Stat 21 - Class 8

Determining Which Method to Use

1. A consumer magazine plans to poll car owners to see if they are happy enough with their vehicles that they would purchase the same model again. They randomly selected 450 owners of American-made cars and 450 owners of Japanese models and ask the owners whether or not they are happy with their vehicle (yes/no).

Suppose we want to make a statistical statement quantifying the difference in owner satisfaction of American versus Japanese cars.

Population:

Parameter of interest (if there is one):

Type of variable(s):

Sample size:

Observational units:

Method:

2. Data was collected on the average high temperatures in the months of January and July of 2020 for a dozen different cities.

Suppose we want to determine if there is a significant difference in the mean temperatures between January and July.

Population:

Parameter of interest (if there is one):

Type of variable(s):

Sample size:

Observational units:

Method:

3. The Masterfoods Company claims that yellow candies make up 20% of its milk chocolate M&M's, red another 20%, orange, blue, and green 10% each. The rest are brown. You purchase a bag of plain M&M's and count the number of yellow, red, orange, blue, green, and brown candies.

Suppose we want to determine if your sample is consistent with the company's stated proportions.

Population:

Parameter of interest (if there is one):

Type of variable(s):

Sample size:

Observational units:

Method:

4. Hepatitis C causes bout 10,000 deaths each year in the US but often lies undetected for years after infection. A study at a large medical center randomly surveyed visitors over a particular time period. The participants were asked whether or not they had any tattoos and from where (all tattoos from a parlor, at least one tattoo from somewhere besides a parlor, or no tattoos) and were tested to determine if they had hepatitis C or not.

Suppose we want to test if a hepatitis C infection is related to whether and how people have tattoos.

Population:

Parameter of interest (if there is one):

Type of variable(s):

Sample size:

Observational units:

Method:

5. Some people think that a full moon elicits unusual behavior in people including increased illegal activities. Suppose we collect data on the number of arrests made in a small town during the weeks of six full moods and six other randomly selected weeks during the same year. For each week we note whether or not there was a full moon and we count the number of arrests for violent crime, property damage, drug offenses, and other offenses.

Suppose we want to test whether or not there is evidence of a difference in the types of illegal activity that take place during a full moon.

Population:

Parameter of interest (if there is one):

Type of variable(s):

Sample size:

Observational units:

Method: