Assignment 1 (Week 1 - 2)

STAT 2601 - Business Statistics (2024 Fall)
SCHOOL OF MATHEMATICS AND STATISTICS, CARLETON UNIVERSITY

Due: September 25, 2024, before 10:00 am
Total Marks: 27

Q1: [18] Revenue of Canadian Banks/Financial Institutions

The revenue of the Canadian banks increased steadily during the period 2015 and 2023. A Sprott student took a random sample of 10 Canadian banks/financial institutions in 2023 to analyze the yearly revenue which is available in the data set **Assignment 1_Data**.

(a) [7.5] Calculate mean, median, and standard deviation. Comparing mean and median, what shape would you expect for this distribution and why? Which measure of central tendency would you recommend and why?

(b) [2] Draw a histogram of this data set using EXCEL following the instructions given below and include your EXCEL output in the assignment.

(c) [7.5] Given that $Q_1 = 10.5$, now calculate Q_3. Draw the Box-and-Whisker plot manually labelling Q_1, Q_2(median)$, Q_3$, lower whisker, and upper whisker, and include in your answer. Is there any financial institution considered outlier with respect to yearly revenue? Justify.

(d) [1] Which shape do you discern in the box-and-whisker plot drawn in step (c)? Justify your answer.

EXCEL Instructions (Histogram)

- Select the column of Revenue of Banks ($ billions) (B1:B11).

- **Insert > Recommended Charts > All Charts > Histogram > OK**.

- Click on top right (+ sign) > Select **Axis Title** > Edit the Axis Title.

- Select the X-axis values > Right Click > **Format Axis > Axis Options > Number of Bins** (Insert 4).

- Click on **Chart Title** and given an appropriate title.

Q2: [4] Temu Visitors

Temu, a popular new online shopping platform, remains at the top of online shopping charts after debuting in Canada in February 2023. A marketing analyst of Temu has collected data for different types of visits to the site in January 2024 and would like to summarize them for the company. The results are contained in the tab, named **Temu Visits**, of the assignment Excel data file.

(a) [3] Use Excel to construct a pie chart and a Pareto chart and include the outputs in your assignment.

(b) [1] Which chart do you think will be more useful to analyse the Temu visits? Explain.

EXCEL Instructions for Pareto Chart

- Select the data (A1:B6).

- **INSERT** > Click on **Insert Statistic Chart** (the icon in the middle that looks like a blue histogram) which is under the **Chart** group > Click on **Pareto**.

- Click on **Chart Elements** (the plus symbol icon toward the top right of the Pareto chart) > check **Axis Titles** > Edit the Axis Title.

- Click on **Chart Title** and given an appropriate title.

EXCEL Instructions for Pie Chart

- Select the data (A1:B6).

- **INSERT** > Click on **Insert Pie or Doughnut Chart** (the icon in the bottom left that looks like a blue pie chart) which is under the **Chart** group > Click on the first icon, called **Pie**, under **2-D Pie**.

- Click on **Chart Elements** (the plus symbol icon toward the top right of the pie chart) > Check **Data Labels** > Check **More Options** > Check **Percentage** and uncheck **Value** (under the label options).

- Click on **Chart Title** and given an appropriate title.

Q3: [5] Voter Turnout

The following data is the percentage of voters of a random sample of 6 provinces/territories in the last Canadian federal election in 2021.

$$61.2 \qquad 62.7 \qquad 61.4 \qquad 63.7 \qquad 64.0 \qquad 61.6$$

(a) [2] Identify the population, variable, and unit of analysis.

(b) [1] Classify the variable in part (a) as qualitative nominal, qualitative ordinal, quantitative interval, or quantitative ratio. If it is quantitative, classify it as discrete or continuous.

(c) [2] Draw a stem-and-leaf plot manually (do not use a split stem and leaf plot), specify leaf unit note, and include your plot in the assignment.