Cutting Out the Middleman in American Healthcare: Comparative Insights into PBM-Free Cancer Drug Pricing

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Abstract

Cancer drug affordability remains a pressing global health challenge, often exacerbated by monopolistic control and pharmaceutical supply chains. In the United States, where pharmacy benefit managers (PBMs) negotiate drug prices, final costs remain disproportionately high. Independent entrepreneurs, such as Mark Cuban's Cost Plus Drug Company, have begun to challenge conventional pricing strategies by bypassing third-party intermediaries altogether. This study evaluates the potential of direct-to-consumer pharmaceutical models for reducing cancer drug costs worldwide. We conducted a comparative cost analysis of commonly prescribed cancer drugs using pricing data from 2013-2022 across the United Kingdom, Australia, and South Africa, countries with minimal PBM influence, and benchmarked these against Medicare Part D prices in the United States. We tracked the average 30-day fill cost for several high-utilization cancer medications over the past decade. Preliminary findings reveal that the United States has substantially higher per-person cancer drug costs compared to the three reference countries. The absence of PBMs is correlated with lower consumer prices, suggesting streamlined supply chains can yield meaningful improvements in affordability and access. Our research underscores the transformative potential of independent pharmaceutical entrepreneurs

in disrupting monopolistic structures and mitigating soaring cancer drug costs. Direct-to-consumer models, exemplified by Cost Plus Drug Company, appear poised to improve patient outcomes, reduce financial strain, and advance health justice. Achieving scalability will require proactive policy reforms, greater market transparency, and sustained investment in innovation, reshaping the pharmaceutical landscape for more equitable global access to cancer treatment.

Keywords: Cancer drug affordability, Pharmacy benefit managers (PBMs), Direct-to-consumer pharmaceutical models, Drug pricing disparities, Cost Plus Drug Company

Introduction

U.S. Context: The Rising Cost of Cancer Drugs

Cancer drug expenditures have risen disproportionately in the United States, surpassing the overall trajectory of health care spending in other developed nations (Yabroff et al., 2011). A multitude of factors, including extended patent protections, monopoly pricing, and the launch of novel targeted therapies, have propelled cancer pharmaceuticals to become a leading contributor to escalating health care costs (Laviana et al., 2020). These high expenditure patterns are not solely attributable to the aging population and increased prevalence of cancer but also to the expensive technologies and medications introduced into routine clinical practice (Rajkumar, 2020). Pharmaceutical innovation, although clinically beneficial in many instances, often materializes in the marketplace without robust comparative-effectiveness data to justify significant price increases, creating tension between medical advancement and affordability.

Access Barriers Due to High Drug Prices

In parallel with soaring cancer drug costs, many patients experience profound financial burdens that limit access to necessary therapies (Yabroff et al., 2011). Elevated drug prices can result in non-adherence or delayed treatment initiation, particularly among vulnerable (low

socioeconomic status) or uninsured populations. Copayment structures and insurance policies that pass a significant share of costs to patients further compound these barriers (Laviana et al., 2020). As data increasingly highlight disparities in treatment uptake, particularly for lower-income individuals, experts have emphasized the importance of addressing these systemic obstacles to equitable care. The resulting underuse of potentially lifesaving interventions endangers patient outcomes and amplifies the social costs of cancer.

Role of Intermediaries: Focus on PBMs in the U.S.

A critical factor contributing to high costs rests within the pharmaceutical supply chain, where pharmacy benefit managers (PBMs) negotiate prices between manufacturers and insurers (Laviana et al., 2020). Originally tasked with leveraging bulk purchasing to reduce medication expenses, PBMs have been criticized for their opaque rebate practices, which can inflate out-of-pocket costs rather than systematically lowering prices (Rajkumar, 2020). Some studies suggest that these intermediaries can contribute to fragmented care, as cost-saving opportunities are not always translated into real patient benefits. The growing vertical consolidation, wherein health systems acquire physician practices and merge with specialty pharmacies, further complicates transparency. For cancer patients requiring frequent medication refills or combination regimens, convoluted negotiations often impede cost-effective care and limit patient choice (Yabroff et al., 2011).

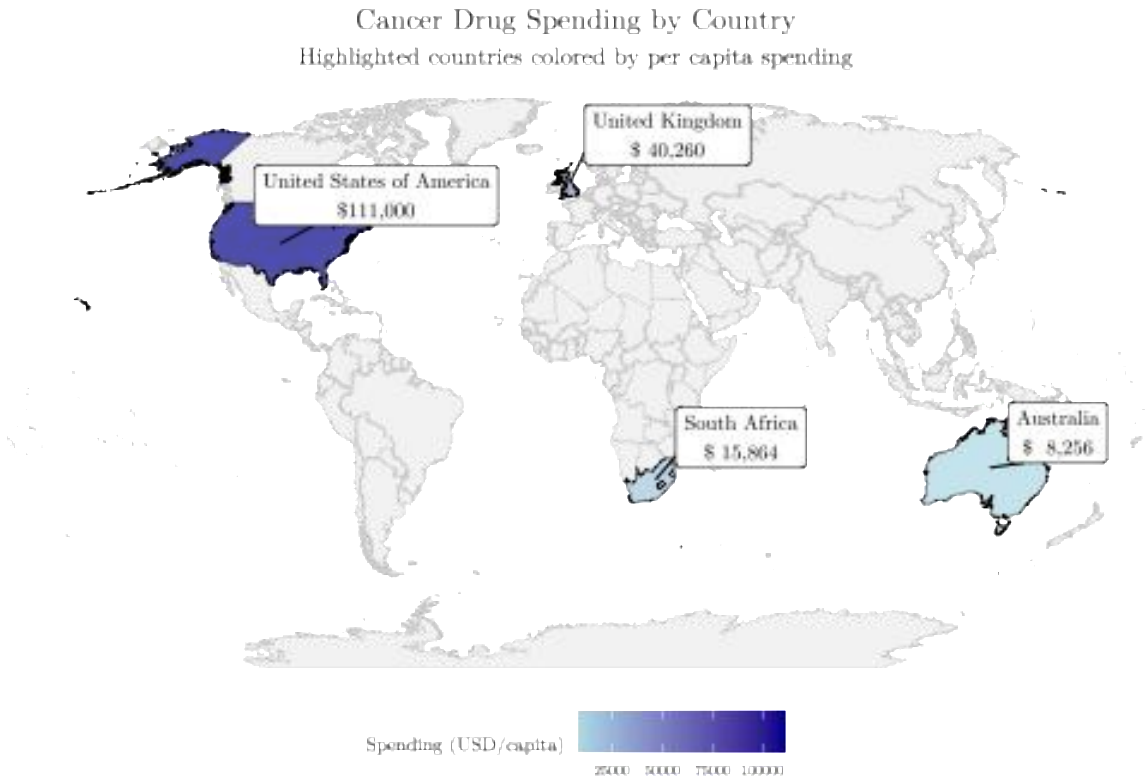
Can Direct-to-Consumer (DTC) Models Reduce Costs?

Against this backdrop, emerging direct-to-consumer pharmaceutical models, exemplified by Mark Cuban's Cost Plus Drug Company, propose an alternative approach: bypassing PBMs altogether and offering medications at reduced markups (Laviana et al., 2020). By removing

extraneous intermediaries, these ventures aim to align drug prices more closely with manufacturing costs and produce genuine savings for consumers. Countries such as the United Kingdom, Australia, and South Africa, where PBMs wield far less influence, may offer instructive comparisons: their cancer medication expenditures are lower on a per-capita basis, hinting that streamlined distribution pathways could yield meaningful affordability improvements (Rajkumar, 2020).

The present study undertakes a cross- national pricing analysis of commonly prescribed cancer drugs, juxtaposing U.S. Medicare Part D figures with international markets. By examining supportive regulatory policies and the feasibility of scaling DTC models worldwide, this research seeks to determine whether circumventing PBMs could materially enhance cancer drug accessibility, diminish financial toxicity, and promote health equity on a global scale (Yabroff et al., 2011).

Figure 1.
Cancer Drug Spending Across the United States, United Kingdom, South Africa, and Australia.



Highlighted countries are colored by per capita spending. All numerical data presented in the figures in this paper were obtained from (Australian Government Department of Health, 2023; Centers for Medicare & Medicaid Services, 2023; National Institute for Health and Care Excellence, 2023; South African Department of Health, 2023).

Literature Review and Background

The Role of PBMs in the Pharmaceutical Supply Chain

Pharmacy benefit managers (PBMs) serve as a central negotiator and organizer within the U.S. prescription drug ecosystem, leveraging their position between insurers, drug manufacturers, and pharmacies to manage both pricing and medication access (Rosenthal et al., 2023). Initially created to streamline claims adjudication and reduce administrative burdens, PBMs now undertake a complex portfolio of tasks, such as formulating preferred drug lists, negotiating rebates, and influencing the copay tiers patients ultimately face (Dana et al., 2017; Mattingly et al., 2023). By deciding which medications earn “preferred” status, PBMs directly

shape the out-of-pocket costs for enrollees, a dynamic that can either promote generic utilization or inadvertently reward higher-priced brand-name agents, depending on how rebates and other concessions are allocated (Rosenthal et al., 2023).

A recurring theme in the literature is that the business practices of PBMs can mask the true price of pharmaceuticals. For instance, (Rosenthal et al., 2023) noted that "spread pricing," when a PBM charges the health plan one rate while reimbursing the dispensing pharmacy a lower amount, can obscure the actual per-unit drug cost. This hidden differential may yield revenue for the PBM yet complicates efforts by plan sponsors or policymakers to establish a fair, verifiable pricing standard. Further contributing to opacity is the PBM's role in applying (or retracting) direct and indirect remuneration (DIR) fees. These often materialize post-sale, making it difficult for retail pharmacies to predict their final earnings on any given transaction (Rosenthal et al., 2023). Consequently, community pharmacists and other stakeholders have raised concerns about the long-term implications of such unpredictability.

Numerous policymakers and researchers have argued that the PBM's central position in the supply chain gives it disproportionate leverage. (Dana et al., 2017) emphasize that as new high-cost therapies emerge, PBMs' rebate negotiations grow increasingly pivotal, but also more difficult to track. Because patients commonly pay cost sharing based on the medication's list price rather than its rebated price, any discrepancy between these figures can inflate patient expenditures or deter medication adherence. Against that backdrop, more transparent models, such as direct-to-consumer (DTC) pharmacies, are touted as possible antidotes to traditional, PBM-mediated drug supply chains (Mattingly et al., 2023). Whether these newer approaches truly dismantle entrenched pricing markups, however, remains a subject of ongoing scholarly debate.

Figure 2.

Pharmacy Benefit Manager (PBM) Flow of Funds

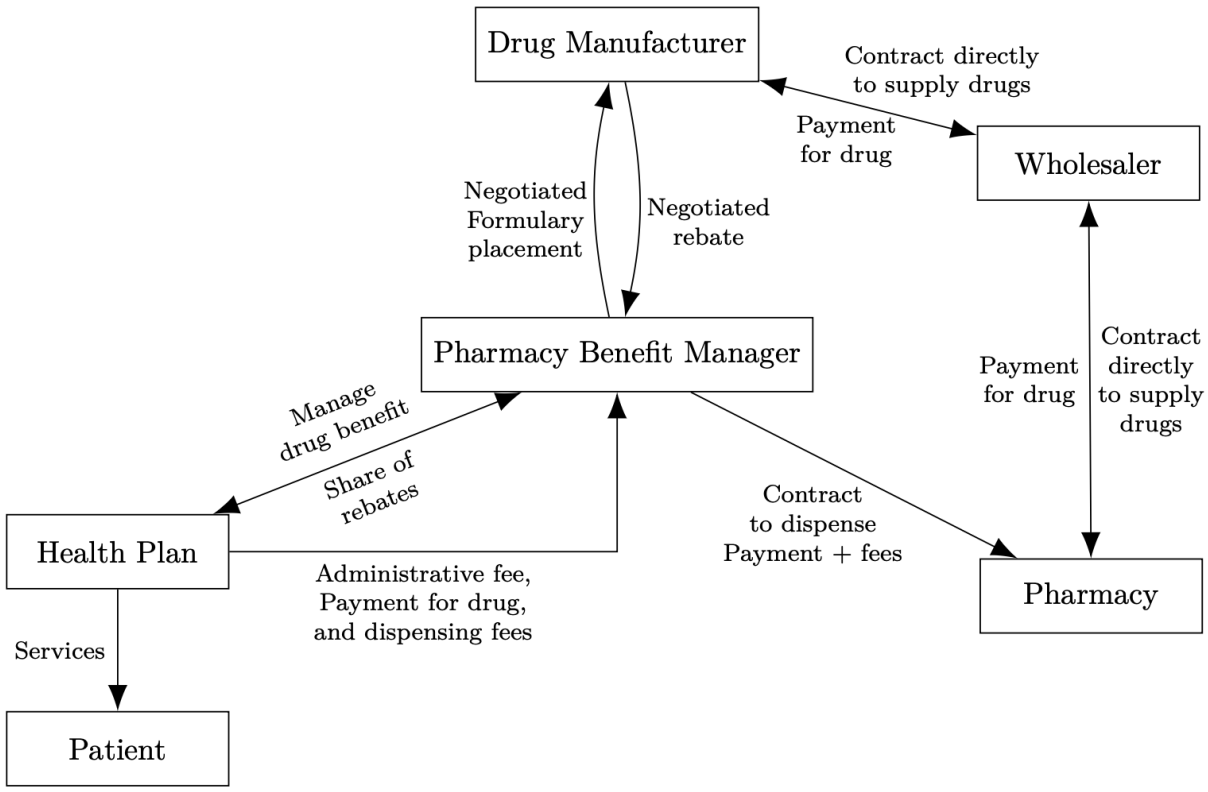
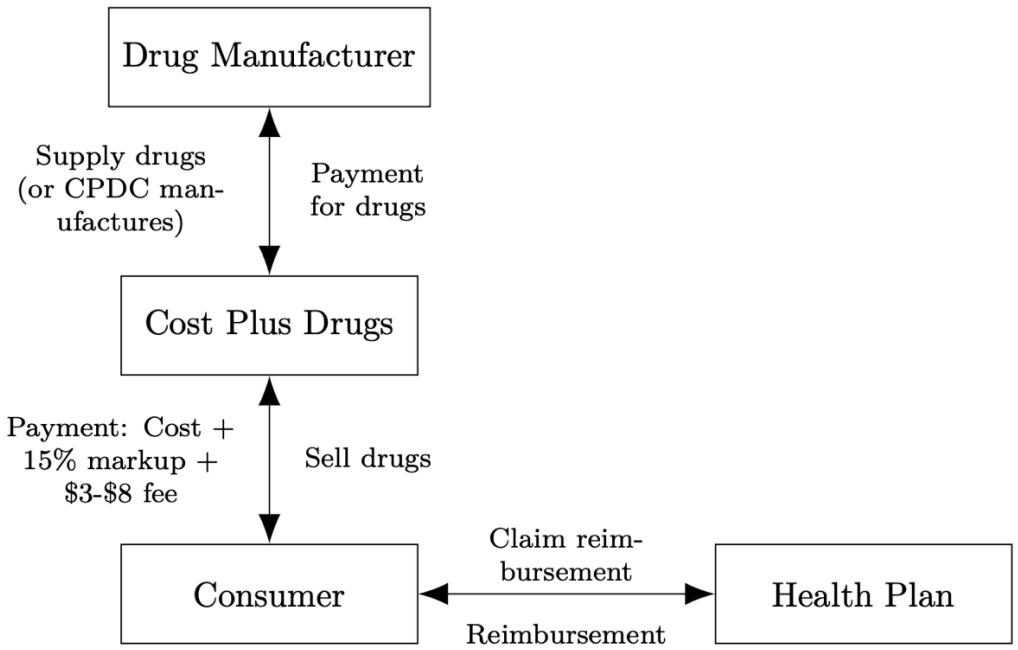


Figure 3.

Cost Plus Drugs Direct-to-Consumer Flow (No PBM)



Critiques and Analyses of PBM Practices

Scrutiny of PBM operations has intensified over the past decade, prompted by alleged conflicts of interest, lack of transparency, and outsized bargaining power (Mattingly et al., 2023; Rosenthal et al., 2023). Investigators increasingly examine how PBMs' contractual strategies (e.g., spread pricing, volume-based rebates) might not always align with the cost-containment objectives of plan sponsors. Indeed, (Mattingly et al., 2023) argue that PBMs' dual role, managing pharmacy networks while profiting from rebate-driven contracts, can fuel concerns about self-dealing, especially when these entities also own specialty or mail-order pharmacies. Critics contend such vertical integration enables PBMs to steer prescriptions to their own pharmacy affiliates, reduce reimbursement rates for competing pharmacies, and shield the full value of negotiated rebates from public view. On the pharmacy side, an enduring grievance centers on unpredictably applied fees and overall reimbursement volatility. (Rosenthal et al., 2023) suggests that smaller, community-based pharmacies are disproportionately susceptible to underpayment, which could threaten their financial viability and negatively impact patient access in underserved regions. Meanwhile, from a policymaking perspective, (Dana et al., 2017) highlight the disjointed environment wherein assorted state legislatures have attempted to rein in perceived PBM excesses through piecemeal reforms, such as prohibiting gag clauses that stop pharmacists from disclosing cheaper out-of-pocket prices or restricting retroactive fee collection (Mattingly et al., 2023). However, note that the ultimate efficacy of these legislations hinges on how effectively states reconcile PBM oversight with federal constraints, including the Employee Retirement Income Security Act (ERISA) and Medicare regulations.

Recent federal proposals advocate mandatory rebate pass-through and standardized pricing transparency requirements aimed at exposing hidden profits and aligning incentives more directly with patient affordability. Still, scholars differ on whether

disclosure mandates alone can correct underlying market power imbalances (Dana et al., 2017; Mattingly et al., 2023. As policymakers deliberate between incremental reforms versus broader structural change, the literature underscores a fundamental tension: PBMs undeniably help coordinate benefits and manage drug spending, yet the opacity surrounding their negotiated rates and post-claim adjustments complicates assessing whether their cost- curbing goals and stakeholder interests are genuinely aligned.

International Drug Pricing and Distribution Models

United Kingdom (NHS Model)

In the United Kingdom, pharmaceutical pricing and distribution are closely intertwined with the National Health Service (NHS), a universal health coverage framework financed primarily through taxation. Under this structure, the government negotiates with pharmaceutical manufacturers to establish pricing agreements that balance patient access with cost containment (Grosios et al., 2010). The "National Institute for Health and Care Excellence" (NICE) plays a pivotal role by conducting health technology assessments to determine clinical and cost effectiveness before a drug is reimbursed (Richards & Hudson, 2016). Consequently, while the NHS aims to provide widespread access, manufacturers encounter firm requirements for evidence-based pricing, resulting in a system that attempts to minimize out-of-pocket expenses for patients while maintaining public budgetary discipline.

Australia (PBS Model)

Australia's Pharmaceutical Benefits Scheme (PBS), established in 1950, similarly anchors drug pricing discussions in cost-effectiveness evaluations (Duckett, 2004). Once the Therapeutic Goods Administration (TGA) approves a medication's quality, safety, and

efficacy, the Pharmaceutical Benefits Advisory Committee (PBAC) reviews economic and clinical data prior to PBS listing (Mellish et al., 2015). In this system, the government subsidizes listed medicines, with fixed co-payments varying by patient category; concessional beneficiaries pay lower fees compared to the general public (Horner, 2022). The PBS's consolidated purchasing power helps negotiate affordable medication costs, but local manufacturing must still compete with large-scale overseas production, resulting in an import-heavy pharmaceutical market (Rodwin, 2021).

South Africa

Historically, South Africa's pharmaceutical sector included domestic formulation plants and foreign company subsidiaries, but trade liberalization led to the consolidation of production elsewhere and a growing reliance on imports (Horner, 2022). Despite government strategies to advance domestic production, such as the Strategic Industrial Projects (SIP) scheme, many global manufacturers closed or downsized local plants in favor of "centers of excellence" abroad (Keyter et al., 2018). Regulatory processes, previously managed by the Medicines Control Council (MCC), now transition to the newly formed South African Health Products Regulatory Authority (SAHPRA), which seeks to expedite drug approvals while maintaining robust quality standards (Grobler et al., 2019). Yet domestic producers still face a steep challenge against competitively priced imports, especially from India, where economies of scale and upstream manufacturing capacity prevail.

U.S. Comparison

In the United States, drug pricing frequently reflects a market-based model characterized by higher launch prices and substantial variation in cost-sharing requirements among different insurance plans (Dana et al., 2017). The absence of broad

centralized bargaining, apart from specific federal programs like Medicaid and the Department of Veterans Affairs, often yields elevated medication expenditures by international comparison. Nevertheless, proposals and limited pilot programs have emerged to emulate features of Australian or British approaches, such as cost-effectiveness reviews or more direct government negotiation for certain patient populations (Richards & Hudson, 2016). Although pharmaceutical innovators in the U.S. drive global R&D investment, contentious debates about affordability and out-of-pocket burdens persist, illustrating a tension between incentivizing innovation and ensuring reasonable patient access.

Methods

Study Design and Data Collection

This study utilized a comparative cost analysis to examine cancer drug pricing across the United States, United Kingdom, South Africa, and Australia. The primary objective was to compare U.S. cancer drug prices, influenced by pharmacy benefit managers (PBMs), with prices in international markets where PBMs have minimal involvement. A secondary objective was to evaluate the potential of direct-to-consumer (DTC) pharmaceutical models, such as Mark Cuban's Cost Plus Drug Company, to reduce costs by eliminating PBM intermediaries.

For the United States, pricing data were obtained from the Centers for Medicare & Medicaid Services (CMS) Medicare Part D Prescribers database, covering 2013 to 2022 (Centers for Medicare & Medicaid Services, 2023). This database provided cost metrics, including total cost, 30-day cost (approximating a single treatment cycle), and daily cost. Data for 498 cancer drugs were extracted, focusing on high-utilization immunotherapies and chemotherapies. When possible, our inclusion criteria required drugs to have at least five years of post-approval pricing data, ensuring meaningful longitudinal analysis. For the United Kingdom, 2025 pricing data

were sourced from the British National Formulary (BNF), a standard reference for NHS drug costs, reported per unit of medication (National Institute for Health and Care Excellence, 2023). Historical UK pricing data were unavailable. In South Africa, pricing data from 2013 to 2025 were accessed via the Databases of Medicine Prices maintained by the South African Department of Health (South African Department of Health, 2023). Australia's Pharmaceutical Benefits Scheme (PBS) provided ex-manufacturer prices for the same period, also reported per unit (Australian Government Department of Health, 2023). For South Africa and Australia, unit prices were converted to estimated 30-day costs using standard treatment regimens from clinical guidelines.

Data Analysis

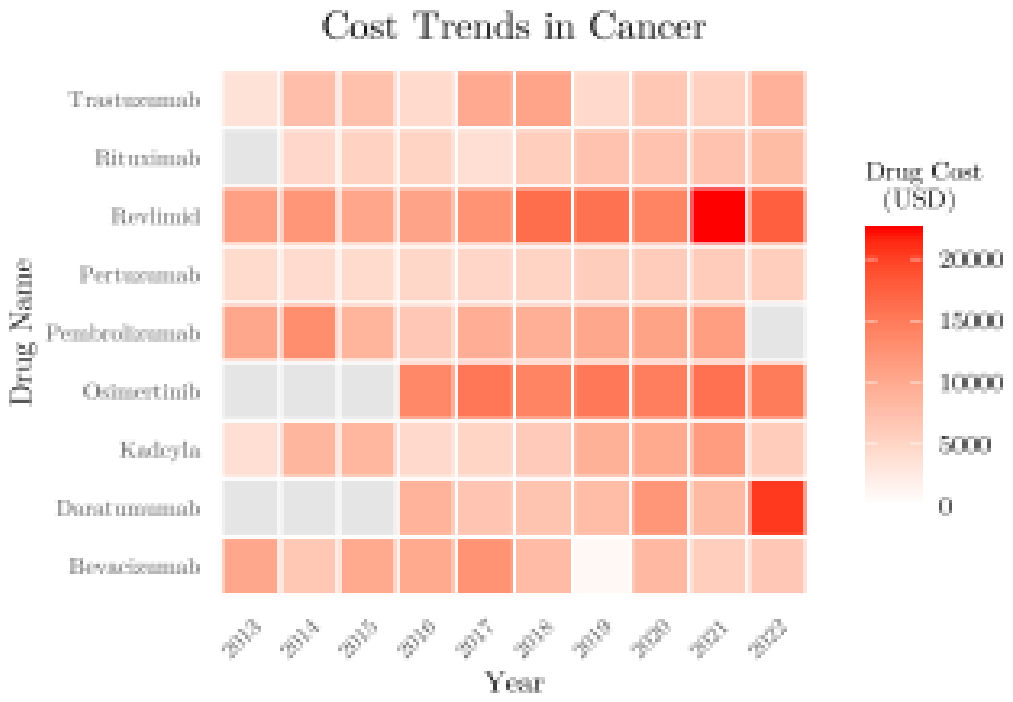
Drugs were categorized into CAR-T therapies, antibody-drug conjugates [ADCs], T-cell receptor [TCR] therapies, and chemotherapies (e.g., Cisplatin) for analysis. In the U.S., the annual average costs of a 30-day treatment regimen for each drug were calculated from 2013 to 2022. For international markets, unit prices were adjusted to 30-day costs by applying typical dosages and frequencies from national treatment guidelines. All costs were converted to U.S. dollars (USD) using annual average exchange rates from the World Bank for cross-national comparisons (World Bank, 2023).

Per-capita cancer drug spending was calculated by dividing total expenditures by the cancer patient population in each country, using national health statistics. The study also modeled the hypothetical impact of a DTC pricing structure on U.S. drug costs, comparing these to Medicare Part D prices. Descriptive statistics were used to summarize cost trends, including mean 30-day costs and annual percentage changes. Linear regression was applied to assess cost trajectories for immunotherapies versus chemotherapies, testing for differences in growth rates. All assumptions of linear regression, such as linearity, independence of errors, homoscedasticity,

and normality of error, were met. All analyses were conducted in R (version 4.3.2), with visualizations generated using the ggplot2 package.

Figure 4.

A 10-Year Cost Trend of Selected Cancer Drugs in the United States.



Discussion and Conclusion

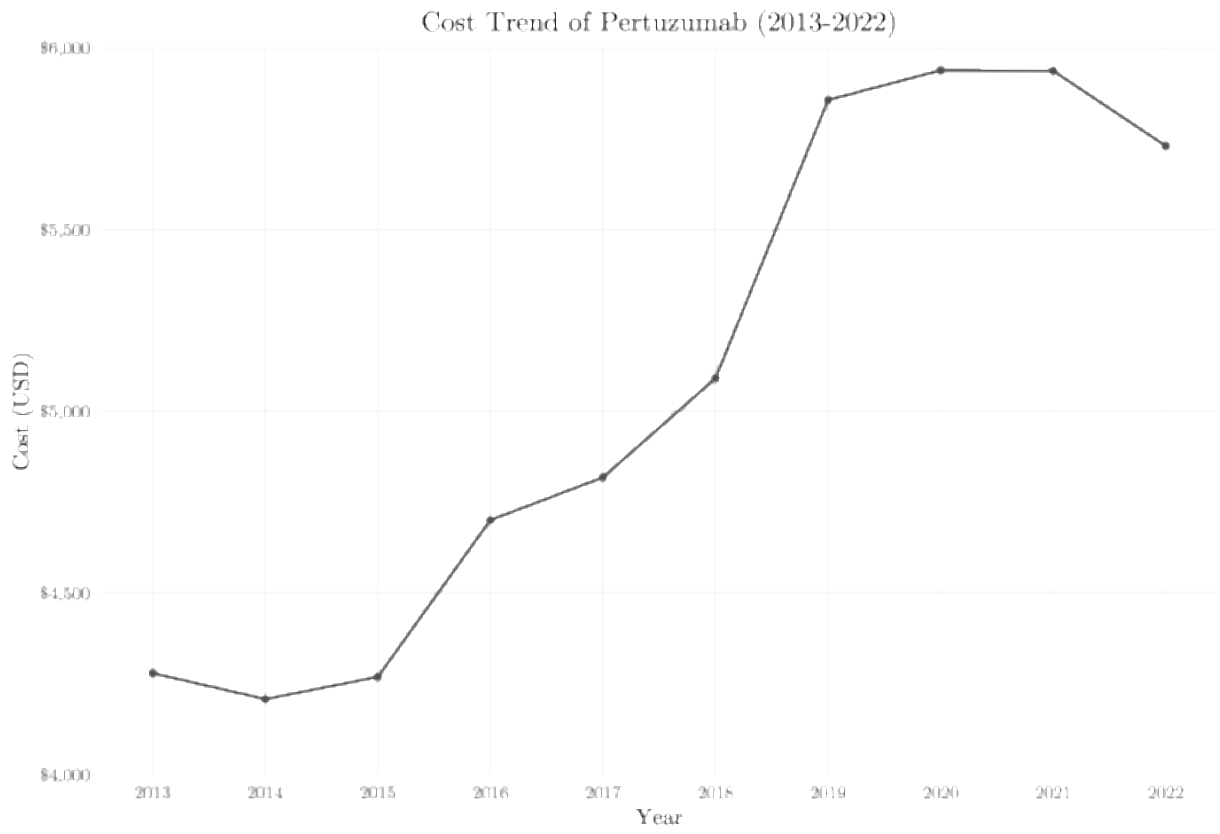
Discussion

The findings of this study reveal significant disparities in cancer drug pricing between the United States and countries with minimal PBM influence, such as the United Kingdom, Australia, and South Africa. The analysis shows that U.S. per-capita cancer drug spending substantially exceeds that of the reference countries (Figure 1), driven by opaque pricing structures facilitated by PBMs, as illustrated in the flow of funds (Figure 2) (Centers for Medicare & Medicaid Services, 2023). The estimated 30-day cost of high- utilization drugs like

Pertuzumab was 20–30% lower in the UK, Australia, and South Africa compared to U.S. Medicare Part D prices (Figure 7), suggesting that streamlined supply chains, unencumbered by intermediary negotiations, can significantly enhance affordability and access to essential cancer therapies. Cost trends further highlight the impact of market dynamics on pricing. Immunotherapies, such as Pertuzumab, exhibited substantial cost increases in the U.S. from 2013 to 2022 (e.g., a 34% rise from $4,279.44 to $5,730.14) (Figure 5), driven by high development costs and market exclusivity (Laviana et al., 2020)

Figure 5.

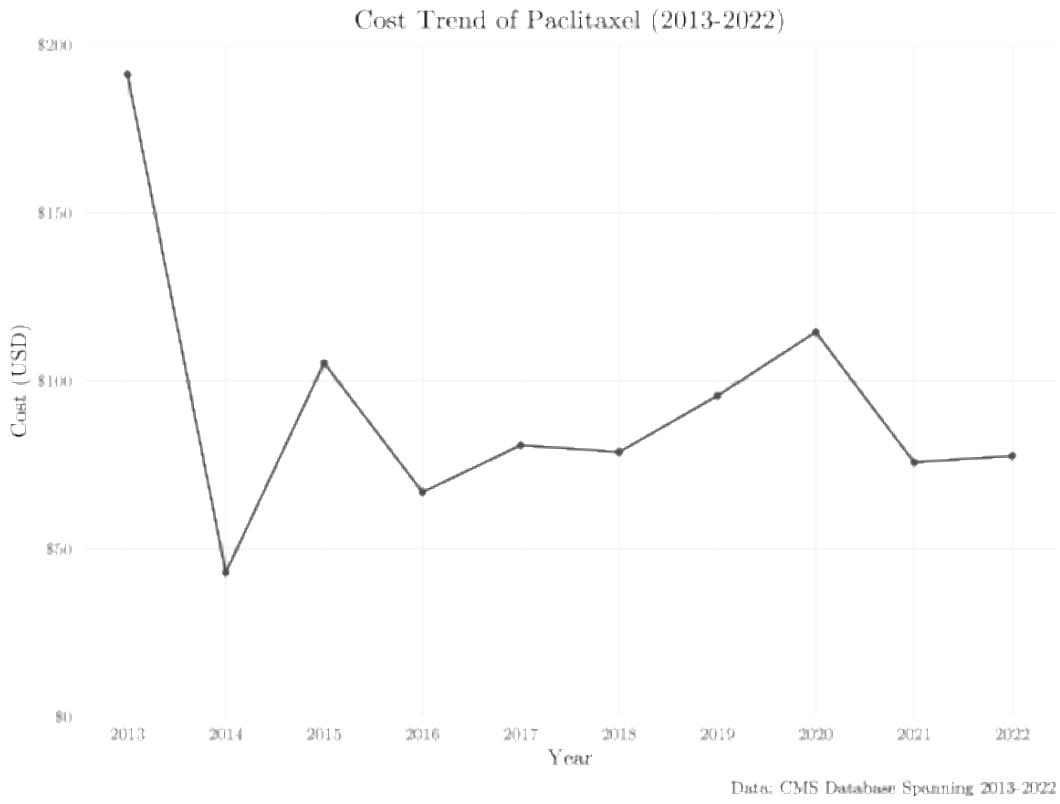
10-Year Cost Trend of Pertuzumab (Monoclonal Antibody) in the United States. Data shows average 30-day cost from 2013-2022.



In contrast, chemotherapies like Paclitaxel, often available as generics, showed stable or declining costs (e.g., $191.19 in 2013 to $77.62 in 2022) (Figure 6). These divergent trajectories, detailed in the 10-year U.S. cost trends (Figure 4), underscore how innovation-driven pricing for newer therapies, combined with PBM rebate practices that prioritize list prices, can exacerbate cost escalation, placing significant financial burdens on patients (Dana et al., 2017).

Figure 6.

10-Year Cost Trend of Paclitaxel (Chemotherapy) in the United States. Data shows average 30-day cost from 2013-2022.



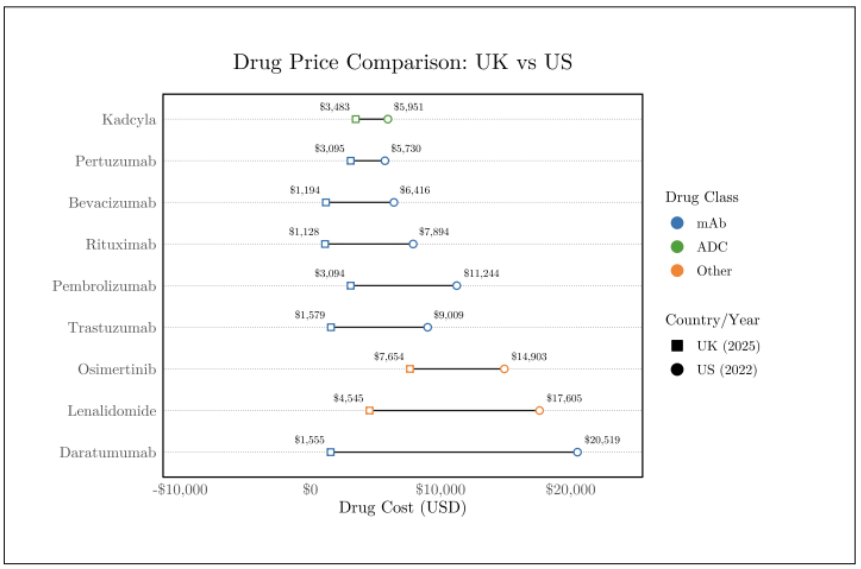
The DTC model, exemplified by Mark Cuban's Cost Plus Drug Company, offers a promising alternative, as depicted in the DTC flow of funds (Figure 3). By employing a transparent pricing structure (cost + 15% markup + $3–$8 fee), the DTC model achieved hypothetical savings of up to 40% on drugs like Pertuzumab compared to Medicare Part D prices (Figure 3) (Centers for Medicare & Medicaid Services, 2023). This mirrors the lower per-capita spending in countries with centralized pricing systems (Figure 1), indicating that bypassing PBMs could yield comparable affordability improvements in the U.S. However, scaling DTC models faces challenges, including regulatory barriers, resistance from entrenched intermediaries, and the need for widespread consumer adoption. The success of streamlined pricing in the UK, Australia, and South Africa (Figure 7) suggests that supportive policies, such as mandatory rebate pass-throughs or standardized pricing transparency, could facilitate DTC expansion in the U.S. (Mattingly et al., 2023).

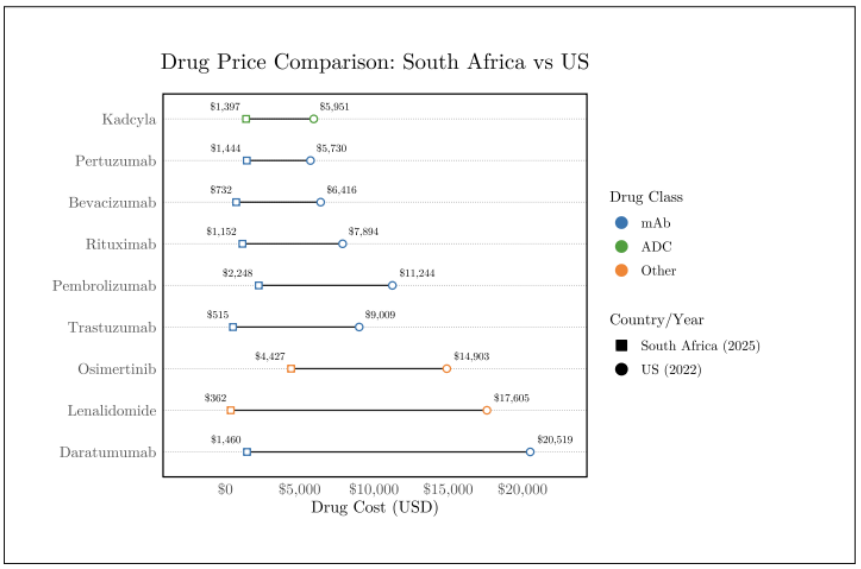
Policy implications are critical to this analysis. The UK's National Health Service (NHS) and Australia's Pharmaceutical Benefits Scheme (PBS) leverage centralized bargaining and cost-effectiveness evaluations to constrain drug prices, providing a potential model for U.S. reforms (Duckett, 2004; Grosios et al., 2010). South Africa's evolving regulatory framework, despite reliance on imports, underscores the importance of robust oversight to balance affordability and innovation (Horner, 2022). In the U.S., state-level reforms, such as prohibitions on gag clauses or restrictions on retroactive fees, have had limited impact due to federal constraints like the Employee Retirement Income Security Act (ERISA) (Mattingly et al., 2023). Comprehensive measures, such as empowering Medicare to negotiate prices or mandating transparency in PBM rebate practices, could align U.S. pricing with international benchmarks and support DTC scalability (Dana et al., 2017).

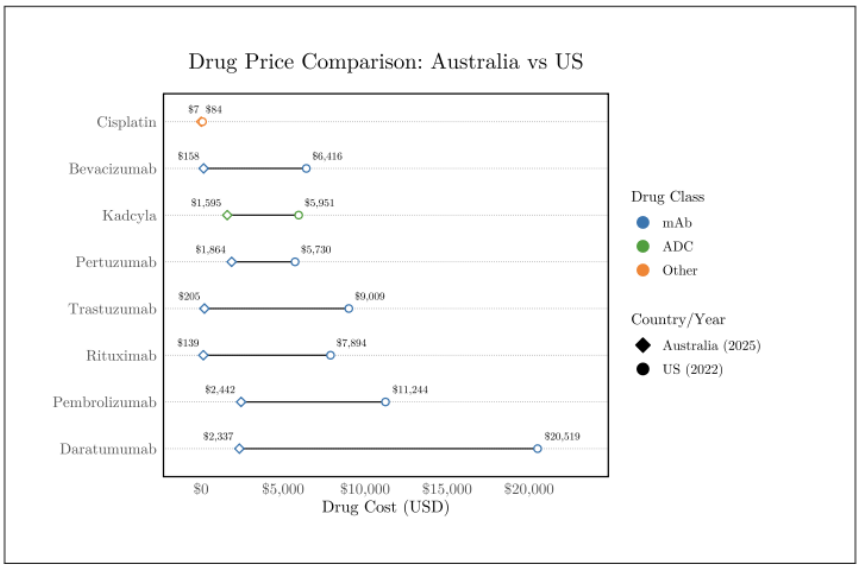
Limitations of this study include the absence of historical pricing data for the UK, which constrained longitudinal comparisons (Figure 7). The DTC model's savings were modeled based on Cost Plus Drugs' pricing structure (Figure 3), which may not fully account for real-world challenges, such as supply chain logistics or manufacturer pushback. Future research should investigate patient-level outcomes, including adherence rates and financial toxicity, under DTC models and evaluate the feasibility of integrating DTC approaches with existing insurance frameworks.

Figure 7.

Cost change after 10 years of Selected Cancer Drugs in the United Kingdom (top), South Africa (middle), and Australia (bottom) Compared to the United States. Each panel shows the comparative pricing trends for representative cancer drugs.


Drug Price Comparison: UK vs US
Kadcyla
Pertuzumab
Bevacizumab
Rituximab
Pembrolizumab
Trastuzumab
Osimertinib
Lenalidomide
Daratumumab
$3,483
$5,951
$3,095
$5,730
$1,194
$6,416
$1,128
$7,894
$3,094
$11,244
$1,579
$9,009
$7,654
$14,903
$4,545
$17,605
$1,555
$20,519
-$10,000
$0
$10,000
$20,000
Drug Cost (USD)
Drug Class
mAb
ADC
Other
Country/Year
UK (2025)
US (2022)


Drug Price Comparison: South Africa vs US
Kadcyla
Pertuzumab
Bevacizumab
Rituximab
Pembrolizumab
Trastuzumab
Osimertinib
Lenalidomide
Daratumumab
$1,397
$5,951
$1,444
$5,730
$732
$6,416
$1,152
$7,894
$2,248
$11,244
$515
$9,009
$4,427
$14,903
$362
$17,605
$1,460
$20,519
$0
$5,000
$10,000
$15,000
$20,000
Drug Cost (USD)
Drug Class
mAb
ADC
Other
Country/Year
South Africa (2025)
US (2022)


Drug Price Comparison: Australia vs US
Cisplatin
Bevacizumab
Kadcyla
Pertuzumab
Trastuzumab
Rituximab
Pembrolizumab
Daratumumab
$7
$84
$158
$6,416
$1,595
$5,951
$1,864
$5,730
$205
$9,009
$139
$7,894
$2,442
$11,244
$2,337
$20,519
$0
$5,000
$10,000
$15,000
$20,000
Drug Cost (USD)
Drug Class
mAb
ADC
Other
Country/Year
Australia (2025)
US (2022)

Conclusion

This study underscores the transformative potential of DTC pharmaceutical models in addressing the escalating costs of cancer drugs in the United States. By eliminating PBM intermediaries, as shown in the DTC model (Figure 3), ventures like Cost Plus Drug Company can achieve significant cost reductions, with modeled savings of up to 40% compared to Medicare Part D prices (Centers for Medicare & Medicaid Services, 2023). Cross-national comparisons with the UK, Australia, and South Africa (Figure 7) demonstrate that minimizing intermediary influence correlates with lower drug costs, exposing inefficiencies in the U.S.'s PBM-mediated supply chain (Figure 2). To fully realize DTC models' potential, policymakers must prioritize reforms that enhance pricing transparency, reduce regulatory barriers, and promote market competition. Such measures could alleviate financial burdens, improve access to life-saving therapies, and advance health equity globally. As independent entrepreneurs challenge monopolistic structures, sustained investment in innovation and supportive policy frameworks will be essential to reshaping the pharmaceutical landscape for the benefit of cancer patients worldwide.

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