

Minnesota's Aging Population: Implications for Health Care Costs and System Capacity

Introduction

After a period of respite in the mid-1990s, health care costs in both Minnesota and the nation are again growing rapidly.¹ Many factors are commonly cited as drivers of health care cost growth, including technology, increases in the cost of labor and other inputs, changes in utilization patterns, market consolidation of health plans and providers, and demographic shifts.

This issue brief examines the impact of population growth and aging of the population on overall use of health care services and health care costs. It examines how these demographic factors affected the use of health care services during the 1990s, and projects how population shifts over the next three decades will affect the demand for services in Minnesota's health care system.

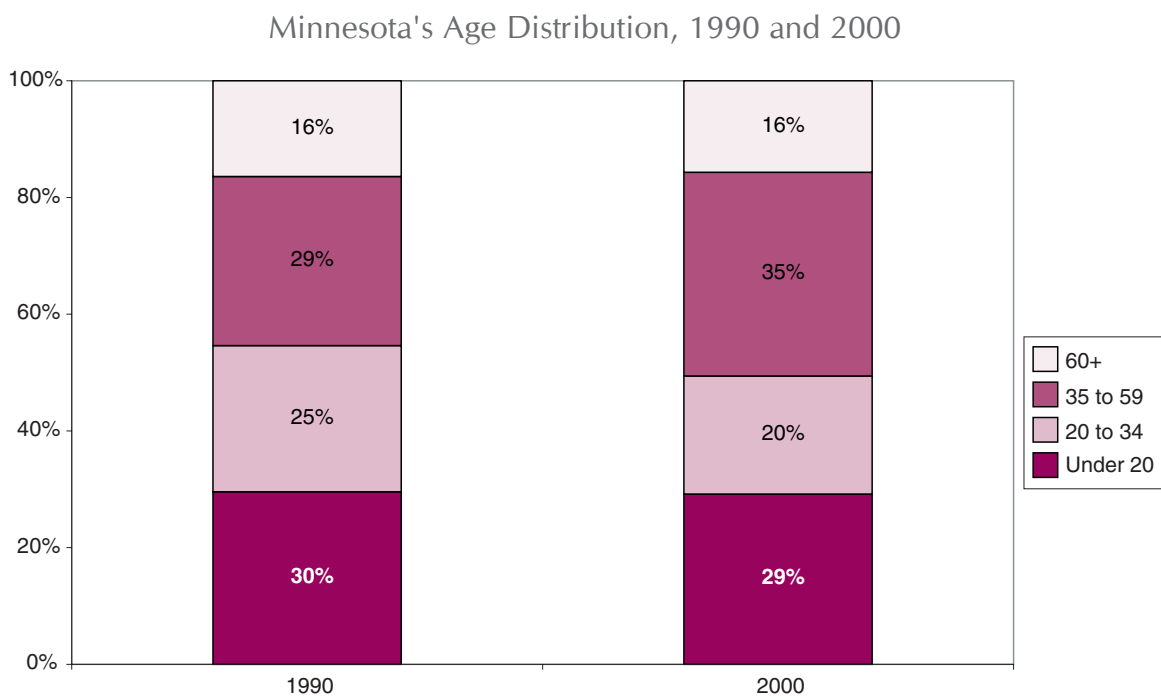
In summary, although the aging population has likely had some impact already on health care utilization and costs in Minnesota, the effect to date has been relatively small. However, population growth and aging are projected to have a significant impact on the use of health care services and overall health care costs in Minnesota in the coming years. As a result, these demographic factors will also play a larger role as drivers of health care cost increases in both the public and private sectors. In addition, these changes may have implications for Minnesota's health care system in terms of its capacity to meet growing demand and need for services.

Demographic Trends

Minnesota's population grew by 12.4 percent from 1990 to 2000, or about 1.2 percent per year. It is projected to grow from 4.9 million in 2000 to nearly 6.3 million in 2030, a total increase of 27 percent over the next 30 years.²

As the baby boom generation (born between 1946 and 1964) ages, the age distribution of Minnesota's population is shifting upward. Figure 1 shows the change in the age distribution of Minnesota's population from 1990 to 2000. As shown in the figure, the shift has been relatively gradual; between 1990 and 2000, the share of the population in the 35 to 59 year old age group grew from 29 percent to 35 percent, while the share between ages 20 and 34 declined.

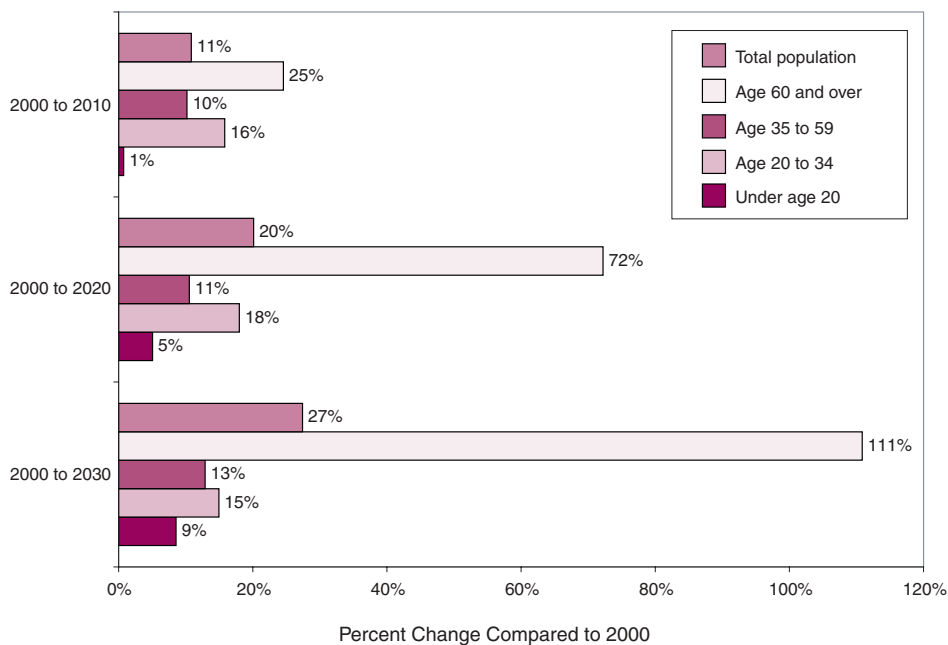
Figure 1



Source: U.S. Census Bureau

Figure 2

Cumulative Minnesota Population Growth by Age Group, 2000 to 2030



Source: Minnesota State Demographic Center, October 2002 projections.

Over the next 30 years, growth in the population over age 60 is projected to far exceed growth in other age groups. Figure 2 illustrates the projections for population growth by age group. Between 2000 and 2030, Minnesota's population that is age 60 or older will more than double, while the younger age groups shown in the figure will grow by a total of only 9 to 15 percent. By 2030, it is expected that over one quarter (26 percent) of Minnesota's population will be over age 60, compared to 16 percent in 2000.

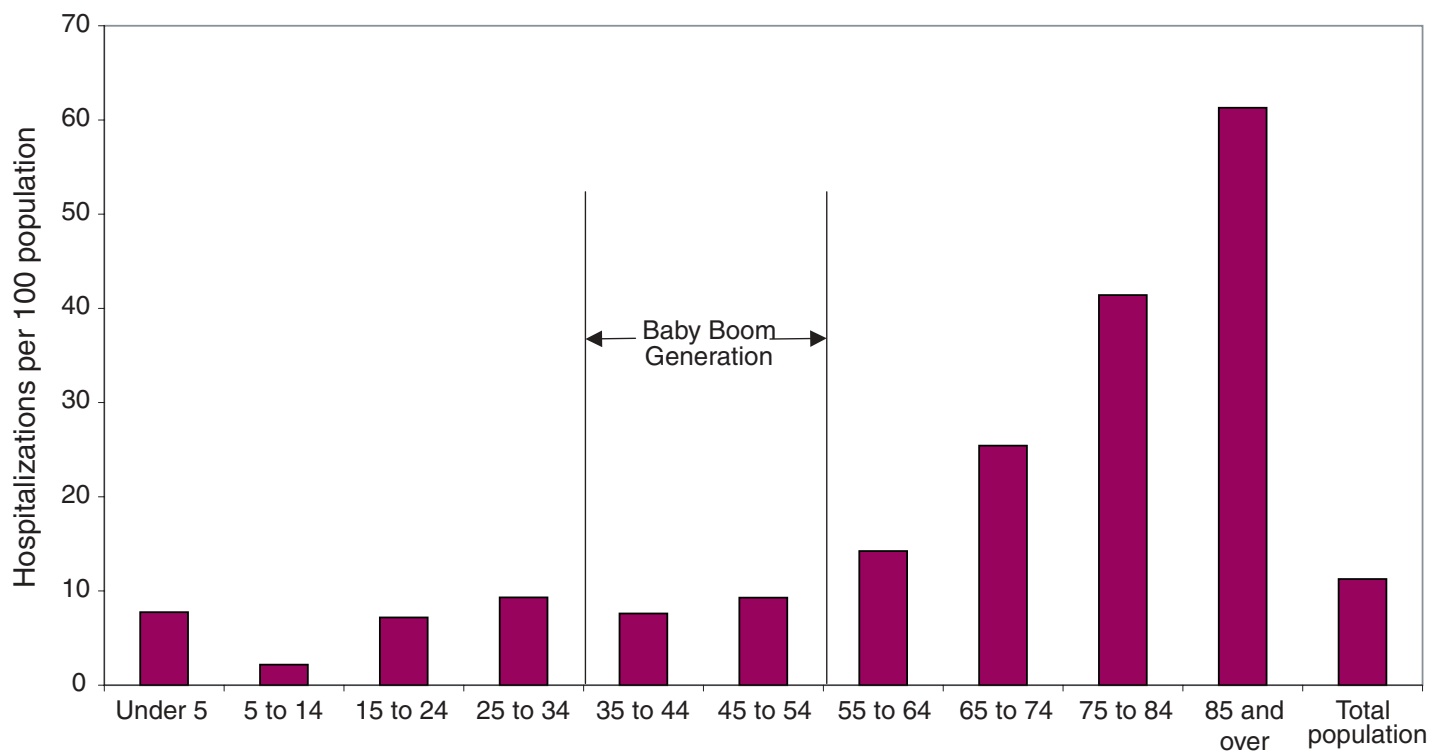
As described in more detail below, because use of health care services tends to increase with age, these projected shifts in Minnesota's age distribution have significant implications for Minnesota's health care system.

Age and Use of Health Care Services

On average, as people get older, their use of health care services increases. For example, Figure 3 shows the variation by age in hospitalization rates for the U.S. population in 2000. Hospitalization rates are relatively low for people under age 55; beginning around age 55, however, hospitalization rates rise dramatically. The pattern for physician services is similar; although the variation among younger and older age groups is not as great as for hospitalization, people age 65 and older have about twice as many physician visits per year than the average for the population as a whole (see Figure 4).

Figure 3

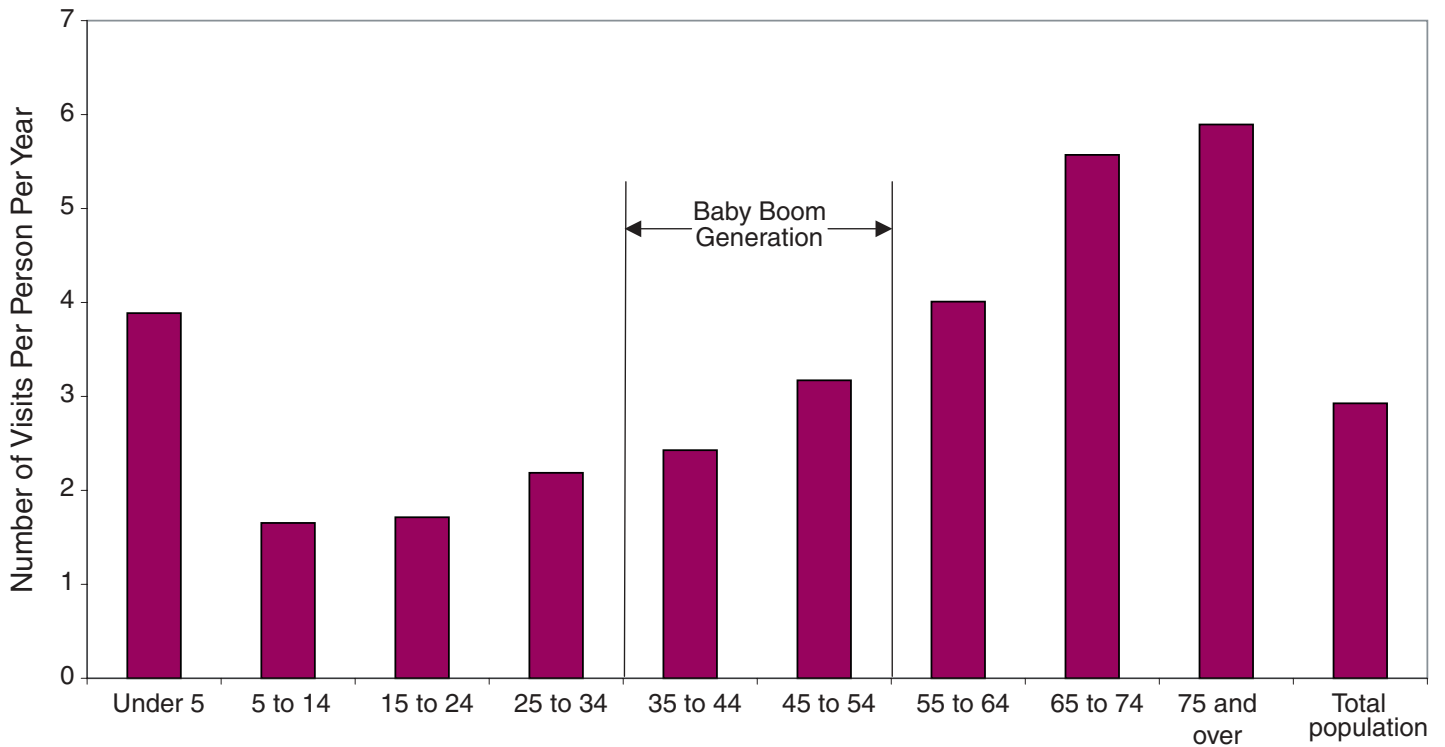
U.S. Hospitalization Rates by Age, 2000



Source: MDH analysis of data from National Center for Health Statistics, 2000 National Hospital Discharge Survey; U.S. Census Bureau. Hospitalization rates exclude newborns.

Figure 4

U.S. Physician Visit Rates by Age, 2000

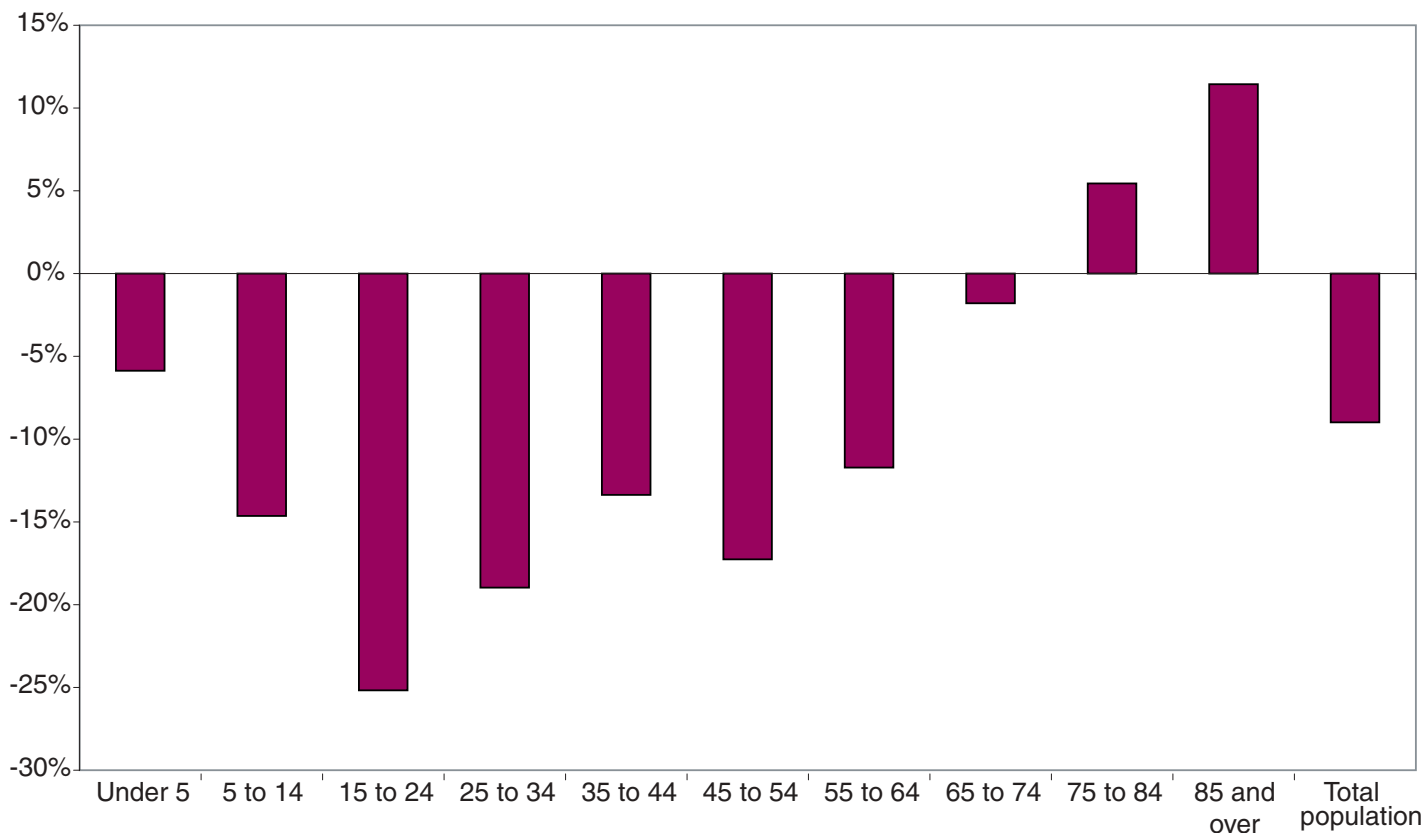


Source: MDH analysis of data from National Center for Health Statistics, 2000 National Ambulatory Medical Care Survey; U.S. Census Bureau.

During the 1990s, national hospitalization rates declined in nearly every age group (see Figure 5). In fact, if the population size and age distribution had remained the same in 2000 as they were in 1990, the total number of hospitalizations in the U.S. would have declined by nearly 10 percent. Instead, the total number of hospitalizations rose by about 3 percent, due mainly to population growth rather than changes in the age distribution of the population (see Table 1). One reason why changes in the age distribution had so little impact on hospitalizations during the 1990s is that the baby boom generation had not yet reached the age at which hospitalization rates increase sharply. As a result, the full impact of population aging has yet to be felt by hospitals in Minnesota and across the nation – but the impact will be significant over the next 10, 20 and 30 years.

Figure 5

Percent Change in U.S. Hospitalization Rates by Age, 1990 to 2000



Source: MDH analysis of data from National Center for Health Statistics, National Hospital Discharge Surveys, 1990 and 2000; U.S. Census Bureau.

Table 1

Sources of Change in U.S. Inpatient Hospital Utilization, 1990 to 2000

Total percent change in number of hospitalizations, 1990 to 2000	3.0%
Percent change due to:	
Population growth	13.2%
Changes in utilization rates	-9.7%
Changing age distribution	0.7%

Source: MDH analysis of data from National Center for Health Statistics, National Hospital Discharge Surveys, 1990 and 2000; U.S. Census Bureau
 Note: percent changes due to population growth, changes in utilization rates, and changing age distribution combine multiplicatively to yield total percent change.

Projected Growth in Health Care Utilization

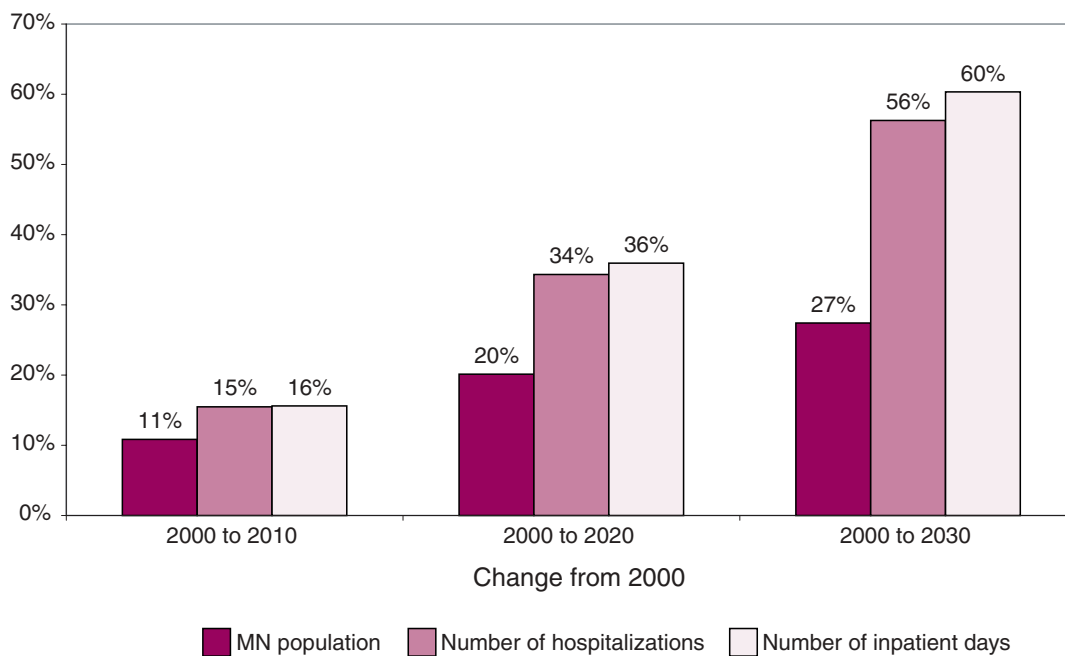
As demonstrated above, as Minnesota’s population ages, the use of health services will rise. Because the health care system is so complex and many factors influence the amount and types of care delivered, it is impossible to predict with any degree of certainty what the impact of aging on any particular segment of the health care system will be. However, it is possible to create models that project the future use of health care services under a range of alternative assumptions. In this issue brief, we focus on the use of inpatient hospital services as an example of how Minnesota’s aging population will affect demand for services.³

To illustrate the impact that demographic changes are likely to have on Minnesota’s health care system, we used projections of the size and age distribution of Minnesota’s population from 2000 to 2030.⁴ Using data on hospital discharge rates and average length of stay by age group, we created a baseline projection of the number of hospitalizations and the number of inpatient days in Minnesota hospitals in 2010, 2020, and 2030 assuming that utilization patterns (hospitalization rates and average length of stay by age group) are unchanged from 2000.⁵ Because of the uncertainty involved in projecting health care utilization, we also analyzed the impact of a 15 percent increase and a 15 percent decrease in hospitalization rates compared to this baseline.⁶

Figure 6 summarizes the results of this analysis. With no change in current utilization patterns by age group, the total number of hospitalizations in Minnesota over the next 30 years is expected to increase by 56 percent and the number of inpatient days is expected to increase by 60 percent. As shown in the figure, use of hospital inpatient services is expected to grow much faster than the state population, which is largely a reflection of the higher health care needs of an older population.

Figure 6

Projected Growth in Minnesota Hospital Utilization, 2000 to 2030
(Baseline Projection)



Note: assumes hospitalization rates and average length of stay by age group remain constant at 2000 levels.

About half of the projected increase in hospitalizations and inpatient days from 2000 to 2030 is due to population growth and half is due to the shifting age distribution of the population (see Table 2). As shown in the table, the importance of aging compared to population growth as a driver of increased utilization is projected to grow over time. The changing age distribution of the population accounts for about one third of projected growth in inpatient days from 2000 to 2010. In 2010, the eldest baby boomers will be 64 years old and the youngest members of this generation will be 46. In later years, as more of this generation reaches the age at which health care utilization grows sharply, the influence of the changing age distribution of the population is projected to overtake population growth as the primary driver of growth in hospital utilization.

Table 2

Sources of Growth in Projected Minnesota Hospital Utilization
(Baseline Projection)

Cumulative Growth from 2000:

2000 to 2010 2000 to 2020 2000 to 2030

NUMBER OF HOSPITALIZATIONS			
Percent change due to:			
Population growth	10.8%	20.1%	27.4%
Changing age distribution	<u>4.2%</u>	<u>11.8%</u>	<u>22.6%</u>
Total*	15.5%	34.3%	56.3%
Share of growth due to:			
Population growth	70.0%	58.6%	48.7%
Changing age distribution	<u>30.0%</u>	<u>41.4%</u>	<u>51.3%</u>
Total	100.0%	100.0%	100.0%
NUMBER OF INPATIENT DAYS			
Percent change due to:			
Population growth	10.8%	20.1%	27.4%
Changing age distribution	<u>4.3%</u>	<u>13.2%</u>	<u>25.8%</u>
Total*	15.6%	35.9%	60.3%
Share of growth due to:			
Population growth	69.4%	56.0%	45.4%
Changing age distribution	<u>30.6%</u>	<u>44.0%</u>	<u>54.6%</u>
Total	100.0%	100.0%	100.0%

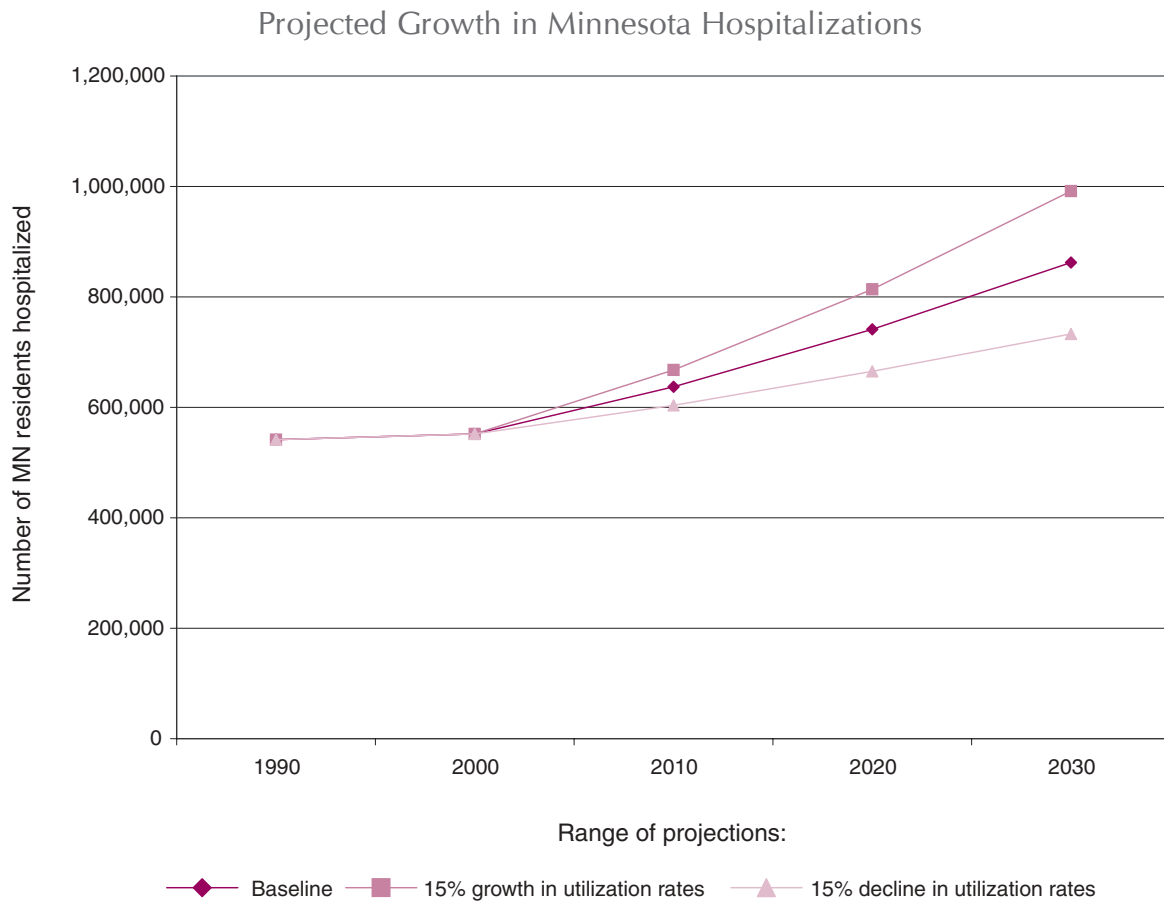
*Population growth and age distribution factors are combined multiplicatively to yield total growth rate.

Note: the baseline projection assumes that hospitalization rates and average length of stay for each age group remain constant at 2000 levels.

Figure 7 illustrates the range of projections using the assumptions of constant utilization rates (baseline projection), a 15 percent increase, and a 15 percent decrease. As shown in the figure, in the scenario that assumes 15 percent growth in hospitalization rates, the total number of hospitalizations in 2030 would be about 80 percent higher

than the 2000 level. Under the scenario that assumes a 15 percent decline in hospitalization rates, the overall number of hospitalizations would still rise by about one-third compared to 2000, because of population growth and the changing age distribution.

Figure 7



Implications for System Capacity

One important question for policymakers to consider is how much hospital capacity is needed to handle this anticipated growth in demand. There has been a moratorium on adding new hospital beds in Minnesota since 1984, which means that increasing the number of licensed hospital beds in the state requires legislative action. In 2001, there were about 16,500 licensed hospital beds in Minnesota, or about 3.3 beds per 1,000 residents. However, the current operating capacity of the hospital system is less than the number of licensed beds – Minnesota’s hospitals had about 11,600 available beds in 2001, or 2.3 per 1,000 residents.⁷

In total, Minnesota hospitals provided about 2.5 million days of inpatient care in 2001, or 57 percent of the number of days of care that could have been provided if every available bed had been filled each day. Table 3 summarizes how the three alternative projections for future use of inpatient hospital services affect estimates of the utilization of hospital services relative to system capacity. In the baseline projection, the number of days of inpatient care would rise to 3.9 million in 2030, or 91 percent of capacity that is currently available (and 65 percent of currently

licensed capacity). Under the projection that assumes a 15 percent increase in hospitalization rates, the total number of patient days in 2030 would be about 4.5 million, or 105 percent of currently available capacity (and 74 percent of licensed capacity). Finally, in the model that assumes a 15 percent decline in hospitalization rates, the projected number of inpatient hospital days in 2030 is about 3.3 million, or 78 percent of currently available capacity (and 55 percent of licensed capacity).

Table 3

Inpatient Days in Relation to Minnesota Hospital Capacity, 2000 to 2030

	<u>2000</u>	<u>2010</u>	<u>2020</u>	<u>2030</u>
Projected Number of Inpatient Days:				
Baseline	2,429,355	2,808,499	3,302,521	3,895,234
15% growth in utilization rates		2,942,435	3,625,023	4,479,519
15% decline in utilization rates		2,660,402	2,963,408	3,310,949
Capacity Utilization as % of 2001 Available Beds:				
Baseline	57%	66%	77%	91%
15% growth in utilization rates		69%	85%	105%
15% decline in utilization rates		62%	69%	78%
Capacity Utilization as % of 2001 Licensed Beds:				
Baseline	40%	47%	55%	65%
15% growth in utilization rates		49%	60%	74%
15% decline in utilization rates		44%	49%	55%

Note: Total capacity calculated based on 11,687 available beds and 16,511 licensed beds in 2001 multiplied by 365.

Despite the uncertainties involved in projected future demand for services, the increased demand for inpatient hospital services that will result from population growth and aging over the next 30 years is likely to create strains on Minnesota's hospital system. While none of the projections described above shows a need for an increase in the aggregate number of licensed hospital beds in Minnesota, there are several additional factors that will be important for policymakers to consider that are not addressed in this analysis. First, the occupancy rates at Minnesota's hospitals vary widely (from a low of 3 percent to a high of 95 percent in 2001, when capacity usage is measured relative to available beds), and these statewide projections take no account of geographic or seasonal variation in occupancy rates and demand for services. In addition, the projections do not take into account the capacity to provide specialized services such as cardiac care and the potential need to adjust capacity for these specialized services to meet growing demand. Further research and analysis is needed to determine whether the current distribution of hospital capacity in Minnesota is sufficient to meet future needs given the geographic distribution of the population and growing demand for specialized care. Finally, the availability of labor to provide inpatient care (particularly the availability of nursing staff) is another dimension of hospital system capacity that is likely to be of concern in the coming years, given current and projected shortages of nurses.⁸

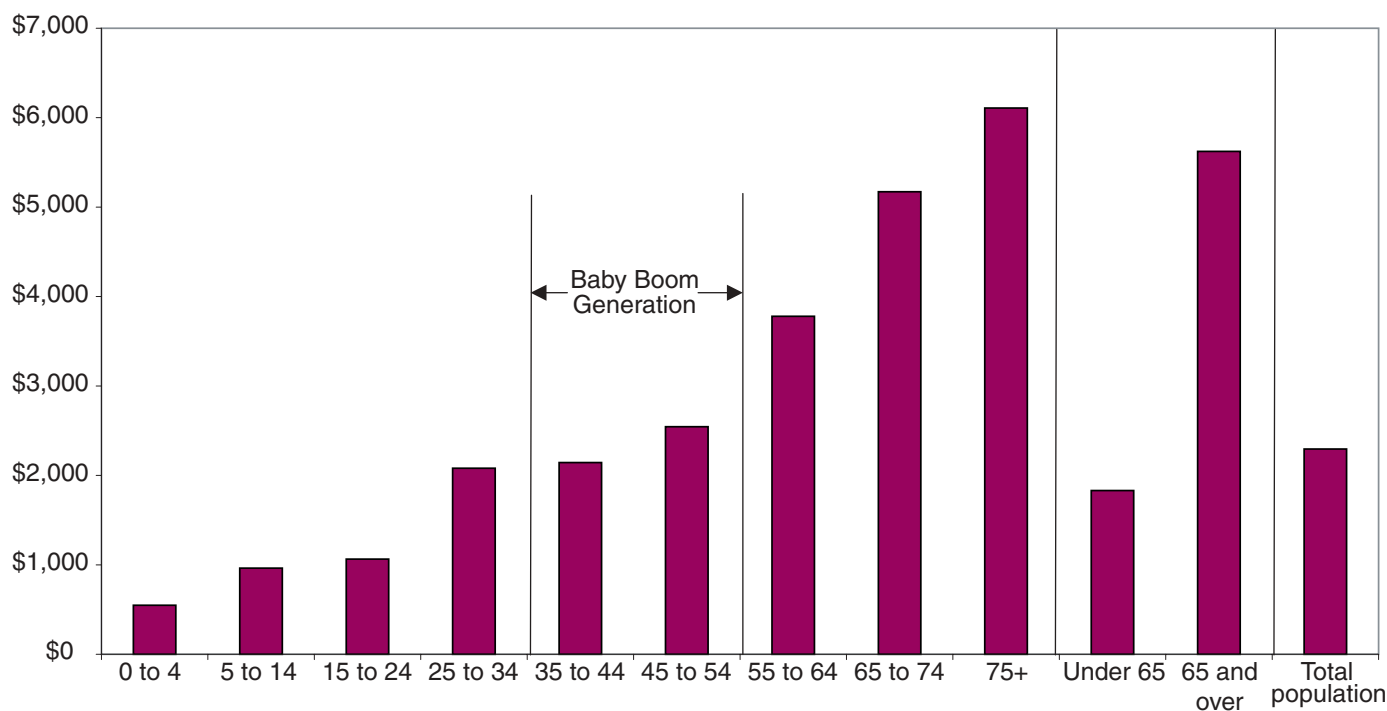
Implications for Health Care Costs

From an overall cost standpoint, increased use of health care services that is a result of population growth is not necessarily a concern, since population growth also contributes to a larger economy. In other words, although population growth raises the total amount spent on health care, it does not necessarily result in increased spending per capita or as a share of the economy.

The changing age distribution of the population has far different implications. As the baby boom generation enters the stage of life where use of health care services increases dramatically, there is likely to be a substantial impact on per capita costs. Excluding long-term care, health care spending per person age 65 and over was more than three times the average for the population under age 65 in 2000 (see Figure 8); including long-term care services, if such data were available, would result in an even larger difference.

Figure 8

Per Capita U.S. Health Care Spending by Age, 2000*



Source: Agency for Healthcare Research and Quality, 1999 Medical Expenditure Panel Survey (MEPS), data for per capita spending by age group in the Midwest. Estimates were inflated to 2000 using 1999-2000 per capita growth in national health expenditures from the Centers for Medicare and Medicaid Services (CMS).

*Per capita spending excludes long-term care and other populations and services that are outside the scope of MEPS.

Although much of the cost pressure from the growing demand for health care services to care for an aging population will ultimately be borne by publicly financed health care programs (Medicare and Medicaid), the initial impact will likely be felt most strongly in the private health insurance system. Most working-age adults have pri-

vate health insurance, usually through an employer. Because average health care spending among adults aged 55 to 64 is about 2.3 times per capita spending for the population under age 55, the aging of the baby boom population is likely to emerge as a more important cost driver in the private health insurance system over the next several years.

Conclusion

Minnesota's aging population presents several challenges for policymakers concerned about health care issues. In recent years, health care costs have re-emerged as a significant public policy issue, with employers, individuals, and government all feeling the impact of rising costs. Although the aging population has likely had some impact already on health care utilization and costs in Minnesota, the effect to date has been relatively small. In the coming years, increasing demand for services as a result of population aging will emerge as a more important cost driver, adding to the significant cost pressures already being felt in the system. In addition, policymakers face the challenge of ensuring that Minnesota's health care system has the capacity to meet future demand for services in a manner that ensures timely access to high-quality health care services for all Minnesotans.

Endnotes

¹ Minnesota Department of Health, Health Economics Program, "Minnesota Health Care Spending Trends, 1993-2000", January 2003; Katharine Levit et al., "Trends in U.S. Health Care Spending, 2001," Health Affairs, January/February 2003.

² All population projections in this issue brief come from projections released by the Minnesota State Demographic Center in October 2002.

³ The implications for the state's long-term care system have been studied extensively by Minnesota's Long-Term Care Task Force. Information and reports from this task force are available at <http://www.dhs.state.mn.us/agingint/lcttaskforce/default.htm>.

⁴ This analysis does not consider other demographic changes, such as projected changes in the racial and ethnic makeup of the population, that could also affect health care utilization patterns.

⁵ National hospital discharge rates were used for this analysis because they are the only reliable source for age-specific hospitalization rates that is currently available. Using national discharge rates, the estimated number of hospitalizations in Minnesota in 2000 is only 2% different from the actual number of hospital admissions reported by hospitals to the Minnesota Department of Health in the Health Care Cost Information System (HCCIS) database for 2000. Minnesota-specific data from the Minnesota Hospital Discharge Database for 2000 were used in the model for average length of stay by age group.

⁶ The model assumes a gradual increase or decrease in hospitalization rates for each age group over the 30-year period, resulting in either a cumulative 15 percent increase or decrease at the end of 30 years. Average length of stay is assumed to remain constant at 2000 levels. There are a number of arguments that can be made to support the assumption of either increasing or decreasing hospitalization rates. For example, factors that might cause hospitalization rates to increase include the recent shift to less tightly managed care and the fact that much of the decline in hospitalization rates observed in the 1990s was likely a one-time shift resulting from the widespread adoption of managed care; increases in the level of chronic disease or risk factors at all age levels (for example, the rise in the share of the population that is considered to be overweight); and technological change. Factors that might cause hospitalization rates to decline include the potential for a renewed focus on limiting care as a result of financial pressures created by rapid cost growth; improvements in the management of chronic diseases; and technological change. There are many other factors that could also impact hospitalization rates either directly or indirectly.

⁷ Data from Health Care Cost Information System (HCCIS), Minnesota Department of Health. Available beds, sometimes referred to as set-up beds, is defined as "the number of acute care beds that are immediately available for use or could be brought online within a short period of time."

⁸ Minnesota Department of Health, Health Economics Program, "Labor Availability and Health Care Costs: Report to the Minnesota Legislature," October 2002.

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