(5 minutes) List five features of health care markets that Kenneth Arrow identifies as making them different from most other markets.

1. 

2. 

3. 

4. 

5. 

6. (2 minutes) If consumer cost sharing is raised from zero to 100 percent, what prediction would the results from the Rand Health Insurance Experiment (HIE) suggest for the percent change in total health care spending that should be expected?

7. (3 minutes) The Rand HIE found that some services are more elastic to insurance coverage than others. List ONE medical service that is more elastic and one that is less elastic than overall health spending.

More elastic:

Less elastic:

Which of these two services would economic efficiency arguments suggest should be more generously insured?
8. (15 minutes)
a) Mary is risk neutral and has an annual income of $10,000 and no dependents. In the absence of any insurance she spends $4000 per year on medical care (M) and the rest on all other goods (AOG). Assume her indifference curves have the usual convex shape. Draw her uninsured budget constraint, her highest feasible indifference curve, and label her preferred consumption bundle as point A.

b) Mary is now offered health insurance with an annual premium that costs $2500 per year. This plan pays half of the cost of all of her medical expenses (M). Once insured, she chooses to consume $5000 of M. On the same diagram as part a, draw her new budget constraint, her highest feasible indifference curve, and label her preferred consumption bundle B.

c) Explain whether you can predict whether Mary will prefer to purchase this insurance plan or not. If the answer is uncertain, explain why.
9. (15 minutes) Suppose that the marginal cost of medical care is one. The demand for health care is characterized by the following linear function.

\[ M = 4000 - 2000 \cdot c \cdot P^S \]

- \( M \) = annual medical spending
- \( c \) = demand side cost share, the proportion of costs paid by the consumer
- \( P^S \) = the supply price, assumed constant and equal to one

a. Draw the marginal cost curve and the demand curve for medical care \( M \), as a function of the coinsurance rate \( c \), labeling vertical and horizontal intercepts.

b. Calculate the market quantity demanded, total health spending (\( M \)), consumer out of pocket spending, cost to the insurer, and consumer surplus and deadweight loss of the following two cost sharing rates.

<table>
<thead>
<tr>
<th>( c )</th>
<th>Free care</th>
<th>No insurance</th>
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<tbody>
<tr>
<td>( M )</td>
<td></td>
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<tr>
<td>Out of pocket cost</td>
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<td>Cost to insurer</td>
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<td>Consumer surplus</td>
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<td>Deadweight loss</td>
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</table>
10. (10 minutes) Assume that there is no moral hazard problem. There are three types of consumers in a population, all equally likely.

L: Low cost  Health Cost = 0
M: Middle cost  Health Cost = 3,000
H: High cost  Health cost = 12,000

a) What is the expected health cost in this population? What is the actuarially fair premium for insuring the full population?

b) Suppose that all consumers are risk averse, consumers do not know their health type when buying insurance. An insurer offers to reimburse all enrollees for their health costs while charging the actuarially fair premium for the full population. Who will purchase insurance and what will the health plans profits be?

c) Suppose now that consumers are risk neutral, and know their health type when they are buying insurance. An insurer offers to reimburse these three types of consumers for their health costs while charging the actuarially fair premium for the full population. Who will purchase insurance and what will the health plans profits be?
11. (10 points) Assume that $Y$ is income and that Karina has a utility function of $U = Y^{1/2}$ (the square root of income $Y$). Her losses when sick are not subject to any moral hazard problem.

Karina has an initial endowment of 25, with a probability $p = .5$ of losing 16, and $p = .5$ of losing nothing.

a) What is her expected income?

b) What is her expected utility?

c) At what income for sure will she be as well off as she is now facing this uncertain stream of income?

d) What is the maximum total premium that she will be willing to pay for full insurance?