

ECO663 Experimental Economics

Final Take-Home Exam

Due: February 1st (Friday) at 23:59 PM.

**Submit your report in pdf format by e-mail.*

**No late report (even by a minute) will be accepted.*

You should work all alone. **Any discussion with anybody (including classmates, family members..everybody but you) is not allowed and considered as copies. Even partially copied/very similar reports will result in 0 point.*

**Be as specific as possible. Concrete ideas/answers will earn you the higher points.*

**And Enjoy being creative! The main goal of this exam is to give you an opportunity to think in creative way, combining what you've learn during the semester and come up with the answers and solutions to real-world problems.*

Question 1 (50 points)

In this question, you are expected to come up with a solution to one of three problems listed below by conducting an experiment and by using at least **two** Heuristics/Anomalies concepts. Consider this task as creating a detailed project proposal. All of your answers should be original. If you use any reference, cite properly. The steps to be taken to answer this question is as follows:

1. Select one of the topics listed below.
2. Suggest one very original/unique potential solution to the problem.
3. Design an experiment to test the validity of your solution.
 - 3.1. Experimental Design [General setting and structure of the experiment.]
 - 3.2. Implementation of the experiment [Population, Sample, Sampling Procedure]
 - 3.3. What other kind of variables should be collected as data?
4. Data Preparation
 - 4.1. Simulate each variable by carefully considering the characteristics of each variable.
 - 4.2. Code the simulated data in excel. (Submit this excel file as well).
5. Data Analysis
 - 5.1. What kind of statistical/econometrical model(s) to be estimated. Model Specification.
 - 5.2. Estimated Results using the simulated data.
 - 5.3. Interpret the estimated result.
 - 5.4. Expected Result in connection with the effectiveness of your suggested solution.
6. Testing Long Term Impacts of your solution
 - 6.1. Test if your solution has a prolonged effect on the problem. What kind of test should be conducted?
 - 6.2. In order for your solution to have a prolonged effect, how should you modify/change your initially suggested solution?

List of Topics

Problem 1: Credit Card Overuse

How can we make people to avoid credit-card overuse/overspending? Let's define people who are "overspending" as (i) Annual expenditure $>$ [Annual income + Wealth], (ii) Pay just minimum payment each month and pay significant amount of interests on their credit-card spending, (iii) Repay one credit card by another credit card and (iv) Get a credit from a bank to repay credit cards debts. Consider one solution.

Problem 2: Preventing Second-Hand Smoking Damages of Children with Smoking Parents.

It is well known fact that second-hand smoking seriously damage human health. Children are not aware of the risk and are often the victim of the smoking parents. Smoking around the children, especially at home and in the car should be prevented. Design an experiment to test if there is behavioral economic solution to this problem. Target population is smoking parents.

Problem 3: Increasing Organ Donation Rate in Turkey

We discussed in the class that making "being an organ donor" as default dramatically increase the number of potential organ donors. Can you think of some other solutions to increase organ donation rate in Turkey? Design an experiment to test if there is behavioral economic solution to this problem. Target population is adults living in Turkey.

Problem 4: Decreasing Single-Use Plastic Consumption in Turkey

Single-use plastics are going to be banned in EU member states by 2021. As you all know, plastic bags are now charged 25 cents at all the shops in Turkey. But I hear lots of complaints among people due to the inconvenience and increased expenditure. How can you incorporate behavioral economic ideas to motivate people to reduce single-use plastic (pet bottles, plastic food trays/containers/bags) consumption? Design an experiment to test your idea. Target population is people living in Turkey.

If I find that anything is "borrowed" or "copy-paste" of other's work, you will get 0 or very low score depending on the level of similarities. Enjoy coming up with your original, interesting ideas!

Question 2 (50 points): Two-Way ANOVA and Logit Model Estimations

Given the data file "pneumon" (variables' description is also attached), answer the following questions.

ANOVA

1. Identify the Research Question/Hypotheses you can answer by ANOVA.
2. Identify two factors to answer your hypotheses and determine their levels for Two-Way ANOVA.
3. Organize the data and conduct Two-Way ANOVA. Interpret the result. Written codes in R should be pasted to the report.
4. Conduct Tukey's pair-wise comparisons. Interpret the result.
5. Generate (1) box-plots (2) interaction plots and (3) figure(s) with 95% family-wide confidence level and interpret the findings from these figures.

Logit Model (Could be Ordered Logit/ Multinomial Logit as well)

1. Identify the Research Question/Hypotheses you can answer by Logit Model.
2. Specify a logit model and run it.
3. Estimate Odds Ratio and interpret the result.
4. Predict the outcome for an individual with certain specifications.

If you have any question, send me an e-mail.

Enjoy, and Good luck!