

Webster University
 BUSN 5760
 Fall 1 2019
 Midterm Exam

1. The following data represents the per-capita consumption of beverages (in gallons) sold at retail stores in 2017, 2018, 2019.

Type of drink	<u>2017</u>	<u>2018</u>	<u>2019</u>
Bottled water	8.5	10.1	11.7
Dairy/other	0.3	0.3	0.3
Energy drinks	4.1	4.7	6.8
Soft drinks	46.0	44.0	40.5
Sports drinks	4.9	6.8	9.5
Tea	1.9	2.4	2.1
Total	65.7	68.3	70.9

- For each year form a percentage summary table for the types of drinks.
- For each year, construct a bar chart, and a pie chart.
- Construct a side-by-side bar chart of the market share of the types of drinks in 2017, 2018, and 2019.
- Based on the results of (a) through (c), what conclusions can be made about the trend in choice of beverage from 2017 to 2019?

2. A hotel manager observed the following times, in seconds, to check in a customer and give them their room key.

206	155	246	255	196	366	270	172	262	262
224	263	296	325	142	202	322	250	456	330
186	112	115	127	266	266	415	316	325	292
217	235	72	177	281	210	192	202	49	316
261	352	256	311	346	78	441	364	211	231

- Perform a summary statistics analysis. What are your observations regarding the measures of central tendency (mean, median, mode) and variability (standard deviation, range) for the data?
- What would be your next step(s) in your study? Which statistical measure(s) would you use as the benchmark in order to measure and analyze whether the new and improved check in system about to be implemented is improving customer check in time when compared to the data above?
- Why did you choose this statistical measure(s)?

3. Download the data file AIRCLEANERS. This represents the price, yearly energy cost, and yearly filter cost of room air cleaners.

- a) Construct a scatter diagram with price on the Y axis and energy cost on the X axis.
- b) What conclusions about the relationship of energy cost and filter cost to the price of the air cleaners can you make?

4. One of the major measures of quality of service provided by any organization is the speed with which it responds to customer complaints. A large family-held department store selling furniture and flooring, including carpet, had undergone a major expansion in the past several years. In particular, the flooring department had expanded from 2 installation crews to an installation supervisor, a measurer, and 15 installation crews. A sample of 50 complaints concerning carpet installation was selected during a recent year. Download the file FURNITURE from the website. This represents the number of days between the receipt of the complaint and the resolution of the complaint.

- a) Compute the mean, and median.
- b) Compute the range, variance and standard deviation.
- c) On the basis of the results of (a) through (b), if you had to tell the President of the company how long a customer should expect to wait to have a complaint resolved, what would you say? Explain the reasoning for your choice.

5. What are the advantages and disadvantages of each measure of central tendency (Mean, Median and Mode) and cite an example where each measure would be the most appropriate measure of the middle?