Econ 132 Fall 2019 FIRST MIDTERM EXAM (A): SOLUTIONS Cameron

Version A

1.(a)(i) Expected loss = 0.2×20,000 + 0.8×5,000= $8,000. This is the actuarially fair premium.

(ii) Loading factor = 100×(8,000 – 8,000) / 8,000 = 0.0%.

(b) Individual variance = $0.2 \times (20{,}000 - 8{,}000)^2 + 0.8 \times (5{,}000 - 8{,}000)^2$
$= 0.2 \times 144{,}000{,}000 + 0.8 \times 9{,}000{,}000 = 36{,}000{,}000.$

Variance of group average = 36,000,000/100 = 360,000.
Standard deviation of average loss = sqrt(360,000) = $600.
With probability .95 within two stand. deviation of mean = 8,000 ± 2x600 = (6,800, 9,200).
(or if use within 1.96 standard deviations of mean = 8,000 ± 1.96x600 = (6,824, 9,176)

(c)(i) Insurance pays 80% above the deductible = 0.8 × (4000 – 1000) = $2,400.

(ii) This was similar to assignment 1 exercise where found that there was a subsidy (a monthly premium assistance (tax credit)).

2.(a) False U.S. has higher infant mortality rates.

(b) True Roughly two-thirds.

(c) False It is a bit over one-half.

(d) True Medicare is for old and doesn't cover everything, Medicaid is for poor and one can be old and poor. So can eb covered by both.

(e) True From 5% of GDP to 17% of GDP.

(f) False Virtually all old people are covered by Medicare.

3.(a)(i) FFS. Since paid directly for each service provided.
(ii) HMO. This is a feature of open HMO's – payment per member per month.

(b) Elasticity = $\frac{(2000 - 3000) / [(2000 + 3000)/2]}{(100 - 50) / [(100+50)/2]} = \frac{-1000/2500}{50/75} = \frac{-0.4}{2/3} = -0.6.$
(you can also multiply by minus one, in which case the answer is 0.6).

(c)(i) Require people to purchase on the exchange if they do not have health insurance through other sources such as employer or Medicaid. (Other answers may also be possible).

(ii) Make it easier to qualify for Medicaid. OR Require employers (other than those with few employees) to provide health insurance. (Other answers may also be possible).

4.(a)(i) Risk averse as there is diminishing marginal utility.
E.g. When income increases by 10 from 0 to 10 utility increases by 180, but when income increases by 10 from 40 to 50 utility increases by only 20 (= 500 – 480).,

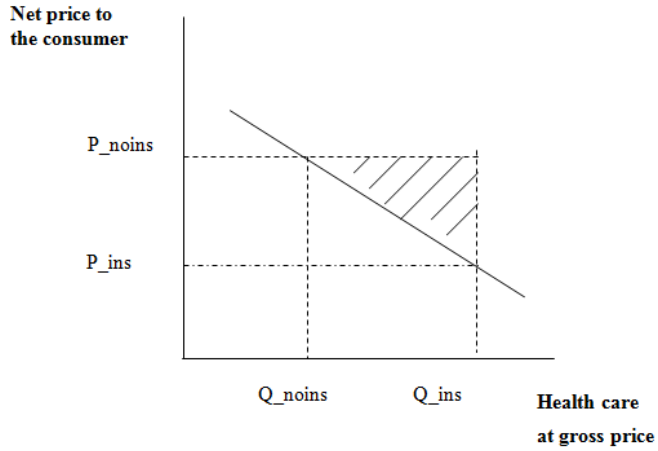
(i) Expected utility $E[U(x)] = 0.2 \times U(0) + 0.8 \times U(50) = 0.2 \times 0 + 0.8 \times 500 = 400.$

(b)(i) Insurer pays out 0 with probability 0.8 and 50 with probability 0.2.
Expected payout = $0.8 \times 0 + 0.2 \times 50 = 10$. Actuarially fair premium = 10.

(ii) Ann has income after insurance of 50 – 20 = 30. U(30) = 420 exceeds expected utility without insurance of 400. Since she is risk averse she will definitely get the insurance.

Version A (Continued)

4.(c)



5.(i) From first output we have 1026.13 ± 1. 96 × 1729.41/sqrt(251) = 1026.13 ± 1.96 × 109.16 = 1026.13 ± 213.95 = (812.18, 1240.8)
(or 1026.13 ± 2 × 1482.23/sqrt(229) = 1026.13 ± 2 × 109.16 = (807.81, 1.244.36).

(ii) Easiest directly from regression output: $522.01 lower in 25% coinsurance plan.

(iii) Yes. This is a t-test on coins25 in the regression output. Reject H0 at level 0.05 as p=0.005 < 0.05. (Or t = -2.79 has |t| > 1.96 so reject H0 at level 0.05).

(iv) In general **regress y** gives the sample average of variable **y.**
So **regress out_infl if coins25 == 0** gives the sample average of **out_infl when coins25 == 0** which from output is $1548.13.

(v) With only two mutually exclusive categories the two coefficients are just the sample means. So coefficient of **coins0** is mean spending in the 0% plan (when **coins25**=0) or $1,548.13.

(vi) No. the histogram from assignment is very right skewed. So not normal.

Multiple choice

Question	1	2	3	4	5	6
Answer	b	b	d	a	a	b

Scores out of 36 **Curve (Indication only: Course Grade is based on Total Score!)**

75th percentile	30	(83 %)	(Ave GPA 2.77 on this curve)		C+	25.5 and above
Median	28.5	(79 %)	A	31.5 and above	C	24.5 and above
25th percentile	24.5	(68 %)	A-	30 and above	C-	23 and above
			B+	29 and above	D+	22 and above
			B	28 and above	D	21 and above
			B-	26.5 and above	D-	19.5 and above