



OBESITY AND FUTURE HEALTH CARE COSTS

A Portrait of Two Minnesotas

January 2008



CONTENTS

| | |
|--|-----------|
| EXECUTIVE SUMMARY | 2 |
| THE RISE AND THE COST OF THE OBESITY EPIDEMIC | 4 |
| ORIGIN OF THIS RESEARCH | 7 |
| DRIVERS OF FUTURE HEALTH CARE COSTS | 8 |
| DRIVER #1: INCREASING PREVALENCE OF OBESE AND OVERWEIGHT ADULTS | 8 |
| DRIVER #2: RISING TREATMENT INTENSITY | 9 |
| DRIVER #3: THE AGING OF MINNESOTA'S POPULATION | 10 |
| RESULTS | 11 |
| THE CURRENT HEALTH CARE COSTS OF OBESITY AND OVERWEIGHT..... | 11 |
| AN ECONOMIC PORTRAIT OF TWO FUTURE MINNESOTAS..... | 11 |
| IMPACT ON NOMINAL TOTAL PERSONAL INCOME..... | 13 |
| DISCUSSION | 14 |
| ABOUT THIS REPORT | 16 |
| ENDNOTES | 17 |

OBESITY AND FUTURE HEALTH CARE COSTS

A Portrait of Two Minnesotas

A Collaborative Report from Blue Cross and Blue Shield of Minnesota,
the Minnesota Department of Health and the Minnesota State Demographer

Based on research by Kenneth E. Thorpe, Ph.D. of Emory University

EXECUTIVE SUMMARY

This report uses Minnesota data to create the first Minnesota-specific projections of future health care costs directly attributable to obesity.

Projections are based on an analysis of United States data previously developed and published by Kenneth E. Thorpe, Ph.D., and colleagues from Emory University. The Minnesota-specific analysis examines the impact of three cost drivers on direct health care costs for adults:

- 1) the increasing prevalence of overweight and obesity,
- 2) the rising treatment intensity for obesity and associated diseases, and
- 3) the anticipated aging of Minnesota's population.

Controlling for other factors, the analysis compares future costs under two scenarios.

In **Scenario A**, current trends continue for all three cost drivers.

Scenario B assumes the continuation of current trends in treatment intensity and anticipated aging, but holds Minnesota's rates of obesity and overweight steady at 2005 levels.

Major Findings:

- If current trends continue, only one-third of Minnesota adults will be of healthy weight by 2010. Overweight will be the “norm” at 39 percent; more than one-quarter (27 percent) of adults will be obese. By 2020 only 23 percent of Minnesota adults will be of healthy weight and 31 percent will be obese. The most numerous group will be the overweight, including 45 percent of all adults.
- The average cost to treat overweight or obese persons has been increasing faster than treatment costs for other adults. If this trend continues, treating an obese person will cost 61 percent more than treating a healthy-weight person by 2020.
- Left unchecked, nearly 31 percent of the overall increase in health care costs from 2005 to 2020 will be due to the projected increases in obesity and overweight. These projected increases will add nearly \$1 billion to Minnesota's total annual health care costs by 2010, and \$3.7 billion by 2020.
- Even modest success at curbing the rise in rates of obesity could substantially decrease the projected burden of health care costs on Minnesota employers and the state as a whole.

Implications:

These additional costs attributable to obesity have numerous implications. They could reduce the ability of businesses to provide health insurance to employees, impair the capacity of state and local governments to provide health care coverage to employees and to the uninsured and/or impede Minnesota's ability to compete in a global economy.

Being overweight is commonly considered an issue of personal responsibility, an indicator of a failure of personal willpower. However, the increasing prevalence of obesity and overweight is not due simply to individual choice or happenstance. The choices of individuals are always influenced by the social and physical environments in which they live.

The obesity epidemic may best be understood as an epidemic of inadequate activity and unhealthy eating. This epidemic is fostered by social and physical environments that promote poor eating choices and less activity.

The time to act is now. Minnesota's business, policy, and community leaders need to take collective action to create environments and conditions that make healthier eating and regular physical activity the normal, easy choices for Minnesota's residents. The future economic and physical health of our state is at stake.

WHY WORRY ABOUT OBESITY? MORE CHRONIC MEDICAL PROBLEMS

People who are obese or overweight have substantially increased risk to acquire one or more of many diseases and health conditions. These include:

- Hypertension
- High cholesterol
- Type 2 diabetes
- Coronary heart disease
- Stroke
- Gallbladder disease
- Osteoarthritis
- Sleep apnea
- Respiratory problems
- Breast cancer
- Colon cancer
- Problems in pregnancy and childbirth

Source: Centers for Disease Control and Prevention (CDC) <http://www.cdc.gov/nccdphp/dnpa/obesity/>

Researchers from Blue Cross and Blue Shield of Minnesota collaborated with colleagues from the Minnesota Department of Health and the Minnesota State Demographer, and also with Kenneth Thorpe, Ph.D., and colleagues from Emory University to apply Dr. Thorpe's national econometric model to Minnesota, to extend the model forward using Minnesota data, and to factor in changing demographics. In addition to Dr. Thorpe, contributors to this report include Steven S. Foldes, Ph.D., and Rebecca Fee, M.P.H., from Blue Cross, and Thomas Gillaspay, Ph.D., and John Oswald, Ph.D., from the State of Minnesota. Seven other researchers from Blue Cross and the Minnesota Department of Health reviewed and commented on this report.

THE RISE AND THE COST OF THE OBESITY EPIDEMIC

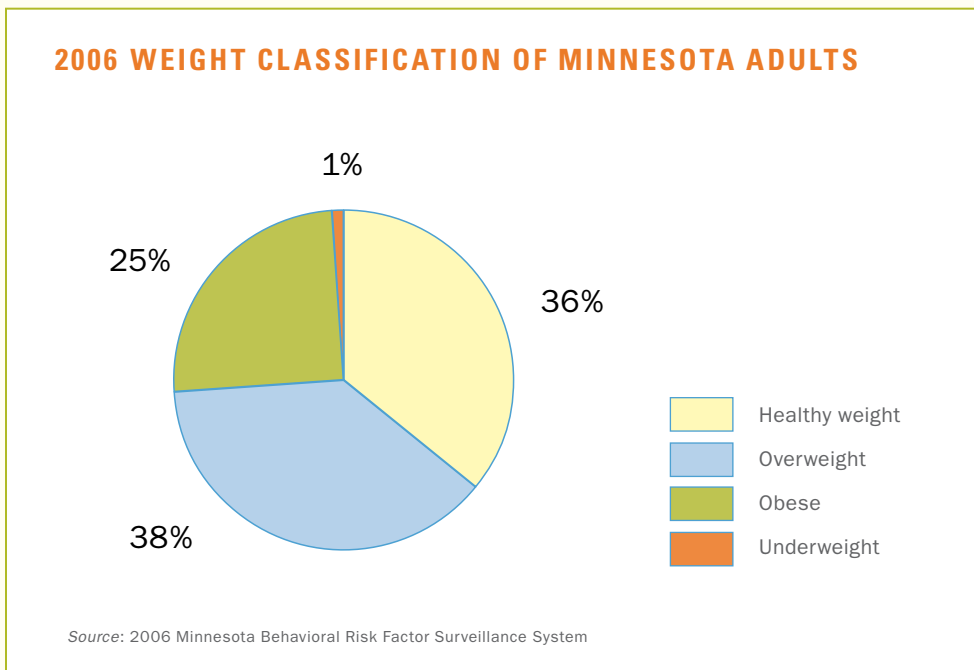
Obesity is emerging as a defining disease of our age.¹ In the United States, the prevalence of obesity among adults doubled from 12 percent to 25 percent between 1990 and 2006.² An additional 38 percent were overweight in 2006. (See “Defining Obesity and Overweight,” page 5.) Although obesity has multiple causes, including genetics, biological factors cannot explain this rapid increase in the American population,³ which has occurred among all socioeconomic groups.⁴

In testimony before Congress, Centers for Disease Control and Prevention (CDC) Director Julie Gerberding, M.D., M.P.H., indicated that the speed of the spread of obesity is due to a myriad of social changes that combine to increase Americans’ caloric intake and reduce their physical activity.⁵ Dr. Gerberding argued that both the health impact and the economic impact of these trends require heightened attention to obesity as a public health problem. Indeed, many expert observers, and the majority of the American public, have labeled these trends as an “obesity epidemic.”^{6,7,8,9,10} (See “Warning Signs of an Epidemic,” page 6.)

As in the rest of the United States, obesity has increased steadily in Minnesota. **Figure 1** indicates the weight

classification of Minnesota adults in 2006, based on Behavioral Risk Factor Surveillance System (BRFSS) data from the Minnesota Department of Health (MDH).² Drawing on historical data from MDH, the proportion of Minnesota adults who are obese increased from 10 percent in 1990 to 25 percent in 2006. The proportion of adults who are overweight but not obese increased from 33 to 38 percent over this period. Conversely, the proportion of Minnesota adults of “normal,” or healthy weight decreased from 54 to 36 percent in that same time period. These trends place Minnesota squarely in the middle of the nation. The proportion of Minnesota adults who are obese ranks the state 21st, meaning that 20 states have lower rates of obesity.

FIGURE 1



Previous Estimates of Obesity-attributable Health Care Costs

In addition to the toll obesity takes on individuals' health and quality of life, several studies point to the substantial economic implications of the rise in obesity and overweight among adults. Eric Finkelstein, Ph.D., and colleagues from the Research Triangle Institute and the CDC estimated national obesity-attributable direct health care costs to be as high as \$75 billion annually in 2003 dollars, of which close to half is publicly financed. The researchers attributed approximately 6 percent of all adult health care, 7 percent of Medicare, and 11 percent of Medicaid expenditures to obesity.¹¹ They estimated obesity-attributable direct health care costs in Minnesota to be over \$1.3 billion in 2003 dollars. These estimates do not include costs for overweight persons.

Chenoweth and Associates, Inc., an econometrics consulting firm, conducted studies of multiple behavioral risk factors for several states, using a different methodological approach from that used by Dr. Finkelstein and colleagues. For example, using 1998–99 data, they estimated that obesity and overweight cost California \$8.4 billion a year in 2000 dollars for direct and indirect medical care, workers' compensation and lost productivity.¹² Their comparable estimate of the total costs of obesity and overweight for adults in North Carolina was over \$9.7 billion in 2003 dollars.¹³ Although these states differ from Minnesota demographically and in terms of the costs of health services, they are among the few available points of comparison for the economic impact of obesity on a state's health care costs.

DEFINING OBESITY AND OVERWEIGHT

To define weight categories, researchers often use Body Mass Index (BMI), which is a simple weight-to-height ratio.* BMI is not a direct measure of body fat. However, it does correlate with actual body fat amounts and is considered a reliable alternative to more labor-intensive methods of measurement. This research used the standard BMI weight categories, consistent with the CDC definitions:

| Weight category | Body Mass Index (BMI) |
|-----------------------|-----------------------|
| Obese | ≥30.0 |
| Overweight | 25.0 to 29.9 |
| Healthy weight | 18.5 to 24.9 |
| Underweight | <18.5 |

*The BMI calculation is:

$$\text{BMI} = \text{weight (lbs.)} \div \text{height (in.)} \div \text{height (in.)} \times 703$$

In this report, BMI calculations were based on height and weight self-reported by individuals in national and state surveys. It is important to note that self-reported height and weight often result in underestimation of BMI. Therefore, the actual prevalence of obesity and overweight in Minnesota is likely to be higher than reported here. For instance, the National Health and Nutrition Examination Survey (NHANES), a national study in which nurses measure participants' height and weight, indicates that 31 percent of American adults were obese in 1999–2002. By comparison, the Behavioral Risk Factor Surveillance System (BRFSS) used by the CDC indicates that 22 percent of American adults were obese in 2002.

Sources: Centers for Disease Control and Prevention. Available at NHANES: <http://www.cdc.gov/nchs/data/hus/04trend.pdf#069> BRFSS: <http://apps.nccd.cdc.gov/brfss/display.asp?yr=2002&state=UB&qkey=4409&grp=0&SU=BMIT3=Go>

WARNING SIGNS OF AN EPIDEMIC

“Epidemic” may sound like too strong a word. The *American Heritage Dictionary*’s definition is “an outbreak of a contagious disease that spreads rapidly and widely.” This definition is consistent with the data on the historic rise in prevalence of overweight and obese adults nationally and in Minnesota. These observations have alarmed health experts:

- Among advanced industrialized nations, the United States has higher rates of obesity than Australia, Canada, and all of Western Europe.
- The rate of obesity among women in the United States is five times that of women in France. For men, the United States obesity rate is four times the rate in France.
- One in four American adults was obese in 2006.
- In Minnesota, only one in ten Minnesotans was obese in 1990. In 2006, one in four was obese.

Furthering the view that obesity is an epidemic, a recent article by Christakis and Fowler in the *New England Journal of Medicine* reported that an individual’s chance of becoming obese is much higher if that person has a close friend who is obese.¹⁰ This research suggests that obesity appears to be “socially contagious.”

Most Americans apparently agree that obesity is now an epidemic. A recent survey commissioned by the Trust for America’s Health found that 85 percent of the general public thinks that obesity in the United States has reached “epidemic proportions.”

Sources: *American Heritage Dictionary*, *New England Journal of Medicine*, *Trust for America’s Health*, World Health Organization, Centers for Disease Control and Prevention

Kenneth Thorpe’s Model of Obesity-related Health Care Costs

In a unique study that departed from estimating the costs of obesity at only one point in time, Kenneth E. Thorpe, Ph.D., and colleagues from Emory University developed an econometric model to estimate the impact of the increase in the prevalence of obesity on the growth of health care costs over time. They focused on the contribution of the increasing prevalence of obesity and overweight to the growth in the nation’s health care costs between 1987 and 2001.¹⁴

This analysis employed nationally representative data on adults and used a two-part regression analysis to predict the effect of weight on total direct health care costs. The analysis controlled for age, gender, race/ethnicity, marital status, level of education, income level, health insurance status, geographic region and smoking status. This approach allowed researchers to estimate the independent contribution of obesity to the rise in inflation-adjusted per capita spending between 1987 and 2001.

Dr. Thorpe and colleagues found that, over the 14-year study period, the proportion of the adult population that was categorized as obese increased by 10.3 percentage points, while the proportion with a healthy weight decreased by 13 percentage points. On a per capita basis, 27 percent of the growth in direct health care spending was attributable to obesity. Moreover, the increase in the proportion of the population that was obese accounted for 12 percent of real per capita spending growth. The remaining 15 percent of the spending increase was due to relatively higher spending on obese patients, reflecting changes in medical practices that physicians use to treat obese patients and the diseases common among those patients.¹⁵

The authors also found sharp increases in the treated cases of diabetes and hypertension over this time period. They linked the rise in health spending traced to obesity to higher spending for treating these and other chronic medical conditions. When Dr. Thorpe’s article reporting the research appeared in *Health Affairs* in 2004, it attracted national attention.

ORIGIN OF THIS RESEARCH

Clearly, the obesity epidemic is well-established in both the nation and in Minnesota, and has already contributed substantially to the rise of health care costs. As this epidemic continues, its price in terms of health care costs will be exacerbated by the continuing rise of obesity, the growing intensity of medical treatments for obesity, and the aging of the population.

The question that motivated this current research effort is: What are the future implications for health care costs of the obesity epidemic in Minnesota? Such costs (plus related lost productivity costs) are of great concern to employers and policymakers, who will have to finance these expenditures from business profits and public revenues.

To answer this question, Blue Cross and Blue Shield of Minnesota, the Minnesota Department of Health and the Minnesota State Demographer invited Dr. Thorpe to apply his national econometric model to Minnesota. However, rather than estimating obesity-related health care costs in the past, the focus of this investigation was future costs. Because it was designed to estimate obesity-attributable spending over time, Dr. Thorpe's analysis offers one way to project the economic implications of current trends into the future. Researchers from Blue Cross, the Minnesota Department of Health, and the Minnesota State Demographer's office collaborated with Dr. Thorpe and supplied Minnesota-specific data, where available, to assist him with this research. Readers are encouraged to consult Dr. Thorpe's *Health Affairs* article for details of his methodology.

Based on Dr. Thorpe's analysis, the research team developed two scenarios—portraits of two potential future Minnesotas. Scenario A, "Obesity Continues to Rise," projects forward to 2020 the economic implications of continuing the previous trend in the growth of obesity and overweight. Scenario B, "Obesity Remains at Current Level," forecasts the economic implications of holding the rates of obesity and overweight at current levels. This alternative projection makes it possible to isolate the contribution of the ongoing rise in obesity and overweight to future health care costs, and to gauge the magnitude of the increase due to the continuation of current trends.

DRIVERS OF FUTURE HEALTH CARE COSTS

As in his published research, Dr. Thorpe's Minnesota-specific analysis accounts for two important drivers of future health care costs related to the obesity epidemic: the increasing prevalence of obese and overweight adults, and rising treatment intensity. At the request of the Minnesota research team, Dr. Thorpe additionally incorporated the impact of the anticipated aging of the Minnesota population in this analysis. The assumptions related to these drivers are explored in greater detail below.

Driver #1: Increasing prevalence of obese and overweight adults

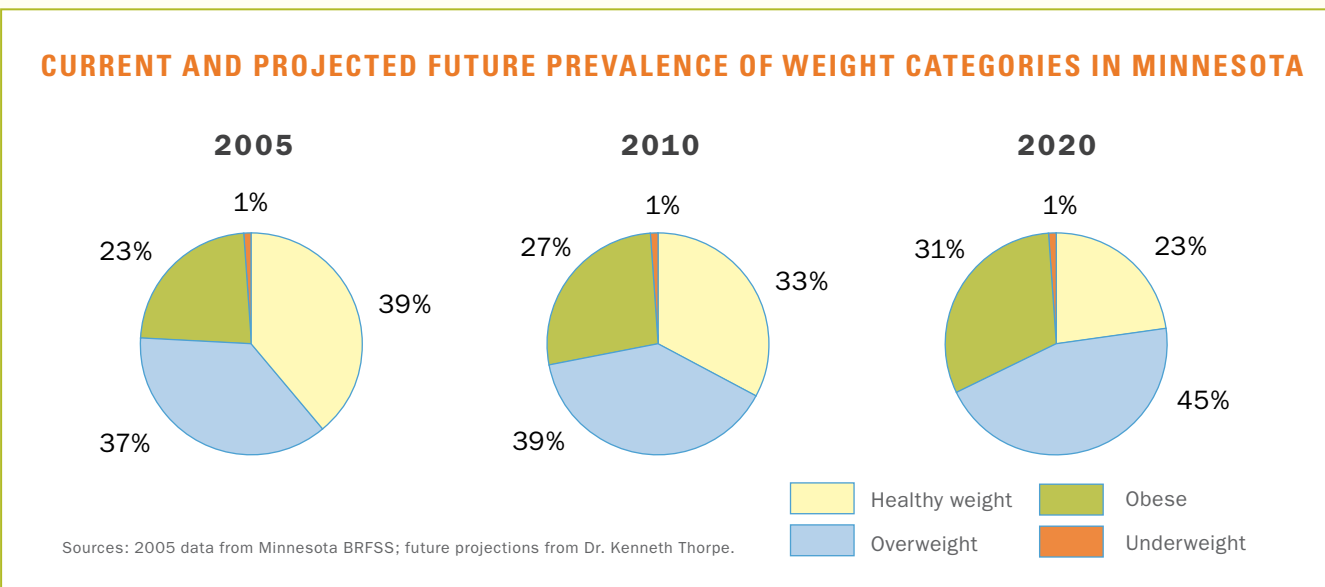
The prevalence of overweight and obesity in the United States' adult population has been rising at between .5 and 1 percent per year over the past fifteen years, based on data from the National Health and Nutrition Examination Survey (NHANES).¹⁶ Although small in any given year, the impact over time of these increases in a large population is substantial. Assuming that the prevalence of obesity and overweight among Minnesota adults increases at the rate of one-half of one percent per year, and applying that increase to the 2005 Minnesota-specific rates reported in the BRFSS, healthy-weight persons will constitute less than one-quarter of Minnesota's adults by 2020.¹⁷ As **Figure 2** shows, almost one-third of adults (31 percent) will be obese, and another 45 percent will be overweight. (The base

year for the analysis is 2005, the latest year for which required data were available when Dr. Thorpe's research was conducted.)

"Healthy weight" is rapidly disappearing as the norm. In fact, by 2006 overweight adults became the single most numerous adult population group in Minnesota, and this group's plurality further increases in 2010 and beyond in this projection.

Dr. Thorpe's Scenario A analysis assumes that the prevalence of both overweight and obesity in Minnesota's adult population (age 19 and above) will continue to increase at the rates observed recently in Minnesota at least through 2020. The alternative, Scenario B, assumes that the prevalence of overweight and obesity will stay at current levels (defined from 2005 rates based on BRFSS data).

FIGURE 2



MINNESOTA – NOT MUCH ABOVE AVERAGE

- According to 2006 survey results, Minnesota ranks as the 21st state in the nation with regard to obesity rates, meaning that 20 states have lower obesity rates, and 29 have higher rates.
- The rate of increase in the prevalence of obesity in Minnesota (142 percent increase since 1990) is outpacing that of the country overall (116 percent increase since 1990).
- The greatest behavioral contributors to obesity are physical inactivity and unhealthy eating. Compared with other states, in 2005
 - > Minnesota ranked 18th in fruit and vegetable consumption
 - > Minnesota ranked 19th in meeting physical activity guidelines.

Sources: Centers for Disease Control and Prevention, BRFSS data as presented at www.cdc.gov and as interpreted on www.fitteststatemn.com

Driver #2. Rising treatment intensity

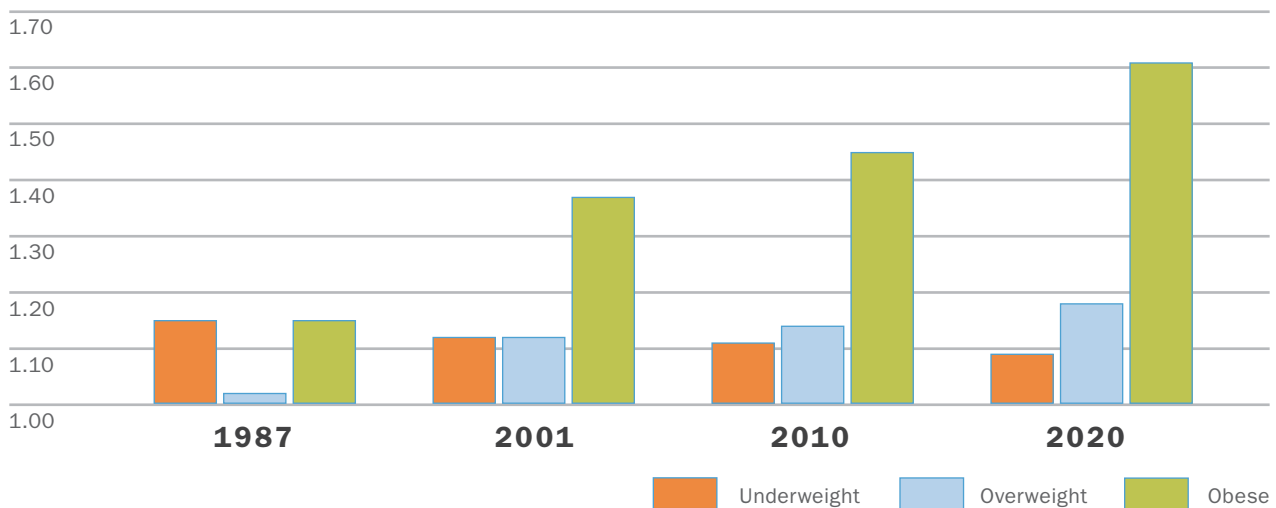
The average cost of treating a person who is overweight or obese also continues to rise. New pharmacological and surgical treatments often improve care for complex chronic conditions such as diabetes. New treatments also typically increase costs. In addition, overweight and obese persons on average are treated for a broader range of medical problems than are healthy-weight persons.

In 1987, the national average per capita cost of treating obese persons was 15 percent higher than the cost for healthy-weight persons. As **Figure 3** shows, Dr. Thorpe’s analysis projects that by 2020, treating obese persons will cost an estimated 61 percent more than the cost of treating healthy-weight persons.

Dr. Thorpe’s analysis assumes that the relative costs of treating obese compared with healthy weight adults will continue to increase at current rates under both scenarios.

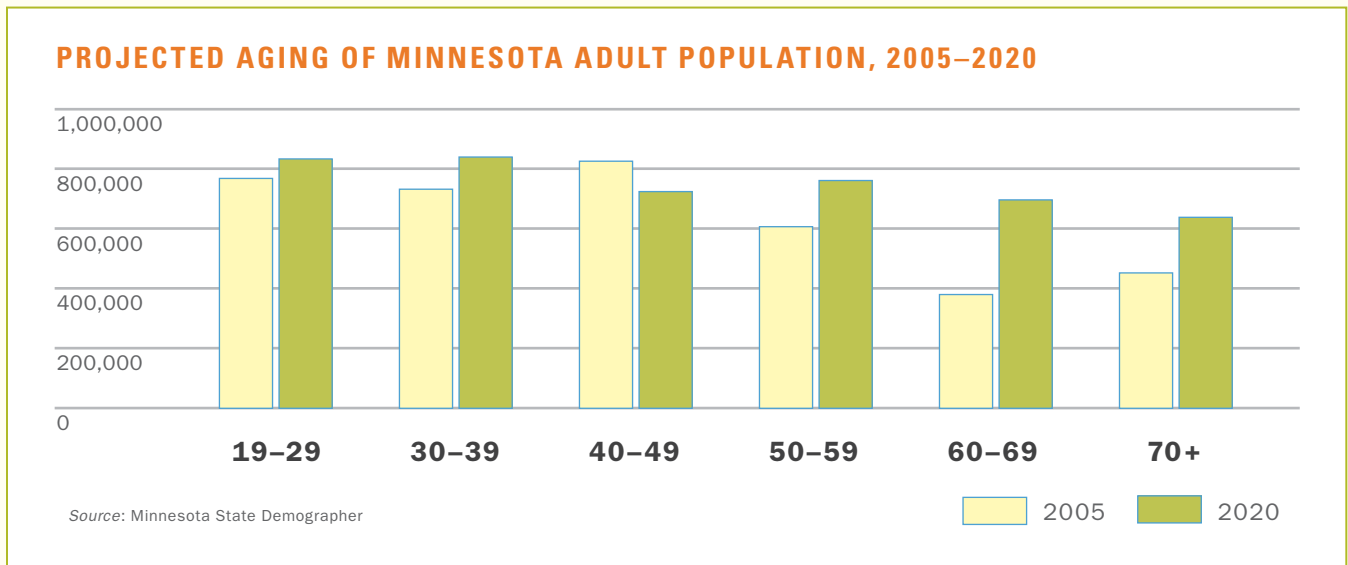
FIGURE 3

PROJECTED ANNUAL TREATMENT COSTS OF OBESE, OVERWEIGHT AND UNDERWEIGHT ADULTS, RELATIVE TO HEALTHY-WEIGHT ADULTS (1987–2020)



Sources: 1987 and 2001: Dr. Kenneth Thorpe’s 2004 *Health Affairs* article; future projections from Dr. Thorpe

FIGURE 4



Driver #3. The aging of Minnesota’s population

Population projections from the Minnesota State Demographer’s office forecast continued population increases for Minnesota. The 2005 adult (age 19 and above) subset of Minnesota’s population was nearly 3.8 million. The 2010 adult projection rises to almost 4.1 million. A further increase to almost 4.5 million adults is expected by 2020.¹⁸

In addition, the age composition of this growing population will also change. As shown in Figure 4, the 40–49 age-group is projected to decrease over time. By comparison, older age-groups will increase substantially. The largest increases will be among the 60–69 age-group, which will experience an 83 percent increase in population. The age 70 and above group will also increase sharply, growing by 41 percent.

Age is relevant because older people are more likely to be overweight or obese¹⁹ and also more likely to have multiple chronic medical conditions that require treatment and management. The Medicare system is already experiencing an increase in the number and proportion of obese beneficiaries. One report estimated that between 1997 and 2002, the prevalence of obesity in elderly beneficiaries increased by 5 percentage points, from 16.4 percent to 21.4 percent. That represents an

increase of 1 percentage point per year.²⁰ Although the impact in Dr. Thorpe’s Minnesota analysis of demographic changes on future health care costs to 2020 is modest compared with the other two cost drivers, this anticipated overall growth and aging of Minnesota’s adult population will continue to rise in importance as a driver of increasing health care costs due to the higher prevalence of obesity.

Dr. Thorpe’s analysis incorporates the demographic changes forecast by the Minnesota State Demographer’s office into both scenarios.

Limitations

As in any such exercise, this analysis is but one estimate of future costs. Its accuracy depends on the model on which it is built, and all models are approximations of the more complex reality they seek to describe. Although Dr. Thorpe’s published analysis received the scrutiny of academic peer review and has been widely cited, it was based on historical data and did not project future costs. In the present application of this model, Dr. Thorpe trends current rates forward to estimate future costs. This analysis is sensitive to the assumptions made about future trends in the continuing rise of obesity, the costs of treatments for obesity, and of demographic changes, all of which may change.

The Current Health Care Costs of Obesity and Overweight

It already costs more today to treat overweight and obese Minnesotans than those who are of a healthy weight. People who are obese or overweight have significantly higher risks of developing several diseases, most notably diabetes, heart disease (including hypertension), and unhealthy levels of blood cholesterol.^{21,22}

For example, 12 percent of Minnesota adults of a healthy weight had a diagnosis of hypertension in 2003. In comparison, 19 percent of overweight adults and almost 30 percent of obese adults had diagnosed hypertension.²³ The rate for obese adults is 151 percent higher than for healthy-weight adults. Among individuals diagnosed with type 2 diabetes nationwide, 55 percent are obese and another 30 percent are overweight.²⁴ Similar differences exist for unhealthy levels of blood cholesterol and other conditions.

The more frequent occurrence of these conditions among the overweight and obese combines with the higher cost of treating obese and overweight adults; together these two factors result in 12 percent higher health care costs for overweight adults, and 37 percent higher health care costs for obese adults, relative to healthy-weight adults.

An Economic Portrait of Two Future Minnesotas

Dr. Thorpe's Minnesota analysis projects future health care costs under two scenarios, holding all else constant.

- **Scenario A: Obesity Continues to Increase**

The prevalence of overweight and obesity continues to rise at current rates (driver #1), the treatment intensity continues to increase at current rates (driver #2), and demographic changes will occur as expected (driver #3).

- **Scenario B: Obesity Remains at Current Level**

The prevalence of overweight and obesity remains at the 2005 level (NO driver #1), but the treatment intensity continues to increase at current rates (driver #2), and demographic changes will occur as expected (driver #3).

The analysis projects increases in direct health care costs under both scenarios. The results are presented first on a per capita basis, to focus on the impact that obesity-related costs will have on the average annual health care costs for Minnesota adults.

FIGURE 5

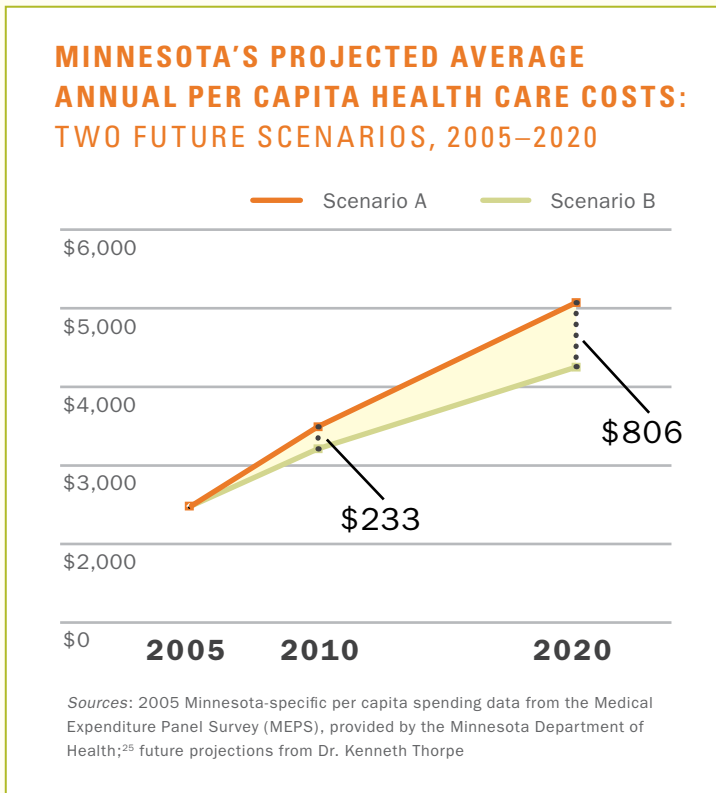
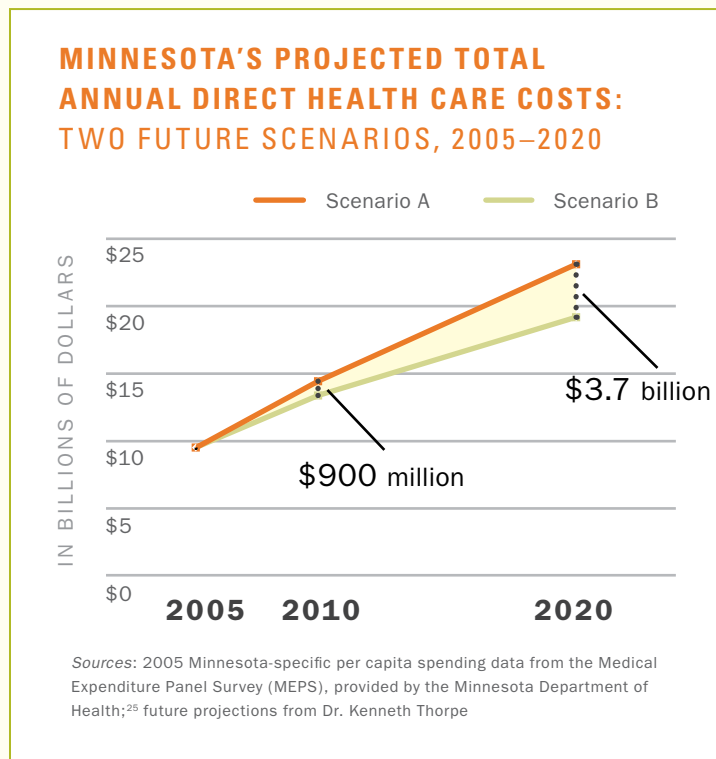


Figure 5 projects estimated average annual per capita health care costs under the two future scenarios. Because the analysis accounts for other factors, the difference between the two scenarios is due to the direct effect of the projected increase in the prevalence of obesity and overweight in Minnesota.

In Scenario A, current trends are projected to more than double average annual per capita costs to \$5,080 in 2020, an increase of \$2,625. By comparison, if obesity and overweight were to remain at current levels, annual per capita costs would increase to \$4,274 in 2020 dollars (Scenario B). The difference between the two scenarios, \$233 in 2010 and \$806 in 2020, represents the projected additional average annual cost of health care for all Minnesota adults that will be contributed by the ongoing rise in the prevalence of overweight and obesity among adults.

FIGURE 6



The analysis projects that, by 2020, the continuing increase in overweight and obesity will contribute nearly 31 percent of the overall increase in annual per capita costs over this 15-year period.

Figure 6 displays results on a total cost basis, in order to show the impact of these changes on future total annual costs at the population level.

In Scenario A, total annual costs would rise from \$9.3 billion in 2005 to \$22.9 billion in 2020 (in 2020 dollars). Scenario B's annual costs would rise to \$19.2 billion in 2020.

The projected increase in the prevalence of overweight and obese persons will add nearly \$1 billion to Minnesota's total annual health care costs by 2010 and \$3.7 billion by 2020.

TABLE 1

TOTAL DIRECT HEALTH CARE COSTS AS A PERCENTAGE OF PROJECTED NOMINAL TOTAL PERSONAL INCOME (TPI) IN MINNESOTA, 2005 TO 2020

| | 2005 | 2010 | 2020 |
|--|--------|-------------|-------------|
| Nominal Total Personal Income (\$ billion) | \$ 192 | \$ 249 | \$ 411 |
| Scenario A: Obesity Continues to Increase | 4.9% | 5.7% | 5.6% |
| Scenario B: Obesity Remains at Current Level | 4.9% | 5.3% | 4.7% |
| Difference Due to Increasing Obesity | | 0.4% | 0.9% |

Sources: This comparison relies on a projection of total personal income (TPI) prepared by the Minnesota State Economist, based on a forecast for Minnesota by Global Insight, Inc., to 2009, and extrapolated from then to 2020 based on the United States growth rate for personal income.

Impact on Nominal Total Personal Income

One way to assess the full implications of these projections is to compare them to the nominal Total Personal Income (TPI) for Minnesota. This measure is frequently used by policymakers to assess the cost of government.

As shown in Table 1, if obesity continues to increase, total direct health care costs may consume a growing percentage of Minnesota's projected nominal TPI. Under Scenario A, Minnesota's total direct health care costs may rise from just under 5 percent of nominal TPI in 2005 to 5.7 percent in 2010 and 5.6 percent in 2020. Despite the projected rise in nominal TPI over this time, even small changes in this proportion represent major shifts in the dollars that Minnesota will have available for other priorities.

Under Scenario B, Minnesota's total direct health care costs may rise from just under 5 percent of nominal TPI in 2005 to 5.3 percent in 2010 and decline to 4.7 percent in 2020. This possible decline by 2020 would mean that, compared with 2005, total direct health care costs would consume a smaller portion of Minnesota's nominal TPI.

The difference in the two scenarios indicates that the projected increase in the prevalence of overweight and obese persons will add nearly half of 1 percent by 2010 and nearly 1 percentage point by 2020 to the portion of nominal TPI consumed by health care costs in Minnesota. Although some increase in the portion of nominal TPI appears inevitable under either scenario in 2010, the projected increase in the prevalence of overweight and obese persons may determine whether the percentage of nominal TPI used for health care costs will rise or fall by 2020.

Given that total direct health care costs constitute less than 5 percent of nominal TPI in 2005, the projected difference of nearly 1 percent between the two scenarios in 2020 suggests the magnitude of the impact of overweight and obesity on Minnesota's future economic environment.

IMPACT ON WORKFORCE PRODUCTIVITY

Beyond the direct health care costs, obesity is associated with many additional costs to employers. These include:

- Absenteeism
 - > Wages paid to absent salaried workers
 - > Replacement costs for absent workers
 - > Reduced productivity of replacement workers
 - > Lost productivity if workers are not replaced when absent
- "Presenteeism" (reduced functioning while present at work)
- Short-term disability costs
- Workers' compensation costs
- On-the-job injuries

Estimation of these costs is beyond the scope of this report. However, it is clear that employers whose workforces include an average sample of Minnesotans will experience increased future personnel-related expenditures.

Source: Chenoweth D. *The Economic Costs of Physical Inactivity, Obesity, and Overweight in California Adults During the Year 2000: A Technical Analysis*. Sacramento, Calif: California Dept. of Health Services; 2005

DISCUSSION

These results offer confirmation for the multiple warnings about the health and economic implications of the continuing rise in the prevalence of overweight and obesity. This report focuses on the direct health care cost implications of these trends among Minnesota adults. Although the sole difference between the two future scenarios is the rise in the prevalence of overweight and obesity, the economic implications are substantial. Assuming the continuation of the recent trends in the increase in overweight and obesity in Minnesota, by 2020 direct health care costs are projected to be \$3.7 billion per year more than if the prevalence of overweight and obesity were to stay at current levels. As soon as 2010, this annual cost difference is estimated at nearly \$1 billion.

These additional costs may have numerous implications, for example, reduced ability of businesses to provide health insurance to employees, impaired capacity of state and local governments to provide health care coverage to employees and to the uninsured, and impeded ability of Minnesota to compete in a global economy. Approximately one third of all Minnesota health care costs are covered by public programs, so this issue directly affects state government as well as private employers.²⁶ Clearly, Minnesota has ample motivation to take action.

The Root Causes of Obesity

Addressing Minnesota's obesity epidemic requires a clear understanding of the root causes that contribute to current trends. Obesity is a complex problem that for some individuals involves genetic or metabolic causes. But researchers agree that there are two major behavioral contributors to the obesity epidemic: inadequate physical activity and unhealthy eating.²⁷

How do Minnesota adults fare on physical activity and healthy eating? According to Minnesota BRFSS data, in 2005 only 51 percent of Minnesota adults met the minimum recommended amount of accumulating 30 minutes of daily moderate physical activity on most days of the week (or 20 minutes of vigorous activity on at least three days of the week).²⁸

Healthy eating is a more complex behavior, and there are several potential indicators of how Minnesotans are doing. Perhaps the best and certainly the most

commonly used single indicator of healthy eating is daily consumption of fruits and vegetables. In 2005 only 25 percent of Minnesota adults ate the minimum recommended servings of five servings of fruits and vegetables daily.²⁹

These behaviors must change if Minnesota hopes to halt the steady increase in obesity. Being overweight is commonly considered an issue of personal responsibility, an indicator of a failure of personal willpower. However, the increasing prevalence of obesity and overweight is not due simply to individual choice or happenstance. The choices of individuals are always influenced by the social and physical environments in which they live.

Researchers have linked the increasing rates of obesity in the United States to the following factors:

- Eating out more often, frequently due to working hours and/or busier schedules³⁰
- Larger portion sizes, particularly in restaurants³¹
- Consuming more sugar-sweetened drinks³²
- Fewer physically demanding jobs and more sedentary jobs³³
- Use of free time for sedentary activities, such as television, computer and electronic gaming³⁴
- Fear of crime or other safety concerns that can discourage outdoor activities³⁵

Additional environmental factors make it difficult for many individuals to incorporate regular physical activity into their lives:

- “Auto-centric” communities that often lack safe places to walk or bike for errands, commuting or recreation³⁶
- “Sprawl” that increases the distance between residences and common destinations (schools, worksites, and shopping areas), thus heightening dependence on automobiles³⁷

To the extent that these factors contribute to more sedentary lifestyles, they also are associated with increased risk of overweight and obesity.

From these perspectives, the obesity epidemic may best be understood as an epidemic of inadequate activity and unhealthy eating. This epidemic is fostered by social and physical environments that promote poor eating choices and less activity. Some individuals successfully fight these obstacles to healthy living, but the evidence suggests that our social and physical environments make it harder for most individuals to make healthier decisions.

A Call to Action

A major implication of this report is that even modest success at curbing the rise in obesity rates would substantially decrease the projected cost burden—with concomitant improvements in health and productivity.

Scenario B acknowledges increasing treatment intensity for overweight and obese persons and Minnesota’s changing demographics, but assumes no further rise in the prevalence of overweight and obesity. This scenario offers encouragement that a healthier and more productive future for Minnesota can become a reality.

To make that alternate future a reality, business, policy, and community leaders need to take collective action now to create environments and conditions that make healthier eating and regular physical activity the normal, easy choices for Minnesota’s residents. How can this be accomplished?

- **Elected officials** can guide community design through zoning and other policy mechanisms to create communities that are more amenable to walking and biking, and that increase access to fresh fruits and vegetables.
- **Employers** can create environments and policies where employees are encouraged to be active and offer low-cost, healthier options in the cafeteria and vending machines.
- **Individuals** also have a role, by taking increased responsibility for their decisions concerning use of leisure time and their food choices.

Changing “what’s normal” can be done. It will take creativity and persistence, and concerted action by community leaders. This report has focused on the economic payoff. But the payoff in human terms is equally compelling. The future economic and physical health of our state is at stake.

ABOUT THIS REPORT

Research Team Members

Kenneth E. Thorpe, Ph.D., conducted the research on which this report is based. He is the Robert W. Woodruff Professor and Chair of the Department of Health Policy & Management, in the Rollins School of Public Health of Emory University, Atlanta, Georgia. Most recently, Dr. Thorpe was deputy assistant secretary for health policy in the U.S. Department of Health and Human Services. In this capacity, he coordinated all financial estimates and program impacts of President Clinton's health care reform proposals for the White House. Dr. Thorpe was educated at the University of Michigan and holds advanced degrees from Duke University and the RAND Graduate School. He has held academic positions at the University of North Carolina at Chapel Hill, the Harvard University School of Public Health, and Columbia University. Dr. Thorpe has authored and co-authored more than 60 articles, book chapters and books and is a frequent national presenter on issues of health care financing, insurance, and health care reform at health care conferences, on television and in the media.

Steven S. Foldes, Ph.D., led the Minnesota research team and wrote this report. He is the Director of Research and Evaluation in the Center for Prevention, Blue Cross and Blue Shield of Minnesota. Dr. Foldes was educated at the University of Southern California, received his doctorate in anthropology from the University of Chicago, and did post-graduate work at Harvard University, Northwestern University and the Carlson School of Business at the University of Minnesota as a Bush Foundation Leadership Fellow.

Rebecca Fee, M.P.H., participated in the Minnesota research team and served as project manager. She is a senior research analyst in the Center for Prevention, Blue Cross and Blue Shield of Minnesota.

Thomas Gillaspay, Ph.D., participated in the Minnesota research team and reviewed and commented on this report. He is the Minnesota state demographer.

John Oswald, Ph.D., participated in the Minnesota research team. He was the director of the Center for Health Statistics in the Minnesota Department of Health until September 2007.

Reviewers

Don Bishop, Ph.D., reviewed and commented on this report. He is the section chief of the Center for Health Promotion in the Minnesota Department of Health.

Michelle Brasure, M.S.P.H., Ph.D., reviewed and commented on this report. She is the evaluation coordinator for the Steps to a Healthier Minnesota program at the Minnesota Department of Health.

Heather Devlin, M.A. reviewed and commented on this report. She is the diabetes program evaluation lead in the Minnesota Department of Health.

James Golden, Ph.D., reviewed and commented on this report. He is the director of the Division of Health Policy in the Minnesota Department of Health.

Marc W. Manley, M.D., M.P.H., reviewed and commented on this report. He is the vice president of Population Health in the Center for Prevention, Blue Cross and Blue Shield of Minnesota.

Diane Rydrych, M.A., reviewed and commented on this report. She is the assistant director of the Division of Health Policy in the Minnesota Department of Health.

Julie Sonier, M.P.A., reviewed and commented on this report. She is the director of the Health Economics Program in the Minnesota Department of Health and Minnesota's state health economist.

The research team acknowledges the contributions of Mary M. Hunter, M.B.A., in the preparation of this report.

Collaborating Organizations

Blue Cross and Blue Shield of Minnesota

Blue Cross and Blue Shield of Minnesota (Blue Cross) is the largest health plan based in Minnesota, covering 2.9 million members in Minnesota and nationally through its health plans or plans administered by its affiliated companies. Prevention Minnesota is Blue Cross' unprecedented, long-term commitment to tackle preventable heart disease and cancers throughout Minnesota by addressing their root causes: tobacco use, secondhand smoke, physical inactivity and unhealthy eating. Prevention Minnesota is being funded by Blue Cross' settlement proceeds from its landmark lawsuit against the tobacco industry. Blue Cross and Blue Shield of Minnesota, a nonprofit corporation, is an independent licensee of the Blue Cross and Blue Shield Association, an association of independent Blue Cross and Blue Shield plans, headquartered in Chicago. Go to www.bluecrossmn.com to learn more about Blue Cross and Blue Shield of Minnesota.

Minnesota Department of Health

The Minnesota Department of Health works to protect, maintain and improve the health of all Minnesotans by performing a wide range of public health activities. Priority areas for MDH include preparing for public health emergencies, ensuring quality care in health care facilities, eliminating health disparities, improving the quality of health care and controlling rising costs and maintaining the basic responsibilities of a state public health organization, including safe food and water, immunization, newborn screening and disease prevention and control. Go to www.health.state.mn.us to learn more about the activities of the Minnesota Department of Health.

Contact information:

Steven S. Foldes, Ph.D.
Director of Research and Evaluation
steven_s_foldes@bluecrossmn.com

Center for Prevention, S113
Blue Cross and Blue Shield of Minnesota
P.O. Box 64560
St. Paul, MN 55164-0560

