Minnesota Health Care Spending: 2014 Estimates and Ten-Year Projections

Report to the Minnesota Legislature
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Executive Summary

Every year, the Minnesota Department of Health (MDH) analyzes data to track health care spending for and by Minnesota residents. This work doesn't just provide estimates of how much Minnesotans collectively spent on health care and how this is projected to change over time. MDH's extensive work on health care spending also offers insights into changes in:

- Who pays for health care in Minnesota;
- In which setting health care dollars are spent;
- What share of the state's overall economy is devoted to health care; and
- What factors seem to be drivers of health care spending growth in the state.

In this annual work spanning the past 20 years, MDH has found a consistent theme: each year, health care spending grows, often at rates above inflation, displaying substantial resilience in the face of initiatives to constrain spending trends. Paired with evidence from health care spending projections, this work raises important questions about the long-term sustainability of trends and, ultimately, about the stability of access to health care services for Minnesotans.

Spending estimates in this report aim to paint a comprehensive picture for Minnesota. Similar to national work, which our analysis draws on, the estimates represent the total volume of resources spent by all payers, including individuals, businesses and the government, for health care goods and services consumed by Minnesota residents during a calendar year. Unless otherwise noted, the analysis relies on aggregate data on health care spending collected from payers of health care services such as insurers, government sponsors of health care coverage, and public health agencies. In addition, the estimates include spending on public health, medical care paid for by workers' compensation insurance and correctional facilities, as well as estimates for health insurer profits.

Historical Health Care Spending

Health care spending in Minnesota increased 6.4 percent in 2014, to $43.4 billion. This change stands in contrast to the slower growth in health care spending from 2010 to 2013. It also accounts, in part, for the increase in the share of the Minnesota economy devoted to health care (a 0.3 percentage point increase to 13.6 percent).

While Minnesota spending grew one percentage point faster than nationally, per-person spending (at $7,961) remained below national levels, as did the share of the economy devoted to health care (13.6 percent compared to 16.5 percent)

A number of factors helped accelerate health care spending in 2014, including:

- An improving economy that brought with it more disposable income for a greater share of the population;

- New health insurance coverage for approximately 200,000 Minnesotans, largely due to the provisions of the Patient Protection and Affordable Care Act (ACA);
- The cost pressure from the introduction of specialty drugs, such as those used to treat hepatitis C, and the use of compound drugs[1]; and
- General inflation of prices for health care services.

While the majority of health care spending in Minnesota came from private payers (52.1 percent), growth in spending by public sources (8.6 percent) outpaced private spending growth (4.4 percent) in 2014. Most of the public spending growth appears to be driven by more Minnesotans obtaining public program coverage, rather than inflationary trends in delivering care to public program beneficiaries. For example, per-enrollee spending in Minnesota Health Care Programs actually decreased by 7.9 percent in 2014, reaching the lowest cost per enrollee since 2006.

Our analysis of private spending, focusing on commercially insured Minnesotans, shows that price increases, rather than utilization or service mix, was driving growth in spending in 2014. While the impact varied by type of service, type of settings, and in some instances geography, in aggregate, price increases accounted for 60.8 percent of the change in spending in 2014.

Although the one-year spending growth in 2014 was the largest for retail prescription drugs (13.6 percent) and physician services (7.9 percent), spending on hospital-based outpatient services and long-term care accounted for most of the change in spending between 2010 and 2014 (23.1 percent and 20.4 percent, respectively).

Health Care Spending Projections

We project that the average annual growth in health care spending will accelerate between 2015 and 2024 to 5.8 percent, up from 4.5 percent for the preceding ten years. During this period, health care spending is projected to continue its pattern of nearly doubling every ten years, rising to about $75.6 billion by 2024. At that point, health care spending will consume about 15.8 percent of the state economy, placing substantial pressure on spending for other sectors.

We project that the share of public spending will grow as Minnesota's population continues to age into Medicare and more Minnesotans will rely on financing for long-term care services provided by the state's Medicaid program. Public rates of growth are projected to exceed private trends, driven in large part by increases in the population, but also influenced by the higher health care needs of public program beneficiaries compared to those who are privately insured (e.g., the greater rate of chronic disease among the Medicare beneficiaries) and the benefit design of the programs. We anticipate that, due to these dynamics, public health care spending will begin to exceed private spending at some point before 2024.

[1] Compound drugs combine two or more drugs by combining, mixing, or altering ingredients to create a new medication for an individual patient.

Moving Forward

With Minnesota health care spending projected to accelerate after a period of slow growth, concerns about longer-term pressures of spending trends on businesses, individuals and state budgets have begun to intensify as well. Yet, despite ongoing policy and business initiatives to constrain spending growth in health care, our past experience with cost containment strategies in health care suggests there are no easy solutions that could enjoy broad support. As part of our next report, in which we will update estimates of health care spending and projections, MDH plans to summarize some of the emerging evidence about initiatives that offer promise in "bending the cost curve." This work will aim to distinguish ideas and initiatives that address unique challenges for spending in the Medicare population, in state health care programs and the commercial market.

Introduction

Over 20 years ago, the Health Economics Program of the Minnesota Department of Health (MDH) began conducting research on health care spending trends for Minnesota residents. This work began as a way to document health care spending pressure and inform policy discussions around how to constrain health care spending. It was built in recognition of the fact that at the time, the national spending estimates, developed annually by the federal Centers for Medicare & Medicaid Services (CMS), lacked generalizability to Minnesota and sufficient specificity to drive policy change.

Since then, the Minnesota Legislature has directed MDH to create annual estimates of Minnesota health care spending and develop estimates of *future* spending to help monitor sustainability of trends. While this report provides an accounting of total resources spent on health care in a given year and the types of services health care spending went towards, it does not assess whether the services delivered were sufficient, necessary or represented efficient or high quality health care delivery. The data used to generate estimates for this report were summary data from payers of health care services, rolled up to the state level. Therefore, analyses of spending and the potential of disparities in spending by geography or sociodemographic factors, including race and ethnicity, income, and education, are not part of this report. The Health Economics Program contributes to these areas of analyses through investigations on coverage and access, as well as by small-area research using the Minnesota All Payer Claims Database.[2]

[2] See for example: MDH Health Economics Program, "Minnesota's Changing Health Insurance Landscape: Results from the 2017 Minnesota Health Access Survey." Issue Brief, February 2018 (http://www.health.state.mn.us/divs/hpsc/hep/publications/mnha2017primfind.pdf; April 6, 2018) and http://www.health.state.mn.us/healthreform/allpayer/publications.html

Health Care Spending in 2014

Since Minnesota started to track health care spending in the 1990s, spending has risen every year, although with varying rates of growth. Estimated health care spending grew again in 2014, reaching $43.4 billion (Figure 1). Compared to one year earlier, this new level of Minnesota spending on health care represents an increase of 6.4 percent and the fastest growth in seven years.

Key Findings:

- Health care spending grew 6.4 percent in 2014, to $43.4 billion.
- Nearly one out of every seven dollars of the state economy (13.6 percent) was devoted to health care that year.
- Higher enrollment in Medicare and Minnesota Health Care Programs drove growth in public program spending.
- Retail pharmacy spending saw the fastest spending growth (13.6 percent).
- Hospital spending continued to account for one-third of total spending.

An important contributor to spending growth in 2014 was related to the number of Minnesotans who gained health insurance coverage due to state and federal health reform initiatives; this resulted in improvement in access to and use of health care services.[3] However, use of health care services has also tended to be higher when the economy is better.[4]

While a more rapid uptick than in the recent past, the 2014 increase in health care spending remains below the 10-year period prior to the most recent economic recession, when health care spending grew at an average annual rate of 8.5 percent.[5]

The historical spending estimates in this report represent the total amount consumed by *all* payers on health care goods and services for residents, including individuals, businesses, and state and federal agencies. Estimates for Minnesota residents are based on analysis of aggregated data collected by payers of health care services such as insurers, government sponsors of health care coverage, and public health agencies. Included in these estimates are health care spending for public health, medical care paid for by workers' compensation insurance, and care delivered in correctional facilities. Estimates of the cost of health insurance, including administrative health plan expenditures and insurer profits are also part of the estimates.

[3] While there is no Minnesota data with which to document the contribution to spending for people who otherwise would have had no health coverage, there is a wide body of evidence demonstrating that the uninsured use less health care than people with insurance coverage. Further, estimates show that 56 percent of newly covered individuals with a chronic condition would receive treatment for a previously undiagnosed chronic condition, which would represent "new" spending. Sommers B, et al. "Three-Year Impacts of the Affordable Care Act: Improved Medical Care and Health Among Low-Income Adults." Health Affairs. June 2017.

[4] Martin A, et al. "National Health Spending in 2014: Faster Growth Driven by Coverage Expansion and Prescription Drug Spending." Health Affairs. 2015.

[5] The U.S. Bureau of Labor Statistics defines the most recent recession as beginning December 2007 and ending in June 2009. U.S. Bureau of Labor Statistics (BLS) Spotlight on Statistics: The Recession of 2007-2009. February 2012.

Figure 1: Trends in Minnesota Health Care Spending (2000-2014)

Source: MDH, Health Economics Program

Minnesota Health Care Spending in the National Context

Similar to Minnesota, the pace of national health care spending increased in 2014, albeit at about 1 percentage point below growth in Minnesota (5.3 percent vs. 6.4 percent).[6] Because of the faster pace of spending at a time of more modest economic growth, the share of the economy devoted to health care grew for both Minnesota and the U.S., to 13.6 and 16.5 percent, respectively.

There are two primary factors that contribute to the difference in health care spending as a share of the economy between Minnesota and the nation overall: First, per person spending in Minnesota has persistently been below national levels (see Table 1), meaning Minnesota starts out from a lower level. Second, economic activity in Minnesota, as measured by median income, labor market performance, and economic output, often outpaces the U.S. overall. For example, in 2014 Minnesota

[6] Martin A, et al. "National Health Spending in 2014: Faster Growth Driven by Coverage Expansion and Prescription Drug Spending." Health Affairs. 2015.

employment was 2.4 percentage points above the U.S. rate; Minnesota's median income of $60,828 also exceeded the national median, by more than $7,000.[7]

That said, per-person spending in 2014 rose again in Minnesota, reaching nearly $8,000 (about $1,000 below the U.S. equivalent).[8] The overall economic picture is one of several factors that can influence health care spending, serving to both accelerate and limit spending growth. Health reform laws, both on the state and federal levels, as well as advances in medical technology, and changes in cost-sharing and benefit designs that impact use of health care services can all influence the general trajectory of spending.[9]

Table 1: Health Care Spending as a Share of the Economy and Per Person Spending

	2010	2011	2012	2013	2014
Health Care Spending as a Share of the Economy:					
Minnesota	13.8%	13.4%	13.4%	13.3%	13.6%
U.S.	16.4%	16.4%	16.4%	16.3%	16.5%
Per Person Spending:					
Minnesota	$7,053	$7,121	$7,341	$7,535	$7,961
U.S.	$7,929	$8,171	$8,423	$8,619	$9,023

Source: MDH, Health Economics Program; Centers for Medicare & Medicaid Services; U.S. Department of Commerce: Bureau of Economic Analysis: Gross Domestic Product, updated through June 14, 2016 for Minnesota and September 26, 2016 for the United States.

[7] Household median income in 2014 inflation-adjusted dollars, U.S. Census Bureau, American Community Survey 5-year Estimates.

[8] Per capita spending comparisons between Minnesota and the United States are somewhat difficult because of the difference in data and methodologies. For this analysis, MDH used national estimates categorized as "health consumption expenditures," which are best comparable based on Minnesota's analytic focus in this report. The estimate includes some costs not considered in Minnesota's analysis, e.g., government costs associated with the administration of public health programs, payments made by philanthropy, and school-based health care. In the national context, these expenditures make up approximately 5 percent of health consumption expenditures. When taken into account, national per capita spending remains nearly 8 percent higher than Minnesota per capita spending (instead of 13 percent).

[9] A more in-depth discussion these factors can be found in Minnesota Department of Health, Health Economics Program Health Care Spending and Projections, 2013. March 2016 at http://www.health.state.mn.us/divs/hpsc/hep/publications/costs/healthspending2016.pdf

Who Pays for Health Care in Minnesota?

Independent of who the "sponsor" of health care services is, or who hands over payment for medical services or pharmaceuticals, health care spending is ultimately financed by residents through:

- Paying premiums to health insurance companies or the government;
- Forgoing wages in return for employer coverage;
- Paying taxes to contribute to the financing of Medicaid and Medicare coverage; and
- Spending out-of-pocket on deductibles and other cost-sharing, or for services not covered by health insurance (for the uninsured or people with limits on their coverage).

Key Findings:

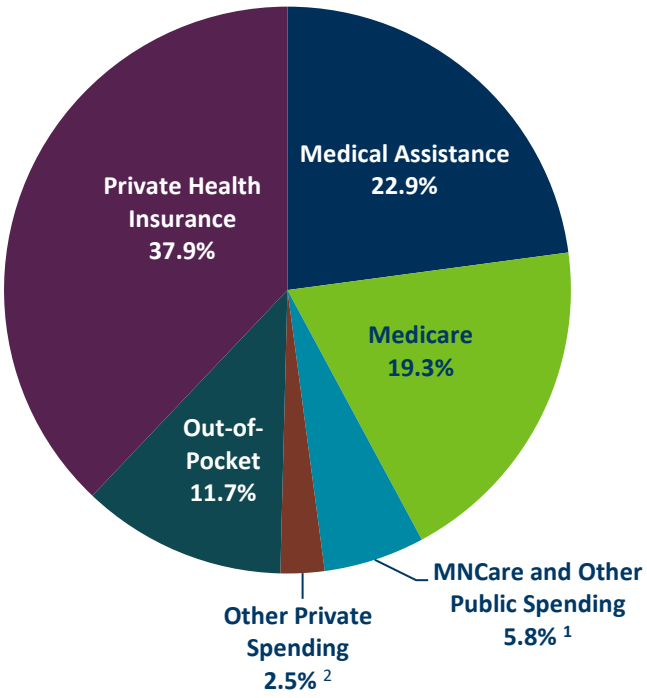
- Private health insurance was the single largest category of spending (37.9 percent).
- Statewide growth in out-of-pocket spending was slower than that for other categories.
- Higher enrollment in Medicare and Minnesota Health Care Programs drove growth in public program spending.

Nonetheless, we tend to think of health care spending along the categories of who sponsors health insurance coverage and often refer to them as payers. For this report, we divide these payers into public sources (e.g. government, usually state or federal) and private sources (e.g. private companies, employers, individuals).[10]

Using this lens, spending for health care services in Minnesota has tended to follow a reasonably stable distribution of coverage over time, with the majority of spending coming from private payers. As shown in Figure 2, this was also the case in 2014, when 52.1 percent of health care spending came from private payers (private health insurance, out-of-pocket spending and other private spending). However, this is down from 60.0 percent of spending in 2005, when the number of Minnesotans with private coverage was 4.6 percentage points higher than in 2014.

[10] For the purposes of this report, spending for employee health insurance by government entities (such as cities, counties, school boards, and the state) are included in private health insurance spending; however, some may consider them public, as employee compensation is covered by public funds.

Figure 2: Payers of Health Care, 2014



Source: MDH, Health Economics Program. Numbers may not sum to total due to rounding.
[1]Other public spending includes government workers' compensation, and Veterans Affairs.
[2]Other major private payers include private workers' compensation and auto medical insurance.

Private health insurance was the single largest category of spending (37.9 percent),[11] while patient out-of-pocket spending and other private spending (including workers' compensation and medical care covered by auto insurance) contributed 11.7 percent and 2.5 percent, respectively, to total spending.

The remaining 47.9 percent of spending in 2014 came from public payers. Minnesota's Medicaid program (Medical Assistance) and Medicare accounted for 22.9 percent and 19.3 percent of total spending, respectively.[12] Other sources of public spending, including MinnesotaCare and public health expenditures, made up the remaining 5.8 percent.[13]

[11] Medicare Advantage is a public program administered by private payers. As a result, spending for this program is divided between public and private spending categories, based on the relative proportions of capitation payments and enrollee premiums to total revenue. Appendix B contains further discussion.

[12] This does not include the portion of Medicare Advantage expenses funded through enrollee premiums.

[13] MDH's definition of "Other Public Spending" slightly differs than that of national estimates categorized as "health consumption expenditures," which are most directly comparable to Minnesota's analytic focus in this report. Minnesota's analysis of "Other Public Spending" excludes school-based health care. Public spending in this report also includes spending by the Veterans Administration, workers' compensation, correctional facilities, and public health. We estimate public health spending to be less than one percent of total spending.

The following two sections identify components of private and public spending, and factors that contributed to changes over time. We also explore how spending growth was driven by enrollment changes.

Components of Private Spending

Private spending grew at a rate of 4.4 percent between 2013 and 2014. This rate represents an increase from previous years, when following a recession, private spending actually decreased. Several characteristics of private payers influence change in spending differently than public payers, some of which we discuss in some greater detail below:

- The vast majority of private spending is delivered through private health insurance, which tends to cover younger and healthier workers and their families;
- This type of insurance also typically has higher levels of reimbursement than Medicare and Medicaid, as prices are negotiated separately with each health insurance company; and
- A portion of spending is directly paid for by the consumer of health care (e.g., individuals pay premiums and out-of-pocket costs), which makes private spending somewhat sensitive to broader economic trends.

PRIVATE HEALTH INSURANCE

Three out of every five Minnesotans (more than 60 percent) held private insurance coverage in 2014. Accordingly, private payers remained the dominant payer for health care that year. Although the federal Patient Protection and Affordable Care Act (ACA) increased public coverage, private health care coverage and spending was also influenced by new provisions:

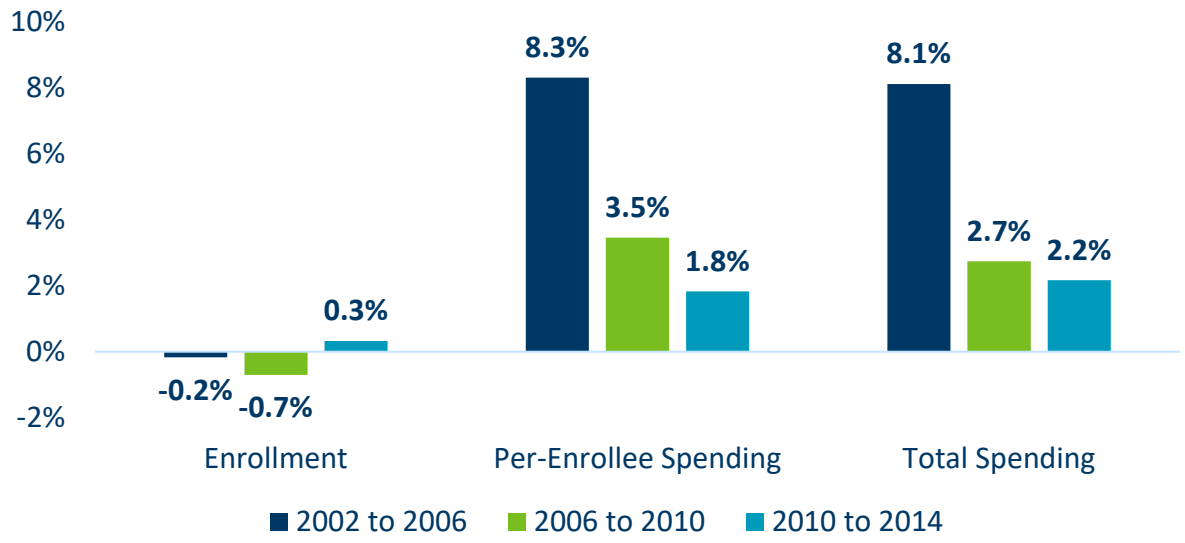
- More people obtained health insurance coverage due to the Individual Shared Responsibility (ISR) provision ("individual mandate").[14] People with health insurance coverage use more health care than those who are uninsured, leading to spending growth.
- Changes to insurance benefit designs (i.e., removal of pre-existing condition limitations, implementation of essential health benefits, and annual out-of-pocket maximums) and federal subsidies (i.e., to cover premiums and out-of-pocket costs) altered how insurers set rates and provided greater financial protection for consumers, increasing access to care.
- Termination of state and federal high-risk pools led to easier access for less healthy individuals to purchase coverage in the non-group health insurance market; however, this increased premiums in many states' non-group markets.[15]

[14] The ACA began requiring individuals to have health insurance in 2014 or pay a penalty, as described at Healthcare.gov.

[15] With the removal of pre-existing condition limitations, state and federal high-risk pools became obsolete. The Minnesota Comprehensive Health Association (MCHA) program and federal Pre-Existing Condition Insurance Plan (PCIP) ended in 2014. MCHA was a high-risk program providing individual health insurance coverage to Minnesota residents turned down in the private marketplace due

Despite the impact of the ACA, enrollment in private coverage has remained relatively flat since 2002 in Minnesota, with a small decrease (Figure 3). Therefore, private spending appears to be growing primarily due to spending increases per person each year. We will discuss cost drivers for private health insurance later in this report, but the impact of per-enrollee spending growth has moderated in recent years, growing to an average of 1.8 percent per year between 2010 and 2014.[16] This moderation was driven by minimal growth in the early years of the period (2010 through 2013).

Figure 3: Five-year Average Annual Trends in Private Health Insurance Spending and Enrollment



Source: MDH, Health Economics Program. Per-enrollee spending for private health insurance is calculated using net enrollment (primary source of coverage).

OUT-OF-POCKET SPENDING

Meanwhile, out-of-pocket spending across all Minnesota residents – a component of private spending because it is paid by individuals and not government payers – grew more slowly in 2014 (1.7 percent), reaching about $5 billion. Because the statewide growth in out-of-pocket spending was slower than that for other categories that year, the share of total spending by individuals for out-of-pocket health care services declined as well in 2014, as shown in Figure 4.

The slower growth in out-of-pocket spending, as well as its declining share of overall spending, may be surprising at first glance, given the substantial drive towards insurance products with more cost sharing. This trend is explained, simply, by the change in the distribution of people with health insurance coverage. Enrollment shifts towards public program coverage with minimal or limited

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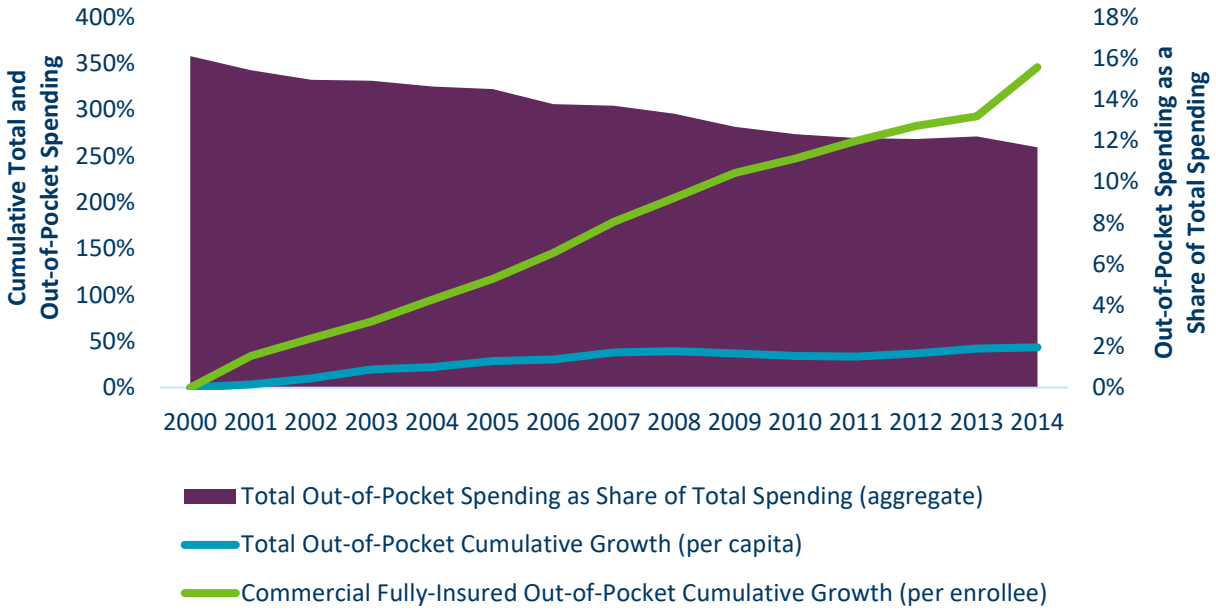
to a pre-existing health condition and covered around 25,000 Minnesotans in 2013. Enrollment declined throughout 2014 as individuals enrolled in other public programs or on non-group plans.

[16] Per-enrollee spending is the total spending divided by the number of Minnesota residents that had that type of insurance coverage.

member cost sharing offset some of the private market upswing in out-of-pocket spending. [17,18] This dynamic is reflected in Figure 4, where the green line represents the growing cumulative out-of-pocket spending for Minnesotans with private coverage, while the light blue line represents cumulative out-of-pocket spending growth for *all Minnesotans*, including people with public program coverage; the shaded area shows how the percent of overall health care spending that was spent out of pocket has decreased over time.

Figure 4: Total Out-of-Pocket and Per Capita Spending Growth as a Share of Total Spending



Source: MDH, Health Economics Program
Commercial Fully-Insured is based on an analysis of a subset of Minnesota health plan companies, representing nearly 90 percent of fully-insured commercial covered lives as of December 31, 2014.

The following factors may contribute to a modest increase in out-of-pocket spending:

- Evidence suggests that when individuals gained access to insurance coverage, particularly public programs, their out-of-pocket costs fell.[19,20,21]

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[17] Martin A, et al. "National Health Spending in 2014: Faster Growth Driven by Coverage Expansion and Prescription Drug Spending." Health Affairs. 2015.

[18] Orszag P. Academy Health Annual Research Meeting. The Health Care Landscape. June 2016: https://academyhealth.confex.com/academyhealth/2016arm/meetingapp.cgi/Session/2887.

[19] Finkelstein A, et al. "The Oregon Health Insurance Experiment: Evidence From the First Year." National Bureau of Economic Research. 2011.

[20] Mulcahy A, Eibner C, Finegold K. "Gaining Coverage Through Medicaid or Private Insurance Increased Prescription Use and Lowered Out-of-Pocket Spending." Health Affairs. September 2016.

[21] Gleied S, Chakraborty O, Russo T. "How Medicaid Expansion Affected Out-of-Pocket Health Care Spending for Low-Income Families." The Commonwealth Fund, August 2017 http://www.commonwealthfund.org/~/media/files/publications/issue-brief/2017/aug/glied_medicaid_expansion_oop_ib.pdf.

- Caps on out-of-pocket costs in the private health insurance market under the ACA were implemented in an attempt to limit the maximum amount an individual will pay for *covered* health insurance services in a year.
- Additionally, the growth of high deductible health plans (HDHPs) may be contributing to lower out-of-pocket spending by creating disincentives to seeking or delaying or reducing care. National data illustrates this pattern.[22]

Components of Public Spending

As discussed, public spending increased at a faster rate of growth than private spending (8.6 percent and 4.4 percent, respectively), primarily in Medicare and Minnesota Health Care Programs (MHCP). This is due to both enrollment growth, as well as changes in the mix of populations served within distinct public programs.[23]

By design, public coverage programs – specifically Medicare and Medicaid – provide health care coverage to the elderly and people with disabilities and cover a large percentage of long-term care costs.[24] Thus, Medicare and Medicaid per-enrollee spending is higher than private per-enrollee spending because these programs have a larger proportion of individuals with greater health care needs, and also cover additional benefits (e.g. long-term care). To illustrate, a recent MDH analysis found that in 2012, 72.0 percent of Minnesotans aged 65 or older had at least one chronic disease, double the rate of the overall population (35.4 percent).[25] These factors significantly contributed to accelerating public spending in 2014 – nearly doubling the rate of growth from 2013 – and are examined below.

MEDICARE

The majority of people who enroll in Medicare do so due to age, and over the last five years Minnesotans were "aging" into Medicare at a faster rate than in the period before, increasing the number and share of Minnesotans with Medicare coverage. Specifically, from 2010 to 2014, average annual enrollment growth in Medicare was 3.1 percent while the average annual state population

[22] Agarwal R, Mazurenko O, and Menachemi N. "High-Deductible Health Plans Reduce Health Care Cost And Utilization, Including Use Of Needed Preventive Services." Health Affairs. October 2017.

[23] Department of Health & Human Services, Centers for Medicare & Medicaid Services, Office of the Actuary. 2015 Actuarial Report on the Financial Outlook for Medicaid. Accessed August 10, 2016.

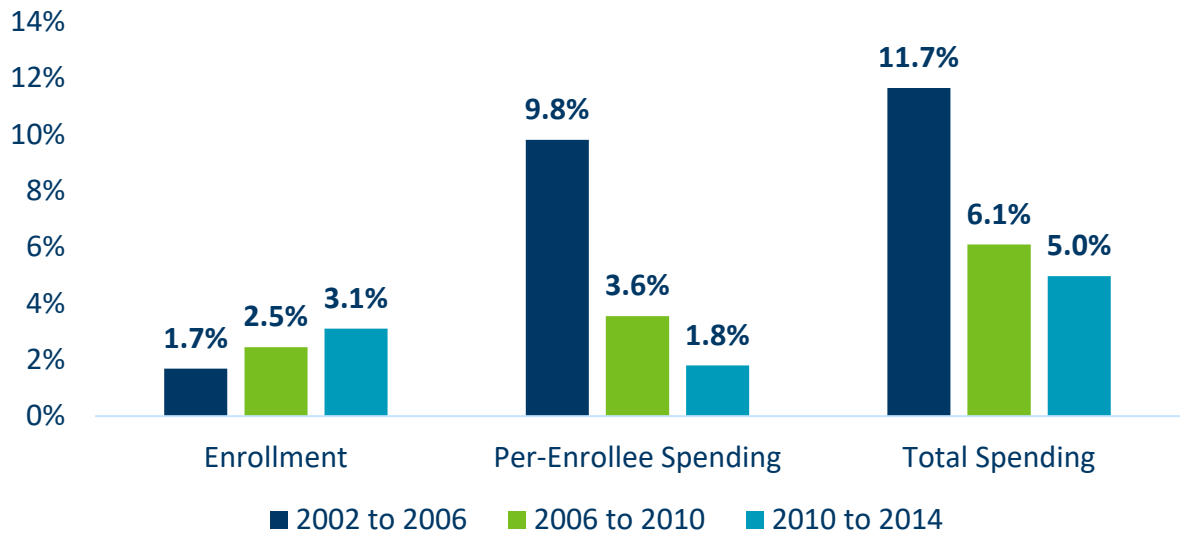
[24] As discussed on the U.S. Department of Health and Human Services website, Medicare does not cover the largest part of long-term care services or personal care, but does pay for certain care in a skilled nursing facility, hospice, or home health care. For more information visit the Long-Term Care website: http://longtermcare.gov/medicare-medicaid-more/medicare/.

[25] MDH, Health Economics Program, Chronic Conditions in Minnesota: New Estimates of Prevalence, Cost and Geographic Variation for Insured Minnesotans, 2012. January 2016.

grew by 0.7 percent. [26] By 2014, nearly one of every six Minnesotans was enrolled in Medicare, which amounts to 16.3 percent of the population (up from to 14.8 percent in 2010).

Medicare spending for Minnesotans continued to grow in 2014, consuming about $8.4 billion. Because the per-enrollee rate of growth has slowed over the past five years compared to the previous five-year period (1.8 percent and 3.6 percent, respectively), total spending grew modestly, rising at an average annual rate of 5.0 percent between 2010 and 2014 (Figure 5).

Figure 5: Five-year Average Annual Trends in Medicare Spending and Enrollment



Source: MDH, Health Economics Program. Per-enrollee Medicare costs are calculated using gross enrollment costs, not by primary source of coverage.

Two main factors likely drove the modest change in per-enrollee spending:

- An influx of healthier and younger Medicare beneficiaries (e.g. people aging into Medicare reducing the age distribution); and
- Significant efforts motivated by the ACA to moderate Medicare spending growth through creating incentives to reduce readmissions and focusing on the delivery of value based care.

While Medicare spending will grow as enrollment grows, continued slower growth in spending per enrollee could reflect lower price inflation or changes in health care use by Medicare beneficiaries.

MINNESOTA HEALTH CARE PROGRAMS

Spending for Minnesota Health Care Programs (MHCP), primarily Medicaid and MinnesotaCare, increased 11.9 percent to reach $10.3 billion in 2014. However, on a per-enrollee basis, spending

[26] Based on August 2015 projections by the Minnesota State Demographic Center, by 2022 the estimated Minnesota population age 65 and older will reach over 1 million, averaging a growth of 3.4 percent annually between 2015 and 2024. In comparison, the estimated population aged 20 and older (including those over 65) will increase 0.8 percent over the same time period.

actually decreased by a noteworthy 7.9 percent to fall under $10,000 per enrollee and reached the lowest spending per enrollee since 2006. The pattern of enrollment and spending for MHCP is somewhat analogous to the trends described for the Medicare population: increases in enrollment, matched by moderated growth (or contraction) in per-enrollee spending, translating into modest overall growth in total spending.

Over the last five years, enrollment in MHCP has risen from 12.2 percent of the population in 2010 to 15.6 percent in 2014.[27] This increase primarily occurred at two points in time that were associated with eligibility changes:

- In 2011 Minnesota implemented its "early" Medicaid expansion, authorized under the ACA and state law, increasing enrollment by nearly 44,000 Minnesotans relative to a year earlier.[28]
- Three years later, in 2014, enrollment in MHCP rose by 161,000 individuals, as a result of the full ACA coverage expansion that offered access to subsidized health insurance for adults with incomes up to 200 percent of federal poverty guidelines (FPG) (just over $23,300 for an individual, and children (aged 2 to 18) up to 275 percent FPG). [29]

Looking at these trends, we see that while spending growth exceeded enrollment growth both before and during the recession, it has slowed despite the increase in the population more recently (Figure 6). The recent decrease in per-enrollee spending is likely driven by changes in contracting and an improvement in the risk pool, as the vast majority of people who gained MHCP coverage in 2014 were either childless adults or families and children, likely healthier than elderly and disabled beneficiaries. [30] The Minnesota Department of Human Services started using a competitive bid process for managed care contracts starting in the 2012 plan year and began implementing a Medicaid Accountable Care Model, called Integrated Health Partnerships (IHP), in 2013 with certain health care providers.[31]

[27] Based on primary source of insurance coverage (i.e., net enrollment) for Medical Assistance, MinnesotaCare, and the now terminated GAMC program.

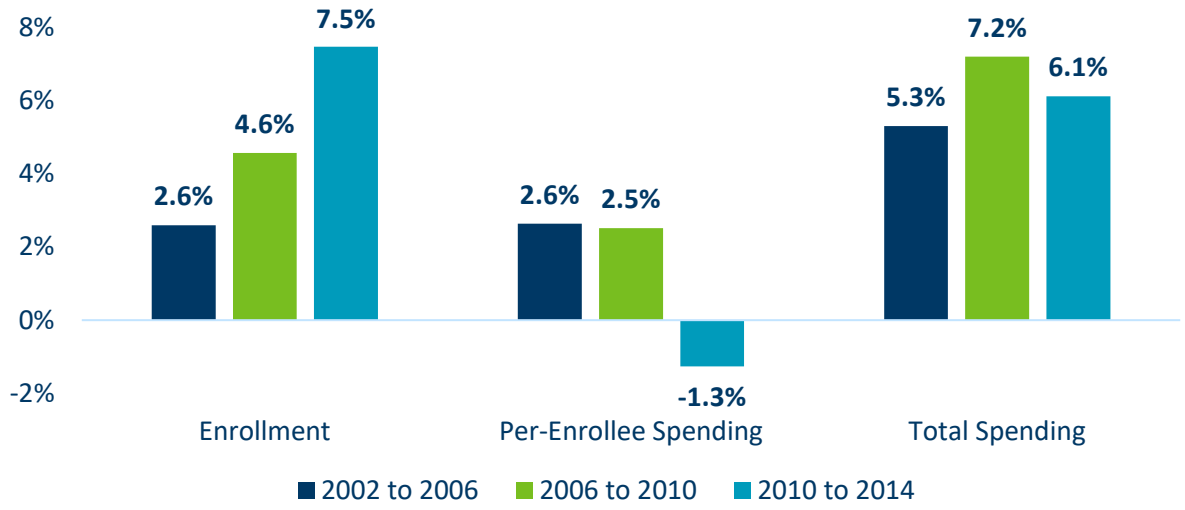
[28] Based on MDH estimates of primary source of enrollment.

[29] Based on the MDH estimates of primary source of insurance. Medical Assistance (Medicaid) covers adults under 65 with incomes up to 133 percent of Federal Poverty Guidelines (FPG); MinnesotaCare covers adults with incomes over 133 percent FPG up to 200 percent FPG.

[30] Unpublished analysis from the Minnesota Health Care Access Survey.

[31] Minnesota House Research Department, Information Brief. Integrated Health Partnerships Demonstration. December 2017.

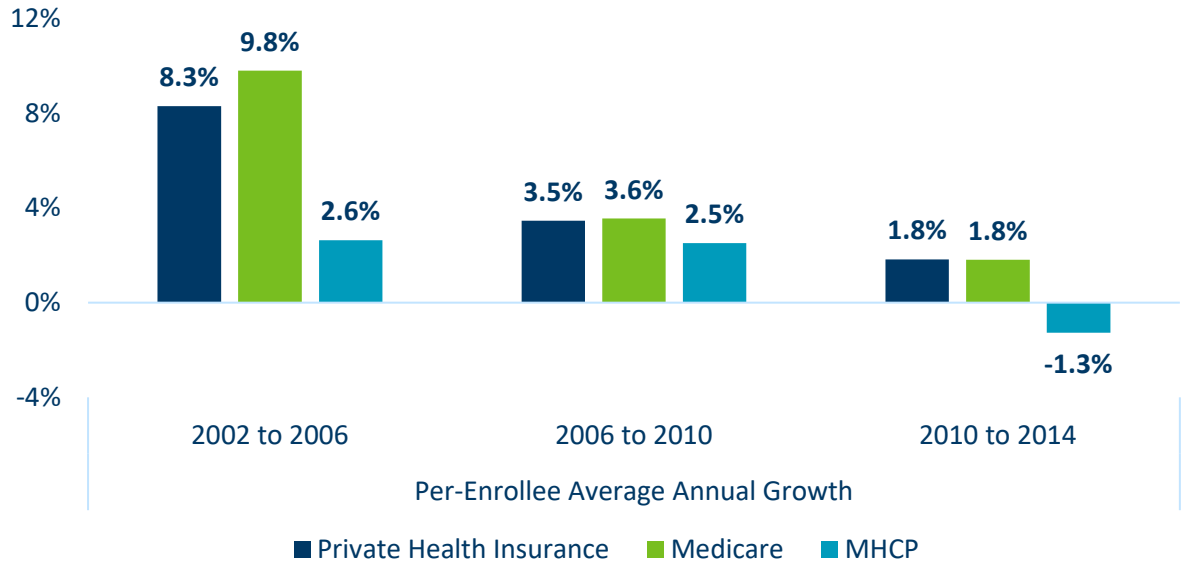
Figure 6: Five-year Average Annual Trends in MHCP Spending and Enrollment



Source: MDH, Health Economics Program. Per-enrollee public program costs are calculated using gross enrollment costs, not by primary source of coverage.

The distribution of spending between public and private payers will likely continue to shift away from private payers, judging by trends in coverage and the aging of the population, which will make more Minnesotans eligible for Medicare coverage. Interestingly, innovations in public program payments may act as a countervailing force to the demographic trends. As shown in Figure 7, per-enrollee spending growth has been slowing across private health insurance, as well as Medicare and MHCP, since 2002.

Figure 7: Growth in Per-Enrollee Spending by Payer



Source: MDH, Health Economics Program. Per-enrollee public program costs are calculated using gross enrollment costs, not by primary source of coverage. Therefore, public program enrollees with dual coverage are included in each of the respective coverages.

As we continue to monitor growth in health care spending, identifying the point at which public spending outpaces private spending and to what extent it is due to enrollment growth or increases in utilization and prices will be key.

What Minnesota Health Care Dollars Pay for

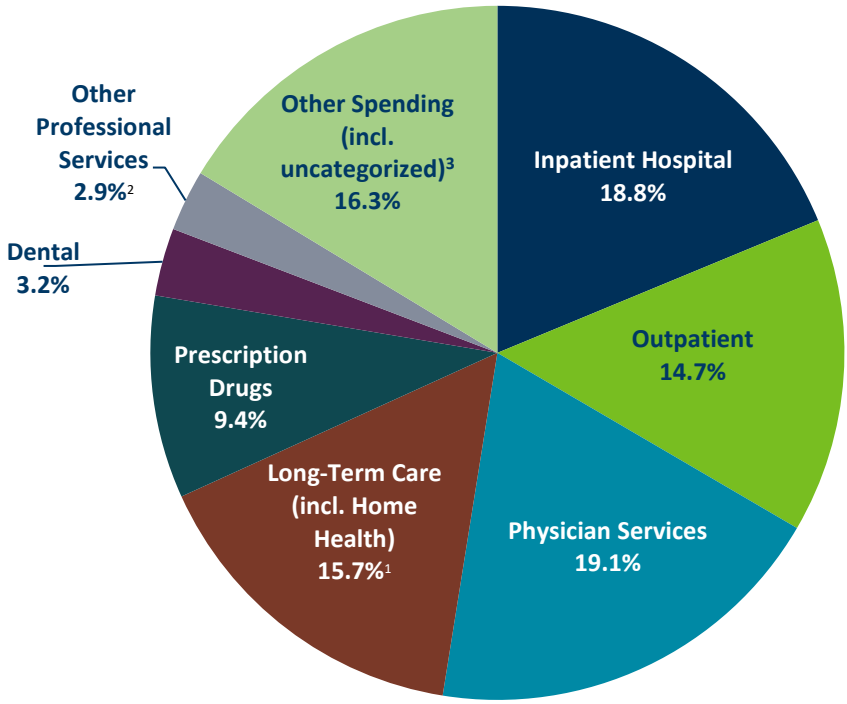
MDH also analyzes spending by type of service, distinguishing between spending on hospital care, long-term services, prescription drugs and other categories of care to identify potential structural changes in the distribution of service use and costs. In 2014, we find the distribution of health care spending across service categories remained relatively stable, with *all* types of health care services experiencing growth.

Key Findings:

- Hospital spending continued to account for one-third of total spending (33.5 percent).
- Prescription drug spending represented nearly one of every 10 dollars spent on health care (9.4 percent).
- The share of spending by other types of health care services stayed similar between 2013 and 2014.

As shown in Figure 8, spending on hospital care, covering services delivered by hospitals in inpatient and outpatient settings, remained the most significant expenditure category in 2014, accounting for 33.5 percent of total spending or $14.5 billion. Health care provided by physicians and in long-term care settings accounted for another 34.8 percent of spending. Spending on retail prescription drugs accounted for 9.4 percent of spending, with the remaining spending devoted to other professional services, dental care and a set of other, uncategorized health care services.

Figure 8: Distribution by types of health care services, 2014



Source: MDH, Health Economics Program.
[1]Includes home health care services.
[2]Includes services provided by health practitioners who are not physicians or dentists.
[3]Includes chemical dependency/mental health (3.0 percent), other medical spending (includes not itemized and durable medical equipment; 6.7 percent), health plan administrative expenses and revenues in excess of expenses (5.3 percent), and uncategorized spending (for spending such as public health spending, correctional facility health spending, Indian Health Services; 1.4 percent).

In 2014, prescription drug spending, limited here just to retail drugs, saw the largest growth year-over-year, increasing 13.6 percent or $490 million. The literature documents one key dynamic that appears to drive this substantial increase in Minnesota and nationally: The introduction of new, high cost brand name drugs, including innovative drugs to treat Hepatitis C. [32]

This increase in prescription drug spending caused the share of spending for prescription drugs to increase from 8.8 percent in 2013 to 9.4 percent in 2014, exceeding $4 billion, or nearly one of every 10 dollars spent on health care (Table 2). This is similar to the share of total spending for prescription drugs prior to 2011.[33]

From separate research conducted with the Minnesota All Payer Claims Database (MN APCD), we understand that the overall volume of drug spending is substantially higher when one also considers

[32] Martin A, et al. "National Health Spending in 2014: Faster Growth Driven by Coverage Expansion and Prescription Drug Spending." Health Affairs 35, No. 1 (2016).

[33] For further information on previous trends, see MDH, Health Economics Program, Health Care Spending and Projections, 2013. March 2016; Department of Health & Human Services, Office of the Assistant Secretary for Planning and Evaluation (ASPE). ASPE Issue Brief: Observations on Trends in Prescription Drug Spending. March 8. 2016.

spending on drugs administered in medical settings (e.g., intravenous chemotherapy drugs in physicians' offices or hospital outpatient clinics).[34] In this report, spending on these prescription drugs are typically embedded in other categories, such as outpatient hospital, physician services or inpatient services, masking the full impact of prescription drug spending in the state.

In contrast to prescription drug spending, inpatient hospital services grew more slowly, at 3.4 percent, and its share of total spending fell in 2014 to 18.8 percent. Within hospital spending, the share of spending associated with inpatient services has been declining since 2007 (Figure 8; Table 2), as admissions are falling. At the same time, more services are delivered in outpatient settings, and a greater number of clinics become affiliated with hospitals as outpatient facilities.[35]

Not surprisingly, spending growth by other types of health care services reflected overall growth, with rates between 3.0 percent and 7.9 percent for most categories (Table 2). Physician services spending continued to increase in 2014, growing 7.9 percent. As a result, its share of total spending increased slightly from 2013 to 19.1 percent.

Table 2: Spending and distribution by type of health care services (2010-2014)

	Spending ($ millions)					Change
Type of Service	**2010**	**2011**	**2012**	**2013**	**2014**	**from 2013**
Inpatient Hospital	$7,562	$7,533	$7,752	$7,879	$8,148	**3.4%**
Outpatient Hospital	$4,986	$5,343	$5,852	$6,031	$6,370	**5.6%**
Physician Services	$7,420	$7,454	$7,651	$7,689	$8,298	**7.9%**
Long-Term Care[1]	$5,592	$5,750	$6,055	$6,423	$6,815	**6.1%**
Prescription Drugs	$3,515	$3,330	$3,478	$3,611	$4,101	**13.6%**
Dental	$1,262	$1,258	$1,280	$1,332	$1,372	**3.0%**
Other Professional Services[2]	$1,106	$1,245	$1,228	$1,186	$1,241	**4.7%**
Other Spending[3]	$6,013	$6,171	$6,201	$6,694	$7,096	**6.0%**
Total	**$37,456**	**$38,083**	**$39,498**	**$40,845**	**$43,443**	**6.4%**

	Distribution of Spending					Change
Type of Service	**2010**	**2011**	**2012**	**2013**	**2014**	**from 2013**
Inpatient Hospital	20.2%	19.8%	19.6%	19.3%	18.8%	**-0.5%**
Outpatient Hospital	13.3%	14.0%	14.8%	14.8%	14.7%	**-0.1%**
Physician Services	19.8%	19.6%	19.4%	18.8%	19.1%	**0.3%**
Long-Term Care[1]	14.9%	15.1%	15.3%	15.7%	15.7%	**0.0%**
Prescription Drugs	9.4%	8.7%	8.8%	8.8%	9.4%	**0.6%**
Dental	3.4%	3.3%	3.2%	3.3%	3.2%	**-0.1%**
Other Professional Services[2]	3.0%	3.3%	3.1%	2.9%	2.9%	**0.0%**
Other Spending[3]	16.1%	16.2%	15.7%	16.4%	16.3%	**-0.1%**
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	

Source: MDH, Health Economics Program.
1Includes home health care services.
2Includes services provided by health practitioners who are not physicians or dentists.
3Includes chemical dependency/mental health, durable medical, health plan administrative expenses and revenues in excess of expenses, public health spending, correctional facility health spending, Indian Health Services, not itemized spending, and uncategorized spending.

[35] MDH, Health Economics Program. Trends at Minnesota's Community Hospitals, 2011-2014. July 2016.

Drivers of Spending Growth in the Commercial Market

Previous sections of this report described changes in overall spending in Minnesota. This section explores to what extent changes in prices, the types of services used (service mix), and volume of services help explain this growth in spending. For this part of the analysis, we focus on the commercial market because, lacking forms of price controls used in public health insurance settings, the commercial market better represents the underlying factors that drive health care costs.

Key Findings

- Price increases were the primary driver of spending growth in the commercial market.
- Change in prices explained most of growth for the majority of service categories, types of care, and areas of geography.
- Health care use was largely unchanged; service mix changes accounted for 39 percent of spending growth and price inflation for nearly 61 percent.

Using the Minnesota All Payer Claims Database (MN APCD),[36] a comprehensive data system that tracks health care services transactions in Minnesota's health care market, this analysis looks at all procedures and services delivered to Minnesota residents in 2013 and 2014 to understand:

- How much prices for the same procedure/service changed;
- Whether fewer or more services were used; and
- How the mix of procedures and services changed, either in favor of more or less costly treatment options.

As a unique data source in Minnesota, the MN APCD enables this analysis in the first place by offering de-identified information on health care utilization for nearly all Minnesotans *combined* with actual transaction prices for the services and procedures that were delivered. At a time where health care spending growth seems to be driven more by an increase in per-enrollee spending than by changes in the number of people with insurance coverage, this work is particularly useful in assessing the sustainability of private spending.

For this analysis, MDH looked to distinguish changes in spending over time not just in aggregate, but also by type of service (e.g., inpatient hospital acute care, outpatient hospital care, etc.) and care type (e.g., surgical, medical, unclassified).[37] This year, the analysis also tested if cost drivers differed

[36] More information on the Minnesota All Payer Claims Database is available online: http://www.health.state.mn.us/healthreform/allpayer/index.html

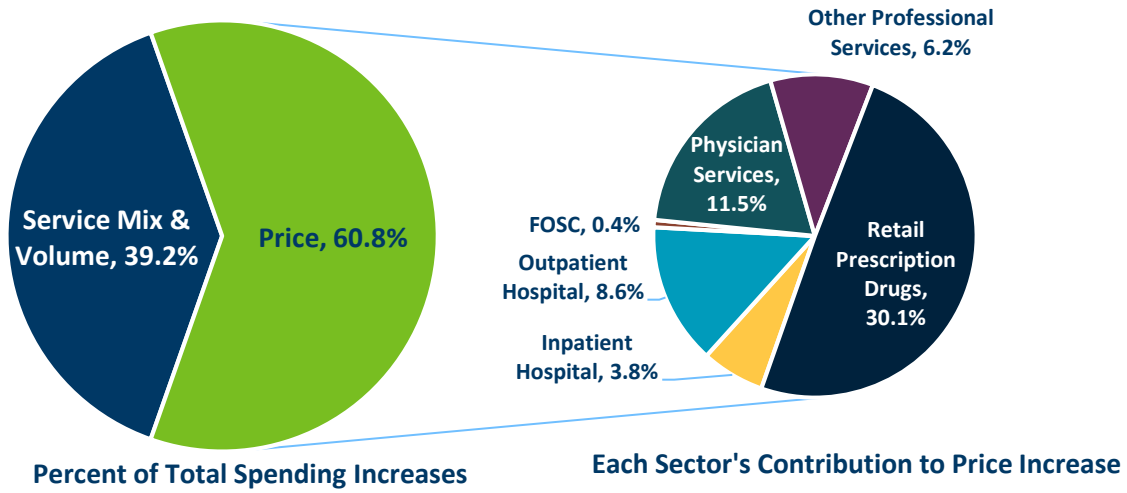
[37] The categorization of type of service and total spending for this analysis varies slightly from the earlier presentation because of differences in underlying methodologies.

between geographic areas within the state, using Rural-Urban Commuting Area methodology (RUCA).[38]

As shown in Figure 9, this year's analysis found that:

- Growth in health care prices drove most (60.8 percent) of the increase in health care spending in the commercial market from 2013 to 2014, compared to service mix and volume of services;
- Changes in service mix accounted for 39.0 percent of spending growth, while changes in volume (greater utilization) did not appear to influence aggregate spending growth in this market;
- Prices were the primary driver of commercial spending growth for outpatient hospital services, physician services, and prescription drug spending (these categories accounted for over 83 percent of the change in spending); and
- Increases in prescription drug prices alone accounted for 30.1 percent of total commercial spending growth (or about half of the growth accounted for by price inflation).[39]

Figure 9: Spending Increases Associated with Price, Service Mix and Volume, 2013 to 2014



Source: MDH, Health Economics Program; Mathematica Policy Research, Cost Drivers Analysis for Privately Insured Health Care Services in Minnesota from 2013 to 2014. FOSC is Freestanding Outpatient Surgical Center. Refer to Appendix B for additional information.

Increases in spending for the commercial market varied substantially by patient geography. The statewide rate of health spending growth for commercial insurance between 2013 and 2014 of 5.3

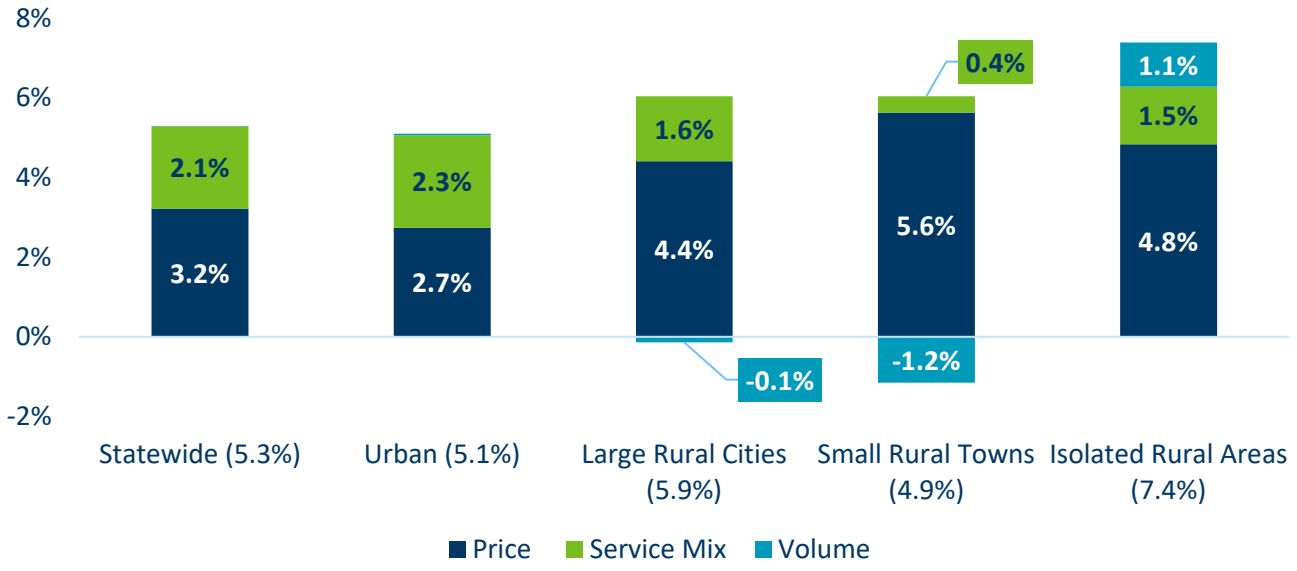
[38] RUCAs were developed to better characterize communities' degree of rurality and make more meaningful comparisons between geographies. By recognizing and considering commuting patterns and, thereby, access to resources, RUCAs improve designation of rural status, particularly for communities that are rural in nature but encompass cities. Additional information about RUCAs is available online: http://depts.washington.edu/uwruca/ruca-uses.php; a Minnesota map is available in Appendix B.

[39] In this analysis, prescription drugs administered in a medical setting are included in the prescription drug category.

percent was bookended by high spending growth in isolated rural areas (7.4 percent) and low spending growth in small rural towns (4.9 percent).

Price was the primary driver of spending changes in *all* geographic areas of the state, although it had a larger influence in large rural cities and small rural towns than in urban areas (Figure 10). In urban areas, service mix was also an important driver, while volume did not measurably influence spending increases. In both large rural cities and small rural towns, a decrease in health care use between 2013 and 2014 put modest downward pressure on spending. Meanwhile, in isolated rural areas, volume and service mix both put increased pressure on the growth in spending between 2013 and 2014, brought on by inflation in health care prices.

Figure 10: Drivers of Spending Growth for People with Commercial Health Insurance Spending, by Geography (2013 to 2014)



Source: MDH, Health Economics Program; Mathematica Policy Research, Cost Drivers Analysis for Privately Insured Health Care Services in Minnesota from 2013 to 2014. Refer to Appendix B for additional information.

Health Care Spending Projections

In this section, we present health care spending projections for Minnesota through 2024, relying on historical patterns of health care spending, coverage trends and macroeconomic factors.

Similar to past years, these projections take into consideration changes to historical data. They also only consider spending in the context of current law (here through 2014). In other words, the projections do not aim to account for likely or potential spending changes that might derive from planned or upcoming policy changes affecting health care, coverage or the economy. Given the relatively short projection period – ten years –long-term effects from evolutions in policies, system and the health care ecosystem may not be captured.[40]

Key Findings:

- Health care spending is expected to nearly double over the next decade, reaching $75.6 billion.
- Average annual health care spending growth through 2024 is projected to be higher than the growth experienced from 2005 to 2014.
- Similar to national results, the share of Minnesota's economy devoted to health care spending is expected to increase over the next decade (to 15.8 percent).

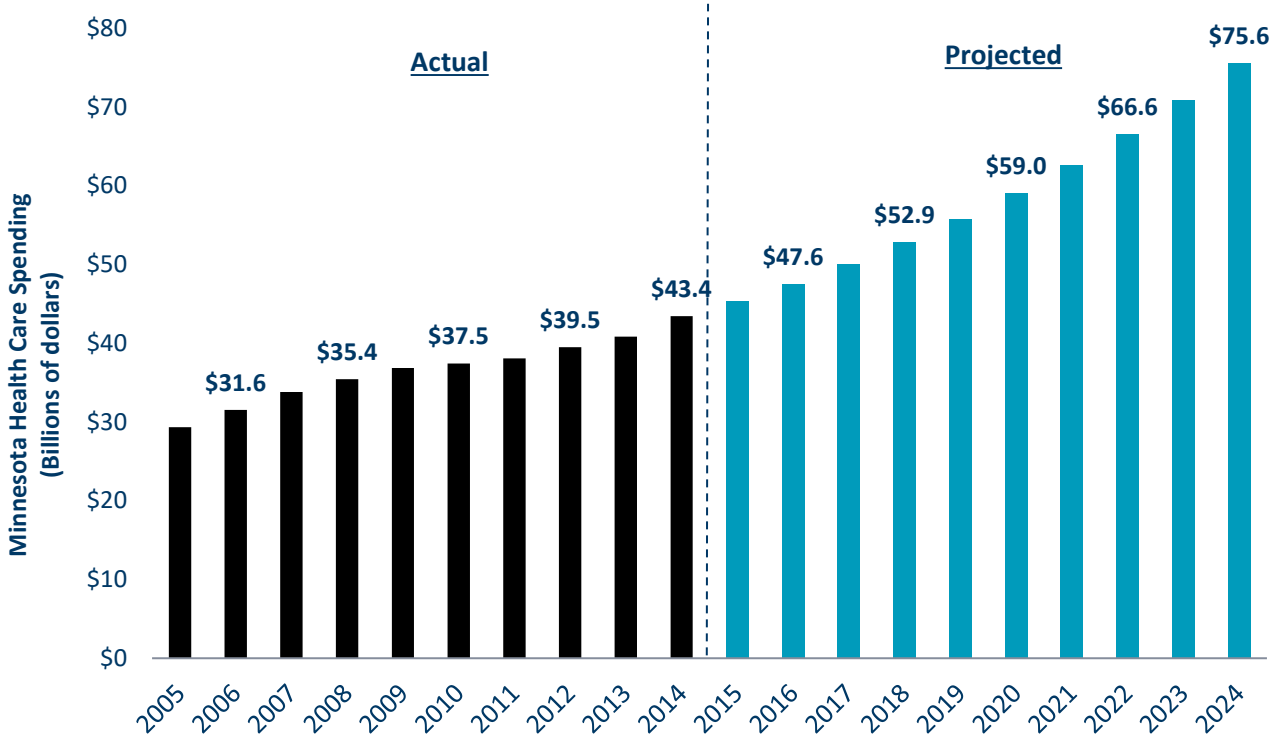
These Minnesota projections rely on methodologies established by the Centers for Medicare & Medicaid Services (CMS) aligned to Minnesota and statistical modeling at the payer and service type level (discussed later in Appendix B).

Future Health Care Spending

Health care spending grew 4.5 percent per year on average from 2005 to 2014. In comparison, between 2015 and 2024, health care spending is projected to grow more quickly on average, at 5.8 percent per year. With this accelerated growth, health care spending is expected to reach $75.6 billion by 2024 (Figure 11) and account for 15.8 percent of Minnesota's economy. At that point, nearly one out of every six dollars in Minnesota's economy would be devoted to paying for health care.

[40] These projections use all available historical spending information, including calendar year 2014 estimates, to project future Minnesota health care spending.

Figure 11: Minnesota Health Care Spending 2005 to 2024



Source: historical spending estimates from MDH, Health Economics Program; projections from Mathematica Policy Research. Health care spending includes medical and prescription drug spending.

Several factors will likely contribute to the higher spending growth expected over the next ten years, as compared to the prior decade:

- **The shifting age structure in Minnesota will change the composition of people with insurance coverage, as well as the pattern of health care needs.** As Minnesota's population ages, a greater share of residents will obtain coverage through Medicare, and more Medicaid dollars will be devoted to finance long-term care for an increasing number of people. In addition, more Minnesotans will be living with one or more chronic diseases, exacerbating the impact on spending from increasing rates of disease among younger age groups.[41]
- **Similar to past years, one of the main drivers of spending growth is expected to be medical price inflation.** Of concern is that prescription drug spending will continue to be higher than witnessed during the Great Recession – with the majority of the spending coming from specialty

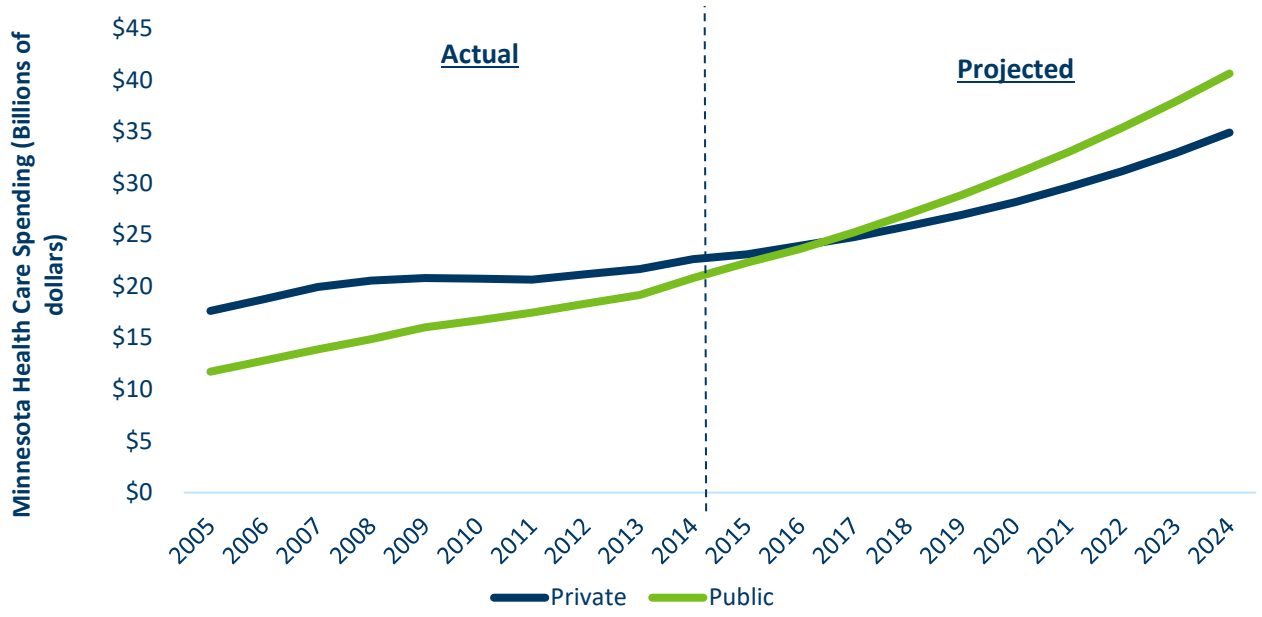
[41] MDH, Health Economics Program. "Treated Chronic Disease Costs in Minnesota – a Look Back and a Look Forward." Legislative Report, December 2017.

prescriptions (e.g., higher cost and higher complexity drugs) and higher growth occurring for office administered medications.[42,43]

- **Private spending is projected to grow more quickly than in the past decade**, resulting from both higher prices and increased utilization. MDH estimates that from 2005 to 2014 private health care spending grew at an average annual rate of 2.8 percent. Projections for the next ten years estimate private average annual spending growth at 4.7 percent (not shown).

As shown in Figure 12, the outcome of faster public spending growth is that the share of public spending is anticipated to surpass the share of private spending in the next few years. In Figure 12, the cross-over point is projected to be 2017. However, it is possible that with updated projections of public and private spending, this milestone might be pushed out a few years. The early years of this growth will be driven more by enrollment increases in Medicare and Medicaid, rather than other factors such as price or utilization. That changes after 2017, when over half the change is due to other factors.

Figure 12: Public and Private Health Care Spending, 2005 to 2024 (Billions of Dollars)



Source: historical spending estimates from MDH, Health Economics Program; projections from Mathematica Policy Research. Health care spending includes medical and prescription drug spending.

[42] Keehan S, et al. "National Health Expenditure Projections, 2015–25: Economy, Prices, And Aging Expected To Shape Spending And Enrollment." Health Affairs. 2016; and Roehrig C. "'Moderate' Health Spending Growth Projections Exceed What We Can Afford." Health Affairs Blog. August 10, 2016.

[43] Hirsch B, Balu S, Schulman K. "The Impact of Specialty Pharmaceuticals as Drivers of Health Care Costs." Health Affairs. October 2014 vol. 33 no. 10.

As noted, the projections in this report do not aim to capture the expected health care spending impact from future policy changes and other factors that may evolve over time. For example, our models do not incorporate the impact from potential microeconomic changes in Minnesota's market that may be resulting from changes in payment arrangements. Nor does it take into account future changes in federal policy, including spillover effects that could result from Medicare policy changes, such as from the Medicare Access and CHIP Reauthorization Act (MACRA) of 2015, the termination of the individual shared responsibility provision of the ACA, regulatory changes in the individual and small group markets and other provisions that have not been fully realized.[44] This somewhat static approach allows us to sketch a picture of future spending absent further policy or business changes to constrain health care spending. However, this approach also makes it necessary to revisit the projection model, underlying data and assumptions on a regular basis.

Beyond these considerations, there are other important limitations associated with the precision of projections in general, and these health spending projections, in particular. They are further discussed in Appendix B.

Comparisons of Actual to Projected Health Care Spending, 2014

Beginning with the 2009 report on health care spending estimates and projections, MDH analyzed how actual spending differed from what past projections had estimated. The point of this comparison was not to assess technical precision – how accurately we forecast future spending – but rather to gauge to what extent actual spending deviates from expected trends. Although such an exercise is associated with substantial technical complexities and limitations, the hope is that such an analysis can offer insights into whether spending trends, or changes in the level of spending, move in a desirable direction.

One particular question the Minnesota Legislature wanted to assess was if the initiatives passed as part of the 2008 bipartisan health reform legislation were contributing to a hoped for "bending" of the health care spending curve.[45] To address this question in the past, MDH worked with a research vendor to develop health care spending projections that incorporated the expected impact of the reforms (by reducing spending estimates). Estimated actual spending was then compared to these projections and the resulting difference analyzed to identify the portion attributable to state administered programs, such as Medicaid and the State Employee Group Insurance Program (SEGIP).

Since 2008, we have performed this analysis six times. In three years, we found that actual spending was greater than projected spending without reforms. In the other three years, we found that actual spending was lower than projected spending. In 2013, we certified that the difference between actual and projected spending attributable to state administered programs was greater than $50 million,

[44] MACRA is also known as the Quality Payment Program.

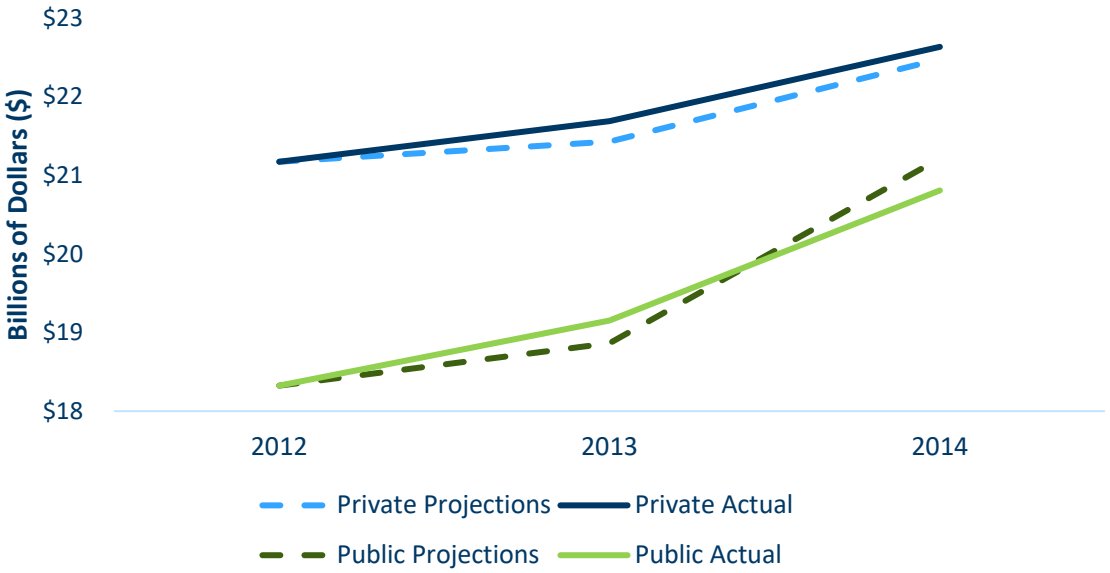
[45] Minnesota Statutes, Section 62U.10, subd., which defines the difference between actual and projected spending as "savings," ties the accumulation of this difference to a potential transfer of $50 million from the state's General Fund to the Health Care Access Fund.

thus triggering the repayment of the transfer stipulated in Minnesota Statutes, Section 62U.10, Subd. 4.[46]

The health care market and health policy space are never static, but between 2010 and 2014 there were particularly dramatic changes, including the implementation of the Patient Protection and Affordable Care Act (ACA), further provider consolidation, changes in payment practices and the emergence of pricing pressure from prescription drugs and new technology. One consequence of that dynamic is that it is no longer a realistic analytic exercise, nearly a decade later, to isolate any remaining, independent influence of the Minnesota 2008 health reforms on trends in health care spending.

Nevertheless, comparing actual spending to previous projections does allow us to understand how variable our expectations for health care spending are and how difficult it is to forecast the impact of policy initiatives. To that end, we compare our spending projections for the years 2013 and 2014 to actual spending for 2013 and 2014. As shown in Figure 13, the overall magnitude and direction of the spending increases that were projected for 2013 and 2014 were similar to actual spending. However, actual private spending was slightly higher than projected in both 2013 and 2014, while actual public spending was higher than projected in 2013, but slightly lower in 2014.

Figure 13: Comparison of Spending Projections with Actual Spending, 2012 to 2014, by Sponsor of Coverage



Source: Historical spending estimates from MDH, Health Economics Program; projections from Mathematica Policy Research.

This comparison tells us that our near-term projections that specifically accounted for the impact of the ACA were fairly accurate. The higher private spending experienced could be due to price increases, especially for prescription drugs, that were not fully anticipated, along with increased

[46] MDH, Health Economics Program: Minnesota Health Care Spending and Projections, 2011. December 2013.

coverage and use as the economy improved. The lower actual public spending experienced in 2014 may represent the impact of not fully accounting for changes in contracting on behalf of Medicaid beneficiaries.

Conclusions

MDH's analysis of health care spending trends documents accelerated growth in 2014. With an increase of 6.4 percent over the previous year, growth in health care spending reached levels not seen since 2007, but below the double-digit increases of the early 2000s. Although the level of spending – Minnesota health care costs amounted to $43.4 billion in 2014 – and the rate of growth are noteworthy, in and of themselves, they do not come as a surprise.

After years of what experts suggested was dampened health care use that resulted from a depressed economy and a slow recovery, health care spending was expected to increase somewhat with greater economic growth, lower unemployment and the resulting gain in coverage and disposable income.[47] More importantly, however, 2014 also marked the year in which many of the Patient Protection and Affordable Care Act's (ACA's) coverage provisions took hold, which helped about 200,000 more Minnesotans than in the previous year get or keep insurance coverage.[48] For those with new insurance coverage, 2014 became the year where they were able to begin to address delayed health care needs within a structure that constrained out-of-pocket spending, offered minimum essential benefits and made premium support available for people at certain lower incomes. As documented elsewhere, this contributed to health care spending growth in the short term, with the hope that over the longer term, availability of insurance coverage would generate savings related to continuity of care and early diagnosis and treatment.[49]

Exacerbating these dynamics were well-documented pricing pressures in the prescription drug market related to the introduction of new brand name and specialty drugs with high market prices, and price inflation for generics and legacy products. Ultimately, the 2014 increase in spending was not a surprise, because, nationally, health care spending has been accelerating as well, and historical spending trends suggest the modest growth in spending since 2007 was bound to become a temporary disruption.[50]

This observed resilience in health care spending growth, despite recent slowing, is what accounts for projections that predict the near-doubling of health care expenses over a decade. It is also what worries policymakers, businesses and individuals, as they realize that this volume of spending has the potential to crowd out other spending priorities, on both a personal and community level.

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[47] Hartman M, et al. "National Health Spending in 2013: Growth Slows, Remains in Step With the Overall Economy." Health Affairs. 2015. Dranove D, Garthwaite C, Ody C. "Health Spending Slowdown is Mostly Due to Economic Factors, Not Structural Change in the Health Care Sector." Health Affairs. 2014.

[48] MDH, Health Economics Program and University of Minnesota, School of Public Health, "Health Insurance Coverage in Minnesota: Results from the 2015 Minnesota Health Access Survey." Issue Brief, February 2016

[49] Maciosek M, et al. "Greater Use of Preventive Services in U.S. Health Care Could Save Lives at Little or No Cost." Health Affairs. 2010. "Kaiser Family Foundation: Preventive Services Covered by Private Health Plans Under the Affordable Care Act." Henry J. Kaiser Family Foundation. August 4, 2015.

[50] Martin A, et al. "National Health Spending in 2014: Faster Growth Driven by Coverage Expansion and Prescription Drug Spending." Health Affairs. 2015.

While there may not be a single, widely appealing, silver bullet to constrain health care spending growth and, perhaps, even correct the current level of spending, there are a range of emerging initiatives that have the potential to make an impact. MDH is analyzing the evidence as part of our next iteration of this annual report. As part of this work, we will aim to distinguish ideas and initiatives that address unique challenges for spending in the Medicare population, in state health care programs and the commercial market.

Appendices

Appendix A: Actuarial Certification

Willis Towers Watson

September 30, 2016

Mr. Stefan Gildemeister
Director, Health Economics Program
Minnesota Department of Health
85 East Seventh Place, Suite 220
Saint Paul, MN 55101

Dear Stefan:

Actuarial Certification

Over the past several weeks, Willis Towers Watson has provided an actuarial review of the final estimates of statewide health expenditures in Minnesota developed by the Minnesota Department of Health (MDH). Our review considered the extensive tables that MDH provided, presenting sources of funding and categories of state health care expenditures for 2014 and previous years. Our review also included examination of supporting documentation, discussion of data sources and methodologies, and requests for additional documentation and clarification.

Based on this review, we find the data sources and methodologies MDH has used are valid and reasonable. We further certify that the health spending estimates for 2014, including statewide health care expenditures totaling $43.4 billion and total spending less Medicare and long-term care in the amount of $29.2 billion, are reasonable based on our review of the data used, the methodologies employed and health care spending trends observed nationally. The tables on the following page summarize these estimates.

Best Regards,

Scott Lund

Scott Lund, FSA, MAAA
Willis Towers Watson

cc: Alisha Simon, Michelle Wilson – MDH
David Jones, Deborah Chollet – Mathematica Policy Research
Ryan Lore – Willis Towers Watson

Scott Lund, FSA, MAAA

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Table 1
Where Minnesota Health Care Spending Came From in 2014

Source of Funding	Total Spending (Millions)	%	Total Spending Less Medicare and LTC (Millions)	%
Medicare	$ 8,367	19.3%		
Medical Assistance	$ 9,940	22.9%	$ 5,800	19.8%
Other Public	$ 2,501	5.8%	$ 2,388	8.2%
Private Health Insurance	$ 16,473	37.9%	$ 16,260	55.6%
Other Private	$ 1,088	2.5%	$ 1,088	3.7%
Out of Pocket	$ 5,075	11.7%	$ 3,689	12.6%
All Sources of Funding	**$ 43,443**	**100.0%**	**$ 29,225**	**100.0%**

Major sources of Other Public funding include the state public health programs (MinnesotaCare and General Assistance Medical Care), public workers compensation, public health spending and the Veterans Administration.

Other Private funding includes private workers compensation and auto medical insurance.

The amounts by funding source may not sum to totals due to rounding.

Table 2
Where Minnesota Health Care Dollars Were Spent in 2014

Spending Category	Total Spending (Millions)	%	Total Spending Less Medicare and LTC (Millions)	%
Hospital	$ 14,519	33.4%	$ 10,144	34.7%
Physician Services	$ 8,298	19.1%	$ 6,798	23.3%
Long-Term Care (incl. Home Care)	$ 6,815	15.7%		
Prescription Drugs	$ 4,101	9.4%	$ 3,646	12.5%
Dental	$ 1,372	3.2%	$ 1,353	4.6%
Other Professional Services	$ 1,241	2.9%	$ 1,034	3.5%
Chemical Dependency/Mental Health	$ 1,285	3.0%	$ 1,285	4.4%
Other Medical Spending	$ 3,517	8.1%	$ 2,883	9.9%
Other Nonmedical Spending	$ 2,294	5.3%	$ 2,081	7.1%
Total Spending	**$ 43,443**	**100.0%**	**$ 29,225**	**100.0%**

Other Professional Services spending includes spending for services by private-duty nurses, chiropractors, podiatrists and other health practitioners who are not physicians or dentists.

The amounts by spending category may not sum to totals due to rounding.

Appendix B: Health Care Spending Estimate and Projection Methodology

Overview

The Health Economics Program (HEP) of the Minnesota Department of Health (MDH) prepares annual estimates of health care spending for Minnesota residents as part of its responsibility to monitor trends in Minnesota's health care market and in compliance with requirements to assess actual health care spending in the context of developed spending projections. These estimates detail health care spending by broad expenditure categories and sources of funding. Generally, the data sources used for the development of Minnesota's health care spending estimates are provided in fairly aggregated form; no patient-level information on volume or utilization and location of health care services is available for this purpose. The data originate with payers of health care expenditures, such as health plans, government agencies, and consumers. Minnesota's approach to spending estimates is a bottom-up approach, in that all health care spending for consumers is tracked by the source of payment. This is an important distinction from the top-down approach used by the Centers for Medicare & Medicaid Services (CMS); CMS uses a data flow from providers or equivalent estimates to construct their national spending estimates. While MDH works to align with the CMS framework, using similar payer and type of service categories, the data sources used by CMS are not available with the geographic specificity necessary to directly reproduce these estimates. As such, MDH utilizes the CMS framework by following their categorization by payers and by types of service, but by using different data sources that are available on a state-specific basis.

In addition to estimates of historic spending, MDH contracts with an outside consultant to develop projections of future health care spending. Similar to the spending estimates, projections are computed annually to carry forward the projection window and maintain alignment with methods and data updates employed by CMS.

This document outlines the methodological approach used to generate the spending estimate and projections. It identifies data sources and key assumptions made when working to isolate annual trends in expenses resulting from health care consumption by Minnesota residents. Estimated and projected spending are divided into categories of payer and type of service.

Estimating Historical Health Care Expenditures

Data

Data on health care spending are available to the analysis in aggregated form, generally submitted to MDH by payers of health care services. This means detailed expenditure data that would allow for decomposition of expenditure trends into drivers of health care growth, such as changes in mix of services (e.g., technology), health care demand due to aging or other factors, or unit prices of various products and services are not available.

The sources of funding are grouped by type of payer similar to the payer categories used in the National Health Expenditure Accounts (NHEA), a nationwide spending estimate conducted by CMS. The broad categories include private health insurance, out-of-pocket spending, spending by other private payers, and spending by public payers, including Medicare, Minnesota Health Care Programs (MHCP), and other public sources. In addition to health care spending, data on type of coverage are used to estimate per capita spending and the size of the overall Minnesota market. As shown in Table B1, we use a number of primary data sources to create health care spending estimates. The first three data sources, covering private spending, spending for state public program enrollees, and Medicare fee-for-service program spending, consistently capture about 75 percent of total health care spending in the state.

Table B1: Major Data Sources Used in Minnesota Health Care Spending

Data Source Name	Types of Data	Sources of Data	Data Use
Health Plan Financial and Statistical Report (HPFSR)	Aggregated expenditure data, enrollment, revenue	Group purchasers (health plan companies)	Fully-insured and self-insured private health plans, Medicare Advantage, Medicare Supplement, and Medicare Prescription Drug Plan spending
Reports and Forecasts Division, Minnesota Department of Human Services (DHS)	Aggregated expenditure data, enrollment	Minnesota DHS	Minnesota Health Care Programs (MHCP) spending
Medicare Fee-for-Service (FFS) Spending Estimate	Aggregated expenditure	Centers for Medicare & Medicaid Services (CMS)	Medicare spending
Medical Expenditure Panel Survey (MEPS)	Out-of-pocket cost estimates	Agency for Healthcare Research and Quality (AHRQ)	Estimating out-of-pocket costs
National Health Expenditure Accounts	Out-of-pocket cost estimates	CMS	Estimating out-of-pocket costs
Various administrative reports and data	Aggregate expenditures, enrollment	Federal and state agencies	Other public and private spending

The remainder of this section discusses approaches to estimating spending by primary payers in two broad categories: private and public sources of spending.

Private Expenditures

Private payer spending includes all health care expenses incurred by non-public contributors to health care financing. This includes claims paid by private insurers, costs paid by consumers out-of-pocket, and expenses paid by other entities such as automobile insurance carriers, third-party administrators, and others.

Private Insurance

For the fully-insured market, estimates of private health insurance spending are computed using data reported to MDH by health insurance carriers licensed to provide health insurance coverage in Minnesota. The vehicle of data collection is the annual Health Plan Financial and Statistical Report (HPFSR). Carriers report the data by 13 expenditure categories and type of product, which means the data system includes information beyond private insurance spending, like spending for people with Medicare Supplement coverage. Spending under Medicare Supplement policies is calculated consistently with commercial spending.

A significant share of privately insured Minnesotans (approximately 60 percent) receive coverage through self-insured employers. Total self-insured spending is estimated by creating a product of a calculated per capita ratio of fully-insured to self-insured spending and an estimate of the number of self-insured Minnesotans. The estimate of the number of self-insured residents in Minnesota is derived as a population residual using information on the distribution of health insurance coverage for Minnesota residents.

High-Risk Pools

Spending for Minnesotans who are covered in two high-risk pool programs – the Minnesota Comprehensive Health Association (MCHA) and the federal Pre-existing Condition Insurance Plan (PCIP) – is calculated separately for each program. MCHA spending is derived from aggregated claims data obtained from the plan administrator in Minnesota. PCIP private spending is calculated based on reported average monthly premiums per enrollee. The portion of PCIP spending funded by the federal government for the small number of Minnesota enrollees is reported as public spending (under other public spending). In 2014, both MCHA and PCIP programs terminated due to the onset of additional Patient Protection and Affordable Care Act (ACA) provisions. MCHA ended December 31, 2014 and PCIP ended April 30, 2014.

Medicare Advantage Private Expenses

Health insurance carriers offering Medicare Advantage policies report those expenditures via the HPFSR to MDH. The expenditures are divided between public and private payer categories by subtracting CMS capitation payments from total expenditures.

Out-of-Pocket Costs

MDH estimates out-of-pocket spending from a ratio of national estimates of out-of-pocket spending to covered-spending (the share of spending paid by an insurance carrier). This analysis is conducted at the expenditure category level and is based on aggregated health expenditure data drawn from the household component of Medical Expenditure Panel Survey (MEPS) (Midwest) and the NHEA.

MDH weights this ratio to the distribution of coverage in Minnesota, to account for the difference in coverage distribution between Minnesota and the Midwest region overall. The results are multiplied by an estimate of Minnesota covered-spending.

Other Private Spending

Other private spending includes spending estimates for a number of smaller-volume payers, including workers' compensation spending for non-government workers and automobile insurance medical spending. Health care spending for the private portion of the workers' compensation program is calculated as the product of total spending and a ratio of private-to-public employment. The estimate of health care spending paid by automobile insurance, the other component of this spending category, is based on a ratio of medical paid losses to total paid losses. This ratio, which is derived from "Best's Averages & Aggregates," a publication for the property and casualty industry, is applied to an estimate of total Minnesota paid losses, estimated from historic data on medical paid losses.

Public Expenditures

Public expenditures include public spending for health insurance, such as Medicare and Medical Assistance, and other spending such as by the Veterans Administration, workers' compensation, state and federal correctional systems, and public health.

Medicare

Medicare expenses include costs for beneficiaries enrolled in fee-for-service (FFS) Medicare and payments made to health plans as part of the Medicare Advantage and Prescription Drug programs – again, the private portion of these payments is calculated separately, as private spending. FFS spending is based on a series of data tables prepared by CMS for Minnesota (residence-based) Medicare Parts A and B spending. An estimate of managed care payments (capitation) paid by CMS to Medicare Advantage plans is added to this value for public Medicare spending. The amount Medicare Advantage plans report on the HPFSR as revenue from CMS is used to represent public Medicare capitation payments. The HPFSR also collects data related to prescription drug coverage for Minnesota residents through a stand-alone Medicare Part D plan. These data are benchmarked against monthly enrollment reports from CMS.

Minnesota seniors eligible for both Medicare and Medicaid may enroll in Minnesota Senior Health Options (MSHO), a program that blends Medicare and Medicaid benefits into one managed care product. CMS and the Minnesota Department of Human Services (DHS) make capitated payments directly to the managed care plan companies. These companies report revenue and expenditures as part of their annual financial reporting on the Minnesota Supplement Report #1. To avoid double counting of expenses and ensure accurate allocation of payer type data, DHS administrative records are used to subtract Medicaid contributions to MSHO, leaving the Medicare capitations. The distribution of these payments across service categories is calculated based on the distribution observed for Medicare Advantage enrollees. The remaining payment stream (the DHS capitation amounts) is captured in Medical Assistance managed care spending within Minnesota Health Care Programs.

Minnesota Health Care Programs

Spending estimates for Medical Assistance (MA), Minnesota's Medicaid program, are computed separately for the managed care and FFS portions of the program. DHS reports MA FFS data directly. The managed care component of health care spending for MA are distributed across type of service using historical estimates provided by DHS. 2013 and 2014 spending included estimates on the additional federal funding related to the temporary (2013-2014) ACA provision that increased payments for primary care services to be equal to Medicare Part B payments.

Aggregated MinnesotaCare spending by calendar year is obtained from the DHS Reports and Forecasts division. DHS also provided historical expenditure distributions that MDH used to allocate spending across type of service. Historically, the methodology for deriving spending estimates for enrollees in MinnesotaCare and GAMC was nearly identical. However, GAMC underwent significant program changes in fiscal year 2010. For 2010 and 2011, spending estimates are based on program reports for each component. They explicitly include budgetary expenses that the DHS Forecast no longer carries. This reconfigured program ended in 2011, and enrollees were converted to Medical Assistance.

Other Public Spending

In addition to Medicare and Minnesota Health Care Programs, the estimate of public health care spending includes spending by the Veterans Administration, government workers' compensation, public health programs, the Indian Health Service (IHS), and the state and federal correctional systems.

Veterans Administration health care spending for Minnesota beneficiaries (medical care and general operating expenses) is obtained directly from the U.S. Department of Veterans Affairs website. Federal fiscal year data are converted to calendar years and allocated across expenditure categories based on historic information from the U.S. Office of Management and Budget (for years prior to 1997) and from the CMS NHEA (for years 1997 forward). In limited circumstances when the most recent fiscal year is not available, a five-year annual growth rate trend is applied. Future spending reports are updated with complete data once data is available. The Department of Defense (DOD) reports TRICARE spending. They report the data by expenditure category, which are aligned to those in the Minnesota estimation model.

Estimates of workers' compensation spending for state and local employees rely on data from the Minnesota Department of Labor and Industry (DOLI). Total Minnesota non-federal workers' compensation claims are multiplied by the share of the workforce employed by state and local government units. Estimates of workers' compensation spending for federal employees who are Minnesota residents are based on total federal workers' compensation expenses in the state from the U.S. Department of Labor.

MDH's estimation approach includes spending estimates for the medical care of individuals incarcerated in federal prisons located within the state and in state correctional facilities. The federal data are obtained directly from the Federal Bureau of Prisons. Data on medical spending at state

correctional facilities is obtained directly from the Minnesota Department of Corrections. To calculate state spending, MDH multiplies per diem costs for "health services" and "behavioral health" by the average annual population utilizing health services in state correctional facilities.

The estimate of public health care spending for the state of Minnesota draws on data from a range of sources to estimate spending at the federal, state, and local public health-level. The federal public health care spending estimate relies on data from USASpending.gov, the U.S. Department of Health & Human Services Health Resources and Services Administration data warehouse, and the Substance Abuse and Mental Health Services Administration website, which reports information on block grants and other major federal grant programs. State public health data are obtained from the DHS forecast and from a division of MDH that awards public health grants to local public health departments. Those data are converted from federal and state fiscal year to calendar year.

The estimate of data on federal health care spending by the Indian Health Service (IHS) are obtained from the IHS Bemidji area office and converted to a calendar year estimate. Because the data are not available by expenditure categories, all IHS expenditures are currently reported as uncategorized other public spending.

Lastly, to align with CMS' NHEA methodology, we began to include estimates of the ACA's Advanced Premium Tax Credit (APTC) as uncategorized other public spending. We based the estimate on data received from MNsure. Data related to the ACA's Cost-Sharing Reductions (CSR) was not included in the 2014 estimates as data was incomplete and we did not expect it to make a material difference in spending estimates.

Differences between MDH and CMS Estimation Approaches

As mentioned earlier, Minnesota has developed health care expenditure estimates since the mid-1990s, relying on data explicitly collected from payers for this effort and advancing the methodological approach and data sources used over time. Minnesota's health care spending estimation method follows the structure, or framework, of the NHEA published by CMS. While the data used for Minnesota's estimates differ from those at the national level—Minnesota uses data from payers, while CMS largely relies on data from providers— both estimates use similar categories for payers and types of service. Minnesota compares its results relative to a subset of CMS expenditure data, namely spending in the health consumption category, which includes spending for personal health care, government administration, the net cost of private health insurance, and government public health activities. Both estimates exclude resources spent on investments and research that are not explicitly built into prices by providers and paid for by payers. This category of national spending offers the best comparison with the Minnesota estimates, and provides context for spending, both at a per capita level, and as a percent of the economy.

Systemic differences do exist between Minnesota's state spending analysis and CMS' effort to estimate the state portion of their national health expenditure account initiative. CMS historically had developed the State Health Expenditure Account (SHEA), in which CMS attempted to translate expenditures at the point of service into a point-of-residency perspective in order to estimate state-

level health spending for personal health expenditures. The estimates involved a two-step process of first generating estimates based on provider location, and then, using Medicare claims data, estimating the extent to which residents crossed state lines for care.[51] A historical independent analysis by an MDH contractor of the CMS SHEA approach did not reveal any factors that suggest CMS' approach is characterized by methodological strengths relative to Minnesota's approach, or vice versa. Rather, the CMS approach appears to be a tool that uses statistical methods to compensate for a lack of available data that is comparable for all (or most) states by apportioning spending across the nation.

Cost Drivers Analysis

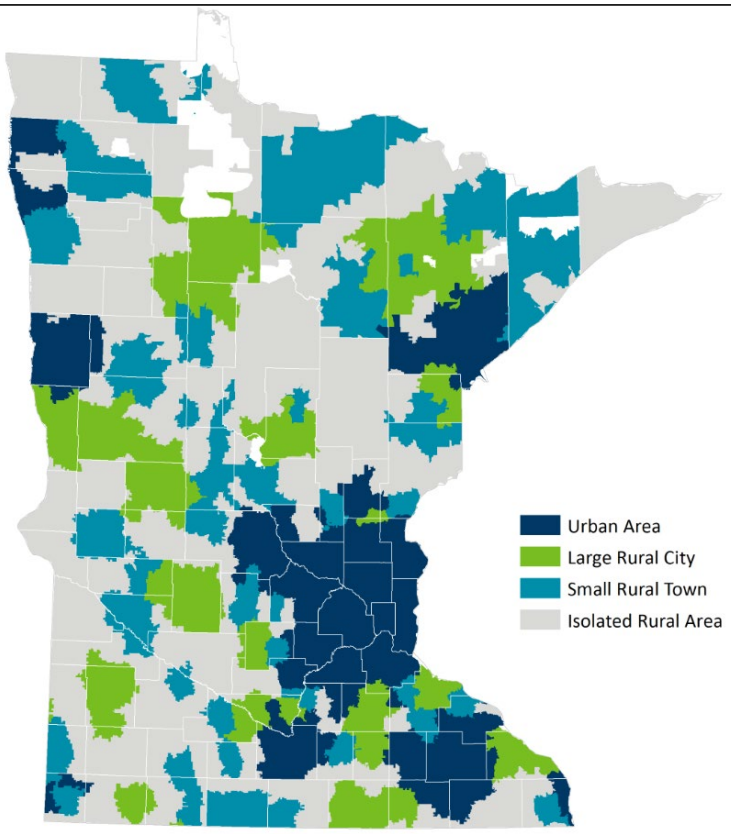
MDH contracted with Mathematica Policy Research to analyze the drivers in spending growth in the private insurance market. An analysis was performed at a microeconomic level, for years 2012 to 2013, 2013 to 2014, and 2012 to 2014 by type of service and geography, to distinguish changes in spending attributable to price, service mix (e.g., distribution of spending between categories of services), and volume of health care. Results presented of the analysis between 2013 and 2014 in this report, as they are most relevant to the changes discussed.

Mathematica obtained data for comprehensive private commercial insurance claims from the Minnesota All Payer Claims Database (MN APCD) and reviewed six types of service: (1) inpatient hospital acute care; (2) outpatient hospital care; (3) freestanding outpatient facilities; (4) physician services; (5) other professional services; and (6) prescription drugs (including injectable drugs delivered in the medical setting). They excluded claims that fell into other service categories. Within each type of service, Mathematica completed additional review based on four Rural Urban Commuting Area Codes (RUCA): (1) Urban (Metropolitan); (2) Large Rural Cities (Micropolitan); (3) Small Rural Towns; and (4) Isolated Rural Areas. RUCA codes are based on classifications of U.S. census tract information that measure population density, urbanization, and daily commuting.[52]

[51] Further information on the methodology used by CMS to generate state-level spending estimates through 2014 can be found on the CMS State Health Expenditure web site https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/NationalHealthAccountsStateHealthAccountsResidence.html

[52] United States Department of Agriculture, Economic Research Service. http://www.ers.usda.gov/data-products/rural-urban-commuting-area-codes.aspx

Figure B1: Illustration of Rural Urban Commuting Area Codes (RUCAs)



Source: Rural-Urban Commuting Area Codes Version 3.10, Categorization A, developed by the federal Office of Rural Health Policy (of Health Resources & Service Administration, HHS) and the Economic Research Service (of the Department of Agriculture). Zip code tabulation areas shown are based on an approximation of census-tract rural-urban commuting codes using the 2010 Census work-commuting data, 2012 Census Bureau revised urban area definition based on 2010 Census data, and 2013 Zip Codes. Areas without color are not assigned a zip code. Map created by MDH, Health Economics program, January 2017.

Prior to beginning the analyses, MN APCD data for calendar years 2012, 2013, and 2014 were run through the 3M™ All Patient Refined DRG (APR DRG) Classification System. The purpose of running this grouper was specifically done to adjust for inpatient medical claims for severity of illness (SOI) and risk of mortality (ROM), allowing for a more consistent measure of inpatient diagnostic groups.[53]

The analyses also excluded spending associated with (1) non-Minnesota residents; (2) payers who did not report in each analysis year; (3) non-standard service codes; (4) service codes that had a low threshold of claims; and (5) payments considered to be outliers.

The contractor's method used an average of the Laspeyres' and Paasche's indexes to analyze cost drivers, and estimated spending changes separately by types of services and by geographies for the analysis.

[53] For more information on the 3M APR DRG, visit the 3M™ APR DRG Software website: http://www.3m.com/3M/en_US/company-us/all-3m-products/~/3M-APR-DRG-Software?N=5002385+8707795+8709364+8711017+8717532+8717554+3293081278&rt=rud

Health Care Expenditure Projections

Minnesota develops projections for the primary purposes of projecting future health care spending, as required by Minnesota Statutes, section 62U.10. MDH contracted with Mathematica Policy Research to develop the macroeconomic model used to project health care spending for this year (2015 through 2024). The method to develop health care spending projections is based on the methodology used by CMS to forecast national health care spending projections, and, where appropriate, is customized to Minnesota's health care and data environment, based on the current policy landscape.[54]

For all spending projections, a growth rate specific to each year is projected, and applied to actual spending from the preceding year. In previous years, projections to estimate what future spending would have been without the impact of 2008 Minnesota health care reforms, or the Patient Protection and Affordable Care Act (ACA) were also undertaken. Now over five years removed from 2008 reforms, and with full implementation of the ACA beginning in 2014, continuing this projection series is no longer a realistic analytic endeavor, as discussed below.

Macroeconomic Forecast

Similar to CMS' projection approach, Minnesota's approach aims to project an overall model of health care spending. It does so by modeling payer and service categories and benchmarking results to form a more predictive total spending model.

Public Spending

Three types of public spending are included in MDH's contractors' projections: Medicare, MHCP, and other public spending. Projected values for each are determined separately.

Medicare spending projections are based on growth rates published by the CMS Office of the Actuary.

MHCP projections, which include Medical Assistance, MinnesotaCare, and (prior to 2011) GAMC, are derived from the Minnesota Department of Human Services (DHS). DHS provided the data and MDH summarized it into program type and demographic categories. As DHS' data at the time of the forecast was projected to state fiscal year 2019, projections beginning for calendar year 2019 were based on a three- or five-year average growth rate applied to each demographic category. The MHCP projections are one area where projecting spending in absence of the 2008 Minnesota reforms or ACA was no longer feasible. Projections for public spending in the absence of the changes from the 2008 reforms were no longer available; nor were continuations of previous projections possible. Other public spending, which includes spending for the Veterans Administration and public workers' compensation, is calculated by applying a three- or five-year average growth rate to each category

[54] CMS projection methodology is available at the CMS projection methodology website: https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/index.html. MDH works to align its projections with the CMS methodology framework.

(depending on which average was the best approximation of recent growth and least likely to be influenced by any outliers) beginning with calendar year 2015.

Private Spending

Future private spending is projected by estimating a series of regression models using historic spending estimates and macroeconomic data for the years 1993 through 2014. The method utilized by MDH and its contractor is designed and updated to be aligned with CMS methods as much as is appropriate. Again, this process determines the historic relationship between macroeconomic variables and health care spending, aiming to hold this pattern constant. After fitting the historic data, future spending is estimated using projected macroeconomic factors as explanatory variables. Spending is projected in total and also by private payer type and by service category.

Each individual model includes a subset of the following as explanatory variables:

- **Price Index:** Estimates of national price indices are generated by CMS for each expenditure category.
- **National Real Per Capita GDP and Nominal Personal Income:** Estimates are obtained from the Bureau of Economic Analysis.
- **Minnesota Real Per Capita Personal Income:** Estimates and projections are obtained from forecasts by Minnesota Management and Budget. In line with CMS methodology, public health care spending is subtracted to better approximate income of the population that accounts for private health care spending. This value is divided by population estimates for per capita values.
- **Minnesota Real Per Capita Public Spending:** Public health care spending projections were estimated outside the models, based on growth rates in past public spending.
- **Minnesota Employment:** Estimates and projections are obtained from non-farm employment forecasts by Minnesota Management and Budget.
- **Time Trend:** A time trend is included in line with the methods used by CMS. The variable is created by subtracting 1993 (the first year of historic data) from the observation year.

Using these variables, models are run in aggregate and by payer type and service category. Payer type and service category models are then constrained so that the sums of estimates from the individual models are equal to the projected aggregate spending.

Limitations of Projection Model

The macroeconomic projection model is successful at explaining past trends in health care spending (the R-squared value of the total spending model is 0.9148). However, similar to any exercise in projections, the results are subject to considerable uncertainties because of the range of necessary assumptions about future trends.

Because a number of macroeconomic factors predict private spending, the projection relies on the accuracy of the underlying explanatory variables. If the explanatory variables are predicted

incorrectly, then the spending estimates will also be incorrect. For example, if GDP in Minnesota doesn't increase as projected in 2017 due to slow economic growth, health care spending estimates for 2017 may be inaccurate.

Even with accurately predicted explanatory variables, the accuracy of projections can be affected by external factors, such as changes in federal policy or economic shocks, like the Great Recession, that are not built into the historic relationship between explanatory variables and health care spending. Similar to limitations with national projections developed by CMS, MDH's approach aims to update model specifications to capture those trends; however, given that the model is macroeconomic in nature and the shifts might not carry through into the specific explanatory variables, the adjustment is only a best approximation. In addition, the soundness of the historical data, both about how much of the "signal" of underlying trends they carry and the length of the timeline from which to extract relationships between spending and explanatory factors, can be an important limitation. Minnesota's historical data, while strong because of its consistency and the method by which it is aggregated, represents a relatively short time series.

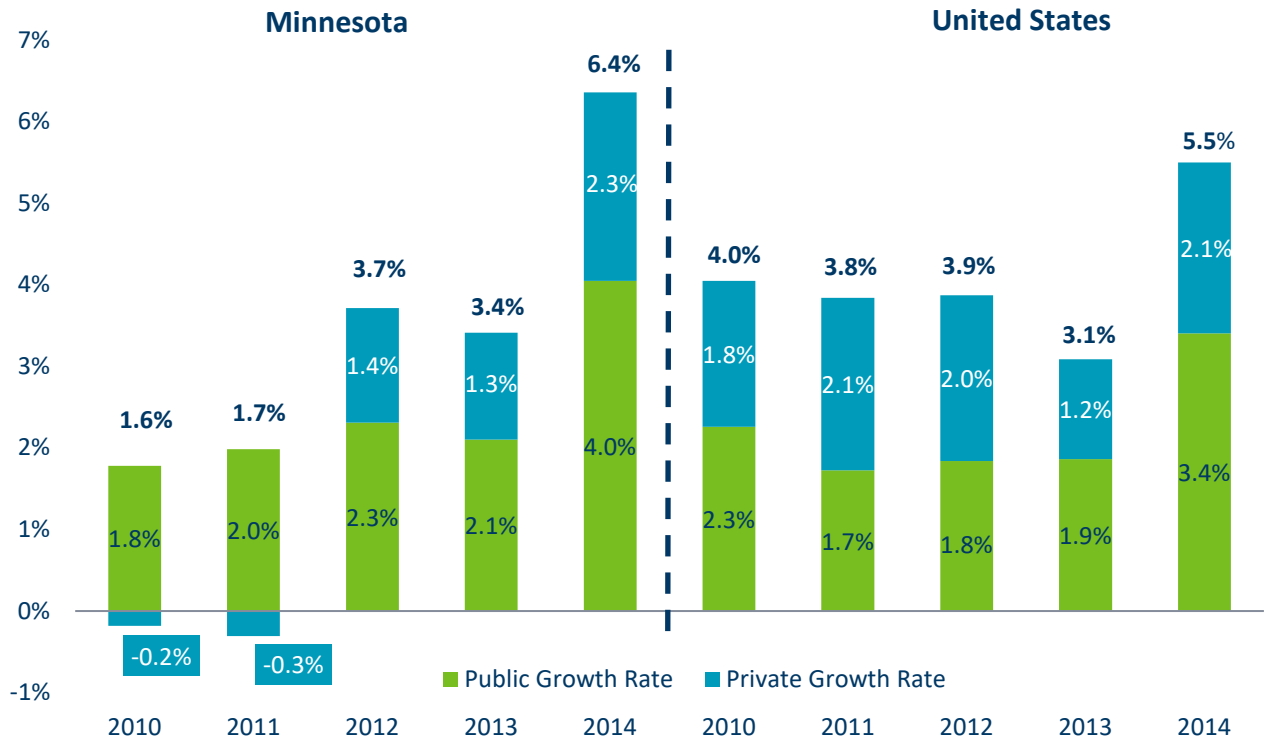
Appendix C: Additional Figures and Tables

This appendix includes additional figures and tables that represent health care spending results found in the broader *Health Care Spending and Projections, 2014* report.

Appendix Figure C1 shows spending growth from public payers, which primarily includes the public health insurance programs – Medicare and Medicaid – continued to exceed growth in spending by private payers.[55] Total public spending growth is largely influenced by coverage expansions in Medical Assistance.

In comparison, Minnesota's private spending generally experienced lower rates of growth than nationally; however, in 2014, it was modestly higher. Private spending includes non-public contributors to health care financing such as private health insurance, out-of-pocket expenses, automobile medical insurance, and private workers' compensation.

Figure C1: Health Care Spending Growth Rates for Minnesota and the United States, Overall and by Payer, 2010 to 2014



Note: Overall growth rates appear in bold above bars.
Source: MDH, Health Economics Program; Centers for Medicare & Medicaid Services.

[55] Public spending in this report also includes spending by Veterans Administration, workers' compensation, correctional facilities, and public health.

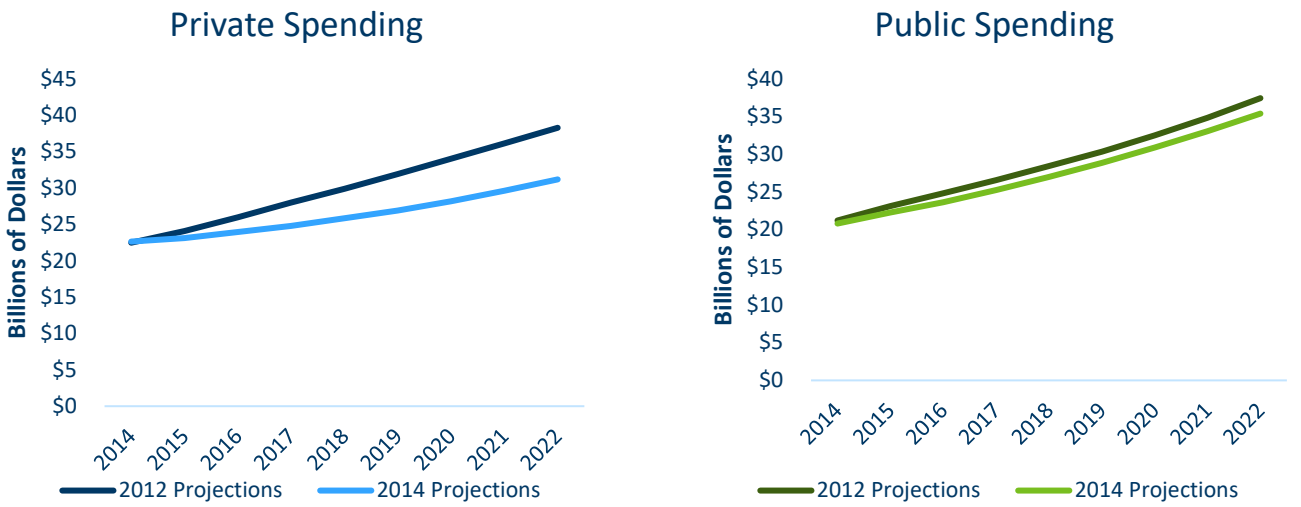
Appendix Table C1 shows the share of public and private payers moving closer to parity in 2014, in Minnesota and nationally. The share of public spending for health care in Minnesota increased steadily since 2013, but due to the high rate of private coverage in Minnesota, spending by private payers continued to account for the larger share of spending.

Appendix Table C1: Percent of Spending by Payer Type

Minnesota	***2010***	***2011***	***2012***	***2013***	***2014***
Private Spending, Total	**55.4%**	**54.2%**	**53.6%**	**53.1%**	**52.1%**
Private Health Insurance	40.5%	39.5%	39.0%	38.3%	37.9%
Out-of-Pocket	12.3%	12.1%	12.1%	12.2%	11.7%
Other Private[1]	2.6%	2.5%	2.5%	2.6%	2.5%
Public Spending, Total	**44.6%**	**45.8%**	**46.4%**	**46.9%**	**47.9%**
Medicare	18.4%	18.8%	19.5%	19.6%	19.3%
Medicaid	19.4%	20.8%	20.8%	21.1%	22.9%
Other Public Spending[2]	6.8%	6.2%	6.1%	6.2%	5.8%
United States[3]	***2010***	***2011***	***2012***	***2013***	***2014***
Private Spending, Total	**51.6%**	**51.7%**	**51.8%**	**51.4%**	**50.7%**
Private Health Insurance	35.2%	35.4%	35.3%	34.8%	34.4%
Out-of-Pocket	12.2%	12.2%	12.0%	11.9%	11.5%
Other Private[1]	4.2%	4.1%	4.4%	4.7%	4.8%
Public Spending, Total	**48.4%**	**48.3%**	**48.2%**	**48.6%**	**49.3%**
Medicare	21.2%	21.4%	21.5%	21.5%	21.5%
Medicaid	16.9%	16.7%	16.7%	17.1%	17.9%
Other Public Spending[2]	10.2%	10.1%	10.1%	10.0%	9.9%

Source: MDH, Health Economics Program, Centers for Medicare & Medicaid Services. Numbers may not sum to total due to rounding.
[1]Other major private payers include private workers' compensation and auto medical insurance.
[2]Other public spending includes government workers' compensation and Veterans Administration.
[3]U.S. comparison - CMS National Health Expenditure Accounts, Health Consumption Expenditures. This does not include research and investment.

Figure C2: Comparison of Spending Projections from 2012 and 2014, by Sponsor of Coverage



Source: Projections from Mathematica Policy Research for spending report years 2012 and 2014.

Figure C2 compares spending projections created in 2012 with projections from 2014. The changes in the short-term trends are fairly minimal, reflecting primarily changes in historical spending updates and changes in the regression model specifications. They are also a reflection of greater confidence in coverage trends following the implementation of the ACA. We found the projected growth for private coverage with the revisions between 2012 and 2022 to be 3.9 percent per year on average and spending growth for public programs between 2012 and 2022 to be 6.8 percent per year on average. It's important to note, these new figures include three years (2012, 2013, and 2014) of historical spending.

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