

Executive Summary

The Health Care Cost Institute (HCCI) is pleased to present the *2014 Diabetes Health Care Cost and Utilization Report*, with a principal focus on trends in health care spending and utilization for the national population younger than age 65 and covered by employer-sponsored insurance (ESI) with diagnosed diabetes. In this report, we also examine selected spending and utilization trends for the ESI population without diabetes (see box “Trends in Spending and Utilization of Health Care Services for People without Diabetes”) and compare trends for the two populations – with and without diabetes – on selected spending and utilization measures. However, unless specifically stated, the discussion in this report is for the population with diabetes.

This report covers the period 2012 to 2014 (the “study period”), with the bulk of the analysis focused on 2014. Additionally, this report is a follow-up publication to *Per Capita Health Care Spending on Diabetes: 2009-2013*, which can be found on the HCCI Website.¹ Using the same general population as the previous report on the ESI population with diabetes,² this report details trends in total per capita spending, per capita out-of-pocket spending, and utilization of health care services. These spending and use trends were created at the national-level and broken down by age group and gender. Additionally, we studied trends for two broad types of services: medical (acute inpatient admissions, outpatient services, and professional services) and prescription (brand and generic; see box “Service Categories Analyzed in this Report”

for more information).

The American Diabetes Association (ADA) estimated that for the entire population of Americans with diagnosed diabetes in 2012, per capita spending on health care was \$13,741.³ For that year (the most recent year that per capita health care spending estimates were available from the ADA), they found that per capita spending for people with diabetes was 3.9 times higher than spending for people without diabetes. This per capita figure for all Americans with diabetes was about \$1,000 lower than the 2012 spending estimate for our study population (younger than 65 with ESI) with diabetes presented in this report (\$14,711). We found that in 2012, per capita spending for our study population with diabetes was 3.56 times higher than spending for the study population without diabetes—a slightly lower figure than the ADA’s estimate. Much of the difference between HCCI’s and the ADA’s spending estimates is probably due to population and methodological differences between the two samples.

We estimated that between 2012 and 2014, per capita spending for the insureds with diabetes grew by \$1,310 (Table 1). Further, by 2014, per capita spending for this population was 3.64 times higher than spending for the insureds without diabetes (Table 1 and Appendix Table A2). In addition to per capita spending trends, our report examines per capita out-of-pocket spending trends and the utilization rates of health care service use for the insureds with diabetes. This

BY THE NUMBERS: 2014

\$16,021

Health care spending per capita for people with diabetes

\$4,396

Health care spending per capita for people without diabetes

12.1%

Share of total health care spending paid by out-of-pocket by individuals with diabetes

17.1%

Share of total health care spending paid by out-of-pocket by individuals without diabetes

1.2% and -1.0%

Changes in utilization of outpatient visits by people with and without diabetes

9.6%

Share of total spending per capita for people with diabetes that was spent on antidiabetic agents

report proceeds in three sections: per capita spending trends, out-of-pocket spending trends, and utilization rates of health services. The findings from each of these sections and the similarities and differences in trends between the insured populations with and without diabetes as well as highlights for a few notable spending and utilization trends observed in our study populations are briefly noted below.

Spending and Utilization Trends for People with Diabetes in this Report

In 2014, national per capita spending for insureds with diabetes grew 5.9% to \$16,021, an increase of \$897 over the previous year (Table 1). Per capita spending grew over the entire study period for all medical service categories, both men and women, and all age groups (see “HCCI Age Groups”). Spending on prescriptions grew at the fastest average annual rate over the study period (8.7%). The second fastest average annual growth was for outpatient services (5.0%), followed by professional services (2.2%), and acute inpatient care (2.2%).

Over the study period, per capita spending was highest for pre-Medicare adults (ages 55-64), followed by children (ages 0-18), young adults (ages 19-25), and middle-age adults (ages 45-54); intermediate adults (ages 26-44) had the lowest spending.

Corresponding to the increase in total per capita spending were increases over the study period in per capita out-of-pocket spending for insureds with diabetes. In 2014, per capita out-of-pocket spending was \$1,944, a \$10 increase over the previous year (Table 2). In each year of the study period, per capita out-of-pocket spending on each of the medical service categories increased. At the

same, there were declines in the out-of-pocket spending on prescriptions. This decline in prescription spending out of pocket was most pronounced for the oldest age group. Per capita out-of-pocket spending by pre-Medicare adults fell between 2013 and 2014, due to a decline in their out-of-pocket spending on prescriptions, specifically brand prescriptions. In 2012 and 2013, pre-Medicare adults had the highest out-of-pocket spending of all of the age groups studied. However, due to the decline in this spending between 2013 and 2014, the highest out-of-pocket spending per capita in 2014 was for children.

In contrast to the year-on-year increase in spending per capita observed over the study period, the utilization of medical services and brand prescriptions generally declined (Table 3). Small increases in the rates of use of outpatient visits and generic prescriptions occurred in every year studied. The increase in use of generic prescriptions more than offset the decline in the use of brand prescriptions, leading to a net increase in total prescription use (brand prescriptions plus generic prescriptions) each year of the study period. In 2014, there were 1,242,571 filled days of prescriptions per 1,000 people with diabetes. This prescription use rate averages to just over 3 filled days of prescriptions per person with diabetes per day.

Comparison of Trends for People with and Without Diabetes

In 2014, total per capita spending for the study population with diabetes was 3.6 times higher than spending for those without diabetes (Table 1 and Appendix Table A2). Out-of-pocket per capita spending was 2.6 times higher for people with diabetes than for those without (Table 2 and

Appendix Table A19). Compared to people without diabetes, utilization of services by people with diabetes ranged from 2.4 times higher use of outpatient visits to 7.1 times higher use of brand prescriptions (Table 3 and Appendix Table A36).

The per capita spending trends for people with diabetes generally looked quite different from the spending trends for people without diabetes (Table 1 and Appendix Table A2). For children without diabetes, spending per capita was the lowest of any age group without diabetes studied (\$2,613 in 2014). In comparison, spending for children with diabetes was the second highest for any age group with diabetes (\$17,380 in 2014). This trend was similar for young adults. Young adults without diabetes had the second-lowest spending per capita of any age group without diabetes (\$2,664), while young adults with diabetes had the third-highest spending of any age group with diabetes (\$15,839). Overall, for those without diabetes, the younger age groups had low spending compared to the older age groups, while the opposite tended to be true for the younger age groups with dia-

HCCI AGE GROUPS

Children

Ages 0 through 18.

Young Adults

Ages 19 through 25.

Intermediate Adults

Ages 26 through 44.

Middle-Age Adults

Ages 45 through 54.

Pre-Medicare Adults

Ages 55 through 64.

SERVICE CATEGORIES ANALYZED IN THIS REPORT

In this report, HCCI analyzed medical and prescription claims for individuals (ages 0–64) covered by ESI. As in prior reports, HCCI grouped these claims into distinct service categories for analytic purposes. See the 2014 HCCI Analytic Methodology for a detailed description of HCCI’s claims categorization methods.⁵

Medical service, subservice, and detailed service categories in this report

Three medical service categories were identified: inpatient facility, outpatient facility, and professional procedures. These categories divide into three medical subservice categories: acute inpatient admissions, which included labor and delivery (LD), medical, mental health and substance use (MH/SU), newborn, and surgery admissions; outpatient visits; and outpatient other services. These further divide into “detailed service” categories.⁵

Prescription service, subservice, detailed service categories, and therapeutic subclasses in this report

HCCI analyzed prescription claims from retail and mail order pharmacies. The prescription service category divides into brand and generic subservice categories. These subservices further divide into “detailed service” categories, which divide into therapeutic subclasses.³ (See the methodology document for more details.) In this report, HCCI also examined two therapeutic subclasses of prescriptions – as defined by the American Hospital Formulary Service (AHFS) – antidiabetic agents and contraceptives.^{5,6}

betes. This trend for the younger age groups was more pronounced for out-of-pocket per capita spending (Table 2 and Appendix Table A19). In 2014, out-of-pocket per capita spending for children with diabetes was highest of the five age groups (\$2,173), while lowest for children without diabetes (\$466).

Shares of total per capita spending by categories of services also differed between the two populations. For people with diabetes, the share of total spending for each service category ranged between 24% and 26%, a fairly even spending distribution across types of services (Table 1). In contrast, per capita spending for people without diabetes was highest for professional services (35.4% of their total spending) and lowest for prescriptions (16.9%; Appendix Table A2). For out-of-pocket per capita spending, the out-of-pocket dollars spent on acute admissions and outpatient visits were quite similar across the two populations (Table 2 and Appendix Table A19). People with diabetes spent 6.6% of their out-of-pocket

dollars on acute admissions and 25.7% on outpatient services, while people without diabetes spent 6.1% and 28.5% of their out-of-pocket dollars on those services.

However, people with diabetes spent proportionally more out-of-pocket on prescription services per capita (32.4%) compared to people without diabetes (18.9%; Table 2 and Appendix Table A19). At same time, people without diabetes spent proportionally more out of pocket on professional services (46.4% of their out-of-pocket spending) compared to people with diabetes (35.2%). The largest difference in per capita spending and out-of-pocket spending between the two populations was for prescriptions. The largest component of this prescription spending difference was due to antidiabetic agents. In 2014, for people with diabetes, per capita spending on antidiabetic agents (brand and generic agents) was \$1,531, with \$182 of that spent out of pocket (Appendix Tables A3 and A20), compared to per capita spending for people without diabetes of \$6,

with \$1 spent out of pocket (Appendix Tables A4 and A21). Higher total spending and out-of-pocket spending on cardiovascular agents and central nervous system (CNS) agents for people with diabetes were also observed. For people with diabetes, spending per capita was 7.7 times higher on cardiovascular drugs and 2.4 times higher on CNS agents than spending for people without diabetes. The rates of use of these prescriptions help explain these spending trends. People with diabetes used 7.5 times more filled days of cardiovascular drugs and 2.6 times more CNS agents than people without diabetes (Appendix Tables A37 and A38).

Notable Trends

Use of antidiabetic agents: For children and young adults with diabetes, the most commonly used prescription class was brand antidiabetic agents (Appendix Tables A43 and A45; see “Service Categories Analyzed in this Report”). This class includes medications commonly taken to manage blood glucose levels in people with diabetes, including, insulin, metfor-

THE PREVALENCE OF DIAGNOSED DIABETES IN THE HCCI POPULATION

In 2014, we identified 5.0% of the individuals younger than age 65 and covered by ESI as having diagnosed diabetes. From 2012 to 2014, the percentage of those with diabetes remained constant at 5.0% (Appendix Table A1).

The percentage of insureds with diabetes in 2012 and 2013 identified in this report is now slightly lower than the population HCCI reported in *Per Capita Health Care Spending on Diabetes: 2009-2013*.¹ In that prior report, 5.3% of insureds were identified as having diagnosed diabetes in both years. This downward adjustment in the membership trend of insureds identified as having diagnosed diabetes (about 0.3%) was the result of changes made to the analytic methodology and the diabetes flag.⁵

The newly reported number for 2012 and 2013 is closer to other estimates of the prevalence of diabetes among the privately insured population. For instance, the ADA estimated a rate of 4.6% in 2012 for the privately insured population.³ This small difference in prevalence rates (0.4%) may be attributable to differences in population and study methodology.

In this report, we also identified 6.6% of all adults and 0.3% of all children in the dataset as having diagnosed diabetes. The percentage of adults and children with diabetes remained constant over the study period.

min, and oral hypoglycemics.⁴ In 2014, there were 255,481 filled days of brand antidiabetic agents per 1,000 children and 172,369 filled days per 1,000 young adults. For the three oldest age groups, use of generic antidiabetic agents was more common than use of brand antidiabetic agents (Appendix Tables A47, A49, A51). For example, for intermediate adults, there were 96,730 filled days of brand antidiabetic agents per 1,000 adults and 116,843 filled days of generic antidiabetics per 1,000.

Use of generic cardiovascular drugs by oldest adults: For the three oldest age groups (intermediate adults, middle-age adults, and pre-Medicare adults),

the most commonly used prescription class was generic cardiovascular agents (Appendix Tables A47, A49, A51). For middle-age adults and pre-Medicare adults, the second-most used prescription class was generic antidiabetic agents. However, for intermediate adults, the second-most used prescription class was generic central nervous system (CNS) agents.

LD hospital admissions: For the study population without diabetes, the use rate of labor and delivery (LD) hospital admissions increased with age over the first three age groups (children, young adults, and intermediate adults; Exhibit 1). In 2014, in the population without diabetes, there

was 1 LD admission per 1,000 children without diabetes (Appendix Table A43), 18 LD admissions per 1,000 young adults without diabetes (Appendix Table A45), and 32 LD admissions per 1,000 intermediate adults without diabetes (Appendix Table A47). For intermediate adults, there were more LD admissions per 1,000 adults for the population without diabetes (32) than for the population with diabetes (25). However, this pattern is reversed for young adults. For young adults with diabetes, there was a higher use rate of LD (28 admissions per 1,000) than for the population of young adults without diabetes (18 admissions per 1,000) or for

Exhibit 1: Utilization of Labor and Delivery Hospital Admissions by Children, Young Adults, and Intermediate Adults with and without Diabetes (2014)

Age Group	Labor and Delivery Admissions per 1,000 Insureds in 2014	
	With Diabetes	Without Diabetes
Children (ages 0-18)	1	1
Young Adults (ages 19-25)	28	18
Intermediate Adults (ages 26-44)	25	32

Source: HCCI 2016.

the intermediate adults with diabetes (25 admissions per 1,000). We do not have an explanation for these differences.

MH/SU hospital admissions for young adults: In 2014, there were 37 mental health and substance use (MH/SU) hospital admissions per 1,000 young adults with diabetes (Appendix Table A45). This use rate increased from 22 MH/SU admits per 1,000 in 2012, a 68.2% increase. MH/SU admissions had the second highest use rate of any type of admission for young adults. Comparatively, this was the highest rate of MH/SU use of any age group studied. The next highest

rate of MH/SU use was for children, who had 21 MH/SU admissions per 1,000 children with diabetes (Appendix Table A43). And for children, these admissions increased 23.5% over the study period.

Spending and use trends for children: Compared to most of the other age groups, children had high per capita spending, high out-of-pocket spending, and high rates of use of health services (Tables 2 and 3, Appendix Table A41). In all years studied, children had the second highest spending per capita; the highest out-of-pocket spending per capita in the last year of the study period (2014); the highest

rate of use of outpatient services, specifically outpatient-other services; and, after young adults, the second-highest use rate of acute hospital admissions, specifically medical hospital admissions (195 acute admissions per 1,000 children in 2014).

TRENDS IN SPENDING AND UTILIZATION OF HEALTH CARE SERVICES FOR PEOPLE WITHOUT DIABETES

During the study period (2012-2014), per capita spending for people without diagnosed diabetes was over \$10,000 lower than per capita spending for people with diagnosed diabetes (Table 1 and Appendix Table A2). For example, in 2014, spending for people without diabetes was \$4,396 per capita, while spending for people with diabetes was \$16,021 per capita. In all years studied, spending for those without diabetes was about one quarter of the spending for people with diabetes. This difference in spending was due largely to much lower rates of utilization of services by people without diabetes as compared to the service use of people with diabetes.

For people without diabetes, per capita spending between 2012 and 2014 increased from \$4,138 to \$4,396 (Appendix Table A2). During this period, spending grew about 3% per year. In 2014, the largest share of per capita spending for people without diabetes (35.4%) was on professional services (\$1,556). Per capita spending on outpatient services was 28.5% of total spending in 2014 (\$1,255). Of that per capita amount on outpatient services, 63.7% was on outpatient visits (\$799), while the rest was spending on outpatient-other services (\$456). Per capita spending on acute inpatient services accounted for 18.9% of total spending (\$832), leaving 16.9% of spending on prescriptions. Of the \$745 per capita spent on prescriptions in 2014, \$264 was spent on generic prescriptions, while \$481 was spent on brand prescriptions.

In 2014, out-of-pocket spending per capita for people without diabetes was \$752 (Appendix Table A19), increasing by \$43 per person over the study years. The largest share of out-of-pocket spending (46.4%) was on professional services (\$349 per capita). Out-of-pocket spending on prescriptions (\$142 per capita) and outpatient services (\$214 per capita) accounted for 18.9% and 28.5% of total out-of-pocket spending, respectively. The smallest share of out-of-pocket spending (6.1%) was on acute inpatient services (\$46 per capita).

Between 2012 and 2014, for people without diabetes, the use of acute inpatient services, outpatient services, and brand prescriptions declined each year. During that period, the number of acute inpatient admissions declined from 50 per 1,000 people without diabetes in 2012 to 47 in 2014 (Appendix Table A36). Similarly, the use of outpatient services declined by about 1.5% per year. This decline was observed for both outpatient visits (a 8 visit per 1,000 person decline) and outpatient-other services (a 66 services per 1,000 person decline). The largest declines in use were for brand prescriptions, for which the number of filled days per 1,000 people declined by more than 15% per year during the study period – from 44,287 filled days per 1,000 people without diabetes in 2012 to 30,361 filled days in 2014. Use of professional services rose slightly between 2012 and 2013 (by 57 services per 1,000 people). The following year, use of these services declined by 175 services to 15,152 professional services per 1,000 people without diabetes. Only use of generic prescriptions increased during the study period: use of generic prescriptions increased from 189,305 filled days per 1,000 people to 202,808 filled days.

Spending Per Capita for Insureds with Diabetes

In 2014, total per capita spending (payer spending plus out-of-pocket spending) was \$16,021 on health care for insureds under 65 with diagnosed diabetes (Table 1). Over the study period (2012-2014), per capita spending increased every year, rising at average annual rate of 4.3%. Spending per capita increased from 2012 to 2013 by \$413 and from 2013 to 2014 by an additional \$897.

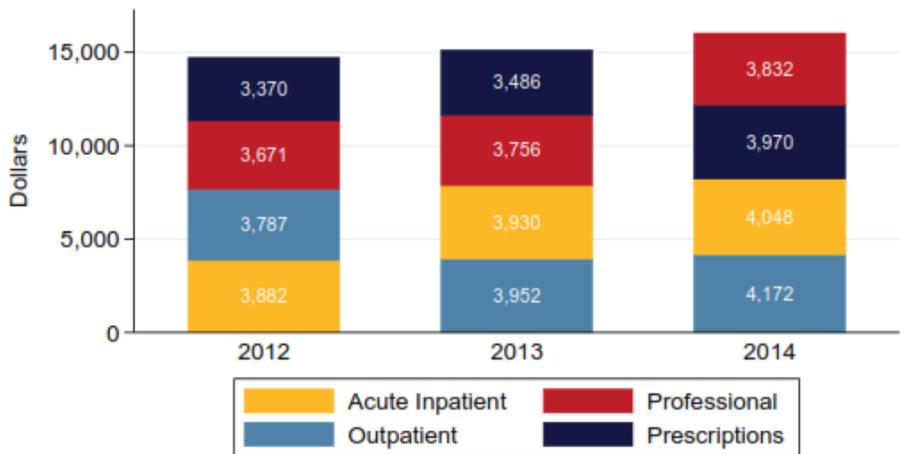
Proportionally, per capita spending for insureds with diabetes was distributed fairly evenly across the major service categories (see “Service Categories Analyzed in this Report”). Of total per capita spending in 2014, the largest share, 26.0%, was on outpatient care (Table 1 and Figure 1). The remaining shares were split across acute inpatient admissions (24.8% of total spending), prescriptions (24.8%), and professional services (24.0%).

For each of the service categories, per capita spending rose every year of the study period. Spending on prescriptions grew at the fastest average annual rate over the study period (8.7%), followed by growth in spending for outpatient services (5.0%), professional services (2.2%), and acute inpatient care (2.2%).

Outpatient Spending

Per capita spending for the study population with diabetes was higher on outpatient services than on any other service category. In 2014, per capita spending on outpatient services was \$4,172 (Table 1). The majority of

Figure 1
Spending Per Capita by Service Category for Insureds with Diabetes: 2012-2014



Source: HCCI, 2016.

Notes: All data weighted to reflect the national, younger than 65 ESI population with Diabetes. Data from 2013 and 2014 adjusted using actuarial completion.

spending on outpatient services was on outpatient visits. For example, in 2014, per capita spending for insureds with diabetes was \$2,254 on outpatient visits, compared with spending on outpatient-other services, at \$1,918.

In 2014, outpatient visits accounted for 54.0% of spending on outpatient services (Table 1). Per capita spending on outpatient visits grew from

room (ER) visits (\$715), and observation visits (\$143; Appendix Table A3). The fastest growth rate in spending during the study period among outpatient visits was for ER visits, which grew at an average annual rate of 10.0% (a \$123 increase).

The remaining 46.0% of per capita spending on outpatient services was on outpatient-other services (\$1,918; Table 1). From 2012 to 2013, per cap-

For people with diabetes, spending per capita on outpatient ancillary services was 6.5 times higher than for people without diabetes (Appendix Tables A3 and A4).

2012 to 2013 by \$102, and from 2013 to 2014 by an additional \$157 (Table 1). Of the dollars spent on outpatient visits in 2014, insureds with diabetes spent the most on outpatient surgery (\$1,396), followed by emergency

ita spending on outpatient-other services increased by \$62 and then grew from 2013 to 2014 by an additional \$63. Of total spending per capita on outpatient-other services, the largest per capita amount was for miscellane-

ous services (\$820; Appendix Table A3). This was followed by spending on radiology services (\$475), ancillary services (\$417), and laboratory and pathology services (\$207).

Acute Inpatient Spending

In 2014, per capita spending for individuals with diabetes was \$3,975 on acute inpatient services (Table 1). From 2012 to 2013, per capita spending on acute inpatient admissions increased by \$51 dollars – the smallest increase for a service category that year. From 2013 to 2014, spending on acute inpatient admissions increased by an additional \$121. Of the total dollars per capita spent in 2014 on acute inpatient admissions, the largest share was on surgical admissions (57.5%, \$2,287 per capita) (Appendix Table A3). Most of the rest that spending was on medical admissions (39.6%), \$1,575 per capita.

Per capita spending on mental health and substance use admissions was over 4.5 times higher for people with diabetes than for those without diabetes (Appendix Tables A3 and A4).

Professional Services Spending

In 2014, per capita spending on professional services was \$3,832 (Table 1). This was the service category with the lowest per capita spending, although spending on professional services was just \$340 per capita lower than on the highest spending service category (outpatient services). From 2012 to 2013, per capita spending on professional services increased by \$85, and from 2013 to 2014, grew by an additional \$76. This growth in 2014 was the smallest increase in spending observed for any category in that year. Of the total spending in 2014 on professional services, the largest amount was on miscellaneous services (\$982), followed by surgical

For people without diabetes, spending on professional services made up 35.4% of their total per capita health care spending, while it made up just 23.9% of the spending for people with diabetes (Table 1 and Appendix Table A2).

professional services (\$655), and administered drugs (\$555; Appendix Table A3).

Prescription Spending

In 2014, per capita spending on all prescriptions was \$3,970 (Table 1). Spending on prescriptions grew at the fastest average annual rate of any service category during the study period (8.7%). Of the per capita spending on prescriptions in 2014, 71.1% was on brand prescriptions and 28.6% was on generic prescriptions.⁷ From 2012 to 2013, per capita spending on brand prescriptions grew by \$77 and from 2013 to 2014, grew by an additional \$395. Over the study period, spending on generic prescrip-

tions increased by a smaller amount than did spending on brand prescriptions. Between 2012 and 2014, spending on generic prescriptions increased by \$125.

In 2014, spending on brand prescriptions was \$2,829 per capita (Tables 1). Of that amount, 50.0% was for brand antidiabetic agents (\$1,412; Appendix Table A3). Between 2012 and 2013, spending on brand antidiabetic agents grew by \$88, and by additional \$272 the following year. Both of these increases were the largest increases for detailed classes of brand prescriptions in their respective years. The next highest spending on a detailed class of brand prescriptions was on cardiovascular drugs (\$276),

just 9.8% of brand spending.⁸ Spending on brand anti-infective agents was the third highest spending detailed class of brand prescriptions in 2014 (\$206). Spending on these prescriptions also rose over the study period – from 2012 to 2013, by just \$1, and by \$99 from 2013 to 2014.

Spending on generic prescriptions was \$1,138 in 2014 (Table 1). Of that amount, the most dollars were spent on cardiovascular drugs (\$238) and central nervous system (CNS) agents (\$215; Appendix Table A3). Generic antidiabetic agents made up just 10.5% of total spending on generic prescriptions (\$119), and fell by \$19 from the previous year. Between 2013 and 2014, spending on generic prescriptions increased by \$87. The biggest contributor to this growth was an increase in spending on generic CNS agents, which rose \$36 dollars.

Per Capita Spending by Gender

Women with diabetes had higher spending per capita than men with diabetes in every year of the study period. For example, in 2014, per capita spending for women was \$16,409, compared with \$15,688 for men (Table 1). The difference between per capita spending for men and women narrowed over the study period – from \$951 to \$721. This reduction in the spending difference between men and women was due to a larger increase in spending over the study period for men (\$1,420) than for women (\$1,190).

In 2014, per capita spending on acute inpatient admissions and prescriptions for men was \$376 higher than

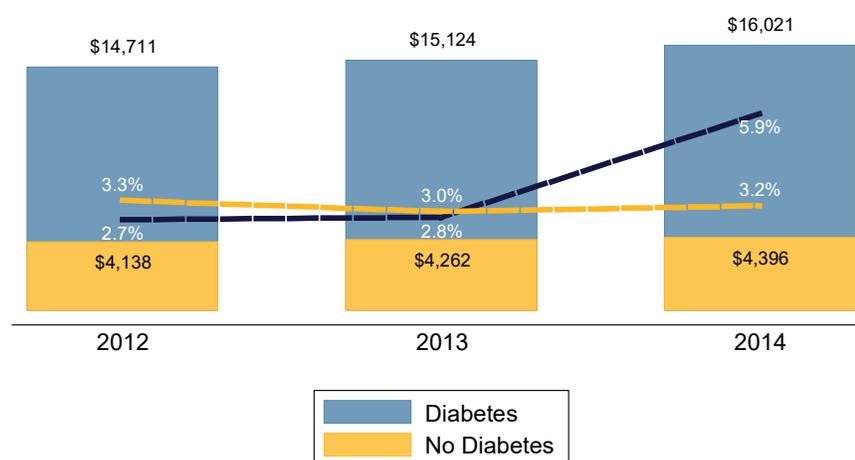
SHARE OF PER CAPITA SPENDING ON MEDICAL SERVICE CATEGORIES FOR INSURED WITH AND WITHOUT DIABETES

Compared to individuals with diagnosed diabetes, per capita spending for people that were not diagnosed with diabetes was much lower. Spending for people without diabetes in 2014 was \$4,396 per capita (Appendix Table A2), compared to \$16,021 per capita for people with diabetes (Table 1 and Figure 2). The distribution of per capita spending across health care service categories was different for the populations with and without diabetes.

The largest share of the total per capita spending for individuals without diagnosed diabetes in 2014 was on professional services (35.4%, \$1,556 per capita; Appendix Table A2). Comparatively, for those with diagnosed diabetes, professional services accounted for the smallest share of their spending per capita (24.0% or \$3,832; Table 1). For both populations, the shares of spending on professional services were distributed similarly across the professional services detailed categories. However, we observed a difference in the share of dollars spent on visits to the doctor. For people with diabetes, 18.4% (\$705) of their per capita spending on professional services was on visits to the doctor, compared to 22.0% (\$342) for those without diabetes (Appendix Tables A3 and A4).

The largest share of spending for people with diabetes was on outpatient services (26.0%, \$4,172 per capita), while outpatient services was the second highest-spending share for people without diabetes (28.5%, \$1,255 per capita); Table 1 and Appendix Table A2). People with diabetes spent a smaller share of their outpatient dollars on outpatient surgery and emergency room visits than people without diabetes. Those with diabetes spent 50.6% of their outpatient dollars on emergency room visits and outpatient surgery. Comparatively, those without diabetes spent a larger share, 60.8% on emergency room visits and outpatient surgery (Appendix Tables A3 and A4). People without diabetes had a larger share of their outpatient spending on outpatient surgery, while those with diabetes had higher spending in terms of dollars per capita on outpatient surgery (\$1,396) compared to people without diabetes (\$480).

Figure 2
Spending Per Capita and Change in Spending for Insured With and Without Diabetes: 2012-2014



Source: HCCI, 2016.
Notes: All data weighted to reflect the national, younger than 65 ESI population.
Data from 2013 and 2014 adjusted using actuarial completion.

for women. (Appendix Table A5). Additionally, spending on inpatient admissions for men accounted for the largest share of spending for men (26.4%, or \$4,149 per man) but the smallest share of spending for women (23%, or \$3,773 per woman). Per capita spending for men on prescriptions was \$142 higher than prescription spending for women. This higher spending for men was due to higher spending on brand prescriptions. In 2014, spending on brand prescriptions was \$2,953 per man compared to \$2,686 per woman. However, spending for women on generic prescriptions (\$1,205) was higher than for men (\$1,081).

In 2014, per capita spending for women was higher than for men, largely due to higher spending on outpatient services (\$417 more for women) and professional services (\$808 more for women; Appendix Table A5). For women, the highest spending categories of health care services was on outpatient services and professional services. Outpatient services represented 26.8%, or \$4,396, of per capita spending for women, while professional services made up 26.0%, or \$4,226, of their spending.

Per Capita Spending by Age Group

Over the study period, per capita spending was highest for pre-Medicare adults (ages 55-64) followed by children (ages 0-18), young adults (ages 19-25), and middle-age adults (ages 45-54); intermediate adults (ages 26-44) had the lowest spending (Table 1).

Children

Children had the second highest per capita spending in 2014 (\$17,380), which was \$462 per capita lower than spending for pre-Medicare adults (Table 1). Over the study period, per

capita spending for children increased by a larger amount than did spending for pre-Medicare adults: a \$2,337 increase for children and a \$1,374 increase for pre-Medicare adults. From 2012 to 2013, per capita spending for children grew by \$1,158, and from 2013 to 2014, grew by an additional \$1,179. The largest amount for children was spent on prescriptions (\$6,286 per child; Appendix Table A 7 and Figure 3). This spending on prescriptions was higher than for any other age group. Spending per capita for children on prescriptions was \$1,866 per capita higher than for pre-Medicare adults, the next highest spending age group. Of the amount per capita for children, most was on brand antidiabetic agents: \$3,301 per child in 2014.

Conversely, compared to the other age groups in 2014, children had the lowest per capita spending on professional services (\$2,771; Appendix Table A7 and Figure 3). The most professional dollars were spent on visits to the doctor (\$834 per child) and professional surgical services (\$194 per child; Appendix Table A9). Children also had the lowest spending of any age group on outpatient visits (\$1,350 per child). Of this amount, 57.4% was on ER visits (\$775 per child) and 33.7% were on outpatient surgical visits (\$455 per child).

Young Adults

In 2014, per capita spending for young adults was \$15,839 (Table 1). Between 2012 and 2013, spending for young adults increased by \$517 per capita. The following year, spending for young adults increased by an additional \$1,563. This growth was the largest increase in spending observed for that year for any age group. The largest portion of the per capita spending for young adults was on

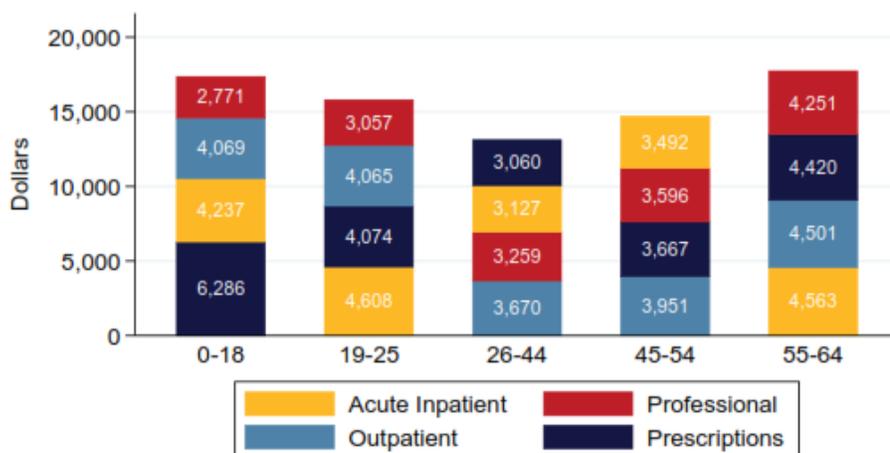
acute inpatient admissions, as was also true for pre-Medicare adults (Figure 3). In 2014, young adults had the highest spending per capita on acute admissions (\$4,608 per young adult) of any age group (Appendix Table A7). For young adults, the highest spending for acute admissions in 2014 was on medical admissions (\$2,734 per capita), followed by surgical admissions (\$1,217), labor and deliver (LD) admissions (\$305), and mental health and substance use (MH/SU) admissions (\$352; Appendix Table A11).

The second highest spending for young adults was on prescriptions (\$4,074; Appendix Table A7 and Figure 3). Of this amount, nearly 60% was on brand antidiabetic agents (\$2,332 per capita; Appendix Table A11). While spending per capita on outpatient services was comparatively lower than spending on acute admissions and prescriptions, a comparatively high amount was spent per capita on two types of outpatient services (Appendix Table A7). For young adults, \$1,253 was spent per capita on ER visits and \$1,143 was spent on ancillary services (Appendix Table A11).

Intermediate Adults

In 2014, intermediate adults had the lowest per capita spending of all of the age groups: \$13,141 (Table 1). Similar to middle-age adults, intermediate adults spent the most on outpatient services (\$3,670 per capita; Appendix Table A7 and Figure 3). Outpatient surgical visits (\$1,005 per capita) and ER visits (\$971 per capita) accounted for the most of these adults' spending on outpatient services (Appendix Table A13). Interestingly, intermediate adults had the lowest spending of any age group on outpatient-other services. One factor

Figure 3
Spending Per Capita, by Service Category and Age Group for Insureds with Diabetes: 2014



Source: HCCT, 2016.
 Notes: All data weighted to reflect the national, younger than 65 ESI population with diabetes.
 Data from 2013 and 2014 adjusted using actuarial completion.

driving this was the comparatively low per capita spending on outpatient lab/path services (\$178 per intermediate adult).

The second most per capita spending for intermediate adults was on professional services (\$3,259), followed by acute inpatient admissions (\$3,127; Appendix Table A7). The most acute inpatient dollars were spent on surgical admissions (\$1,468 per capita) followed by medical admissions (\$1,308; Appendix Table A13). Compared to spending for intermediate adults, spending for young adults on LD admissions and MH/SU admissions was 11.3% and 363.0% higher, respectively (Appendix Tables A11 and A13).

The lowest spending per capita was on prescriptions (\$3,060; Appendix Table A7). The intermediate adult group was the only age group for which prescriptions was the lowest spending service category. Compared to the other age groups, spending for intermediate adults on brand antidiabetic agents (the prescription class with the highest per capita spending

for every age group) was lower (\$1,286 per intermediate adult; Appendix Table A13).

Middle-Age Adults

In 2014, per capita spending for middle-age adults (\$14,755) was the second lowest of any age group (Table 1). Middle-age adults also had the lowest per capita spending increase (\$1,145) over the study period. Between 2012 and 2013, per capita spending for these adults grew by \$397, and spending grew by an additional \$748 the following year. As with intermediate adults, for middle-age adults, the service category with the highest spending in 2014 was outpatient services (\$3,951 per capita; Appendix Table A7 and Figure 3). Within outpatient services, the highest per capita spending was on outpatient surgical services (\$1,323) and ER visits (\$734; Appendix Table A15). Compared to the other age groups, middle-age adults had the lowest per capita spending on ancillary services (\$349), a comparatively higher spending category for children (\$1,932; Appendix Table A9) and

young adults (\$1,143; Appendix Table A11).

Middle-age adults were the only age group where acute inpatient admissions was the lowest spending category of services (\$3,492 per capita; Appendix Table A7 and Figure 3). One factor driving this appears to be the comparatively low spending on medical admissions (\$1,364 per capita) compared to the other age groups (Appendix Table A15).

Pre-Medicare Adults

As with pre-Medicare adults generally,⁹ pre-Medicare adults with diabetes had the highest per capita spending in every year of the study period. In 2014, per capita spending for pre-Medicare adults was \$17,842 (Table 1). From 2012 to 2013, spending for pre-Medicare adults rose \$429 per capita; from 2013 to 2014, spending increased by an additional \$945. Of the total per capita spending for pre-Medicare adults in 2014, the largest amount was spent on acute inpatient admissions (\$4,563; Appendix Table A7 and Figure 3). Pre-Medicare adults and young adults were the only two age groups that had higher spending on acute admissions than any other service category. Pre-Medicare adults also had the highest per capita spending on surgical admissions of any age group (\$2,799; Appendix Table A17). Interestingly, this group had the lowest per capita spending on MH/SU admissions (\$35). After acute admissions, for pre-Medicare adults, the second largest amount per capita was spent on outpatient services (\$4,501), followed by prescriptions (\$4,420), and professional services (\$4,251; Appendix Table A7).

Table 1: Annual Spending Per Capita for Insureds with Diabetes (2012–2014)

desc	2012	2013	2014	Percent Change 2012 / 2013	Percent Change 2013 / 2014
Per Capita	\$14,711	\$15,124	\$16,021	2.8%	5.9%
Per Capita by Age					
18 and Younger	\$15,043	\$16,201	\$17,380	7.7%	7.3%
19-25	\$13,759	\$14,276	\$15,839	3.8%	10.9%
26-44	\$11,923	\$12,193	\$13,141	2.3%	7.8%
45-54	\$13,610	\$14,007	\$14,755	2.9%	5.3%
55-64	\$16,468	\$16,897	\$17,842	2.6%	5.6%
Per Capita by Gender					
Men	\$14,268	\$14,736	\$15,688	3.3%	6.5%
Women	\$15,219	\$15,571	\$16,409	2.3%	5.4%
Per Capita by Service Category					
Inpatient	\$3,882	\$3,930	\$4,048	1.2%	3.0%
Acute Inpatient	\$3,803	\$3,854	\$3,975	1.3%	3.1%
Outpatient	\$3,787	\$3,952	\$4,172	4.4%	5.6%
Visits	\$1,995	\$2,097	\$2,254	5.1%	7.5%
Other	\$1,793	\$1,855	\$1,918	3.5%	3.4%
Professional Procedures	\$3,671	\$3,756	\$3,832	2.3%	2.0%
Prescriptions	\$3,370	\$3,486	\$3,970	3.4%	13.9%
Brands	\$2,357	\$2,434	\$2,829	3.3%	16.2%
Generics	\$1,013	\$1,051	\$1,138	3.8%	8.3%

Source: HCCI, 2016.

Notes: All data weighted to reflect the national population ages 0-64 and covered by ESI with diabetes. Data for 2013 and 2014 adjusted using actuarial completion. All per capita dollars from allowed amounts. All figures rounded.

Out-of-Pocket Spending Per Capita for Insureds with Diabetes

In 2014, people with diabetes spent \$1,944 out of pocket per capita (Table 2). Of total per capita spending on health care in 2014 (\$16,021), 12.1% was spent out of pocket by people with diabetes. Overall, per capita out-of-pocket spending grew more from 2012 to 2013 (\$66, or 3.6%) than it did from 2013 to 2014 (\$10, or 0.5%; Figure 4). This is opposite of the trend for total per capita spending, which rose more between 2013 and 2014 than between 2012 and 2013.

Of the per capita out-of-pocket dollars spent in 2014, insureds with diabetes spent the most on professional services (\$684; Table 2). After professional services, out-of-pocket spending per capita was highest on prescriptions (\$629), followed by spending on outpatient services (\$500). The smallest amount of per capita out-of-pocket spending was on acute inpatient services (\$128). The overall increase in out-of-pocket spend-

ing per capita was smaller from 2013 to 2014 than from 2012 to 2013. The smaller increase was due largely to declining per capita out-of-pocket spending on prescriptions and acute inpatient admissions, which offset increasing out-of-pocket spending on outpatient services. Per capita spending out-of-pocket on prescriptions declined both years of the study period, first by 8.9%, or \$22, from 2012 to 2013, and then by an additional 6.8%, or \$37 from 2013 to 2014. Out-of-pocket spending per capita on acute inpatient admissions rose by \$9 dollars from 2012 to 2013, but fell by \$6 from 2013 to 2014.

Overall, total out-of-pocket spending rose in all years studied (Table 2). The increases in out-of-pocket spending were due largely to increases in per capita spending on outpatient and professional services. The increase in out-of-pocket spending was larger for outpatient services than for professional ser-

vices. Out-of-pocket per capita spending on outpatient services rose by \$40 from 2012 to 2013, and then grew by an additional \$34 from 2013 to 2014. Out-of-pocket per capita spending on professional services also rose during the study period, growing by \$41 from 2012 to 2013, and by an additional \$19 from 2013 to 2014.

Professional Services Out-of-Pocket

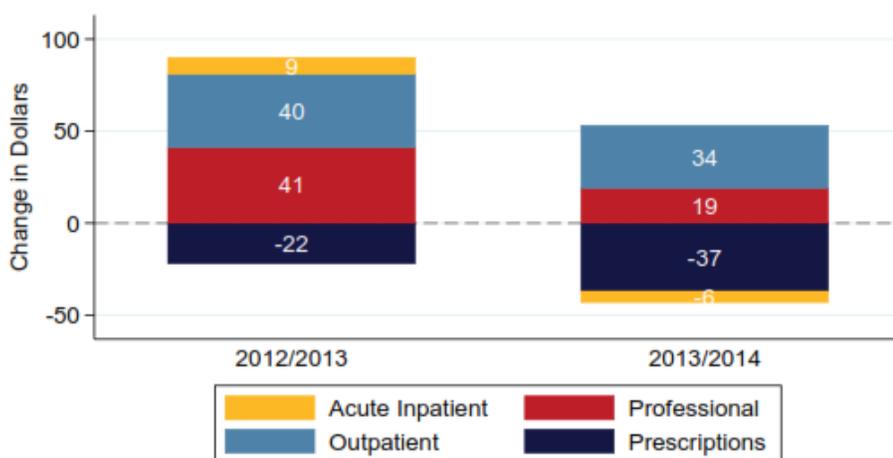
In 2014, among the service categories, out-of-pocket spending per capita was highest for professional services (\$684; Table 2). Of the out-of-pocket spending on professional services in 2014, the largest share (31.7%) was spent on doctor visits (\$201 per capita; Appendix Table A20). This was followed by out-of-pocket spending on professional surgical services (\$90 per capita) and professional laboratory and pathology (lab/path) services (\$85 per capita).

Between 2012 and 2013, out-of-pocket spending on doctor visits rose from \$201 to \$217 (Appendix Table A20). Between 2013 and 2014, however, there was no increase in out-of-pocket per capita spending on doctor visits. This flat growth led to a smaller increase in total out-of-pocket spending on all professional services in 2014 (\$19) than occurred in the previous year (\$41; Table 2).

Prescriptions Out-of-Pocket

From 2012 to 2013, per capita out-of-pocket spending on prescriptions fell by \$22 dollars, and fell by an additional \$37 dollars between 2013 and 2014 (Table 2). In 2014, out-of-pocket spending on all prescriptions was \$629 per capita. Of that amount, \$297 was spent on brand prescriptions and \$331 was spent on

Figure 4
Difference From the Previous Year in Out-of-Pocket Spending, Per Capita by Service Category: 2012-2014



Source: HCCL, 2016.
Notes: All data weighted to reflect the national, younger than 65 ESI population with diabetes. Data from 2013 and 2014 adjusted using actuarial completion.

generic prescriptions. Brand prescription out-of-pocket spending per capita declined each year studied, leading to the decline in total prescription out-of-pocket spending. Conversely, per capita spending on generic prescriptions increased from 2012 to 2013 by \$9, but fell by \$16 between 2013 and 2014.

Per capita out-of-pocket spending on brand prescriptions was 6 times higher for people with diabetes than for those without diabetes (Table 2 and Appendix Table A19).

In 2014, out-of-pocket spending on brand prescriptions was \$297 per capita or 47.2% of out-of-pocket spending per capita on all prescriptions (Table 2). Of the out-of-pocket spending on brand prescriptions, the largest share (22.7%) was on brand anti-diabetic agents (\$143 per capita; Appendix Table A20). The only other detailed category that had higher out-of-pocket spending was visits to the doctor. After brand anti-diabetic agents, insureds with diabetes spent the most brand prescription out-of-pocket dollars on brand cardiovascular drugs (\$55 per capita). The decline in out-of-pocket spending over the study period on brand prescriptions was driven largely by declining out-of-pocket spending on cardiovascular drugs. Out-of-pocket spending on brand cardiovascular drugs fell every year of the study period, declining by a total of \$37 dollars between 2012 and 2014.

In 2014, \$331 per capita was spent out of pocket on generic prescriptions, which made up 52.6% of out-of-pocket spending on all prescriptions (Table 2). Of this amount, the most was spent on generic cardiovascular drugs (\$96 per capita), followed by generic central nervous system (CNS) agents (\$58), and generic anti-

diabetic agents (\$39; Appendix Table A20). Total out-of-pocket spending on generic prescriptions rose between 2012 and 2013 due to a small increase in out-of-pocket spending on anti-diabetic agents (\$5 per capita increase). However, from 2013 to 2014, a decline in out-of-pocket spending on generic cardiovascular

drugs (\$5 per capita decrease) and anti-diabetic agents (\$6 per capita decrease) drove declining total out-of-pocket spending on generic prescriptions.

Outpatient Out-of-Pocket

In 2014, out-of-pocket spending per capita on outpatient services was \$500 (Table 2). These dollars were almost evenly divided between outpatient visits (\$253 per capita) and outpatient-other services (\$248). Overall out-of-pocket spending on all health services grew from 2013 to 2014 because of an increase in out-of-pocket spending on outpatient services. Between 2013 and 2014, out-of-pocket spending on outpatient visits rose \$17, and rose by \$18 on outpatient-other services.

In 2014, outpatient visits accounted for 50.6% (\$253 per capita) of the out-of-pocket spending on outpatient services (Table 2). Of the out-of-pocket dollars spent on outpatient visits, spending was highest on outpatient surgical visits (\$132 per capita), followed by ER visits (\$111), and observation (\$9; Appendix Table A20). The \$39 growth in out-of-pocket spending on outpatient visits over the study period was largely the result of rising out-of-pocket spending on ER visits. From 2012 to 2013, out-of-

pocket spending on ER visits grew by \$13 per capita (59.1% of the total increase in outpatient visit spending). And from 2013 to 2014, it grew by an additional \$14 dollars per capita (82.4% of the total increase in outpatient visit spending).

In 2014, outpatient-other services accounted for 49.6% (\$248 per capita) of out-of-pocket spending on all outpatient services (Table 2). Of these dollars, out-of-pocket spending was highest for ancillary services (\$77 per capita), followed by outpatient radiology services (\$65; Appendix Table A20). Out-of-pocket spending on ancillary services grew the most of any outpatient-other detailed category over the study period. From 2012 to 2013, out-of-pocket spending on ancillary services grew by \$5 per capita, and from 2013 to 2014 it grew by an additional \$5.

Acute Inpatient Out-of-Pocket

Out-of-pocket spending per capita on acute inpatient admissions was the lowest spending for any service category over the study period. Out-of-pocket spending on acute inpatient admissions was \$128 per capita in 2014 (Table 2). Of the dollars spent out-of-pocket on inpatient admissions in 2014, the most were spent on medical admissions (\$71 per capita; Appendix Table A20). After medical admissions, out-of-pocket spending was highest on surgical admissions (\$47 per capita). Out-of-pocket per capita spending on acute admissions fell by \$6 between 2013 and 2014. This decline was largely the result of falling out-of-pocket spending on medical admissions (fell by \$3 per capita) and surgical admissions (fell by \$3).

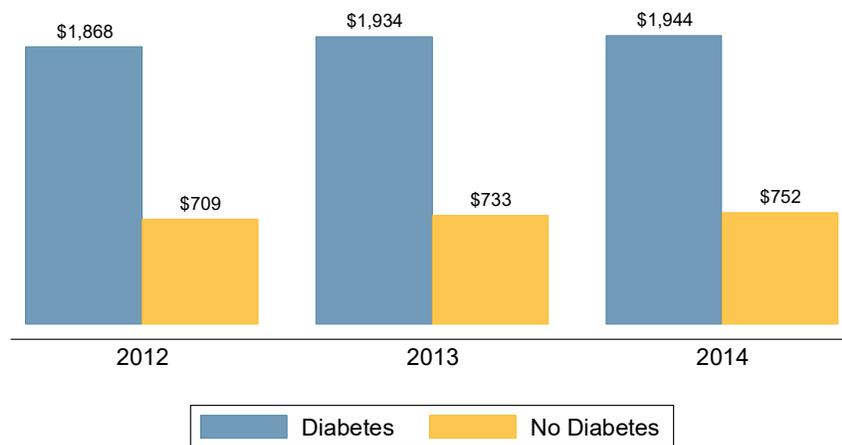
Out-of-Pocket Spending by Gender

As with the total health care spending per capita trends, women spent more

OUT-OF-POCKET SPENDING ACCOUNTED FOR A SMALLER SHARE OF TOTAL SPENDING FOR THOSE WITH DIABETES

Each year of the study period, insureds with diabetes spent, per capita, two and half times more out-of-pocket than insureds without diabetes (Table 2 and Appendix Table A19). For example, in 2014, insureds with diabetes spent \$1,944 per capita out of pocket, compared to \$752 per capita spent out of pocket by insureds without diabetes (Figure 5). However, the share of spending paid out of pocket by those with diabetes was smaller than the share of total spending by those without diabetes. In 2014, for those with diabetes, out-of-pocket spending accounted for 12.1% of total per capita spending (payer spending plus out-of-pocket spending), compared with 17.1% for those without diabetes (Appendix Table A19), but of a much larger total dollar amount (Table 2). These trends were also observed in 2012 and 2013.

Figure 5
Out-of-Pocket Spending Per Capita for Insureds With and Without Diabetes: 2012-2014



Source: HCCL, 2016.
Notes: All data weighted to reflect the national, younger than 65 ESI population.
Data from 2012 and 2013 actuarially completed.

For both groups, those with and without diabetes, the largest share of their out-of-pocket spending was on professional services. For people with diabetes, in 2014, 35.2% of their out-of-pocket spending was on professional services, while for people without diabetes this share was 46.4%. Of the detailed categories of professional services, the most out-of-pocket spending for both populations was on visits to the doctor: \$217 per person with diabetes and \$108 per person without diabetes (Appendix Tables A20 and A21). Proportionally, this spending was nearly even across the two groups. Visits to the doctor made up 31.7% of the spending of professional services for people with diabetes, compared with 30.9% of the professional spending for people without diabetes.

As a share of total spending, out-of-pocket spending on outpatient services for people with and without diabetes was similar (25.7% and 28.5%, respectively; Appendix Tables A2 and A19). However, the types of outpatient services on which they spent their dollars differed between the two populations. Nearly 60% of out-of-pocket outpatient spending for people without diabetes was on ER visits and outpatient surgical visits. In contrast, less than 50% of the outpatient spending for people with diabetes was on ER visits and outpatient surgical visits. Also, per capita out-of-pocket spending for people with diabetes on outpatient ancillary services was 15.4%, compared with 6.5% for people without diabetes.

out of pocket per capita than did men in every year of the study period. For example, in 2014 women spent \$2,060 out of pocket, while men spent \$1,845 out-of-pocket (Table 2). Over the study period, out-of-pocket spending for women grew by more dollars (rose by \$81 per woman) than out-of-pocket spending for men (rose by \$75 per man).

Women had higher out-of-pocket per capita spending on every service category than did men. In 2014, the largest differences between men and women's out-of-pocket spending were observed for professional services (a \$122 per capita difference) and outpatient services (a \$85 difference; Appendix Table A22). For both men and women, more out-of-pocket per capita dollars went to professional services than any other service category. Per capita out-of-pocket spending on professional services was \$750 per woman and \$628 per man, a \$122 difference. Over the study period, out-of-pocket spending per capita on both professional and outpatient services rose for both men and women. For men, out-of-pocket spending rose by \$58 per man on professional services and \$70 on outpatient services. For women, out-of-pocket spending rose by \$63 per woman on professional services and \$78 on outpatient services.

Out-of-pocket per capita spending on prescriptions was nearly equal for men and women. Spending out of pocket on prescriptions was \$630 per woman and \$627 per man in 2014 (Appendix Table A22). Women only out spent men by \$3 per capita on prescriptions. This was also true for out-of-pocket spending on generic prescriptions, where women out spent men by \$33 per capita. However, per capita out-of-pocket spending

for men on brand prescriptions was higher than this spending for women. In 2014, men spent \$311 per capita out of pocket on brand prescriptions, while women spent \$280. For both men and women, out-of-pocket spending on brand prescriptions declined across the study period. Between 2012 and 2014, spending out of pocket for men fell by \$54 per man and by \$52 per woman. Conversely, out-of-pocket per capita spending on generic prescriptions rose for both men and women rose between 2012 and 2013, by \$10 per man and \$8 per woman. However, this out-of-pocket spending fell the following year by \$15 per man and \$17 per woman.

Additionally, women's out-of-pocket spending on acute inpatient admissions was quite similar to that by men. In 2014, women spent \$131 per capita on acute admissions while men spent \$126, \$5 difference (Appendix Table A22). Similar to the trends for out-of-pocket spending on generic prescriptions, spending on acute admissions rose for both men and women between 2012 and 2013. Out-of-pocket spending on acute admissions rose by \$10 per man and by \$9 per woman. The following year, out-of-pocket spending on acute admissions fell for both genders: by \$4 per man and by \$8 per woman.

Out-of-Pocket Spending by Age Group

In 2014, out-of-pocket per capita spending for children was the highest for any age group (\$2,173; Table 2). After children, out-of-pocket per capita spending was highest for pre-Medicare adults (\$2,046). However, 2014 was the only year in the study period for which spending per capita out of pocket for children was higher than spending for pre-Medicare adults. In 2014, per capita out-of-

pocket spending was higher for children than for pre-Medicare adults because the spending for children increased by 5.7%, while the spending for pre-Medicare adults declined by 1.0%. Out-of-pocket spending per capita for children grew by the most dollars over the entire study period (\$256 per child), while out-of-pocket spending grew the least for pre-Medicare adults (\$38 per adult).

In every year of the study period, the lowest per capita out-of-pocket spending was by intermediate adults (Table 2). In 2014, intermediate adults spent \$1,791 per capita out of pocket. This was followed by out-of-pocket per capita spending for young adults (\$1,850) and middle-age adults (\$1,869). As with spending for children, per capita out-of-pocket spending for these three age groups increased in every year studied.

Children

Out-of-pocket spending per capita for children in 2014 was \$2,173, the highest of any age group (Table 2). In 2012 and 2013, children had the second highest per capita spending after pre-Medicare adults. Out-of-pocket spending grew over the study period for children, rising \$139 from 2012 to 2013 and by an additional \$117 from 2013 to 2014.

Of the dollars spent out of pocket for children in 2014, the most were spent on prescriptions (\$751 per child; Appendix Table A24). This was the highest per capita out-of-pocket spending on any service category by any age group. Children were the only age group for whom out-of-pocket per capita spending on prescriptions increased in 2014. For all of the other age groups, this out-of-pocket spending declined by at least 3%. The increase for children was due an increase in out-of-pocket per capita

spending on brand prescriptions, which increased by \$38 per capita to \$433. The most prescription out-of-

young adult; Appendix Table A28). After outpatient services, the most out-of-pocket per capita dollars were

professional services (\$648 in 2014; Appendix Table A24 and Figure 6). The most out-of-pocket dollars on professional services were spent on visits to the doctor: \$203 per intermediate adult in 2014 (Appendix Table A30).

After professional services, the most out-of-pocket dollars were for outpatient services (\$532 per capita; Appendix Table A24 and Figure 6). Unlike all of the other age groups, the most outpatient out-of-pocket dollars spent by intermediate adults were on ER visits. In 2014, out-of-pocket spending on ER visits was \$172 per intermediate adult (Appendix Table A30). Out-of-pocket spending on outpatient services generally, and ER visits specifically, saw high growth over the study period. Between 2012 and 2014, out-of-pocket spending on outpatient services grew \$91 per capita and grew \$44 on ER visits (Appendix Tables A24 and A30). This growth in out-of-pocket spending was an important driver in total out-of-pocket spending growth for intermediate adults over the study period.

The least out-of-pocket dollars for intermediate adults were on prescriptions (\$464 per capita), and acute inpatient admissions (\$146; Appendix Table A24). As with the other adult age groups, out-of-pocket spending on prescriptions fell over the study period, driven by declining out-of-pocket spending on brand prescriptions.

Middle-Age Adults

In 2014, middle-age adults spent \$1,869 out of pocket per capita (Table 2). Compared to out-of-pocket spending per capita trends for the other age groups, spending out of pocket by middle-age adults was in the middle. For middle-age adults, out-of-pocket spending grew more from 2012 to

Out-of-pocket spending per child was over twice as high on doctor visits and ER visits for children with diabetes as compared to children without diabetes (Appendix Tables A26 and A27).

pocket dollars for children were spent on brand antidiabetic agents (\$350 per child; Appendix Table A26). After prescriptions, out-of-pocket spending per capita for children was highest on outpatient services (\$703), followed by professional services (\$522), and acute inpatient admissions (\$196; Appendix Table A24). After spending on brand antidiabetic agents, the most out-of-pocket dollars for children were spent on outpatient ancillary services (\$395 per child) and visits to the doctor (\$228 per child; Appendix Table A26).

Young Adults

Out-of-pocket per capita spending for young adults in 2014 was \$1,850 (Table 2). This was the second lowest per capita out-of-pocket spending for any age group. In terms of dollars, out-of-pocket spending by young adults grew the second most after out-of-pocket spending for children over the study period. From 2012 to 2013 out-of-pocket spending by young adults grew by \$103 per capita, and rose by an additional \$66 from 2013 to 2014. Of the dollars spent out-of-pocket, the most were spent on outpatient services (\$615 per young adult; Appendix Table A24 and Figure 6). The most outpatient out-of-pocket dollars were spent on ancillary services (\$228 per young adult) and ER visits (\$202 per

spent on professional services (\$539), prescriptions (\$478), and acute inpatient admissions (\$216; Appendix Table A24).

Unlike all of the other age groups, the per capita out-of-pocket spending by young adults on brand and generic prescriptions declined each year studied (Appendix Table A24). Total out-of-pocket spending on prescriptions declined from \$506 per young adult in 2012 to \$478 in 2014. The most out-of-pocket dollars on prescriptions were spent on brand antidiabetic agents (\$230 per capita in 2014), a slight increase over the study period (by \$7 per capita; Appendix Table A28). Compared to the other age groups, young adults had higher per capita spending on acute inpatient admissions in each year of the study period (Appendix Table A24).

Intermediate Adults

Out-of-pocket per capita spending for intermediate adults was the lowest of any age group in all years studied. In 2014, out-of-pocket spending was \$1,791 per intermediate adult (Table 2). Out-of-pocket spending rose over the study period, increasing more from 2012 to 2013 (\$85 per capita), than from 2013 to 2014 (\$61). Unlike the younger age groups, intermediate adults spent the most per capita on

Out-of-pocket spending per young adult on acute inpatient admissions was nearly five times higher for young adults with diabetes as those without (Appendix Tables A24 and A25).

2013 (\$61 per capita), than from 2013 to 2014 (\$20).

spending on all prescriptions for middle-age adults over the study period

Pre-Medicare adults spent the most out-of-pocket per capita on professional services (\$720 in 2014), followed by prescriptions (\$712), outpatient services (\$487), and acute inpatient admissions (\$122; Appendix Table A24 and Figure 6). Compared to the other age groups, pre-Medicare adults had the highest per capita out-of-pocket spending on professional services. In contrast, pre-Medicare adults had the lowest out-of-pocket spending per capita on outpatient services, and comparatively low spending on acute admissions. For pre-Medicare adults, the most out-of-pocket per capita dollars were spent on visits to the doctor (\$227 per pre-Medicare adult), outpatient surgical visits (\$147), and brand antidiabetic agents (\$143; Appendix Table A33).

The ratio of out-of-pocket spending for people with diabetes to those without diabetes declined with age. The difference in spending between people with and without diabetes was largest for children (4.7) and smallest for pre-Medicare adults (1.7; Table 2 and Appendix Table A21).

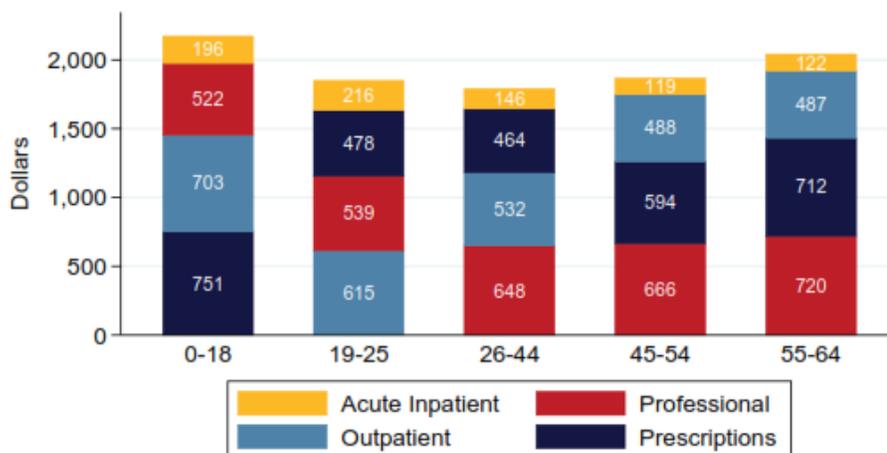
In 2014, middle-aged adults spent the most of their per capita out-of-pocket dollars on professional services (\$666), followed by prescriptions (\$594), outpatient services (\$488), and acute inpatient admissions (\$119; Appendix Table A24 and Figure 6). Compared to the other age groups, middle-age adults had the lowest out-of-pocket spending on acute admission during the study period. Within these service categories, the most out-of-pocket dollars were spent on visits to the doctor (\$211 per capita), brand antidiabetic agents (\$133 per capita), and outpatient surgical visits (\$129 per capita; Appendix Table A32). As was observed for intermediate and pre-Medicare adults, falling spending out of pocket on brand prescriptions drove the decline in out-of-pocket

(Appendix Table A24).

Pre-Medicare Adults

In 2014, after children, pre-Medicare adults spent the most out of pocket per capita (\$2,046; Table 2). In the two previous years, pre-Medicare adults had the highest spending of any age group. Pre-Medicare adults had just the second highest out-of-pocket per capita spending in 2014 because it fell by \$20 from 2013 to 2014. Over the entire study period, out-of-pocket spending for Pre-Medicare adults grew by the least dollars of any age group. Between 2012 and 2014, out-of-pocket spending increased by \$38 per pre-Medicare adult.

Figure 6
Out-of-Pocket Spending Per Capita, by Service Category and Age Group for Insureds with Diabetes: 2014



Source: HCCL, 2016.
Notes: All data weighted to reflect the national, younger than 65 ESI population with diabetes. Data from 2013 and 2014 adjusted using actuarial completion.

Table 2: Out-of-pocket Spending Per Capita for Insureds with Diabetes (2012–2014)

	2012	2013	2014	Percent Change 2012 / 2013	Percent Change 2013 / 2014
Out-of-Pocket Per Capita	\$1,868	\$1,934	\$1,944	3.6%	0.5%
Share of Expenditures	12.7%	12.8%	12.1%	N/A	N/A
Out-of-Pocket Per Capita by Age					
18 and Younger	\$1,917	\$2,056	\$2,173	7.2%	5.7%
19-25	\$1,681	\$1,784	\$1,850	6.2%	3.7%
26-44	\$1,645	\$1,730	\$1,791	5.1%	3.5%
45-54	\$1,788	\$1,849	\$1,869	3.4%	1.1%
55-64	\$2,008	\$2,066	\$2,046	2.9%	-1.0%
Out-of-Pocket Per Capita by Gender					
Men	\$1,770	\$1,829	\$1,845	3.3%	0.9%
Women	\$1,979	\$2,056	\$2,060	3.9%	0.2%
Out-of-Pocket Per Capita by Service Category					
Inpatient	\$128	\$137	\$131	6.9%	-4.5%
Acute Inpatient	\$125	\$134	\$128	7.2%	-4.5%
Outpatient	\$426	\$466	\$500	9.2%	7.4%
Visits	\$214	\$236	\$253	10.5%	6.9%
Other	\$213	\$230	\$248	8.0%	7.9%
Professional Procedures	\$624	\$665	\$684	6.5%	2.9%
Prescriptions	\$688	\$666	\$629	-3.2%	-5.6%
Brands	\$350	\$318	\$297	-8.9%	-6.8%
Generics	\$338	\$347	\$331	2.6%	-4.6%

Source: HCCI, 2016.

Notes: All data weighted to reflect the national population ages 0-64 and covered by ESI with diabetes. Data for 2013 and 2014 adjusted using actuarial completion. All per capita dollars from allowed amounts. All figures rounded.

Utilization of Health Services for Insureds with Diabetes

For people with diabetes, utilization of most medical subservice categories declined over the 2012-2014 study period (Table 3 and Figure 7). The number of acute inpatient admissions, outpatient-other services, and professional services declined every year studied. Only use of outpatient visits increased slightly between 2012 and 2014 (by 9 visits per 1,000 people).

Additionally, the use of filled days of brand prescriptions declined over the study period (Table 3). At the same time, the use of generics increased each year. This increase was larger than the decline in use of brand prescriptions, leading to a net increase in the use of prescriptions between 2012 and 2014.

Use of Professional Services

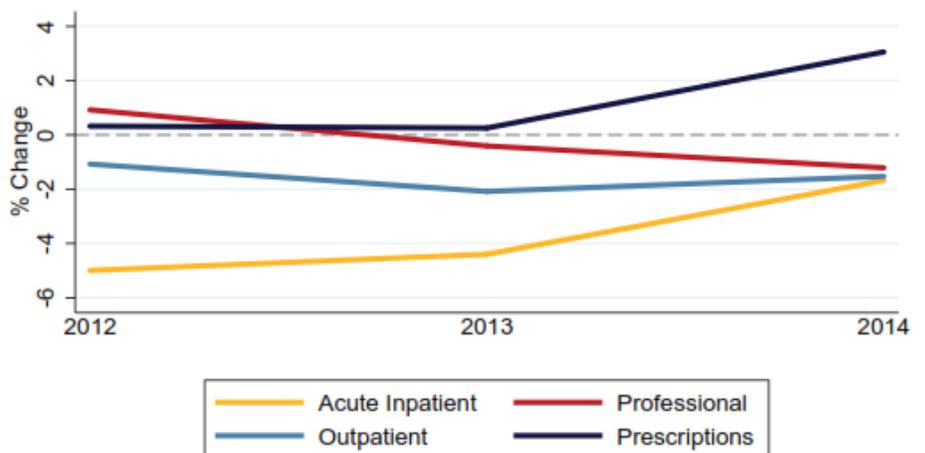
In each year of the study period, the most services used by people with diabetes were professional services. In 2014, there were 36,927 professional services per 1,000 people (Table 3). This number declined slightly each year studied. Between 2012 and 2014, the number of professional services declined by 607 services per 1,000 people.

Individuals without diabetes had half the number of doctor visits and half as many ER visits compared to people with diabetes (Appendix Tables A37 and A38).

Of the types of professional services, the one with the highest rate of use was professional laboratory and pathology services (lab/path). In 2014, there were 13,193 lab/path services per 1,000 people. The use of lab/path services increased slightly between

Figure 7

Annual Percentage Changes in Utilization per 1,000 Insureds With Diabetes by Service Category: 2012-2014



Source: HCCI, 2016.

Notes: All data weighted to reflect the national, younger than 65 ESI population with diabetes. Data from 2013 and 2014 adjusted using actuarial completion.

2012 and 2013 (by 122 services per 1,000), before declining slightly the following year (by 63 services per 1,000; Appendix Table A37). Another frequently used service for people with diabetes was visits to the doctor. In 2014, there were 6,692 doctor visits per 1,000 people. The number of visits increased slightly in 2013 (by 84 visits per 1,000), and declined slightly the following year (by 84 visits per 1,000).

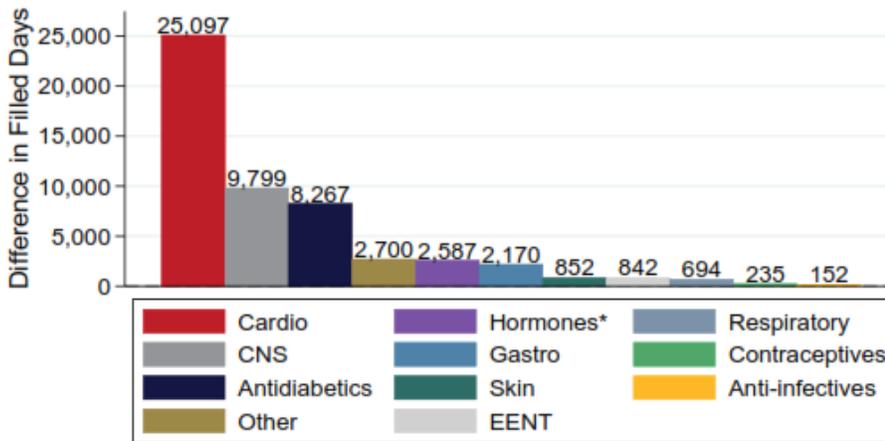
declined over the study period, from 9,423 outpatient services per 1,000 people to 9,085 services per 1,000 people.

Of these outpatient services, the vast majority were outpatient-other services. In 2014, there were 8,373 outpatient-other services per 1,000 people (Table 3). The use of these services fell slightly each year studied. The most used type of outpatient-other service was outpatient laboratory and pathology services. In 2014, there were 3,458 outpatient lab/path services per 1,000 people, falling slightly from 3,634 services per 1,000 people in 2012 (Appendix Table A37). Unlike the use of outpatient-other services, use of outpatient visits increased slightly over the study period. Use increased by 1 visit per 1,000 people in 2013 and by an additional 8 visits the following year (to 712 visits

Use of Outpatient

The second-highest medical service category used was outpatient services. In 2014, there were 9,085 outpatient services per 1,000 people (Table 3). Use of outpatient services

Figure 8
Difference From the Previous Year in Filled Days per 1,000
Insureds for Generic Prescription Detailed Categories: 2013-2014



Source: HCCL, 2016.
 Notes: All data weighted to reflect the national, younger than 65 ESI population with diabetes.
 Data from 2013 and 2014 adjusted using actuarial completion.
 *Hormones and synthetics substitutes not including antidiabetic agents and contraceptives.

study period by about 5% per year, to 368,607 filled days per 1,000 people in 2014 (Appendix Table A37 and Figure 8). The second most used class of prescriptions was generic antidiabetic agents (171,919 filled days per 1,000 people in 2014), followed by brand antidiabetic agents (107,570 filled days). Combined, brand and generic antidiabetic agents accounted for 22.5% of total prescription use by people with diabetes. Use of generic antidiabetic agents increased each year studied, by 17,013 filled days between 2012 and 2014. Use of brand antidiabetic agents, however, declined between 2012 and 2013 (by 8,705 filled days), before increasing in 2014 (by 2,170 filled days).

Use by Gender

For all the medical subservice categories, use of services per 1,000 women was higher than use by men (Appendix Table A39). This difference in service use, expressed as a ratio of services used by women to use by men, was largest for outpatient visits (1.3) and smallest for acute inpatient admissions (1.1). Use of filled days of generic prescriptions per 1,000 people was also slightly higher for women than men (1.06). Only for filled days of brand prescriptions was use higher for men than for women (0.92).

per 1,000 people; Table 3). Use of outpatient visits was split fairly evenly between ER visits and outpatient surgery visits. In 2014, there were 329 ER visits per 1,000 people and 314 outpatient surgery visits (Appendix Table A37). In comparison, there were just 69 observation visits per 1,000 people.

Use of Acute Inpatient

Of the medical subservice categories in 2014, acute inpatient admissions had the lowest use rate (160 acute admissions per 1,000 people; Table 3). There was a small decline in the use of acute admissions over the study period. The number of admissions declined by 7 admissions per 1,000 people between 2012 and 2013, and by an additional 3 admissions the following year. Medical admissions were the most common for people with diabetes. In 2014, there were 95 medical admissions per 1,000 people, nearly twice as many as the number of surgical admissions (55 admissions per 1,000; Appendix Table A37).

Use of Prescriptions

In 2014, people with diabetes used 1,242,571 filled days of prescriptions per 1,000 people (Table 3). This prescription use rate averages to just over 3 drugs per person with diabetes per day. Over 80% of these filled days of prescriptions were generic. The use of generic prescriptions increased each year studied. Use increased by 94,244 filled days per 1,000 people, from 933,587 days in 2012 to 1,027,831 in 2014. At the same time, the use of brand prescriptions de-

Compared to people without diabetes, people with diabetes used 5 times more filled days of generic prescriptions and 7 times more filled days of brand prescriptions (Table 3 and Appendix Table A36).

clined by 54,537 filled days per 1,000 people, from 268,738 filled days in 2012 to 214,201 filled days in 2014.

The most used therapeutic class of prescriptions in 2014 was generic cardiovascular drugs. Use of this class of prescriptions increased over the

For women with diabetes, the medical subservice category with the highest use was professional services. In 2014, there were 41,038 professional services per 1,000 women (Appendix Table A39). Between 2012 and 2014, a small decline occurred in the rate of

use of these services: by 833 services per 1,000 women. A small year-on-year decline also occurred in the use of acute inpatient admissions.

The number of admissions declined by 12 admits per 1,000 women, from 182 admissions in 2012 to 170 in 2014. Similarly, use of outpatient-other services also declined each year studied, from 9,297 services per

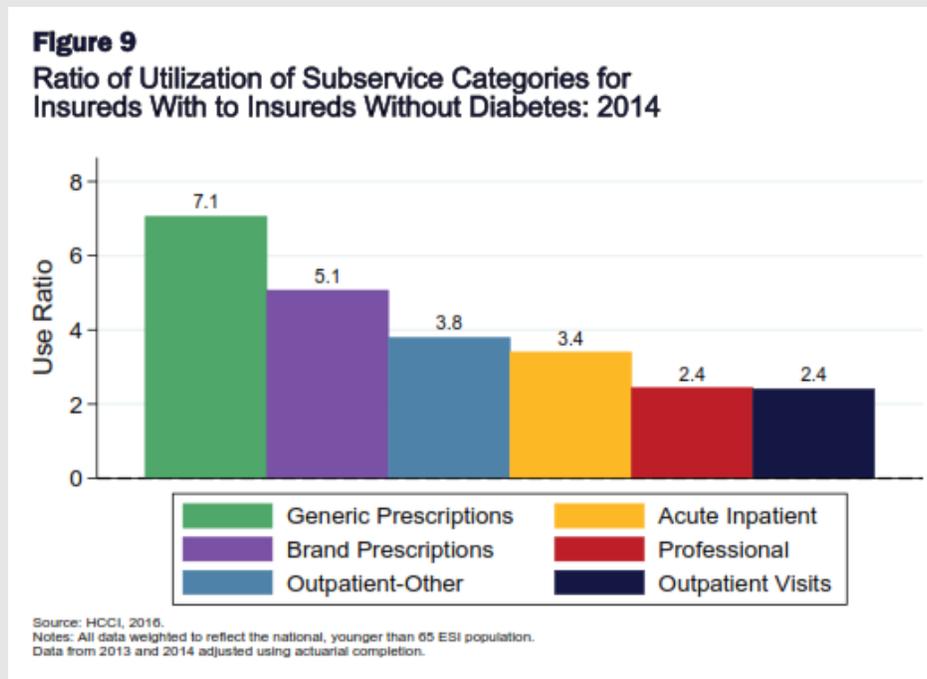
1,000 women in 2012 to 8,882 in 2014. While use of outpatient visits declined slightly between 2012 and 2013 – from 805 visits per 1,000 women to 801 visits, a small increase occurred in use of visits in 2014 (to 812 visits per 1,000).

In 2013, the use of filled days of brand prescriptions declined by 13.8% and by an additional 7.9% in 2014. This

was a decline of 52,942 filled days of brand prescriptions over the study period. However, the use of filled days of generic prescriptions increased every year studied. This increase in generic filled days of 91,918 filled days of generic prescriptions per 1,000 women led to a net increase in the total filled days of prescriptions over the study period. Total filled

COMPARISON OF THE RATES OF SERVICE USE FOR PEOPLE WITH AND WITHOUT DIABETES

In every year of the study period, people with diabetes had higher rates of use for all of the service categories compared to people without diabetes (Table 3 and Appendix Table A36). Across the service categories, the difference in use between the two groups was larger for some categories of services than for others. When examining the ratio of service use for people with diabetes compared to those without, the ratio is largest for brand prescriptions (7.1) and generic prescriptions (5.1) and smallest for professional services (2.4; Figure 9). In other words there is a larger difference in use of prescriptions than of professional services. In 2014, people with diabetes used 1,242,571 filled days of prescriptions, compared to 233,208 filled days for people without diabetes (Table 3 and Appendix Table A36).



For prescriptions, this difference in use was due largely to the use of antidiabetic agents by people with diabetes (279,489 filled days of antidiabetic agents per 1,000 people with diabetes). The difference was also influenced by the comparatively higher use of cardiovascular agents by people with diabetes. In 2014, there were 414,524 filled days of cardiovascular agents per 1,000 people with diabetes compared to 55,291 filled days of cardiovascular agents per 1,000 people without diabetes. After brand and generic prescriptions, the next highest use ratio – the second-largest difference in rate of service use – in 2014 was observed for outpatient other services (3.8). Within the outpatient services category, the biggest difference in use between people with diabetes and those without was for ancillary services (6.0). In 2014, there were 1,980 ancillary services per 1,000 people with diabetes compared to 328 ancillary services per 1,000 people without diabetes.

days of prescriptions increased from 1,227,220 filled days per 1,000 women in 2012 to 1,266,384 filled days in

(Appendix Table A41). This high use of outpatient services was driven by the use of outpatient-other services

professional services (7,943 services per 1,000 children; Appendix Table A43). Use of acute admissions per 1,000 children declined every year studied, from 200 admissions to 195 admissions (Appendix Table A41). This decline was due largely to a small decline over the study period in the use of medical admissions. The number of medical admissions declined from 168 admissions per 1,000 children in 2012 to 160 admissions in 2014 (Appendix Table A43).

Children were the only age group for whom increases occurred in the number of filled days of brand prescriptions during the study period. Between 2012 and 2014, the number of filled days of brand prescriptions rose by 12,022 filled days per 1,000 children (Appendix Table A41). Due to this increase in use, by 2014, children had higher rates of use of brand prescriptions than any other age groups. Brand prescriptions also constituted a larger proportion of total prescriptions (40.0%) than for any other age group. This high use of brand prescriptions was driven largely by the use of brand antidiabetic agents. Chil-

There were 3 times as many acute admissions for women with diabetes compared to women without diabetes, and 4 times as many acute admissions for men with diabetes compared to men without diabetes (Appendix Tables A39 and A40).

2014.

As with women, the medical sub-service category with highest use by men was professional services. In 2014, there were 33,387 professional services per 1,000 men (Appendix Table A39). The number of professional services increased slightly between 2012 and 2013 (by 80 services per 1,000 men), before a small decline in use the following year (by 442 services per 1,000 men). The use of acute inpatient admissions declined in every year studied, from 159 admissions per 1,000 men in 2012 to 152 in 2014. A year-on-year decline of 1.5% also occurred in use of outpatient-other services. Use of outpatient-other services declined about 1.5% each year, from 8,215 services per 1,000 men in 2012 to 7,935 in 2014. Conversely, use of outpatient visits increased by about 1.0% per year across the study period, from 11 visits to 626 visits. Similarly, use of filled days of generic prescriptions increased each year studied, by 96,544 filled days per 1,000 men between 2012 and 2014. This increase more than offset the decline of 56,008 in filled days of brand prescriptions during the same period.

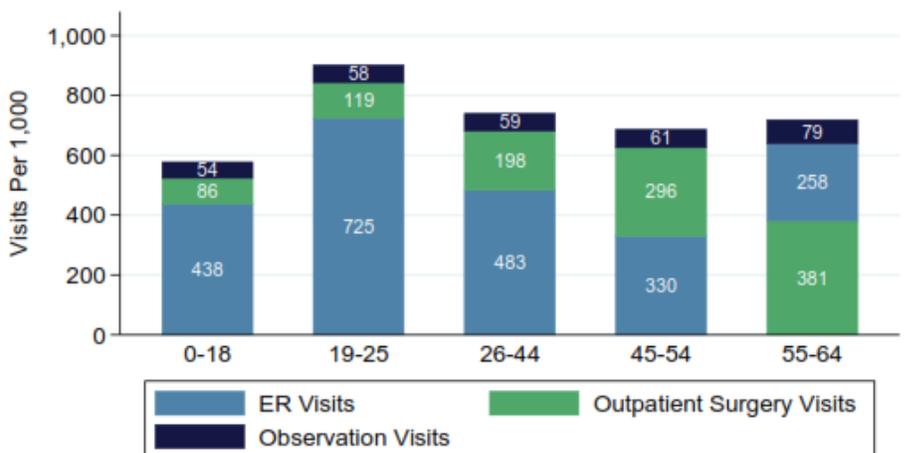
Use by Age Group

Children

Children (ages 0-18) with diabetes had a higher use rate of outpatient services compared to the other age groups. In 2014, there were 11,138 outpatient services per 1,000 children

(10,561 per 1,000 children), which accounted for 94.8% of outpatient service use. In contrast, children had the lowest rate of outpatient visit use (Figure 10). In 2014, there were 577 outpatient visits per 1,000 children, which was 56% lower than the use of outpatient visits by young adults (the age group with the highest use). Of these outpatient visits for children, 75.9% were ER visits (438 visits per 1,000 children; Appendix Table A43). Children also had the lowest use of professional services. In 2014, there were 25,646 professional services per 1,000 children a slight decline over the previous year (Appendix Table A41). Of these professional services, 24.4% were visits to the doctor (6,249 doctor visits per 1,000 children) and 31.0% were lab/path pro-

Figure 10
Utilization of Outpatient Visits per 1,000 Insureds with Diabetes by Age Group: 2014



Source: HCCL, 2016.
Notes: All data weighted to reflect the national, younger than 65 ESI population with diabetes. Data from 2013 and 2014 adjusted using actuarial completion.

dren used more filled days of brand antidiabetic agents per 1,000 people than did any other age group (Appendix Table A43 and Figure 11). And this use increased each year studied. In 2014, there were 255,481 filled days of brand antidiabetic agents per 1,000 children. In comparison, children used 1.5 times more of these prescriptions than did young adults, who had the second highest use (172,369 filled days of brand antidiabetic agents per 1,000 young adults; Appendix Table A45).

Young Adults

Young adults (19-25) with diabetes were the only age group to see an increase in service use for all the medical subservice categories in each study year. Young adults also had more acute hospital admissions per 1,000 people than the other age groups (Appendix Table A41). In 2014, there were 259 acute admissions per 1,000 young adults. Acute admissions rose from 247 admits per 1,000 in 2012 to 259 in 2014, a 5% increase. In comparison, the next highest use of acute admissions was for children, who had 195 admissions per 1,000 children in 2014. For young adults, the most admissions in 2014 were medical (172 admissions per 1,000), followed by MH/SU admissions (37 admissions), and LD admissions (28 admissions; Appendix Table A45).

Young adults also had a higher rate of outpatient visit use compared to the other age groups (Appendix Table A41 and Figure 10). In 2014, there were 902 outpatient visits per 1,000 young adults, an increase of 24 visits over 2012. Of these outpatient visits, 80.4% were ER visits (725 visits per 1,000 young adults in 2014; Appendix Table A45), which was the highest rate of ER visit use among the five age

groups. As with the other age groups, young adults' most used subservice category was professional services (30,289 professional services per 1,000 young adults; Appendix Table A41). Of these professional services, 17.5% were visits to the doctor (5,287 doctor visits per 1,000 young

services. In 2014, there were 6,643 outpatient-other services per 1,000 working age adults (Appendix Table A41).

However, working adults had the second highest (after young adults) use of outpatient visits: 740 visits per 1,000 intermediate adults (Figure 10).

Young adults with diabetes had 4 times more mental health and substance use admissions and nearly 3.5 times more ER visits than young adults without diabetes (Appendix Tables A45 and A46).

adults), while 41.9% were lab/path professional services (12,686 per 1,000 young adults; Appendix Table A45). At the same time, compared to the other age groups, young adults had lower use of filled days of prescriptions (592,734 filled days per 1,000 young adults; Appendix Table A41).

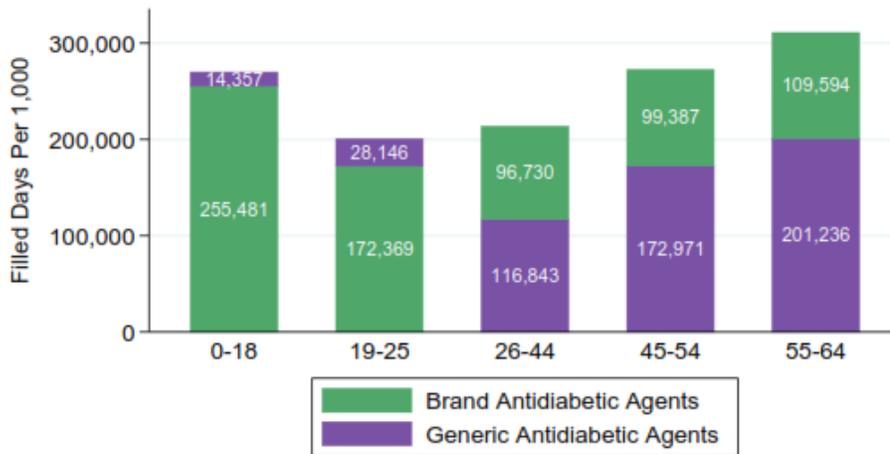
Intermediate Adults

For intermediate adults (ages 26-44), the rates of use of the medical subservice categories declined between 2012 and 2013. The following year, use of acute inpatient admissions, outpatient visits, and professional services increased slightly (Appendix Table A41). Compared to the other age groups, intermediate adults had a low rate of use of acute inpatient admissions. In 2014, there were 154 acute admissions per 1,000 intermediate adults. The majority of these admissions were medical admissions (82 admissions per 1,000 intermediate adults) followed by LD admissions (25 admissions per 1,000 intermediate adults; Appendix Table A47). Compared to the other age groups, intermediate adults had the lowest rate of use for outpatient services (7,383 services per 1,000 intermediate adults) (Appendix Table A41). This low use was due largely to comparatively low use of outpatient-other

Of those visits, 65.3% were ER visits (483 ER visits per 1,000 intermediate adults) and 26.8% were outpatient surgical visits (198 visits; Appendix Table A47). Between 2013 and 2014, the use of professional services by intermediate adults increased slightly, to 32,948 professional services per 1,000 adults (Appendix Table A41). The most used type of professional service was lab/path services (12,883 professional lab/path services per 1,000 intermediate adults) followed by visits to the doctor (6,023 visits per 1,000; Appendix Table A47).

Compared to the other age groups, intermediate adults had the lowest use of brand prescriptions. In 2014, there were 152,127 filled days of brand prescriptions per 1,000 intermediate adults (Appendix Table A41). As with the other age groups, the largest proportion of brand prescriptions was filled days of brand antidiabetic agents. However, intermediate adults had the lowest rate of use of filled days of brand antidiabetic agents (96,730 filled days per 1,000 intermediate adults) of the five age groups (Appendix Table A47 and Figure 11). Brand prescriptions made up 18.6% of total prescription use by intermediate adults (Appendix Table A41). The total number of filled days of prescriptions increased each year during

Figure 11
Utilization of Filled Days per 1,000 Insureds with Diabetes of Brand and Generic Antidiabetic Agents by Age Group: 2014



Source: HCCI, 2016.
Notes: All data weighted to reflect the national, younger than 65 ESI population with diabetes.
Data from 2013 and 2014 adjusted using actuarial completion.

the study period. This was the only adult age group from which a year-on-year increase occurred in total prescription use.

Middle-Age Adults

We observed general declines in the rates of use of the medical subservice categories by middle-age adults. The only increase in use of services for this age group occurred between 2013 and 2014 in the rate of use of outpatient visits per 1,000 (from 677 visits to 687 visits; Appendix Table A41). This increase was due to an increase in the rate of use of ER visits per 1,000 between 2013 and 2014 – from 316 visits to 330 visits (Appendix Table A49 and Figure 11). The rates of use of acute inpatient admissions, outpatient-other services, and professional services all declined in each year studied (Appendix Table A41). Interestingly, in 2014, middle-age adults had the lowest number of acute admissions: 141 per 1,000 middle-age adults. As with intermediate adults, the number of filled days of prescriptions per 1,000 middle-age adults increased each year of the

study period. This was due to an increase in the number of filled days of generic prescriptions between 2012 and 2014, which rose from 879,274 filled days of generic prescriptions to 974,063 filled days.

Pre-Medicare Adults

The rates of use of the medical subservice categories by pre-Medicare adults (ages 55-64) generally declined across the study period. Only use of outpatient visits saw small increases in the years studied (Appendix Table A41). Similar to young adults, total prescription use declined slightly between 2012 and 2013 before increasing the following year. Use of professional services by pre-Medicare adults declined over the study period. At the same time, use of professional services, in general, increased with age. Pre-Medicare adults used more professional services per 1,000 people than the other age groups. In 2014, there were 39,917 professional services per 1,000 pre-Medicare adults. The most used type of professional service was lab/path services: 13,632 professional lab/

path services per 1,000 pre-Medicare adults (Appendix Table A51). There were also 7,163 visits to the doctor per 1,000 adults. Similar to middle-age adults, there were small declines in the use of acute inpatient admissions and outpatient-other services over the study period (Appendix Table A41). The number of acute admissions declined from 181 admits per 1,000 pre-Medicare adults in 2012 to 171 in 2014.

The number of outpatient-other services declined from 9,890 per 1,000 pre-Medicare adults in 2012 to 9,383 in 2014 (Appendix Table A41). Conversely, pre-Medicare adults' use of outpatient visits increased every year studied. Between 2012 and 2014, outpatient visits per 1,000 pre-Medicare adults rose from 710 visits to 719 visits. Unlike the other age groups, outpatient surgical visits were the most common type of outpatient visit for pre-Medicare adults (Appendix Table A51 and Figure 11). In 2014, there were 381 outpatient surgical visits per 1,000 and 258 ER visits per 1,000. Pre-Medicare adults used more filled days of prescriptions per 1,000 people than did the other age groups. In 2014, there were 1,486,253 filled days of prescriptions per 1,000 pre-Medicare adults (Appendix Table A41). Of these filled days, 83.4% were generics (1,238,539 filled days) and 16.6% were brand (247,031) – the smallest proportion of brand filled days for any age group. For pre-Medicare adults in 2014, the most filled days were for generic cardiovascular agents (474,413 filled days per 1,000 pre-Medicare adults), followed by generic antidiabetic agents (201,236 filled days; Appendix Table A51 and Figure 10).

Table 3: Changes in Utilization by Service Category for Insureds with Diabetes (2012–2014)

	2012	2013	2014	Percent Change 2012 / 2013	Percent Change 2013 / 2014
Utilization per 1,000 insureds by Service Category					
Inpatient	182	174	171	-4.40%	-1.68%
Acute Inpatient	170	163	160	-3.79%	-1.87%
Outpatient	9,423	9,226	9,085	-2.09%	-1.53%
Visits	703	704	712	0.12%	1.15%
Other	8,719	8,522	8,373	-2.26%	-1.75%
Professional Procedures	37,534	37,380	36,927	-0.41%	-1.21%
Prescriptions - Filled Days	1,202,693	1,205,732	1,242,571	0.25%	3.06%
Brands	268,738	230,832	214,201	-14.11%	-7.20%
Generics	933,587	974,434	1,027,831	4.38%	5.48%

Source: HCCI, 2016.

Notes: All data weighted to reflect the national population ages 0-64 and covered by ESI with diabetes. Data for 2013 and 2014 adjusted using actuarial completion. All figures rounded.

About the Data and Methodology

Data

HCCI's dataset contains several billion de-identified commercial health insurance claims for the years 2010 through 2014. Three major health insurers contributed data to HCCI for the purposes of producing a national, multipayer, commercial health care claims database. These data include claims for individuals covered by group insurance (fully insured and administrative services only), individual insurance, and Medicare Advantage plans. The claims data include prices paid to providers by both insurers and insureds and details about the services used. Furthermore, HCCI's claims data are compliant with the Health Insurance Portability and Accountability Act (HIPAA).

For *2014 Diabetes Health Care Cost and Utilization Report*, HCCI performed analysis on a subset of data for approximately 40 million insureds per year (2012–2014). This analytic subset consisted of all claims for insureds ages 0 through 64 and covered by ESI. The data set used for this report represented about 26% of the privately insured people in the United States.

Methods

HCCI weighed the analytic subset using United States Census Bureau age-gender geographic-based estimates of the ESI population to make the analytic subset representative of the national ESI population. Claims in the analytic subset from 2013 and 2014 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, and utilization of services for 2012 through 2014. HCCI did not correct dollars for inflation; thus, all reported expenditures and prices were in nominal dollars.

HCCI analyzed four major categories of services, several subservice categories, and detailed service categories (see "Service Categories Analyzed in this Report"). Inpatient facility claims were from hospitals, skilled nursing facilities (SNFs), and hospices where 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 (procedures) included claims billed by physicians and non-physicians according to the industry's standard procedure coding practices. Prescription data are prescriptions filled at both retail and mail order pharmacies.

For a more detailed description of HCCI's methodology and dataset, see the Analytic Methodology on HCCI's Website.⁵ For a discussion of the cost and utilization trends for the national younger than 65 ESI population, see the *2014 Health Care Cost and Utilization Report*. Both documents are available on HCCI's Website, for details on these changes.

A diagnosis of diabetes was determined using the DDMT methodology for identifying health care activity

associated with diabetes. Individuals with a diagnosis of diabetes for at least one inpatient admission, one outpatient visit, or two office visits in the same calendar year were flagged in a year of data as having been diagnosed with diabetes (see the HCCI Methodology document for a list of codes included in this categorization).⁵ Once individuals were flagged as having received a diagnosis of diabetes, they retained this flag in all subsequent years of the dataset. This methodology excluded radiology and laboratory claims, as these can be used for screening purposes and may not reflect a diagnosis of diabetes.

To be flagged in the HCCI dataset as having a diagnosis of diabetes, individuals must have had at least one medical claim filed with their insurer in one of the years of the study period. The population of individuals without diabetes is composed of all members in the HCCI analytic dataset who were not flagged as having received a diabetes diagnosis. This population without diabetes included individuals who never had a medical claim filed with their insurer during the study period. Therefore, these two populations—individuals diagnosed with diabetes and individuals without diabetes—are similar but not methodologically identical. Per capita spending trends and rates of service utilization for these populations should be treated as estimates.

Limitations

This report, like all research, has several limitations that affect the generalizability and interpretation of the findings. For this reason, HCCI consid-

ers the work a starting point for analysis and research on individuals covered by ESI rather than as a conclusive analysis of the ESI population's effect on health care in the United States.

First, our findings were estimates for the United States ESI population ages 0 through 64 based on a sample of approximately 26% of these insured Americans. Second, the analysis and results were descriptive, and the findings were not used to determine causal relationships. The tables and figures presented are limited to descriptive statistics for individuals covered by ESI and younger than age 65. In this brief, we presented spending and utilization trends for individuals flagged as having diagnosed diabetes and those not flagged as having diabetes.

Third, because HCCI's claims holdings reflect only explicit health care activity, HCCI could not identify individuals with diabetes who (1) did not seek medical care between 2012 and 2014, (2) did not meet our criteria for study inclusion, (3) did not file with their health insurer a claim that indicated a diagnosis of diabetes, or (4) had undiagnosed diabetes. Moreover, claims data have a mixed record of utility for population health studies. Work is ongoing to improve the methods used to determine health status from administrative claims.

Suggested Citation for This Report:

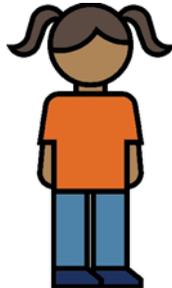
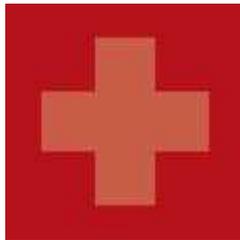
"2014 Diabetes Health Care Cost and Utilization Report." Health Care Cost Institute, Inc., June 2016. Web.

Endnotes

1. Health Care Cost Institute. Per Capita Health Care Spending on Diabetes: 2009-2013. Washington, DC: Health Care Cost Institute. 2015.
2. The population and spending trends detailed in this report differ slightly due to differences in the two data sets and in the methodology used to develop the diabetes diagnosis flag, see "About the Data and Methodology" for more information.
3. American Diabetes Association. "Economic Costs of Diabetes in the U.S. in 2012." *Diabetes Care* 2013 Apr; 36(4): 1033-1046.
4. Diabetes.co.uk. "Anti-diabetic drugs." <http://www.diabetes.co.uk/diabetes-medication/antidiabetic-drugs.html>.
5. Health Care Cost Institute. 2014 Health Care Cost and Utilization Report Analytic Methodology V4.0. Washington, DC: Health Care Cost Institute. 2015.
6. McEvoy, Gerald K., Ed. AHFS Drug Information 2010. Bethesda, MD: American Society of Health-System Pharmacists, 2010. Print.
7. There was a small amount of spending per capita each year on "unknown" prescriptions that could not be identified as either brand or generic prescriptions. In 2014, the spending on unknown prescriptions was \$12 per capita.
8. In the tables there is a class of brand and generic prescriptions labeled "other therapeutic classes". This is a combination of 22 individual classes of prescriptions that have been combined due to low spending and utilization.
9. Health Care Cost Institute. 2014 Health Care Cost and Utilization Report. Washington, DC: Health Care Cost Institute. 2015.
10. Duncan, I, Ed. Dictionary of Disease Management Terminology. Washington, DC: Disease Management Association of America, 2004.
11. Burton, B, Jesilow, P. "How Healthcare Studies Use Claims Data." *The Open Health Services and Policy Journal* 4.1 (2011): 26-29.

The Impact of Diabetes:

Costs and Use of Health Care by Children in 2014



In this report, we estimated that 0.3% of children (ages 0-18) covered by employer-sponsored insurance (ESI) have been diagnosed with diabetes. While this might be a relatively small percentage of children, for the kids diagnosed with diabetes and their families, this condition can have a big impact. Below we compare the health care costs and service use for the average child with diabetes and the average child without diabetes. In 2014, compared to the average child without diabetes, the average child with diabetes used more than twice as many health services, and their parents paid more than 4 times the dollars out of pocket.

In 2014, the average child (aged 0-18) with diabetes, compared to the average child without diabetes...

Incurred health care costs that were **6.7** times higher

Had **2** times as many doctor visits

Had nearly **5** times more acute inpatient admissions

Used **4.6** times as many professional laboratory/pathology services

Had **2.5** times as many ER visits

Used **10.5** times as many filled days of prescriptions

Their parents spent:

4.7 times more out of pocket

2.4 times more out of pocket on doctor visits

6.8 times more out of pocket on acute inpatient admissions



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