying Your Target Sample or Case

- For many of these methods, you will choose a research site or a target sample (your "case")
  - What do you want to generalize to? – Think about what you’d want to be able to say at the end of the study
  - Why that location? Why that group of individuals?
    - Could be based on theory, research question, literature, feasibility, access

- Some researchers justify their case upfront, selecting based on “logical” reasoning

- Other researchers justify their case after the fact

- Either way, you can justify your case:
  - Compare characteristics of the case to other cases
    - The goal of this is to identify the characteristics of your case that make it an ideal case of study
  - Use a description of how the case compares to other cases to describe the case as an extreme or average case
  - Discuss what we can learn from an average or extreme case to bolster the literature

- Keep in mind that you may want multiple cases in your study to have a comparison or counterfactual
ANALYSIS
Analysis Decisions

- Once you have selected your data, you have to decide how to best approach the analysis process:
  - Strictly qualitative analysis – Preserve the textual form of the qualitative data
    - Analyze for themes or discourses
  - Quantitizing qualitative data – Converting qualitative data to counts or quantitative data for analysis
    - Can look at trends and patterns
    - Includes content or text analysis (looking for specific words or phrases in the data to count frequency of use), as well as counting how often certain themes or discourses come up
  - Integrating quantitative data – Including a separate sources of quantitative data to your data
    - Might include geospatial data, demographic data, secondary dataset analysis, etc.
    - Often used to explain broader trends around the puzzle/problem/question you are studying

- You might use a combination of these approaches for a larger project
Analysis Tools

- Strictly qualitative analysis
  - Qualitative Data Analysis (QDA) software (e.g., MaxQDA, Atlas.TI, NVivo, Dedoose)

- Quantitizing qualitative data
  - Some QDA software packages (e.g., MaxQDA, NVivo)
  - Some quantitative software packages (e.g., R)
  - Some other software packages (e.g., Python)

- Integrating quantitative data
  - Some QDA software packages (e.g., MaxQDA, NVivo)
    - These programs will not do robust statistical analyses, but could be used for descriptive statistics
  - Some quantitative software packages (e.g., R and RQDA)
    - Could also use a separate quantitative software package to analyze your quantitative data separately (e.g., Stata, SAS, SPSS, R)

- D-Lab offers workshops and consulting around all of these types of tools
Quantitative vs. Qualitative

- There is/shouldn’t be a rivalry between quantitative and qualitative methods
  - Each can be used to confirm the other

- Quantitative data and findings have underlying qualitative dimension
  - Qualitative data can also add description, detail and texture to quantitative data

- Quite often availability of data and its characteristics determine the method and what is possible – not a preference for one over the other
Quantitative vs. Qualitative

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- Quantitative data and findings have underlying qualitative dimension
  - Qualitative data can also add description, detail and texture to quantitative data

- Quite often availability of data and its characteristics determine the method and what is possible – not a preference for one over the other

- Both quantitative and qualitative research can aim at description of built environment

- Complementary - not contradictory
  - different kinds of research questions and objects of research
  - different perspectives on the same research objects / questions (methodological triangulation)
Exercise 1 – Data Collection

- Do school districts disproportionately apply harsher disciplinary actions to students of color?
Exercise 1 – Data Collection

- Do school districts disproportionately apply harsher disciplinary actions to students of color?
  - If this were your research question –
    - What kinds of data would you need to address it?
    - What methods would you use to collect it?
Exercise 1 – Data Collection

- Do school districts disproportionately apply harsher disciplinary actions to students of color?
  - If this were your research question –
    - What kinds of data would you need to address it?
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Exercise 2 – Data Collection

- Do school districts disproportionately apply harsher disciplinary actions to students of color?
- Now let’s go over the list of considerations you should reference when deciding what kind of data/methods to use ....
Exercise 2 – Which Method to Use?

- Depending on:
  - Type of data you want/need
    - Cross-sectional, longitudinal
    - Quantitative or qualitative
  - Sample size
    - Generalizability
    - Small- or large-N
  - Access
    - Is it a protected population? (e.g. minors/students)
    - Can you gain access?
    - Human subjects
  - Location
    - Local, state, national, international
  - Time – qual. Often requires periods of months/years of intensive study, moving, embedding, etc.
    - Timeline for data collection
  - Resources
    - Are you conducting the research alone? (do you have RAs)
    - Cost of instrument design
    - Cost of data collection
    - Cost of analysis
Exercise 2 – Data Collection

- Do school districts disproportionally apply harsher disciplinary actions to students of color?

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<tr>
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<td>Type of data</td>
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<td>Resources</td>
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</tbody>
</table>
Part II -- References

- References/Resources
  - *The Practice of Social Research* – Earl Babbie
  - *Statistical Methods for the Social Sciences* – Agresti & Finlay
  - Sage Research Methods - http://srmo.sagepub.com/
  - Ethics: Guidelines for Research Ethics
  - Best Practices: NIH Office of Behavioral and Social Sciences Research
  - Statistics – www.ats.ucla.edu
  - Workshops & consulting – www.dlab.berkeley.edu
Part III: References

- D-Lab’s Qualitative Methods Group (QMG):
  http://dlab.berkeley.edu/working-groups/qualitative-methods-group-qmg-0

- D-Lab’s Computation Text Analysis Working Group:
  http://dlab.berkeley.edu/working-groups/text-analysis-working-group-0

- D-Lab Consulting:
  http://dlab.berkeley.edu/consulting

- Questions/Comments: Nora Broege, nbroege@berkeley.edu