

How The Pharmaceutical Industry Impacts Healthcare Affordability In The United States

Vivek Kumar Bhagat (23218538)

1. Introduction

The increasing prices of prescription medications and the heavy financial strain of healthcare in the United States have become major issues for millions of people. High drug costs hit low- and middle-income families the hardest, making it tougher for them to afford necessary healthcare services. This problem is made worse by the complicated relationships between drug companies, insurance providers, and government regulations, which often focus more on profits than on making healthcare affordable for everyone.

This report seeks to answer my project's question, I examine trends in drug pricing, usage, and insurance coverage, and this analysis aims to highlight the underlying factor(s) that has led to unaffordable healthcare. In particular, the report looks into monopolistic behaviors in the pharmaceutical sector, rising prices of brand-name drugs, and the differences between out-of-pocket expenses and federal insurance programs that showcase a grim reality.

2. Used Data

This project aimed to investigate the research question by using two detailed datasets that offer valuable insights into healthcare spending in the United States:

- **CMS Prescription Drug Utilization and Spending Data**

This dataset centers on how prescription drugs are used and their costs within Medicare. Its main features include:

Structure: It is organized by drug type, total spending, unit costs, claims, manufacturers, etc. The data covers several years, which allows for trend analysis but for our use case, we have considered the most recent data, which is from 2022.

Relevance: It emphasizes the financial impact of prescription drug prices under the Medicare program.

Key Variables:

Brand Name and Generic Name: This helps classify the drugs.

Total Spending and Total Claims: These are important financial and usage metrics.

Total Manufacturers: This distinguishes between brand-name drugs and competitive generic drugs.

Data Quality and Licensing:

The data was complete, although for this case I did some basic cleaning and preprocessing, selecting a limited number of useful rows and columns. Besides, the dataset follows the Open Government Data Act (2018), which permits unrestricted analysis and sharing.

Medicare Part D Dataset (First 5 Rows):

	Brand Name	Generic Name	Total Manufacturers	Manufacturer Name	Total Spending	Total Dosage Units	Total Claims	Total Beneficiaries	Average Spending Per Dosage Unit	Average Spending Per Claim	Average Spending Per Beneficiary
0	Eliquis	Apixaban	1	Overall	1.521981e+10	1.669477e+09	18973041	3505142.0	9.117185	802.180963	4342.138576
1	Trulicity	Dulaglutide	1	Overall	6.225292e+09	1.356320e+07	4610823	840163.0	459.008371	1350.147613	7409.623689
2	Revlimid	Lenalidomide	1	Overall	5.935051e+09	6.720907e+06	329329	45557.0	883.096177	18021.647330	130277.478600
3	Jardiance	Empagliflozin	1	Overall	5.851721e+09	3.000422e+08	5653254	1321067.0	19.509144	1035.106645	4429.541259
4	Xarelto	Rivaroxaban	1	Overall	5.772683e+09	3.402421e+08	6524784	1311333.0	17.263298	884.731594	4402.148461

- **National Health Expenditures (NHE) Tables**

This dataset offers a broader view of healthcare spending trends and insurance coverages in the U.S. Its main features include:

Structure: It includes temporal, categorical, and quantitative variables, breaking down data by service type (like hospital care and prescription drugs) and funding source (such as private insurance and government programs).

Relevance: It monitors the overall trends in healthcare spending and changes in funding over the years.

Key Variables:

Expenditure Totals: This tracks total spending by category and funding source.

Percentage Changes: This shows year-over-year changes in spending habits.

Data Quality and Licensing:

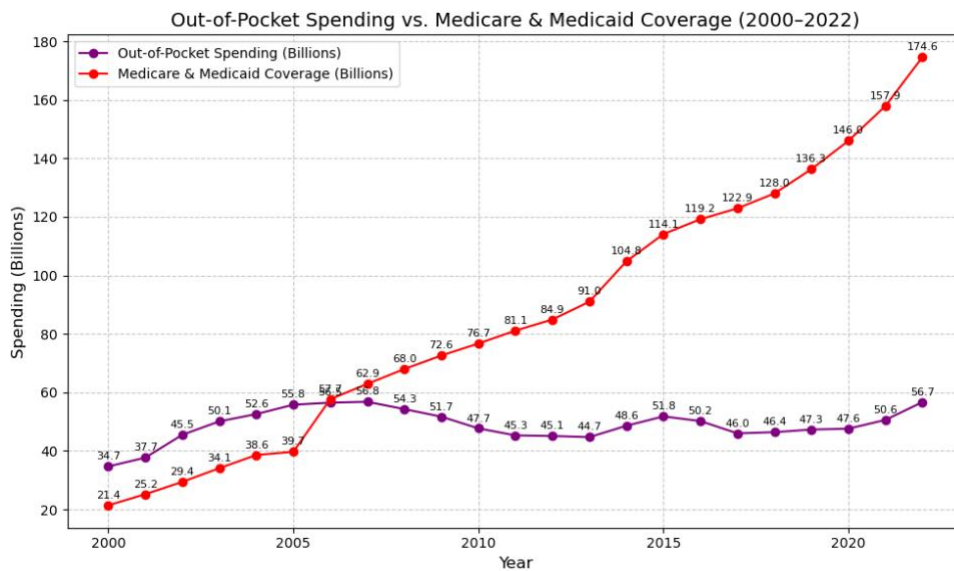
The data was a part of a bigger excel sheet; preprocessing was done to include relevant cells, fixing header inconsistencies and formatting problems. This dataset also complies with the U.S. government's standards for public data, making it freely available for academic and research use.

Retail Prescription Drugs Expenditure Dataset (First 5 Rows):

	Year	Total Cost	Out of Pocket Cost	Total Health Insurance Coverage	Private Health Insurance Coverage	Medicare Coverage	Medicaid Coverage	Other Health Insurance Programs Coverage	Other Third Party Payers Coverage
0	2000	122.0	34.7	83.4	59.9	1.6	19.8	2.1	3.9
1	2001	140.6	37.7	98.2	70.1	1.8	23.4	2.9	4.6
2	2002	159.8	45.5	109.2	75.5	1.9	27.5	4.3	5.2
3	2003	179.7	50.1	123.8	83.8	1.9	32.2	5.9	5.8
4	2004	195.6	52.6	137.1	91.9	2.7	35.9	6.7	5.9

3. Analysis

Using the **National Health Expenditures (NHE) Tables** dataset, I made a plot that you can observe below, showcasing how out-of-pocket expenses and the total coverage from Medicare and Medicaid (federal health insurance programs) has dramatically changed from 2000 to 2022. By analyzing the data, I found that **out-of-**

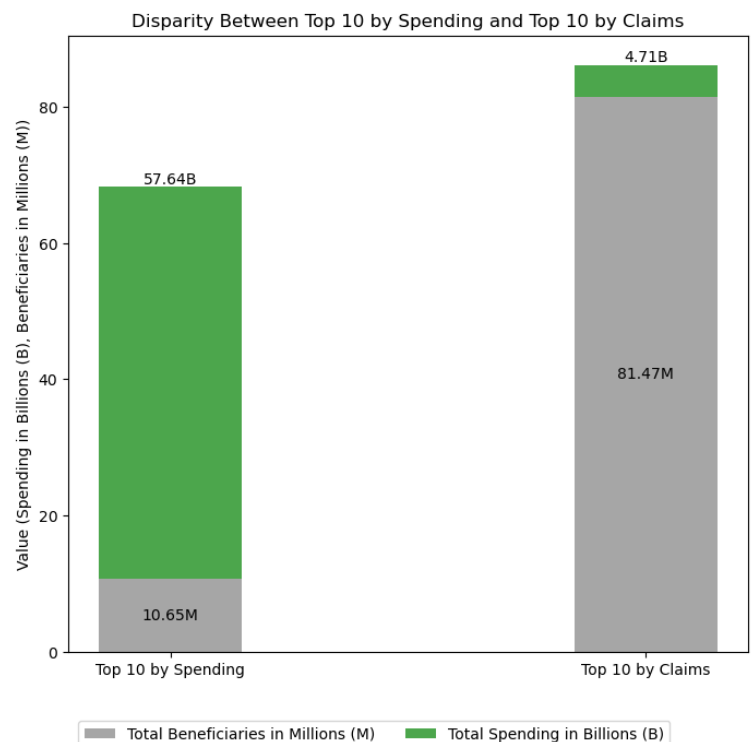


pocket spending jumped by 63.4%, increasing from \$34.7 billion in 2000 to \$56.7 billion in 2022. During the same time, the coverage provided by **Medicare and Medicaid skyrocketed by 716%**, going from \$21.4 billion in 2000 to \$174.6 billion in 2022. To put this in perspective, the U.S. population only grew by 19.1% during this time, from 282.2 million to 336.0 million. This big difference

shows that while public insurance programs have helped reduce out-of-pocket costs for people (or have been able to barely regulate it), they are also facing a huge financial strain, and the rapid increase in federal insurance spending compared to population growth points to serious inefficiencies, which I explore further.

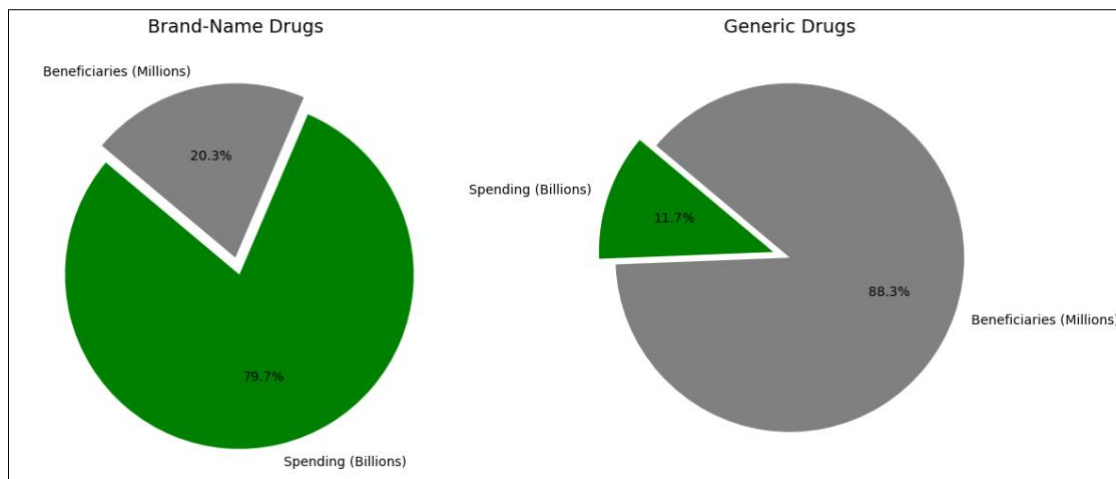
From the next plot, I can further build on my argument. The plot was made using the **CMS Prescription Drug Utilization and Spending Data** dataset, which offers detailed information on prescription drug expenses, claims, beneficiaries, and much more. I compared the difference between the top 10 drugs based on spending and the top 10 drugs based on claims (total number of times a particular drug was purchased).

The results are eye-opening: the top 10 drugs by spending total an incredible \$57.64 billion, but they **only benefit 10.65 million people**. On the other hand, the top 10 drugs by claims cost just \$4.71 billion and **serve 81.47 million beneficiaries**. This significant imbalance in focus on expensive drugs that only help a small group raises concerns about monopolistic behavior in the pharmaceutical sector. Brand-name medications, usually manufactured by a single company dominate the “Top 10 by Spending” list. These drugs target niche markets and are priced extremely high because of the lack of any competition, prioritizing profits over making them accessible to a wider audience.



This situation has larger consequences. The high prices of brand-name drugs put a strain on federal insurance programs like Medicare and Medicaid, which depend heavily on taxpayer money. This creates a chain reaction, putting financial pressure on taxpayers and adding to the ongoing problem of unaffordable healthcare in the United States.

As already stated, pharmaceutical industry's emphasis on brand-name medications leads to a system that prioritizes profits over taxpayer interests and healthcare affordability, and I can further highlight this phenomenon using the plot below. Analyzing the **CMS Prescription Drug Utilization and Spending Data** dataset, which includes information on 3,385 drugs (with 2,395 being brand-name and 990 generic), the chart reveals a significant imbalance. Brand-name drugs, which only benefit 48.27 million people, account for an astonishing \$189.33 billion in spending. In comparison, generic drugs serve a much larger group of 300.09 million individuals at a much lower cost of \$39.89 billion. This disparity underscores the exploitative nature of the current healthcare system.



To understand why this happens, or more so, how, I discovered that pharmaceutical companies engage in predatory tactics, such as **patent evergreening**, to keep their brand-name drugs

exclusive – by making minor changes to existing medications – like tweaking the formulation, dosage, or delivery method – and using this companies extend their patents and prevent generic competition. This allows them to continue charging high prices for drugs that often target small markets. Moreover, strategies like **pay-for-delay agreements**, where generic companies receive payments to postpone the launch of cheaper options, further establish these monopolistic practices.

These tactics put a heavy financial burden on federal programs like Medicare, which must spend considerable resources on these expensive medications. Ultimately, taxpayers bear the cost, as they fund these programs through public money, worsening the affordability crisis in U.S. healthcare. While generic drugs present a practical, cost-effective alternative by reaching more beneficiaries at a lower price, their potential is often overlooked due to systemic obstacles.

4. Conclusion

Although my analysis offers important insights, it doesn't fully answer the original question due to some limitations. For example, while the data examined provides information on drug spending and usage trends, it lacks detailed information on pricing negotiations, manufacturer profit margins, or how laws impact pricing. These factors could have given a deeper understanding of the underlying reasons for unaffordable healthcare. Additionally, looking into other datasets that reflect the effects of pharmaceutical supply chains, or the comparison of international drug prices might have made the conclusions stronger.

Even with these limitations, the results highlight the need to tackle unfair pricing practices, encourage the use of generic drugs, and enhance transparency in pharmaceutical pricing to build a more sustainable and fair healthcare system. More research that includes different aspects of healthcare economics would offer a broader perspective on this complicated issue.