Cameron   ECON 132 (Health Econ): SAMPLE FIRST 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.(a)(i) Order FFS, HMO and PPO in order of increasing choice that consumer has for health care.

(ii) What is the benefit of regional health insurance pools under Obamacare?

(b) State two essential differences between Medicare and Medicaid.

(c) Suppose consumers are randomly assigned to insurance policies and we find that on average health expenditures are $4,000 in the insurance plan with 60% coinsurance and are $6,000 in the insurance plan with free health care. Calculate the arc price elasticity of demand.

2. Circle True or False to each of the following statements about the U.S. health market.
[One point each.]

(a) True   False   Private sources of funds for health care in the U.S. exceed 5% of GDP.

(b) True   False   Government expenditures on health care in the U.S. exceed 5% of GDP.

(c)   True   False   The main uses of health funds in the U.S. are in order: physician, hospital, and pharmaceutical.

(d) True   False   Over 20% of individuals in the U.S. lack health insurance.

(e) True   False   The most common form of employer-provided health insurance is a PPO.

(f) True   False   The movement to managed care in the 1990's/2000's led to a one-time decrease in health expenditures but little decrease in subsequent growth rates in expenditures.

3. Susan believes she faces health costs in the current year of either $5,000 with probability 0.8 or $15,000 with probability 0.2.

(a) Susan can purchase complete insurance for $8,000.

(i) Calculate the actuarially fair premium.

(ii) Calculate the load factor.

(b) Suppose an insurance company sells insurance to 400 people who face the same distribution of health costs as does Susan. What interval will the average claim per individual insured person lie in with probability 0.95?

(c)(i) Susan obtains a major medical and hospital policy that covers all costs, aside from a $1,000 annual deductible and a 30% coinsurance rate. If Susan actually incurs annual health charges of $5,000, by how much will her health insurance company reimburse her?

(ii) With the introduction of Obamacare Susan instead shifts to a Covered California Bronze 60 Plan. Ignoring the individual deductible and maximum deductible, what coinsurance rate will she face?

4.(a) Suppose George is risk-averse and faces a gain of $100 with probability 0.5 and a gain of $200 with probability of 0.5.

(i) On an appropriate diagram show George's well-being.

(ii) On the same diagram show George's well-being if he could instead receive with certainty an amount equal to his expected gain.

(b) This part unrelated to George in part (a).

(i) Which of the following policies is a risk-averse consumer more likely to choose?
1: Insurance costs $110. It pays out $50 with probability 0.5 and $150 with probability 0.5.
2: Insurance costs $110. It pays out $0 with probability 0.5 and $200 with probability 0.5.
Explain your answer.

(ii) Consumer B has U''(x)/U'(x) that is more negative than consumer A.
Who is more likely to choose insurance policy 1 defined above. Consumer A or Consumer B?
Explain your answer.

(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 is U(X) = X.
Buyers only know that car value is uniformly distributed on (50,150) and their utility is 1.5×X.
Suppose the posted price for used cars is 90. Will consumers buy a car at this price?
Explain your answer.

5. You are given the following Stata output for a sample who had either 0% coinsurance or 95% coinsurance.

```
. describe
Contains data from mt1f16.dta
  obs:            611
 vars:              3                          4 Oct 2016 19:31
 size:          9,776
            storage   display    value
variable name   type    format    label      variable label
-------------------------------------------------------------------------------
out_infl        double  %9.0g                outpatient medical spending in 2011 $
coins0          float   %9.0g                = 1 if 0% coinsurance and = 0 otherwise
coins95         float   %9.0g                = 1 if 95% coinsurance and = 0 otherwise

. ttest out_infl, by(coins95) unequal

Two-sample t test with unequal variances
-------------------------------------------------------------------------------
   Group |     Obs       Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+---------------------------------------------------------------------
       0 |     409    1144.132   78.34698     1584.47       -          -
       1 |     202    743.6596   106.3208     1511.103      -          -
---------+---------------------------------------------------------------------
combined |     611    1011.734   63.5443      1570.714    886.9414   1136.526
---------+---------------------------------------------------------------------
    diff |             400.4723   132.0695                 140.8688   660.0758
-------------------------------------------------------------------------------
    diff = mean(0) - mean(1)                                    t =    3.0323
Ho: diff = 0                        Satterthwaite's degrees of freedom =  417.858

    Ha: diff < 0                   Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.9987          Pr(|T| > |t|) = 0.0026         Pr(T > t) = 0.0013
```

(i) Give the average difference in spending between the two plans.

(ii) Give a 95% confidence interval for the mean difference in spending between the two plans.

(iii) Does a test at significance level 5 percent reject the null hypothesis that mean spending is the same in the two plans? **Explain your answer.**

(iv) Give a 95% confidence interval for the 95% coinsurance plan.
You will need to do some calculation.

(v) Suppose we give the command **regress out_infl**.
Given the above output, what number do you expect the estimated coefficient to equal?

(vi) Suppose we give the command **regress out_infl coins95**.
Given the above output, what number do you expect the estimated coefficient of **coins95** to equal?

4

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

1. Health care expenditure in the United States

a.   has more than tripled as a fraction of GDP since 1930

b.   has more than tripled in real terms since 1930

c.   neither a. nor b.

d.   both a. and b.

2. Major changes in health insurance in the United States include

a.   extensive employer-provided private insurance by the 1920's

b.   extensive public insurance for the elderly and the poor introduced in the 1960's

c.   both a. and b.

d.   neither a. nor b.

3. Compared to other markets health care and health insurance markets are characterized by

a.   uncertainty

b.   asymmetric information

c.   both a. and b.

d.   neither a. nor b.

4. Insurance plans that seek to reduce the moral hazard problem include

a.   HMO

b.   High deductible health plan

c.   both a. and b.

d.   neither a. nor b.

5. A risk-averse consumer has expected annual health costs of $3,000 (with a standard deviation of $5,000). For $5,000 she can purchase a health insurance policy that will cover all her actual health costs. It follows that

a.   she will **definitely buy** the health insurance policy

b.   she will **possibly buy** the health insurance policy

c.   she will **definitely not buy** the health insurance policy

6. In assignment 2 the command **regress out_infl coins0 coins25 coins50 coins95 coinsindiv, noconstant** provided

a.   sample average outpatient spending for each of the insurance plans

b.   the difference between outpatient spending for each of the insurance plans and that in the free plan

c.   neither a. nor b.

d.   both a. and b.