

Health Market and Health Insurance

Graded satisfactory (4% of course grade) or unsatisfactory (0% of grade).

Satisfactory means a serious attempt made to answer at least 80% of the questions. Your answers need not be lengthy. No credit for late assignments. Academic honesty is required.

Post answers as a single pdf at Canvas / Assignments. Include key Stata output with answers including log file open and close. For how to include key Stata output see [Canvas/Files/Assignments/Example_Format_for_Assignment_Answers.pdf](#)

QUESTIONS 4, 5 and 6 ANALYZE DATA USING STATA and data in file ass1s25.dta

- 1.(a)** Give two major features of health economics that are much more important in health economics than in most branches of economics.
- (b)** Are the results of a major medical research study more likely to resolve positive issues or normative issues in health policy? Explain.
- (c)** Give two major differences between the provision of health care in the U.S. and that in other western developed countries.
- (d)** Give two major differences between health outcomes in the U.S. and that in other western developed countries.

2. Martha's insurance is a major medical and hospital policy that covers all costs, aside from a \$2,000 deductible and a 10% coinsurance rate. If Martha incurs annual health charges of \$3,000, how much will he have to pay after insurance?

3. You are 28 years old, single, living in Yolo County in zip code 95616 with annual income of \$35,000. You are not pregnant or blind or disabled. You are shopping for health insurance through the Covered California website <https://www.coveredca.com/>. (Note: On a Google search this is not the first website to appear). You have no particular doctor you want to access, have few health care needs are a medium user of medical services and pharmaceutical drugs.

Go to Shop and Compare. Use 2025 coverage year prices.

- (a)** How much will you have to pay for the Bronze 60 PPO Plan through Blue Shield (Blue Shield Bronze 60 PP0)? And how much is the government subsidy?
- (b)** What is the maximum amount of money that you could have to pay for the year under this insurance policy if all treatment is in network? Include both the insurance cost and paying for any medical services.
- (c)** If your medical expenses for the year were \$5,000 plus pharmaceutical expenses for the year were \$800, and in-network only, how much would you have to pay? Here by expenses I mean the amount before any coinsurance or copays. Hint: You need to read the benefits carefully.
- (d)** Now consider the Kaiser Permanente Bronze 60 HMO plan. What advantages and disadvantages do you see compared to the Blue 60 PPO plan?
- (e)** Now consider the Silver Plan through Blue Shield (Blue Silver 70 PP0). What advantages and disadvantages do you see compared to the Blue 60 PPO plan?
- (f)** Suppose you choose Blue Shield Bronze 60 PP0. How would you find out if your usual primary care physician was in this plan?
- (g)** Would it be easy to choose which of the 40 insurance policies would be best?

4.-6. Questions 4, 5 and 6 will be covered in the discussion section.

For the statistics methods used in this assignment see sections 1 to 9 of tr132statistics.pdf, posted at the Canvas course site under Files / Statistics for 132.

Information on getting started in Stata is at <http://cameron.econ.ucdavis.edu/stata/stataintro.html> and more details are at <http://cameron.econ.ucdavis.edu/stata/stata.html>.

It is best to use Stata in the following way:

1. Download any data files into your working directory.
2. Start Stata and change the directory to your working directory using the File menu and then Change Working Directory
3. Create a log file that saves results from the session. e.g. If it is ass1results.txt type Stata command log using ass1results.txt, text replace
(The replace means that any previous file named ass1results.txt will be over-written and the text means that is saved as a text file).
4. Read in the data. For a Stata dataset this is the use command. For other data formats it is often the import command - for details help import. If typing data in use command input.
Examples: use xyz.dta, clear and import delimited using xyz.csv, comma
5. Once data is read in if it was not a Stata dataset then save it as a Stata dataset.
6. To save any graphs you can cut and paste them into your assignment solutions document.
Or directly save the file in Stata. e.g. To save the first graph as a WMF graph named ass1q1graph1.wmf give Stata command graph export ass1q1graph1.wmf, replace
7. When you leave Stata give the command log close to save the log file.
8. The Stata output log file is a text file with everything properly aligned if you use a fixed character width font. A good font to use if using e.g. MS Word is Courier New. A font size of 9 prevents wraparound of results.
9. To save paper just print out the key results for the assignment.
10. For printing on a black and white printer, which is cheaper, graphs will print better if you explicitly use a black and white scheme. Give the Stata command set scheme slmono.

The data in file **ass1s25.dta** come from the Rand Health Insurance Experiment. There are 449 observations.

We consider individuals 25 years and older in the third year of the experiment who are in either the free health plan or the 95% deductible plan.

outpatient	= Outpatient medical spending in 2011 dollars (this excludes inpatient hospital)
coins95	= 1 if have 95% coinsurance and = 0 if have free insurance
age	= Age in years
bad_health	= 1 if health is bad and = 0 otherwise

These questions cover inference on the mean and difference in means.

4.(a) Read in the data from file **ass1s25.dta**

(e.g. Change the working directory to the directory with file **ass1s25.dta** and give the Stata command **use ass1s25.dta, replace**)

(b) Create a log file using e.g. command **log using ass1s25.log, text replace**

(c) Use command **summarize** to summarize the data.

Are all variables in the expected ranges?

Are data available for all variables and all observations?

(d) Use command **hist outpatient** to obtain a histogram of outpatient medical spending.

Does spending appear to be normally distributed?

(e) Use command **hist lnoutpatient** to obtain a histogram of the **natural logarithm** of outpatient medical spending (a variable you will need to create).

Does spending appear to be normally distributed?

5.(a) An approximate 95% confidence interval for the population mean of a variable X is $\bar{x} \pm 1.96 \times s/\sqrt{n}$ where \bar{x} is sample mean, s sample standard deviation and n is sample size. Using summary statistics, calculate a 95% confidence interval for population mean outpatient spending.

(b) Now compute this using Stata command **mean outpatient**

Your answer will differ slightly from part (a) as (b) uses a $T(n-1)$ critical value rather than 1.96.

(c) Now run an OLS regression of outpatient on an intercept (or constant) only using Stata command **regress outpatient**

Compare the coefficient estimate **_cons** with your answer in part (b). What do you conclude?

Compare the 95% conf. interval for **_cons** with your answer in part (b). What do you conclude?

(d) Now run the same regression with heteroskedastic-robust standard errors using Stata command **regress outpatient, vce(robust)**

Compare the coefficient, standard error and confidence interval with that in part (c).

6.(a) Give command **bysort coins95: sum outpatient**

What is the average difference in outpatient spending between those on the free plan and those on the 95% coinsurance plan?

(b) Given output from the previous command calculate the standard error of the difference which is $\sqrt{s_1^2/n_1 + s_2^2/n_2}$ where s_1 and s_2 are the standard deviations in the two groups and n_1 and n_2

(c) Give command **ttest outpatient, by(coins95) unequal**

Is the difference between population mean spending under the two plans statistically significantly different at 5%.

(d) Are the standard errors computed in parts (b) and (c) the same?

(e) Now run an OLS regression of outpatient on an intercept and coins95 using Stata command **regress outpatient coins95, vce(robust)**

Compare the coefficient estimate coins95 with your answer in part (c). What do you conclude?

Compare the standard error of the coefficient estimate coins95 with your answer in part (c).

(f) What is the policy significance of the results of this question?