Chapter 1 : Bureau of Made up statistics

In today's world, data is constantly collected, analyzed, interpreted and used. Get a handle on statistics and basic data analysis, including using the programming language R to visualize patterns in data sets.

Distinguish between a sample and a population Define inferential statistics Distinguish between simple random sampling and stratified sampling Distinguish between random sampling and random assignment Populations and samples In statistics, we often rely on a sample that is, a small subset of a larger set of data to draw inferences about the larger set. The larger set is known as the population from which the sample is drawn. You have been hired by the National Election Commission to examine how the American people feel about the fairness of the voting procedures in the U. Whom will you ask? It is not practical to ask every single American how he or she feels about the fairness of the voting procedures. Instead, we query a relatively small number of Americans, and draw inferences about the entire country from their responses. The Americans actually queried constitute our sample of the larger population of all Americans. The mathematical procedures whereby we convert information about the sample into intelligent guesses about the population fall under the rubric of inferential statistics. A sample is typically a small subset of the population. In the case of voting attitudes, we would sample a few thousand Americans drawn from the hundreds of millions that make up the country. In choosing a sample, it is therefore crucial that it not over-represent one kind of citizen at the expense of others. For example, something would be wrong with our sample if it happened to be made up entirely of Florida residents. If the sample held only Floridians, it could not be used to infer the attitudes of other Americans. The same problem would arise if the sample were comprised only of Republicans. Inferential statistics are based on the assumption that sampling is random. We trust a random sample to represent different segments of society in close to the appropriate proportions provided the sample is large enough; see below. We are interested in examining how many math classes have been taken on average by current graduating seniors at American colleges and universities during their four years in school. Whereas our population in the last example included all US citizens, now it involves just the graduating seniors throughout the country. This is still a large set since there are thousands of colleges and universities, each enrolling many students. New York University, for example, enrolls 48, students. It would be prohibitively costly to examine the transcript of every college senior. We therefore take a sample of college seniors and then make inferences to the entire population based on what we find. To make the sample, we might first choose some public and private colleges and universities across the United States. Then we might sample 50 students from each of these institutions. Suppose that the average number of math classes taken by the people in our sample were 3. Then we might speculate that 3. But we must be careful about the possibility that our sample is non-representative of the population. Perhaps we chose an overabundance of math majors, or chose too many technical institutions that have heavy math requirements. Such bad sampling makes our sample unrepresentative of the population of all seniors. To solidify your understanding of sampling bias , consider the following example. Try to identify the population and the sample, and then reflect on whether the sample is likely to yield the information desired. A substitute teacher wants to know how students in the class did on their last test. The teacher asks the 10 students sitting in the front row to state their latest test score. He concludes from their report that the class did extremely well. What is the sample? What is the population? Can you identify any problems with choosing the sample in the way that the teacher did? In Example 3, the population consists of all students in the class. The sample is made up of just the 10 students sitting in the front row. The sample is not likely to be representative of the population. Those who sit in the front row tend to be more interested in the class and tend to perform higher on tests. Hence, the sample may perform at a higher level than the population. A coach is interested in how many cartwheels the average college freshmen at his university can do. Eight volunteers from the freshman class step forward. After observing their performance, the coach concludes that college freshmen can do an average of 16 cartwheels in a row without stopping. The sample is composed of the 8 volunteers. In the example, we are also not told of the gender of the volunteers. Were they all women, for example? That might affect the outcome, contributing to the

non-representative nature of the sample if the school is co-ed. The most straightforward is simple random sampling. Such sampling requires every member of the population to have an equal chance of being selected into the sample. In addition, the selection of one member must be independent of the selection of every other member. That is, picking one member from the population must not increase or decrease the probability of picking any other member relative to the others. In this sense, we can say that simple random sampling chooses a sample by pure chance. To check your understanding of simple random sampling, consider the following example. Was the sample picked by simple random sampling? A research scientist is interested in studying the experiences of twins raised together versus those raised apart. She obtains a list of twins from the National Twin Registry, and selects two subsets of individuals for her study. First, she chooses all those in the registry whose last name begins with Z. Then she turns to all those whose last name begins with B. Because there are so many names that start with B, however, our researcher decides to incorporate only every other name into her sample. Finally, she mails out a survey and compares characteristics of twins raised apart versus together. In Example 5, the population consists of all twins recorded in the National Twin Registry. It is important that the researcher only make statistical generalizations to the twins on this list, not to all twins in the nation or world. That is, the National Twin Registry may not be representative of all twins. Even if inferences are limited to the Registry, a number of problems affect the sampling procedure we described. For instance, choosing only twins whose last names begin with Z does not give every individual an equal chance of being selected into the sample. Moreover, such a procedure risks over-representing ethnic groups with many surnames that begin with Z. Perhaps such people are more patient than average because they often find themselves at the end of the line! The same problem occurs with choosing twins whose last name begins with B. Just this defect alone means the sample was not formed through simple random sampling. Sample size matters Recall that the definition of a random sample is a sample in which every member of the population has an equal chance of being selected. This means that the sampling procedure rather than the results of the procedure define what it means for a sample to be random. Random samples, especially if the sample size is small, are not necessarily representative of the entire population. For example, if a random sample of 20 subjects were taken from a population with an equal number of males and females, there would be a nontrivial probability 0. To see how to obtain this probability, see the section on the binomial distribution. Such a sample would not be representative, although it would be drawn randomly. Only a large sample size makes it likely that our sample is close to representative of the population. For this reason, inferential statistics take into account the sample size when generalizing results from samples to populations. More complex sampling Sometimes it is not feasible to build a sample using simple random sampling. To see the problem, consider the fact that both Dallas and Houston are competing to be hosts of the Olympics. Imagine that you are hired to assess whether most Texans prefer Houston to Dallas as the host, or the reverse. Given the impracticality of obtaining the opinion of every single Texan, you must construct a sample of the Texas population. But now notice how difficult it would be to proceed by simple random sampling. Even among people you find in the telephone book, how can you identify those who have just relocated to California and had no reason to inform you of their move? What do you do about the fact that since the beginning of the study, an additional 4, people took up residence in the state of Texas? As you can see, it is sometimes very difficult to develop a truly random procedure. For this reason, other kinds of sampling techniques have been devised. We now discuss two of them. Random Assignment In experimental research, populations are often hypothetical. For example, in an experiment comparing the effectiveness of a new anti-depressant drug with a placebo , there is no actual population of individuals taking the drug. In this case, a specified population of people with some degree of depression is defined and a random sample is taken from this population. The sample is then randomly divided into two groups; one group is assigned to the treatment condition drug and the other group is assigned to the control condition placebo. This random division of the sample into two groups is called random assignment. Random assignment is critical for the validity of an experiment. For example, consider the bias that could be introduced if the first 20 subjects to show up at the experiment were assigned to the experimental group and the second 20 subjects were assigned to the control group. It is possible that subjects who show up late tend to be more depressed than those who show up early, thus making the experimental group less depressed than the

control group even before the treatment was administered. In experimental research of this kind, failure to assign subjects randomly to groups is generally more serious than having a non-random sample. Failure to randomize the former error invalidates the experimental findings.

Chapter 2 : How Are Statistics Applied in Marketing? | Your Business

Note: Citations are based on reference standards. However, formatting rules can vary widely between applications and fields of interest or study. The specific requirements or preferences of your reviewing publisher, classroom teacher, institution or organization should be applied.

Share on Facebook Marketing seeks to develop and retain a consumer base so products can be sold for a profit. Statistics are an invaluable tool for marketing, because they can be used to make informed decisions about how to best sell any product. Intelligent use of statistics can make the difference between a wildly successful marketing campaign, and one that alienates potential customers or has no noticeable effect. Developing a Target Market The first thing you need to sell any product is a base of potential consumers. You might think you have a great idea for a product, but if no one else agrees with you, you greatly reduce your chances for success. Statistics help you to identify the audience that you will be speaking to through your marketing. The average income, age, gender, marital status and attitudes of those who might be interested in your product are crucial factors. Getting to know your target market through statistical analysis allows you to speak to them in a relatable and understandable way. Picking The Venue Where you advertise is just as important as the approach and tone that your marketing takes. Statistics can help you find out who is exposed to what cultural mediums. Whether your target market watches TV, surfs the Internet, reads the newspaper or likes to get around town and talk to others will determine where your marketing will be most effective. Statistics can also reveal how responsive people are to different mediums of marketing. Some of the most important things to understand are what your audience wants, what they believe they need, how they relate to products and how they are influenced by prices. In short, you want to know why they make economic decisions so that you can offer them something valuable. For example, if your audience has a low income and is looking for a low price, you would take a very different approach than if your audience is affluent and not as concerned with pricing. Statistics can reveal the needs and wants of consumers, and the motivations that cause them to make different purchases. Reactions to Advertising Another good use of statistics is to determine the ways in which consumers tend to react to advertising and what kind of marketing themes elicit certain responses. This can give you ideas on how to approach your audience. For example, some people find advertising to be overbearing or condescending and are turned off from buying products they might otherwise want. These consumers need to be addressed in a more subtle tone. Your tone will create an emotional response in your audience that will influence their decisions. Statistics can show you what kind of marketing campaigns have been successful and why, how marketing is perceived by consumers and why it is sometimes ineffective.

Chapter 3 : Find and register for classes & camps | Saturday Academy

statistics courses relevant, interesting and fun. 2 RESEARCH MANAGEMENT MODULE The teaching of statistics for Masters' students forms part of a "short-fat" Research.

Overview[edit] In applying statistics to a problem, it is common practice to start with a population or process to be studied. Populations can be diverse topics such as "all persons living in a country" or "every atom composing a crystal". Ideally, statisticians compile data about the entire population an operation called census. This may be organized by governmental statistical institutes. Descriptive statistics can be used to summarize the population data. Numerical descriptors include mean and standard deviation for continuous data types like income , while frequency and percentage are more useful in terms of describing categorical data like race. When a census is not feasible, a chosen subset of the population called a sample is studied. Once a sample that is representative of the population is determined, data is collected for the sample members in an observational or experimental setting. Again, descriptive statistics can be used to summarize the sample data. However, the drawing of the sample has been subject to an element of randomness, hence the established numerical descriptors from the sample are also due to uncertainty. To still draw meaningful conclusions about the entire population, inferential statistics is needed. It uses patterns in the sample data to draw inferences about the population represented, accounting for randomness. These inferences may take the form of: Inference can extend to forecasting , prediction and estimation of unobserved values either in or associated with the population being studied; it can include extrapolation and interpolation of time series or spatial data , and can also include data mining. Sampling[edit] When full census data cannot be collected, statisticians collect sample data by developing specific experiment designs and survey samples. Statistics itself also provides tools for prediction and forecasting through statistical models. The idea of making inferences based on sampled data began around the mids in connection with estimating populations and developing precursors of life insurance. Representative sampling assures that inferences and conclusions can safely extend from the sample to the population as a whole. A major problem lies in determining the extent that the sample chosen is actually representative. Statistics offers methods to estimate and correct for any bias within the sample and data collection procedures. There are also methods of experimental design for experiments that can lessen these issues at the outset of a study, strengthening its capability to discern truths about the population. Sampling theory is part of the mathematical discipline of probability theory. Probability is used in mathematical statistics to study the sampling distributions of sample statistics and, more generally, the properties of statistical procedures. The use of any statistical method is valid when the system or population under consideration satisfies the assumptions of the method. The difference in point of view between classic probability theory and sampling theory is, roughly, that probability theory starts from the given parameters of a total population to deduce probabilities that pertain to samples. Statistical inference, however, moves in the opposite directionâ€” inductively inferring from samples to the parameters of a larger or total population. Experimental and observational studies[edit] A common goal for a statistical research project is to investigate causality , and in particular to draw a conclusion on the effect of changes in the values of predictors or independent variables on dependent variables. There are two major types of causal statistical studies: In both types of studies, the effect of differences of an independent variable or variables on the behavior of the dependent variable are observed. The difference between the two types lies in how the study is actually conducted. Each can be very effective. An experimental study involves taking measurements of the system under study, manipulating the system, and then taking additional measurements using the same procedure to determine if the manipulation has modified the values of the measurements. In contrast, an observational study does not involve experimental manipulation. Instead, data are gathered and correlations between predictors and response are investigated. While the tools of data analysis work best on data from randomized studies , they are also applied to other kinds of dataâ€”like natural experiments and observational studies [15] â€”for which a statistician would use a modified, more structured estimation method e. Experiments[edit] The basic steps of a statistical experiment are: Planning the research, including finding the number of replicates of the

study, using the following information: Consideration of the selection of experimental subjects and the ethics of research is necessary. Statisticians recommend that experiments compare at least one new treatment with a standard treatment or control, to allow an unbiased estimate of the difference in treatment effects. Design of experiments , using blocking to reduce the influence of confounding variables , and randomized assignment of treatments to subjects to allow unbiased estimates of treatment effects and experimental error. At this stage, the experimenters and statisticians write the experimental protocol that will guide the performance of the experiment and which specifies the primary analysis of the experimental data. Performing the experiment following the experimental protocol and analyzing the data following the experimental protocol. Further examining the data set in secondary analyses, to suggest new hypotheses for future study. Documenting and presenting the results of the study. Experiments on human behavior have special concerns. The famous Hawthorne study examined changes to the working environment at the Hawthorne plant of the Western Electric Company. The researchers were interested in determining whether increased illumination would increase the productivity of the assembly line workers. The researchers first measured the productivity in the plant, then modified the illumination in an area of the plant and checked if the changes in illumination affected productivity. It turned out that productivity indeed improved under the experimental conditions. However, the study is heavily criticized today for errors in experimental procedures, specifically for the lack of a control group and blindness. The Hawthorne effect refers to finding that an outcome in this case, worker productivity changed due to observation itself. Those in the Hawthorne study became more productive not because the lighting was changed but because they were being observed. This type of study typically uses a survey to collect observations about the area of interest and then performs statistical analysis. In this case, the researchers would collect observations of both smokers and non-smokers, perhaps through a cohort study , and then look for the number of cases of lung cancer in each group. Types of data[edit] Main articles: Statistical data type and Levels of measurement Various attempts have been made to produce a taxonomy of levels of measurement. The psychophysicist Stanley Smith Stevens defined nominal, ordinal, interval, and ratio scales. Nominal measurements do not have meaningful rank order among values, and permit any one-to-one transformation. Ordinal measurements have imprecise differences between consecutive values, but have a meaningful order to those values, and permit any order-preserving transformation. Interval measurements have meaningful distances between measurements defined, but the zero value is arbitrary as in the case with longitude and temperature measurements in Celsius or Fahrenheit , and permit any linear transformation. Ratio measurements have both a meaningful zero value and the distances between different measurements defined, and permit any rescaling transformation. Because variables conforming only to nominal or ordinal measurements cannot be reasonably measured numerically, sometimes they are grouped together as categorical variables , whereas ratio and interval measurements are grouped together as quantitative variables , which can be either discrete or continuous , due to their numerical nature. Such distinctions can often be loosely correlated with data type in computer science, in that dichotomous categorical variables may be represented with the Boolean data type , polytomous categorical variables with arbitrarily assigned integers in the integral data type , and continuous variables with the real data type involving floating point computation. But the mapping of computer science data types to statistical data types depends on which categorization of the latter is being implemented. Other categorizations have been proposed. For example, Mosteller and Tukey [18] distinguished grades, ranks, counted fractions, counts, amounts, and balances. Nelder [19] described continuous counts, continuous ratios, count ratios, and categorical modes of data. See also Chrisman , [20] van den Berg Whether or not a transformation is sensible to contemplate depends on the question one is trying to answer" Hand, , p. A statistic is a random variable that is a function of the random sample, but not a function of unknown parameters. The probability distribution of the statistic, though, may have unknown parameters. Consider now a function of the unknown parameter: Commonly used estimators include sample mean , unbiased sample variance and sample covariance. A random variable that is a function of the random sample and of the unknown parameter, but whose probability distribution does not depend on the unknown parameter is called a pivotal quantity or pivot. Between two estimators of a given parameter, the one with lower mean squared error is said to be more efficient. Furthermore, an estimator is said to be unbiased if its expected value

is equal to the true value of the unknown parameter being estimated, and asymptotically unbiased if its expected value converges at the limit to the true value of such parameter. Other desirable properties for estimators include: UMVUE estimators that have the lowest variance for all possible values of the parameter to be estimated this is usually an easier property to verify than efficiency and consistent estimators which converges in probability to the true value of such parameter. This still leaves the question of how to obtain estimators in a given situation and carry the computation, several methods have been proposed: Null hypothesis and alternative hypothesis[edit] Interpretation of statistical information can often involve the development of a null hypothesis which is usually but not necessarily that no relationship exists among variables or that no change occurred over time. The null hypothesis, H0, asserts that the defendant is innocent, whereas the alternative hypothesis, H1, asserts that the defendant is guilty. The indictment comes because of suspicion of the guilt. The H0 status quo stands in opposition to H1 and is maintained unless H1 is supported by evidence "beyond a reasonable doubt". However, "failure to reject H0" in this case does not imply innocence, but merely that the evidence was insufficient to convict. So the jury does not necessarily accept H0 but fails to reject H0. While one can not "prove" a null hypothesis, one can test how close it is to being true with a power test , which tests for type II errors.

Chapter 4 : Formats and Editions of Statistics made relevant : a casebook of real life examples [calendrierd

Statistics made relevant a casebook of real life examples. 1. Statistics made relevant a casebook of real life examples. by P Baum Print book: English.

March 14, at 3: It is not really a test, but it has some tests associated with it. You are correct that there are a number of assumptions associated with linear regression, but whether you need to satisfy all of them depends on how you plan to use linear regression. A quick review of some of these assumptions: Linearity â€" You have two independent variables and so you should create two scatter charts: The data on each of these plots should align reasonably well with a straight line i. Normality â€" The residuals the y data values minus the y values predicted by the regression model should be normally distributed. You can check this by using the Shapiro-Wilk test or QQ plots, etc. Other assumptions about the residuals â€" The residuals should be randomly distributed with mean close to zero. You can remove multicollinearity by removing one possibly more of the variables that is causing multicollinearity. Exact multicollinearity is not common with real data, but you can have a high level of multicollinearity especially if you have a lot of independent variables. You can detect the possibility of high multicollinearity if the VIF values for some of the variables are high. You can reduce the impact of multicollinearity by using Ridge regression or some other similar method. Homoscedasticity homogeneity of variances â€" When you graph the residuals against any of the independent variables, you should see a random pattern. You can also use the Breusch-Pagan test. You can address violations of this requirement by using a transformation of the data or a correction to the standard errors of the regression coefficients what are called robust standard errors. No Autocorrelation â€" You can use Durbin-Watson to detect first-order autocorrelation. The Breusch-Godfrey test can be useful in this case. Autocorrelation tends to be an issue with time series data since the data in one period year, month, etc. Autocorrelation can be addressed using techniques such as Newey-West standard errors. Unless assumption 7 is violated you will be able to build a linear regression model, but you may not be able to gain some of the advantages of the model if some of these other assumptions are not met. Normality and Durbin-Watson actually Autocorrelation is the assumption are not the only assumptions that are important. In fact, for large samples it tends to be less critical to check for normality since the Central Limit Theorem will kick in.

Chapter 5 : How To Determine Sample Size, Determining Sample Size

How to Make the Learning of Statistics Interesting, Fun and Personally Relevant: Using Progressive Material as Examples for In-class Analysis and to Raise.

Products and Export China accounts for 95 percent of global output of rare earths, 17 chemically similar metals used in hybrid cars and wind turbines. Smoking Polulation According to statistics, smoking population in China is million. Among them, Chinese male accounts for Around 1 million people dead for smoking and second hand smoking death number is over , everyear. Transportation China has nearly million motor vehicles. China Development Statistics China has more newspapers and magazines There are ten times as many Chinese newspapers and magazines than there were 30 years ago. Today, the country has 2, newspapers and 9, different magazines. In the meantime, official figures show China has some publishing houses producing nearly , kinds of books. Rapid economic development and universal education since China adopted the reform has helped fuel the need for more information sources. Under the market economy, hundreds of publishing houses and newspapers have taken steps to restructure management systems into corporations listed on the stock market. The legal system overseeing the news and publishing sectors in China has also changed over the last three decades. Since a law and five relevant regulations were adopted in to govern the sectors. Since it started in , digital publishing has flourished. Its industrial volume amounted to 20 billion yuan 2. More than , kinds of digital books were produced last year alone in China, which is more than any other country in the world. Department heads and general-managers make up 77 percent of the total and year olds account for 70 percent. Managers born in s are becoming the backbone of the group. Their average annual earnings were , yuan in , up The executive class, it seems, are media junkies, with The survey found that 69 percent of executives have favorite brand products that they are reluctant to change. The number owning a car rose 10 percent to 47 percent; 65 percent say they consider safety features when deciding what car to buy, while 50 percent pay attention to fuel consumption and emissions. Many felt under pressure, with 47 percent complaining of high workloads and 41 percent fretting over personal responsibilities. But 72 percent of executives say they are satisfied with their present jobs and lifestyle. Executives were defined as entrepreneurs, department heads and managers responsible for at least 50 staff. By Jessica Zhang China. The surge was largely driven by a boom in search engine advertising, or keyword advertising, which experienced an annual growth rate of Search engine advertising accounted for Online brand advertising jumped Advertising embedded in games, software and video clips would also become the major driving forces for online advertising, it said. However, the United States reported more than Online shopping nearly doubled in China in The customs revenue increased partly because of the increase of imports, which were up The customs revenue from telecommunication equipment, integrated circuits, television receivers and printing machines rose considerably due to the increase in imports of these products, the administration said. More imports of high-end cars and SUVs, and rising prices of imported staple goods such as copper, nickel and other metals also contributed to the revenue rise, it explained. The higher export tariffs on some goods, which were aimed at curbing exports and balancing foreign trade, had also increased customs revenues by about 20 billion yuan, it said. Enterprises became the biggest buyers and sellers in the market with their technological output and purchase accounting for 56 and 75 per cent of the total market trade amount respectively. Click for full article Nov.

Chapter 6 : Statistics Tutorial - Help on Statistics and Research

My initial thoughts before signing up for a required statistics college course were that this subject would be very math intensive, difficult to understand, and one that I would soon forget after the course.

Much of this information was determined mathematically by using statistics. When used correctly, statistics tell us any trends in what happened in the past and can be useful in predicting what may happen in the future. Weather Forecasts Do you watch the weather forecast sometime during the day? How do you use that information? Have you ever heard the forecaster talk about weather models? These computer models are built using statistics that compare prior weather conditions with current weather to predict future weather. Emergency Preparedness What happens if the forecast indicates that a hurricane is imminent or that tornadoes are likely to occur? Emergency management agencies move into high gear to be ready to rescue people. Emergency teams rely on statistics to tell them when danger may occur. Predicting Disease Lots of times on the news reports, statistics about a disease are reported. But when statistics become involved, you have a better idea of how that disease may affect you. For example, studies have shown that 85 to 95 percent of lung cancers are smoking related. Medical Studies Scientists must show a statistically valid rate of effectiveness before any drug can be prescribed. Statistics are behind every medical study you hear about. Genetics Many people are afflicted with diseases that come from their genetic make-up and these diseases can potentially be passed on to their children. Statistics are critical in determining the chances of a new baby being affected by the disease. Candidates consult voter polls to determine where and how they campaign. Statistics play a part in who your elected government officials will be 7. Insurance You know that in order to drive your car you are required by law to have car insurance. If you have a mortgage on your house, you must have it insured as well. The rate that an insurance company charges you is based upon statistics from all drivers or homeowners in your area. Consumer Goods Wal-Mart, a worldwide leading retailer, keeps track of everything they sell and use statistics to calculate what to ship to each store and when. From analyzing their vast store of information, for example, Wal-Mart decided that people buy strawberry Pop Tarts when a hurricane is predicted in Florida! So they ship this product to Florida stores based upon the weather forecast. Quality Testing Companies make thousands of products every day and each company must make sure that a good quality item is sold. So the company uses statistics to test just a few, called a sample, of what they make. If the sample passes quality tests, then the company assumes that all the items made in the group, called a batch, are good. Stock Market Another topic that you hear a lot about in the news is the stock market. Stock analysts also use statistical computer models to forecast what is happening in the economy.

Chapter 7 : Marijuana Statistics - Cannabis Use Statistics - Drug-Free World

4 INTERMEDIATE STATISTICS that the Roman V ("5") is a stand-in for the "V" that is made by your thumb and first finger when you hold up a single hand and tilt it outward.

Give examples of statistics encountered in everyday life Give examples of how statistics can lend credibility to an argument Like most people, you probably feel that it is important to "take control of your life. Partly, it means being able to properly evaluate the data and claims that bombard you every day. If you cannot distinguish good from faulty reasoning, then you are vulnerable to manipulation and to decisions that are not in your best interest. Statistics provides tools that you need in order to react intelligently to information you hear or read. In this sense, statistics is one of the most important things that you can study. To be more specific, here are some claims that we have heard on several occasions. We are not saying that each one of these claims is true! Native Americans are significantly more likely to be hit crossing the street than are people of other ethnicities. People tend to be more persuasive when they look others directly in the eye and speak loudly and quickly. Women make 75 cents to every dollar a man makes when they work the same job. People predict that it is very unlikely there will ever be another baseball player with a batting average over All of these claims are statistical in character. We suspect that some of them sound familiar; if not, we bet that you have heard other claims like them. Notice how diverse the examples are. They come from psychology, health, law, sports, business, etc. Indeed, data and data interpretation show up in discourse from virtually every facet of contemporary life. Statistics are often presented in an effort to add credibility to an argument or advice. You can see this by paying attention to television advertisements. Many of the numbers thrown about in this way do not represent careful statistical analysis. They can be misleading and push you into decisions that you might find cause to regret. For these reasons, learning about statistics is a long step towards taking control of your life. It is not, of course, the only step needed for this purpose. The present textbook is designed to help you learn statistical essentials. It will make you into an intelligent consumer of statistical claims. You can take the first step right away. To be an intelligent consumer of statistics, your first reflex must be to question the statistics that you encounter. The British Prime Minister Benjamin Disraeli is quoted by Mark Twain as having said, "There are three kinds of lies -- lies, damned lies, and statistics. So let us invite you to reform your statistical habits from now on. No longer will you blindly accept numbers or findings. Instead, you will begin to think about the numbers, their sources, and most importantly, the procedures used to generate them. We have put the emphasis on defending ourselves against fraudulent claims wrapped up as statistics. We close this section on a more positive note. Just as important as detecting the deceptive use of statistics is the appreciation of the proper use of statistics. You must also learn to recognize statistical evidence that supports a stated conclusion. Statistics are all around you, sometimes used well, sometimes not. We must learn how to distinguish the two cases. Now let us get to work! Please answer the questions:

Chapter 8 : Assumptions for Statistical Tests | Real Statistics Using Excel

Marketing seeks to develop and retain a consumer base so products can be sold for a profit. Statistics are an invaluable tool for marketing, because they can be used to make informed decisions about how to best sell any product. Intelligent use of statistics can make the difference between a wildly.

Chapter 9 : inferential statistics

Established in , The Institute for Statistics Education at calendrierdelascience.com is the leading provider of online education in statistics, analytics and data science with 4 certificate programs and + courses at novice, intermediate and advanced levels.