

DEMAND FOR HEALTH CARE





DEMAND FOR HEALTH CARE

- “Derived” demand
- e.g.) car producers demand labor, steel, computer components, etc. It demands all of those inputs, not because the firm cares about hiring labor or buying steels, but those inputs hold to produce the end product.
- **The demand for healthcare is demand derived from the demand to be _____.**



1

ELASTICITY OF HEALTH CARE

ARE PEOPLE PRICE-SENSITIVE TO HEALTH
CARE?





DEMAND CURVE FOR HEALTH CARE

- Fundamental question in HE
- Downward sloping?
- How steep is the slope?
- How sensitive are we to the price of health care?

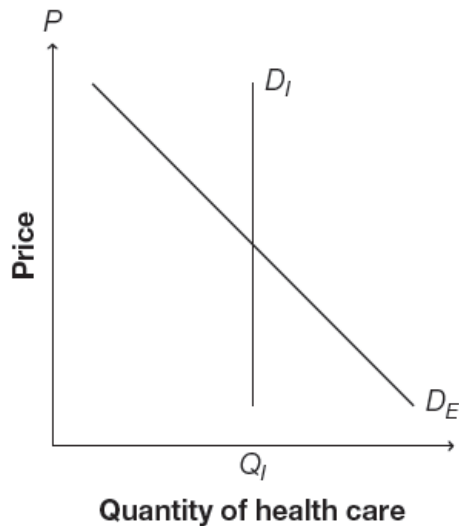


Figure 2.1. A price-inelastic demand curve, D_I , and price-elastic one, D_E . This chapter discusses which curve more accurately resembles the demand for health care.



What would be the health care goods/services that have the **elastic** demand?

What would be the health care goods/services that have the **inelastic** demand?





DEMAND CURVE FOR HEALTH CARE

- If the price of health care goes **down**
 - Would people seek **more** health care?
 - Would people become **healthier** because they seek more healthcare?
- Tremendous implications for health care reform and policy





We need randomized experiments!

- Can we simply compare those insured vs uninsured?
- Or insured with high coverage vs insured with low coverage?
- Why need experiment?
- RAND Health Insurance Experiment (HIE)
- Oregon Medicaid Experiment



2

RAND Health Insurance Experiment (HIE)

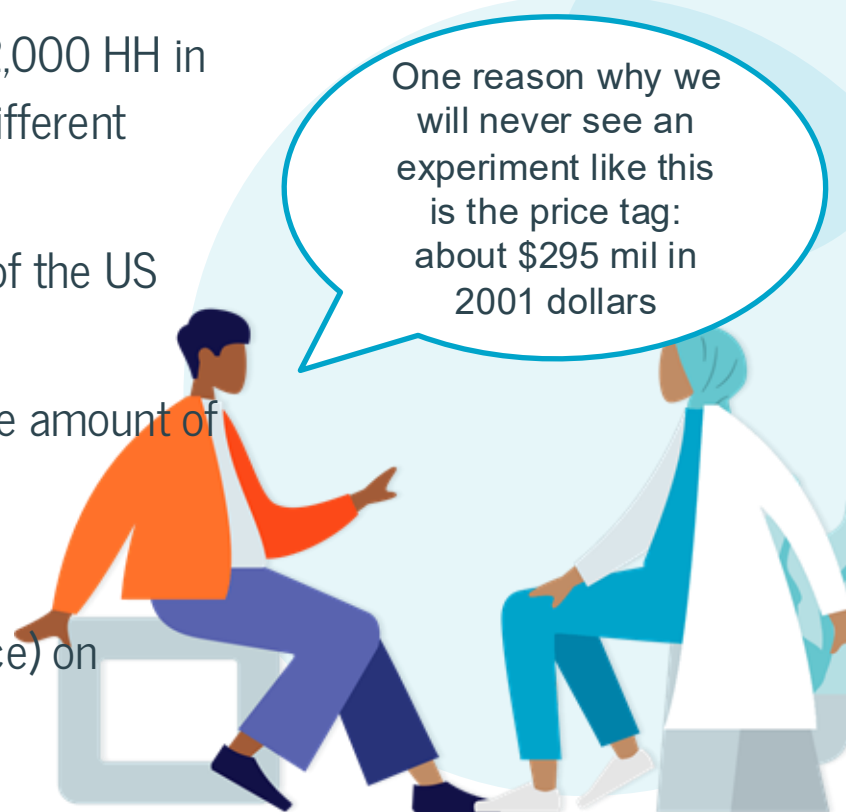


RAND HIE basics



Between 1974-1981, 5,800 individuals from 2,000 HH in six cities were randomly allocated to receive different insurance plans

- People were selected as to be representative of the US population
- The main difference between the plans was the amount of **cost-sharing**:
 - 0% (free), 25%, 50%, 95%
- What is the impact of cost-sharing (coinsurance) on quantity demanded?
- $P = \text{_____}$, $Q = \text{_____}$
- Remember that in the RAND HIE, nobody was uninsured



One reason why we will never see an experiment like this is the price tag: about \$295 mil in 2001 dollars

Table 1

Plan Summary Statistics and Refusal and Attrition Rates

Plan	Individuals (families)	Average out-of-pocket share ^c	Share refusing enrollment	Share attriting	Share refusing or attriting
Free Care	1,894 (626)	0%	6%	5%	12%
25% Coinsurance	647 (224)	23%	20%	6%	26%
Mixed Coinsurance ^a	490 (172)	28%	19%	9%	26%
50% Coinsurance	383 (130)	44%	17%	4%	21%
Individual Deductible ^b	1,276 (451)	59%	18%	13%	28%
95% Coinsurance	1,121 (382)	76%	24%	17%	37%
All plans	5,811 (1,985)	34%	16%	10%	24%
<i>p</i> -value, all plans equal			< 0.0001	< 0.0001	< 0.0001
<i>p</i> -value, Free Care vs. 95%			< 0.0001	< 0.0001	< 0.0001
<i>p</i> -value, Free Care vs. 25%			0.0001	0.5590	0.0001
<i>p</i> -value, 25% vs. 95%			0.4100	0.0003	0.0136

Notes: "Coinsurance rate" refers to the share of the cost that is paid by the individual. In the 25 percent, mixed, 50 percent, and 95 percent coinsurance rate plans, families were assigned out-of-pocket maximums of 5 percent, 10 percent, or 15 percent of family income, up to a limit of \$750 or \$1,000. In the individual deductible plan, the out-of-pocket maximum was \$150 per-person up to a maximum of \$450 per family. The sample counts for the 95 percent coinsurance rate plans include 371 individuals who faced a 100 percent coinsurance rate in the first year of the experiment. Refusal and attrition rates are regression-adjusted for site and contact month fixed effects and interactions, because plan assignment was random only conditional on site and month of enrollment (see Newhouse et al. 1993, appendix B). "Contact month" refers to the month in which the family was first contacted by the experiment and is used in lieu of month of enrollment because month of enrollment is available only for individuals who agreed to enroll. Refusal and attrition rates exclude the experiment's Dayton site (which accounted for 1,137 enrollees) because data on Dayton refusers were lost. An individual is categorized as having attrited if he leaves the experiment at any time prior to completion.

^a The "Mixed Coinsurance" plan had a coinsurance rate of 50 percent for dental and outpatient mental health services, and a coinsurance rate of 25 percent for all other services.





Different measures of Care

Outpatient Care

Medical care that does not involve an overnight hospital stay

e.g.) runny noses, minor broken bones

Inpatient care

Medical care requiring overnight stays

e.g.) serious surgeries or conditions that require overnight recovery or monitoring

ER visits

Care involving the emergency room

e.g.) heart attacks, strokes





RAND HIE MAIN FINDINGS

Overall elasticity

: -0.2

A 10% increase in copays reduces quantity
demanded by _____

The law of demand holds in health care!





RAND HIE MAIN FINDINGS: Outpatient care

(a)

Avg # of annual episodes by condition

Plan	Total	Acute	Chronic
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Free	2.99	2.29	0.70
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25%	2.32	1.78	0.54
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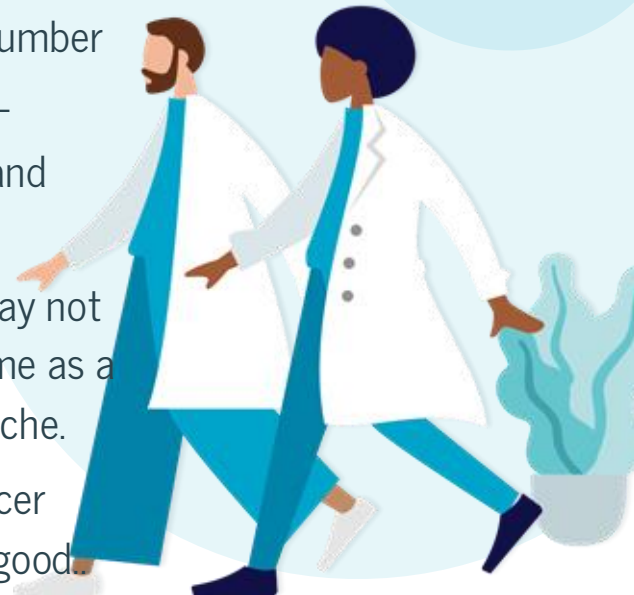
50%	2.11	1.60	0.51
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95%	1.90	1.44	0.46
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Outpatient care

As copayments increased, the number of outpatient episodes -----

- Both for chronic conditions and acute conditions:
- So a person with diabetes may not visit the doctor as much; same as a person who has a bad headache.
- Or people might skip on cancer screening; that's clearly not good.





RAND HIE MAIN FINDINGS: Inpatient care

(a)	
Plan	Avg # of Annual Visits
Free	0.133
25%	0.109
50%	0.099
95%	0.098

Inpatient care

Demand is still downward-sloping but *less* elastic than demand for outpatient care





RAND HIE MAIN FINDINGS: ER Visits

(a)	
Plan	Probability of ER use
Free	22%
25%	19%*
50%	20%
95%	15%**

* Indicates significantly different from the free plan at the $p = 5\%$ level.

** Indicates significantly different from the free plan at the $p = 1\%$ level.

ER Visits

- As copayments increased, ER visits _____.
- ER visits would be more inelastic
- Even for emergency room care – likely the most urgent kind – those on the highest copayment plan in the RAND HIE were *less* likely to buy care!

Remember, there was a cap to out of pocket expenses; it's not that they had to pay 95% of price, for example





RAND HIE MAIN FINDINGS: Pediatric care



Table 2.5. *Percentage with preventative pediatric care over three years, by age and care type.*

	0–6 years		7–16 years	
	Immunization	Any preventative	Immunization	Any preventative
Free	58.9	82.5	21.2	64.8
Copayment	48.7*	73.7*	21.7	59.6

* Statistically significant discrepancy from free plan.

Source: Newhouse (1993). With permission from RAND.



RAND HIE MAIN FINDINGS: Mental Health

Table 2.6. *Per-capita mental health expenditures, by plan type.*

Plan	Mean expense (\$)	Percentage of free plan
Free	42.2	—
25%	28.4	67%
50%	13.1	33%
95%	18.1	43%

Source: Newhouse (1993). With permission from RAND.



RAND HIE MAIN FINDINGS: Dental care

Table 2.7. *Dental care utilization by income level.*

	Low-income group [†]		High-income group [†]	
	Percentage with any use	Average expenditures (\$)	Percentage with any use	Average expenditures (\$)
Free	57.8	317	74.7	339
95%	39.8*	216*	61.3*	234*

* Statistically significant discrepancy from free plan.

† The low-income group comprises the third of households with the lowest incomes. The high-income group comprises the third of households with the highest incomes.

Source: Newhouse (1993). With permission from RAND.

The law of demand holds for both income groups!

3

Oregon Medicaid Experiment





Oregon Medicaid Experiment 2008

- Two groups of low-income adults
 - Lottery winners to enroll in Medicaid vs Lottery losers
 - Not all winners actually enrolled
- What was randomized was the **opportunity** to enroll in Medicaid, not receiving Medicaid
 - What would be the issue with this?





for program eligibility at sign-up for the lottery. A total of 89,824 individuals were placed on the list during the five-week window it was open.

The state conducted eight lottery drawings from the list with roughly equal numbers selected from each drawing; the drawings were fairly evenly spaced from March through September 2008. Selected individuals won the opportunity—for themselves and any household member (whether listed or not)—to apply for OHP Standard coverage. Treatment thus occurred at the household level. In total, 35,169 individuals—representing 29,664 households—were selected by lottery. If individuals in a selected household submitted the appropriate paperwork within 45 days after the state mailed them an application and demonstrated that they met the eligibility requirements, they were enrolled in OHP Standard.⁴ About 30% of selected individuals successfully enrolled. There were two main sources of slippage: only about 60% of those selected sent back applications, and about half of those who sent back applications were deemed ineligible, primarily due to failure to meet the requirement of income in the last quarter corresponding to annual income below the poverty level, which in 2008 was \$10,400 for a single person and \$21,200 for a family of four (Allen et al. 2010). If they did successfully enroll in OHP Standard, individuals could remain enrolled indefinitely, provided that they recertified their eligibility status every six months.



Key difference with RAND HIE

- Those who got Medicaid incur copays, which are low or zero
- Lottery losers: presumably had no insurance and must pay out-of-pocket
- Very different setting & population
 - 1980s vs 2008
 - US representative sample vs Oregon





OREGON MEDICAID MAIN FINDINGS

Similar to RAND's for outpatient, but not so much for inpatient and ER: More price-sensitive for outpatient care than inpatient care or ER visits

Outpatient care

More visits for winners, Less visits for lottery losers

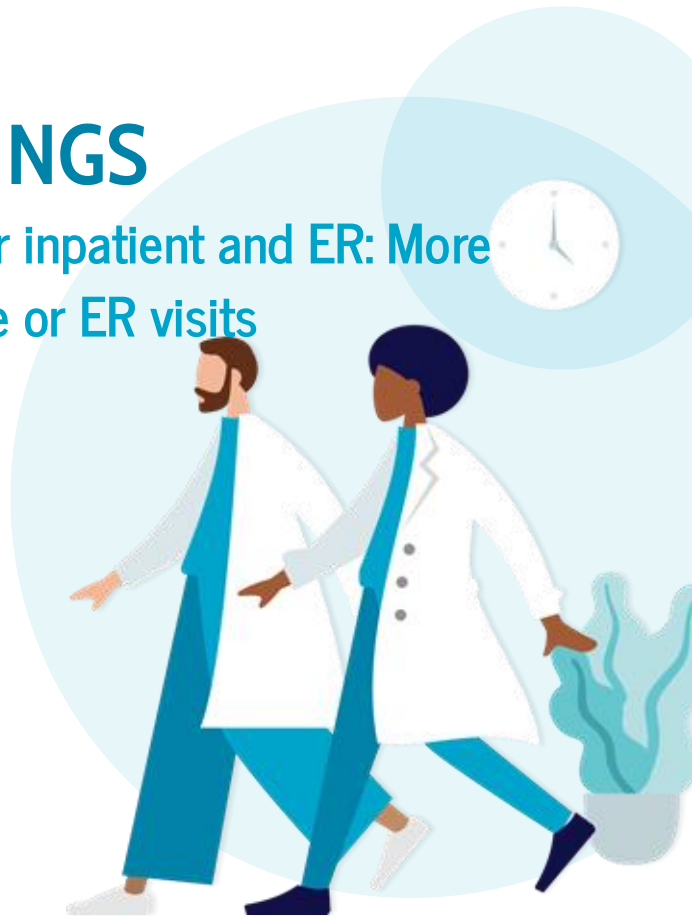
Inpatient care

More visits for winners, Less visits for lottery losers

- But the difference was NOT statistically significant

ER visits

No statistically significant diff between the two groups



4

Does the Price of Health Care affect Health itself?





How would you want to measure “Health” outcome?

Both RAND and Oregon experiments did not find a significant difference in health across different groups

** 10% difference of mortality rate between **high-risk** participants on free and cost-sharing plans (people on free plan less likely to die)



RAND HIE

- Generally, no health differences between people on free plan vs. cost-sharing!
- **Only statistically significant difference between plans were in blood pressure, myopia, & presbyopia

Table 2.10. *Health indicators by insurance plan in the RAND HIE.*

Condition	Free plan	Copay plan
FEV ₁ ^a	95.0	94.8
Diastolic blood pressure (mm Hg)	78.0	78.8*
Cholesterol (mg/dl)	203	202
Glucose (mg/dl)	94.7	94.2
Abnormal thyroid level (% of sample)	2.4	1.7
Hemoglobin (g/100 ml)	14.5	14.5
Functional far vision (Snellen lines)	2.4	2.5*
Functional near vision (Snellen lines)	2.35	2.44*
Chronic joint symptoms (% of sample)	30.0	31.6

^a FEV is forced expiratory volume in 1 second.

* Indicates significantly different from the free plan at the $p = 5\%$ level.

Source: Newhouse (1993). With permission from RAND.

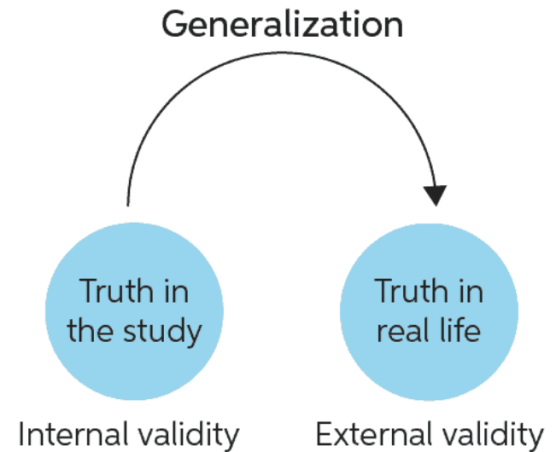
OREGON MEDICAID



- Lottery winners self-reported better overall health, more healthy days, and lower rates of depression
- Discrepancy with RAND HIE may be because Oregon Medicaid Study worked with the very low-income, while RAND HIE studied a broader cross-section of the U.S.

Internal vs External Validity

- Internal validity: the degree of confidence that the causal relationship being tested is trustworthy and not influenced by other factors
- External validity: the extent to which results from a study can be applied (generalized) to other groups, situations, times.



GROUP ACTIVITIES



- Can you criticize the RAND HIE and Oregon Medicaid Experiment? Do you really believe their findings? Are there any limitations to the experiments? How could you improve them?
- What are the policy implications of RAND HIE and Oregon Medicaid Experiment?
 - Why can't we just provide free health insurance plan for all?

5

Evidence from non-experimental studies from US





Non-randomized experiment evidence

- U.S. Medicare
 - Citizens are eligible for health insurance through Medicare when they turn 65 but not before
 - If demand for health care is downward-sloping, we expect a jump in health care usage at age 65
 - This is known as a **discontinuity study**
 - There is a discontinuity in health insurance at age 65





Does Medicare Save Lives? (QJE, 2009)

- Card et al. have two main findings:
 - **Unplanned** emergency department admissions follow a linear trend around the age of 65
 - Other hospital admissions *jump* up at the age of 65
- There is a discontinuity in medical usage at the same point of discontinuity in Medicare coverage!
- This is further evidence that demand for health care is sensitive to price





Find a **cutoff** (age, birthweights, mmHg, BMI index, income thresholds, nights at hospital), which introduces **a jump in health care utilization or treatment or health care cost**





Jonathan Zhang

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...

<https://www.youtube.com/watch?v=TZawOf27I9s>



I'm watching The Office and this entire episode (s6e17) revolves around Pam delaying going to the hospital until midnight so her insurance company covers 2 full nights. I'm jumping up and down screaming Almond and Doyle AEJ 2011!

Plot [[edit](#)]

Pam Halpert ([Jenna Fischer](#)) and **Jim Halpert** ([John Krasinski](#)) both acquire sales while making small talk about their baby's upcoming birth. **Dwight Schrute** ([Rainn Wilson](#)) wants to do the same and asks **Angela Martin** ([Angela Kinsey](#)) to be the mother. Angela is initially excited, but becomes annoyed after Dwight draws up a parenting contract with absurd demands he wants her to agree to.

Michael Scott ([Steve Carell](#)) anxiously waits for Pam and Jim's baby to be born; Jim urges Pam to let him take her to the hospital, but Pam would rather wait until midnight like she and Jim wanted to do initially (arriving after midnight means a longer hospital stay under the terms of their health insurance). She finds comfort in watching the rest of the office performing absurd activities to distract her from the pain. When Jim reaches his breaking point, Pam reveals that their baby is a girl, which calms Jim's nerves a bit, but then she tells him that her water broke.



CONCLUSION

- Demand curves for health care are downward sloping
 - Quantity of care demanded **responds** to price
- **BUT** generally, price of health care does not seem to affect one's health
 - Exception is that price seems to affect the most vulnerable segments of the population (low-income, high blood pressure, etc.)
- Policy and health insurance implications?

