Decomposing Trends in U.S. Health Care Spending Among Nonelderly Adults, 2007-2016

**Fredric Blavin[1] , Michael Karpman[1],
and Diane Arnos[1]**

Abstract

Using the 2007 to 2016 Medical Expenditure Panel Survey–Household Component, this study analyzes trends in per capita health expenditures among nonelderly adults from the Great Recession to the period following full implementation of the Affordable Care Act. We find that the growth in total per capita spending—and specifically for prescription drug and emergency room spending—from 2007-2009 to 2014-2016 was largely driven by increases in expenditures per unit, that is, increases in per unit prices, quality, and/or intensity of treatment. We also find that changes in the health insurance distribution were the largest driver behind the increase in total per capita expenditures over this period, while changes in prevalence of chronic conditions explained a smaller portion of the increase. Identifying policies for containing health care spending growth requires a detailed understanding of the sources of that growth, particularly during periods of economic fluctuations, policy changes, and technological developments.

Keywords

health care spending, Affordable Care Act, health policy, decomposition

Corresponding Author:
Fredric Blavin, The Urban Institute, Health Policy Center, 500 L'Enfant Plaza SW, Washington, DC 20024, USA.
Email: fblavin@urban.org

Introduction

The pace of health care spending growth plays a prominent role in discussions around the Affordable Care Act (ACA) and cost containment policies. The overall level of health care spending in the United States is highest among all countries—$3.5 trillion in 2017, constituting 17.9% of the economy (Centers for Medicare & Medicaid Services, 2018). High health care spending already forces significant budget trade-offs for federal and state governments, employers, and households, and—after a recent period of relatively low growth—some expect spending to pick up again due to rising health care prices, shifting demographics, and new technologies (Keehan et al., 2017). While additional per capita spending on medical care can improve quality of care for those receiving additional services, it does not always translate into additional value (Garber & Skinner, 2008; Hadley, Waidmann, Zuckerman, & Berenson, 2011). Identifying potential policies for containing health care spending growth requires a detailed understanding of the sources of that growth, particularly during periods of economic fluctuations, policy changes, and technological developments.

This study analyzes trends in per capita health care expenditures among nonelderly adults from the Great Recession (2007-2009) to the period following full implementation of the ACA (2014-2016). We focus on nonelderly adults since this is the population primarily targeted by the ACA coverage expansions. During the Great Recession, the unemployment rate rose sharply, from about 5% in December 2007 to 9.5% in June 2009. The unemployment rate peaked at 10% in October 2009 and slowly declined as the economy and labor market began to recover, but it remained at or above 7% for most of 2013 and did not return to prerecession levels until September 2015 (U.S. Bureau of Labor Statistics, 2019). The ACA was signed into law in March 2010 during the recession recovery, with some components being implemented in the 2010-2013 period, and the Medicaid expansion and subsidization of private coverage in new Marketplaces starting in 2014.

Based on its design, it was clear that the ACA would increase health care spending as it led to more people having insurance coverage and affordable access to health services. However, it is possible that the cost-containment initiatives introduced under the ACA partially contributed to lower health care spending relative to prior expectations. Components of the law that could place downward pressure on health care spending include Medicare payment reductions, increased insurance market competition, increased emphasis on preventive services and wellness programs, and changes in public and private payment strategies (Holahan, Blumberg, Clemans-Cope, McMorrow, & Wengle, 2017).

Given recent large changes in the number of people insured, understanding the underlying source of health care cost growth requires a particular focus on per capita health care spending. Research has shown that growth in per capita health care expenditures is largely attributable to the rise in the prevalence of chronic health conditions and/or the general increase in health care prices, which could be due to various factors such as improvements in quality, increases in intensity of treatment, dispersion of new

technologies, or changes in insurer or provider market power. These studies are discussed in more detail in the appendix (see Supplemental Material available online).

Using the 2007 to 2016 Medical Expenditure Panel Survey–Household Component (MEPS-HC), we expand on a prior study (Blavin, Blumberg, Waidmann, & Phadera, 2012) to examine how the composition of per capita health care spending changed over this period and decompose the changes by service type into changes in the share of individuals using services, the average number of services used, and expenditures per unit of service. We conclude by assessing the extent to which changes in per capita spending can be explained by changes in the socioeconomic characteristics, health insurance coverage, prevalence of chronic conditions among the nonelderly adult population, and other unobserved factors.

Overall, total inflation-adjusted per capita health expenditures among nonelderly adults increased by 11% from 2007-2009 to 2014-2016. We find that the growth in total per capita spending—and specifically for prescription drug and emergency room spending—from 2007-2009 to 2014-2016 was primarily driven by increases in expenditures per unit, that is, increases in per unit prices, quality, and/or intensity of treatment for medical events such as physician visits, hospital visits, and prescription drugs. The average number of total health care service units per user also increased, as prescription drug fills and hospital outpatient/physician visits and hospital inpatient stays significantly increased. We also find that changes in the health insurance distribution were was the largest driver behind the increase in per capita expenditures from the Great Recession to the full ACA implementation period, while changes in prevalence of chronic conditions explained some of the increase.

New Contribution

This analysis adds to this body of work by isolating the drivers of health care spending factors and by using a multivariate regression approach to decompose variation in spending patterns over a unique period marked by the Great Recession, economic recovery and early ACA implementation, and the main ACA coverage expansions.

Data

The MEPS-HC is a nationally representative survey of individual household members drawn from the pool of the prior year's National Health Interview Survey respondents. Given the large sampling variation in the MEPS-HC, we primarily rely on three sets of pooled estimates representing the Great Recession (2007-2009), the slow recovery period following the recession and during implementation of some of the ACA's insurance market rules and the dependent coverage expansion (2010-2013), and the period following the full implementation of the ACA's main coverage components, that is, the Medicaid expansion, the creation of subsidized coverage in the marketplaces, and the full set of regulatory reforms in the small group and nongroup markets (2014-2016). The decomposition analyses focus on the changes in per capita spending from the Great Recession to the full ACA implementation period.

The MEPS-HC full-year consolidated data files provide detailed information on spending by public and private payers and out-of-pocket spending on various health care services used during the year. Health care expenditures reported by MEPS-HC respondents are supplemented with data from the MEPS Medical Provider Component (MPC). The MPC collects this information through a follow-back survey of a sample of respondents' medical providers and pharmacies for office-based visits (to physicians or medical providers supervised by physicians), hospital visits, and prescription medicines, but not for other services such as nonphysician provider visits, dental care, and medical equipment (Agency for Healthcare Research and Quality, 2018). MPC data are used to edit and impute expenditures to improve the quality of spending data in the MEPS-HC. Though the MEPS collects data on both charges and payments for health care services, we only use spending measures that reflect direct payments to providers for medical events.

The survey also collects each individual's monthly health insurance status. Based on this information, we create mutually exclusive health insurance categories with the following hierarchy: any group, any private nongroup (including nongroup plans sold through the Marketplaces), any public, and uninsured for the full year. As a robustness check, we also create nonmutually exclusive groupings and different coverage hierarchies.

We use the MEPS-HC Medical Event files to complement the service category information in the full-year consolidated files. The event files, supplemented by data from health care providers, contain detailed utilization and cost information for each medical event individuals report during the year. Using this information, we classify utilization and spending into physician and outpatient hospital (including office-based visits with nurse practitioners and physician assistants), inpatient hospital, emergency room, prescription drugs, and other services (namely, dental, home health, and medical equipment expenditures).

We obtain detailed information on reported health conditions from the MEPS-HC Medical Conditions files. Most of these conditions are identified through medical events, but conditions may also be identified as reasons for one or more episodes of disability days or as conditions that bothered the person during the reference period. Reported conditions are assigned diagnosis codes from the International Classification of Diseases, Ninth Revision, Clinical Modification, and grouped into clinically meaningful categories using Clinical Classification Software (CCS). Conditions are considered chronic if they have lasted or are expected to last for a year or more and result in a functional limitation or the need for ongoing treatment (Karpman, Long, & Bart, 2018). We then measure the number of chronic conditions in separate single-level CCS categories for each respondent. 2016 data are not included in the two-part model analysis because the 2016 Medical Conditions file transitioned to International Classification of Diseases, Tenth Revision, Clinical Modification codes and the process of mapping these to CCS codes has not yet been completed; we were thus unable to obtain full information on chronic conditions for this year.

To address the problem of national health expenditures being underestimated in the MEPS, we inflate expenditures of service and payer categories using the respective

adjustment factors (Bernard, Cowan, Selden, Lassman, & Catlin, 2018). The adjustments were made to all sources of payment except out-of-pocket spending, as it is one of the strongest features of the MEPS and no administrative data source exists to which out-of-pocket spending might be benchmarked. Even after these adjustments, the MEPS expenditure data are not equivalent to the National Health Expenditure Accounts because the MEPS does not collect data on long-term care spending, the institutionalized population, over-the-counter drugs, public health spending, and administrative costs for insurance.

All spending estimates have been put in real terms to be adjusted for general price inflation. We use the consumer price index for all urban consumers (CPI-U) to express all expenditures in 2018 prices. A possible alternative for deflating per capita spending is the medical care component of CPI (CPI-M). However, compared with the CPI-U, the CPI-M is, by design, more sensitive to changes in the market basket of medical services and changes in medical prices. Since one goal of this analysis is to understand the role of changes in these two factors, removing them from the trends defeats the purpose. We also adjust standard errors to account for the cluster design of the MEPS.

Methods

To better understand the nature of expenditure growth from 2007-2009 to 2014-2016, we estimate changes in the three components of per capita expenditures—the fraction of nonelderly adults aged 18 to 64 years using specific types of service, the average number of utilization events per user of each service, and the average expenditure per event—between the two periods. Expenditures per event, which we refer to as expenditures per unit of services used, include payments to all providers associated with the medical event. For hospital outpatient, inpatient, and emergency room visits, this includes payments for physician services and all other services and treatments included in hospital facility fees as well as payments to doctors who bill separately for services provided during the visit.

We also estimate two-part models—where the first part predicts the probability of any use of each service and the second part predicts spending among service users—to decompose the drivers behind the changes in per capita expenditures between 2007-2009 and 2014-2015. To isolate the role of underlying changes in population composition, we first controlled for socioeconomic characteristics (age, race and ethnicity, sex, family type, family income, and region) at their 2007-2009 levels and calculated their impact on the changes in per capita spending between the two periods. Next, we added controls for health insurance type to isolate the effect of changes in health insurance coverage during the analysis period. Last, to isolate the impacts of chronic condition prevalence, we added controls for the number of major health conditions (zero, one, two, three or more). To estimate how changes in each factor affected expenditure trends, we used the results of the two-part models to calculate predicted expenditures in 2014-2015 if each set of explanatory factors had remained unchanged and compared these counterfactual estimates to actual 2014-2015 outcomes. The differences can be interpreted as the impact of compositional changes.

Since this approach is path dependent, as a robustness check, we switched the order of when we control for different sets of variables. A more detailed description of the methodology can be found in the online appendix.

Results

Descriptive Statistics

Table 1 highlights changes in the socioeconomic characteristics, health insurance coverage distribution, and number of chronic conditions among nonelderly adults over the three periods studied. Since these are the same control variables used in the two-part decomposition models, we exclude 2016 data from the full ACA implementation period.

There were several significant changes in the characteristics of the nonelderly population from 2007-2009 to 2014-2015. First, the share of nonelderly adults who were White, non-Hispanic declined by 5.1 percentage points, from 66.0% in 2007-2009 to 60.9% in 2014-2015. This decline corresponds with a 2.4 percentage point increase in the share who were Hispanic and a 2.2 percentage point increase in the share who identified as neither White nor Black alone and were non-Hispanic. There were also some changes in family structure over this period. For example, the share of two-parent households with children declined by 2.4 percentage points, from 33.5% in 2007-2009 to 31.1% in 2014-2015, while the share of single-parent households with children increased by 1.3 percentage points. Finally, there were significant changes in the income distribution in the periods following the Great Recession. The share of nonelderly adults with incomes below 138% of the federal poverty level increased by 2.6 percentage points, from 24.0% during the Great Recession period to 26.6% in 2014-2015. This increase mainly occurred during the period of slow economic recovery (2010-2013) and remained about the same in 2014-2015. On the upper end of the income distribution, the share of nonelderly adults with incomes above 400% of the federal poverty level declined by 1.6 percentage points from 2007-2009 to 2010-2013, but subsequently increased by 1.4 percentage points in 2014-2015.

The share of nonelderly adults with employer-sponsored insurance (ESI) or other group coverage declined by 2.1 percentage points in the period following the Great Recession, from 69.5% in 2007-2009 to 67.4% in 2010-2013. This overall decline in ESI during the recession recovery period masks the increase in ESI coverage among those under 26 years (Appendix Table 1), a finding likely driven by the dependent coverage mandate that went into effect in September 2010 (Akosa Antwi, Moriya, & Simon, 2013). The overall share of nonelderly adults covered by ESI remained roughly the same in 2014-2015, which is consistent with other studies that found that overall employment and ESI coverage did not significantly change after full ACA implementation (Gangopadhyaya, Garrett, & Dorn, 2018; Shartzer, Blavin, & Holahan, 2018).

There were several significant changes in private nongroup and public coverage over the analysis period. The share of nonelderly adults with any private nongroup

Table 1. Descriptive Statistics for Variables Included in Decomposition Analysis, Nonelderly Adults.

	Great recession, 2007-2009 (%)	Economic recovery and early ACA implementation, 2010-2013 (%)	Main ACA coverage expansion, 2014-2015 (%)	
Socioeconomic characteristics				
Age, years	40.5	40.7	40.8	^
Gender				
Male	49.6	49.2	49.3	
Female	50.4	50.8	50.7	
Race and ethnicity				
White, non-Hispanic	66.0	63.6***	60.9***	^^^
Black, non-Hispanic	12.0	12.2	12.5	
Hispanic	15.0	16.4***	17.4**	^^^
Other, non-Hispanic	6.9	7.7***	9.2***	^^^
Family type				
Two parent with children	33.5	32.4*	31.1*	^^^
Single-parent with children	10.0	11.4***	11.3	^^^
Married couple, no children	22.6	22.2	23.1	
Single, no children	31.6	32.0	32.7	^
No parents	1.3	1.3	1.1	
Married couple, adult children	1.0	0.8**	0.6	^^^
Income category				
137% FPL or less	24.0	26.8***	26.6	^^^
138% to 249% FPL	17.9	18.1	17.2**	
250% to 400% FPL	20.6	19.2***	18.9	^^^
>400% FPL	37.5	35.9***	37.3**	
Region				
Northeast	18.3	18.1	17.8	
Midwest	21.8	21.3	21.0	
South	36.4	37.0	37.4	
West	23.5	23.6	23.8	
Missing	0.1	0.1	0.1	
Health insurance distribution				
Mutually exclusive insurance				
Any group insurance	69.5	67.4***	66.9	^^^
Any private nongroup/ marketplace	2.4	2.8***	5.5***	^^^
Any public coverage	9.6	11.4***	14.5***	^^^
Uninsured whole year	18.6	18.5	13.1***	^^^

Table 1. (continued)

	Great recession, 2007-2009 (%)	Economic recovery and early ACA implementation, 2010-2013 (%)	Main ACA coverage expansion, 2014-2015 (%)	
Chronic conditions				
Number of chronic conditions				
Zero	46.5	45.6*	46.3%	
One condition	22.3	21.6**	20.9**	^^^
Two conditions	12.8	13.0	12.4*	
Three or more conditions	18.5	19.8***	20.5	^^^

Source. Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey–Household Component, 2007 to 2015.
Note. FPL = federal poverty level.
*$p < .1$. **$p < .05$. ***$p < .01$ (compared with the previous period).
^$p < .1$. ^^^$p < .01$ (compared with 2007-2009).

coverage increased by 0.4 percentage points from 2007-2009 to 2010-2013. Following full implementation of the ACA, the share of nonelderly adults with any nongroup or Marketplace coverage nearly doubled, from 2.8% in 2010-2013 to 5.5% in 2014-2015. In addition, the share of nonelderly adults with any public coverage increased significantly, by 1.8 percentage points in 2010-2013 and by 3.1 percentage points in 2014-2015 following full implementation of the ACA.

Overall, the full-year uninsured rate among nonelderly adults remained unchanged from 2007-2009 to 2010-2013, as gains in Medicaid coverage during the economic recovery period countered losses in ESI. Following full implementation of the ACA, the full-year uninsured rate declined by 5.4 percentage points, from 18.5% in 2010-2013 to 13.1% in 2014-2015.

Single-year coverage estimates for this coverage hierarchy, along with other coverage definitions, can be found in Appendix Table 2. These levels and trends are consistent with coverage estimates from other nationally representative surveys (Berchick, Hood, & Barnett, 2018; Cohen, Zammitti, & Martinez, 2018).

The share of nonelderly adults with any chronic conditions remained constant over the analysis period. However, the share of nonelderly adults with three or more chronic conditions increased by 2.0 percentage points, from 18.5% in 2007-2009 to 20.5% in 2014-2015.

Components of per Capita Expenditures

Table 2 shows per capita health expenditures in 2007-2009 and 2014-2016, by service type in real terms. In both periods, per capita health expenditures were highest for hospital outpatient and office-based physician services, followed by expenditures on hospital inpatient services, prescription drugs, other health care services, and

Table 2. Components of Per Capita Expenditure by Service Type, 2007-2016 in Real Terms, Nonelderly Adults.

	Year		
Services	Great recession 2007-2009	Main ACA coverage expansion 2014-2016	Change
Total			
A. % Users	81.8%	81.4%	−0.4%
B. Number of units per user	20.6	21.5	0.9**
C. Expenditures per unit	$318	$339	$21***
Per capita expenditures (A × B × C)	**$5,353**	**$5,927**	**$574***
Hospital outpatient + physician			
A. % Users	66.8%	67.5%	0.7%
B. Number of visits per user	5.4	5.5	0.1***
C. Expenditures per visit	$554	$586	$32
Per capita expenditures (A × B × C)	**$1,991**	**$2,179**	**$188**
Hospital inpatient[a]			
A. % Users	6.4%	5.6%	−0.8%***
B. Number of stays per user	5.5	6.1	0.5*
C. Expenditures per stay	$4,389	$4,702	$314***
Per capita expenditures (A × B × C)	**$1,561**	**$1,603**	**$42**
Emergency room hospital			
A. % Users	11.5%	12.2%	0.7%**
B. Number of stays per user	1.5	1.5	0.0
C. Expenditures per stay	$1,451	$1,725	$274***
Per capita expenditures (A × B × C)	**$254**	**$320**	**$66***
Prescription drugs			
A. % Users	62.1%	60.1%	−2.0%***
B. Number of fills per user	15.4	16.1	0.7**
C. Expenditures per fill	$97	$124	$26***
Per capita expenditures (A × B × C)	**$931**	**$1,195**	**$265***
All other services[b]			
A. % Users	52.0%	51.3%	−0.7%
B. Number of units per users	6.2	7.2	1.0
C. Expenditures per unit	$190	$170	−$19***
Per capita expenditures (A × B × C)	**$617**	**$629**	**$13**

Source. Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey–Household Component, 2007 to 2015.
Note. ACA = Affordable Care Act.
[a]Includes zero-night hospital stays.
[b]Other services = other providers + dentist + home health + medical equipment expenditures.
*p < .10. **p < .05. ***p < .01.

emergency room services. This table highlights the following changes from the recession period (2007-2009) to the main ACA coverage expansion period (2014-2016):

- Total per capita expenditures increased by 10.7%, from $5,353 in 2007-2009 to $5,927 in 2014-2016. These increases were roughly equal (5%) from 2007-2009 to 2010-2013 and from 2010-2013 to 2014-2016 (data not shown).
- Per capita expenditures on hospital outpatient/physician services increased by 9.5%, from $1,991 to roughly $2,179.
- Per capita inpatient expenditures remained statistically unchanged at approximately $1,600.
- Per capita emergency room spending increased significantly by 26.0%, from $254 to $320.
- Per capita prescription drug spending increased by 28.4%, from $931 to $1,195.
- Per capita expenditures on other services remained statistically unchanged at approximately $600.

To better understand the source of increased real per capita health care spending over this period, we looked at changes in the share of the nonelderly adult population using services, the average number of units used by each user, and the average expenditures per unit of services used.

The inflation-adjusted $574 increase in total per capita spending from 2007-2009 to 2014-2016 was driven by increases in per capita spending on outpatient care (hospital and physician combined), emergency room care, and prescription drugs. This increase resulted from a 0.9 (4.2%) increase in the number of units per user (e.g., number of visits, number of prescription fills, etc.) and a $21 (6.7%) increase in expenditures per unit consumed (e.g., increases in price per unit or intensity of treatment). The share of the nonelderly adult population using any health care services remained unchanged.

Per capita hospital outpatient/physician spending increased by $188 (9.5%) from the Great Recession to the full ACA implementation period. This increase was primarily driven by a significant 0.1 increase (2.6%) in the average number of visits per user and small but statistically insignificant increases in the percentage of users and expenditures per visits.

Per capita hospital inpatient spending remained about the same from 2007-2009 to 2014-2016, although there were significant changes in each spending component. The average number of inpatient stays per user increased by 0.5 (9.3%) and average expenditures per stay increased by $314 (7.1%). However, placing downward pressure on per capita inpatient spending was a 0.8 percentage point decline (-12.3%) in the share of users, from 6.4% in 2007-2009 to 5.6% in 2014-2016.

The $66 increase (26.0%) in per capita emergency room spending in 2014-2016 was largely attributable to a $274 increase (18.9%) in expenditures per visit. There was also a 0.7 percentage point increase (5.7%) in the share of emergency room users, placing additional upward pressure on per capita spending.

Per capita prescription drug spending increased by $265 (28.4%), the largest dollar and percent increase among the service categories. A significant increase in expenditures per prescription filled ($26 or 27.2%) was the primary driver behind this increase, along with a small increase in the number of fills per user (0.7 or 4.4%). The increase in per capita prescription drug spending would have been even larger if the share of nonelderly adults who had any prescription drug fills did not decline by 2.0 percentage points over this period.

Decomposition of Spending

The decomposition analysis allows us to identify the extent to which changes in per capita health spending between 2007-2009 and 2014-2015 were affected by changes in the distribution of (1) individual characteristics, (2) health insurance coverage, and (3) number of chronic conditions. Below, we discuss the findings for service categories where there were statistically significant changes in per capita expenditures across periods.

Table 3 shows estimates of what total per capita health expenditures would be in 2014-2015 if these three groups of characteristics remained at 2007-2009 levels. Total per capita health expenditures would have been about the same (1.5% lower) in 2014-2015 if socioeconomic characteristics remained at 2007-2009 levels (Column A). However, per capita expenditures would have been 7.7% lower in 2014-2015 if the health insurance distribution and number of chronic conditions also remained at 2007-2009 levels (Column C). Most of this effect is driven by changes in the health insurance distribution (Column B).

These findings suggest that changes in the health insurance distribution (e.g., increases in public and private coverage) significantly contributed to the rise in total per capita spending among nonelderly adults between 2007-2009 and 2014-2015. In contrast, changes in socioeconomic characteristics (e.g., declines in income and the share of the population that is White, non-Hispanic, as shown in Table 1) and the prevalence of chronic conditions had very little effect on total per capita spending over this period. Overall, more than half (53.2%) of the increase in total per capita health spending was attributable to changes in health insurance coverage, 14.5% was attributable to changes in socioeconomic characteristics, and 5.4% was attributable to changes in the prevalence of chronic conditions, while 26.9% was attributable to factors not measured in the models (e.g., increases in medical prices beyond the CPI-U and changes in technology; Table 4).

Tables 3 and 4 also show how changes in these observable characteristics among the nonelderly adult population contributed to the significant increases in per capita spending by service type between 2007-2009 and 2014-2015. Consistent with the patterns for total spending, changes in the health insurance distribution were also the largest observable contributor to the increases in per capita hospital inpatient, prescription drug, and emergency room spending, while changes in socioeconomic characteristics and the prevalence of chronic conditions had smaller effects.

Table 3. Decomposition of Changes in Per Capita Expenditure, 2007-2013, Pooled, by Service Type, Nonelderly Adults.

	Spending Means									
	Actual Per Capita Spending				2014-2015: Predicted Per Capita Spending if characteristics remain at 2007-2009 level					
					(A) Socioeconomic characteristics[c]		(B) Socioeconomic characteristics + Health Insurance[d]		(C) Socioeconomic characteristics + Health Insurance + Chronic Conditions[e]	
Services	Great Recession 2007-2009	Main ACA Coverage Expansion 2014-2015	Difference		Mean	Difference^ %	Mean	Difference^ %	Mean	Difference^ %
Total	5,353	5,984	631	***	5,892	-1.5%	5,557	-7.1%	5,523	-7.7%
Hospital Outpatient + Physician	1,991	2,159	168	*	2,056	-4.8%	1,958	-9.3%	1,943	-10.0%
Hospital Inpatient[a]	1,561	1,625	65		1,588	-2.3%	1,484	-8.7%	1,459	-10.2%
Prescription Drugs	931	1,217	286	***	1,186	-2.6%	1,092	-10.3%	1,077	-11.5%
Emergency Room	254	331	77	***	331	-0.1%	314	-5.2%	314	-5.4%
All Other Services[b]	617	650	34		660	1.5%	633	-2.7%	630	-3.2%

WITHOUT HEALTH STATUS

Source: Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey–Household Component, 2007 to 2015.
^Compared to actual 2014-2015 spending
[a]Includes zero-night hospital stays.
[b]Other services = other providers + dentist + home health + medical equipment expenditures.
[c]The model controls for age, age², sex, race, family type, family income, and region at the 2007-2009 level.
[d]Model controls for insurance coverage categories at the 2007-2009 level. Individuals are assigned to a single type of coverage based on the following hierarchy: Any group insurance, any private nongroup or marketplace insurance, any public coverage, uninsured the whole year.
[e]Model controls for numbers of reported chronic conditions (0, 1, 2, 3 or more) at the 2007-2009 level.
$*p < .10; **p < .05; ***p < .01$

Table 4. Decomposition of Changes in Per Capita Expenditure from 2009-2015 by Service Type, Nonelderly Adults Percent of Change in Per Capita Expenditures Explained by Models Versus Unexplained.

Services	2007-2009 to 2014-2015			
	Socio-economic charecteristics[c]	Health insurance type[d]	Prevalence of Chronic Conditions[e]	All Other (Unexplained)
Total	14.5%	53.2%	5.4%	26.9%
Hospital Outpatient + Physician	61.4%	58.4%	8.7%	-28.6%
Hospital Inpatient[a]	57.0%	161.9%	37.2%	-156.1%
Prescription Drugs	11.0%	32.6%	5.4%	51.0%
Emergency Room	0.3%	21.9%	1.0%	76.8%
All Other Services[b]	-29.7%	82.3%	8.5%	38.9%

Source. Agency for Healthcare Research and Quality, Medical Expenditure Panel Survey–Household Component, 2007-2015.
[a]Includes zero-night hospital stays. [b]Other services = other providers + dentist + home health + medical equipment expenditures. [c]The model controls for age, age², sex, race, family type, family income, and region at 2007-2009 levels. [d]Model controls for insurance coverage categories at 2007-2009 levels. Individuals are assigned to a single type of coverage based on the following hierarchy: Any group insurance, any private nongroup or marketplace insurance, any public coverage, uninsured the whole year. [e]Model controls for numbers of reported chronic conditions (0, 1, 2, 3 or more) at 2007-2009 levels.

In slight contrast, most of the increase in per capita hospital outpatient/physician spending over the period was attributable to changes in both health insurance coverage and socioeconomic characteristics. Per capita spending on hospital outpatient/physician services would have been 4.8% lower in 2014-2015 if socioeconomic characteristics remained at 2007-2009 levels (Table 3, Column A), and per capita expenditures on these services would have been 9.3% lower if socioeconomic characteristics and the health insurance distribution did not change (Column B). Holding the prevalence of conditions constant at 2007-2009 levels had very little effect on predicted hospital outpatient/physician spending (Column C).

Appendix Table 3 shows the estimates of what total per capita health expenditures would be in 2010-2013 if these three groups of characteristics remained at 2007-2009 levels, and Appendix Table 4 shows estimates of what total per capita health expenditures would be in 2014-2015 if characteristics remained at 2010-2013 levels. These results highlight that overall changes in Table 3 represent a combination of recovery from the recession in 2010-2013 and full implementation of the ACA in 2014-2015. The major difference between the two decompositions is that changes in health insurance coverage from 2010-2013 to 2014-2015 had a much larger effect on per capita spending than changes in health insurance coverage from 2007-2009 to 2010-2013.

This finding is consistent with the timing of the ACA coverage expansion. The findings in Table 3 also highlight how the main results are generally robust to switching the order of when we add different sets of control variables (Appendix Table 5).

Discussion

Per capita MEPS health expenditures among nonelderly adults increased by approximately 11% from 2007-2009 to 2014-2016 in real terms. This finding is consistent with the NHEA estimates, which highlight the slowdown in health expenditure growth rates during and following the Great Recession and ACA implementation period.

The growth in total per capita spending—along with per capita prescription drug and emergency room spending—from the Great Recession to the full ACA implementation period was largely driven by increases in expenditures per unit, that is, increases in per unit prices, quality, and/or intensity of treatment. The average number of units per user also increased over this period, most noticeably for hospital outpatient and physician services.

These changes are consistent with what can be expected with a significant increase in insurance coverage. Increased use of outpatient services, prescription drugs, and emergency room services due to gaining insurance coverage or enrolling in more comprehensive coverage could be decreasing the need for inpatient care resulting from neglected conditions becoming worse. While we cannot conclude that that is the reason behind these changes with these data, it is plausible, given the coverage changes over the course of this period.

We also find that changes in the health insurance distribution, and to a lesser extent, changes in the number of chronic conditions, played a significant role in explaining the increase in per capita spending from 2007-2009 to 2014-2015. Changes in the health insurance distribution explain over half of the total increase in inflation-adjusted per capita expenditures over this period. This finding is consistent with expectations of increased access to and use of health care services under the ACA's coverage expansions. Changes in chronic condition prevalence explain around 5% of the increase in per capita expenditures over this period—as shown in the appendix, prior studies found that increases in treated conditions explained a larger share (around one third) of per capita health care spending growth between 1996 and 2006, 1987 and 2009, and 2001 and 2009. The online appendix compares these studies and describes how differences in methodological approaches (e.g., time periods, study populations, and data sources) can explain the key differences in findings.

While the ACA coverage expansions were associated with higher per capita costs over this recent period, the potential upside is significant for those that gained health insurance. There is an extensive literature that highlights the benefits of health insurance through managing financial risk, increasing access to care, improving self-reported health, and ultimately improving health outcomes and reducing mortality. These benefits to health may manifest in earlier detection of disease, better adherence to medication and management of chronic conditions, and improved mental health (Sommers, Gawande, & Baicker, 2017). From a societal perspective, one study that focused on

mortality changes after Medicaid expansion found that expansion costs $327,000 to $867,000 per life saved, which is significantly below the cost per life saved associated with other public policies that reduce mortality (Sommers, 2017).

Declaration of Conflicting Interests

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ORCID iD

Fredric Blavin ⓘD https://orcid.org/0000-0002-2354-9819

Supplemental Material

Supplemental material for this article is available online.

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