Econ 626. ML for Economists
Prediction Competition 1: Human Prediction and Utilizing ChatGPT/GPT4

January 9, 2024

Please do not write your name anywhere in your submission. I can see it on Learn.

- Instead, please invent an anonymized name (such as **BellKor**, **Datachamp**, **Joe97**) that you will use in problem sets. Write that name at the top of your submission. (Again, I can still see your real name on Learn.)
- This anonymized name enables us to construct a leaderboard for Question 1, which is a prediction competition
- Best answers will be distributed anonymously to class. Students whose answer is selected will receive ten percentage point bonus points for problem set.

Due on **Monday, January 15, 5pm.** Please submit via Learn. Please submit the answer to question 1 in one CSV file and the answers to questions (2) and (3) in one **PDF** file .

The top of the first page of your PDF must have the following six elements (and nothing else)

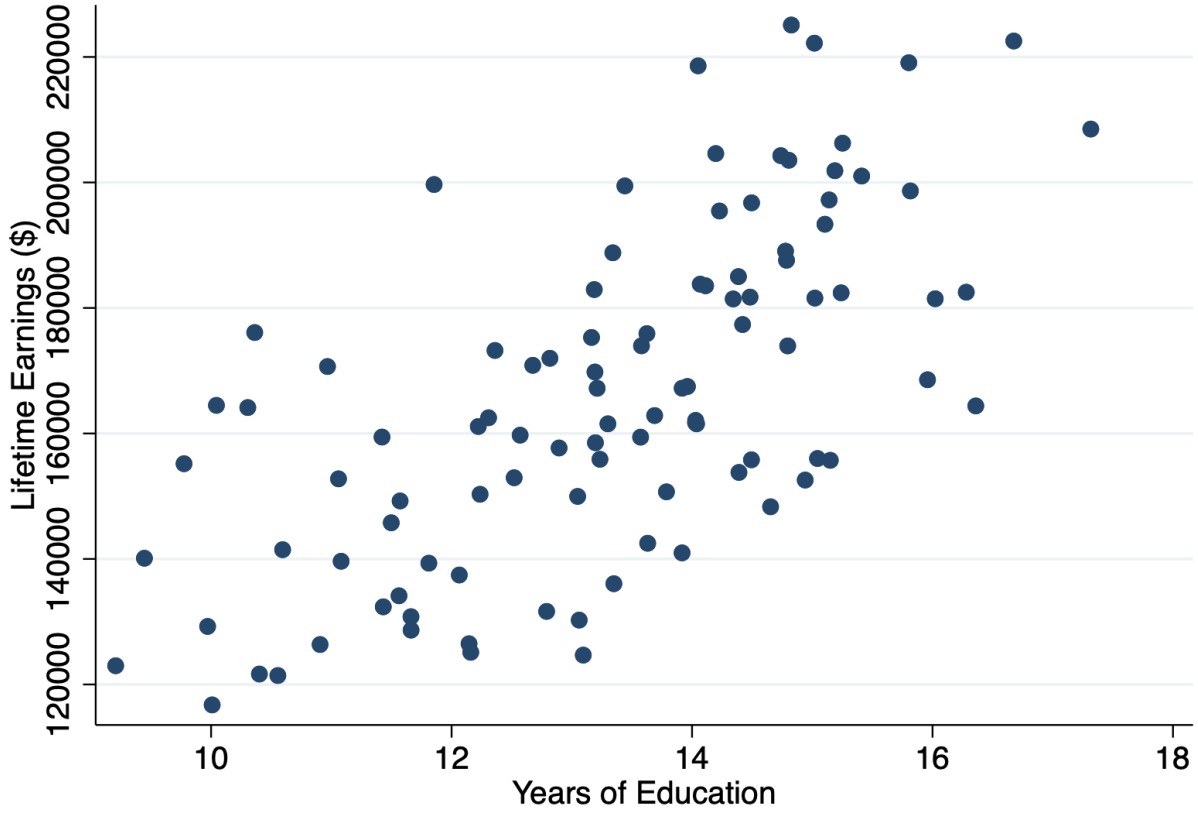
1. Your anonymized name.
2. Your answer to question 2a (a number, nothing else).
3. One sentence summary of how you arrived at the above answer.
4. Your answer to question 2b (a number, nothing else).
5. One sentence summary of how you arrived at the above answer.
6. Your answer to questions 3a, 3b, 3cc (One sentence answer to each).
7. Your answer to question 4 (one or two screenshots of your interactions with ChatGPT/GPT4.

After these, please include in the PDF any code that you utilize.

You can use any (or no) programming language/statistical software package to aid with Q2 and Q3. Q1 must be done without using computers for calculations.

Collaboration is encouraged but **everyone must run their own code and write up their own answers.**

An economy has 1,000,000 people, all adults. In this economy the government chooses randomly (using a lottery) how much education each person gets, and people in this economy always follow the government's directive in terms of how much education they get. After graduating, people are free to choose any job they can get (aside from education, it is a free market economy). People can also start businesses. Below are 100 observations on the lifetime earnings and years of education on a random sample of people in this economy.



Data are from a simulation, not a real economy.

The table below has numbered observations on Years of Education for 20 more people in this economy.

ObservationNumber	YearsOfEducation
1	11.28278
2	13.68312
3	14.40669
4	15.96969
5	14.86386
6	15.33683
7	12.69982
8	11.447
9	11.87571
10	11.87264
11	15.14703
12	11.12808
13	15.11679
14	12.33917
15	16.24666
16	16.42583

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17 15.69144
18 12.7121
19 14.64092
20 10.02925
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Question 1 (7 points) Give a prediction for the lifetime earnings of each of these 20 people, in this same order. You are **not** allowed to use a computer program to calculate the predictions (you must eyeball the answers or use only visual aids).

Submit your answers in a .CSV data file (a flat text file, not word/pdf etc). First line has your student ID, second line has your anonymized name (allowed characters: A-Z a-z 0-9 and blank space; no quotation marks etc). Lines 3-22 have one number for each observation in the same order as the above 20 observations. **Nothing else in the file**.

Note that this question is a **prediction competition**. Your grade depends solely on how close you are to the observed lifetime earnings for these 20 individuals.

Your anonymized name and accuracy of your predictions will be displayed on class leaderboard on Learn.

Question 2a (0.5 points) Jimmy is one individual in this economy. Government assigned Jimmy 12 years of education. How much higher would Jimmy's expected lifetime earnings be if government instead assigned Jimmy 13 years of education?

Question 2b. (0.5 points) How much would the average lifetime earnings increase in this economy if government assigned everyone 17 years of education?

Question 3. (1 point) Consider the article "Data Insights: Standardized Test Scores and Academic Performance at Ivy-Plus Colleges" and the associated "Technical Appendix" posted on
`https://opportunityinsights.org/paper/collegeadmissions/`

a) What are the measured college outcomes?

b) What variables are the most and least important predictors of college outcomes?

c) In your view, which of these variables should be considered in college admissions?

Question 4. (1 point) Ask ChatGPT/GPT4/Other LLM, how to answer one of the above questions Q1-Q3. You can utilize the answers in your own answers to Q1, Q2 and Q3 if you like, or ignore them. You still cannot use computers to calculate answers to Q1, please tell this constraint to ChatGPT.