Social Research for Social Science

Dr. Ashok Shivaji Yakkaldevi

LAXMI BOOK PUBLICATION

258/34, Raviwar Peth, Solapur - 413005

+91 9595359435 / 0217-2372010

ayisrj2011@gmail.com / ayisrj@yahoo.in

Rs. : 325/-

Social Research for Social Science

Dr. Ashok Shivaji Yakkaldevi

ISBN - 978-1-312-68319-8

Published by,
Laxmi Book Publication,
258/34, Raviwar Peth, Solapur, Maharashtra, India
Contact No. : +91 9595-359-435 / 0217-2372010
Website : http://www.lsrj.in
Email ID : ayisrj2011@gmail.com / ayisrj@yahoo.in

Dedicated to

My Guru Dr. H. N. Jagtap
And
My Family Members

Acknowledgement

I am using this opportunity to express my gratitude to everyone who supported me throughout the completion of this book. I am thankful for their aspiring guidance, invaluably constructive criticism and friendly advice during the written work. I am sincerely grateful to them for sharing their truthful and illuminating views on a number of issues related to the project.

At the very outset, I would like to record my deep sense of gratitude and everlasting indebtedness. I would like to express my deepest appreciation to all those who provided me the possibility to complete this book.

I gratefully acknowledge the unstinted encouragement and unreserved support from my beloved teacher, Dr. H. N. Jagtap for providing me the necessary knowledge and support in bringing this work. Also I would like to thankful to Principal Dr. Rajendra Shendge, A. R. Burla Mahila Varishta Mahavidyalay, Solapur.

It is with great pleasure and a sense of gratitude I remember the encouragement I received from my parents, wife, son and my loving daughters. More than anything else, their love and affection is so gratifying that it always motivates me to do the things to be worthy of their love and affection. But for the blessings, incessant help at all levels and the constant insistence of my parents, this work could not have been completed. I am ever grateful to them for the sincerity and warmth in their blessings.

Dr. Ashok S. Yakkaldevi

Social Research

Social research refers to research conducted by social scientists, which follows by the systematic plan. Social research methods can generally vary along a quantitative/qualitative dimension.["Research and experimental development (R&D) comprise creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications." It is used to establish or confirm facts, reaffirm the results of previous work, solve new or existing problems, support theorems, or develop new theories. A research project may also be an expansion on past work in the field. To test the validity of instruments, procedures, or experiments, research may replicate elements of prior projects, or the project as a whole. The primary purposes of basic research (as opposed to applied research) are documentation, discovery, interpretation, or the research and development of methods and systems for the advancement of human knowledge. Approaches to research depend on epistemologies, which vary considerably both within and between humanities and sciences. There are several forms of research: scientific, humanities, artistic, economic, social, business, marketing, practitioner research, etc

The nature of social research

Social research is empirical & probabilistic

- **Empirical research:** research that operates from the ideological position that questions about human behavior can be answered only through controlled, systematic observations of the real world.

- **Probabilistic:** capable of identifying only those forces that have a high likelihood, but not a certainty, of influencing human action.

Essay on the Meaning and Definition of Social Research Not only in the field of physical science but also in the realm of social sciences are researches taking place.

The youngest of the social sciences that is sociology is also doing a lot of research work. "Sociological research is highly interesting and exciting. Research in sociology is really a kind of systematic detective work. It faces innumerable puzzles and suspicions, withstands disappointments and discouragements, challenges blind faith and hearsays and finally becomes successful in unraveling the mystery that clouds the truth."

Research today has become a part of sociology. Research in sociology is where the real action takes place. In fact, there are two sides to the sociological enterprise: theory and research. Both are essential, and each depends on the other and each hinges on the other. Facts without theory are utterly meaningless.

Theories without facts are unproved speculations of little use to anybody, because there is no way to tell whether they are correct. Theory and research thus go together. A theory inspires research that can be used to verify or disprove it, and the findings of research are used to confirm, reject or modify the theory, or even to provide the basis of new theories. This process recurs endlessly.

Definition of Social Research:

According to Pauline V. Young, "… social research is a systematic method of exploring, analysing and conceptualising social life in order to "extend, correct, or verify knowledge, whether that knowledge aids in the construction of a theory or in the practice of an art."

Stating it still differently, social research seeks to find explanations to unexplained social phenomena to clarify the doubtful and correct the misconceived fact of social life.

Pauline V. Young has also said that "social research may be defined as a scientific undertaking which, by means of logical and systematized techniques aims to…

1) Discover new facts or verify and test old facts.
2) Analyses their sequences, interrelationships, and causal explanations.
3) Develop new scientific tools, concepts and theories which would facilitate reliable and valid study of human behavior".

According to Wallace and Wallace, "Sociological research refers to the structural observation of social behavior".

Importance of Social Research:

Research is carried on in the social field not just with academic interests. It has both academic and non-academic purposes and importance. Importance of research can be briefly stated here.

- ✓ Research is essential to diffuse knowledge and to expand its horizon.
- ✓ Research provides practical clues, to undertake measures that lead to social improvement, social change and social progress.
- ✓ Research by probing into the perplexing problems of the day… provides new insight regarding their nature. Research helps us to know the nature and the magnitude of the problems.
- ✓ Researchers have commercial importance also. Industries, business firms and commercial establishments can get lot of information and clues about their endeavors in society.
- ✓ Research can provide all the required data and facts to the administrators to adopt and undertake appropriate policies, plans and programmes.

- ✓ Research has educational importance. It is mainly an intellectual activity. Information obtained through research may have their educational importance.
- ✓ Research motivates interdisciplinary studies. It stresses the interdependence of different sciences. It thus strengthens the "interdisciplinary approach" which is emerging out these days.

Other uses and Importance

- ✓ Those working in the academic field can obtain a new degree known as Ph.D. [Doctor of Philosophy] by successfully carrying out research as per the stipulated rules.
- ✓ Those working in the research department attached to industries, other types of establishments have made research their profession and obtain salary for their service. It provides job opportunities for a few intellectuals.
- ✓ For the philosophers and scientists research can be intellectually delighting and mentally satisfying, and
- ✓ Those who are in the field of literature, art, architecture, etc., can seek to establish new styles and trends through research.

Meaning, Nature and Scope of Social Research

Meaning and Definition

According to the Oxford Advanced Learners' Dictionary of Current English, research is "a careful investigation or enquiry specially through search for new facts in any branch of knowledge". Webster's Encyclopedic Unabridged Dictionary of English Language defines research as "diligent and systematic enquiry or investigation in to a subject in order to discover or revise facts, theories, applications, etc." Thus, in common parlance, research refers to as research for knowledge. It can also be defined as a scientific and systematic search for pertinent information on a specific topic; it is an art of scientific investigation. However, in Social Research, many scholars have given comprehensive definitions

of research, although there is no consensus among them on a single, precise and comprehensive definition of social research. Redman and Mory have defined social research as a systematized effort to gain new knowledge. In te words of Donald Slessinger and Mary Stevenson, social research is a systematic method of exploring, analyzing, and conceptualizing social life in order to"Extend, correct or verify knowledge, whether that knowledge aid in theconstruction of a theory or in the practice of an art". Pauline V. Young in his 'Scientific Social Surveys and Research' says, "Social Research may be defined as a scientific undertaking which by means of logical and systematized techniques, aims to:

Discover new facts or verify and test old facts;

Analyze their sequences, interrelationships and causal explanations, which are derived within an appropriate theoretical frame of reference;

Develop new scientific tools, concepts and theories which wouldfacilitate reliable and valid study of human behaviours."

Yet for other scholars, social research is a movement, a movement from theknown to the unknown; a movement tat seeks to find explanations tounexplained social phenomena, to clarify the doubtful, and correct temisconceived facts of social life

Qualitative research

Qualitative Methods

Definition

The word qualitative implies an emphasis on the qualities of entities and on processes and meanings that are not experimentally examined or measured (if measured at all) in terms of quantity, amount, intensity, or frequency. Qualitative researchers stress the socially constructed nature of reality, the intimate relationship between the researcher and what is studied, and the situational constraints that shape inquiry. Such researchers emphasize the value-laden nature of inquiry. They seek answers to questions that stress how ocial experience is

created and given meaning. In contrast, quantitative studies emphasize the measurement and analysis of causal relationships between variables, not processes. Proponents of such studies claim that their work is done from within a value-free framework.

Qualitative forms of inquiry are considered by many social and behavioral scientists to be as much a perspective on how to approach investigating a research problem as it is a method.

Characteristics of Qualitative Research

The Design

Naturalistic refers to studying real world situations as they unfold naturally; non manipulative and non controlling; researcher is open to whatever emerges (there is a lack of predetermined constraints on findings).

- ✓ Emergent acceptance of adapting inquiry as understanding deepens and/or situations change; the researcher avoids rigid designs that eliminate responsiveness and pursues new paths of discovery as they emerge.
- ✓ Purposeful cases for study (e.g., people, organizations, communities, cultures, events, critical incidences) are selected because they are “information rich” and illuminative. That is, they offer useful manifestations of the phenomenon of interest; sampling is aimed at insight about the phenomenon, not empirical generalization from a sample to a population.

The Collection of Data

- ✓ Dataobservations that yield detailed, "Thick description" (in-depth understanding); interviews that capture direct quotations about people’s personal perspectives and experiences; case studies; careful document review.
- ✓ Personal experience and engagementthe researcher has direct contact with and gets close to the people, situation, and phenomenon under study; the researcher’s personal

experiences and insights are an important part of the inquiry and critical to understanding the phenomenon.

- ✓ Empathic neutralityan empathic stance in working with study respondents seeks vicarious understanding without judgment (neutrality) by showing openness, sensitivity, respect, awareness, and responsiveness; in observation it means being fully present (mindfulness).
- ✓ Dynamic systemsthere is an attention to process; assumes change as ongoing, whether the focus is on an individual, an organization, a community, or an entire culture; therefore, mindful of and attentive to system and situation dynamics.

The Analysis

Unique case orientationassumes that each case is special and unique; the first level of analysis is being true to, respecting, and capturing the details of the individual cases being studied; cross-case analysis follows from and depends on the quality of individual case studies.

- ✓ Inductive analysisimmersion in the details and specifics of the data to discover important patterns, themes, and inter-relationships; begins by exploring, then confirming findings, guided by analytical principles rather than rules.
- ✓ Holistic perspectivethe whole phenomenon under study is understood as a complex system that is more than the sum of its parts; the focus is on complex interdependencies and system dynamics that cannot be reduced in any meaningful way to a few discrete variables and linear, cause and effect relationships.
- ✓ Context sensitiveplaces findings in a social, historical, and temporal context; careful about, even dubious of, the possibility or meaningfulness of generalizations across time and space; emphasizes instead careful comparative case analyses and extrapolating patterns for possible transferability and adaptation in new settings.
- ✓ Voice, perspective, and reflexivitythe qualitative methodologist owns and is reflective about her or his own

voice and perspective; a credible voice conveys authenticity and trustworthiness; complete objectivity being impossible and pure subjectivity undermining credibility, the researcher's focus reflects a balance between understanding and depicting the world authentically in all its complexity and of being self-analytical, politically aware, and reflexive in consciousness.

Basic Research Design for Qualitative Studies

Unlike positivist or experimental research that utilizes a linear and one-directional sequence of design steps, there is considerable variation in how a qualitative research study is organized. In general, qualitative researchers attempt to describe and interpret human behavior based primarily on the words of selected individuals (“informants” or “respondents”) and/or through the interpretation of their material culture or occupied space. There is a reflexive process underpinning every stage of a qualitative study to ensure that researcher biases, presuppositions, and interpretations are clearly evident thus ensuring that the reader is better able to interpret the overall validity of the research. According to Maxwell (2009), there are five, not necessarily ordered or sequential, components in qualitative research designs. How they are presented depends on the research philosophical and theoretical framework of the study, the methods chosen, and the assumptions underpinning the study.

Goals

Describe the central research problem being addressed but avoid describing any anticipated outcomes. Questions to ask yourself are: Why is your study worth doing? What issues do you want to clarify, and what practices and policies do you want it to influence? Why do you want to conduct this study, and why should we care about the results?

Conceptual Framework

Questions to ask yourself are: What do you think is going on with the issues, settings, or people you plan to study?

What theories, beliefs, and prior research findings will guide or inform your research, and what literature, preliminary studies, and personal experiences will you draw on for understanding the people or issues you are studying? Note not just the results of other studies in your review of the literature, but the methods used as well. If appropriate, describe why earlier studies using quantitative methods were inadequate in addressing the research problem.

Research Questions

Usually there is a research problem that frames your qualitative study and influences your decision about what methods to use, but qualitative designs generally lack an accompanying hypothesis or set of assumptions because the findings are emergent and unpredictable. In this context, more specific research questions are generally the result of an interactive design process rather than the starting point for that process. Questions to ask yourself are: What, specifically, do you want to learn or understand by doing this study? What do you not know about the things you are studying that you want to learn? What questions will your research attempt to answer, and how are these questions related to one another?

Methods

Structured approaches to applying a method or methods to your study help to ensure that there is comparability of data across sources and researchers and, thus, they can be useful in answering questions that deal with differences between phenomena and the explanation for these differences (variance questions). An unstructured approach allows the researcher to focus on the particular phenomena studied. This facilitates an understanding of the processes that led to specific outcomes, trading generalizability and comparability for internal validity and contextual and evaluative understanding. Questions to ask yourself are: What will you actually do in conducting this study? What approaches and techniques will you use to collect

and analyze your data, and how do these constitute an integrated strategy?

Validity

In contrast to quantitative studies where the goal is to design, in advance, "controls" such as formal comparisons, sampling strategies, or statistical manipulations to address anticipated and unanticipated threats to validity, qualitative researchers must attempt to rule out most threats to validity after the research has begun by relying on evidence collected during the research process itself in order to effectively argue that any alternative explanations for a phenomenon are implausible. Questions to ask yourself are: How might your results and conclusions be wrong? What are the plausible alternative interpretations and validity threats to these, and how will you deal with these? How can the data that you have, or that you could potentially collect, support or challenge your ideas about what's going on? Why should we believe your results?

Conclusion

Although Maxwell does not mention a conclusion as one of the components of a qualitative research design, you should formally conclude your study. Briefly reiterate the goals of your study and the ways in which your research addressed them. Discuss the benefits of your study and how stakeholders can use your results. Also, note the limitations of your study and, if appropriate, place them in the context of areas in need of further research.

Strengths of Using Qualitative Methods

The advantage of using qualitative methods is that they generate rich, detailed data that leave the participants' perspectives intact and provide multiple contexts for understanding the phenomenon under study.

- ✓ Among the specific strengths of using qualitative methods to study social science research problems is the ability to:

- ✓ Obtain a more realistic view of the lived world that cannot be understood or experienced in numerical data and statistical analysis;
- ✓ Provide the researcher with the perspective of the participants of the study through immersion in a culture or situation and as a result of direct interaction with them;
- ✓ Allow the researcher to describe existing phenomena and current situations;
- ✓ Develop flexible ways to perform data collection, subsequent analysis, and interpretation of collected information;
- ✓ Yield results that can be helpful in pioneering new ways of understanding;
- ✓ Provide a holistic view of the phenomena under investigation;
- ✓ Interact with the research subjects in their own language and on their own terms; and,
- ✓ Create a descriptive capability based on primary and unstructured data.

Limitations of Using Qualitative Methods

It is very much true that most of the limitations you find in using qualitative research techniques also reflect their inherent strengths. For example, small sample sizes help you investigate research problems in a comprehensive and in-depth manner. However, small sample sizes undermine opportunities to draw useful generalizations from or make broad recommendations based upon the findings. As the primary instrument of investigation, qualitative researchers are often imbedded in the cultures and experiences of others. This, however, increases the opportunity for bias to enter into the way data is gathered, interpreted, and reported.

Some specific limitations associated with using qualitative methods to study research problems in the social sciences include:

Drifting away from the original objectives of the research in response to the changing nature of the context;

- ✓ Arriving at different conclusions based on the same information depending on the personal characteristics of the researcher;
- ✓ An inability to investigate causality between different research phenomena;
- ✓ Difficulty in explaining the difference in the quality and quantity of information obtained from different respondents and arriving at different, non-consistent conclusions;
- ✓ Requires a high level of experience from the researcher to obtain the targeted information from the respondent;
- ✓ May lack consistency and reliability because the researcher can employ different probing techniques and the respondent can choose to tell some particular stories and ignore others; and,
- ✓ Generation of a significant amount of data that cannot be randomized into manageable parts for analysis.

Qualitative research is a method of inquiry employed in many different academic disciplines, traditionally in the social sciences, but also in market research and further contexts.[1] Qualitative researchers aim to gather an in-depth understanding of human behavior and the reasons that govern such behavior. The qualitative method investigates the why and how of decision making, not just what, where, when. Hence, smaller but focused samples are more often used than large samples.

In the conventional view, qualitative methods produce information only on the particular cases studied, and any more general conclusions are only propositions (informed assertions). Quantitative methods can then be used to seek empirical support for such research hypotheses.

History

In the early 1900s, some researchers rejected positivism, the theoretical idea that there is an objective world

about which we can gather data and "verify" this data through empiricism. These researchers embraced a qualitative researchparadigm, attempting to make qualitative research as "rigorous" as quantitative research and creating myriad methods for qualitative research. In the 1970s and 1980s, the increasing ubiquity of computers aided in qualitative analyses, several journals with a qualitative focus emerged, and postpositivism gained recognition in the academy. In the late 1980s, questions of identity emerged, including issues of race, class, and gender, leading to research and writing becoming more reflexive. Throughout the 1990s, the concept of a passive observer/researcher was rejected, and qualitative research became more participatory and activist-oriented. Also, during this time, researchers began to use mixed-method approaches, indicating a shift in thinking of qualitative and quantitative methods as intrinsically incompatible. However, this history is not apolitical, as this has ushered in a politics of "evidence" and what can count as "scientific" research in scholarship, a current, ongoing debate in the academy.

Data collection

Qualitative researchers face many choices related to data collection ranging from grounded theory practice, narratology, storytelling, classical ethnography, or shadowing. Qualitative methods are also loosely present in other methodological approaches, such as action research or actor-network theory. The most common method is the qualitative research interview, but forms of the data collected can also include group discussions, observation and reflection field notes, various texts, pictures, and other materials.

Qualitative research often categorizes data into patterns as the primary basis for organizing and reporting results.[citation needed] Qualitative researchers typically rely on the following methods for gathering information: Participant Observation, Non-participant Observation, Field Notes, Reflexive Journals, Structured Interview, Semi-structured

Interview, Unstructured Interview, and Analysis of documents and materials.

The ways of participating and observing can vary widely from setting to setting. Participant observation is a strategy of reflexive learning, not a single method of observing. In participant observation researchers typically become members of a culture, group, or setting, and adopt roles to conform to that setting. In doing so, the aim is for the researcher to gain a closer insight into the culture's practices, motivations and emotions. It is argued that the researchers' ability to understand the experiences of the culture may be inhibited if they observe without participatingcitation needed.

The data that is obtained is streamlined to a definite theme or pattern. This is further worked on and alternative research hypothesis is generated which finally provides the basis of the research statement.Some distinctive qualitative methods are the use of focus groups and key informant interviews. The focus group technique involves a moderator facilitating a small group discussion between selected individuals on a particular topic. This is a particularly popular method in market research and testing new initiatives with users/workers.

In fields that study households, a much debated topic is whether interviews should be conducted individually or collectively (e.g. as couple interviews).One traditional and specialized form of qualitative research is called cognitive testing or pilot testing which is used in the development of quantitative survey items. Survey items are piloted on study participants to test the reliability and validity of the items.

There are several different research approaches, or research designs, that qualitative researchers use. In the academic social sciences, the most frequently used qualitative research approaches include the following:

- ✓ Basic/generic/pragmatic qualitative research, which involves using an eclectic approach taken up to best match the research question at hand.
- ✓ Ethnographic Research: This method is also called "ethno methodology" or "methodology of the people". An example of applied ethnographic research is the study of a particular culture and their understanding of the role of a particular disease in their cultural framework.
- ✓ Grounded Theory is an inductive type of research, based or "grounded" in the observations or data from which it was developed; it uses a variety of data sources, including quantitative data, review of records, interviews, observation and surveys.
- ✓ Phenomenology describes the "subjective reality" of an event, as perceived by the study population; it is the study of a phenomenon.
- ✓ Philosophical Research is conducted by field experts within the boundaries of a specific field of study or profession, the best qualified individual in any field of study to use an intellectual analysis, in order to clarify definitions, identify ethics, or make a value judgment concerning an issue in their field of study their lives.
- ✓ Critical Social Research, used by a researcher to understand how people communicate and develop symbolic meanings.
- ✓ Ethical Inquiry, an intellectual analysis of ethical problems. It includes the study of ethics as related to obligation, rights, duty, right and wrong, choice etc.
- ✓ Foundational Research, examines the foundations for a science, analyzes the beliefs, and develops ways to specify how a knowledge base should change in light of new information.
- ✓ Historical Research allows one to discuss past and present events in the context of the present condition, and allows one to reflect and provide possible answers to current issues and problems. Historical research helps us in

answering questions such as: Where have we come from, where are we, who are we now and where are we going?

Data analysis

Interpretive techniques

The most common analysis of qualitative data is observer impression. That is, expert or bystander observers examine the data, interpret it via forming an impression and report their impression in a structured and sometimes quantitative form.

Coding

Coding is an interpretive technique that both organizes the data and provides a means to introduce the interpretations of it into certain quantitative methods. Most coding requires the analyst to read the data and demarcate segments within it, which may be done at different times throughout the process. Each segment is labeled with a "code" usually a word or short phrase that suggests how the associated data segments inform the research objectives. When coding is complete, the analyst prepares reports via a mix of: summarizing the prevalence of codes, discussing similarities and differences in related codes across distinct original sources/contexts, or comparing the relationship between one or more codes.

Some qualitative data that is highly structured (e.g., close-end responses from surveys or tightly defined interview questions) is typically coded without additional segmenting of the content. In these cases, codes are often applied as a layer on top of the data. Quantitative analysis of these codes is typically the capstone analytical step for this type of qualitative data.

Contemporary qualitative data analyses are sometimes supported by computer programs, termed Computer Assisted Qualitative Data Analysis Software. These programs do not supplant the interpretive nature of coding but rather are aimed at enhancing the analyst's efficiency at data storage/retrieval and at applying the codes to the data. Many programs offer

efficiencies in editing and revising coding, which allow for work sharing, peer review, and recursive examination of data.

A frequent criticism of coding method is that it seeks to transform qualitative data into empirically valid data, which contain: actual value range, structural proportion, contrast ratios, and scientific objective properties; thereby draining the data of its variety, richness, and individual character. Analysts respond to this criticism by thoroughly expositing their definitions of codes and linking those codes soundly to the underlying data, therein bringing back some of the richness that might be absent from a mere list of codes.

Recursive abstraction

Some qualitative datasets are analyzed without coding. A common method here is recursive abstraction, where datasets are summarized; those summaries are then further summarized and so on. The end result is a more compact summary that would have been difficult to accurately discern without the preceding steps of distillation.

A frequent criticism of recursive abstraction is that the final conclusions are several times removed from the underlying data. While it is true that poor initial summaries will certainly yield an inaccurate final report, qualitative analysts can respond to this criticism. They do so, like those using coding method, by documenting the reasoning behind each summary step, citing examples from the data where statements were included and where statements were excluded from the intermediate summary.

Mechanical techniques

Some techniques rely on leveraging computers to scan and reduce large sets of qualitative data. At their most basic level, mechanical techniques rely on counting words, phrases, or coincidences of tokens within the data. Often referred to as content analysis, the output from these techniques is amenable to many advanced statistical analyses.

Mechanical techniques are particularly well-suited for a few scenarios. One such scenario is for datasets that are simply too large for a human to effectively analyze, or where analysis of them would be cost prohibitive relative to the value of information they contain. Another scenario is when the chief value of a dataset is the extent to which it contains "red flags" (e.g., searching for reports of certain adverse events within a lengthy journal dataset from patients in a clinical trial) or "green flags" (e.g., searching for mentions of your brand in positive reviews of marketplace products).

A frequent criticism of mechanical techniques is the absence of a human interpreter. And while masters of these methods are able to write sophisticated software to mimic some human decisions, the bulk of the "analysis" is nonhuman. Analysts respond by proving the value of their methods relative to either a) hiring and training a human team to analyze the data or b) letting the data go untouched, leaving any actionable nuggets undiscovered.

Paradigmatic differences

Contemporary qualitative research has been conducted from a large number of various paradigms that influence conceptual and theoretical concerns of legitimacy, control, data analysis, ontology, and epistemology, among others. Research conducted in the last 10 years has been characterized by a distinct turn toward more interpretive, postmodern, and critical practices. Guba and Lincoln (2005) identify five main paradigms of contemporary qualitative research:positivism, post positivism, critical theories, constructivism, and participatory/cooperative paradigms.Each of the paradigms listed by Guba and Lincoln are characterized by axiomatic differences in axiology, intended action of research, control of research process/outcomes, relationship to foundations of truth and knowledge, validity (see below), textual representation and voice of the researcher/participants, and commensurability with other paradigms. In particular, commensurability involves the extent to which paradigmatic concerns "can be retrofitted to each other in ways that make the simultaneous practice of both possible".[12] Positivist and post positivist paradigms share commensurable assumptions but are largely incommensurable with critical, constructivist, and participatory paradigms. Likewise, critical, constructivist, and participatory paradigms are commensurable on certain issues (e.g., intended action and textual representation).

Qualitative research in the last ten years also has been characterized by concern with everyday categorization and

ordinary storytelling. This "narrative turn" is producing an enormous literature as researchers present sensitizing concepts and perspectives that bear especially on narrative practice, which centers on the circumstances and communicative actions of storytelling. Catherine Riessman (1993) and Gubrium and Holstein (2009) provide analytic strategies, and Holstein and Gubrium (2012) present the variety of approaches in recent comprehensive texts. Relatedly, narrative practice increasingly takes up the institutional conditioning of narrative practice (see Gubrium and Holstein 2000).

Trustworthiness

In quantitative studies, this is referred to as 'validity'. A central issue in qualitative research is trustworthiness (also known as credibility and/or dependability). There are many different ways of establishing trustworthiness, including: member check, interviewer corroboration, peer debriefing, prolonged engagement, negative case analysis, auditability, confirmability, bracketing, and balance. Most of these methods were coined, or at least extensively described by Lincoln and Guba (1985)

Academic research

By the end of the 1970s many leading journals began to publish qualitative research articles and several new journals emerged which published only qualitative research studies and articles about qualitative research methods. In the 1980s and 1990s, the new qualitative research journals became more multidisciplinary in focus moving beyond qualitative research's traditional disciplinary roots of anthropology, sociology, and philosophy.

Qualitative research in psychology

Wilhelm Wundt, the founder of scientific psychology, was one of the first psychologists to openly conduct qualitative research as part of his experiments. Early examples of his qualitative research were published in 1900 through 1920, in his 10volume study, Völkerpsychologie (translated to: Social Psychology). Wundt advocated the strong relation between psychology and philosophy. He believed that there was a gap between psychology and quantitative research that could only be filled by conducting qualitative research. Qualitative research dove into aspects of human life that could not adequately be covered by quantitative research; aspects such as culture, expression, beliefs, morality and imagination.

There are records of qualitative research being used in psychology before World War II, but at the time these methods were viewed as invalid forms of research. Due to the lack of acceptance, many of the psychologists who practiced qualitative researchers denied the usage of such methods or apologized for doing so. It was not until the late 20th century when qualitative research was becoming widely accepted in the world of psychology. The excitement about the groundbreaking form of research was short-lived since many of the pioneering studies with qualitative research had already been conducted. This left many psychologists without the recognition they deserved for their significant work in the field of research.

Quantitative research

In sociology, quantitative research refers to the systematic empirical investigation of social phenomena via statistical, mathematical or numerical data or computational techniques. The objective of quantitative research is to develop and employ mathematical models, theories and/or hypotheses pertaining to phenomena. The process of measurement is central to quantitative research because it provides the fundamental connection between empirical observation and

mathematical expression of quantitative relationships. Quantitative data is any data that is in numerical form such as statistics, percentages, etc. In layman's terms, this means that the quantitative researcher asks a specific, narrow question and collects a sample of numerical data from participants to answer the question. The researcher analyzes the data with the help of statistics. The researcher is hoping the numbers will yield an unbiased result that can be generalized to some larger population. Qualitative research, on the other hand, asks broad questions and collects word data from participants. The researcher looks for themes and describes the information in themes and patterns exclusive to that set of participants. More generally, quantitative research is widely used in social sciences such as psychology, economics, sociology, marketing, community health, health & human development, gender and political science, and less frequently inanthropology and history. Research in mathematical sciences such as physics is also 'quantitative' by definition, though this use of the term differs in context. In the social sciences, the term relates to empirical methods, originating in both philosophical positivism and the history of statistics, which contrast with qualitative research methods.

Qualitative methods produce information only on the particular cases studied, and any more general conclusions are only hypotheses. Quantitative methods can be used to verify which of such hypotheses are true.

A comprehensive analysis of 1274 articles published in the top two American sociology journals between 1935 and 2005 found that roughly two thirds of these articles used quantitative methods.

Overview

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

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.[3] Approaches to quantitative psychology were first modeled on quantitative approaches in the physical sciences by Gustav Fechner in his work onpsychophysics, which built on the work of Ernst Heinrich Weber. 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. For example, based on analysis of the history of science, Kuhn concludes that "large amounts of qualitative work have usually been prerequisite to fruitful quantification in the physical sciences".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 (from the speech response of the researchee) and meaning (why did this person/group say something and what did it mean to them?) (Kieron Yeoman).

Although quantitative investigation of the world has existed since people first began to record events or objects that had been counted, the modern idea of quantitative processes have their roots in Auguste Comte's positivist framework.Positivism emphasized the use of the scientific method through observation to empirically test hypotheses explaining and predicting what, where, why, how, and when phenomena occurred. Positivist scholars like Comte believed only scientific methods rather than previous spiritual explanations for human behavior could advance.

Use of statistics

Statistics is the most widely used branch of mathematics in quantitative research outside of the physical sciences, and also finds applications within the physical sciences, such as in statistical mechanics. Statistical methods are used extensively within fields such as economics, social sciences and biology. Quantitative research using statistical methods starts with the collection of data, based on the hypothesis or theory. Usually a big sample of data is collected this would require verification, validation and recording before the analysis can take place. Software packages such as SPSS and R are typically used for this purpose. Causal relationships are studied by manipulating factors thought to influence the phenomena of interest while controlling other variables relevant to the experimental outcomes. In the field of health, for example, researchers might measure and study the relationship between dietary intake and measurable physiological effects such as weight loss, controlling for other key variables such as exercise. Quantitatively based opinion surveys are widely used in the media, with statistics such as the proportion of respondents in favor of a position commonly reported. In opinion surveys, respondents are asked a set of structured questions and their responses are tabulated. In the field of climate science, researchers compile and compare statistics such as temperature or atmospheric concentrations of carbon dioxide.

Empirical relationships and associations are also frequently studied by using some form of General linear model, non-linear model, or by using factor analysis. A fundamental principle in quantitative research is that correlation does not imply causation, although some such as Clive Granger suggest that a series of correlations can imply a degree of causality. This principle follows from the fact that it is always possible a spurious relationship exists for variables between whichcovariance is found in some degree. Associations may be examined between any combination of continuous and categorical variables using methods of statistics.

Measurement

Views regarding the role of measurement in quantitative research are somewhat divergent. Measurement is often regarded as being only a means by which observations are expressed numerically in order to investigate causal relations or associations. However, it has been argued that measurement often plays a more important role in quantitative research. For example, Kuhn argued that within quantitative research, the results that are shown can prove to be strange. This is because accepting a theory based on results of quantitative data could prove to be a natural phenomenon. He argued that such abnormalities are interesting when done during the process of obtaining data, as seen below:

When measurement departs from theory, it is likely to yield mere numbers, and their very neutrality makes them particularly sterile as a source of remedial suggestions. But numbers register the departure from theory with an authority and finesse that no qualitative technique can duplicate, and that departure is often enough to start a search (Kuhn, 1961, p. 180).

In classical physics, the theory and definitions which underpin measurement are generally deterministic in nature. In contrast, probabilistic measurement models known as the Rasch model and Item response theory models are generally employed in the social sciences. Psychometrics is the field of study

concerned with the theory and technique for measuring social and psychological attributes and phenomena. This field is central to much quantitative research that is undertaken within the social sciences.

Quantitative research may involve the use of proxies as stand-ins for other quantities that cannot be directly measured. Tree-ring width, for example, is considered a reliable proxy of ambient environmental conditions such as the warmth of growing seasons or amount of rainfall. Although scientists cannot directly measure the temperature of past years, tree-ring width and other climate proxies have been used to provide a semi-quantitative record of average temperature in the Northern Hemisphere back to 1000 A.D. When used in this way, the proxy record (tree ring width, say) only reconstructs a certain amount of the variance of the original record. The proxy may be calibrated (for example, during the period of the instrumental record) to determine how much variation is captured, including whether both short and long term variation is revealed. In the case of tree-ring width, different species in different places may show more or less sensitivity to, say, rainfall or temperature: when reconstructing a temperature record there is considerable skill in selecting proxies that are well correlated with the desired variable.

Relationship with qualitative methods

In most physical and biological sciences, the use of either quantitative or qualitative methods is uncontroversial, and each is used when appropriate. In the social sciences, particularly in sociology, social anthropology and psychology, the use of one or other type of method can be a matter of controversy and even ideology, with particular schools of thought within each discipline favouring one type of method and pouring scorn on to the other. The majority tendency throughout the history of social science, however, is to use eclectic approaches-by combining both methods. Qualitative methods might be used to understand the meaning of the

conclusions produced by quantitative methods. Using quantitative methods, it is possible to give precise and testable expression to qualitative ideas. This combination of quantitative and qualitative data gathering is often referred to as mixed-methods research.

Examples

- ✓ Research that consists of the percentage amounts of all the elements that make up Earth's atmosphere.
- ✓ Survey that concludes that the average patient has to wait two hours in the waiting room of a certain doctor before being selected.
- ✓ An experiment in which group x was given two tablets of Aspirin a day and Group y was given two tablets of a placebo a day where each participant is randomly assigned to one or other of the groups. The numerical factors such as two tablets, percent of elements and the time of waiting make the situations and results quantitative.
- ✓ In finance, quantitative research into the stock markets is used to develop models to price complex trades, and develop algorithms to exploit investment hypotheses, as seen in quantitative hedge funds and Trading Strategy Indices.

What Is Qualitative Research?

Qualitative researchers are primarily concerned with practice and process rather than outcomes. That is, they focus on the process that is occurring instead of the outcome of that process. The focus is on participants' perceptions and experiences and the way they make sense of their lives.

Qualitative research, also called field research, typically involves fieldwork in which the researcher observes and records behavior and events in their natural setting. The researcher physically goes to the people, setting, or site in order to observe the subject as it normally and naturally occurs or behaves.

In a sense, you've been doing qualitative research your whole life. We do field research whenever we observe or participate in social behavior and try to understand it, whether in a college classroom, in a doctor's waiting room, or on an airplane. Whenever we report our observations to others, we are reporting our field research efforts.

Methods of Data Collection

- ✓ Direct observation: The researcher studies people in their natural environment, simply observing interactions and behaviors as an outsider, without participating.
- ✓ In-depth interviews: The researcher interviews participants in-depth and one-on-one. The interviewer typically has a general plan of inquiry but not a specific set of questions that must be asked in a particular order. Rather, it flows more like a conversation in which the respondent guides the direction of the interview.
- ✓ Participation: The researcher observes behavior by participating in the group and gaining first-hand experiences.
- ✓ Immersion: The researcher immerses themselves into the setting, living among the participants for months or years. The researcher "goes native" to get an in-depth and longitudinal understanding of the subject.
- ✓ Focus group: The researcher interviews a small group of participants at the same time. The focus groups are generally more structured and contain 10-15 participants at a time. Focus groups are used often in market research.

Strengths of Qualitative Research

Field research is especially effective for studying subtle nuances in attitudes and behaviors and for examining social processes over time. The main strength of this method, then, lies in the depth of understanding that it allows. Rarely is field research challenged as being "superficial."

Another advantage of qualitative research is the flexibility it permits. Researchers can modify their field

research design at any time and as often as they like. Further, one is always prepared to engage in field research, whenever the occasion should arise, as there is little to no preparation needed. You could not as easily initiate a survey or conduct an experiment in this manner.

Field research can be relatively inexpensive as well. Other social scientific research methods may require expensive equipment or an extensive research staff, but field research typically can be undertaken by one researcher with a notebook and pen.

Weakness of Qualitative Research

Field research has several weaknesses as well. First, qualitative research is not an appropriate means for arriving at statistical descriptions of large populations. Observing casual political discussions in restaurants, for example, would not yield trustworthy estimates of future voting behaviors of the total voting population. Nevertheless, the study could provide important insights into how political attitudes are formed.

Field research also has a potential problem with reliability. Reliability can also be thought of as dependability: If you made the same measurement or observation again and again, would you get the same result? In field research, since observations and interpretations are subjective and personal, the researcher must take pains to address this and prevent their personal opinions and feelings from biasing their results.

Social Research Methods/Qualitative Research

Qualitative Research

Qualitative research is collection of research methods that collect verbal or text data in order to answer sociological questions. This kind of research looks at processes and explanations in answering these questions.

Three qualitative methods include:

- ✓ content analysis
- ✓ interviews
- ✓ field research

Field research

Field research is the systematic observation of people in a natural setting for an extended period of time. This research has its origins in investigative journalism and cultural anthropology.

Topics appropriate for field research

- ✓ Topics that defy simple quantification
- ✓ Attitudes and behaviors best understood in their natural settings
- ✓ Social processes over time

Elements of social life appropriate for field research

- ✓ Practices
- ✓ Episodes
- ✓ Encounters
- ✓ Roles and Social Types
- ✓ Social and Personal Relationships
- ✓ Groups and Cliques
- ✓ Organizations
- ✓ Settlements and Habitats
- ✓ Social Worlds
- ✓ Subcultures and Lifestyles

Potential problems

- ✓ Bias - both experimenter bias and participant bias
- ✓ Reactivity - a related idea in which subjects alter their behavior as a response to the knowledge that they are being studied
- ✓ Possibility of the experimenter "going native" or becoming part of the culture they are studying
- ✓ Some subjects may not consent to being observed

Strengths and Weaknesses of Qualitative Field Research

Strengths:

- ✓ effectiveness for studying subtle nuances in attitudes and behaviors and
- ✓ social processes over time
- ✓ flexibility

- ✓ inexpensiveness

Weaknesses:

- ✓ no appropriate statistical analyses
- ✓ reliability (because this research is not easy to replicate)
- ✓ validity

Types of validity include...

- ✓ ECOLOGICAL VALIDITY is the degree to which the researcher's construction of the field site corresponds to the subjects' own conception of it
- ✓ **NATURAL HISTORY VALIDITY** is the degree to which outsiders other than the researcher accept that the methods used by the researcher are valid
- ✓ **MEMBER VALIDITY** is the degree to which subjects confirm the accuracy and fairness of the researcher's field notes
- ✓ **COMPETENT INSIDER PERFORMANCE VALIDITY** is the degree to which the researcher has been accepted into the social world of the field site

Qualitative Field Research Paradigms

- ✓ **Naturalism -** an approach to field research based on the assumption that an objective social reality exists and can be observed and reported accurately
- ✓ **Institutional Ethnography -** a research technique in which the personal experiences of individuals are used to reveal power relationships and other characteristics of the institution within which they operate. It links the micro level of everyday personal experiences with the macrolevel of institutions. The level of analysis in this paradigm is culture. It does this through explicit knowledge, tacit knowledge, and thick description.
- ✓ **Ethnomethodology -** an approach to the study of social life that focuses on the discovery of implicit, usually unspoken, assumptions and agreement. This paradigm usually focuses on "breaking the rules" as well as finding and analyzing "what everyone knows". The units of analysis typically

include words, gestures, and body language and are typically studied through breeching experiments.

- ✓ **Breeching Experiment-** an experiment in which the researcher breaks tacit social norms in order to test people's reactions.
- ✓ **Grounded Theory -** an inductive approach to the study of social life that attempts to generate a theory from the constant comparing of unfolding observations. The guidelines for this paradigm include thinking conservatively, obtaining multiple viewpoints, periodically stepping back, maintaining an attitude of skepticism, and following the research procedures.
- ✓ **Case Studies -** the in-depth examination of a single instance of some social phenomenon
- ✓ **Extended case method -** a technique in which case study observations are used to discover flaws in and to improve existing social theories
- ✓ **Participatory Action Research -** an approach to social research in which the people being studied are given control over the purpose and procedures of the research
- ✓ **Emancipatory Research -** research conducted for the purpose of benefiting disadvantaged groups.

Conducting Qualitative Field Research

Prepare for the field

In preparing for field research, most methodologists suggest selecting a site where the researcher is a stranger. This ensures a more balanced perspective. However, it can be difficult for researchers to obtain access to such sites. Situations in which the researcher is an insider or is perceived as a member of the same general community can also be helpful. Sometimes, obtaining access to a site may be facilitated by obtaining the interest and trust of a gatekeeper, who may have formal or informal authority. Personal connections are often especially important when deviant or elite populations are

being studied. Personal connections can even play a role in every-day situations, aiding the researcher in transforming "access" into "acceptance."

A few important steps in preparation for field research:

- ✓ Be familiar with relevant research
- ✓ Discuss your plans with others in the area
- ✓ Identify and meet informants (when appropriate)
- ✓ Make good first impressions, as these are important
- ✓ Establish rapport, which is an open and trusting relationship

The roles a researcher can take on in field research are defined by the relationship the observer has with the subject. This is because the involvement the research has with the subject will affect how in depth the research is, and it may also incur the observer effect, in which the subject changes his/her behavior based on the knowledge that he/she is being observed. Another way in which the researcher impacts the research is based on his own involvement in the experiment itself; this participatory involvement is defined by how involved the researcher is with the subjects and their behavior throughout the course of the experiment. The researcher can be entirely an outside observer, never interacting directly with the subject, or be entirely in the group and part of the group they are researching, or any level in between these two extremes. Depending on the research and what is being studied, the researcher will decide what level of involvement will be appropriate for the research and what level of involvement will give the best results and not affect the quality of the data.

Take into account any ethical considerations

Institutional review boards typically exercise great caution in approving field research studies. While field research is unlikely to harm the subjects, it can be very risky for harming the institution. This is especially true when the research subjects are children.

Observing in public areas is generally accepted but some public areas have special considerations: one are not part

of the “public” if the group is homogeneous and he/she is different (woman in an all male group, adult among kids, etc…) Researchers should only take the liberty to "act invisible" and hide their role as a researcher if the behavior they are researching is completely public and completely anonymous, for example, study habits in a library, how people approach one another in a bar, etc. However, a researcher must disclose their researcher role when observing in private locations.

Interviewing/Stages in complete interviewing process:

- ✓ Thematizing
- ✓ Designing
- ✓ Interviewing
- ✓ Transcribing
- ✓ Analyzing
- ✓ Verifying
- ✓ Reporting

Qualitative Analysis

Qualitative Analysis is the numerical examination and interpretation of observations, for the purpose of discovering underlying meanings and patterns of relationships. This is most typical of field research and historical research.

Link Theory and Analysis

Discovering Patterns

You must try to find frequencies, magnitudes, structures, processes, causes and consequences.

- ✓ **Cross-Case Analysis –** an analysis that involves an examination of more than one case; this can be either a variable-oriented analysis
- ✓ **Variable-Oriented Analysis –** an analysis that describes and/or explains a particular variable
- ✓ **Case-Oriented Analysis –** an analysis that aims to understand a particular case or several cases by looking closely at the details of each
- ✓ **Ground Theory Method (GTM)–** an inductive approach to research introduced by Barney Glaser and Anselm Strauss in

which theories are generated solely from an examination of data rather than being derived deductively

- ✓ **Constant Comparative Method –** a component of the Grounded Theory Method in which observations are compared with one another and with the evolving inductive theory

Four stages of constant comparative method (Glaser and Strauss):

- ✓ Comparing incident application to each category
- ✓ Integrating categories and their properties
- ✓ Delimiting the theory
- ✓ Writing theory

Semiotics – the study of signs and the meanings associated with them.

This is commonly associated with content analysis

Conversation Analysis (CA)– a meticulous analysis of the details of conversation, based on a complete transcript that includes pauses, hems, and also haws.

Conceptualization in qualitative analysis

In quantitative analysis, it is usually obvious what the variables to be analyzed are, for example, race, gender, income, education, etc. Deciding what is a variable, and how to code each subject on each variable, is more difficult in qualitative data analysis.

- ✓ **Concept Formation** - is more sophisticated in qualitative data analysis. Concept formation is the creation of variables (usually called THEMES) out of raw qualitative data.
- ✓ **Casing** - the process of determining what represents a case, is an important part of concept formation. CODING is the actual transformation of qualitative data into themes.

Coding in qualitative analysis

- ✓ **Open Coding –** the initial classification and labeling of concepts in qualitative data analysis. In open coding, the codes are suggested by the researchers' examination and questioning of the data

- ✓ **Axial coding** – a reanalysis of the results of open coding aimed at identifying the important concepts (themes).
- ✓ **Selective coding** – this builds on the results of open coding and axial coding to identify the central concept that organizes the other concepts that have been identified in a body of textual materials.
- ✓ **Memoing** – writing memos that become part of the data for analysis in qualitative research such as grounded theory. Memos can describe and define concepts, deal with methodological issues, or offer initial theoretical formulations. Memos can be thought of as a researcher's diary.
- ✓ **Code memos** – identify the code labels and their meanings
- ✓ **Theoretical memos** – reflections on dimensions and deeper meaning of contexts, relationship among contexts, theoretical propositions, etc.
- ✓ **Operational memos** – deal primarily with methodological issues.
- ✓ **Concept Mapping**– the graphical display of concepts and their interrelations, useful in the formulation of theory

Social network analysis

Social network analysis is a technique to discover, analyze, and display sets of relations among a group. It emerged from the sociometric study of small groups. Examples of groups would be school classes, summer camps, etc. It utilizes a graph (diagraph) for display, and ties between individuals are represented as edges (arcs) in this graph. In order to determine the ties, questions that could be used include: "Whom do you know personally?", "Who are your best friends?", "Whom do you most respect?", "With whom would you most like to be friends?", etc. Ties are typically represented by 0 or 1, but they can also be given magnitudes. Finally, structurally similar individuals are clustered together.

Questions for Evaluating the Quality of Qualitative Research

- ✓ Credibility of the findings
- ✓ Ways that the research has extended knowledge or understanding of the subject
- ✓ Effectiveness of evaluation in addressing its original aims/purposes
- ✓ Explanation of the scope for drawing wider inferences
- ✓ Clarity of the basis of evaluative appraisal
- ✓ Defensibility of the research design
- ✓ Defense of the same design/target selection of cases/documents
- ✓ Description of the eventual sample composition and coverage
- ✓ Quality of data collection process
- ✓ Clarity of approach to, and formulation of, analysis
- ✓ Portrayal and retention of contexts of data sources retained and portrayed
- ✓ Exploration of diversity of perspective and content
- ✓ Coherence in conveying detail, depth, and complexity of the data
- ✓ Clarity of links between data, interpretation, and conclusions
- ✓ Clarity and coherence of reporting
- ✓ Clarity of assumptions/theoretical perspectives/values that shape the evaluation's form and output
- ✓ Evidence of attention to ethical issues
- ✓ Adequacy of documentation of research process

Qualitative methods are rooted in interpretive approaches to the social sciences that state that to know the social worlds we study, we need to understand the meanings that human subjects hold. Qualitative traditions of social research thus stress the importance of gaining access to the meanings possessed by human beings, since it is on the basis of such meanings that human agency and sociability become intelligible. Ethnographic traditions of social research have thus emphasized the importance of studying social life in its ‘natural

settings' and through the participation of the researcher in those worlds. This has been complemented and revised by other qualitative research techniques and practices aimed at accessing the experiences, meanings and understandings possessed by human subjects, and how these are best represented through the construction of sociologically valid knowledge.

Qualitative Methods Print Page

Definition

The word qualitative implies an emphasis on the qualities of entities and on processes and meanings that are not experimentally examined or measured (if measured at all) in terms of quantity, amount, intensity, or frequency. Qualitative researchers stress the socially constructed nature of reality, the intimate relationship between the researcher and what is studied, and the situational constraints that shape inquiry. Such researchers emphasize the value-laden nature of inquiry. They seek answers to questions that stress how social experience is created and given meaning. In contrast, quantitative studies emphasize the measurement and analysis of causal relationships between variables, not processes. Proponents of such studies claim that their work is done from within a value-free framework.

Qualitative forms of inquiry are considered by many social and behavioral scientists to be as much a perspective on how to approach investigating a research problem as it is a method.

Characteristics of Qualitative Research

The Design

- ✓ **Naturalistic-**refers to studying real-world situations as they unfold naturally; nonmanipulative and noncontrolling; researcher is open to whatever emerges (there is a lack of predetermined constraints on findings).
- ✓ **Emergent-**acceptance of adapting inquiry as understanding deepens and/or situations change; the researcher avoids

rigid designs that eliminate responsiveness and pursues new paths of discovery as they emerge.

- ✓ **Purposeful-**cases for study (e.g., people, organizations, communities, cultures, events, critical incidences) are selected because they are "information rich" and illuminative. That is, they offer useful manifestations of the phenomenon of interest; sampling is aimed at insight about the phenomenon, not empirical generalization from a sample to a population.

The Collection of Data

- ✓ **Data-**observations that yield detailed, "Thick description" (in-depth understanding); interviews that capture direct quotations about people's personal perspectives and experiences; case studies; careful document review.
- ✓ **Personal experience and engagement-**the researcher has direct contact with and gets close to the people, situation, and phenomenon under study; the researcher's personal experiences and insights are an important part of the inquiry and critical to understanding the phenomenon.
- ✓ **Empathic neutrality-**an empathic stance in working with study respondents seeks vicarious understanding without judgment (neutrality) by showing openness, sensitivity, respect, awareness, and responsiveness; in observation it means being fully present (mindfulness).
- ✓ **Dynamic systems-**there is an attention to process; assumes change as ongoing, whether the focus is on an individual, an organization, a community, or an entire culture; therefore, mindful of and attentive to system and situation dynamics.

The Analysis

- ✓ **Unique case orientation-**assumes that each case is special and unique; the first level of analysis is being true to, respecting, and capturing the details of the individual cases being studied; cross-case analysis follows from and depends on the quality of individual case studies.

- ✓ **Inductive analysis-**immersion in the details and specifics of the data to discover important patterns, themes, and inter-relationships; begins by exploring, then confirming findings, guided by analytical principles rather than rules.
- ✓ **Holistic perspective-**the whole phenomenon under study is understood as a complex system that is more than the sum of its parts; the focus is on complex interdependencies and system dynamics that cannot be reduced in any meaningful way to a few discrete variables and linear, cause and effect relationships.
- ✓ **Context sensitive-**places findings in a social, historical, and temporal context; careful about, even dubious of, the possibility or meaningfulness of generalizations across time and space; emphasizes instead careful comparative case analyses and extrapolating patterns for possible transferability and adaptation in new settings.
- ✓ **Voice, perspective, and reflexivity-**the qualitative methodologist owns and is reflective about her or his own voice and perspective; a credible voice conveys authenticity and trustworthiness; complete objectivity being impossible and pure subjectivity undermining credibility, the researcher's focus reflects a balance between understanding and depicting the world authentically in all its complexity and of being self-analytical, politically aware, and reflexive in consciousness.

Basic Research Design for Qualitative Studies

Unlike positivist or experimental research that utilizes a linear and one-directional sequence of design steps, there is considerable variation in how a qualitative research study is organized. In general, qualitative researchers attempt to describe and interpret human behavior based primarily on the words of selected individuals ("informants" or "respondents") and/or through the interpretation of their material culture or occupied space. There is a reflexive process underpinning every stage of a qualitative study to ensure that researcher

biases, presuppositions, and interpretations are clearly evident thus ensuring that the reader is better able to interpret the overall validity of the research. According to Maxwell (2009), there are five, not necessarily ordered or sequential, components in qualitative research designs. How they are presented depends on the research philosophical and theoretical framework of the study, the methods chosen, and the assumptions underpinning the study.

Goals

Describe the central research problem being addressed but avoid describing any anticipated outcomes. Questions to ask yourself are: Why is your study worth doing? What issues do you want to clarify, and what practices and policies do you want it to influence? Why do you want to conduct this study, and why should we care about the results?

Conceptual Framework

Questions to ask yourself are: What do you think is going on with the issues, settings, or people you plan to study? What theories, beliefs, and prior research findings will guide or inform your research and what literature, preliminary studies, and personal experiences will you draw on for understanding the people or issues you are studying? Note not just the results of other studies in your review of the literature, but the methods used as well. If appropriate, describe why earlier studies using quantitative methods were inadequate in addressing the research problem.

Research Questions

Usually there is a research problem that frames your qualitative study and influences your decision about what methods to use, but qualitative designs generally lack an accompanying hypothesis or set of assumptions because the findings are emergent and unpredictable. In this context, more specific research questions are generally the result of an interactive design process rather than the starting point for that process. Questions to ask yourself are: What, specifically, do

you want to learn or understand by doing this study? What do you not know about the things you are studying that you want to learn? What questions will your research attempt to answer, and how are these questions related to one another?

Methods

Structured approaches to applying a method or methods to your study help to ensure that there is comparability of data across sources and researchers and, thus, they can be useful in answering questions that deal with differences between phenomena and the explanation for these differences (variance questions). An unstructured approach allows the researcher to focus on the particular phenomena studied. This facilitates an understanding of the processes that led to specific outcomes, trading generalizability and comparability for internal validity and contextual and evaluative understanding. Questions to ask yourself are: What will you actually do in conducting this study? What approaches and techniques will you use to collect and analyze your data, and how do these constitute an integrated strategy?

Validity

In contrast to quantitative studies where the goal is to design, in advance, "controls" such as formal comparisons, sampling strategies, or statistical manipulations to address anticipated and unanticipated threats to validity, qualitative researchers must attempt to rule out most threats to validity after the research has begun by relying on evidence collected during the research process itself in order to effectively argue that any alternative explanations for a phenomenon are implausible. Questions to ask yourself are: How might your results and conclusions be wrong? What are the plausible alternative interpretations and validity threats to these, and how will you deal with these? How can the data that you have, or that you could potentially collect, support or challenge your ideas about what's going on? Why should we believe your results?

Conclusion

Although Maxwell does not mention a conclusion as one of the components of a qualitative research design, you should formally conclude your study. Briefly reiterate the goals of your study and the ways in which your research addressed them. Discuss the benefits of your study and how stakeholders can use your results. Also, note the limitations of your study and, if appropriate, place them in the context of areas in need of further research.

Strengths of Using Qualitative Methods

The advantage of using qualitative methods is that they generate rich, detailed data that leave the participants' perspectives intact and provide multiple contexts for understanding the phenomenon under study.

Among the specific strengths of using qualitative methods to study social science research problems is the ability to:

- ✓ Obtain a more realistic view of the lived world that cannot be understood or experienced in numerical data and statistical analysis;
- ✓ Provide the researcher with the perspective of the participants of the study through immersion in a culture or situation and as a result of direct interaction with them;
- ✓ Allow the researcher to describe existing phenomena and current situations;
- ✓ Develop flexible ways to perform data collection, subsequent analysis, and interpretation of collected information;
- ✓ Yield results that can be helpful in pioneering new ways of understanding;
- ✓ Provide a holistic view of the phenomena under investigation;
- ✓ Interact with the research subjects in their own language and on their own terms; and,

- ✓ Create a descriptive capability based on primary and unstructured data.

Limitations of Using Qualitative Methods

It is very much true that most of the limitations you find in using qualitative research techniques also reflect their inherent strengths. For example, small sample sizes help you investigate research problems in a comprehensive and in-depth manner. However, small sample sizes undermine opportunities to draw useful generalizations from or make broad recommendations based upon the findings. As the primary instrument of investigation, qualitative researchers are often imbedded in the cultures and experiences of others. This, however, increases the opportunity for bias to enter into the way data is gathered, interpreted, and reported.

Some specific limitations associated with using qualitative methods to study research problems in the social sciences include:

- ✓ Drifting away from the original objectives of the research in response to the changing nature of the context;
- ✓ Arriving at different conclusions based on the same information depending on the personal characteristics of the researcher;
- ✓ An inability to investigate causality between different research phenomena;
- ✓ Difficulty in explaining the difference in the quality and quantity of information obtained from different respondents and arriving at different, non-consistent conclusions;
- ✓ Requires a high level of experience from the researcher to obtain the targeted information from the respondent;
- ✓ May lack consistency and reliability because the researcher can employ different probing techniques and the respondent can choose to tell some particular stories and ignore others; and,

- ✓ Generation of a significant amount of data that cannot be randomized into manageable parts for analysis.

Quantitative Study

Introduction

The introduction to a quantitative study is usually written from the third person point of view and covers the following information:

- ✓ Identify the research problem - as with any academic study, you must state clearly and concisely the research problem being investigated.
- ✓ Review the literature - review scholarship on the topic, synthesizing key themes and, if necessary, noting studies that have used similar methods of inquiry and analysis. Note where key gaps exist and how your study helps to fill those gaps.
- ✓ Describe the theoretical framework -- provide an outline of the theory or hypothesis underpinning your study. If necessary, define unfamiliar or complex terms, concepts, or ideas and provide background information to place the research problem in proper context [e.g., historical, cultural, economic, etc.].

Methodology

The methods section of a quantitative study should describe how each objective of your study will be achieved. Be sure to provide enough detail to enable that the reader can make an informed assessment of the method being used to obtain results associated with the research problem.

- ✓ **Study population and sampling -** where did the data come from; how robust is it; note where gaps exist or what was excluded. Note the procedures used for their selection;
- ✓ **Data collection –** describe the tools and methods used to collect information and identify the variables being measured; Describe the methods used to obtain the data; Note if the data was pre-existing [i.e., government data] or you gathered it yourself. If you gathered it, describe what

type of instrument you used and why. Note that no data set is perfect describing any limitations in methodology.

- ✓ **Data analysis** -- describe the procedures for processing and analyzing the data. If appropriate, describe the specific instruments of analysis used to study each research objective.

Results

The finding of your study should be written objectively and in a succinct and precise format. In quantitative studies, it is common to use graphs, tables, charts and other non-textual elements to help the reader understand the data. Make sure that non-textual elements do not stand in isolation from the text but are used to supplement the overall description of the results and to help clarify key points being made. Further information about how to effectively present data using charts and graphs can be found here.

- ✓ **Statistical analysis --** how did you analyze the data? What were the key findings from the data? The findings should be present in a logical, sequential order. Describe but do not interpret these trends or negative results; save that for the discussion section. The results should be presented in the past tense.

Discussion

Discussions should be analytic, logical and comprehensive. The discussion should meld together your findings in relation to those identified in the literature review, and placed within the context of the theoretical framework underpinning the study.

- ✓ Interpretation of results -- reiterates the research problem being investigated and compare and contrast the findings with the research questions underlying the study. Did they affirm predicted outcomes or did the data refute it?
- ✓ Description of trends, comparison of groups, or relationships among variables describes any trends that

emerged from your analysis and highlight all unanticipated and statistical insignificant findings.

- ✓ Discussion of implications what is the meaning of your results? Highlight key findings based on the overall results and note you believe them to be important. How have the results helped fill gaps in understanding the research problem?
- ✓ Limitations describe any limitations or unavoidable bias in your study and, if necessary, note why these limitations did not inhibit effective interpretation of the results.

Conclusion

End of your study by to summarizing the topic and provide a final comment and assessment of the study.

- ✓ **Summary of findings** – synthesize the answers to your research questions. Do not report any statistical data here; just provide a narrative summary of the key findings and describe what learned that you did not know before conducting your study.
- ✓ **Recommendations** – if appropriate to the aim of the assignment, tie key findings with policy recommendations.
- ✓ **Future research** – note the need for future research linked to your study's limitations or to any remaining gaps in the literature that were not addressed.

Strengths of Using Quantitative Methods

Quantitative researchers try to recognize and isolate specific variables contained within the study framework, seek correlation, relationships and causality, and attempt to control the environment in which the data is collected to avoid the risk of variables, other than the one being study, accounting for the relationships identified.

- ✓ Among the specific strengths of using quantitative methods to study social science research problems:
- ✓ Allows for a broader study, involving a greater number of subjects, and enhancing the generalization of the results;
- ✓ Allows for greater objectivity and accuracy of results. Generally, quantitative methods are designed to provide summaries of data that support generalizations about the phenomenon under study. In order to accomplish this, quantitative research usually involves few variables and many cases, and employs prescribed procedures to ensure validity and reliability;
- ✓ Applying well-established standards means that the research can be replicated, and then analyzed and compared with similar studies;

- ✓ You can summarize vast sources of information and make comparisons across categories and over time; and,
- ✓ Personal bias can be avoided by researchers by keeping a 'distance' from participating subjects and employing subjects unknown to them.

Limitations of Using Quantitative Methods

Quantitative methods presume to have an objective approach to studying research problems, where data is controlled and measured, to address the accumulation of facts, and to determine the causes of behavior. As a consequence, the results of quantitative research may be statistically significant but are often humanly insignificant.

Some specific limitations associated with using quantitative methods to study research problems in the social sciences include:

- ✓ Quantitative data is more efficient and able to test hypotheses, but may miss contextual detail;
- ✓ Uses a static and rigid approach and so employs an inflexible process of discovery;
- ✓ The development of standard questions by researchers can lead to "structural bias" and false representation, where the data actually reflects the view of the researcher instead of the participating subject;
- ✓ Results provide less detail on behavior, attitudes, and motivation;
- ✓ Researcher may collect a much narrower and sometimes superficial dataset;
- ✓ Results are limited as they provide numerical descriptions rather than detailed narrative and generally provide less elaborate accounts of human perception;
- ✓ The research is often carried out in an unnatural, artificial environment so that a level of control can be applied to the exercise. This level of control might not normally be in place in the real world thus yielding "laboratory results" as opposed to "real world results"; and,

- ✓ Preset answers will not necessarily reflect how people really feel about a subject and in some cases might just be the closest match to preconceived hypothesis.

Quantitative research

In sociology, quantitative research refers to the systematic empirical investigation of social phenomena via statistical, mathematical or numerical data or computational techniques. The objective of quantitative research is to develop and employ mathematical models, theories and/or hypotheses pertaining to phenomena. The process of measurement is central to quantitative research because it provides the fundamental connection between empirical observation and mathematical expression of quantitative relationships. Quantitative data is any data that is in numerical form such as statistics, percentages, etc. In layman's terms, this means that the quantitative researcher asks a specific, narrow question and collects a sample of numerical data from participants to answer the question. The researcher analyzes the data with the help of statistics. The researcher is hoping the numbers will yield an unbiased result that can be generalized to some larger population. Qualitative research, on the other hand, asks broad questions and collects word data from participants. The researcher looks for themes and describes the information in themes and patterns exclusive to that set of participants.
More generally, quantitative research is widely used in social sciences such as psychology, economics, sociology, marketing, community health, health & human development, gender and political science, and less frequently inanthropology and history. Research in mathematical sciences such as physics is also 'quantitative' by definition, though this use of the term differs in context. In the social sciences, the term relates to empirical methods, originating in both philosophical positivism and the history of statistics, which contrast with qualitative research methods.

Qualitative methods produce information only on the particular cases studied, and any more general conclusions are only hypotheses. Quantitative methods can be used to verify which of such hypotheses are true.

A comprehensive analysis of 1274 articles published in the top two American sociology journals between 1935 and 2005 found that roughly two thirds of these articles used quantitative methods as follows…

- ✓ Overview
- ✓ Use of statistics
- ✓ Measurement
- ✓ Relationship with qualitative methods

Overview

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

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. Approaches to quantitative psychology were first modeled on quantitative approaches in the physical sciences by Gustav Fechner in his work onpsychophysics, which built on the work of Ernst Heinrich Weber. 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. For example, based on analysis of the history of science, Kuhn concludes that "large amounts of qualitative work have usually been

prerequisite to fruitful quantification in the physical sciences". 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 (from the speech response of the researcher) and meaning (why did this person/group say something and what did it mean to them?.

Although quantitative investigation of the world has existed since people first began to record events or objects that had been counted, the modern idea of quantitative processes have their roots in Auguste Comte's positivist framework.[5]Positivism emphasized the use of the scientific method through observation to empirically test hypotheses explaining and predicting what, where, why, how, and when phenomena occurred. Positivist scholars like Comte believed only scientific methods rather than previous spiritual explanations for human behavior could advance.

Use of statistics

Statistics is the most widely used branch of mathematics in quantitative research outside of the physical sciences, and also finds applications within the physical sciences, such as in statistical mechanics. Statistical methods are used extensively within fields such as economics, social sciences and biology. Quantitative research using statistical methods starts with the collection of data, based on the hypothesis or theory. Usually a big sample of data is collected – this would require verification, validation and recording before the analysis can take place. Software packages such as SPSS and R are typically used for this purpose. Causal relationships are studied by manipulating factors thought to influence the phenomena of interest while controlling other variables relevant to the experimental outcomes. In the field of health, for example, researchers might measure and study the relationship between dietary intake and measurable physiological effects such as weight loss, controlling for other key variables such as exercise. Quantitatively based opinion surveys are widely used in the media, with statistics such as the proportion of respondents in favor of a position commonly reported. In opinion surveys, respondents are asked a set of structured questions and their responses are tabulated. In the field of climate science, researchers compile and compare statistics such as temperature or atmospheric concentrations of carbon dioxide.

Empirical relationships and associations are also frequently studied by using some form of General linear model, non-linear model, or by using factor analysis. A fundamental principle in quantitative research is that correlation does not imply causation, although some such as Clive Granger suggest that a series of correlations can imply a degree of causality. This principle follows from the fact that it is always possible a spurious relationship exists for variables between whichcovariance is found in some degree. Associations may be

examined between any combination of continuous and categorical variables using methods of statistics.

Measurement

Views regarding the role of measurement in quantitative research are somewhat divergent. Measurement is often regarded as being only a means by which observations are expressed numerically in order to investigate causal relations or associations. However, it has been argued that measurement often plays a more important role in quantitative research.[6] For example, Kuhn argued that within quantitative research, the results that are shown can prove to be strange. This is because accepting a theory based on results of quantitative data could prove to be a natural phenomenon. He argued that such abnormalities are interesting when done during the process of obtaining data, as seen below:

When measurement departs from theory, it is likely to yield mere numbers, and their very neutrality makes them particularly sterile as a source of remedial suggestions. But numbers register the departure from theory with an authority and finesse that no qualitative technique can duplicate, and that departure is often enough to start a search (Kuhn, 1961, p. 180).

In classical physics, the theory and definitions which underpin measurement are generally deterministic in nature. In contrast, probabilistic measurement models known as the Rasch model and Item response theory models are generally employed in the social sciences. Psychometrics is the field of study concerned with the theory and technique for measuring social and psychological attributes and phenomena. This field is central to much quantitative research that is undertaken within the social sciences.

Quantitative research may involve the use of proxies as stand-ins for other quantities that cannot be directly measured. Tree-ring width, for example, is considered a reliable proxy of ambient environmental conditions such as the warmth of growing seasons or amount of rainfall. Although scientists

cannot directly measure the temperature of past years, tree-ring width and other climate proxies have been used to provide a semi-quantitative record of average temperature in the Northern Hemisphere back to 1000 A.D. When used in this way, the proxy record (tree ring width, say) only reconstructs a certain amount of the variance of the original record. The proxy may be calibrated (for example, during the period of the instrumental record) to determine how much variation is captured, including whether both short and long term variation is revealed. In the case of tree-ring width, different species in different places may show more or less sensitivity to, say, rainfall or temperature: when reconstructing a temperature record there is considerable skill in selecting proxies that are well correlated with the desired variable.

Relationship with qualitative methods

In most physical and biological sciences, the use of either quantitative or qualitative methods is uncontroversial, and each is used when appropriate. In the social sciences, particularly in sociology, social anthropology and psychology, the use of one or other type of method can be a matter of controversy and even ideology, with particular schools of thought within each discipline favouring one type of method and pouring scorn on to the other. The majority tendency throughout the history of social science, however, is to use eclectic approaches-by combining both methods. Qualitative methods might be used to understand the meaning of the conclusions produced by quantitative methods. Using quantitative methods, it is possible to give precise and testable expression to qualitative ideas. This combination of quantitative and qualitative data gathering is often referred to as mixed methods research.

Examples

- ✓ Research that consists of the percentage amounts of all the elements that make up Earth's atmosphere.

- ✓ Survey that concludes that the average patient has to wait two hours in the waiting room of a certain doctor before being selected.
- ✓ An experiment in which group x was given two tablets of Aspirin a day and Group y was given two tablets of a placebo a day where each participant is randomly assigned to one or other of the groups. The numerical factors such as two tablets, percent of elements and the time of waiting make the situations and results quantitative.
- ✓ In finance, quantitative research into the stock markets is used to develop models to price complex trades, and develop algorithms to exploit investment hypotheses, as seen in quantitative hedge funds and Trading Strategy Indices.

Quantitative Methods Initiative

A key part of our research methods strategy is to combat the skills deficit in quantitative research methods across the social science research base. We have been working in collaboration to develop a strategy to address the current shortages.

More recently these efforts have been given added momentum through co-funding from the Higher Education Funding Council for England (HEFCE), the British Academy, and the Nuffield Foundation.

Through the Quantitative Methods Initiative we aim to:

- ✓ create a comprehensive and co-ordinate training framework in quantitative methods at each level of the educational lifecourse
- ✓ integrate training to create a national training infrastructure which builds quantitative skills development at each stage of the educational lifecourse
- ✓ create a framework which is flexible enough to meet the particular skill requirements of individual researchers.

The following pages highlight our work in specific areas:

- ✓ Undergraduate activities

- ✓ Undergraduate pilot projects
- ✓ Postgraduate activities
- ✓ Links with other research resources
- ✓ Consultancy reports

What Is Quantitative Research?

Quantitative research is research that uses numerical analysis. In essence, this approach reduces the data into numbers, such as the percent of teenage mothers in Florida. The researcher knows in advance what he/she is looking for and all aspects of the study are carefully designed before the data is collected. The objective of quantitative research is to develop and employ mathematical models, theories and/or hypotheses pertaining to phenomena.

Quantitative research is generally done using scientific methods, which includes the following steps:

- ✓ Developing models, theories, and hypotheses of what the researcher expects to find.
- ✓ Developing instruments and methods for measuring the data.
- ✓ Experimental control and manipulation of variables.
- ✓ Collecting the data.

Methods of Data Collection

- ✓ Surveys or questionnaires with closed-ended questions.
- ✓ Using secondary data (data that someone else has collected).
- ✓ Experiments (with a control group and an experimental group).

Strengths of Quantitative Research

The greatest strength of quantitative research is that it produces quantifiable, reliable data that are usually generalizable to some larger population. Quantitative analysis also allows researchers to test specific hypotheses, in contrast to qualitative research, which is more exploratory.

Weakness of Quantitative Research

The greatest weakness of the quantitative approach is that it decontextualizes human behavior in a way that removes the event from its real world setting and ignores the effects of variables that have not been included in the model. It also lacks a depth and richness of data that is present with qualitative research. Because there are so many participants using quantitative methods, it is impossible to know the details about each and every one.

Quantitative Methods in Social Research (SO916)

This module aims to develop practical quantitative research methods skills, and a critical appreciation of such methods. The module covers the collection or generation of primary quantitative data, the secondary analysis of data from large-scale surveys, and the interpretation of existing data sources or published data, including official statistics. The evaluation of existing research instruments and the development and design of new questionnaires are discussed, as are the conceptual and contextual factors determining the meaning and value of quantitative data.

The module aims to develop the ability of students to interpret published statistical analyses and also to carry out their own analyses, including multivariate analyses. There are a number of 'hands-on' computing sessions, in which SPSS for Windows is used to manipulate and analyse data. The statistical techniques considered within the module, and applied using SPSS, range from basic descriptive and inferential statistics, such as cross-tabulations and chi-square, to multivariate techniques, such as logistic regression.

Indicative reading:

Quantitative Methods in Social Research (SO916)

This module aims to develop practical quantitative research methods skills, and a critical appreciation of such methods. The module covers the collection or generation of primary quantitative data, the secondary analysis of data from large-scale surveys, and the interpretation of existing data

sources or published data, including official statistics. The evaluation of existing research instruments and the development and design of new questionnaires are discussed, as are the conceptual and contextual factors determining the meaning and value of quantitative data.

The module aims to develop the ability of students to interpret published statistical analyses and also to carry out their own analyses, including multivariate analyses. There are a number of 'hands-on' computing sessions, in which SPSS for Windows is used to manipulate and analyse data. The statistical techniques considered within the module, and applied using SPSS, range from basic descriptive and inferential statistics, such as cross-tabulations and chi-square, to multivariate techniques, such as logistic regression.

What is quantitative research?

Research methods in education (and the other social sciences) are oftendivided into two main types: quantitative and qualitative methods. Thisbook will discuss one of these two main strands: 'quantitative methods',and what distinguishes quantitative from qualitative methods.When you think of quantitative methods, you will probably have specificthings in mind. You will probably be thinking of statistics, numbers, andmany of you may be feeling somewhat apprehensive because you thinkquantitative methods are difficult. Apart from the last one, all thesethoughts capture some of the essence of quantitative methods.

The following definition, taken from Aliaga and Gunderson (2000),describes what we mean by quantitative research methods very well:

Quantitative research is 'Explaining phenomena by collecting numericaldata that are analysed using mathematically based methods (in particularstatistics)'.

Let's go through this definition step by step. The first element is explainingphenomena. This is a key element of all research, be it quantitative or qualitative.When we set out to do

some research, we are always looking to explainsomething. In education, this could be questions like ‘why do teachers leaveteaching?’, ‘what factors influence pupil achievement?’, and so on.The specificity of quantitative research lies in the next part of the definition.In quantitative research, we collect numerical data. This is closely connectedto the final part of the definition: analysis using mathematicallybased methods. In order to be able to use mathematically based methods,our data have to be in numerical form. This is not the case for qualitativeresearch. Qualitative data are not necessarily or usually numerical, andtherefore cannot be analysed by using statistics.Therefore, as quantitative research is essentially about collecting numericaldata to explain a particular phenomenon, particular questions seem immediatelysuited to being answered using quantitative methods. How manymales get a first-class degree at university compared to females? What percentageof teachers and school leaders belong to ethnic minority groups?Has pupil achievement in English improved in our school district overtime? These are all questions we can look at quantitatively, as the data weneed to collect are already available to us in numerical form. Does this notseverely limit the usefulness of quantitative research though? There aremany phenomena we might want to look at, but which don’t seem to produceany quantitative data. In fact, relatively few phenomena in educationactually occur in the form of ‘naturally’ quantitative data.Luckily, we are far less limited than might appear from the above. Manydata that do not naturally appear in quantitative form can be collected ina quantitative way. We do this by designing research instruments aimedspecifically at converting phenomena that don’t naturally exist in quantitativeform into quantitative data, which we can analyse statistically.

Examples of this are attitudes and beliefs. We might want to collect dataon pupils’ attitudes to their school and their teachers. These attitudesobviously do not naturally exist in

quantitative form (we don’t form ourattitudes in the shape of numerical scales!). Yet we can develop a questionnairethat asks pupils to rate a number of statements (for example, ‘I thinkschool is boring’) as either ‘agree strongly’, ‘agree’, ‘disagree’ or ‘disagreestrongly’, and give the answers a number (e.g. 1 for ‘disagree strongly’, for agree strongly). Now we have quantitative data on pupil attitudes toschool. In the same way, we can collect data on a wide number of phenomena,and make them quantitative through data collection instrumentssuch as questionnaires or tests. In the next three chapters, we will look athow we can develop instruments to do just that. The number ofphenomena we can study in this way is almost unlimited, makingquantitative research quite flexible. This is not to say that all phenomenaare best studied by quantitative methods. As we will see, whilequantitative methods have some notable advantages, they also have disadvantages, which mean that some phenomena are better studied byusing different (qualitative) methods.

The last part of the definition refers to the use of mathematically basedmethods, in particular statistics, to analyse the data. This is what peopleusually think about when they think of quantitative research, and is often

Doing Quantitative Research in Education with SPSS

It seen as the most important part of quantitative studies. This is a bit of amisconception, as, while using the right data analysis tools obviously mattersa great deal, using the right research design and data collection instrumentsis actually more crucial. The use of statistics to analyse the data is,however, the element that puts a lot of people off doing quantitativeresearch, as the mathematics underlying the methods seems complicatedand frightening. As we will see later on in this book, most researchers donot really have to be particularly expert in the mathematics underlying themethods, as computer software allows us to do the analyses quickly and(relatively) easily.

Foundations of quantitative research methods

Realism, subjectivism and the 'paradigm wars'

Now we have defined quantitative research, it is a good idea to compare it with qualitative research, to which it is usually put in opposition. While quantitative research is based on numerical data analysed statistically, qualitative research uses non-numerical data. Qualitative research is actually an umbrella term encompassing a wide range of methods, such as interviews, case studies, ethnographic research and discourse analysis, to name just some examples.

The difference between quantitative and qualitative research is often seen as quite fundamental, leading people to talk about 'paradigm wars' in which quantitative and qualitative research are seen as warring and incommensurable fractions. Many researchers define themselves as either quantitative or qualitative.

Where does this idea come from?

This idea is linked to what are seen as the different underlying philosophies and world views of researchers in the two 'paradigms' (also called 'epistemologies'). According to this view, two fundamentally different world views underlie

quantitative and qualitative research. The quantitative view is described as being ‘realist’ or sometimes ‘positivist’, while the world view underlying qualitative research is viewed as being ‘subjectivist’.

What does this mean?

Realists take the view that what research does is uncover an existing reality. ‘The truth is out there’ and it is the job of the researcher to use objective research methods to uncover that truth. This means that the researcher needs to be as detached from the research as possible, and use methods that maximise objectivity and minimise the involvement of the researcher in the research. This is best done by methods taken largely from the natural sciences, which are then transposed to socialresearch settings (such as education). Positivism is the most extreme formof this world view. According to positivism, the world works according tofixed laws of cause and effect. Scientific thinking is used to test theoriesabout these laws, and either reject or provisionally accept them. In thisway, we will finally get to understand the truth about how the world works.By developing reliable measurement instruments, we can objectively studythe physical world. This view that there is a true reality out there that wecan measure completely objectively is problematic. We are all part of theworld we are observing, and cannot completely detach ourselves from whatwe are researching. Historical research has shown that what is studied, andwhat findings are produced, are influenced by the beliefs of the peopledoing the research and the political/social climate at the time the researchis done.

According to this viewpoint, qualitative researchers are subjectivists. Incontrast to the realist view that the truth is out there and can be objectivelymeasured and found through research, they point to the role of humansubjectivity in the process of research. Reality is not ‘out there’ to be objectivelyand dispassionately observed by us, but is at least in part constructedby us and by our observations. There is no pre-

existing objective reality thatcan be observed. The process of our observing reality changes and transformsit, and therefore subjectivists are relativistic. All truth can only be relative,and is never definitive, as the positivist claims. The extreme relativistposition is obviously as problematic as the extreme positivistic one, as itwould in theory deny that anything more than social consensus and powerdistinguishes modern science from witchcraft.If you look at the extreme forms of the two views we have set out here, itwould seem that quantitative and qualitative research methods are prettyincompatible. These extremes are, however, a gross simplification of the view's of both quantitative and qualitative researchers. Very few people ineither 'camp' hold these extreme views. I have included them here becausethey are frequently presented in only slightly less extreme forms as strawmen for critics of one method (qualitative, for example) to attack users ofdifferent methods (for example, quantitative) with. It is worth pointing outhere that, as 'qualitative methods' is an umbrella term for a large numberof different research methods (e.g. participant observation, interviews, casestudies, ethnographic research) which are quite different, they are used byresearchers with quite different world views, some of which clearly lietowards the realistic end of the spectrum. To ascribe radical subjectivistviews to all qualitative researchers is a fallacy.

To label all quantitative researchers positivists is equally inaccurate.Quantitative researchers have taken up many criticisms of positivist views,and there is now a variety of epistemologies underlying theory and practicein quantitative research. I think it is true to say that very few quantitativeresearchers nowadays are radical positivists.

Post-positivism, experiential realism and pragmatism

Post-positivists accept the critique of traditional positivism that has beenpresented by the subjectivists, without going so far as to reject any notionof realism. Post-positivists accept that we cannot observe the world we arepart of as totally

objective and disinterested outsiders, and accept that thenatural sciences do not provide the model for all social research. However,they do believe in the possibility of there being an objective reality. Whilewe will never be able to totally uncover that reality through our research,post-positivists believe that we should try to approximate that reality asbest we can, all the while realising that our own subjectivity is shaping thatreality. Rather than finding the truth, post-positivists will try to representreality as best they can.

In contrast to positivists, post-positivists believe that research can never becertain. Rather than focusing on certainty and absolute truth, post-positivistsocial science focuses on confidence – how much can we rely on ourfindings?

How well do they predict certain outcomes?

A second world view or epistemology that underlies the work of somequantitative researchers is called experiential realism. Experiential realismclaims, as do anti-positivist positions that we cannot observe the world ina purely objective way, as our perception itself influences what we see andmeasure. In contrast to subjectivist positions, however, experiential realistsbelieve that there is a limit to subjectivity. We are limited in our subjectivityby the fact that we use a limited number of schemas to formulate ourviews of the world. This is because our perception is 'embodied'. We don'tobserve passively, but actively interact with the world through our bodies.Experiential realists see the use of metaphor as crucial to the way we makesense of the world around us. We use metaphors to understand our world.One of the main metaphors we use to do this is the subject–object schema,which divides the world into objects (things) and subjects (people). Thismetaphor has its origins in the fact that in our dealings with the world wefind that there is a distinction between an external world consisting ofedges, surfaces and textures that are not us, and those things that are us,the actor. As we move around our world, the objects remain invariant.Science, according to this

view, is an activity that is based on this subject–object schema (Mulaik, 1995).Many researchers, both quantitative and qualitative (me included), take apragmatist approach to research, using different methods depending on theresearch question they are trying to answer. In some cases, this will lead themto quantitative research, as, for example, when they need to give a quantitativeanswer to a question, need to generalise findings to a population, or arelooking to test a theory mathematically; in other cases, they will employ qualitativemethods. In many cases, a mixed-methods approach combining quantitativeand qualitative methods will be the most appropriate.Philosophers such as Peirce, Dewey and James developed pragmatism as aphilosophy in the USA. One of the main contentions of this school ofphilosophy is that the meaning and the truth of any idea are a function ofits practical outcome(s). Pragmatists strongly oppose the absolutism theysee as a key part of most other philosophical beliefs. They feel that too oftena chosen philosophy is put in opposition to other philosophies (think ofthe positivist/subjectivist debate), which are totally rejected.

As for the subjectivists, there is no definite truth in pragmatic philosophy.Truth is constantly changing and being updated through the process ofhuman problem solving. The key question for pragmatists is not ‘is it true?’,or ‘is it right?’, but ‘does it work?’.

When do we use quantitative methods?

If we take a pragmatic approach to research methods, the main questionthat we need to answer is ‘what kind of questions are best answered byusing quantitative as opposed to qualitative methods?’

There are four main types of research questions that quantitative researchis particularly suited to finding an answer to:

The first type of research question is that demanding a quantitativeanswer. Examples are: ‘How many students choose to study education?’
or ‘How many maths teachers do we need and how many have we got inour school district?’ That we need to use quantitative research to answerthis kind of question is obvious. Qualitative, non-numerical methodswill obviously not provide us with the (numerical) answer we want.

Numerical change can likewise accurately be studied only by using quantitativemethods. Are the numbers of students in our university rising orfalling? Is achievement going up or down? We’ll need to do a quantitativestudy to find out.

As well as wanting to find out about the state of something or other, weoften want to explain phenomena. What factors predict the recruitmentof maths teachers? What factors are related to changes in studentachievement over time? As we will see later on in this book, this kind ofquestion can also be studied successfully by quantitative methods, and many statistical techniques have been developed that allow us to predictscores on one factor, or variable (e.g. teacher recruitment) from scores onone or more other factors, or variables (e.g. unemployment rates, pay,conditions).

The final activity for which quantitative research is especially suited isthe testing of hypotheses. We might want to explain something forexample, whether there is a relationship between pupil’s achievementand their self-esteem and social background. We could look at the theoryand come up with the hypothesis that lower social class backgroundleads to low self-esteem, which would in turn be related to low achievement.Using quantitative research, we can try to test this kind of model.Problems one and two above are called ‘descriptive’. We are merely tryingto describe a situation. Three and four are ‘inferential’. We are trying toexplain something rather than just describe it.As it mentioned above, while quantitative methods are good at answeringthese four

types of questions, there are other types of questions that are notwell suited to quantitative methods.

The first situation where quantitative research will fail is when we wantto explore a problem in depth. Quantitative research is good at providinginformation in breadth, from a large number of units, but when wewant to explore a problem or concept in depth, quantitative methodscan be too shallow. To really get under the skin of a phenomenon, wewill need to go for ethnographic methods, interviews, in-depth casestudies and other qualitative techniques.

What is a hypothesis?

A hypothesis is a tentative explanation that accounts for a set of facts and canbe tested by further investigation.For example, one hypothesis we might want to test is that poverty causeslow achievement, or that there is a relationship between pupils' self-esteemand the amount of time they spend watching television.Quantitative researchers design studies that allow us to test these hypotheses.We will collect the relevant data (for example, parental income andschool achievement) and use statistical techniques to decide whether or notto reject or provisionally accept the hypothesis.Accepting a hypothesis is always provisional; as new data may emerge thatreject it later on.

We saw above that quantitative research is well suited for the testing oftheories and hypotheses. What quantitative methods cannot do verywell is develop hypotheses and theories. The hypotheses to be tested maycome from a review of the literature or theory, but can also be developedby using exploratory qualitative research.

If the issues to be studied are particularly complex, an in-depth qualitativestudy (a case study, for example) is more likely to pick up on thisthan a quantitative study. This is partly because there is a limit to howmany variables can be looked at in any one quantitative study, and partlybecause in quantitative

research the researcher defines the variables to bestudied her, while in qualitative research unexpected variables mayemerge.

Finally, while quantitative methods are best for looking at cause andeffect (causality, as it is known), qualitative methods are more suited tolooking at the meaning of particular events or circumstances.What, then, do we do if we want to look at both breadth and depth, or atboth causality and meaning? In those cases, it is best to use a so-calledmixed-methods design, in which we use both quantitative (for example, a questionnaire) and qualitative (for example, a number of case studies)methods. Mixed-methods research is a flexible approach, where theresearch design is determined by what we want to find out rather than byany predetermined epistemological position. In mixed-methods research,qualitative or quantitative components can predominate, or both can haveequal status.

Units and variables

When we collect data in quantitative educational research, we have to collectthem from someone or something. The people or things (e.g. schools)we collect data on or from are known as units or cases.The data that we are collecting from these units are known as variables.Variables are any characteristic of the unit we are interested in and want tocollect (e.g. gender, age, self-esteem).The label ‘variable’ refers to the fact that these data will differ betweenunits. For example, achievement will differ between pupils and schools,gender will differ between pupils, and so on. If there are no differences atall between the units we want to study, we probably aren’t going to be ableto do any interesting research (for example, studying whether pupils arehuman would not yield interesting findings).

In this chapter we have discussed what quantitative research is. We saidquantitative research is about explaining phenomena by collectingquantitative data, which are analysed by mathematically based methods.The fact that the data have to

be quantitative does not mean that theyhave to be naturally available in quantitative form. Non-quantitative

Common misconceptions

1. I have to have an epistemology to do research, don't I? No, not necessarily.While you may have strong epistemological and philosophical beliefs thatdetermine what kind of research you want to do, you can also start outwanting to solve a particular problem, or wanting to find out about a particularphenomenon. In that case you will be able to pragmatically choosewhat methods are best suited to answering your research question.
2. Data have to be in a quantitative format to do quantitative research, don'tthey? Not necessarily. If data are not naturally available as numbers, youcan try to turn non-quantitative data (like attitudes or opinions) into quantitativedata by measuring them numerically (for example, by using aquestionnaire rating scale).
3. Qualitative and quantitative research are incompatible, aren't they? Not necessarily.Qualitative and quantitative research can be usefully combined inmixed-methods designs, which often produce much useful information.Also, depending on your research question, you might in one instancewant to use quantitative and in another instance qualitative research. Thisis something I personally often do.
4. The most important thing about quantitative research is the statistics, isn't it?Not at all. While the way in which you analyse your data matters, if youhaven't designed your research well, and collected the data in a valid andreliable way, you will not get valid results however sophisticated youranalyses.
5. Qualitative research is purely subjective, isn't it? Not necessarily. While somequalitative researchers might take a strong subjectivist stance, there is awide variety of qualitative methods that can accommodate a variety ofviewpoints.

6. We can never explain things by using quantitative research. To do that weneed to use qualitative methods. That is not strictly true. While qualitativeresearch usually provides more depth and less breadth than quantitativeresearch, a well-designed quantitative study will allow us not just to lookat what happens, but to provide an explanation of why it happens as well.The key lies in your research design and what variables you collect phenomena (such as teacher beliefs) can be turned into quantitative datathrough our measurement instruments.

Quantitative research is often placed in opposition to qualitative research.In many cases, this turns into a ‘paradigm war’, which is seen to result fromapparently incompatible world views underlying the methods. When youlook closer at researchers’ actual beliefs, it appears that the so-called subjectivist(qualitative) versus realist (quantitative) divide is not that clear-cut.Many researchers take a pragmatic approach to research, and use quantitativemethods when they are looking for breadth, want to test a hypothesis,or want to study something quantitative. If they are looking for depth andmeaning, they will prefer to use qualitative methods. In many cases, mixedmethodsapproaches will be appropriate.

Exercises

1. Gender (male/female) is not a quantitative variable. Can you think ofany ways you could study gender in quantitative research?
2. Attitude to school (e.g. 'I like school', 'I think school is boring') is not aquantitative variable. Can you think of any ways you could study learningstyles in quantitative research?
3. What is your world view (epistemology) with regard to research? Do youthink it is compatible with using quantitative methods?
4. Can you think of a research question you could study by quantitativemethods?
5. What kind of research question would you study using a mixed-methodsdesign?
6. What are the main distinctions between post-positivism and positivism?

Quantitative Social Research Methods explores the entire spectrum of quantitative social research methods and their application, with special reference to the development sector. It provides detailed coverage of all statistical research and analysis method with an emphasis on multivariate analysis techniques, such as regression discriminate analysis, logistic regression, factor, factor, cluster, correspondence and conjoint analysis.

The book is thematically arranged in two sections: the first section introduces development research techniques, explores the genesis and scope of social research, research processes and then goes on to explain univariate, bivariate and multivariate data analysis with the help of software packages such as SPSS and STATA. The second focuses on the application of social and development research methods in the development sector. It explores research method application and the issues relevant to aspects of development such as

population, health and nutrition, poverty and rural development, education, water and sanitation, and environment and natural resource management.

Social Research Methods/Quantitative Research

Quantitative Research and Data Analysis

After a researcher had conducted experiments and/or surveys, the information he/she is left with is known as quantitative data. This type of information is measurable and focuses on numerical values, unlike qualitative data which is more descriptive. Once the quantitative data is collected, the researcher performs an analysis of the findings.

Quantitative analysis

The numerical representation and manipulation of observations for the purpose of describing and explaining the phenomena that those observations reflect.

Quantification of Data

Researchers use the process of coding to analyze their findings. When conducting a survey some of the data is numerical while other data must be converted from qualitative to quantitative.

Developing Code Categories

Coding

The process in which raw data is transformed into a standardized form suitable for machine processing and analysisCoding is the act of assigning numerical values to a set of data in order to make analysis simpler and can be used to quantify both manifest and latent content. The difference between manifest content and latent content is very important when it comes to survey research.

Manifest content is the tangible or concrete surface content (data), as distinguished from latent content, the underlying meaning behind this information.

Advantages with manifest content are ease of testing and reliability and a disadvantage is its validity. Latent content

is the underlying meaning of communications, as distinguished from manifest content. An advantage with latent content is that it is designed perfect for tapping the underlying meaning of communication and its disadvantages are its reliability and specificity.

Codebook Construction

To make the coded data understandable and manageable a codebook is created. This books explains the coding process and acts as a guide for locating variables in the data set. Codebooks also describe the meanings for each code used. There are two purposes for these codebooks, first they are a guide in the coding process. Secondly, codebooks act as guides in locating variables within a study.

Data Entry

Examples of quantitative coding:

- ✓ a survey that ranks responses on a 1-9 scale and has the respondent choose one of the nine listed.
- ✓ Other variables, such as gender or political affiliation, must be assigned a numerical value in order to conduct quantitative analysis
- ✓ i.e.: male= 1; female=2 OR Democrat=1; Republican=2; Independent=3
- ✓ Since ages are already represented numerically, the researcher may choose not to develop a coding system for this data.

Coding is necessary in analyzing data because one must be able to transform raw data into meaningful information.

Univariate Analysis

Once data is properly coded it is then ready to be analyzed. One type of analysis is univariate data analysis, in which one variable (such as gender, race, or socioeconomic status) is singled out for analysis to allow for better description. There are many different ways this data can be analyzed including:

- ✓ **Frequency Distribution:** Counting the number of times data was collected for the sample.
- ✓ **Average:** A term expressing a general trend of data.
- ✓ **Mean:** The sum of total data divided by the number of data points.
- ✓ **Median:** The "middle number" in the data if it is arranged numerically in descending or ascending order.
- ✓ **Mode:** The most frequently occurring data point.
- ✓ Dispersion or variance: measures the range of data around a central value, such as the mean
- ✓ **Standard deviation:** measures the dispersion around the mean as well; however in a way that 68% of the sample will lie within plus or minus one standard deviation of the mean.
- ✓ Technologically advanced programs, such as Microsoft Excel, have the ability to calculate the mean, median, mode, variance, and standard deviation from a set of data. This is a very convenient and easy way to analyze a set of data.

Understanding Distributions and Dispersion

A normal distribution graph is usually used as diagram to display standard deviation and variance.If a high proportion of values are tightly clustered around the mean, this represents a low standard deviation; whereas if values are widely spread out among the range of possibilites, this corresponds to a high standard deviation. In simple terms, a low dispersion and standard deviation indicate that the values are rather close to each other with a relatively small amount of variation.

Continuous and Discrete Variables

- ✓ Continuous variable a variable whose attributes form a steady progression.
- ✓ Discrete variable a variable whose attributes are separate from one another.

Therefore, a continuous variable (such as height) can have an infinite number of possible values, while a discrete variable (such as year) can only have certain values (2010 or

2011 but not 2010.5). Microsoft Excel can also compute these two values easily.

Univariate analysis can be described pictorally with a chart or graph. It is best to maintain simplicity when constructing a chart of graph for better comprehension.

Bivariate Analysis

The analysis of two variables simultaneously, for the purpose of determining the empirical relationship between them.Bivariate analysis focuses on relationships between variables rather than on comparisons of groups. Bivariate analysis explores the statistical association between the independent variable and independent variable. Its purpose is usually explanatory rather than merely descriptive.

Constructing Contingency Tables

The results of bivariate analyses often are presented in the form of contingency tables, which are constructed to reveal the effects of the independent variable on the dependent variable.

Contingency Table

A format for presenting the relationships among variables as percentage distributions

How to construct and read a bivariate table:

- ✓ Divide cases into groups according to attributes of the independent variable.
- ✓ Describe subgroups in terms of attributes of the dependent variable.
- ✓ Read the table by comparing the independent variable subgroups with another in terms of a given attribute of the dependent variable.

Introduction to Multivariate Analysis

Multivariate Analysis

The analysis of the simultaneous relationships among several variables. It examines and explains variance in the dependent variable using independent, intervening, and antecedent variables.

- ✓ Intervening variables come between the independent variables and the dependent variable in a time order or as a causal mechanism.
- ✓ Antecedent variables precede the independent variable.

Multivariate tables can be created on the basis of the more sophisticated subgroup descriptions following a similar outline to bivariate tables. This is due to the usage of more than one independent variable and having the dependent variable rely on these independent variables to show the any relationship.

An example would be attendance at a bingo competition. Assuming prior that older people usually attend this game, we could divide up the participants according to age. Age differences would be our independent variables when broken into various subgroups and will show a relationship to the dependable variable, attendance at bingo.

Dissemination of Information & Other Issues

To display the data, it is usually beneficial to use tables opposed to bar graphs and such due to the complications of portraying more than one independent variable. These tables are also very useful to rule out opinions and find true facts and data.

An issue with quantitative data analysis is the possibility of bias. It is common for researchers to favor one finding over another. To help eliminate this, a detailed hypothesis prior to the research is useful. By recording conclusions that may not prove your hypothesis correct, it is beneficial to other researches (who are working on similar topics) to know your results so it can aid them in their studies. Data can be collected and displayed without any bias when researching controversial topics if the research is conducted correctly and portrayed appropriately in the table.

Research Tips

- ✓ Some useful research tips to keep in mind when carrying out quantitative analysis:

- ✓ It is a good idea to use percentages to make comparisons, and to create these percentages for each category of your dependent variable
- ✓ Variables should be recorded in order to make the comparisons you want to make, and this recoding can be done in different ways.
- ✓ Choose an independent variable that has enough explanatory power to make sense.

Social statistics is the use of statistical measurement systems to study human behavior in a social environment. This can be accomplished through polling a group of people, evaluating a subset of data obtained about a group of people, or by observation and statistical analysis of a set of data that relates to people and their behaviors.

Social scientists use social statistics for many purposes, including:

- ✓ the evaluation of the quality of services available to a group or organization,
- ✓ analyzing behaviors of groups of people in their environment and special situations,
- ✓ determining the wants of people through statistical sampling.

Statistics in the Social Sciences

Statistics and statistical analyses have become a key feature of social science. Statistics is employed in economics, psychology, political science, sociology and anthropology. There is a debate regarding the uses and value of statistical methods in social science, especially in political science, with some statisticians questioning the policy conclusions of political partisans who overestimate the interpretive power that nonrobust statistical methods such as simple and multiple linear regression allow. Indeed, an important axiom that social scientists cite, but often forget, is that "correlation does not imply causation."

The use of statistics has become so widespread in the social sciences that many universities such as Harvard, have developed institutes focusing on "quantitative social science." Harvard's Institute for Quantitative Social Science focuses mainly on fields like political science that incorporate the advanced causal statistical models that Bayesian methods provide.

Statistical methods in social sciences

Methods, techniques and concepts used in quantitative social sciences include:

- ✓ Structural Equation Modeling and factor analysis
- ✓ Multilevel models
- ✓ Cluster analysis
- ✓ Latent class model
- ✓ Item response theory
- ✓ Survey methodology and survey sampling
- ✓ Labor Research Association- Statistics for Labor Economics
- ✓ Labor and Work life Program- Labor Stats at Harvard Law School

Social Statistics 2.0

M.S. in Applied Statistics for Social Science Research: A Socially Significant Degree

The Master of Science in Applied Statistics for Social Science Research (A3SR) is a flexible-credit program that provides you with rigorous training in statistical research techniques and their applications in contemporary social, behavioral, and health science research. The program allows you to learn highly marketable skills in the current data science revolution and to use those skills to address important social issues.

Who is this program for?

This M.S. program is a good choice if you like to work with numbers and solve problems and want to learn valuable data-analysis and analytical skills. Advanced statistical methods can be used to answer pivotal research questions across many science and social science disciplines as well as to inform policy and do work that is socially important and significant. The program is designed to help you develop the ability to perform and understand complex quantitative research in the social, behavioral, and health sciences.

What will I learn?

The A3SR curriculum provides you with a firm foundation in statistical modeling tools commonly used in the social, behavioral, and health science research. You will become proficient in use of methods such as:

- ✓ linear models
- ✓ multilevel modeling
- ✓ multivariate analysis
- ✓ measurement models
- ✓ generalized linear models
- ✓ causal inference
- ✓ approaches to missing data

If you are entering the program with more advanced mathematical or statistical training, you will have the option of pursuing more advanced coursework which will provide

opportunities to develop and evaluate the properties of statistical models.

Coursework and data analysis projects help you gain confidence in your skills to undertake data-analytic projects and research grounded in proven methodology and make strong data-based decisions and assessments. You will have opportunities to apply your skills to address critical policy issues and social problems through an internship and the consulting research seminar.

The curriculum will prepare you for jobs in fields such as:

- ✓ Psychology
- ✓ Education
- ✓ Political Science
- ✓ Applied Economics
- ✓ Public policy
- ✓ Health and healthcare
- ✓ Media research

By the time you graduate you will know how to:

- ✓ Manipulate simple and complex data structures
- ✓ Determine appropriate analyses needed to answer critical questions.
- ✓ Apply a wide range of statistical methods and understand the results at a sophisticated level.
- ✓ Evaluate the appropriateness and efficacy of statistical procedures.
- ✓ Communicate the role of and results from statistical analyses to colleagues or employers.
- ✓ Alter or extend existing techniques or develop new methods to address complicated data analysis problems for which routine statistical procedures are insufficient (exclusively open to students who enter with additional training).

What can I do with this degree?

The curriculum prepares you for a career as an applied statistician and data scientist in the private or public sector, as

well as for further academic study in a variety of academic disciplines that require quantitative analysis.

Who will I study with?

This is an exciting time to study applied statistics and data science at NYU. The M.S. program is an initiative of the NYU Steinhardt Center for the Promotion of Research Involving Innovative Statistical Methodology (PRIISM) and is an integrated part of the larger university-wide initiative in Data Science and Statistics, which offers several new master's degrees, including this M.S. program.

A3SR faculty has particular strengths in:

- ✓ causal inference
- ✓ high-dimensional data
- ✓ measurement
- ✓ missing data
- ✓ model selection
- ✓ multivariate analysis
- ✓ multilevel modeling
- ✓ surveys and sampling

The entirefaculty is deeply committed to using data analysis methods and strategies for the social good. They have worked and consulted for a range of advocacy and policy organizations. They are applying these strategies to important questions in public health, politics, psychology and psychometrics, demography, sociology, labor markets, and education. This program seeks like-minded students who are eager to apply these tools to do well in the world.

Some of the important application-area questions they are exploring include:

- ✓ What is the role of media in forming public opinions?
- ✓ What is the effect of gifted and talented programs on student achievement?
- ✓ What is the relationship between diet and certain forms of cancer?

- ✓ Do student curricular pathways matter for degree attainment and subsequent labor market outcomes?
- ✓ What are effective strategies for rehabilitation of stroke patients?

On the methodological front our faculty is working in diverse areas across statistics. Examples include research to:

- ✓ Assess when observational studies can act as reasonable substitutes for randomized experiments
- ✓ Develop better strategies to handle missing data
- ✓ Develop variable selection methods for high dimensional data
- ✓ Model the dependencies in categorical sequences of events

We encourage you and all our students to work closely with our faculty on research that ranges from applied statistical analysis to the development of customized statistical models.

What other options do I have to study statistics at NYU?

There are many graduate programs in the Steinhardt School and at NYU that you may wish to further explore. We encourage you to explore these options further to find the program that best matches your personal interests and career goals. See the Data Science website for a full list of master's and doctoral programs in the field of statistics and data science.

Overview

Sociology(Arts): This is an introductory course in descriptive and inferential statistics. The course is designed to help students develop a critical attitude toward statistical argument. It serves as a background for further statistics courses, helping to provide the intuition which can sometimes be lost amid the formulas.

Social Research Methods/Statistical Analysis

Introduction

Statistics is the applied branch of mathematics especially appropriate for a variety of research analysis.

Descriptive Statistics

- ✓ Descriptive statisticare used to summarize data under study. Some descriptive statistics summarize the distribution of attributes on a single variable; others summarize the associations between variables.
- ✓ Descriptive statistics summarizing the relationships between variables are called measures of association.
- ✓ Many measures of association are based on a proportionate reduction of error (PRE) model. This model is based on a comparison of

1. The numbers of errors we would make in attempting to guess the attributes of a given variable for each of the cases under study - if we knew nothing but the distribution of attributes on that variable - and
2. The number of errors we would make if we knew the joint distribution overall and were told for each case the attribute o one variable each time we were asked to guess the attribute of the other. These measures include lambda, which is appropriate for the analysis of two nominal variables; gamma, which is appropriate for the analysis of two ordinal variables; and Pearson's product-moment correlation, which is appropriate for the analysis of two interval or ratio variables.
3. Regression analysis represents the relationships between variables in the form of equations, which can be used to predict the values of a dependent variable on the basis of values of one or more independent variables

Regression equations are computed on the basis of a regression line: the geometric line representing, with the least amount of discrepancy, the actual location of points in a scatter gram.

Types of regression analysis include linear regression analysis, multiple regression analysis, partial regression analysis, and curvilinear regression analysis.

Inferential Statistics

Inferential statistics are used to estimate the generalizability of findings arrived at through the analysis of a

sampling to the larger population from which the sample has been selected. Some inferential statistics estimate the single-variable characteristics of the population; others - tests of statistical significance - estimate the relationships between variables in the population.

Inferences about some characteristic of population must indicate a confidence interval and a confidence level. Computations of confidence levels and intervals are based on a probability theory and assume that conventional probability-sampling techniques have been employed in the study.

Inferences about the generalizability, to a population, of the associations discovered between variables in a sample involve tests of statistical significance, which estimate the likelihood that an association as large as the observed one could result from normal sampling error if no such association exists between the variables in the larger population. Tests of statistical significance are also based on probability theory and assume that conventional probability-sampling techniques have been employed in the study.

The level of significance of an observed association is reported in the form of the probability that the association could have been produced merely by sampling error. To say that an association is significant at the .05 level is to say that an association is large as the observed one could not be expected o result from sampling error more than 5 times our of 100.

Social researchers tend to use a particular set of levels of significance in connection with tests of statistical significance: .05, .01 and .001. This is merely a convention, however.

A frequently used test of statistical significance in tabular data is chi-sqaure.The t-test is a frequently used test of statistical significance for comparing means.Statistical significance must not be confused with substantial significance, the latter meaning that an observed association is strong, important, meaningful, or worth writing home to your mother

about.Tests of statistical significance, strictly speaking, make assumptions about data and methods that are almost never satisfied completely by real social research. Despite this, the tests can serve a useful function in the analysis and interpretation of data.

Other Multivariate Techniques

Path analysis is a method of presenting graphically the networks of causal relationships among several variables. It illustrates the primary "paths" of variables through which independent variables cause dependent ones. Path coefficients that represent the partial relationships between variables.
Time-series analysis is an analysis of changes in a variable (such as crime rates) over time.

1. Factor analysis, feasible only with a computer, is an analytic method of discovering the general dimensions represented by a collection of actual variables. These general dimensions, or factors, are calculated hypothetical dimensions that are not perfectly represented by any of the empirical variables under study but are highly associated with groups of empirical variables. A factor loading indicates the degree of association between a given empirical variable and a given factor.
2. Analysis of variance (ANOVA) is based on comparing variations between and within groups and determining whether between-group differences could reasonably have occurred in simple random sampling or whether they likely represent a genuine relationship between the variables involved.
3. Discriminate analysis seeks to account for variation in some dependent variable. It results in an equation that scored people on the basis of those hypothetical dimensions and allows us to predict their values on the dependent variable.
4. Log-linear models offer a method for analyzing complex relationships among several nominal variables having more than two attributes each.

5. Geographic Information Systems (GIS) map quantitative data that describe geographic unites for a graphic display.
6. Key Terms that is important for understanding statistical analyses.
7. Analysis of variance (ANOVA): Method of analysis in which cases under study are combined into groups representing an independent variable, and the extent to which the groups differ from one another is analyzed in terms of some dependent variable. Then, the extent to which the groups differ is compared with the standard of random distribution.
8. Curvilinear regression analysis: A form of regression analysis that allows relationships among variables to be expressed with curved geometric lines instead of straight ones.
9. Descriptive statistics: Statistical computation describing either the characteristics of a sample or the relationship among variables in a sample. Descriptive statistics merely summarize a set of sample observations, whereas inferential statistics move beyond the description of specific observations to make inferences about the larger population from which the sample observations were drawn.
10. Discriminate analysis: Method of analysis similar to multiple regressions, except that dependent variable can be nominal.
11. Factor analysis: A complex algebraic method for determining the general dimensions or factors that exist within a set of concrete observations.
12. Geographic Information Systems (GIS): Analytic technique in which researchers map quantitative data that describe geographic units in a graphic display.
13. Inferential statistics: The body of statistical computations relevant to making inferences from findings based on sample observations to some larger populations.
14. Level of significance: In the context of tests of statistical significance, the degree of likelihood that an observed, empirical relationship could be attributable to sample error. A relationship is significant at the .05 level if the likelihood

of its being only a function of sampling error is no greater than 5 out of 100.

15. Linear regression analysis: A form of statistical analysis that seeks the equation for the straight line that best describes the relationship between two ratio variables.
16. Log-linear analysis: Data-analysis technique based on specifying models that describe the interrelationships among variables and then comparing expected and observed table-cell frequencies.
17. Multiple regression analysis: A form of statistical analysis that seeks the equation representing the impact of two or more independent variables on a single dependent variable.
18. Nonsampling error: Those imperfections of data quality that are a result of factors other than sampling error. Exampling include misunderstandings of questions by respondents, erroneous recordings by interviewers and coders, and keypunch errors.
19. Partial regression analysis: A form of regression analysis in which the effects of one or more variables are held constant, similar to the logic of the elaboration model.
20. Path analysis: A form of multivariate analysis in which the causal relationships among variables are presented in a graphic format.
21. Proportionate reduction of error (PRE): A logical model for assessing the strength of a relationship by asking how much knowing values on one variable would reduce our errors in guessing values on the other. For example, if we know how much education people have, we can improve our ability to estimate how much they earn, thus indicating there is a relationship between the two variables.
22. Regression analysis: A method of data analysis in which the relationships among variables are represented in the form of an equation, called a regression equation.
23. Statistical significance: A general term referring to the likelihood that relationships observed in a sample could be attributed to sampling error alone.

24. Tests of statistical significance: A class of statistical computations that indicate the likelihood that the relationship observed between variables in a sample can be attributed to sampling error only.
25. Time-series analysis: An analysis of changes in a variable (such as crime rates) over time.

Why the Social ResearcherUses Statistics

Alittle of the social scientist can be found in all of us. Almost daily, we take educatedguesses concerning the future events in our lives in order to plan for new situations or experiences.As these situations occur, we are sometimes able to confirm or support ourideas; other times, however, we are not so lucky and must face the sometimes unpleasantconsequences.

Consider some familiar examples: We might invest in the stock market, vote for apolitical candidate who promises to solve domestic problems, play the horses, and take medicineto reduce the discomfort of a cold, throw dice in a gambling casino, try to psych outour instructors regarding a midterm, or accept a blind date on the word of a friend.Sometimes we win; sometimes we lose. Thus, we might make a sound investment inthe stock market, but be sorry about our voting decision; win money at the craps table, butdiscover we have taken the wrong medicine for our illness; do well on a midterm, but havea miserable blind date; and so on. It is unfortunately true that not all of our everyday predictionswill be supported by experience.

The Nature of Social Research

Similar to our everyday approach to the world, social scientists attempt to explain andpredict human behavior. They also take "educated guesses" about the nature of social reality,although in a far more precise and structured manner. In the process, social scientistsexamine characteristics of human behavior called variablescharacteristics thatdiffer or vary from one individual to another (for example, age, social class, and attitude)or from one point in time to another (for example, unemployment, crime rate, andpopulation).

Not all human characteristics vary. It is a fact of life, for example, that the gender ofthe person who gave birth to you is female.

A biology text would spend considerable time discussingwhy only females give birth and the conditions under which birth is possible, but asocial scientist would consider the mother's gender a given, one that is not worthy of studybecause it never varies. It could not be used to explain differences in the mental health ofchildren because all of their mothers are females. In contrast, a mother's age, race, andmental health are variables: In any group of individuals, they will differ from person toperson and can be the key to a greater understanding of the development of the child. A researchertherefore might study differences in the mental health of children depending onthe age, race, and mental health of their mothers.In addition to specifying variables, the social researcher must also determine the unitof observation for the research. Usually, social scientists collect data on individual persons.
For example, a researcher might conduct interviews to determine if the elderly arevictimized by crime more often than younger respondents. In this case, an individual respondentis the unit to be observed by the social scientist.However, researchers sometimes focus their research on aggregatesthat is, on theway in which measures vary across entire collections of people. For example, a researchermight study the relationship between the average age of the population and the crime ratein various metropolitan areas. In this study, the units of observation are metropolitan areasrather than individuals.

Whether focusing on individuals or aggregates, the ideas that social scientistshave concerning the nature of social reality are called hypotheses. These hypothesesare frequently expressed in a statement of the relationship between two or more variables:at minimum, an independent variable (or presumed cause) and a dependent variable(or presumed effect). For example, a researcher might hypothesize that

sociallyisolated children watch more television than children who are well integrated into theirpeer groups, and he or she might conduct a survey in which both socially isolated andwell-integrated children are asked questions regarding the time they spend watchingtelevision (social isolation would be the independent variable; TV-viewing behaviorwould be the dependent variable). Or a researcher might hypothesize that the oneparentfamily structure generates greater delinquency than the two-parent family structureand might proceed to interview samples of delinquents and no delinquents todetermine whether one or both parents were present in their family backgrounds (familystructure would be the independent variable; delinquency would be the dependentvariable).Thus, not unlike their counterparts in the physical sciences, social researchers oftenconduct research to increase their understanding of the problems and issues in their field.

Social research takes many forms and can be used to investigate a wide range of problems.Among the most useful research methods employed by social researchers for testing theirhypotheses are the experiment, the survey, content analysis, participant observation, andsecondary analysis. For example, a researcher may conduct an experiment to determine ifarresting a wife batterer will deter this behavior in the future, a sample survey to investigatepolitical opinions, a content analysis of values in youth magazines, a participant observationof an extremist political group, or a secondary analysis of government statisticson unemployment.

Why Test Hypotheses?

Social science is often referred to, quite unfairly, as the study of the obvious. However, it isdesirable, if not necessary, to test hypotheses about the nature of social reality, even thosethat seem logical and self-evident. Our everyday commonsense observations are generallybased on narrow, often biased preconceptions and personal experiences. These can lead usto accept without criticism invalid assumptions about the

characteristics of social phenomenaand behavior.To demonstrate how we can be so easily misled by our preconceptions and stereotypes,consider what we “know” about mass murderersthose individuals who simultaneously killat least four victims. According to popular thinking (and media portrayals), mass murderersare typically insane individuals who go berserk or run amok, expressing their anger in aspontaneous and impulsive outpouring of aggression. Moreover, they are usually regarded astotal strangers to their victims, who are unlucky enough to be in the wrong place at thewrong timeat a shopping mall, on a commuter train, or in a fast-food restaurant.

The foregoing conception of mass murderers may seem clear-cut and obvious. Yet,compiling detailed information from FBI reports about 697 mass killers over the periodfrom 1976 to 1995, Fox and Levin found instead that mass murderers are rarely insane andspontaneousthey know exactly what they are doing and are not driven to kill by voices ofdemons. Random shootings in a public place are the exceptions; most mass murders occurwithin families or among acquaintances. Typically, mass murderers target spouses and all oftheir children, or bosses and their co-workers. Far from being impulsive, most mass killersare methodical and selective. They usually plan their attacks and are quite selective as to thevictims they choose to kill. In an office massacre, for example, a mass killer might chooseto murder only those co-workers and supervisors whom the murderer blames for losing animportant promotion or getting fired.Until recently, even criminologists all but ignored mass killings, perhaps believing thatmass murder was merely a special case of homicide (albeit, by definition, yielding a largerbody count), explainable by the same theories applied to single-victim incidents and thereforenot deserving of special treatment. From this point of view, mass murder occurs in the sameplaces, under the same circumstances, and for the same reasons as single-victim

murder.Comparing FBI reports of single-victim homicides with mass murders reveals quitea different pattern. The location of mass murder differs sharply from that of homicides inwhich a single victim is slain. First, mass murders do not tend to cluster in large cities asdo single-victim crimes; rather, mass killings are more likely to occur in smalltown orrural settings. Moreover, while the South (and the deep South in particular) is known forits high rates of murder, this does not hold for mass murder. In comparison to singlevictimmurder, which is highly concentrated in urban inner-city neighborhoods and in thedeep South where arguments are often settled through gunfire, mass murder more or lessreflects the general population distribution.

Not surprisingly, the firearm is the weapon of choice in mass-murder incidents, evenmore than in single-victim crimes. Clearly, a handgun or rifle is the most effective means ofmass destruction. By contrast, it is difficult to kill large numbers of people simultaneouslywith physical force or even a knife or blunt object. Furthermore, although an explosivedevice can potentially cause the death of large numbers of people (as in the 1995 bombingof the Oklahoma City federal building), its unpredictability would be unacceptable for mostmass killers who target their victims selectively. In addition, far fewer Americans are proficientin the use of explosives, as compared with guns.

The findings regarding victimoffender relationships are perhaps as counterintuitiveas the weapon-use results may be obvious. Contrary to popular belief, mass murderers infrequentlyattack strangers who just happen to be in the wrong place at the wrong time. Infact, almost 40% of these crimes are committed against family members, and almost asmany involve other victims acquainted with the perpetrator (for example, co-workers). It is well known that murder often involves family members, but this is especially pronouncedamong massacres.The differences in circumstance underlying these crimes are quite dramatic. Althoughmore than half of all single-

victim homicides occur during an argument between the victimand the offender, it is relatively rare for a heated dispute to escalate into mass murder.Some of the most notable differences between homicide types emerge in the offenderdata. Compared to those offenders who kill but one, mass murderers are especially likely tobe male, are far more likely to be white, and are somewhat older (middle-aged). Typically,the single-victim offender is a young male and slightly more often black than white.Victim characteristics are, of course, largely a function of the offender characteristics,indicating that mass killers generally do not select their victims on a random basis. For example,the victims of mass murder are usually white simply because the perpetrators towhom they are related or with whom they associate are white. Similarly, the youthfulnessand greater representation of females among the victims of mass murder, as compared tosingle-victim homicide, stem from the fact that a typical mass killing involves the breadwinnerof the household who annihilates the entire familyhis wife and his children.

The Stages of Social Research

Systematically testing our ideas about the nature of social reality often demands carefullyplanned and executed research in which the following occur:

- ✓ The problem to be studied is reduced to a testable hypothesis (for example, "oneparentfamilies generate more delinquency than two-parent families").
- ✓ An appropriate set of instruments is developed (for example, a questionnaire or aninterview schedule).
- ✓ The data are collected (that is, the researcher might go into the field and conduct apoll or a survey).
- ✓ The data are analyzed for their bearing on the initial hypotheses.
- ✓ Results of the analysis are interpreted and communicated to an audience (for example,by means of a lecture, journal article, or press release).

As we shall see in subsequent chapters, the material presented in this book is mostclosely tied to the data-analysis stage of research (see number 4 earlier), in which the datacollected or gathered by the researcher are analyzed for their bearing on the initialhypotheses. It is in this stage of research that the raw data are tabulated, calculated,counted, summarized, rearranged, compared, or, in a word, organized, so that the accuracyor validity of the hypotheses can be tested.

Using Series of Numbers to Do Social Research

Anyone who has conducted social research knows that problems in data analysis must beconfronted in the planning stages of a research project, because they have a bearing on thenature of decisions at all other stages. Such problems often affect aspects of the researchdesign and even the types of instruments employed in collecting the data. For this reason,we constantly seek techniques or methods for enhancing the quality of data analysis.

Most researchers would agree on the importance of measurement in analyzing data.When some characteristic is measured, researchers are able to assign to it a series of numbersaccording to a set of rules. Social researchers have developed measures of a widerange of phenomena, including occupational prestige, political attitudes, authoritarianism,alienation, anomie, delinquency, social class, prejudice, dogmatism, conformity, achievement,ethnocentrism, neighborliness, religiosity, marital adjustment, occupational mobility,urbanization, sociometric status, and fertility.

Numbers have at least three important functions for social researchers, depending onthe particular level of measurement that they employ. Specifically, series of numbers canbe used to

1. Classify or categorize at the nominal level of measurement,
2. Rank or order at the ordinal level of measurement, and
3. Assign a score at the interval / ratio level of measurement.

The Nominal Level

The nominal level of measurement involves naming or labelingthat is, placing cases intocategories and counting their frequency of occurrence. To illustrate, we might use a nominallevelmeasure to indicate whether each respondent is prejudiced or tolerant toward Latinos.

Other nominal-level measures in social research are sex (male versus female), welfarestatus (recipient versus nonrecipient), political party (Republican, Democrat, andLibertarian), social character (inner-directed, other-directed, and tradition-directed), modeof adaptation (conformity, innovation, ritualism, retreatism, and rebellion), and time orientation(present, past, and future), to mention only a few.

When dealing with nominal data, we must keep in mind that every case must beplaced in one, and only one, category. This requirement indicates that the categories mustbe nonoverlapping, or mutually exclusive. Thus, a respondent's race classified as whitecannot also be classified as black; any respondent labeled male cannot also be labeled female.

The requirement also indicates that the categories must be exhaustivethere mustbe a place for every case that arises. For illustrative purposes, imagine a study in which allrespondents are interviewed and categorized by race as either black or white. Where wouldwe categorize a Chinese respondent if he or she were to appear? In this case, it might benecessary to expand the original category system to include Asians or, assuming that mostrespondents will be white or black, to include an "other" category in which such exceptionscan be placed.

The reader should note that nominal data are not graded, ranked, or scaled forqualities, such as better or worse, higher or lower, more or less. Clearly, then, a nominalmeasure of sex does not signify whether males are superior or inferior to females.

Nominal data are merely labeled, sometimes by name (male versus female or prejudicedversus tolerant), other times

by number (1 versus 2), but always for the purpose ofgrouping the cases into separate categories to indicate sameness or differentness withrespect to a given quality or characteristic. Thus, even when a number is used to label acategory (for example, 1 = white, 2 = black, 3 = other), a quantity is not implied.

The Ordinal Level

When the researcher goes beyond the nominal level of measurement and seeks to order hisor her cases in terms of the degree to which they have any given characteristic, he or she isworking at the ordinal level of measurement. The nature of the relationship among ordinalcategories depends on that characteristic the researcher seeks to measure. To take a familiarexample, one might classify individuals with respect to socioeconomic status as lowerclass, middle class, or upper class. Or, rather than categorize the students in a given classroomas either prejudiced or tolerant, the researcher might rank them according to theirdegree of prejudice against Latinos.

The Interval/Ratio Level

By contrast to the ordinal level, the interval and ratio levels of measurement not only indicatethe ordering of categories but also the exact distance between them. Interval and ratiomeasures employ constant units of measurement (for example, dollars or cents, Fahrenheitor Celsius, yards or feet, minutes or seconds), which yield equal intervals between pointson the scale.

Some variables in their natural form are interval/ratio levelfor example, howmany pounds you weigh, how many siblings you have, or how long it takes a student tocomplete an exam. In the social sciences, naturally formed interval/ratio measures mightinclude the length of a prison sentence, the number of children in a family, or the amount of time in minutes and hours an individual spends on the job.

Other variables are interval/ratio because of how we scale them. Typically, an interval/ratio measure that we construct generates a set of scores that can be comparedwith one another. As currently used by social scientists, for example, a well knownmeasure of job satisfaction, employed by Tom W. Smith who directs the General SocialSurvey at the National Opinion Research Center, is treated as an interval variable. Inthis process, respondents are asked to indicate how satisfied are with the work theydo on a four-point rating scale consisting of someone who is "very dissatisfied," for someone who is "a little dissatisfied," for someone who is "moderately satisfied,"and for someone who is "very satisfied." The occupations are then placed in a hierarchyfrom lowest to highest, depending on the overall evaluationsthe mean satisfaction score they receive from a group of respondents who hold the jobs they are asked tojudge. In one recent study, for example, the job title clergy received a rating of 3.79 (almostat the "very satisfied" level), whereas waiters received a 2.85 (close to the "moderatelysatisfied" level); physical therapists got a score of 3.72, whereas roofersreceived a 2.84.

We are able to order a group of eight occupations in termsof their degree of satisfaction and, in addition, determine the exact distances separatingone from another. This requires making the assumption that our measure of job satisfactionuses a constant unit of measurement (one satisfaction point). Thus, we can say that thejob of clergy is the most satisfying on the list because it received the highest score on themeasure. We can also say that authors are only slightly more satisfied than psychologists,but much more satisfied than bartenders and roofers, both of which received extremely lowscores. Depending on the purpose for which a study is designed, such information mightbe important to determine, but is not available at the ordinal level of measurement.The ratio level is the same as the interval level, but in addition presumes the existence of an absolute or trues zero point. In contrast, an

interval level variable may have anartificial zero value or even none at all.For example, age meets the condition for the ratio level, because a zero representsbirth, or the complete absence of age. In contrast, the Fahrenheit scale of temperature possessesan artificial zero point, because "zero degrees" does not represent the total absenceof heat, even though it does not feel particularly warm. Similarly, the IQ scale has no zeropoint at allthat is, there is no such thing as a zero IQand therefore qualifies only as aninterval scale. Thus, we cannot say that a person with an IQ of 150 is 50% more intelligentthan someone with an average 100 IQ.Similarly, a score of zero on a scale of occupational satisfaction, if it existed, would indicatea total absence of any satisfaction at all ("complete dissatisfaction"), and therefore potentiallyrepresents a ratio scale. As constructed by the author, however, the scale of occupationalprestige illustrated previously has not been given a score of zero (a score of "1" indicates"very" but not complete dissatisfaction) and is therefore at the interval, not the ratio, level.When it comes right down to it, it makes little practical difference whether a variableis interval or ratio level. There are many important statistical techniques that assume astandard distance between scale points (that is, an interval scale), but there are very fewthat require valid ratios between scale points (that is, a ratio scale). Thus, throughout theremainder of the book, we shall indicate whether a technique requires the nominal level,the ordinal level, or the interval level.

The rank-of-professor variable could hardly be mistaken for interval. The differencebetween instructor and lecturer is minimal in terms of prestige, salary, or qualifications,whereas the difference between instructor and assistant professor is substantial,with the latter generally requiring a doctorate and receiving a much higher salary. Bycontrast, the attitude-toward-professor variable has scale values that are roughly evenlyspaced. The difference between somewhat unfavorable and unfavorable appears tobe virtually the same as the

difference between somewhat unfavorable and neutral.In fact, this is true of most attitude scales ranging from strongly agree to strongly disagree.Rather than split hairs, many researchers make a practical decision. Whenever possible,they choose to treat ordinal variables as interval, but only when it is reasonable to assume thatthe scale has roughly equal intervals. Thus, they would treat the attitude-toward-professorvariable as if it was interval, but they would never treat the rank-of-professor variable as anythingother than ordinal. As you will see later in the text, treating ordinal variables that havenearly evenly spaced values as if they were interval allows researchers to use more powerfulstatistical procedures.

Further Measurement Issues

Whether a variable is measured at the nominal, ordinal, or interval level is sometimes a naturalfeature of the characteristic itself, and not at all influenced by the decisions that the socialresearcher makes in defining and collecting data. Hair color (black, brown, blonde,gray, and so on), race (black, white, Asian), and region of residence (Northeast, Mid-Atlantic, South, Midwest, Mountain, and West) are, for example, unquestionably nominallevelvariables. A researcher, however, can still expand the meaning of basic characteristicslike these in an attempt to increase the precision and power of his or her data. Hair color, forexample, can be redefined in terms of shades (for example, from dark brown to platinumblonde) to elevate the level of measurement to ordinal status. Similarly, for the purpose ofmeasuring geographic proximity to Southern culture, an ordinal-level "Southerness scale"might be developed to distinguish Mississippi and Alabama at one extreme, Kentucky andTennessee next, followed by Maryland and Delaware, and then Connecticut and Vermont atthe other extreme. Although it may be somewhat stretching the point, a researcher couldalso develop an interval-level Southerness scale, using the number of miles a state's centerlies above or below the Mason–Dixon line.

Scale Value
Rank ofProfessor
Attitude towardProfessor

1. Distinguished professor Very favorable
2. Full professors Favorable
3. Associate professor Somewhat favorable
4. Assistant professor Neutral
5. Instructor Somewhat unfavorable
6. Lecturer Unfavorable
7. Teaching assistant Very unfavorable

More commonly, there are situations in which variables must be downgraded in theirlevel of measurement, even though this might reduce their precision. To increase the responserate, for example, a telephone interviewer might redefine age, an interval-levelvariable, into ordinal categories such as toddler, child, teenager, young adult, middle-aged,and senior.Another important measurement distinction that social researchers confront is betweendiscrete and continuous variables. Discrete data take on only certain specific values.For example, family size can be expressed only in whole numbers from 1 on up (there isno such thing as 3.47 people in a family; it's either 1, 2, 3, 4, or more members). Familysize therefore represents a discrete interval-level measure. Moreover, nominal variables(such as New England states: Massachusetts, Connecticut, Rhode Island, Vermont, Maine,and New Hampshire; gender: female and male; religion: Protestant, Catholic, Jewish,Muslim, Hindu), by virtue of their categorical nature, are always discrete.Continuous variables, on the other hand, present an infinite range of possible values,although the manner in which we measure them may appear to be discrete. Body weight,for example, can take on any number of values, including 143.4154 pounds. Some bathroomscales may measure this weight to the nearest whole pound (143 pounds), and othersmay measure weight to the nearest half pound (143.5), and some even to the nearest tenthof a pound (143.4).

Underlying whatever measuring device we use, however, is a naturalcontinuum. Similarly, age is a continuous variable and theoretically could be measured innanoseconds from birth on. Yet it is customary to use whole numbers (years for adults,weeks for infants) in recording this variable. As shown earlier, it is also a common practicearbitrarily to divide the continuum of age into categories such as toddler, child, teenager,young adult, middle-aged, and senior.

The Functions of Statistics

When researchers use numbers they quantify their data at the nominal, ordinal, or intervallevel of measurementthey are likely to employ statistics as a tool of (1) descriptionor (2) decision making. Let us now take a closer look at these important functions ofstatistics.

Description

To arrive at conclusions or obtain results, a social researcher often studies hundreds, thousands,or even larger numbers of persons or groups. As an extreme case, the U.S. Bureauof the Census conducts a complete enumeration of the U.S. population, in which millionsof individuals are contacted. Despite the aid of numerous sophisticated procedures, it isalways a formidable task to describe and summarize the mass of data generated fromprojects in social research.

To take a familiar example, the examination grades of 80 students have been listedin Table 1.5. Do you see any patterns in these grades? Can you describe these grades in afew words? In a few sentences? Can you tell if they are particularly high or low on thewhole?

Your answer to these questions should be “no.” However, using even the most basicprinciples of descriptive statistics, it is possible to characterize the distribution of the examinationgrades with a good deal of clarity and precision, so that overall tendenciesor group characteristics can be quickly discovered and easily communicated to almostanyone. First, the grades can be rearranged in consecutive order (from highest to lowest)and grouped into a much smaller number of categories. This grouped frequency distribution presents the grades withinbroader categories along with the number or frequency (f) of students whose grades fellinto these categories. It can be readily seen, for example, that 17 students received gradesbetween 60 and 69; only 2 students received grades between 20 and 29.

Frequency Distribution

Grades f
90–99 3
80–89 7
70–79 16
60–69 17

50–59 15
40–49 11
30–39 9
20–29 2

Examination Grades For 80 Students

72 49 81 52 31
38 81 58 68 73
43 56 45 54 40
81 60 52 52 38
79 83 63 58 59
71 89 73 77 60
65 60 69 88 75
59 52 75 70 93
90 62 91 61 53
83 32 49 39 57
39 28 67 74 61
42 39 76 68 65
58 49 72 29 70
56 48 60 36 79
72 65 40 49 37
63 72 58 62 46

Another useful procedure rearranges the grades graphically.

The categories of grades are placed (from 20–29 to 90–99)along one line of a graph (that is, the horizontal base line) and their numbers or frequenciesalong another line (that is, the vertical axis). This arrangement results in a rather easilyvisualized graphic representation in which we can see that most grades fall between50 and 80, whereas relatively few grades are much higher or lower.As elaborated on in Chapter 3, a particularly convenient and useful statisticalmethodone with which you are already more or less familiaris to ask: What is thegrade of the average person in this group of 80 students? The arithmetic average (ormean), which can be obtained by adding the entire list of grades and dividing this sum bythe

number of students, gives us a clearer picture of the overall group tendency or classperformance. The arithmetic average in this example happens to be 60.5, a rather lowgrade compared against the class averages with which most students may be familiar.Apparently, this group of 80 students did relatively poorly as a whole.Thus, with the help of statistical devices, such as grouped frequency distributions,graphs, and the arithmetic average, it is possible to detect and describe patterns or tendenciesin distributions of scores (for example, the grades in Table 1.5) that might otherwise havegone unnoticed by the casual observer. In the present context, then, statistics may be definedas a set of techniques for the reduction of quantitative data (that is, a series of numbers) to asmall number of more convenient and easily communicated descriptive terms.

Decision Making

For purposes of testing hypotheses, it is frequently necessary to go beyond mere description.It is often also necessary to make inferences that is, to make decisions based ondata collected on only a small portion or sample of the larger group.

The concept of sampling error is discussed in greater detail in Chapter 6. However, to understand the inevitabilityof error when sampling from a larger group, you may now wish to conduct the following demonstration. Referwhich contains the grades for a population of 80 students. At random (for example, by closing youreyes and pointing), select a sample of five grades from the entire list. Find the average grade by adding the fivescores and dividing by 5, the total number of grades. It has already been pointed out that the average grade for theentire class of 80 students was 60.5. To what extent does your sample average differ from the class average, 60.5?

Try this demonstration on several more samples of a few grades randomly selected from the larger group. Withgreat consistency, you should find that your sample mean will almost always differ at least slightly from thatobtained from the entire

class of 80 students. That is what we mean by sampling error.Factors such as cost, time, and need for adequate supervision many times precludetaking a complete enumeration or poll of the entire group (social researchers call thislarger group from which the sample was drawn a population or universe).

As we shall see in Chapter 6, every time social researchers test hypotheses on a sample,they must decide whether it is indeed accurate to generalize the findings to the entire populationfrom which they were drawn. Error inevitably results from sampling, even sampling thathas been properly conceived and executed. This is the problem of generalizing or drawinginferences from the sample to the population.Statistics can be useful for purposes of generalizing findings, with a high degree of confidence,from small samples to larger populations. To understand better this decision-makingpurpose of statistics and the concept of generalizing from samples to populations, let us examinethe results of a hypothetical study that was conducted to test the following hypothesis:

Hypothesis: Male college students are more likely than female college students tohave tried marijuana.

The researchers in this study decided to test their hypothesis at an urban universityin which some 20,000 students (10,000 males and 10,000 females) were enrolled. Due tocost and time factors, they were not able to interview every student on campus, but did obtainfrom the registrar's office a complete listing of university students. From this list,every one-hundredth student (one-half of them male, one-half of them female) was selectedfor the sample and subsequently interviewed by members of the research staff. Theinterviewers asked each of the 200 members of the sample whether he or she had ever triedmarijuana and then recorded the student's gender as either male or female. After all interviewshad been completed and returned to the staff office, the responses on the marijuanaquestion were tabulated by gender.

Marijuana Use by Genderof Respondent: Case IGender ofRespondent

Marijuana Use	Male	Female
Number who have tried it	35	15
Number who have not tried it	65	85
Total	100	100

Notice that results obtained from this sample of 200 students, as in the hypothesized direction: 35 out of 100 males reported having tried marijuana,whereas only 15 out of 100 females reported having tried marijuana. Clearly, in thissmall sample, males were more likely than females to have tried marijuana. For our purposes,however, the more important question is whether these gender differences in marijuanause are large enough to generalize them confidently to the much larger universitypopulation of 20,000 students. Do these results represent true population differences? Orhave we obtained chance differences between males and females due strictly to samplingerrorthe error that occurs every time we take a small group from a larger group?

To illuminate the problem of generalizing results from samples to larger populations,imagine that the researchers had, instead, obtained the results. Notice that these results are still in the predicted direction: 30 males as opposed to only20 females have tried marijuana. But, are we still willing to generalize these results to thelarger university population? Is it not likely that a difference of this magnitude (10 moremales than females) would have happened simply by chance? Or can we confidently saythat such relatively small differences reflect a real difference between males and females atthat particular university?

Let us carry out the illustration a step further. Suppose that the social researchers had obtained the data. Differences between males and females shownin the table could not be much smaller and still be in the hypothesized direction: 26 malesin contrast to 24 females tried marijuanaonly 2 more males than females.

Marijuana Use by Gender ofus would be willing to call this finding a true population difference between males and femalesrather than a product of chance or sampling error?Where do we draw the line? At what point does a sample difference become largeenough so that we are willing to treat it as significant or real? With the aid of statistics, wecan readily, and with a high degree of confidence, make such decisions about the relationshipbetween samples and populations. To illustrate, had we used one of the statistical testsof significance discussed later in this text, wewould already have known that only those results reported can be generalizedto the population of 20,000 university studentsthat 35 out of 100 males but only 15 outof 100 females have tried marijuana is a finding substantial enough to be applied to the entirepopulation with a high degree of confidence and is therefore referred to as astatistically significant difference. Our statistical test tells us there are only 5 chances outof 100 that we are wrong! By contrast, application of the same statistical criterion showsthe results reports are statistically nonsignificant, probably beingthe product of sampling error rather than real gender differences in the use of marijuana. In the present context, then, statistics is a set of decision-making techniques that aidresearchers in drawing inferences from samples to populations and, hence, in testing hypothesesregarding the nature of social reality.

An Important Note about Rounding

If you are like most students, the issue of rounding can be confusing. It is always a pleasure,of course, when an answer comes out to be a whole number because rounding is notneeded. For those other times, however, when you confront a number such as 34.233333 or7.126534, determining just how many digits to use in rounding becomes problematic.For occasions when you need to round, the following rule can be applied: Round afinal answer to two more decimal digits than contained in the original scores. If the originalscores are all whole numbers (for example, 3, 6, 9, and 12), then round your final answerto two decimal places (for example, 4.45). If the original scores contain one decimalplace (for example, 3.3, 6.0, 9.5, and 12.8), then round your answer to three decimal places(for example, 4.456). Many problems in this book require a number of intermediate steps before arrivingat the final answer. When using a calculator, it is usually not necessary to round off calculationsdone along the way (that is, for intermediate steps). Your calculator will often carrymany more digits than you will eventually need. As a general rule for intermediate steps,do not round until it comes time to determine your final answer.Rules of thumb, of course, must be used with some degree of good judgment. As anextreme example, you would not want to round only to two decimal places in calculating thetrajectory or thrust needed to send a missile to the moon; even a slight imprecision mightlead to disaster. In doing problems for your statistics class, on the other hand, the precision ofyour answer is less important than learning the method itself. There may be times when youranswer will differ slightly from that of your classmate or that contained in this book. For example,you may obtain the answer 5.55, whereas your classmate may get 5.56, yet you bothmay be correct. The difference is trivial and could easily have resulted from using

two calculatorswith different memory capacities or from doing calculations in a different sequence.

In this text, we have generally followed this rule of thumb. In some illustrations,however, we rounded intermediate steps for the sake of claritybut only to an extent thatwould not invalidate the final answer.

Summary

In the first chapter, we linked our everyday predictions about the course of future eventswith the experiences of social researchers who use statistics as an aid in testing their hypothesesabout the nature of social reality. Almost daily, ordinary people take educatedguesses about the future events in their lives. Unlike haphazard and biased everyday observations,however, researchers seek to collect systematic evidence in support of their ideas.Depending on the particular level of measurement, series of numbers are often employedby social researchers to categorize (nominal level), rank (ordinal level), or score (interval/ratio level) their data. Finally, social researchers are able to take advantage of twomajor functions of statistics in the data-analysis stage of social research: description (thatis, reducing quantitative data to a smaller number of more convenient descriptive terms)and decision making (that is, drawing inferences from samples to populations).

Questions and Problems

1. Someone who ranks a list of cities from slowest to fastest pace of life is operating at the_____ level of measurement.
    a. nominal
    b. ordinal
    c. interval
2. A researcher who scores a set of respondents (from 0 to 10) in terms of their degree of empathyfor accident victims is working at the _____ level of measurement.
    a. nominal

b. ordinal
c. interval

3. Identify the level of measurement nominal, ordinal, or interval represented in each ofthe following questionnaire items:

a. Your gender:

1. _____ Female
2. _____ Male

b. Your age:

1. _____Younger than 20
2. _____ 20–29
3. _____ 30–39
4. _____ 40–49
5. _____ 50–59
6. _____ 60–69
7. _____ 70 or older

c. How many people are in your immediate family?

_____

d. Specify the highest level of education achieved by your mother:

1. _____ None
2. _____ Elementary school
3. _____ some high school
4. _____ Graduated high school
5. _____ some college
6. _____ Graduated college
7. _____ Graduate school

e. Your annual income from all sources: _____ (specify)

f. Your religious preference:

1. _____ Protestant
2. _____ Catholic
3. _____ Jewish
4. _____ Muslim
5. _____ other _____ (specify)

g. The social class to which your parents belong:

1. _____ Upper
2. _____ Upper-middle
3. _____ Middle-middle
4. _____ Lower-middle
5. _____ Lower

h. In which of the following regions do your parents presently live?

1. _____ Northeast
2. _____ South
3. _____ Midwest
4. _____West
5. _____ other _____ (specify)

i. Indicate your political orientation by placing an X in the appropriate space:

4. For each of the following items, indicate the level of measurement—nominal, ordinal, or Interval:

a. A tailor uses a tape measure to determine exactly where to cut a piece of cloth.
b. The speed of runners in a race is timed in seconds by a judge with a stopwatch.
c. Based on attendance figures, a ranking of the Top 10 rock concerts for the year is compiledby the editors of a music magazine.
d. A zoologist counts the number of tigers, lions, and elephants she sees in a designatedwildlife conservation area.
e. A convenience store clerk is asked to take an inventory of all items still on the shelves atthe end of the month.
f. The student life director at a small college counts the number of freshmen, sophomores,juniors, and seniors living in residence halls on campus.
g. Using a yardstick, a parent measures the growth of his child on a yearly basis.
h. In a track meet, runners in a half-mile race were ranked first, second, and thirdplace.

5. A researcher who ranks a list of countries according to how much they have depleted theirnatural resources is working at the _____ level of measurement.

a. nominal
b. ordinal
c. interval

6. Governments can be divided into three different types—unitary governments, federal governments,and confederations—depending on where the concentration of power is located.This would be considered which level of measurement?

a. Nominal
b. Ordinal
c. Interval

7. A sociologist conducts a survey to determine the effects of family size on various aspectsof life. For each of the following questionnaire items, identify the level of measurement(nominal, ordinal, or interval):

a. Does family size affect school performance? Students are asked to circle their lettergrade (A, B, C, D, or F) in various school subjects.
b. Does family size differ by socioeconomic status? Parents are asked to provide theiryearly income in dollars.
c. Does parental health differ by family size? Parents are asked to rate their overall healthon a scale from 1 to 5, with 1 being in very good health and 5 being in very poor health.
d. Do the effects of family size differ with race and ethnicity? Respondents are asked to indicateif they are Black, White, Hispanic, Asian, or other.

8. Identify the level of measurement (nominal, ordinal, or interval) in each of the following items:

a. American psychologist William Sheldon developed the idea that there are three majorbody types: ectomorph, endomorph, and mesomorph.

b. In a study of short-term memory, a psychologist measures in seconds the time it takesfor participants to remember words and numbers that were told to them an hour earlier.
c. The same psychologist then groups the participants according to how good their shorttermmemory is, distributing them into five categories that range from “Very goodshort-term memory” to “Very poor short-term memory.”
d. Participants in a study about eating disorders are asked how many times they eat perday.
e. Based on blood pressure readings, a psychologist ranks the stressfulness of variousactivities on a scale of 1 to 10, with 1 being the least stressful and 10 being the moststressful.
f. In a study on color blindness, a psychologist counts the number of times those participants are able to identify the colors red, yellow, and blue in order to categorize them aseither color blind or not color blind.
g. A researcher interested in family relations focuses on the birth order of siblings.

9. For a very small group of his clients, a psychologist conducts a survey and determines thatthe most common phobia in the group is acrophobia (fear of heights). In this case, statisticsare being used as a tool to perform which function?

a. Ranking
b. Population
c. Description
d. Decision making
e. Generalization

Looking at the Larger Picture: A Student Surveythe chapters of this textbook each examine particulartopics at close range. At the same time, itis important, as they say, to “see the forestthrough the trees.” Thus, at the close of eachmajor part of the text, we shall apply the most
useful statistical procedures to the same set ofdata drawn from a hypothetical survey. This continuingjourney should

demonstrate the processby which the social researcher travels from havingabstract ideas to confirming or rejecting hypothesesabout human behavior. Keep in mindboth here and in later parts of the book that“Looking at the Larger Picture” is not an exercisefor you to carry out, but a summary illustration ofhow social research is done in practice.For many reasons, surveys have long beenthe most common data-collection strategy employedby social researchers. Through the careful design of a survey instrumenta questionnairefilled out by survey respondents or an interviewschedule administered over the telephone or in person a researcher can elicit responses tailoredto his or her particular interests. The adage“straight from the horse’s mouth” is as true for informingsocial researchers and pollsters as it isfor handicapping the Kentucky Derby.

A rather simple yet realistic survey instrumentdesigned to study smoking and drinkingamong high school students follows. The ultimatepurpose is to understand not just the extent towhich these students smoke cigarettes and drinkalcohol, but the factors that explain why somestudents smoke or drink while others do not.Later in this book, we will apply statistical proceduresto make sense of the survey results. But fornow, it is useful to anticipate the kind of informationthat we can expect to analyze.Suppose that this brief survey will be filledout by a group of 250 students, grades 9 through12, in a hypothetical (but typical) urban highschool. Note that many of the variables inthis survey are nominalwhether the respondentsmokes or has consumed alcohol within the pastmonthas well as respondent characteristics, suchas race and sex. Other variables are measured at the ordinal level specifically, the extent of respondent’speer-group involvement, his or her participationin sportsexercise, as well as academicperformance. Finally, still other variables are measured at the interval level in particular, dailyconsumption of cigarettes as well as age and gradein school.

To experience firsthand the way that data arecollected, you may decide to distribute this surveyor something similar on your own. But just like onthose television cooking shows, for our purposeshere, we will provide at the end of each part of thetext, “precooked” statistical results to illustratethe power of these techniques in understanding behavior.As always, it is important not to get caughtup in details, but to see the larger picture.Student SurveyAnswer the following questions as honestly aspossible. Do not place your name on the form sothat your responses will remain completely privateand anonymous.

1. What school grade are you currently in?
    a. _____

2. How would you classify your academicperformance? Are you
    a. _____ an excellent, mostly A’s student
    b. _____ a good, mostly B’s student
    c. _____ an average, mostly C’s student
    d. _____ a below average, mostly D’s student

3. Within the past month, have you smokedany cigarettes?
    a. _____Yes
    b. _____ No

4. If you are a smoker, how many cigarettesdo you tend to smoke on an average day?
    a. _____ per day

5. Within the past month, have you had anybeer, wine, or hard liquor?
    a. _____Yes
    b. _____ No

6. If you have had beer, wine, or hard liquorin the past month, on how many separateoccasions?
    a. _____ times.

7. In terms of your circle of friends, which ofthe following would best describe you?
    a. _____ I have lots of close friends.
    b. _____ I have a few close friends.

c. _____ I have one close friend.
d. _____ I do not have any really close friends.

8. Does either of your parents smoke?
   a. _____Yes
   b. _____ No
9. To what extent do you participate in athletics? or exercise?
   a. _____ Very frequently
   b. _____ Often
   c. _____ Seldom
   d. _____ Never
10. What is your current age?
   a. _____ years old
11. Are you
   a. _____ Male
   b. _____ Female
12. How would you identify your race orethnicity?
   a. _____ White
   b. _____ Black
   c. _____ Latino
   d. _____ Asian
   e. _____ Other

The Importance of Social Statistics

Nineteenth-century Americans worried about prostitution;reformers called it “the social evil” and warned that manywomen prostituted themselves. How many? For New York Cityalone, there were dozens of estimates: in 1833, for instance,reformers published a report declaring that there were “not lessthan 10,000” prostitutes in New-York (equivalent to about 10 percentof the city’s female population); in 1866, New York’s

Methodist bishop claimed there weremore prostitutes (11,000 to12,000) thanMethodists in the city; other estimates for the periodranged as high as 50,000. These reformers hoped that theirreports of widespread prostitution would prod the authorities toact, but city officials’ most common response was

to challengethe reformers' numbers.Various investigations by the police andgrand juries produced their own, much lower estimates; forinstance, one 1872 police report counted only 1,223 prostitutes(by that time, New York's population included nearly half a mil10the importance of social statisticslion females). Historians see a clear pattern in these cycles ofcompeting statistics: ministers and reformers "tended to inflatestatistics";1 while "police officials tended to underestimate prostitution."

Antiprostitution reformers tried to use big numbers to arousepublic outrage. Big numbers meant there was a big problem: ifNew-York had tens of thousands of prostitutes, something oughtto be done. In response, the police countered that there were relativelyfew prostitutesan indication that they were doing agood job. These dueling statistics resemble other, more recentdebates. During Ronald Reagan's presidency, for example,activists claimed that three million Americans were homeless,while the Reagan administration insisted that the actual numberof homeless people was closer to 300,000, one-tenth what theactivists claimed. In other words, homeless activists argued thathomelessness was a big problem that demanded additional governmentsocial programs; while the administration argued newprograms were not needed to deal with what was actually amuch smaller, more manageable problem. Each side presentedstatistics that justified its policy recommendations, and eachcriticized the other's numbers. The activists ridiculed the administration'sfigures as an attempt to cover up a large, visible problem,while the administration insisted that the activists' numbers were unrealistic exaggerations.

Statistics, then, can become weapons in political strugglesover social problems and social policy. Advocates of differentpositions use numbers tomake their points ("It's a big problem!"the importance of social statistics "No, it's not!"). And, as the example of nineteenth-century estimatesof

prostitution reminds us, statistics have been used asweapons for some time.

The Rise of Social Statistics

In fact, the first "statistics" were meant to influence debates oversocial issues. The term acquired its modern meaningnumericevidencein the 1830s, around the time thatNew-York reformersestimated that the city had 10,000 prostitutes. The forerunner ofstatistics was called "political arithmetic"; these studiesmostlyattempts to calculate population size and life expectancy emerged in seventeenth-century Europe, particularly in Englandand France. Analysts tried to count births, deaths, andmarriagesbecause they believed that a growing population was evidence ofa healthy state; those who conducted such numeric studies aswell as other, nonquantitative analyses of social and politicalprosperitycame to be called statists. Over time, the statists'social research led to the new term for quantitative evidence:

Early social researchers believed that information about societycould help governments devise wise policies. They were wellaware of the scientific developments of their day and, like otherscientists, they came to value accuracy and objectivity. Counting quantifyingoffered a way of making their studies moreprecise, and let them concisely summarize lots of information.

As the researchers collected and analyzed theirdata, they began to see patterns. From year to year, they discovered,the numbers of births, deaths, and even marriagesremained relatively stable; this stability suggested that socialarrangements had an underlying order, that what happened in asociety depended on more than simply its government's recentactions, and analysts began payingmore attention to underlyingsocial conditions.By the beginning of the nineteenth century, the social orderseemed especially threatened: citieswere larger than ever before;

Economies were beginning to industrialize; and revolutions inAmerica and France had made it clear that political stabilitycould not be taken for granted. The need for information, forfacts that could guide social policy, was greater than ever before.A variety of government agencies began collecting and publishingstatistics: the United States and several European countriesbegan conducting regular censuses to collect population statistics;courts, prisons, and police began keeping track of the numbersof crimes and criminals; physicians kept records of patients;educators counted students; and so on. Scholars organized statisticalsocieties to share the results of their studies and to discussthe best methods for gathering and interpreting statistics.And reformers who sought to confront the nineteenth-century'smany social problemsthe impoverished and the diseased, thefallen woman and the child laborer, the factory workforce anddispossessed agricultural laborfound statistics useful inthe importance of social statistics demonstrating the extent and severity of suffering. Statisticsgave both government officials and reformers hard evidence proof that what they said was true. Numbers offered a kind ofprecision: instead of talking about prostitution as a vaguelydefined problem, reformers began to make specific, numericclaims (for example, that New-York had 10,000 prostitutes).During the nineteenth century, then, statisticsnumericstatements about social life became an authoritative way todescribe social problems. There was growing respect for science,and statistics offered a way to bring the authority of science todebates about social policy. In fact, this had been the main goalof the first statisticians they wanted to study society throughcounting and use the resulting numbers to influence social policy.

They succeeded; statistics gained widespread acceptance asthe best way to measure social problems. Today, statistics continueto play a central role in our efforts to understand theseproblems. But, beginning in the nineteenth

century and continuingthrough today, social statistics have had two purposes, onepublic, the other often hidden. Their public purpose is to give anaccurate, true description of society. But people also use statisticsto support particular views about social problems. Numbersare created and repeated because they supply ammunition forpolitical struggles, and this political purpose is often hiddenbehind assertions that numbers, simply because they are numbers,must be correct. People use statistics to support particularpoints of view, and it is naive simply to accept numbers as accurate,without examining who is using them and why.

Creating Social Problems

We tend to think of social problems as harsh realities, like gravityor earthquakes, that exist completely independent of humanaction. But the very term reveals that this is incorrect: socialproblems are products of what people do.This is true in two senses. First, we picture social problems assnarls or flaws in the social fabric. Social problems have theircauses in society's arrangements; when some women turn toprostitution or some individuals have no homes, we assume thatsociety has failed (although we may disagree over whether thatfailure involves not providing enough jobs, or not giving childrenproper moral instruction, or something else). Most peopleunderstand that social problems are social in this sense.But there is a second reason social problems are social.Someone has to bring these problems to our attention, to givethem names, describe their causes and characteristics, and soon. Sociologists speak of social problems being "constructed" that is, created or assembled through the actions of activists,officials, the news media, and other people who draw attentionto particular problems.5 "Social problem" is a label we give tosome social conditions, and it is that label that turns a conditionwe take for granted into something we consider troubling. Thismeans that the processes of identifying and publicizing socialproblems are important.When we start

thinking of prostitutionor homelessness as a social problem, we are responding to campaignsby reformers who seek to arouse our concern about theissue.

The creation of a new social problem can be seen as a sort ofpublic drama, a play featuring a fairly standard cast of characters.Often, the leading roles are played by social activists individualsdedicated to promoting a cause, tomaking others awareof the problem. Activists draw attention to new social problemsby holding protest demonstrations, attracting media coverage,recruiting new members to their cause, lobbying officials to dosomething about the situation, and so on. They are the mostobvious, the most visible participants in creating awareness ofsocial problems.

Successful activists attract support from others. The mass media including both the press (reporters for newspapers ortelevision news programs) and entertainment media (such as television talk shows) relay activists' claims to the general public.Reporters often find it easy to turn those claims into interestingnews stories; after all, a new social problem is a fresh topic,and it may affect lots of people, pose dramatic threats, and leadto proposals to change the lives of those involved. Media coverage,especially sympathetic coverage, can make millions of peopleaware of and concerned about a social problem. Activistsneed the media to provide that coverage, just as the mediadepend on activists and other sources for news to report.Often activists also enlist the support of expert'sdoctors, scientists, economists, and so on who presumably have specialqualifications to talk about the causes and consequences ofsome social problem. Experts may have done research on theproblem and can report their findings. Activists use experts tomake claims about social problems seem authoritative, and thethe importance of social statistics massmedia often rely on experts' testimonies tomake news storiesabout a new problem seem more convincing. In turn,experts enjoy the respectful attention they receive fromactivistsand the media.

Not all social problems are promoted by struggling, independentactivists; creating new social problems is sometimes thework of powerful organizations and institutions. Governmentofficials who promote problems range from prominent politicianstrying to arouse concern in order to create election campaignissues, to anonymous bureaucrats proposing that theiragencies' programs be expanded to solve some social problem.And businesses, foundations, and other private organizationssometimes have their own reasons to promote particular socialissues. Public and private organizations usually command theresources needed to organize effective campaigns to createsocial problems. They can afford to hire experts to conductresearch, to sponsor and encourage activists, and to publicizetheir causes in ways that attract media attention.

In other words, when we become aware of and start toworry aboutsome new social problem, our concern is usuallythe result of efforts by some combination of problempromoter'sactivists, reporters, experts, officials, or privateorganizationswho have worked to create the sense that this isan important problem, one that deserves our attention. In thissense, people deliberately construct social problems.The importance of social statisticsI am not implying that there is anything wrong with callingattention to social problems. In fact, this book can be seen as myEfforts to create or promote social problems, particularlywhen they begin to attract attention, may inspire opposition.Sometimes this involves officials responding to critics by defendingexisting policies as adequate. Recall that New York policeminimized the number of prostitutes in the city, just as theReagan administration argued that activists exaggerated thenumber of homeless persons. In other cases, opposition comesfrom private interests; for example, the Tobacco Institute(funded by the tobacco industry) became notorious for, overdecades, challenging every research finding that smoking washarmful.

Statistics play an important role in campaigns to createordefuse claims aboutnewsocial problems.Most often, such statisticsdescribe the problem's size: there are 10,000 prostitutes inNew York City, or three million homeless people. When socialproblems first come to our attention, perhaps in a televised newsreport, we're usually given an example or two (perhaps videofootage of homeless individuals living on city streets) and then astatistical estimate (of the number of homeless people). Typicallythis is a big number. Big numbers warn us that the problem is acommon one, compelling our attention, concern, and action.Themedia like to report statistics because numbers seemto be "hardfacts"little nuggets of indisputable truth. Activists trying todrawmedia attention to a new social problemoften find that thepress demands statistics: reporters insist on getting estimates ofthe importance of social statistics effort to construct "bad statistics" as a problem that ought to concernpeople.

The problem's size how many people are affected, how much itcosts, and so on. Experts, officials, and private organizationscommonly report having studied the problem, and they presentstatistics based on their research.Thus, the key players in creatingnew social problems all have reason to present statistics.In virtually every case, promoters use statistics as ammunition;they choose numbers that will draw attention to or awayfroma problem, arouse or defuse public concern. People use statisticsto support their point of view, to bring others around totheir way of thinking. Activists trying to gain recognition for what they believe are a big problem will offer statistics that seem toprove that the problemis indeed a big one (and theymay chooseto downplay, ignore, or dispute any statistics that might make itseem smaller). The media favor disturbing statistics about bigproblems because big problems make more interesting, morecompelling news, just as experts' research (and the experts themselves) seemsmore important if their subject is a big, importantproblem. These concerns lead

people to present statisticsthat support their position, their cause, and their interests. There isan old expression that captures this tendency: “Figures may notlie, but liars figure.” Certainly we need to understand that peopledebating social problems choose statistics selectively and presentthemto support their points of view. Gun-control advocateswill be more likely to report the number of children killed byguns,while opponents of gun controlwill prefer to count citizenswho use guns to defend themselves from attack. Both numbersmay be correct, but most people debating gun control presentonly the statistic that bolsters their position.

The importance of social statistics

The Public as an Innumerate Audience

Most claims drawing attention to new social problems aim topersuade all of usthat is, the members of the general public.We are the audience, or at least one important audience, for statisticsand other claims about social problems. If the publicbecomes convinced that prostitution or homelessness is a seriousproblem, then something is more likely to be done: officialswill take action; new policies will begin, and so on. Therefore,campaigns to create social problems use statistics to help arousethe public’s concern.

This is not difficult. The general public tends to be receptiveto claims about new social problems, and we rarely think criticallyabout social problems statistics. Recall that the media liketo report statistics because numbers seem to be factual, littlenuggets of truth. The public tends to agree; we usually treat statisticsas facts.In part, this is because we are innumerate. Innumeracy is themathematical equivalent of illiteracy; it is “an inability to dealcomfortably with the fundamental notions of number andchance.” Just as some people cannot read or read poorly, manypeople have trouble thinking clearly about numbers.One common innumerate error involves not distinguishingamong large numbers. A very small child may be pleased by thegift of a penny; a slightly older

child understands that a penny oreven a dime can't buy much, but a dollar can buy some things,ten dollars considerablymore, and a hundred dollars a great deal(at least from a child's point of view). Most adults clearly graspthe importance of social statistics what one can do with a hundred, a thousand, ten thousand, evenone hundred thousand dollars, but then our imaginations beginto fail us. Big numbers blend together: a million, a billion, a trillion what's the difference? They're all big numbers. (Actually, ofcourse, there are tremendous differences. The difference betweena million and a billion is the difference between one dollarand one thousand dollars; the difference between a millionand a trillion is the difference between one dollar and a milliondollars.)

Because many people have trouble appreciating the differencesamong big numbers, they tend to uncritically accept socialstatistics (which often, of course, feature big numbers). Whatdoes itmatter, theymay say, whether there are 300,000 homelessor 3,000,000?either way, it's a big number. They'd never makethis mistake dealing with smaller numbers; everyone understandsthat it makes a real difference whether there'll be threepeople or thirty coming by tomorrow night for dinner. A difference(thirty is ten times greater than three) that seems obviouswith smaller, more familiar numbers gets blurred when we dealwith bigger numbers (3,000,000 is ten times greater than300,000). If society is going to feed the homeless, having an accuratecount is just as important as it is for an individual planning to host three or thirtydinner guests.Innumeracywidespread confusion about basicmathematicalideasmeans that many statistical claims about socialproblems don't get the critical attention they deserve. This is notsimply because an innumerate public is being manipulated byadvocates who cynically promote inaccurate statistics. Often,20 the importance of social statisticsstatistics about social problems originate with sincere, wellmeaningpeople who are themselves innumerate; they may

notgrasp the full implications of what they are saying. Similarly, themedia are not immune to innumeracy; reporters commonlyrepeat the figures their sources give them without bothering tothink critically about them.The result can be a social comedy. Activists want to drawattention to problem prostitution, homelessness, or whatever.The press asks the activists for statistics how many prostitutes?How many homeless? Knowing that big numbers indicatebig problems and knowing that it will be hard to get actionunless people can be convinced a big problem exists (and sincerelybelieving that there is a big problem), the activists producea big estimate, and the press, having no good way to checkthe number, simply publicizes it. The general publicmost of ussuffering from at least a mild case of innumeracytends toaccept the figure without question. After all, it's a big number,and there's no real difference among big numbers.

Organizational Practices and Official Statistics

One reason we tend to accept statistics uncritically is that weassume that numbers come fromexperts who know what they'redoing. Often these experts work for government agencies, suchas the U.S. Bureau of the Census, and producing statistics is partof their job. Data that come from the governmentcrime rates,the importance of social statistics unemployment rates, poverty rates are official statistics.

There is a natural tendency to treat these figures as straightforwardfacts that cannot be questioned.This ignores the way statistics are produced. All statistics,even themost authoritative, are created by people. This does notmean that they are inevitably flawed or wrong, but it does meanthat we ought to ask ourselves just how the statistics weencounter were created.

Let's say a couple decides to get married. This requires goingto a government office, taking out amarriage license, and havingwhoever conducts the marriage ceremony sign and file

thelicense. Periodically, officials add up the number of marriagelicenses filed and issue a report on the number ofmarriages. Thisis a relatively straightforward bit of recordkeeping, but noticethat the accuracy ofmarriage statistics depends on couples' willingnessto cooperate with the procedures. For example, imaginea couple who decide to "get married" without taking out alicense; they might even have a wedding ceremony, yet theirmarriage will not be counted in the official record. Or considercouples that cohabit live together without getting married;there is no official record of their living arrangement. And thereis the added problem of recordkeeping: is the system for filing,recording, and generally keeping track of marriages accurate, ordo mistakes occur? These examples remind us that the officialnumber of marriages reflects certain bureaucratic decisionsabout what will be counted and how to do the counting.

Now consider a more complicated example: statistics on suicide.Typically, a coroner decides which deaths are suicides. Thiscan be relatively straightforward: perhaps the dead individualleft behind a note clearly stating an intent to commit suicide. Butoften there is no note, and the coronermust gather evidence that points to suicide perhaps the deceased is known to have beendepressed, the death occurred in a locked house, the cause ofdeath was an apparently self-inflicted gunshot to the head, andso on. There are two potential mistakes here. The first is that thecoroner may label a death a "suicide" when, in fact, there wasanother cause (in mystery novels, at least, murder often is disguisedas suicide). The second possibility for error is that thecoroner may assign another cause of death to what was, in fact,a suicide. This is probably a greater risk, because some peoplewho kill themselves want to conceal that fact (for example, somesingle-car automobile fatalities are suicides designed to look likeaccidents so that the individual's family can avoid embarrassmentor collect life insurance benefits). In addition, survivingfamilymembersmay be ashamed

by a relative's suicide, and theymay press the coroner to assign another cause of death, such asaccident.

In other words, official records of suicide reflect coroners'judgments about the causes of death in what can be ambiguouscircumstances. The act of suicide tends to be secretiveit usuallyoccurs in privateand the motives of the dead cannotalways be known. Labeling some deaths as "suicides" and othersas "homicides," "accidents," or whatever will sometimes bewrong, although we cannot know exactly how often. Note, too,that individual coroners may assess cases differently; we mightimagine one coroner who is relatively willing to label deaths suicides, and another who is very reluctant to do so. Presented withthe same set of cases, the first coroner might find many more suicides than the second. It is important to appreciate that coroners view their task asclassifying individual deaths, as giving each one an appropriatelabel, rather than as compiling statistics for suicide rates.Whatever statistical reports come out of coroners' offices (say,total number of suicides in the jurisdiction during the past year)are by-products of their real work (classifying individual deaths).

That is, coroners are probably more concerned with being ableto justify their decisions in individual cases than they are withwhatever overall statistics emerge from those decisions.The example of suicide records reveals that all official statisticsare productsand often by-products of decisions by variousofficials: not just coroners, but also the humble clerks whofill out and file forms, the exalted supervisors who prepare summaryreports, and so on. These peoplemake choices (and sometimeserrors) that shape whatever statistics finally emerge fromtheir organization or agency, and the organization provides acontext for those choices. For example, the law requires coronersto choose among a specified set of causes for death: homicide,suicide, accident, natural causes, and so on. That list of causesreflects our culture. Thus, our laws do not

allow coroners to list“witchcraft” as a cause of death, although that might be considereda reasonable choice in other societies. We can imaginedifferent laws that would give coroners different arrays ofchoices: perhaps theremight be no category for suicide; perhapspeople who kill themselves might be considered ill, and theirimportance of social statisticsdeaths listed as occurring from natural causes; or perhaps suicidesmight be grouped with homicides in a single category ofdeaths caused by humans. In other words, official statisticsreflect what sociologists call organizational practicesthe organization’sculture and structure shape officials’ actions andthose actions determine whatever statistics finally emerge.Now consider an even more complicated example. Policeofficers have a complex job; they must maintain order, enforcethe law, and assist citizens in a variety ofways.Unlike the coronerwho faces a relatively short list of choices in assigning cause ofdeath, the police have tomake all sorts of decisions. For example,police responding to a call about a domestic dispute (say, a fightbetween husband and wife) have several, relatively ill-definedoptions. Perhaps they should arrest someone; perhaps the wifewants her husband arrestedor perhaps she says she does notwant that to happen; perhaps the officers ought to encourage thecouple to separate for the night; perhaps they ought to offer totake the wife to a women’s shelter; perhaps they ought to try talkingto the couple to calmthemdown; perhaps they find that talkingdoesn’t work, and then pick arrest or a shelter as a secondchoice; perhaps they decide that the dispute has already been settled,or that there is really nothing wrong. Policemustmake decisionsabout how to respond in such cases, and some but probablynot allof those choiceswill be reflected in official statistics.

If officers make an arrest, the incident will be recorded in arreststatistics, but if the officers decide to deal with the incident informally(by talking with the couple until they calm down), theremay be no statistical record ofwhat happens.The

choices officersthe importance of social statistics make depend onmany factors. If the domestic dispute call comesnear the end of the officers' shift, theymay favor quick solutions.If their department has a new policy to crack down on domesticdisputes, officers will be more likely to make arrests. All thesedecisions, each shaped by various considerations, will affectwhatever statistics eventually summarize the officers' actions. Like our earlier examples of marriage records and coronerslabeling suicides, the example of police officers dealing withdomestic disputes reveals that officials make decisions (relativelystraightforward for marriage records, more complicatedfor coroners, and far less clear-cut in the case of the police), thatofficial statistics are by-products of those decisions (policeofficers probably give even less thought than coroners to the statisticaloutcomes of their decisions), and that organizationalpractices form the context for those decisions (while there maybe relatively little variation in how marriage records are kept,organizational practices likely differ more among coroners'offices, and there is great variation in how police deal with theircomplex decisions, with differences among departments,precincts, officers, and so on). In short, even official statistics aresocial products, shaped by the people and organizations thatcreate them.

Thinking about Statistics as Social Products

The lesson should be clear: statisticseven official statisticssuch as crime rates, unemployment rates, and census counts are products of social activity.We sometimes talk about statisticsas though they are facts that simply exist, like rocks, completelyindependent of people, and that people gather statisticsmuch asrock collectors pick up stones. This is wrong. All statistics are createdthrough people's actions: people have to decide what tocount and how to count it, people have to do the counting andthe other calculations, and people have to interpret the resultingstatistics, to decide what the numbers mean. All statistics aresocial products, the results of people's

efforts.Once we understand this, it becomes clear that we should notsimply accept statistics by uncritically treating numbers as trueor factual. If people create statistics, then those numbers need tobe assessed, evaluated. Some statistics are pretty good; theyreflect people's best efforts tomeasure social problems carefully,accurately, and objectively. But other numbers are bad statistics figures that may be wrong, even wildly wrong.We need tobe able to sort out the good statistics from the bad. There arethree basic questions that deserve to be asked whenever weencounter a new statistic.

1. Who created this statistic? Every statistic has its authors, itscreators. Sometimes a number comes from a particular individual.On other occasions, large organizations (such as the Bureauof the Census) claim authorship (although each statistic undoubtedlyreflects the work of particular people within theorganization).

In asking who the creators are, we ought to be less concernedwith the names of the particular individuals who produced anumber than with their part in the public drama about statistics.Does a particular statistic come from activists, who are strivingto draw attention to and arouse concern about a social problem?Is the number being reported by the media in an effort to provethat this problem is newsworthy? Or does the figure come fromofficials, bureaucrats who routinely keep track of some socialphenomenon, and who may not have much stake in what thenumbers show?

2. Why was this statistic created? The identities of the peoplewho create statistics are often clues to their motives. In general,activists seek to promote their causes, to draw attention to socialproblems. Therefore, we can suspect that they will favor largenumbers, be more likely to produce them and less likely to viewthemcritically.When reformers cry out that there aremany prostitutesor homeless individuals, we need to recognize that theircausemight seamless compelling if their numbers were smaller.

On the other hand, note that other peoplemay favor lower numbers.Remember that New York police officials produced figuresshowing that there were very few prostitutes in the city as evidencethey were doing a good job.We need to be aware that thepeople who produce statistics often care what the numbersshow, they use numbers as tools of persuasion.

3. How was this statistic created? We should not discount astatistic simply because its creators have a point of view, becausethey view a social problem as more or less serious. Rather, weneed to ask how they arrived at the statistic. All statistics areimperfect, but some are far less perfect than others. There is a bigdifference between a number produced by a wild guess, and onegenerated through carefully designed research. This is the keyquestion. Once we understand that all social statistics are createdby someone, and that everyone who creates social statisticswants to prove something (even if that is only that they are careful,reliable, and unbiased), it becomes clear that themethods ofcreating statistics are key. The remainder of this book focuses onthis third question.

Reference:

1. Jump up sociology. (n.d.).The American Heritage® Science Dictionary. Retrieved July 13, 2013, from Dictionary.com website:http://dictionary.reference.com/browse/sociology
2.Jump up Ashley D, Orenstein DM (2005). Sociological theory: Classical statements (6th ed.). Boston, Massachusetts, USA: Pearson Education. pp. 3–5, 32–36.
3. Jump up Ashley D, Orenstein DM (2005). Sociological theory: Classical statements (6th ed.). Boston, Massachusetts, USA: Pearson Education. pp. 3–5, 38–40.
4. Jump up to: a b Giddens, Anthony, Duneier, Mitchell, Applebaum, Richard. 2007.Introduction to Sociology. Sixth Edition. New York: W.W. Norton and Company. Chapter 1.
5. Jump up Macy, Michael; Willer, Robb (2002). "From Factors to Actors: Computational Sociology and Agent-Based Modeling". Annual Review of Sociology 28: 143–66. doi:10.1146/annurev.soc.28.110601.141117.
6. Jump up Lazer, David; Pentland, Alex; Adamic, L; Aral, S; Barabasi, AL; Brewer, D; Christakis, N; Contractor, N et al. (February 6, 2009). "Computational Social Science".Science 323 (5915): 721–723. doi:10.1126/science.1167742. PMC 2745217.PMID 19197046.
7.Jumpup http://www.nsf.gov/pubs/2012/nsf12599/nsf12599.htm#appendix
8.Jump up http://www.asanet.org/footnotes/feb13/vp_0213.html
9.Jump up A. H. Halsey(2004),A history of sociology in Britain: science, literature, and society, p.34
10.Jump up Geoffrey Duncan Mitchell(1970),A new dictionary of sociology, p.201
11.Jump up Dr; Akhtar, S. W. (1997). "The Islamic Concept of Knowledge". Al-Tawhid: A Quarterly Journal of Islamic Thought & Culture 12: 3.

12.Jump up Haque, Amber (2004). "Psychology from Islamic Perspective: Contributions of Early Muslim Scholars and Challenges to Contemporary Muslim Psychologists". Journal of Religion and Health 43 (4): 357–377 [375]. doi:10.1007/s10943-004-4302-z.
13.Jump up Enan, Muhammed Abdullah (2007). IbnKhaldun: His Life and Works. The Other Press. p. v. ISBN 983-9541-53-6
14. Jump up Alatas, S. H. (2006). "The Autonomous, the Universal and the Future of Sociology". Current Sociology 54: 7–23 [15].doi:10.1177/0011392106058831
15.Jump up Warren E. Gates (July–September 1967). "The Spread of IbnKhaldun's Ideas on Climate and Culture". Journal of the History of Ideas (University of Pennsylvania Press) 28 (3): 415–422 [415]. doi:10.2307/2708627. JSTOR 2708627
16.Jump up H. Mowlana (2001). "Information in the Arab World", Cooperation South Journal 1.
Jump up Rose, Edward (April 1960). "The English Record of a Natural Sociology".American Sociological Review (American Sociological Association) 25 (2): 193–208. doi:10.2307/2092625.JSTOR 2092625.
18.Jump up Des Manuscrits de Sieyès. 1773–1799, Volumes I and II, published by Christine Fauré, Jacques Guilhaumou, Jacques Vallieret Françoise Weil, Paris, Champion, 1999 and 2007. See also Christine Fauré and Jacques Guilhaumou, Sieyès et le non-dit de la sociologie: du mot à la chose, inRevued'histoire des sciences humaines, Numéro 15, novembre 2006: Naissances de la science sociale. See also the article 'sociologie' in the French-language Wikipedia.
Jump up A Dictionary of Sociology, Article: Comte, Auguste
20.Jump up Macionis, Gerber, John, Linda (2010). Sociology 7th Canadian Ed. Toronto, Ontario: Pearson Canada. pp. 10.
21.Jump up Dictionary of the Social Sciences, Article: Comte, Auguste

22.Jump up "Stanford Encyclopaedia: Auguste Comte". Plato.Stanford.edu. Retrieved 2011-11-04.
23.Jump up Copleson, Frederick S.J. [1974] A History of Philosophy: IX Modern Philosophy (1994). Image Books, New York. pp118
24.Jump up Berlin, Isaiah. 1967. Karl Marx: His Life and Environment. Time Inc Book Division, New York. pp130
25.Jump up Berlin, Isaiah. [1937] Karl Marx: His Life and Environment. 3rd edition (1967). Time Inc Book Division, New York. pp13-14
26.Jump up Perrin, Robert G. (1995). "Émile Durkheim's Division of Labor and the Shadow of Herbert Spencer". Sociological Quarterly 36 (4): 791–808.doi:10.1111/j.1533-8525.1995.tb00465.x.
27. Jump up to:a b Commager, Henry Steele (1959-09-10). The American mind: an interpretation of American thought and character since 1880s. ISBN 978-0-300-00046-7.
28. Jump up to:a b c d e f g h i j Wacquant, Loic. 1992. "Positivism." In Bottomore, Tom and William Outhwaite, ed., The Blackwell Dictionary of Twentieth-Century Social Thought
29.Jump up Gianfranco Poggi (2000). Durkheim. Oxford: Oxford University Press.
30.Jump up Durkheim, Émile [1895] "The Rules of Sociological Method" 8th edition, trans. Sarah A. Solovay and John M. Mueller, ed. George E. G. Catlin (1938, 1964 edition), pp. 45
31.Jump up Habermas, Jürgen, The Philosophical Discourse of Modernity: Modernity's Consciousness of Time, Polity Press (1990), paperback, ISBN 0-7456-0830-2, p. 2.
32.Jump up "Max Weber – Stanford Encyclopaedia of Philosophy". Plato.stanford.edu. 2007-08-24.Retrieved 2010-01-05.
33.Jump up to:a b Harriss, John. The Second Great Transformation? Capitalism at the End of the Twentieth

Century in Allen, T. and Thomas, Alan (eds) Poverty and Development in the 21st Century', Oxford University Press, Oxford. p325.
34. Jump up "Sociology – History of Sociology | Encyclopedia.com: Oxford Companion to United States History". Encyclopedia.com. Retrieved 2010-01-05.
35. Jump up "University of Kansas Sociology Department Webpage". Ku.edu. Retrieved 2009-04-20.
36. Jump up to:a b "American Journal of Sociology Website". Journals.uchicago.edu. 1970-01-01. Retrieved 2009-04-20.
37. Jump up Miller, David (2009). George Herbert Mead: Self, Language, and the World. University of Texas Press.ISBN 0-292-72700-3.
38.Jump up 1930: The Development of Sociology at Michigan. pp.3–14 in Sociological Theory and Research, being Selected papers of Charles Horton Cooley, edited by Robert Cooley Angell, New York: Henry Holt
39. Jump upCamic, Charles. 1992. "Reputation and Predecessor Selection: Parsons and the Institutionalists", American Sociological Review, Vol. 57, No. 4 (Aug., 1992), pp. 421–445
40.Jump up Morrison, Ken. 2006 (2nd ed.) "Marx, Durkheim, Weber", Sage, pp. 1–7
41.Jump up "British Journal of Sociology Website". Lse.ac.uk. 2009-04-02.Retrieved 2009-04-20.
42.Jump up "Leonard TrelawnyHobhouse". Bookrags.Retrieved 2011-11-04.
43.Jump up "Pioneers of the social sciences". The London School of Economics and Political Science. 2011-09-2011. Retrieved 2012-09-07.
44.Jump up Hill, Michael R. (2002) "Harriet Martineau: theoretical and methodological perspectives" Routledge. ISBN 0-415-94528-3
45.Jump up Bendix, Reinhard (July 1, 1977). Max Weber: An Intellectual Portrait. University of California Press.ISBN 0-520-03194-6.

46.Jump up"Frankfurt School". (2009). In Encyclopædia Britannica. Retrieved September 12, 2009, fromEncyclopædia Britannica Online .Retrieved September 12, 2009.
47.Jump up "International Sociological Association Website". Isa-sociology.org. Retrieved 2011-11-04.
48.Jump up Durkheim, Émile. 1895. The Rules of the Sociological Method. Cited in Wacquant (1992).
49.Jump up Halfpenny, Peter. Positivism and Sociology: Explaining Social Science.London:Allen and Unwin, 1982.
50.Jump upAshley D, Orenstein DM (2005). Sociological theory: Classical statements (6th ed.). Boston, Massachusetts, USA: Pearson Education. pp. 94–98, 100–104.
51.Jump upFish, Jonathan S. 2005. 'Defending the Durkheimian Tradition. Religion, Emotion and Morality' Aldershot: Ashgate Publishing.
52.Jump upGartell, David; Gartell, John (1996). "Positivism in sociological practice: 1967–1990". Canadian Review of Sociology 33: 2.
53.Jump up Boudon, Raymond. 1991. "Review: What Middle-Range Theories are". Contemporary Sociology, Vol. 20 Num. 4 pp 519–522.
54.Jump upAshley D, Orenstein DM (2005). Sociological theory: Classical statements (6th ed.). Boston, Massachusetts, USA: Pearson Education. p. 169.
55.Jump upAshley D, Orenstein DM (2005). Sociological theory: Classical statements (6th ed.). Boston, Massachusetts, USA: Pearson Education. pp. 202–203.
56. Jump up Rickman, H. P. (1960) The Reaction against Positivism and Dilthey's Concept of Understanding, The London School of Economics and Political Science. p307
57. Jump upAshley D, Orenstein DM (2005). Sociological theory: Classical statements (6th ed.). Boston, Massachusetts, USA: Pearson Education. pp. 239–240.

58. Jump upAshley D, Orenstein DM (2005). Sociological theory: Classical statements (6th ed.). Boston, Massachusetts, USA: Pearson Education. p. 241.
59.Jump up Ferdinand Tönnies (ed. Jose Harris), Community and Civil Society, Cambridge University Press (2001), hardcover, 266 pages, ISBN 0-521-56119-1; trade paperback, Cambridge University Press (2001), 266 pages,ISBN 0-521-56782-3
60. Jump up Weber, Max The Nature of Social Action in Runciman, W.G. 'Weber: Selections in Translation' Cambridge University Press, 1991. p7.
61. Jump up Kaern, Phillips & Cohen. (1990) Georg Simmel and Contemporary Sociology.Springer Publishing.ISBN 978-0-7923-0407-4. p15.
62. Jump up to:a b Levine, Donald (ed) 'Simmel: On individuality and social forms' Chicago University Press, 1971. pxix.
63.Jump up Levine, Donald (ed) 'Simmel: On individuality and social forms' Chicago University Press, 1971. p6.
64.Jump up Simmel, Georg The Metropolis and Mental Life in Levine, Donald (ed) 'Simmel: On individuality and social forms' Chicago University Press, 1971. p324.
65.Jump up to:a b Abend, Gabriel. 2008. "The meaning of 'Theory'." Sociological Theory, 26:2
66.Jump up Urry, John (2000). "Metaphors". Sociology beyond societies: mobilities for the twenty-first century. Routledge.p. 23.ISBN 978-0-415-19089-3.
67.Jump up "Department of Anthropology College of Arts and Sciences The University of Alabama: Anthropological theories". As.ua.edu. Retrieved 2011-11-04.
68.Jump up Giddens, Anthony "The Constitution of Society" in The GiddensReaderPhilipCassell (eds.) MacMillan Press pp.88
69.Jump up Durkheim, Émile The Division of Labor in Society [1893] LA Coser: New York: The Free Press, 1984

70.Jump up Marx and Engels, The Communist Manifesto, introduction by Martin Malia (New York: Penguin group, 1998), pg. 35 ISBN 0-451-52710-0
71.Jump up Jay J. Coakley, Eric Dunning, Handbook of sports studies
72.Jump up Slattery, Martin. 1993. Key Ideas in Sociology. Cheltenham: Nelson Thornes, Ltd.
73.Jump up Barnes, B. 1995. The Elements of Social Theory. London: UCL Press. Quoted in Jay J. Coakley, Eric Dunning, Handbook of sports studies
74.Jump up Cassell, Philip The Giddens Reader (1993) The Macmillan Press Ltd, pp. 6
75.Jump up Assiter, A 1984, 'Althusser and structuralism', The British journal of sociology, vol. 35, no. 2, Blackwell Publishing, pp.272–296.
76.Jump up Giddens, Anthony "The Constitution of Society" in The GiddensReaderPhilipCassell (eds.) MacMillan Press pp.89
77.Jump up Jürgen Habermas. Taking Aim at the Heart of the Present in Hoy, D (eds) 'Foucault: A critical reader' Basil Blackwell. Oxford, 1986.
78.Jump up Richard Rorty. Foucault and Epistemology in Hoy, D (eds) 'Foucault: A critical reader' Basil Blackwell. Oxford, 1986.
79.Jump up Giddens, A (1996). The Constitution of Society. California: University of California Press. pp. 14–19. ISBN 0-520-05728-7.
80.Jump up to:a b c Haralambos&Holborn. Sociology: Themes and perspectives (2004) 6th ed, Collins Educational. ISBN 978-0-00-715447-0. Chapter 14: Methods
81.Jump up Hunter, Laura, Leahey, Erin (2008). "Collaborative Research in Sociology: Trends and Contributing Factors". American Sociologist 39 (4): 290–306.doi:10.1007/s12108-008-9042-1.
82.Jump up Hanson, Barbara (2008). "Whither Qualitative/Quantitative?: Grounds for Methodological

Convergence". Quality and Quantity 42: 97–111.doi:10.1007/s11135-006-9041-7.
83. Jump up to:a b Jstor.org
84.Jump up Martin, Patricia Yancey, Turner, Barry A.. (1986). "Grounded Theory and Organizational Research".The Journal of Applied Behavioral Science, 22(2), 141. Retrieved June 21, 2009, from ABI/INFORM Global database. (Document ID: 1155984).
85.Jump up Jost, JT; Kay, AC (2005). "Exposure to benevolent sexism and complementary gender stereotypes: Consequences for specific and diffuse forms of system justification" (PDF). Journal of Personality and Social Psychology 88 (3): 498–509. doi:10.1037/0022-3514.88.3.498. PMID 15740442.
86.Jump up Macionis, J., and Gerber, L. (2010). Sociology, 7th edition. Toronto, Ontario: Pearson Canada Inc.. pp. 42
87.Jump up Macionis, Gerber, John, Linda (2010). Sociology 7th Canadian Ed. Toronto, Ontario: Pearson Canada Inc.. pp. 40
88.Jump up Bainbridge, William Sims (2007). "Computational Sociology".In Ritzer, George.Blackwell Encyclopedia of Sociology.Blackwell Reference Online.doi:10.1111/b.9781405124331.2007.x.ISBN 978-1-4051-2433-1.
89.Jump up Macy, Michael W.; Willer, Robert (2002). "From Factors to Actors: Computational Sociology and Agent-Based Modeling". Annual Review of Sociology (Annual Reviews) 28: 143–166.doi:10.1146/annurev.soc.28.110601.141117.JSTOR 3069238.
90.Jump up Epstein, JM; Axell, R (1996). Growing Artificial Societies: Social Science from the Bottom Up. Washington, D.C.: Brookings Institute Press. ISBN 0-262-05053-6.
91.Jump up Axelrod, Robert (1997). The Complexity of Cooperation: Agent-Based Models of Competition and Collaboration. Princeton, New Jersey: Princeton University Press. ISBN 0-691-01568-6.

92.Jump up Casti, J (1999). "The Computer as Laboratory: Toward a Theory of Complex Adaptive Systems". Complexity 4 (5): 12–14.doi:10.1002/(SICI)1099-0526(199905/06)4:5<12::AID-CPLX3>3.0.CO;2-4.
93.Jump up Goldspink, C (2002). Methodological Implications of Complex Systems Approaches to Sociality: Simulation as a Foundation for Knowledge 5 (1). Journal of Artificial Societies and Social Simulation.
94.Jump up Gilbert, Nigel; Troitzsch, Klaus (2005). "Simulation and social science". Simulation for Social Scientists (2 ed.). Open University Press.
95.Jump up Epstein, Joshua (2007). Generative Social Science: Studies in Agent-Based Computational Modeling. Princeto: Princeton University Press.ISBN 0-691-12547-3.
96.Jump up "What Is Applied Sociology?" Applied Sociology.Web. 21 Feb. 2012. <http://www.appliedsoc.org/applied-sociology/>.
97.Jump up "Robert K. Merton Remembered". Retrieved 2009-12-02.
98.Jump up Banakar, Reza (2009) "Law Through Sociology's Looking Glass: Conflict and Competition in Sociological Studies of Law" in "The new ISA handbook in contemporary international sociology: Conflict, Competition, and Cooperation", Ann Denis, DevorahKalekin-Fishman, eds., (London: Sage). An e-copy available at papers.ssrn.com
99.Jump up Western, Bruce. 2006. Punishment and Inequality in America. New York: Russel Sage.
100.Jump up "Principles of Economic Sociology by Richard Swedberg – An extract". Retrieved 2009-12-02.
101.Jump up Gordon Marshall (ed) A Dictionary of Sociology (Article: Sociology of Education), Oxford University Press, 1998
102.Jump up Hanushek, Eric A. (1998) "Conclusions and Controversies about the Effectiveness of School Resources"

Economic Policy Review Federal Reserve Bank of New York, 4(1): pp. 11–27, accessed 30 December 2008
103.Jump up Bose,Christine. 2012. "Intersectionality and Global Gender Inequality" Gender & Society 26(1): 67-72
104.Jump up Seybold, Kevin S.; Peter C. Hill (Feb 2001). "The Role of Religion and Spirituality in Mental and Physical Health". Current Directions in Psychological Science 10 (1): 21–24. doi:10.1111/1467-8721.00106.
105.Jump up Correll, Shelley, Stephen Benard, In Paik. 2007. "Getting a job: Is there a motherhood penalty?" American Journal of Sociology 112: 1297–1338.
106.Jump up http://willer.berkeley.edu/WillerOverdoingGender.pdf
107.Jump up "British Sociological Association: Medical Sociology". BSA.Retrieved 2009-10-23.
108.Jump up D. R. Wilson, Researching Sociology on the Internet, Thomson/Wadsworth, 2004, ISBN 0-534-62437-5
109.Jump up The Internet Galaxy, Reflections on the Internet, Business and Society. Oxford, Oxford University Press (2001)
110.Jump up Ben-David, Joseph; Teresa A. Sullivan (1975). "Sociology of Science". Annual Review of Sociology 1: 203–222.doi:10.1146/annurev.so.01.080175.001223. Retrieved 2006-11-29.
111.Jump up Siebold, Guy (2001). "Core Issues and Theory in Military Sociology".Journal of Political and Military Sociology.Retrieved 2008-07-14.
112.Jump up Piven, F. (1988) Why Americans Don't Vote: And Why Politicians Want it That Way Pantheon. ISBN 0-679-72318-8
113.Jump up Lipset, S.M. Introduction: Ostrogorski and the Analytical Approach to the Comparative Study of Political Parties in M. Ostrogorski, Democracy and the Organization of Political (2 vol, 1964; 1982 ed.)

114.Jump up Contemporary political sociology ... - Kate Nash. Books.google.com. 2009-12-15.ISBN 9781444320770.Retrieved 2011-11-04.
115.Jump up Social movements: an introduction – Donatella Della Porta, Mario Diani. Books.google.com. 2009-02-09.ISBN 9781405148214.Retrieved 2011-11-04.
116.Jump up "Milton Louw – Making A Better World." : Oldest Coloured Owned Business in Namibia. Web. 22 Feb. 2012. <http://milton-louw.blogspot.com/2011/03/oldest-coloured-owned-business-in.html>.
117.Jump up Kevin J. Christiano, et al., (2nd ed., 2008), Sociology of Religion: Contemporary Developments, Lanham, Maryland: Rowman& Littlefield Publishers. ISBN 978-0-7425-6111-3
118.Jump up Berger, Peter L. The Sacred Canopy: Elements of a Sociological Theory of Religion (1967). Anchor Books 1990 paperback: ISBN 0-385-07305-4
119.Jump up Stolte, John F; Fine, Gary Alan; Cook, Karen S. (2001). "Sociological miniaturism: seeing the big through the small in social psychology". Annual Review of Sociology 27: pp. 387–413. doi:10.1146/annurev.soc.27.1.387.
120. Jump up to:a b "What Is Social Psychology – An Introduction to Social Psychology". Psychology.about.com. Retrieved 2010-06-01.
121.Jump up Macionis, Gerber, John, Linda (2010). Sociology 7th Canadian Ed. Toronto, Ontario: Pearson Canada Inc.. pp. 225
122.Jump up Saunders, Peter (1990). Social Class and Stratification.Routledge.ISBN 978-0-415-04125-6.
123.Jump up Macionis, Gerber,, John, Linda (2010). Sociology 7th Canadian Ed. Toronto, Ontario: Pearson Canada Inc..p. 243.ISBN 978-0-13-700161-3.
124.Jump up Stark, , Rodney (2006). Sociology.Wadsworth Publishing.ISBN 978-0-495-09344-2.

125.Jump up Dahrendorf, Ralf. (1959) Class and Class Conflict in Industrial Society. Stanford: Stanford University Press.
126.Jump up Bornschier V. (1996), 'Western society in transition' New Brunswick, N.J.: Transaction Publishers.
127.Jump up Sassen, Saskia – The Global City: New York, London, Tokyo. (1991) – Princeton University Press. ISBN 0-691-07063-6
128.Jump up Watson, Tony J. 2008 Sociology, Work, and Industry. Routledge.ISBN 0-415-43555-2. p392
129.Jump up Sherif, M., and CW Sherif. An Outline of Social Psychology (rev. ed.). New York: Harper & Brothers, 1956
130.Jump up "Web page". Sociology and Its Relationships to Other Social Sciences.National Organization of Sociology.Retrieved 15 July 2011.
131. Jump up to:a b Kirst-Ashman, K.K. & Hull, G.H. (2009). Generalist Practice with Organizations and Communities (4th ed.). Belmont, CA: Brooks/Cole Cengage Learning. ISBN 0-495-50715-6.
132.Jump up Hepworth, D.H, Rooney, R.H., Rooney, G.D, Strom-Gottfried, K., Larsen, J.A. (2006). "1". Direct Social Work Practice. Belmont, CA: Thomson Brooks/Cole. ISBN 0-534-64458-9.
133.Jump up Janes, Craig Robert; Stall, Ron; Gifford, Sandra M (1986). James Trostle. Springer.ISBN 978-90-277-2248-5.Retrieved 2009-09-08.
134.Jump up "Sociology-Basic Concepts". nos.org. Retrieved 2010-11-28.
135.Jump up Dugan, David. "NOVA: Lord of the Ants." NOVA: Lord of the Ants. Dir. David Dugan. Prod. David Dugan. PBS. WGBH, Boston, Massachusetts, 20 May 2008. Television.
136.Jump up to:a b Horowitz, Irving (1994) The Decomposition of Sociology Oxford University Press. p3-9
137.Jump up Randall Collins, Cited in Horowitz, Irving (1994) The Decomposition of Sociology Oxford University Press. p3-9

138.Jump up "The most cited authors of books in the humanities". timeshighereducation.co.uk. 2009-03-26. Retrieved 2009-11-16.
139.Jump up to:a b Sociology Journals ranked by 5-year Impact Factor. "2011 Journal Citation Reports". Web of Science (Social Sciences ed.). Thomson Reuters. 2011.

Glossary

Acculturation

Secondary socialisation. Learning culture; learning how to operate in society. When we must learn to adapt to a new society or to a changing society. Compare with enculturation. Acculturation. WP

Acephalous

Headless. A simple society below the band level of complexity, where there are no permanent chiefs. Acephalous.WP.

Adaptation

Changing in order to survive or cope with changes in the environment. WP.

Aesthetics-Values Dimension.

One of the six dimensions of culture and community. Three axes: good versus bad, beautiful versus ugly, and right versus wrong. To be human is to have values. Aesthetics-Values Dimension.

Affinity

A family relationship based upon marriage or extensions beyond that marriage (brother-in-law, for example). WP.

Age

A process reflecting the passage of time. People get older, and they gain and lose physical characteristics as a result. While ageing is a physical process, humans add various social attributes to it, so they also gain and lose social roles as they get older.WP.

Ageism

An attitude like racism and sexism, where people have different physical and biological and physical characteristics, but other persons attribute various social characteristics to them, and behave in often bigoted and prejudicial ways that reflect their attitudes to persons with those age characteristics. WP.

Agricultural Revolution

A major transformation in the technology of obtaining food. Prior to adopting agriculture, people relied on gathering and hunting, later herding. The agricultural revolution, 20,000 to 10,000 years ago, produced a food surplus that permitted new classes of people to form, people who did not grow their own food. Like other changes in technology, gathering, hunting and herding did not completely disappear, and even agriculture continues today after the industrial revolution, although it is increasingly being carried out in an industrial manner.

Agricultural Surplus

As a new technology of food production expanded, agriculture, it allowed the production of food beyond the amount needed to feed only the farmers. That food surplus was needed to form cities then city states then empires, as it was used to feed non farmers such as the aristocracy, the scribes, the military the traders and the artisans.

Agriculture

A technology that combines horticulture (growing plants) and herding (growing animals) in the production of food and other farm products.

Akan

A language and cultural group of West Africa, mainly now in southern Ghana and Eastern Côte d'Ivoire, in the rain forest. Many different states were Akan, including the best known, Asante (Ashanti), as well as Fante, Akuapem, Akyem, Kwawu and Bono. They are characterised by matrilineal descent (inheritance and succession) and a political system based upon the confederation of matrilineages and matriclans (corporate descent groups), in an elaborate hierarchy well designed for military success in the rain forest. Akan Studies.

Alienation

A feeling of being separated or disconnected from nearby persons.

Altruism

An attitude of generosity and sacrifice. The concept is borrowed from biology where some individuals are sacrificed for the benefit of the group and the reproduction of the species. When hunting, herding and agricultural communities sacrificed animals to their gods, it symbolised their willingness to give up something valuable for the benefit of the whole community. In horticultural societies animal sacrifice was replaced by setting aside some of the crop in order to plant for the next growing season, which was the forerunner to investment in capitalist societies. Altruism.

Animation

From the Greek word, "anima," meaning soul, life, fire or movement. Social animation means to move a community or to activate it; put some life into it. Animation

Animism

Again from "anima," this is a belief system that attributes spirits or other supernatural life forms to natural objects such as trees, rivers, mountains, caves or the ocean. Similar to Pantheism.

Anomie

From the Latin for "unknown" or "without name." It implies a feeling of being anonymous to one's family and community — disconnected. It was used by Durkheim to describe a condition that raised the rate of suicide for those who had it.

Anthropomorphism

Attributing human characteristics to non human things. Anthropomorphism.

Apathy

One of the "big five" factors of poverty. An attitude of thinking it does not matter to act, because conditions are not in one's control. Often associated with the idea that everything is "God's will," and therefore none of our business. Apathy

Applied Sociology

Whereas pure sociology simply intends to find things out (what is), applied sociology seeks to take that knowledge and use it for some public benefit or private profit. Applied Sociology

Asante

One of the major matrilineal states of West Africa in the rain forest. In its largest and most powerful era, late eighteenth century, it included an Empire that stretched from Ghana west into half of what is now Côte d'Ivoire, north to Ouagadougou in what is now Burkina Faso, and East to what is now Benin. The British fought seven wars in the nineteenth century with the Asante (whom they called Ashanti), but not until they introduced the Gatling gun (a type of machine gun) did they finally win, in 1901, during the Sagranti (Sir Garnet Wolseley) war, the year Queen Victoria died.

Atomistic

A simplistic view of society as composed only of a collection of individuals, without reference to any social process or structure that holds them together. The concept is discarded by this book and by most sociologists.

Aural

Based upon hearing. Compare with "oral." Aural Method

Authority

Political power that is recognised as legitimate.

A form of knowing based upon being told something is true by persons who are respected and recognised as knowing. Contrasted with belief, logic or observation. Authority

Autochthonic

A fancy way of saying "native." Once used when "aboriginal" was considered to be offensive.

Band

A level of political complexity lower than tribe.Often without chiefs. In Canadian legal terminology, however, complex communities are called "bands" even though they have chiefs,

elders and other characteristics of political complexity above the band level.

Barter

A method of distributing wealth without using money or any currency.Trading.

Beliefs

Thoughts by humans, expressed in their language, reflecting their conviction in some truths, such the existence of a Supreme Being. A belief is contrasted with other forms of knowing, such as by observing, by logic, or by authority.

Belief-Worldview (Dimension)

One of the six dimensions of culture. It includes religious beliefs and more: all we believe is true about how the universe operates. It includes atheism. Not the same as religious institutions, which belong to the institutional or interactional dimension of culture. Belief

Bicultural

A characteristic of having two cultures. Canada is bicultural and bilingual: French and English.

Bigamy

Two spouses.Bigamy.

Bigotry

Speaking and acting towards categories of persons in ways that are demeaning, disrespectful, unsympathetic and unfair. Often applied to racism, ageism and sexism.

Bilingual

Having two languages. Canada is officially bilingual, English and French, even though a very small minority of individuals can speak and read both languages.

Bourgeoisie

The owners of capital.Derives from the same origin as burgers, the shopkeepers of a town. Bourgeoisie

Bureaucracy

Derived from "bureau," meaning office, and "cracy," meaning power. A formal organisation where the power is vested in the office. Bureaucracy

Cain-Abel

A story from Genesis in the old testament of the bible, two children of Adam, one a tiller, the other a herder. The herder, Abel, sacrifices an animal to God who is pleased. Cain, the tiller who has only vegetables, is jealous and kills his brother. It is argued in this book that this story symbolizes the ancient animosity between farmers and herders.

Calvinism

Named after John Calvin, often used as an equivalent of Protestant Christianity.

Capacity

Ability. An organisation or community is said to have more capacity when it has more ability to reach its goals. Strength.Measuring Capacity

Capacity building

The notion that an outside agency can build the capacity, strength or power of an organisation or community.

Capacity Development

The notion that increased strength or capacity of an organisation or community can only come from within itself, that it grows as a living cultural organism.

Capital

Wealth that is generated or produced not for immediate consumption but for increased future production. Tools.A factor of production, the price of which is measured as interest.

Capitalism

Social and economic organisation in which capital (tools, factories) is an important factor of production, where the owners of capital are the rulers and decision makers.

Cause

Where a change in an identified independent variable is necessary and sufficient for the change in an identified dependent variable. Cause

Charity

Giving or transferring of wealth to people or organisations in need, based upon generosity rather than an expectation of an immediate or delayed return of wealth. Gifts. In the community empowerment methodology, the "Charity Methodology" is seen to contribute to dependence and sustained poverty by training the recipients to become dependent upon, and to expect further, charity. Charity

City

A human settlement characterised by large population, high population density, division of labour, high rates of anonymous interactions by roles, anonymity, anomie, and gesellschaft. City

Class

A concept developed by Karl Marx in which people are categorised by their relations to the means of production. Later sociologists developed it into social class, where people are categorised by their levels of prestige, power, and wealth. Class Conflict.

A group of students and a teacher in a classroom during a designated time period for the purposes of the students learning some designated material.

Class (Working)

A social class in which the members relation to the means of production is that they provide labour for pay. Marx called them the "proletariat."

Coca-colonisation

A non technical term implying the world is becoming more culturally homogenized as a result of the relentless spread of multinational corporations. The big global corporations have annual budgets far exceeding those of many nations, and are seen as a new political force in the world.

Cohort
A group or category of individuals who start some designated process at the same time, or the same year. All members of the class of 2005 belong to the same cohort.
Colour
When light vibrates at different frequencies, we "see" the variations as different colours. Colours are not intrinsic to the things we see, but is a response in ourselves to the frequency of light bouncing off them. Differences in colours are within our optical and nervous systems. We have no way of knowing that what you see as "red" is what I see as "red" even when we describe the same item by the same colour name (red). Three Souls.
Skin colour is often used to distinguish visible minorities which are then called "races." Highly unscientific. There are no biological categories of race or colour. There is more variation in skin colour on a single person than between the colours of persons designated in indifferent races. Race and colour are social categories.
Different languages put different boundaries around colours. Observations of variations in colour naming systems led to the development of the Sapir-Whorf hypotheses that states we learn to perceive and understand reality by the language we learn.
Commensality
The sociology of who eats with whom.
Common Sense
Many of the things to learn from sociology demonstrate that our common sense calculations and assumptions do not stand the test of scientific investigation.
Common Values
When people of an organisation or community share common values, the community or organisation has more strength. Where they differ, tolerance of each others' values will give strength. Common Values.
Communal

Belonging to the commune or community.

Communal Services

A community has some facilities which are available to all, such as roads, public latrines, water supply, market place, sometimes schools and clinics, where they are not privately owned and operated. These provide services which are communal. Communal Services.

Commune

In many European countries, the "commune" is the legal structure of the community (municipality, district).

In North America, a commune is a constructed family or community of a group of persons who have chosen to live together, share domestic duties and responsibilities, and to share their resources equally.

Communications

The system and hardware for communicating information, not the information itself. It includes technical aids such as radio, telephones, TV, intercoms, letters, memos and protocols (rules and accepted manners of communicating). Communication.

Communism
An ideology and system of social organising and distributing wealth, the main feature being expressed in the phrase, "From each according to his ability; to each according to his need."Associated with the writing of Karl Marx and Friedrich Engels.
Communist Manifesto
A thin little blue book which sets out the main tenets of Communism.Written by Karl Marx and Freidrich Engels.
Community
The social organisation of a settlement or association of people.Community.
Community Empowerment
The strengthening or increase of capacity of a community. A web site dedicated to training field workers to strengthen communities.
Community Participation
Where all members of a community participate in decision making about choices that affect the community. Usually it requires the services of a skilled mobiliser who intervenes and stimulates and guides the participation. Not to be confused with consultation where members of an outside agency confer with a few members of the community. Not to be confused with community contribution where members of a community contribute (donate) in cash or kind to the community. Community Participation.
Complex
Not simple. The direction of social change is usually from simple to complex.
In Psychology, a complex is a set of mental problems.
Confidence
An attitude of optimism in which a person does not fear failure.Confidence.

Conflict
A situation where two or more parties (individuals or groups) compete for resources, where they disagree in ideas (objectives, values, beliefs), and which may progress into violence.
Conflict (Culture)
A situation where two or more groups, or factions within a community, having different cultures, are in conflict.
Conflict Perspective
An important classical approach in sociology, where different factions are identified, and seen to be in competition for control over scarce resources. The perspective follows the writings of Karl Marx, although not identified or created by him. Conflict theory.
Construct
Something that is consciously built. It is contrasted with things that grow naturally. See "Social Construct."
Constructed Community
An association of persons with similar interests, in contrast to a natural or orthodox community which has a geographic base, relatively easy to identify boundaries, and containing people who were born or immigrated into it rather than who chose to belong.
Context (Political-Administrative)
The political and administrative environment is composed of all the rules, regulations and practices that affect the operations of an organisation or community. One of the sixteen elements of organisational or community strength.Context.
Counting
A process of deciding size as numbers of discrete objects. Contrast with measuring. We use "fewer" when counting in contrast to "less" when measuring.

Cultural Dimension
A "Dimension" of culture is one of six logical categories, not intrinsic to culture itself, along which we identify various

cultural variables. It is a way or ordering a large number of sometimes contradictory theories and observations in anthropology and sociology. The categories include technological, economic, political, interactional, value and belief dimensions of culture.Dimension

Culture

Everything we learn. Culture.Preserving culture.

Culture (High)

Sophisticated and elite art and entertainment, such as ballet, symphony, and the visual art usually found in galleries. When called only "culture" it can be confused with the social science definition of culture (everything we learn)..

Culture Lag

Culture is always changing. When some change occurs, we can expect compensatory changes in other aspects and dimensions in culture. When some of those are slow in coming, we call it culture lag. Language is often one of the slowest parts of culture to change, and lags behind much of the rest.

Defining

Putting boundaries around the meanings of symbols.Making them better understood.

Democracy

From the Latin words, "demo" (people) and "cracy" (power); thus "power to the people." There are several types of democracy, which allow varying amounts of power to the people of a community or society. Democracy.

Democracy (Participatory)
A type of democracy in which all members of the group, community or society participate in the decision making of the whole. It is a slow and awkward method of making decisions.
Democracy (Representational)
A type of democracy in which all members of a group, community, or society vote for representatives, who make decisions on their behalf. It is faster than participatory democracy, but slower than decision making in an autocracy (kingdom, dictatorship).
Demography
From the Latin words, "demo" (people) and "graphy" (quantitative study of).A science of counting people and comparing the results with various other variables.
Density
In Physics, density is the ratio of number of items per volume. In Demography, density is the ratio of people per area of land.
Dependency
An attitude and belief of people that they can not take care of themselves or determine their own destiny.A factor of poverty.Dependency Syndrome.
Descent
A kinship relationship based on birth and its extensions. Matrilineal Descent
Descriptive
Something that describes how it is, in contrast with something that says how it should be. Science, in this way, is descriptive rather than prescriptive.
Deviance
Variation from the norm (social or statistical)

Deviant
A person labelled as behaving outside the norms acceptable by a society. There are no universal characteristics of a deviant, each community is different.
Deviate
Another word for deviant.Often associated with sexual deviations.
Dialectics
A process of change, from the writings of Hegel. Everything has inside it the seeds of its own destruction, but from the ashes of that destruction will arise a new (possibly better) form.
Dimension (Cultural)
One of six categories of culture that are constructed to order information: technological, economic, political interactional, value and belief dimensions. Dimensions.
Dimension (Culture)
Dimensions of culture can also be called cultural dimensions. Dimension.
Discrimination
Hindering or forbidding persons access to desired situations (renting a residence, job recruitment, promotions) on the basis of some arbitrary and unfair characteristic.
Disease
Medically unwell; from "dis" (not) at ease.One of the major five factors of poverty as a social problem.
Dishonesty
Actions which are not honest. One of the five major factors of poverty. Dishonesty.

Division of Labour
An ordered situation where different individuals or groups are responsible for different tasks, which are interdependent and making up a more efficient or productive whole.
Divorce
Public or social recognition of the end of a marriage.
Documents
Anything written.One of the sources of information for social research.
Economic Dimension
A dimension of culture where the focus is on the distribution of wealth. Unlike the day to day concept of the economy, being market driven and based on money, wealth may be distributed in many ways (with or without money) as part of the economic dimension. See "wealth." Economic Dimension.
Emigration
Moving out of an arda, location, community or society.
Empire
Political domination of one nation over any number of others.The product of imperialism.
Empirical
Based on observations through any of the five senses.
Empowerment
Strengthening. When applied to an organisation or community, it also means capacity development. The "power" in empowerment is not only political power, but the ability to do anything that the community or organisation wants. Empowerment.
Enculturation
Primary socialisation.The process of making an animal, the human baby, into a human being.Humanization.Differs from "acculturation" or resocialisation. Some American sociologists reverse the "em" and "ac." Enculturation.
Endogamy

Marriage rules that allow one to marry only inside a specified group of which the individual is a member. Castes are usually endogamous. From "gamy" meaning marriage, and "endo" meaning within. Contrast with exogamy. Endogamy.

Enforcement

Social mechanisms intended to force individuals to conform to activities within allowed ranges or boundaries. Usually negative sanctions against those who do not conform. These can include the work of police officers, courts and prisons.

Environment

The physical environment or the ecology within which the people of a community or society are situated. The political and administrative environment includes the laws, regulations and official practices in which an organisation or community may operate.

Epistemology

The study of how we know. Although philosophical, it is an important consideration of research in all sciences. Knowing.

Equality

A very rare condition in nature.An ideal in political ideology; likely impossible.Equalitarian.

Essentialising

Generalizing community characteristics on the basis of a limited number of objectives.

Esteem (Public)

High respect (prestige) for a person or group.

Esteem (Self)

The degree to which an individual respects his or her self.

Ethnicity

Belonging to an identifiable community whit specific cultural characteristics.

Ethnocentrism

Putting the value system of your own ethnic group at the centre of how you view the world. It means judging other groups by your standards, even when the other groups may have different

standards. This approach is popular with those who believe there are universal standards and that they have them. Contrast with cultural relativity.

Ethnography

An ethnography is an anthropological study and report of a community or culture.

Exogamy

A rule of marriage that says a person must marry outside a defined group in which that person is a member. Very often lineages are exogamous, as an ideological extension of the incest taboo, but they allow and often prefer cross cousin marriages because cross cousins are outside each others' lineages. Contrast with endogamy. Exogamy.

Experiments

A scientific research method in which the scientist or observer inserts some item and sees what effects result.

Factor

A variable which has the effect of maintaining a situation. Not quite the same thing as a cause (independent variable), in that the result is already existing.

Factors of Production

In classical economics, factors of production include land, labour and capital.

Faith
One for the four elementary ways (in epistemology) that we know something. It is based upon our beliefs.
Family
A social organisation based on a group of people, related by affinity and/or descent, and/or adoption.
Feminine
Characteristics of the female gender.
Feminism
An ideology seeking increased power, prestige, respect and wealth for females. It is based on the observation that they are generally distributed unevenly.
Feminist Sociology
A branch of sociology concerned with the inequalities and inequities faced by females.Feminist theory.
First Nations
Descendants of the people occupying North America when the Europeans arrived. Elsewhere sometimes called "natives," "autochthons," "Aboriginals," or "Indians.
Formal Organisation
An organisation which has a recognised structure.Often contrasted with the family.
Freedom Fighter
Terrorist.
Functional
A condition of supporting the sustaining of an institution.Functional analysis.
Gay
Formerly meaning happy and joyful. Currently also meaning homosexual.
Gemeinschaft
Characteristics of communities: small, informal, face to face knowing of persons as whole persons. From the German word meaning community.

Gender
A concept borrowed from grammar. Social characteristics of being masculine or feminine, in contrast to sex which is biological and distinguishes between male and female.Gender.
Genes
Biological carriers of information which determine the physical characteristics of living things.DNA.
Gesellschaft
From the German word for society. Characteristics of society contrasted with those of community. Implies formality, regularized rules, cold and impersonal social organisation.
Gift
A transfer of wealth by means other than exchange.When something is given to another person with no expectation of return.
Glass Ceiling
An invisible social barrier that prevents women from getting job promotions to higher levels of responsibility and pay.
Global
World wide.Beyond national borders.
Gossip
Informal discussion, usually relating unacceptable behaviour.
Habitat
Place of residence. For humans, these include hamlets, villages, towns and cities.

Hegemony (Cultural)
Informal cultural influence from one community or society to another. Cultural hegemony is a concept borrowed from the political concept of hegemony.
Hegemony (Political)
Informal power and influence from one community or society to another.
Heterogeneous
Mixed. Not uniform. A community may be heterogeneous when it has in it many languages, separate social classes, different ethnic groups, various religious groups, variations in income and wealth, and a high division of labour.
Hierarchy
An arrangement of power in a group or organisation, shaped usually like a pyramid with a small number at the top wielding much power and a wide base of persons at the bottom with little of no power.
Home
Something more than a residence.A word not often with equivalents in other languages. It implies many elements of gemeinschaft and sentimentality.
Homogeneous
Blended.Consistent in composition. A community is homogeneous where there is very little variation in social classes, wealth, languages, religions or ethnicity, and a minimal division of labour.
Homophobia
A fear of homosexuals or of homosexuality. The fear is suggested to be a result of the observation that we all have at least little bit of latent homosexuality, and we fear that in ourselves.
Homosexual
A person who is attracted sexually to persons of the same sex.
House

A building (constructiom) containing a residence.

Household

A group of people sharing the same residence, and who cook and eat together as a unit.

Humanity

The characteristic that makes us, as a biological species, human. It is cultural and therefore acquired as we acquire culture.

Idea

A concept that begins as part of our thoughts, but can also be then written and communicated. One of the two essential elements, along with our actions, that comprise culture and society, in contrast to the individuals that carry it.

Identity

A symbol of something that makes it possible for us to recognise it.

Many human beings believe that they are separate individual entities and that they have free will. Those who do are socialised to believe this.

Ideology

One of the six dimensions of culture is composed of our values. Ideology is a set of values applied to what we think would be best for how we govern our society or community. Ideological Dimension

Ignorance

Not knowing. One of the five factors of poverty as a social problem. Do not confuse ignorance with stupidity or foolishness.Ignorance.

Immigration

Migrating in to a community or society.

Imperialism

A set of social structures, beliefs and practices that support an empire.Colonialism.Where one country exercises formal (political and economic) control over another.

Incest

Sexual intercourse between mother and son, between father and daughter and between brother and sister. Do not confuse this with child sexual molestation.

IncestTaboo

The widespread (perhaps universal) fear and loathing people have for the act of incest.

Income

Wealth coming in to an individual or to a family.Income.

IncomeGeneration

From the word "generation" (related to genesis, creation) where wealth is created, not merely transferred from one group or person to another. Wealth must have value by being useful and scarce. Not necessarily money. Income Generation.

Industrial Revolution

The world wide technological transformation from a dependence upon agriculture as the main source of wealth, to the dependence upon capital (tools, factories) in industry to produce wealth. The revolution is still not complete in many countries, and yet some other societies have gone beyond industrialisation to a postindustrial industry of information technology.

Industrialisation

A relentless progression in societies, with an increase of factories, monetary capital and factory production.

Industry

Industry strictly means work. It is now applied to each sector of production in a society. The owners and managers have captured the word and use it to mean themselves, excluding labour in their usage.

Influence

Indirect power.

Information

The content of a communication process. Composed of symbols to which humans attach meaning. One of the sixteen

elements of organisational capacity and community strength.Information.

Inorganic
Material lacking life.Chemicals outside carbon, hydrogen and oxygen combinations.A level of organisation below organic and superorganic.
Institution (Social)
A social institution is an identifiable pattern of social interaction.
Institution(Total)
A total institution is a formal organisation in which prisoners or patients are kept. Includes mental institutions and prisons.
InstitutionalDimension
One of the six dimensions of culture. In includes social interaction and patterns of communication. Institutional Dimension.
Interaction
Human behaviour in which individuals consider the meaning of their actions, the assumptions and expectations of other persons' interpretations of the action, and in response to other persons' behaviour. The way we behave in the presence of others. More than action.Interaction.
Interactional Dimension
The institutional dimension of culture.
Intermarriage
Marriage between persons of different groups.
Intervention
An action taken by a person or agency intended to correct a dysfunction or to change a person or group. Intervention

Intolerance
An attitude of not accepting some persons or categories of persons as they are.
Intrinsic
Within itself.A characteristic of an object that is in the object itself rather than in the mind of the observer. Currency, for example, has no intrinsic value but has value because of the faith we have in what it symbolizes.
Kingdom
A level of political complexity and organisation above tribe and below nation state.
Kitsch
Bland and uncontroversial. Television and other entertainment programming aimed at cutting across social categories such as class or ethnicity. Not demanding much intelligence or effort to understand.
Know-how
Skills and knowledge.The ability to do or achieve something.A recognised job requisite.
Know-who
Knowing persons of influence. Having patrons in an organisationwho can help one get a job or a promotion. An unrecognized job requisite.
Labour
A factor of production made up of the time, effort and skills of individuals. Its price is measured by wages.
Organisedlabour; the unions and their political influence.
Land
A factor of production made up of space on farms or inside factories. It price is measured by rent.
Language
A system of communication.Composed of symbols.
Law

Rules, usually those that prohibit specific activities, made up and approved officially by the state.

Leadership

A characteristic of being able to lead people.

Learning

A process of learning information. Most learning is learning of culture, and is composed of symbols. It can also include learning characteristics without words, non cultural, such as learning that a metal object is hot.

Logic

A method of knowing based upon argument. It is contrasted with belief, observation and authority.

Love

A strong emotion or feeling of affection and compassion. Once love, marriage, sex and child bearing were necessarily linked together but, with the advent of improved birth control and fertility technology, there is less necessity of socially linking them.

Lumpenproletariat

A class of people located below the working class, in the analysis of Marx. People who today might be called "street people."

Macro-level

Analysis and observations at the widespread community or national level.In sociology, the analysis of whole societies or communities. Contrast with micro-level.

Mainstream

An analogy borrowed from the physics of rivers. The mainstream is the major flow of a river, and the main culture of a society, excluding sub-cultures and ethnic minorities.

Malaria
A disease, potentially fatal, carried by anopheles mosquitoes. The major killer of children, ages 0-5, world wide. An indicator of poverty.
Marriage
A contractual arrangement between two persons, recognised by a community or society or by their members. The arrangement usually includes rights to cohabitation and sexual intercourse. It may also include a purpose or responsibility of having and raising children. Marriage Terminology.
Masculine
A word borrowed from grammar to indicate social characteristics of maleness. Includes costumes and behaviour. What is considered masculine varies from community to community. Contrast with feminine.
Materialism
An ideology or assumption that material elements (technological and economic) are prime, in relation to other dimensions of cultures.
Mean (Arithmetic)
One of several types of mathematical average.Composed of the sum of all values divided by the number of values.
Mean (Personality)
A person who is unkind and not generous.Originally a word indicating someone who holds on tightly to her or his money.(Short arms and deep pockets).Scrooge at the beginning of the story.
Measuring
A way of reckoning size of things that vary continuously. Contrast with counting which requires discrete objects. Measured things can be less (like water) or smaller (in size), but not fewer.

Mechanism
A word borrowed from physics which refers to a social arrangement or institution which achieves some objective.
Median
Another mathematical form of average. Here you list all the items in order of size, and find the one which half way along the list. Its size is the median.
Melting Pot
A process defined as social changes when people migrate to a society, in which both the immigrants and the host society members change to produce some common or compromise set of characteristics which reflects both, and which all share in sameness.
Micro Credit
Various income generating schemes in which the amount of capital loaned is very small, intended to introduce participants to creating and running their own small enterprises. Building a credit organization.
Micro Enterprise
Coupled with micro-credit and training, various schemes intended to train and support individuals in setting up their own small businesses.
Micro-level
Sociological investigation and analysis in which interaction between two or a few more individuals is the focus.Contrasted with macro level.
Migration
A one way move in which a person or small group changes location from one community to another.Differs from nomadic wandering.
Minority (Visible)
Any ethnic group which can be identified by looking at their members. Usually the identifying features are the biological or

physical features of the individuals, but sometimes can be the clothing, accessories or accoutrements.

Mobility (Geographic)

Moving from one location to another, Includes migrations and nomadic herding.

Mobility (Social)

Moving from one social class to another. Rarely: – moving from one ethnic group to another.

Model

A picture that represents a reality that may not be easily seen.

Molestation (Sexual)

Sexual predation, where an adult has sex with a vulnerable individual.Sometimes miscalled "incest."

Money

A system of symbols for the measure, storage and exchange of wealth.

Monitor

To observe. Monitoring a project or activity means to compare its outputs to its objectives (planned and desired outputs).

Monogamy

Marriage to one spouse only. From "gamy" meaning marriage. Monogamy.

Monolithic

A single model or design thought to be the only one applicable. In sociology, the notion of a monolithic family is seen as misleading, ideal and without reference to the observed facts.

Monotheism

Belief in a single God. Attributed to Moses, but practised in Persia long before by the followers of Zarathustra (Zoroaster). When Moses introduced monotheism, changing Jove to Jehovah, the other gods in the pantheon had to be transformed, so they became angels.

Mosaic
A picture or design, often composed of tiny tiles, stones or pieces of glass, which is multi coloured. In sociology, applied sometimes to multiculturalism.
Multiculturalism
An ideology which suggests we should respect our different cultural origins and languages, to make up a tolerant and varied society.
Multinational Corporation
A large commercial organisation which has legitimate branches in many countries. A corporation has only one ethic, to make a profit, so it can engage in activity which may be alien or deviant in some of the countries where it operates.
Nature
The biological universe.
Neanderthal
A human nomadic group in Europe which appeared around 230,000 years ago, co-existed with modern humans from 100,000 years ago then disappeared or changed about 28,000 years ago.
Networking
Making contacts, acquaintances and friends.
Newspeak
A word coined by George Orwell to describe what we now call spin doctoring, where the government takes concepts that are socially unacceptable and gives them new words with opposite meanings that reduce the negativity of the original words.
Norm (Social)
A set of values relating to acceptable behaviour.
Norm (Statistical)
A form of mathematical average which categorizes values into those inside and those outside.
Nuclear

Pertaining to the part of an atom that is at the centre, including protons and neutrons. Used as an adjective to refer to the science and technology of tearing apart or fusing nuclei to produce large amounts of energy.

Nuclear Family

Considered the centre of an extended family, composed of father-husband, wife-mother, and their offspring.Based on publicly recognised monogamous heterosexual relations. A model promoted by social and religious conservatives.

Oral

Verbal.Using the mouth.Communication that is contrasted with written communication. Compare to "aural" (by ear).

Organic

Having life, from the word "organ".A level of complexity above inorganic and below superorganic.

Organisation

A set of social interactions that comprise a recognisable structure. Where there is division of labour, each function is compared to an "organ" in a biological system.

Organisation Formal

A constructed and designed social organisation based on rationalisation, where logic and deliberate design are employed in its construction.

Organised

Arranged in such a way that the different parts have different functions and contribute to a greater effectiveness as a whole. Having organs.

Organism

A living entity that is complex enough to have organs specialising in different functions.If applied to cultural and social arrangements, where it is composed of symbols instead of living cells, sometimes called superorganism.

Pantheism

A belief system that sees all (pan) gods, nature and the universe as one. See polytheism and animism.

Participant Observation
A method of social science research where the observer lives among those being observed, and who records his or her own responses as well as those of those being observed.
Participation
Taking part in the activities.Doing. Not relying only on observing. A recommended way to train and teach people.
Participatory Appraisal
A method of assessment or observation where those being assessed participate centrally in the assessment process.
Participatory Measurement
The application of methods of participatory appraisal to the measurement of strength, or changes in strength, of a community or organisation.
Pedagogy
The study of how we learn, and the various effects of methods of teaching.
People
A collection of persons, so that the word is singular.
The biological organisms, or living entities who make up a society, as distinct from society, being their ideas and actions.
Persons
Individual human beings.

Perspective
A way of looking at something. When there is more than one perspective, the thing observed does not change, only the observers.
Political Dimension
A dimension of culture and community concerned with the allocation and exercise of power, including influence and authority.
Political Power
The ability to control or influence other people or groups of people.
Polygamy
More than one spouse. Bigamy is two spouses. Polygyny is more than one wife. Polyandry is more than one husband.

Polytheism
The belief in several gods, each with distinct personalities and characteristics. From "poly" meaning many.
Population
The total number of people in a society or community, plus their demographic characteristics.
The larger group which is being studied, when a sample is taken for observation in research.
Poverty
A social problem that is not merely the lack of cash, but where a community or society is low in spirit, cannot see its own strengths and resources, and does not have any hope of becoming stronger or more wealthy.
Poverty (Factors)
The "big five" factors of poverty are disease, apathy, dependency, dishonesty, and ignorance. To end poverty it is necessary to attack factors rather than symptoms of poverty.

Poverty (War)
The war on poverty is a global movement aimed at eradicating, not alleviating, poverty. It avoids the charity approach, which ultimately increases poverty. It aims at making the poor stronger to fight their own war, and is opposed to those who wage war against the poor.

Power
Strength.The ability to move something.In social organisations, capacity.

Prejudice
A short sighted and intolerant way of thinking that involves making judgements prior to having all the relevant information.

Prescribed Norms
Behaviour that is recommended or required.

Prescriptive
Statements that tell you what to do. As a science, Sociology is seen as "descriptive rather than prescriptive."

Preservation
Preparing or conditioning something so that it will not change. Includes pickling and canning. Usually results in the death or demise of that which is being preserved.

Prestige
A value judgement about the worth or importance of a person.One of the three elements of social class.

Primate
Any animal that belongs to the same biological family which includes monkeys, baboons, chimpanzees, gorillas, mangabeys, colobus, and human beings.

Process
Any series of changes that are linked together.

Production
A process of taking factors (land, labour and capital) and adding or creating value by combining them in a manner that makes something more useful and scarce.
Production Factors
Factors of production are the inputs needed for economic production. Land can mean any space (but once meant farm land when production was agricultural). Capital includes all the tools. Labour means energy, skills and knowledge provided by humans.
Proletariat
Workers.
Proscribed
Behaviour which is forbidden or discouraged. See Norms.

Protestant Reformation
A social and religious movement in Europe which was a response to the corruption, decadence and hypocrisy of the western Christian Church (not including Eastern orthodox churches) of the time. The result was to create several protestant churches, leaving the original western church to be called Catholic.
Punishment
Discomfort, pain or ill at ease administered as retribution to someone who has been found to commit a crime.
Qualitative (Interviews)
A method of social science research in which questions are asked that do not require short answers.
Race
A set of social categories based upon a range of biological variations. There is no biological base for racial categories, although it is widely believed to be so.
Racism

Attitudes of prejudice, intolerance and bigotry based upon the illusion of racial categories.

Rainbow

When light passes through a prism (triangular shaped) of glass or water it becomes separated into a range of frequencies. Those different frequencies are perceived by our eyes as different colours. When the sun passes through raindrops in the air, the illusion of a rainbow appears in the sky. Colours do not exist as such in nature; what we see as colours of things are the variations in light frequencies bounced of the objects that appear so coloured.

Rainbow Coalition

Coined by Jesse Jackson in his Operation Breadbasket in South Side Chicago, the rainbow coalition implied that it was composed of people of all colours. Later Nelson Mandela and Desmond Tutu picked up the term to describe South Africa as multi coloured after the Apartheid era.

Rationalisation

A process of becoming more based upon logic and reason. Weber said rationalisation was expressed in bureaucracy and the formation of organisations based on reason rather than on tradition or other standards.

Recidivism

Rate at which convicted criminals return to committing crimes after finishing their sentences.

Reductionism

The mistake of seeking explanation of a higher level of complexity by referring to variables at lower levels of complexity. Durkheim said we should not seek to explain social variables or social facts by psychological or biological facts.

Relativity
The idea that there are no absolutes, but only things that have characteristics which are relative to others. Cultural relativity says there are no absolute values, but only those which are in each community or society, and those vary.
Religion
A formal organisation which is based upon a set of beliefs.
Religious
Pertaining to theological beliefs or to organisations based upon them.
Reproduction (Cultural)
The process by which culture in all its dimensions, based upon ideas and actions, is able to continue even when its carriers (humans) may come and go, be born or die.
Reproduction (Sexual)
A process of biological reproduction of plants and animals which require the union of a male and female semi cell to produce a new cell that will grow to become a new individual plant or animal.
Reproduction (Social)
The process by which society and its institutions, based upon ideas and actions, is able to continue even when its carriers (humans) may come and go, be born or die.
Research
Investigation.The observing of facts so as to test a scientific theory.The search for written or other material about a specified topic.
Research (Community)
Research about the nature and operation of communities as social organisations.Sociology research.
Residence
A sheltered location for an individual or a group to rest, sleep and eat.

Restorative (Justice)
Legal process where the objective is not punishment of perpetrators, but to restore the moral "balance" of the victims.Restorative Justice.
Revolt
An event where subject peoples, using force or persuasion, seek to remove their leaders.
Revolution
In physics, the moving full circle (180 degrees) of a wheel or any rotating object.
A major transformation in all aspects of a society, such as the agricultural revolution or industrial revolution.
Role
The set of expected actions and responsibilities that apply to a named social position.

Sanction
A response to an action that may be positive (rewards) or negative (punishment).
Sapir-Whorf
A theory first proposed by Edward Sapir and Benjamin Whorf that learning a language influences how we perceive reality. Sapir Whorf.
Scarcity
Relatively not available.One of two factors that give value to goods and services and make them wealth.
Schism
A huge divide. A social schism is some barrier dividing different categories or groups in a community.
Schmaltz
From Yiddish.Chicken fat.

Science
A method of discovery and the body of knowledge accumulated by it.
Secondary Analysis
A research method that takes the discovered information of other observers and analyses them in a new way.
Settlement
An habitat of human beings: city, town, village, hamlet.
Sex
Plants (or parts of plants) and animals are divided into two categories, male and female, both of which are usually needed for reproduction. Genetically, there are other arrangements of X and Y chromosomes, so a few individuals are neither male or female or both. Compare with gender.
A word often used meaning sexual intercourse.
Sexism
A form of bigotry, intolerance, prejudice and discrimination based upon sexual differences between individuals, which are biological, and their social extrapolations, which are called gender. Similar to ageism and racism in concept (physical differences; social extrapolations).
Sibling
Brother or sister.
Simple
Not complex. The general direction of change in the biomass and in society, is from simple to complex.
Skills
Abilities, attained by training, of individuals to achieve things.
Slave
A social status of an individual who is considered the property of another person considered to be the owner of the slave. Ownership confers the rights of sale and purchase.
Social
Pertaining to society.

Social Problem
A social problem is qualitatively different from an individual problem. What makes it social is that the problem is "systemic" meaning that it is a problem in the system, not merely an anomaly. The "system" here is society itself. It may be possible to alleviate specific manifestations of the problem, but to solve the whole problem requires social change, and that implies the need for social intervention.

Socialisation
A process, based upon learning the meanings of symbols, wherein the biological entity of a new human begins and continues to learn culture.
A means of society and culture in reproducing itself and continuing after its carriers, humans, are removed.

Socialism
An ideology in which society is seen as having more importance than individuals.

Socialist
An individual who supports the ideology of socialism.

Society
The patterns of ideas and action of human beings, often seen as a system that behaves as if it is outside the individuals which carry it.

Sociological Perspective
The ability to perceive and understand society. Sociological Perspective

Sociology
The scientific study of society.

Sociology (Applied)
The application of the knowledge obtained by society, for practical purposes.

Sociology (Pure)
The use of the scientific method to obtain information about society, discovered so as to advance knowledge rather than for practical purposes.
Solidarity (Mechanical)
A concept presented by Durkheim suggesting that the "glue" holding simple communities and societies together was based upon the similarities of members.
Solidarity (Organic)
A concept presented by Durkheim suggesting that the "glue" holding complex communities and societies together was based upon division of labour and interdependence.
Sophomore
A "wise moron."Common name for a second year college student.From "soph" meaning wise, and "more" meaning stupid, ignorant or foolish.
Spin Doctoring
Taking an unpleasant or embarrassing event and using different words to make it look better. See Newspeak.
Spirit (Community)
The idea that a community or association can have optimism, loyalty, anima, and a positive attitude, as if, but not scientifically confirmed, the community has a spirit in it.
State
The government, and all its institutions, of a nation.
Status
Condition.
The attributes, including the degree to which it is respected, of a social role.

Stereotype
A set of over simplified characteristics that describe person in a category, often those which exaggerate faults or turn assets into liabilities.Often applied to visible minorities, some age groups and to all individuals in a particular gender.

Stereotyping
The process of making assumptions about persons based on stereotypes (see above) of their category.

Strange Fish
Most fish do not exit water, so do not have the absence of water to compare with it, thus do not know what water is.
Sociologists use as a metaphor this to describe individuals who can not know the existence of culture, because they can not compare it with its absence.

Stratification (Social)
Layers of social classes where members of society in each layer have about the same level of power, prestige and wealth.

Strength
Power.Ability to achieve a desired objective.

Structure
A model of a social institution which sees it as frame on which behaviour between its members is attached.

Sub-Culture
A variation in culture found in a sub category or a group within a society or community.

Suicide (act)
A very personal act based upon what might be the ultimate of freedom of choice, ending one's own life. It is very difficult to interview those who are successful to ask why, because they tend to be deceased. Interviewing those who are not successful does not guarantee that they have the same motivations and reasoning of the successful ones.

Suicide (Rate)

Durkheim argued that a rate of suicide among a specified social category or group was a social fact, and should not be explained by psychological variables.

Sunup

When discussing culture lag, and pointing out that our languages is often reflecting an old concept that is no longer accepted, we use "sunup" as an example, When we say the sun comes up on the morning, or down in the evening, we are using language that dates to a time in the past when we thought the world was flat and the centre of the universe. Now astronomy tells us that the world is like a globe, and rotating on its axis, giving the illusion of the sun rising.

Superorganic

In the three levels of complexity in the universe, inorganic, lifeless, is at the bottom, most simple. Organic is in the middle, based on but transcending the inorganic, having enough complexity to support life. Superorganic is the highest level of complexity, based on but transcending the organic, as humans carry culture, but it is composed of symbols.

Surveys

One of the popular methods of doing sociological research.Useful for finding a small amount of information about a large number of persons.

Survival

To survive means to continue living after some condition or experience which might threaten that living.
If something can survive, it will be able to reproduce itself. This applies to organic life forms and superorganic social forms.

Sustainable

To be sustainable in the environmental sense means that a social institution can continue to survive without destroying its physical environment.

To be sustainable in the development assistance sense is to establish a project which will continue after the outside funding is ended.

Symbol

Anything which can stand for something else, having meaning.

Symbolic Interaction

One of the three classical perspectives in Sociology, where the meanings of our actions is important, and where we look at the way people behave in response to their assumptions about how other people will interpret the behaviour.

Taboo

A proscription where social values forbid the doing of something.Often applied to eating specified foods.

Taboo (Incest)

The strong negative judgement and feeling of horror at sexual incest.Apparently one of our longest standing institutions and perhaps the basis of human family systems.

Technological Dimension

The dimension of culture that includes tools, our ability to create them, modify them, use them, and to communicate their design and use to others. The interface between society and the physical environment. Capital. Technology

Technology

Our system of tools.Ranging from large complex systems such as agriculture or industry, to individual tools or sets of tools, as found in a plumber’s box or a doctor’s bag.

Terrorist
A person who uses violence to frighten others in pursuit of a political objective.A freedom fighter.
Thought
The process that goes on in our minds, based on symbols that we use in communicating with each other.
Tools
Goods that are not immediately consumed, but produced in order to increase further production. Capital.
Totem
A symbol usually of an animal or other entity in nature, which is used to label and identify a social group such as a family or clan. Very often there is a food prohibition against members of that group eating the identified animal.
Totem Pole
Totem poles used by West Coast First Nations often tell stories, and do not represent totemic symbols.
Town
A human settlement or habitat smaller than a city and larger than a village.
Transcend
To go beyond. Used originally in a theological sense, in sociology it is used to describe how culture, while carried by individual humans, goes beyond the individuals in how it behaves.
Tribal People or Tribals
A term used to describe people in India, often located in marginalised areas, who do not belong to the standard caste system.
Tribe
A technical term in political anthropology meaning a level of political complexity above a band but below a kingdom. Misused as a term of prejudice to identify ethnic groups remaining from pre colonial political states.

Trust
To have an attitude that someone will keep his or her promises and be reliable.
One of the sixteen elements of organisational and community strength, earned though honest and transparent behaviour. Trust.
Unity
A variable in communities indicting the level to which members will work together, respect each others differences, and heal over social schisms.
Unobtrusive Measures
A characteristic of some social science research where the persons being observed are not aware of the observation. It often uses books such as telephone books and newspapers to make the observations.
Urbanisation
Social change in the direction of greater populations in settlements, greater population density, increased social complexity, and greater resemblance to cities.
Urbanism
An ideology and life style of acceptance and support of the values and social organisation of cities.
Utility
Usefulness. One of the two elements of wealth, which gives value to goods and services identified as wealth.
Utopia
An imaginary society, like Erehwon, where everything is perfect.

Value-Aesthetic Dimension
A cultural dimension in which the judgements of people are made about right versus wrong, good versus bad and beautiful versus ugly.Values.

Value
A characteristic of wealth, any good or service, if it is relatively useful and relatively scarce.

Values
The shared judgements of people in communities.

Verstehen
From German, the meaning that people put towards their actions, thoughts and symbols. Weber said that an understanding of the nature of society required an understanding of the meanings people have.

Village
A human settlement or habitat which is smaller than a town but larger than a hamlet.Village.

Visible Minority
An ethnic group in which the members, by their biological or physical characteristics, sometimes by their costumes and behaviour – eg Jews and Palestinians, are easily identified by looking at them.

Wealth
Wealth is what is distributed in any economic system. It is any goods or services – ultimately goods because of the services they provide – characterised by relative utility and relative scarcity. Wealth.

Wealth Generation
Sometimes called income generation, where there is a genuine creation (generation) of wealth by a value added process, and not merely a transfer of cash. Income generation.

Weltshautung
The notion that learning a language contains in it the perception of reality. See Sapir-Whorf.

Workers
People who provide (sell) their labour for surviving.
Working Class
In a stratification system, those people who work for a living. Karl Marx called them the "proletariat."
It will be interesting and informative to also look at the Key Words list. They are notes used for training community workers.