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1: Sensitivity and specificity - Wikipedia

Accurate and precise: If a weather thermometer reads 75 o F outside and it really is 75 o F, the thermometer is accurate. If the thermometer consistently registers the exact temperature for several days in a row, the thermometer is also precise.

The collection of crime and incident data is vitally important in implementing crime analysis, at both a local and national level, and always begins with accurate and consistent data entry. Unfortunately, there is currently not a mandatory national reporting program in place. Summary reporting and Incident-Based Reporting. Because agencies and states can submit data based on differing reporting models, it is difficult for the FBI to provide a single, in-depth view of crime statistics for America as a whole. While some states and agencies provide comprehensive crime reporting through the National Incident-Based Reporting System NIBRS , the majority of agencies report Summary crime reporting data, which is not as comprehensive. This disparity between systems and standards affects the public safety community in a number of ways, all of which translate into inefficient reporting and vague crime analysis. Because of this, Spillman has taken a proactive approach to this problem by partnering with standards governing bodies and customers across the nation to participate in an initiative to get more agencies reporting with NIBRS data. As shown in the chart below, because certain data sets collected by these reporting systems do not overlap, aggregate statistical representations of crime trends in the United States is simplified in order to present NIBRS data as Summary data. In fact, attempting to create a sample of various population centers may misrepresent crime statistics. Summary Data NIBRS Data Provides counts on arrests for the 8 Index crimes and 21 other offenses Consists of monthly aggregate crime counts for eight Index crimes Provides details on arrests for the 8 Index crimes and 49 other offenses Consists of individual incident records for the 8 Index crimes and 38 other offenses with details on: Records one offense per incident as determined by hierarchy rule Records each offense occurring in incident Hierarchy rule suppresses counts of lesser offenses in multiple-offense incidents Distinguishes between attempted and completed crimes Does not distinguish between attempted and completed crimes Expands burglary hotel rule to include rental storage facilities Applies hotel rule to burglary Restructures definition of assault http: With this initiative, the BJS aimed to increase the number of agencies reporting incident based crime statistics to the FBI. Because current information collected â€” and the way it is collected â€” in each system is so different, agencies use one or the other. Unfortunately, although NIBRS is the more in-depth reporting system, a majority of public safety agencies currently report only Summary data. The first step was to identify law enforcement agencies that provide a good representative sample based on agency size and location from across the country and expand participation in NIBRS by combining data from existing NIBRS agencies with data from the additional agencies, some of which are Spillman Technologies customers. Through its participation with the IJIS Institute, Spillman Technologies volunteered to be one of the voices of the public safety software vendor community to provide the BJS and FBI with a better idea of the financial, technical, and governance issues that needed to be addressed before moving forward with the NCS-X initiative. Being on the frontline of this initiative will allow Spillman to become involved with national organizations and direct project strategy in a way that will increase efficiencies in the reporting products now and in the future. Spillman can be a voice on behalf of current and future Spillman customers through its proactive involvement in the NCS-X initiative. Because Spillman currently develops and maintains NIBRS, Summary, and, when necessary, other state-specific reporting systems, having a standardized system would allow Spillman to reallocate development resources currently dedicated to continually updating the various reporting systems into other innovations that benefit Spillman customers nationwide. When working with a vendor that is dedicated to advancing and streamlining relevant reporting systems, agencies will be able to count on long lasting returns on investment. Additionally, a successful implementation of the NCS-X initiative will provide law enforcement agencies with a more detailed and accurate statistical representation of the nature of crime in the United States to help plan initiatives at levels that cannot be achieved through existing summary collection programs.

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2: OECD Glossary of Statistical Terms - Accuracy Definition

The field of statistics, where the interpretation of measurements plays a central role, prefers to use the terms bias and variability instead of accuracy and precision: bias is the amount of inaccuracy and variability is the amount of imprecision.

It measures the correctness and closeness of the result at the same time by comparing it to the absolute value. Therefore, the closer the measurement, the higher is the level of accuracy. It mainly depends on the way; data is collected. Definition of Precision Precision represents the uniformity or repeatability in the measurements. It is the degree of excellence, in the performance of an operation or the techniques used to obtain the results. It measures the extent to which the results are close to each other, i. Therefore, the higher the level of precision the less is the variation between measurements. Precision is when the same spot is hit, again and again, which is not necessarily the correct spot. Key Differences Between Accuracy and Precision The difference between accuracy and precision can be drawn clearly on the following grounds: The level of agreement between the actual measurement and the absolute measurement is called accuracy. The level of variation that lies in the values of several measurements of the same factor is called as precision Accuracy represents the nearness of the measurement with the actual measurement. On the other hand, precision shows the nearness of an individual measurement with those of the others. Accuracy is the degree if conformity, i. On the other hand, precision is the degree of reproducibility, which explains the consistency of the measurements. Accuracy is based on a single factor, whereas precision is based on more than one factor. Accuracy is a measure of statistical bias while precision is the measure of statistical variability. Accuracy focuses on systematic errors, i. As against this, precision is concerned with random error, which occurs periodically with no recognisable pattern. Conclusion So, if the actual measurement is high in accuracy and precision, the result would be free from errors. If the actual measurement is precise but inaccurate, then the result is in disagreement with the expected one. If the actual result is accurate but imprecise, then there are huge variations in the measurements. And finally, if the actual measurement is neither accurate nor precise, then the result would lack correctness and exactness at the same time.

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3: How to Tell When the Statistics are Accurate - 7 Helpful Ways

Accuracy and precision are used in context of measurement. Accuracy refers to the degree of conformity and correctness of something when compared to a true or absolute value, while precision refers to a state of strict exactness â€" how consistently something is strictly exact. In other words, the.

The field of statistics , where the interpretation of measurements plays a central role, prefers to use the terms bias and variability instead of accuracy and precision: A measurement system can be accurate but not precise, precise but not accurate, neither, or both. For example, if an experiment contains a systematic error , then increasing the sample size generally increases precision but does not improve accuracy. The result would be a consistent yet inaccurate string of results from the flawed experiment. Eliminating the systematic error improves accuracy but does not change precision. A measurement system is considered valid if it is both accurate and precise. Related terms include bias non- random or directed effects caused by a factor or factors unrelated to the independent variable and error random variability. The terminology is also applied to indirect measurementsâ€"that is, values obtained by a computational procedure from observed data. In addition to accuracy and precision, measurements may also have a measurement resolution , which is the smallest change in the underlying physical quantity that produces a response in the measurement. In numerical analysis , accuracy is also the nearness of a calculation to the true value; while precision is the resolution of the representation, typically defined by the number of decimal or binary digits. In military terms, accuracy refers primarily to the accuracy of fire or "justesse de tir" , the precision of fire expressed by the closeness of a grouping of shots at and around the centre of the target. False precision In industrial instrumentation, accuracy is the measurement tolerance, or transmission of the instrument and defines the limits of the errors made when the instrument is used in normal operating conditions. The accuracy and precision of a measurement process is usually established by repeatedly measuring some traceable reference standard. This also applies when measurements are repeated and averaged. In that case, the term standard error is properly applied: Further, the central limit theorem shows that the probability distribution of the averaged measurements will be closer to a normal distribution than that of individual measurements. With regard to accuracy we can distinguish: Establishing and correcting for bias is necessary for calibration. Here, when not explicitly stated, the margin of error is understood to be one-half the value of the last significant place. For instance, a recording of To avoid this ambiguity, the number could be represented in scientific notation: Similarly, it is possible to use a multiple of the basic measurement unit: In fact, it indicates a margin of 0. However, reliance on this convention can lead to false precision errors when accepting data from sources that do not obey it. Under the convention it would have been rounded to , When the term is applied to sets of measurements of the same measureand, it involves a component of random error and a component of systematic error. In this case trueness is the closeness of the mean of a set of measurement results to the actual true value and precision is the closeness of agreement among a set of results. ISO and VIM also avoid the use of the term " bias ", previously specified in BS , [6] because it has different connotations outside the fields of science and engineering, as in medicine and law. Evaluation of binary classifiers Accuracy is also used as a statistical measure of how well a binary classification test correctly identifies or excludes a condition. That is, the accuracy is the proportion of true results both true positives and true negatives among the total number of cases examined. The formula for quantifying binary accuracy is: Precision is a synonym for reliability and variable error. The validity of a measurement instrument or psychological test is established through experiment or correlation with behavior. This is a comparison of differences in precision, not accuracy. Precision is measured with respect to detail and accuracy is measured with respect to reality. Commonly used metrics include the notions of precision and recall. Less commonly, the metric of accuracy is used, is defined as the total number of correct classifications true positives plus true negatives divided by the total number of documents. None of these metrics take into account the ranking of results. Ranking is very important for web search engines because readers seldom go past the first page of results, and there are too many documents on the web to manually classify all of them as to whether they should be included or excluded from a given

search. Adding a cutoff at a particular number of results takes ranking into account to some degree. More sophisticated metrics, such as discounted cumulative gain , take into account each individual ranking, and are more commonly used where this is important.

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4: Statistics of Handgun Accuracy

Accuracy: Of the cases that have been tested, the test could determine 25 patients and 50 healthy cases correctly. Therefore, the accuracy of the test is equal to 75 divided by or 75%. Therefore, the accuracy of the test is equal to 75 divided by or 75%.

Chick Two requisites to win a shooting match are skill and an accurate gun. Shooter skill consists of aligning the sights, following through, squeezing the trigger, etc. An accurate gun places the shots where they are aimed. Hitting the bulls-eye with a. Even a blind squirrel can find an acorn once in while. However, to hit the bulls-eye 20 times for a perfect score requires a shooter with superskill using a superaccurate gun or perhaps a highly skilled shooter with an accurate gun and some luck. To date there has been neither. No entrant in a national match has ever shot a perfect score. Therefore, we must consider these two major factors, skill and guns. What effect does each have on the score and what relationship exists between the two? There are aspects of the gun that will affect skill. Are the grips comfortable, uncomfortable, or custom-made to fit the hand? Is the trigger pull smooth as butter or crunchy? Are the sights poor quality iron sights or red dot? Are the cartridges loaded down to decrease recoil, etc.? These considerations may affect some shooters and not others. Many can be overcome with practice. The shooter, no matter how skillful, cannot control the inherent accuracy of the gun. Experimenting with different bullets, powders, primers, and cases can improve accuracy to a point of diminishing returns. After this point has been reached, the only path to better scores is to improve skill or modify or purchase a new gun. The first step for a shooter who wants to improve is to determine what part of scoring depends on the gun and what part on the shooter. Therefore, it is necessary that the gun be tested first. When testing the gun, the point of interest is the accuracy of the gun and its components and not the skill of the shooter. The term accuracy is some times confused with the term precision. Precision can be defined as the closeness of the shots to each other. The less distance between the shots or less variation, the more precise the shots. The closer the shots to the point of aim, the greater the accuracy of the shot. The definitions of accuracy and precision. The usual definition of accuracy and precision is illustrated in figure fig. We can interpret these figures as: In tests, accuracy is generally understood as precision. When testing for accuracy, the gun is fired a predetermined number of times at a target. The subject of interest then becomes the pattern of those shots and the group size. The group size is determined by measuring the greatest distance between any two shots in the group fig. This distance represents the extreme of all the shots in the group, thereby determining the amount of variation. There is debate as to the number of shots required per group. Tests using five shot groups are the norm. However, groups of three and 10 are common. Bulls-eye shooters prefer 10 shot groups, aking the reasonable assumption that if the gun cannot hold 10 shots within the 10 ring, then the chance of a perfect score is nil. To be meaningful, the distance between the shooter and the target must be specified. This can be 10 feet, 25 yards, yards, or whatever. However, there is another method that does not consider distance. This is when the group size is given in degree minutes. A degree minute is the number of degrees measured in minutes between the end of the barrel and distance between the center-to-center distance on the target fig. For example, if the greatest center-to-center distance on the target happens to be 2 inches and the distance from the gun to the target is 25 yards, the minutes of angle can be found by: For example, if a gun shoots less than one MOA, the gun is shooting a group less than one inch at yards This tangent can be used to find the group size at any distance. The group size at yards if the minutes of angle are 7. Simply divide yards by 25 yards to get 4 and then multiply by 2. The answer is 8. This method works if the bullet spread is proportional to the distance. This assumption does not always hold true. For instance, if the test is at 25 yards the angle may increase after 50 yards and the bullets go wild at yards. This is certainly true for the full Wadcutter bullet. It is best that the test be conducted at the same distance used in competition. The method used to support the gun while firing is also important. If the gun is shot offhand in a standing position, most of the variation can be attributed to the shooter swaying and aligning the sights improperly. Unless the shooter is experienced, testing using this method is not a good idea.

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5: Reporting Accuracy and the National Crime Statistics Exchange (NCS-X) - Spillman Technologies

Accuracy mean of multiple measurements, to its true or accepted value. Accuracy versus Precision In casual conversation we use the words "accurate" and "precise" interchangeably.

The Sample Representation Is Inaccurate or Biased A poll on how much money businesses spend on marketing research would not be accurate if it surveyed only small businesses. Likewise, polling people on their ability to identify a quote from classic literature would lead to inaccurate results if the study was done only at a conference of literature professors. The cherry-picking of respondents does not lead to fair results. The best samples are probability samples because they are designed to account for the characteristics of the group being studied. Other ways in which sample representation can be inaccurate or biased is if the survey was carried out via telephone only and if no double blinding occurred. The problem with using telephone only is that landlines tend to be used, thus skipping people who have cell phones and people who do not have telephones at all. Such a project, however, could be accurate if its interested in measuring only landline telephone users. For example, which cola drinks are in which glasses. This is the only way studies can avoid the risk of giving subtle cues to respondents or introducing biases, however unconscious, into the conclusions. Incentives are Inappropriate for the Sample Incentives are commonplace, and often required, in research. Some incentive structures can lead to inaccurate results. One sign of biased statistics is that respondents had incentives to answer a certain way. There are other ways to look at incentives, too. For example, a journalist could go on and on about the fact that Americans want hybrid cars based on a statistic, but they journalist might never mention the context of the study and statistic. That is a red flag that the statistic is misleading. When a statistic says that people are now twice as likely to die from something, that could be an example of context not being reported. What were the odds of dying from that cause in the first place? If they were something like 0. The Statistic Flies in the Face of Precedent What might someone think if a survey came out tomorrow saying that skin cancer actually is not all that common? It is the most common of all cancers, according to the American Cancer Society and many other organizations. Beware of statistics that go against the grain. Look at the groups sponsoring or carrying out the research. The conclusion for businesses and statistics are threefold: Many consumers are savvy. They know when something is not on the up and up, and its often best for businesses to be straightforward about how they conducted research and reached their conclusions. Businesses need to be sure that the companies they work with for, say, tracking consumer data, are presenting information accurately. By being aware of these pitfalls of misleading data and looking at signs such as sample size, methodology, and sample representation, a company can get a good idea of whether research is being performed accurately. Curious about what can happen when companies get the data wrong or ignore the data entirely? Check out our blog post:

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6: 6 BASIC STATISTICAL TOOLS

Accuracy and Precision. They mean slightly different things! Accuracy. Accuracy is how close a measured value is to the actual (true) value.. Precision. Precision is how close the measured values are to each other.

Depending on the nature of two sets of data n, s, sampling nature , the means of the sets can be compared for bias by several variants of the t-test. The following most common types will be discussed: Basically, for the t-tests Equation 6. To compare the mean of a data set with a reference value normally the "two-sided t-table of critical values" is used Appendix 1. The applicable number of degrees of freedom here is: As with the F-test, when it is expected or suspected that the obtained results are higher or lower than that of the reference value, the one-sided t-test can be performed: More commonly, however, the "true" value of proper reference samples is accompanied by the associated standard deviation and number of replicates used to determine these parameters. We can then apply the more general case of comparing the means of two data sets: As is shown in Fig. This is discussed next. If the standard deviations are sufficiently similar they can be "pooled" and the Student t-test can be used. When the standard deviations are not sufficiently similar an alternative procedure for the t-test must be followed in which the standard deviations are not pooled. A convenient alternative is the Cochran variant of the t-test. The criterion for the choice is the passing or non-passing of the F-test see 6. Therefore, for small data sets, the F-test should precede the t-test. When comparing two sets of data, Equation 6. The pooled standard deviation sp is calculated by: To perform the t-test, the critical ttab has to be found in the table Appendix 1 ; the applicable number of degrees of freedom df is here calculated by: Another illustrative way to perform this test for bias is to calculate if the difference between the means falls within or outside the range where this difference is still not significantly large. In other words, if this difference is less than the least significant difference lsd. This can be derived from Equation 6. The measured difference between the means is Then determine an "alternative" critical t-value: Example The two data sets of Table can be used. According to the F-test, the standard deviations differ significantly so that the Cochran variant must be used. Furthermore, in contrast to our expectation that the precision of the rapid test would be inferior, we have no idea about the bias and therefore the two-sided test is appropriate. Further investigation of the rapid method would have to include the use of more different samples and then comparison with the one-sided t-test would be justified see 6. This is caused by the fact that the difference in result of the Student and Cochran variants of the t-test is largest when small sets of data are compared, and decreases with increasing number of data. Namely, with increasing number of data a better estimate of the real distribution of the population is obtained the flatter t-distribution converges then to the standardized normal distribution. The procedure is then reduced to the "normal" t-test by simply calculating tcal with Eq. The proper choice of the t-test as discussed above is summarized in a flow diagram in Appendix 3. This is for instance the case when two methods are compared by the same analyst using the same sample s. It could, in fact, also be applied to the example of Table if the two analysts used the same analytical method at about the same time. As stated previously, comparison of two methods using different levels of analyte gives more validation information about the methods than using only one level. Comparison of results at each level could be done by the F and t-tests as described above. The paired t-test, however, allows for different levels provided the concentration range is not too wide. As a rule of fist, the range of results should be within the same magnitude. If the analysis covers a longer range, i. In intermediate cases, either technique may be chosen. The null hypothesis is that there is no difference between the data sets, so the test is to see if the mean of the differences between the data deviates significantly from zero or not two-sided test. If it is expected that one set is systematically higher or lower than the other set, then the one-sided test is appropriate. Example 1 The "promising" rapid single-extraction method for the determination of the cation exchange capacity of soils using the silver thiourea complex AgTU, buffered at pH 7 was compared with the traditional ammonium acetate method NH4OAc, pH 7. Although for certain soil types the difference in results appeared insignificant, for other types differences seemed larger. Such a suspect group were soils with ferralic oxic properties i. In Table the results often soils with these properties are grouped to test if the CEC methods give different results. The difference d

within each pair and the parameters needed for the paired t-test are given also.

7: Accuracy: Definition

Accurate statistics have become increasingly important as the world becomes more quantitative,. They show up in fields such as medicine, education, politics, and, of course, market research. Consumers can find statistics everywhere, including on websites, in marketing copy, and on social media posts, to name a few.

8: â€¢ Accuracy of news on social media | Statistic

Accuracy symbolizes the extent of conformity, whereas Precision indicates the extent of reproducibility. At the time of taking measurements, these two are always taken into account, due to their utmost importance in the various field, such as science, statistics, research and engineering.

9: Part 1: Simple Definition and Calculation of Accuracy, Sensitivity and Specificity

Accuracy and Precision: Accuracy refers to the closeness of a measured value to a standard or known value. For example, if in lab you obtain a weight measurement of kg for a given substance, but the actual or known weight is 10 kg, then your measurement is not accurate.

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The car buyers art The Pink and the Black THE ENGLISH CONVOCATION. The sepulchral dean. Mesmerism and hypnosis Simmers annual autumn catalogue of bulbs, plants, seeds, etc. Agile web development with rails 5 by sam ruby Buddhism for My Friends Researchers guide to McPherson County, South Dakota cemeteries 3. The Labour Party and the Company Amie previous year question papers Engineering mechanics statics and dynamics solutions Penetration testing with raspberry pi second edition John purcell price list 2016 U00c6schylus in English verse . The power of remembering Michael Honey Veiled Alliance (AD&D/Dark Sun Accessory DSR3 (DSR3, Advanced Dungeons Dragons, 2nd Edition, 2411) Building an HO model railroad with personality The Chief Actors In The Puritan Revolution Phantom of the opera sheet music violin Mary Anne Clarke (1776-1852), by W. G. Waters. Yamaha 85 hp outboard service manual The Wizard Hunters (The Fall of Ile-Rien, Book 1) St Martins Church 23 Building pathways between Zuni and Mashantucket Pequot country Russell G. Handsman and Kevin A. McBride Career paths in the field of aging Yamaha r1 2006 manual Newborn, puberty, general diseases, infectious diseases ; Vol. 3 Toward a lean and lively calculus Carnival of destruction Sausages for Tuesday. Simple curiosity ; letters from George Gaylord Simpson to his family, 1921-1970 Introduction To Poetry, Sixth Edition And Introduction To Drama And Barberousse An examination of / Of fire and stars audrey coulthurst Three million more? Pursuit of Meaning Nationalism and the Drive For Sovereignty in Tatarstan, 1988-92 National Immunization Program Financing Assessment Basics of pipe stress analysis design