

Cameron ECON 132 (Health Econ): SAMPLE SECOND MIDTERM EXAM 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. New PCSK9 inhibitor drugs reduce substantially the levels of LDL (bad cholesterol). Preliminary studies suggest this lowers the probability of a heart attack in one year from 4 percent to 2 percent. Suppose that a heart attack on average leads to the loss of 4 quality adjusted life years (due to premature death in some heart attack victims and reduced quality of life for survivors). The PCSK9 inhibitor drugs will sell for \$10,000 per year. Suppose one QALY is valued at \$100,000.

(a) Perform a **cost-benefit analysis** of PCSK9 inhibitors. Does it favor using PCSK9 inhibitors?

(b) (i) What is the **cost of PCSK9 inhibitors per heart attack avoided**? Show calculations.

(ii) What is the **cost of PCSK9 inhibitors per quality-adjusted life year**? Show calculations.

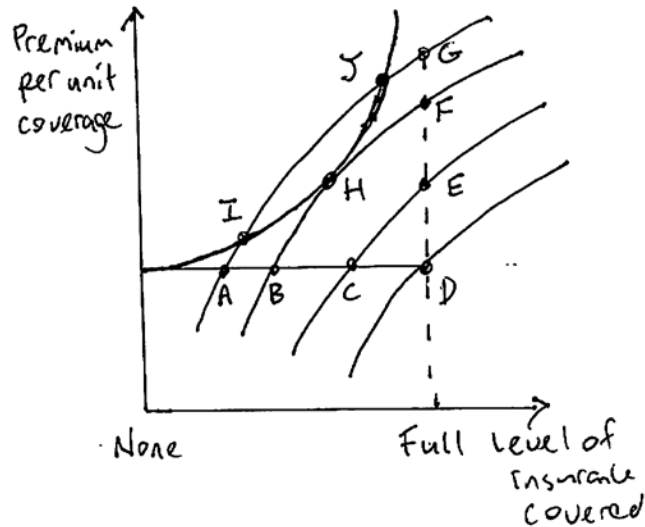
(c) Consider the following screening test for cancer applied to 100,000 people, 500 of whom have cancer. Each test costs \$20, picks up 60% of cancer cases, and additionally 10% of the time falsely diagnoses cancer. Detection of cancer (rightly or wrongly) leads to a further exact diagnostic test that costs \$100. Correct early detection of cancer by the test is valued at \$20,000. Is the first test worthwhile?

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2.(a) For the following diagram

(i) Which of points A to J is society's optimum in the absence of moral hazard?

(ii) Which of points A to J is society's optimum in the presence of moral hazard?



(b) Consider moving from partial health insurance cover to complete health insurance cover.

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 $(50,150)$ and their utility from the car is $1.5 \times X$.

Suppose the posted price for used cars is 90. Will consumers buy a car at this price?

Explain your answer.

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3.(a) (i) On an appropriate diagram show a consumer's choice of health capital and consumption of goods other than medical goods.

(ii) Suppose two consumers are identical in all respects (preferences, income, prices, ...) except that one has a college degree and one has an eighth grade education. How, if at all, is your diagram in part (a) likely to differ across the two consumers? **Explain your reasoning.**

(b) Present the equations for the Grossman model, with description of each variable. (One point off each missing / incorrect equation).

(c) (i) On an appropriate diagram show the impact of licensure on price and quantity of medical services (assuming licensing of doctors does not change people's preferences to see doctors).

(ii) On the same diagram show the gain or loss in consumer surplus due to licensure.

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

- (a) **True** **False** The Rand health insurance experiment found that access to better health insurance led to a reduction in mortality rates.
- (b) **True** **False** Medicare extensively uses cost-effectiveness analysis in determining what procedures it will cover.
- (c) **True** **False** For public health policy purposes a good measure of the value of a life saved is the present discounted value of future earnings.
- (d) **True** **False** The Grossman model cannot be extended to include time input into health.
- (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** Negotiated payment per patient bed day is an example of capitation.

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

You are given the following table for sample means of variable **waz**

	Treatment = High	Treatment = Low
Year==93	-0.54	-0.41
Year==98	0.32	-0.07

- (i) What command in Stata will give the entry -0.54 in this table?
- (ii) What is the change over time in the mean of **waz** for the high treatment group?
- (iii) What is the difference time in the mean of **waz** across treatment groups in 1998?
- (iv) What is the difference-in-difference effect of introducing free health care at community clinics? **Show your calculations.**
- (v) What value do you expect for the coefficient of **high** in the following regression?
regress waz post high postXhigh, vce(robust)
- (vi) What value do you expect for the coefficient of **high** in the following regression?
regress waz high if year==98, vce(robust)

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

1. Adverse selection in insurance means:
 - a. the choice by insurance plans to require certain persons to have their premiums determined on an individual basis.
 - b. the choice by consumers of an insurance plan that is insufficient to meet their needs
 - c. the choice by insurance plans not to cover medical conditions that exist at the time a person begins coverage with the insurance plan
 - d. the systematic choice of a particular insurance plan by persons with higher than average risks
 - e. all of the above.

2. 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.

3. For the sixth stool Guaiac test example, what was the optimal number of tests when early detection of colon cancer is valued at \$100,000 (as in the notes and lecture)
 - a. 0 or 1
 - b. 2 or 3
 - c. 4 or 5
 - d. more than 5.

4. The incremental cost-effectiveness ratio
 - a. determines which treatment is optimal
 - b. indicates how expensive a treatment is in monetary terms per outcome
 - c. neither a. nor b.
 - d. both a. and 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. The dramatic increase in the real cost of a hospital patient bed day over the past fifty years is due to
 - a. substantially increased real wages and salaries
 - b. substantially more labor-intensive and capital-intensive treatment in hospital
 - c. neither a. nor b.
 - d. both a. and b