STAT 514 Final Group Project Fall 2026

Please prepare a written report up to 8 pages (pseudo SAS code and output not included in the page count). The deadline is **Monday November 30, 2026 by 4pm.** Please directly email me (xbw@purdue.edu) the pdf file for the report (you do NOT need to email me the ppt for your presentation). Make sure to write the group member names at the beginning of the report. These reports and presentations should be prepared towards an audience with only basic knowledge of statistics. Be sure to number all of the pages of your report for easy reference.

Each group should organize all your questions into one email. **I will NOT answer specific questions such as which design should be used or which contrast/test will be used, etc.**

Please email me your questions by **Fri Nov 13, the end of the day.** I will answer the questions by Sunday Nov 15, the end of the day.

Each group should prepare a **10 minute presentation with PPT**, and make sure to show up in class following the posted presentation schedule.

Good luck!

We plan to conduct an experiment to explore the effects of two factors -- the calorie information and the bundle type -- on the behaviors of fast-food customers. There are three types of bundles: (1) traditional preset bundles, i.e., combo meals with high-calorie sides and beverages; (2) nudged preset bundles, i.e., combo meals with low-calorie sides and beverages; (3) a participant can choose the sides and the beverages in the combo meals. There are two levels for the calorie information: (1) Total calories of a bundle meal is reported on the menu (therefore a participant knows this information); (2) Total calories of a bundle meal is not written on the menu (a participant doesn't know this information). Consider up to three types of fast food restaurants (for example, a Burger King, a Jimmy Johns, a Chipotle). A participant can only visit one restaurant and have one bundle meal. Every participant will provide his/her weekly frequency of visiting each type of fast food restaurants involved in the experiment. The response from a participant is the revisit intention, which is the average of two Likert-scale items, each using a scale of 1--10 provided by the participant after having the bundle meal. Higher scores indicate higher revisit intention.

(1) How would you design the experiment? Describe your lay out in as much detail as possible. Carry out any randomizations needed for your design. How do you use the information regarding the participant's weekly frequency of visiting different fast food restaurants in your design? **Please also provide a pseudo data structure for your design**.

Provide both models, formulas, pseudo SAS code, and pseudo SAS output for the following questions. You can use a simulated toy data-set for demonstration purpose.

(2) Describe the model that you would use in your analysis of the pseudo data;
(3) How would you compare all possible pairs of meal bundle types?
(4) Does knowing the calorie information increase or decrease the revisit intention?

(5) Does the effect of bundles vary across different types of fast food restaurants?

(6) How do you assess the effect of having a nudged bundle meal – will the participant less likely to revisit?

(7) How to evaluate the effect of weekly frequency of visiting different types of fast food restaurants? How does it interact with the effect of bundle types?

(8) What is the sample size for your design? Do you think a design with smaller sample size will still be able to answer the above questions?

(9) Discuss the considerations for the comparisons and conclusions.