Higher Education

CHAPTER 7

In Chapter 2, we learned that Minnesota's spending per capita on higher education peaked in 1972. In contrast, Chapter 4 suggested that the fastest employment growth in Minnesota state and local governments between 1972 and 1992 occurred in higher education. This apparent contradiction was largely the result of substantial spending for higher education buildings in the late 1960s and early to mid-1970s. Capital costs, which were 35 percent of higher education expenditures in 1972, accounted for only 8 percent of higher education spending in 1992.

In this chapter, we focus on spending changes since 1978. This period of time was selected for two reasons. First, it enables us to focus on spending changes occurring after the building boom for higher education in Minnesota. Second, data for analyzing Minnesota spending trends in detail and making certain national comparisons were not generally available for years prior to 1978.

This chapter addresses the following questions:

- **What have been the trends in higher education spending?**
- **How has the financing of higher education changed?**
- **What factors are responsible for spending trends?**
- **How does Minnesota's spending on higher education compare with other states?**
- **What factors explain the difference between spending per capita in Minnesota and spending in other states?**

We first examine spending data from the Census Bureau and analyze that data using enrollment and other data published by Research Associates of Washington for the period 1978-92.[1] These data enable us to track the effects of growing enrollment, as well as increases in spending per student, on trends in spending per capita. In addition, we can look at how the shares of revenue from student tuition and public appropriations have changed over time. We also use data from the Higher Education Services Office to review trends in Minnesota through 1994. Second,

1 Research Associates of Washington,*State Profiles: Financing Public Higher Education, 1978 to 1994,* (Washington, D.C., 1994).

we examine in detail the factors which explain the growth in spending per student from 1978 to 1992 at the University of Minnesota and Minnesota's state universities, community colleges, and technical colleges. Finally, we compare higher education spending per capita in Minnesota with other states and identify the key factors which explain why Minnesota spends more per capita than the national average.

TRENDS

Overall Spending Trends

From 1978 to 1992, inflation-adjusted spending per capita on higher education increased 19 percent in Minnesota and 24 percent nationwide. Growth in spending per student was lower. Spending per student increased 8 percent in Minnesota and 18 percent nationally. As Table 7.1 indicates:

- **From 1978 to 1992, more than half of the growth in Minnesota's spending per capita on higher education was the result of increased enrollments.**

Higher education spending increased slower in Minnesota than throughout the nation.

Table 7.1: Higher Education Spending and Enrollment, Minnesota and the United States, 1978-92

	Minnesota	United States
Percentage Change in:		
Spending per Student	8%	18%
Enrollment per Capita	10	5
Spending per Capita[a]	19%	24%

Sources: U.S. Census Bureau and Research Associates of Washington.

[a]Spending was adjusted for inflation using the PGSL.

Higher education enrollment per capita rose 10 percent in Minnesota and 5 percent nationwide. Thus, less than one-fourth of the national growth in spending per capita was due to increased enrollments.

These results for spending by higher education institutions do not include financial aid. If financial aid is included, the results are somewhat similar. Spending per capita increased 21 percent in Minnesota and 24 percent nationally, while spending per student rose 10 percent in Minnesota and 18 percent nationwide. The spending growth in Minnesota is a little greater if financial aid is included, because financial aid in Minnesota grew faster than other higher education spending.

Financial aid spending per capita rose 55 percent in Minnesota and 20 percent nationally during this period.[2]

It should be noted, however, that these results may be sensitive to the time period examined and the price deflator we used. Using data from the Higher Education Services Office (HESO), we also examined Minnesota higher education spending from 1978 to 1994. During this period, instructional expenditures per capita rose 14 percent, while spending per student increased 12 percent and enrollment per capita grew only 1 percent. By examining two additional years, we change the conclusion about how much of the growth was due to increases in enrollment. For the period 1978-94, less than 10 percent of the growth in spending per capita was due to enrollment increases, while more than half the spending growth from 1978 to 1992 was the result of enrollment growth. This reversal occurred because higher education enrollment declined about 5 percent over the last two years while spending increased slightly in constant dollars.[3]

The results are also sensitive to the deflator used to adjust for inflation. Consistent with the remainder of this report, the main results were calculated using the price deflator for all state and local government services. It could be argued, however, that higher education spending has experienced higher rates of inflation during the time period examined because instructional salaries have risen faster nationwide than other types of salaries. Consequently, we also used the Higher Education Price Index (HEPI) produced by Research Associates of Washington to deflate higher education expenditures. Using the HEPI, spending per capita increased only 6 percent in Minnesota and 11 percent nationally from 1978 to 1992. Spending per student declined 3 percent in Minnesota, while increasing 6 percent nationwide. All of the growth from 1978 to 1992 in Minnesota's spending per capita can be attributed to enrollment growth, if the HEPI is used to adjust for inflation.

Overall Financing Trends

Tuition has grown significantly.

Both in Minnesota and other states, student tuition is financing an increasing share of the costs of instruction at higher education institutions. Table 7.2 shows that:

- **State appropriations per student for instructional purposes declined 6 percent in constant dollars from 1978 to 1992, while net tuition revenue per student rose 79 percent in Minnesota.**

On a per capita basis, state and local appropriations increased 3 percent and net tuition revenue grew 96 percent in constant dollars.[4] Nationally, appropriations grew

2 Trends in financial aid spending were calculated using the Census Bureau's category of "educational assistance and subsidies." This category does not include federal Pell grants and college work-study programs and may include some financial aid to private and parochial schools providing elementary-secondary education.

3 The difference in conclusions does not result from the use of the HESO data which, unlike the Census data, does not include non-instructional operating expenditures and capital expenditures. For the period 1978-92, the HESO data also indicate that more than half of the growth in spending per capita was due to enrollment growth.

4 Net tuition is tuition revenues less state appropriated financial aid and the amount of tuition waived by higher education institutions.

Table 7.2: Higher Education Appropriations and Net Tuition, 1978-92

	Minnesota	United States
Percentage Change in:		
State and Local Appropriations per Student	(-6)%	3%
Net Tuition Revenue per Student	79	57
Appropriations and Tuition per Student	7%	13%
State and Local Appropriations per Capita	3%	8%
Net Tuition Revenue per Capita	96	65
Appropriations and Tuition per Capita	17%	19%

Sources: Research Associates of Washington and U.S. Census Bureau.

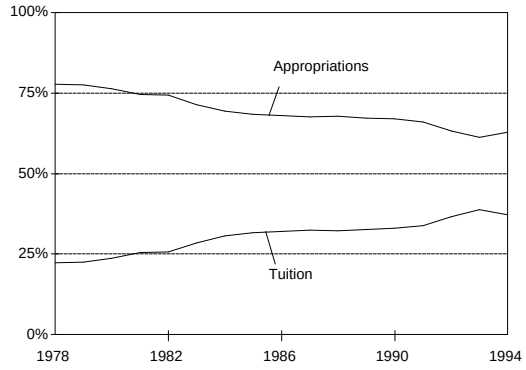
a little faster than in Minnesota and tuition revenue grew slower. Appropriations per student increased 3 percent nationally, and tuition per student rose 57 percent. Appropriations and tuition revenue on a per capita basis were up 8 percent and 65 percent respectively.[5]

Tuition has financed an increasing share of higher education spending.

There has been significant growth in Minnesota in the share of instructional spending financed by tuition. As Figure 7.1 shows:

- **Tuition financed 37 percent of instructional spending in 1994, compared with 22 percent in 1978.**

Figure 7.1: Share of Instructional Expenditures Financed by State Appropriations and Tuition Revenue, Minnesota, 1978-94



Source: Higher Education Services Office.

At the University of Minnesota, the percentage of instructional spending financed by tuition has increased from 28 to 41 percent. Tuition's share at state universities rose from 23 to 38 percent, while increasing from 24 to 38 percent at Minnesota's community colleges. The largest increase occurred at the technical colleges, which once charged no tuition to state residents under the age of 21. The share of instructional spending financed by tuition increased from 9 to 30 percent at the technical colleges.

This increased reliance on tuition to finance higher education spending has, for the most part, been the direct result of state policy set by the Legislature and various

5 The growth rates for combined appropriation and tuition revenues differ somewhat from those in Table 7.1 because the figures in Table 7.2 do not include capital costs and current operating costs for certain non-instructional purposes.

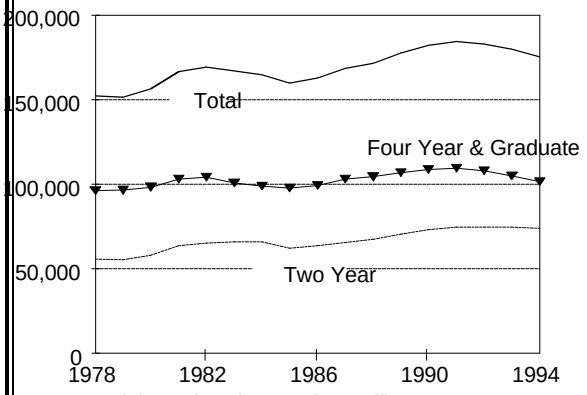
administrations. In a 1994 report, we examined the growth in tuition in greater detail. We found that about 85 to 90 percent of the tuition growth from 1978 to 1992 was due to either inflation or the increased reliance on tuition to fund instructional activities.[6]

Spending Trends by Type of Institution

As we noted earlier, spending growth can occur because enrollments are increasing or spending per student grows. Figure 7.2 shows how enrollment in Minnesota's higher education institutions changed between 1978 and 1994. Total enrollment increased 15 percent, while instructional expenditures per student increased 12 percent. Statewide, instructional expenditures increased 30 percent in constant dollars.

Higher education enrollment has been growing until recently.

Figure 7.2: Full-Year Equivalent Enrollment in Minnesota's Public Colleges and Universities, 1978-94



Source: Higher Education Services Office.

The various types of higher education institutions were affected differently. At the University of Minnesota, enrollment fell 10 percent, while instructional spending per student rose 24 percent. Total instructional spending grew 12 percent. As Table 7.3 shows, other institutions experienced enrollment growth and slower rates of growth in spending per student. However, because of enrollment growth,

Table 7.3: Trends in Enrollment and Instructional Expenditures by Type of Institution, 1978-94

	Percentage Change in:		
	Enrollment	Instructional Expenditures Per Student[a]	Total Instructional Expenditures
University of Minnesota	(-10)%	24%	12%
State Universities	28	17	49
Community Colleges	72	13	94
Technical Colleges	10	8	19
Total	15%	12%	30%

Source: Higher Education Services Office.

[a]Expenditures were adjusted for inflation using the PGSL.

6 Office of the Legislative Auditor, *Higher Education Tuition and State Grants*, February 1994.

total instructional spending rose more at these institutions than at the University of Minnesota. At the state universities, enrollment grew 28 percent, spending per student was up 17 percent, and total instructional spending increased 49 percent. Enrollment grew 10 percent at the technical colleges, while spending per student and total instructional spending increased 8 and 19 percent respectively. The community colleges experienced the greatest enrollment growth (72 percent) and total instructional spending growth (94 percent). Instructional spending per student increased 13 percent at the state's community colleges.

In the remainder of this section, we examine in greater detail the changes in instructional and non-instructional spending at the various types of institutions. Our focus is on those types or objects of expenditure which explain the real changes in spending between 1978 and 1992. All expenditures (or revenues) were adjusted using the PGSL and are expressed in 1992 dollars.

University of Minnesota

Expenditures per student increased at the University of Minnesota from $8,886 in 1978 to $11,121 in 1992, or about 25 percent. Table 7.4 shows that:

- **About 57 percent of the growth in spending per student came from non-instructional activities, particularly research and financial aid.**

Instructional activities accounted for 43 percent of the growth. Both instructional and non-instructional activities in Table 7.4 include a share of overhead costs such as physical plant, administration, academic support, student services, and libraries.

Instructional, research, and financial aid spending increased at the University of Minnesota.

Table 7.4: State-Funded Expenditures at the University of Minnesota, 1978-92

	Expenditures per Student[a]		
	1978	1992	Percentage of Overall Growth
Instruction	$6,142	$7,095	43%
Research	1,381	2,225	38
Financial Aid	89	465	17
Continuing Education and Extension[b]	249	420	8
Public Service and Other	626	530	(-4)
University Hospital	378	317	(-3)
Support Services	23	68	2
Non-Instruction	$2,744	$4,026	57%
TOTAL	$8,886	$11,121	100%

Source: University of Minnesota.

[a]Expenditures are in constant 1992 dollars, adjusted using the PGSL. Expenditures for each activity include an appropriate share of overhead costs, as well as the direct costs of the activity.

[b]Includes non-credit continuing education only.

If these overhead costs are separately examined, they would account for about 20 percent of the real growth in spending per student. Direct instructional costs accounted for 42 percent of the growth, while direct non-instructional costs constituted 38 percent of the growth in spending per student.

Table 7.5 shows that total revenues from state appropriations and tuition grew from $515 million in 1978 to $603 million in 1992, or 17 percent. Tuition and state appropriations for non-instructional purposes were significant sources of additional revenue for the University of Minnesota. In contrast, state appropriations for instructional activities declined 14 percent in constant dollars from $254 million to $219 million.

Table 7.5: State Appropriations and Tuition Revenue for the University of Minnesota, 1978-92

	Revenues (in 1992 dollars)		Percentage of Overall Growth
	1978	1992	
Tuition Revenue	$102,500,000	$166,000,000	72%
State Appropriations for Instruction	253,400,000	218,700,000	(-39)
Revenues for Instruction	$355,800,000	$384,700,000	33%
State Appropriations for Non-Instruction	159,000,000	218,300,000	67
Total	$514,800,000	$603,000,000	100%

Source: University of Minnesota.

State Universities

From 1978 to 1992, enrollment at Minnesota's state universities grew 40 percent. As a result, the state universities were probably able to achieve some economies of scale by more fully utilizing previously underutilized classrooms and other facilities. In fact, the number of staff employed by the state university system per 1,000 students declined 18 percent.

In addition, spending per student declined 2 percent. As Table 7.6 shows, spending per student declined largely because spending per student on physical plant operations declined 48 percent. Student services and institutional support had substantial increases (36 percent and 22 percent respectively), while instructional and department research expenditures per student rose only 2 percent.

As Table 7.7 indicates:

- **Fringe benefits experienced the most significant growth in spending per student at Minnesota's state universities.**

Table 7.6: State University Expenditures by Type of Expenditure, 1978-92

	Expenditures per Student[a]		
	1978	1992	Percentage Change
Instruction and Department Research	$2,699	$2,761	2%
Project Research	19	16	(-16)
Public Service	46	25	(-46)
Academic Support	588	526	(-11)
Student Services	274	373	36
Institutional Support	728	885	22
Physical Plant	696	364	(-48)
Total	$5,050	$4,950	(-2)%

Source: State University System.

[a]In 1992 dollars.

Fringe benefit costs grew significantly at the state universities and community colleges.

Table 7.7: State University Expenditures by Object of Expenditure, 1978-92

	Expenditures per Student[a]		
	1978	1992	Percentage Change
Salaries	$3,428	$3,185	(-7)%
Fringe Benefits	551	896	63
Non-Personnel	1,071	869	(-19)
Total	$5,050	$4,950	(-2)%

Source: State University System.

[a]In 1992 dollars.

From 1978 to 1992, fringe benefits per student increased 63 percent, while salaries per student declined 7 percent. Non-personnel expenditures per student fell 19 percent.

The decline in salary expenditures per student does not mean that salaries per staff member decreased. Average salaries, in fact, increased 14 percent after inflation, while average fringe benefits per full-time equivalent staff member increased 100 percent. The drop in salary expenditures per student resulted because the number of staff per student declined 18 percent.

Community Colleges

Community colleges may also have been able to take advantage of some economies of scale, as their enrollment grew 66 percent from 1978 to 1992. Staffing per

1,000 students declined 8 percent, and spending per student rose only 4 percent. Table 7.8 shows that:

- **The most significant category of growth was institutional support, which increased 63 percent.**

Table 7.8: Community College Expenditures by Type of Expenditure, 1978-92

	Expenditures per Student[a]		
	1978	1992	Percentage Change
Instruction	$2,025	$2,020	0%
Community Education	125	137	10
Academic Support	478	535	12
Student Support	782	616	(-21)
Institutional Support[b]	536	874	63
Plant Operations	503	456	(-9)
Total	$4,449	$4,638	4%

Source: Community College System.

[a]In 1992 dollars.

[b]Expenditures for 1992 include about $70 per student in early retirement incentives and severance pay and $21 per student in unemployment compensation and workers' compensation, which should be distributed across all affected types of expenditures.

This category accounted for all of the growth in spending per student.[7] Instructional spending per student declined slightly.

Table 7.9 examines community college expenditures by object of expenditure. From this perspective:

- **Increased spending on fringe benefits accounted for all of the growth in community college spending per student.**

Fringe benefit expenditures per student rose 39 percent from 1978 to 1992. Salary expenditures per student increased only 1 percent, while non-personnel spending per student declined 6 percent.

Average salaries per full-time equivalent staff member increased 10 percent after inflation. The 8 percent decline in staff-student ratios resulted in a 1 percent increase in salary expenditures per student. Also, fringe benefits per staff member increased 51 percent from 1978 to 1992.

7 Institutional support includes top management, institutional services, marketing and public relations, and development personnel.

Table 7.9: Community College Expenditures by Object of Expenditure, 1978-92

	Expenditures per Student[a]		
	1978	1992	Percentage Change
Salaries	$2,873	$2,913	1%
Fringe Benefits	536	746	39
Non-Personnel	1,040	979	(-6)
Total	$4,449	$4,638	4%

Source: Community College System.

[a]In 1992 dollars.

Technical Colleges

Comparable expenditure data are not available on technical colleges for the entire period 1978-92. However, most of the real growth in spending per student during that period occurred from 1985 to 1992. As a result, we examined spending at the technical colleges during that latter period.

Non-instructional spending accounted for most of the growth in technical college spending.

Table 7.10 shows that:

- **Most of the real growth in technical college spending per student from 1985 to 1992 was due to non-instructional activities.**

Table 7.10: Technical College Expenditures by Type of Expenditure, 1985-92

	Net Expenditures per Student[a]		
	1985	1992	Percentage Change
Continuous Instruction	$2,944	$2,820	(-4)%
Extension Instruction	230	378	64
Management Programs	78	180	131
Media/Library	87	104	20
Farm-Based Management Programs	62	69	11
Research and Other	48	5	(-90)
Instruction	$3,448	$3,555	3%
Student Support	544	661	22
Institutional Support	764	966	26
Fixed Costs	61	132	116
Plant Operations and Repairs	680	663	(-2)
Non-Instruction	$2,048	$2,423	18%
Total	$5,496	$5,978	9%

Source: Technical College System.

[a]In 1992 dollars.

Non-instructional spending per student increased 18 percent, while instructional spending rose only 3 percent. The overall increase in spending per student was 9 percent. Non-instructional activities showing the largest amount of growth include institutional support, student support, and fixed costs.

Table 7.11 shows the growth in technical college expenditures per student by object of expenditure. Salary expenditures per student grew only 8 percent but accounted over half of the overall real growth in spending per student. Fringe benefit expenditures per student increased 22 percent and accounted for about 30 percent of the overall growth.

Table 7.11: Technical College Expenditures by Object of Expenditure, 1985-92

	Expenditures per Student[a]		
	1985	1992	Percentage Change
Salaries	$3,331	$3,614	8%
Fringe Benefits	665	813	22
Travel	59	84	42
Purchased Services	605	756	25
Other Expenses	53	86	62
Less: Other Revenue	(142)	(303)	113
Net Staff Budget	$4,570	$5,050	11%
Net Supplies Budget	459	414	(-10)
Net Equipment Budget	465	514	11
Total	$5,496	$5,978	9%

Source: Technical College System.

[a]In 1992 dollars.

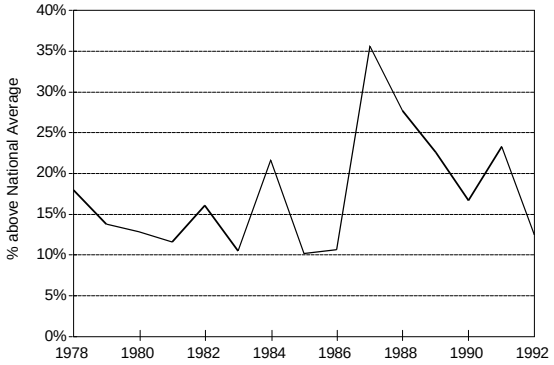
The number of staff per 1,000 students increased 5 percent, primarily due to a 21 percent increase in non-licensed staff. Average salaries per staff member rose 3 percent after inflation, while average fringe benefits increased 15 percent.

NATIONAL COMPARISONS

In 1992, Minnesota spent $372 per capita on higher education, or 12 percent more than the national average of $331.[8] Minnesota has also spent more on higher education in each of the years we examined from 1978 to 1992. Minnesota's spending per capita has ranged from 10 to 36 percent above the national average over this period (See Figure 7.3).

8 If financial aid is included, Minnesota spending on higher education was 15 percent above the national average.

Figure 7.3: Percentage Difference Between Minnesota Higher Education Spending per Capita and the National Average, 1978-92



Source: U.S. Census Bureau.

As Table 7.12 demonstrates:

- **Minnesota's above average spending on higher education is largely due to its larger enrollments in higher education.**

In 1992, Minnesota's higher education enrollment per capita was 20 percent above the national average, while its spending per student was about 6 percent below average. Larger enrollment relative to population also explains most of the higher than average spending in other years since 1978. Between 1978 and 1992, Minnesota's enrollment per capita has been between 15 and 28 percent greater than the national average. Spending per student has ranged from 11 percent below to 6 percent above the national average.[9]

Minnesota spends more than average on higher education because it has more students.

Table 7.12: Higher Education Spending and Enrollment in Minnesota Compared with National Averages, 1992

	Percentage Difference From National Average
Spending per Student	(-6)%
Enrollment per Capita	20
Spending per Capita	12%

Sources: U.S. Census Bureau and Research Associates of Washington.

Minnesota's greater than average enrollments can be further analyzed. We found that:

- **Minnesota's above average higher education enrollments and spending are largely due to the higher than average number of high school graduates per capita.**

9 Data from the Research Associates of Washington suggest that instructional spending per student may be larger relative to the national average than indicated by Census data on overall spending. These data indicate that, for Minnesota, instructional revenues per student were 6 percent above the national average in 1992. This finding suggests that capital and non-instructional spending per student was lower than average.

Table 7.13 indicates that Minnesota produced 15 percent more high school graduates per capita than the national average in 1992. The larger number of graduates explained about three-fourths of the difference in higher education enrollments per capita. The remainder was explained by a greater participation ratio in higher education. Enrollment per high school graduate was 4 percent above the national average.[10]

Minnesota produces more high school graduates than the national average and has a greater participation rate in higher education.

Table 7.13: High School Graduates per Capita and Higher Education Participation Ratio in Minnesota Compared with National Averages, 1992

	Percentage Difference From National Average
High School Graduates per Capita	15%
Participation Ratio[a]	4
Higher Education Enrollment per Capita	20%

Sources: Research Associates of Washington and the U.S. Census Bureau.

[a]Higher education enrollment per high school graduate.

The above average number of high school graduates in Minnesota is the result of lower than average dropout rates and a higher than average share of school-age population for elementary-secondary education. Secondary education dropout rates have historically been lower in Minnesota than in other states. The number of school age children per capita in Minnesota was 7 percent above the national average in 1992.

SUMMARY

Higher education spending per capita grew 19 percent in Minnesota from 1978 to 1992. Roughly half of that growth was due to increased enrollment, although that conclusion appears sensitive to the time period we chose to examine. Tuition is financing an increasing share of spending in higher education. Net tuition revenue per student rose 79 percent in Minnesota, while state appropriations for instructional purposes declined 6 percent in constant dollars.

The national trends are similar, but other states appear to have increased spending more. Spending per capita grew 24 percent nationally between 1978 and 1992. The rate of increase in spending per student was 18 percent, compared with 8 percent in Minnesota. Tuition growth was also a little slower nationally (57 percent), while state and local appropriations per student increased 3 percent.

10 According to Research Associates of Washington, Minnesota has produced between 11 and 18 percent more high school graduates per capita than the national average during the years from 1978 to 1994.

In Minnesota, the factors affecting spending vary somewhat by type of institution. For example, there has been considerable variation in enrollment growth since 1978. Enrollment increased significantly at community colleges and state universities, while declining at the University of Minnesota.

The factors affecting spending per student vary as well. At the University of Minnesota, more than half of the real growth in spending per student between 1978 and 1992 was due to increases in non-instructional spending on activities such as research and financial aid. Fringe benefits, as well as institutional support and student services, showed substantial growth at the state universities. Fringe benefits and institutional support also grew fast at Minnesota's community colleges. Meanwhile, spending per student on plant operations declined at both the state universities and community colleges. Non-instructional expenditures also accounted for most of the growth in spending per student at Minnesota's technical colleges from 1985 to 1992.

Minnesota has generally spent more per capita than other states on higher education. In 1992, Minnesota's spending was 12 percent above the national average. However, most of the difference in spending has resulted from Minnesota's higher than average number of high school graduates per capita and higher participation rates in higher education. The higher number of high school graduates is due to Minnesota's lower than average dropout rates and a higher than average number of school-age children per capita.