

**SPEA-V-202**

Contemporary Economic Issues in Public Affairs

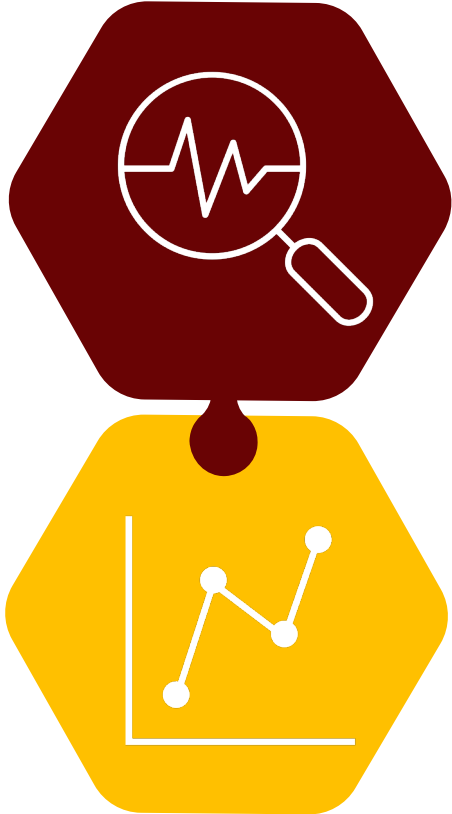
## **Health Care and Insurance II**

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# Outline for Today



## Risk Aversion and Moral Hazard

- Imperfect information and moral hazard
- Moral Hazard and overconsumption of health care

## Health care in the US

- Medicaid
- Medicare
- International Comparison



# Summary of Main Concepts

- **Imperfect Information:** the difference in information available to sellers and buyers in the market.
- **Adverse Selection:** insured individuals know more about their risk level than the insurer. Hence, those more likely to experience adverse outcomes (less healthy) are more prone to buy insurance.
- **Moral Hazard:** when you insure individuals against adverse events, you can encourage adverse behavior.
  - Behavior induced/encouraged by insuring against an adverse event.
  - Example: if individuals have health insurance, they may be less likely to take precautions against getting ill.
- **Risk Aversion:** the degree to which consumers are willing to bear risks.



# More on Imperfect Information

**Example:** suppose we have a pool of 10 individuals: 4 sick and 6 healthy (hence  $\Pr(\text{Sick}) = 0.4$ ). Medical costs in case of an adverse event are estimated in \$20. Since insurers cannot tell who is healthy and who is not, so they assume it is like a coin toss.  $\Pr(\text{Sick}) = 0.5$ .

Exp U	Perfect Information (Efficiency)	Imperfect Information (Market Failure)
Probability of being sick	$\Pr(\text{Sick}) = 0.4$	$\Pr(\text{Sick}) = 0.5$
Expected Costs	$4 \times 20 = 80$	$5 \times 20 = 100$
Premium	$80/10 = 8$	$100/10 = 10$

**Takeaway:** under the presence of asymmetric information, insurance companies might assign a wrong probability to the adverse events, increasing the prices faced by everyone (both low-risk and high-risk individuals).



# More on Imperfect Information: Risk Aversion

Further suppose that out of the 6 healthy individuals: 2 are **risk-averse** and 4 are **risk-takers**. Risk-averse people, in general, are more willing to pay for insurance.

- Suppose that risk-averse are willing to pay up \$11 for insurance, while the others are willing to pay their actuarially fair premium. Since  $\Pr(Sick) = 0.4$ , such price is \$8.
- Free market exchange leads to a price of \$10 per insurance contract. In this case, risk-taker individuals will not buy insurance (exit the market) because the price is above their maximum WTP.
- **Note:** the market failure has two effects:
  - Increases the price above the actuarially fair premium for healthy individuals.
  - Leads risk-takers to be uninsured (there is underinsurance in the economy).



# Death Spiral of Insurance Companies

**Same setting:** pool of 10 individuals: 4 sick and 6 healthy. Medical costs = \$20. Since insurers cannot tell who is healthy and who is not, they assume  $p=0.5$ , which leads to a price of \$10 per contract. Of the 6 healthy individuals: 2 are **risk-averse** (max WTP=\$11) and 4 are **risk-takers** (max WTP=\$4).

- **Year 1:** If the company sells insurance at premiums of \$10, only 6 people will get insurance. So, the pool of money raised to cover medical expenses is \$60. However, if all 4 sick people cash their contract, total medical expenses are \$80. So, the insurance company loses \$20.
- **Year 2:** Considering last period it was \$20 short, the insurer thinks he underestimated the riskiness of the pool (i.e. number of high-risk patients). In response, he increases the price of insurance by \$2 (from \$10 to \$12). However, at \$12, only 4 people get insurance, so the pool of money raised is \$36. If all 4 sick people cash their contract, total medical expenses are \$80, and the insurance company loses \$54.

**Takeaway:** so long the insurer is not able to distinguish between patients, it has incentives to increase prices. But that crowds-out the healthy population! increasing the risk of the pool along with expected health care costs. Supplying insurance leads to losing money, so in response the insurer keeps increasing prices, amplifying the crowding-out effect on the market.



# Solutions to this problem

- **Problem:** free-market exchange leads to underprovision of insurance and could potentially lead to the collapse of the market.
- **Government intervention:** fill the gaps in private provision.
  - Publicly provided healthcare/health insurance (Medicaid, Medicare)
  - Subsidy to companies providing private insurance.



# Health Care in the United States

The U.S. health care system is a mix of public, private, and non-profit providers.

## Public Provision (Government)

- Medicaid
- Medicare

## Private Provision

- Employer Provided Insurance
- Self-purchased Insurance

## Uninsured Population

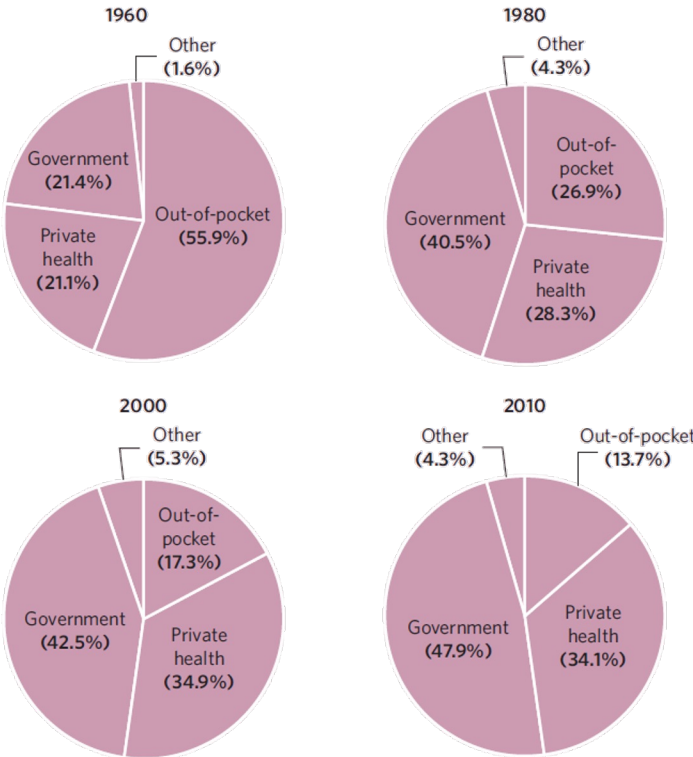


FIGURE 13.3

### SOURCES OF FUNDS FOR PERSONAL HEALTH CARE EXPENDITURES, SELECTED YEARS

Americans pay a relatively small percentage of health care costs out of pocket, and the share of such payments has been falling in recent decades. "Other" includes spending by charitable organizations and industrial on-site health services.

SOURCE: Centers for Medicare and Medicaid Services, Office of the Actuary, National Health Statistics Group, *National Health Expenditure Accounts, 1960–2010*.

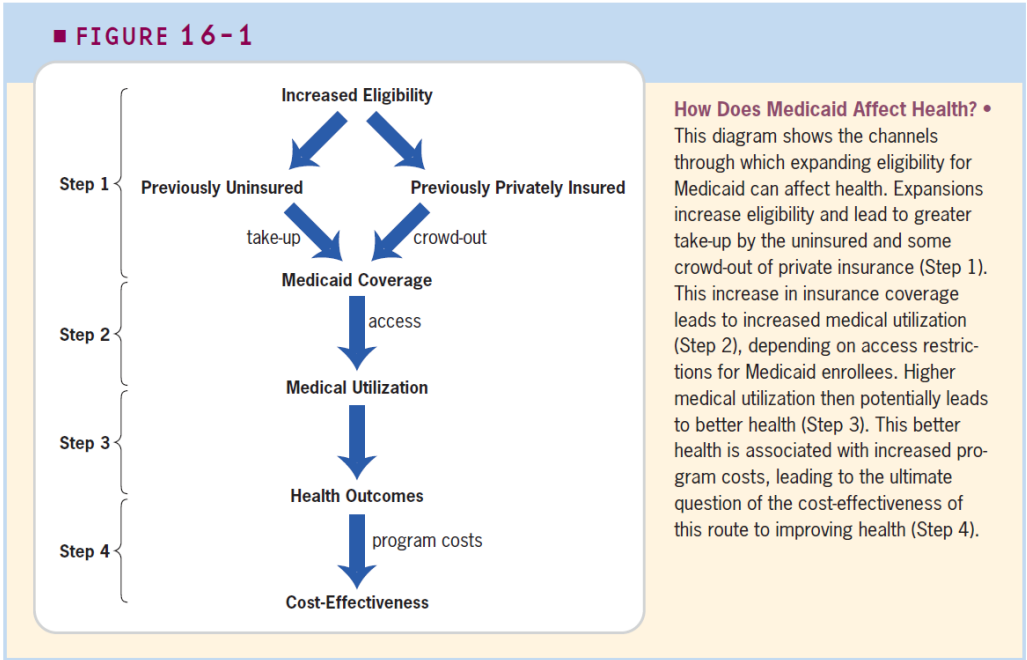
Source: Stiglitz and Rosengard Ch 13





# Government Intervention in health care markets

Increasing insurance coverage aims to improve health outcomes in the population.



Thinking like an economist: insurance coverage should be expanded so long the marginal benefits (improved health) outweigh the marginal costs (health care costs).

Source: Gruber Ch 16



# Medicaid

- Major public health expenditure program which provides health care for people experiencing poverty, targeting several specific groups:
  - People that qualify for cash welfare programs (e.g. single mothers and their children).
  - Most low-income pregnant women and children.
  - Elderly and disabled population.
- Financed by the federal and state governments. Federal spending is progressive in this policy: low-income states observe higher participation of federal funds financing the program.
- For providers, Medicaid works like private insurance: reimbursement for the services provided to enrollees. However, reimbursement rules differ across states.



# Medicare

- Major public health expenditure program which provides health care for all people over age 65 and disabled persons under age 65.
- Every citizen who has worked for 10 years or more in Medicare-covered employment is eligible for Medicare at age 65.
- Medicare has three components: hospital insurance (part A), supplementary medical insurance (part B) and prescription drugs (part D). It is financed by a 2.9% payroll tax.
- Eligibility and benefits differ across states. Hence, states bear some of the costs of the program.



# Medicaid and Medicare

■ TABLE 16-2

Medicaid and Medicare		
	Medicaid	Medicare
Eligibles	Families on welfare Low-income children, pregnant women Low-income elderly, disabled	Retirees and spouses 65 and older Certain disabled individuals under 65 People with kidney failure (requiring dialysis or transplant)
Premiums	None	Hospital coverage: none Physician coverage: \$66.60 per month Prescription drug coverage: Variable
Deductibles/copayments	None (or very small)	Hospital coverage: \$1,068 deductible for first 60 days Physician coverage: \$135 deductible, 20% coinsurance Prescription drug coverage: Variable
Services excluded	None (or very minor)	Prescription drugs (until 2006) Routine checkups, dental care, nursing home care, eyeglasses, hearing aids, immunization shots
Provider reimbursement	Very low	Moderate (but falling)

Medicaid provides health insurance for low-income individuals, covering a wide range of health services at little cost to those individuals. Medicare provides health insurance for those age 65 and over, covering many, though not all, health services at some cost to those individuals.

Source: Gruber Ch 16

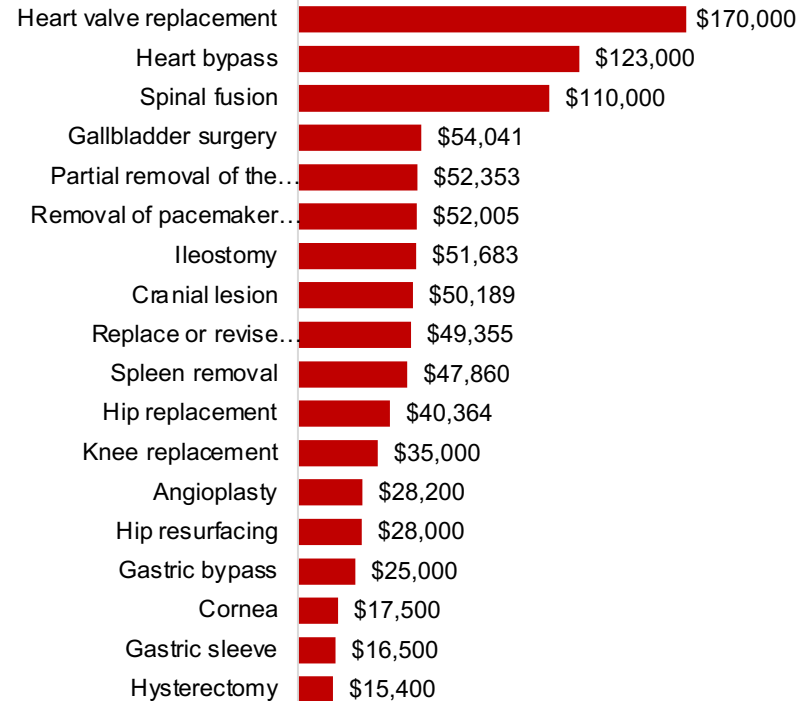


# Health care costs and insurance

## Getting sick is expensive!

- The costs of some medical procedures are way larger than the annual income per capita in the US ([\\$35K](#)).
- So, if you require any of these procedures your yearly income might not be large enough to afford them.
- More importantly, most of these medical procedures **are not chosen by individuals!** No one chooses their propensity for some conditions (e.g. diabetes, heart problems).
- Insurance alleviates the financial burden of medical events. However, by doing so creates a distortion on individual's behavior.

## Average Out-of-Pocket Costs of Surgery (2020)



Source: <https://www.talktomira.com/post/how-much-does-surgery-cost-without-insurance>



# Uninsured population and the “job lock”

- Some individuals might be afraid of moving to another job where they could be more productive if they risk losing health insurance coverage.
- Think about risk-takers and risk-averse individuals, and the intuition behind the “benefit-cliff”.
- If the opportunity cost of switching jobs is too high, then individuals might be unwilling to move. In this case, the opportunity cost is determined by the costs of healthcare. This leads to the **job lock**.
- **Job lock:** the unwillingness to move to a better job for fear of losing health insurance.
- This leads to a DWL because resources in the economy are not efficiently allocated (e.g. some people could be earning more by providing goods and services in a more productive way).



# Moral Hazard: Patient's Side

**Example:** suppose there are 2 patients with the same demand for healthcare, but different insurance policies. Both patients require medical treatment. A new experimental drug was developed that seems to be more effective but costs \$50K. Suppose both patients chose this new treatment. How does this reflect on the costs borne by the insurer and the patients?

Payments	Treatment = \$50K
Policy A: Coinsurance Rate 50% (i.e. the patient pays half of the medical bills).	Patient: 25 Insurer: 25
Policy B: Deductible of \$5k (i.e. the patient pays the first \$5K of the medical bills).	Patient: 5 Insurer: 45

Policy B caps the payment made by the patient. Hence, for costs above his deductible (\$5K) he is no longer price responsive (e.g. perfectly inelastic demand). Everything else constant, he will consume the best treatment, regardless of the cost. Moreover, under Policy B the insurer pays \$20 more relative to Policy A.

**Main Takeaway:** When individuals buy insurance, they no longer pay the full costs of health care, hence incentivizing them to consume more than they would if they faced the full costs.



# Moral Hazard: Patient's Side

**Moral hazard:** individuals are more willing to take risks if they know they are insured.

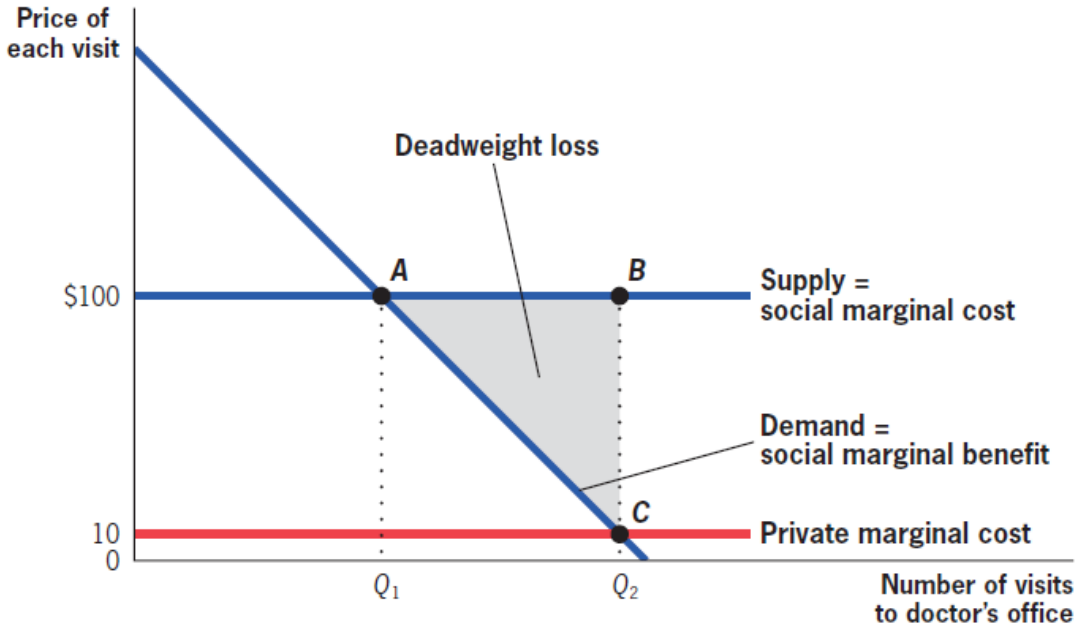
- Key Idea: When individuals buy insurance, they no longer pay the full costs of health care.
- Recall our externalities framework. Under the presence of an externality, social marginal benefits/costs differ from private marginal benefits/costs. Thus, leading to over/underconsumption of some good.
- Imperfect information has a similar on the demand/supply curves: they no longer reflect accurately society's WTP/WTS.
- We can use the same framework to analyze this problem.





# Moral Hazard: Patient's Side

■ FIGURE 15-3



**Patient-side Moral Hazard** • With no insurance, at a cost of \$100 per visit, individuals would consume  $Q_1$  doctor's office visits, where marginal costs and benefits are equal. With only a \$10 copayment, however, individuals consume  $Q_2$  worth of visits, where private marginal costs equal social marginal benefit; this overconsumption of health care leads to a deadweight loss of ABC.

Source: Gruber Ch 15



# Moral Hazard: Patient's Side

- The previous example highlights how moral hazard leads to increased healthcare costs.
- **Moral Hazard:** with insurance, individuals spend too much on healthcare.
- The issue is not so much the increase in costs, but that at the margin the costs might outweigh the benefits. There is a concern that excessive insurance (due to government policies) explains the large healthcare costs in the US.
- The key question, however, remains to be whether incremental healthcare expenditures derive on marginal benefits at health outcomes (Gruber's Figure 16-1, Step 4).
- **In summary:** information asymmetries have two main effects in health care markets:
  - Underprovision of insurance (adverse selection).
  - Overconsumption of health care (moral hazard).

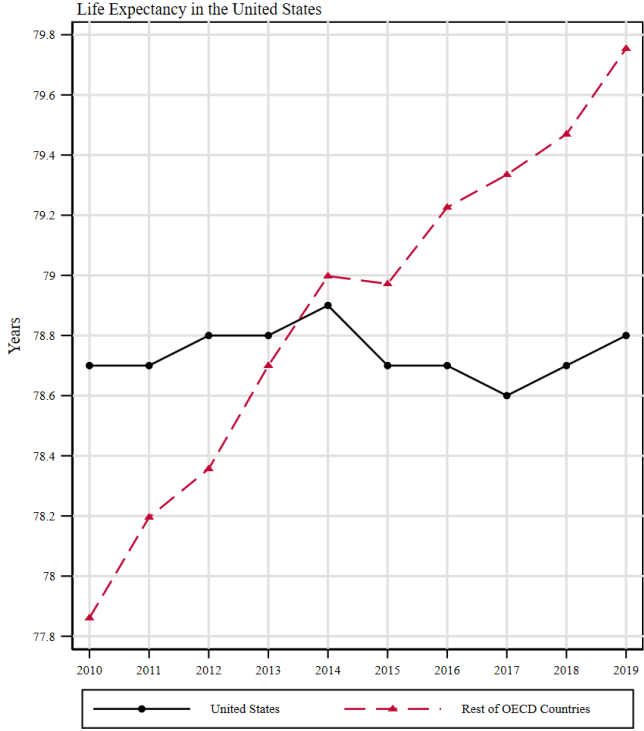
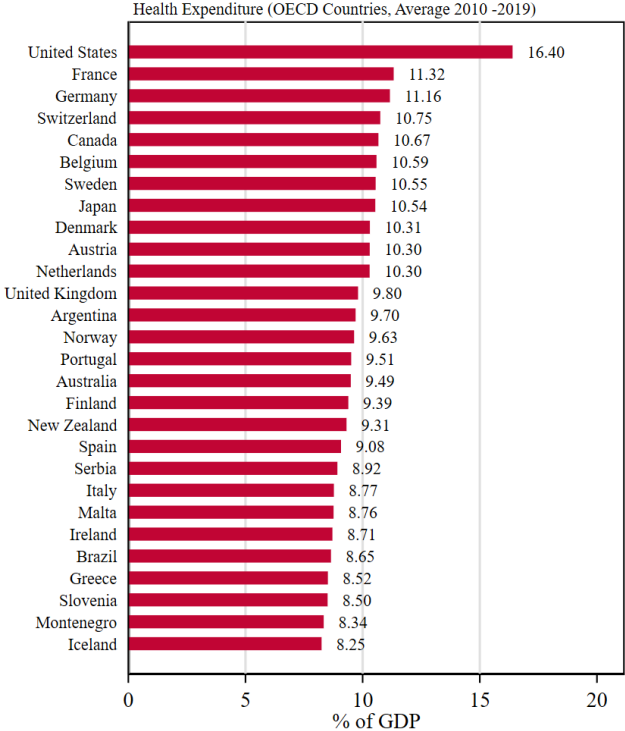


# Healthcare in the US: International Comparison

- The United States is one of the countries that spend the most on healthcare.
- However, health outcomes in the United States are poorer than those in other advanced economies that spend a fraction of the amount spent in the US.
- Potential causal mechanisms: lifestyle decisions (U.S. also leads in obesity incidence) and income inequality (there is still population without healthcare due to insufficient income).
- Takeaway: there is room for improvement in the efficiency and effectiveness of US's healthcare sector.

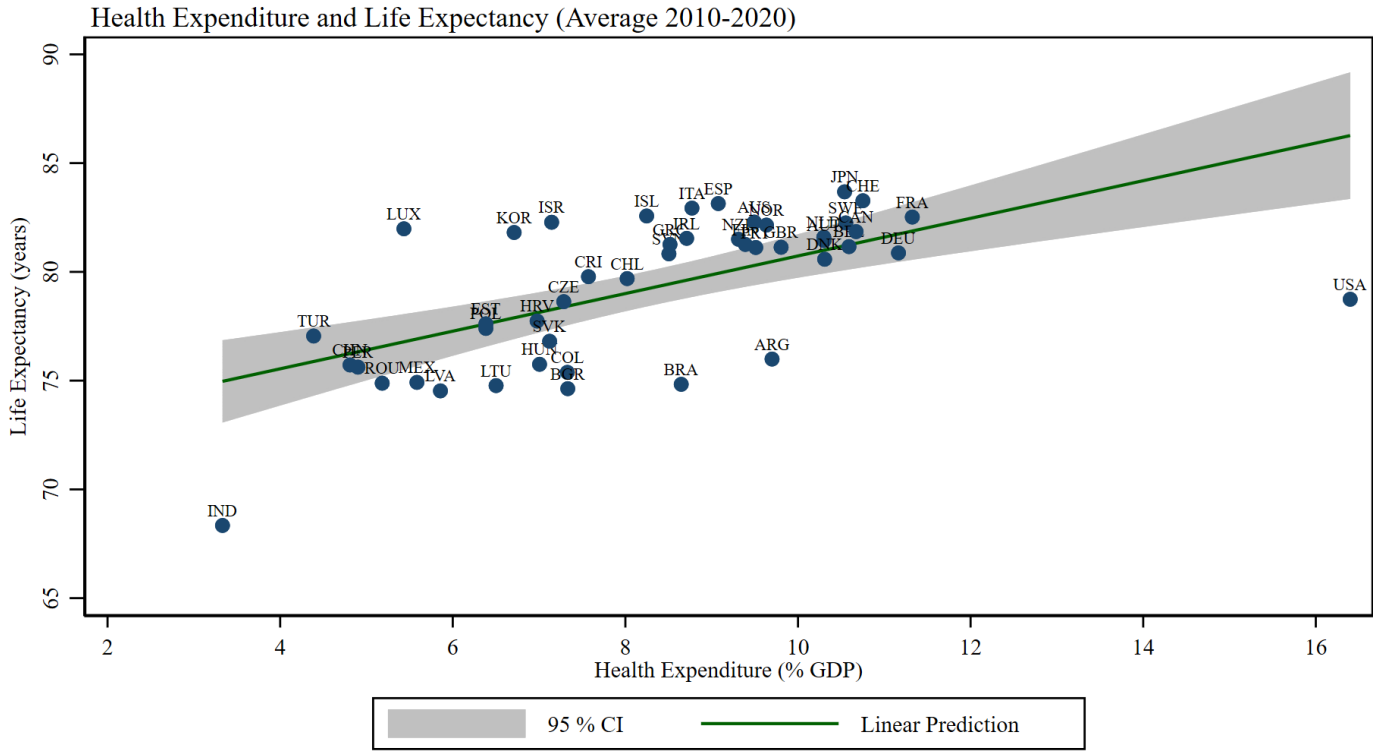


# Healthcare and Life Expectancy in the United States



<https://stats.oecd.org/Index.aspx?ThemeTreeId=9>

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# For Next Class

- **Next class:** Monopoly and Anti-trust Regulation
- **Readings:** Mankiw Ch 15.



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