

Descriptive Statistics	Probability
<ul style="list-style-type: none"> <li>Given a two-way table of relative frequencies that summarizes survey data relates a person's highest level of education and their role model, determine if a person whose highest level of education is a bachelor's degree is more likely to have a family member than a stranger as a role model.</li> </ul>	<ul style="list-style-type: none"> <li>A cereal company is putting a prize in each box of cereal. The company is offering four different and evenly distributed prizes. How many boxes should one expect to need to buy to get all four prizes?</li> </ul>
Probability Distributions	Correlation and Regression
<ul style="list-style-type: none"> <li>The heights of five women are measured to be 63 inches, 68 inches, 56 inches, 64 and 67 inches. Determine the expected value of the height of a randomly chosen woman.</li> </ul>	<ul style="list-style-type: none"> <li>A random sample of beef hotdogs was taken and the amount of sodium (in mg) and calories were measured. Use the provided information to determine and use the regression equation to determine to find the amount of sodium in a beef hotdog that has 170 calories and in a beef hotdog that has 120 calories. Which of the calculated sodium levels is closer to the true sodium level? Why?</li> </ul>
Confidence Intervals	Hypothesis Testing with One Variable
<ul style="list-style-type: none"> <li>Alyssa has over 500 songs saved on her phone. She wants to estimate the proportion of songs by a female artist. After taking a simple random sample of 50 songs, she finds that 20 of the sampled songs are by a female artist. Determine a 99% confidence interval for the proportion of songs on her phone that are by a female artist.</li> </ul>	<ul style="list-style-type: none"> <li>Ellen has a pair of dogs and she noticed that they seem to breed more male puppies than female puppies. In the next litter of 12 puppies, there were 9 male puppies. Test the hypothesis that each puppy has an equal chance of 50% of being either male or female versus the alternative that the chance of a male puppy is greater. Look at the results of 1000 simulations, each simulating 12 puppies with a 50% chance of being male or female. According to the simulations, what is the probability of having 9 male puppies or more out of 12? If the observed outcome has a probability less than 1% under the tested hypotheses, reject the hypothesis. What should be concluded regarding the hypothesis?</li> </ul>
Statistical Inference	
<ul style="list-style-type: none"> <li>A researcher wants to know if the children from three schools have equal mean IQ scores. Each school enrolls 1000 students. But there is neither the time of funding to test all 3000 students. Based on a simple random survey of 10 students from each school, perform and analyze an ANOVA test.</li> </ul>	