

1: Statistics/Quantitative Methods

Quantitative research is "explaining phenomena by collecting numerical data that are analysed using mathematically based methods (in particular statistics).. Qualitative research seeks to answer questions about why and how people behave in the way that they do.

An Overview of Quantitative Research This module provides a basic overview of quantitative research, including its key characteristics and advantages. Describe the uses of quantitative research design. Provide examples of when quantitative research methodology should be used. Discuss the strengths and weaknesses of quantitative research. Once a researcher has written the research question, the next step is to determine the appropriate research methodology necessary to study the question. The three main types of research design methods are qualitative, quantitative and mixed methods. The focus of this set of modules is qualitative research. However, the following introductory video, A Brief Introduction to Research Design, offers a brief explanation of each method and a comparison. Quantitative methods are used to examine the relationship between variables with the primary goal being to analyze and represent that relationship mathematically through statistical analysis. This is the type of research approach most commonly used in scientific research problems. Following is a list of characteristics and advantages of using quantitative methods: The data collected is numeric, allowing for collection of data from a large sample size. Statistical analysis allows for greater objectivity when reviewing results and therefore, results are independent of the researcher. Numerical results can be displayed in graphs, charts, tables and other formats that allow for better interpretation. Data analysis is less time-consuming and can often be done using statistical software. Results can be generalized if the data are based on random samples and the sample size was sufficient. Data collection methods can be relatively quick, depending on the type of data being collected. Numerical quantitative data may be viewed as more credible and reliable, especially to policy makers, decision makers, and administrators. There are a variety of quantitative methods and sampling techniques that will be discussed in detail in the other modules in this unit. However, following are examples of research questions where quantitative methods may be appropriately applied: How often do college students between the ages of access Facebook? What is the difference in the number of calories consumed between male and female high school students? What percentage of married couples seek couples counseling? How many organized sports activities has the average 10 year old child competed in? The collection of numerical data through quantitative research methods lends itself well to large variety of research questions. The following modules in this series will explore when to choose quantitative methods, how to write a good research question, types of quantitative methods, data analysis, ethics and many other topics that will lead to better understanding of quantitative research. Planning, conducting, and evaluating quantitative. Qualitative, quantitative, and mixed methods approaches. Basics of social research. Qualitative and quantitative approaches. The lancet, , Real world research Vol.

2: Quantitative Methods and Statistics (QMST) | Texas State University

Introduction to Quantitative Methods Parina Patel October 15, Contents Descriptive statistics are often used to describe variables. Descriptive statis-

But information is not something that is handed to anyone on a silver platter. It starts with a small raw fact or figure “ or a set of raw facts and figures “ that are not organized and, all too often, without meaning or context. By itself, and in its raw form, data may seem useless. Data will cease to be useless once it undergoes processing, where it will be organized, structured and given context through interpretation and analysis. Processing gives it meaning, effectively turning it into information that will eventually be of great use to those who need it. Collectively, all information will make up bodies of knowledge that will, in turn, benefit various users of this knowledge. Therefore, no matter how data may seem random and useless, it is actually considered to be the most important and basic unit of any information structure or body of knowledge. That is why, in all of these processes that involve the usage of information and knowledge, one of the very first steps is data collection. The approach to applying the methods may also vary, customized to suit the purpose and prevailing circumstances, without compromising the integrity, accuracy and reliability of the data. There are two main types of data that users find themselves working with “ and having to collect. These are data that deal with quantities, values or numbers, making them measurable. Thus, they are usually expressed in numerical form, such as length, size, amount, price, and even duration. The use of statistics to generate and subsequently analyze this type of data add credence or credibility to it, so that quantitative data is overall seen as more reliable and objective. These data, on the other hand, deals with quality, so that they are descriptive rather than numerical in nature. Unlike quantitative data, they are generally not measurable, and are only gained mostly through observation. Narratives often make use of adjectives and other descriptive words to refer to data on appearance, color, texture, and other qualities. In most cases, these two data types are used as preferences in choosing the method or tool to be used in data collection. As a matter of fact, data collection methods are classified into two, and they are based on these types of data. Thus, we can safely say that there are two major classifications or categories of data collection methods: But for many, that still does not mean much. Depending on the perspective of the user and the purpose of the information, there are many concrete benefits that can be gained from data gathering. In general terms, here are some of the reasons why data collection is very important. The first question that we will address is: Learning and building knowledge is a natural inclination for human beings. Even at a very young age, we are in search for answers to a lot of things. Take a look at toddlers and small children, and they are the ones with so many questions, their curious spirit driving them to repeatedly ask whatever piques their interest. A toddler curious about a white flower in the backyard will start collecting data. He will approach the flower in question and look at it closely, taking in the color, the soft feel of the petals against his skin, and even the mild scent that emanates from it. He will then run to his mother and pull her along until they got to where the flower is. And now the little boy even has a name for it. Suddenly, he felt a prickle in his fingers, followed by a sharp pain that made him yelp. When he looked down at his palm, he saw two puncture marks, and they are bleeding. The little boy starts to cry, thinking how roses, no matter how pretty and good-smelling, are dangerous and can hurt you. The same goes in case of a marketing research, for example. A company wants to learn a few things about the market in order to come up with a marketing plan, or tweak an already existing marketing program. Data collection facilitates and improves decision-making processes, and the quality of the decisions made. Leaders cannot make decisive strategies without facts to support them. Planners cannot draw up plans and designs without a basis. Entrepreneurs could not possibly come up with a business idea “ much less a viable business plan “ out of nothing at all. All that decision-makers are left with is their intuition and gut feeling , but even gut feeling and instinct have some basis on facts. Decision-making processes become smoother, and decisions are definitely better, if there is data driving them. In business, one of the most important decisions that must be made is on resource allocation and usage. If they collect the relevant data, they will be able to make informed decisions on how to use business resources efficiently. Data collection improves quality of expected results or output.

Just as having data will improve decision-making and the quality of the decisions, it will also improve the quality of the results or output expected from any endeavor or activity. For example, a manufacturer will be able to produce high quality products after designing them using reliable data gathered. Consumers will also find the claims of the company about the product to be more reliable because they know it has been developed after conducting significant amount of research. Through collecting data, monitoring and tracking progress will also be facilitated. This gives a lot of room for flexibility, so response can be made accordingly and promptly. Adjustments can be made and improvements effected. Now we move to the next question, and that is on the manner of collecting data. Why is there a need to be particular about how data is collected? Why does it have to be systematic, and not just done on the fly, using whatever makes the data gatherer comfortable? Why do you have to pick certain methodologies of data collection when you can simply be random with it? Collecting data is expensive and resource-intensive. It will cost you money, time, and other resources. Thus, you have to make sure you make the most of it. You cannot afford to be random and haphazard about how you gather data when there are large amounts of investment at stake. Data collection methods will help ensure the accuracy and integrity of data collected. Using the right data collection method and using it properly will allow only high quality data to be gathered. In this context, high quality data refers to data that is free from errors and bias arising from subjectivity, thereby increasing their reliability. High quality and reliable data will then be processed, resulting to high quality information. You may notice some methods falling under both categories, which means that they can be used in gathering both types of data. Qualitative Data Collection Methods Exploratory in nature, these methods are mainly concerned at gaining insights and understanding on underlying reasons and motivations, so they tend to dig deeper. Since they cannot be quantified, measurability becomes an issue. This lack of measurability leads to the preference for methods or tools that are largely unstructured or, in some cases, maybe structured but only to a very small, limited extent. Generally, qualitative methods are time-consuming and expensive to conduct, and so researchers try to lower the costs incurred by decreasing the sample size or number of respondents.

Face-to-Face Personal Interviews This is considered to be the most common data collection instrument for qualitative research, primarily because of its personal approach. The interviewer will collect data directly from the subject the interviewee, on a one-on-one and face-to-face interaction. This is ideal for when data to be obtained must be highly personalized. The interview may be informal and unstructured conversational, even as if taking place between two casual to close friends. The questions asked are mostly unplanned and spontaneous, with the interviewer letting the flow of the interview dictate the next questions to be asked. However, if the interviewer still wants the data to be standardized to a certain extent for easier analysis, he could conduct a semi-structured interview where he asks the same series of open-ended questions to all the respondents. But if they let the subject choose her answer from a set of options, what just took place is a closed, structured and fixed-response interview.

Qualitative Surveys Paper surveys or questionnaires. Questionnaires often utilize a structure comprised of short questions and, in the case of qualitative questionnaires, they are usually open-ended, with the respondents asked to provide detailed answers, in their own words. This is basically a web-based or internet-based survey, involving a questionnaire uploaded to a site, where the respondents will log into and accomplish electronically. Instead of a paper and a pen, they will be using a computer screen and the mouse. This is often due to the questions being shorter, requiring less detail than in, say, a personal interview or a paper questionnaire.

Focus Groups Focus groups method is basically an interview method, but done in a group discussion setting. When the object of the data is behaviors and attitudes, particularly in social situations, and resources for one-on-one interviews are limited, using the focus group approach is highly recommended. Ideally, the focus group should have at least 3 people and a moderator to around 10 to 13 people maximum, plus a moderator. Depending on the data being sought, the members of the group should have something in common. For example, a researcher conducting a study on the recovery of married mothers from alcoholism will choose women who are 1 married, 2 have kids, and 3 recovering alcoholics. Other parameters such as the age, employment status, and income bracket do not have to be similar across the members of the focus group. The topic that data will be collected about will be presented to the group, and the moderator will open the floor for a debate. He must be highly capable and experienced in

controlling these types of interactions. Documental Revision This method involves the use of previously existing and reliable documents and other sources of information as a source of data to be used in a new research or investigation. This is likened to how the data collector will go to a library and go over the books and other references for information relevant to what he is currently researching on. If he chooses wrong, then the quality of the data he will collect later on will be compromised. Observation In this method, the researcher takes a participatory stance, immersing himself in the setting where his respondents are, and generally taking a look at everything, while taking down notes. Aside from note-taking, other documentation methods may be used, such as video and audio recording, photography, and the use of tangible items such as artifacts, mementoes, and other tools. The observed may become reactive to the idea of being watched and observed. If he planned to observe recovering alcoholic mothers in their natural environment e. This may lead to the results becoming impaired. Longitudinal studies This is a research or data collection method that is performed repeatedly, on the same data sources, over an extended period of time. It is an observational research method that could even cover a span of years and, in some cases, even decades. The goal is to find correlations through an empirical or observational study of subjects with a common trait or characteristic. The study aimed to gather data on the characteristics of gifted children “ and how they grow and develop ” over their lifetime.

3: Quantitative research - Wikipedia

Quantitative methods emphasize objective measurements and the statistical, mathematical, or numerical analysis of data collected through polls, questionnaires, and surveys, or by manipulating pre-existing statistical data using computational techniques. Quantitative research focuses on gathering.

Bibliography Definition Quantitative methods emphasize objective measurements and the statistical, mathematical, or numerical analysis of data collected through polls, questionnaires, and surveys, or by manipulating pre-existing statistical data using computational techniques. Quantitative research focuses on gathering numerical data and generalizing it across groups of people or to explain a particular phenomenon. The Practice of Social Research. Wadsworth Cengage, ; Muijs, Daniel. Characteristics of Quantitative Research Your goal in conducting quantitative research study is to determine the relationship between one thing [an independent variable] and another [a dependent or outcome variable] within a population. Quantitative research designs are either descriptive [subjects usually measured once] or experimental [subjects measured before and after a treatment]. A descriptive study establishes only associations between variables; an experimental study establishes causality. Quantitative research deals in numbers, logic, and an objective stance. Quantitative research focuses on numeric and unchanging data and detailed, convergent reasoning rather than divergent reasoning [i. Its main characteristics are: The data is usually gathered using structured research instruments. The results are based on larger sample sizes that are representative of the population. The research study can usually be replicated or repeated, given its high reliability. Researcher has a clearly defined research question to which objective answers are sought. All aspects of the study are carefully designed before data is collected. Data are in the form of numbers and statistics, often arranged in tables, charts, figures, or other non-textual forms. Project can be used to generalize concepts more widely, predict future results, or investigate causal relationships. Researcher uses tools, such as questionnaires or computer software, to collect numerical data. The overarching aim of a quantitative research study is to classify features, count them, and construct statistical models in an attempt to explain what is observed. Things to keep in mind when reporting the results of a study using quantitative methods: Explain the data collected and their statistical treatment as well as all relevant results in relation to the research problem you are investigating. Interpretation of results is not appropriate in this section. Report unanticipated events that occurred during your data collection. Explain how the actual analysis differs from the planned analysis. Explain your handling of missing data and why any missing data does not undermine the validity of your analysis. Explain the techniques you used to "clean" your data set. Choose a minimally sufficient statistical procedure; provide a rationale for its use and a reference for it. Specify any computer programs used. Describe the assumptions for each procedure and the steps you took to ensure that they were not violated. When using inferential statistics, provide the descriptive statistics, confidence intervals, and sample sizes for each variable as well as the value of the test statistic, its direction, the degrees of freedom, and the significance level [report the actual p value]. Avoid inferring causality, particularly in nonrandomized designs or without further experimentation. Use tables to provide exact values; use figures to convey global effects. Keep figures small in size; include graphic representations of confidence intervals whenever possible. Always tell the reader what to look for in tables and figures. When using pre-existing statistical data gathered and made available by anyone other than yourself [e. Wadsworth Cengage, ; Brians, Craig Leonard et al. Quantitative and Qualitative Research Methods. Longman, ; McNabb, David E. Quantitative and Qualitative Approaches. Sharpe, ; Quantitative Research Methods. Colorado State University; Singh, Kultar. Quantitative Social Research Methods. Basic Research Design for Quantitative Studies Before designing a quantitative research study, you must decide whether it will be descriptive or experimental because this will dictate how you gather, analyze, and interpret the results. A descriptive study is governed by the following rules: An experimental design includes subjects measured before and after a particular treatment, the sample population may be very small and purposefully chosen, and it is intended to establish causality between variables. Introduction The introduction to a quantitative study is usually written in the present tense and from the third person point of view. It covers the following

information: Identifies the research problem -- as with any academic study, you must state clearly and concisely the research problem being investigated. Reviews 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 these gaps or clarifies existing knowledge. Describes 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 the appropriate background information to place the research problem in proper context [e. 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 the reader can make an informed assessment of the methods being used to obtain results associated with the research problem. The methods section should be presented in the past tense. 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; and, note if the data was pre-existing [i. If you gathered it yourself, describe what type of instrument you used and why. Note that no data set is perfect--describe any limitations in methods of gathering data. 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, including mathematical techniques and the type of computer software used to manipulate the data. 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 being 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. The discussion should be presented in the present tense. Interpretation of results -- reiterate 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 -- describe any trends that emerged from your analysis and explain 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 findings that you believe are 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 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 was learned that you did not know before conducting the study. Recommendations -- if appropriate to the aim of the assignment, tie key findings with policy recommendations or actions to be taken in practice. Doing Quantitative Research in the Social Sciences: Competencies for Analysis and Applications. Upper Saddle River, NJ: Merril Prentice Hall, ; Hector, Anestine. Bates College; Nenty, H. Basic Inquiry of Quantitative Research. 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 studied, 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. Sharpe, ; Singh, Kultar. 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.

4: Quantitative Data - Center for Innovation in Research and Teaching

Quantitative research is statistical: it has numbers attached to it, like averages, percentages or quotas. Qualitative research uses non-statistical methods. For example, you might perform a study and find that 50% of a district's students dislike their teachers.

Read on to learn about what makes them different, how you can turn one into the other, and when you might use which method. It helps researchers gain an understanding of underlying reasons, opinions, and motivations. It provides insights into the problem or helps to develop ideas or hypotheses for potential quantitative research. Qualitative data collection methods vary using unstructured or semi-structured techniques. Common methods include focus groups, individual interviews, observation or immersion, and diary studies. The sample size is typically small, and respondents are selected to fulfill a given quota. It is used to quantify attitudes, opinions, behaviors, and other defined variables, and generalize results from a larger sample population. Quantitative research uses measurable data to formulate facts and uncover patterns in research. Quantitative data collection methods are much more structured; they include various forms of surveys – online surveys, paper surveys, mobile surveys and kiosk surveys, face-to-face interviews, telephone interviews, longitudinal studies, website interceptors, online polls, and systematic observations. Differences in the data In terms of the actual data, here are some of the key differences: Qualitative data is not countable. You can turn qualitative data into structured quantitative data through analysis methods like coding. Quantitative data can help to give you more confidence about a trend, and allow you to derive numerical facts. This would be a quantitative fact. If you then landed on the ground and interviewed some motorbike riders about their thoughts on truck drivers, the notes or recording of those interviews would be qualitative data. They often blur, and you can represent the same data set in both ways. In its raw form, this would be considered qualitative data. By doing this, you would have turned some unstructured qualitative data into a structured, countable insight. Qualitative research generally focuses more on the human angle – what are people thinking and feeling? In your research, consider using both qualitative and quantitative methods together to be better equipped to solve the problem at hand.

5: Quantitative Analysis

Quantitative research is mostly conducted in social sciences using the statistical methods used above to collect quantitative data from the research study. In this research method, researchers and statisticians deploy mathematical frameworks and theories that pertain to the quantity under question.

This module describes quantitative data and examines common methods of data collection in quantitative studies. Define quantitative data and its characteristics. Explain the difference between discrete and continuous data. List examples of quantitative data. Describe common methods of quantitative data collection. Quantitative data is data that can be counted or expressed numerically. Because it is numerical in nature, quantitative data is both definitive and objective. It also lends itself to statistical analysis and mathematical computations and therefore, is typically illustrated in charts or graphs. There are two main types of quantitative data: Discrete data is described as having a finite number of possible values. For example, if a teacher gives an exam that has questions, the exam scores reflect the number of answers that were correct out of the possible questions. Discrete data may also be defined as data where there is space between values on a number line, thus values must be a whole number. For example, if a study examined the number of vehicles owned by households in America, the data collected would be whole numbers. Continuous data is defined as data where the values fall on a continuum and it is possible to have fractions or decimals. Continuous data is usually a physical measurement. Examples may include measurements of height, age, or distance. Quantitative data collection may include ANY method that will result in numerical values. Common examples of quantitative data collection strategies may include: The advantage of collecting quantitative data is that the numerical outcomes result in data that can be statistically analyzed that may be viewed as credible and useful in decision-making. However, the disadvantage of quantitative data is that it may be superficial and fail to fully capture explanatory information. The following video, [Quantitative vs. Qualitative Data](#), defines quantitative data, discusses the types of quantitative data and describes how the data can be analyzed. [Quantitative data analysis for social scientists rev. Planning, conducting, and evaluating quantitative. Qualitative, quantitative, and mixed methods approaches. Measurement scales and statistics: Resurgence of an old misconception. Basics of social research. Qualitative and quantitative approaches. The lancet, , Real world research Vol. On the theory of scales of measurement.](#)

6: My Market Research Methods - Quantitative vs. Qualitative Research

From here, the quantitative research method can begin by using various methods to determine why faults occurred and ways to fix them. Qualitative research shows what is wrong, where quantitative methods reveal ways to improve products based on end-user input; or numerical data that can be analyzed.

A proper explanation of quantitative vs. Conversely, think of qualitative data as unstructured information focus group comments, observations, etc. Quantitative vs Qualitative Research Ok, now for the next level of detail and some examples: Quantitative Research – This research aims to objectively measure the topic at hand, using mathematics and statistics. If you are doing quantitative research, you will most likely be analyzing raw data with the help of a spreadsheet software program like Microsoft Excel, or a statistical package like SPSS. To facilitate this type of analysis, your data will need to be gathered in a structured format. Quantitative research is often conducted using market research methods like surveys and experiments, which are best at collecting structured data. Remember that original primary research may not be necessary to conduct quantitative analysis. There are many secondary research data sources available that have structured data perfect for quantitative analysis a good example is gapminder. Every day, a one-question survey is conducted at the website How Stuff Works. These surveys are simple examples of quantitative research, because they can be analyzed numerically. Example of Quantitative Research Analysis Source: In this case, the researcher is not interested in determining objective statistical conclusions or in testing a hypothesis, but rather in gaining insights about a certain topic. Common qualitative research techniques include focus groups, interviews, and observation. Since the data is unstructured—imagine a bunch of handwritten notes from a focus group meeting—it can be tricky drawing conclusions and presenting the findings. In the case of interviews and focus groups, the moderator may simply take some time to write up the key points heard in the meeting, and then present those key points to the interested parties. For example, in a focus group about pizza, you might see the following summary: With the conversations summarized into these coded responses, the data has been converted from purely qualitative data into quantitative data that can be summarized in charts and graphs. Yet another qualitative analysis method is automated content analysis. You could manually look through the notes and draw some conclusions. You could also take that text and dump it into a content analyzer e. This method provides a quick way to gain insights into the unstructured data, especially when the set of data is overwhelmingly large. You have a few choices here.

7: Chapter 7: Evaluation Methods | Principles of Community Engagement | ATSDR

Quantitative methods are used to examine the relationship between variables with the primary goal being to analyze and represent that relationship mathematically through statistical analysis. This is the type of research approach most commonly used in scientific research problems.

Find Answers Using the Quantitative Method written by: This can be done in a variety of ways and here, Jean Scheid discussed the best practices for using such methods based on factual data that is easily analyzed. In order for any quantitative research method to work, one must first establish the baseline of what will be analyzed. For example, will a certain widget sell as is? To find out, quantitative methods pool participants in various ways and match actual and factual numbers to the questions asked. Here, questions on market share, market demographics, and customer satisfaction can be achieved and those results used to improve the widget or change the widget or elements of the widget entirely. Her idea incorporated a stuffed animal pet with Velcro which opened up into a sleeping pillow. Using the Pillow Pet example, we must first look at the qualitative method first. Most likely in developing her first Pillow Pets, Ms. Telfer looked at gender-specific designs. After all, girls may not like giraffes as much as boys or boys may want to skip the panda, etc. Qualitative research always comes first, so in our scenario to determine the problems with low sales of the Pillow Pet qualitative research shows the reason for the low sales. For example, perhaps a focus group of children were gathered with a variety of designs to determine favorites and the not so favorites. Once qualitative researched showed no child wanted the polar bear or snake pillow pet, each were specifically questioned on why to determine the exact reasons. Once these reasons are discovered, quantitative research can begin. No child of either gender liked the way the snake pillow felt when unfolded and found it uncomfortable. Females thought the snake looked mean. The polar bear was not white and black in color. From here, the quantitative research method can begin by using various methods to determine why faults occurred and ways to fix them. Qualitative research shows what is wrong, where quantitative methods reveal ways to improve products based on end-user input; or numerical data that can be analyzed. Hybrid Sampling

For the uncomfortable Pillow Pet design, a new design offered a bigger pillow-head area, the pillow snake was given a happier smile and the Panda Pillow Pet was offered in recognizable black and white colors. The focus group needed to answer specific questions about what they liked about the new Pillow Pets including questions such as, do you think the snake pillow is comfortable and why? Does the snake look happy or scary? What if we made the Panda red and yellow? Here, through learned responses, the new design, if developed using the quantitative method will help to increase sales. The answers provide quantitative numbers to increase sales based on pooling a group. Parent Surveys

Telephone or online surveys are developed to be answered by parents of the original focus group of children. Through these surveys, parents are asked what specifically they think their child would rather see in the snake or the panda. Again, survey data analysis reveals if indeed a redesign would work or fail. The production cost of the scary snake is dropped and the designers can focus on what children like best based on parental input. These surveys, once analyzed, reveal quantitative facts based on numerical data and show what parents will buy their children based on known likes and what they will avoid. If surveys or questionnaires revealed an elephant was missing from the Pillow Pet line via suggestions by a panel, this product could be introduced. These surveys are easily designed to simply explain what the Pillow Pet is and does, likes and dislikes and the ever important

what would you like to see different question. Again via analysis, the appropriate product line could be produced. In this quantitative method, the number of people asking for an Pillow Pet elephant would be overwhelming, making it a perfect new product line choice. These methods show actual number results, meaning the project can focus on how many to produce and which kind will sell best. What can make the quantitative method fail is not analyzing the data and using the results to ensure the product will indeed sell.

8: Overview of Qualitative And Quantitative Data Collection Methods

The course is comparable to a university level introductory course on quantitative research methods in the social sciences, but has a strong focus on research integrity. We will use examples from sociology, political sciences, educational sciences, communication sciences and psychology.

By this definition, one of the first appearances of criminology was the work of Cesare Beccaria in related to torture and the death penalty. It was published in and was the first work of its kind to include quantitative data, mainly suicide rates across different populations. This study marks the first documented use of quantitative research methods in the field of criminology. The first case of this in the United States occurred at the University of Chicago, around where scientists were studying the massive immigration into the city. It provided an ideal setting for empirical studies, where the scientists were testing hypotheses related to the proneness to criminal behavior. To study this they looked at recorded convictions, environment and social experiences, from which they recorded data and statistics to formulate a conclusion for the study. American criminology was greatly influenced by British criminology due to the large number of social scientist that developed criminology theories. Criminology back in the late 19th century was a broader scope which included similar theories as sociology. A more current and encompassing definition of criminology is: The scientific study of crime, criminals, criminal behavior, and corrections. This is the definition that is more widely used than the one from the late 19th century. In general criminology has remained constant in terms of its science and how it is conducted. Research methods for criminology and well as early theories have had little if no change to those of today. The use of quantitative methods in criminology is still heavily used as it was when the discipline first developed, and the means of collection and analysis are still very similar. Quantitative methods of research can be defined as "methods such as surveys and experiments that record variation in social life in terms of categories that vary in amount. Data that are treated as quantitative are either numbers or attributes that can be ordered in terms of magnitude" Schutt This means that the research, unlike qualitative methods, is not based upon a subjective interpretation of the observations but aims to be a more objective and impartial analysis based on the numerical findings of quantitative research Dantzker and Hunter In the study of criminology, the research methods tend to be quantitative because of the potential for bias in qualitative research. However, there are many issues not suitable for quantitative study. Debates and personal beliefs tend to be more influenced by emotion rather than scientific study. This makes quantitative research a difficult, but worthwhile method of research Dantzker and Hunter Data sources in criminological research[edit] There are multiple types of data that social scientists use to measure crime today. In order to measure crime, we must first come up with a definition of crime. There are many different definitions of crime out there, but a simple definition that I will use comes from Wilson and Herrnstein, in which they say crime is "any act committed in violation of a law that prohibits it and authorizes punishment for its commission" Maxfield Once we understand what crime is in itself, we can start to measure it. There are generally four approaches to measure crime in order to get quantitative data: Observation is far from the best way to measure crime. If one were to go by the ways police are informed of crime, either by observing it themselves, or by crimes reported to them, one would realize that some crimes will not be well measured. There are tons of instances where shoplifting will neither be observed by police nor reported by other people. Therefore, crimes like shoplifting, drug possession and sales, etc. But because the data in these reports are based on reported crimes, they share the same measurement problems that have been listed above. There are a number of errors in the UCR. First, the UCR does not try to count all reported crimes. Index offenses, also called Part I crimes, are only counted if they are reported AND recorded by police. Usually, there are always reports of crime, but police may choose not to record them for a number of reasons. Also, the UCR will not include Part II crimes only if the arrestee has been formally charged with a crime, because individual states may have varying definitions of these crimes Maxfield Another source of error is created by the hierarchy rule used by police agencies, which basically means that if a number of crimes are committed in one incident, to only count the most serious one in the UCR. However, do not think that the UCR is not helpful. UCR data represents groups

of analysis, meaning that crime reports are available for cities and states; the data just does not represent individual crimes very well. Asking people if they have been victims of crimes is a good way to measure data. This type is usually done in the form of a survey. Surveys can possibly have several advantages, like: The NCVS yields more data on individual victims, offenders, and incidents, meaning its better used for studies on individual factors in crime victimization. This is because it is a survey designed to represent nationwide levels of crime, but cannot provide crime estimates for cities or states Maxfield Surveys of offenders are used just like victimization surveys, but these are for the offenders. The surveys often measure how many crimes the offender has committed. This type is helpful especially for victimless crimes, like prostitution, public order and delinquency crimes, and rarely reported crimes, like shoplifting. As with all surveys, there are some problems one may run into, such as dishonesty in responses and exaggeration, but these surveys help us to find out some data that would otherwise never be noted. Because crime is really hard to measure, it is often best to combine many of these methods in order to get the most valid data for measurement. Descriptive analysis and comparison[edit] The quality of data must be evaluated. In this analysis process, it helps to have access to the raw data and the published data. This comparison can be more telling than simply the published data because there can be no bias in the comparison. Another valuable tool in research is the ability to compare newly collected data primary data with previously collected data secondary data. There two ways in which it can help: Data exchange can occur between nations. Data of this type is typified through census data or governmentally collected data. Exchange can also occur between regions, states and municipalities to improve social matters, fix problems, or just display differences. Temporal data analysis is vital to our understanding of the world we live in and where we are headed. Data collected over time can show researchers infinite amounts of data that can aid in an equally large amount of studies. Measurement challenges in criminology[edit] As with all forms of measurement, there are challenges associated with measuring data in criminology. There are a number of variables that influence police to record a crime or make an arrest. For example, an assault between people who know each other will less likely be recorded than a fight between two strangers. They had established that all participants had been subjected to microaggressions and bullying, some of which would have been considered criminal. However, multiple people did not want to report these incidences, and some had not actually considered themselves to be victims of crimes. Evidently, the researches faced challenges in maintaining consistent data and avoiding re-traumatizing the participants by heightening the seriousness of the incidents. For example, in a large city like Cleveland, Ohio, many minor crimes or infractions may go unreported just because the police have many more things to worry about besides small crimes, or may not even have the time to waste because of the heavy workload. But in a small city, more arrests may be made and reported because of the police not having too many things to do. Another measurement challenge that often comes about is laws being changed. There are different laws everywhere, and laws often vary from state to state, and in some cases, county to county. One example of this is minor possession of marijuana laws. Several states have passed decriminalization laws, which call for allowing the possession or use of small amounts of marijuana, and would impose fines, rather than prison terms for transgressions of minor marijuana laws DIANE The difference in laws hurts the measurement of crimes because crimes in one city or state may not be punishable in other states. As with all forms of research studies, it is important to have a critical approach to statistics and measurements. There are problems associated with many forms of measurement, like the UCR and NCVS surveys, but looking at these statistics and measurements through a critical lens will help us to realize what statistics and measurements are valid and reliable. Testing causation in criminological research[edit] This section possibly contains original research. Please improve it by verifying the claims made and adding inline citations. Statements consisting only of original research should be removed. October Learn how and when to remove this template message Criminology is interested in looking at crime and its relation to society. To do this criminologists often research causes of crime and factors for its occurrence. One way in which this is accomplished is through causation studies. Causation is a type of research method that examines and tries to interpret trends. Examining these methods helps criminologists look at ways to prevent crime and help determine underlying causes of crime. Causality is defined as a directional relationship between one event and another event, which is the result of the first. To look at causality in regards to criminology one can

look at factors that affect why crime rates are higher in some areas as opposed to others. Studies have been conducted that show poverty, graduation rates, unemployment rates, police and corrections funding, and income inequality. Below are different theories that mechanisms that are believed to have a relation to crime, and specific case studies where these are applied. How social relations affect criminality[edit] Some theories that are often used in criminology to help get an understanding for why crimes are being committed are differential association and control theory. Edwin Sutherland developed the differential association theory. Through social interaction the people learn the values, attitudes, techniques, and motives for criminal behavior. Another popular theory is control theory, which was founded by William Glasser. This theory is described as saying behavior is caused by what a person wants most at any given time, and not by any outside stimuli. Control theory is based on the assumption that humans are not innately driven to crime, or they are drawn to conformity. However, control theory says that people are rational beings that will be drawn to crime when the advantages are greater than those of conformity. A studied that was conducted by Travis Hirschi from the Richmond Youth project analyzed self-reported delinquency and collected data from the Richmond Youth Center that contradicted the differential association theory, by collecting empirical evidence that supports his control theory. He concluded a boy who has intense relationships pertaining to the attachment of one or more other boys, who are delinquent, then the less likely that individual is going to be delinquent. He concluded this through observation and surveys. His argument is based on the notion that criminal behavior occurs only because of a learning process through someone else is not reliable. He feels that there are direct social mechanisms related to crime, as opposed to indirectly by one having an influence on that individual. In this experiment a child views an adult beating up a blown-up doll.

9: Overview of Quantitative Methods - Center for Innovation in Research and Teaching

The following video, Quantitative vs. Qualitative Data, defines quantitative data, discusses the types of quantitative data and describes how the data can be analyzed. Suggested Readings: Bryman, A., & Cramer, D. ().

Both methods provide important information for evaluation, and both can improve community engagement. These methods are rarely used alone; combined, they generally provide the best overview of the project. This section describes both quantitative and qualitative methods, and Table 7. Surveys may be self- or interviewer-administered and conducted face-to-face or by telephone, by mail, or online. Analysis of quantitative data involves statistical analysis, from basic descriptive statistics to complex analyses. Quantitative data measure the depth and breadth of an implementation e. Quantitative data collected before and after an intervention can show its outcomes and impact. The strengths of quantitative data for evaluation purposes include their generalizability if the sample represents the population, the ease of analysis, and their consistency and precision if collected reliably. The limitations of using quantitative data for evaluation can include poor response rates from surveys, difficulty obtaining documents, and difficulties in valid measurement. Analyses of qualitative data include examining, comparing and contrasting, and interpreting patterns. Analysis will likely include the identification of themes, coding, clustering similar data, and reducing data to meaningful and important points, such as in grounded theory-building or other approaches to qualitative analysis Patton, Observations may help explain behaviors as well as social context and meanings because the evaluator sees what is actually happening. Interviews may be conducted with individuals alone or with groups of people and are especially useful for exploring complex issues. Interviews may be structured and conducted under controlled conditions, or they may be conducted with a loose set of questions asked in an open-ended manner. It may be helpful to tape-record interviews, with appropriate permissions, to facilitate the analysis of themes or content. Some interviews have a specific focus, such as a critical incident that an individual recalls and describes in detail. Focus groups are run by a facilitator who leads a discussion among a group of people who have been chosen because they have specific characteristics e. Focus group participants discuss their ideas and insights in response to open-ended questions from the facilitator. The strength of this method is that group discussion can provide ideas and stimulate memories with topics cascading as discussion occurs Krueger et al. Top of Page Mixed Methods The evaluation of community engagement may need both qualitative and quantitative methods because of the diversity of issues addressed e. The choice of methods should fit the need for the evaluation, its timeline, and available resources Holland et al.

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