



PROJECTIONS OF THE NON-RETAIL PRESCRIPTION DRUG SHARE OF NATIONAL HEALTH EXPENDITURES

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Acknowledgments

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Background

Each year the Centers for Medicare & Medicaid Services (CMS) releases a ten-year projection of national health expenditures (NHE) that includes a prescription drug component. In the CMS data, prescription drug spending refers to what was paid for retail medicines at the point of sale (e.g., at retail and mail order pharmacies), net of manufacturer rebates. There is also substantial “non-retail” spending on prescription drugs that is included in the CMS estimates but is not separately categorized. Non-retail drug spending consists of prescription drugs that are administered as a part of a physician visit, or during a hospital or nursing home stay. The cost of these drugs is built into the charge for the visit or stay and is captured in the CMS data as spending on physician, hospital, and nursing home services, respectively.

The [most recent CMS projection](#) of national health expenditures was released in March 2022 and covers the years 2021 through 2030. This data brief augments the CMS projection with an estimate of non-retail prescription drug spending to form a projection of total (retail plus non-retail) medicine spending as a share of NHE. This 2022 report represents the seventh time we have added a non-retail component to the CMS projection.¹ Our approach to estimating the non-retail component of drug spending builds upon the methods we have used in previous years, with modifications to accommodate for changes in data sources as well as emerging trends. Details on the data and methods are provided in the Appendix.

Findings

Exhibit 1 presents our ten-year projection (2021 to 2030) of the share of NHE going to retail and non-retail prescription drug spending, with 2020 added to provide the most recent historical CMS health account data point. CMS reports that retail drug spending accounted for 9.4% of NHE in 2020 and projects this share to fall to 9.0% by 2030. We estimate that non-retail prescription drug spending accounted for an additional 4.3% of NHE in 2020 and will grow to 4.6% by 2030.

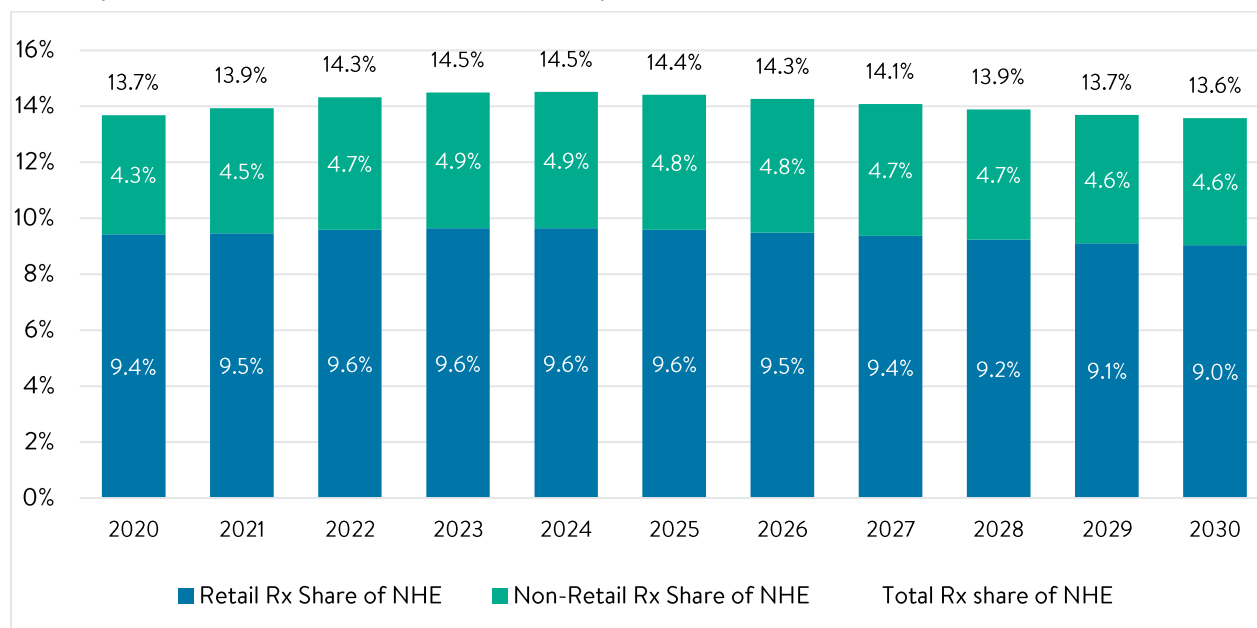
In total, retail and non-retail prescription drug spending represented 13.7% of NHE in 2020. Over the next decade, total prescription medicine spending as a share of NHE is projected to remain constant, peaking in 2024 at 14.5%, and then dropping to 13.6% by 2030.

¹ Previous releases were in [October 2014](#), [August 2015](#), [May 2017](#), [June 2018](#), [June 2019](#), and [September 2020](#).



EXHIBIT 1

Prescription Drug Share of National Health Expenditures – 2020 to 2030



Sources: Retail shares are from March 2022 CMS Office of the Actuary NHE projections, except for 2020 share, which is CMS' historical estimate. Non-retail shares are Altarum estimates.

In dollar terms, total spending on prescription drugs is projected to increase from \$564.4 billion in 2020 to \$917.1 billion in 2030 (Exhibit 2). Between 2020 and 2030, retail drug spending is projected to increase from \$388.6 billion to \$609.8 billion, while non-retail spending is estimated to increase from \$175.8 billion to \$307.3 billion. During this period, total NHE is projected to grow from \$4.1 trillion to \$6.8 trillion.

EXHIBIT 2

Prescription Drug Spending and National Health Expenditures, 2020 – 2030 (\$billions)

Year	Retail Rx	Non-Retail Rx	Total Rx	NHE
2020	388.6	175.8	564.4	4,124.0
2021	406.5	192.2	598.7	4,297.1
2022	431.3	212.9	644.1	4,496.6
2023	455.0	229.3	684.3	4,720.5
2024	478.8	241.3	720.1	4,962.1
2025	501.2	252.6	753.8	5,231.0
2026	522.6	263.4	786.0	5,510.8
2027	543.4	273.8	817.2	5,802.4
2028	565.2	284.8	850.1	6,120.9
2029	587.5	296.1	883.6	6,450.9
2030	609.8	307.3	917.1	6,751.5

Sources: Retail drug spending and total NHE are from March 2022 CMS Office of the Actuary NHE projections, except for 2020 data, which are CMS' historical estimates. Non-retail spending figures are Altarum estimates.



In the national health accounts, non-retail prescription drug spending is included in the health care services category that reflects where the medicine was administered. For example, the cost of medicines dispensed during a hospital stay are subsumed in the hospital bill and are included in spending on hospital services in the health accounts. Exhibit 3 presents estimates of where the non-retail spending appears in the health accounts by service category.

EXHIBIT 3

National Health Expenditures Attributable to Non-Retail Medicines by NHE Category (\$billions)

NHE Category	2018	2019	2020
Hospital Inpatient + Outpatient	87.6	92.1	101.2
Physician & Non-Hospital Clinical Services	56.4	58.7	64.1
Nursing Homes	17.7	16.5	17.5
Home Health	7.7	8.5	9.5
TOTAL	169.4	175.8	192.2

Source: Altarum estimates. Figures may not sum due to rounding. See appendix for detailed methodology on allocation of spending and changes from previous reports.

Discussion

Estimates of the share of health spending going to prescription drugs vary based on the categories of drug spending included in the numerator and the definition of total spending included in the denominator.² Presenting prescription drug spending as a share of total NHE, as in Exhibit 1, provides consistency with the way data are reported in the annual CMS NHE releases. By expanding the numerator to include both retail and non-retail drug spending, we raise the estimate of the drug spending share of total NHE from 9% to 14%.

The denominator, total NHE, includes spending on health care goods and services and on items such as public health, medical research, structures and equipment, and the costs of administering insurance. Another meaningful measure would be the share of spending on just health care goods and services – the Personal Health Care component of NHE, which accounts for about 85% of total NHE. Using Personal Health Care spending as the denominator raises the prescription drug share by two percentage points to 16%.

² For a detailed analysis of alternative measures of the prescription drug share of health spending, see <https://www.npcnow.org/publication/reconciling-seemingly-irreconcilable-how-much-are-we-spending-drugs-0>



Appendix: Data and Methods

Retail Share of NHE. For each year from 2020 through 2030 we used the [March 2022 CMS projections](#) of NHE and retail prescription drug spending.

Non-Retail Share of NHE. Our primary data sources for the non-retail estimates are the annual IQVIA *Medicine Use and Spending in the U.S.* reports (most recently, the [May 2022 release](#)) as well as data obtained through direct communications with IQVIA.³ Exhibit A-1 updates the invoice spending data we have relied upon in previous years. Invoice spending refers to what wholesalers were paid for drugs they sold to retailers (pharmacies) and non-retailers (hospitals, physicians, and nursing homes).

EXHIBIT A-1

Retail and Non-Retail Prescription Drug Invoice Sales by Channel (\$billions)

	2014	2015	2016	2017	2018	2019	2020	2021
Total Spending	380.2	426.7	446.5	455.0	483.7	513.0	537.3	578.0
Retail Channels	273.2	306.7	322.0	322.9	337.6	354.7	374.3	402.9
Chain Stores / Independent / Food Stores	191.0	208.2	216.2	211.3	216.1	221.6	229.5	243.6
Mail Service	82.3	98.6	105.8	111.6	121.5	133.1	144.9	159.3
Non-Retail Channels	107.0	120.0	124.5	132.1	146.1	158.3	162.9	175.0
Clinics	49.2	57.2	64.1	71.3	81.2	91.4	97.6	105.4
Non-Federal Hospitals	30.4	33.5	34.3	34.2	36.4	37.5	36.5	39.8
Long Term Care	16.3	16.6	16.5	16.6	16.7	15.9	14.7	15.4
Federal Facilities	2.8	2.7	2.8	2.7	2.8	2.9	2.7	2.7
Home Health Care	3.4	3.9	3.8	4.2	5.7	6.9	7.5	8.3
HMO	3.9	4.9	1.7	1.9	2.0	2.3	2.6	2.3
Miscellaneous	1.0	1.2	1.3	1.4	1.3	1.3	1.3	1.2

Source: Data for 2014 are from IQVIA *Medicine Use and Spending in the U.S.* 2018. Data for 2015 – 2016 are from May 2020 personal communication with Michael Kleinrock of IQVIA. Data for 2017-2021 are from May 2022 personal communication with Michael Kleinrock of IQVIA.

For simplicity, we will use the term “rebates” to include rebates, discounts, copay assistance, and other payments from manufacturers. Non-retail spending is equal to the amount retained by the manufacturer after rebates (manufacturer net revenue) plus the amounts added on by the supply

³ Personal communication with Michael Kleinrock of IQVIA, May 2022.



chain. Manufacturer net revenue is provided by IQVIA. Estimates of overall supply chain add-ons in the non-retail space are lacking, so we have applied gross margins from the retail space which come to 28.7% of invoice spending.⁴

This margin likely underestimates the actual average provider mark-up on non-retail medicines. While mark-ups for government payers can be quite small, recent studies suggest massive hospital mark-ups to commercial insurers, with payments averaging 250% of acquisition cost.⁵ The overall non-retail mark-up is a complicated mixture of government and commercial amounts, which also differ across hospital and physician settings. Thus, estimation requires extensive additional research.

Non-retail spending projections. Exhibit A-2 compares the growth rates of retail and non-retail invoice spending from 2013 to 2021. Growth rates between the two categories are similar for the first four years, but diverge from 2017 to 2019, when non-retail spending growth outpaces retail spending growth. This pattern reverses in 2020, representing a break from historical trends. 2020 is likely an anomalous year, driven by dramatic changes in health care utilization as a result of the COVID-19 pandemic. In 2021, retail and non-retail spending growth rates converge as the health care system adjusts to a ‘new normal’ and utilization begins to recover from lower-than-anticipated rates during 2020. Looking forward, we have opted to continue the trend of faster non-retail spending growth into 2022, cutting the gap in half in 2023, and then assuming identical rates of growth for the remainder of the projection period.

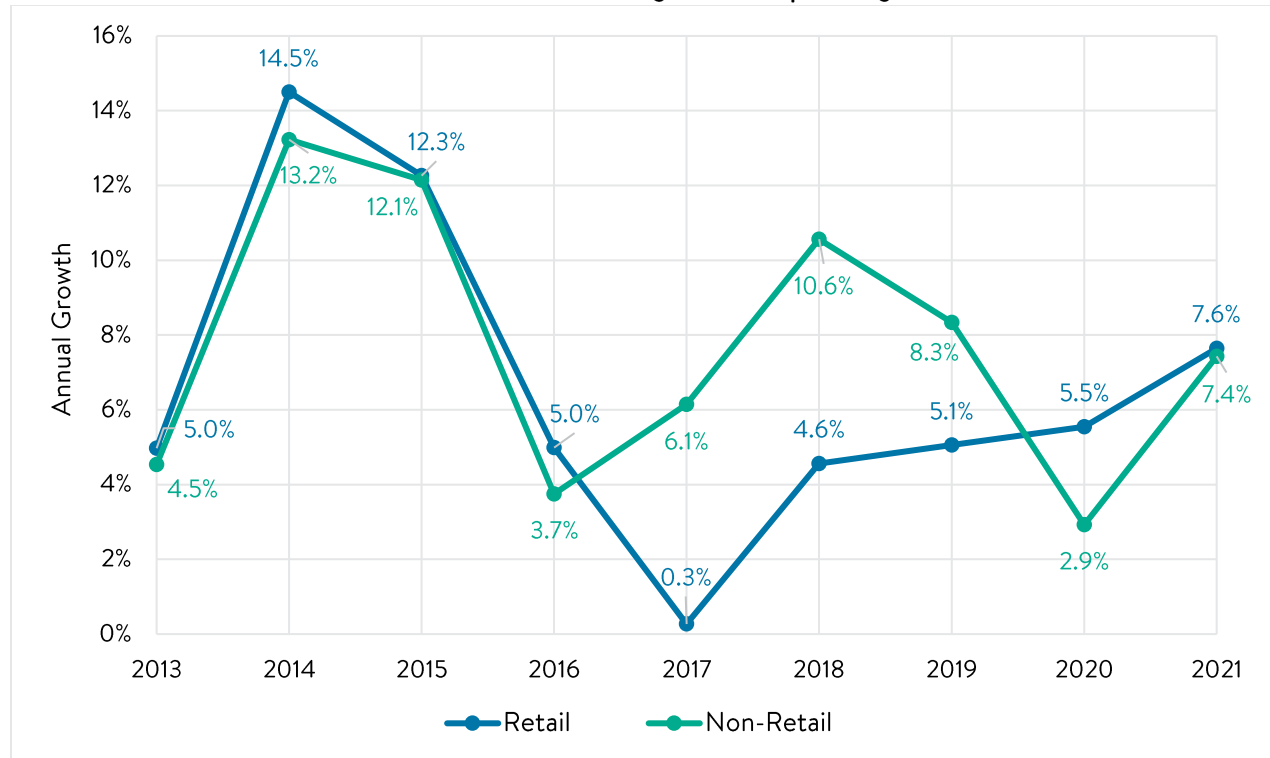
⁴ Gross margins for wholesalers and retailers have been estimated at 3.7% and 20% respectively. Sood, N., Shih, T., Van Nuys, K., & Goldman, D. (2017). “The flow of money through the pharmaceutical distribution system,” University of Southern California Schaeffer Center. Accessed June 2017 at http://healthpolicy.usc.edu/Flow_of_Money_Through_the_Pharmaceutical_Distribution_System.aspx. The 20% gross margin for retailers is a percentage of retailer revenue and translates to 25% of invoice spending.

⁵ <https://phrma.org/-/media/Project/PhRMA/PhRMA-Org/PhRMA-Org/PDF/M-O/Moran-Company-Report-Hospital-Charges-Reimbursement-for-Medicines-August-2018.pdf>



EXHIBIT A-2

Trends in the Growth of Retail and Non-Retail Drug Invoice Spending



Source: Altarum computations from data in Exhibit A-1.

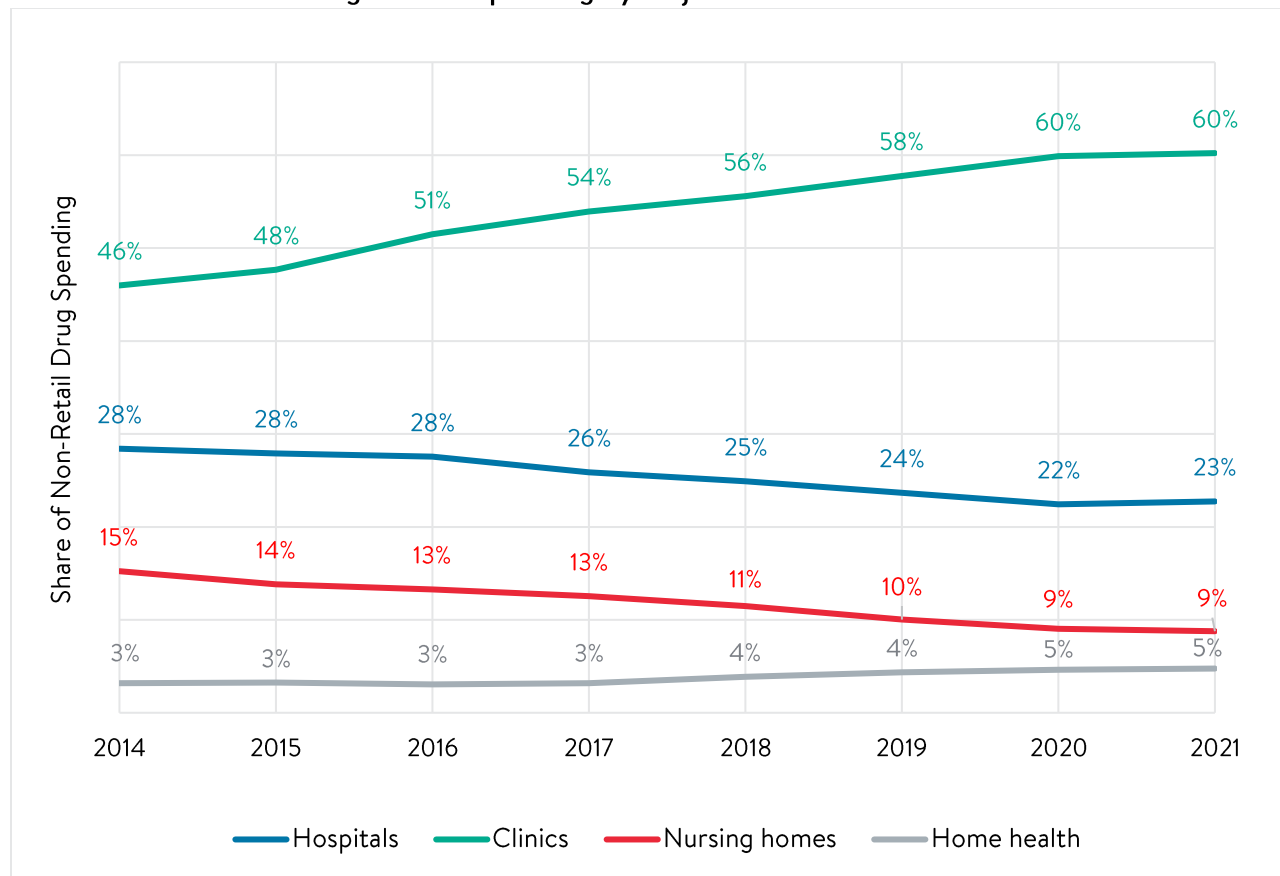
Allocation of non-retail prescription drug spending to national health account services categories.

In the national health accounts, non-retail prescription drug spending is included in health care services spending. To develop an estimate of how non-retail spending is allocated across service categories, we used the IQVIA invoice spending by channel data shown in Exhibit A-1. The largest channels are clinics, hospitals, nursing homes, and home health. The share of total non-retail spending by channel over time is shown in Exhibit A-3.



EXHIBIT A-3

Shares of Non-Retail Drug Invoice Spending by Major Channels



Source: Altarum computations from data in Exhibit A-1.

Our approach to this allocation has evolved in recent years. Prior to the 2020 report, we assumed that spending in the IQVIA “clinic” category should be allocated physicians and clinical services in NHE. In the 2020 report, we learned that an unknown portion of clinic invoices were for hospital-owned clinics and hospital outpatient departments and should instead be captured within hospital spending. While this was noted as a limitation in the 2020 report, information available at the time did not allow for an updated estimate.

For this report, we developed estimates of the hospital portion of clinic invoices to provide a more accurate estimate of the share of non-retail spending that would be captured in hospitals versus physician and clinical services categories. This estimate is based on the underlying assumption that non-retail prescription drug spending in the combined hospital and physician categories is divided between the two categories in roughly the same proportion as total spending for the service categories. In other words, hospital spending accounted for 61% of total hospital and physician spending in recent years. Thus, we assume that the hospital share of invoice spending for non-retail drugs in the combined categories of hospitals and clinics is also 61% and the non-retail spending is allocated following this division.



For example, in 2021, invoice spending for hospitals and clinics was \$39.8 billion and \$105.4 billion, respectively (Exhibit A-1). The combined total is \$145.2 billion, and we assume that 61% of this total, or \$88.6 billion is invoice spending associated with hospitals (inpatient plus outpatient). Since the hospital invoice figure is currently \$39.8 billion, the implication is that $\$88.6 - \$39.8 = \$48.4$ billion of non-retail hospital spending is occurring in hospital-owned clinics. The remaining clinic spending ($\$105.4 - \$48.4 = \$56.6$) is allocated to physician and clinical services. As shown in Exhibit A-1, non-retail channels also include federal facilities, HMOs, and miscellaneous (e.g., prisons). We apportion these small amounts across the remaining categories in proportion to their spending shares.