P   Discovery Project

Economists use several metrics to understand the state of the economy and what might lie ahead. Some of those metrics specifically focus on consumer spending. One such measure is consumer consumption. This value gives economists an idea of how much consumers are spending and is tracked monthly, in order to understand how consumer spending impacts the overall economy.

One way that consumers choose to pay for goods and services is through using credit cards. Obtaining a credit card is generally simple and most consumers can qualify for some type of card. The terms of the credit issued can vary though based on variables such as household income, credit score, and educational status.

Using the data set Credit Card Data, answer the following questions to better understand how differences in certain factors can impact spending and credit limits. The data set has nine variables (159 data points).

⠿ Data

This data set can be found at stat.hawkeslearning.com by navigating to **Discovering Business Statistics, Second Edition > Data Sets > Credit Card Data**.

1. Download the data file and open it in Microsoft Excel.

2. Determine the mean, mode, median, maximum, minimum, standard deviation, and the coefficient of variation of the following variables: age, total credit limit, total balance, credit score, annual household income, and number of children and briefly discuss the results. (**Hint**: These values can be quickly calculated using the Data Analysis Add-in: Descriptive Statistics in Excel.)

3. Fully summarize the qualitative variables (i.e., what percent of the sample has a college degree?) and briefly discuss your findings. (**Hint**: These values can be quickly determined using the Data Analysis Add-in: Histogram in Excel.)

4. Determine if there is a significant difference in credit card balances based on educational status using the appropriate hypothesis test. Use a significance level of 0.05. If significant differences are found, determine which groups are different from each other. (Note: It will be necessary to rearrange the dataset to conduct the hypothesis test.)

5. Choose one of the other qualitative variables (i.e., housing status) and determine if there is a significant difference in credit card limits based on that variable. Use the significance level of 0.01. If significant differences are found, determine which groups are different from each. (Note: It will be necessary to rearrange the dataset to conduct the hypothesis test.)

6. Conduct the appropriate hypothesis test to see if there is a difference in credit card limits by both marital status and housing status. Use the significance level of 0.01. (Note: It will be necessary to rearrange the dataset to conduct the hypothesis test.)

7. Partition and sort the data for credit score based on the marital status and number of children in the household. Randomly select 10 data points where there are no kids in the household, then do the same for those households with children, also include the marital status. This data selection will be used in the next problem.

8. Conduct the appropriate hypothesis test to see if there is a difference in credit scores by both marital status and number of children in the household. Use the significance level of 0.05. Is there any interaction present between the variables? (Note: You will use the data subset you selected in the previous problem. Be sure the data is formatted appropriately for the selected hypothesis test.)

9. Briefly summarize your findings from these analyses and discuss the limitations present in the data set.