Econ 132 Winter 2009 FIRST MIDTERM EXAM (A): SOLUTIONS Cameron

Version A

1.(a) We move from (Q_100, P_100) to (Q_50, P_50).

(i) Change in health expenditure is C + B + F (equals P_100 × (Q_50 – Q_100)).
(ii) Moral hazard loss is C (difference between societal cost (P_100) and maximum willing to pay (given by the demand curve).

(b) Demand for health care responds to prices (or responds to the generosity of insurance). There is welfare loss of health insurance due to moral hazard, and this loss is large.

(c)(i) False. See p.536. (Coinsurance reduces overconsumption so insurance premia is lower so may then prefer the insurance).
(ii) True. See p.531. (This was the motivation for Paully writing this article).

2.(a) True Around $2.3 trillion.

(b) False The big increase was in the real cost of each day in hospital, not number of days.

(c) False Combined account for about two-thirds.

(d) False Out-of-pocket is more than 5% of total, plus other such as research.

(e) True

(f) False Medicare is for all elderly – rich or poor. Medicaid is targeted to poor.

3.(a) Actuarially fair premium = expected value = 0.2 x 20,000 + 0.8 × 5,000 = $8,000.

(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 = 36,000,000/10000 = 3,600.
Standard deviation of average loss = sqrt(3,600) = $60.

(c) Health company pays 0.8 × (4000 – 1000) = 0.8 × 3000 = $2,400.

4.(a) See over.

(b) Adverse selection arises if there is a difference between those who buy insurance (high risk, meaning high expected loss) and those who do not (low risk).
This can lead to an insurance death spiral - only the unhealthy buy insurance, premia is high, so the least unhealthy drop out, so premia increases even more, and so on. Ultimately no-one buys.

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

5.(a) $t = (0.80 - 0.72)/\text{sqrt}(0.02^2 + 0.02^2) = 0.08/\text{sqrt}(0.0008) = 0.08/0.028 = 2.83.$
Reject H0: means are equal, as t > 1.96.
Conclude that the difference is statistically significant.

(b)(i) On average little difference between HMO and FFS in quality of care.
(ii) One-time savings of 10-20 percent of health costs, but now back on high annual increases.

(c) PPO: Preferred provider organization; HMO: Health Maintenance Organization; POS: Point-of-service.

Multiple choice

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

Scores out of 36

75th percentile	29	(81 %)
Median	27	(75 %)
25th percentile	25	(69 %)

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

(Ave GPA 2.56 on this curve)

A	31 and above	C+	26 and above
A-	30 and above	C	25 and above
B+	29 and above	C-	23.5 and above
B	28 and above	D+	22 and above
B-	27 and above	D	21 and above
		D-	20 and above

4. Georges utility function is given

(a) Expected utility E[U(x)] = 0.5×U(100) + 0.5×U(200)

Utility of expected outcome U(E[x]) = U(0.5×100 + 0.5×200) = U(150)