Under Pressure: Adults with Hypertension are Spending Increasingly More on Health Care

Hypertension is a common chronic condition among adults in the United States. The CDC estimates that more than 75 million adults – 29% of the U.S. adult population – currently have hypertension, a particularly salient estimate given hypertension's role in increasing the risk of two of the five leading causes of death (heart attack and stroke). Over the 20-year period between 2010 and 2030, the annual estimated direct cost of hypertension is projected to rise from $69.9 billion to $200.3 billion. Moreover, the American College of Cardiology's recent change to the guidelines for diagnosing hypertension emphasizes the importance of treating and understanding this highly prevalent and costly disease. To this end, we study trends in health care spending and utilization for people with hypertension.

What We Did. HCCI explored how hypertension affects health care costs by comparing health care spending and utilization from 2012 to 2016 for adults diagnosed with hypertension to those not diagnosed with hypertension. We limited our analysis to consider adults between the ages of 18 and 65 with employer sponsored health insurance (ESI).

Questions We Asked.

1. ***How does health care spending compare between adults with and without hypertension?***
2. ***How have spending and utilization changed over time for people with hypertension?***
3. ***How do changes in prescription drug spending compare to changes in use?***

What We Found. Adults with hypertension spent 3.2 times more in total and 2.2 times more out-of-pocket than adults without hypertension in 2016. Spending for adults with hypertension is growing faster than for those without hypertension. From 2012 to 2016, total spending by adults with hypertension increased by 18.3% compared to 14.3% for adults without hypertension. Adults with hypertension used fewer inpatient and professional services in 2016 than in 2012, yet used slightly more outpatient services and prescription drugs.

Prescription drug spending was the fastest-growing service category of spending, and the only category with continuous growth in utilization over the 5-year period. The increases in prescription drug spending and use by adults with hypertension were two largely separate trends. The increase in prescription drug spending was primarily due to increased *brand* prescription drug spending. The increase in prescription drug utilization was entirely due to increased *generic* prescription drug use. Notably, from 2012 to 2016, adults with hypertension decreased their spending on cardiovascular drugs by $147 despite their increased use of those drugs.

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1 *How does health care spending compare between adults with and without hypertension?*

Adults with hypertension spend more on care than adults without hypertension

Figure 1: Share of Health Care Spending, 2016

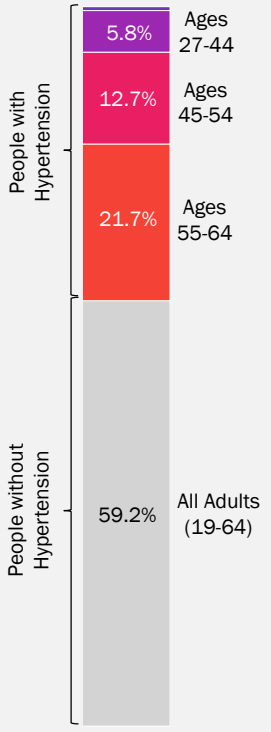
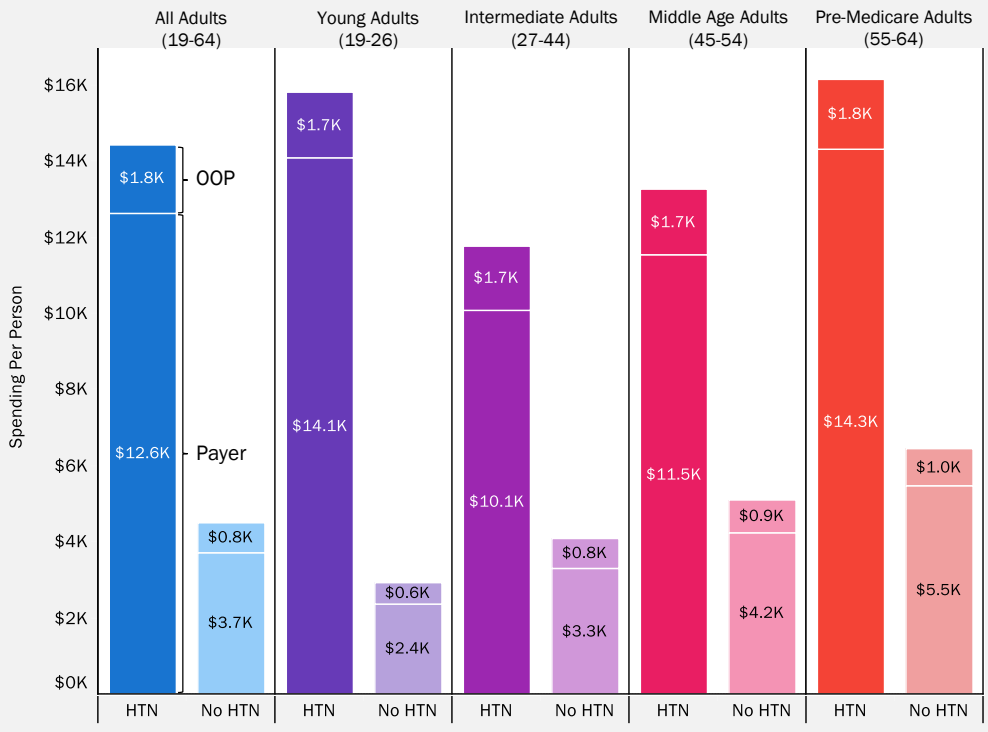


Figure 2: Costly Hypertension: Comparing Spending Between Adults With and Without Hypertension, 2016



- In 2016, adults with hypertension accounted for 40.8% of all health care spending, despite representing 18% of our sample.
- Pre-Medicare adults (55-64) accounted for more than half of all spending by adults with hypertension, and more than 21% of all health care spending.
- In 2016, the average adult with hypertension spent 3.2 times more in total than the average adult without hypertension (Table 2).
- In 2016, the average adult with hypertension paid 2.2 times more out-of-pocket than the average adult without hypertension (Table 1).

A note on terminology:
Throughout this issue brief, we use the term adults with hypertension to refer to adults diagnosed with hypertension. For a more complete discussion, see the methods and limitations sections. We do not attribute all spending by people with hypertension to the treatment of hypertension. Rather, we compare patterns of total health care spending and use by adults diagnosed with hypertension to those who are not.

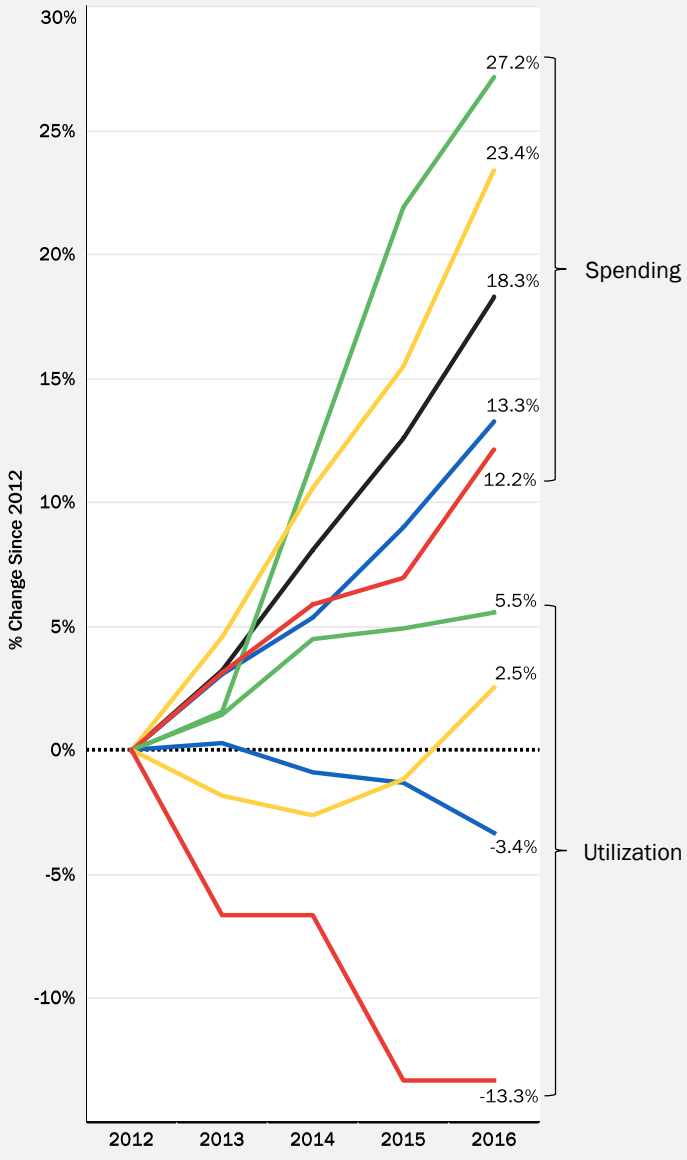
2 *How have spending and utilization changed over time for people with hypertension?*

Growth in health care spending has outpaced changes in utilization

Both adults with and without hypertension experienced similar trends in spending and use across service categories. We focus on adults with hypertension. For more detail on changes in service category spending and use for adults with and without hypertension, see Tables 3 and 4.

- Total spending per person by adults with hypertension grew 18.3% from 2012 to 2016.
- Prescription drugs was the fastest growing component of spending, increasing 27.2%.
- Inpatient utilization for adults with hypertension had the largest percent decrease among all service categories (13.3%).
- Adults with hypertension used 52 more prescription filled days (a 5.5% increase) in 2016 than in 2012.
- The prescription drugs service category was the only one to show a continuous rise in utilization by adults with hypertension.

Figure 3: Cumulative Change in Hypertension Spending and Utilization



3 *How do changes in prescription drug spending compare to changes in use?*

The increases in prescription drug spending and prescription drug utilization are two largely separate trends

Figure 4: Change in Prescription Drug Utilization by Adults with Hypertension

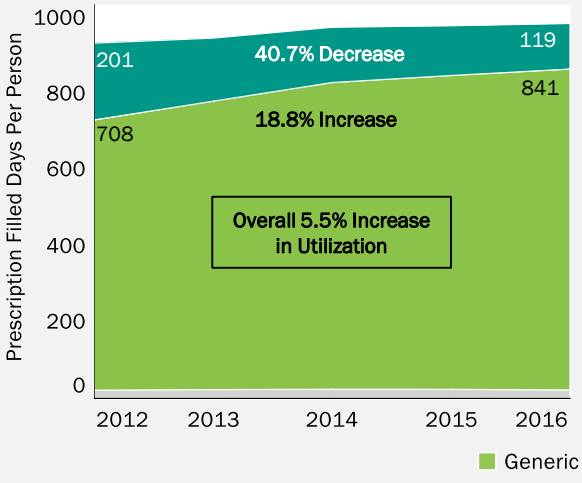
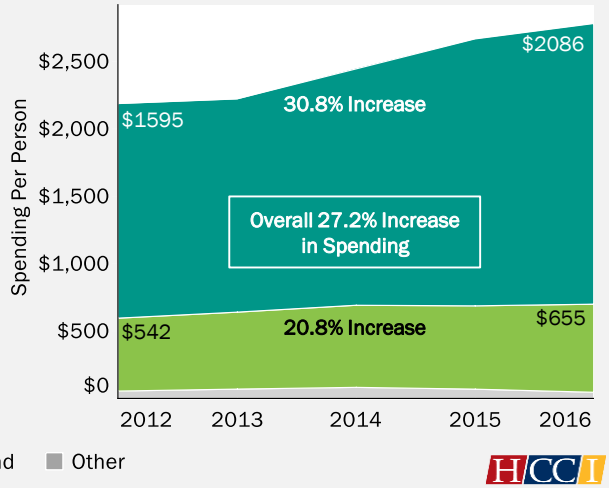


Figure 5: Change in Prescription Drug Spending by Adults with Hypertension



Generic Brand Other

Increased drug use entirely due to increased generic drug use:

- Adults with hypertension used 52 filled days per person (5.5%) more in 2016 than 2012.
- Increased cardiovascular drug use accounted for 34.2% of the net increase in overall prescription drug use by adults with hypertension.
- Cardiovascular drugs comprised the largest individual component of the increase in generic prescription drug use by adults with hypertension (52.0%).
- Adults with hypertension actually decreased their spending on cardiovascular drugs by $147, despite increased use.

Increased prescription drug spending driven by increased brand drug spending:

- Increased brand prescription drug spending accounted for 82.5% of the increase in prescription drug spending by adults with hypertension from 2012 to 2016.
- Brand prescription spending by adults with hypertension rose 30.8% between 2012 and 2016, despite a 40.7% decrease in brand prescription use.
- Our findings imply that the average cost of brand prescription drugs used by adults with hypertension increased from 2012 to 2016. This could be due to either the use of different (more expensive) brand drugs and/or price increases.

Data and Methods

This issue brief used an analytic dataset that consisted of weighted and aggregated claims data for adults between the ages of 18 and 65 who were covered by employer-sponsored insurance (ESI) for calendar years 2012 to 2016. The analytic dataset was derived from health care claims for just under 40 million covered lives per year from 2012 to 2016. This analytic dataset came from a national, multiplayer, commercial health care claims database created by HCCI containing information provided by four major insurers, and was used for the 2016 Health Care Cost and Utilization Report. All of the data used for our study were de-identified and HIPAA compliant.

HCCI identified individuals with four types of hypertension: essential hypertension on primary diagnosis, essential hypertension on other diagnosis, secondary hypertension on primary diagnosis, and secondary hypertension on other diagnosis. If there was the presence of one of a relevant hypertension diagnosis in any of an insured's inpatient, outpatient, or physician claims then the individual was flagged as having hypertension in that year. For each year from 2012 to 2016, HCCI reflagged adults as having one of the four identified types of hypertension or as not having hypertension. It is important to note that whether an individual is flagged as diagnosed with hypertension may change from year to year.

To be flagged as having a diagnosis of hypertension in the HCCI dataset, individuals must have at least one medical claim filed with their insurer in one of the study years. The population of individuals without hypertension is composed of all members in the HCCI analytic dataset who were not flagged as having received a hypertension diagnosis. This population without hypertension included individuals who never had a medical claim filed with their insurer during the study period. Per person spending trends for these populations should be treated as estimates.

We decomposed spending into four service categories of health services: inpatient facility, outpatient facility, professional services (the medical service categories), and prescriptions. For a full list of the detailed subservice categories and a more complete discussion of the methodology, see the 2016 Health Care Cost and Utilization Report. Prescription drug categories reported are 4-digit AHFS Classifications.

Limitations

This study has several limitations that affect the interpretation of the findings presented. This brief presents per person spending and use trends for adults flagged as diagnosed with hypertension and those not flagged as being diagnosed with hypertension. For more information about the calculation of per person spending trends, see the HCCI methodology document. Because this study was based on claims data, HCCI could not identify individuals with hypertension who did not file medical claims with their health insurer or had undiagnosed hypertension. Therefore, ESI adults identified in this analytic dataset as having hypertension are by construction more likely to have any health care spending than the average ESI adult individual with hypertension in the U.S. To that end, HCCI invites readers to review the methodology for this report and comment on how to better identify the chronically ill from claims data.

The findings in this study are descriptive and not causal. In particular, we did not account for the direction of the relationship between hypertension diagnosis and spending. HCCI considers its work a starting point for analysis and research on individuals between the ages of 18 and 65 who are covered by ESI and diagnosed with hypertension, rather than a complete analysis of this population's effect on health care in the U.S. This study's findings are estimates for the U.S. ESI population based on a sample of approximately 26% of all individuals between 18-65 who have ESI. The estimates for numbers of insured individuals were weighted to account for any demographic differences between the HCCI sample and population estimates based on the U.S. Census, making the dataset representative of the national ESI population younger than 65. For a more complete description of these data, please consult the HCCI methodology document.

Authors

Bill Johnson
Dan Fulop
Sally Rodriguez

Contact

Health Care Cost Institute, Inc.
1100 G Street NW, Suite 600
Washington, DC 20005
202-803-5200

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Table 1: Total and Out-of-Pocket Spending Per Person by Adults with, without Hypertension, 2012 – 2016

	2012	2013	2014	2015	2016
Adults with Hypertension:					
Total Spending per Person	$12,174	$12,568	$13,159	$13,707	$14,399
Year-Over-Year Percent Change		3%	5%	4%	5%
OOP Spending per Person	$1,620	$1,679	$1,690	$1,718	$1,771
Year-Over-Year Percent Change		4%	1%	2%	3%
Adults Without Hypertension					
Total Spending per Person	$3,934	$4,031	$4,146	$4,316	$4,495
Year-Over-Year Percent Change		3%	3%	4%	4%
OOP Spending per Person	$706	$721	$741	$765	$791
Year-Over-Year Percent Change		2%	3%	3%	3%
Age Groups, Percent with Hypertension					
All Adults (19-64)	19.0%	18.4%	17.7%	17.6%	17.7%
Young Adults (19-26)	1.5%	1.4%	1.3%	1.3%	1.5%
Intermediate Adults (27-44)	8.9%	8.7%	8.2%	8.1%	8.2%
Middle Age Adults (45-54)	24.7%	24.4%	23.7%	23.5%	23.7%
Pre-Medicare Adults (55-64)	40.9%	40.2%	38.8%	38.2%	38.2%

Source: HCCI, 2018

Notes: All data weighted to reflect the national, younger than 65 ESI population. Data from 2014 and 2015 adjusted using actuarial completion.

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Table 2: Total Spending Per Person by Adults with, without Hypertension by Age, Gender Groups – 2016

	All (19-64)	Young Adults (19-26)	Intermediate Adults (27-44)	Middle Age Adults (45-54)	Pre-Medicare Adults (55-64)
Adults with Hypertension:					
All	$14,399	$15,812	$11,748	$13,248	$16,156
Female	$14,916	$17,542	$13,935	$14,118	$15,751
Male	$13,932	$14,501	$9,946	$12,464	$16,537
Adults without Hypertension:					
All	$4,495	$2,927	$4,070	$5,093	$6,440
Female	$5,501	$3,575	$5,418	$5,968	$6,944
Male	$3,372	$2,287	$2,598	$4,055	$5,814
Ratio of Total Per Person Spending by Adults with / without Hypertension:					
All	3.2	5.4	2.9	2.6	2.5
Female	2.7	4.9	2.6	2.4	2.3
Male	4.1	6.3	3.8	3.1	2.8

Source: HCCI, 2018
Notes: All data weighted to reflect the national, younger than 65 ESI population. Data from 2014 and 2015 adjusted using actuarial completion.

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Table 3: Total Spending Per Person by High Level Service Category, 2012 – 2016

	2012	2013	2014	2015	2016	Absolute Change	Percent Change
Adults with Hypertension:							
Total	$12,174	$12,568	$13,159	$13,707	$14,399	$2,225	18.3%
Inpatient	$3,164	$3,263	$3,350	$3,384	$3,548	$384	12.2%
Outpatient	$3,358	$3,512	$3,714	$3,879	$4,145	$786	23.4%
Professional	$3,461	$3,567	$3,646	$3,772	$3,920	$459	13.3%
Prescriptions	$2,191	$2,226	$2,449	$2,672	$2,786	$595	27.2%
Adults without Hypertension:							
Total	$3,934	$4,031	$4,146	$4,316	$4,495	$561	14.3%
Inpatient	$632	$643	$647	$649	$672	$40	6.3%
Outpatient	$1,105	$1,137	$1,171	$1,204	$1,272	$166	15.1%
Professional	$1,491	$1,530	$1,552	$1,595	$1,640	$149	10.0%
Prescriptions	$706	$721	$776	$867	$912	$206	29.1%

Table 4: Utilization Per Person by High Level Service Category, 2012 – 2016

	2012	2013	2014	2015	2016	Absolute Change	Percent Change
Adults with Hypertension:							
Inpatient	0.15	0.14	0.14	0.13	0.13	-0.02	-13.3%
Outpatient	7.57	7.43	7.37	7.48	7.76	0.19	2.5%
Professional Procedures	33.1	33.2	32.8	32.7	32.0	-1.11	-3.4%
Prescriptions - Filled Days	930.9	944.1	972.5	976.5	982.4	51.53	5.5%
Adults without Hypertension:							
Inpatient	0.05	0.04	0.04	0.04	0.04	-0.01	-20.0%
Outpatient	2.47	2.40	2.37	2.38	2.46	-0.01	-0.4%
Professional Procedures	15.2	15.3	15.1	15.0	14.7	-0.53	-3.5%
Prescriptions - Filled Days	228.7	228.3	228.1	235.2	231.3	2.62	1.1%

Source: HCCI, 2018
Notes: All data weighted to reflect the national, younger than 65 ESI population. Data from 2014 and 2015 adjusted using actuarial completion

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Table 5a: Trends in Per Person Prescription Drug Spending for Adults with Hypertension, 2012 - 2016

Category	2012	2013	2014	2015	2016	Absolute Change	Percent Change
All Categories							
Total	$2,191	$2,226	$2,449	$2,672	$2,786	$595	27%
Brand	$1,595	$1,585	$1,756	$1,983	$2,086	$491	31%
Generic	$542	$572	$610	$619	$655	$113	21%
Other	$55	$69	$82	$69	$46	-$9	-16%
Anti-Infective Agents							
Total	$139	$140	$232	$309	$258	$120	86%
Brand	$105	$104	$197	$266	$215	$111	106%
Generic	$34	$36	$35	$43	$43	$9	27%
Cardiovascular Drugs							
Total	$535	$483	$447	$412	$388	-$147	-27%
Brand	$355	$296	$257	$241	$210	-$145	-41%
Generic	$180	$187	$190	$171	$178	-$2	-1%
Central Nervous System Agents							
Total	$346	$342	$337	$315	$316	-$30	-9%
Brand	$209	$205	$179	$159	$158	-$50	-24%
Generic	$137	$137	$159	$156	$157	$20	15%
Gastrointestinal Drugs							
Total	$109	$111	$99	$90	$90	-$19	-17%
Brand	$81	$84	$72	$55	$54	-$27	-33%
Generic	$29	$27	$26	$36	$36	$8	27%
Hormones and Synthetic Substitutes							
Total	$387	$426	$513	$620	$694	$307	79%
Brand	$340	$369	$456	$563	$626	$286	84%
Generic	$47	$56	$56	$57	$68	$21	46%

Source: HCCI, 2018

Notes: All data weighted to reflect the national, younger than 65 ESI population. Data from 2014 and 2015 adjusted using actuarial completion.

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Table 5b: Trends in Prescription Drug Utilization, in filled days, for Adults with Hypertension, 2012 - 2016

Category	2012	2013	2014	2015	2016	Absolute Change	Percent Change
All Categories							
Total	931	944	972	976	982	52	5.5%
Brand	201	165	145	130	119	-82	-40.7%
Generic	708	756	804	822	841	133	18.8%
Other	22	23	24	24	22		
Anti-Infective Agents							
Total	20	20	20	20	20	0	0.8%
Brand	3	3	3	2	2	0	-16.2%
Generic	17	17	17	18	17	1	3.4%
Cardiovascular Drugs							
Total	390	393	406	407	408	18	4.5%
Brand	78	58	45	36	27	-51	-65.0%
Generic	312	336	361	371	381	69	22.0%
Central Nervous System Agents							
Total	166	168	171	172	175	9	5.4%
Brand	22	19	14	11	10	-13	-56.8%
Generic	143	148	158	162	165	22	15.2%
Gastrointestinal Drugs							
Total	39	40	41	41	41	2	5.1%
Brand	10	9	7	5	4	-6	-60.3%
Generic	29	31	34	36	37	8	26.9%
Hormones and Synthetic Substitutes							
Total	129	133	140	143	147	18	14.1%
Brand	49	45	46	47	48	-2	-3.4%
Generic	80	87	94	97	100	20	24.9%

Source: HCCI, 2018
Notes: All data weighted to reflect the national, younger than 65 ESI population. Data from 2014 and 2015 adjusted using actuarial completion.

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Table 6a: Trends in Per Person Prescription Drug Spending for Adults without Hypertension, 2012 - 2016

Category	2012	2013	2014	2015	2016	Absolute Change	Percent Change
All Categories							
Total	$706	$721	$776	$867	$912	$206	29.1%
Brand	$512	$515	$559	$646	$690	$178	34.8%
Generic	$183	$190	$197	$206	$214	$30	16.6%
Other	$11	$15	$20	$16	$8	-$3	-25.2%
Anti-Infective Agents							
Total	$80	$81	$105	$129	$123	$43	53.6%
Brand	$58	$58	$84	$107	$101	$43	74.6%
Generic	$22	$23	$21	$22	$22	$0	-1.3%
Cardiovascular Drugs							
Total	$55	$47	$44	$44	$41	-$15	-26.4%
Brand	$39	$31	$27	$28	$24	-$14	-37.0%
Generic	$16	$16	$16	$15	$16	$0	-1.2%
Central Nervous System Agents							
Total	$171	$165	$157	$155	$157	-$14	-8.0%
Brand	$104	$98	$88	$86	$87	-$16	-15.8%
Generic	$67	$67	$69	$69	$70	$3	4.0%
Gastrointestinal Drugs							
Total	$40	$40	$36	$35	$36	-$3	-8.0%
Brand	$31	$33	$28	$26	$26	-$5	-15.9%
Generic	$8	$8	$8	$10	$10	$2	21.8%
Hormones and Synthetic Substitutes							
Total	$95	$100	$107	$123	$133	$38	39.5%
Brand	$68	$72	$78	$94	$101	$33	48.3%
Generic	$27	$28	$29	$29	$31	$5	17%

Source: HCCI, 2018

Notes: All data weighted to reflect the national, younger than 65 ESI population. Data from 2014 and 2015 adjusted using actuarial completion.

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Table 6b: Trends in Prescription Drug Utilization, in filled days, for Adults without Hypertension, 2012 - 2016

Category	2012	2013	2014	2015	2016	Absolute Change	Percent Change
All Categories							
Total	229	228	228	235	231	3	1.1%
Brand	56	47	42	39	36	-20	-35.1%
Generic	169	178	183	192	192	22	13.2%
Other	3	3	3	4	3	0	1.1%
Anti-Infective Agents							
Total	12	12	12	12	12	-1	-6.1%
Brand	2	2	1	1	1	0	-17.6%
Generic	11	11	10	11	10	0	-4.3%
Cardiovascular Drugs							
Total	34	32	32	35	33	0	-0.5%
Brand	8	5	4	4	3	-5	-62.9%
Generic	26	27	28	31	31	5	17.8%
Central Nervous System Agents							
Total	72	72	72	74	74	2	2.5%
Brand	11	9	7	6	6	-5	-46.1%
Generic	62	63	65	68	68	7	10.9%
Gastrointestinal Drugs							
Total	11	11	11	11	11	0	-0.9%
Brand	3	3	2	2	2	-2	-49.8%
Generic	8	8	9	9	9	1	19.1%
Hormones and Synthetic Substitutes							
Total	52	53	54	56	57	5	8.9%
Brand	18	16	15	15	15	-4	-20.1%
Generic	34	37	39	41	42	8	24.4%

Source: HCCI, 2018
Notes: All data weighted to reflect the national, younger than 65 ESI population. Data from 2014 and 2015 adjusted using actuarial completion.