Statistics made easy pdf

Statistics Approximately 34 million children and adults have diabetes in the United States. The numbers associated with diabetes make a strong case for devoting more resources to finding a cure. Read more The national cost of diabetes in the U.S. in 2017 was more than $327 billion, up from $245 billion in 2012. Diabetes is growing at an epidemic rate in the United States. And what's true nationwide is also true in each state. Back to Previous Page [PDF-916.67 KB] Violence Impacts Teens' Lives Prevent violence. Improve lifelong health. Youth Risk Behavior Surveillance System (YRBSS) monitors health-risk behaviors among adolescents and young adults.at the national, state, territorial, tribal, and local levels. Search here for data on dietary intake, weight, and physical activity behaviors. Fact sheets, data tables, and other resources on these topics and more can be found on the CDC Healthy Schools Health and Academics web page. Additional data from YRBSS is available here. Specific data for CDC Healthy Schools can be accessed through the drop down selection boxes below. Youth Online: YRBSS Interactive Data 2017 Dietary Behaviors Obesity, Overweight, and Weight Control Physical Activity Other Health Topics Tobacco Use Alcohol Use This course is part six of the MathTrackX XSeries Program which has been designed to provide you with a solid foundation in mathematical fundamentals and how they can be applied in the real world. This course will build on probability and random variable knowledge gained from previous courses in the MathTrackX XSeries with the study of statistical inference, one of the most important parts of statistics. Guided by experts from the School of Mathematics and the Maths Learning Centre at the University of Adelaide, this course will cover random sampling, sample means and proportions, confidence intervals for sample means and proportions and one-sample tests of proportions and means. Join us as we provide opportunities to develop your skills and confidence in applying mathematics to solve real world problems.Institution: AdelaideXSubject: MathLevel: IntroductoryPrerequisites: Language: EnglishVideo Transcript: EnglishAssociated programs: The concept of a random sample, sources of bias in samples, and procedures to ensure randomness The concept of the sample proportion as a random variable The approximate normality of the distribution of proportions for large samples The concept of an interval estimates for a parameter associated with a random variable How to define the approximate margin of error for proportions. Instructables is a community for people who like to make things. Come explore, share, and make your next project with us!Instructables is a community for people who like to make things. Come explore, share, and make your next project with us!Instructables is a community for people who like to make things. Come explore, share, and make your next project with us!Instructables is a community for people who like to make things. Come explore, share, and make your next project with us!Instructables is a community for people who like to make things. Come explore, share, and make your next project with us!Instructables is a community for people who like to make things. Come explore, share, and make your next project with us! Inferential statistics look at the relationship between several variables present in a sample. These statistics will predict the future of variables. Sometimes they generalize about larger groups of people. They tell us what is happening. These statistics interpret the data for us. This allows social scientists to view patterns. They can make sense of the information. They also use complex mathematics. This is the core difference between inferential and descriptive statistics. How to Use Inferential Statistics Inferential statistics examine relationships between variables in a sample. The statistics help people make predictions, or inferences, about a larger population. Scientists may use these kinds of statistics as a more affordable way to measure groups based on small samples so that it can later be applied to a large population. For example, if you wanted to know the exact age at which each person in the country went on their first date, you probably wouldn't be able to ask everybody. Instead, you would need to find a sample size and draw conclusions based on the sample. Inferential statistics is all about relationships and quantitative analysis. You can use inferential statistics to create logistic regression analysis and linear regression analysis. Descriptive Statistics Descriptive statistics describe and summarize data. Examples include numerical measures, like averages and correlation. Standard deviation is another descriptive statistic. Descriptive statistics explain only the population you are studying. Scientists cannot use the information to generalize other groups. There are two types of descriptive statistics: measures of spread and measures of central tendency. Measures of Spread A measure of spread shows the distribution of a data set. The measure of spread also shows the relationship between each data point. A measure of spread includes the range, quartiles, variance, frequency distribution and mean absolute deviation. We show measures of spread in different ways. For example, you can show a measure of spread on a bar chart, table or histogram. These charts help people interpret trends in data. Measures of Central Tendency Measures of central tendency are another form of descriptive statistics. The measure of central tendency reveals data trends. It includes the mean, median and mode. Each of these figures tell us something about the data. For example, the mode is the most common value the data shows. The mode can tell you the age at which most people graduate from high school, for instance. The media is the middle range of a data set. It can give us information about the set of ages in which people typically get their first job. Finally, the mean is the average of the data. You can add up each piece of data and then divide that figure by the number of data pieces. You can use the mean to determine the average age at which people begin college, for instance. In statistics, the term population is used to describe the subjects of a particular study—everything or everyone who is the subject of a statistical observation. Populations can be large or small in size and defined by any number of characteristics, though these groups are typically defined specifically rather than vaguely—for instance, a population of women over 18 who buy coffee at Starbucks rather than a population of women over 18. Statistical populations are used to observe behaviors, trends, and patterns in the way individuals in a defined group interact with the world around them, allowing statisticians to draw conclusions about the characteristics of the subjects of study, although these subjects are most often humans, animals, and plants, and even objects like stars. The Australian Government Bureau of Statistics notes: It is important to understand the target population being studied, so you can understand who or what the data are referring to. If you have not clearly defined who or what you want in your population, you may end up with data that are not useful to you.   There are, of course, certain limitations with studying populations, mostly in that it is rare to be able to observe all of the individuals in any given group. For this reason, scientists who use statistics also study subpopulations and take statistical samples of small portions of larger populations to more accurately analyze the full spectrum of behaviors and characteristics of the population at large. A statistical population is any group of individuals who are the subject of a study, meaning that almost anything can make up a population so long as the individuals can be grouped together by a common feature, or sometimes two common features. For example, in a study that is trying to determine the mean weight of all 20-year-old males in the United States, the population would be all 20-year-old males in the United States. Another example would be a study that investigates how many people live in Argentina wherein the population would be every person living in Argentina, regardless of citizenship, age, or gender. By contrast, the population in a separate study that asked how many men under 25 lived in Argentina might be all men who are 24 and under who live in Argentina regardless of citizenship. Statistical populations can be as vague or specific as the statistician desires; it ultimately depends on the goal of the research being conducted. A cow farmer wouldn't want to know the statistics on how many red female cows he owns; instead, he would want to know the data on how many females cows he has that are still able to produce calves. That farmer would want to select the latter as his population of study. There are many ways that you can use population data in statistics. StatisticsShowHowto.com explains a fun scenario where you resist temptation and walk into a candy store, where the owner might be offering a few samples of her products. You would eat one candy from each sample; you wouldn't want to eat a sample of every candy in the store. That would require sampling from hundreds of jars, and likely would make you quite sick. Instead, the statistical website explains: "You might base your opinion about the entire store's candy line on (just) the samples they have to offer. The same logic holds true for most surveys in stats. You're only going to want to take a sample of the whole population ("population" in this example would be the entire candy line). The result is a statistic about that population." The Australian government's statistics bureau gives a couple of other examples, which have been slightly modified here. Imagine you want to study only people who live in the United States who were born overeas—a hot political topic today in light of the heated national debate on immigration. Instead, however, you accidentally looked at all people born in this country. The data include many people you do not want to study. "You could end up with data that you do not need because your target population was not clearly defined, notes the statistics bureau. Another relevant study might be a look at all primary grade school children who drink soda. You would need to clearly define the target population as "primary school children" and "those who drink soda pop," otherwise, you could end up with data that included all school children (not just pupils in primary grades) and/or all of those who drink soda pop. The inclusion of older children and/or those who don't drink soda pop would skew your results and likely make the study unusable. Although the total population is what scientists wish to study, it is very rare to be able to perform a census of every individual member of the population. Due to constraints of resources, time, and accessibility, it is nearly impossible to perform a measurement on every subject. As a result, many statisticians, social scientists and others use inferential statistics, where scientists are able to study only a small portion of the population and still observe tangible results. Rather than performing measurements on every member of the population, scientists consider a subset of this population called a statistical sample. These samples provide measurements of the individuals that tell scientists about corresponding measurements in the population, which can then be repeated and compared with different statistical samples to more accurately describe the whole population. The question of which population subsets should be selected, then, is highly important in the study of statistics, and there are a variety of different ways to select a sample, many of which will not produce any meaningful results. For this reason, scientists are constantly on the lookout for potential subpopulations because they typically obtain better results when recognizing the mixture of types of individuals in the populations being studied. Different sampling techniques, such as forming stratified samples, can help in dealing with subpopulations, and many of these techniques assume that a specific type of sample, called a simple random sample, has been selected from the population. Within a set of data one important feature are measures of location or position. The most common measurements of this kind are the first and third quartiles. These denote, respectively, the lower 25% and upper 25% of our set of data. Another measurement of position, which is closely related to the first and third quartiles, is given by the midhinge. After seeing how to calculate the midhinge, we will see how this statistic can be used. The midhinge is relatively straightforward to calculate. Assuming that we know the first and third quartiles, we do not have much more to do to calculate the midhinge. We denote the first quartile by Q1 and the third quartile by Q3. The following is the formula for the midhinge: (Q 1 + Q 3) / 2. In words we would say that the midhinge is the mean of the first and third quartiles. As an example of how to calculate the midhinge we will look at the following set of data: 1, 3, 4, 4, 6, 6, 6, 6, 7, 7, 7, 8, 8, 9, 9, 10, 11, 12, 13 To find the first and third quartiles we first need the median of our data. This data set has 19 values, and so the median in the tenth value in the list, giving us a median of 7. The median of the values below this (1, 3, 4, 4, 6, 6, 6, 6, 7) is 6, and thus 6 is the first quartile. The third quartile is the median of the values above the median (7, 8, 8, 9, 9, 10, 11, 12, 13). We find that the third quartile is 9. We use the formula above to average the first and third quartiles, and see that the midhinge of this data is (6 + 9) / 2 = 7.5. It is important to note that the midhinge differs from the median. The median is the midpoint of the data set in the sense that 50% of the data values are below the median. Due to this fact, the median is the second quartile. The midhinge may not have the same value as the median because the median may not be exactly between the first and third quartiles. The midhinge carries information about the first and third quartiles, and so there are a couple of applications of this quantity. The first use of the midhinge is that if we know this number and the interquartile range we can recover the values of the first and third quartiles without much difficulty. For instance, if we know that the midhinge is 15 and the interquartile range is 20, then Q3 - Q1 = 20 and (Q3 + Q1) / 2 = 15. From this we obtain Q3 + Q1 = 30. By basic algebra we solve these two linear equations with two unknowns and find that Q3 = 25 and Q1) = 5. The midhinge is also useful when calculating the trimean. One formula for the trimean is the mean of the midhinge and median: trimean = (median + midhinge) /2 In this way the trimean conveys information about the center and some of the position of the data. The midhinge's name is derived from thinking of the box portion of a box and whiskers graph as being a hinge of a door. The midhinge is then the midpoint of this box. This nomenclature is relatively recent in the history of statistics, and came into widespread use in the late 1970s and early 1980s.