Econ 132 Spring 22 FIRST MIDTERM EXAM (A): SOLUTIONS Cameron

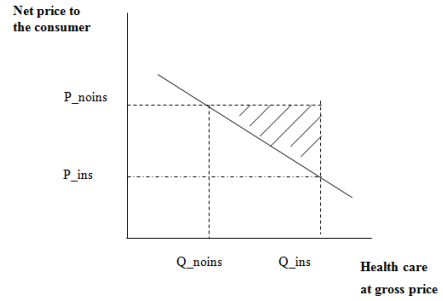
Version A

1.(a)(i) B **(ii)** C

(b)(i) By pooling risk the variability in an average claim is much less than that of each individual claim.

(ii) Because risk averse people prefer a more certain outcome to a less certain outcome, and will give up some money to get the more certain outcome.

(c) Price to consumer falls and health care rises. Shaded area is welfare loss due to moral hazard.



2.(a) False More than $10,000.

(b) True Roughly two-thirds.

(c) False The insurance company pays 60% only after the deductible. It is 0% before then.

(d) False They are higher.

(e) True Medicaid is for poor people.

(f) True

3.(a) Expected loss = 0.9×2,000 + 0.1×12,000= $3,000. This is the actuarially fair premium.
No. A premium of $4,000 is higher than the actuarially fair premium.

(b) Individual variance = $0.9 \times (2{,}000 - 3{,}000)^2 + 0.1 \times (12{,}000 - 3{,}000)^2$
$= 0.9 \times 1{,}000{,}000 + 0.1 \times 81{,}000{,}000 = 9{,}000{,}000.$

Variance of group average = 9,000,000/10,000 = 900.
Standard deviation of average loss = sqrt(900) = $30.
With probability .95 within two stand. deviation of mean = 3,000 ± 2x30 = (2,9400, 3,060).
(or if use within 1.96 standard deviations of mean = 3,000 ± 1.96x30 = (2,941, 3,059)

(c)(i) Positive correlation will increase the variance of the group average, leading to a wider confidence interval.

(ii) John pays 600 + 0.1 × (5,000 – 600) = 600 + 440 = $1,040. So insurance pays $3,960.

4.(a)(i) As coinsurance rate rises from 0% (free) to 95% health care use and expenses fall.

(ii) It is obtained from a randomized experiment (the Rand experiment).

(b) Elasticity = $-\frac{(630 - 534) / [(630 + 534)/2]}{(16 - 31 / [(16+41)/2]} = -\frac{96/582}{-15/23.5} = \frac{01649}{0.6383} = 0.258.$

(c)(i) Advantage: HMO premia are lower. OR HMO out-of-pocket costs are lower.
(ii) Disadvantage: Less choice in care. (Due to gatekeeper and also stay in network).

Version A (Continued)

5.(i) Difference is -406.03 (95% coinsurance is 406.03 less than 0%)

(ii) The 95% confidence interval is (-644.00, -168.07)

(iii) The test statistic is -3.35 with p= .001 < 0.05 so reject the null hypothesis of same mean spending across the plans.

(iv) Yes. (Regression on an intercept and dummy is a difference in means test, which ttest does.)

(v) No. (This gives summary statistics. To get the confidence interval give command **mean out_infl)**

(vi) coins95=1 if on 95% plan. Then the model estimates 1127.43 – 406.03 ×1 = 721.40.

Multiple choice

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

(For question 6 Medicaid was widened but Medicare eligibility was not).

The median for the Stata question was 4 and the average was 3.8.

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

75th percentile	30.5	(85 %)	(Ave GPA 2.73 on this curve)		C+	25.5 and above
Median	27.5	(76 %)	A	32 and above	C	24 and above
25th percentile	25.5	(71 %)	A-	30.5 and above	C-	22 and above
			B+	29 and above	D+	20.5 and above
			B	28 and above	D	19 and above
			B-	27 and above	D-	18 and above