

Projected Health Care Spending in Minnesota

Final Report

July 26, 2010

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Deborah Chollet



MATHEMATICA
Policy Research, Inc.

Contract Number:

Projected Health Care Spending in Minnesota

Mathematica Reference Number:
6572-100

Submitted to:
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EXECUTIVE SUMMARY

In 2008, Governor Pawlenty signed significant health care reform legislation into law, incorporating recommendations from both the Governor's Transformation Task Force and the Legislature's Health Care Access Commission. The 2008 reforms included provisions to help improve Minnesotans' health status, increase private insurance and public program coverage, and improve the quality and efficiency of health care in Minnesota. Taken together, the 2008 reforms are expected to produce significant health care cost savings.

Enacted as part of the 2008 reforms, Minnesota Statutes Section 62U.10 requires the Commissioner of the Minnesota Department of Health (MDH) to measure health care cost savings against projected costs without reform. Specifically, the Commissioner must establish a health care spending baseline for calendar years 2008 to 2018 and calculate the annual projected total private and public health care spending for state residents, excluding expenditures for Medicare and long-term care. In June 2009, Mathematica Policy Research delivered an initial set of expenditure projections (from 2007 to 2018) in the absence of Minnesota's reforms and a detailed review of the methods used to generate the forecasts. In this report (one year later), we update the projections for 2008 to 2018 with current data and summarize changes made to the methodology to account both for the impacts of severe economic recession and projected implementation of the national health care reform law.

Methods for Projecting Health Care Expenditures in Minnesota

Projected expenditures for health services and supplies in Minnesota are calculated as the sum of projected private expenditures (modeled as described below) and public expenditure forecasts provided by (or extrapolated from) the Minnesota Department of Human Services (DHS). To project private health care expenditures in Minnesota from 2008 to 2018 we began with the same methodology used in our June 2009 report. That is, we developed a series of econometric models to explain past private health care expenditures as measured by MDH; specifications for these models generally followed the Centers for Medicare and Medicaid Services (CMS) methods for forecasting the National Health Expenditure Accounts (NHEA). The dependent variable in all models was real per capita private spending. In the June 2009 report, the basic model of private health care spending included four "core" explanatory variables that paralleled those in the CMS models and were strong predictors of private expenditures in Minnesota: (1) real Minnesota per capita disposable personal income; (2) real Minnesota per capita public expenditures for health services and supplies; (3) a national index of the relative price of personal health care; and (4) real national per capita GDP.

For this report, we refreshed the data used in the projections to reflect the most current health care and macroeconomic information available and added a time trend to the total private spending model (to follow CMS's addition of a time trend in its most recent model). In addition, we added two variables to account for changes in private spending during the recent economic recession and anticipated recovery: employment (total employment per adult population in Minnesota) and the percent of the population under age 65 without health insurance. As for the 2009 report, we tested several alternative specifications as potentially better predictors of total private spending in Minnesota, measuring the right-hand side variables in different ways. We examined both the fit of each model and the plausibility of the resulting projections to select the final model for projecting total private spending in Minnesota.

Our estimates and projections of health care spending in Minnesota measure the same total set of services and payers as the NHEA, but reflect MDH's aggregation of expenditures for health services and supplies to eight service categories: inpatient hospital care, physician services, prescription drugs, outpatient hospital care, long-term care (including nursing home and home health care), dental care, other professional services, and other spending. As in MDH expenditure estimates, public health activities and government administration and the net cost of private health insurance are included in the "other spending" category (and are not separate expenditure categories, as in the NHEA).

Following CMS, we developed separate models of private expenditures by service type and for three payer types: private health insurance spending, other private spending, and out-of-pocket spending. These models are similar to that for total private spending described above. That is, the dependent variables are real per-capita private expenditures for the each service and payer type. We initially specified each model as closely as possible to the CMS model for that service and payer type, and then estimated the models using available Minnesota-specific data. We investigated alternative specifications (including the addition of the Minnesota employment and insurance coverage variables) to achieve the best fit, and (like CMS) constrained the results of both the service and payer type models to equal projected aggregate private expenditures. Finally, responding to a request from MDH, we projected health care spending in Minnesota, by service and payer type, that also include Medicare and long-term care spending.

Projected Spending for Health Care in Minnesota

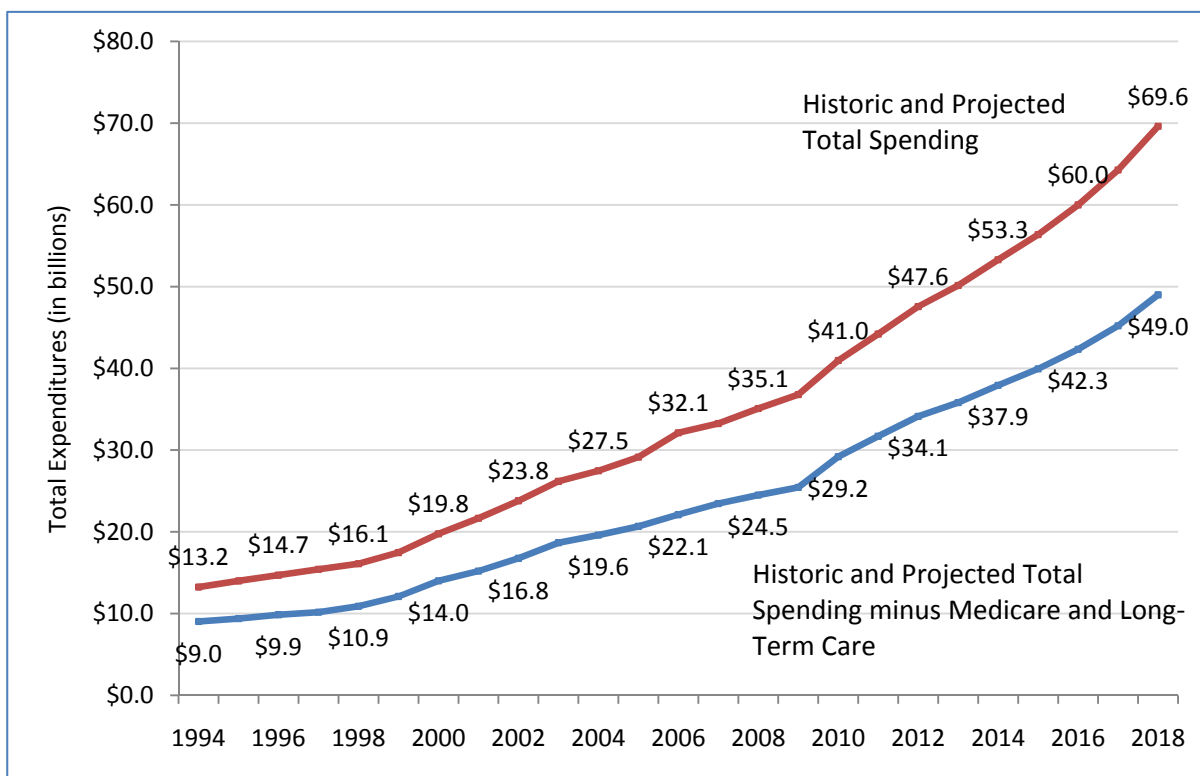
Excluding Medicare and long-term care expenditures, total spending in the absence of the 2008 reforms is projected to reach \$49.0 billion in 2018 (Figure ES.1). This level of expenditure is 98 percent greater than the \$24.7 billion spent in 2008 (the most recent year for which MDH has released estimates of actual spending). Including both Medicare and long-term care, projected total spending for health services and supplies in the absence of the 2008 reforms is \$69.6 billion in 2018, also 98 percent more than the estimated \$35.1 billion spent in 2008.

Projected Expenditure Growth

Expenditures for health services and supplies in Minnesota are projected to grow more slowly from 2008 to 2018 than in past years (Table ES.1). Expenditures from 2008 to 2018 (minus Medicare and long-term care) are projected to grow at an average annual rate of 7.2 percent, in contrast to 8.2 percent historically (from 1993 to 2007).

Slower projected growth from 2008 to 2018 is largely driven by projected growth in private expenditures. The average growth rates for projected total private spending (6.3 percent) is 2.4 percentage points lower than the historic average (8.7). This lower average growth rate is projected for each of the private payer types (private health insurance, other private, and out-of-pocket) as well as all service types except physician services and uncategorized spending. In contrast, the average growth rate for projected total public spending (9.7 percent) is 0.9 percentage points higher than the historic average (8.8 percent).

Figure ES.1. Historic and Projected Total Health Care Expenditures in Minnesota: 1994–2018 (current dollars in billions)



Source: Mathematica Policy Research. Historic expenditure estimates (1994–2007) are from the Minnesota Department of Health.

Note: Estimates exclude the projected effects of the Patient Protection and Affordable Care Act.

Factors that Could Affect the Accuracy of the Projections

A number of factors could significantly affect the accuracy of the expenditure projections. These include the accuracy of projected public expenditures as well as changes in environmental circumstances and government policy that are outside Minnesota’s historical experience.

Public spending. The projections rely on the accuracy of projected future values of public spending in Minnesota in two ways: indirectly (it is an explanatory variable in all public spending models) and directly (as a major component of aggregate spending). We made assumptions about the growth rates of public spending for the various public programs in Minnesota based on the growth observed and projected prior to the 2008 reforms. Any changes unrelated to the 2008 reforms but that would affect future spending growth in Minnesota’s public programs—including national health care reform—could substantially impact the accuracy of the projected expenditures in this report.

Table ES.1. Estimated Average Annual Growth in Expenditures for Health Care Services and Supplies in Minnesota, minus Medicare and Long-Term Care, by Service Type and Payer: 1993–2018 (percent change in current dollars)

	Historic Average Annual Growth 1997–2007	Projected Average Annual Growth 2008–2018	Percentage Point Change in Average Annual Growth, from 1993–2007 period to 2008–2018 period
Total Spending	8.7	7.2	-1.5
Service Type			
Inpatient Hospital	8.6	6.8	-1.8
Physician Services	7.8	8.5	0.7
Prescription Drugs	8.9	9.5	0.7
Outpatient Hospital	11.2	6.9	-4.3
Dental	9.5	-0.1	-9.5
Other Professional	9.4	7.5	-1.9
Other	8.7	4.7	-4.0
Uncategorized	5.2	6.4	1.1
Payer Type			
Total Private	8.7	6.3	-2.4
Private Health Insurance	9.7	7.4	-2.2
Other Private	3.7	-2.7	-6.4
Out of Pocket	6.7	2.1	-4.6
Total Public	8.8	9.7	0.9
Medicaid	9.5	9.2	-0.3

Source: Mathematica Policy Research. Historic expenditure estimates (1993–2007) are from the Minnesota Department of Health.

Note: Percentage point changes may reflect rounding.

Economic recession and recovery. The recent downturn in the U.S. economy is a major change likely to affect the accuracy of projected expenditures. While the CMS models capture the usual relationship between general economic conditions and health care spending, the current economic situation is unprecedented. That is, we did not observe conditions from 1993 to 2007 in Minnesota that would provide evidence of how health care spending responds in the current economy. By adding variables that successfully predict change in health care spending in economic recession and recovery periods (employment and insurance coverage), the models are better able to predict spending during these periods. However, only as data reflecting responses to current economic conditions in Minnesota become available, will it be possible to re-estimate the models and improve the accuracy of the projections.

Government policy. The Patient Protection and Affordable Care Act (PPACA) is expected to substantially change public and private health care spending nationwide and in Minnesota. Because (following CMS) we use public spending to predict private spending in Minnesota, even accurate projections of future public spending could lead to inaccurate projections of future private spending if PPACA alters the relationship between public and private spending as it was observed from 1993 to 2007. Consequently, accurately predicting the impacts of federal health reform (independent of both the historical relationship between public and private spending in Minnesota and the state's own reforms) is essential to predicting private spending absent Minnesota's reforms.

Federal Reform Estimates

Within the time and resources available to this project, we were unable to develop a full projection model to estimate the effect of federal health care reform in Minnesota, comparable to the models we assume CMS developed to support its actuarial projections. Instead, to project post reform health care spending in Minnesota, we used the same model specifications as described above, but changing the values of two right-hand side variables: public spending (which we adjusted to be consistent with OACT reform estimates) and the percent of Minnesotans under age 65 who are uninsured.

This simplified projection method produced little net change in projected total spending for health care in Minnesota. Consistent with the OACT reform estimates, total public spending minus Medicare changes very little relative to pre-reform estimates until 2014, when eligibility for MA expands to include all adults under 133 percent FPL (Table ES.2). In 2014 through 2019, public spending excluding Medicare is projected to be 6 to 7 percent higher than it would be without reform. However, including reductions in projected Medicare spending, projected total public spending in Minnesota changes very little.

Table ES.2. Projected Minnesota Health Care Expenditures after PPACA, and Change as a Percent of Pre-Reform Projected Spending, 2010–2018

Calendar year	Total spending	Total public spending	Medicare	MA and other public spending	Total private spending	Private health insurance spending
Total spending in billions of current dollars:						
2010	41.0	16.9	6.5	10.4	24.1	18.6
2011	44.1	18.1	6.8	11.3	26.0	20.6
2012	47.4	19.6	7.3	12.3	27.8	22.1
2013	49.9	20.9	7.6	13.4	28.9	23.1
2014	54.0	23.2	7.9	15.3	30.8	24.5
2015	59.5	25.3	8.5	16.8	34.2	27.7
2016	63.2	27.5	9.0	18.5	35.8	29.2
2017	67.4	29.7	9.6	20.0	37.7	31.2
2018	72.8	32.3	10.4	21.9	40.5	33.9
Projected percentage change from pre-reform spending:						
2010	0.1%	0.3%	0.1%	0.4%	0.0%	-0.2%
2011	-0.2%	-0.4%	-0.9%	-0.2%	0.0%	0.4%
2012	-0.3%	-0.8%	-2.4%	0.1%	0.1%	0.7%
2013	-0.6%	-1.4%	-4.7%	0.5%	0.1%	1.3%
2014	1.3%	0.8%	-8.0%	6.0%	1.7%	2.0%
2015	5.6%	1.8%	-7.0%	6.8%	8.6%	10.2%
2016	5.4%	1.6%	-8.4%	7.3%	8.5%	10.2%
2017	4.9%	0.7%	-9.5%	6.5%	8.4%	10.8%
2018	4.5%	0.2%	-10.5%	6.3%	8.2%	10.9%

Source: Mathematica Policy Research.

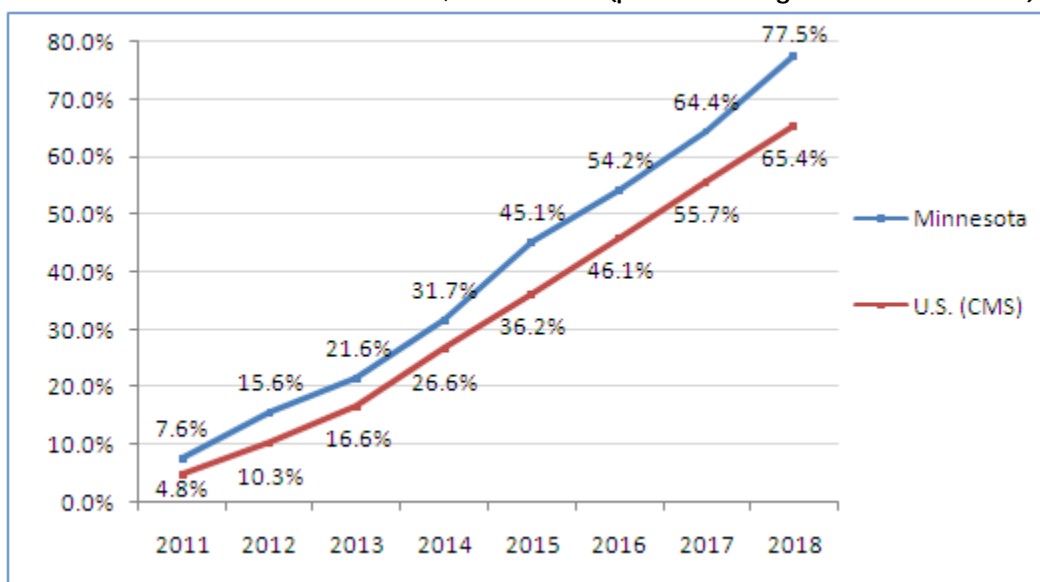
Projected total private spending increases with implementation of PPACA, reflecting much greater private insurance spending. In 2014, the first year of the individual mandate, projected private insurance spending is just 2 percent greater than in the absence of reform, reflecting our assumption about gradual compliance with PPACA's mandate. However, in 2015 through 2018,

projected private insurance spending is 10 to 11 percent greater than would occur in the absence of federal reform.

Reflecting the relatively small net effects of PPACA implementation on total spending, we continue to project faster spending growth in Minnesota through 2018 than the national average. In Minnesota, projected total spending (including Medicare and long term care) in 2018 with PPACA implementation is 77 percent more than the projected level of spending in 2010, with the start of PPACA implementation. This compares with projected national spending that is 65 percent higher in 2018 than in 2010 (Figure ES.2).

At least two caveats with respect to these projections are in order. First, it is impossible to validate the estimates within Minnesota's experience. While the statistical explanatory power of the underlying models is quite high, these projections lie outside Minnesota's historical experience since 1993—with respect not only to the unprecedented scope of federal health care reform, but also the path of recovery from a uniquely deep economic recession. Second, we assume that public and private spending under PPACA will change as it has in past years when employment, income, and health insurance coverage changed. However, if Minnesotans who are uninsured systematically have different health status or preferences for using health care services, compared with Minnesotans who are insured, our estimates would misstate the increase in total spending with implementation of PPACA. To improve projections of private and public spending with PPACA implementation, future estimates should rely on disaggregated modeling that takes into account the specific characteristics of uninsured Minnesotans who would gain coverage under PPACA, the sources of coverage they would gain, the proportion of the year they are currently uninsured, and their demand for health care when insured.

Figure ES.2. Cumulative Percent Change in Projected Total Spending with Implementation of Federal Health Care Reform: Minnesota and the U.S., 2010–2018 (percent change in current dollars)



Source: Mathematica Policy Research.

Note: Estimates include Medicare and long term care, in addition to other health care spending.

I. BACKGROUND

In 2008, Governor Pawlenty signed significant health care reform legislation into law, incorporating recommendations from both the Governor's Transformation Task Force and the Legislature's Health Care Access Commission.¹ The 2008 reforms were comprehensive. They included provisions to help improve Minnesotans' health status; increase access to MinnesotaCare and other state public health care programs; increase offer and take-up of Section 125 plans to help employees afford group coverage; expand the use of medical homes, especially for chronic care management; establish a statewide system of quality-based incentive payments for use by public and private health care purchasers alike; and improve efficiency via adoption of electronic health records and e-prescribing.

Enacted as part of the 2008 reforms, Minnesota Statutes Section 62U.10 requires the Commissioner of the Minnesota Department of Health (MDH) to measure health care cost savings against projected spending without the reforms. Specifically, the Commissioner must establish a health care spending baseline for calendar years 2008 to 2018, and calculate the annual projected total private and public health care spending for state residents. The law instructs the Commissioner to use the Centers for Medicare and Medicaid Services (CMS) forecast for total growth in national health care expenditures excluding Medicare and long-term care spending, and adjusted to reflect Minnesota's particular circumstances as the Commissioner deems necessary.

In December 2008, MDH contracted with Mathematica Policy Research to develop expenditure projections in the absence of reform. In June of 2009, Mathematica submitted a report to MDH projecting health care expenditures in Minnesota from 2007 to 2018 (Jones and Chollet 2009).

This report follows on our 2009 report. We present updated health spending projections in Minnesota from 2008 to 2018 and summarize changes made to the methodology. We include expenditure projections without Medicare and long-term care spending (as Minnesota Statutes Section 62U.10 specifies), as well as estimates that include both spending components. Projected spending is reported both by major type of service (inpatient hospital, outpatient hospital, physician services, prescription drugs, dental services, other professional services, and other services and supplies) and by private payers (private insurance, other private sources, and out-of-pocket, or OOP) separately from public payers (Medicare, Medicaid, and other public sources). Finally, we present initial projections of the changes in total public and private spending with implementation of the new federal health care reform law.

A. Overview of methods

To develop projections of health spending in Minnesota assuming no passage of the 2008 reforms, it is necessary to draw on Minnesota's cost experience prior to reform. The projections

¹ The health reform measures passed in the 2007-2008 session are largely included in Chapter 358, Senate File (S.F.) 3780. Additional reform measures enacted in 2008 include legislation passed as Omnibus tax bill Chapter 366, House File (H.F.) 3149 (which authorizes grants and tax credits to cover certain employers' cost of establishing Section 125 Plans); Supplemental budget bill Chapter 363, H.F. 1812 (which requires health care cost savings to be measured against projected costs without reform); and Omnibus higher education bill Chapter 298, S.F. 2942 (which requires a workgroup to develop recommendations for the education and regulation of oral health practitioners).

presented in this report differ from those in the 2009 report for two reasons. First, in response to comments that MDH received from Mathematica and others regarding the methods used to develop its current-year spending estimates, MDH improved its estimates of spending and revised estimates from 1993 to 2008 to create a methodologically consistent series. As a result, the underlying data used in the projection models changed. Second, we tested and adopted alternative specifications to several of the econometric models that produced the projections in the 2009 report. The projections in this report are based on models that include additional variables to account for key impacts of the economic recession—high unemployment and loss of health insurance—on health care spending and the addition of a time trend variable to the model of total spending as CMS adds to their latest model.

1. CMS's Projection Methods

Minnesota Statutes Section 62U.10 requires the Commissioner to use the CMS forecast for total growth in national health care expenditures, adjusted as deemed necessary for factors specific to Minnesota. CMS bases its forecast on the National Health Expenditure Accounts (NHEA), which include annual estimates of total expenditures for health services and supplies across the United States, projecting these estimates forward eleven years.²

CMS develops personal health care expenditures both by type of service and by source of financing. Expenditures are estimated for ten major service types: hospital care, physician and clinical services, other professional services, dental services, home health care, other personal care, nursing home care, prescription drugs, other non-durable medical products, and durable medical equipment. Compared to the NHEA, the health services and supplies category excludes research and construction expenditures.

In addition, the NHEA projections recognize five major sources of payment: (1) private health insurance, including all premiums to private insurers, divided between those paid by employers and by households or individuals; (2) OOP spending, including any direct payment for health care such as coinsurance and deductibles for private and government-sponsored plans, and the cost of services not covered by insurance; (3) other private sources, including philanthropic contributions and income from activities such as hospital gift shops, cafeterias, and parking lots; (4) federal government spending including Medicaid, Medicare, and SCHIP; and 5) state government spending including Medicaid and SCHIP. CMS also reports total projected expenditures for Medicaid and Medicare separately from federal and state spending.

CMS uses a series of single-equation econometric models to forecast growth in the private spending component of the NHEA—specifically, annual growth in real per capita private spending in total, and then by type of service and payer. The CMS model for total private spending includes three core explanatory variables: (1) growth in real per capita disposable personal income (DPI), less

² The NHEA divide health services and supplies into three groups: (1) personal health care, including hospital care, professional services, nursing home and home health, and retail sales of medical products; (2) government public health activities, including expenditures to promote the general health of the population such as immunization and disease prevention programs; and (3) government administration and the net cost of private health insurance, including all expenditures net of benefits for private insurance and the cost of administering government programs. Nonprofit or government research expenditures as well as the costs of capital accumulation (structures and medical equipment) are classified separately as investment.

Medicare and Medicaid spending; (2) the relative price of medical care; and (3) real per capita public spending growth.³ Total future expenditures are the sum of the private expenditure projections (derived from the model) and public spending forecasts generated outside the model. Public spending is based primarily on Office of the Actuary (OACT) projections of Medicare and Medicaid spending. CMS's methods and data sources for projecting national health expenditures are summarized in Appendix A and explained more fully in documents available on the CMS website (CMS 2008).

CMS models real per capita private spending growth for the ten service types separately. In general, these models contain the same basic variables as the aggregate model with various exceptions to improve the predictive accuracy of each model. Once the aggregate and service type models are estimated, CMS constrains the predicted values from each service type model, so that they sum to the annual projections from the aggregate model.⁴ Expenditures for each payer type are modeled for the ten service types and then added together to estimate total expenditures by each payer. Again, spending is constrained for both payer and service types to ensure that the aggregate, service type, and payer type projections are consistent.

Finally, to estimate total projected expenditures for health services and supplies, public health activities and government administration and the net cost of private health insurance are estimated separately and added to expenditures by type of service.

2. Alternative Specifications to Forecast Expenditures in Minnesota

To update projections of future health care expenditures in Minnesota, we began with the same econometric models used in our June 2009 report, which were modified versions of the models CMS uses to project the NHEA. Projected expenditures are estimated as the sum of projected private spending (modeled using the CMS approach) and public spending forecasts provided by the Minnesota Department of Human Services (DHS).

Our estimates and projections of total expenditures in Minnesota measure the same total set of services and payers as the NHEA. However, because our projections of private spending are based on the historic estimates constructed by MDH, they reflect the service categories and construction that MDH has reported historically. Specifically, MDH defines eight service categories: inpatient hospital, physician services, prescription drugs, outpatient hospital care, long-term care (including nursing home and home health care), dental care, other professional services, and other spending. In addition, public health activities, health plan administration and the net cost of private health insurance are included in the "other spending" category (and are not a separate expenditure category, as in the NHEA).

³ CMS measures the explanatory variables in the model as follows: The DPI measure is constructed using the University of Maryland Long-Term Interindustry Forecasting Tool (LIFT). CMS estimates the relative price of medical care in a separate equation, primarily determined by a series of input prices. Projections of Medicaid and Medicare spending are based on forecasts by CMS's Office of the Actuary (OACT). Projections for other public expenditures are based on lagged growth in GDP.

⁴ Prescription drugs are the only exception to this part of CMS's methodology. CMS bases adjustments to estimates of prescription drug spending on outside research.

We estimated models for total private spending as well as for each expenditure category and payer type.⁵ We then tested whether adding Minnesota-specific variables measuring employment and insurance coverage produced reasonable spending projections from 2008 to May 2010, given the economic conditions during this time period. In particular, we studied the performance of the model to predict actual private insurance spending in 2008; this estimate was available at the time of the study, but not incorporated in the historic spending series. We then explored a number of alternative specifications for each spending category and payer type, focusing on the fit statistics for the models and the plausibility of the projections generated by the models.⁶ The variables included and fit statistics for each model are reported in Appendix A. To estimate the effects of federal reform implementation on projected spending, we changed the values of the variables used to estimate these models, but did not change the model specifications.

B. Organization of the Report

The remainder of the report is organized as follows. The methods used to project public and private spending are described in much greater detail in Chapter II, together with the construction of key explanatory variables. In Chapter II, we highlight changes made to methodology (if any) relative to those documented in the June 2009 report. The models that support expenditure projections by service and payer type, and the performance of the models, are presented in Chapter III. In Chapter IV, we present the projection results and in Chapter V we provide an analysis of the impacts of federal health care reform on projected spending in Minnesota. Supplemental information and supporting data are provided in appendices.

⁵ We modeled real per capita private spending rather than the growth in real per capita private spending (as CMS does) to improve the fit of the models. We also chose to include each variable as is rather than log-transformations as transforming the variables did not substantially change the distributions of the variables and it did not improve fit.

⁶ For the purposes of this report, “fit” refers to the performance of a model in predicting historic values of spending. The primary factors in determining which models have the best fit are R-squared and adjusted R-squared statistics, as well as the average absolute difference between actual and predicted historic values.

II. METHODS AND DATA

Future total spending for health services and supplies, minus Medicare and long-term care, were estimated as the sum of projected aggregate private and public spending for Minnesota residents.^{7, 8} Private spending was derived by estimating a regression model of aggregate private spending. The original regression model, presented in the June 2009 report, incorporated variations of the macroeconomic and health sector variables that CMS used to project national expenditures. Specifically, we included Minnesota-specific versions of the variables whenever possible to maximize the fit of the model. To improve the performance of the model in predicting health expenditures during the recent recession and potential recovery periods, the current model adds two new variables: total employment per adult population in Minnesota and the percent of the population under age 65 without health insurance. It also includes a time trend, following CMS's addition of a time trend in its most recent model. In addition to estimating an aggregate private spending model, we estimated separate models of private spending by service and payer types. Public health care spending projections were determined outside the model, based on DHS forecasts and growth rates in past public spending.

Both the private and public projections are based on the historic spending estimates (by service and payer types) constructed by MDH.⁹ The following sections document our methods for projecting public and private spending for health services and supplies.

A. Public Expenditures

1. Medical Assistance, General Assistance Medical Care, and MinnesotaCare

Projecting public health care expenditures in Minnesota entailed several key steps. First, spending was projected from 2009 to 2013 for three major public programs: (1) Medical Assistance (MA), (2) General Assistance Medical Care (GAMC), and (3) MinnesotaCare (MNCare).¹⁰ Managed care and fee-for-service (FFS) spending were estimated separately for each of the three state programs. These projections use MDH's estimation methods for historic public expenditures and DHS's February 2010 forecast of future managed care and FFS expenditures.

To estimate managed care expenditures for MA, GAMC, and MNCare, we summed DHS spending projections each year from 2009 to 2013 (the final year in the 2010 DHS projections). For MA, managed care expenditures are comprised of (1) Managed Care (HMO); (2) Managed Care Performance Payment and Gross Adjustments; and (3) payments under Minnesota's Managed Care

⁷Health Services and Supplies (HSS) is an expenditure category defined by CMS for their National Health Expenditure Accounts (NHEA). HSS includes all personal health care as well as program administration and net cost of private health insurance, and government public health activities. Although the sub-categories within HSS defined by MDH are not an exact match with those defined by CMS, most of the sub-categories are equivalent and the MDH and CMS definitions of overall HSS are the same.

⁸ From this point forward, any mention of expenditures excludes Medicare and long-term care unless noted otherwise.

⁹ See MDH (2009a) for a more detailed discussion of MDH's estimation methods.

¹⁰ Total public spending in Minnesota in 1993-2009 was estimated as the sum of public spending by program, based on data provided by DHS. Public spending in 2010 to 2013 are DHS projections.

Elderly Waiver, Community Alternatives for Disabled Individuals Waiver, and Traumatic Brain Injury Waiver. Expenditures were reallocated from fiscal years (FY) to calendar years (CY) by adding one half of reported spending in any given fiscal year and one half of spending in the following fiscal year (for example, $CY2001 = 0.5 \cdot FY2001 + 0.5 \cdot FY2002$).¹¹ To allocate expenditures for MA, GAMC, and MNCare across service types, we used program-specific spending data from DHS for large service categories. To allocate the remaining spending in state public programs, we used the Health Plan Financial and Statistical Report (HPFSR) for the nine HMOs and County Based Purchasing entities that provided Prepaid Medical Assistance Program (PMAP) coverage.

To estimate FFS expenditures for MA and GAMC (there are no MNCare FFS enrollees), we began by aggregating projected FFS spending in the DHS forecasts (2009 to 2013) into the appropriate service categories.¹² DHS forecasts FFS spending in detailed categories that closely approximate the service types estimated by MDH. Thus, it was not necessary to apply past service type distributions to the DHS forecasts as they were already in categories analogous to the MDH service types.¹³ Again, because DHS forecasts fiscal year spending, we reallocated expenditures to calendar years. We added the FFS and managed care estimates (by service type) to calculate total calendar year spending projections by service type for MA, GAMC, and MNCare from 2009 to 2013.

To estimate MA, GAMC, and MNCare expenditures from 2014 to 2018, we used the growth in projected spending for these three programs reported in the DHS forecasts. We applied the average growth rate in expenditures for each program over the last three years (that is, *projected* expenditures from 2010 to 2013) to expenditures for the given program in the most recent year (also a *projected* value). This method assumes that the average growth rate observed from 2010 to 2013 will continue into the future; it also relies on the accuracy of the predicted expenditures based on the DHS forecasts.

We investigated average growth rates over longer periods of time to determine which rates best characterized the recent overall patterns of expenditure growth. When the three-year trend contained an outlier value, we increased the range to four or five years to better approximate the general growth trend and reduce the impact of any short-term phenomena driving the three-year rate.

2. Other Public Spending

The next step in projecting total public spending was to estimate other public spending (that is, public spending other than spending in MA, GAMC, and MNCare). This payer category includes (but is not limited to): (1) Government Workers Compensation, (2) Veterans Administration, (3) Public Health Activities (federal, state, and local), (4) Minnesota Comprehensive Health Association

¹¹ Given this method, it is necessary to estimate expenditures in FY 2014 in order to estimate spending in CY 2013. We used the average growth rate over the previous years for each expenditures category (variously, three, four, or five years to smooth the effect of outlier values in any one year) to estimate spending in FY 2014.

¹² MNCare does not have FFS enrollment.

¹³ See pages 9-10 of MDH (2009a) for an explanation of which DHS categories map to which service types for MA.

(MCHA), and (5) MCHA Medicare supplemental claims.¹⁴ Forecasted expenditures for these five spending categories are not available.

Changes in Methods for Estimating MA, GAMC, and MinnesotaCare Expenditures

Several aspects of the input data series used to project public expenditures changed, relative to the input data series used to project expenditures in our June 2009 report. With respect to public expenditures, the nature of the data available from DHS necessitated additional changes, as follows:

- **Public Expenditure Projections absent Minnesota's 2008 Reforms.** The DHS projections of MA spending through 2013 include changes in payments to providers as of 2011, as part of the fees associated with the creation of medical homes. MDH and DHS estimated these amounts to be roughly \$4,500,000 per year for the physician payments and \$500,000 per year for payments to hospitals. We adjusted the MA spending projections from DHS downward to arrive at projections of public spending for MA that do not include these impacts of the 2008 reforms.
- **Projecting GAMC 2010-2013.** GAMC has ceased to exist as a program; instead, funding for services is made available through direct appropriation to health care providers. Because GAMC is no longer part of the state's forecast, it was necessary to develop projections by service type for 2010 to 2013. MDH constructed projections of total GAMC expenditures from 2010 to 2013 based on a fiscal note which estimated the funding. Projected expenditures from 2011 to 2013 were allocated among service types in two steps. First, expenditures for prescription drugs were set at \$51,875,000 for all three years. The remaining total was then distributed among four service categories (inpatient hospital, physician services, outpatient hospital, and other expenditures) based on the actual distribution of GAMC expenditures in 2009.
- **Projecting Net Cost of Insurance 2010-2014.** MDH's revised expenditure series from 1993 to 2008 adds the net cost of insurance (the difference between premiums collected and health care spending) for MA, GAMC, and MNCare to the "other spending" service category. We projected the net cost of insurance from 2010 to 2013 for each program using a three-year moving average of past growth in the net cost of insurance for public programs.

To estimate other public spending from 2009 to 2018, we applied past growth rate trends to historic expenditures in each of the five payer categories. We estimated future growth in each category as the average growth rate over either the past three or five-year period. As described above, we chose a three-year moving average growth rate when it best characterized the recent general growth trend. However, when there was a spike in the growth rate in a single year over the past three years, we investigated whether growth rates calculated over longer periods of time might represent the general growth trend better. Having estimated total expenditures in each payer category, we then allocated expenditures by service type using the most recent historic distribution by service type for each category, assuming implicitly that the distribution of expenditures by service type will not change in future years. Lastly, we subtracted long-term care spending from each public spending category to complete the time series of projected public spending (minus Medicare and long-term care) in Minnesota from 2009 to 2018.

¹⁴ These sources make up roughly two-thirds of the other public spending category from 1993-2006.

B. Private Health Expenditures

The model of aggregate private expenditures is based on the historic aggregate private spending estimates for health services and supplies constructed by MDH.¹⁵ As mentioned in Chapter I, we began with a specification identical to that used in the June 2009 report; that model mirrored the CMS model with national data, with real per capita private spending entered as the dependent variable.

The model specifications from the June 2009 report included national real per capita GDP (which performed particularly well as an explanatory variable) and versions of three “core” explanatory variables that are strong predictors of national private spending in CMS’s model: (1) real per capita disposable personal income in Minnesota, (2) real per capita public spending in Minnesota and (3) an a national index for the relative price of personal health care.¹⁶ We began with this basic specification and then added two variables to account for the economic conditions during the early projection period (2008-2010): (1) total employment per adult population in Minnesota and (2) the rate of uninsured among the population under age 65. Both are thought to have strong, if potentially countervailing, effects on individuals’ use of health care.¹⁷ Lastly, we tested a series of alternative models as potentially better predictors of private spending in Minnesota. These included the basic set of variables measured in different ways and various combinations of the explanatory variables. We examined the fit of each model and the plausibility of the resulting projections to select a final model to project private spending.

The separate models of private spending by service type are similar to the model for aggregate spending described above.¹⁸ Like the aggregate model, the separate models are estimated using the private expenditure series that MDH constructs by service type. The dependent variables are real per capita private spending for the each service type: inpatient hospital, physician services, prescription drugs, outpatient hospital, dental, other professional services, and other spending. For each service-type model we began with the same specification estimated in the June 2009 report, and then re-estimated the models including the employment and insurance variables. Finally, we tested the fit of alternative specifications and the plausibility of the projections to arrive at final models for each service type.

¹⁵ We incorporated historic MDH estimates of private expenditures through 2007 in estimating these models.

¹⁶ CMS has found a strong negative relationship in the growth of per capita public and private spending (CMS 2008). They argue this is due to a shift in relatively low-cost individuals (in particular children and non-disabled adults) from private to public insurance as well as short-term cost shifting between public and private programs. However, it may as well be an artifact of estimating macroeconomic models across (versus within) states. For our purposes, we include public spending for its strong predictive power; although in Minnesota, growth in public spending is positively associated with the growth in private spending.

¹⁷ The logic for potentially countervailing effects is as follows: As unemployment rises, some individuals lose employer-sponsored coverage. Of these, some become uninsured; others continue group coverage under COBRA or buy individual coverage. Some unemployed workers and their families, who may or may not have had coverage while employed, become eligible for public coverage as their incomes fall. Individuals who become uninsured are likely to reduce their use of health care, and therefore, their total spending (previously insured spending plus OOP spending) for care. However, the research literature suggests that the stress of unemployment triggers health problems and additional need for services. Therefore, among those who continue to be privately insured, total spending may increase. Those who newly enroll in public coverage would see reduced OOP spending, whether or not they had been previously insured.

¹⁸ Model specifications are reported in Chapter III.

Finally, we estimated models of the three payer types under private spending (private health insurance spending, other private spending, and OOP spending) using the same methods as for the service type models. For each payer type, we began with the total private spending models specified as in the June 2009 report and then added the employment and insurance variables to account for economic conditions from 2008-2009.

Because the individual models are estimated separately from the aggregate model, the sum of the projections does not equal total projected private spending from the aggregate model. Therefore (generally following CMS's methodology), we constrained the results of both the service and payer type models to sum to the projected total of private spending in the aggregate model.¹⁹ Because the aggregate model was considerably better at predicting past spending levels than the individual service and payer models, we used the aggregate projections as the standard and to constrain the sum of the projections from the individual models.²⁰

Having estimated future values for public and private spending for health services and supplies, the projections were aggregated to arrive at annual projections of total spending. We report the projected total, per capita, and growth in expenditures over time. With noted specific exceptions, these projections are analogous to CMS's estimates of expenditures for health services and supplies.

C. Construction of Key Variables

The historical data on which the models are estimated exclude the influence of the 2008 Minnesota reforms. However, to project expenditures absent these reforms, it was necessary also to develop projections of the explanatory variables that also are absent the influence of the reforms. This process is described below.

1. Dependent Variables

The dependent variables are real per capita private spending for health services and supplies (minus long-term and home health care) in Minnesota from 1993 to 2007. These estimates are taken directly from MDH's resident-based expenditure estimates by service and payer type. We calculated per capita expenditures by dividing total expenditures by the total population in Minnesota (population variables are discussed below). We adjusted the nominal per capita expenditure estimates using a price index for personal health care developed by CMS to arrive at real per capita expenditures (in 2000 dollars).

¹⁹ CMS's methodology for this procedure is not publicly documented. We used qualitatively the same process, as it was explained in various personal communications with NHEA staff.

²⁰ Specifically, we constrained the separate projections by taking the difference between the summed and the aggregate projection in a given year and reducing each figure proportional to its contribution to total projected spending. For instance, if the projection for inpatient hospital spending makes up ten percent of the sum of the projections in a given year and the difference between the sum and the aggregate projection is \$100, then we reduce the inpatient hospital projection by \$10. This assumes that each service type contributes to the overestimate proportional to its contribution to spending as a whole.

2. Explanatory Variables

As the measure of relative price for each expenditure category, we used CMS's price index for that category divided by a general price index for all consumer spending.²¹ The various price indices (for each service type) were also used to adjust the categories of private and public nominal expenditures to real values (2000 dollars).

We obtained nominal personal income estimates and projections for Minnesota residents from Minnesota Management and Budget (MMB). MMB reports this series quarterly from 1990 to 2012. To obtain yearly estimates, we calculated the average of the four quarterly values. To project the MMB variables from 2013 to 2018, each variable was regressed on a time trend, and future values were predicted using the estimated regression equation. To better approximate the personal income of the population that accounts for private health care spending, we subtracted public spending (as previously defined for this study: Medical Assistance, GAMC, and MinnesotaCare, plus other public spending) from aggregate personal income.²² To calculate real per capita personal income in Minnesota, we divided nominal personal income by the total population and adjusted this measure using the price index for personal health care (in 2000 dollars).

The Minnesota State Demographic Center reports historic and forecasted estimates for the total population of Minnesota by age. The Center constructs annual population estimates from 1990-2008 and population projections for every five years after that. We constructed estimates of the total population and the population over age 65 for the years between the five-year projections by assuming a linear trend in the growth rate for each five-year period. We used the total population projections to construct each of the per capita variables used in the analysis. We calculated the percent of the population over age 65 as the number of Minnesota residents over 65 years divided by the total population.

The real values of national GDP were constructed by Global Insight (in 2000 dollars). We divided the real GDP values by the estimates of total U.S. population reported in CMS's National Health Expenditures Accounts 2009 report to arrive at annual real per capita GDP from 1993-2018.

D. Projections Including Medicare and Long-Term Care

We also estimated expenditures for health services and supplies in Minnesota that include Medicare and long-term care (nursing home and home health) spending. Medicare and long-term care were added to the analysis in three steps: (1) Medicare expenditures were extrapolated from 2009 to 2018, (2) a model of private long-term care expenditures was estimated, and (3) long-term care expenditures were added back into the aggregate private and public expenditure estimates.

²¹ For a more detailed description of the construction of their price indices, see CMS (2008).

²² CMS begins with disposable personal income (personal income minus taxes) and then subtracts Medicare and Medicaid spending.

Construction of New Explanatory Variables to Estimate Private Spending

Two new variables were tested and introduced into the specification of models used to project private spending on health care services and supplies in Minnesota:

- Total employment estimates and projections (measured as total payroll) for Minnesota residents were obtained from MMB. MMB reports this series quarterly from 1990 to 2012. We calculated yearly estimates as the average of the four quarterly values and applied the projected rate of growth in national total employment (generated by Global Insight) to project total employment in Minnesota from 2013 to 2018. Total employment per adult population was calculated by dividing total employment by the population in Minnesota age 19-64.
- The percentage of Minnesota residents under age 65 without health insurance is based on the results from the Minnesota Health Access Survey fielded in 2001, 2004, 2007, and 2009. The uninsured rates for the years between the survey years were calculated by smoothing the growth rate between the survey years. We estimated the uninsured rates for those years outside of 2001-2009 by regressing the uninsured rate on the lagged unemployment rate in Minnesota and then applying the straight line trend to the missing years. The historic and projected unemployment rates were obtained from the Bureau of Labor Statistics (BLS).

To arrive at nominal per capita projections, we applied projected price indices (provided by CMS) to adjust real per capita projections from the models. The nominal per capita estimates were then multiplied by the total population to calculate total nominal expenditures. Finally, growth rates in the nominal expenditures and nominal per capita expenditures were calculated.

We estimated Medicare expenditures in Minnesota from 2009 to 2018 using historic estimates provided by MDH and the projected growth rates in nationwide Medicare expenditures constructed by CMS. We applied the annual projected growth rate in Medicare expenditures per population over age 65 to the historic levels of Medicare expenditures in Minnesota per population over 65. We then multiplied this figure by the total projected number of Minnesota residents over the age of 65 (provided by the Minnesota State Demographic Center) to project total Medicare expenditures in Minnesota.

To project private expenditures for long-term care, we estimated a model of private spending for long-term care using the same methods as used for the other service types. The dependent variable is real per capita private expenditures for long-term care. Explanatory variables in the final model were: a five year moving average of real per capita Minnesota personal income, the relative price of nursing home care, real per capita public expenditures for long-term care, the percentage of the population over age 65, and real per capita national GDP. Finally, because we originally excluded public and private spending on long-term care from the aggregate projections and the private payer type models (as described above), we removed this step to project total private and public expenditures including long-term care. Once these changes were made, we projected aggregate expenditures (and expenditures by payer type) as described above.

III. THE EXPENDITURE MODELS

The model specifications reported in June 2009 performed very well in predicting past private expenditures in Minnesota.²³ That is, based on the explanatory variables, the predicted values were very close to actual historic expenditure estimates. In general, the models predicting aggregate expenditures and expenditures in the largest service and payer categories performed better than those attempting to predict relatively small expenditure amounts. In Appendix Table A.1, actual and projected real per capita private spending (absent Medicare and long term care spending) are compared from 1994 to 2007. For each service type, the projection error is very small, typically averaging less than one dollar per capita over the time period.

To produce expenditure estimates and projections for this report, we added total employment per adult population in Minnesota and the uninsured rates among Minnesotans under age 65 to the previous specifications to account for the effects of recent economic conditions on health care spending in Minnesota. We also tested the fit of alternative models and investigate the plausibility of the projections generated by the models. The performance of the models with these additions and other changes is described below.

A. The Aggregate model

After refreshing the input data series with MDH's revised historical estimates, and also adding the employment and insurance coverage variables to the model of total private spending, we observed several years from 2008 to 2018 with projected growth rates well over 10 percent. In addition, the average growth rate over this period was almost 10 percent, compared with a projected national growth rate of about 6 percent.

The principal factor driving the large projected growth in this model was real per capita public spending in Minnesota. As noted in Chapter II, we estimate a positive relationship between private and public spending in Minnesota. However, during periods in which enrollment in public coverage is rising and private coverage is declining, one might expect to observe a negative relationship or at minimum, a relationship that is weaker than we observed.

Because the short historical data series available to estimate the model dictates a parsimonious specification of the model, we chose to remove public spending from the model estimating total private spending (even though the fit statistics dropped somewhat), and instead add a time trend to the model (as CMS did in its 2009 model of national private spending). With this change, the model predicted historic values quite well and the average growth rate from 2008-2018 was nearly identical to the national average, roughly 6 percent. In addition, predicted 2008 private spending declined slightly, similar to the change in spending in 2008 that private carriers reported to MDH.

B. Service and Payer Types

The Minnesota employment and insurance coverage variables also were added to each of the service type models. We examined the fit statistics of these updated models and the plausibility of

²³ All models are estimated using Ordinary Least Squares (OLS) regression, including a constant term.

the projections from each model. Based on these analyses, we made the following changes to the model specifications:

Physician Services. Similar to our initial results for total private spending, having refreshed the input data series and added the unemployment and insurance variables to the specification, we projected double-digit growth rates for physician services in most years from 2008-2018 (with rates over 20 percent in two years). We investigated the drivers of the high growth rates and determined that a particularly fast growth in projected real national Medicare spending for physician services in these years drove high projected rates in Minnesota. Without real national Medicare spending on physician services as an explanatory variable in the model for private spending on physician services, the model produced results that seemed more reasonable and still estimated historical spending for this service type very well.

Prescription Drugs. Having refreshed the input data series and added the unemployment and insurance variables to the specification, the model to estimate prescription drug spending also predicted very high growth rates (over 20 percent in several years—although not the same years as were noted in the initial model for physician services). As in the model for total private spending, we traced the unusually high projections to real public spending for prescription drugs, and removed that variable in favor of adding a time trend.

Dental Care. The model for dental care spending did not perform particularly well in predicting historic values in the June 2009 report, and also did not perform well with refreshed input data and the addition of unemployment and insurance variables. The model projected very volatile growth rates (ranging from -9 percent to 10 percent), reflecting volatility in the historic data measuring private spending for dental care (with growth ranging from -8 percent to 20 percent). We tested many different model specifications and found that excluding the relative price of dental care, national disposable personal income, and total employment per adult population produced the highest statistical fit. However, the projected growth rates still range from -11 percent to 11 percent. The changed and slightly larger range of growth rates in the current model (compared with that in the 2009 report) is due to having used revised historical data as well as an additional year (2007) to estimate past expenditures, affecting both the overall fit of the model and projected spending.

Spending for Other Professional Services, and Other Spending. Relative to the specifications of the models documented in our June 2009 report, we made additional changes to the models for these service categories as follows:

- **2-Year Moving Averages.** We recalculated 5-year moving averages as 2-year moving averages, to make the input measures strictly consistent over the historical series.²⁴
- **Outlier Years.** Estimated spending in both service categories grew much faster in 1993 and 1994 than in other years through 2009. Eliminating these years when estimating the models improved the fit statistics and also improved stability in the projected growth rates.

²⁴ In the June 2009 report, we calculated moving averages over four years for 1996, three years for 1995, and two years for 1994 due to data limitations. For all other years, moving averages were calculated over five years.

Based on these models, projected total spending from 2008 through 2018 is reported in Chapter IV.

IV. PROJECTED EXPENDITURES

The results of the modeling described in Chapter III are briefly presented in this chapter. Extensive tables are provided in Appendix A, reporting all modeling results in the aggregate and by service and payer type. Note that all projected expenditures reflect anticipated spending in the absence of the 2008 Minnesota reforms. Historic and projected health services and supplies expenditure estimates in Minnesota from 1993 to 2018, exclusive of Medicare and long-term care spending, are presented by service type in Tables A2 and A3. Total expenditures (in current-year dollars) are reported in Table A2, and expenditures per capita are reported in Table A3. Annual growth in total expenditures and per capita expenditures are reported in Tables A4 and A5, respectively. Expenditure estimates by payer type are reported in Tables A6 and A7. Finally, analogous estimates (total and per capita) that include both Medicare and long-term care expenditures are reported in Tables 10 and 11 (by service type) and in Tables A14 and A15 (by type of payer).

A. Overview of the Projection Results

In the absence of the 2008 reforms, total health services and supplies expenditures in Minnesota are projected to reach \$49.0 billion in 2018, excluding Medicare and long-term care spending (Table A2). This level of expenditure is approximately twice as much as was spent in 2007 (\$23.5 billion), the most recent year for which MDH has released estimates of actual expenditures. Including both Medicare and long-term care spending, total expenditures for health services and supplies in the absence of the 2008 reforms are projected to reach \$69.6 billion in 2018 (Table A10). Minnesotans are projected to spend \$11,979 per capita for health care in 2018, of which nearly 30 percent (\$3,548) is for Medicare and long-term care.

Annual rates of growth in nominal total and per capita expenditures, minus Medicare and long-term care spending, are presented in Tables 4 and 5 (by service type) and in Tables 8 and 9 (by type of payer). Annual growth rates in total and per capita expenditures including Medicare and long-term care spending are presented in Tables 12 and 13 (by service type) and in Tables 16 and 17 (by type of payer).

Total health care spending in Minnesota (minus Medicare and long-term care) is projected to grow at an average annual rate of 7.2 percent from 2008 to 2018 (Table A4). This compares with an historical average of 8.7 percent from 1997 to 2007, with double-digit growth in most years from 1999 to 2003. In 2010, health care spending is projected to grow very fast (14.8 percent), reflecting anticipated employment and income growth, offsetting very low annual growth in total spending in 2008 and 2009.

Compared with the historic growth rates in spending, the slower projected growth in total spending (minus Medicare and long-term care) reflects much slower projected growth in private spending. Private spending is projected to grow at an average annual rate of 6.3 percent from 2008 to 2018, compared with 8.7 percent growth from 1997 to 2007 (Table A8). Conversely, public spending is projected to grow faster, averaging 9.7 percent annual growth from 2008 to 2018, compared with 8.8 percent from 1997 to 2007.

The slower growth in spending (minus Medicare and long-term care) is particularly apparent in expenditures for inpatient and outpatient hospital care. Absent the 2008 reforms, inpatient hospital expenditures are projected to grow at an average annual rate of 6.8 percent from 2008 to 2018, despite very fast growth (16.4 percent) projected in 2010 (Table A4). This compares with 8.6 percent average annual growth from 1997 to 2007. Similarly, spending for outpatient hospital care (again, excluding Medicare and long-term care) is projected to grow at an average annual rate of 6.9 percent from 2008 to 2018, compared with average growth of 11.2 percent from 1997 to 2007. This low projected growth in outpatient spending reflects slower growth in 2011 than in 2010, and very slow growth from 2012 to 2014 (2.3 to 2.5 percent per year), as the pace of economic recovery slows.

Projected private spending continues to grow more slowly (6.3 percent from 2008 to 2018) than the average historic rate of growth (8.2 percent from 1997 to 2007) when Medicare and long-term care spending are included in the projections (Table A16). In contrast, the average projected growth rate for total public spending is higher (8.1 percent) than the average historic rate (7.8 percent), due to faster projected growth in non-Medicare public programs. Medicare is projected to grow at a slightly lower average annual rate from 2008 to 2018 (7.0 percent) than in the earlier time period (7.7 percent).

The estimates of spending growth for private health insurance and out-of-pocket spending change very little when Medicare and long-term care are included (Table A16). The average rate of growth from 2008 to 2018 in projected private health insurance spending including Medicare and long-term care is 7.3 percent compared with 7.4 percent when they are excluded. Projected out-of-pocket spending also grows at about the same rate whether Medicare and long-term care are included (2.2 percent) or excluded (2.1 percent). (In contrast, average growth in other private spending from 2008 to 2018 is very different when Medicare and long-term care are included, consistent with the sensitivity of this spending category to changes in the model and data.)

Projected total public spending grows more slowly from 2008 to 2018 when Medicare and long-term care are included (8.1 percent, versus 9.7 percent without Medicare and long-term care). This is primarily due to higher growth in projected Medicaid spending for long-term care.

When Medicare and long-term care spending are included, projected expenditures for inpatient care grow faster (7.5 percent per year on average) from 2008 to 2018 than from 1997 to 2007 (7.2 percent), reflecting faster growth in projected Medicare spending (Table A12). In contrast, projected expenditures for outpatient hospital care grow somewhat more slowly—averaging 9.0 percent per year from 2008 to 2018, compared with 11.2 percent per year from 1997 to 2007. Projected spending for physician care also grows more slowly from 2008 to 2018 when Medicare spending (as well as long-term care) is included, averaging 6.0 percent per year compared with 8.0 percent per year from 1997 to 2007.

B. Factors that May Affect the Accuracy of the Projections

The models perform quite well in predicting past private expenditures for health services and supplies, and they perform particularly well in predicting these expenditures in the aggregate and for large service and payer categories: inpatient hospital, physician services, prescription drugs, outpatient hospital, and private health insurance spending. However, the projections depend fundamentally on the projected values of the explanatory variables in the models, as described in Chapter III. Therefore, to the extent that the independent variables do not represent true future macroeconomic and health sector conditions, the accuracy of the predicted expenditures will be diminished. In addition, even if the explanatory variables are forecasted accurately, major changes to

the health care system or fluctuations in the economy that are not reflected in the historic time series used to estimate the models could alter the relationship between the explanatory variables and spending such that the model would no longer accurately predict future expenditures.

Nevertheless, the advantage of using such aggregate macroeconomic variables is that they produce relatively robust estimates. That is, the expenditure projections do not necessarily rely on maintaining the status quo in the health sector as long as the forecasted explanatory variables continue to reflect the factors that would influence private spending.

The projections will most likely mirror actual future health care expenditures if there is no structural or policy change that would alter the relationship between health care spending and the variables that successfully predict past spending trends. For example, the employment and insurance variables added to the models in this report will continue to be good predictors of private health care spending as long as their respective historical relationships to spending persist.

However, a number of factors could nevertheless affect the accuracy of the expenditure projections. For example, economic recovery may yield relatively low growth in employment nationwide, compared with earlier economic cycles. In this case, the employment variable that we use to project spending may be forecasted with error, causing error in the spending projections. In addition, the estimates do not account for the major system changes that federal reform will introduce. In all states, federal reform is intended to reduce the number of uninsured, improve the efficiency of health care, and potentially also change the prices paid for health care services. For this report, we investigate the potential impact on spending of just one of these changes—the expected change in the number of uninsured—in Chapter V, to develop preliminary projections of health care spending in Minnesota with the implementation of federal reform.

V. FEDERAL REFORM ESTIMATES

The Patient Protection and Affordable Care Act (PPACA) reforms health care financing in every state. It calls for important expansions of eligibility for public programs, removes barriers to the purchase of private insurance, and (with few exceptions) requires all Americans to obtain health insurance coverage. These provisions will affect total health care spending in future years—and would do so also in the absence of Minnesota’s reforms. Therefore, to project what health care spending in Minnesota would be if Minnesota’s reforms were not enacted, it is necessary to project implementation of PPACA without Minnesota’s reforms.

In the following sections, we document our methods for estimating the effects of federal reform on spending for health services and supplies in Minnesota. We then present estimates of public and private expenditures with implementation of the federal reform law.

A. Implementation of Major Federal Reforms

PPACA calls for a phased implementation of many reforms to both private insurance and Medicaid that will affect spending for health services and supplies, beginning in 2010²⁵. Prior to 2014, no one of these reforms alone is likely to dramatically change private spending. However, the many changes to Medicare (phased in through 2019) will offer enrollees some relief on out-of-pocket costs for covered services in the first post-reform years. Similarly, expansion of Medicaid eligibility (despite some offsetting increase in drug rebates) is likely to increase Medicaid spending as early as 2010 in states that pursue a state plan amendment; all states must implement these and other changes by 2014.

A number of PPACA’s provisions are intended to substantially reduce the number of individuals who remain uninsured, especially in 2014 when an individual mandate becomes effective, as well as guaranteed issue of all health insurance coverage, state implementation of individual and small-group exchanges, federal “play or pay” requirements for employers with more than 50 employees, and premium and cost sharing subsidies for low- and middle-income individuals.

B. Health Care Reform Impacts on National Spending

OACT has produced estimates of PPACA’s impacts on national health care spending. In Table A.18, these estimates are recalculated as the percentage change in spending due to federal reforms on spending in each year, 2010 through 2019.

Several aspects of these estimates are especially noteworthy. First, from 2011 through 2013, total public spending is expected to decline, largely as a result of reduced Medicare spending. Second, as private insurance reforms come on line, private insurance spending increases, while out-of-pocket and other private spending decline.

²⁵ A listing of PPACA’s provisions and the implementation timeline are available at: <http://www.kff.org/healthreform/8060.cfm>, accessed May 27, 2010.

In 2014, these impacts become much larger: Medicare spending is 8.0 percent lower due to federal reforms, and private insurance spending is 6.1 percent higher. With the expansion of Medicaid eligibility to all residents with income under 133 percent of the federal poverty level (FPL), combined Medicaid and other public spending in 2014 is 6 percent higher, driving a small net increase (0.3 percent) in total public spending. Due to changes in the private sector, projected private insurance spending increases, while out-of-pocket spending and other private spending drop significantly. Overall, total spending is projected to rise just 1 percent. Faster projected growth from 2015-2018 (about 2 percent per year) is largely associated with faster growth in projected private insurance spending.

C. Post-Reform Expenditures in Minnesota

Within the time and resources available to this project, we were unable to develop a full projection model to reflect PPACA implementation in Minnesota, comparable to the parameter-driven (and, by implication, population-based) model supporting OACT's projections (Foster 2010a). Instead, to project post reform health care spending in Minnesota, we used the same macroeconomic model specifications as described in Chapter III, but changed the values of two right-hand side variables to reflect the effect of reform: public spending (which we adjusted to be consistent with OACT reform estimates) and the percent of Minnesotans under age 65 who are uninsured. Both are discussed below.

- **Public spending.** With the implementation of reform, both total non-Medicare public spending and Medicare spending were assumed to increase by the respective OACT percentage estimates as reported in Table V.1. In Minnesota, relatively little public spending will move out of public programs. We expect that some MinnesotaCare enrollees and former GAMC enrollees will move into MA, and their benefits and costs will increase; many others who are now uninsured will newly enroll in MA. Only higher-income MinnesotaCare enrollees and all MCHA enrollees (together accounting for about 3 percent of current public health care spending in Minnesota) will move to private insurance.
- **Percent of Minnesotans under age 65 who are uninsured.** Individuals who are uninsured tend to spend less for health care than when insured. When insured they no longer pay the full price of their health care; as a result, they are more likely to seek care and providers are more likely to accept them as patients. It follows that PPACA's individual mandate, which will be implemented in 2014, will increase total private spending for health care as the number of privately insured Minnesotans increases. Under PPACA, the tax penalty for remaining uninsured, initially modest, increases in 2015.

In Minnesota, the percentage of persons under age 65 who are currently uninsured is similar to that in Massachusetts prior to implementation of that state's individual mandate. Furthermore, PPACA's graduated tax penalty is similar to the graduated tax penalty in Massachusetts' reform law. We assume that the rate of uninsured under age 65 in Minnesota falls in the same pattern in 2014-2016 as the rate of uninsured fell in Massachusetts following implementation of reform in

2007. Specifically, we assume that Minnesota's uninsured rate falls from a projected rate of 7.8 percent in 2013, to 6.7 percent in 2014, and to roughly 3.4 from 2015 to 2019.²⁶

By changing the value of these two variables in the projection model, we developed revised projections of public and private spending in Minnesota, reported in Table A.19. We estimate that total spending in Minnesota will change very little in the initial years of implementation, and will be slightly lower (as a result of lower public spending) from 2011 through 2013. In 2014, PPACA implementation will raise total spending modestly (1.3 percent) relative to what would have occurred without reform, reflecting greater spending by Medicare and private health insurance. By 2018, projected total spending in Minnesota (\$72.8 billion) is 4.5 percent higher than would occur without implementation of reform.

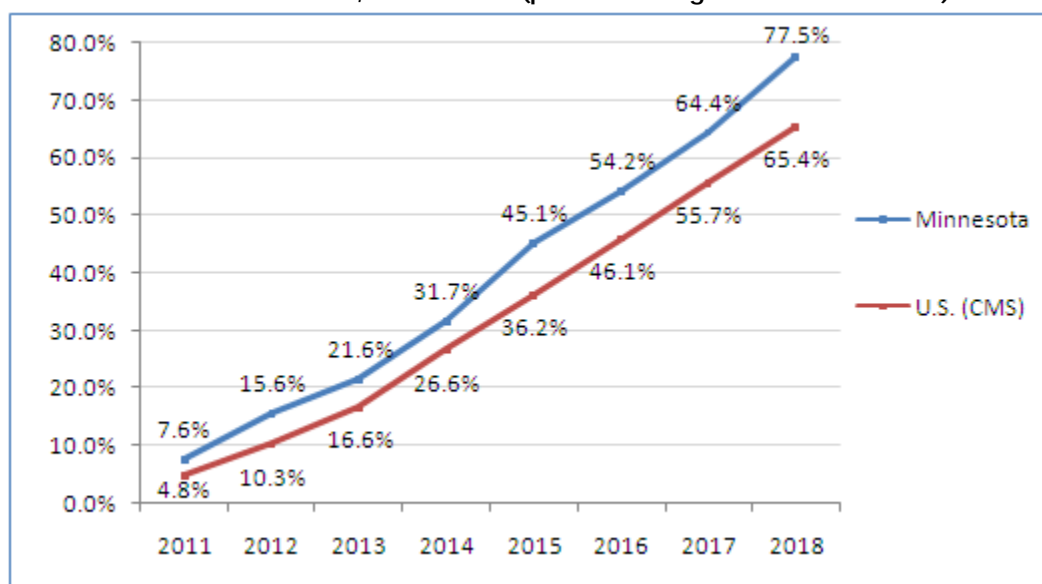
Two aspects of the estimates are particularly noteworthy. First, total public spending minus Medicare changes very little relative to pre-reform estimates until 2014, when eligibility for MA expands to include all adults under 133 percent FPL. In 2014 through 2019, public spending excluding Medicare in Minnesota is projected to be 6 to 7 percent higher than it would be without reform. Total public spending changes very little, however, due to offsetting reductions in Medicare spending.

Second, projected total private spending is greater with implementation of PPACA, due especially to greater private insurance spending. In 2014, the first year of the individual mandate, projected private insurance spending is just 2 percent greater than in the absence of reform, reflecting our assumption of gradual compliance with PPACA's mandate. However, in 2015 through 2019, private insurance spending is approximately 10 percent greater than would occur in the absence of reform, driving growth of approximately 8 percent per year in total private spending. The change in total private spending is somewhat less than the change in private insurance spending, primarily reflecting a decline in out-of-pocket spending due to greater insurance coverage.

Reflecting the relatively small net effects of PPACA implementation on total spending, we continue to project faster spending growth in Minnesota through 2018 than the national average. In Minnesota, projected total spending (including Medicare and long term care) in 2018 with PPACA implementation is 77 percent more than the projected level of spending in 2010, with the start of PPACA implementation. This compares with projected national spending that is 65 percent higher in 2018 than in 2009 (Figure V.1).

²⁶ Within the resources available for this report, there is no way to validate how well these assumptions are likely to predict Minnesota's experience under PPACA, even if Minnesota's implementation of PPACA would parallel Massachusetts' implementation of its 2006 reform law. To the extent that these assumptions over- or under-state the reduction in the number of uninsured in post-recession Minnesota, we anticipate that projected private spending would be (respectively) more or less than we have estimated.

Figure V.1. Cumulative Change in Projected Total Spending with Implementation of Federal Health Care Reform: Minnesota and the U.S., 2010–2018 (percent change in current dollars)



Source: Mathematica Policy Research.

Note: Estimates include Medicare and long term care, in addition to other health care spending.

At least two caveats with respect to these projections are in order. First, it is impossible to validate the projections within Minnesota's experience. Although the statistical explanatory power of the underlying models is quite high, the projections lie outside Minnesota's historical experience since 1993 in two major respects, as mentioned in Chapter IV: Minnesota's uncertain path of recovery from severe economic recession and federal health care reform of an unprecedented scope.

Second, we implicitly assume that spending under PPACA will change as spending changed in past years with changes in employment, income, and health insurance coverage. However, if Minnesotans who are uninsured have systematically different health status or different preferences for using health care services than Minnesotans who are currently insured, our estimates would misstate the increase in total spending with implementation of PPACA. In addition, if the change in public spending in Minnesota differed from the national average rate of change, our estimates would be biased in direct proportion to the difference.

CMS has not made public its projection methods in detail, but available documentation suggests that that OACT's spending projections under PPACA are based on disaggregated modeling that explicitly considers population demand for insurance (Foster 2010a) and likely also the demand for care among the population that gains coverage. In contrast, our reliance on macroeconomic modeling could introduce error in projected spending under PPACA. For example, our estimates implicitly assume that uninsured Minnesotans who gain coverage will, on average, use health care in the same way as Minnesotans who are currently insured. Because uninsured Minnesotans report much lower health status than those who are insured (MDH 2009b), it seems likely that when insured they will use health care differently than the population that is currently insured. Furthermore, under PPACA, uninsured Minnesotans may gain coverage in various ways—many finding coverage in Medicaid, and others through private insurance. Our estimates implicitly assume that, when the rate of uninsured Minnesotans changes, the ratio of private to public coverage changes as it has historically. However, this ratio may not persist as coverage increases under PPACA.

While it is fairly easy to identify how macroeconomic modeling may introduce error in estimates of both private and public spending under PPACA, it is impossible to estimate either the magnitude or direction of the net error, given the multiple sources and conflicting directions of change. To improve projections of private and public spending with PPACA implementation, future estimates should take into account the specific characteristics of uninsured Minnesotans who would gain coverage under PPACA, the sources of coverage they would gain, the proportion of the year they are currently uninsured, and their demand for health care when insured. Disaggregated modeling methods, ideally using microsimulation techniques such as were developed for Minnesota's exchange study (Chollet et al. 2008) would resolve many sources of error in the aggregate method we used to develop projections in this report.

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APPENDIX A

TABLES

Table A.1. Actual vs. Projected Real Per Capita Private Expenditures for Health Services and Supplies in Minnesota, minus Medicare and Long-Term Care Spending: 1994-2007 (calendar year 2000 dollars)

Year	Total			Inpatient Hospital			Physician			Prescription Drugs		
	Actual	Projected	Difference	Actual	Projected	Difference	Actual	Projected	Difference	Actual	Projected	Difference
1994	1,832	1,948	-116	316	315	0	569	567	3	222	222	1
1995	1,794	1,764	30	316	320	-3	578	586	-8	232	234	-2
1996	1,833	1,813	20	324	318	6	607	614	-7	245	243	2
1997	1,822	1,845	-23	329	331	-2	601	588	14	260	257	2
1998	1,898	1,983	-84	344	344	0	591	596	-5	257	260	-3
1999	2,034	2,106	-72	355	358	-4	651	644	7	301	304	-3
2000	2,284	2,222	62	394	390	4	709	714	-5	328	328	1
2001	2,326	2,229	98	399	400	-2	701	707	-6	352	347	5
2002	2,417	2,389	29	426	427	-1	755	748	6	384	386	-2
2003	2,565	2,524	41	444	439	5	789	774	15	413	415	-2
2004	2,580	2,653	-73	444	450	-6	734	743	-9	429	427	3
2005	2,621	2,607	14	456	452	3	758	758	-1	426	427	-2
2006	2,704	2,691	14	500	496	4	830	826	4	391	390	1
2007	2,747	2,781	-35	505	510	-5	845	852	-8	388	388	0
Average	2,247	2,254	-7	397	396	0	694	694	0	331	331	0
Year	Outpatient Hospital			Dental			Other Professional			Other		
	Actual	Projected	Difference	Actual	Projected	Difference	Actual	Projected	Difference	Actual	Projected	Difference
1994	143	145	-3	158	150	8	103	86	17	346	285	62
1995	159	158	2	134	135	0	73	73	0	341	332	9
1996	171	166	5	121	124	-3	73	72	0	318	311	6
1997	178	179	-2	114	126	-12	72	72	0	284	291	-6
1998	190	194	-4	133	130	3	71	71	0	318	318	0
1999	220	222	-2	134	126	8	75	75	0	313	350	-37
2000	235	229	5	140	141	-1	79	79	0	399	381	18
2001	244	247	-3	136	133	3	83	83	0	406	368	38
2002	269	269	-1	140	150	-10	91	91	0	343	375	-32
2003	288	286	3	153	151	3	97	97	0	372	380	-8
2004	300	302	-1	147	155	-8	101	100	0	395	371	24
2005	326	326	0	159	148	11	104	104	0	375	391	-16
2006	337	334	2	157	161	-4	109	109	0	365	370	-5
2007	341	343	-2	163	159	3	112	112	0	370	361	9
Average	235	235	0	140	141	0	87	86	1	352	348	4

Source: Mathematica Policy Research, based on MDH estimates of spending and Minnesota State Demographic Center population estimates. Price indexes provided by CMS were used to convert nominal to real spending.

Table A.2. Total Minnesota Expenditures for Health Services and Supplies by Service Type, minus Medicare and Long-Term Care Spending: 1993-2019 (current dollars in millions)

Year	Total	Inpatient Hospital	Physician Services	Prescription Drugs	Outpatient Hospital	Dental	Other Professional	Other	Uncategorized
1993	9,491	1,956	2,459	1,058	717	581	423	1,873	425
1994	9,029	1,905	2,363	1,035	774	592	494	1,598	268
1995	9,383	2,020	2,521	1,124	889	545	421	1,570	294
1996	9,863	2,093	2,746	1,236	979	522	432	1,561	294
1997	10,172	2,150	2,827	1,355	1,041	516	430	1,530	323
1998	10,894	2,255	2,893	1,435	1,124	619	433	1,777	357
1999	12,097	2,376	3,288	1,776	1,298	668	475	1,843	373
2000	14,011	2,689	3,766	2,051	1,457	734	513	2,409	393
2001	15,204	2,873	3,939	2,342	1,617	758	554	2,701	420
2002	16,759	3,257	4,425	2,752	1,853	835	641	2,571	425
2003	18,671	3,605	4,777	3,144	2,090	956	716	2,906	479
2004	19,598	3,779	4,712	3,379	2,287	972	781	3,199	489
2005	20,669	4,024	5,050	3,439	2,566	1,103	860	3,181	448
2006	22,103	4,592	5,656	3,184	2,793	1,162	969	3,269	478
2007	23,465	4,902	5,990	3,168	3,011	1,275	1,056	3,524	537
Projected									
2008	24,494	4,799	6,809	3,183	3,362	1,347	1,132	3,310	553
2009	25,436	4,886	6,568	3,407	3,911	1,494	1,295	3,288	588
2010	29,190	5,687	7,104	4,427	4,494	1,577	1,709	3,568	626
2011	31,691	6,173	7,650	5,151	4,915	1,406	1,929	3,803	665
2012	34,129	6,671	8,781	5,524	5,037	1,368	2,007	4,033	708
2013	35,818	6,986	9,538	5,761	5,155	1,312	2,061	4,251	753
2014	37,921	7,448	10,600	5,940	5,276	1,374	2,099	4,384	801
2015	39,937	7,706	11,572	6,269	5,510	1,359	2,124	4,545	852
2016	42,328	8,054	12,695	6,651	5,772	1,338	2,154	4,759	906
2017	45,211	8,503	13,983	7,153	6,079	1,339	2,218	4,973	964
2018	48,996	9,283	15,334	7,914	6,526	1,339	2,339	5,236	1,025

Source: Mathematica Policy Research, based on MDH estimates of spending.

Table A.3. Per Capita Minnesota Expenditures for Health Services and Supplies, minus Medicare and Long-Term Care Spending, by Service Type: 1993–2019 (current dollars)

Year	Total	Inpatient Hospital	Physician Services	Prescription Drugs	Outpatient Hospital	Dental	Other Professional	Other	Uncategorized
1993	2,083	429	540	232	157	127	93	411	93
1994	1,958	413	513	225	168	128	107	347	58
1995	2,013	433	541	241	191	117	90	337	63
1996	2,093	444	583	262	208	111	92	331	62
1997	2,135	451	593	284	219	108	90	321	68
1998	2,263	469	601	298	234	129	90	369	74
1999	2,482	487	675	364	266	137	97	378	77
2000	2,840	545	763	416	295	149	104	488	80
2001	3,052	577	791	470	324	152	111	542	84
2002	3,341	649	882	549	369	166	128	512	85
2003	3,700	714	946	623	414	189	142	576	95
2004	3,859	744	928	665	450	191	154	630	96
2005	4,049	788	989	674	503	216	168	623	88
2006	4,297	893	1,100	619	543	226	188	636	93
2007	4,528	946	1,156	611	581	246	204	680	104
Projected									
2008	4,670	915	1,298	607	641	257	216	631	105
2009	4,771	916	1,232	639	733	280	243	617	110
2010	5,359	1,044	1,304	813	825	290	314	655	115
2011	5,719	1,114	1,380	930	887	254	348	686	120
2012	6,077	1,188	1,563	984	897	244	357	718	126
2013	6,318	1,232	1,682	1,016	909	231	364	750	133
2014	6,653	1,307	1,860	1,042	926	241	368	769	140
2015	6,994	1,350	2,027	1,098	965	238	372	796	149
2016	7,385	1,405	2,215	1,160	1,007	233	376	830	158
2017	7,842	1,475	2,425	1,241	1,054	232	385	863	167
2018	8,431	1,597	2,639	1,362	1,123	230	402	901	176

Source: Mathematica Policy Research, based on MDH estimates of spending and Minnesota State Demographic Center population estimates.

Table A.4. Percent Annual Growth in Minnesota Expenditures for Health Services and Supplies, minus Medicare and Long-Term Care Spending, by Service Type: 1994-2019 (percent change in current dollars)

Year	Total	Inpatient Hospital	Physician	Prescription Drugs	Outpatient Hospital	Dental	Other Professional	Other	Uncategorized
1994	-4.9	-2.6	-3.9	-2.1	7.9	2.0	16.8	-14.7	-36.9
1995	3.9	6.0	6.7	8.5	14.9	-8.0	-14.8	-1.7	9.5
1996	5.1	3.6	8.9	10.0	10.1	-4.1	2.6	-0.6	0.3
1997	3.1	2.7	3.0	9.6	6.4	-1.1	-0.5	-2.0	9.7
1998	7.1	4.9	2.4	6.0	8.0	20.0	0.6	16.1	10.7
1999	11.0	5.3	13.7	23.7	15.5	7.9	9.7	3.7	4.4
2000	15.8	13.2	14.5	15.5	12.2	9.9	8.0	30.7	5.3
2001	8.5	6.8	4.6	14.2	11.0	3.2	8.1	12.1	7.0
2002	10.2	13.4	12.3	17.5	14.6	10.1	15.5	-4.8	1.1
2003	11.4	10.7	8.0	14.2	12.8	14.4	11.8	13.0	12.7
2004	5.0	4.8	-1.4	7.5	9.4	1.7	9.1	10.1	2.2
2005	5.5	6.5	7.2	1.8	12.2	13.5	10.0	-0.6	-8.5
2006	6.9	14.1	12.0	-7.4	8.9	5.3	12.7	2.8	6.9
2007	6.2	6.8	5.9	-0.5	7.8	9.7	9.1	7.8	12.4
Average annual growth 1997-2007:									
	8.7	8.6	7.8	8.9	11.2	9.5	9.4	8.7	5.2
Projected									
2008	4.4	-2.1	13.7	0.4	11.7	5.6	7.1	-6.1	2.9
2009	3.8	1.8	-3.5	7.0	16.3	11.0	14.4	-0.7	6.4
2010	14.8	16.4	8.2	29.9	14.9	5.6	31.9	8.5	6.4
2011	8.6	8.6	7.7	16.4	9.4	-10.9	12.9	6.6	6.4
2012	7.7	8.1	14.8	7.2	2.5	-2.7	4.1	6.1	6.4
2013	4.9	4.7	8.6	4.3	2.4	-4.1	2.7	5.4	6.4
2014	5.9	6.6	11.1	3.1	2.3	4.7	1.8	3.1	6.4
2015	5.3	3.5	9.2	5.5	4.4	-1.1	1.2	3.7	6.4
2016	6.0	4.5	9.7	6.1	4.7	-1.6	1.4	4.7	6.4
2017	6.8	5.6	10.1	7.5	5.3	0.1	3.0	4.5	6.4
2018	8.4	9.2	9.7	10.6	7.4	0.0	5.4	5.3	6.4
Average annual projected growth 2008-2018:									
	7.2	6.8	8.5	9.5	6.9	-0.1	7.5	4.7	6.4

Source: Mathematica Policy Research, based on MDH estimates of spending.

Note: The projected growth rate of uncategorized spending is constant because uncategorized spending is comprised entirely of public spending, and future values of public spending sources are extrapolated using an average of past growth rates.

Table A.5. Percent Annual Growth in Minnesota per Capita Expenditures for Health Services and Supplies, minus Medicare and Long-Term Care Spending, by Service Type: 1994-2019 (percent change in current dollars)

Year	Total	Inpatient Hospital	Physician	Prescription Drugs	Outpatient Hospital	Dental	Other Professional	Other	Uncategorized
1994	-6.0	-3.8	-5.0	-3.3	6.6	0.8	15.4	-15.7	-37.6
1995	2.8	4.9	5.5	7.4	13.7	-9.0	-15.7	-2.8	8.4
1996	3.9	2.5	7.7	8.8	8.9	-5.2	1.5	-1.7	-0.9
1997	2.0	1.7	1.9	8.4	5.2	-2.2	-1.5	-3.0	8.5
1998	6.0	3.8	1.3	4.9	6.9	18.7	-0.4	14.9	9.5
1999	9.7	4.0	12.3	22.2	14.0	6.6	8.4	2.4	3.1
2000	14.4	11.8	13.1	14.1	10.9	8.5	6.7	29.1	4.0
2001	7.5	5.8	3.6	13.1	9.9	2.2	7.0	11.1	5.9
2002	9.5	12.6	11.6	16.7	13.9	9.4	14.7	-5.5	0.4
2003	10.7	10.0	7.3	13.5	12.1	13.8	11.2	12.4	12.0
2004	4.3	4.2	-2.0	6.8	8.8	1.1	8.4	9.4	1.6
2005	4.9	5.9	6.6	1.3	11.6	12.9	9.5	-1.1	-9.0
2006	6.1	13.3	11.2	-8.1	8.1	4.5	11.8	2.0	6.1
2007	5.4	5.9	5.1	-1.2	7.0	8.9	8.3	7.0	11.5
Average annual growth 1997-2007:									
	7.8	7.7	6.9	8.0	10.3	8.5	8.5	7.8	4.3
Projected									
2008	3.1	-3.3	12.3	-0.8	10.3	4.3	5.9	-7.2	1.7
2009	2.2	0.2	-5.1	5.3	14.4	9.1	12.6	-2.3	4.6
2010	12.3	13.9	5.9	27.2	12.5	3.3	29.2	6.2	4.1
2011	6.7	6.7	5.8	14.4	7.5	-12.4	10.9	4.8	4.5
2012	6.3	6.6	13.3	5.8	1.1	-4.0	2.7	4.6	5.0
2013	4.0	3.7	7.6	3.3	1.4	-5.0	1.7	4.4	5.4
2014	5.3	6.0	10.5	2.5	1.8	4.1	1.3	2.6	5.8
2015	5.1	3.3	9.0	5.4	4.3	-1.3	1.0	3.5	6.2
2016	5.6	4.1	9.3	5.7	4.4	-1.9	1.0	4.3	6.0
2017	6.2	5.0	9.5	6.9	4.7	-0.5	2.4	3.9	5.7
2018	7.5	8.3	8.8	9.8	6.5	-0.8	4.6	4.4	5.5
Average annual projected growth 2008-2018:									
	6.1	5.7	7.3	8.4	5.8	-1.1	6.4	3.6	5.3

Source: Mathematica Policy Research, based on MDH estimates of spending and Minnesota State Demographic Center population estimates.

Table A.6. Total Minnesota Expenditures for Health Services and Supplies, minus Medicare and Long-Term Care Spending, by Payer Type: 1993–2019 (current dollars in millions)

Year	Private				Public		
	Total	Private Health Insurance	Other Private	Out of Pocket	Total	Medicaid	Other Public
1993	7,558	4,965	599	1,995	1,932	970	963
1994	7,094	4,715	597	1,781	1,935	1,095	840
1995	7,488	5,106	605	1,777	2,024	1,121	903
1996	7,775	5,454	618	1,703	2,088	1,159	929
1997	7,983	5,616	629	1,738	2,189	1,209	979
1998	8,590	6,085	644	1,861	2,305	1,266	1,039
1999	9,615	6,954	671	1,990	2,481	1,386	1,095
2000	11,270	8,271	743	2,256	2,742	1,536	1,205
2001	12,055	8,887	828	2,339	3,149	1,753	1,396
2002	13,097	9,750	844	2,504	3,662	2,062	1,599
2003	14,500	10,881	843	2,775	4,172	2,327	1,845
2004	15,196	11,445	859	2,892	4,402	2,480	1,922
2005	16,191	12,274	877	3,040	4,479	2,581	1,898
2006	17,386	13,438	871	3,077	4,717	2,757	1,960
2007	18,362	14,144	905	3,313	5,103	3,003	2,100
Projected							
2008	18,917	14,668	935	3,313	5,578	3,308	2,269
2009	19,234	14,809	1,136	3,289	6,202	3,689	2,514
2010	22,443	17,374	1,334	3,735	6,747	4,055	2,692
2011	24,287	19,307	1,293	3,687	7,404	4,540	2,864
2012	25,922	20,947	1,134	3,841	8,206	5,019	3,187
2013	26,889	21,990	998	3,901	8,929	5,416	3,513
2014	28,173	23,229	928	4,016	9,748	5,856	3,893
2015	29,270	24,493	845	3,933	10,666	6,331	4,335
2016	30,634	25,916	783	3,934	11,694	6,846	4,849
2017	32,366	27,624	735	4,006	12,846	7,402	5,444
2018	34,861	30,091	709	4,061	14,135	8,003	6,132

Source: Mathematica Policy Research, based on MDH estimates of spending.

Table A.7. Per Capita Minnesota Expenditures for Health Services and Supplies, minus Medicare and Long-Term Care Spending, by Payer Type: 1993–2019 (current dollars)

Year	Private				Public		
	Total	Private Health Insurance	Other Private	Out of Pocket	Total	Medicaid	Other Public
1993	1,659	1,090	131	438	424	213	211
1994	1,539	1,023	130	386	420	238	182
1995	1,607	1,096	130	381	434	241	194
1996	1,650	1,157	131	361	443	246	197
1997	1,676	1,179	132	365	460	254	206
1998	1,785	1,264	134	387	479	263	216
1999	1,973	1,427	138	408	509	284	225
2000	2,284	1,676	151	457	556	311	244
2001	2,419	1,784	166	469	632	352	280
2002	2,611	1,943	168	499	730	411	319
2003	2,873	2,156	167	550	827	461	366
2004	2,992	2,254	169	570	867	488	378
2005	3,172	2,404	172	596	877	506	372
2006	3,380	2,613	169	598	917	536	381
2007	3,543	2,729	175	639	985	579	405
Projected							
2008	3,607	2,797	178	632	1,063	631	433
2009	3,607	2,778	213	617	1,163	692	471
2010	4,121	3,190	245	686	1,239	745	494
2011	4,383	3,484	233	665	1,336	819	517
2012	4,616	3,730	202	684	1,461	894	568
2013	4,743	3,879	176	688	1,575	955	620
2014	4,943	4,075	163	705	1,710	1,027	683
2015	5,126	4,290	148	689	1,868	1,109	759
2016	5,345	4,522	137	686	2,040	1,194	846
2017	5,614	4,791	127	695	2,228	1,284	944
2018	5,998	5,178	122	699	2,432	1,377	1,055

Source: Mathematica Policy Research, based on MDH estimates of spending and Minnesota State Demographic Center population estimates.

Table A.8. Percent Annual Growth in Minnesota Expenditures for Health Services and Supplies, minus Medicare and Long-Term Care Spending, by Payer Type: 1994-2019 (percent change in current dollars)

Year	Private				Public		
	Total	Private Health Insurance	Other Private	Out of Pocket	Total	Medicaid	Other Public
1994	-6.1	-5.0	-0.3	-10.7	0.2	12.9	-12.7
1995	5.6	8.3	1.3	-0.3	4.6	2.4	7.4
1996	3.8	6.8	2.2	-4.2	3.2	3.4	2.8
1997	2.7	3.0	1.7	2.1	4.8	4.3	5.5
1998	7.6	8.3	2.4	7.0	5.3	4.6	6.1
1999	11.9	14.3	4.1	7.0	7.7	9.5	5.4
2000	17.2	18.9	10.7	13.4	10.5	10.8	10.1
2001	7.0	7.5	11.5	3.7	14.9	14.1	15.8
2002	8.6	9.7	1.9	7.0	16.3	17.6	14.6
2003	10.7	11.6	-0.1	10.8	13.9	12.8	15.4
2004	4.8	5.2	1.8	4.2	5.5	6.6	4.1
2005	6.5	7.2	2.1	5.1	1.7	4.1	-1.2
2006	7.4	9.5	-0.7	1.2	5.3	6.8	3.3
2007	5.6	5.3	3.9	7.7	8.2	8.9	7.1
Average annual growth 1997-2007:							
	8.7	9.7	3.7	6.7	8.8	9.5	7.9
Projected							
2008	3.0	3.7	3.4	0.0	9.3	10.2	8.1
2009	1.7	1.0	21.4	-0.7	11.2	11.5	10.8
2010	16.7	17.3	17.4	13.6	8.8	9.9	7.1
2011	8.2	11.1	-3.0	-1.3	9.7	12.0	6.4
2012	6.7	8.5	-12.3	4.2	10.8	10.6	11.3
2013	3.7	5.0	-12.0	1.6	8.8	7.9	10.2
2014	4.8	5.6	-7.0	3.0	9.2	8.1	10.8
2015	3.9	5.4	-8.9	-2.1	9.4	8.1	11.4
2016	4.7	5.8	-7.3	0.0	9.6	8.1	11.8
2017	5.7	6.6	-6.2	1.8	9.8	8.1	12.3
2018	7.7	8.9	-3.6	1.4	10.0	8.1	12.6
Average annual projected growth 2008-2018:							
	6.3	7.4	-2.7	2.1	9.7	9.2	10.5

Source: Mathematica Policy Research, based on MDH estimates of spending.

Table A.9. Percent Annual Growth in Minnesota per Capita Expenditures for Health Services and Supplies, minus Medicare and Long-Term Care Spending, by Payer Type: 1994-2019 (percent change in current dollars)

Year	Private				Public		
	Total	Private Health Insurance	Other Private	Out of Pocket	Total	Medicaid	Other Public
1994	-7.3	-6.1	-1.4	-11.8	-1.0	11.6	-13.7
1995	4.4	7.1	0.3	-1.3	3.4	1.3	6.3
1996	2.7	5.6	1.0	-5.2	2.0	2.3	1.7
1997	1.6	1.9	0.7	1.0	3.7	3.2	4.3
1998	6.5	7.2	1.4	5.9	4.2	3.6	5.0
1999	10.6	12.9	2.8	5.7	6.3	8.2	4.1
2000	15.8	17.5	9.3	12.0	9.1	9.5	8.7
2001	5.9	6.4	10.4	2.7	13.7	13.0	14.7
2002	7.9	9.0	1.2	6.3	15.5	16.8	13.8
2003	10.0	10.9	-0.7	10.2	13.3	12.1	14.7
2004	4.2	4.5	1.2	3.6	4.9	5.9	3.5
2005	6.0	6.7	1.6	4.6	1.2	3.5	-1.7
2006	6.6	8.7	-1.4	0.5	4.5	6.0	2.5
2007	4.8	4.5	3.1	6.9	7.4	8.1	6.3
Average annual growth 1997-2007:							
	7.8	8.8	2.8	5.8	7.9	8.6	7.0
Projected							
2008	1.8	2.5	2.1	-1.2	8.0	8.9	6.8
2009	0.0	-0.7	19.5	-2.3	9.4	9.7	9.0
2010	14.2	14.8	15.0	11.2	6.5	7.6	4.8
2011	6.4	9.2	-4.7	-3.0	7.9	10.0	4.6
2012	5.3	7.1	-13.5	2.8	9.4	9.1	9.8
2013	2.8	4.0	-12.8	0.6	7.8	6.9	9.2
2014	4.2	5.1	-7.5	2.4	8.6	7.5	10.2
2015	3.7	5.3	-9.1	-2.2	9.2	7.9	11.2
2016	4.3	5.4	-7.7	-0.3	9.2	7.7	11.4
2017	5.0	6.0	-6.7	1.2	9.2	7.5	11.6
2018	6.9	8.1	-4.4	0.6	9.2	7.3	11.8
Average annual projected growth 2008-2018:							
	5.2	6.4	-3.7	1.0	8.6	8.1	9.3

Source: Mathematica Policy Research, based on MDH estimates of spending and Minnesota State Demographic Center population estimates.

Table A.10. Total Minnesota Expenditures for Health Services and Supplies by Service Type: 1993–2019 (current dollars in millions)

Year	Total	Inpatient Hospital	Physician Services	Long-Term Care	Prescription Drugs	Outpatient Hospital	Dental	Other Professional	Other	Uncategorized
1993	13,519	2,988	2,915	2,151	1,072	899	589	429	2,052	425
1994	13,236	2,940	2,852	2,299	1,049	969	600	500	1,760	268
1995	13,998	3,125	3,049	2,605	1,137	1,105	552	426	1,705	294
1996	14,701	3,278	3,289	2,707	1,253	1,215	527	437	1,700	294
1997	15,417	3,401	3,394	3,007	1,378	1,296	517	436	1,664	323
1998	16,106	3,549	3,477	2,912	1,459	1,381	620	439	1,911	357
1999	17,463	3,733	3,916	2,960	1,801	1,557	670	482	1,972	373
2000	19,762	4,069	4,456	3,213	2,080	1,730	737	527	2,557	393
2001	21,653	4,367	4,716	3,615	2,369	1,933	761	572	2,900	420
2002	23,802	4,829	5,223	4,004	2,791	2,243	838	665	2,785	425
2003	26,173	5,265	5,639	4,233	3,192	2,513	958	740	3,152	479
2004	27,473	5,543	5,642	4,373	3,426	2,780	975	807	3,438	489
2005	29,139	5,906	6,085	4,553	3,502	3,134	1,107	894	3,509	448
2006	32,114	6,630	7,071	4,792	3,487	3,625	1,168	1,037	3,825	478
2007	33,242	6,814	7,322	4,958	3,462	3,756	1,280	1,112	4,000	537
Projected										
2008	35,086	7,221	7,672	5,133	3,485	4,637	1,392	1,207	3,785	553
2009	36,792	7,718	7,919	5,199	3,551	5,292	1,381	1,312	3,833	588
2010	40,962	8,446	8,961	5,543	4,506	5,797	1,439	1,617	4,028	626
2011	44,200	9,034	9,566	5,968	5,249	6,409	1,361	1,815	4,132	665
2012	47,554	9,830	10,061	6,388	5,831	6,896	1,428	1,945	4,469	708
2013	50,134	10,455	10,514	6,665	6,259	7,286	1,435	2,034	4,732	753
2014	53,296	11,287	11,124	7,065	6,607	7,652	1,586	2,135	5,038	801
2015	56,368	11,884	11,652	7,553	6,951	8,366	1,669	2,207	5,236	852
2016	59,993	12,689	12,216	8,021	7,442	9,158	1,773	2,299	5,490	906
2017	64,278	13,633	12,858	8,715	8,050	10,022	1,902	2,415	5,720	964
2018	69,616	14,826	13,800	9,381	8,924	11,005	2,042	2,585	6,029	1,025

Source: Mathematica Policy Research, based on MDH estimates of spending.

Table A.11. Per Capita Minnesota Expenditures for Health Services and Supplies by Service Type: 1993–2019 (current dollars)

Year	Total	Inpatient Hospital	Physician Services	Long- Term Care	Prescription Drugs	Outpatient Hospital	Dental	Other Professional	Other	Uncategorized
1993	2,967	656	640	472	235	197	129	94	450	93
1994	2,871	638	619	499	228	210	130	108	382	58
1995	3,004	670	654	559	244	237	118	91	366	63
1996	3,119	696	698	574	266	258	112	93	361	62
1997	3,236	714	713	631	289	272	109	92	349	68
1998	3,346	737	722	605	303	287	129	91	397	74
1999	3,583	766	803	607	369	319	137	99	405	77
2000	4,006	825	903	651	422	351	149	107	518	80
2001	4,346	876	946	725	476	388	153	115	582	84
2002	4,745	963	1,041	798	556	447	167	132	555	85
2003	5,186	1,043	1,117	839	633	498	190	147	625	95
2004	5,410	1,092	1,111	861	675	547	192	159	677	96
2005	5,708	1,157	1,192	892	686	614	217	175	687	88
2006	6,244	1,289	1,375	932	678	705	227	202	744	93
2007	6,414	1,315	1,413	957	668	725	247	215	772	104
Projected										
2008	6,689	1,377	1,463	979	664	884	265	230	722	105
2009	6,900	1,447	1,485	975	666	992	259	246	719	110
2010	7,521	1,551	1,645	1,018	827	1,064	264	297	740	115
2011	7,976	1,630	1,726	1,077	947	1,157	246	328	746	120
2012	8,467	1,750	1,791	1,137	1,038	1,228	254	346	796	126
2013	8,843	1,844	1,854	1,176	1,104	1,285	253	359	835	133
2014	9,350	1,980	1,952	1,240	1,159	1,343	278	375	884	140
2015	9,872	2,081	2,041	1,323	1,217	1,465	292	386	917	149
2016	10,467	2,214	2,131	1,399	1,298	1,598	309	401	958	158
2017	11,149	2,365	2,230	1,512	1,396	1,738	330	419	992	167
2018	11,979	2,551	2,375	1,614	1,535	1,894	351	445	1,037	176

Source: Mathematica Policy Research, based on MDH estimates of spending and Minnesota State Demographic Center population estimates.

Table A.12. Percent Annual Growth in Minnesota Expenditures for Health Services and Supplies by Service Type: 1994-2019 (percent change in current dollars)

Year	Total	Inpatient Hospital	Physician	Long-Term Care	Prescription Drugs	Outpatient Hospital	Dental	Other Professional	Other	Uncategorized
1994	-2.1	-1.6	-2.1	6.9	-2.2	7.7	1.9	16.5	-14.2	-36.9
1995	5.8	6.3	6.9	13.3	8.4	14.1	-8.0	-14.7	-3.1	9.5
1996	5.0	4.9	7.9	3.9	10.2	10.0	-4.6	2.6	-0.3	0.3
1997	4.9	3.7	3.2	11.1	10.0	6.7	-1.8	-0.3	-2.1	9.7
1998	4.5	4.3	2.4	-3.2	5.9	6.6	20.0	0.8	14.8	10.7
1999	8.4	5.2	12.6	1.7	23.4	12.7	8.0	9.8	3.2	4.4
2000	13.2	9.0	13.8	8.6	15.5	11.2	10.1	9.2	29.7	5.3
2001	9.6	7.3	5.8	12.5	13.9	11.7	3.2	8.6	13.4	7.0
2002	9.9	10.6	10.8	10.8	17.8	16.1	10.1	16.1	-4.0	1.1
2003	10.0	9.0	8.0	5.7	14.4	12.0	14.4	11.4	13.2	12.7
2004	5.0	5.3	0.0	3.3	7.3	10.6	1.8	9.1	9.1	2.2
2005	6.1	6.5	7.9	4.1	2.2	12.8	13.5	10.8	2.1	-8.5
2006	10.2	12.3	16.2	5.3	-0.4	15.6	5.6	15.9	9.0	6.9
2007	3.5	2.8	3.5	3.5	-0.7	3.6	9.6	7.3	4.6	12.4
Average annual growth 1997-2007:										
	8.0	7.2	8.0	5.1	9.7	11.2	9.5	9.8	9.2	5.2
Projected										
2008	5.5	6.0	4.8	3.5	0.7	23.4	8.7	8.5	-5.4	2.9
2009	4.9	6.9	3.2	1.3	1.9	14.1	-0.8	8.7	1.3	6.4
2010	11.3	9.4	13.2	6.6	26.9	9.5	4.2	23.2	5.1	6.4
2011	7.9	7.0	6.7	7.7	16.5	10.6	-5.4	12.2	2.6	6.4
2012	7.6	8.8	5.2	7.0	11.1	7.6	4.9	7.1	8.1	6.4
2013	5.4	6.4	4.5	4.3	7.3	5.7	0.5	4.6	5.9	6.4
2014	6.3	8.0	5.8	6.0	5.6	5.0	10.5	5.0	6.5	6.4
2015	5.8	5.3	4.7	6.9	5.2	9.3	5.2	3.4	3.9	6.4
2016	6.4	6.8	4.8	6.2	7.1	9.5	6.3	4.2	4.8	6.4
2017	7.1	7.4	5.3	8.6	8.2	9.4	7.3	5.1	4.2	6.4
2018	8.3	8.8	7.3	7.6	10.9	9.8	7.4	7.0	5.4	6.4
Average annual projected growth 2008-2018:										
	7.1	7.5	6.0	6.2	9.9	9.0	3.9	7.9	4.8	6.4

Source: Mathematica Policy Research, based on MDH estimates of spending.

Note: The projected growth rate of uncategorized spending is constant because uncategorized spending is comprised entirely of public spending, and future values of public spending sources are extrapolated using an average of past growth rates.

Table A.13. Percent Annual Growth in Minnesota per Capita Expenditures for Health Services and Supplies by Service Type: 1994-2019
(percent change in current dollars)

Year	Total	Inpatient Hospital	Physician	Long-Term Care	Prescription Drugs	Outpatient Hospital	Dental	Other Professional	Other	Uncategorized
1994	-3.2	-2.8	-3.3	5.6	-3.3	6.4	0.7	15.1	-15.2	-37.6
1995	4.6	5.1	5.8	12.1	7.2	12.9	-8.9	-15.6	-4.2	8.4
1996	3.9	3.8	6.7	2.8	9.0	8.7	-5.6	1.5	-1.4	-0.9
1997	3.8	2.6	2.1	9.9	8.8	5.5	-2.8	-1.4	-3.1	8.5
1998	3.4	3.3	1.4	-4.2	4.8	5.4	18.7	-0.3	13.6	9.5
1999	7.1	3.9	11.2	0.4	21.9	11.3	6.7	8.5	1.9	3.1
2000	11.8	7.7	12.4	7.2	14.1	9.8	8.7	7.9	28.1	4.0
2001	8.5	6.3	4.8	11.4	12.8	10.6	2.2	7.5	12.3	5.9
2002	9.2	9.8	10.0	10.0	17.0	15.3	9.4	15.3	-4.6	0.4
2003	9.3	8.4	7.3	5.1	13.7	11.4	13.7	10.7	12.5	12.0
2004	4.3	4.6	-0.6	2.7	6.7	9.9	1.1	8.4	8.4	1.6
2005	5.5	6.0	7.3	3.6	1.7	12.2	12.9	10.2	1.5	-9.0
2006	9.4	11.4	15.3	4.5	-1.2	14.8	4.8	15.0	8.2	6.1
2007	2.7	2.0	2.8	2.7	-1.4	2.8	8.8	6.4	3.8	11.5
Average annual growth 1996-2007:										
	7.1	6.3	7.1	4.2	8.7	10.3	8.6	8.9	8.2	4.3
Projected										
2008	4.3	4.7	3.5	2.3	-0.5	22.0	7.4	7.2	-6.5	1.7
2009	3.2	5.1	1.5	-0.4	0.2	12.3	-2.4	7.0	-0.4	4.6
2010	9.0	7.1	10.8	4.4	24.2	7.2	2.0	20.6	2.9	4.1
2011	6.0	5.1	4.9	5.8	14.5	8.7	-7.0	10.3	0.8	4.5
2012	6.2	7.4	3.8	5.6	9.6	6.2	3.5	5.7	6.7	5.0
2013	4.4	5.4	3.5	3.4	6.3	4.7	-0.4	3.6	4.9	5.4
2014	5.7	7.4	5.2	5.4	5.0	4.5	9.9	4.4	5.9	5.8
2015	5.6	5.1	4.6	6.7	5.0	9.1	5.0	3.2	3.8	6.2
2016	6.0	6.4	4.4	5.8	6.7	9.1	5.8	3.8	4.4	6.0
2017	6.5	6.8	4.6	8.0	7.5	8.8	6.6	4.4	3.6	5.7
2018	7.4	7.9	6.5	6.8	10.0	8.9	6.5	6.2	4.6	5.5
Average annual projected growth 2007-2018:										
	6.0	6.4	5.0	5.1	8.7	7.9	2.8	6.8	3.7	5.3

Source: Mathematica Policy Research based on MDH estimates of spending and Minnesota State Demographic Center population estimates.

Table A.14. Total Minnesota Expenditures for Health Services and Supplies by Payer Type: 1993-2019 (current dollars in millions)

Year	Private				Public			
	Total	Private Health Insurance	Other Private	Out of Pocket	Total	Medicare	Medicaid	Other Public
1993	8,182	5,023	599	2,560	5,337	2,061	2,265	1,011
1994	7,706	4,774	597	2,334	5,531	2,134	2,506	892
1995	8,045	5,129	605	2,311	5,953	2,276	2,721	956
1996	8,467	5,514	618	2,335	6,234	2,435	2,814	985
1997	8,957	5,684	629	2,644	6,460	2,569	2,851	1,040
1998	9,462	6,160	644	2,657	6,644	2,603	2,941	1,099
1999	10,515	7,034	671	2,810	6,948	2,676	3,119	1,152
2000	12,236	8,365	743	3,129	7,526	2,857	3,400	1,269
2001	13,090	8,994	828	3,268	8,562	3,247	3,849	1,466
2002	14,213	9,874	844	3,495	9,589	3,487	4,425	1,676
2003	15,652	11,021	843	3,778	10,521	3,726	4,864	1,931
2004	16,338	11,584	859	3,895	11,135	4,016	5,104	2,016
2005	17,357	12,440	877	4,040	11,782	4,482	5,300	1,999
2006	18,585	13,631	871	4,083	13,529	5,871	5,593	2,065
2007	19,615	14,323	905	4,386	13,627	5,414	5,996	2,217
Projected								
2008	20,328	15,159	889	4,279	14,758	5,882	6,472	2,404
2009	20,759	15,725	917	4,117	16,033	6,346	7,024	2,663
2010	24,087	18,620	1,065	4,402	16,876	6,465	7,554	2,857
2011	26,042	20,496	1,163	4,383	18,158	6,886	8,225	3,046
2012	27,787	21,903	1,233	4,651	19,767	7,458	8,919	3,389
2013	28,894	22,816	1,285	4,793	21,240	7,955	9,549	3,736
2014	30,288	23,990	1,327	4,971	23,007	8,544	10,325	4,139
2015	31,500	25,174	1,357	4,969	24,868	9,096	11,164	4,608
2016	32,968	26,513	1,403	5,052	27,025	9,804	12,071	5,150
2017	34,791	28,138	1,461	5,192	29,487	10,658	13,051	5,778
2018	37,381	30,552	1,532	5,297	32,235	11,621	14,112	6,502

Source: Mathematica Policy Research, based on MDH estimates of spending.

Table A.15. Per Capita Minnesota Expenditures for Health Services and Supplies by Payer Type: 1993-2019 (current dollars)

Year	Private				Public			
	Total	Private Health Insurance	Other Private	Out of Pocket	Total	Medicare	Medicaid	Other Public
1993	1,796	1,103	131	562	1,171	452	497	222
1994	1,671	1,036	130	506	1,200	463	543	193
1995	1,726	1,101	130	496	1,277	488	584	205
1996	1,797	1,170	131	495	1,323	517	597	209
1997	1,880	1,193	132	555	1,356	539	599	218
1998	1,966	1,280	134	552	1,380	541	611	228
1999	2,158	1,443	138	577	1,426	549	640	236
2000	2,480	1,695	151	634	1,525	579	689	257
2001	2,627	1,805	166	656	1,719	652	773	294
2002	2,833	1,968	168	697	1,911	695	882	334
2003	3,102	2,184	167	749	2,085	738	964	383
2004	3,217	2,281	169	767	2,193	791	1,005	397
2005	3,400	2,437	172	791	2,308	878	1,038	392
2006	3,614	2,650	169	794	2,630	1,142	1,088	401
2007	3,785	2,764	175	846	2,630	1,045	1,157	428
Projected								
2008	3,876	2,890	170	816	2,814	1,121	1,234	458
2009	3,893	2,949	172	772	3,007	1,190	1,317	499
2010	4,422	3,419	196	808	3,098	1,187	1,387	525
2011	4,699	3,698	210	791	3,277	1,243	1,484	550
2012	4,948	3,900	220	828	3,520	1,328	1,588	603
2013	5,097	4,024	227	846	3,746	1,403	1,684	659
2014	5,314	4,209	233	872	4,036	1,499	1,811	726
2015	5,517	4,409	238	870	4,355	1,593	1,955	807
2016	5,752	4,626	245	881	4,715	1,711	2,106	899
2017	6,034	4,881	253	900	5,115	1,849	2,264	1,002
2018	6,432	5,257	264	911	5,547	2,000	2,428	1,119

Source: Mathematica Policy Research based on MDH estimates of spending and Minnesota State Demographic Center population estimates.

Table A.16. Annual Percent Growth in Minnesota Expenditures for Health Services and Supplies by Payer Type: 1994–2019 (percent change in current dollars)

Year	Private				Public			
	Total	Private Health Insurance	Other Private	Out of Pocket	Total	Medicare	Medicaid	Other Public
1994	-5.8	-5.0	-0.3	-8.8	3.6	3.5	10.6	-11.8
1995	4.4	7.4	1.3	-1.0	7.6	6.7	8.6	7.2
1996	5.2	7.5	2.2	1.0	4.7	7.0	3.4	3.1
1997	5.8	3.1	1.7	13.2	3.6	5.5	1.3	5.5
1998	5.6	8.4	2.4	0.5	2.9	1.3	3.1	5.8
1999	11.1	14.2	4.1	5.7	4.6	2.8	6.1	4.8
2000	16.4	18.9	10.7	11.3	8.3	6.8	9.0	10.1
2001	7.0	7.5	11.5	4.5	13.8	13.6	13.2	15.6
2002	8.6	9.8	1.9	6.9	12.0	7.4	15.0	14.3
2003	10.1	11.6	-0.1	8.1	9.7	6.8	9.9	15.2
2004	4.4	5.1	1.8	3.1	5.8	7.8	4.9	4.4
2005	6.2	7.4	2.1	3.7	5.8	11.6	3.8	-0.8
2006	7.1	9.6	-0.7	1.1	14.8	31.0	5.5	3.3
2007	5.5	5.1	3.9	7.4	0.7	-7.8	7.2	7.4
Average annual growth 1997–2007:								
	8.2	9.7	3.7	5.2	7.8	7.7	7.7	7.9
Projected								
2008	3.6	5.8	-1.7	-2.4	8.3	8.6	7.9	8.5
2009	2.1	3.7	3.1	-3.8	8.6	7.9	8.5	10.8
2010	16.0	18.4	16.2	6.9	5.3	1.9	7.6	7.3
2011	8.1	10.1	9.2	-0.4	7.6	6.5	8.9	6.6
2012	6.7	6.9	6.0	6.1	8.9	8.3	8.4	11.3
2013	4.0	4.2	4.2	3.1	7.5	6.7	7.1	10.2
2014	4.8	5.1	3.3	3.7	8.3	7.4	8.1	10.8
2015	4.0	4.9	2.3	0.0	8.1	6.5	8.1	11.3
2016	4.7	5.3	3.4	1.7	8.7	7.8	8.1	11.8
2017	5.5	6.1	4.1	2.8	9.1	8.7	8.1	12.2
2018	7.4	8.6	4.9	2.0	9.3	9.0	8.1	12.5
Average annual projected growth 2008–2018:								
	6.3	7.3	5.6	2.2	8.1	7.0	8.1	10.5

Source: Mathematica Policy Research, based on MDH estimates of spending.

Table A.17. Annual Percent Growth in Minnesota per Capita Expenditures for Health Services and Supplies by Payer Type: 1994-2019
(percent change in current dollars)

Year	Private				Public			
	Total	Private Health Insurance	Other Private	Out of Pocket	Total	Medicare	Medicaid	Other Public
1994	-6.9	-6.1	-1.4	-9.9	2.4	2.3	9.3	-12.9
1995	3.3	6.3	0.3	-2.0	6.5	5.5	7.4	6.0
1996	4.1	6.3	1.0	-0.1	3.6	5.8	2.3	1.9
1997	4.7	2.0	0.7	12.0	2.5	4.4	0.3	4.4
1998	4.5	7.2	1.4	-0.5	1.8	0.3	2.1	4.7
1999	9.8	12.8	2.8	4.4	3.3	1.5	4.8	3.5
2000	14.9	17.5	9.3	10.0	7.0	5.5	7.7	8.8
2001	5.9	6.5	10.4	3.4	12.7	12.5	12.1	14.4
2002	7.8	9.0	1.2	6.2	11.2	6.7	14.2	13.5
2003	9.5	11.0	-0.7	7.5	9.1	6.2	9.3	14.5
2004	3.7	4.5	1.2	2.5	5.2	7.1	4.3	3.7
2005	5.7	6.8	1.6	3.2	5.2	11.0	3.3	-1.4
2006	6.3	8.8	-1.4	0.3	14.0	30.0	4.7	2.5
2007	4.7	4.3	3.1	6.6	0.0	-8.5	6.4	6.6
Average annual growth 1997-2007:								
	7.2	8.8	2.8	4.3	6.8	6.8	6.8	7.0
Projected								
2008	2.4	4.6	-2.9	-3.6	7.0	7.3	6.6	7.2
2009	0.5	2.0	1.4	-5.3	6.9	6.1	6.8	8.9
2010	13.6	15.9	13.7	4.7	3.0	-0.3	5.3	5.0
2011	6.3	8.2	7.3	-2.1	5.7	4.7	7.0	4.8
2012	5.3	5.4	4.6	4.7	7.4	6.9	7.0	9.8
2013	3.0	3.2	3.3	2.1	6.4	5.7	6.1	9.2
2014	4.3	4.6	2.7	3.1	7.7	6.8	7.5	10.2
2015	3.8	4.8	2.1	-0.2	7.9	6.3	7.9	11.1
2016	4.3	4.9	3.0	1.3	8.3	7.4	7.7	11.4
2017	4.9	5.5	3.5	2.2	8.5	8.1	7.5	11.5
2018	6.6	7.7	4.1	1.2	8.4	8.2	7.3	11.6
Average annual projected growth 2008-2018:								
	5.2	6.2	4.5	1.1	7.0	6.0	7.0	9.3

Source: Mathematica Policy Research, based on MDH estimates of spending and Minnesota State Demographic Center population estimates.

Table A.18. Projected Change in National Health Care Expenditures Due to PPACA (current dollars)

Calendar year	Total spending	Total public spending	Medicare	Medicaid and other public	Private Insurance	Out-of-pocket spending	Other private spending
2010	0.2%	0.2%	0.1%	0.4%	0.2%	0.0%	-0.1%
2011	-0.2%	-0.5%	-0.9%	-0.2%	0.2%	0.1%	-0.1%
2012	-0.4%	-0.9%	-2.4%	0.1%	0.2%	-0.1%	-0.1%
2013	-0.8%	-1.6%	-4.7%	0.5%	0.2%	-0.2%	0.0%
2014	1.0%	0.3%	-8.0%	6.0%	6.1%	-7.7%	-2.7%
2015	1.9%	1.2%	-7.0%	6.8%	7.9%	-9.6%	-2.4%
2016	2.1%	0.9%	-8.4%	7.3%	9.4%	-11.2%	-1.4%
2017	1.8%	-0.1%	-9.5%	6.5%	10.2%	-11.4%	-0.9%
2018	1.3%	-0.7%	-10.5%	6.3%	8.7%	-9.4%	-0.6%
2019	1.0%	-1.2%	-11.6%	6.3%	8.6%	-8.8%	-0.8%

Source: Mathematica Policy Research, calculated from Foster (2010b) and CMS (2010).

Table A.19. Projected Minnesota Health Care Expenditures With and Without PPACA Impacts, 2010–2018

Calendar year	Total spending	Total public spending	Medicare	MA and other public spending	Total private spending	Private health insurance spending
Projected spending without PPACA implementation, in billions of current dollars:						
2010	41.0	16.9	6.5	10.4	24.1	18.6
2011	44.2	18.2	6.9	11.3	26.0	20.5
2012	47.6	19.8	7.5	12.3	27.8	21.9
2013	50.1	21.2	8.0	13.3	28.9	22.8
2014	53.3	23.0	8.5	14.5	30.3	24.0
2015	56.4	24.9	9.1	15.8	31.5	25.2
2016	60.0	27.0	9.8	17.2	33.0	26.5
2017	64.3	29.5	10.7	18.8	34.8	28.1
2018	69.6	32.2	11.6	20.6	37.4	30.6
Projected total spending with PPACA implementation, in billions of current dollars:						
2010	41.0	16.9	6.5	10.4	24.1	18.6
2011	44.1	18.1	6.8	11.3	26.1	20.6
2012	47.4	19.6	7.3	12.3	27.8	22.1
2013	49.9	20.9	7.6	13.4	28.9	23.1
2014	54.0	23.2	7.9	15.3	30.8	24.5
2015	59.5	25.3	8.5	16.9	34.2	27.7
2016	63.2	27.5	9.0	18.5	35.8	29.2
2017	67.4	29.7	9.6	20.0	37.7	31.2
2018	72.8	32.3	10.4	21.9	40.5	33.9
Projected change in spending with PPACA implementation, in millions of current dollars:						
2010	38.7	42.3	5.0	37.2	-3.6	-37.6
2011	-72.7	-80.5	-61.2	-19.4	7.9	78.3
2012	-144.4	-160.0	-177.5	17.5	14.6	159.5
2013	-277.1	-306.7	-372.9	67.2	28.6	306.4
2014	698.4	192.5	-680.5	873.1	504.8	478.2
2015	3,139.7	442.1	-637.4	1,078.6	2,697.5	2,566.3
2016	3,231.8	441.9	-821.9	1,263.9	2,788.8	2,692.8
2017	3,129.1	200.8	-1,015.2	1,216.0	2,928.3	3,032.8
2018	3,159.6	78.1	-1,219.2	1,297.4	3,081.5	3,325.6
Projected percentage change from pre-reform spending:						
2010	0.1%	0.3%	0.1%	0.4%	0.0%	-0.2%
2011	-0.2%	-0.4%	-0.9%	-0.2%	0.0%	0.4%
2012	-0.3%	-0.8%	-2.4%	0.1%	0.1%	0.7%
2013	-0.6%	-1.4%	-4.7%	0.5%	0.1%	1.3%
2014	1.3%	0.8%	-8.0%	6.0%	1.7%	2.0%
2015	5.6%	1.8%	-7.0%	6.8%	8.6%	10.2%
2016	5.4%	1.6%	-8.4%	7.3%	8.5%	10.2%
2017	4.9%	0.7%	-9.5%	6.5%	8.4%	10.8%
2018	4.5%	0.2%	-10.5%	6.3%	8.2%	10.9%

Source: Mathematica Policy Research, based on MDH estimates of spending.

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