Scenario Examples Choosing the Right Statistic

Scenario 1

- Your manager swings by your desk and asks if you can tell her what the most common way that customers are reaching out for help. Customer service is available via phone, email, and instant message.

- What is the variable of interest?
  - Ways customers are reaching out
- Are you testing anything?
  - No (so this is a descriptive statistic)
- Is the variable continuous or categorical?
  - Categorical
- You should be doing frequencies and percents

Scenario 2

- When they do get calls or instant messages, the manager wants to know how long those interactions with customers typically last.

- What is the variable of interest?
  - How long the customer interactions take

- Are you testing or comparing anything?
  - No (so it's descriptive)

- Is your variable continuous or categorical?
  - Continuous

- You should be looking at the means

Scenario 3

- When they do get calls or instant messages, the manager wants to know the distribution of how long the interactions last. Are they all long, all short? How much variation is there?

- What is the variable of interest?
  - How long the customer interactions take

- Are you testing or comparing anything?
  - No (so it's descriptive)

- Is your variable continuous or categorical?
  - Continuous

- You should be looking at measures of dispersion – range, standard deviation

Scenario 4

- Your company has the following breakdown for customer ethnicities:
  - 30% Caucasian
  - 30% African American
  - 30% Asian
  - 10% Native American
- In the industry, the breakdown is usually as follows:
  - 20% Caucasian
  - 40% African American
  - 20% Asian
  - 20% Native American
- The VP would like to know if their customer base is similar to the industry.

Scenario 4

- What is the variable of interest?
  - Ethnicity breakdown
- Are you testing or comparing anything?
  - Yes
- Are you comparing a sample to a population?
  - Yes
- Is your variable continuous or categorical?
  - Categorical
- You should be doing a goodness of fit Chi-Square

Scenario 5

- Your boss has data on customer ethnicities from 2010, and would like you to compare them to customer ethnicities in 2020.

- What are the variables of interest?
  - Time – IV
  - Ethnicity categories - DV

- Are you testing or comparing anything?
  - Yes

- Are you comparing a sample to a population?
  - No

Scenario 5

- Your boss has data on customer ethnicities from 2010, and would like you to compare them to customer ethnicities in 2020.
- Is your independent variable continuous or categorical?
  - Categorical
- Is your dependent variable continuous or categorical?
  - Categorical
- You should be doing a McNemar Chi-Square.

Scenario 6

- Your boss would like you to see if the ethnicity breakdown of your customer base differs by gender.

- What are the variables of interest?
  - Gender – IV
  - Ethnicity categories - DV

- Are you testing or comparing anything?
  - Yes

- Are you comparing a sample to a population?
  - No

Scenario 6

- Your boss would like you to see if the ethnicity breakdown of your customer base differs by gender.

- Is your independent variable continuous or categorical?
  - Categorical

- Is your dependent variable continuous or categorical?
  - Categorical

- You should be doing an Independent Chi-Square.

Scenario 7

- Your boss would like to know if the amount of time spent helping customers varies based on their ethnicity. There are four racial categories the company caters to: Caucasian, African American, Asian, and Native American.

- What are the variables of interest?
  - Ethnicity categories- IV
  - Time spent helping - DV

- Are you testing or comparing anything?
  - Yes

- How many levels of the IV do you have?
  - Four

Scenario 7

- Your boss would like to know if the amount of time spent helping customers varies based on their ethnicity. There are four racial categories the company caters to: Caucasian, African American, Asian, and Native American.

- Is your independent variable continuous or categorical?
  - Categorical

- Is your dependent variable continuous or categorical?
  - Continuous

- You should be doing an ANOVA

Scenario 8

- Your boss would like to know if the amount of time spent helping customers varies based on their gender. They are using traditional gender roles of just male and female.

- What are the variables of interest?
  - Gender categories- IV
  - Time spent helping - DV

- Are you testing or comparing anything?
  - Yes

- How many levels of the IV do you have?
  - Two

Scenario 8

- Your boss would like to know if the amount of time spent helping customers varies based on their gender. They are using traditional gender roles of just male and female.

- Is your independent variable continuous or categorical?
  - Categorical

- Is your dependent variable continuous or categorical?
  - Continuous

- You should be doing an independent t-test

Scenario 9

- Your boss would like to know if the amount of time spent helping customers has changed over time. They have data from 2010 and also from the current year of 2020.

- What are the variables of interest?
  - Time - IV
  - Time spent helping - DV

- Are you testing or comparing anything?
  - Yes

- How many levels of the IV do you have?
  - Two

Scenario 9

- Your boss would like to know if the amount of time spent helping customers has changed over time. They have data from 2010 and also from the current year of 2020.

- Is your independent variable continuous or categorical?
  - Categorical

- Is your dependent variable continuous or categorical?
  - Continuous

- You should be doing a dependent t-test

Scenario 10

- Your boss would like to know if the amount of time spent helping customers and the wait times vary based on their ethnicity. There are four racial categories the company caters to: Caucasian, African American, Asian, and Native American.

- What are the variables of interest?
  - Ethnicity categories- IV
  - Time spent helping and time spent waiting - DVs

- Are you testing or comparing anything?
  - Yes

- How many levels of the IV do you have?
  - Four

Scenario 10

- Your boss would like to know if the amount of time spent helping customers and the wait times vary based on their ethnicity. There are four racial categories the company caters to: Caucasian, African American, Asian, and Native American.

- Is your independent variable continuous or categorical?
  - Categorical

- Is your dependent variable continuous or categorical?
  - Continuous

- You should be doing a MANOVA

Scenario 11

- Your boss would like to know if the amount of time spent helping customers and the wait times vary based on their ethnicity. There are four racial categories the company caters to: Caucasian, African American, Asian, and Native American. Since they know that females tend to talk longer on the phone than males, they want to control for the effects of gender as well.

- What are the variables of interest?
  - Ethnicity categories- IV
  - Time spent helping and time spent waiting – DVs
  - Gender - CV

- Are you testing or comparing anything?
  - Yes

- How many levels of the IV do you have?
  - Four

Scenario 11

- Your boss would like to know if the amount of time spent helping customers and the wait times vary based on their ethnicity. There are four racial categories the company caters to: Caucasian, African American, Asian, and Native American. Since they know that females tend to talk longer on the phone than males, they want to control for the effects of gender as well.

- Is your independent variable continuous or categorical?
  - Categorical

- Is your dependent variable continuous or categorical?
  - Continuous

- Are you controlling for anything?
  - Yes

- You should be doing a MANCOVA

Scenario 12

- Your boss would like to know if the amount of time spent helping customers based on their ethnicity. There are four racial categories the company caters to: Caucasian, African American, Asian, and Native American. Since they know that females tend to talk longer on the phone than males, they want to control for the effects of gender as well.

- What are the variables of interest?
  - Ethnicity categories- IV
  - Time spent helping – DV
  - Gender - CV

- Are you testing or comparing anything?
  - Yes

- How many levels of the IV do you have?
  - Four

Scenario 12

- Your boss would like to know if the amount of time spent helping customers based on their ethnicity. There are four racial categories the company caters to: Caucasian, African American, Asian, and Native American. Since they know that females tend to talk longer on the phone than males, they want to control for the effects of gender as well.

- Is your independent variable continuous or categorical?
  - Categorical

- Is your dependent variable continuous or categorical?
  - Continuous

- Are you controlling for anything?
  - Yes

- You should be doing a ANCOVA

Scenario 13

- The supervisor now wants to know if the wait time helps predict whether or not a customer continues service with the company.

- What are the variables of interest?
  - Wait times - IV
  - Continues service – DV

- Are you testing or comparing anything?
  - Yes

- Is the IV continuous or categorical?
  - Continuous

Scenario 13

- The supervisor now wants to know if the wait time helps predict whether or not a customer continues service with the company.

- Is the DV continuous or categorical?
  - Categorical

- How many levels of the DV do you have?
  - 2

- Do you need to know how much influence something has?
  - No

- You should be doing binary logistic regression

Scenario 14

- The supervisor now wants to know if the wait time helps predict whether a customer continues services with the company, temporarily continues services with the company, or does not continue service with the company.

- What are the variables of interest?
  - Wait times - IV
  - Continues service – DV

- Are you testing or comparing anything?
  - Yes

- Is the IV continuous or categorical?
  - Continuous

Scenario 14

- The supervisor now wants to know if the wait time helps predict whether a customer continues services with the company, temporarily continues services with the company, or does not continue service with the company.

- Is the DV continuous or categorical?
  - Categorical

- How many levels of the DV do you have?
  - 3

- Do you need to know how much influence something has?
  - No

- You should be doing multinomial logistic regression

Scenario 15

- The supervisor now wants to know if the wait time and the length of time spent on the call help predict whether a customer continues services with the company, temporarily continues services with the company, or does not continue service with the company. They'd like to know specifically which is more important – wait time or length of time spent on the call.

- What are the variables of interest?
  - Wait times - IV
  - Continues service – DV

- Are you testing or comparing anything?
  - Yes

- Is the IV continuous or categorical?
  - Continuous

Scenario 15

- The supervisor now wants to know if the wait time and the length of time spent on the call help predict whether a customer continues services with the company, temporarily continues services with the company, or does not continue service with the company. They'd like to know specifically which is more important – wait time or length of time spent on the call.

- Is the DV continuous or categorical?
  - Categorical

- How many levels of the DV do you have?
  - 3

- Do you need to know how much influence something has?
  - Yes

- You should be doing multinomial logistic regression

Scenario 16

- The supervisor now wants to know if the wait time and the length of time spent on the call help predict whether a customer continues services with the company or not. They'd like to know specifically which is more important – wait time or length of time spent on the call.

- What are the variables of interest?
  - Wait times - IV
  - Continues service – DV

- Are you testing or comparing anything?
  - Yes

- Is the IV continuous or categorical?
  - Continuous

Scenario 16

- The supervisor now wants to know if the wait time and the length of time spent on the call help predict whether a customer continues services with the company or not. They'd like to know specifically which is more important – wait time or length of time spent on the call.

- Is the DV continuous or categorical?
  - Categorical

- How many levels of the DV do you have?
  - 3

- Do you need to know how much influence something has?
  - Yes

- You should be doing binary logistic regression

Scenario 17

- Does the customer's age influence how long they spend on the phone with customer service?

- What are the variables of interest?
  - Age - IV
  - Time on the phone – DV

- Are you testing or comparing anything?
  - Yes

- Is the IV continuous or categorical?
  - Continuous

- Is the DV continuous or categorical?
  - Continuous

- You should be doing simple linear regression

Scenario 18

- Does the customer’s age and yearly income influence how long they spend on the phone with customer service?

- What are the variables of interest?
  - Age & Yearly Income - IV
  - Time on the phone – DV

- Are you testing or comparing anything?
  - Yes

- Is the IV continuous or categorical?
  - Continuous

Scenario 18

- Does the customer’s age and yearly income influence how long they spend on the phone with customer service?

- Is the DV continuous or categorical?
  - Continuous

- Do you think other variables can influence your DV?
  - No

- You should be doing multiple linear regression

Scenario 19

- Does the customer’s age and yearly income influence how long they spend on the phone with customer service?

- What are the variables of interest?
  - Age & Yearly Income - IV
  - Time on the phone – DV

- Are you testing or comparing anything?
  - Yes

- Is the IV continuous or categorical?
  - Continuous

Scenario 19

- Does the customer’s age and yearly income influence how long they spend on the phone with customer service?

- Is the DV continuous or categorical?
  - Continuous

- Do you think other variables can influence your DV?
  - No

- You should be doing multiple linear regression

Scenario 20

- Does the customer's age and yearly income influence how long they spend on the phone with customer service and how long they have to wait for service?

- What are the variables of interest?
  - Age & Yearly Income - IV
  - Time on the phone & wait time – DV

- Are you testing or comparing anything?
  - Yes

- Is the IV continuous or categorical?
  - Continuous

Scenario 20

- Does the customer’s age and yearly income influence how long they spend on the phone with customer service and how long they have to wait for service?

- Is the DV continuous or categorical?
  - Continuous

- Do you think other variables can influence your DV?
  - No

- You should be doing canonical correlation

Scenario 21

- You are creating a new customer satisfaction survey.
- You should be doing exploratory factor analysis

Scenario 22

- You are helping to validate an existing customer satisfaction survey, to make sure it still applies to today's customers.

- You should do confirmatory factor analysis.

Scenario 23

- You've been hired for a research department and they want to create a theory as to how and when a customer would get frustrated enough that they would call in for help.

- You should perform structural equation modeling.

Scenario 24

- You are trying to see if there is a relationship between age and customer satisfaction, ranked 1-10.

- How many variables do you have?
  - 2

- Are the variables continuous or categorical?
  - Continuous

- You should run the Pearson’s correlation

Scenario 25

- You are trying to see if there is a relationship between gender and whether a customer was satisfied or not.

- How many variables do you have?
  - 2

- Are the variables continuous or categorical?
  - Categorical

- You should run the Spearman Rank correlation

Scenario 26

- You have been asked to examine the customer base, using the variables of gender, age, ethnicity, and yearly salary.

- How many variables do you have?
  - More than 2

- Are you trying to predict group membership?
  - No

- You should run cluster analysis

Scenario 27

- You have been asked to examine the customer base, using the variables of gender, age, ethnicity, and yearly salary. Your boss would like to know if customers qualify for silver, gold, or platinum tier services.

- How many variables do you have?
  - More than 2

- Are you trying to predict group membership?
  - Yes

- You should run discriminant function analysis