

# Comparative Analysis of Healthcare Expenditure: Spring 2024

SKIDMORE

Emily Hey and David S. Read, Department of Computer Science



## Goals

- Identify ways that the healthcare system in the United States could improve.
- Compare the differing healthcare systems of countries to determine what the root cause of expense differences are.
- Gain knowledge about the processes of data science and experience with these systems of handling statistics.

## Approach

Our research started with discussing the Affordable Care Act, what it did to help, and areas it could have been improved. It quickly became clear that the ACA helped insure many people, but still proportionally less than peer nations.

This led to the consideration of expense as a major component contributing to the United States' lack of accessibility to healthcare. To determine the impact of healthcare costs in the U.S. we started by comparing these expenses with the Netherlands and Singapore. It became quickly apparent that the U.S. pays a significant amount more.

This led to research to determine why there is such a disparity between countries in expense despite the lack of benefits or any apparent reason to spend more.

After breaking down the costs of U.S. healthcare expenses by category, we delved further into specific expenses and researched reasons for the extremes we previously encountered.

## Compiling Data

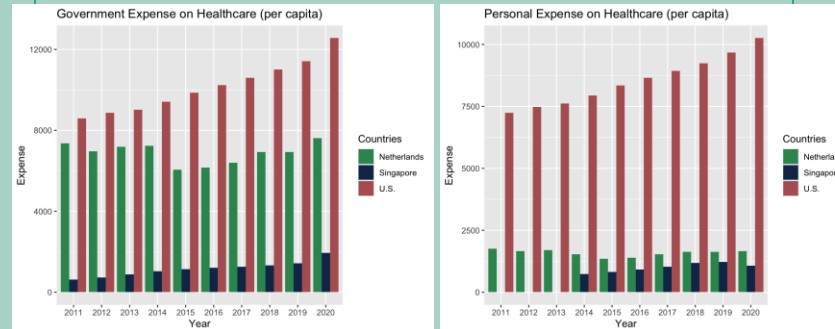
Making all the data compatible involved:

- Converting everything to USD (accounting for inflation using the average exchange rate for each year)
- Data was also converted to be per person using population statistics to compare information more accurately

## Tools

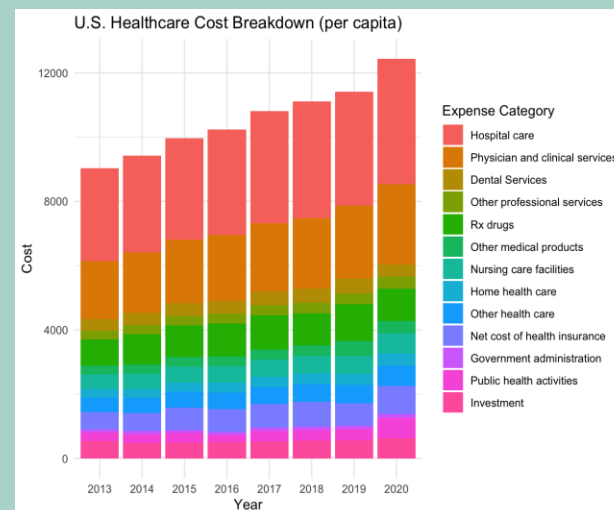
- RStudio 

## Statistics



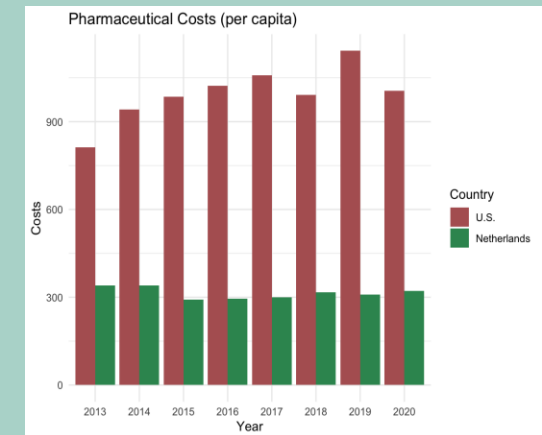
Above are the graphs we started with, depicting the total expense per person that the government spends (left) and that the average person spends (right).

Below is the graph depicting the breakdown of how much the U.S. spends on healthcare per person.



## Focusing In

The cost breakdown led to focusing on specific categories to compare. Pharmaceutical costs that the government spends per capita are shown below.



## Results

The first set of statistics highlights how significant the gap is in expense. In both, the cost is consistently much higher per capita in the U.S., however, the personal expense shows a much larger gap.

To analyze this expense further, the next graph depicts the cost breakdown. Here, we can see that each category remains proportional as the total cost increases yearly.

The last graph looks more closely at the cost of prescription drugs across the U.S. and the Netherlands. This disparity can be explained by the law that created Medicare Part D banning the U.S. government from negotiating pharmaceutical prices.

Many of these issues (extreme costs, especially in personal expenses, higher pharmaceutical prices, etc.) can be explained by comparing to other countries and looking at their systems. Most countries have single-payer healthcare where the government manages costs. They have more power in negotiating for lower prices in pharmaceuticals.