

**WHY ARE WE DISCUSSING
QUANTIFICATION TODAY?**

**THE WORLD IS A MESSY PLACE:
POLICY WORLD REALLY MESSY**

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[View](#) the image of the flowchart of the proposed health care law.

Quantitative research is generally made using scientific methods, which can include:

- The generation of models, theories and hypotheses
- The development of instruments and methods for measurement
- Experimental control and manipulation of variables
- Collection of empirical data
- Modeling and analysis of data
- Evaluation of results
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- In social science particularly, quantitative research is often contrasted with qualitative research, which is the examination, analysis and interpretation of observations for the purpose of discovering underlying meanings and patterns of relationships, including classifications of types of phenomena and entities, in a manner that does not involve mathematical models.
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Quant or Qual?

- Although a distinction is commonly drawn between qualitative and quantitative aspects of scientific investigation, it has been argued that the two go hand in hand.
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- For example, based on analysis of the history of science, Kuhn concludes “large amounts of qualitative work have usually been prerequisite to fruitful quantification in the physical sciences.
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- Qualitative research is often used to gain a general sense of phenomena and to form theories that can be tested using further quantitative research. For instance, in the social sciences qualitative research methods are often used to gain better understanding of such things as intentionality and
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- Quantitative investigation of the world has existed since people first began to record events or objects that had been counted.

Scientific method

A body of techniques for investigating phenomena, acquiring new knowledge, or correcting and integrating previous knowledge. To be termed scientific, a method of inquiry must be based on gathering observable, empirical and measurable evidence subject to specific principles of reasoning. A scientific method consists of the collection of data through observation and experimentation, and the formulation and testing of hypotheses.

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- Although procedures vary from one field of inquiry to another, identifiable features distinguish scientific inquiry from other methods of obtaining knowledge. Scientific researchers propose hypotheses as explanations of phenomena, and design experimental studies to test these hypotheses.
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- These steps must be repeatable, to predict future results.

- Theories that encompass wider domains of inquiry may bind many independently derived hypotheses together in a coherent, supportive structure.
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- Theories, in turn, may help form new hypotheses or place groups of hypotheses into context.
- Scientific inquiry is generally intended to be as objective possible, to reduce biased interpretations of results.
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- Another basic expectation is to document, archive and share all data and methodology so they are available for careful scrutiny by other scientists, giving them the opportunity to verify results by attempting to reproduce them.
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- This practice, called *full disclosure*, also allows statistical measures of the reliability of these data to be established.
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Don't Go Being Qualitative on
Me!

Primary Approach by Students

- The case study
- It is based on an in-depth investigation of a single individual, group, or event. Case studies may be descriptive or explanatory. The latter type is used to explore causation in order to find underlying principles.
- Rather than using samples and following a rigid protocol (strict set of rules) to examine a limited number of variables, case study methods involve an in-depth, longitudinal (over a long period of time) examination of a single instance or event: a **case**.
- They provide a systematic way of looking at events, collecting data, analyzing information, and reporting the results.
- As a result the researcher may gain a sharpened understanding of why the instance happened as it did, and what might become important to look at more extensively in future research. Case studies lend themselves to both generating and testing hypotheses:

The Case Study

- **Choosing good cases for extremely small samples is a challenging endeavor.**
- **most case studies seek to elucidate the features of a broader population.**
- **They are about something larger than the case itself, even if the resulting generalization is issued in a tentative fashion.**
- **In case studies of this sort, the chosen case is asked to perform a heroic role: to stand for (represent) a population of cases that is often much larger than the case itself.**

How to Justify Selection of Case Study

- When selecting a case for a case study, researchers often use information-oriented sampling , as opposed to random sampling. This is because an average case is often not the richest in information. Extreme or atypical cases reveal more information because they activate more basic mechanisms and more actors in the situation studied.

The Critical Case

- A critical case can be defined as having strategic importance in relation to the general problem. A critical case allows the following type of generalization, 'If it is valid for this case, it is valid for all (or many) cases.' In its negative form, the generalization would be, 'If it is not valid for this case, then it is not valid for any (or only few) cases.'
- The case study is also effective for generalizing using the type of test that Karl Popper, called falsification, which forms part of critical reflexivity . Falsification is one of the most rigorous tests to which a scientific proposition can be subjected: if just one observation does not fit with the proposition it is considered not valid generally and must therefore be either revised or rejected.
- Popper himself used the now famous example of, "All swans are white," and proposed that just one observation of a single black swan would falsify this proposition and in this way have general significance and stimulate further investigations and theory-building. The case study is well suited for identifying "black swans" because of its in-depth approach: what appears to be "white" often turns out on closer examination to be "black."

The typical case study focuses on a case that exemplifies a stable, cross-case relationship. The puzzle of interest to the researcher lies within that case. Specifically, the researcher wants to find a typical case of some phenomenon so that he or she can better explore the causal mechanisms at work in a general, cross-case relationship.

A second case selection strategy has as its primary objective the achievement of maximum variance along relevant dimensions. We refer to this as a the diverse case method. It requires the selection of a set cases. Each represents the full range of value of the subject in question.

Large-N analysis. Where causal variables are continuous and the outcome is dichotomous, the researcher may employ discriminant analysis to identify diverse cases.

The extreme case method selects a case because of its extreme value on the independent (X) or dependent (Y) variable of interest.

- The deviant case method selects that case that, by reference to some general understanding of a topic (either a specific theory or common sense), demonstrates a surprising value.
- Sometimes, the choice of a case is motivated solely by the need to check the assumptions behind some model of causal relations. In this circumstance, the extent to which a case fits the overall model is important only insofar as it might affect the overall set of findings for the whole population.
- In its purest form, the chosen pair of cases is similar on all the measured
- independent variables, except the independent variable of interest.

My Project

- Soldiers, health care access, policy to improve conditions
- Literature, Data, Analysis, Findings, Testing, Reporting, Replicability

My Problem...

- Some of the results make sense;
- Some don't.
- What should I do?
- Which approach should I take?

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