



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

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September 2020



SOLUTIONS TO ADVANCE HEALTH



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Acknowledgments

This study was funded by the Pharmaceutical Research and Manufacturers of America.
The authors are grateful to Paul Hughes-Cromwick of Altarum for review and feedback.



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 at retail for the drugs, 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 identifiable. 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 shows up in the CMS data as spending on physician, hospital, and nursing home services.

The [most recent CMS projection](#) of NHE was released in March 2020 and covers 2019 through 2028. 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) spending as a share of NHE. This 2020 report represents the sixth 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 emerging trends. Details on the data and methods are provided in the Appendix of this report.

Findings

Exhibit 1 presents our ten-year projection of the share of NHE going to retail and non-retail prescription drug spending, with 2018 added to provide the most recent official CMS health account data point. As shown, CMS estimates retail spending on prescription drugs at 9.2% of NHE in 2018 and projects this share to fall to 9.0% by 2028. We estimate that non-retail spending on prescription drugs accounted for an additional 4.5% of NHE in 2018 and will grow to 4.9% by 2028. This results in total spending on prescription drugs as a share of NHE growing from 13.7% to 13.9% between 2018 and 2028. These drug spending shares are lower than last year’s projection due to a lowering of the CMS projections of retail drug spending as a share of NHE.²

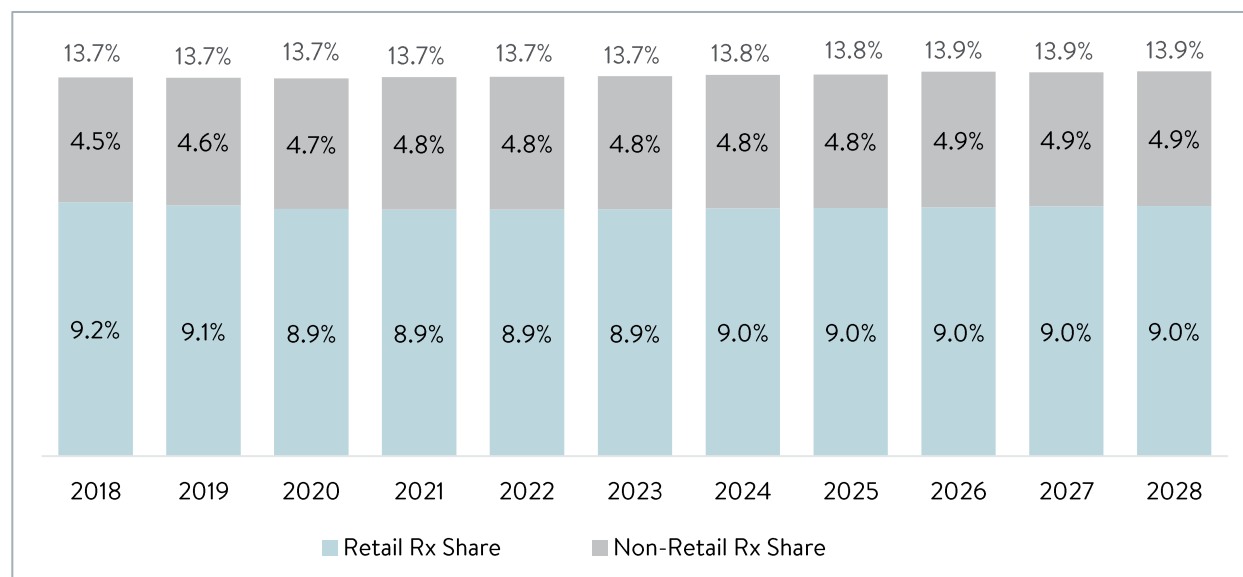
¹ Previous projections were published in October 2014, August 2015, May 2017, June 2018 and [May 2019](#).

² In our 2019 report, we estimated the total prescription drug share of NHE growing from 13.9% in 2018 to 14.3% in 2027 based on CMS’ retail share estimates of 9.4% in 2018 and 9.7% by 2027. In the technical documentation for the 2018 NHE estimates, CMS notes that a new data source has led them to increase their estimate of prescription drug rebates to private insurers, thereby lowering their figures for prescription drug spending net of rebates. See discussion on page 13 in <https://www.cms.gov/files/document/definitions-sources-and-methods.pdf>.



EXHIBIT 1

Prescription Drug Share of National Health Expenditures – 2018 to 2028



Sources: Retail shares are from March 2020 CMS Office of the Actuary NHE projections, except for 2018 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 about \$500 billion in 2018 to \$863 billion in 2028 (Exhibit 2). The retail component grows from \$335 billion to \$560 billion while the non-retail component grows from \$165 billion to \$302 billion. During this period, national health expenditures are projected to grow from about \$3.6 trillion to \$6.2 trillion.

EXHIBIT 2

Prescription Drug Spending and National Health Expenditures, 2018 – 2028 (\$billions)

Year	Retail Rx	Non-Retail Rx	Total Rx	NHE
2018	335.0	164.7	499.7	3,649.4
2019	345.7	176.6	522.3	3,814.6
2020	358.7	190.1	548.8	4,014.2
2021	375.8	202.8	578.6	4,217.1
2022	397.3	214.4	611.7	4,456.0
2023	420.3	226.8	647.2	4,706.3
2024	445.1	240.2	685.4	4,966.1
2025	470.8	254.1	724.9	5,247.4
2026	499.2	269.4	768.6	5,549.5
2027	529.2	285.6	814.8	5,862.9
2028	560.3	302.4	862.6	6,192.5

Sources: Retail drug spending and total NHE are from March 2020 CMS Office of the Actuary NHE projections, except for 2018 data, which are CMS historical estimates. Non-retail spending figures are Altarum estimates.



In the NHE accounts, non-retail prescription drug spending is included in health care services spending. For example, charges for medicines dispensed during a hospital stay are subsumed in the hospital bill and are included in spending on hospital services. Exhibit 3 presents our estimates of where the non-retail spending would appear in the NHE accounts by service category.

EXHIBIT 3

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

NHE Category	2018	2019	2020
Hospitals and Physician & Clinical Services	139.4	151.4	164.9
Hospital minimum*	41.2	41.9	42.6
Nursing Homes	18.8	17.8	16.6
Home Health	6.4	7.4	8.6
TOTAL	164.7	176.6	190.1

Source: Altarum estimates. Figures may not sum due to rounding.

* Minimum estimate for drug spending captured in hospital category, see footnote 3 and appendix.

The allocations across NHE categories were derived from IQVIA data on non-retail invoice spending by dispensing location. While the IQVIA data includes a hospital category, because of differences in the way hospital outpatient department (HOPD) spending is categorized, we are not able to separately allocate non-retail drug spending in hospitals versus physician and clinical services. In the NHE, hospital spending represents all hospital revenues, and includes spending on both inpatient and HOPD services as well as other hospital revenue sources. In the IQVIA data, some portion of HOPD drug spending is included in the physician and clinical services channel. At present, we have no way to identify the share of IQVIA clinic invoice spending that should be mapped to hospitals to align with the NHE care settings. Therefore, we are only able to provide an estimate of non-retail drug spending for the combination of hospital plus physician and clinical service spending in NHE.³ The IQVIA hospital invoice share gives us a minimum estimate for drug spending in hospitals, which we report as a separate line in the table.

³ In prior years, we assumed that the hospital share of IQVIA non-retail invoice spending would be an accurate indicator of the hospital share of non-retail spending net of rebates in the NHE. However, we recently learned that IQVIA clinic sales include an unknown portion of sales to hospital-owned clinics. Thus, our prior estimates have likely understated the share of non-retail spending that would be included in hospital spending in the NHE, and overstated the share going to physician and clinical services.



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.⁴ 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 about 9% to about 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 about two percentage points to about 16%.

In dollar terms, our estimate of the non-retail component of drug spending in 2018 is \$165 billion. This is \$19 billion more than the IQVIA non-retail invoice spending figure of \$146 billion for 2018 (Exhibit A-2). The IQVIA figure represents what institutions paid for the prescription drugs administered during patient stays and visits, prior to any rebates, while our figure is an estimate of what was paid by patients and their insurers. The \$19 billion-dollar difference includes the estimated mark-up by hospitals, physicians/clinics, and nursing homes, minus estimated rebates.

Finally, we note that these projections do not account for the COVID-19 pandemic. Altarum data through mid-2020 show declines in spending on health care services but less impact on growth in retail drug spending thus far, potentially lowering the ratio of non-retail to retail drug spending in 2020. However, it is too soon to know the final impact of the pandemic on drug spending and total health spending this year, and on long-term projections of health spending and our economy.

⁴ 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 Shares of NHE. For each year from 2018 through 2028 we used the March 2020 CMS projections of NHE and prescription drug spending.

Non-Retail Shares of NHE. Our primary data sources for the non-retail estimates are the annual IQVIA *Medicine Use and Spending in the U.S.* reports, data obtained through personal communications with IQVIA (see footnote 2) and the 2020 IQVIA report *Medicine Spending and Affordability in the U.S.* The data shown in Exhibit A-1 are from the 2018 IQVIA report, as this level of detail was not provided in more recent editions. Invoice spending refers to what wholesalers were paid for drugs they sold to retailers (pharmacies) and non-retailers (hospitals, physicians, nursing homes). Net spending refers to invoice spending minus rebates, coupons, and other off-invoice discounts.⁵ These data provide historical trends in computed invoice-to-net rebate percentages that can be projected forward. Exhibit A-2 displays annual data on invoice spending from 2012 through 2019 using the most up-to-date sources.⁶

For 2018, we began with non-retail invoice spending of \$146 billion from Exhibit A-2. This figure represents the acquisition cost of the drugs on the part of non-retailers, prior to rebates. We inflated this figure to account for non-retailer markups and then subtracted rebates. The retail mark-up has been estimated to be roughly 22% of total retail sales.⁷ In the absence of suitable data for estimating the overall non-retail mark-up, we assumed it is the same as the retail markup. Thus, for 2018 our estimate of non-retail spending (prior to rebates) is invoice spending (\$146 billion) divided by $(1-.22) = \$188$ billion.

For 2018, IQVIA did not provide net non-retail spending so we could not directly estimate rebates. As shown in Exhibit A-1, non-retail rebates were 15.7% of invoice spending in both 2016 and 2017. We assumed that rebates in 2018 would remain at 15.7% of invoice spending, for an estimate of \$23 billion in non-retail rebates. Subtracting the \$23 billion in rebates from the \$188 billion in non-retail spending yields our 2018 estimate of \$165 billion in non-retail spending net of rebates.

⁵ For simplicity, we will use the term rebates to refer to rebates plus coupons plus other off-invoice discounts.

⁶ IQVIA historical estimates are adjusted over time which explains the small differences between comparable data in Exhibits A-1 and A-2. For example, retail invoice spending in 2017 is \$319 billion in exhibit A-1 and \$323 in the more recent data shown in exhibit A-2.

⁷ 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. http://healthpolicy.usc.edu/Flow_of_Money_Through_the_Pharmaceutical_Distribution_System.aspx. Accessed June 2017.



The 2019 estimate of non-retail spending net of rebates was based on the same method used for 2018. Invoice spending was inflated for mark-up and rebates, assumed to be 15.7% of invoice sales. The years 2020 through 2028 were estimated based on the ratio of non-retail to retail spending (net of rebates). Between 2018 and 2019, this ratio increased from .49 to .51. For 2020, we assumed it would increase by a similar amount, bringing the ratio to .53. In 2021, we increased the ratio by half this amount, to .54. We then assumed the ratio would remain at .54 through 2028. Using this approach, non-retail spending net of rebates in 2020, for example, is computed as .53 times the \$359 billion of retail spending, which yields \$190 billion as shown in Exhibit 2.

The ratio of non-retail to retail spending (net of rebates) increased between 2018 and 2019, largely because non-retail spending grew more rapidly than retail spending at the invoice level. This is shown in Exhibit A-3, which displays relative growth rates from 2013 through 2019. Invoice spending grew at roughly the same pace for retail and non-retail for 2013 through 2016 and then non-retail began to outpace retail. The gap between non-retail and retail growth rates narrowed in 2019 and we assume that the rates would once again coincide by 2021. A second factor impacting the ratio of non-retail to retail spending (net of rebates) is the relative trends in rebates. As shown in Exhibit A-1, rebate percentages have grown faster in retail than in non-retail. All else equal, this would cause spending, net of rebates, to grow faster in non-retail. We assume that non-retail rebate percentages will remain stable and retail rebate percentages will level off by 2021.

A Note on Coupons. One might expect that CMS would reduce their estimate of prescription drug spending by the amount of manufacturer coupons used by consumers to offset their out-of-pocket costs. This would be consistent with the practice of deducting manufacturer rebates paid to insurers. However, CMS does not deduct coupons because they do not have the necessary source data.⁸ A recent IQVIA report puts the total value of coupons used in 2018 at \$12 billion.⁹ Thus the CMS estimates of net retail spending on prescription drugs would appear to be overstated by roughly this amount. However, there is also a CMS understatement of retail spending because *retail* sales by pharmacies owned by hospitals and nursing homes are not counted as retail by CMS. Instead these sales are included as spending on hospital and nursing home services in the health accounts. In sum, CMS retail spending estimates are overstated by the coupon amounts and understated by the amount of retail sales by hospital and nursing home-owned pharmacies. Because of these offsetting effects, and the lack of good data on the relative sizes of these effects, we do not attempt to adjust for them.

⁸ Email communication with CMS on May 3, 2018.

⁹ IQVIA Institute for Human Data Science, “Medicine Spending and Affordability in the United States: Understanding Patients’ Cost for Medicines,” August 2020.



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 a rough estimate of how non-retail spending is allocated across service categories in the health accounts, we used the IQVIA invoice spending by channel data shown in Exhibit A-2. The largest channels are clinics, hospitals, nursing homes, and home health and the shares for each of these channels over time are shown in Exhibit A-4.

In our prior estimates of the allocation of non-retail spending to these categories, we assumed that the hospital share of IQVIA non-retail invoice spending would be a good indicator of the hospital share of non-retail spending net of rebates in the NHE. However, we have recently been advised that some portion of invoice sales to clinics includes hospital-owned clinics.¹⁰ So the sales channel identified as clinics, which has been growing in share, includes physician offices, other provider offices and freestanding clinics, and some portion of hospital-owned clinics. Since revenues from hospital-owned clinics are counted as hospital spending in the NHE, some portion of the IQVIA clinic sales should be mapped to hospitals to align the settings. Thus, in prior estimates, we have likely understated the share of non-retail spending in hospitals in the NHE and overstated the share in physician and clinical services. At present, we have no way to identify the share of IQVIA clinic sales that are HOPD, so we are only able to report an estimate of the share of non-retail spending for the combination of hospital and physician and clinical service spending.

As shown in Exhibit A-2, non-retail channels also include federal facilities, HMOs, and miscellaneous (e.g., prisons). We assume that revenues from the final sales of these non-retail medicines would be split between hospitals and physician services in the NHE. To illustrate, in 2018 the IQVIA data in Exhibit A-4 show the following percentage shares of non-retail invoice spending:

- ▲ Clinics: 56%
- ▲ Hospitals: 25%
- ▲ Long-term Care: 11%
- ▲ Home Health: 4%

These percentages sum to 96%, with the remaining 4% representing the share going to federal facilities, HMOs, and miscellaneous. From these figures we estimated the following allocation of non-retail spending, net of rebates, across the NHE health services categories in 2018:

- ▲ Combination of Hospitals and Physician and Clinical Services: 85%¹¹
- ▲ Nursing Homes: 11%
- ▲ Home Health: 4%

¹⁰ Personal communication with Michael Kleinrock of IQVIA, June 8, 2019.

¹¹ Note that we have added the 4% share from federal facilities, HMOs, and miscellaneous to this combined category of hospitals and physician and clinical services.



While we cannot accurately separate hospital shares from physician and clinical service shares, we can state that the hospital share is at least the IQVIA hospital share of 25%. Following similar steps, we computed percentage shares for 2019 and 2020 from the data in Exhibit A-4. We then applied these percentages to non-retail spending estimates to create the allocations in Exhibit 3.

EXHIBIT A-1

Retail and Non-Retail Invoice and Net Prescription Drug Spending (\$billions)

	2013	2014	2015	2016	2017
Retail Spending, Invoice	239	274	307	320	319
Retail Spending, Net	178	197	212	216	212
Retail, Invoice-to-Net Rebate	25.5%	28.1%	30.9%	32.5%	33.5%
Non-Retail Spending, Invoice	94	106	120	127	134
Non-Retail Spending, Net	81	88	99	107	113
Non-Retail, Invoice-to-Net Rebate	13.8%	17.0%	17.5%	15.7%	15.7%

Source: Medicine Use and Spending in the U.S. 2017, IQVIA, April 2018. The “rebate rate” is the discount reflected in the difference between invoice and net spending, and represents rebates, coupons, and other off-invoice discounts.

EXHIBIT A-2

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

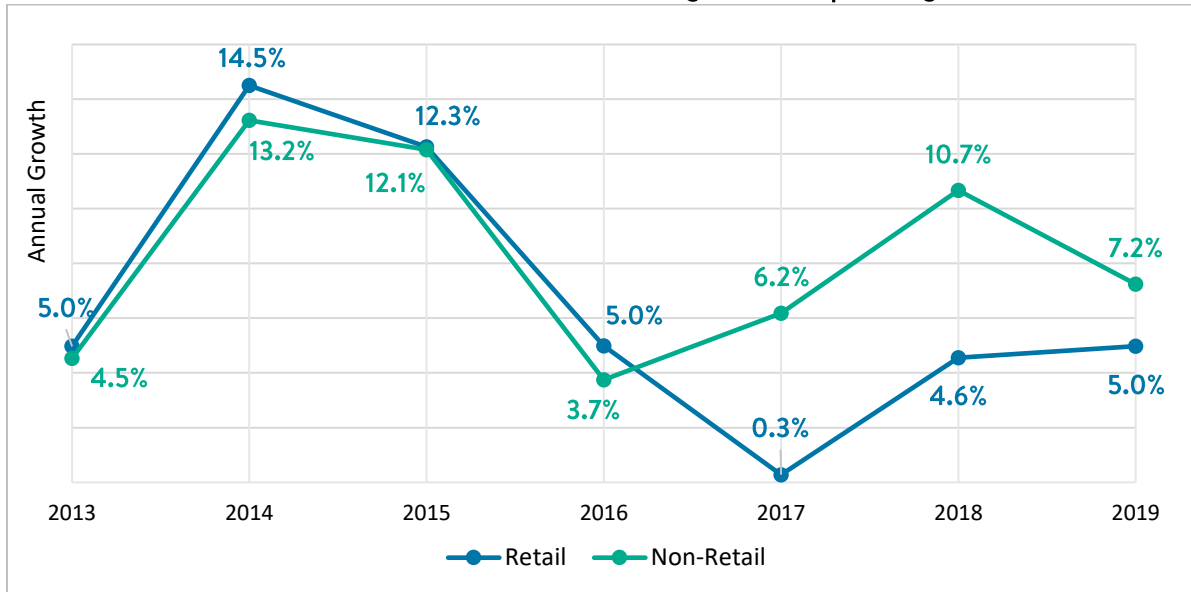
	2012	2013	2014	2015	2016	2017	2018	2019
Total Spending	317.7	333.1	380.2	426.7	446.6	455.2	483.9	511.4
Retail Channels	227.3	238.6	273.2	306.7	322.0	322.9	337.6	354.4
Chain Stores	106.3	110.5	122.2	131.1	138.4	135.4	140.0	144.1
Mail Service	60.9	65.5	82.3	98.6	105.8	111.6	121.4	132.5
Independent	36.5	36.8	42.2	48.2	49.8	49.6	50.2	50.3
Food Stores	23.6	25.8	26.6	28.9	28.0	26.3	25.9	27.5
Non-Retail Channels	90.4	94.5	107.0	120.0	124.6	132.3	146.3	157.0
Clinics	39.5	43.0	49.2	57.2	64.1	71.3	81.2	91.0
Non-Federal Hospitals	28.1	28.7	30.4	33.5	34.4	34.2	36.6	37.2
Long Term Care	13.9	14.1	16.3	16.6	16.5	16.6	16.7	15.8
Federal Facilities	2.8	3.1	2.8	2.7	2.8	2.7	2.8	2.9
Home Health Care	2.7	2.9	3.4	3.9	3.8	4.2	5.7	6.6
HMO	2.5	2.4	3.9	4.9	1.7	1.9	2.0	2.2
Miscellaneous	0.9	0.3	1.0	1.2	1.3	1.4	1.3	1.3

Source: Data for 2012, 2013, and 2014 are from IQVIA Medicine Use and Spending in the U.S. 2016, 2017, and 2018 respectively. Data for 2015 – 2019 are from May 2020 personal communication with Michael Kleinrock of IQVIA, updated based on final data published in IQVIA Medicine Spending and Affordability in the U.S., August 2020.



EXHIBIT A-3

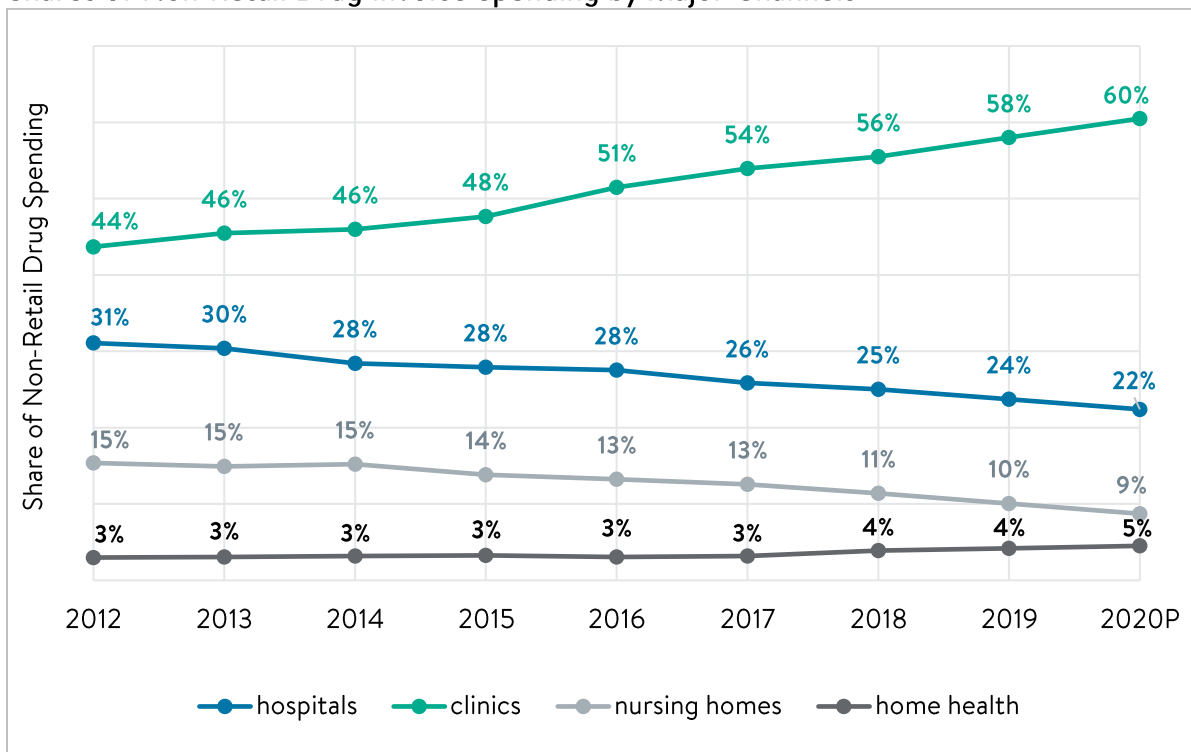
Trends in the Growth of Retail and Non-Retail Drug Invoice Spending



Source: Altarum computations from IQVIA data shown in Exhibit A-2.

EXHIBIT A-4

Shares of Non-Retail Drug Invoice Spending by Major Channels



Source: Altarum computations from IQVIA data shown in Exhibit A-2, with 2020 figures projected by Altarum. Clinics includes physician offices, outpatient clinics, and some portion of hospital-owned clinics.