CE264 – Spring 2018
Problem Set 1: Behavior and Policy

Due: Tuesday, January 30 by 10 PM
(via electronic submission to bCourses)

Introduction

There are 2 parts to this assignment. The first part comprises the bulk of the assignment and focuses on behavioral science. The second part will help you access the estimation software, Pylogit.

Each problem set is to be done in groups of 2 or 3 currently enrolled CE264 students with one solution being turned in by the group (i.e. choose one group member to upload the solution to bCourses). You must list the student ID number (SID) of each team member on homework submissions.

You are to determine your groups, and you can only work with the same student on 2 assignments at most. Violation of any of these rules will result in a 30 point (of 100 points total) deduction on the assignment.

Each assignment is due electronically by 10 PM on the day it is due. Three assignments may be turned in up to three days late without penalty. After that, no credit will be given for late work.

Part I (80 Points): Research Project Brainstorming

Objectives

The objective of this assignment is to get ideas going for the term project (but no pressure in that for most of you this will **not** end up being your term project). Think about linkages between human behavior and engineering, planning, and policy decisions. At this point we do not want you to worry about data collection or behavioral modeling. We'll ask you to do this in a later assignment.

Your Tasks

1. Describe a specific research question or policy of interest that involves some human component. The idea is to start brainstorming ideas for the course research project, so think of something you might wish to study further later in the semester. This assignment will be most effective if you can come up with a precise statement for a research hypothesis, so state the issue in a sentence or two and don't be too broad. For example, rather than taking on the topic of "How can we motivate people to drive less?" focus on a detail such as "What is the impact of real time bus arrival information (e.g., NextBus) on transit ridership?" Make sure to motivate your question (that is, describe why it is interesting). [Short answer: 1-3 sentences]

2. Without thinking about how you would do it or whether it is even possible, state the numerical result (or finding) that you are most interested in obtaining. For example, for the NextBus question, it may be, "I want to know how many additional (or fewer) riders AC Transit has as a result of NextBus." [Short answer: 1-3 sentences]

3. Discuss the potential behavioral response to this policy. Think about the intricacies of the behavioral response. How might people respond? What may guide their responses? What heterogeneity may exist? How might the responses either make the project a success or failure? In considering the behavioral response, (1) think about this from your own perspective and how you would respond and (2) draw on studies in the literature (e.g., from the reading) to support your answer. [1/2 to 1 page]

4. Select from the academic literature (that is, something published in an academic journal) a paper that is related to the policy of interest. Provide a review of this paper [1-2 pages]. This should include:

   - A statement regarding the domain of the journal and authors (e.g., it's a health journal and the authors are economists).
   - A summary of the paper, including motivation, what was done and the methodology, major findings, and contribution to the literature.
   - A critique of the paper, including what is good about the paper and what could be improved.
   - Discussion of the insight (if any) the paper brings to your research question.

Formally cite all sources as is done in an academic journal. In the text, cite the "Author(s) (year)" and include a list of references at the end that includes the full citation.

Part II (20 Points): Getting up and Running with Pylogit

For the next 5 problem sets as well as for your projects, you will be using python and Pylogit. Your task for this assignment is not to understand anything about Pylogit, but simply to get to the point where you can run one of the sample models (the *Assignment 1 code.py* model file with the *data01.csv* data file) and print the output. The deliverable for this assignment is to print the summary table that is created when you run this sample model file, and turn this in with your problem set solution. Do not underestimate how difficult this task is. There's a reason we assign this in the assignment BEFORE you actually have to use it for model estimation. It is critical that you actually complete this task and do not simply obtain the output from someone or somewhere else. If you don't complete this task, you will regret it come Problem Set 2.

We will provide more instructions on how to install Pylogit and some basic information about the various required steps during class on Thursday.

Basic Instructions:

1- Download Anaconda for **python 2 (NOT 3)**. Do not install more recent packages as they won't run (link to download Anaconda: https://www.anaconda.com/download/?lang=en-us#windows)
2- Install the pylogit library, using 'pip install pylogit' on the command console
3- Make sure you adjust the directory that loads onto the data file on your Mac or Windows:
   data_01 = pd.read_csv("YOUR OWN DIRECTORY",sep=",")
   The data file has to be in long format for estimation, which is the case with this assignment. If not, then in upcoming assignments you will be able to convert from wide format to long format using the Pylogit package
4- Run the script file using Jupyter/IPython Notebook