

Version A

1.(a)(i) Either is possible. A risk averse assurance wants to reduce risk (lower coinsurance), but must balance this against the cost of doing so (the price of the insurance policy).

(ii) Covered California.

(b)(i) Carna receives from insurance $0.8 \times (8000 - 5000) = 0.8 \times 3000 = \underline{\$2,400}$.

(ii) This is an example of fee-for-service or indemnity insurance.

(c) $t = (0.90 - 0.72) / \sqrt{0.06^2 + 0.08^2} = 0.18 / \sqrt{0.01} = 0.18 / 0.1 = 1.80$.

Do not Reject H_0 : means are equal, as $|t| < 1.96$.

Conclude that the difference is not statistically significant at significance level 5 percent.

2.(a) True By around five years.

(b) False U.S. spends much more but given this spending has lower life expectancy and greater infant mortality.

(c) False In order it is hospitals, physician, pharmaceutical.

(d) True It is entirely federal funded. In theory funding is from a joint employer / employee and premia for parts B, C, D. In practice also general revenue due to a shortfall.

(e) False HDHP can be FFS, HMO, PPO or POS.

(f) True It is around \$20,000 per year.

3.(a) Mean $E[X] = 0.8 \times 10 + 0.2 \times 60 = 8 + 12 = \underline{20}$.

Variance $V[X] = 0.8 \times (10-20)^2 + 0.2 \times (60-20)^2 = 0.8 \times 100 + 0.2 \times 1600 = 400$.

St. dev. $St.dev.[X] = \sqrt{400} = 20$

For average of 100 individuals, standard deviation of average loss = $20 / \sqrt{100} = 20 / 10 = 2$.

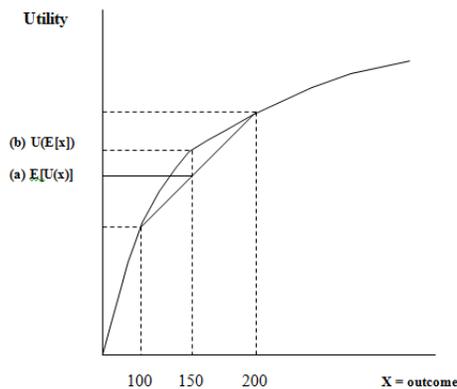
95% confidence interval for average loss is $20 \pm 2 \times 2 = (16, 24)$.

(b) Elasticity = $\frac{(2000 - 3000) / [(3000 + 2000)/2]}{-(100 - 50) / [(100+50)/2]} = \frac{1000/2500}{50/75} = \frac{0.4}{2/3} = 0.6$.

(c) Georges utility function is given:

- Expected utility $E[U(x)] = 0.5 \times U(100) + 0.5 \times U(200)$

- Utility of expected outcome $U(E[x]) = U(0.5 \times 100 + 0.5 \times 200) = U(150)$



Econ 132 – MT1(A) Solutions

4.(a) We move from (Q₁₀₀, P₁₀₀) to (Q₅₀, P₅₀).

(i) Change in health expenditure is C + B + F (equals P₁₀₀ × (Q₅₀ – Q₁₀₀)).

(ii) Moral hazard loss is C (difference between societal cost (P₁₀₀) and maximum willing to pay (given by the demand curve)).

(b)(i) By randomly assigning people to the different insurance plans (so no choice of plan)..

(ii) The 25% plan (with lower coinsurance).

(c)(i) True. (Smaller price elasticity, less responsive to prices, so less effect of increased coinsurance which increases prices).

(ii) True. (This was the motivation for Pauly writing this article)..

5.(i) The 95% plan is the case where coins=1 which is group 1.

From output for Group 1 a 95% confidence interval for mean spending is (616.12, 807.52).

(ii) This is given in the output for diff. A 95% confidence interval for the mean difference in spending between the two plans is (485.45, 820.00).

(iii) Yes. The test statistic is t=7.65 with p=0.000 from the middle test output. Since p < 0.01 we reject the null hypothesis of no difference between the two plans at level 0.01.

(iv) The intercept is 1364.55 and the slope is -652.73.

Reason regression is $y = a + b \times d$.

When d = 0 this yields y = a so a is mean spending on group 0 plan which equals 1364.55.

When d = 1 this yields y = a + b so a + b is mean spending on group 1 plan which equals 817.

Then by subtraction the slope b = (a + b) – a = 711.82 – 1364.55 = -652.73.

(v) Yes. It is 1138.975 from the mean of combined with n = 2364 (=1547+817) observations.

(vi) NO. (It is asymmetrically distributed – right skewed as most people have lowish spending and some have extremely high spending).

Multiple choice

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

Scores out of 36

Curve (Indication only: Course Grade is based on Total Score!)

75 th percentile	29 (79 %)	(Ave GPA 2.70 on this curve)	C+	23.5 and above	
Median	25.5 (71 %)	A	30.5 and above	C	22.5 and above
25 th percentile	22.5 (64 %)	A-	29 and above	C-	21 and above
		B+	27.5 and above	D+	19.5 and above
		B	26.5 and above	D	18.5 and above
		B-	25 and above	D-	17 and above