**DAILY ASSESSMENT FORMAT**

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| **Date:** | **17/June/2020** | **Name:** | **Prashantha naik** |
| **Course:** | **Statistical Learning** | **USN:** | **4al17ec074** |
| **Topic:** | **1.Rules for Probability Calculation.**  **2.** **Bayes theorem Normal distribution** | **Semester & Section:** | **6th b** |
| **GitHub Repository:** | **prashanth\_course** |  |  |

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| **Session details** |
| **Image of session** |
| **Report – Report can be typed or hand written for up to two pages.**  **Bayes' theorem (alternatively Bayles’s theorem, Bayles’s law or Bayes's rule) describes the probability of an event, based on prior knowledge of conditions that might be related to the event.[1] For example, if the risk of developing health problems is known to increase with age, Bayes’s theorem allows the risk to an individual of a known age to be assessed more accurately than simply assuming that the individual is typical of the population as a whole.**  **Bayesian interpretation**  **In the Bayesian (or epistemological) interpretation, probability measures a “degree of belief.” Bayes’ theorem links the degree of belief in a proposition before and after accounting for evidence. For example, suppose it is believed with 50% certainty that a coin is twice as likely to land heads than tails. If the coin is flipped a number of times and the outcomes observed, that degree of belief will probably rise or fall, but might even remain the same, depending on the results. For proposition A and evidence B,**  **P (A), the prior, is the initial degree of belief in A.**  **P (A | B), the posterior, is the degree of belief after incorporating news that B is true.**  **the quotient**  **P(B | A)/P(B)**  **represents the support B provides for A.**  **For more on the application of Bayes' theorem under the Bayesian interpretation of probability, see Bayesian inference.**  **{\displaystyle P(A\mid B)={\frac {P(B\mid A)P(A)}{P(B)}}}**  Normal Distribution  **{\displaystyle P(A|B)={\frac {P(B|A)P(A)}{P(B)}}\cdot }Parameters of the Normal Distribution**  **As with any probability distribution, the parameters for the normal distribution define its shape and probabilities entirely. The normal distribution has two parameters, the mean and standard deviation. The normal distribution does not have just one form. Instead, the shape changes based on the parameter values, as shown in the graphs below.**  **Mean**  **The mean is the central tendency of the distribution. It defines the location of the peak for normal distributions. Most values cluster around the mean. On a graph, changing the mean shifts the entire curve left or right on the X-axis.**  **Graph that display normal distributions with different means.**  **Standard deviation**  **The standard deviation is a measure of variability. It defines the width of the normal distribution. The standard deviation determines how far away from the mean the values tend to fall. It represents the typical distance between the observations and the average.**  **On a graph, changing the standard deviation either tightens or spreads out the width of the distribution along the X-axis. Larger standard deviations produce distributions that are more spread out.**  **Graph that displays normal distributions with different standard deviations.**  **When you have narrow distributions, the probabilities are higher that values won’t fall far from the mean. As you increase the spread of the distribution, the likelihood that observations will be further away from the mean also increases.**  **Population parameters versus sample estimates**  **The mean and standard deviation are parameter values that apply to entire populations. For the normal distribution, statisticians signify the parameters by using the Greek symbol μ (mu) for the population mean and σ (sigma) for the population standard deviation.**  **Unfortunately, population parameters are usually unknown because it’s generally impossible to measure an entire population. However, you can use random samples to calculate estimates of these parameters. Statisticians represent sample estimates of these parameters using x̅ for the sample mean and s for the sample standard deviation.**  **Related posts: Measures of Central Tendency and Measures of Variability**  **Common Properties for All Forms of the Normal Distribution**  **Despite the different shapes, all forms of the normal distribution have the following characteristic properties.**  **They’re all symmetric. The normal distribution cannot model skewed distributions.**  **The mean, median, and mode are all equal.**  **Half of the population is less than the mean and half is greater than the mean.**  **The Empirical Rule allows you to determine the proportion of values that fall within certain distances from the mean. More on this below!**  **While the normal distribution is essential in statistics, it is just one of many probability distributions, and it does not fit all populations. To learn how to determine whether the normal distribution provides the best fit to your sample data, read my posts about How to Identify the Distribution of Your Data and Assessing Normality: Histograms vs. Normal Probability Plots.** |