

Cameron ECON 132 (Health Econ): SECOND MIDTERM EXAM (A) Fall 16

Answer all questions in the space provided on the exam.

Total of 36 points (and worth 22.5% of final grade).

Read each question carefully, so that you answer the question.

Short Answer (6 points each question)

1. The cost-effectiveness of influenza vaccination is well established for persons aged 65 years and older. A study in the October 4 2000 issue of the Journal of the American Medical Association considered cost-effectiveness and cost-benefit for healthy adults less than 65 years old. A randomized experiment was run. The treatment group received an influenza vaccination, while the control group received a placebo. Any favorable benefits of influenza vaccination last only for one flu season (a year).

We consider the costs and benefits of influenza vaccination for 1,000 adults when per person

- The cost of vaccination (including lost work time) is \$25.
- The cost of influenza illness (including lost work time) is \$200.
- Influenza vaccination reduces the probability of getting influenza from 0.24 to 0.14.

(a) Perform a **cost-benefit analysis** of influenza vaccination. Does it favor vaccination?

(b)(i) What is the **cost of influenza vaccination per case of flu avoided**?

(ii) (This part unrelated to the preceding). Give a verbal definition of a **QALY**.

(c) Consider the following screening test for cancer applied to 100,000 people of whom 1,000 have cancer. Each test costs \$5, picks up 90% of cancer cases, and additionally 10% of the time falsely diagnoses cancer. Detection of cancer (rightly or wrongly) leads to a further exact diagnostic test that costs \$100. Correct early detection of cancer by the test is valued at \$10,000. Is the first test worthwhile? Explain your answer.

2. Consider the following table

TABLE 2—SAMPLE MEANS FOR ANNUAL USE OF MEDICAL SERVICES PER CAPITA

Plan	Face-to-Face Visits	Outpatient Expenses (1984 \$)	Admissions	Inpatient Dollars (1984 \$)	Prob. Any Medical (%)	Prob. Any Inpatient (%)	Total Expenses (1984 \$)	Adjusted Total Expenses (1984 \$) ^a
Free	4.55 (.168)	340 (10.9)	.128 (.0070)	409 (32.0)	86.8 (.817)	10.3 (.45)	749 (39)	750 (39)
25 Percent	3.33 (.190)	260 (14.70)	.105 (.0090)	373 (43.1)	78.8 (1.38)	8.4 (0.61)	634 (53)	617 (49)
50 Percent	3.03 (.221)	224 (16.8)	.092 (.0116)	450 (139)	77.2 (2.26)	7.2 (0.77)	674 (144)	573 (100)
95 Percent	2.73 (.177)	203 (12.0)	.099 (.0078)	315 (36.7)	67.7 (1.76)	7.9 (0.55)	518 (44.8)	540 (47)

(a)(i) Which numbers in this table, if any, are puzzling? Explain.

(ii) What do the numbers in parentheses tell us?

(b) Consider moving from partial health insurance to complete health insurance. On an appropriate diagram show

(i) The effect on total medical expenditures.

(ii) The change in society's welfare.

(c) Consider the market for used cars as presented in class and in the text.

Let X = value of the car.

Sellers know the value of the car they sell and their utility from the car is $U(X) = X$.

Buyers only know that car value is uniformly distributed on $(40,150)$ and their utility from the car is $1.2 \times X$.

Suppose the posted price for used cars is 80. Will consumers buy a car at this price?

Explain your answer.

3.(a)(i) Explain in words the limitation of using the conventional model of consumer choice (e.g. that presented in Economics 100) to explain individual demand for health care services.

(ii) Is it nonetheless useful to use market demand and supply curves for health care services? Give a brief explanation.

(b) On an appropriate diagram show **consumer choice between consumption of non-health goods and the level of health**. Now suppose the person, previously uninsured, receives a health insurance policy from the government at no cost. **On the same diagram**, show the effect on consumer choice between consumption of non-health goods and level of health.

State, with explanation, whether or not out-of-pocket expenditure on medical goods consumption has increased **for your diagram**.

(c) Suppose, for simplicity, that a doctor trains for 1 year, is a resident for 1 year and works one year. You are given the following data for a doctor and for a typical college graduate (who begins work immediately after college) over three years. The discount rate is 10% and you are to do calculations in year 1 dollars.

Year	1	2	3
Doctor	-30	55	110
College Graduate	20	44	66

Given these data what is financially better? Being a doctor or being a typical college graduate? Explain.

4. Circle True or False to each of the following statements [One point each.]

- (a) **True** **False** Standard cost-benefit analysis, like standard supply and demand analysis, chooses optimal output to equate marginal benefit and marginal cost.
- (b) **True** **False** For the colon cancer Guaiac tests example (Neuhauser and Lewicki) it would actually be better to not screen at all than to perform all six tests.
- (c) **True** **False** Willingness to accept is an indirect method for determining the value of a life.
- (d) **True** **False** Regressing the natural logarithm of health spending on the level of income provides an estimate of the income elasticity of health spending.
- (e) **True** **False** The original impetus of licensing of doctors in the U.S. (the Flexner report) was to improve doctor quality.
- (f) **True** **False** Restriction by the AMA in the number of doctors trained in the period 1935-1965 had little impact on the number of health services provided.

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5. Consider the Stata exercise in assignment 3 that analyzed the effect of implementing free health care at community clinics in South Africa.

Key variables: waz = Weight for Age Z Score
high = 1 if clinic93=1 and =0 if clinic93=0
year = 93 if 1993 and = 98 if 1998
post = 1 if year==98 and =0 if year==93
postXhigh = post times high
idcommunity = identifier for community

(i) What, approximately, are the mean and standard deviation of the variable **waz**?

(ii) What Stata command will give the average value of **waz** in 1993 for infants in communities that had access to health clinics in 1993?

(iii) What do we learn from running the following regression
regress waz post high postXhigh, vce(robust)

(iv) In the Stata exercise in assignment 3 did we find that implementing free health care at community clinics has a statistically significant (at level 0.05) effect on infant birth weight? A simple yes or no will do.

(v)-(vi) Two points and separate from the preceding.

Consider a policy that came into being in 1995. We have data for 1990 and 2000. The policy affected one group but not the other. We have the following table for the average of the outcome Y in various groups at various points in time.

	Affected by policy	Not affected by policy
Year = 1990	4	2
Year = 2000	10	7

Give the difference in differences estimate of the effect of the policy. **Show computations.**

Multiple Choice (1 point each) Note: You should spend 15-20 % of time on these!

1. In Akerlof's model for the market for lemons, adverse selection is reduced if
 - a. the buyer has better information on used car quality
 - b. the seller has better information on used car quality
 - c. neither a. nor b.
 - d. both a. and b.

2. The Rand health insurance study was limited because
 - a. participants were allowed to choose their coinsurance level
 - b. only those who could afford to purchase insurance participated
 - c. neither a. nor b.
 - d. both a. and b.

3. Under the Beveridge health system in Great Britain adverse selection is eliminated by
 - a. high subsidies of individually-purchased health insurance policies
 - b. offering both low premium high-deductible policies and high premium low-deductible policies
 - c. neither a. nor b.
 - d. both a. and b.

4. The marginal efficiency of health capital curve shows
 - a. the lifetime rate of return from a marginal investment in health at each level of health stock
 - b. the increase in health from a marginal investment in health at each level of health stock
 - c. neither a. nor b.

5. On average the training costs (both money and time) for a doctor are felt to explain
 - a. essentially none of the high income of doctors
 - b. partially the high income of doctors
 - c. completely the high income of doctors

6. Physician-induced demand will
 - a. increase medical prices
 - b. increase use of medical services
 - c. neither a. nor b.
 - d. both a. and b.