

# Health(care) Economics

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## National Economic Education Delegation

- **Vision**

- One day, the public discussion of policy issues will be grounded in an accurate perception of the underlying economic principles and data.

- **Mission**

- NEED unites the skills and knowledge of a vast network of professional economists to promote understanding of the economics of policy issues in the United States.

- **NEED Presentations**

- Are **nonpartisan** and intended to reflect the consensus of the economics profession.



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## Who Are We?

- **Honorary Board: 49 members**

- 2 Fed Chairs: Janet Yellen, Ben Bernanke
- 6 Chairs Council of Economic Advisers
  - o Furman (D), Rosen (R), Bernanke (R), Yellen (D), Tyson (D), Goolsbee (D)
- 3 Nobel Prize Winners
  - o Akerlof, Smith, Maskin

- **Delegates: 500+ members**

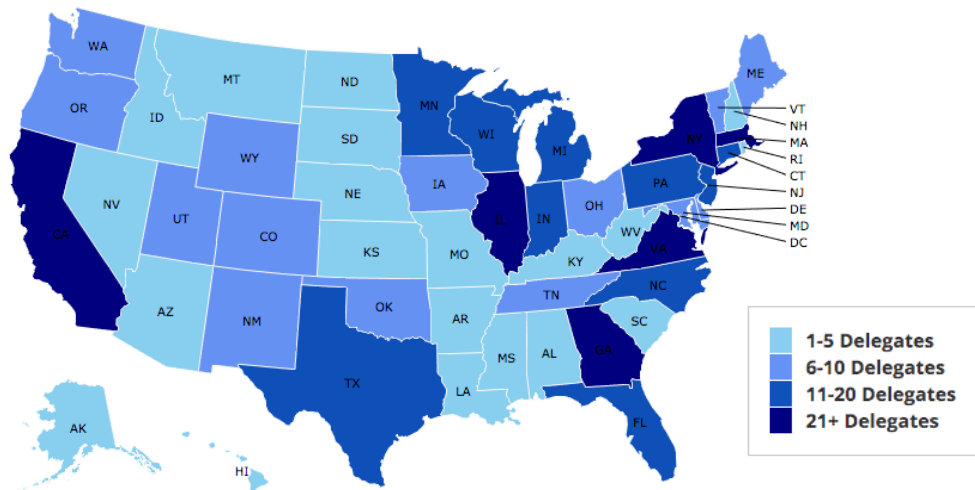
- At all levels of academia and some in government service
- All have a Ph.D. in economics
- Crowdsource slide decks
- Give presentations

- **Global Partners: 45 Ph.D. Economists**

- Aid in slide deck development

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## Where Are We?



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## Credits and Disclaimer

- **This slide deck was authored by:**
  - Veronika Dolar, SUNY Old Westbury
- **Disclaimer**
  - NEED presentations are designed to be nonpartisan.
  - It is, however, inevitable that the presenter will be asked for and will provide their own views.
  - Such views are those of the presenter and not necessarily those of the National Economic Education Delegation (NEED).



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## Outline

- **What is Health(care) Economics?**
- **Taking the Pulse of the Health Economy**
- **Health Care Systems and Institutions**
- **Health Insurance and Reform**
- **Pharmaceuticals – Big Pharma**



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## What is Health(care) Economics?

- Health Economics is a special field of (applied) microeconomics that focuses on the health care industry.
- Examples of other subfields of microeconomics are labor economics, industrial organization, economics of education, public economics, and urban economics.



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## Health Economics is part of Microeconomics

- Although health economics is part of “micro-” economics, it is actually very big:
- In 2019, U.S. national health expenditure was 17.8% of GDP, which is equivalent to around \$3,427 billions.
- For comparison, the entire GDP of Germany in 2019 was \$3,845 billions (4<sup>th</sup> largest economy), GDP of UK was \$2,827 billions (6<sup>th</sup> largest economy), and \$2,715 billions in France (7<sup>th</sup> largest economy).



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## What is Health Economics?

- Health economics studies health care resources markets and health insurance.
- Healthcare is the biggest industry and the largest employer in the US.



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## What is a Market?

- A **market** is a group of buyers and sellers of a particular product in the area or region under consideration. The area may be the earth, or countries, regions, states, or cities.
- The concept of a market is any structure that allows buyers and sellers to exchange any type of goods, services and information.
- Markets can be physical and non-physical.



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## Markets studied in health economics

- **Markets for:**

- Physicians
- Nurses
- Hospital facilities
- Nursing homes
- Pharmaceuticals
- Medical supplies (such as diagnostic and therapeutic equipment)
- **Health Insurance**



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## Pulse of the Health Economy

- **Health economy involves activities related to population health:**

- Production and consumption of goods and services
- Distribution of those goods to consumers

- **Performance indicators of medical care**

- Costs
- Quality
- Access



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## Tradeoffs

Tradeoffs take place among the three legs:

- By increasing quality health care this leads to higher health care costs, which means that some individuals might not be able to afford it and the access may be more limited.
- By increasing access, the costs and/or quality may suffer.
- By decreasing costs, access and/or quality may suffer.



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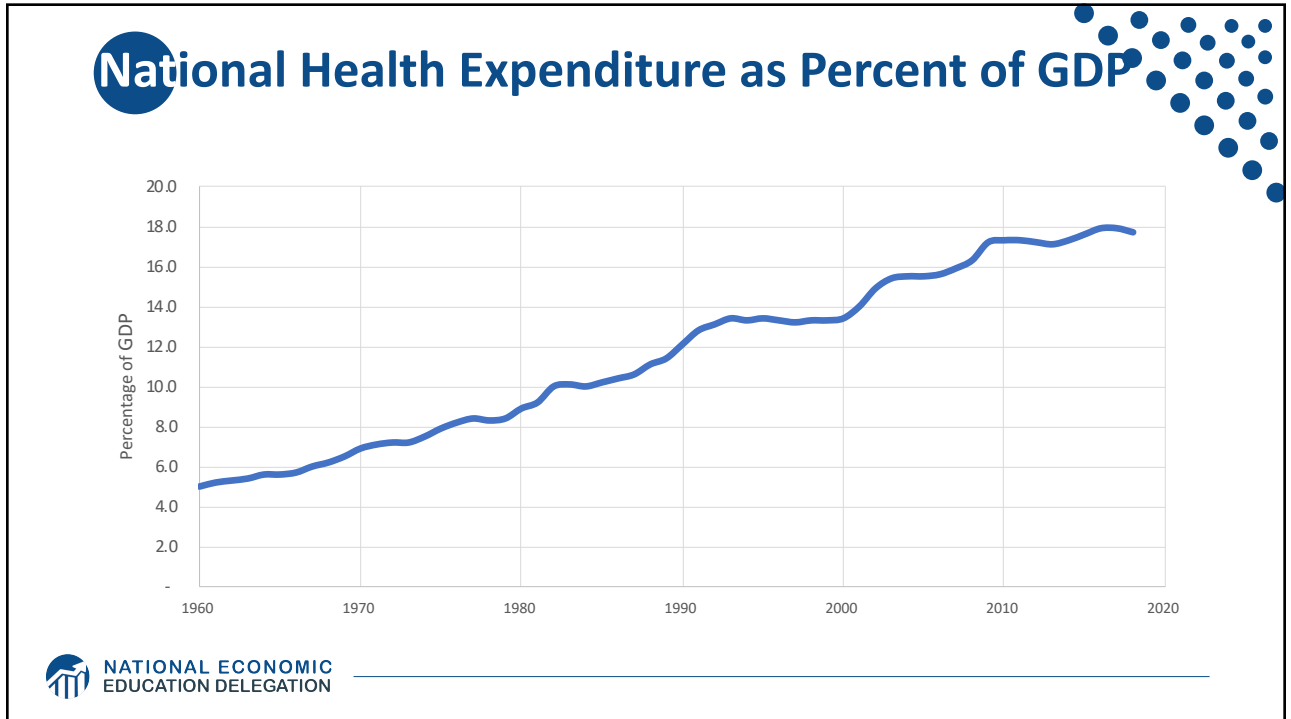
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## Costs

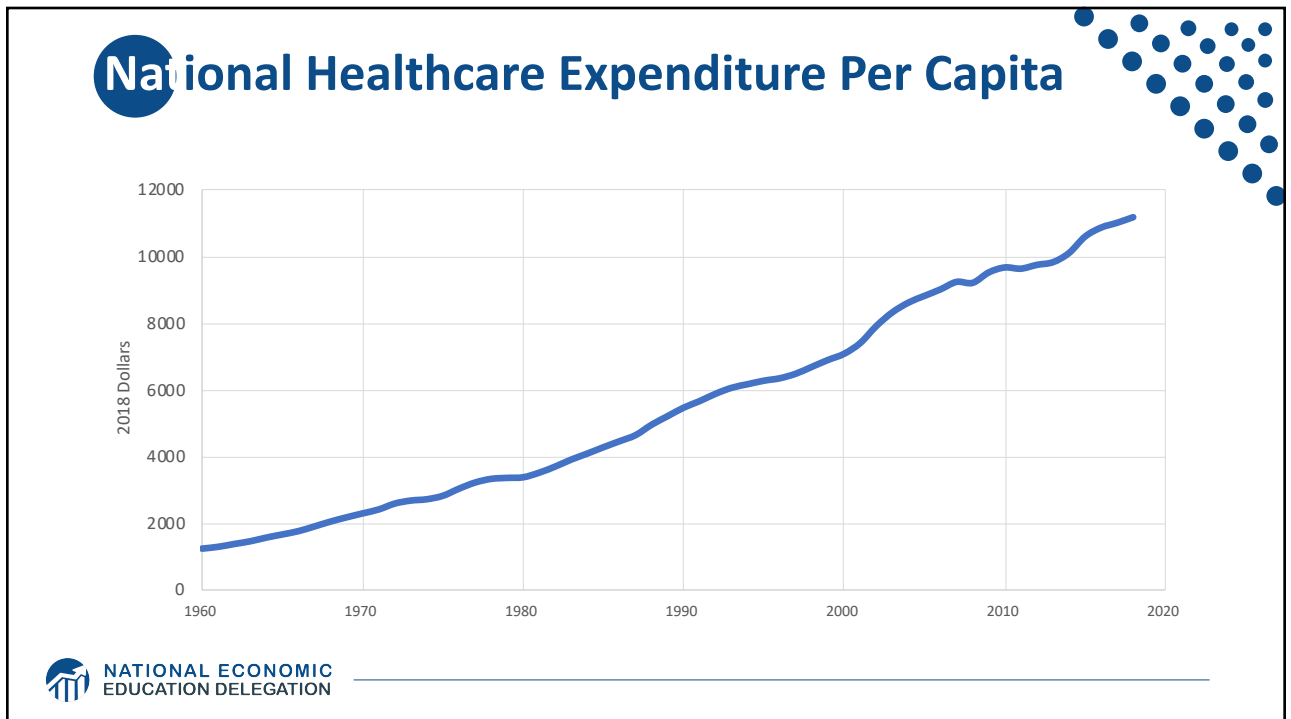


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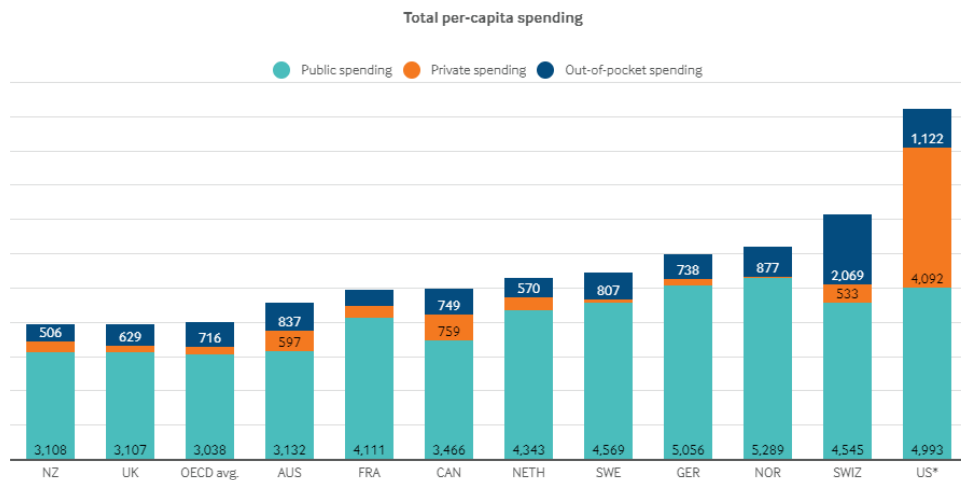


## Amount of Medical Care Spending

- **Costs of health care are high and continually rising**
  - U. S. spent 17.7% of GDP or \$11,172 per person in 2018
  - Compared to 5.0% of GDP and \$1,239 per person in 1960
- **Trade-offs may be involved**
  - High health care costs = Lower amounts of other goods produced and consumed

## International Comparison

Dollars (US\$), adjusted for differences in cost of living



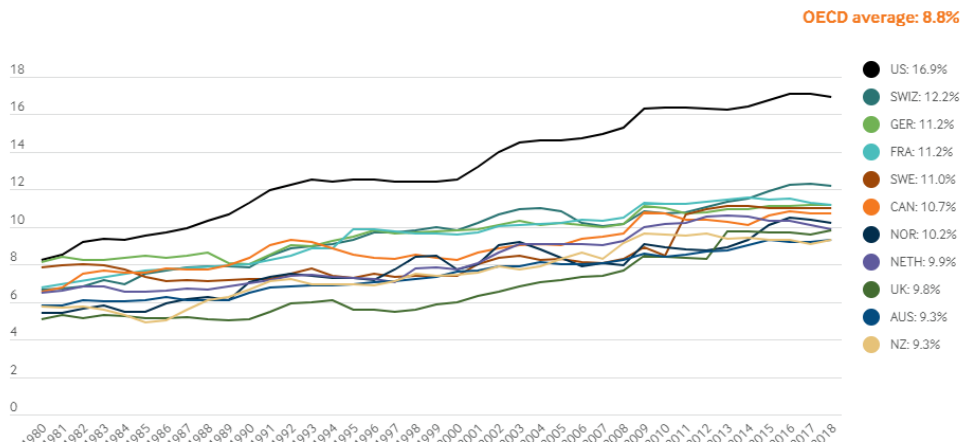
# International Comparison

- Per capita health spending in the U.S. exceeded \$10,000, more than two times higher than in Australia, France, Canada, New Zealand, and the U.K.



# International Comparison

Percent (%) of GDP, adjusted for differences in cost of living  
Legend shows 2018 data\*

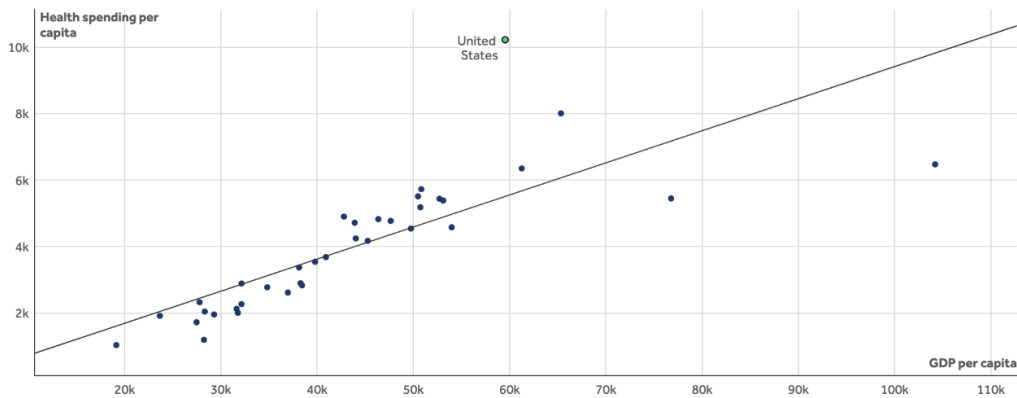


# International Comparison

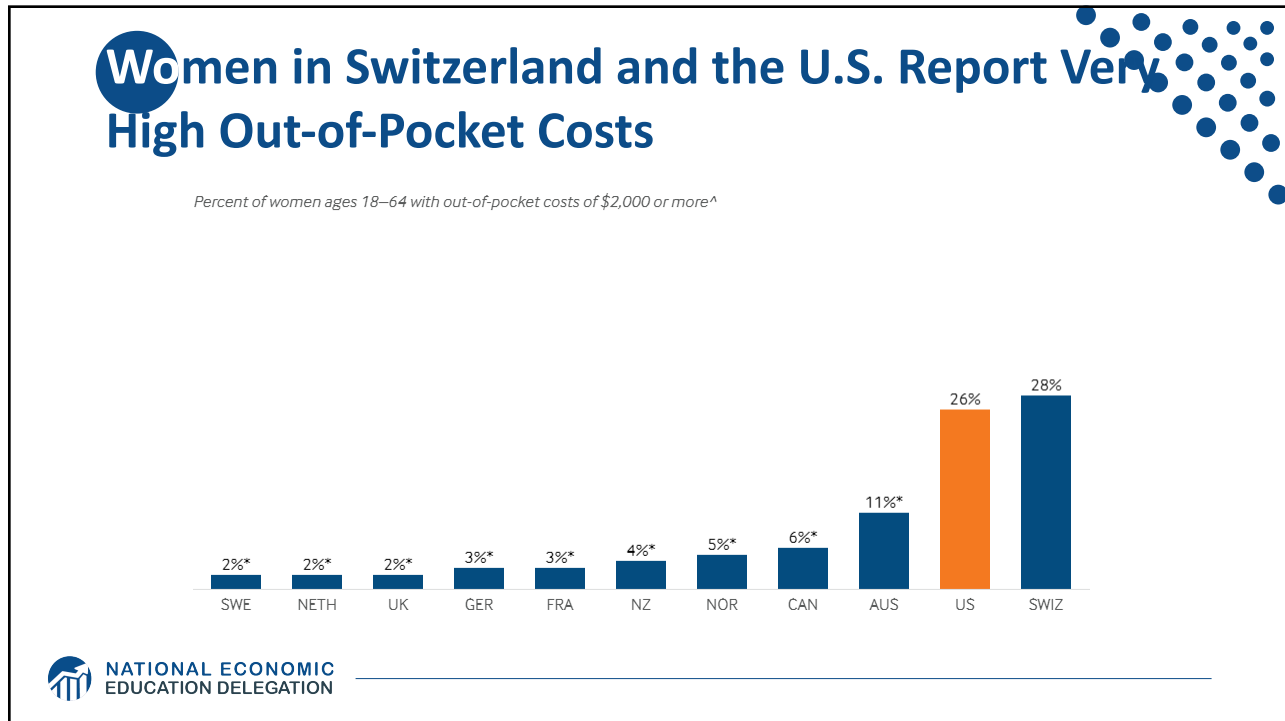
- In 1960, the U.S. was spending a higher percent of GDP on health care compared to other OECD countries, but was still part of the pack.
- In 2018, the U.S. spent 16.9 percent of gross domestic product (GDP) on health care, nearly twice as much as the average OECD country.
- The second-highest ranking country, Switzerland, spent 12.2 percent.
- At the other end of the spectrum, New Zealand and Australia devote only 9.3 percent, approximately half as much as the U.S. does.

## Relative to the size of its wealth, the U.S. spends a disproportionate amount on health care

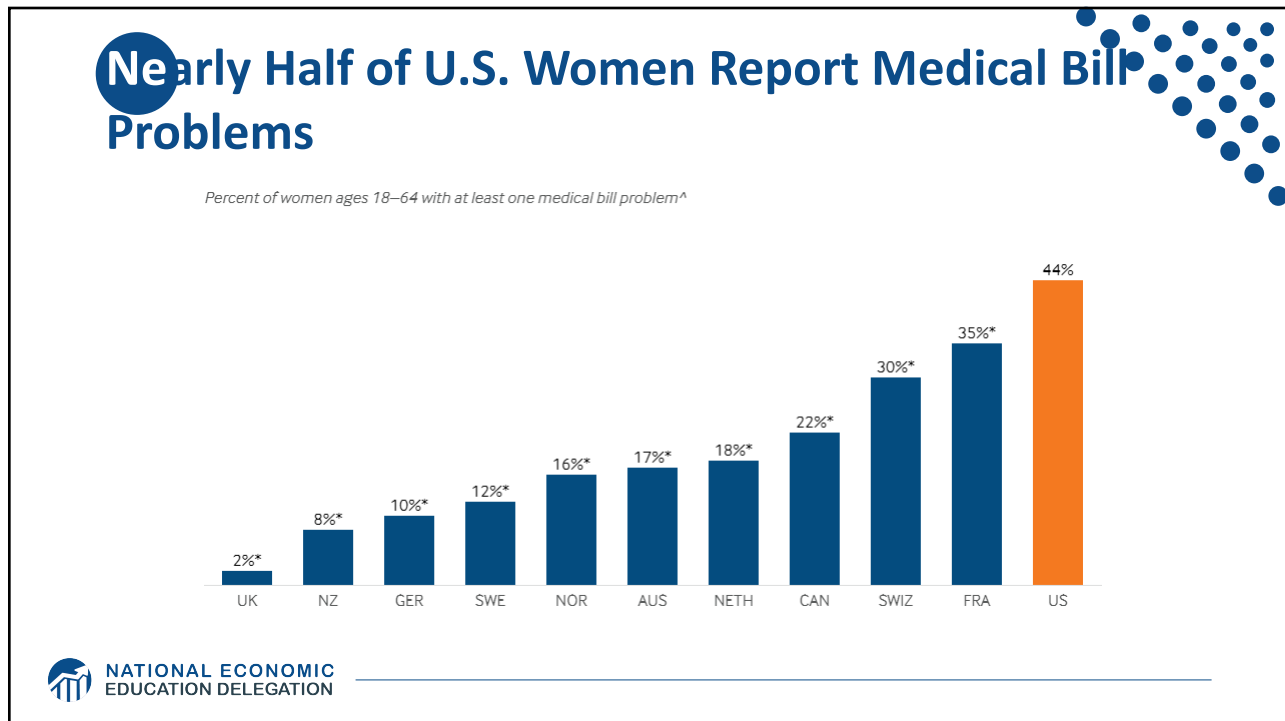
GDP per capita and health consumption spending per capita, 2017 (U.S. dollars, PPP adjusted)



Notes: U.S. value obtained from National Health Expenditure data. Health consumption does not include investments in structures, equipment, or research.



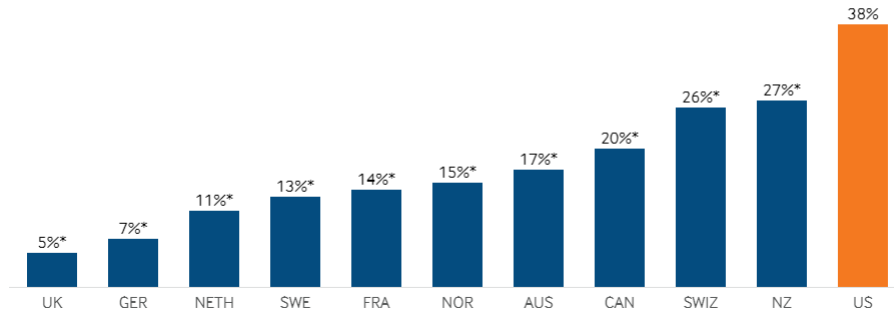
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## More Than One-Third of Women in the U.S. Skip Care Because of Cost vs. 5 Percent in the U.K.

Percent of women ages 18–64 with at least one cost-related access problem<sup>^</sup>



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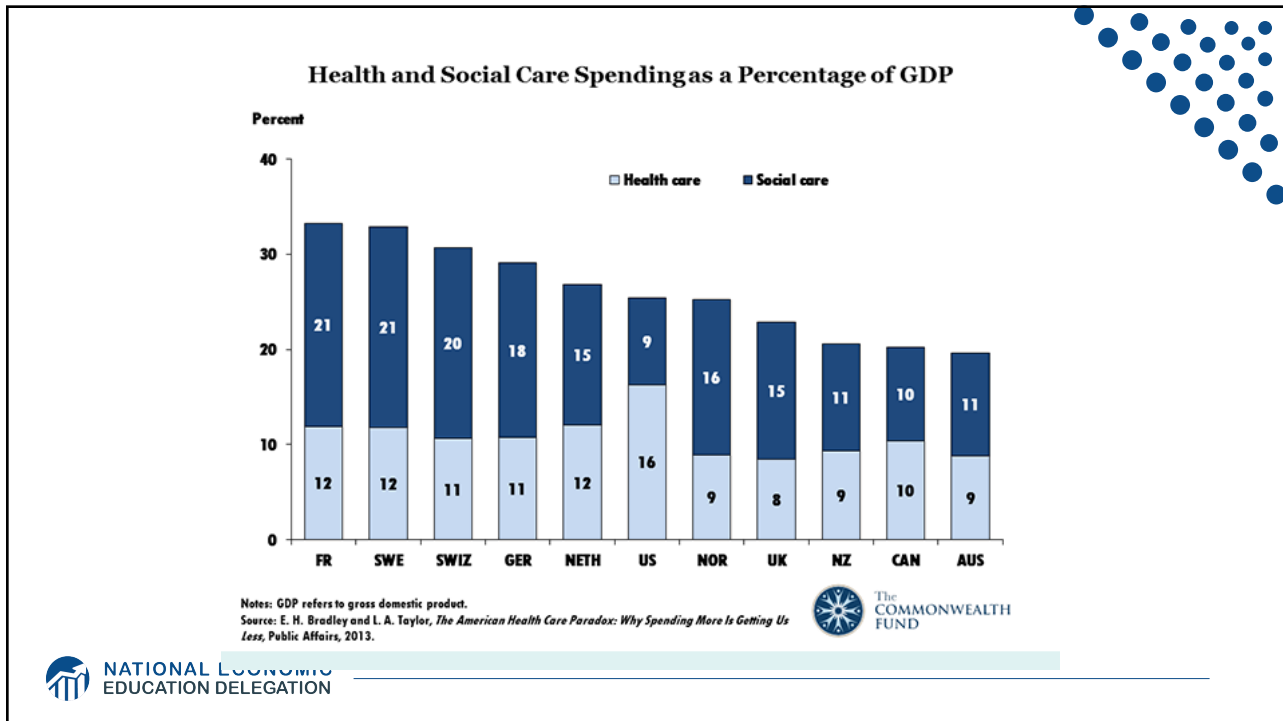
## Health vs Social Care Spending

- The biggest difference here is that the US spends a lot more on Health care and less on other social care – this might be a case of inefficiency.
- In many cases, we are using health care to very inefficiently and expensively address issues that are much better and cheaper and more efficiently addresses with other social programs – issues with homelessness, poverty, mental health, prevention vs. treatment of health issues.



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## Why this increase in healthcare spending?

- The share of the economy spent on health care has been steadily increasing since the 1980s for all countries because health spending growth has outpaced economic growth, in part because of advances in medical technologies, rising prices in the health sector, and increased demand for services.

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# Quality



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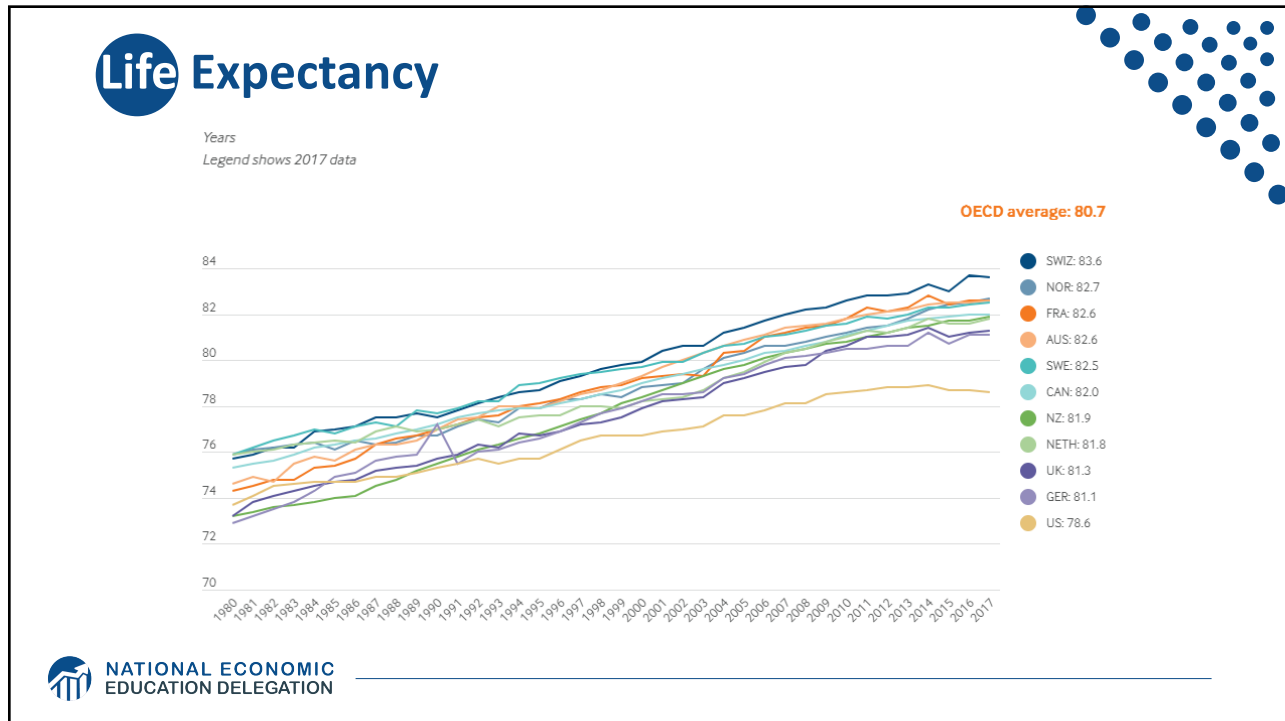
## Summary

- The U.S. has the highest chronic disease burden and an obesity rate that is two times higher than the OECD average.
- Americans had fewer physician visits than peers in most countries, which may be related to a low supply of physicians in the U.S.
- Americans use some expensive technologies, such as MRIs, and specialized procedures, such as hip replacements, more often than our peers.
- The U.S. outperforms its peers in terms of preventive measures — it has the one of the highest rates of breast cancer screening among women ages 50 to 69 and the second-highest rate (after the U.K.) of flu vaccinations among people age 65 and older.
- Compared to peer nations, the U.S. has among the highest number of hospitalizations from preventable causes and the highest rate of avoidable deaths.



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## Life Expectancy

- Despite the highest spending, Americans experience worse health outcomes than their international peers.
- Life expectancy at birth in the U.S. was 78.6 years in 2017 — more than two years lower than the OECD average and five years lower than Switzerland, which has the longest lifespan.

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## Life Expectancy

- In the U.S., life expectancy masks racial and ethnic disparities. Average life expectancy among non-Hispanic black Americans (75.3 years) is 3.5 years lower than for non-Hispanic whites (78.8 years).
- Life expectancy for Hispanic Americans (81.8 years) is higher than for whites, and similar to that in Netherlands, New Zealand and Canada.



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## Life Expectancy

All Races	78.6
White	78.8
Black	75.3
Hispanic	81.8
Non-Hispanic white	78.5
Non-Hispanic black	74.9

Life expectancy at birth 2017



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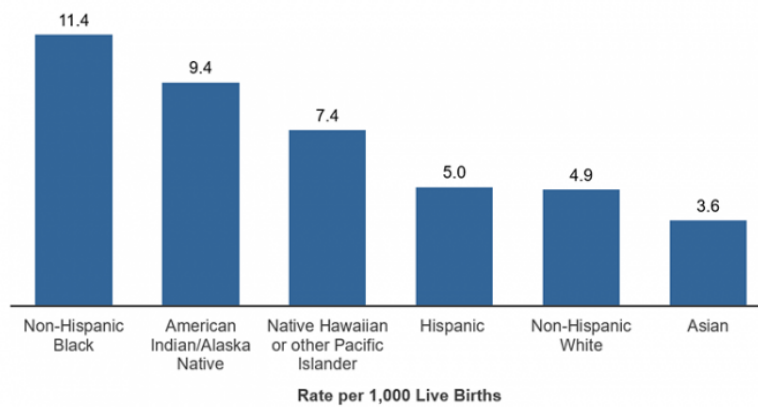
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## Infant Mortality International Comparison

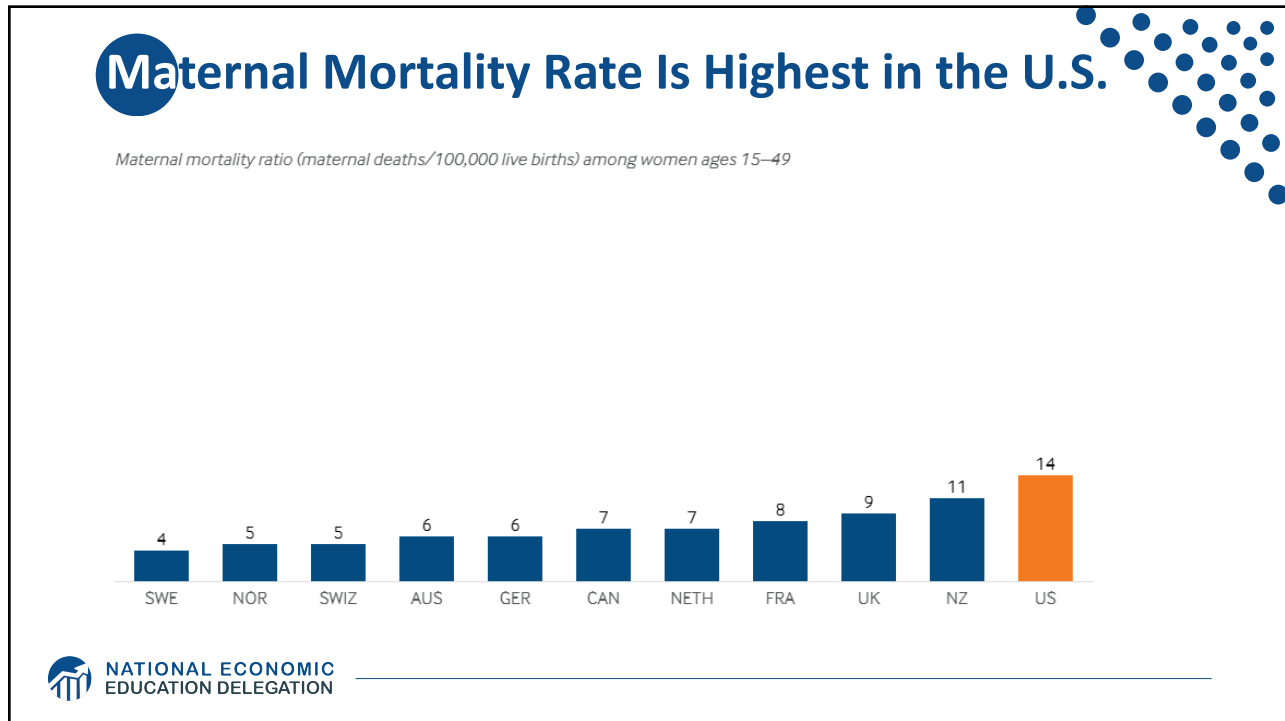
Country	Infant mortality
US	5.8
Switzerland	3.3
Germany	3.2
France	3.8
Sweden	2.0
Canada	4.7
Norway	2.3
Netherlands	3.5
UK	3.9
Australia	3.1
New Zealand	4.2

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## Infant Mortality Rates by Race and Ethnicity, 2016



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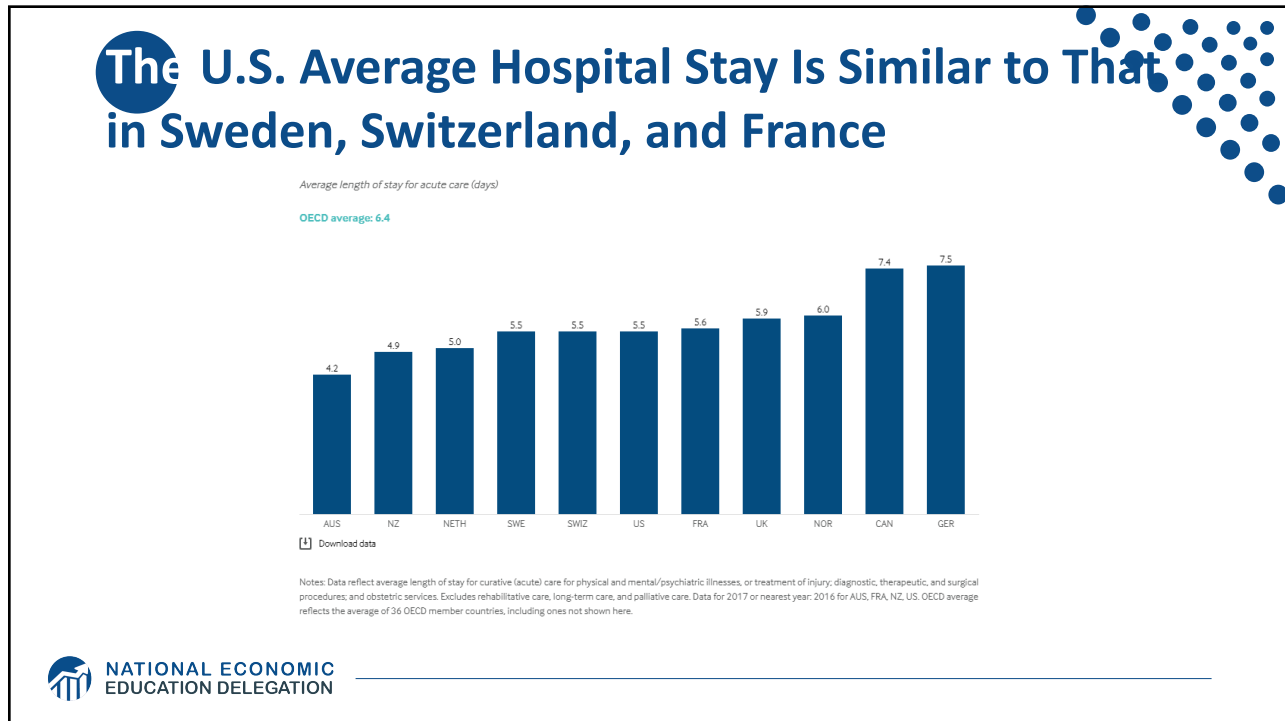
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## Maternal Mortality Rate

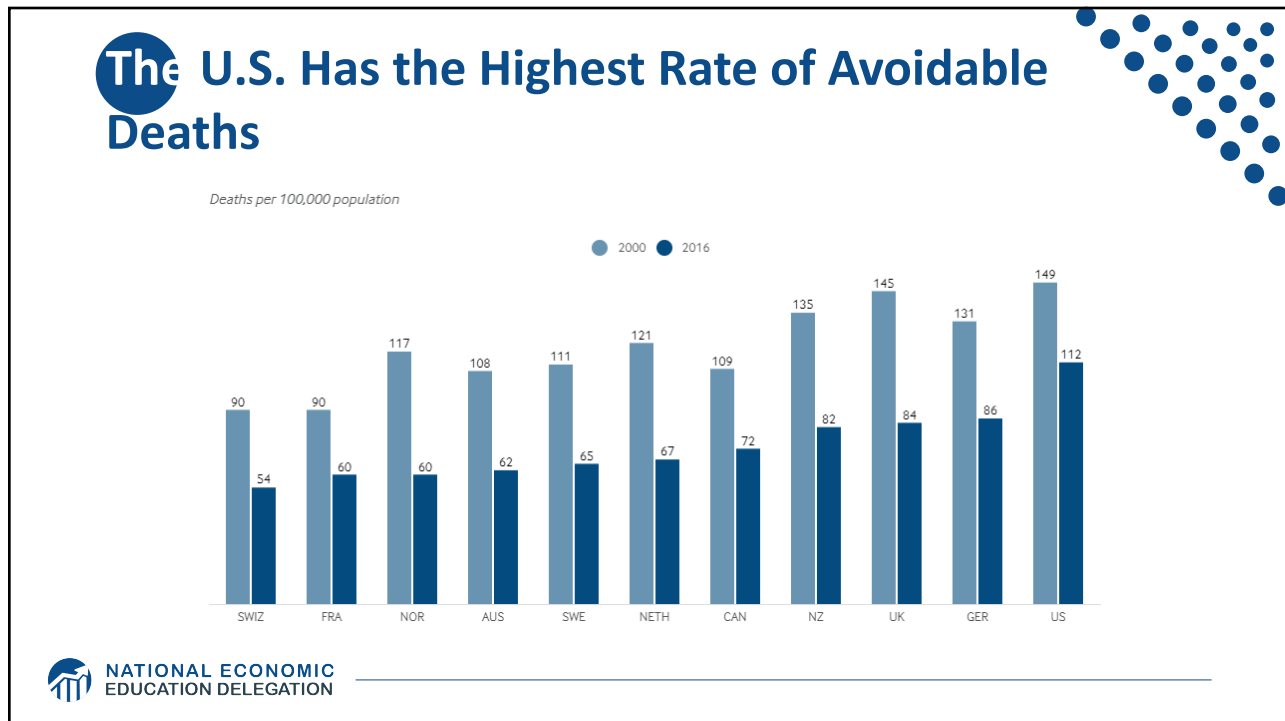
- American Indian/Alaska Native and Black women are 2 to 3 times as likely to die from a pregnancy-related cause than white women.

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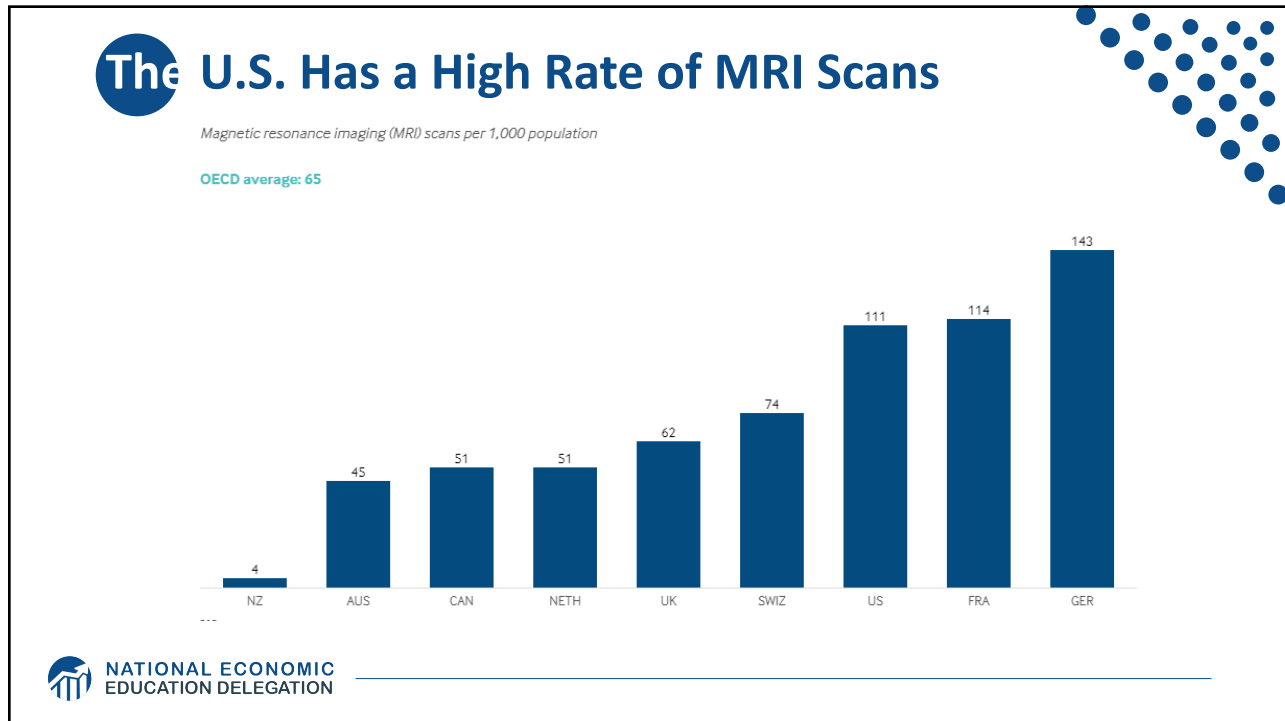
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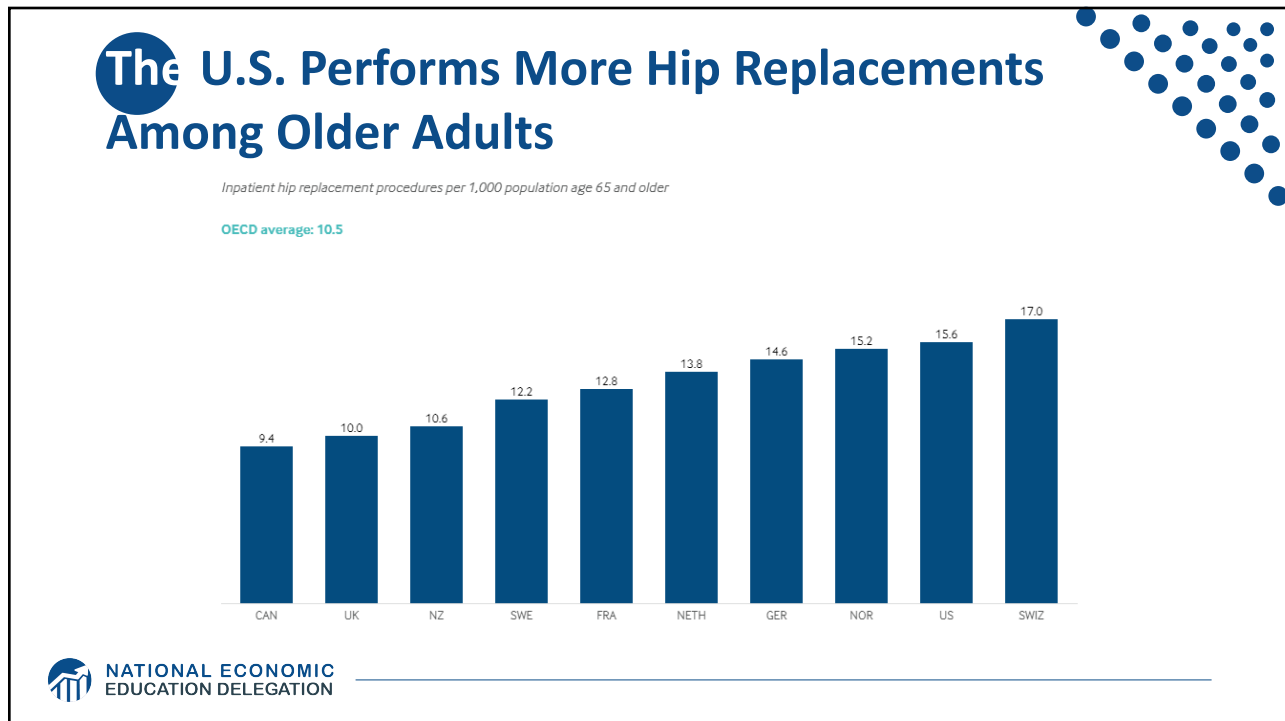
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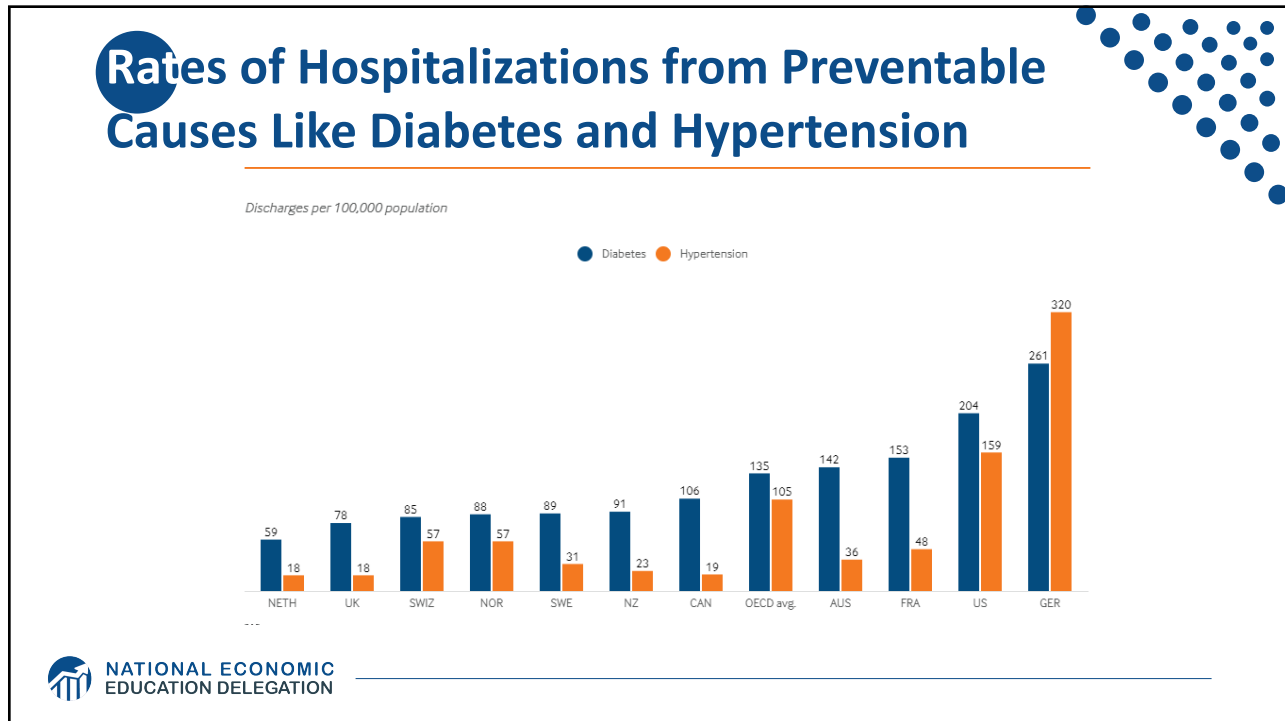
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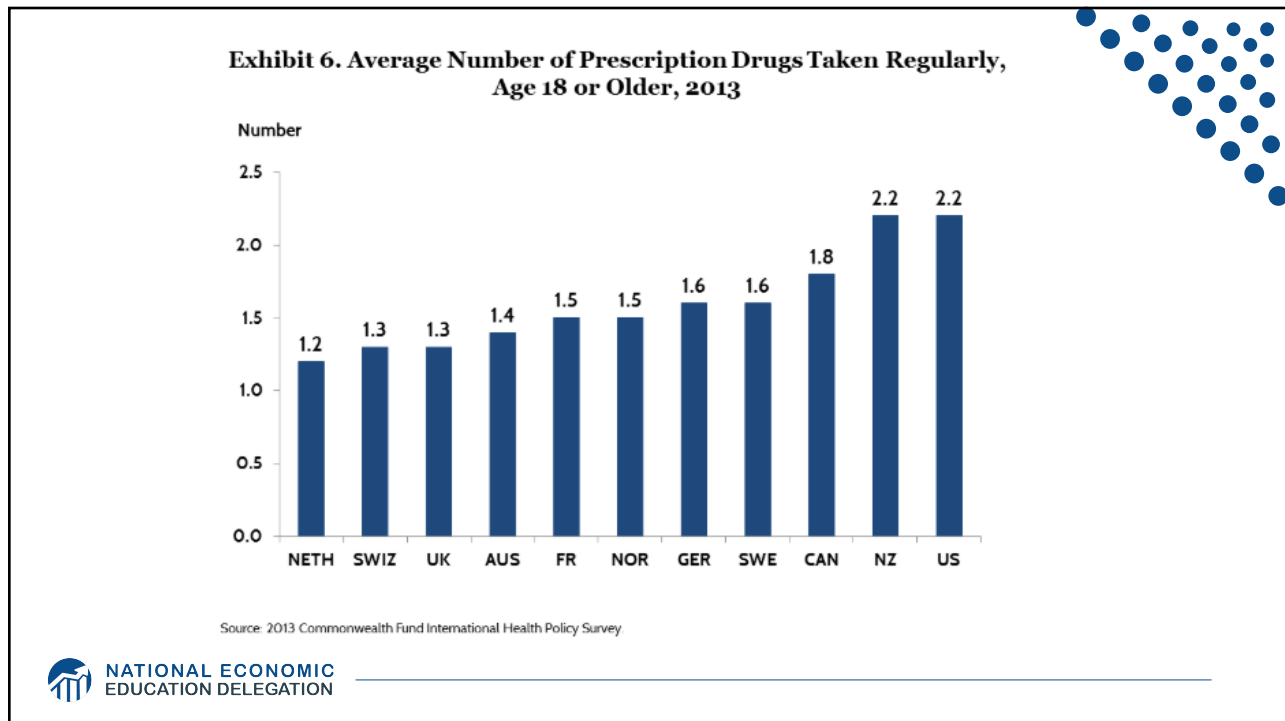
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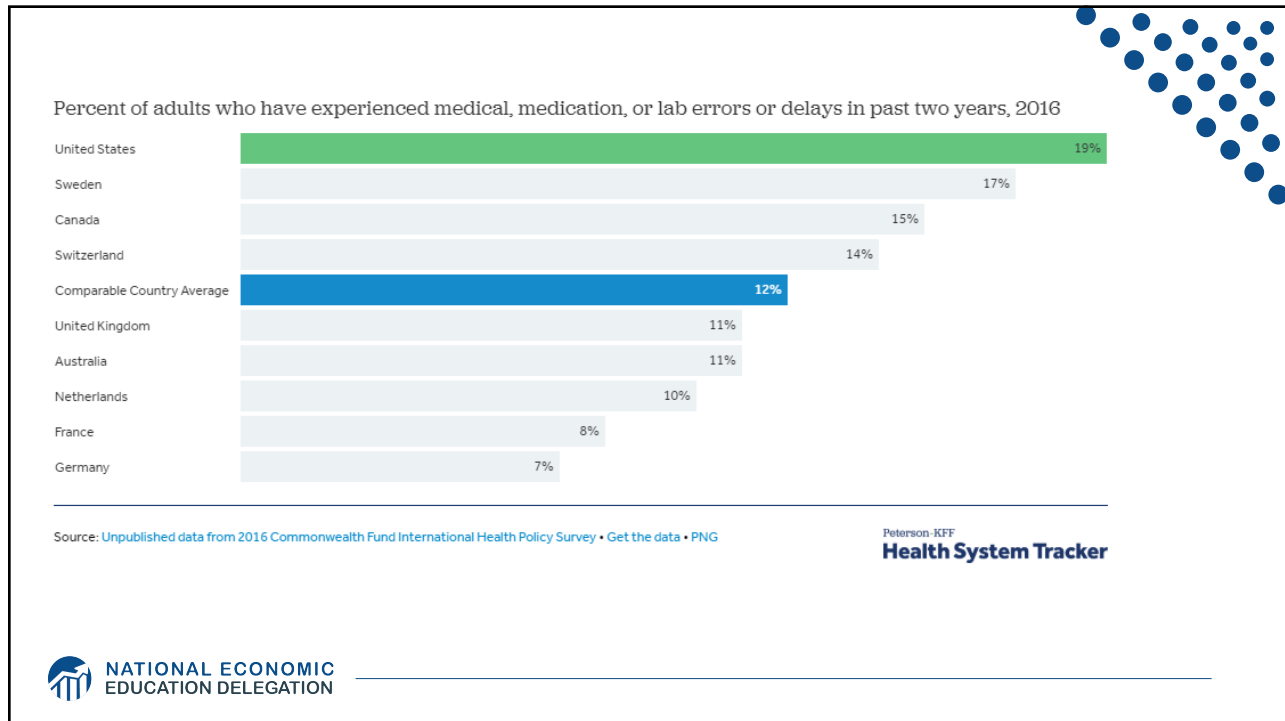
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## The World Health Report 2000, *Health Systems: Improving Performance*

30	Canada	10
31	Finland	18
32	Australia	17
33	Chile	44
34	Denmark	8
35	Dominica	70
36	Costa Rica	50
37	United States	1
38	Slovenia	29
39	Cuba	118
40	Brunei	32
41	New Zealand	20
42	Bahrain	48

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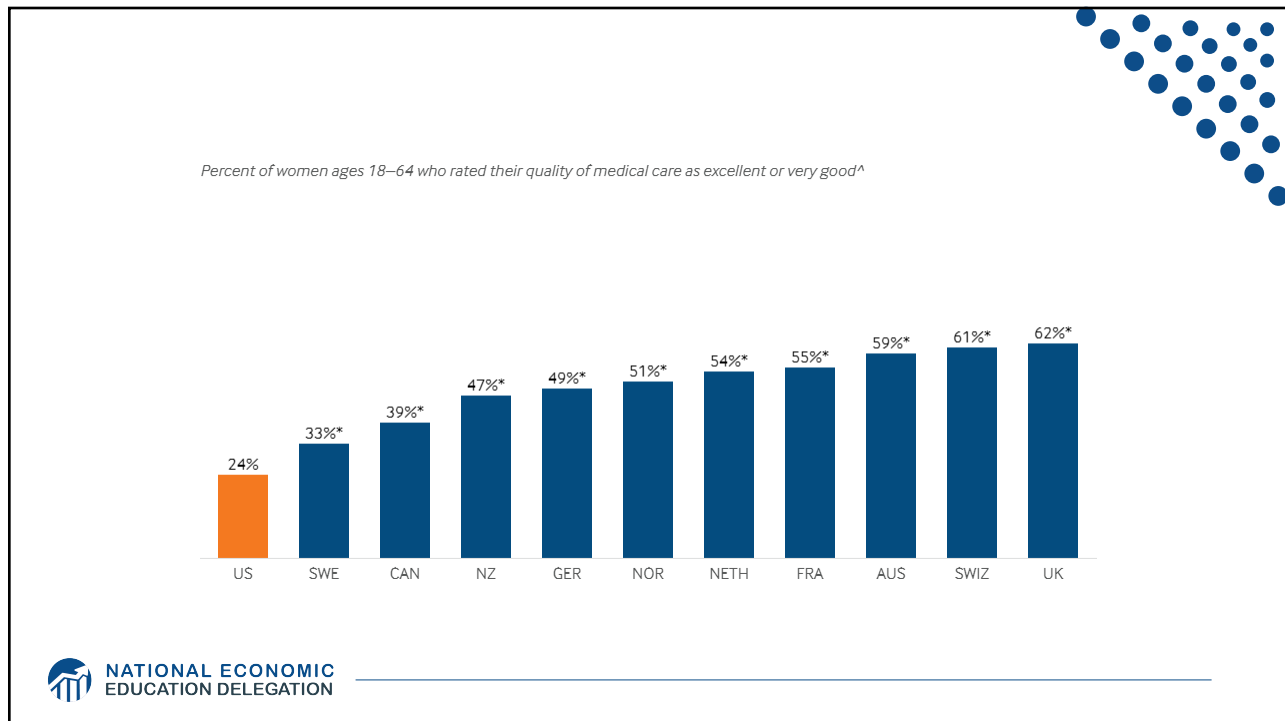
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Ranking	Country	Expenditure Per Capita
1	France	4
2	Italy	11
3	San Marino	21
4	Andorra	23
5	Malta	37
6	Singapore	38
7	Spain	24
8	Oman	62
9	Austria	6
10	Japan	13
11	Norway	16
12	Portugal	28
13	Monaco	12
14	Greece	30
15	Iceland	14
16	Luxembourg	5
17	Netherlands	9
18	United Kingdom	26
19	Ireland	25
20	Switzerland	2
21	Belgium	15
22	Colombia	49
23	Sweden	7
24	Cyprus	39
25	Germany	3
26	Saudi Arabia	63
27	United Arab Emirates	35
28	Israel	19
29	Morocco	99
30	Canada	10



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## Some Other Interesting/Alarming Facts

- According to a joint study by Harvard Law School and Harvard Medical School, every year 700,000 people go bankrupt because of medical bills.
- One classic benchmark for a national medical system is “avoidable mortality” – that is, how well a country does at curing diseases that are curable.
- The number of people under 75 who die from curable illness was almost twice as high in the US as in the countries that do the best on this measure; France, Spain, Japan.

## Access

# Healthcare Access

- Based on the Commonwealth Fund comparative studies of health system performance in 23 developed nations; they ranked US last when it comes to providing universal access to medical care.
- WHO rated the national health care systems of 191 countries in terms of “fairness”. The US ranked 54.



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## The U.S. ranks last in a measure of health care access and quality, indicating higher rates of amenable mortality than peer countries

Healthcare Quality and Access (HAQ) Index Rating, 2016

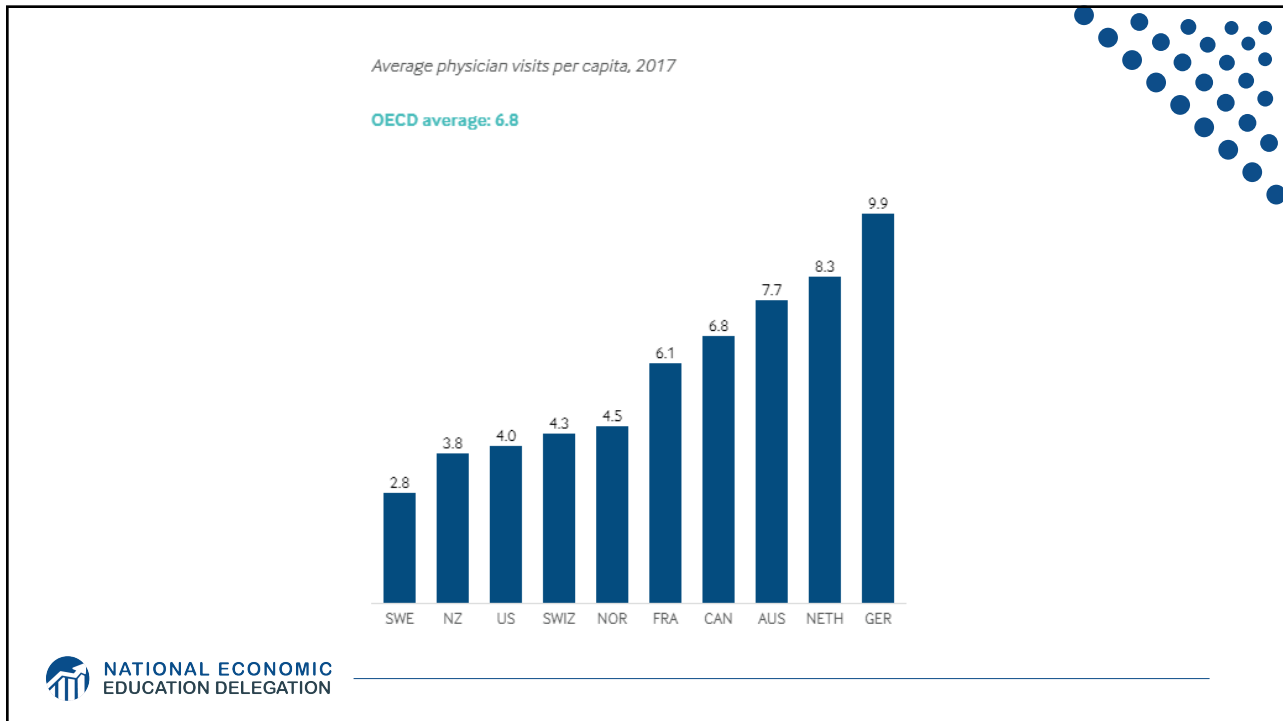


Source: KFF analysis of data from: “Measuring performance on the Healthcare Access and Quality Index for 195 countries and territories and selected subnational locations: a systematic analysis from the Global Burden of Disease Study 2016.” The Lancet. 23 May 2018.  
 • Get the data • PNG

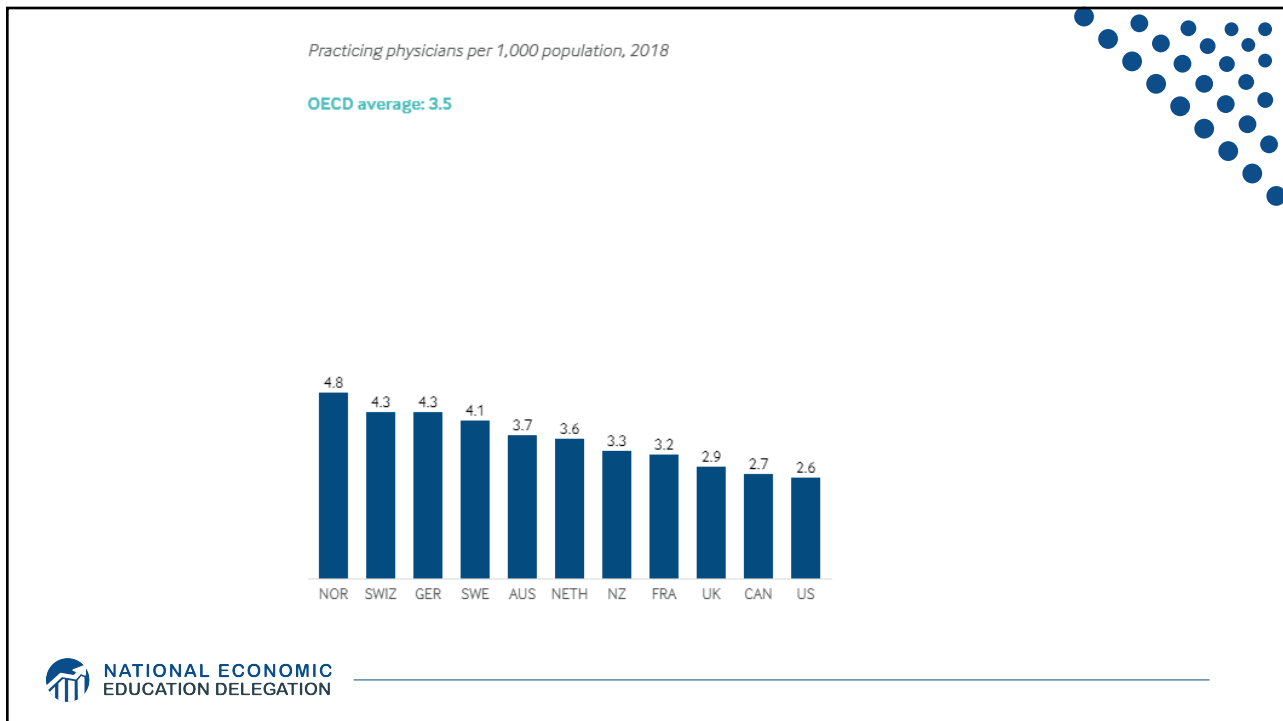
Peterson-KFF  
**Health System Tracker**



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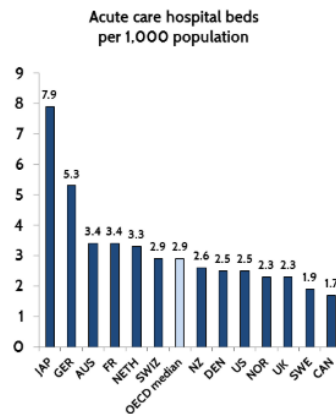


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## Healthcare Access

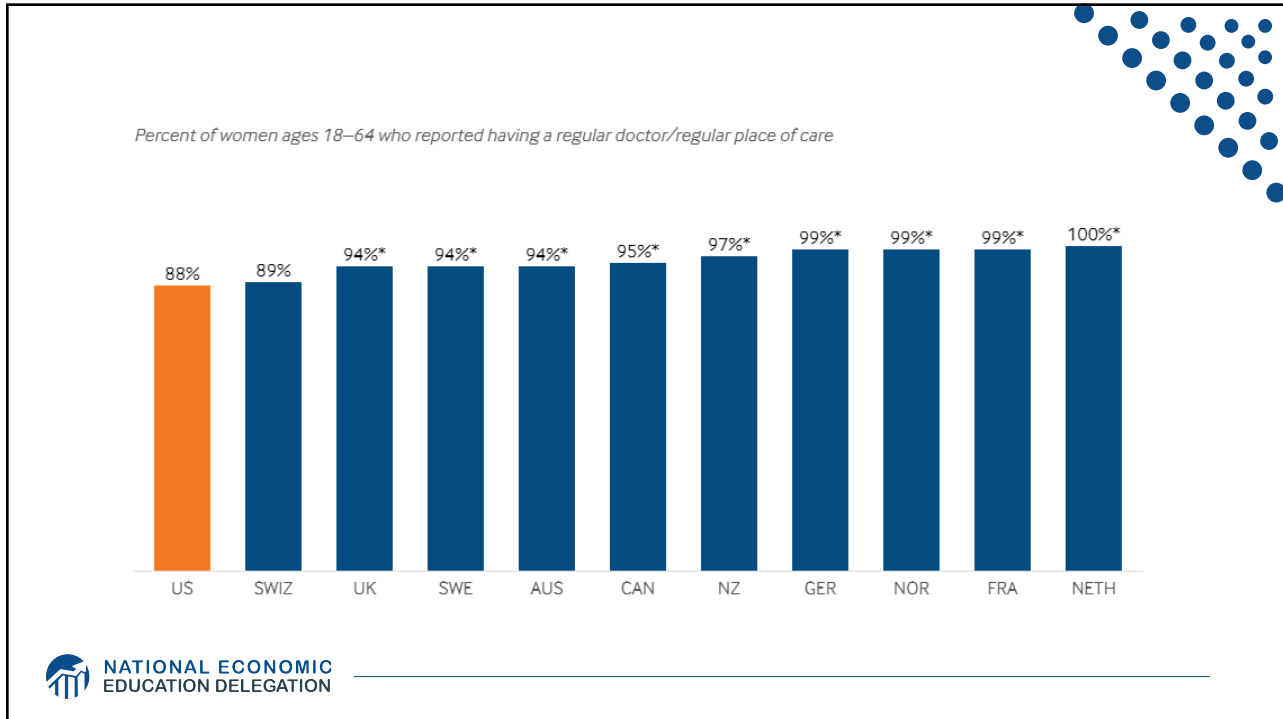
- Despite having the highest level of health care spending, Americans had fewer physician visits than their peers in most countries. At four visits per capita per year, Americans visit the doctor at half the rate as do Germans and the Dutch. The U.S. rate was comparable to that in New Zealand, Switzerland, and Norway, but higher than in Sweden.
- Less-frequent physician visits may be related to the low supply of physicians in the U.S. compared with the other countries. The U.S. has slightly more than half as many physicians as Norway, which has the highest supply.

## Hospital Beds

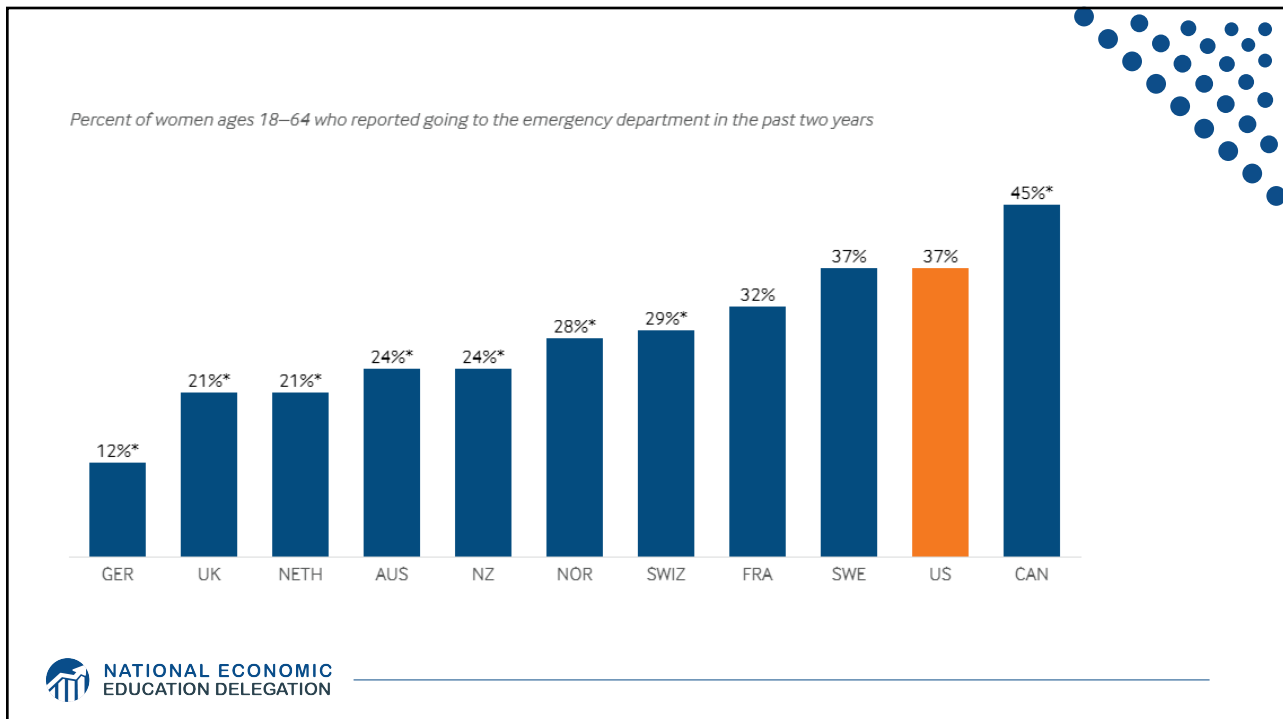


Note: Data from 2012 in Australia, Canada, the Netherlands, and the U.S.

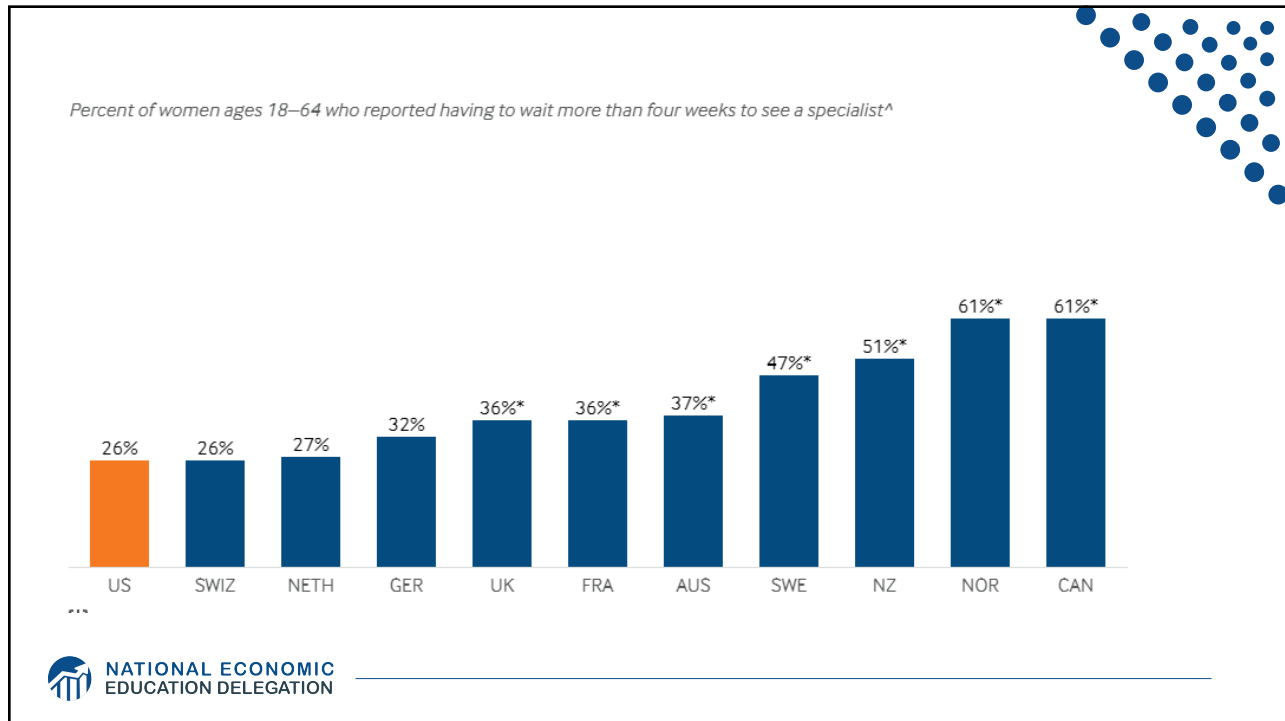
Source: OECD Health Data 2015



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# Health Care Systems and Institutions

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## Elements of a Health Care System

- **Health care system**
  - Deals with the production, consumption, and distribution of health care services in a society
- **Structure**
  - Determines who actually makes the following choices
    - What medical goods to produce?
    - How to produce?
    - Who should receive medical care?
- **Financing Methods**
  - Who payments for the healthcare services made



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## Elements of Health Care System

- **Centralized**
  - Choices are decided by a centralized government, or authority
  - Through a single individual or an appointed or elected committee
- **Decentralized**
  - Individual consumers and health care providers, through their interaction in the marketplace, may decide the answers to the basic questions



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## Elements of a Health Care System

- **Health care systems are huge, complex, and constantly changing as they respond to:**
  - Economic forces
  - Technological forces
  - Social forces
  - Historical forces



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## Definitions

- **Universal coverage** refers to health care systems in which all individuals have insurance coverage.
- Generally, this coverage includes access to all needed services and benefits while protecting individuals from excessive financial hardships.



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## Single Payer

- **Single-payer** refers to financing a health care system by making one entity solely and exclusively responsible for paying for medical goods and services.
- It is only the financing component that is necessarily socialized.
  - The money for the payment can be either collected by
    - Taxes collected by the government
    - Premiums collected by National or Public Health Insurance



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## Socialize Medicine

- **Socialized medicine:** this model actually takes the single-payer system one step further.
- In a socialized medicine system, the government not only pays for health care but operates the hospitals and employs the medical staff.
- This has NOT been proposed by any presidential hopeful and is not part of the current debate in the US.



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## Third-Party Payer

- A **third-party payer** is an entity that pays medical claims on behalf of the insured. Examples of third-party payers include government agencies, insurance companies, health maintenance organizations (HMOs), and employers.
  - Employer-sponsored health plans
  - Individual market health plans
  - National health insurance



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## Role and Financing Methods of Third-Party Payers

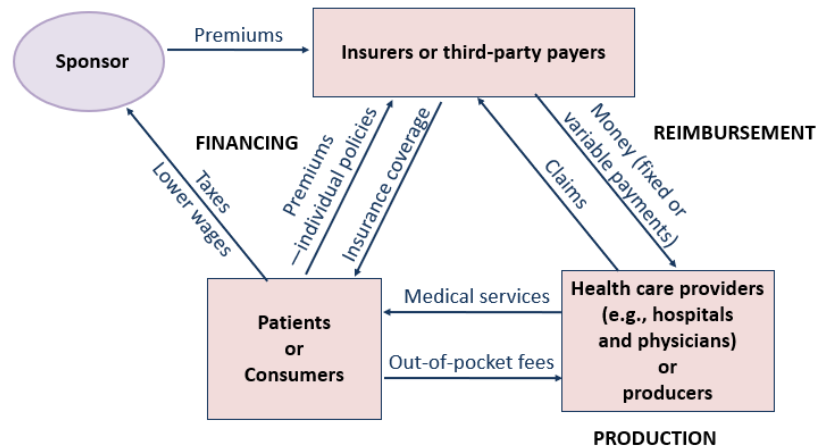
- **Private health insurance company**
  - The consumer pays a premium in exchange for some agreed-upon amount of medical insurance coverage
- **Government / Public health insurance company**
  - Financing of medical care insurance comes from taxes



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## Health Care Market is Different



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## Health System Classification

- **Developed countries of the world have each taken a different approach for their health care delivery systems**
- **5 basic models:**
  - National health insurance (Canada)
  - Bismarck (France, Germany, Japan, Switzerland)
  - Beveridge – socialized medicine (United Kingdom)
  - Out of pocket model – you pay yourself
  - Mixed (United States)



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## US Health Care System

- **Medicare is a national health insurance program run by the federal government. Since it is a federal program, Medicare does not differ much from state to state.**
- Medicaid is an assistance program. It serves low-income people of every age. Medicaid is a federal-state program. It varies from state to state. It is run by state and local governments within federal guidelines.



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## US Health Care System

- **Military Veteran Care – Beveridge model (socialized medicine)**
- **Employer-sponsored insurance – Bismarck model**
- **Individual market health plans - Bismarck model**
- **Uninsured - Out of pocket model**



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## Market Economies

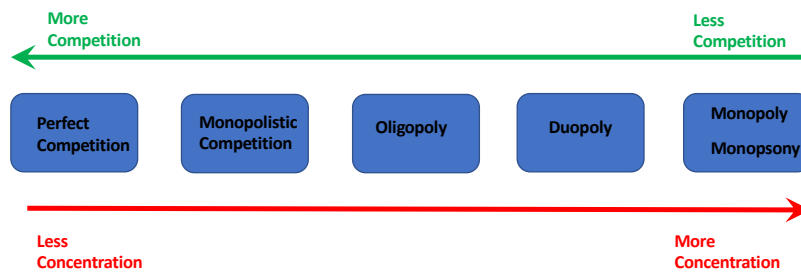
- In market economies, prices adjust to balance supply and demand. These equilibrium prices are the signals that guide economic decisions and thereby allocate scarce resources.



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## What types of markets are there?



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## Perfectly Competitive Market

- Many (numerous) buyers – price takers
- Many (numerous) sellers – price takers
- Identical (homogeneous) product
- Free entry and exit
- Both buyers and sellers have perfect information about the price, utility, quality, and production methods of products.



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## Is there something special about Health Care Markets?

- Market Structure
- Type of products and services
- Principal-Agent Problem
- Asymmetric Information



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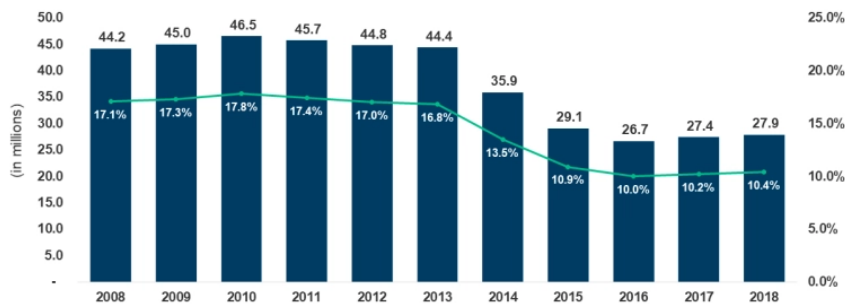
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# Health Insurance and Reform



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Figure 1  
Number of Uninsured and Uninsured Rate among the Nonelderly Population, 2008-2018



NOTE: Includes nonelderly individuals ages 0 to 64.  
SOURCE: KFF analysis of 2008-2018 American Community Survey, 1-Year Estimates.



Figure 1: Number of Uninsured and Uninsured Rate among the Nonelderly Population, 2008-2018



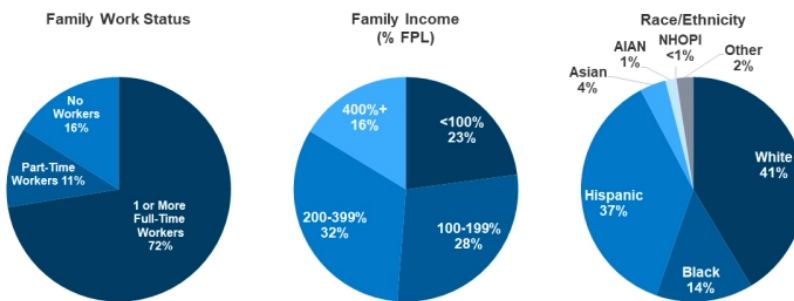
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## Who are the uninsured?

- Most people who are uninsured are nonelderly adults, in working families, and in families with low incomes.
- Reflecting geographic variation in income and the availability of public coverage, people who live in the South or West are more likely to be uninsured.
- Most who are uninsured have been without coverage for long periods of time.
- In 2018, over seven in ten of the uninsured (72%) had at least one full-time worker in their family and an additional 11% had a part-time worker in their family.
- Individuals with income below 200% of the Federal Poverty Level (FPL) are at the highest risk of being uninsured.
- In total, more than eight in ten of the uninsured were in families with incomes below 400% of poverty in 2018.



Figure 3  
Characteristics of the Nonelderly Uninsured, 2018



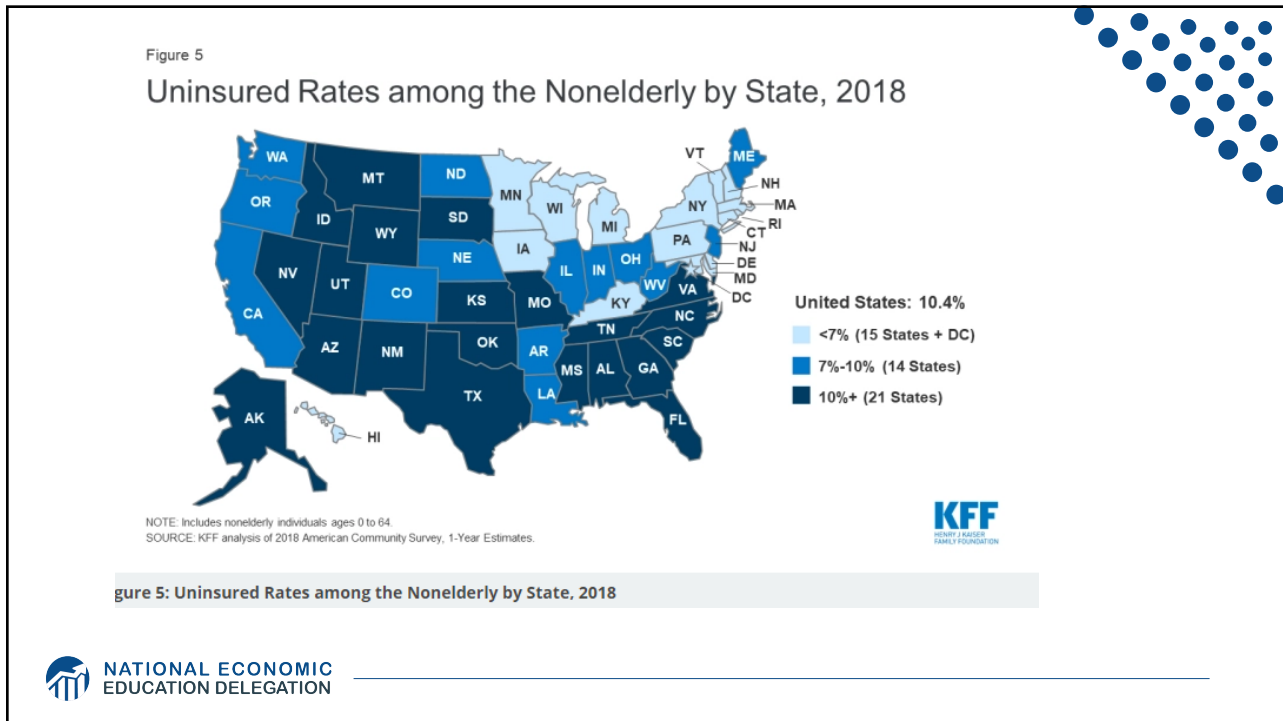
Total = 27.9 Million Nonelderly Uninsured

NOTE: Includes nonelderly individuals ages 0 to 64. The US Census Bureau's poverty threshold for a family with two adults and one child was \$20,212 in 2018. AIAN refers to American Indian and Alaska Native. NHOPI refers to Native Hawaiians and Other Pacific Islanders.

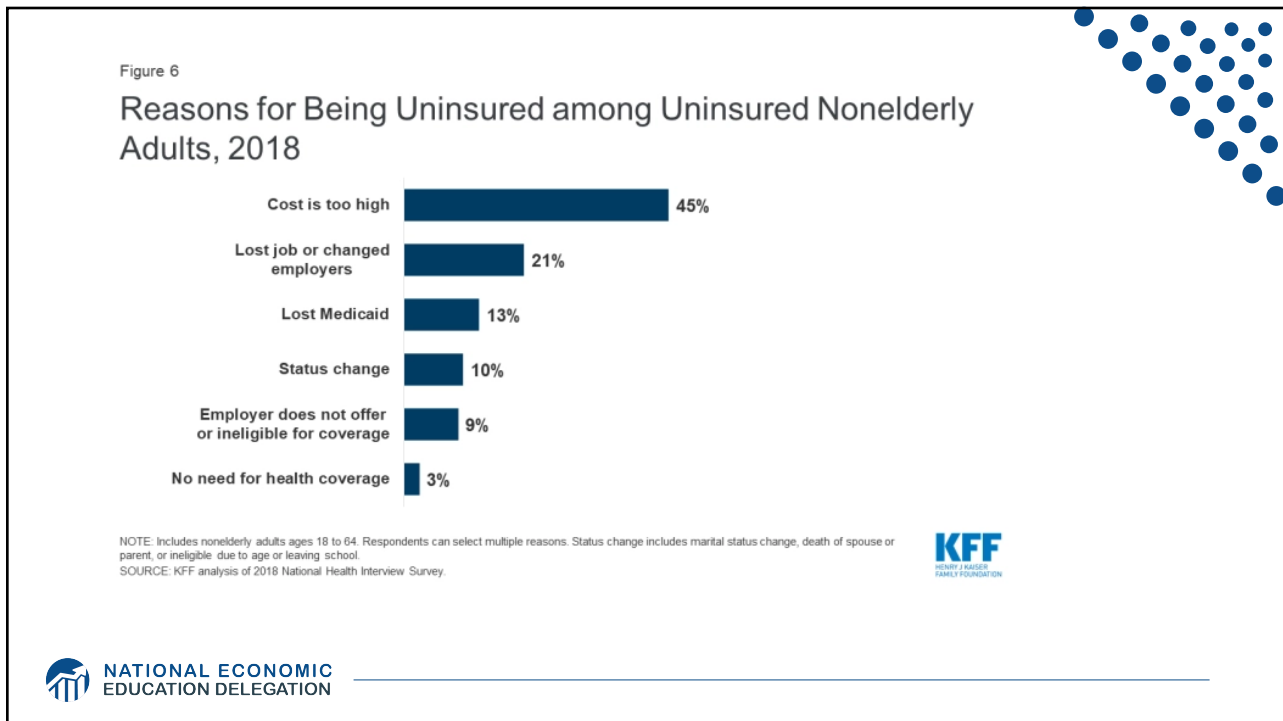
SOURCE: KFF analysis of 2018 American Community Survey, 1-Year Estimates.





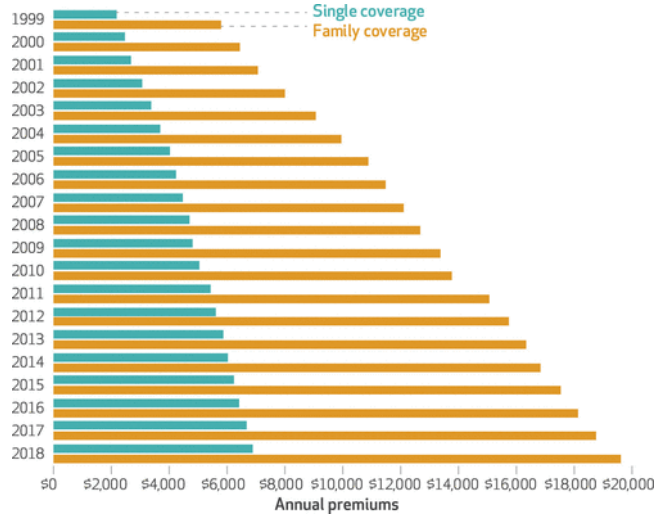


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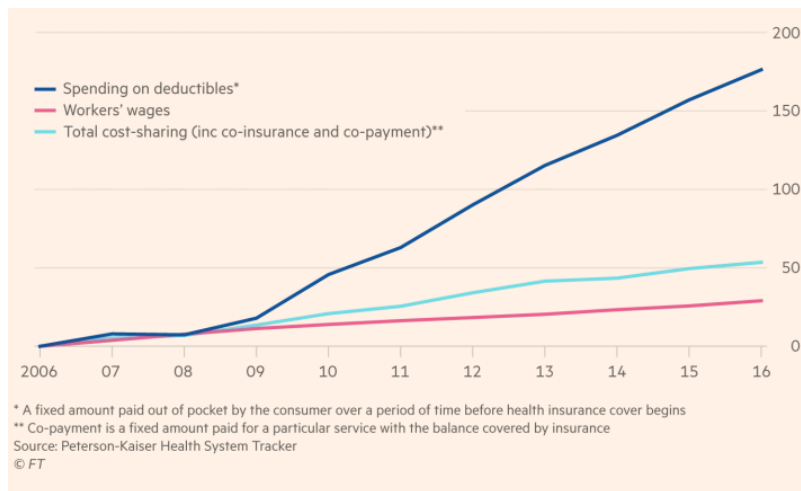


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## Average annual premiums for single and family coverage, 1999–2018



## Spending on Deductibles



## Reason for Higher Health Insurance Rates

- Advances in medical technologies
- Rising prices in the health sector (Why?)
- Increased demand for services
- Concentration of insurance companies!

## Health Insurance Coverage and ACA

	2016		2004	
	People (millions)	Percentage of population	People (millions)	Percentage of population
Total Population	320.4	100	291.1	100
<b>Private</b>	<b>216.2</b>	<b>67.5</b>	<b>198.2</b>	<b>68.1</b>
Employment-based	178.5	55.7	174.1	59.8
Individually purchased	51.9	16.2	27.1	9.3
<b>Public</b>	<b>119.4</b>	<b>37.3</b>	<b>79.2</b>	<b>27.2</b>
Medicare	53.4	16.7	39.9	13.7
Medicaid	62.3	19.4	37.6	12.9
Military Health Care	14.6	4.6	10.8	3.7
<b>Uninsured</b>	<b>28.1</b>	<b>8.8</b>	<b>45.8</b>	<b>15.7</b>

## Health Insurance Coverage

- In 2018, 8.5 percent of people, or 27.5 million, did not have health insurance at any point during the year.
- The uninsured rate and number of uninsured increased from 2017 (7.9 percent or 25.6 million).



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## Death of Uninsured

- Since people who lack health insurance are unable to obtain timely medical care, they have a 40% higher risk of death in any given year than those with health insurance, according to a study published in the American Journal of Public Health.
- The study estimated that in 2005 in the United States, there were 45,000 deaths associated with lack of health insurance.



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## Why Care About the Uninsured?

- Physical externalities associated with communicable diseases; uninsured people are less likely to receive vaccinations and care for communicable diseases.
- Financial externality imposed by the uninsured on the insured through uncompensated care.
- When the uninsured get served by medical providers and don't pay their bills, those costs are passed on to other users of the medical system through high medial prices, a practice called cost-shifting.
- Misuse of service and inefficiencies (think of ER)
- Job lock – the unwillingness to move to a better job for fear of losing health insurance.



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## Monopolization of Health Insurance Market

- As of 2011, there were close to 100 insurers in Switzerland competing for consumer health care dollars, forcing firms to compete by setting prices to just cover costs.
- In the United States, markets are state specific and consumers may choose from plans available in the state in which they reside.
- In 2014, of the 50 states and the District of Columbia, 11 had only 1 or 2 insurers, 21 had 3 or 4, and only 19 states had 5 or more.
- As of July 2019, the number of states with only 1 or 2 insurers had increased from 11 to 20, indicating a growing divide between ACA exchanges and competitive markets.



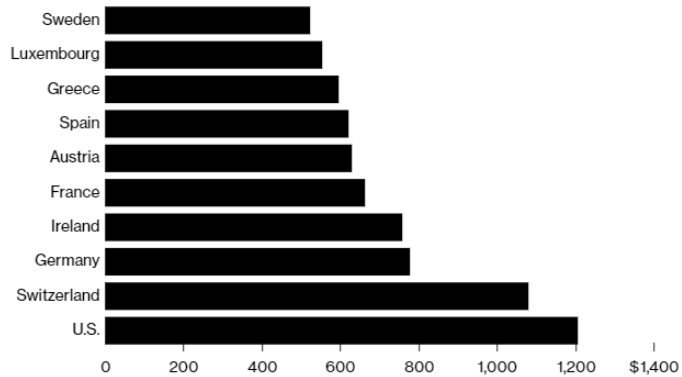
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# Big Pharma

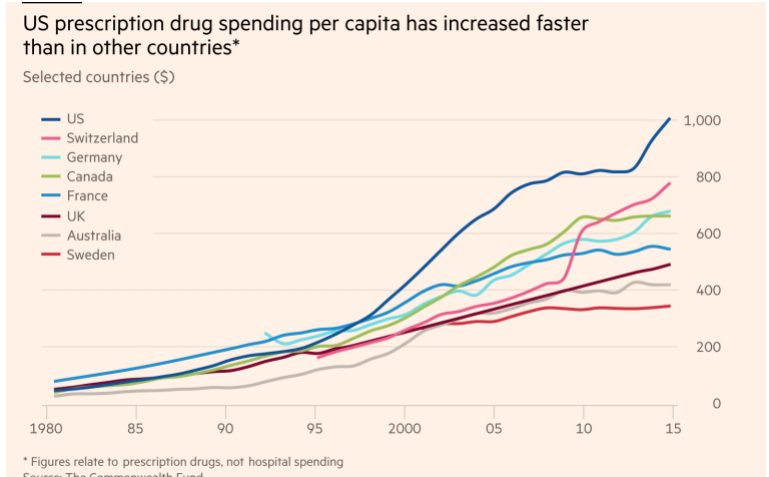
## Drug Prices

Top spenders per capita on drugs in 2016, in U.S. dollars



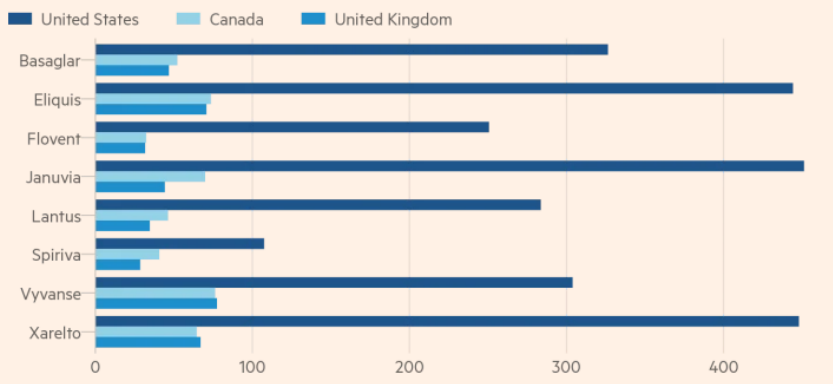
Source: Organisation for Economic Co-operation and Development

# Drug Prices



## Drugs in the US cost much more than their equivalent in the UK and Canada

Eight bestselling brand drugs for conditions ranging from diabetes to asthma and ADHD.  
Drug price (\$)



Note: Their equivalents may be generic versions. Prices have been converted to US dollars using exchange rates available on September 17th, 2019

## Price Hikes

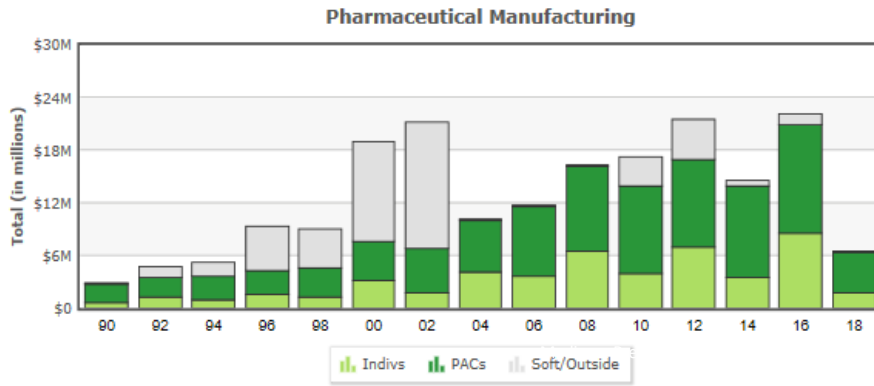
- Turing Pharmaceuticals' 5,555% price increase of Daraprim® in 2015 and Mylan's 500% increase of EpiPen®...
- More than 3,400 drugs have boosted their prices in the first six months of 2019, an increase of 17% in the number of drug hikes from a year earlier.
- The average price hike is 10.5%, or 5 times the rate of inflation.
- About 41 drugs have boosted their prices by more than 100% in 2019.
- Over the course of a decade, the net cost of prescription drugs in the United States rose more than three times faster than the rate of inflation.

## Reasons for higher drug prices

- The **Medicare Prescription Drug, Improvement, and Modernization Act**, also called the **Medicare Modernization Act** or MMA, is a federal **law** of the United States, enacted in 2003.
- Concentration of pharmaceutical companies and increase in prices.

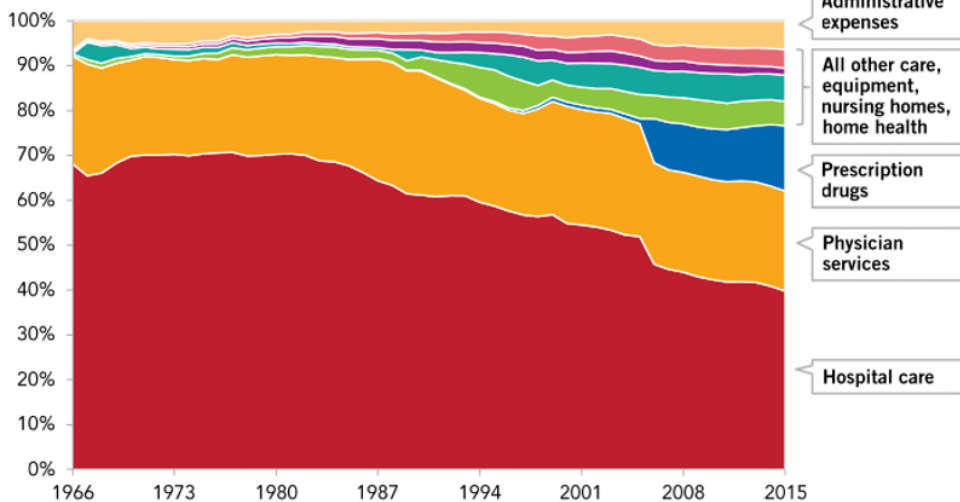


### Contribution Trends, 1990-2018



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### COMPOSITION OF MEDICARE PAYMENTS (% OF TOTAL MEDICARE SPENDING)



SOURCE: Centers for Medicare and Medicaid Services, National Health Expenditures December 2016. Compiled by PGPF.

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## Impact of Medicare Modernization Act

- Medicare Part D, by law, cannot negotiate drug prices like other governments do.
- The study found that in 2017, Medicare spent nearly \$8 billion on insulin. The researchers said that if Medicare were allowed to negotiate drug prices like the U.S. Department of Veterans Affairs (VA) can, Medicare could save about \$4.4 billion *just* on insulin.

## Concentration in Pharmaceutical Companies

- The number of mergers and acquisitions involving one of the top 25 firms more than doubled from 29 in 2006 to 61 in 2015, in part due to lax merger review.
- Between 1995 and 2015, 60 pharmaceutical companies merged into 10.
- In 2010, R&D returned 10.1%. In nearly every year since, that figure has dropped. In 2017, the return was 3.7%, and in 2018, 1.9%.

**Thank you!**

# Any Questions?

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- Autonomous Vehicles
- US Social Policy

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## Why Employers Provide Private Insurance: Risk Pooling

- An insurance risk pool is the group of individuals who enroll in an insurance plan.
- When insurers sell an insurance plan to a group, they don't care about the medical experience of any one member of the group.
- What matters to the insurer is the insurance pool as a whole.
- The goal of all insurers is to create a large insurance pool with a predictable distribution of medical risk.



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## Risk Pooling

- **Two features increase the predictability of medical risk distributions for insurance risk pools:**
- **Absence of adverse selection.**
  - Workers generally do not take their health status into account when choosing which firm to work for.
- **The statistical law of large numbers.**
  - As the size of the pool grows, the odds that the insurer will be unable to predict the average health outcome of the pool falls.



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## Risk Pooling

- Large groups of individuals could be formed to deal with the second concern, group size, but the first concern, adverse selection, always remains: the individuals who band together to come to the insurer looking for coverage might be doing so simply because they are sick.
- Because of adverse selection, insurers would much rather sell insurance to large employer group than to small groups or individuals.



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## Risk Pooling

- The preference for large groups by insurers is reinforced by another aspect of insurance provision, administrative costs.
- Many of the costs of administering insurance are fixed at a certain level no matter the size of the pool. As a result, the larger the pool, the lower per capita administrative costs can be spread.
  - 98% of firms with more than 200 employees offer health insurance
  - 72% of firms with 10-24 employees provide insurance.
  - 47% of firms with fewer than 10 employees provide insurance



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## Why Employers Provide Private Insurance: The Tax Subsidy

- Tax subsidy to employer-provided health insurance.
- Under current U.S. tax law, employee compensation in the form of wages is subject to taxation, but employee compensation in the form of health insurance expenditure is not.
- If your employer pays you \$1 in wages, you keep only  $\$1 \times (1 - \text{tax})$  of those wages. If you have a 30% tax rate, you only keep  $\$1 \times (1 - 0.30) = \$0.7$  of each dollar you earn.
- If your employer pays you in health insurance you keep the full \$1 of health insurance.
- This tax subsidy is only available for employer-provided health insurance.



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## Tax Subsidy to Employer-Provided Health Insurance

- Suppose Oliver and Nicolas are both working for the same employer and earn \$80,000 per year.
- The tax rate is 30%.
- Suppose the employer-provided insurance costs \$5,000 while a private insurance costs \$4,000.
- Oliver takes employer-provided insurance and Nicolas takes the cheaper private insurance. What is the difference in their after-tax, after health insurance income?



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## Tax Subsidy to Employer-Provided Health Insurance

### Oliver:

- $\$80,000 - \$5,000 = \$75,000$  – After insurance, pre tax wage
- $\$75,000 \times (1 - 0.3) = \$52,500$  – After tax, after health insurance income

### Nicolas

- $\$80,000 \times (1 - 0.3) = \$56,000$  – After tax income, pre insurance income
- $\$56,000 - \$4,000 = \$52,000$  - After tax, after health insurance income
- Oliver gets to keep \$500 even though he is paying for a more expensive insurance!



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## Public Insurance

- Trends in public coverage
- Public insurance cover increased from 2000–2010 in part because of an aging population and an economic downturn in the latter part of the decade.
- Funding for Medicaid and CHIP expanded significantly under the 2010 health reform bill.
- The proportion of individuals covered by Medicaid increased from 10.5% in 2000 to 14.5% in 2010 and 20% in 2015.
- The proportion covered by Medicare increased from 13.5% in 2000 to 15.9% in 2010, then decreased to 14% in 2015.



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