

# 2016 Health Care Cost and Utilization Report

A review of trends in health care spending, utilization, and price among Americans with employer-sponsored insurance



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I am pleased to present HCCI's 2016 Health Care Cost and Utilization Report, based on analyses of our leading commercial claims database representing the under-65, employer-sponsored insurance (ESI) population in the United States. We find that health care spending on the ESI population grew by 4.6% in 2016, an increase over the lower rates observed between 2012 and 2015. With this report, HCCI aims to provide a compelling contribution to the broader discussion of U.S. health care costs and stimulate a conversation on the significant role rising prices are playing in driving the growth in health care spending at a time when health care utilization among the ESI population is either flat or declining.

I'm also pleased to announce that as part of HCCI's ongoing mission to promote data transparency, for the first time, we are also providing user-friendly, machine-readable downloads of all the data tables used in this report that will permit anyone to conduct independent analyses to create their own insights and visualizations.

This report focuses on per-person health care spending for the ESI populations from Aetna, Humana, Kaiser and UnitedHealthcare. We calculate total (payer plus out-of-pocket) spending, out-of-pocket (OOP) spending, prices, and utilization for four broad categories of health care services: inpatient, outpatient, professional services, and prescription drugs. We further segment these broad categories into an additional 35 subcategories of health care services in order to better understand the drivers of pricing, utilization and spending. We analyzed the data to understand changes in health care spending between 2015 and 2016, and cumulatively from 2012 to 2016. More information about the methodology and HCCI is available on [our website](#)

I'd like to acknowledge and thank the report's authors, Amanda Frost, John Hargraves, and Sally Rodriguez who have significantly revised and refocused the annual report this year to produce a striking series of visuals that highlight the ongoing challenges we face in meaningfully controlling U.S. health care spending, and in producing public-use versions of the underlying metrics that will allow any reader to utilize the data for their own purposes.

I hope that readers appreciate this latest version of our annual report and I want to remind all interested academic researchers that they can contact HCCI directly to license the underlying claims data included in this analysis for their own research interests.

Niall Brennan,  
President, 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](http://healthcostinstitute.org) or follow us on Twitter [@healthcostinst](#)

## Contact

For more information about HCCI or this report, please see our website [www.healthcostinstitute.org](http://www.healthcostinstitute.org) or e-mail [info@healthcostinstitute.org](mailto:info@healthcostinstitute.org).

# Executive Summary

The Health Care Cost Institute's (HCCI) 2016 annual report on U.S. health care cost and utilization trends finds that Americans under the age of 65 who were insured through their employer spent more than ever on health care, and spending grew faster in 2016 than in recent years.

HCCI analyzed health care spending in terms of overall system costs, out-of-pocket spending, and by types of service. Based on spending data from 2012 to 2016:



**Total spending per person is now growing at faster rates than prior years**, with 4.6% growth in 2016 compared to 4.1% growth in 2015, which followed 2 years of sub-3% growth from 2012 to 2014.



**Spending growth in each year from 2012 to 2016 was almost entirely due to price increases.** We saw particularly large increases in spending and price for administered drugs, emergency room (ER) visits, and surgical hospital admissions.



**Utilization of most health care services remained unchanged or declined**, both year-over-year and over the 2012-2016 period.



**Consumer out-of-pocket (OOP) spending per person increased, but grew more slowly than total spending.** This difference in growth led to a decline in OOP spending as a share of total spending.

## KEY DEFINITIONS

**Spending per person:** Per person, or per capita spending in this report is the estimate of total expenditures on medical and pharmacy claims divided by the employer-sponsored insured (ESI) population.

**Types of health care services:** This report uses three medical service categories: inpatient, outpatient, and professional services, which are further divided into sub-categories. In addition to the medical categories, HCCI analyzes prescription drug and device claims from pharmacies and suppliers. The prescription drug category is divided into brand and generic sub-categories, and further into classes based on the American Society of Health-System Pharmacists' classification system (AHFS).

**Out-of-pocket (OOP) spending:** OOP spending includes the patient's share of payment for the provision of health care services and prescription drugs covered by insurance; such spending includes any co-payments, co-insurance payments, or deductible payments made by the patient. The OOP spending amounts in this report are per person, not per user.



# Health Care Spending Trends

## Total health care spending per person is growing faster than in previous years

Health care spending per person for the commercially insured reached a new high of \$5,407 in 2016 (Figure 1; Appendix Table A1).

Total spending per person in 2016 was 4.6% higher than 2015 (Figure 2). This was the highest annual total spending growth observed during the 2012-2016 study period; much greater than the 2.8% growth from 2012 to 2013.

In 2016, increased spending on outpatient services was the biggest contributor to the annual growth in total spending (Figure 2; Appendix Table A1). This is a change from prior years. In 2014 and 2015 prescription drug spending was the biggest contributor to total spending growth.

Prescription drug spending growth was higher than total spending growth in most years, with annual growth peaking at 10.4% in 2015. While spending growth on prescription drugs remained relatively high in 2016 at 5.1%, it was substantially lower than in the previous two years.

Inpatient and outpatient spending had similar growth trends during the study period, and both saw an uptick in 2016.

Figure 1: Spending per Person in 2016

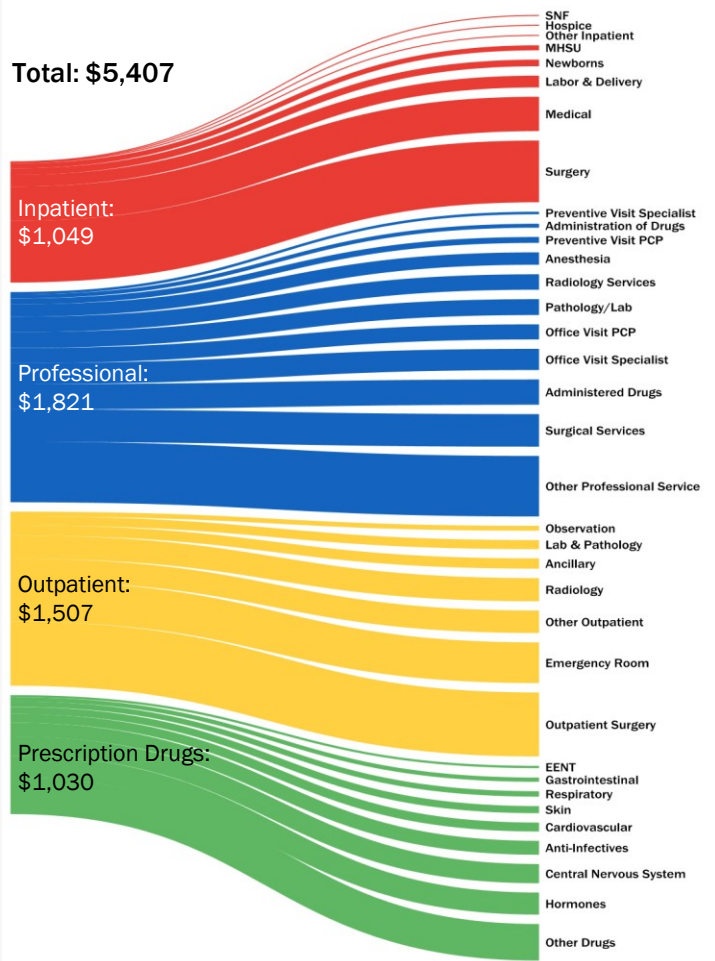
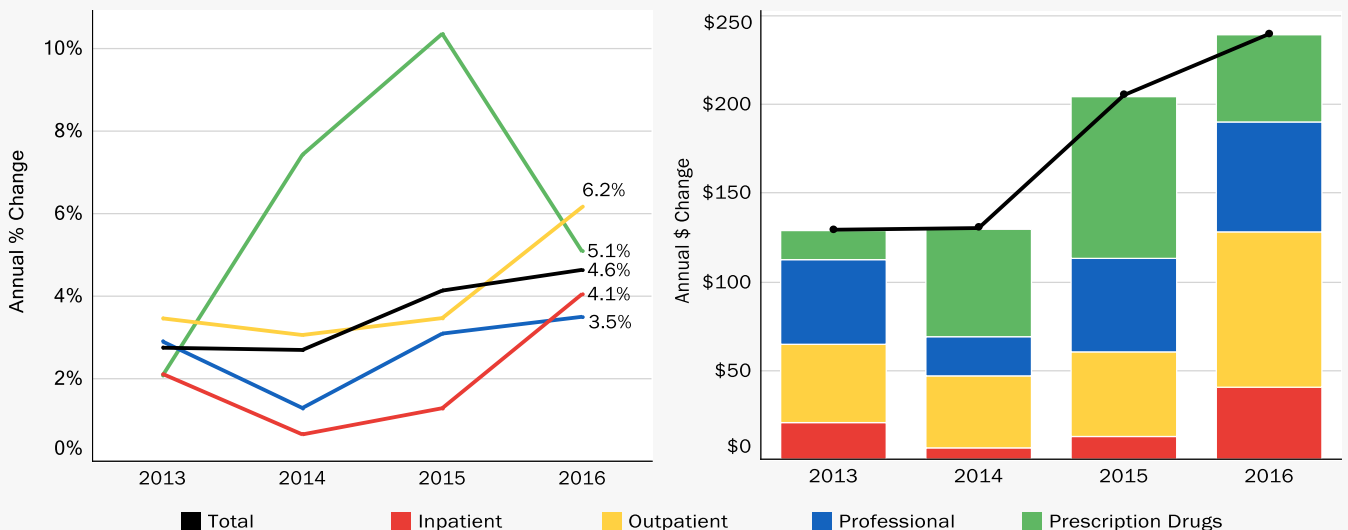


Figure 2: Annual Change in Spending per Person, 2012-2016



# Increasing Prices Drive Health Care Spending Growth

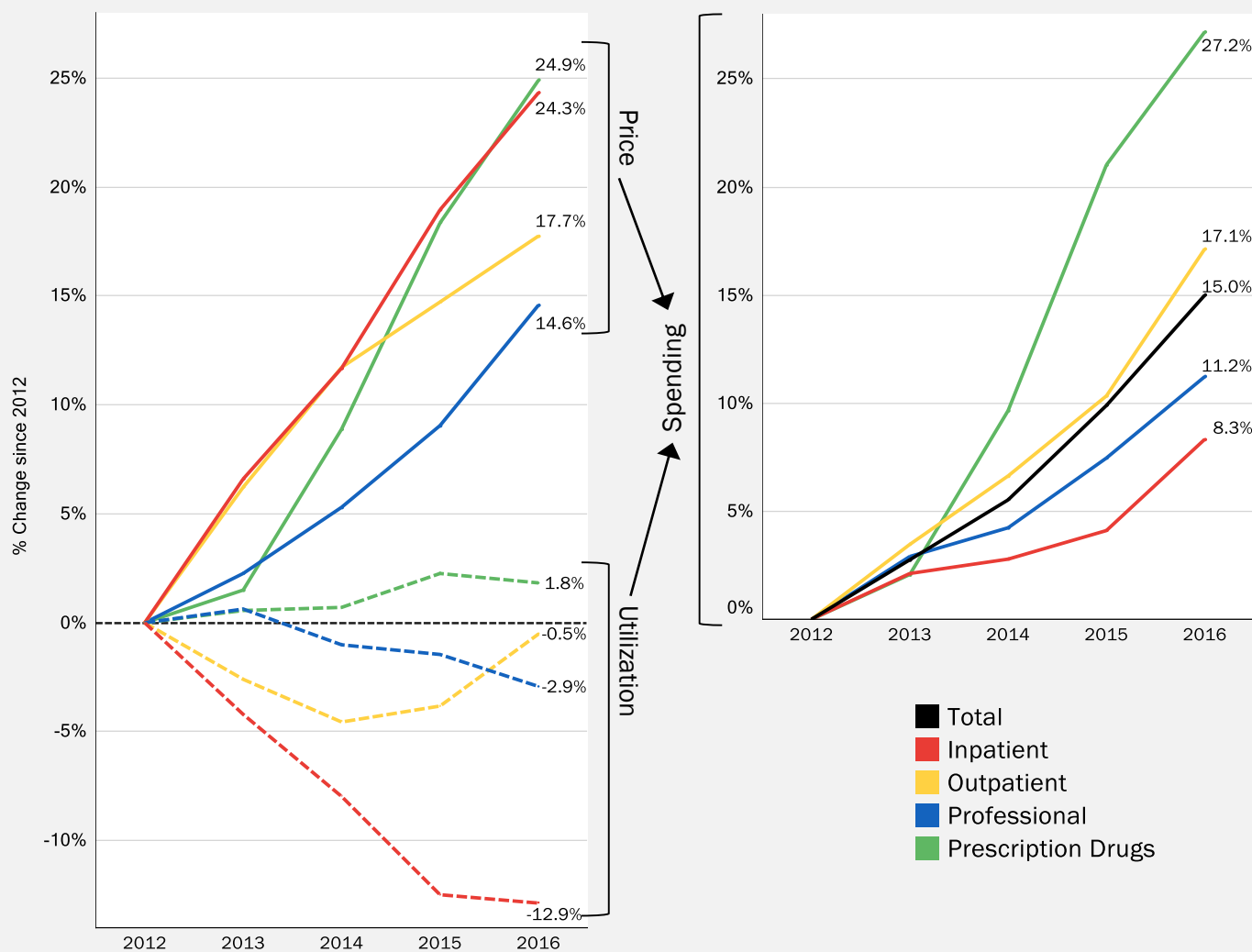
**The utilization of health care services has declined since 2012, but prices for all services have increased.**

Health care spending is the product of two components: price and utilization. From 2012 to 2016, increases in spending were almost entirely attributable to increases in price (Figure 3; Appendix Table A3). In 2016, high growth in prices was partially offset by a net decrease in utilization.

From 2012 to 2016, we observed increases in prices each year and across nearly all service categories. The greatest cumulative price increase was seen in prescription drugs, with 24.9% price growth. Inpatient services also experienced very high price growth, with prices increasing 24.3% between 2012 and 2016.

In contrast, utilization of most services declined over the 2012-2016 period, with the exception of prescription drugs, which increased 1.8%. The utilization of inpatient services had the largest decline, with admissions rates decreasing 12.9% between 2012 and 2016. This decline in use resulted in relatively low inpatient spending growth despite the high price growth. Conversely, the small increase in use of prescription drugs, coupled with high price growth, led to very high spending growth.

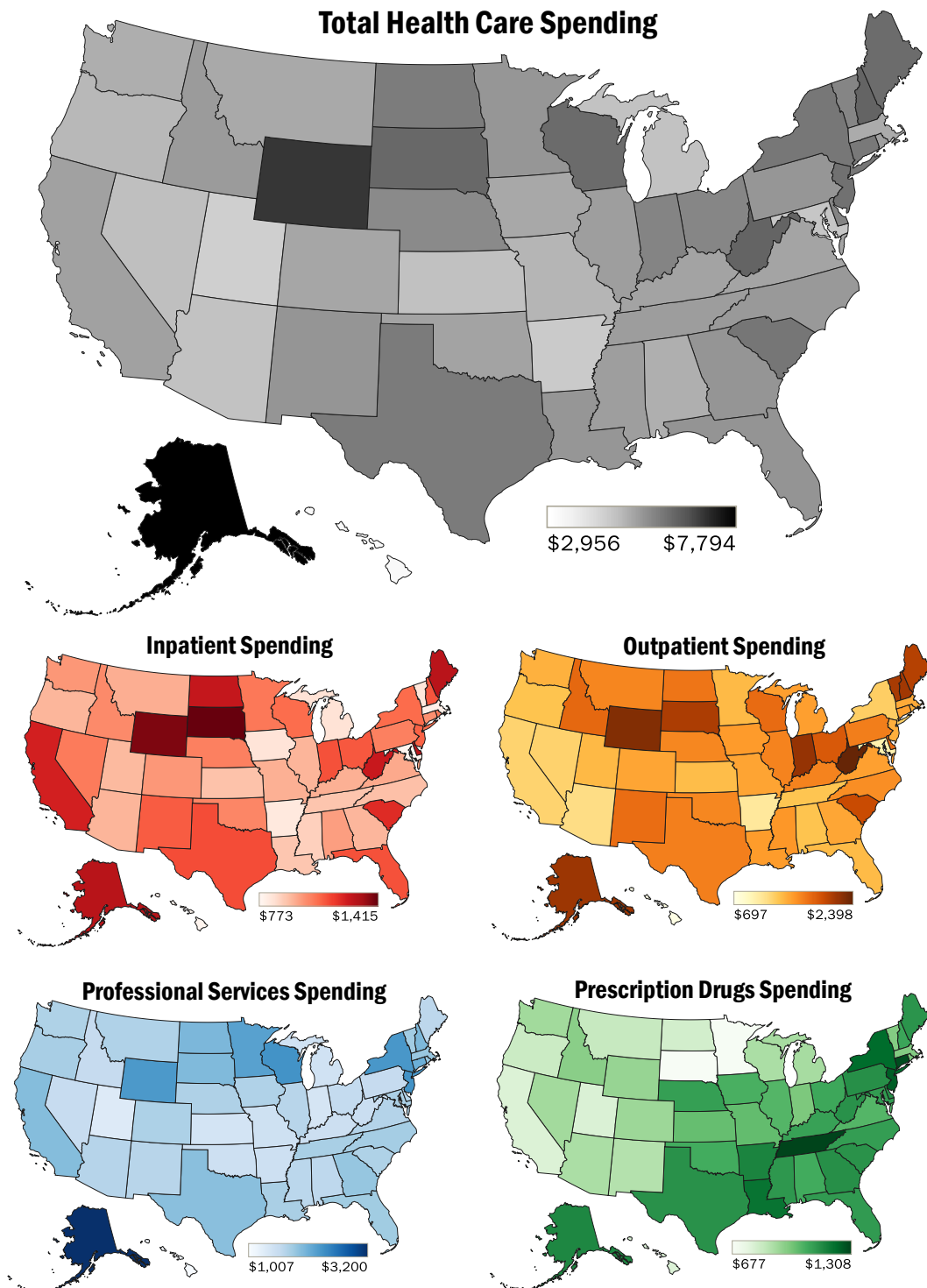
**Figure 3: Cumulative Change in Price, Utilization and Spending, 2012-2016**





# Health Care Spending Patterns Differ by Service Type at the State level

Figure 4: State Variation in Spending per Person in 2016





# Inpatient Spending Trends

## While spending rose for every sub-category of acute inpatient services, surgery spending largely drove the spending increase

Between 2012 and 2016, spending on inpatient admissions grew 8% (Figure 6; Appendix Table 5A). Inpatient spending grew substantially faster from 2015 to 2016 than in previous years, with 4.1% spending growth. The annual increase in spending from 2015 to 2016 was actually greater than the combined annual spending increases of the three previous years.

The biggest driver of the higher inpatient spending in 2016 was surgical admissions. Surgery accounts for just over half of the acute inpatient spending in 2016 (Figure 7). The cumulative growth of surgery spending was relatively low at 9%; however, most of this spending growth occurred over a single year, from 2015 to 2016 (Figure 6). The annual change in surgery spending in 2016 dwarfed all other annual changes in inpatient sub-category spending from 2012 to 2016 (Figure 5; Appendix Table 5A).

Spending on medical admissions was flat over the study period, with a cumulative increase of just 0.6%, which contributed little to inpatient spending growth, despite accounting for 29% of spending in 2016.

Mental health and substance use (MHSU) admissions had the largest cumulative spending increase, with 28%, but a relatively low increase in dollars, given its small share of inpatient spending.

Figure 5: Annual Change in Inpatient Spending per Person

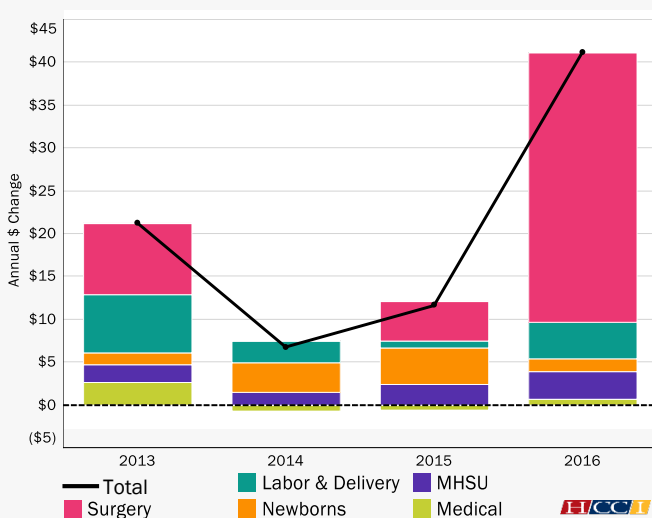


Figure 6: Cumulative Change in Inpatient Spending per Person, 2012-2016

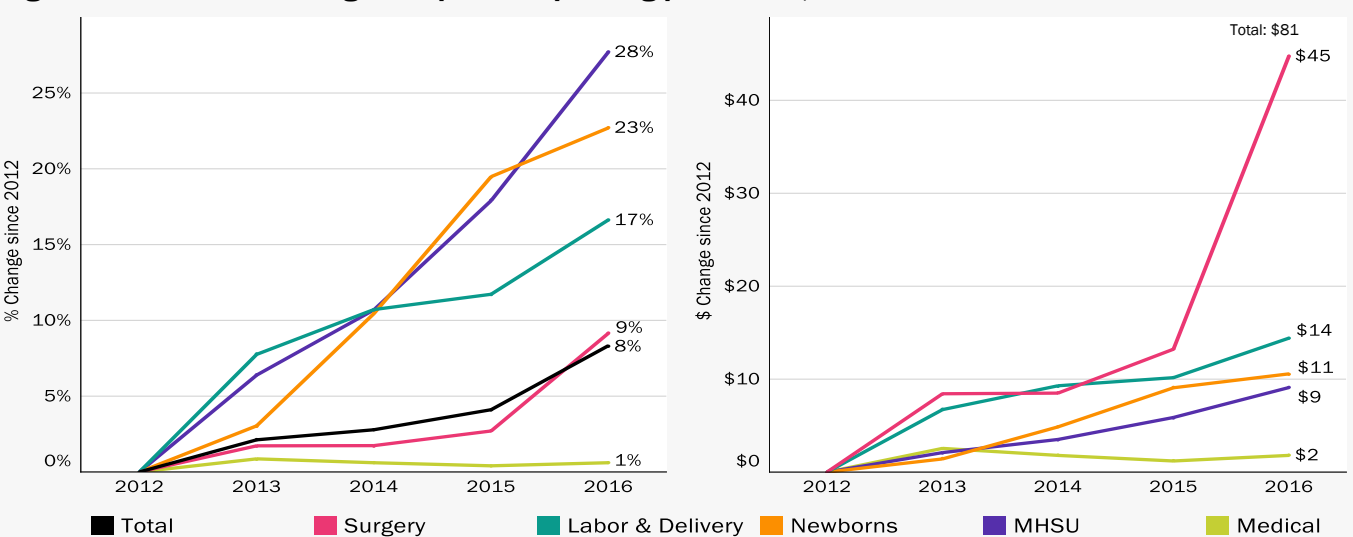


Figure 7: Share of Acute Inpatient Spending in 2016





# **Inpatient Use Continued to Decline but Prices Rose Substantially**

**Utilization of most inpatient admissions decreased throughout the study period, but considerable price increases drove an overall increase in spending**

Within the inpatient category, declines in the use of both medical admissions and surgical admissions drove the overall decline in utilization (Figure 8, Appendix Table A7). Every sub-category of inpatient admissions experienced double-digit price increases, with cumulative growth ranging from 18% to 30% (Figure 8, Appendix Table A8). The increase in prices more than made up for the decline in use, causing inpatient spending to increase between 2012 and 2016.

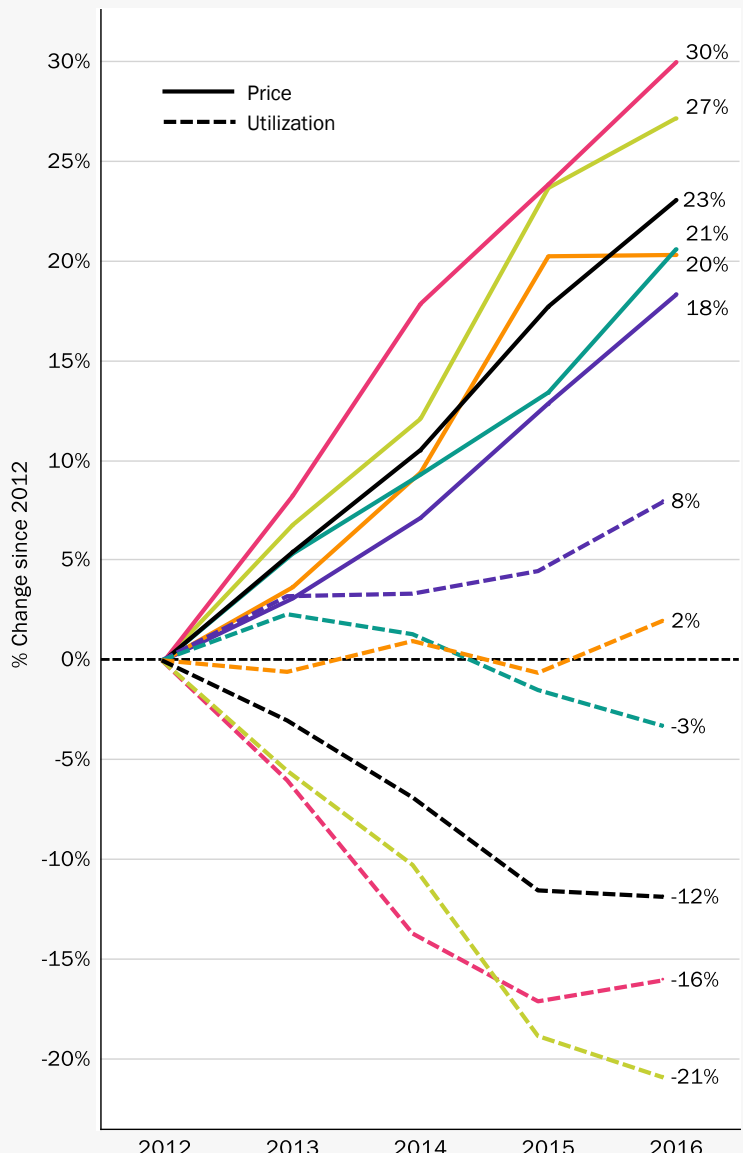
**Surgical admissions.** The highest average price across any sub-category was for surgical hospital admissions, \$41,702 per admission in 2016.

- Surgical admissions experienced a 16% decline in utilization from 2012 to 2016.
- The average price for surgical admissions increased by nearly \$10,000 from 2012 to 2016, a 30% cumulative increase in 5 years.
- Despite the decline in utilization, price growth drove a 9% increase in spending on surgical admissions.

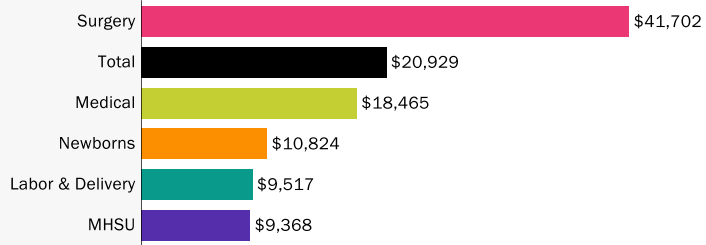
**Mental health and substance use (MHSU) admissions.** We observed increases in both utilization and price, leading to higher spending on these admissions.

- Utilization was generally flat from 2013 to 2015, but we saw a more pronounced increase from 2015 to 2016.
- Prices steadily grew throughout the study period, increasing by 18% from 2012 to 2016.
- The combination of more use and higher prices combined to make MHSU the inpatient sub-category with the largest cumulative change in spending (Figure 6).

**Figure 8: Cumulative Change in Inpatient Price and Utilization** 



## **Inpatient Prices in 2016**







# Outpatient Spending Trends

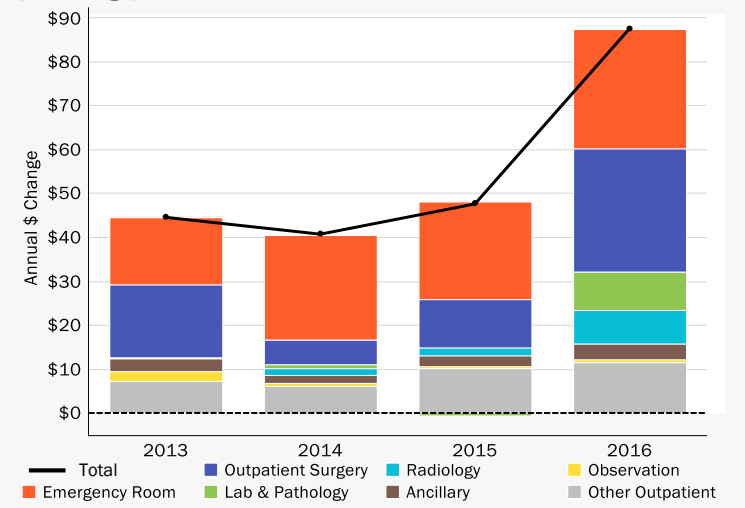
**While spending rose for every sub-category of outpatient services, emergency room and surgery spending were the biggest drivers of the total spending increase**

In 2016, outpatient services had the highest annual spending growth of any service category, at 6% (Appendix Table A1). This equates to an \$88 per person increase in spending and was the largest annual outpatient spending increase during the study period (Figure 9; Appendix Table A5). For many of the outpatient sub-categories, we observed greater increases in spending from 2015 to 2016 than in prior years.

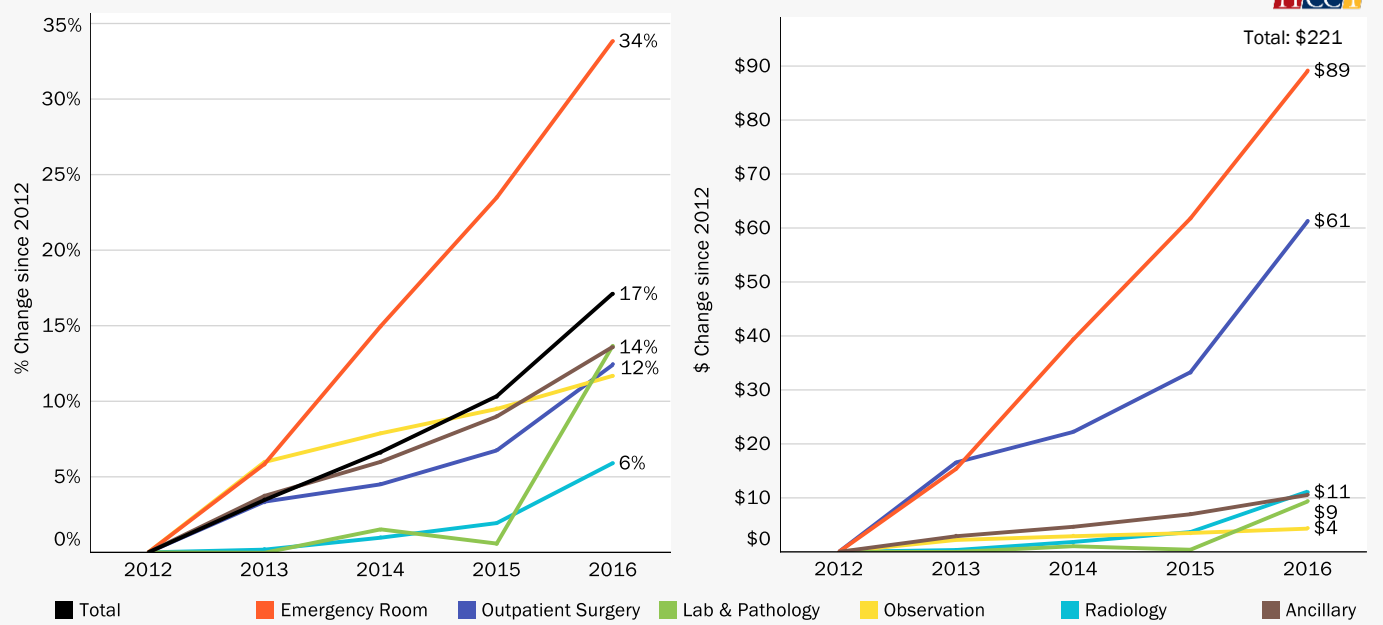
Within the outpatient services category, emergency room (ER) visits and outpatient surgeries accounted for the largest share of spending. They were also the biggest contributors to the absolute increase in outpatient spending across the study period (Figure 10; Appendix Table A5).

ER visits were a consistent driver of outpatient spending growth since 2012, with a cumulative 34% increase from 2012 to 2016. In comparison, outpatient surgery spending, which had the second-highest cumulative increase in absolute dollars, increased by 12% over the same period.

**Figure 9: Annual Change in Outpatient Spending per Person**



**Figure 10: Cumulative Change in Outpatient Spending per Person, 2012-2016**



**Figure 11: Share of Outpatient Spending in 2016**





# Outpatient Prices Drove Spending Growth

## Despite declines in utilization of most outpatient services, outpatient spending increased due to large price increases

From 2012 to 2016, utilization of most outpatient services declined, but we did observe modestly higher utilization of ancillary services and emergency room visits towards the end of the study period (Figure 12; Appendix Table A8).

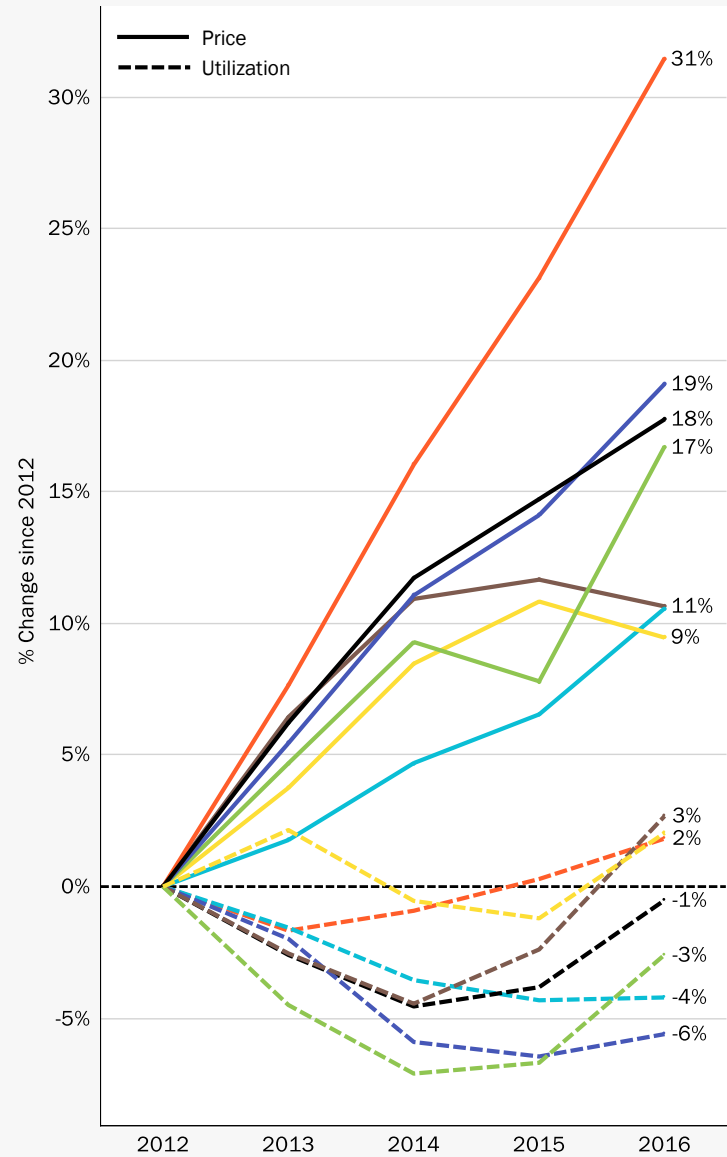
**Emergency room visits.** Between 2012 and 2016, the price of an outpatient ER visit increased by 31% to \$1,917.

- ER visit use increased 2% from 2012 to 2016, an increase of 4 visits per 1,000 individuals.
- The price increase, in combination with the slight increase in use, drove 40% of the increase in total outpatient spending between 2012 and 2016.

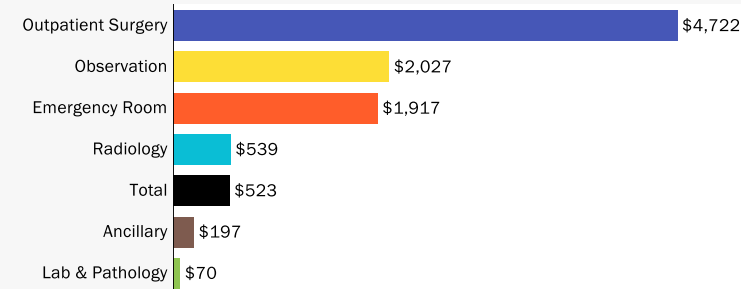
**Outpatient surgery.** Though not as dramatic as the increase in ER visit prices, we observed a large price increase for outpatient surgery. Prices rose 19% from 2012 to 2016, rising to \$4,722 – the highest average price of any outpatient service.

- The use of outpatient surgery decreased 6% between 2012 and 2016.
- Despite the decline in use, surgery continued to account for the largest share of outpatient spending and was responsible for 28% of the cumulative increase in spending on outpatient services.

**Figure 12: Cumulative Change in Outpatient Price and Utilization**



### Outpatient Prices in 2016

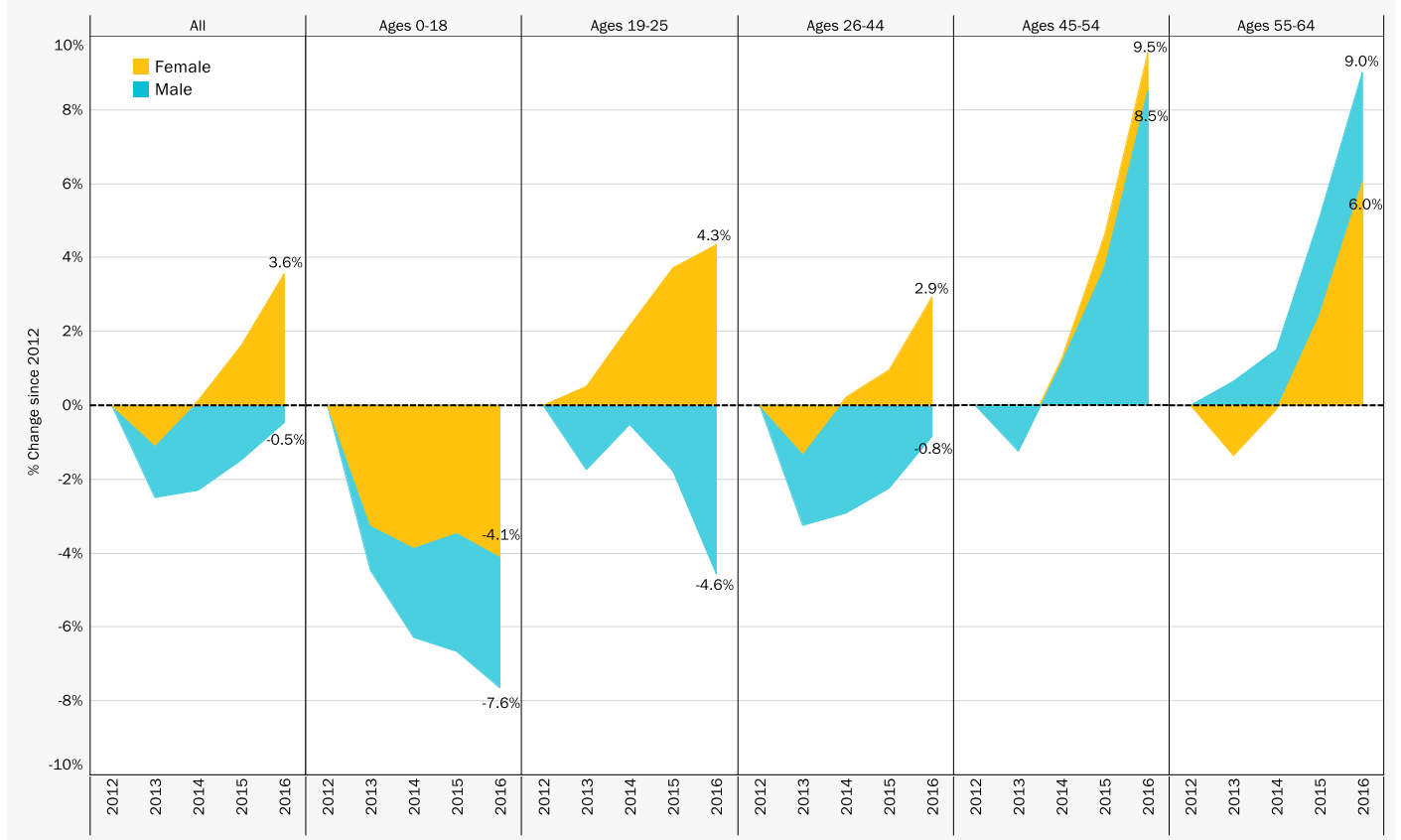


## Children had fewer ER visits and older people had more, while young adults' utilization differed strikingly by gender

ER visits are the most commonly used type of outpatient visit and their use has remained relatively stable from 2012 to 2016, with annual growth peaking at 1.5% in 2016 (Appendix Table A7). However, the flat trend in ER visits is not uniform across age-groups and gender. In fact, the overall trend in ER use masks many striking patterns, as increased use in one population is offset by decreases in another (Figure 1; Appendix Tables A27, A33).

- Adults over 45 visited the ER more often in 2016 than in 2012.
- Children up to age 18 had fewer visits to the ER – boys had 7.8% fewer ER visits in 2012 than 2016, while girls had 4.1% fewer trips to the ER.
- The use of the ER declined for young men between 2012 and 2016, with 4.6% fewer visits for men ages 18-25. Surprisingly, young women's use of the ER increased 4.3% over this same period. The cause of these diverging trends is unclear and question we may explore in future publications.

**Figure 13: Cumulative Change in ER Use by Gender and Age Group** 





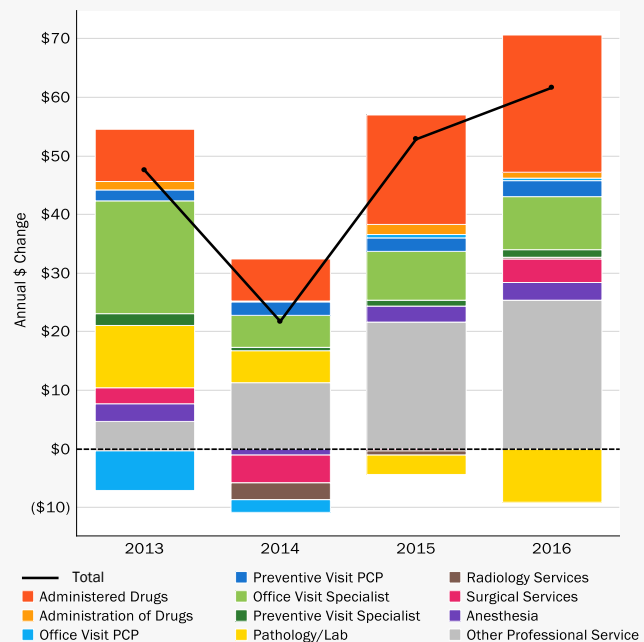
# Professional Services Spending Trends

## Professional services had relatively low spending growth; most of the growth was driven by office visits and administered drugs

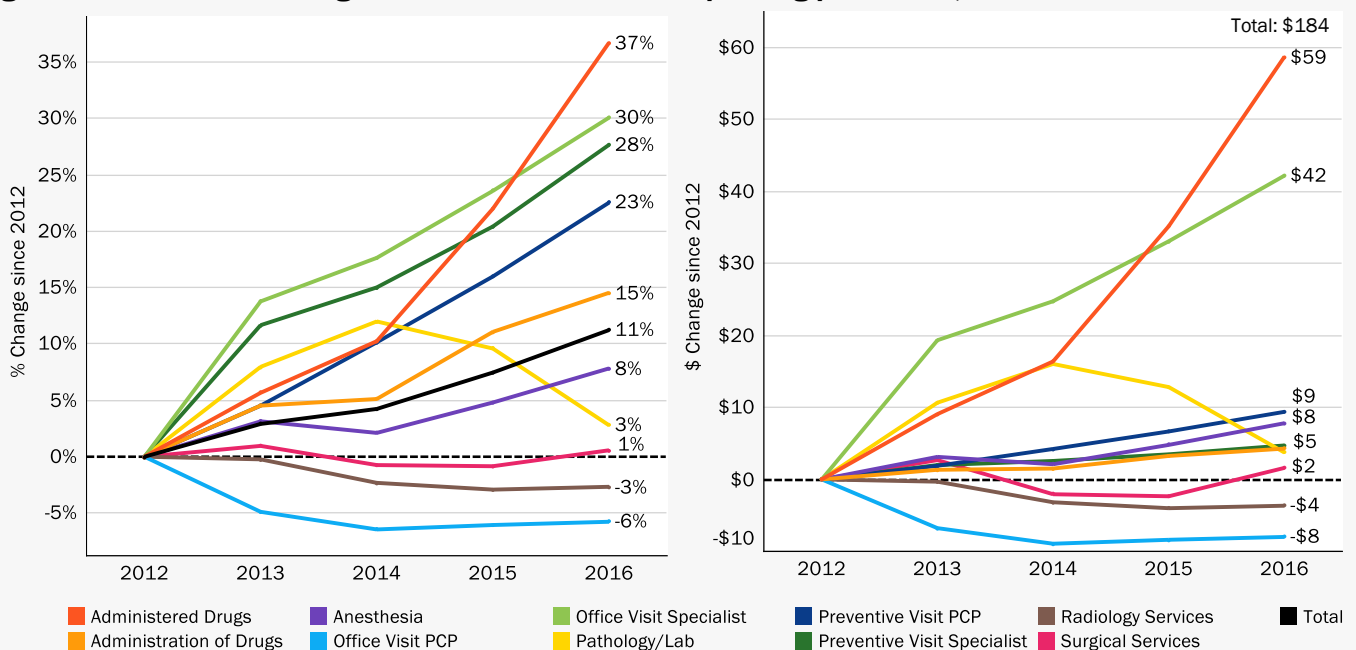
Professional services—including visits to physicians, administered drugs, anesthesia, radiology, pathology, and related services—made up the largest share of health care spending in 2016, but had relatively low spending growth between 2012 and 2016, rising a cumulative 11%.

- The sub-category with the highest per person spending and growth was administered drugs, which are drugs that must be administered by a clinician, such as chemotherapy drugs and infusions. Administered drugs saw considerable spending growth in every year and were a key driver of the annual change in professional services spending in 2015 and 2016 (Figure 14). Spending on these drugs rose by 37% from 2012 to 2016, the highest cumulative growth rate in the professional services category (Figure 15).
- Spending on specialist office visits increased by 30% and was a driver of the overall spending increase on professional services.

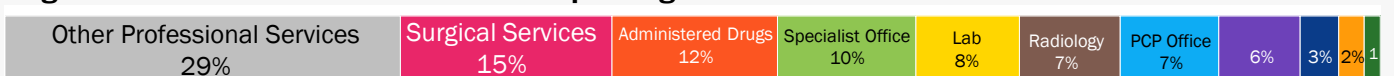
**Figure 14: Annual Change in Professional Services Spending per Person**



**Figure 15: Cumulative Change in Professional Services Spending per Person, 2012-2016**



**Figure 16: Share of Professional Services Spending in 2016**





# Administered Drug Prices Increased Substantially

## Very large price increases for administered drugs drove increased spending, despite utilization declines; PCP office visit use declined while specialist use rose

Professional services were the most commonly used medical service. From 2012 to 2016, use of these services declined 3% as a whole, but some sub-categories of professional services did see increased utilization during this period (Figure 17; Appendix Table A7). Prices for all sub-categories of professional services increased between 2012 and 2016, with the total category price increasing 15%.

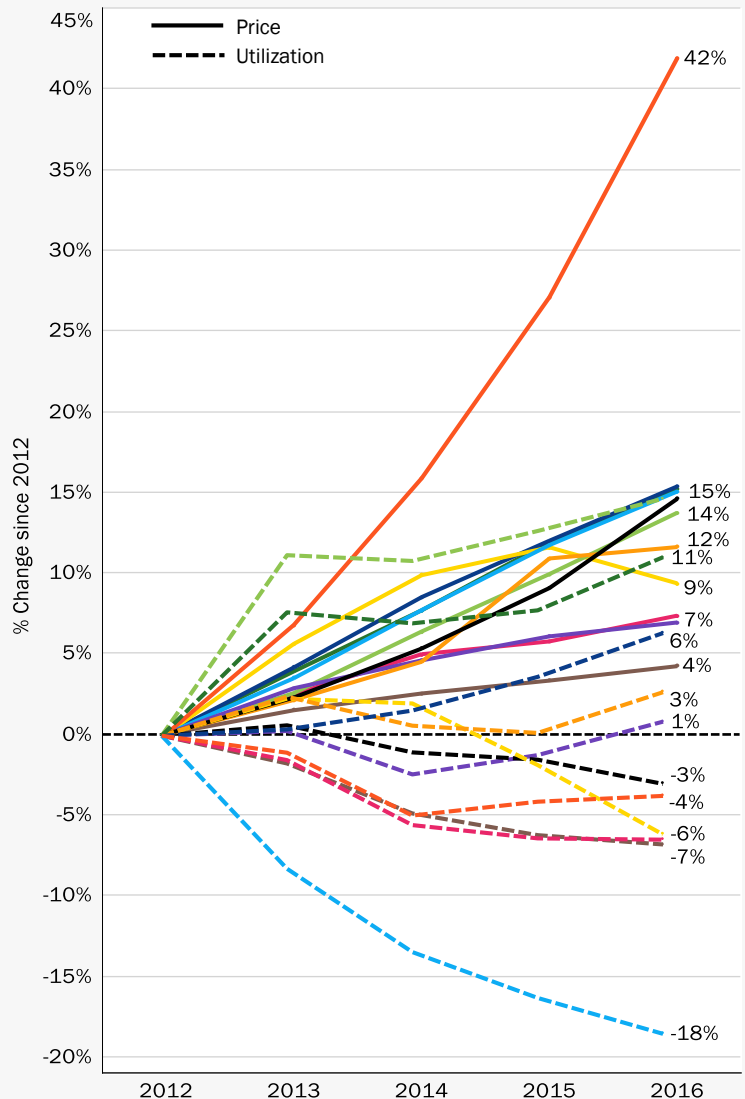
**Doctor Visits:** Doctor visits include 4 professional service sub-categories – office visits to primary care providers (PCPs), preventive visits to PCPs, office visits to specialists, and preventive visits to specialists.

- The overall trend in use of doctor visits was fairly flat. While use of preventive visits to both PCPs and specialists and office visits to specialists increased, the use of office visits to PCPs (the most common type of doctor visit in 2012) declined by 18% from 2012 to 2016.
- In 2016, office visits to specialists were more common than office visits to PCPs.

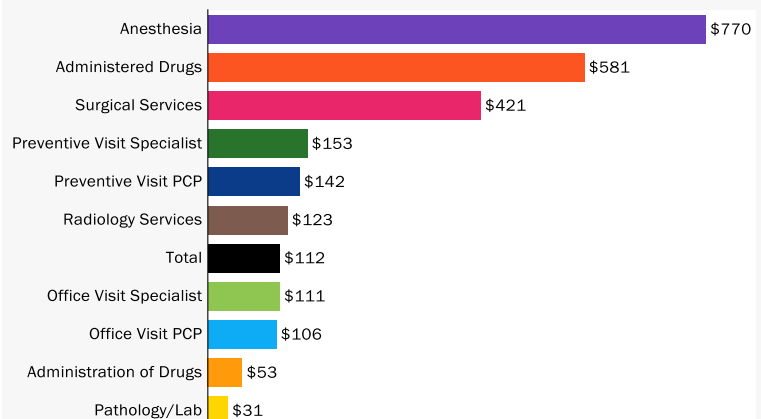
**Administered Drugs:** The highest price growth of any non-prescription drug service sub-category was for administered drugs, for which prices rose 42% between 2012 and 2016.

- There was a small decline in the use of administered drugs, a 4% decrease from 2012 to 2016.
- The extreme price growth more than compensated for the decline in use, resulting in very high spending growth for administered drugs.

Figure 17: Cumulative Change in Professional Services Price and Utilization



## Professional Services Prices in 2016



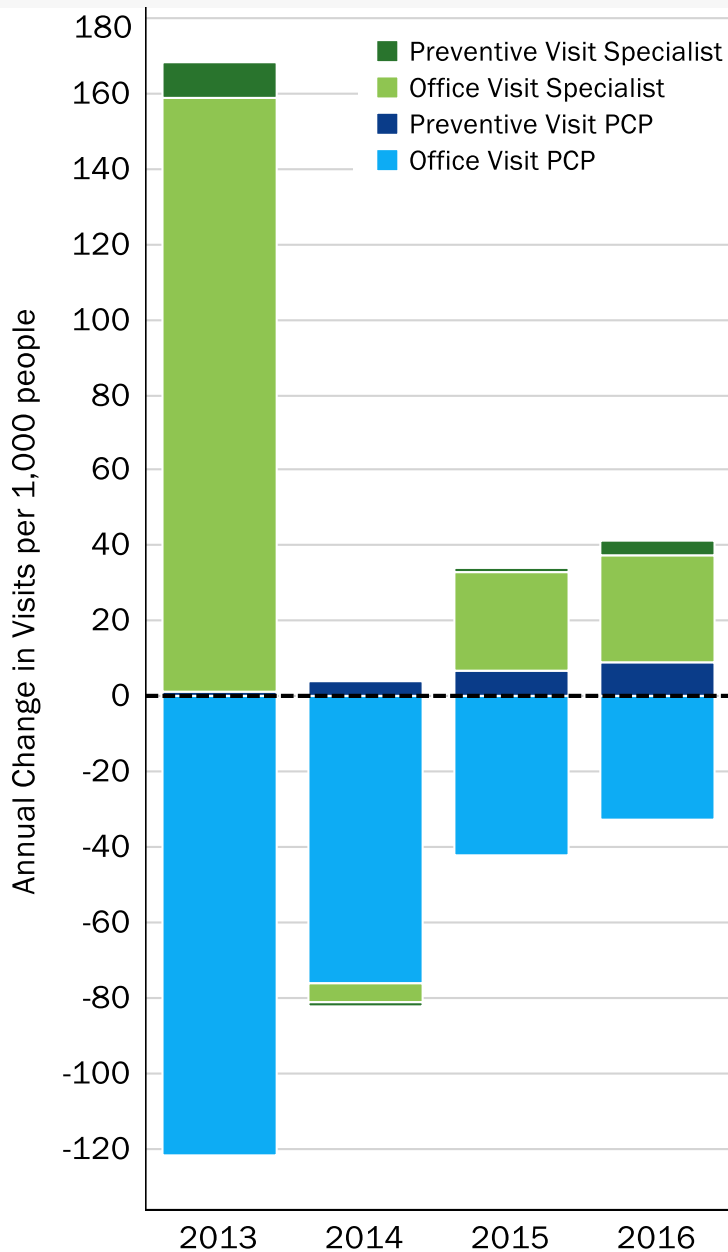


# Utilization of PCP and Specialist Visits is Shifting

## A concurrent drop in use of primary care physician (PCP) visits and rise in use of specialist visits raises questions related to substitution and access

We rarely observe a decline in spending on health services. Within the professional services category, however, two types of services had net declines from 2012 and 2016. Spending on professional radiology services fell by 3%, but more striking was the 6% decrease in spending on office visits to PCPs.

**Figure 18: Annual Change in Office and Preventive Visits, 2012-2016**



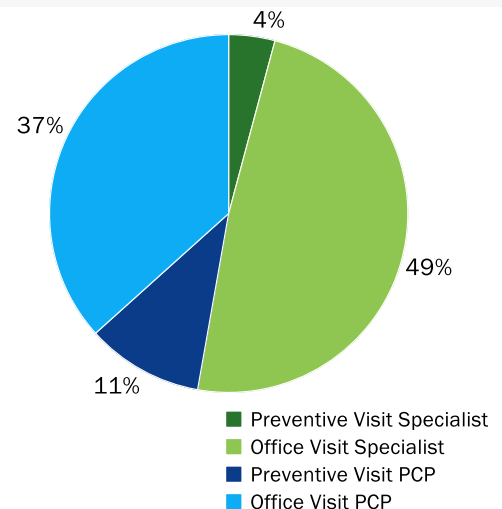
The decline in spending on PCP office visits over the study period was driven by the 18% decline in use of these visits. In contrast, the increased utilization of specialist visits contributed to a 31% spending increase for those visits.

Our study did not explore possible substitution effects, in which patients may be using specialist office visits *instead* of PCP office visits, a phenomenon that may explain our findings.

It is also possible that changes in insurance availability and plan design led to changes in access to physicians and specialists, leading people to change the way they utilize these clinicians.

We also note that physician billing practices may have influenced these findings. We hope to explore a variety of phenomena potentially contributing to these changes in PCP and specialist utilization as part of future analyses.

**Figure 19: Share of Doctor Visits by Type, 2016**





# Prescription Drug Spending Trends

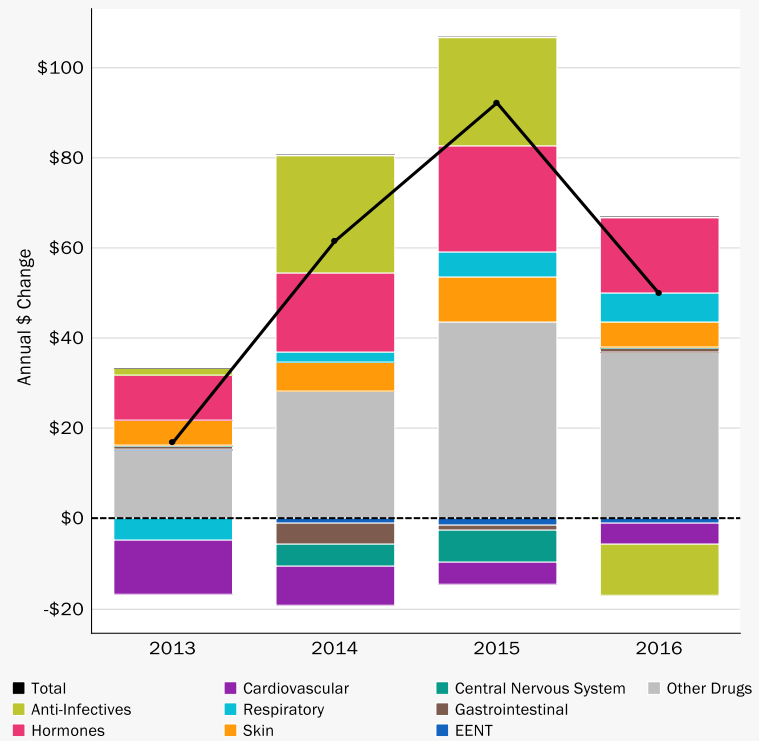
## Spending on prescription drugs grew more than all other categories, driven by three drug classes

Prescription drug spending (combined brand and generic) made up an increasing share of total spending each year, despite being the category with the lowest per person spending.

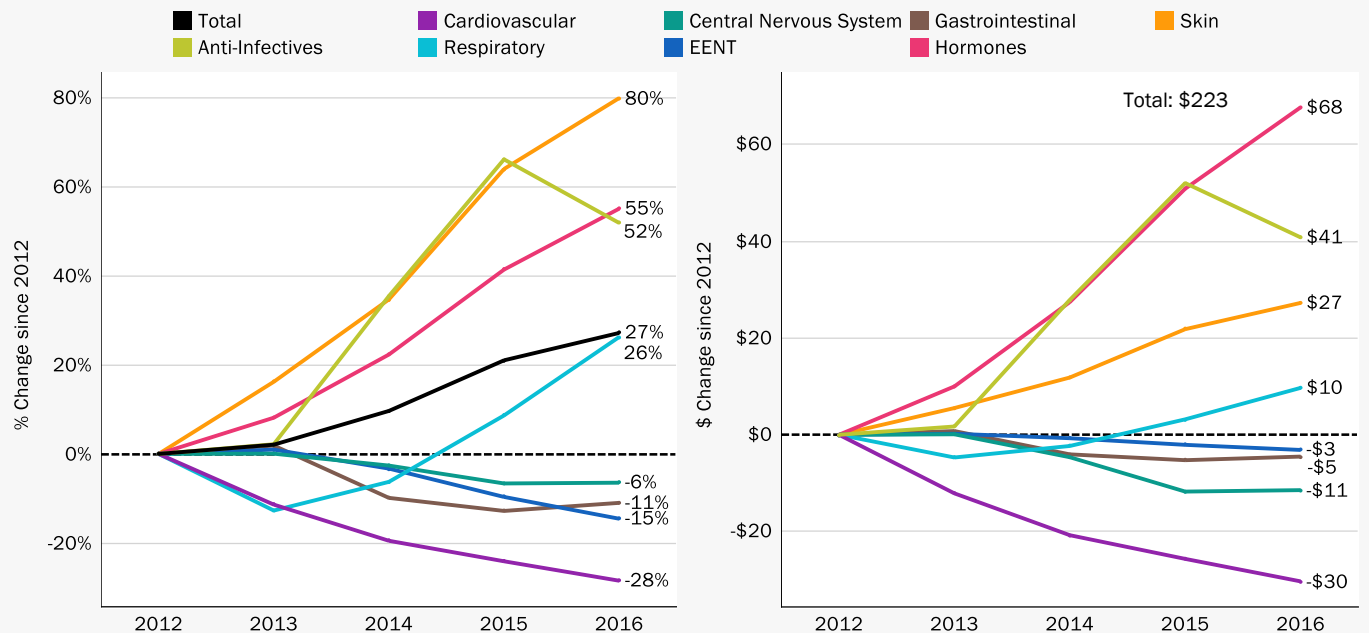
Prescription drugs had the highest cumulative spending growth (27%) of any service category during the study period. Three specific sub-categories of prescription drugs contributed most to that growth (Figure 21; Table A5):

1. **Skin and mucous membrane agents**, which are often topical medications with antibacterial, antiviral or anti-inflammatory properties, had a 79% spending increase.
2. **Hormones and synthetic substitutes**, which include hormonal contraceptives; anti-diabetic agents like insulin; medications that act on the thyroid or pituitary glands; and other agents, had a 55% spending increase.
3. **Anti-infective agents**, which include antibiotics, antivirals, antifungals, and medications that treat other infectious agents, had a 52% spending increase.

**Figure 20: Annual Change in Prescription Drug Spending per Person**



**Figure 21: Cumulative Change in Prescription Drug Spending per Person, 2012-2016**







# Brand Prescription Drug Spending Trends

**Every class of brand drug experienced double digit drops in utilization accompanied by double digit increases in price – driving the overall increase in spending**

Spending on brand prescription drugs increased from 2012 to 2016 due to considerable price increases, despite decreases in utilization of every class of drug (Figure 22; Appendix Tables A7, A8). Between 2012 and 2016, the price of brand prescription drugs increased 110%, while the number of filled days declined by 38%. The cumulative increases in price of brand prescription drug classes are among the highest observed during the study period.

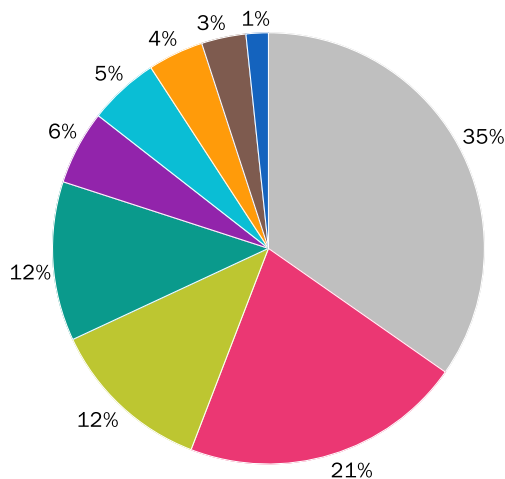
**Brand skin and mucous membrane agents:** Price increased by 165% – the largest cumulative price increase of any class – while utilization dropped by 42%.

**Brand anti-infective agents:** Utilization decreased by 21% while prices rose by 118%.

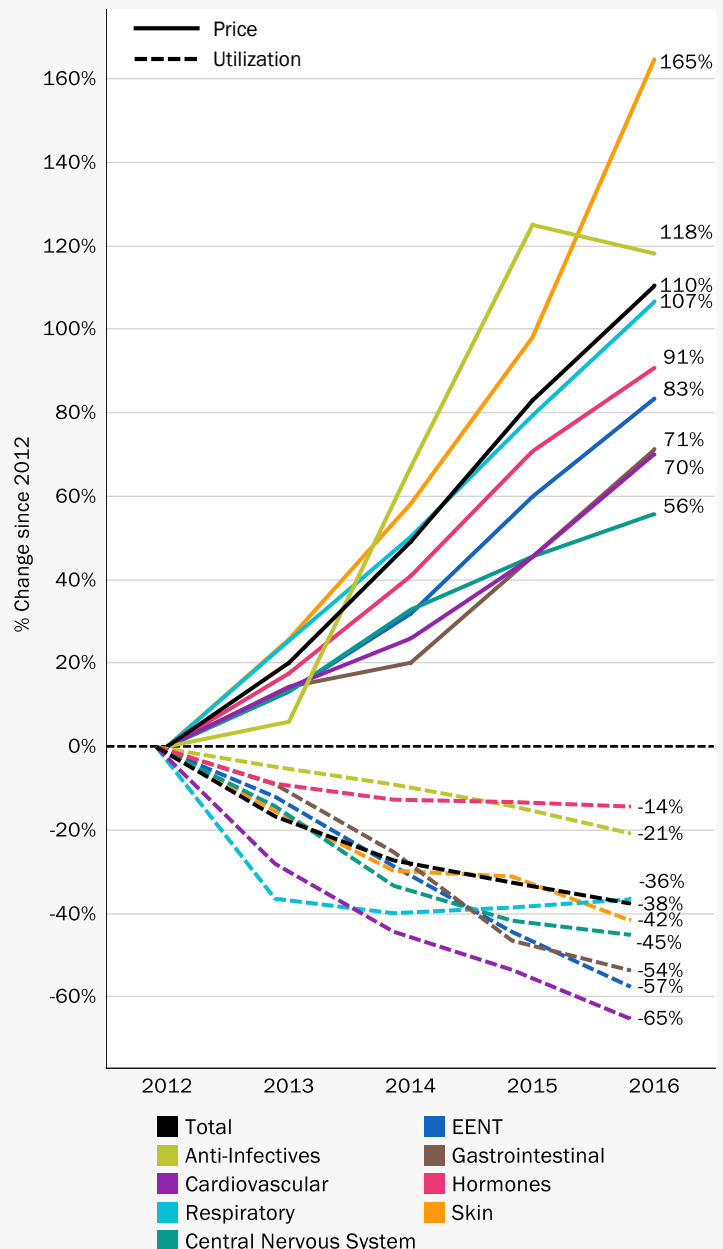
- The majority of the price increase occurred between 2013 and 2015, coinciding with the introduction of Hepatitis C virus (HCV) antivirals.
- Within the brand anti-infective agent sub-category, the class with the highest average price in 2016 was HCV antivirals at \$31,290 for 30-filled days.

**Brand cardiovascular prescription drugs:** Utilization decreased 65% from 2012 to 2016, likely driven by a number of blockbuster drugs losing patent protection. Prices increased by 70%.

**Figure 23: Share of Brand Prescription Drug Spending per Person, 2016**



**Figure 22: Cumulative Change in Brand Prescription Drug Price and Utilization**





# Generic Prescription Drug Spending Trends

## Price and utilization of generic drug classes varied widely; utilization of most classes increased

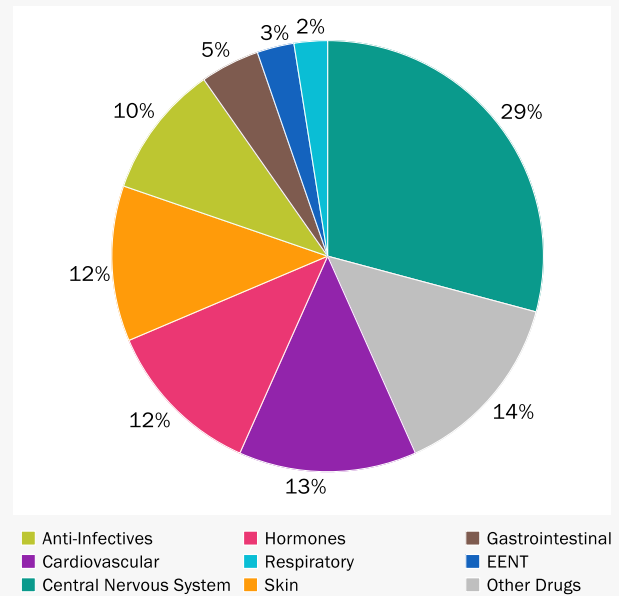
The use of generic drugs increased each year of the study period, with the number of filled days increasing 15% between 2012 and 2016 (Figure 25; Appendix Table A3). Overall, the price of generic drugs increased 4%, but price trends differed by sub-category (Appendix Tables A8).

**Generic cardiovascular drugs** had the largest increase in use, which corresponded with a decline in the use of brand cardiovascular drugs.

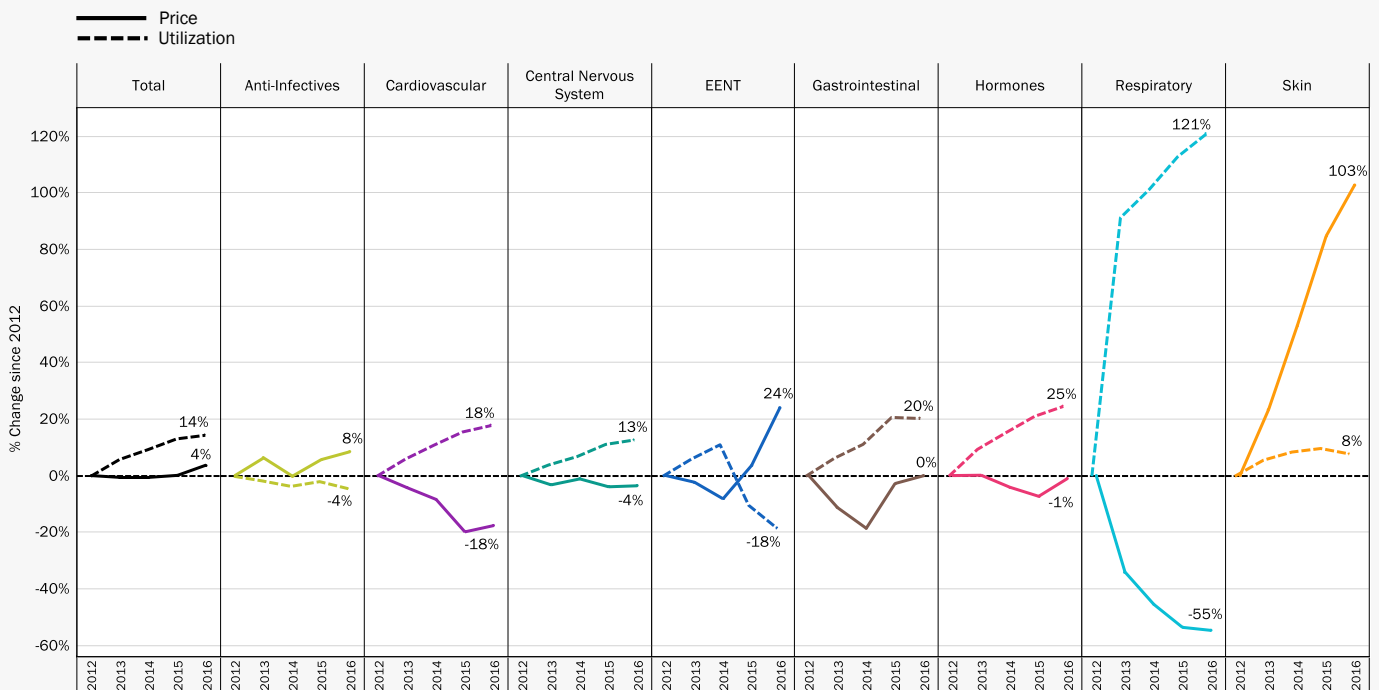
**Generic respiratory drugs:** Utilization more than doubled, increasing 121% between 2012 and 2016, while price decreased by 55%. The increase in use coincided with the introduction of the generic form of Singulair (Montelukast sodium), a blockbuster asthma and allergy drug.

**Generic skin and mucous membrane agents:** The average price of 30 filled days doubled from \$85 in 2012 to \$172 in 2016. Within this sub-category, the class of prescription drugs with the highest average price was pigmenting agents: \$2,383 per 30 filled days in 2016. In contrast, the price per 30 filled days for most of the other sub-categories of generic drugs was around \$30 in every year studied.

**Figure 24: Share of Generic Prescription Drug Spending per Person, 2016**



**Figure 25: Cumulative Change in Generic Prescription Drug Price and Utilization**





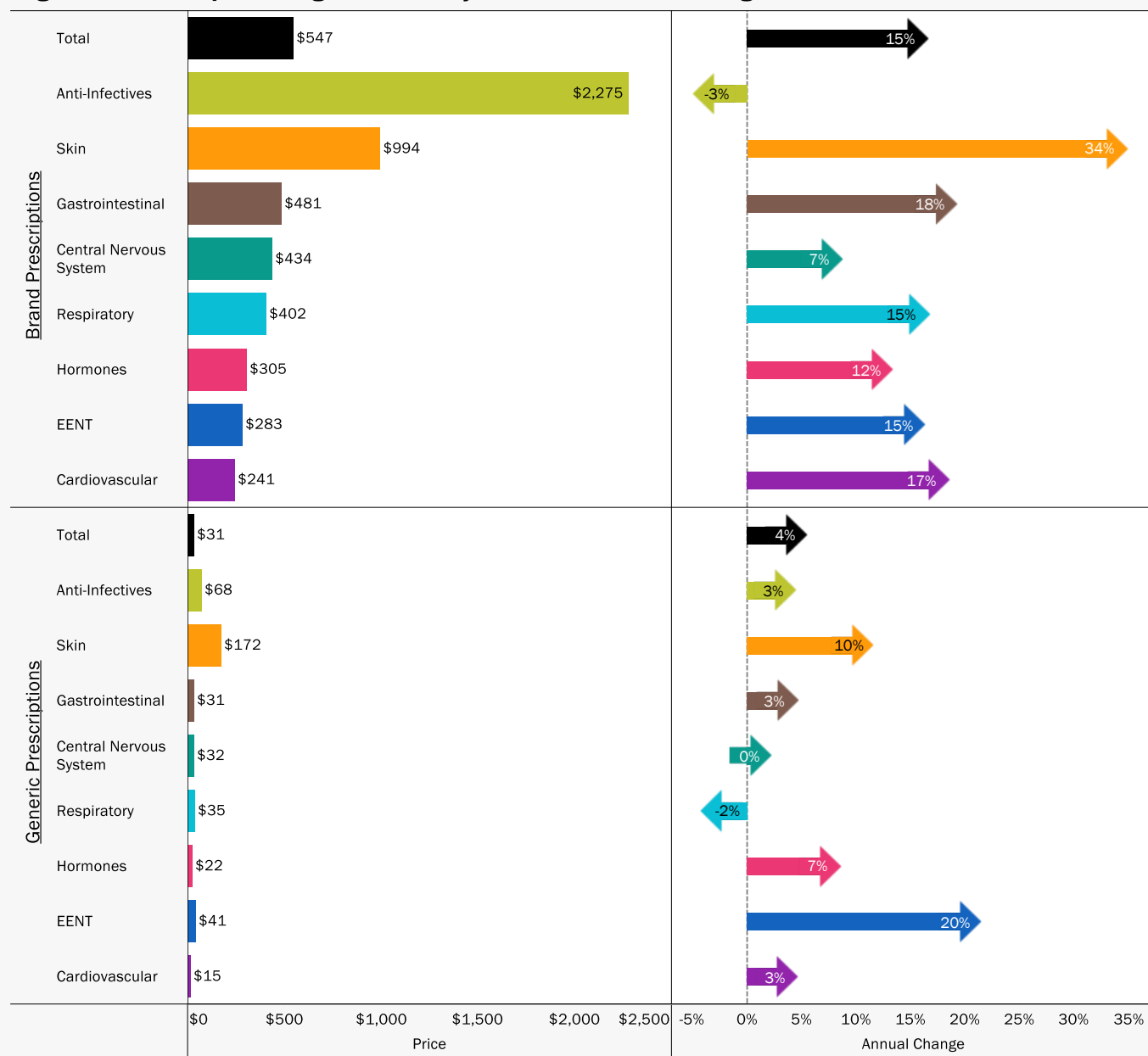
# Brand and Generic Prescription Drug Prices

## Average prices and the annual change in those prices varied dramatically among brand vs. generic drugs and across classes

Brand drugs had much higher average prices than generics for all sub-categories (Figure 26; Appendix Tables A8). In addition to having higher average prices, most classes of brand drugs also had higher price growth. The annual price growth from 2015 to 2016 for brand drugs was 15%, compared to 4% for generics (Appendix Table A3).

Of particular note in 2016 was the high price and high price-growth sub-category – skin and mucous membrane agents. The price for the brand version of these drugs had the highest annual price growth of any class, 34% from 2015 to 2016, and the second-highest price among brand drug classes (Appendix Table A8). Generic skin and mucous membrane agents had the highest price of any generic drug sub-category and annual price growth of 10%.

**Figure 26: Prescription Drug 30 Filled Days Price and Annual Change in 2016**





# Out-Of-Pocket Spending Trends

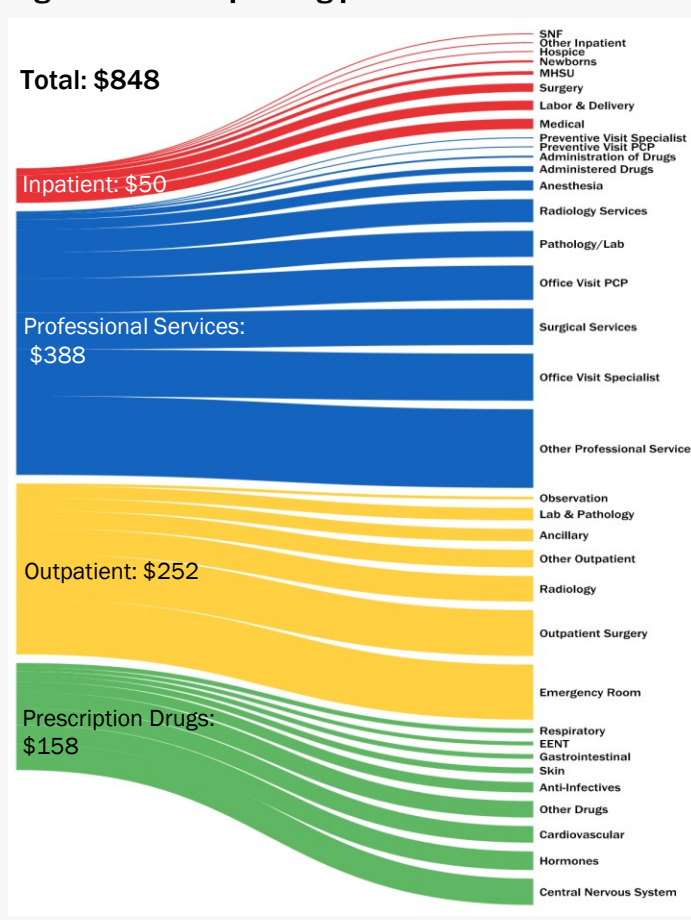
**While consumer OOP spending increased slightly, it grew slower than total spending – possibly insulating consumers from the faster-growing total cost of care**

From 2012 to 2016, total OOP spending per person increased slightly each year. In dollars, the average increase was relatively small – a total of \$88 (Figure 28; Appendix Table A2). It is important to note that our OOP data does not include consumer spending on premiums, which studies suggest are rising considerably and adding to the overall health care spending burden for consumers. In addition, our per person OOP metrics do not reflect the OOP costs of using a certain service, but consider OOP spending as an average across the population – including those who used no services at all.

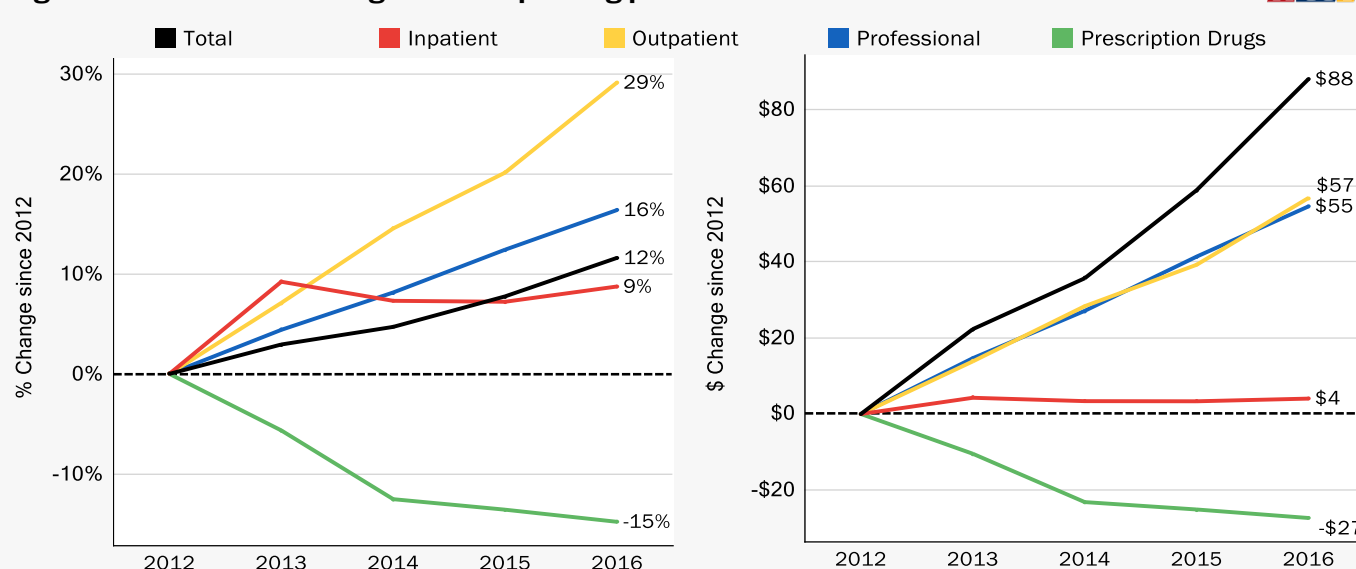
The cumulative growth in OOP spending (12%) was outpaced by total spending (15%). However, like total spending, OOP spending growth appears to be on the rise after a few years of relatively low growth. In 2016, we observed a modest increase of 3.6% in OOP spending per person, up from a 2.9% increase in 2015.

Though OOP spending per person decreased 15% for prescription drugs from 2012 to 2016, it increased for all other categories. The biggest increase we observed was 29% for outpatient, which was mainly due to increased OOP spending for ER and outpatient surgery over the study period.

**Figure 27: OOP Spending per Person in 2016**



**Figure 28: Cumulative Change in OOP Spending per Person**





# Out-Of-Pocket Spending on Prescription Drugs Declined

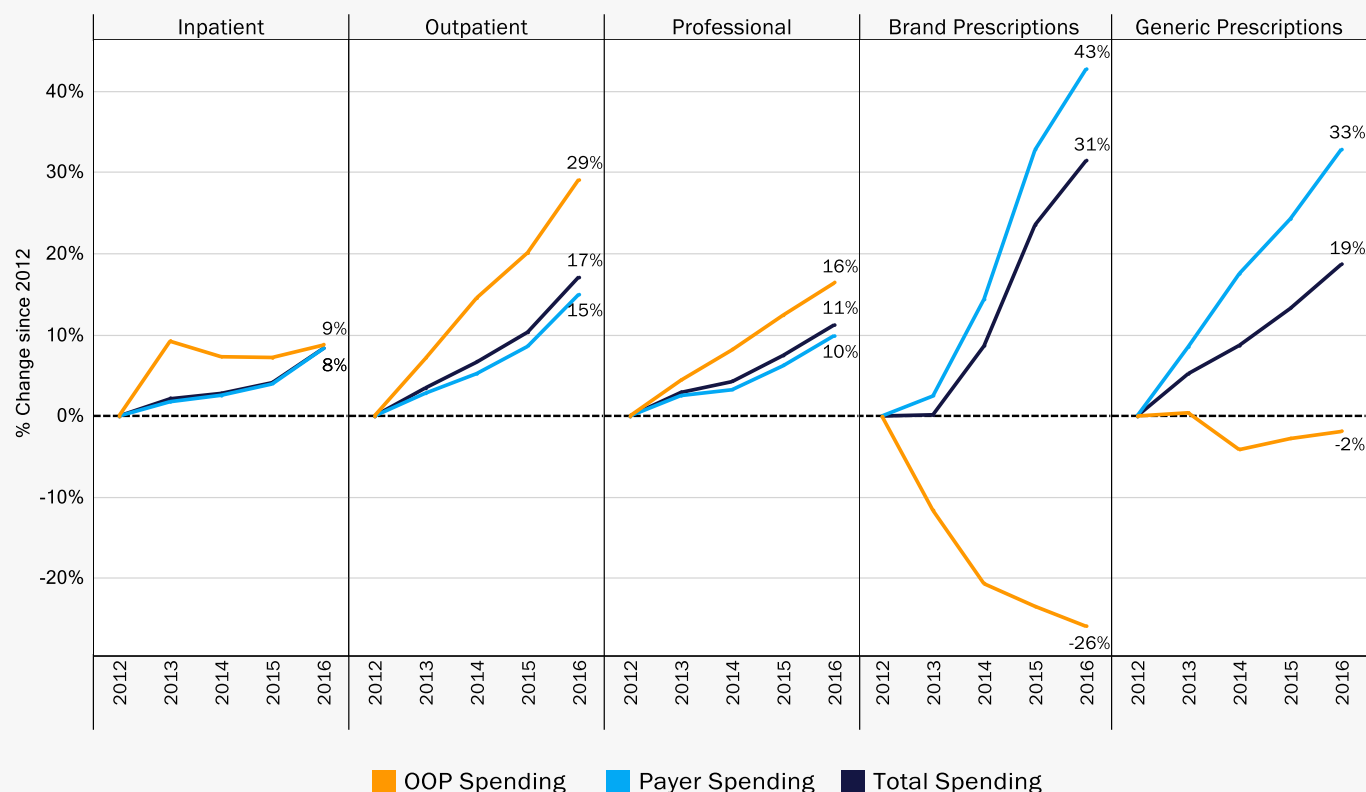
**OOP spending per person increased for inpatient, outpatient, and professional services, but decreased for prescription drugs, especially for brand drugs.**

While OOP spending on generic prescriptions declined 2%, OOP spending on brand prescriptions fell by 26% per person and accounted for 91% of the total decline in prescription drug OOP spending (Figure 29; Appendix Table A2).

OOP spending growth for inpatient, outpatient, and professional services outpaced total spending growth on those service categories. From 2012 to 2016, OOP spending increased 29% for outpatient services, notably faster growth than the 17% increase in total outpatient spending. OOP spending on professional services increased 16%, compared to 11% growth in total spending.

The OOP spending decline for prescription drugs is an important contributor to the overall decline of the consumer OOP burden (the percent of total spending coming OOP), which fell from 16.2% of total health care spending in 2012 to 15.7% in 2016.

**Figure 29: Cumulative Change in OOP and Payer Spending, 2012-2016**





# Out-Of-Pocket Spending Growth Differs by Age

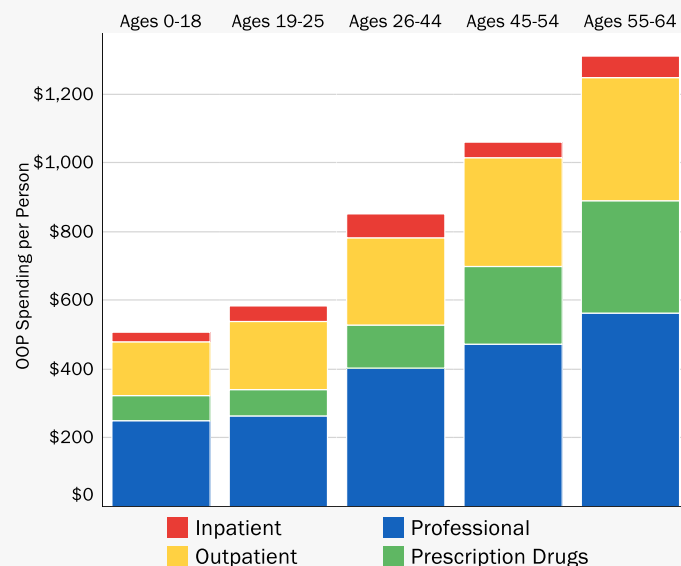
## Older consumers had higher OOP spending per person, but slower OOP spending growth

The age group that experienced the smallest growth in OOP spending over the study period – 6% for 55-64 year olds – had the highest spending, \$1,310 per person in 2016 (Figures 30 and 31; Appendix Table A13). The utilization of most health care services increases with age, typically leading to higher OOP spending. Differences in OOP spending growth by age may be explained by differences in the mix of health care services used by each group.

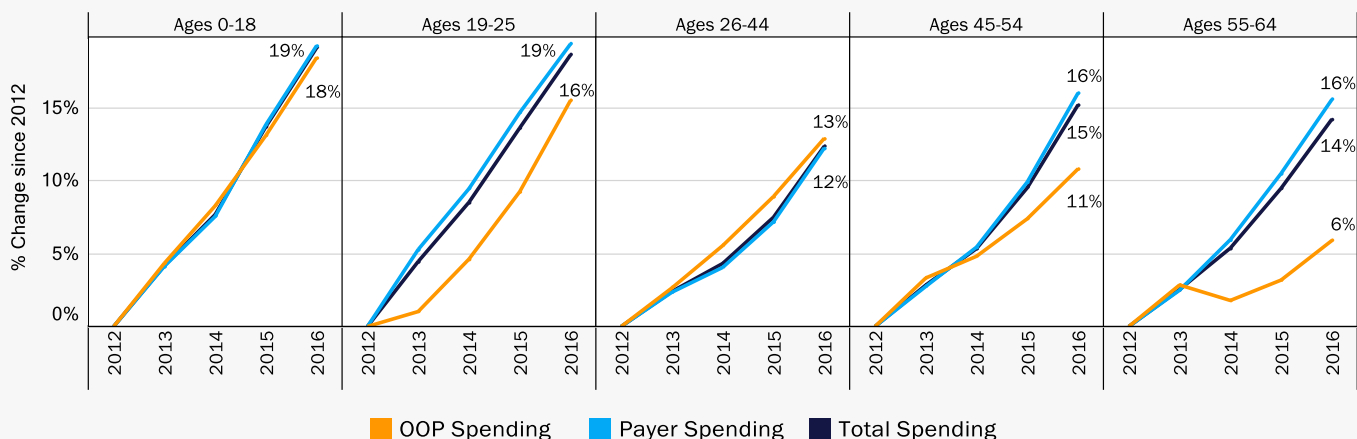
Older adults ages 55-64 spent 25% of their OOP spending on prescription drugs, a much larger share than the 13% spent by young adults ages 19-25 (Appendix Table A13). Older adults also spent a smaller share of their OOP spending on outpatient services compared to young adults, 28% versus 34%.

Younger age groups experienced larger growth in OOP spending between 2012 and 2016 than older adults (Figure 25). OOP spending increased 18% for children ages 0-18 and 16% for young adults ages 19-25. These age groups spent larger shares of OOP on outpatient services, the category with the fastest OOP spending growth. By contrast, older adults ages 55-64 had OOP spending growth of just 6% and spent larger shares of OOP on prescription drugs, the service category with decreasing OOP spending.

**Figure 30: OOP Spending per Person by Age and Service Category, 2016**



**Figure 31: Cumulative Change in OOP, Payer, and Total Spending per Person by Age**





# Data and Methods

## Data

The subset of HCCI's data holdings used here contain de-identified commercial health insurance claim lines for the years 2012 through 2016. Four major health insurers contributed data to HCCI for the purposes of producing a national, multi-payer, commercial health care claims database: Aetna, Humana, Kaiser Permanente, and United Healthcare. Data used for this report include claims for individuals covered by group insurance through an employer (fully insured and administrative services only). The claims data include prices paid to providers by both insurers and insureds, and details about the services used. HCCI's claims data are compliant with the Health Insurance Portability and Accountability Act (HIPAA).

For this report, HCCI analyzed a subset of data totaling about 4 billion claim lines for approximately 39 million insured per year (2012–2016). This analytic dataset consisted of all claims for insureds younger than age 65 and covered by ESI, and represented about 26% of the national ESI population. It is one of the largest datasets on the privately insured ever assembled.

## Methods

The analytic subset was weighted using U.S. Census Bureau age-gender-geographic-based estimates of the ESI population to make the analytic subset representative of the national ESI population younger than age 65. Claims from 2015 and 2016 were actuarially completed to account for claims that had been incurred but not adjudicated.

HCCI used the weighted, actuarially completed dataset to estimate per capita health expenditures, average prices, utilization of services, average intensity, and average intensity-adjusted prices for 2012 through 2016. HCCI did not adjust dollar figures for inflation; thus, all reported expenditures and prices were in nominal dollars.

HCCI analyzed four categories of services, several subservice categories, and detailed service categories. Inpatient facility claims were from hospitals, skilled nursing facilities (SNFs), and hospices for which detail was sufficient to identify an overnight stay by an insured. Outpatient facility claims did not entail an overnight stay, and included observation and ER services. Both outpatient and inpatient claims consisted of only the facility charges associated with such claims. Professional services included claims billed by physicians and non-physicians according to the industry's standard procedure-coding practices. Prescription data reflected prescriptions filled at both retail and mail-order pharmacies.

For a more detailed description of HCCI's methodology, dataset, and changes made for this report, see the [Methodology on HCCI's website](#).

## Limitations

This report had several limitations that affect the generalizability and interpretation of the findings. For this reason, HCCI considers the work a starting point for analysis and research on individuals covered by ESI, rather than a conclusive analysis of the ESI population's effect on health care in the United States.

First, our findings were estimates for the U.S. ESI population ages 0 through 64, based on a sample of approximately 26% of these insureds. Second, the analysis and results were descriptive, and the findings were not causal and cannot be used to determine causal relationships. Third, the effect of individual or population health status, such as existence of chronic conditions, was not specifically investigated or discussed in the report. HCCI does investigate the health trends of individuals with several chronic conditions, reports on which are available on our website. Fourth, HCCI does not report on premiums or their determinants.

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