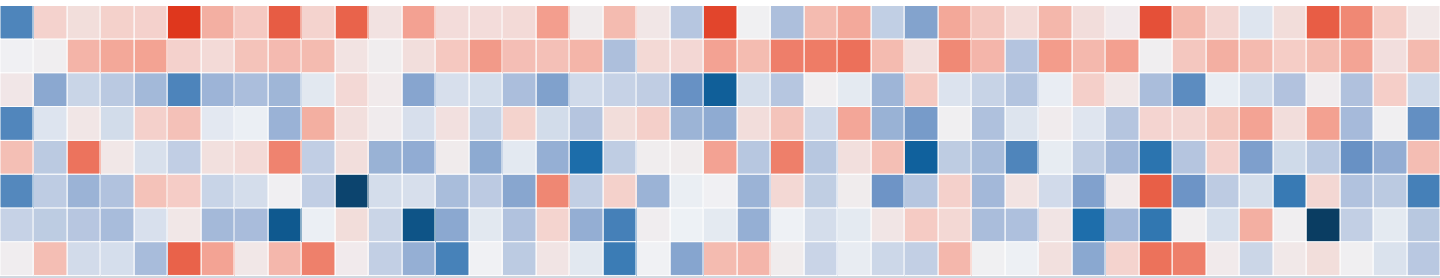




**HEALTH CARE
COST INSTITUTE**



2017 Health Care Cost and Utilization Report





2017 Health Care Cost and Utilization Report

I am pleased to present HCCI's 2017 Health Care Cost and Utilization Report. Drawing on the health care claims of more than 40 million Americans, one of the largest and most complete databases of its type, this report provides a one-of-a-kind view into health care spending, use, and prices for individuals under 65 covered by employer-sponsored insurance (ESI).

We find that spending per-person grew 4.2% in 2017, consistent with the [Centers for Medicare and Medicaid](#) estimates of spending by the privately insured. Average annual spending for this population rose to \$5,641. Over the five-year period covered in the report, year-over-year spending growth averaged 3.9% per year. That slightly outpaced growth in per-capita GDP which grew at an average annual rate of 3.1% over the same period.

The report decomposes trends in spending, utilization, and average prices for medical care and prescription drugs from 2013 to 2017 into four categories: inpatient admissions; outpatient facility visits and procedures; professional services; and prescription drugs and medical devices obtained from pharmacies and suppliers. We further categorize spending and trends within each category into subcategories (e.g., inpatient surgical versus medical admissions). In addition, we present trends in total out-of-pocket spending by individuals, as well as an overview of spending by age and for individuals diagnosed with certain chronic conditions.

In response to feedback received on last year's report, I would like to note a key revision to the [methodology](#) in this year's report that affects the analysis of how changes in average prices and utilization of services affected spending growth. The measures of average prices presented here account for changes in the mix or intensity of services used for three of the four categories (the exception being prescription drugs, for which measures of intensity are not available). Correspondingly, measures of utilization for those three categories were adjusted to capture both changes in the number of services used and changes in the mix and intensity of services provided. Because we could not adjust for intensity for prescription drugs, our measures of prescription drug prices include both spending on the same drugs, as well as spending on new, potentially innovative products, adopted over the report period. Previously, the analysis of intensity-adjusted prices was presented separately or in an appendix. Because the mix of services used became slightly more resource-intensive over time, this revised approach attributes slightly more of the spending growth to growth in utilization and slightly less to growth in prices than the previous method. We made this change to better distinguish increases in average prices for the same services from changes in the mix of services used.

The report relies on claims data from four of the country's largest insurers – Aetna, Humana, Kaiser Permanente, and UnitedHealthcare. As we recently announced, we are sunseting our data collaboration relationship agreement with United, however we plan to continue publishing annual reports of health care spending trends and have already begun preparations for the 2018 report, which will include data from all 4 current insurers. Note that because we rely on claims data, spending on prescription drugs reflects average point-of-sale prices, and do not account for manufacturer rebates provided through separate transactions, so readers should read and interpret the sections dealing with prescription drugs with this in mind. While others may disagree with our approach, I do not think the lack of rebate information should preclude HCCI or other organizations from examining trends of prescription drug prices. Should information on manufacturer rebates become more widely available we will gladly incorporate it into our analysis.

I would like to acknowledge Jeannie Fuglesten Biniek and John Hargraves, the authors of this year's report. They have taken a fresh look at the data and analyses powering this report, thoughtfully revised the methodology, and again produced a set of compelling visuals. In addition, I am grateful to Michael Chernew, Leemore Dafny, and Dale Yamamoto, who provided valuable feedback on the methodology and presentation of this year's report as part of a Technical Expert Panel.

Finally, in service of our mission to promote data transparency, we are again providing machine-readable downloads of all data used in this report. These data may be used by anyone wishing to perform their own analysis or create data visualizations. For those interested in state level spending trends and geographic variation be sure to check out our [interactive supplement](#) to this year's report.

Niall Brennan
President and CEO, HCCI

 @N_Brennan

About HCCI

The Health Care Cost Institute was launched in 2011 to promote independent, nonpartisan research and analysis on the causes of the rise in U.S. health spending. HCCI holds one of the largest databases for the commercially insured population, and in 2014 became the first national Qualified Entity (QE) entitled to hold Medicare data. For more information, visit healthcostinstitute.org, email us at info@healthcostinstitute.org, or follow us on Twitter [@healthcostinst](#)



The 2017 Health Care Cost and Utilization Report examines medical and prescription drug spending, utilization, and average prices, and is based on health care claims data from 2013 through 2017 for Americans under the age of 65 who were covered by employer-sponsored insurance (ESI). The key findings are:



In 2017, per-person spending reached \$5,641, a new all-time high for this population. This total includes amounts paid for medical and pharmacy claims. While it reflects discounts negotiated from wholesale or list prices for prescription drugs, it does not account for manufacturer rebates provided in separate transactions, because these data are not available.



Spending per-person grew at a rate above 4% for the second year in a row, rising 4.2% from 2016 to 2017. This year's spending growth was slower than the 4.9% growth from 2015 to 2016 (2016 spending estimate revised up from previous report).



The overall use of health care services changed very little over the 2013 to 2017 period, declining 0.2%. In 2017, utilization grew 0.5% compared to 2016.



Average prices increased 3.6% in 2017. Year-over-year price growth decelerated throughout the five-year period, rising 4.8% between 2013 and 2014 and slowing to 3.6% in 2016 and 2017. That trend reflects a slowing in the year-over-year changes in average point-of-sale prescription drug prices.



Out-of-pocket spending per-person increased 2.6% in 2017. The growth was slower than the rise in total spending, resulting in out-of-pocket costs comprising a smaller share of spending by 2017.

This report also provides an overview of the ESI population and examines trends within four categories: inpatient admissions; outpatient facility visits and procedures; professional services; and prescription drugs. All data were weighted to reflect the age, gender, and geographic mix of the ESI population.

Definitions of Reported Measures

Spending per person: Total expenditures on medical and pharmacy claims, including payer and patient shares, divided by the number of people with ESI coverage. The prescription drug component reflects point-of-sale expenditures and does not include manufacturer rebates provided through separate transactions because these data are not available.

Utilization: Volume of health care services used per person, weighted by the service-mix intensity of those services (prescription drug utilization is unweighted). Calculated as the count of inpatient admissions, outpatient facility visits, outpatient facility procedures, and professional services, divided by the number of people with ESI coverage, and weighted by intensity of services provided. Prescription drug utilization is the count of days covered by a filled prescription and is not weighted by intensity, because no such measures are available.

Average Price: Measure spending per service (admissions, visits, procedures, or days supplied depending on the service category). Spending and utilization (inclusive of volume and service-mix intensity except in the case of prescription drugs) were aggregated across all services in a category. The average price per service in a category was then calculated by dividing total spending by total utilization.



Data

The report relies on de-identified commercial health insurance claim lines for the years 2013 through 2017. These claims are contributed by four major health insurers: Aetna, Humana, Kaiser Permanente, and UnitedHealthcare. The data reflect medical and pharmacy claims for individuals under the age of 65 covered by group insurance through an employer, including both fully insured and administrative services only. The claims data are compliant with the Health Insurance Portability and Accountability Act (HIPAA).

Methodology Updates

The methodology and presentation of the annual Health Care Cost and Utilization Report is reviewed and updated each year. The 2017 report reflects several revisions.

First, the utilization and average price measures now account for year-to-year changes in service-mix intensity for three of the four service categories (the exception is prescription drugs). Those revisions and their implications are described in further detail below. Previously, measures of intensity-adjusted prices were included as a separate analysis or in the [Appendix tables](#). The [methodology document](#) contains a full description of all updates.

The service categories aggregate underlying claims data across groups of services. From year-to-year, the mix of services in a category can change. To facilitate comparisons across years, a service-mix weighting methodology was applied, so the measure of utilization presented incorporates changes in both volume and mix of the health care services used. In general, weights were applied based on the intensity of a service, reflecting the complexity of the service provided or the level of resources required for treatment. The specific weights varied by service category and included diagnosis related group (DRG), ambulatory service category (APC), and relative value unit (RVU) weights. These weights are developed and used by the Centers for Medicare and Medicaid Services (CMS) in their payments to providers for inpatient, outpatient and professional services. No corollary exists for prescription drugs, however, so no adjustment was made for this category.

Adjusting utilization for service-mix intensity carried over to the calculated average price. Average prices measure spending per unit. To calculate average prices, spending and utilization (inclusive of both volume and service-mix intensity) were aggregated across all services in a category. The average price per service was then determined by dividing total spending by total utilization. The Appendix provides the detailed data with respect to changes in utilization and intensity separately, as in prior reports.

Overall, including service-mix intensity in the measure of utilization increased the levels and growth of utilization during the 2013 to 2017 period. That is because While the volume of services generally declined, the intensity of those services was greater. Thus, slightly more of the spending growth is attributed to growth in utilization and slightly less to growth in average prices than under the previous method.

The second change is the addition of total utilization and total price trends. These were calculated by weighting the year-to-year change for each service category by its average share of total spending between 2013 and 2017 and summing.

Third, this report reflects other updates and revisions described more fully in the methodology document. As a result of those changes, the top-line spending growth number for 2016 was revised up to 4.9% from 4.6%.

Finally, some information presented in previous reports does not appear this year. That includes the brand/generic split for prescription drugs and out-of-pocket spending by service category. These data are available in the Appendix.



Prices Drove Spending Growth from 2013 to 2017

In 2017, per-person spending reached **\$5,641**, the highest spending for the ESI population since HCCI began publishing annual health care cost and utilization reports. This total includes \$1,097 for inpatient admissions, \$1,580 for outpatient visits and procedures, \$1,898 for professional services, and \$1,065 for prescription drugs [Figure 1]. Spending on prescription drugs reflects the amount paid on the pharmacy claim, which includes discounts from the wholesale or list price, but does not account for manufacturer rebates that are paid through separate transactions.

Total annual per-person spending increased 16.7% over the five-year period [Figure 2], rising from an average of \$4,834 in 2013 to \$5,641 in 2017. That is an average annual increase of 3.9%, which slightly outpaced the 3.1% average annual rate of growth in per-capita GDP over the same period. The estimate of spending includes the sum of payer spending and out-of-pocket payments by individuals.

Increases in spending can arise from increases in use, increases in average prices (spending per unit), or a combination of both. The change in the composition of services, which includes use of newly introduced procedures and technologies, as well as the discontinuation of specific practices and treatments, can also affect spending. After adjusting for changes in the mix of services for three of the four categories (the exception being prescription drugs), price increases drove per-person spending growth among the ESI population between 2013 and 2017 [Figure 2].

- **Utilization declined 0.2%** between 2013 and 2017.
- **Average prices increased 17.1%** between 2013 and 2017.

Figure 1: Spending per Person in 2017

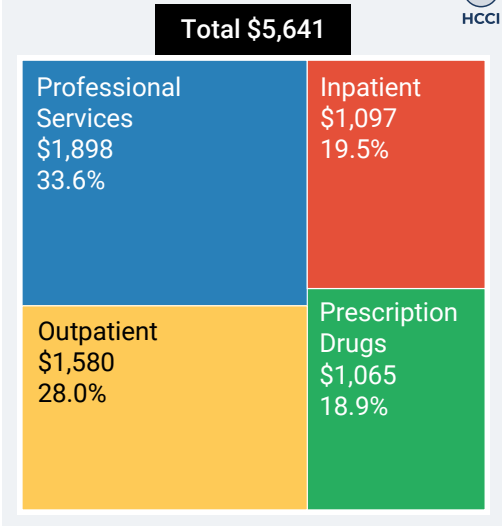
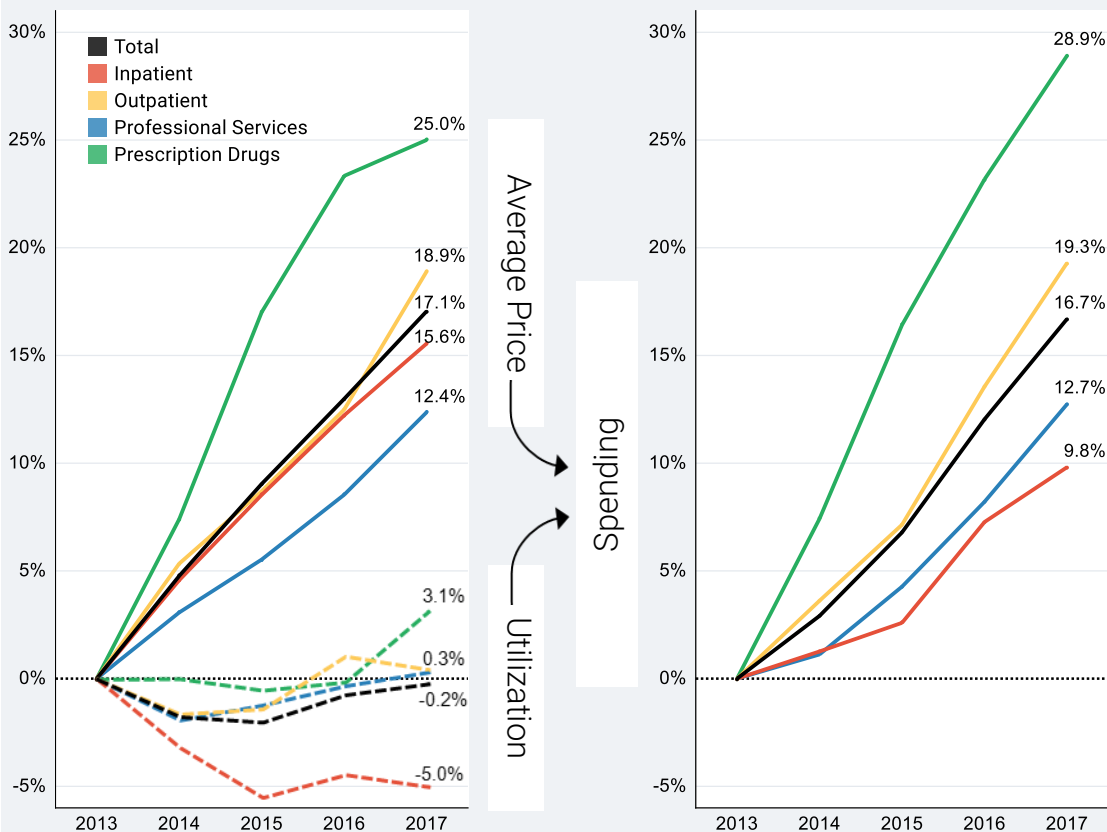


Figure 2: Cumulative Change in Spending per Person, Utilization, and Average Price since 2013



Note: Utilization and average prices account for changes in the type or intensity of services used, with the exception of prescription drugs. Prescription drug spending is the amount paid on the pharmacy claim, which reflects discounts from the wholesale price, but not manufacturer rebates.



Per-person Spending Increased Year-over-Year in Every Year from 2013 to 2017

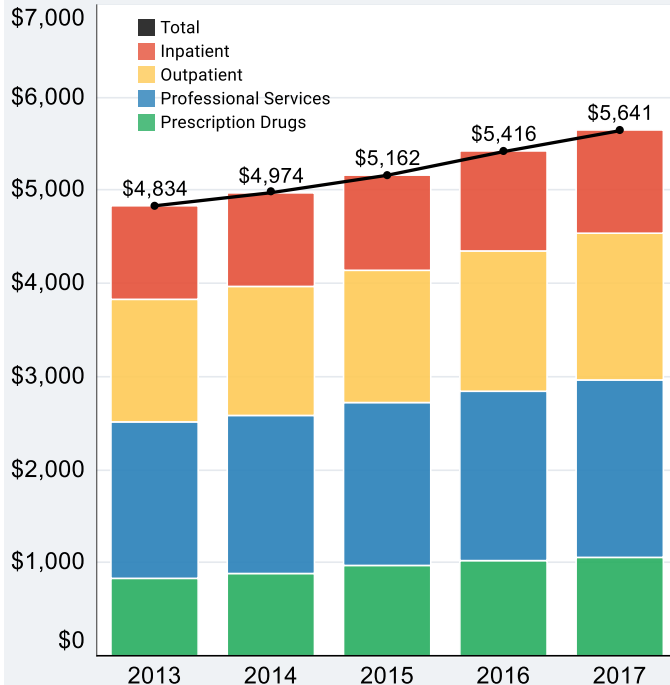
Spending per person for individuals with ESI increased in 2017, averaging \$5,641 per person over the year [Figure 3].

The 2017 increase of \$225 in spending per person [Figure 4] represents growth of 4.2% compared to the previous year [see Figure 5 on page 5 for percent changes]. That increase is consistent with estimates of private health spending in the National Health Expenditure data published by CMS. The increase in spending in 2017 is slightly lower than the \$254 rise in spending per-person between 2015 and 2016 (4.9%, revised up from previous report), but higher than the annual increases observed in 2014 and 2015. As described earlier, because we rely on claims data, prescription drug spending reflects point-of-sale prices, which include discounts from the wholesale or list price, but do not account for manufacturer rebates provided in separate transactions.

For most service categories, per-person spending growth slowed in 2017 [Figure 4].

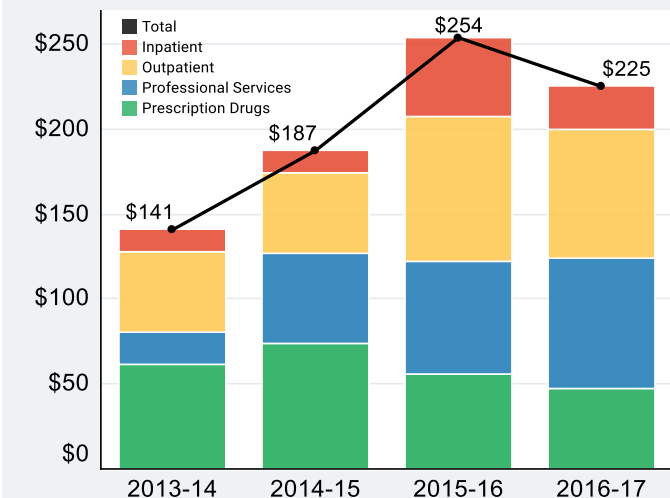
- After increasing \$47 (4.6%) in 2016, per-person spending associated with **inpatient** admissions rose \$25 (2.4%) in 2017.
- Spending per person on **outpatient** facility visits and procedures grew the fastest of any category, rising 5.1% in 2017, reflecting an increase of \$76. But this was still lower than the 2016 rate of 6% (a \$85 increase).
- Per-person spending on **prescription drugs** increased \$47 in 2017, a growth of 4.7%, the lowest rate observed between 2013 and 2017. This spending does not reflect manufacturer rebates, which may reduce total spending.
- In contrast, per-person spending on **professional services** accelerated in 2017, as well as every other year between 2013 and 2017. In 2017, per-person spending on professional services increased \$76 (4.2%). That followed year-over-year growth of \$19 (1.1%), \$53 (3.1%), and \$66 (3.8%) in 2014, 2015, and 2016, respectively.

Figure 3: Annual Spending per Person, 2013-2017



Note: Prescription drug spending is the amount paid on the pharmacy claim, which reflects discounts from the wholesale price, but not manufacturer rebates.

Figure 4: Annual Change in Spending per Person



Note: Prescription drug spending is the amount paid on the pharmacy claim, which reflects discounts from the wholesale price, but not manufacturer rebates.



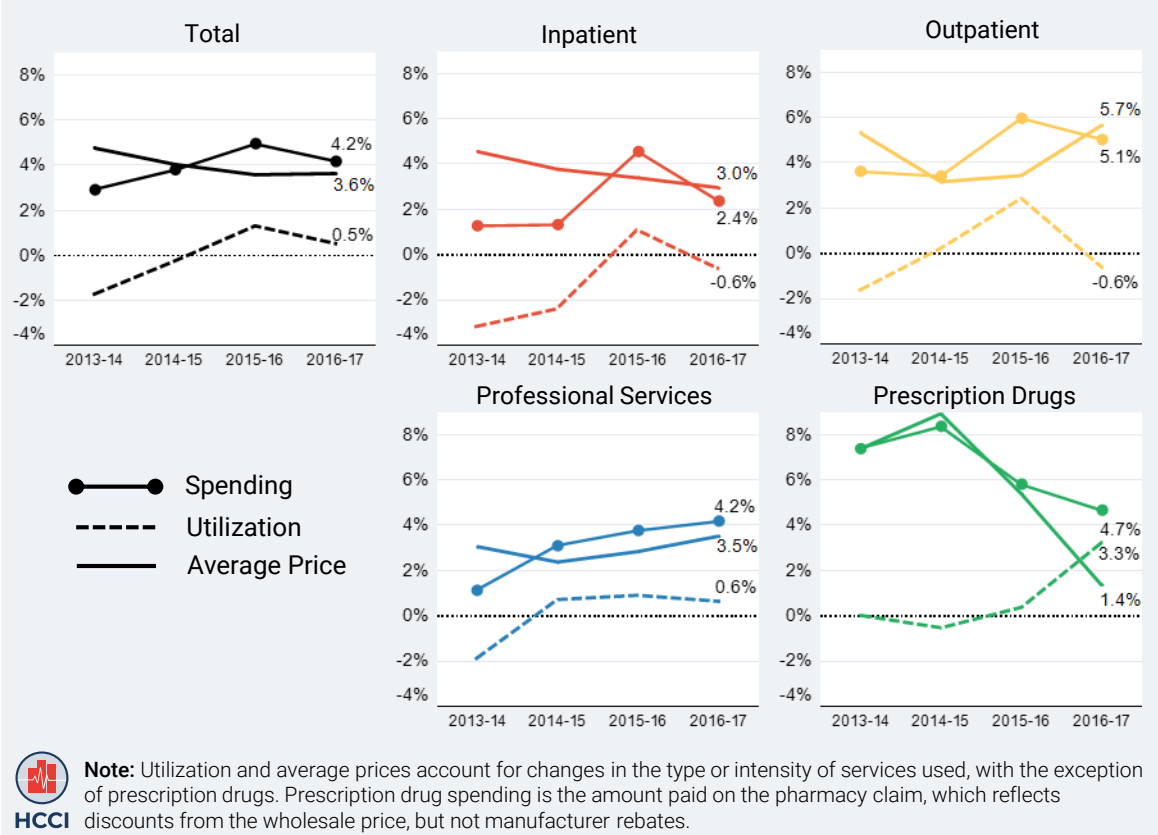
Annual Changes in Utilization and Average Price

Total health care utilization changed little over the five-year period, but trends varied across service categories.

Except for prescription drugs, utilization reflects year-to-year changes in both volume and intensity of the mix of services used (see complete [methodology](#) for more information). From 2016 to 2017, total health care utilization increased 0.5% [Figure 5]. However, from 2013 to 2017 total utilization changed little, with increases in 2016 and 2017 offsetting declines between 2013 and 2015 [for cumulative changes see Figure 2 on page 3]. Utilization trends varied across service categories.

- **Inpatient** admissions declined between 2013 and 2015 before leveling off through 2017.
- Declines in **outpatient** facility visits and procedures and **professional services** in the initial part of the period were offset by increases in later years, resulting in little cumulative change between 2013 and 2017.
- The number of filled **prescription** days was relatively flat from 2013 to 2016 before increasing 3.3% in 2017.

Figure 5: Annual Percent Change in Spending Per Person, Utilization, and Average Price



Moderated price growth provided some restraint to spending increases in 2017.

Total average prices grew 3.6% in 2017, similar to the growth in 2016, and slower than the annual growth between 2013 and 2015 [Figure 5].

- **Inpatient** prices experienced their lowest growth of the period in 2017 at 3.0%.
- **Outpatient** prices increased 5.7% in 2017, their highest year-over-year growth since 2013.
- **Professional services** prices had their highest price growth in 2017 at 3.5%.
- **Prescription drugs** point-of-sale prices also had their lowest annual growth in 2017, increasing 1.4%.

The overall deceleration in average price growth primarily reflects the much slower growth of prescription drug point-of-sale prices in later years. Prescription drugs are not adjusted for changes in the mix of drugs used. Thus, year-to-year changes in average prices capture both increases in payment for the same drugs, as well as shifts in the mix of drugs used. Changes in mix include the adoption of newly approved novel products, as well as the substitution of generics for brand name drugs after patents expire. The data do not allow the decomposition of spending, use, and price trends by new versus existing products. In January 2019, Hernandez et al published a [study](#) in Health Affairs examining the drivers of rising prescription drug costs (based on data for wholesale costs). The authors found that increases in the cost of both new and existing products played a role in wholesale price increases for drugs.

Spending per person and spending growth varied widely by age.

The ESI population includes individuals who receive health insurance coverage from their employer, as well as their dependents, such as spouses and eligible children. A quarter of the ESI population was 18 years old or younger in 2017 [Figure 6].

Per-person spending was lowest for the youngest age group and increased with age. In 2017, individuals 18 years old and under had average spending of \$3,170. In comparison, those between 55 and 64 years old spent an average of \$10,476 in the same year. Over the period, spending per person grew faster for younger age groups [Figure 7].

Differences in the use of health care contributed to differences in per-person spending by age.

Across the entire ESI population, 25.5% of individuals did not have any claims for health care services or prescription drugs in 2017 [Figure 8]. The share varied widely by age group. Among those aged 55 to 64, 15.8% had no claims, compared to 40.4% of individuals between 19 and 25 years old. These statistics reflect claims filed under ESI coverage only. If an individual had no services billed under their ESI coverage, they would be classified as a non-utilizer; non-utilizers may have received health care that did not result in a submitted claim or was covered by a different insurance plan.

Figure 6: 2017 ESI Age Distribution  HCCI

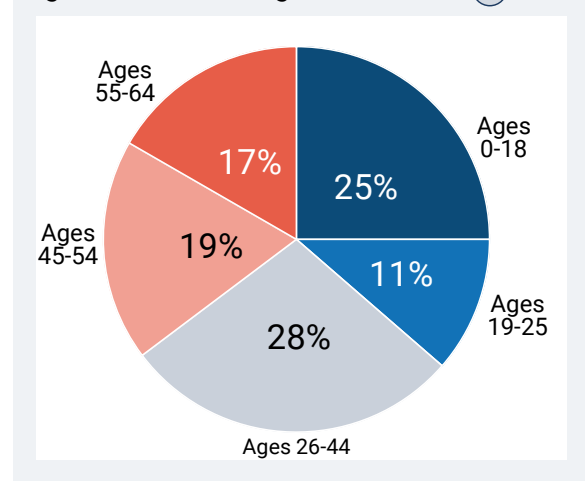



Figure 7: 2017 Spending per Person by Age  HCCI

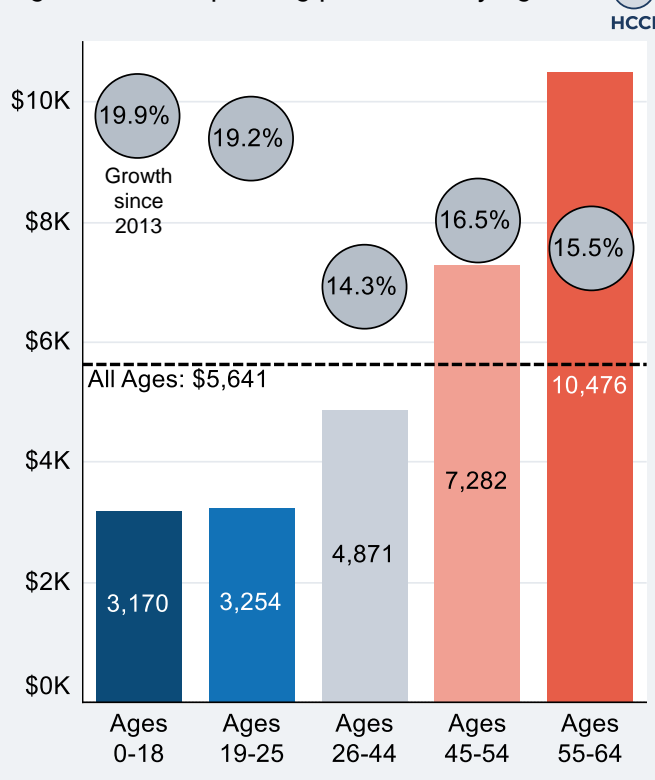

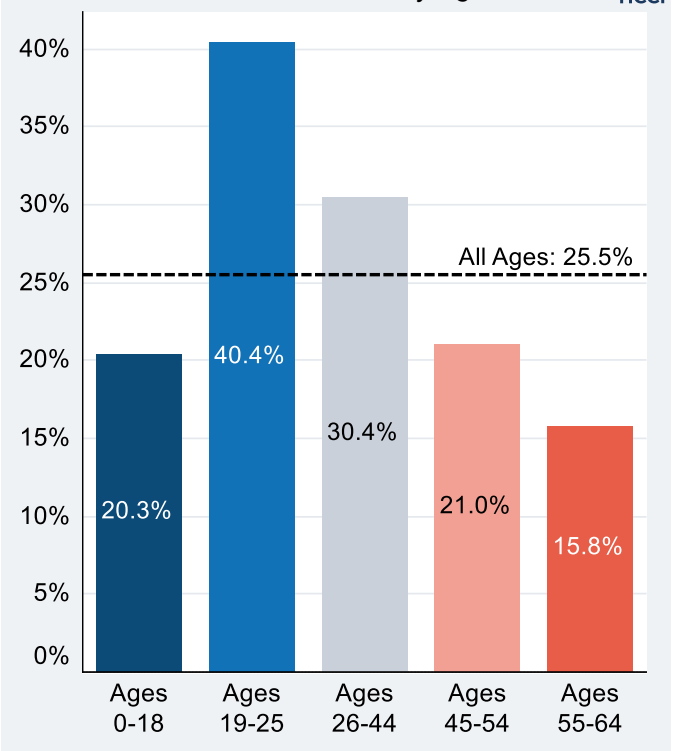


Figure 8: Percent of People with No Health Care Utilization in 2017 by Age  HCCI



Methods Note

This report is based on medical and pharmacy claims data for 40 million Americans with ESI coverage in each year between 2013 and 2017. These data are weighted to reflect the age, gender, and geographic distribution of the entire ESI population (see methodology document for more detail). Over the period, the share of the ESI population that was in the youngest (18 and under) or oldest (55 to 64) age group increased slightly.



Trends of Select Chronic Conditions

The proportion of the ESI population diagnosed with ADHD and asthma increased, while the share of the ESI population with hypertension declined.

The data indicate whether individuals have been diagnosed with one of five chronic conditions: hypertension, asthma, diabetes, attention-deficit/hyperactivity disorder (ADHD), and congestive heart failure (CHF).

- Between 2013 and 2017, the share of the ESI population diagnosed with **ADHD** increased from 2.5% to 4.2% [Figure 9].
- The proportion diagnosed with **asthma** increased from 6.6% in 2013 to 8.8% in 2017
- Over the same period, the proportion of the ESI population diagnosed in any given year with **hypertension** declined slightly from 13.8% to 13.3%.
- The share of the population diagnosed with **CHF** or **diabetes** remained stable at 0.4% and 5.1% respectively.

Each of these conditions are age-related. Estimates of the proportion of the population diagnosed with each chronic condition are not demographically adjusted, so some of the observed change may be explained by shifts in the age composition of the ESI population over the period.

The share of the population diagnosed with at least one of the five selected chronic conditions increased slightly between 2013 and 2017.

In 2017, 19.8% of the ESI population was diagnosed with exactly one of the five conditions, up from 17.9% in 2013 [Figure 10]. The share with two or more diagnoses also increased, rising from 4.9% in 2013 to 5.6% in 2017.

Spending per person was substantially higher for individuals with at least one of the five chronic conditions. Per-person spending for individuals with one diagnosed chronic condition was \$8,921 in 2017, compared to \$3,603 per person with none. Those with two or more chronic conditions had even higher spending, averaging \$20,257 in 2017 [Figure 11].

Figure 9: Proportion of the ESI Population with Select Chronic Conditions

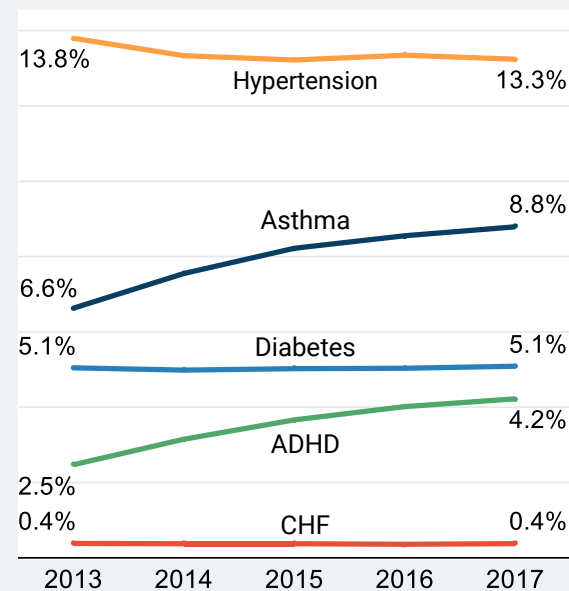


Figure 10: Proportion of the ESI Population with of Multiple Chronic Conditions

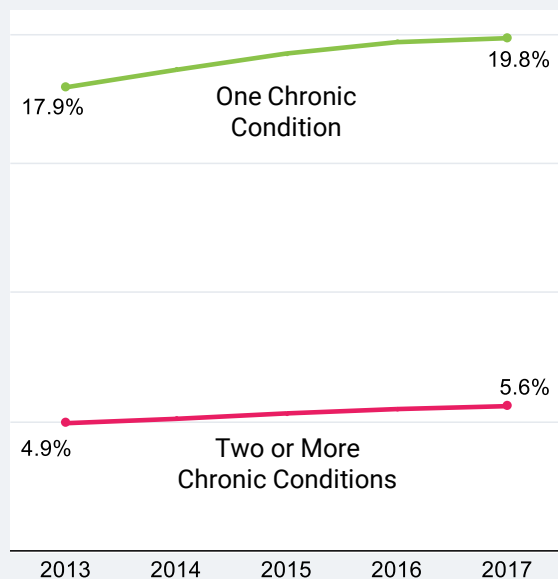
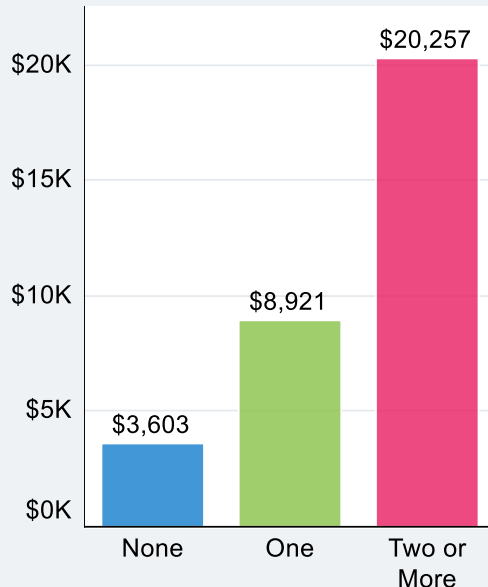


Figure 11: 2017 Spending per Person by Number of Chronic Conditions





Out-of-Pocket Spending Trends

Out-of-pocket (OOP) spending increased steadily, but grew slower than total spending.

Out-of-pocket (OOP) spending includes payments made by patients for health care services and prescription drugs covered by insurance. This spending includes deductibles, co-payments, and co-insurance, but does not reflect coupons or patient assistance programs, which offset patient-cost sharing for some medications and conditions.

Total OOP spending per person rose each year between 2013 and 2017, rising a cumulative 12.2% (\$94) over the five-year period [Figure 12]. These estimates do not include premiums paid for insurance coverage, and so do not reflect the full financial costs for individuals with ESI. Over the same period, the [Kaiser Family Foundation \(KFF\) and Health Research & Educational Trust \(HRET\) 2017 Employer Benefits Survey](#) reports premiums for ESI plans grew 14% for single coverage and 15% for family coverage.

The growth in OOP spending was lower than the growth in total per-person spending in each year [Figure 13]. As a result, the share of spending patients paid out-of-pocket decreased year-over-year in each year from 16.1% in 2013 to 15.4% in 2017 [Figure 14].

There are several possible explanations for the slower growth in OOP spending compared to total spending. First, since 2013, an increasing share of the ESI population was covered by plans with out-of-pocket maximums. The KFF and HRET reports that the percentage of workers with ESI in a plan with an out-of-pocket maximum for single coverage increased by 11 percentage points from 2012 to 2017. In 2015, 2016, and 2017 that share was 98%. In addition, employers may be changing the plan design offerings to keep pace with spending trends less than in previous years. Information on plan design is not included in the medical and pharmacy claims used in this report.

Figure 12: Cumulative Change in Out-of-Pocket and Total Spending per Person since 2013

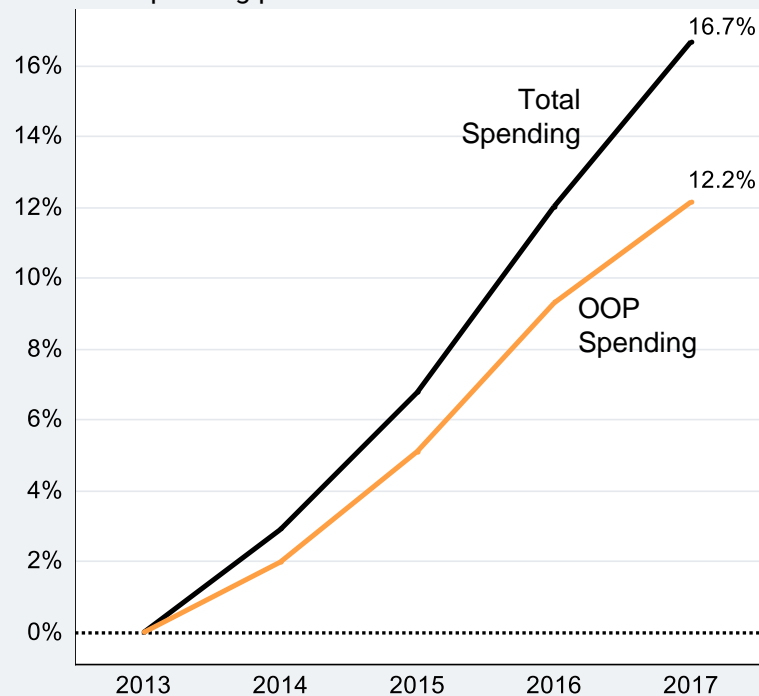


Figure 13: Annual Percent Change in Out-of-Pocket and Total Spending per Person

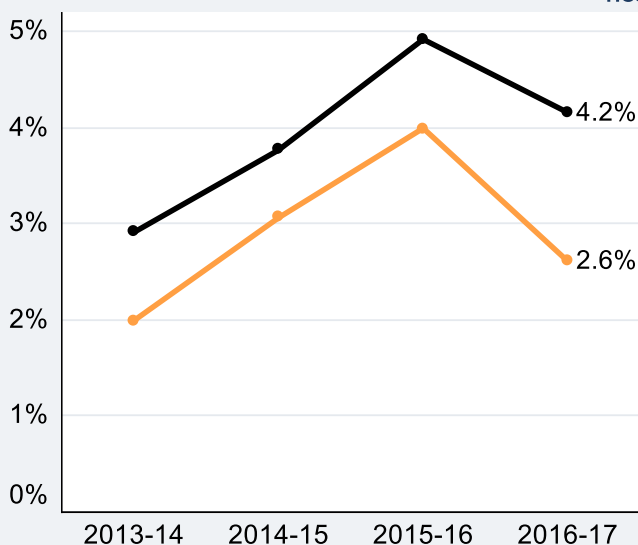
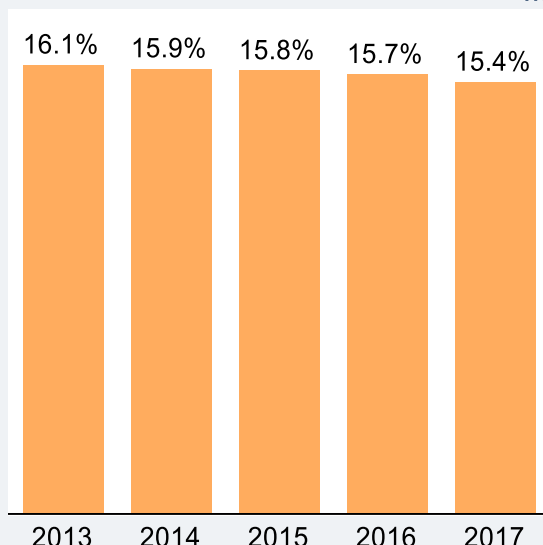


Figure 14: Share of Spending Paid Out of Pocket





Service Category and Subcategory Trends

The health care claims in the underlying data were categorized into four service categories: inpatient facility, outpatient facility, professional services, and prescription drugs. This classification reflects the way claims were processed and paid, and not necessarily how patients interacted with health care providers. In many cases, a single episode of care can have claims in multiple categories. It is also possible that the classification of claims for similar types of episodes vary by provider, or groups of providers, depending on how claims were submitted. Such variation can also occur across years within the same provider. See the accompanying [methodology document](#) for further detail.

Year-to-year changes in spending, use, and average price for each service category can reflect changes in the site of service for certain procedures. For example, if mammograms that had previously been performed in a physician's office, and therefore classified as a professional service, are shifted to an outpatient facility, the trends in spending, use, and price for the radiology subcategory in outpatient facility and professional services categories will be affected. These service-level shifts were not examined, but their possibility should be noted when interpreting the findings presented in the remainder of this report.

As stated before, prescription drug spending includes the amount paid for pharmacy claims. These point-of-sale prices reflect discounts from the wholesale or list prices of prescription drugs, but do not account for manufacturer rebates that occur in separate transactions.

Inpatient



Outpatient



Professional Services



Prescription Drugs





Inpatient Spending Trends

Between 2013 and 2017, per-person spending on inpatient admissions grew 10%, increasing \$98 per person [Figure 16, see Figure 18 on page 11 for cumulative percent changes].

Total per-person spending on inpatient admissions was \$1,097 in 2017 compared to \$999 in 2013. Nearly half of the cumulative spending increase over the period occurred in 2016, when spending per person rose \$47 [Figure 17]. Compared to the sharp increase in 2016, growth tapered off slightly in 2017, but remained higher than in the beginning of the period. The change from 2016 to 2017 (\$26) was similar to the cumulative change between 2013 and 2015 (\$25).

Figure 16: Cumulative Change in Inpatient Spending per Person since 2013

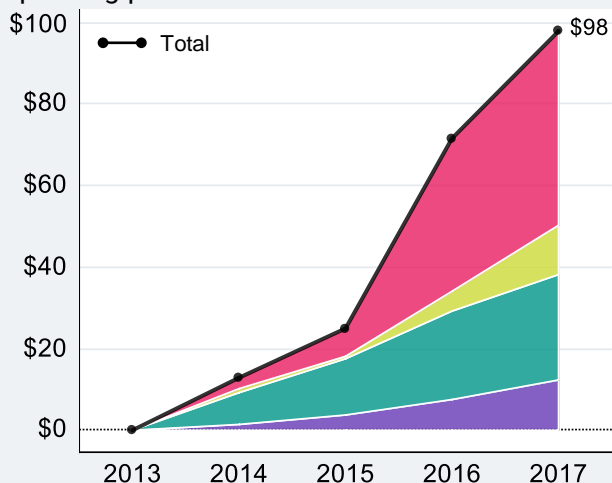


Figure 17: Annual Change in Inpatient Spending per Person

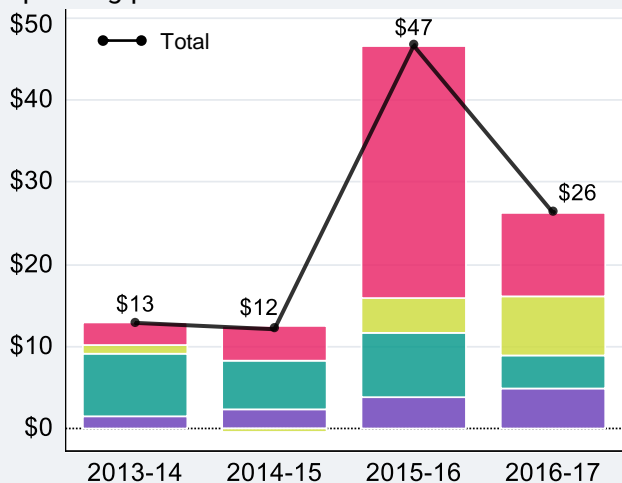
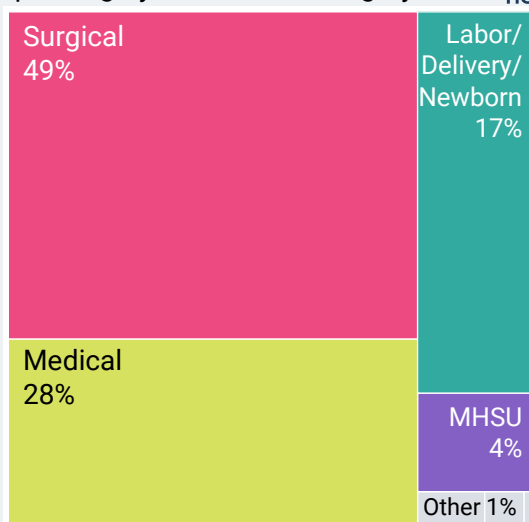


Figure 15: Share of 2017 Inpatient Spending by Service Subcategory



Surgical admissions accounted for highest share of inpatient spending and spending growth.

Per-person spending on **surgical admissions** accounted for 49% of inpatient spending in 2017 [Figure 15]. Spending on surgical admissions increased more than any other inpatient subcategory between 2013 and 2017, with much of the spending growth occurring between 2015 and 2016. While the increase in spending on surgical admissions per person in 2017 was larger than any other inpatient subcategory, it was substantially less than the increase in 2016. This deceleration contributed to the lower total inpatient spending growth in 2017 compared to 2016.


Medical admissions represented 28% of inpatient spending and had the second-largest increase in per-person spending in 2017. After remaining relatively flat between 2013 and 2015, spending on medical admissions accelerated in 2016 and 2017. Over the five-year period, per-person spending on medical inpatient admissions grew 4%, with most of that increase occurring in the last two years [Figure 17].

Labor/delivery/newborn spending per person increased steadily throughout the period and had the second largest cumulative growth (\$26) [Figure 16]. Finally, spending on **mental health and substance use admissions (MHSU)** increased faster than other subcategories between 2013 to 2017, but still accounted for a relatively small share of total spending in 2017 (4%) [see page 12 for more detail].

Contribution of utilization and average prices to overall spending varied across types of inpatient admissions.

Total inpatient utilization fell 5% between 2013 and 2017 [Figure 18]. The change was driven by declines in surgical and medical admissions. The number of labor/delivery/newborn and mental health and substance use admissions rose between 2013 and 2017, but these subcategories account for a smaller share of all inpatient admissions.

Overall price, or average spending per inpatient admission, increased 16% between 2013 and 2017 [Figure 18]. That increase reflects average price increases in each of the four subcategories of inpatient admissions.

Figure 18: Cumulative Change in Inpatient Spending per Person, Utilization, and Average Price since 2013 



Surgical admissions:

- Utilization fell steadily between 2013 and 2015, before leveling off in the last two years of the period, for a cumulative decline of 7%.
- The average price of surgical admissions increased over the five-year-period, rising a cumulative 18%.
- In the first years of the period, declining utilization partially offset increases in price. Steady utilization in later years, combined with average prices that continued to increase led to larger changes in spending per person for surgical admissions. This was especially true in 2016.

Medical admissions:

- Utilization of medical admissions declined a total of 11% between 2013 and 2017. The decline in utilization of medical admissions was greater in earlier years of the period.
- The average price of a medical admission increased 17% between 2013 and 2017.

Labor/delivery/newborn admissions:

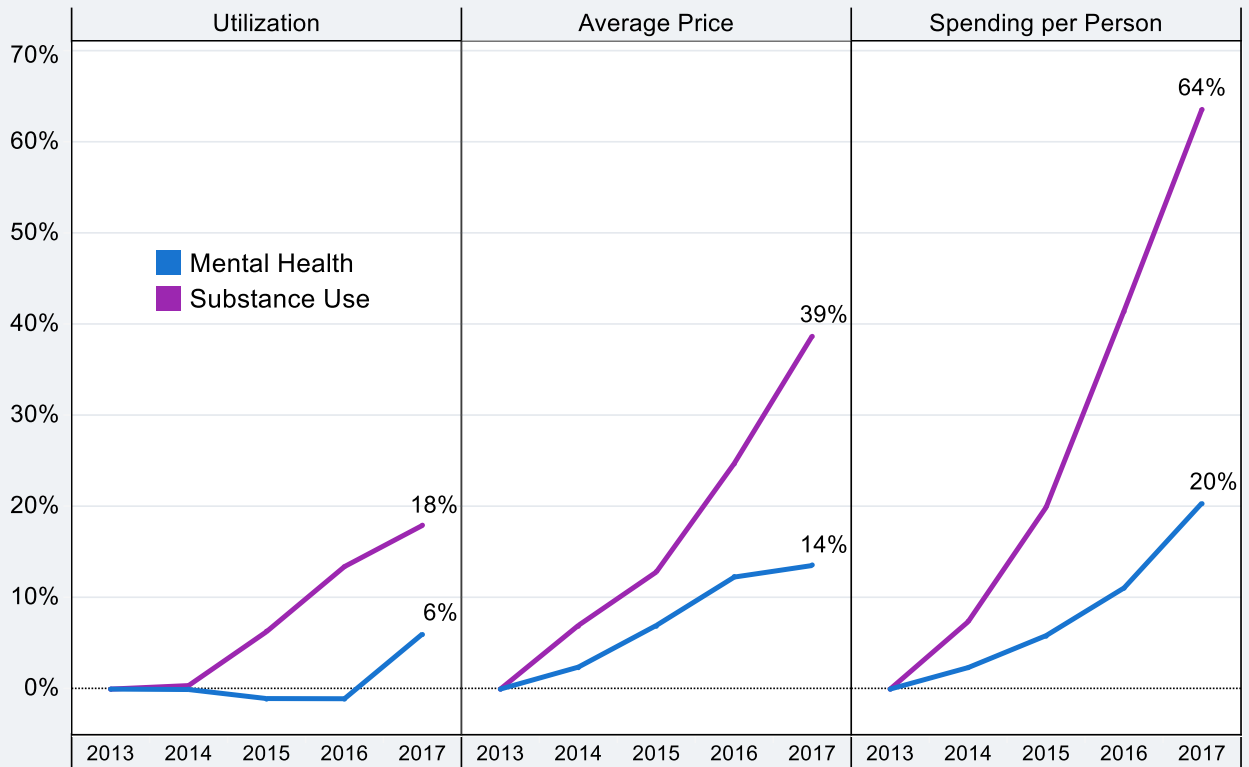
- Increases in both utilization and average prices contributed to growing spending on labor/delivery/newborn admissions.
- Utilization rose steadily, rising a cumulative 6%.
- The 10% increase in the average price of labor/delivery/newborn admissions was slower than the average price growth for the other subcategories between 2013 and 2017 .

Mental health and substance use (MHSU) admissions:

- Utilization of MHSU admissions was flat between 2013 and 2014, increased modestly between 2014 and 2016, and rose sharply in 2017. The total increase was 9% over the period .
- Year-over-year increases in the average price of mental health and substance use admissions tracked the other subcategories of inpatient admissions between 2013 and 2015. From 2015 to 2017, average prices rose more sharply, resulting in a cumulative increase of 23%, the largest in percentage terms of any subcategory.



Figure 19: Cumulative Change in Mental Health and Substance Use (MHSU) Spending per Person, Utilization, and Average Price since 2013



Spending, use, and average prices of inpatient admissions for mental health and substance use increased steadily between 2013 and 2017, but substance use admissions experienced greater growth.

Utilization of mental health and substance use admissions had the largest percentage increase over the five-year period. The growth was concentrated in the 2015 to 2017 period.

This subcategory combines two kinds of admissions for which the resources required are potentially very different – mental health and substance use. The overall use trends for this subcategory are driven by changes in substance use inpatient admissions; however, both types of admissions increased between 2016 and 2017 [Figure 19].

- **Substance use** admissions increased 18% between 2013 and 2017.
- **Mental health** admissions were flat between 2013 and 2016, before rising over 6% in 2017.

In addition, the average price (or spending per admission related to substance use) grew faster than the price of mental health admissions throughout the five-year period, accelerating even more between 2015 and 2017 [Figure 19].

- Overall, the average price of **substance use** admissions increased 39% from 2013 to 2017.
- The price of **mental health** admissions increased 14% over the period.



Outpatient Spending Trends

Spending on outpatient visits and procedures grew faster than other service categories.

Per-person spending on outpatient visits and procedures rose 5.1% in 2017. That rate of growth was the highest of any of the four service categories for the second year in a row. Outpatient spending also increased faster than spending on inpatient admissions or professional procedures between 2013 and 2015.

Outpatient surgery and **emergency room (ER)** visits accounted for the majority of outpatient spending, 36% and 24% respectively [Figure 20]. These subcategories also saw the largest growth, both year-over-year and cumulatively throughout the five-year period [Figures 21 and 22]. Outpatient surgery and ER visits represented 60% of outpatient spending in 2017 and 66% of the increase in per-person spending between 2013 and 2017.

Among outpatient procedures, **radiology** spending grew faster than other subcategories of procedures throughout the entire period; the cumulative rise between 2013 and 2017 was 10% [Figure 26 on page 15].

Figure 20: Share of 2017 Outpatient Spending by Service Subcategory

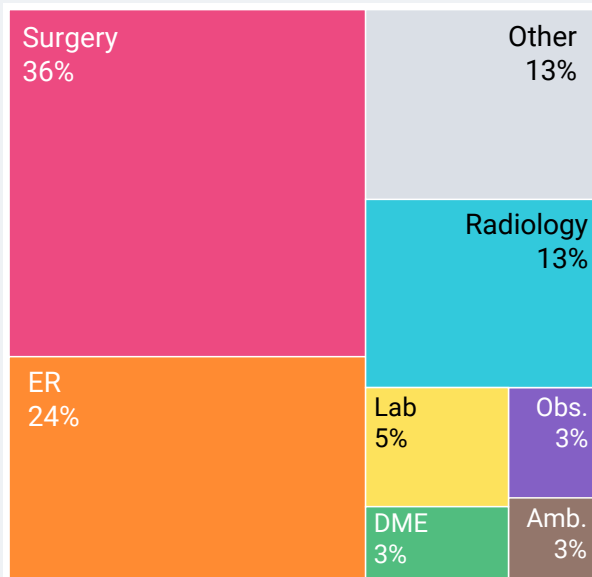


Figure 21: Cumulative Change in Outpatient Spending per Person since 2013

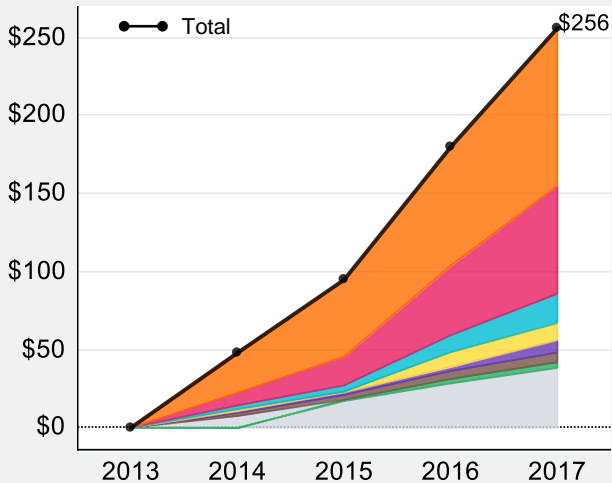
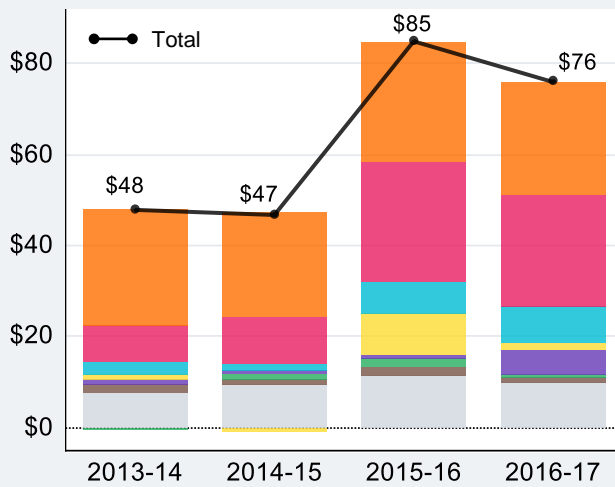


Figure 22: Annual Change in Outpatient Spending per Person



Methods Note

The unit of observation for the outpatient category depended on the site of service, as well as the set of services. Outpatient visits included those services provided in the emergency room, under observation status, as part of a surgery, or during an ambulance ride. In these cases, services on all individual claim lines were aggregated to a single visit. All other services provided by an outpatient facility were counted as individual procedures, and included radiology, laboratory/pathology, and durable medical equipment claims.

The roles of utilization and average prices in driving spending growth varied by type of visit.

All sub-categories of spending on outpatient visits grew steadily between 2013 and 2017. Trends in utilization varied substantially, while prices rose for all sub-categories of visits [Figure 24].

Outpatient surgery visits:

- Use of outpatient surgeries declined slightly between 2013 and 2014, then remained relatively constant through 2017 [Figure 23].
- Consistent growth in average prices drove year-over-year spending growth that totaled 14% between 2013 and 2017 [Figure 24].

Emergency room visits:

- Throughout the five-year period, spending on emergency room visits grew steadily, rising a cumulative 36% between 2013 and 2017 [Figure 24].
- The increase in spending was primarily driven by growth in average prices, which rose 24%, and to a lesser extent growth in utilization, which increased 10%.
- ER visits were the only type of outpatient visits to have increases in utilization every year between 2013 and 2017 [Figure 23].

Observation visits:

- Spending on outpatient observation visits increased 6% cumulatively between 2013 and 2016, before jumping 13% in 2017, which resulted in 20% spending growth between 2013 and 2017 [Figure 24].
- The sharp increase in 2017 reflects upticks in both use and average price.

Ambulance:

- Spending on ambulance services increased 21% from 2013 to 2017, while utilization remained relatively unchanged.

Figure 24: Cumulative Change in Outpatient Visit Spending per Person, Utilization, and Average Price since 2013

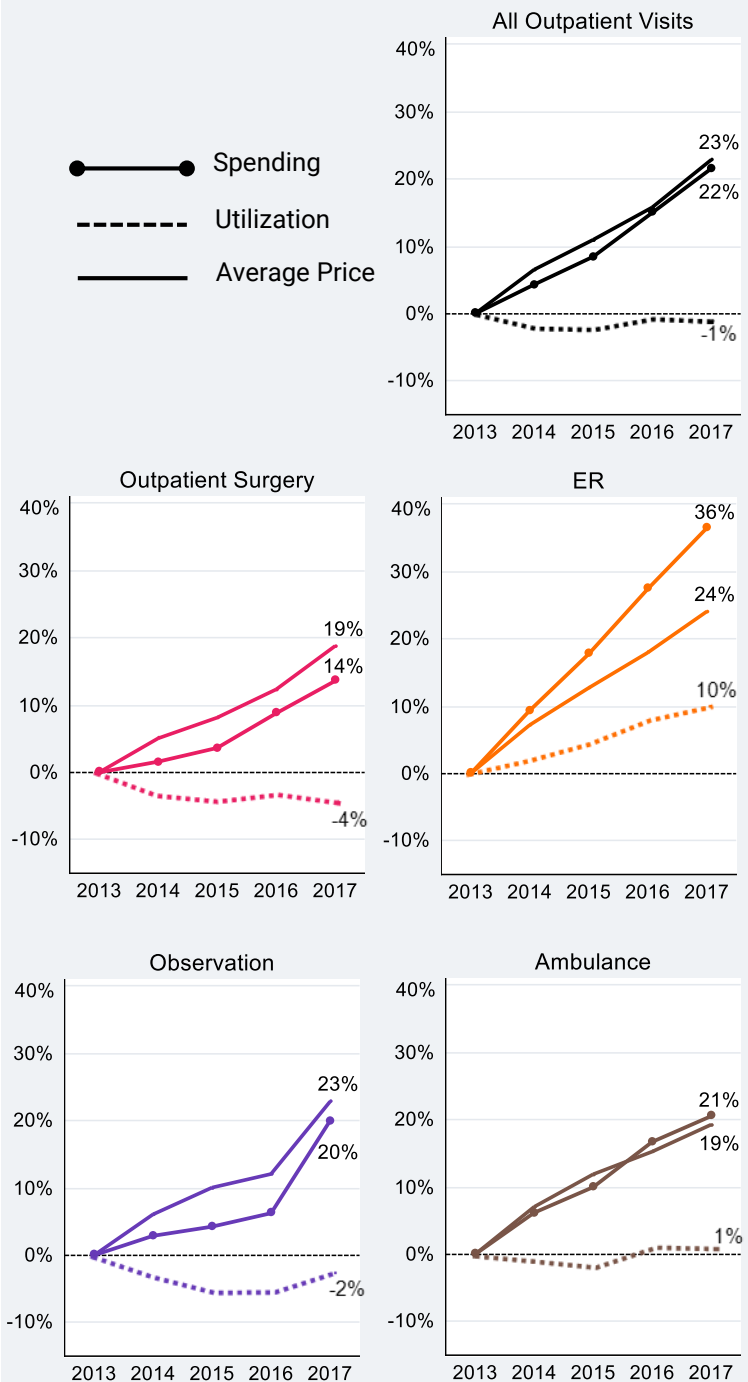
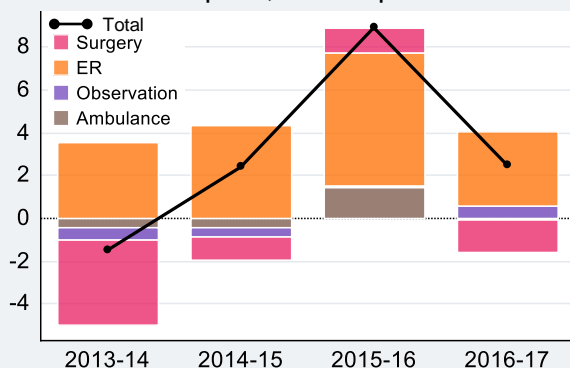


Figure 23: Annual Change in Outpatient Visit Utilization per 1,000 People





Outpatient Procedure Trends

Utilization and average price trends varied by outpatient procedure subcategory.

Radiology procedures:

- Between 2013 and 2017, spending on outpatient radiology increased 10% [Figure 26].
- Utilization and prices moved in opposite directions throughout the period, diverging especially sharply in 2017. That divergence coincides with a change in the service-level codes for mammography screening and diagnostics. Beginning January 1, 2017, five codes associated with mammography with computer-aided detection were condensed into three codes, as noted in [Radiology Today](#). This resulted in fewer procedures, and a higher average price (which measures spending per procedure).

Laboratory/pathology:

- Per-person spending on outpatient laboratory/pathology rose 16% from 2013 to 2017 [Figure 26].
- Utilization of outpatient laboratory and pathology increased 15% between 2013 and 2017, the largest cumulative increase in utilization of any outpatient procedure subcategory.
- Average price growth varied year-over-year, increasing a cumulative 2% by 2017.

Durable medical equipment (DME):

- Spending per person on durable medical equipment increased 8% between 2013 and 2017, the smallest change in spending for any outpatient procedure subcategory.
- Increases in utilization between 2015 and 2016 drove this overall change.

Figure 25: Annual Change in Outpatient Procedure Utilization per 1,000 People

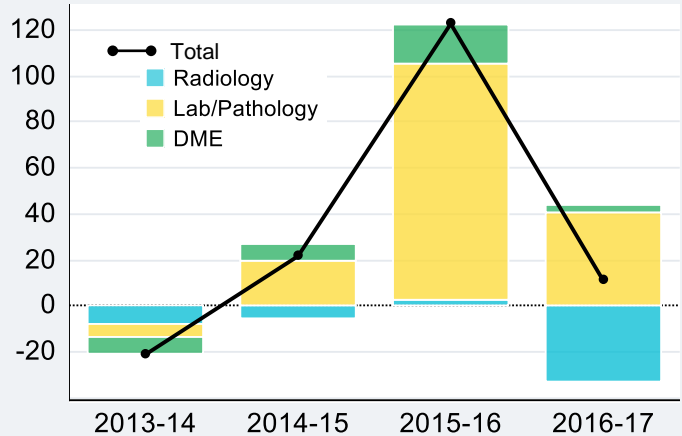
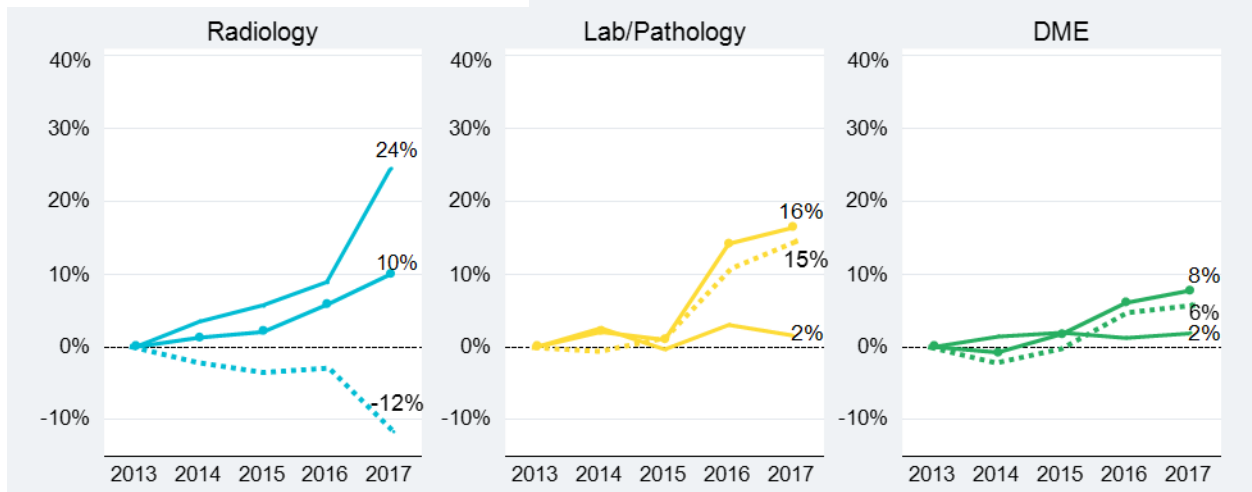
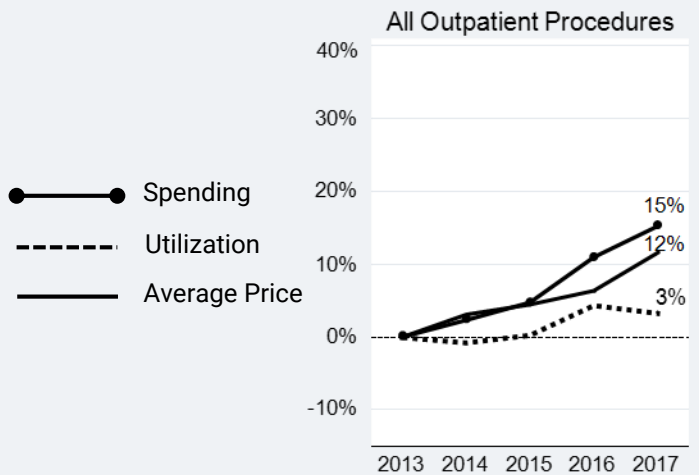


Figure 26: Cumulative Change in Outpatient Procedure Spending per Person, Utilization, and Average Price since 2013



Spending on professional services accelerated steadily.

Per-person spending on professional services increased 13% (\$214) between 2013 and 2017 [Figure 28]. The year-over-year change grew in each year of the period, rising from an increase of \$19 in 2013 to an increase of \$76 in 2017 [Figure 29]. Office visits and administered drugs, which represent two of the three largest professional services subcategories, accounted for more than half the cumulative increase over the period.

Office visits were largest category of professional spending.

In every year between 2013 and 2017, office visits accounted for the largest share of professional services spending. In 2017, office visits represented 21% of the total per-person spending [Figure 27]. The year-over-year increase in spending per person on office visits grew steadily, rising an average of \$9 a year between 2013 and 2017 [Figure 28].

Administered drugs accounted for an increasing share of professional services spending

In each year between 2013 and 2017, spending on administered drugs grew at a faster rate than any other professional services subcategory. This includes the amount paid for chemotherapy agents and other drugs administered by a physician. The year-over-year change grew over the period. Between 2013 and 2014 the increase in spending per person on administered drugs increased \$7. Between 2016 and 2017 the increase had grown to \$27 [Figure 29].

Figure 27: Share of 2017 Professional Services Spending by Subcategory

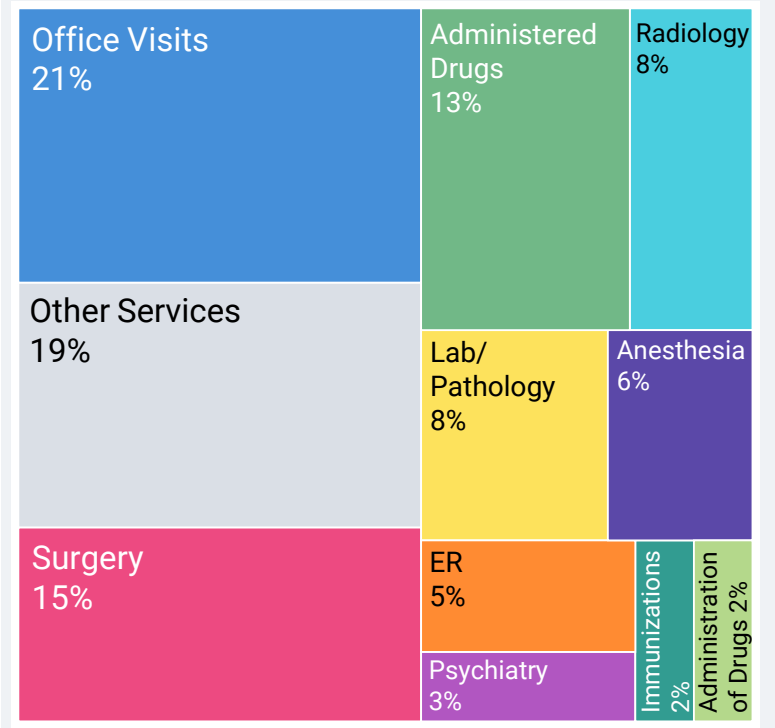


Figure 28: Cumulative Change in Professional Services Spending per Person since 2013

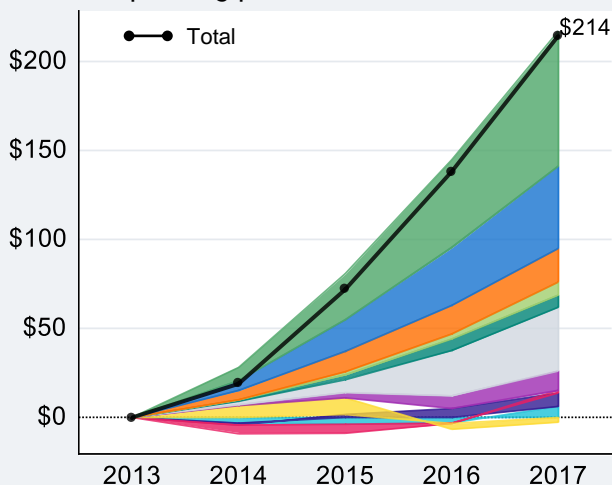
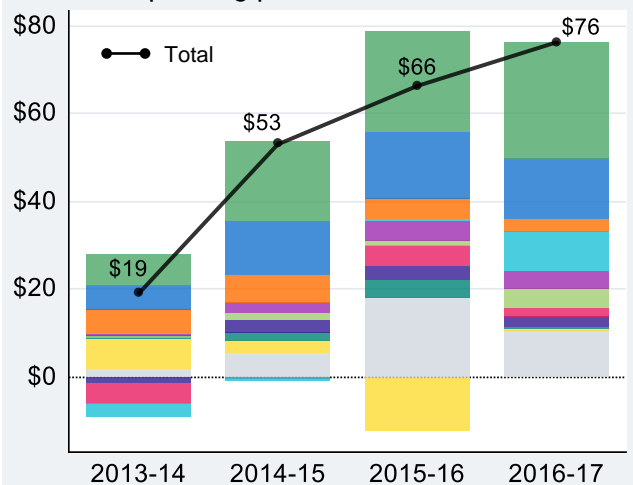


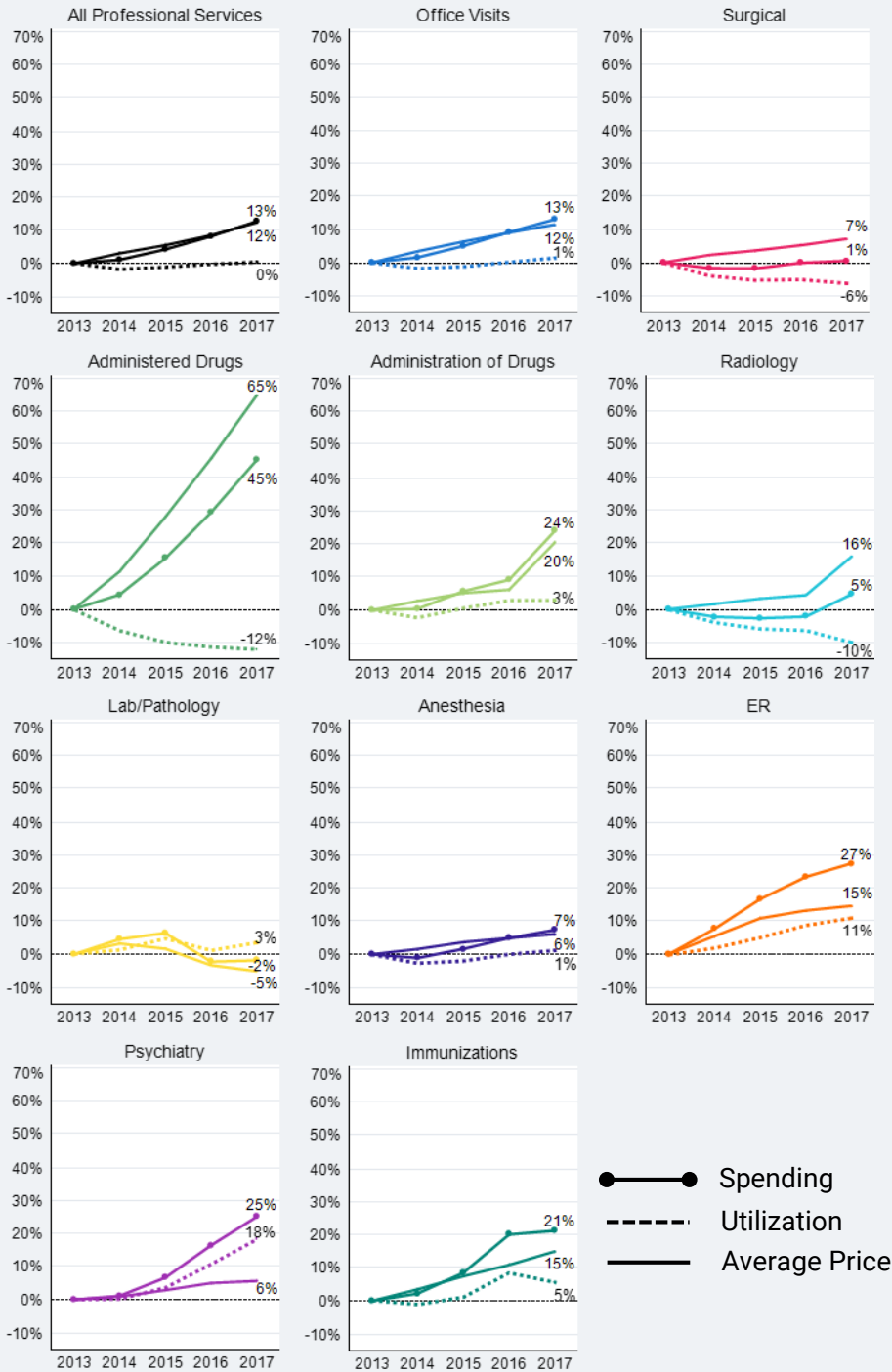
Figure 29: Annual Change in Professional Services Spending per Person





Professional Services Utilization and Average Price Trends

Figure 30: Cumulative Change in Spending per Person, Utilization, and Average Price for Professional Services since 2013



Rising prices drove spending increase

Utilization of professional procedures was flat overall, though changes varied substantially by subcategory of service over the five-year period. The average price for services in each subcategory increased across all subcategories except laboratory/pathology.

Administered drugs had the highest price growth, with the average price for all drugs in the subcategory rising 65% between 2013 and 2017 [Figure 30].

Psychiatry:

The utilization of psychiatry services rose by 18% between 2013 and 2017. Use was flat between 2013 and 2014, ticked up slightly in 2015, and then accelerated in the last two years of the period. This increase is approximately three times the growth in prices over the same period, which increased a cumulative 6% by 2017. Total spending rose 25%.

Radiology:

As noted in the outpatient procedures section, there were coding changes to mammography screening and diagnostic studies using computer aided detection. The number of codes was consolidated from 5 to 3 beginning in January 2017, as reported in [Radiology Today](#). This resulted in fewer procedures in 2017. The price per procedure increases, as the newly coded procedures incorporated broader services.



Prescription Drug Spending

Per-person spending on prescription drugs, based on payments at point-of-sale, totaled \$1,065 in 2017, of which \$807 was spent on brand prescriptions and \$246 on generics [Figure 31].

In 2017, spending on prescription drugs and medical devices obtained at pharmacies was 29% higher than in 2013 [Figure 32]. The increase in spending includes increases in expenditures for the same drugs, as well as increases in expenditures that result from the adoption of newly approved medications.

The trends in per-person spending were not uniform across all subcategories of prescription drugs [Figure 32 on page 19].

- Spending declined for **cardiovascular** (-34%), **central nervous system (CNS)** (-11%), **gastrointestinal (GI)** (-12%), and **ears, eyes, nose, and throat (EENT)** (-15%) prescription drugs.
- Notable spending increases occurred between 2013 and 2017 for **hormones** (55%), **rheumatoid arthritis** (156%), **skin** (70%), and **chemotherapy/antineoplastic agents** (95%) prescription drugs.

Further, these estimates reflect amounts paid at time of purchase, and therefore, do not include manufacturer rebates. Recent analyses by the [Department of Health and Human Services Office of the Inspector General](#) and [Medicare Trustees](#) of the effect of rebates in the Medicare Part D program found that rebates offset approximately 20% of spending increases from 2011 to 2015 and accounted for between 11.7% (2012) and 19.9% (2016) of total drug costs. The [Prescription Drug Cost Transparency Report](#) published by the California Department of Managed Health Care reports that manufacturer rebates totaled just over 10% of prescription drug spending for commercial health plans regulated by the state in both 2016 and 2017.

Methods Note:

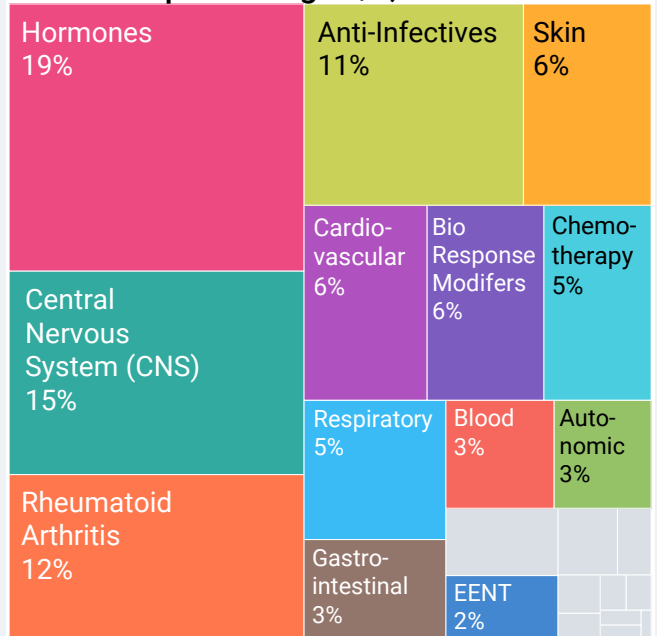
These estimates do not reflect manufacturer rebates, coupons, or other discount programs, because those data are not available. They do, however, include negotiated discounts from the wholesale or "list" price, and are the amounts that appear on the pharmacy claim. Thus, the term, "point-of-sale" price is used to describe the spending per filled day. Any additional manufacturer rebates occur through separate transactions. The degree to which rebates offset point-of-sale spending varies across types of drugs, as well as across specific products, depending on details of the negotiations between manufacturers and pharmacy benefit managers (PBM). Further, how the value of the rebates is distributed across PBMs, insurers, and consumers also varies. Information on these aspects of manufacturer rebates are not available in pharmacy claims data. The change in point-of-sale prices estimated in this report reflects a combination of higher point-of-sale prices for the same drugs and shifts in use to more expensive products, including those introduced during the period.

Additionally, not all drugs are dispensed by retail and mail-in pharmacies. Certain drugs are administered by physicians or other health care providers in outpatient facilities or doctor's offices and are included in the "Administered Drug" subcategory of Professional Services.

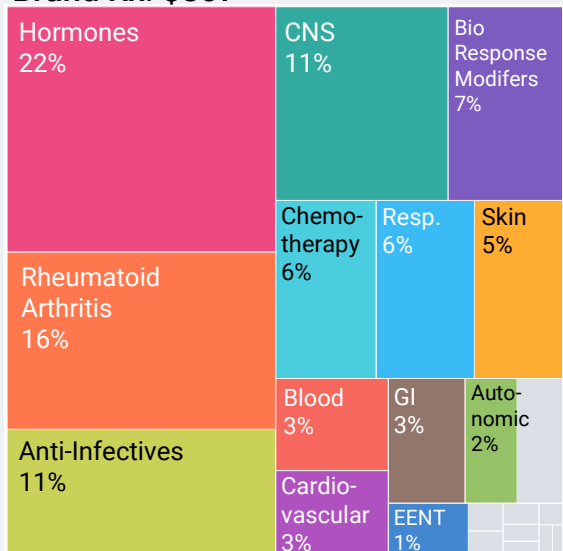
Figure 31: Share of 2017 Prescription Spending



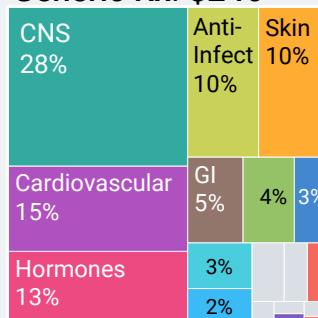
All Prescription Drugs: \$1,065



Brand Rx: \$807



Generic Rx: \$246



Note: Prescription drug spending is the amount paid on the pharmacy claim, which reflects discounts from the wholesale price, but not manufacturer rebates.

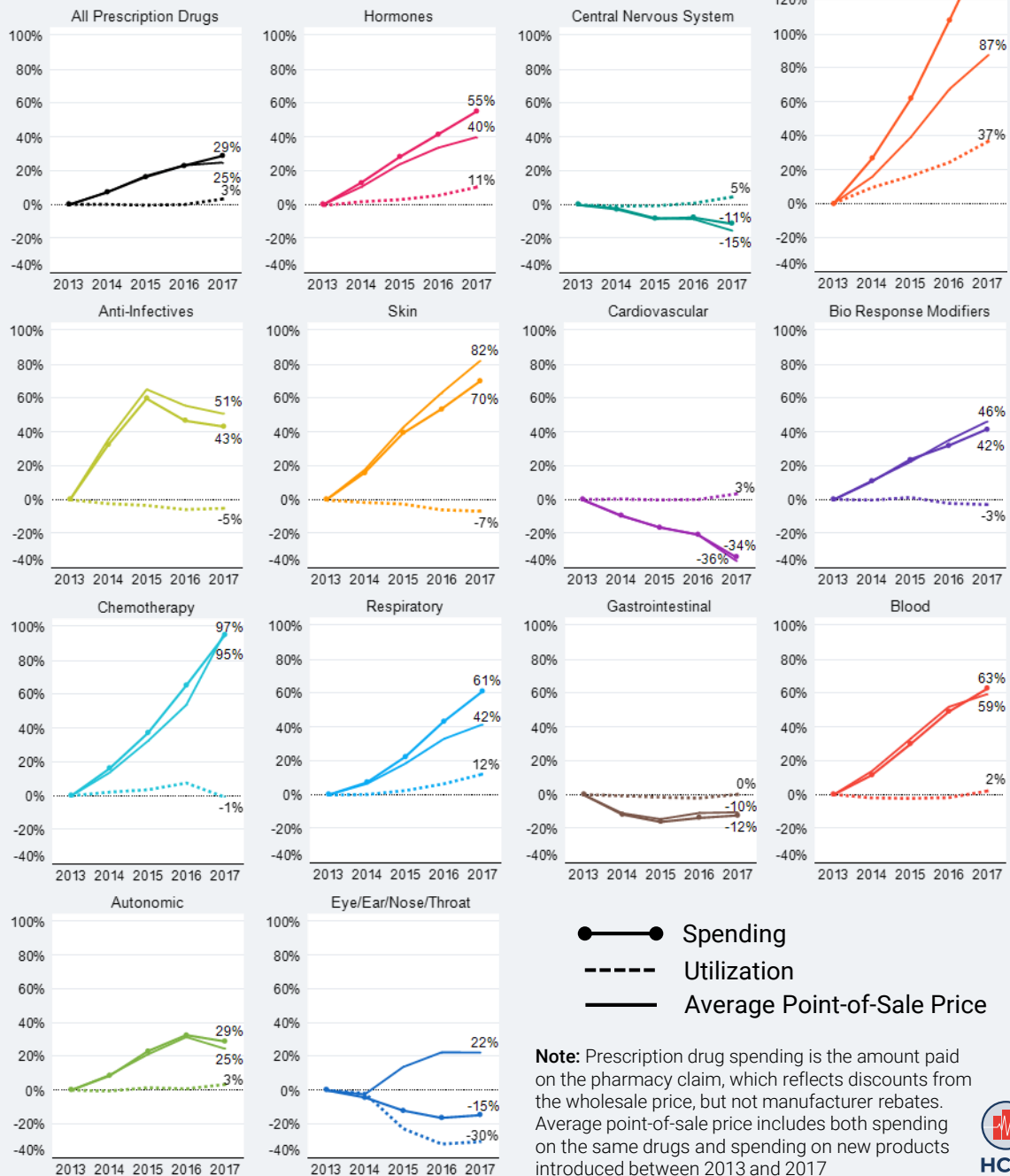


Prescription Drug Utilization and Average Price Trends

Utilization, the number of filled days per person, was constant throughout most of the period, but rose 3.3% in 2017. Some subcategories showed different trends. From 2013 to 2017, the use of **rheumatoid arthritis** drugs increased 37%, while use of **EENT** drugs declined 30% [Figure 32]. Some of the change in utilization may reflect the transition from requiring a prescription, to being available over-the-counter. For example, the decline in EENT drug use coincides with availability of over-the-counter Flonase®.

The average point-of-sale price per filled day across all prescriptions rose 25% between 2013 and 2017. The slower growth in recent years is partly explained by a shift in utilization from brand to generic drugs that have lower point-of-sale prices per filled day. This was particularly notably in the subcategories **cardiovascular** and **central nervous system**, which had average point-of-sale price declines of 36% and 15% respectively. Both of these subcategories contain commonly prescribed brand drugs that went off patent during the period.

Figure 32: Cumulative Change in Prescription Drug Spending per Person, Utilization, and Average Point-of-Sale Price since 2013





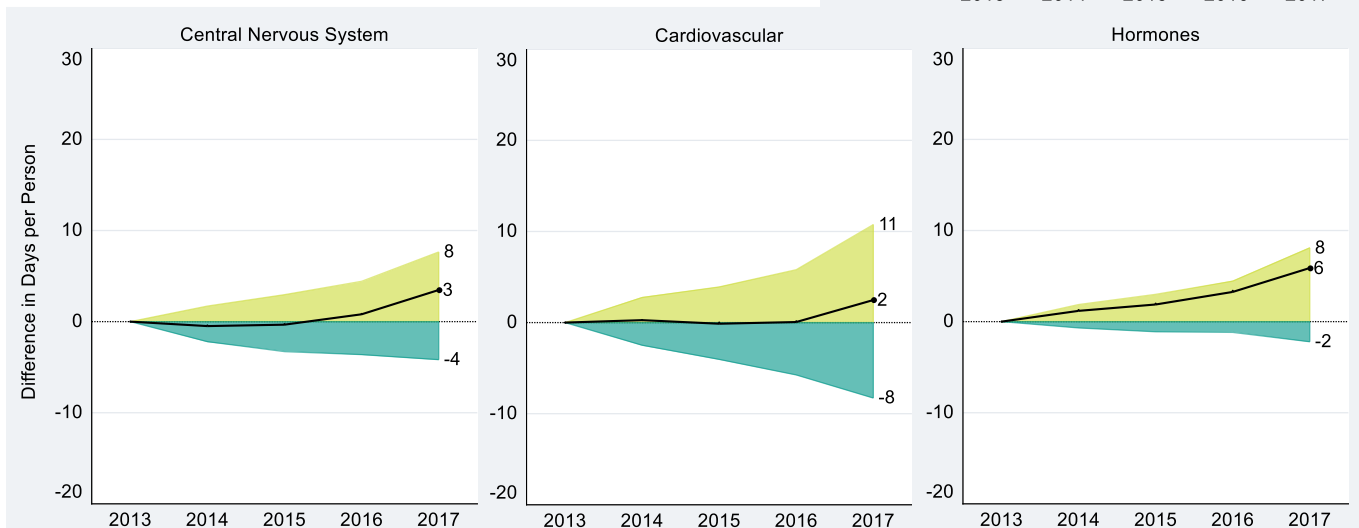
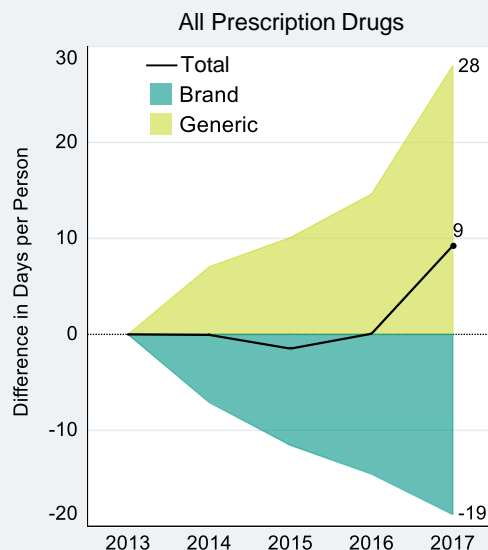
Utilization of Brand and Generic Prescription Drugs

The increase in the utilization of prescription drugs was driven by an increase in the number of filled-days covered by generic prescriptions

In 2017, the number of days per person covered by a filled prescription was 9 more (3%) than in 2013. Over that period, the increase in the number of days covered by generic drugs more than offset the decrease in number of days covered by brand drugs. Between 2013 and 2017, the cumulative change was 28 more days per person covered by generics and 19 fewer day per person covered by brands.

The utilization trend was consistent among the three most commonly prescribed categories of drugs – central nervous system (CNS), cardiovascular, and hormones. Overall utilization rose for each of these categories, with increases in generic use more than offsetting declines in brand use, particularly in 2017. The total increase in number of days filled per person rose by 3 days (5%) for CNS drugs, 2 days (3%) for cardiovascular, and 6 days (11%) for hormones.

Figure 33: Cumulative Change in Days-Filled of Brand and Generic Prescription Drugs since 2013



Methods Note:

Utilization of prescription drugs is measured as the number of days per person covered by prescriptions filled at pharmacies (including mail-in) during the year. Changes in utilization can reflect one of several underlying changes in the composition of those prescriptions:

- A change in the number of people who filled any prescriptions during the year. This would occur when there is a change in the prevalence of chronic conditions or a change in the occurrence of acute conditions that require medication (for example, a particularly bad year for strep throat would increase the number of people with an antibiotic prescription in that year).
- A change in the number of prescriptions each person fills. This would occur when the number of chronic conditions per person changes (co-morbidities become more or less common) or the severity of particular conditions changes on average. In addition, changes in the use of combination therapies (which combine multiple medications into a single pill, thereby reducing the number of prescriptions required) would have an effect.
- A change in the duration of the prescriptions filled.



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[Downloadable Data](#)

[HCCI Service Category Crosswalk](#)

[Previous Health Care Cost and Utilization Reports](#)

Works Referenced in the 2017 Health Care Cost and Utilization Report:

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2. Hernandez et al. "The Contribution of New Product Entry Versus Existing Product Inflation in the Rising Costs of New Drugs," Health Affairs, 38:1, January 2019.
3. Kaiser Family Foundation and Health Research & Educational Trust, "2017 Employer Health Benefits Survey." <http://files.kff.org/attachment/Report-Employer-Health-Benefits-Annual-Survey-2017>
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5. U.S. Department of Health & Human Services Office of the Inspector General, "Increases in Reimbursement for Brand-Name Drugs in Part D."
6. The Board of Trustees, Federal Hospital Insurance and Federal Supplementary Medical Insurance Trust Funds, "2018 Annual Report of the Board of Trustees of Federal Hospital Insurance and Federal Supplementary Medical Insurance Trust Funds." June 5, 2018.
7. Department of Managed Health Care, State of California, "Prescription Drug Cost Transparency Report, Measurement Year 2017," December 2018.

Contact Us:



healthcostinstitute.org



info@healthcostinstitute.org



[@healthcostinst](https://twitter.com/healthcostinst)