**MSDS 6371 Fall 2018 Midterm**

**Analysis Questions**

**Browse Time**



A retail company wants to analyze the length of time that consumers spend on their main webpage. The company has gathered the time (in seconds) that all customers during a one hour period spent on the page. The marketers at the retailer wanted to see if the position (left or right) of a promotional banner affected how long browsers spent on the page. So, they designed an experiment where half of the browsers randomly saw the banner positioned on the left and half randomly saw the banner positioned on the right.

* **Use significance level  unless otherwise stated.**
* **Include your code and relevant output at the end of each response (or within, if appropriate). You may use SAS or R in your analyses.**
* **Please save your work in a Word document.**

1. (20 points) Test the claim that the browsing time is significantly different for the left and right banner positions.

The data are recorded in BannerPositionOnly.csv.

Please provide a **complete analysis** for thequestion of interest. Remember that a **complete analysis** includes doing the following:

* 1. state the problem
  2. **address the assumptions** and clearly state which test you feel is most appropriate
  3. conduct the appropriate test, including 6 steps (you do not need to provide a shaded graph, and the last step should include the conclusion and provide a scope of inference). Be sure to include confidence intervals where appropriate.

1. (20 points) The data scientists then notice that those who saw the left banner were directed to the site from two different web pages that they visited just before this retailer (prior pages 1 & 2), while those who saw the right banner were directed to the site from two entirely different web pages (prior pages 3 & 4). How odd! Now the data scientists are interested in seeing if the prior web pages (and only the prior web pages) had any effect on the browsing time of the consumers. Perform an analysis that answers this question. **After listing which assumptions might be required, you may assume those assumptions are met.** (You do not need to provide evidence supporting these assumptions.) This data is found in Browsetime.csv. This data set contains the same data as BannerPositionOnly.csv along with the additional variable of PriorPage.
2. (20 points) The data scientists are now looking to see which specific prior sites differ in browsing time. **After listing which assumptions might be required, you may assume those assumptions are met.** (You do not need to provide evidence supporting these assumptions.) Conduct an analysis using Browsetime.csv that answers this question. Provide confidence intervals where appropriate.
3. (Bonus 10 points, up to 100 maximum exam points) Reconsider the question of interest in problem 1. Considering that more information and data were provided in questions 2 and 3, would you go about answering the question of interest in question 1 the same way? If so, explain why the additional data is irrelevant. If not, state and perform what you would do instead.

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