SAS Studio Exercise 09

Hypothesis Testing for Proportions

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**Sources**

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SAS® Studio. Release 5.2

SAS® VIYA® release V.03.05

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# Use Case – Hypothesis Testing for Proportions

Razorback Stores is a local department store serving a metropolitan area. As a department store, they offer a wide variety of items and services and track sales through a point of sale system. Over the past several months, Razorback Stores performed a marketing campaign designed to promote and incentivize a loyalty program.

As a recent hire, your boss has asked you to analyze the following:

* Is the proportion of promotional customers less than 50%?

## Step 0: Navigate to SAS Studio/Activate CAS Session

Before jumping into the ***Hypothesis Testing*** task, please refer back to***SAS Studio 01 – Logging into the System*** to understand how to navigate to SAS Studio, activate a CAS session, and manage your data.

We will be using the Razorback Storesdataset which will be provided by your instructor and/or is available on blackboard. Once you have this dataset loaded on SAS Viya, following ***SAS Studio 01 – Logging into the System*** tutorial*,* load this dataset into memory in your personal userfolder.

## Step 1: Tasks

In order to access the **One-Way Frequencies** task within SAS Studio:

1. Click on the **Tasks** icon located on the left-panel
2. Expand the **SAS Tasks** folder
3. Expand the **Statistics** folder
4. Expand the **Descriptive** folder
5. Double click **One-Way Frequencies**

## Step 2: Select Data

Next, you need to select your data. In this case, we will be choosing **Razorback Stores** which can be found in our **User** folder. Under **DATA**,

1. Click on the **folder** icon located at the right of the current dataset in place

A new **Choose a Table** window will open,

1. Click on **Libraries**

A list of all the folders available to you will be displayed.

1. Click on **MYCASLIB** which references your **User** folder

All the different datasets found in your **User** folder will display.

1. Click on **RAZORBACK\_STORES**
2. Click **OK**

## Step 3: Select Variables

Once you have **Razorback Stores** dataset selected, we need to select the variables we want to work with. You will notice red font color text which requires you to select a minimum of one variable. Under **ROLES**,notice you have one subtitle:

* + **Analysis variables**: what variable you want to analyze. For this tutorial: **Type of Customer**
1. Click on the **+** sign to the right of **Analysis variables**

A new window will open, titled **Column Selection**.

1. Select **Type of Customer**
2. Click **OK**

## Step 4: Modify Settings

Once you have selected your dataset and variables, you can move to the **Options** tab where you will modify the characteristics of the model you want to run:

1. Click on the **OPTIONS** tab

1. Expand the **STATISTICS** option

Under **Binomial Proportion**,

1. click on the **Asymptotic test** box
2. Set your **Null hypothesis proportion** to **0.5**
3. Set your **Confidence level** to **95%**

Notice that as we have selected a dataset, variables, and checked/unchecked settings, there is a code area on the right side of the screen that has been updating as we modified these.

1. Click **Run**


## Step 5: Results

Once the task has executed, you will have your **One-Way Frequency** results view in the right most pane.

In order to better visualize the results, locate the three dots at the very right end of the screen under the current date and time.

1. Click on these three dots and,
2. Click on **Open in a browser tab**
3. Click on **Results**
4. Alternatively, you can click on the **Maximize preview** icon

Under **Results**, notice that you have a folder labeled **The Freq Procedure**, and two folders under it named **Table Type of Customer**,and **Distribution Plots**, where you can find subfolders within.

1. Expand all the folders
2. Click on the files inside

You will notice that as you click on these files, the tables and plots on the right window will change.

When clicking on any of these sections, SAS Studio will take you to the table/graph to which that section references in the right.

Binomial Proportion:

Binomial Confidence Limits:

Binomial Proportion Test:

One-Way Frequencies:

Frequency Plot

Cumulative Frequency Plot

Under the **Results** section, we can see the z value and p-value. From here, we can accept or reject our null hypothesis.

Congratulations, you have successfully performed a Hypothesis Testing for Proportions on SAS Studio!