

MA123/MA155 Project 2: Expected Value-Insurance: Deductible Plan

(This Project does not represent what normally happens in practice. This is just intended to help you understand expected value.)

Name: _____

Expected Value: $E(X) = \sum x \cdot P(x)$

Paul has options of getting a low- or high-level deductible health insurance plan.

- If Paul chooses the low-level deductible plan, he will have to pay the first \$500 of any medical cost. The low deductible plan cost (premium) \$9,000 per year.
- If Paul chooses the high-level deductible plan, he will have to pay the first \$3,500 of any medical cost. The low deductible plan cost (premium) \$7,000 per year.

To help himself choose a plan, Paul found some statistics about common health problems for people who are comparable to him. Assume that the table below correctly shows the probabilities and total medical costs within the next year.

Medical Cost, x (\$)	Probability, $P(x)$
0	0.01
500	0.10
2500	0.15
5000	0.35
10000	0.20
15000	0.13
25000	0.06

1. (20 pts) Including the cost of insurance, what is Paul's expected total cost with the low-level deductible plan? Round your answer to the nearest cent.
(Place your Excel computations here!)
2. (20 pts) Including the cost of insurance (premium), what is Paul's expected total cost with the high-level deductible plan? Round your answer to the nearest cent.
(Place your Excel computations here!)
3. (15 pts) If Paul wants the best payoff in the long-run and must buy one of the two insurance plans, what plan should he purchase? Low-Level Deductible Plan or High-Level Deductible Plan.
(Place your answer here!)
4. (15 pts) If someone chooses the high-level deductible plan, what would be his/her rational for this choice (Justify your reasoning behind your choice in no more than 3-4 sentences)?
(Place your answer here!)
5. (30 pts) Which plan would you choose for yourself? Low-Level Deductible Plan or High-Level Deductible Plan (Justify your reasoning behind your choice in no more than 3-4 sentences)?
(Place your answer here!)