

# Factors and Incentives Driving Investment in Medical Facilities

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Minnesota Department of Health

February, 2007



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*Protecting, maintaining and improving the health of all Minnesotans*

February 22, 2007

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Chair, Health and Human Services  
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Minnesota Senate  
Room 309, State Capitol  
75 Rev. Dr. Martin Luther King Jr. Blvd.  
Saint Paul, MN 55155-1606

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The Honorable Paul Thissen  
Chair, Health and Human Services  
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To the Honorable Chairs:

In recent years, there has been rising concern in both Minnesota and at the national level about growth in medical facility investment and its potential impact on health care cost and utilization. The 2006 Legislature required the Minnesota Department of Health to study and report to the Legislature on several issues related to medical facilities investment in Minnesota, including the potential need for a new approval process for the construction of new medical facilities or expansions of existing facilities (Minnesota Session Laws 2006, Chapter 249, Section 5).

This report details the findings and recommendations of the study. In conducting this study, MDH staff conducted many interviews of local health care providers, stakeholder groups, and health care policy experts. I want to express my appreciation for the thoughtful and candid perspectives provided by the people who were interviewed.

I look forward to continuing to work with you on this issue. Questions and comments on the report may be directed to the Health Economics Program at (651) 201-3560.

Sincerely,

A handwritten signature in cursive script that reads "Dianne Mandernach".

Dianne M. Mandernach  
Commissioner  
P.O. Box 64882  
St. Paul, Minnesota 55164-0882



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# Table of Contents

Executive Summary	1
1. Introduction	5
2. Current Regulation of Health Care System Capacity	9
3. Factors Influencing Medical Facility Investment	13
4. Data on Medical Facility Investments, Capacity, and Utilization	21
5. Study Findings and Recommendations	29
Appendix	33



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# Executive Summary

In recent years, concerns have been rising in both Minnesota and the nation about growth in medical facility investments, and its potential impact on health care utilization and cost. In addition, the recent interest and competition by three organizations to build a hospital in Maple Grove has also fueled concerns regarding medical facility expenditures and led to renewed discussions about the state's role in regulating medical facility growth.

Much of the public debate about investments in health care facilities revolves around services that require significant investments in technology, such as specialized hospital services, outpatient surgery centers, and diagnostic imaging. Although technology is an important driver of health care cost increases, it is important to remember that technological advances are responsible for substantial improvements in the ability to treat health conditions and cure diseases. Problems arise, however, when technology is overused, underused, or misused in ways that increase health care costs without providing benefits that exceed the costs.

## Investment in Medical Facilities as a Public Policy Issue

Investment in medical facilities is an issue of concern in Minnesota and nationally because of its impact on the cost of, access to, and quality of health care services. Several factors contribute to concerns about potential overinvestment in medical facilities as a public policy issue. These factors include the following:

- More competition among health care facilities does not necessarily lead to lower prices;
- Geographic areas with higher availability of health care resources (e.g., hospital beds) have higher use of services, but do not have better health outcomes;
- Investments by physician groups in providing certain types of services (such as diagnostic imaging) have generated rising concern about potential overuse of services that may result from financial conflicts of interest;
- Payments from both public and private payers do not necessarily reflect the cost of providing services. As a result, health care providers may have incentives to overinvest in some types of capacity and underinvest in others; and
- For some types of health care services, it may be desirable to encourage a small number of “centers of excellence” rather than a larger number of competing facilities.

## Current State Regulation of Medical Facility Investment

Since 1984, Minnesota law has prohibited the construction of new hospitals or expansion of bed capacity of existing hospitals without specific authorization from the Legislature. The moratorium on licensure of new hospital beds replaced a Certificate of Need (CON) program that provided for case-by-case review and approval of proposals by hospitals and other health care providers for large projects such as construction and remodeling or purchases of expensive medical equipment. The moratorium was seen as a more effective means of limiting investments in excess hospital capacity than CON, which has been criticized for failing to adequately control growth in medical facilities construction and health care costs.

Current Minnesota law provides for public interest review by the Minnesota Department of Health (MDH) of proposals for exceptions to the hospital bed moratorium. In situations where multiple providers may be competing to build a new facility, the law provides for evaluation of the competing proposals according to criteria established by MDH. In all cases, final decisions about whether to grant an exception to the hospital bed moratorium are made by the Legislature.

Another mechanism in current law that is intended to limit excess investment in medical facilities is a requirement for reporting and retrospective review of major capital expenditures. If MDH determines that a provider has made an inappropriate expenditure, then the provider must obtain prior approval for all major capital expenditures for a period of five years.

## Factors Influencing Medical Facility Investment

Several factors influence investments in medical facilities. These include:

- Population aging and demographic change;
- Technological advance;
- Replacement or renovation of aging facilities;
- Overall system efficiency;
- Variations in profitability by type of service; and
- Physicians' expansion into new services.

The last two factors listed above are particularly important in understanding what many believe to be a “medical arms race.” Because some types of services are particularly profitable, they attract more investment than other services. Some health care providers, particularly hospitals, have traditionally subsidized money-losing services with profits from other services, and thus they compete vigorously to expand, maintain, or defend their market shares in these profitable services. As the ability to perform these types of services in non-hospital settings has expanded, financial pressures on hospitals have increased. In addition, rapid growth in physician investments to provide these highly profitable services has led to concerns about potential overutilization of services, despite federal laws that are intended to restrict physician self-referral.

## Study Findings and Recommendations

This study's major findings include the following:

- Current health care payment systems send distorted market signals that influence medical facility investment decisions. Payment systems need to be adjusted to accurately reflect the costs of providing health care services, in order to eliminate incentives to overinvest in some types of services and underinvest in others.

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- Making the payment system more accurate is an issue that cannot easily be separated from broader issues related to health care cost and quality. Even if payments accurately reflected costs, the fact that payments are typically based on the volume of services provided means that incentives for improving efficiency and value are limited.
  - Similar to national trends, physician investments in the ability to provide highly profitable services such as diagnostic imaging may be leading to overuse of services.
  - Minnesota's current data collection systems for hospitals, ambulatory surgery centers, and diagnostic imaging facilities provide a solid foundation for analysis of market trends, although there is a need to fill some information gaps.
  - The capital expenditure reporting law has not likely had much impact on medical facility investment decisions in Minnesota. However, the data reported has provided important insights into overall market trends.
  - Minnesota's hospital moratorium has likely had both positive and negative effects. It has likely prevented overinvestment in new facilities (such as the proliferation of specialty hospitals that has occurred in some other states), and has perhaps encouraged more efficient use of existing capacity. On the other hand, it has protected hospitals from competition and has prevented the hospital system from adjusting to major population shifts that have occurred in the state.
  - Although still untested, the newly enacted process for evaluating competing proposals to build a new hospital provides for a more orderly process (based on responses to specific criteria) than the recent highly contentious process for choosing among competing proposals to build a hospital in Maple Grove.

Building on these findings, MDH makes the following recommendations:

- The Commissioner of Health will appoint an independent commission to establish an overall vision for Minnesota's health care delivery system and to make specific recommendations for aligning provider, payer and consumer incentives in ways that support progress toward the vision. The commission will also be charged with making recommendations on whether to allow hospitals to retain licenses for unused beds, whether to implement an auction process to allocate future new hospital licenses (MDH should retain responsibility for evaluating competing applications pending any recommendations for an alternative process), and how to encourage greater collaboration among multiple entities that are competing to build new facilities. It will also study the need to reform financing of unprofitable hospital services that are currently subsidized through profits from other services, and make recommendations about the need for restrictions on physician self-referral that are tighter than the restrictions in federal law.
- New data collection should be authorized to fill identified gaps in current data collection on hospitals, diagnostic imaging centers, and ambulatory surgery centers.
- The capital expenditure review law should be transitioned into an annual report from health care providers on capital expenditures, and the retrospective review provisions of the law should be repealed.



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# 1. Introduction

In 2006, the Minnesota Legislature passed a law requiring the Minnesota Department of Health (MDH) to study and report to the Legislature on the need for a new process for approving the construction of medical facilities or the addition of services at existing medical facilities.<sup>1</sup> Specific issues that the study is required to address include:

- What type of investment in medical facilities should be subject to prior approval, including the types of facilities that should be included, the types of services that should be included, and the threshold level of investment that would make a project subject to an approval process;
- What entity should be responsible for approving investments in medical facilities;
- What decision-making process should be used when multiple providers propose to invest in similar facilities or services within the same geographic area;
- What information would be required to effectively determine the need for new medical facilities or services; and
- Other issues identified by the commissioner as relevant to health care delivery capacity in Minnesota.

This legislation was passed during a period of heightened concern about growth in medical facility investment and its relationship to growth in health care costs. At the state level, organizations including Blue Cross and Blue Shield of Minnesota, the Citizens League, and the National Institute for Health Policy have highlighted concerns about the trends in medical facility investment in Minnesota.<sup>2</sup> In addition, the recent interest and competition by three organizations to build a hospital in Maple Grove also fueled concerns regarding medical facility expenditures and led to renewed discussions about the state's role in regulating medical facility growth.

Much of the public debate about investments in health care facilities revolves around services that require significant investments in technology, such as specialized hospital services, outpatient surgery centers, and diagnostic imaging. Most economists agree that the most important long-run driver of health care cost increases is technology.<sup>3</sup> However, it is important to remember that technological advances are responsible for substantial improvements in the ability to treat health conditions and cure diseases, and that the benefits of technological advances in health care have generally been higher than the costs.<sup>4</sup> Problems arise, however, when technology is overused, underused, or misused in ways that increase health care costs without providing benefits that exceed the costs.

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<sup>1</sup> 2006 Minnesota Laws, Chapter 249, Section 5.

<sup>2</sup> Blue Cross Blue Shield of Minnesota, "Hospital Expansion in Minnesota: Is Growth Worth the Cost?" July 2005; Citizens League, "Developing Informed Decisions: Seeking Market Reforms to Advise Medical Facility Expansion," April 2006; National Institute of Health Policy, "The Medical Arms Race Syndrome: Where Will It Lead and Do We Want to Go There?" August 2006.

<sup>3</sup> See, for example, Joseph P. Newhouse, "Medical Care Costs: How Much Welfare Loss?" *Journal of Economic Perspectives*, v. 6 no. 3, Summer 1992.

<sup>4</sup> David Cutler, *Your Money or Your Life: Strong Medicine for America's Health Care System*, Oxford University Press, 2004.

Investment in medical facilities is an issue of concern in Minnesota and nationally because of its impact on the cost of, access to, and quality of health care services. Several factors contribute to concerns about potential overinvestment in medical facilities as a public policy issue. First, more competition among health care facilities does not necessarily lead to lower prices, for several reasons:

- The fact that most people have health insurance limits the degree to which decisions about the services they receive are influenced by prices.
- Many types of health care facilities and services require large investments of capital. If more facilities are built than are needed, the cost of building and maintaining each facility may need to be spread over a smaller number of people, resulting in a higher cost per person served.
- In recent years, consumers have shown a strong preference for broad health plan networks, and care systems typically negotiate their participation in health plan networks on an “all or nothing” basis. As a result, health plans’ ability to negotiate lower prices through selective contracting is limited.

In addition to the fact that competition does not necessarily result in lower prices, there are several other reasons why investment in medical facilities is of concern:

- Geographic areas with higher per capita supplies of health care resources (e.g., hospital beds) have more use of “supply-sensitive” services, with higher costs per person. However, regions with greater use of supply-sensitive services do not have better health outcomes.<sup>5</sup> Although Minnesota has long enjoyed a national reputation for having an efficient health care system compared to other states, the question of whether recent major investments in new or expanded facilities may lead to overuse of health care resources in Minnesota is a legitimate question for public debate.
- Over the past several years, the rapid growth of investments by physician groups to provide certain types of services (such as diagnostic imaging) as part of their practices has generated rising concern about potential overuse of services that result from financial incentives associated with physician self-referral.<sup>6</sup>
- A large share (approximately 45 percent) of health care spending in the U.S. is paid for by the public sector, which typically uses administered pricing systems (in other words, prices are set by government rather than through negotiation with providers). In addition, private payers often have payment systems that are based on Medicare’s payment system. If these public and private payment systems do not accurately reflect the cost of providing services, then health care providers may overinvest in some types of capacity and underinvest in others.<sup>7</sup>

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<sup>5</sup> Center for the Evaluative Clinical Sciences, Dartmouth Medical School, “The Care of Patients with Severe Chronic Illness: A Report on the Medicare Program by the Dartmouth Atlas Project,” Executive Summary, May 2006. “Supply-sensitive services” are services for which an area’s supply of resources influences how much care is used.

<sup>6</sup> See, for example, David Armstrong, “U.S. Seeks to More Tightly Restrict Doctors’ Billings for Medical Tests,” *The Wall Street Journal*, October 23, 2006; Robert A. Berenson et al., “Specialty-Service Lines: Salvos in the New Medical Arms Race,” *Health Affairs* web exclusive, July 25, 2006.

<sup>7</sup> Paul B. Ginsburg and Joy M. Grossman, “When the Price Isn’t Right: How Inadvertent Payment Incentives Drive Medical Care,” *Health Affairs* web exclusive, August 9, 2005.

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- For some types of health care services, facilities that perform more procedures have better patient outcomes. For example, research studies have demonstrated for several types of highly specialized procedures that high-volume hospitals have lower mortality rates than low-volume hospitals.<sup>8</sup> Although there are many other factors that also influence health care quality and outcomes, some people believe that it is desirable to encourage the provision of certain highly specialized services in a small number of “centers of excellence” rather than a larger number of low-volume facilities.<sup>9</sup>

In contrast to concerns about overinvestment in some types of services, there are also situations that may lead to underinvestment in capacity to deliver health care services. For example, certain types of health care services (such as inpatient mental health services) are widely believed to be unprofitable for hospitals; as a result, health care providers may be reluctant to add more capacity for these services even if there is a community need for them. In addition, variations in sources of insurance coverage (or “payer mix”) across local areas may lead to differences in geographic access to services. For example, providers may find it more attractive to build new facilities in high-income areas with large privately insured populations than in lower-income areas with higher prevalence of public insurance and uninsurance.

In performing this study, the Minnesota Department of Health conducted interviews with a wide range of stakeholders, including health care providers, health plans, other state agencies, the Citizens League and other experts on health policy. MDH also reviewed available Minnesota and national data on utilization, spending and capacity, data from other states on medical facility regulation, and relevant published research. These sources of information were used by MDH to develop the following set of guiding principles for state policy toward medical facility investment and regulation:

- Policies toward medical facility investments need to be flexible to enable the health care delivery system to respond to changing population needs. Policies also need to be flexible in order to encourage innovation, both in technology and in finding new ways to provide high-quality, cost-effective care in the most appropriate settings. Health care services available in Minnesota draw substantial numbers of patients from neighboring states, and in some cases from across the U.S. and all over the world; it is to the state’s economic benefit to continue to be seen as a technological leader in health care.
- To the degree possible, state policies toward medical facilities and technology should establish a “level playing field” that treats services the same way regardless of the setting in which they are provided.
- Both public and private payers should seek to avoid sending market signals that distort decisions about investment in health care facilities, by either paying too much or too little for certain types of services.
- State policy should discourage unnecessary duplication of services, particularly those that require high levels of capital investment and those for which health outcomes may be improved through the use of high-volume centers of excellence.

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<sup>8</sup> See, for example, A. Gandjour et al., “Threshold Volumes Associated With Higher Survival in Health Care: A Systematic Review,” *Medical Care*, v. 41 no. 10, October 2003; Ethan Halm et al., “Is Volume Related to Outcome in Health Care? A Systematic Review and Methodologic Critique of the Literature,” *Annals of Internal Medicine* v. 137 no. 6, September 2002.

<sup>9</sup> The Leapfrog Group for Patient Safety, Fact Sheet on Evidence-Based Hospital Referral, April 2004.

- State policy should ensure that all Minnesotans have adequate geographic access to health care services, while recognizing that not all areas of the state can support highly specialized services, and that certain types of services are best provided in regional referral centers.

The remainder of this report is organized as follows:

- Section 2 discusses current Minnesota law related to regulation of health care system capacity;
- Section 3 describes the factors that influence medical facility investments;
- Section 4 discusses the data that are currently available to describe trends in medical facility construction and utilization, as well as gaps in data availability; and
- Section 5 presents the study findings and recommendations.

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## 2. Current Regulation of Health Care System Capacity

Unlike many states, Minnesota does not regulate investments in medical facilities through a certificate of need process. The two primary mechanisms that Minnesota has in place to regulate health care system capacity and investments in new facilities are a moratorium on licensing additional hospital beds and a system of retrospective review of major capital expenditures. Each of these is described in more detail below.

### Moratorium on New Licensed Hospital Beds

Since 1984, Minnesota law has prohibited the construction of new hospitals or expansion of bed capacity of existing hospitals without specific authorization from the Legislature (Minnesota Statutes, Section 144.551). As originally enacted, the law included a few specific exceptions to the moratorium on new hospital capacity; other exceptions have been added over time, and there are currently 23 exceptions listed in the statute. Many of these exceptions apply to specific facilities, but some define an exception that applies more broadly (e.g., an exception that allows for the relocation of a hospital within five miles of its original site under some circumstances).

The moratorium on licensure of new hospital beds replaced a Certificate of Need (CON) program that provided for case-by-case review and approval of proposals by hospitals and other health care providers for large projects such as construction and remodeling or purchases of expensive medical equipment. The CON program was in effect from 1971 to 1984, when it was replaced by the hospital moratorium. The CON program was criticized for failing to adequately control growth in medical facilities construction and health care costs, but at the same time there was substantial concern among policymakers about allowing the CON program to expire without placing some other type of control on investment in new capacity.<sup>10</sup> The moratorium was seen as a more effective means of limiting investments in excess hospital capacity than the Certificate of Need program it replaced.

Beginning in 1974, federal law encouraged all states to operate CON programs and provided funding for state efforts. Federal support for state CON programs ended in 1986, partly as a result of concerns that CON had not been effective in containing cost growth and partly as a result of growing support for more competition in health care.<sup>11</sup> Currently, thirty-seven states still have CON laws, although the scope and stringency of the laws vary substantially across states.<sup>12</sup>

In 2004, the Minnesota Legislature established a process for reviewing proposals for exceptions to the hospital

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<sup>10</sup> Dave Giel and Michael Scandrett, "Hospital and Nursing Home System Growth: Moratoria, Certificate of Need, and Other Alternatives," Minnesota Senate Research Report, January 1986.

<sup>11</sup> Christopher J. Conover and Frank A. Sloan, "Evaluation of Certificate of Need in Michigan: A Report to the Michigan Department of Community Health," May 2003, p. 4.

<sup>12</sup> American Health Planning Association, "National Directory of Health Planning, Policy and Regulatory Agencies," Sixteenth Edition: January 2005.

moratorium (Minnesota Statutes, Section 144.552). This “public interest review” process requires that hospitals planning to seek an exception to the moratorium law submit a plan to the Minnesota Department of Health (MDH). Under the law, MDH is required to review each plan and issue a finding on whether the plan is in the public interest. Specific factors that MDH is required to consider in the review include:

- Whether the new hospital or hospital beds are needed to provide timely access to care or access to new or improved services;
- The financial impact of the new hospital or hospital beds on existing acute-care hospitals that have emergency departments in the region;
- How the new hospital or hospital beds will affect the ability of existing hospitals in the region to maintain existing staff;
- The extent to which the new hospital or hospital beds will provide services to nonpaying or low-income patients relative to the level of services provided to these groups by existing hospitals in the region; and
- The views of affected parties.

Finally, the law requires that the public interest review be completed within 90 days, but allows for a review time of up to six months in extenuating circumstances. Authority to approve any exception to the hospital moratorium continues to rest with the Legislature.

In November 2004, MDH received three separate filings for public interest review of a proposal to build a new hospital in Maple Grove, Minnesota. Because the public interest review statute did not specifically address the issue of competing proposals, MDH evaluated each proposal separately according to the criteria established in the law. MDH determined that it is in the public interest for a hospital to be built in Maple Grove, but did not recommend a specific proposal to the Legislature. In 2006, legislation was passed that established an exception to the hospital bed moratorium for a new hospital to be built in Maple Grove.

In addition, the 2006 Legislature established a new process for evaluating competing proposals to build a hospital in the same area (Minnesota Statutes, Section 144.553). This alternative process begins with the requirement that an organization seeking permission to build a new hospital must submit a letter of intent to the Commissioner of Health. MDH would then publish a notice that a proposal to build a new hospital has been received, with a 30 day period for other interested organizations to notify the Commissioner if they propose to build a hospital in the same or similar service area. If no other parties notify the Commissioner of their interest, then the public interest review process described above applies.

However, when multiple parties are interested in constructing a new hospital, the law requires MDH to perform a “needs assessment” to determine if a new hospital is needed in the proposed service area. If MDH determines that a new hospital is needed, it must establish criteria for reviewing proposals, and each organization seeking an exception to the moratorium is allowed to submit a proposal. Specific factors that MDH is required to consider in reviewing these plans include access to care, quality of care, cost of care and overall project feasibility. In addition, MDH may establish additional criteria related to mental health services, uncompensated care and care for uninsured patients, and coordination of specialized services with other hospitals to avoid

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unnecessary duplication of services. After reviewing the competing proposals, MDH must make a recommendation to the Legislature on which proposal best meets the criteria, although the Legislature retains the authority to approve all exceptions to the hospital moratorium.

Currently, there is a substantial difference between the number of licensed hospital beds in Minnesota and the number of beds that are actually available (either currently staffed or that could be brought into service within a short period of time). Statewide, the number of licensed beds exceeded available beds by over 40 percent in 2005 (16,392 licensed beds vs. 11,650 available beds). Many hospitals have effectively “banked” unused bed licenses by maintaining the licensed beds from facilities that have downsized or closed. As a result, when additional capacity is needed in a community, some hospitals have an advantage over others because they may not need to seek a legislative exception to the hospital bed moratorium. In addition, the state has no regulatory authority to stop projects that bring licensed but unused beds into service, even if the projects would duplicate existing services. The existence of so many licensed but unused beds is likely an unintentional effect of the hospital moratorium law, because there is little incentive for hospitals to give up excess licensed capacity if there is a possibility that it could be used at some point in the future. Over half (55 percent) of the states’s licensed but unused beds are in the Twin Cities metropolitan area.

## Review of Capital Expenditures

Current Minnesota law (Minnesota Statutes, Section 62J.17) requires health care providers to report to MDH on all major capital spending commitments of more than \$1 million.<sup>13</sup> The capital expenditure review law was enacted as part of a package of major health care reforms in the 1992 MinnesotaCare Act, and was originally intended to serve as an interim measure for restraining capital expenditures on new facilities and equipment while overall expenditure growth limits were developed. Although many of the cost containment measures that were part of the MinnesotaCare laws were later repealed, the capital expenditure reporting law has remained in effect.

As required by this law, MDH conducts a retrospective review of major capital expenditures to assess a project’s appropriateness in terms of its impact on health care cost, quality, and access. If MDH determines that a project has failed retrospective review, the health care provider must obtain prior approval (“prospective review”) of all major capital expenditures for a period of five years. Perhaps in part because the law was intended to be temporary, the criteria for deciding whether a project is “appropriate” are somewhat vague.<sup>14</sup> Since the law’s enactment in 1992, three providers have been placed on prospective review.

In a report to the Legislature in 2003, the Joint Task Force on Health Care Costs and Quality (a commission comprised of ten legislators and five members of Governor Ventura’s cabinet) concluded that there is little evidence that the capital expenditure reporting law has had an impact on health care costs or quality in Minnesota, or that the law has been a consideration for health care providers planning major capital expenditures.<sup>15</sup> Although the task force members considered policy options ranging from repeal of the law to strengthening it, the task force could not reach agreement and did not make a specific recommendation to the legislature.

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<sup>13</sup> Prior to August 1, 2003, the reporting threshold was \$500,000.

<sup>14</sup> Joint Task Force on Health Care Costs and Quality, “The Health Care Capital Expenditure Reporting Law: Report to the Minnesota Legislature,” February 2003.

<sup>15</sup> Joint Task Force on Health Care Costs and Quality, February 2003.



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## 3. Factors Influencing Medical Facility Investment

One historical reason for the enactment of CON laws in the 1970s was concern about financial incentives for health care providers to invest in excess capacity to provide services, which in turn would result in excess use of services and higher health care costs.<sup>16</sup> During this period, health care providers were generally reimbursed for services based on the costs they incurred, which is believed to have contributed to incentives to overinvest in new or expanded facilities (or, at a minimum, reduced incentives to use resources efficiently).

Following the repeal of CON laws in many states, including Minnesota, two significant market shifts resulted in reduced incentives to invest in new or expanded facilities:

- First, the federal Medicare program adopted a prospective payment system for inpatient hospital services that paid a fixed amount based on a patient's diagnosis, rather than based on the volume of services provided or a provider's cost for those services. Most other major payers followed Medicare's example and shifted to prospective payment as well. In the decade following the implementation of prospective payment, the growth in the cost of a Medicare hospital day declined by one-third and the total number of days provided declined by one-fifth, most likely reflecting incentives to use resources more efficiently.<sup>17</sup>
- Second, the growth of managed care in the 1980s and 1990s potentially influenced incentives to invest in medical facilities in several ways. Two important examples of the influence of managed care include controls on utilization of services (such as preauthorization requirements) and selective network contracting (which improved health plans' negotiating leverage with providers and limited providers' ability to pass on the costs of excess capacity).<sup>18</sup>

In recent years, however, public policy concern about medical facility investment has resurfaced, both in Minnesota and nationally. One key reason for rising concern is that after a period of moderation in the growth of health care spending during the 1990s, health care spending began growing more rapidly, bringing renewed attention to the broader problem of health care cost containment and investment in medical facilities as a potential contributor to cost growth. Another important factor driving policy concerns, both in Minnesota and across the nation, has been rapid growth of investments in new or expanded health care facilities, and rapid increases in the utilization of certain types of high-cost services (such as diagnostic imaging).

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<sup>16</sup> Christopher J. Conover and Frank A. Sloan, "Evaluation of Certificate of Need in Michigan," A report to the Michigan Department of Community Health; May 2003; p. 3.

<sup>17</sup> William J. Scanlon, "The Future of Medicare Hospital Payment: 'Modest' Proposals in Light of Medicare's Fiscal Challenges," *Health Affairs*, vol 25 no. 1, January/February 2006.

<sup>18</sup> Paul B. Ginsburg, "A Health Economist's Perspective on the 'Medical Arms Race'," National Institute of Health Policy Webinar, September 29, 2006.

This section of the report describes the factors that influence investment in new or expanded medical facilities, drawing on interviews conducted by MDH for this study as well as national experience. Recent investments in medical facilities in Minnesota appear to be driven by several key factors, including:

- Population aging and demographic change
- Technological advance
- Replacement or renovation of aging facilities
- Overall system efficiency
- Variations in profitability by type of service
- Physicians' expansion into new services

### Population Aging and Demographic Change

Factors such as the rate of population growth, changes in the age and geographic distribution of the population, and changes in illness burden (e.g., increases in the occurrence of diseases associated with obesity) all play a role in the type, location, and level of medical services needed in Minnesota, and the types of facilities needed to serve the population. Based on current utilization patterns, MDH has previously estimated that population growth and changes in the age distribution of Minnesota's population will result in an estimated 36 percent increase in inpatient hospital days statewide between 2000 and 2020.<sup>19</sup> If the number of available hospital beds<sup>20</sup> were unchanged, then occupancy rates would increase from 57% in 2000 to 77% in 2020, with occupancy rates as high as 93% in the Twin Cities metropolitan area (see appendix for more detail). In other words, increases in demand that result from demographic change can be drivers of the need for additional capacity in the health care delivery system.

### Technological Advance

As noted earlier, most economists consider advances in technology to be one of the most important long-run drivers of health care spending growth. However, technology has also produced large benefits in terms of better health and increased life expectancy. For example, life expectancy at birth increased from 69.9 years in 1960 to 76.9 years in 2000, and a large share of this increase is due to better medical care resulting in lower rates of death from cardiovascular disease and lower infant mortality. A recent research study comparing these gains in life expectancy to increased medical spending concluded that in general, the benefits of higher medical spending have far exceeded the costs.<sup>21</sup> However, it is also important to note that technology is not always used appropriately, and that overuse, underuse, and misuse of technology are persistent problems in the U.S. health care system.<sup>22</sup>

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<sup>19</sup> Minnesota Department of Health, Health Economics Program, "Minnesota's Aging Population: Implications for Health Care Costs and System Capacity," Issue Brief 2003-05, August 2003.

<sup>20</sup> "Available 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. Many hospitals are licensed for more beds than they currently have available. In 2005, Minnesota hospitals reported having 11,650 available beds, compared to 16,392 licensed beds.

<sup>21</sup> David M. Cutler, Allison B. Rosen, and Sandeep Vijan, "The Value of Medical Spending in the United States, 1960-2000," *The New England Journal of Medicine*, Volume 355, Number 9, August 31, 2006.

<sup>22</sup> For example, see Cutler, *Your Money or Your Life*; Thomas Bodenheimer, "High and Rising Health Care Costs. Part 2: Technologic Innovation," *Annals of Internal Medicine*, Volume 142, Number 11; Berenson et. al., "Specialty-Service Lines: Salvos In the New Medical Arms Race," *Health Affairs*, July 25, 2006; Fitzhugh Mullan, "Wrestling With Variation: An Interview With Jack Wennberg," *Health Affairs*, October 7, 2004.

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Advances in technology influence investments in medical facilities in several ways. As the state of the art advances, health care providers invest in new, expanded, or renovated facilities in order to provide patients with access to the most effective medical care for their conditions. In addition, technological advances have led to the ability to treat many medical conditions that formerly would have required an inpatient hospital stay on an outpatient basis. As a result, investments in hospital-based outpatient care centers and freestanding ambulatory care centers (such as surgery centers and imaging centers) have increased. In Minnesota, the number of hospital inpatient days declined by 15 percent between 1987 (when this information was first collected) and 2005; in comparison, outpatient hospital visits increased by 134 percent.

It is important to note that the use of new technologies sometimes substitutes for older, potentially more expensive ways of delivering care. By providing safer, less invasive ways to diagnose and treat medical conditions, some types of advances in technology reduce the need for other, potentially more expensive, services. For example, the ability to use imaging to make diagnoses in some cases avoids the need for surgery. On the other hand, the development of less invasive methods of treating disease also has the potential to increase the number of people who receive treatment for a particular condition, resulting in an overall increase in health care utilization and health care spending. One recent research study that examined the association between increased availability of technology and increased health care spending found that areas of the country with higher availability of specific technologies (especially diagnostic imaging) also had higher utilization and higher spending.<sup>23</sup>

## Replacement or Renovation

As facilities age and ways of treating medical conditions change, hospitals and other medical facilities face a need to modernize existing facilities, often by renovating, expanding, or sometimes replacing them. Consumer preferences also play a strong role in many decisions to invest in new or upgraded medical facilities. For example, over the past several years there has been a national trend toward replacing semiprivate hospital rooms with private rooms. Although there are many other factors contributing to these decisions (such as the need to comply with patient privacy laws, reduce the spread of infectious diseases in hospitals, and reduce medical errors<sup>24</sup>), consumer preferences have played a strong role as well.<sup>25</sup>

## Overall System Efficiency

Another factor that influences how much medical facility capacity is needed is the relative efficiency with which current capacity is used. For example, a hospital that is very efficient at managing its capacity and utilization (e.g. transitions of patients between different units) could likely operate at a higher occupancy rate than a less efficient hospital, without raising concerns about crowding. This principle also applies more broadly to the health care delivery system as a whole. MDH has estimated that as many as 12 percent of hospital admissions in Minnesota each year are potentially preventable, meaning that the need for inpatient care (or in some cases, more resource-intensive inpatient care) could have been avoided through the use of preventive care, earlier

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<sup>23</sup> Laurence Baker, Howard Birnbaum, Jeffrey Geppert, David Mishol, and Erick Moyneur, “The Relationship Between Technology Availability and Health Care Spending,” *Health Affairs* web exclusive, November 5, 2003.

<sup>24</sup> Lindsey Tanner, “Architects Endorse Private Hospital Rooms,” Associated Press, July 17, 2006.

<sup>25</sup> Michael Romano, “Going Solo: Private-Rooms-Only Provision for New Hospital Construction Stirs Controversy,” *Modern Healthcare*, November 29, 2004.

intervention, and better management of chronic conditions.<sup>26</sup> In other words, the amount of capacity for inpatient hospital services that is needed is influenced by both the efficiency of hospital operations and the efficiency of the health care system as a whole.

### Variation in Profitability by Type of Service

Researchers have noted a national trend toward rapid growth of investments in specialized health care services that are highly profitable relative to other services.<sup>27</sup> Services that are highly profitable, such as cardiac care, orthopedic care, and diagnostic imaging, have received a substantial share of recent investment in medical facilities, in Minnesota and nationally. Hospitals typically use profits from these services to subsidize losses from services that are unprofitable, such as mental health, chemical dependency, obstetrics, burn care, trauma care, and emergency rooms.<sup>28</sup>

Many health care experts believe that variation in profitability by type of service is a key driver of a “medical arms race.” The threat of losing profitable lines of business can lead to hospitals’ investing more money in expanding or renovating facilities than they otherwise would have in order to protect their market share. As a local example, many Twin Cities hospitals have invested in expanded ability to provide state of the art cardiac care in the past several years.<sup>29</sup> However, in interviews that MDH conducted for this study, many local experts stated that the recent investments in new or renovated cardiac care facilities (accompanied by intense marketing and branding of these new “heart hospitals”) do not seem to have resulted in much of an increase in total hospital capacity to provide cardiac care. Many believed that this recent activity was a clear example of a medical arms race, in which hospitals have invested in upgrading their most profitable services in an attempt to either increase or defend their market shares.

National researchers have also noted that hospital competition to attract and retain the best physicians by offering the latest technology and facility amenities is a factor that has influenced medical facility investments.<sup>30</sup> In many ways, this can be seen as part of hospitals’ overall strategy to gain (or avoid losing) market share in their most profitable services.

Because of variations in profitability by type of service, recent growth in freestanding facilities that provide outpatient surgery and diagnostic imaging represent a potential problem for hospitals’ ability to continue cross-subsidizing unprofitable services with profitable ones. Researchers have noted that hospital investments in profitable service lines are sometimes used as a strategy to forestall entry of physician-owned freestanding facilities, especially when hospitals partner with physicians in these ventures.<sup>31</sup>

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<sup>26</sup> Minnesota Department of Health, Health Economics Program, unpublished estimates based on the Agency for Healthcare Research and Quality’s Prevention Quality Indicators and discharge data from Minnesota hospitals.

<sup>27</sup> Robert A. Berenson, Thomas Bodenheimer, and Hoangmai H. Pham, “Specialty-Service Lines: Salvos in the New Medical Arms Race,” *Health Affairs* web exclusive, July 25, 2006.

<sup>28</sup> Jill Horwitz, “Making Profits and Providing Care: Comparing Nonprofit, For-Profit, and Government Hospitals,” *Health Affairs*, May/June 2005.

<sup>29</sup> Jeremy Olson, “Focus on Cardiac Care Worries Some Insurers,” *St. Paul Pioneer Press*, August 8, 2005.

<sup>30</sup> Berenson et al., July 2006.

<sup>31</sup> Berenson et al., July 2006.

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In many ways, variation in profitability by type of service is the result of the way in which public and private insurers pay for health care services. Medicare, the single largest payer for health care services, has in the past used payment methodologies that rely on providers' charges. Most private insurers have payment systems that are based on Medicare payment rates. Because charges do not necessarily reflect the relative costs of providing services, this payment methodology has led to a situation in which some services are highly profitable and others are unprofitable.

In 2006, the Centers for Medicare and Medicaid Services (CMS) made changes to its payment system for inpatient hospital care in an attempt to make its payment rates more accurately reflective of costs and to reduce incentives to invest more heavily in the most profitable types of health care services. The changes will be phased in over a three-year period, and include changes that will bring hospital payment rates more closely in line with costs and expand the number of payment categories ("diagnosis related groups," or DRGs) in order to better account for variation in severity of illness.<sup>32</sup>

### Physicians' Expansion Into New Services

In the past several years, physician investments in a variety of activities beyond the traditional scope of office practice have increased. Two types of activities in particular have attracted significant attention: investments in imaging facilities and equipment, and investments in freestanding ambulatory surgical centers (ASCs). Researchers have noted several factors contributing to these trends, most of which are related to financial pressures that have led physicians to expand their practices to include new, more profitable services. Examples of these financial pressures include cost containment efforts of both public and private payers, and increases in practice costs due to factors such as liability and labor costs.<sup>33</sup> Other potential reasons for physician investments in these types of activities include the ability to exercise greater management control, or to improve health care quality and efficiency. However, studies of several local health care markets in other states have indicated that financial issues have often been the dominant driver of this type of investment activity.<sup>34</sup>

From a public policy perspective, there are several potential reasons for concern about the recent growth in physician investments in medical facilities and equipment. One is that these facilities often draw profitable business away from hospitals, which have historically used profits from services such as imaging and ambulatory surgery to subsidize the provision of unprofitable services. Another concern is that in some cases, physician investments in these types of services can create a financial conflict of interest that influences decisions about patient care, potentially resulting in unnecessary use of services and higher health care costs. Finally, some have raised concern about whether there is adequate oversight of the quality of services provided at facilities other than hospitals and independent diagnostic testing facilities (IDTFs); for example, the Medicare Payment Advisory Commission (MedPAC) has recently recommended that national quality standards be developed for imaging services provided in physician offices, citing evidence of inconsistent quality.<sup>35</sup>

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<sup>32</sup> Paul B. Ginsburg, "Recalibrating Medicare Payments for Inpatient Care," *The New England Journal of Medicine*: Volume 355, Number 20, November 16, 2006.

<sup>33</sup> Hoangmai H. Pham, Kelly J. Devers, Jessica H. May, and Robert Berenson, "Financial Pressures Spur Physician Entrepreneurialism," *Health Affairs*, vol. 23 no. 2, March/April 2004.

<sup>34</sup> *Ibid.*

<sup>35</sup> "MedPAC Recommendations on Imaging Services," Statement of Glenn M. Hackbarth, J.D., Chairman of the Medicare Payment Advisory Commission, Before the Subcommittee on Health, Committee on Energy and Commerce, U.S. House of Representatives, July 18, 2006.

Most of the research that has been published about the effects of physician self-referral (referring patients to a facility or service in which the referring physician has a direct or indirect financial interest) dates from the late 1980s and early 1990s. Generally, these studies find that physicians who self-refer tend to order more services at a higher cost than physicians who do not self-refer. For example, one widely cited study on this topic found that physicians with diagnostic imaging equipment in their offices used imaging exams 4.0 to 4.5 times more often than physicians who referred their patients to radiologists, and that the imaging charges per episode of care were 4.4 to 7.5 times higher for self-referring physicians.<sup>36</sup> Although MDH is unaware of any recent research studies on this topic, anecdotal evidence at the national level<sup>37</sup> and interviews we conducted for this study suggest that financial incentives have likely played a role in the recent growth in utilization of diagnostic imaging services.

With respect to financial conflicts of interest, there are two types of legal restrictions on the types of activities in which physicians can engage; these include self-referral restrictions and antikickback laws. The federal Ethics in Patient Referrals Act (also known as the Stark law) restricts the types of services for which physicians can self-refer patients who are enrolled in Medicare or Medicaid. Under this law, physicians are prohibited from referring patients to entities with which they have a direct or indirect financial relationship for specific types of services.<sup>38</sup> However, there are some exceptions to the Stark law's ban on physician self-referral. One type of exception is referred to as the "in-office ancillary services" exception, which allows physicians to refer to services they own that are provided (1) personally by the referring physician or another member of the physician's group practice, or directly under their supervision, and (2) in the same building in which the referring physician or the physician's group practice routinely provides the full range of medical services. Another major exception is for referrals within a group practice.

A separate federal law (the antikickback statute) makes it illegal for health care providers to receive direct or indirect payments in return for their referral of a Medicare or Medicaid patient for services; Minnesota law extends the federal antikickback law to all persons in Minnesota, not just beneficiaries of Medicare and Medicaid (Minnesota Statutes, Section 62J.23).

It is believed that much of the recent physician investment in diagnostic imaging services has been structured in a manner that is intended to fit within the in-office ancillary services or group practice exceptions of the Stark law. One recent article by researchers studying the medical arms race phenomenon concludes that "It seems clear that the intent of the Stark law limitations on physician self-referral has not been achieved, largely because physicians have figured out how to take advantage of the broad exception in the law for services provided by self-referral that occurs within their own practices or for services they personally provide."<sup>39</sup>

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<sup>36</sup> Hillman et al., "Frequency and Costs of Diagnostic Imaging in Office Practice – A Comparison of Self-Referring and Radiologist-Referring Physicians," *New England Journal of Medicine* 1990 v 323 p. 1604-1608. For additional studies related to diagnostic imaging, see Hillman et al., "Physicians' Utilization and Charges for Outpatient Diagnostic Imaging in a Medicare Population," *Journal of the American Medical Association*, 1992 v. 268 p. 2050-2054; U.S. General Accounting Office, "Referrals to Physician-Owned Imaging Facilities Warrant HCFA's Scrutiny," Report HEHS-95-2, October 1994. Similar results have also been found for physician self-referral to radiation therapy facilities: Mitchell et al., "Consequences of Physician Ownership of Health Care Facilities – Joint Ventures in Radiation Therapy," *New England Journal of Medicine*, 1992 v. 327 p. 1497-1501.

<sup>37</sup> David Armstrong, "MRI and CT Centers Offer Doctors Way to Profit on Scans," *The Wall Street Journal*, May 2, 2005.

<sup>38</sup> The list of "designated health services" for which the Stark law prohibits physician self-referral includes clinical laboratory services; physical therapy; occupational therapy; speech-language pathology; radiology and certain other imaging services, including x-ray, ultrasound, computerized axial tomography, magnetic resonance imaging, and nuclear medicine (as of January 1, 2007); radiation therapy services and supplies; durable medical equipment and supplies; parenteral and enteral nutrients, equipment, and supplies; prosthetics, orthotics, and prosthetic devices and supplies; home health services; outpatient prescription drugs; and inpatient and outpatient hospital services. (42 Code of Federal Regulations Section 411.351)

<sup>39</sup> Berenson et al., July 2006.

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It is possible, however, that some arrangements that are legal under self-referral laws could violate state and/or federal antikickback laws.<sup>40</sup> The Minnesota Department of Health is responsible for investigating alleged violations of the state antikickback law, and investigations performed in the past few years have resulted in the termination of arrangements between providers that were suspect under the state antikickback law. Because MDH only investigates allegations of specific violations of the law, the full extent of this type of activity in Minnesota is unknown.

Although rapid growth in the number of ambulatory surgery centers in Minnesota in recent years has likely had a financial impact on hospitals and their ability to cross-subsidize money-losing services, in general it does not raise the same types of policy concerns about financial conflict of interest as have been raised by the proliferation of diagnostic imaging services. The regulations that implemented the federal Stark and antikickback laws note that there are several reasons why physician investments in ambulatory surgery centers pose less risk of overutilization of services than other types of services. One key reason is that physician owners of an ASC typically use it as an extension of their own office, to personally perform procedures that cannot safely be performed in the office setting. Other reasons include the fact that decisions to perform invasive procedures such as surgeries are much less likely to be influenced by financial considerations than non-invasive tests such as imaging, as well as the fact that the additional potential gain to a physician from performing a procedure in an ASC is not believed to be high enough relative to the physician's professional fee (which would be earned regardless of where the procedure is performed) to have a significant impact on decision-making.<sup>41</sup>

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<sup>40</sup> Final regulations implementing the Stark law that were adopted in 2001 make clear that some types of arrangements that are considered permissible under the Stark law, such as lease arrangements involving per-use payments, could violate antikickback laws. (Federal Register, vol 66 no. 3, January 4, 2001, "Medicare and Medicaid Programs; Physicians' Referrals to Health Care Entities With Which They Have Financial Relationships.")

<sup>41</sup> Federal Register, vol. 64 no. 223, November 19, 1999, "Medicare and State Health Care Programs: Fraud and Abuse: Clarification of the Initial OIG Safe Harbor Provisions and Establishment of Additional Safe Harbor Provisions Under the Anti-Kickback Statute."



## 4. Data on Medical Facility Investments, Capacity, and Utilization

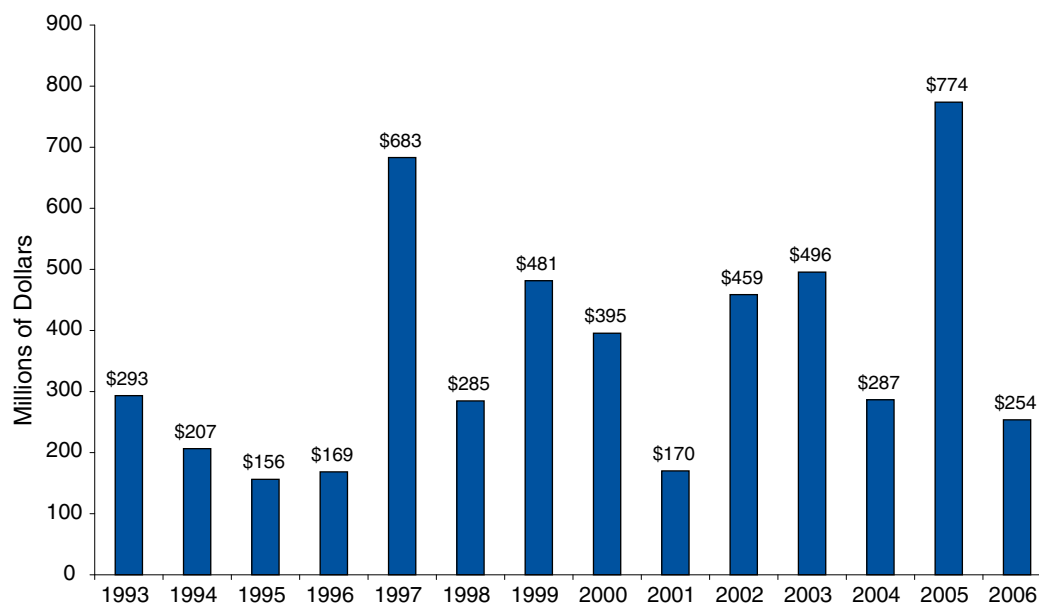
The Legislature's charge to MDH to conduct this study required MDH to provide information about what data would be required to effectively determine the need for new medical facilities or services. This section of the report provides information on the types of data currently available to analyze trends in medical facility investment and the need for additional capacity. It focuses in particular on hospital specialty services, ambulatory surgery centers, and diagnostic imaging centers, which have been the focal point of much of the recent public policy concern over medical facility investment.

### Investment in Medical Facilities

As noted earlier, health care providers are required to report to MDH on their major capital expenditures. These data have been used to analyze general trends in expenditures on medical facilities and equipment in Minnesota.<sup>42</sup> Figure 1 shows the trend in health care capital expenditures over time, and Table 1 shows the types of projects and services that have been reported. Although the data are useful for identifying general trends, the information is highly aggregated so that, in general, it cannot be used to identify expenditures by specific type of equipment or medical service.

Figure 1

#### Health Care Capital Expenditures in Minnesota, 1993 to 2006



Source: MDH, capital expenditure reports as of January 9, 2007. Totals for 2006 are preliminary

<sup>42</sup> See, for example, Minnesota Department of Health, Health Economics Program, "Health Care Capital Expenditures in Minnesota, 1993 to 2004," Issue Brief 2005-04, August 2005.

Table 1

## Types of Capital Spending Projects, 1993 to 2006

	Number of Projects
<b>General Infrastructure</b>	
Building, Renovation, or Non-Patient Physician Office Space	410
Computer, Laboratory, Phone, or Monitoring	228
160	
<b>Patient Care Services</b>	
Surgery	113
Cardiac Care	98
Emergency Care	65
Radiation Therapy	50
Intensive Care (ICU or NICU)	33
<b>Imaging*</b>	
MRI scanners	173
CT scanners	171
PET scanners	16
Other Imaging	132

Projects can be included in more than one category. MDH received a total of 1,020 capital expenditure reports between 1993 and 2006.

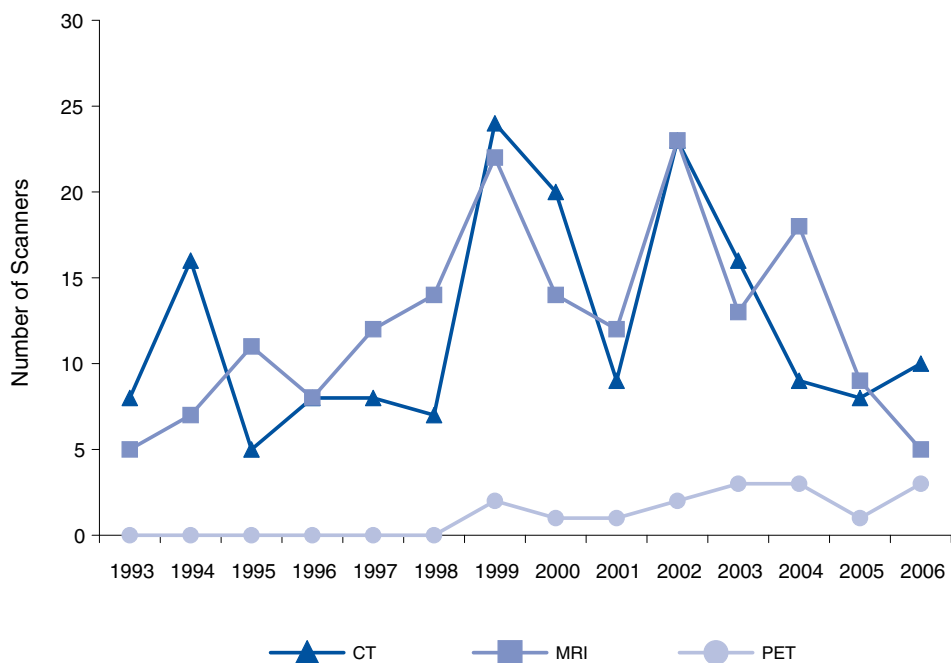
\*Includes both new and replacement equipment.

Source: MDH, capital expenditure reports as of January 9, 2007. Totals for 2006 are preliminary.

Data from capital expenditure reports show that there has been a substantial increase in the use and purchase of diagnostic imaging scanners such as MRI, CT, and PET scanners. This trend is illustrated in Figure 2.

Figure 2

## Annual Purchased CT, MRI, and PET Scanners, Minnesota, 1993 to 2006



Includes both new and replacement scanners.

Source: MDH, Capital Expenditure Reports as of January 9, 2007. Totals for 2006 are preliminary

## Hospital Utilization and Capacity

MDH collects data on many different measures of hospital use and capacity in Minnesota including what services are available, the number and type of beds, the number and type of patient days, the number and type of hospital admissions and discharges, and the number and type of outpatient registrations. The source for most of the MDH hospital data is the Health Care Cost Information System (HCCIS), which is also available to the public. Table 2 shows the period over which these facility data are available from HCCIS.

Table 2

### Available Data on Hospital Capacity and Utilization

	Years
<b>Bed Capacity</b>	
Licensed	1987-2005
Available	2001-2005
<b>Specialty Services</b>	
Cardiac	2004
Orthopedic	2004
Obstetrics	2004
Chemical Dependency	2004
Mental Health	2004
Rehabilitation	2004
Neurology	2004
General/Medical Surgical	2004
<b>Patient Days, Admissions and Outpatient Registrations</b>	
Total inpatient acute and non-acute care days and admissions	
Total Acute care	1987-2005
Medical/Surgical	2003-2005
ICU/CCU	2003-2005
Neonatal (excluding routine nursery)	1987-2005
Chemical Dependency	1987-2005
Rehabilitation	1987-2005
Mental Health	1987-2005
Other Acute Care	2003-2005
Specialty Care	
Cardiac Care	2003-2005
Orthopedic Care	2003-2005
Neurology Care	2003-2005
Total Non-Acute and Nursery Care	2003-2005
Swing Beds	2003-2005
Subacute/Transitional	2003-2005
Nursery/Births	1987-2005
Other Non-Acute	2003-2005
Total Outpatient Registrations	1987-2005
<b>Availability of Specific Services</b>	
<b>Surgery</b>	
Inpatient	1996-2005
Outpatient	1996-2005
Open Heart	1996-2005
Organ Transplant	1996-2005
<b>Mental Health/Chemical Dependency</b>	
Outpatient Psychiatric	1996-2005
Detoxification Services	1996-2005
<b>Other Services</b>	
Renal Dialysis	1996-2005
Cardiac Catheterization	1996-2005

Sources: MDH, Health Care Cost Information System and 2004 MDH Survey.

























Appendix Table 2

## Number of Hospitals Providing Specific Services by Region, 2005

	All Hospitals	Central	Metropolitan	Northeast	Northwest	South Central	Southeast	Southwest	West Central
<b>Number of Hospitals</b>	<b>136</b>	<b>20</b>	<b>26</b>	<b>17</b>	<b>13</b>	<b>15</b>	<b>12</b>	<b>24</b>	<b>9</b>
<b>Surgery</b>									
Inpatient Surgery	126	19	24	14	11	14	12	24	8
Outpatient Surgery	132	20	24	16	12	15	12	24	9
Open Heart Surgery	15	1	11	2	0	0	1	0	0
Organ Transplant	6	0	4	0	0	0	2	0	0
<b>Mental Health/Chemical Dependency</b>									
Outpatient Psychiatric	47	7	12	5	2	5	6	7	3
Detoxification Services	20	3	7	1	1	1	5	1	1
<b>Diagnostic Radiology</b>									
Computerized Tomography (CT)	131	20	23	16	13	14	12	24	9
Magnetic Resonance Imaging (MRI)	125	20	23	13	11	15	11	24	8
Positron Emission Tomography (PET)	8	0	3	2	0	1	1	0	1
Single Photon Emission Computerized Tomography (SPECT)	29	5	10	2	1	1	5	3	2
<b>Other Services</b>									
Renal Dialysis	33	1	15	2	1	2	5	5	2
Cardiac Catheterization	18	1	12	2	0	1	2	0	0

Source: MDH, Health Care Cost Information System

Appendix Table 3

## Hospital Special Care Bed Capacity by Region, 2004

	Central	Metropolitan	Northeast	Northwest	South Central	Southeast	Southwest	West Central	All Hospitals
<b>Total</b>	<b>1,111</b>	<b>5,891</b>	<b>1,122</b>	<b>447</b>	<b>560</b>	<b>1,688</b>	<b>640</b>	<b>376</b>	<b>11,835</b>
General Medical/Surgical	747	2,615	652	359	443	1,338	551	299	7,004
Cardiac	72	750	114	0	7	70	19	10	1,042
Psychiatric	56	693	96	24	43	33	22	14	981
Obstetrics	106	472	53	22	57	95	45	29	879
Orthopedic	36	465	77	0	0	0	0	0	578
Rehabilitation	33	220	63	32	0	57	3	14	422
Newborn	22	252	25	10	0	59	0	10	378
Neurology	22	204	36	0	0	20	0	0	282
Chemical Dependency	11	117	0	0	10	0	0	0	138
Pediatric Intensive Care	6	103	6	0	0	16	0	0	131
<b>Per 100,000 Population</b>									
<b>Total</b>	<b>164.0</b>	<b>212.6</b>	<b>347.7</b>	<b>225.6</b>	<b>195.7</b>	<b>352.1</b>	<b>283.4</b>	<b>204.1</b>	<b>230.0</b>
General Medical/Surgical	110.2	94.4	202.0	181.2	154.8	279.1	243.9	162.3	136.1
Cardiac	10.6	27.1	35.3	0.0	2.4	14.6	8.4	5.4	20.3
Psychiatric	8.3	25.0	29.7	12.1	15.0	6.9	9.7	7.6	19.1
Obstetrics	15.6	17.0	16.4	11.1	19.9	19.8	19.9	15.7	17.1
Orthopedic	5.3	16.8	23.9	0.0	0.0	0.0	0.0	0.0	11.2
Rehabilitation	4.9	7.9	19.5	16.2	0.0	11.9	1.3	7.6	8.2
Newborn	3.2	9.1	7.7	5.0	0.0	12.3	0.0	5.4	7.3
Neurology	3.2	7.4	11.2	0.0	0.0	4.2	0.0	0.0	5.5
Chemical Dependency	1.6	4.2	0.0	0.0	3.5	0.0	0.0	0.0	2.7
Pediatric Intensive Care	0.9	3.7	1.9	0.0	0.0	3.3	0.0	0.0	2.5

Source: MDH Survey, 2004





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