

# Treated Chronic Disease Prevalence and Spending in Minnesota

ESTIMATED SPENDING FOR 2009, 2017, AND 2018

PROJECTED SPENDING FOR 2017 THROUGH 2028

## Introduction

Chronic diseases place enormous burdens on individuals, families, communities, and governments; and their burdens are unevenly distributed among populations and areas of the state. Certain chronic diseases—including heart disease, cancer, and diabetes—are among the leading causes of death and disability and are major contributors to annual health care spending. To better understand the impact of chronic disease on health care utilization and spending in Minnesota, the Legislature has directed the Minnesota Department of Health (MDH) to report annually on actual and projected health care spending *directly related* to a specific set of chronic conditions and risk factors.

Specifically, the Minnesota Legislature directed MDH to:<sup>1</sup>

1. Identify health care spending directly attributable to diabetes, hypertension, dementia, obesity, and smoking, and spending attributable to all chronic conditions among Minnesotans ages 60 and older
2. Project future levels of condition-attributable spending
3. Compare the latest actual health care spending estimates to projected spending for the conditions and risk factors
4. Estimate the share of the difference between actual and projected spending attributable to state-administered programs

The current version of this report and appendices includes estimates from two years (2017 and 2018) in addition to the baseline year (2009). We focus on describing the 2018 findings as compared to the 2009 baseline, but also note some comparisons of 2018 to 2017 in the key findings. The full data for 2009, 2017 and 2018 can be found in the appendices.

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<sup>1</sup> Minnesota Statutes, Chapter 62U.10, subd. 6 to 8.

As with previous iterations of this report, this project brings together analyses of several data sources, research evidence from the literature, and expertise from analysts at the Minnesota Department of Health (MDH) and Mathematica, the state’s analytic vendor for this project, to help us understand patterns in treated chronic disease prevalence and related health care spending, and how they compare to expectations.<sup>2,3,4,5</sup>

In the conclusion, we summarize the main limitations and interpretation challenges, and identify considerations to help inform future directions for this report. The accompanying Supplemental Appendices describe these issues in greater detail.<sup>6</sup>

The following terms are used throughout this report:

- Prevalence – The proportion of a population with a given condition or risk factor during a given year. Most prevalence estimates in this report reflect individuals with the condition who either receive treatment or have a health care encounter related to the condition during that year. As such, these estimates should be interpreted as “treated prevalence.” Prevalence estimates for obesity and smoking exposure, in contrast, reflect a broader definition that includes those who did not receive treatment or have a related health care encounter.
- Chronic Conditions – Conditions altering the structures or functions of the body that are likely to last longer than twelve months and have a negative impact on health or functional status.<sup>7</sup> The specific chronic conditions in this report, as directed by the Minnesota Legislature, are diabetes, hypertension, dementia, and obesity. An additional section focuses on all chronic conditions for Minnesotans ages 60 and older. Detail regarding the conditions included in this group as well as the operationalization of all conditions assessed in this report are described in detail in Appendices 3 and 6.<sup>8</sup>

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<sup>2</sup> Minnesota Department of Health (2017) “Treated Chronic Disease Costs in Minnesota - a Look Back and a Look Forward”, Legislative Report; <https://www.health.state.mn.us/data/apcd/publications.html>

<sup>3</sup> Minnesota Department of Health (2019) “Treated Chronic Disease Prevalence and Costs in Minnesota: Estimated Costs for 2009 and 2015, Projected Costs for 2015 through 2025”, Legislative Report; <https://www.health.state.mn.us/data/apcd/publications.html>

<sup>4</sup> Minnesota Department of Health (2021) “Treated Chronic Disease Prevalence and Spending in Minnesota: Estimated Spending for 2009 and 2016, Projected Spending for 2016 through 2027”, Legislative Report; <https://www.health.state.mn.us/data/apcd/publications.html>

<sup>5</sup> As requested by Minnesota Statute 3.197: This report cost approximately \$344,808 to prepare, including costs for an analytic vendor and Minnesota Department of Health staff time.

<sup>6</sup> Minnesota Department of Health (2021) “Treated Chronic Disease Prevalence and Spending in Minnesota - Estimated Spending for 2009, 2017, and 2018, Projected Spending for 2017 through 2027: Supplemental Appendices” <https://www.health.state.mn.us/data/apcd/publications.html>

<sup>7</sup> The Johns Hopkins University (2020) “The Johns Hopkins ACG® System Version 12.1 User Documentation”

<sup>8</sup> Minnesota Department of Health (2021) “Treated Chronic Disease Prevalence and Spending in Minnesota - Estimated Spending for 2009, 2017, and 2018, Projected Spending for 2017 through 2027: Supplemental Appendices” <https://www.health.state.mn.us/data/apcd/publications.html>

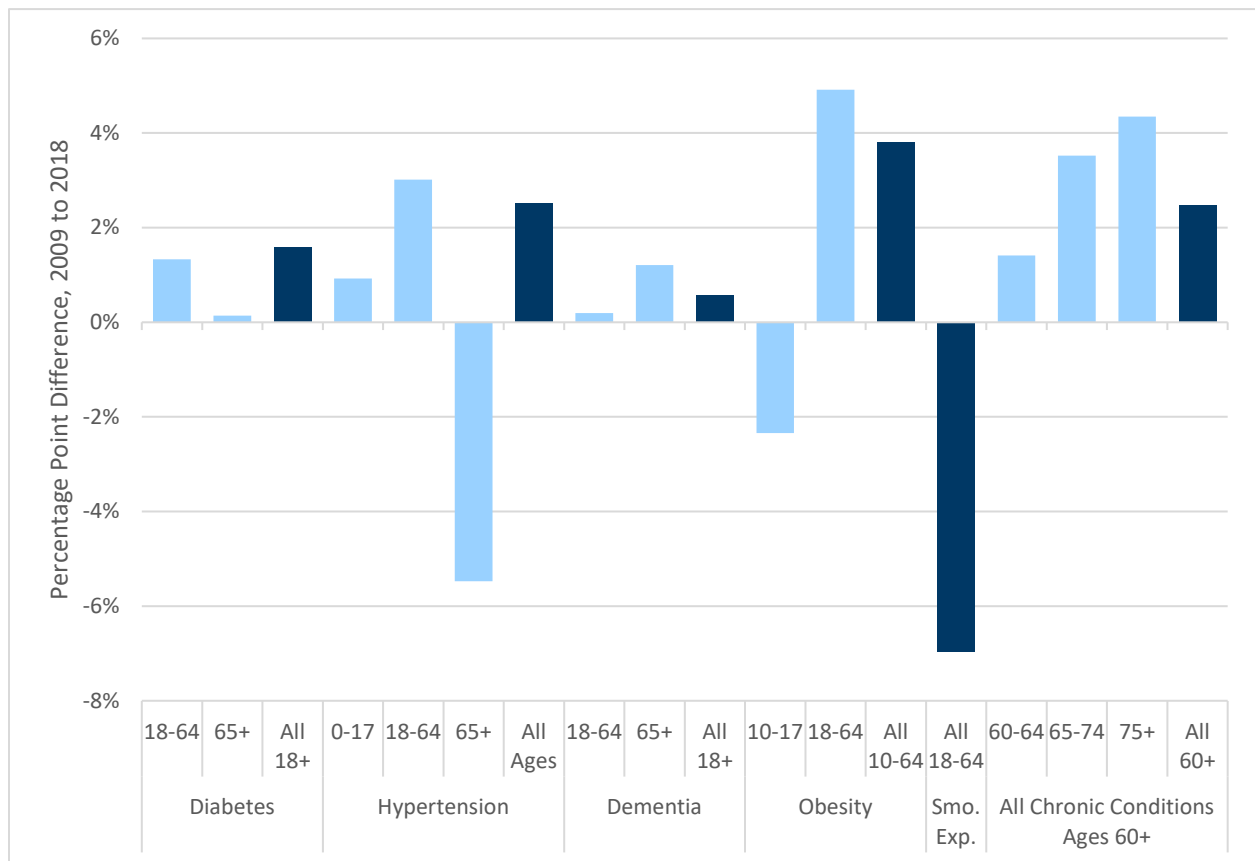
- Risk Factors – Attributes, characteristics, behaviors, or exposures that increase the likelihood of a person developing a disease or health disorder. Smoking exposure is the sole risk factor identified by the Minnesota Legislature to be studied in this report.

## Key Findings

### Overall Prevalence of Chronic Conditions

**Overall prevalence of chronic conditions increased between 2009 and 2018:** Treated prevalence of diabetes, hypertension, dementia, obesity, and all chronic conditions for Minnesotans ages 60 and older increased between 2009 and 2018, both in terms of the number of Minnesotans with a given condition as well as the percentage of the population with a given condition. Prevalence of smoking exposure decreased over this period (Figure 1).

**Figure 1: Change in Treated Prevalence, by Condition and Age, 2009 to 2018**



Source: Mathematica analysis of the Minnesota All Payer Claims Database and other data.

Note: “Smo. Exp.” – Smoking Exposure

Note: The obesity estimates presented throughout this report pertain to a different age group (10 to 64) than is commonly reported (for example, the Behavioral Risk Factor Surveillance System (BRFSS) typically reports estimates for ages 18 and older). A fuller explanation can be found in the obesity section of this report and in the supplemental appendices.

**Changes in prevalence of chronic conditions varied in direction across age groups and condition categories between 2017 and 2018:** Treated prevalence of diabetes and dementia remained largely unchanged between 2017 and 2018. Overall prevalence increases in the hypertension and obesity categories were driven by notable increases in prevalence among Minnesotans ages 18 to 64. Prevalence of chronic conditions among Minnesotans ages 60 and older increased overall and in each age subgroup.

## Prevalence of Chronic Conditions among Older Minnesotans

**Chronic Conditions are becoming increasingly prevalent among older Minnesotans:** Roughly 912,000 adults ages 60 and older (about 76% of those ages 60 and older) had at least one chronic condition in 2018. This represents an increase from about 876,000 (about 75% in 2017) and about 669,000 (about 74% in 2009). Additionally, prevalence of chronic disease increases with age among this group, with a treated prevalence of chronic disease reaching about 87% among those ages 75 and older in 2018.

## Per-person Total Spending for Minnesotans with Chronic Conditions

**Per-person *total* spending for individuals with chronic conditions increased between 2009 and 2018:** Overall per-person total spending for Minnesotans with diabetes, hypertension, or dementia – that is, the average total health care spending across *all care* in a year for individuals with a given condition – was materially higher than that of the population as a whole in 2009, 2017 and 2018, and increased substantially between 2009 and 2018 as well as from 2017 to 2018 for each chronic condition category.

## Disease-attributable Per-person Spending for Minnesotans with Chronic Conditions

**Disease-attributable per-person spending for Minnesotans with chronic conditions increased from 2009 to 2018:** Condition-attributable per-person spending – that is, the average health care spending in a year that is attributable to a given condition among individuals with that condition – increased from 2009 to 2018 for diabetes, hypertension, dementia, and obesity, and for all chronic conditions for Minnesotans ages 60 and older. Attributable spending for Minnesotans with hypertension increased from 2009 to 2017, and decreased slightly from 2017 to 2018.

## Projected Total Disease-attributable Health Care Spending

**Total disease-attributable health care spending for all select chronic conditions and smoking exposure is projected to rise steadily over the next decade:** Total health care spending in

Minnesota that is attributable to selected chronic conditions is projected to grow between 22% (obesity) to 67% (dementia) between 2017 and 2028.

## Comparison to Projections

**Overall actual disease attributable spending in both 2017 and 2018 was substantially above baseline projections for those years.** Actual disease attributable spending – or health care spending directly related to a certain condition for all people with the condition – was above projected spending across nearly all conditions and population groups. From our analysis of spending for populations covered by state-administered populations, we conclude that actual spending exceeded projections for 2017 and 2018. As such, the criteria in state law for a transfer between the General and Health Care Access Funds are not met for either year.<sup>9</sup>

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<sup>9</sup> Minnesota Statutes, Chapter 62U.10, subd. 8.

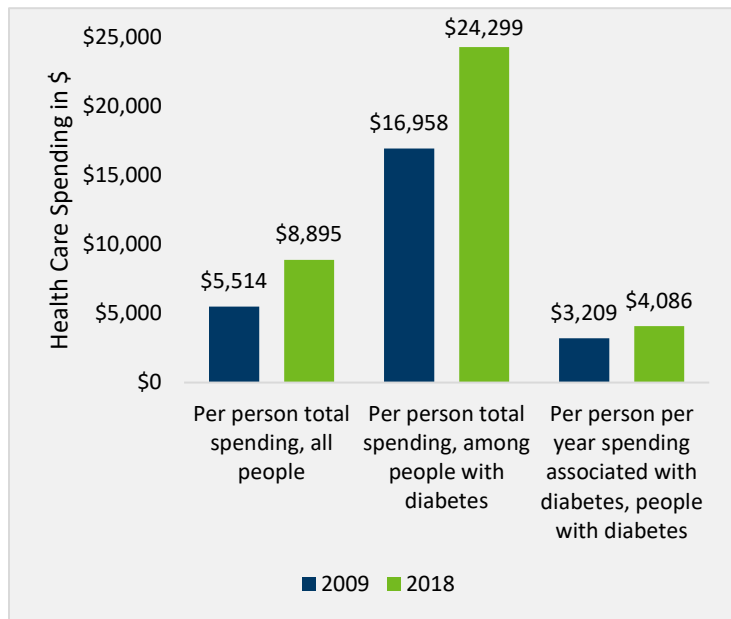
## Diabetes-Attributable Health Care Spending (Ages 18 and Older)

In 2018, roughly 375,000 Minnesotans ages 18 and older—about 9% of that population—received health care services related to the treatment of diabetes, an increase of about 88,000 from 2009 (287,000 Minnesotans, 7% of the population ages 18 and older).

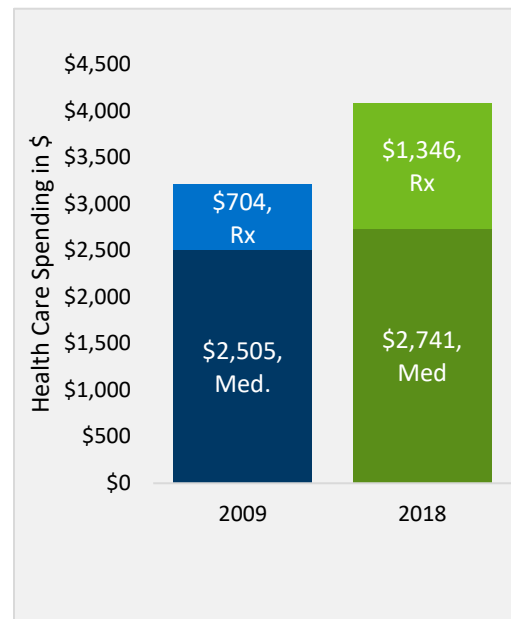
Per-person total health care spending for Minnesotans treated for diabetes in 2018 was about 2.7 times as high as per-person total spending for all Minnesotans (\$24,299 vs \$8,895 respectively, as shown in Figure 2). Roughly 17% of the spending for people with diabetes in 2018, or \$4,086 per person, was directly attributable or related to the treatment of the disease.

As displayed in Figure 3, medical services spending accounted for most (about 67% of diabetes-attributable spending (\$2,741 per person in 2018), with pharmacy spending making up the remaining 33% (\$1,346 in 2018). Both medical spending and pharmacy spending increased from 2009 to 2018 (from \$2,505 to \$2,741 and from \$704 to \$1,346, respectively).

**Figure 2: Per-Person Health Care Spending Among All Minnesotans and Those with Diabetes, Persons Ages 18 and Older**



**Figure 3: Per-Person Spending Associated with Diabetes, by Type of Spending**



Source: Mathematica analysis of the Minnesota All Payer Claims Database and other data.

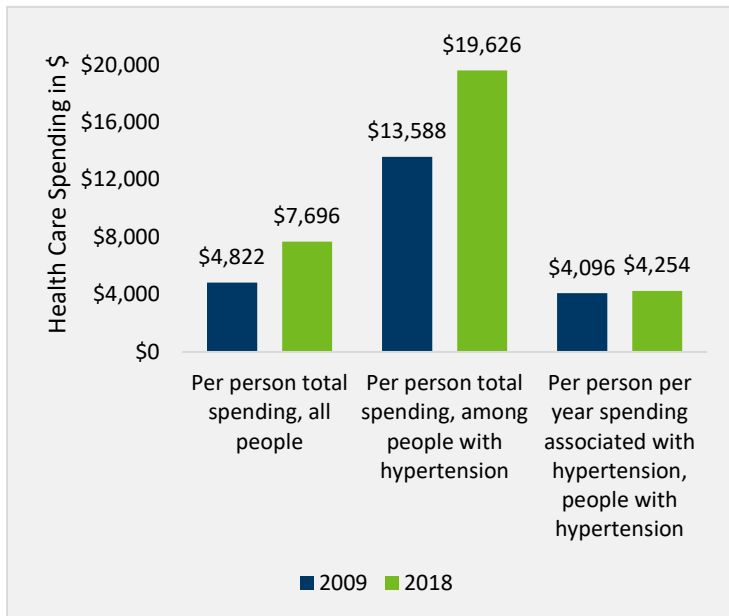
## Hypertension-Attributable Health Care Spending (All Ages)

In 2018, roughly 1.148 million Minnesotans of all ages—about 21% of the population—received health care services related to the treatment of hypertension (high blood pressure), an increase of 205,000 from 2009 (943,000 Minnesotans, 18% of the population).

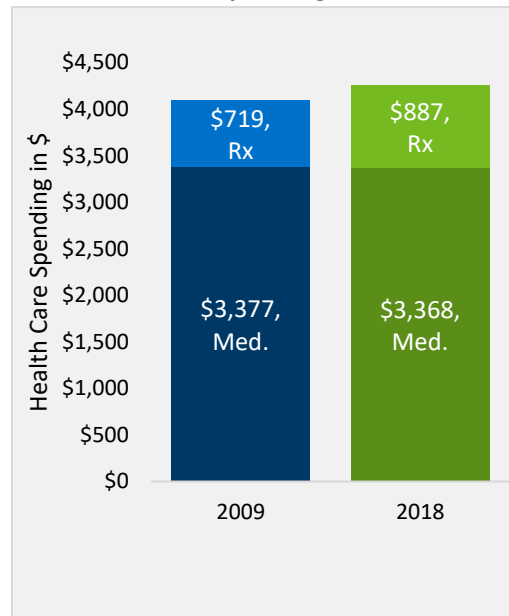
Per-person total health care spending for people treated for hypertension was about 2.6 times as high as per-person total spending for all Minnesotans (roughly \$19,626 and \$7,696 per person, respectively, as shown in Figure 4). Roughly 22% of the spending for people with hypertension in 2018, or \$4,254 per person, was directly attributable or related to the treatment of the disease.

As displayed in Figure 5, medical services spending accounted for about 79% of the directly attributable spending (\$3,368 per person in 2018), with pharmacy spending making up the remaining 21% (\$887 per person in 2018). Medical spending decreased slightly from 2009 to 2018 (from \$3,377 to \$3,368 per person), while per-person pharmacy spending associated with hypertension increased (from \$719 to \$887).

**Figure 4: Per-Person Health Care Spending Among All Minnesotans and Those with Hypertension**



**Figure 5: Per-Person Spending Associated with Hypertension, by Type of Spending**



Source: Mathematica analysis of the Minnesota All Payer Claims Database and other data.

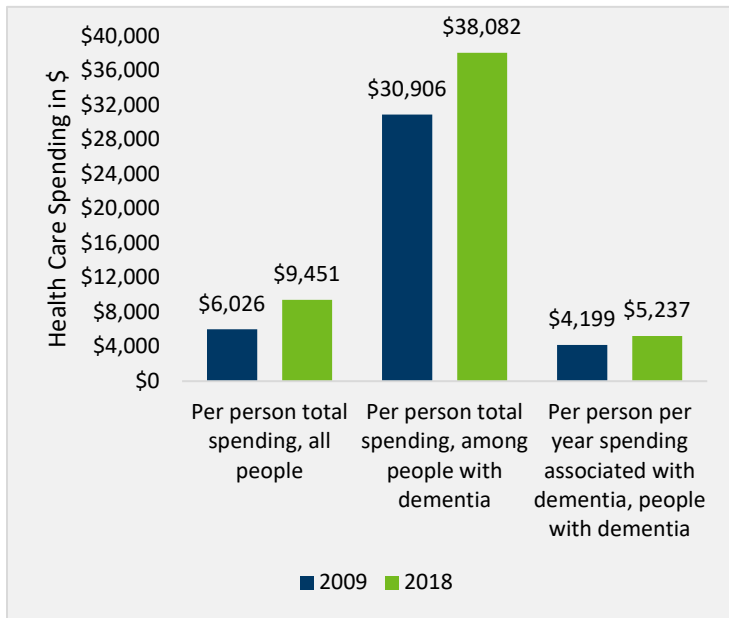
## Dementia-Attributable Health Care Spending (Ages 18 and Older)

In 2018, roughly 65,000 Minnesotans ages 18 and older—about 2% of that population—were estimated to have been treated for a diagnosis of Alzheimer’s disease, vascular dementia, or a similar condition, an increase of about 27,000 from 2009 (38,000 Minnesotans, 1% of the population ages 18 and older).

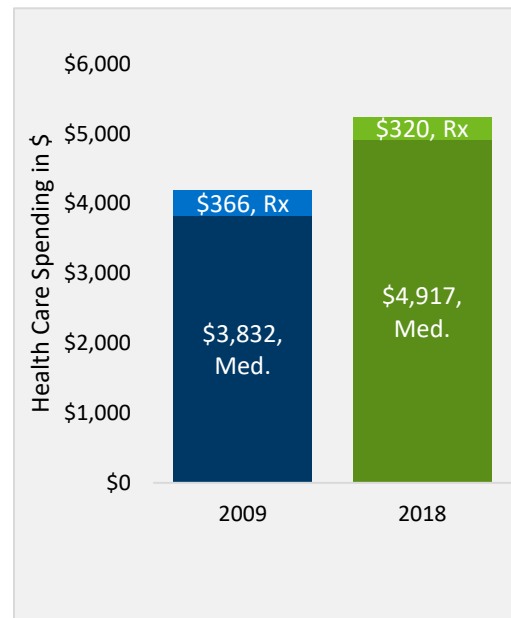
Per-person total health care spending for adults treated for a form of dementia was roughly 4.0 times as high as per-person total spending for all Minnesota adults (\$38,082 vs \$9,451, respectively, as shown in Figure 6). Roughly 14% of the spending for people with dementia in 2018, or \$5,237 per person, was directly attributable or related to the treatment of the disease.

For Minnesotans with dementia, nearly all per-person health care spending attributable to the disease (roughly 94% or \$4,917 in 2018) was for medical services spending, with the remainder (6% or \$320 in 2018) attributed to pharmacy spending (Figure 7).

**Figure 6: Per-Person Health Care Spending Among All Minnesotans and Those with Dementia, Persons Ages 18 and Older**



**Figure 7: Per-Person Spending Associated with Dementia, by Type of Spending**



Source: Mathematica analysis of the Minnesota All Payer Claims Database and other data.



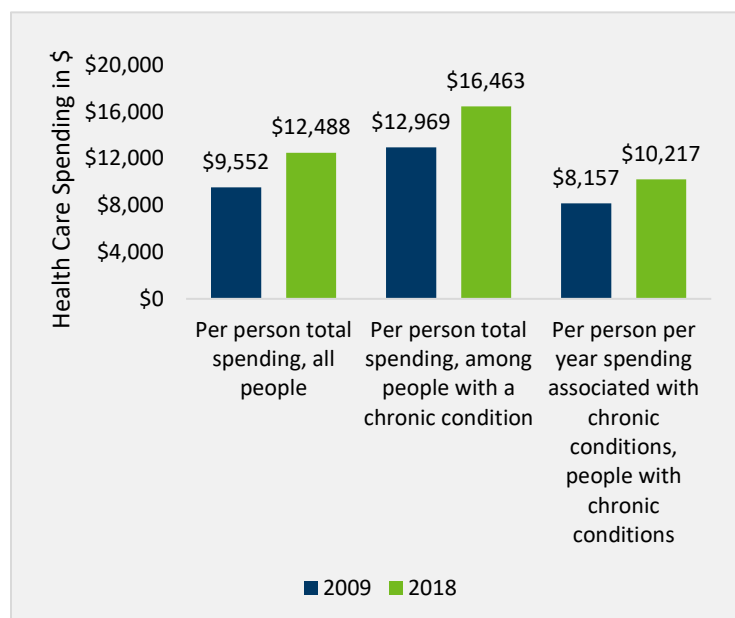
## Chronic Disease-Attributable Health Care Spending (Ages 60 and Older)

Most people ages 60 years and older have been diagnosed with one or more chronic conditions for which they receive medical care or prescription drugs. In 2018, roughly 912,000 Minnesotans fell into this group, representing about 76% of Minnesotans ages 60 years and older (compared to 669,000 or 74% of the population in 2009). Overall, this group has grown by roughly 36% or 243,000 individuals since 2009.

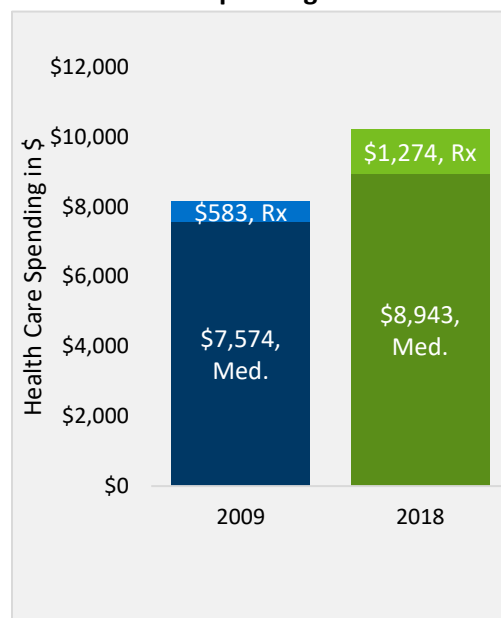
Because the vast majority of people ages 60 and older have at least one chronic condition, the difference between per-person spending for those with one or more chronic condition and all Minnesotans ages 60 and older is less dramatic than for the single condition estimates (\$16,463 compared to \$12,488, as shown in Figure 8). Because this section reports spending attributable to any identifiable chronic condition, rather than one specified condition, roughly 62% of the spending for people in this age group with chronic conditions, or \$10,217 per person in 2018, was directly attributable or related to the treatment of chronic disease.

As displayed in Figure 9, 88% of per-person spending (\$8,943 per-person) for this group in 2018 was attributed to medical services spending, with the remaining 12% or (\$1,274) attributable to pharmacy spending.

**Figure 8: Per-Person Health Care Spending Among All Minnesotans and Those with a Chronic Condition, Persons Ages 60 and Older**



**Figure 9: Per-Person Spending Associated with Chronic Disease, Persons Ages 60 and Older, by Type of Spending**



Source: Mathematica analysis of the Minnesota All Payer Claims Database and other data.

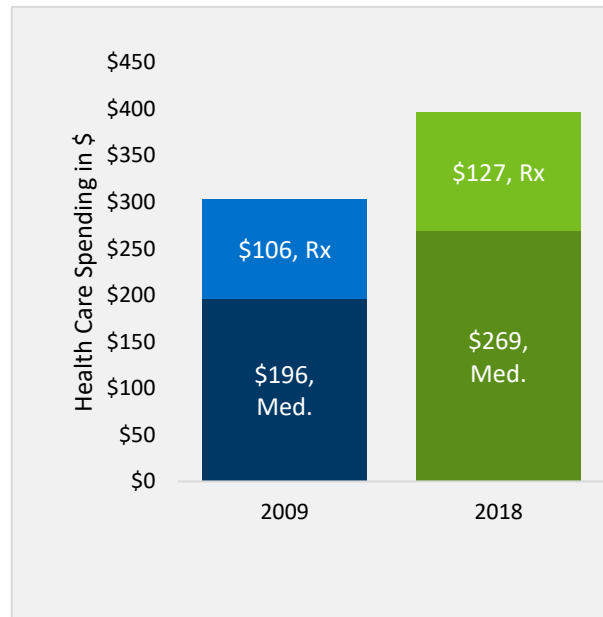
## Obesity-Attributable Health Care Spending (Ages 10 to 64)

In 2018, about 1,092,000 Minnesotans between the ages of 10 and 64—27% of that population—met definitions for obesity. This represents an increase of roughly 178,000 from 2009 (914,000 Minnesotans, 24% of the population ages 10 to 64).

Per-person disease attributable spending for Minnesotans who met the definition of obesity was \$396 in 2018, an increase of about 31% from 2009 (\$303, as displayed in Figure 10). Medical spending for services, such as doctors' appointments, laboratory tests, procedures and equipment comprised roughly two thirds (68%) of per-person obesity-attributable spending in 2018, with pharmacy spending making up the remaining 32%.

Because obesity is a condition that cannot be ascertained from health care claims data, these estimates are based largely on data from the Medical Expenditure Panel Survey (MEPS) and the Behavioral Risk Factor Surveillance System (BRFSS) as described in the Supplemental Appendices. Due to sample size and other limitations of survey data, the estimates of medical and pharmacy spending associated with obesity do not include Minnesotans ages 65 or older and should be interpreted with caution. It is also important to keep in mind that some of the health consequences of obesity take many years to develop.

**Figure 10: Per-Person Spending Associated with Obesity, by Type of Spending**



Source: Mathematica analysis of the Minnesota All Payer Claims Database and other data.

## Smoking-Attributable Health Care Spending (Ages 18 to 64)

In 2018, an estimated 1.178 million Minnesotans ages 18 to 64—35% of that population—were current smokers, former smokers, or lived with a person who smoked. Relative to 2009, the number of adults under 65 with a history of smoking exposure fell in absolute terms (by roughly 203,000 Minnesotans) and as a share of all adults under 65 years (from 42%).

Per-person health care spending estimates for 2009, 2017, and 2018 have been intentionally omitted from this report. The high-level interpretation of the 2017 and 2018 estimates calculated for this report remains consistent with our findings from earlier years. Considering not only the cost of health care, but also the propensity to use health care, smoking attributable per-person health care spending for Minnesotans ages 18-64 is relatively low in any one year and subject to considerable uncertainty.

We have always recommended cautious interpretation of these estimates, taking into consideration the data sources available, the population studied, and the methodological challenges associated with attributing health care spending for those exposed to smoking.<sup>10</sup> Because smoking exposure cannot be ascertained from claims data, these estimates are based largely on data from the Behavioral Risk Factor Surveillance System (BRFSS), as well as the Medical Expenditure Panel Survey (MEPS) linked with the National Health Interview Survey (NHIS). Due to sample size and other limitations of available data, the estimates of medical and pharmacy spending associated with smoking exposure do not include Minnesotans ages 65 or older, an age group more likely than younger adults to have substantial health care costs related to smoking. As a result, the per-person spending estimates would almost certainly be underestimates of health care spending related to smoking exposure. As with obesity, it is important to keep in mind that many of the health consequences of smoking take many years to develop. Additionally, the methods for calculating per-person per-month spending account for not only the cost of health care used by those exposed to smoking, but also the propensity to use health care.

These methodological challenges are not unique to Minnesota or this report. A review of the literature conducted for the 2014 iteration of this report noted a wide range of estimates of the

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<sup>10</sup> Methods for estimating smoking exposure and associated health care spending are explained in detail in the Supplemental Appendices.

health care spending associated with smoking, with researchers regularly noting the complexities in analyzing this population.<sup>11</sup> Nevertheless, the detrimental effects of smoking on human health are well-established, as are the benefits of quitting.

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<sup>11</sup> Congressional Budget Office (2012) “Raising the Excise Tax on Cigarettes: Effects on Health and the Federal Budget”, Legislative Report; [https://www.cbo.gov/sites/default/files/cbofiles/attachments/06-13-Smoking\\_Reduction.pdf](https://www.cbo.gov/sites/default/files/cbofiles/attachments/06-13-Smoking_Reduction.pdf)

## Current Disease Attributable Spending and Spending Projections

The statute directing this study requires MDH to estimate total actual disease attributable spending for the current year, along with updated ten-year projections from the current year based on 2009 baseline estimates. For the current year, estimated actual disease attributable spending is then compared to projected spending. For both 2017 and 2018, we found that total *actual* estimated spending for the conditions assessed in this report was *greater than* projected spending (about \$2.3 billion more than the total projected spending of \$12.2 billion in 2018).<sup>12</sup> As shown in Table 1, this difference between actual and projected spending for 2018 occurred across nearly all condition- and age-specific groups. The comparable table for 2017 actual and projected spending estimates can be found in the supplemental appendices.

**Table 1: Actual and Projected Estimates of Disease-Attributable Spending, 2018**

Group		Spending (Million \$)		
		Actual	Projected	Difference
Condition Categories	Diabetes (all ages)	\$1,534.1	\$1,341.0	\$193.2
	Hypertension (all ages)	\$4,885.9	\$5,367.7	(\$481.8)
	Dementia (ages 18 and older)	\$341.8	\$248.6	\$93.2
	Obesity (ages 10 to 64)	\$432.6	\$385.4	\$47.2
All chronic conditions ages 60 and older		\$9,316.4	\$7,438.8	\$1,877.5
Selected chronic conditions under age 60		\$2,892.6	\$2,420.6	\$472.0
<b>Total</b>		<b>\$12,209.0</b>	<b>\$9,859.5</b>	<b>\$2,349.6</b>

Source: Mathematica analysis of the Minnesota All Payer Claims Database and other data.

The statute also requires MDH to estimate the difference between actual and projected spending for populations covered by state-administered programs—Medicaid, MinnesotaCare and the State Employee Group Insurance Program (SEGIP). Employing multiple approaches, MDH has estimated that spending for state-administered programs in 2018 exceeded projections by an amount ranging from \$204.6 million to \$334.6 million. Based on these

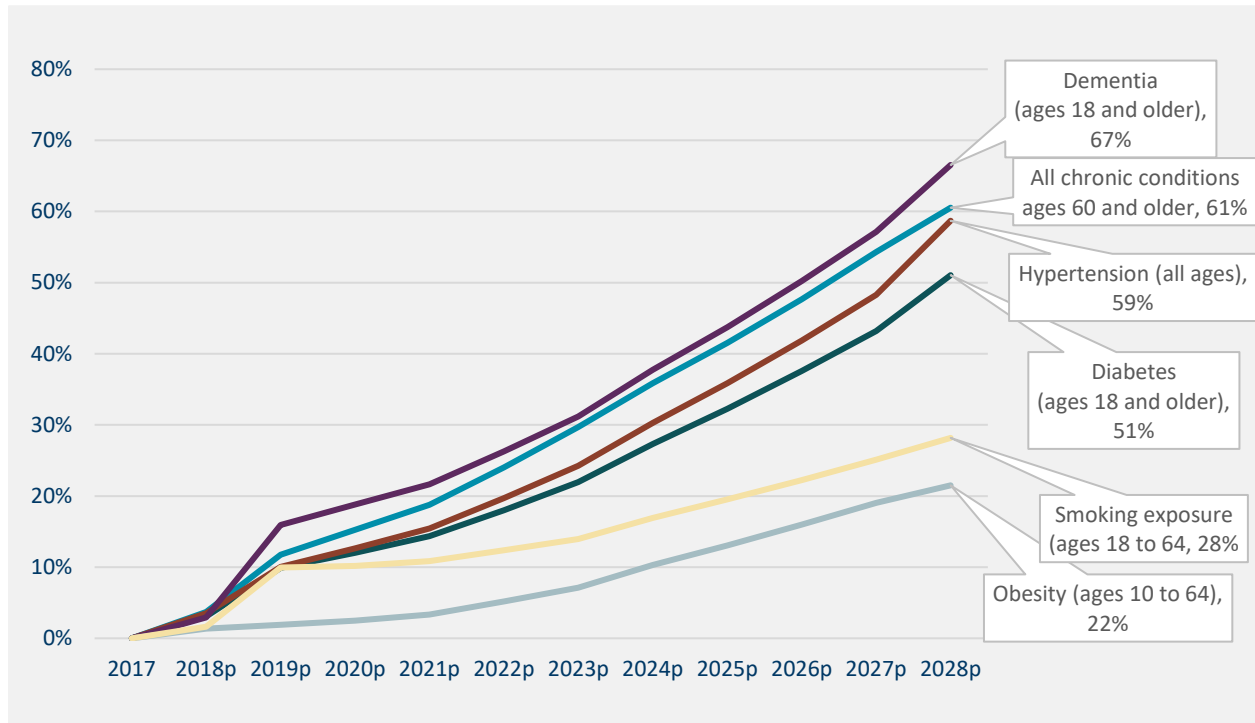
<sup>12</sup> Due to our ongoing concerns with the data and methods underlying the smoking exposure portion of this report, smoking exposure-attributable spending estimates have not been incorporated here. For this report and previous years, there is little difference in these calculations regardless of whether the smoking estimates are included or not included.

estimates and a similar pattern for 2017, we conclude that actual spending exceeded projections for both 2017 and 2018.

Because the portion of the difference accruing to state-administered programs does not meet or exceed \$50 million, the condition that would trigger the requirement in statute for a transfer of resources between the General Fund and the state’s Health Care Access Fund is not met.<sup>13</sup>

Projections of health care spending over a ten-year period show steady increases across all chronic conditions and risk factors studied. As shown in Figure 11, projected cumulative spending growth between 2017 and 2028 ranges from 21% for adults ages 10 to 64 with obesity to 58% for adults with dementia.

**Figure 11: Cumulative Percentage Change in Projected Health Care Spending Attributed to Selected Chronic Conditions and Smoking Exposure**



Source: Mathematica analysis of the Minnesota All Payer Claims Database and other data. Additional detail available in Appendix 6.

<sup>13</sup> If the estimated difference between actual and projected health spending attributable to state-administered programs in one year or cumulatively over two or more years is greater than or equal to \$50 million, a transfer of funds from the general fund to the health care access fund is triggered. (Minnesota Statutes, Chapter 62U.10, subd. 8).

To help assess if Minnesota is making progress over time with respect to prevention and control of chronic conditions, these projections are calculated using only the factors contributing to chronic condition prevalence and spending that are *not* amenable to public health intervention. Two such factors are (1) the impacts of expected changes in the age and sex distribution of the population on overall prevalence, assuming that age- and sex-specific prevalence remains constant, and (2) the expected growth in the cost or price of health care and prescription drugs.

Given this aspect of the projections, if we continue to see increasing prevalence of these conditions *within* most age groups, future spending will most likely considerably outpace these projections.<sup>14</sup> On the other hand, if prevalence of these conditions decreases within most age groups, we would expect to observe future spending that is below projections.

## Conclusion, Limitations and Future Directions

This annual report, focusing on 2017 and 2018 estimates, confirms many of the observations from previous years:

- Chronic disease-related health care spending is substantial, particularly for Minnesotans ages 60 and older
- Treated prevalence of many chronic conditions continues to rise across nearly all age groups
- Over time, health care spending attributable to chronic conditions and smoking is expected to continue rising steadily

These observations for Minnesota are consistent with U.S. trends indicating that the population is aging, chronic conditions are becoming more prevalent, and prices for health care services and prescription drugs are increasing, all of which contribute to increasing health care spending.

In our first three reports on disease-attributable spending, we emphasized that solutions to this ongoing crisis must focus on prevention and on building and supporting environments that promote health and well-being for all. We also noted that these efforts must be system-wide and persistent, given the years or decades required for the needed changes and their impacts

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<sup>14</sup> Projections in our analysis are designed to only consider the likely impact of demographic changes (how will the population within certain age groups change) and of inflation (how are medical and pharmaceutical prices expected to change).

to fully manifest. This analysis of 2017 and 2018 data offers continued evidence in support of these conclusions. For health system transformation to have a meaningful impact, it must address both prevention of chronic conditions and cost-efficient health care for Minnesotans with chronic conditions.

Technical challenges associated with this work have been described in previous iterations of this report and are important considerations for interpreting findings in this report as well. As we consider future iterations of this report, we recommend a consideration of the following:

- **The methodology used for the past years no longer produces reliable estimates for some measures.** While there has always been some degree of uncertainty for the estimates in past versions of report, some spending measure results for both the 2016 and 2017-2018 projects resulted in estimates with a high degree of uncertainty such that we did not feel comfortable reporting them here, most notably for spending attributable to smoking. If we continue producing these reports, it is necessary to consider changes to the current method, and any associated costs, that will produce results that are better aligned with the legislation and policy goals.
- **There are particular challenges in estimating spending attributable to obesity and smoking exposure, especially for older age groups.** Because smoking exposure and obesity are not well documented in claims data (including the MN APCD), multiple data sources are triangulated to derive spending estimates, resulting in an unknown degree of error. Due to limitations in available data, estimates could not be derived for Minnesotans ages 65 and older in the most recent reports, an age group for whom the burden of a history of obesity and smoking exposure, including health implications and related spending, is likely to be greatest. By not including this age group, the results do not reflect, and likely substantially underestimate, the actual attributable costs for Minnesotans of all ages with these conditions.
- **The analytic concept for the study appears to lack applied relevance.** The legislation requires separately calculating attributable spending for each chronic condition and smoking exposure. However, many patients with chronic conditions will have more than one condition, and it is worth considering whether the current approach, which focuses on spending associated with each single condition (e.g., diabetes, hypertension, etc.), produces the most important and/or desired information. Further, because of overlap in some of the downstream conditions and related spending across conditions, the spending estimates for each individual condition are not additive. Before proceeding with future reports, a reconsideration of this study, its focus, and its analytic approach



may be worthwhile. However, MDH has observed little interest in this analysis among stakeholders.

Additional technical challenges are described in the Supplemental Appendices. It is important to understand the burden of chronic conditions and associated spending in Minnesota in order to prevent these conditions to the extent possible, provide timely care and treatment to limit the severity of these conditions, assure that spending on these conditions is appropriate and affordable for all, and to monitor changes and progress in these patterns. A reconsideration of the aims and related methodological approach could potentially improve the applied value of this report for Minnesota patients, providers, payers, public health professionals and agencies, policymakers, and other stakeholders. In the meantime, it may not be a good use of state resources to continue to produce this annual report in its present form.

**December 2022**

Minnesota Department of Health  
Health Economics Program  
PO Box 64882  
St. Paul, MN 55164-0882  
651-201-4520 | [health.hep@state.mn.us](mailto:health.hep@state.mn.us)  
[www.health.state.mn.us/healthconomics](http://www.health.state.mn.us/healthconomics)

To obtain this information in a different format, call: 651-201-4520.