

The Economic Impact of Minnesota State Colleges and Universities

*Updated statewide estimates and local estimates
for universities*

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Contents

Executive Summary	1
Introduction.....	3
Statewide economic impact of system operations	4
Direct spending	4
Induced spending	5
Enhanced productivity	5
Total statewide impact from operations.....	7
Comparison to state spending	8
Impact of past and planned capital spending	10
Past capital spending.....	10
Planned capital spending.....	11
Regional impact of four-year universities.....	13
Appendix.....	15
Local student spending	16
Visitor spending	20
Annual earnings and state tax receipts.....	21

Figures

1. Annual statewide economic impact of system operations (in 2005\$ per year)	7
2. Comparison of economic impact of system operations to gross and net state appropriations (fiscal year 2005)	8
3. Estimated economic impact of past system capital spending fiscal years 2002-2005).....	11
4. Estimated economic impact of planned system capital spending (fiscal years 2006-2007)	11
5. Estimated annual regional economic impact of four-year state universities (in 2005 dollars).....	14

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Executive Summary

This report presents estimates of the economic impact of the Minnesota State Colleges and Universities in several forms. These economic impact estimates update and improve on previous calculations made by the senior author of this paper while working as a private consultant.

Statewide impact of system operations

- The total statewide economic impact of Minnesota State Colleges and Universities in 2005 is estimated as approximately \$3.5 billion. This figure includes both the economic activity generated by the operations of the schools themselves and enhanced productivity of the state's workforce due to training at system colleges.
- The enhanced productivity of Minnesota workers who received degrees or training at Minnesota State Colleges and Universities contributes an estimated \$2.4 billion to the state's economy each year.
- When compared to the net state spending on the system, the annual economic benefits returned to the state amount to an estimated \$10.87 for every dollar spent.

Impact of capital expenditures

- During the last four years, construction spending on system campuses has generated an average of \$243 million of economic activity and the equivalent of over 2,500 full-time jobs per year in Minnesota.
- The system capital budget of \$191.4 million (approved during the 2006 legislative session) will generate an estimated \$430 million in statewide economic activity over the next two years.
- The full capital budget will generate approximately 4,300 person-years of employment, the equivalent of 2,150 full-time jobs over that period.

Local impacts of universities

- The four-year universities in the system have sizable impacts on the level of economic activity in the communities in which they are located. Those impacts are generated by the spending of the institution, its staff and students, and the visitors who come to the area because of the university. For 2005, the estimated impacts of the universities are:

■ Bemidji State University	\$105.0 million
■ Metropolitan State University	\$154.1 million
■ Minnesota State University, Mankato	\$307.4 million
■ Minnesota State University, Moorhead	\$156.3 million
■ Southwest Minnesota State University	\$109.3 million
■ St. Cloud State University	\$369.4 million
■ Winona State University	\$194.4 million

- Unlike the statewide figures for the entire system, these estimates of local impact do not include any estimate of the effect of the university on the local labor force, and therefore understate the net value of the institutions to the areas.
- In addition, these estimates use quite conservative assumptions about student and visitor spending and may, therefore, further understate the overall local economic impact of the universities.

Introduction

This is the fourth in a series of economic analyses of the impact of the Minnesota State Colleges and Universities system dating back to 1998.¹ These reports employ a common methodology to provide estimates of the impact of the system on economic activity inside the state of Minnesota. Such estimates are deemed useful in developing perspective on the contribution that the system makes to the Minnesota economy. This study has three objectives:

- To provide updated estimates of the statewide economic impact of the operations of the system based on the most recent financial and enrollment data.
- To estimate the impact on economic activity that has been generated by construction spending on system capital projects in recent years and to project the prospective impact of planned capital spending.
- To provide updated estimates of the regional economic impact of the seven four-year universities in the system using consistent methods and assumptions.

The three main sections of this report deal with these three topics in order. To improve readability some of the specific details of the underlying calculations have been moved to an appendix.

¹ The first three reports were written by the principal author of this report when he worked at Anton, Lubov & Associates, Inc. See reports by the same title dated November 1998, August 2002, and August 2003.

Statewide economic impact of system operations

The estimated annual impact of the operations of the Minnesota State Colleges and Universities to economic activity in the state of Minnesota consists of three elements: direct spending by the colleges and universities, additional spending induced by those expenditures, and added productivity of the state's workforce due to the contributions of the system's graduates. Each will be discussed briefly.

Direct spending

The first element of economic impact is direct spending by the institutions and their employees. These dollars are injected directly into the Minnesota economy through spending on goods and services within the state. This injection of funds to the state from college and university operations can be broken down into three components that were estimated separately and then added.

Spending by faculty and staff is the largest component of direct spending. In fiscal year 2005, the system recognized payroll costs of approximately \$954 million dollars. Not all of that amount was received as cash by employees and hence adjustments needed to be made to arrive at the estimated amount spent by employees on goods and services in Minnesota. Some of those dollars were paid as contributions to pension funds, some money was withheld as taxes, and some was spent outside of Minnesota. In addition, in line with past studies, we counted only the non-housing spending of faculty and staff. When these various adjustments were made, the final estimate of in-state spending out of system payrolls was \$387.4 million.

Purchases of services comprise the second element of direct spending by system institutions. This spending includes the purchase of local utility services such as energy, sewer, and water. It also includes certain kinds of contract services provided by local vendors. In fiscal year 2005, these expenses totaled just over \$157.2 million. A small adjustment was made for cross-border spending. Thus, total in-state spending on services was estimated as \$155.2 million.

Purchases of supplies represent the balance of direct injections by the colleges and universities into the state's economy. Not all of the supplies purchased by the system come from in-state vendors, so an adjustment was made to account for out-of-state purchases. In fiscal year 2005, the total expenditure on supplies was \$77.6 million. Based on our previous studies, roughly 87 percent of supplies were estimated as

purchased in Minnesota. This resulted in a figure of \$67.5 million as the estimate of in-state spending on supplies.

Taken together, these three components produced total direct spending in Minnesota of \$610.0 million in fiscal 2005. This is the estimated amount of money spent on goods and services in Minnesota by the system and its employees.

Induced spending

The second element of the economic impact is the induced spending that takes place in the state as result of the system's direct spending. This quantity reflects that when the system or its employees spend money in the state, there is a ripple effect of spending by other people and entities. When employees purchase groceries or goods, businesses in the state have higher sales and have higher profits or pay more in salaries to additional workers. Likewise, when a college buys supplies or services, its vendors have higher sales and increased profits or increased payrolls. Then the owners and/or the workers at those businesses purchase additional goods and services with their added income. The additional sales from this second round of spending bring forward a third round of spending and so on. Since some income is saved or diverted, each successive round of spending is smaller than the last, but the total spending continues to grow. The sum of these successive rounds of spending is finite. This additional spending from successive rounds is termed *induced spending*.

Economists summarize the effects of succeeding rounds of spending in the concept of a multiplier. A spending multiplier is defined as the ratio of total spending generated by an initial expenditure to the value of that first round of spending. For this study, a conservative multiplier of 1.8 was used. Thus, it is estimated that the additional spending induced by the direct spending by the system adds roughly 80 cents for every dollar of direct expenditure. So the amount of induced spending in these estimates is \$488.1 million for fiscal year 2005.

Enhanced productivity

The enhanced productivity of the Minnesota workforce generated by the system is the third element of economic impact estimated here. This is the largest and most profound economic effect that the system has on the state's economy. Through training its students, the system enhances the productivity of both public and private enterprises in Minnesota. In both sectors, these former students do not make just a one-time addition to the state's economy; they continue to contribute throughout their working lives.

Since performing a direct measurement of the contribution of system graduates to Minnesota businesses and governments is not feasible, we chose to estimate this concept indirectly by estimating the additional earnings of graduates as a result of their training. This estimate was constructed in three steps.

First, the numbers of graduates from four-year colleges and two-year colleges were estimated using historical graduation data, the percentages of graduates who stay in the state, and assumptions about working lives and labor force participation. Second, data on earnings by educational attainment were used to estimate the additional wages earned by the different groups of graduates. The numbers of graduates were multiplied by their additional earnings to get the added earnings for the entire group.

However, an additional step was needed to avoid overstating the impact of these workers on the labor force. The first two steps would be all that is needed if it were known that 100 percent of system graduates working in Minnesota would not have received equivalent training in the absence of the state college and university system. That clearly overstates the case because many of them would have gone to other colleges or might have received private technical training if system institutions were not available. On the other hand, it is reasonable to assume that a good number of those graduates might not have been able to attend college or technical school if the state were not covered as it is with institutions that offer quality education and training at relatively affordable tuition rates. Therefore, the total contribution figure was multiplied by 40 percent, under the assumption that somewhat less than half of those workers would not have received similar training in the absence of the system.

Carrying out the calculations summarized above, we estimate that the contribution of the system through greater productivity of Minnesota workers amounted to slightly over \$2.4 billion in fiscal year 2005. This is the estimated amount of additional economic production from Minnesota workers who received training that they would not have received if the state colleges and universities had not existed.

Total statewide impact from operations

The three categories of economic impact are added together to produce an estimate of statewide economic impact from the operations of the state college and university system. Based on data for fiscal year 2005, we estimate that the total impact of system operations on the state of Minnesota was slightly more than \$3.5 billion dollars. The results of those calculations are summarized in Table 1 below.

1. Annual statewide economic impact of system operations (in 2005\$ per year)	
Direct spending	
▪ Spending by faculty and staff	\$387.4 million
▪ Purchased services	\$155.2 million
▪ Purchased supplies	<u>\$ 67.5 million</u>
	\$610.0 million
Induced spending	
▪ Additional activity	\$488.1 million
Enhanced productivity	<u>\$2,481.3 million</u>
TOTAL IMPACT	\$3,516.3 million

Source: Wilder Research calculations

Note: Certain numbers may appear not to add due to rounding

This estimated \$3.5 billion is 13.5 percent higher than the estimate produced in 2003 on the basis of data for fiscal year 2002. Direct spending and induced spending increased in those three years by 7.2 percent, roughly in line with the rate of national inflation. The majority of the increase in estimated impact was generated by a rise in the estimated value of increased productivity. That quantity rose by just over \$400 million, or roughly 19 percent, in the three years since the previous study.

Comparison to state spending

Additional perspective can be gained by comparing this benefit to the state with Minnesota's actual spending of tax dollars to support the state college and university system. Such a comparison would show the dollars of economic benefit the state receives for every dollar the state invests in the system. A first approach might be to compare total impact to gross state spending. A more complete and accurate approach is to divide total impact by the net state appropriation.

The *gross state appropriation* is calculated by adding the operating funds allocated to the system in the state's fiscal year 2005 budget to the estimated amount of debt service paid by the state for past system capital projects. The resulting total was \$614.6 million for fiscal 2005.

The *net state appropriation* is calculated by starting with the gross state appropriation. Then the number is reduced by subtracting the estimated state income taxes and sales taxes paid by system employees and the additional income taxes and sales taxes paid by system graduates as a result of their higher earnings.² When these adjustments are made, the net state spending on the system for fiscal year 2005 is estimated to be \$323.5 million.

2. Comparison of economic impact of system operations to net state appropriations (fiscal year 2005)

Estimated economic impact	\$3.516 billion
Estimated gross state appropriation	\$614.6 million
Estimated additional taxes collected	<u>- \$291.5 million</u>
Estimated net state appropriation	\$323.5 million
Ratio: economic impact per dollar of net spending	\$10.87

Source: Wilder Research calculations

As Table 2 shows, the estimated annual benefits generated by the system amount to an estimated *\$10.87 for every dollar of net state spending* on the college system. This figure encompasses both the multiplier effects of spending by the institutions and the enhanced production of the Minnesota workforce generated by the system's education and training

² See the Appendix to this report for details on the calculation of tax receipts from the added wages of system graduates.

as benefits. And it recognizes that the added taxes paid by system employees and those system graduates who would not have received their training without the system should be netted against the state's appropriation to arrive at the true net cost of the college and university system.³

It is clear that the economic benefits generated by the system are a large multiple of what the state spends on the system annually. In that sense, the state colleges and universities offer the state a sizable return on its investment. And that return continues year after year as the state continues to enjoy the comparative advantage of a well-educated, highly-skilled workforce.

³ If one were to neglect these taxes and compare the economic impact of the college system to gross spending by the state, the amount is still a healthy \$5.72 for each dollar of gross state spending.

Impact of past and planned capital spending

Just as system operations contribute to economic activity in Minnesota, construction activity on the state college and university campuses also adds to the state's economy. When the system makes capital improvements to its facilities, the spending on construction and renovation also increases economic activity in the state. However, unlike the impact of ongoing operations, the effect of capital spending projects is a one-time effect that lasts only during the period of construction or renovation. Nevertheless, the effect can be quite large because the dollar amounts involved can be substantial and because construction typically takes place over a period of months, sometimes years.

To estimate the economic impact of construction activity on the state's economy, we use a method similar to that used to estimate the impact of system operations. Direct spending is scaled up through the use of a multiplier. In this case, there is an especially appropriate multiplier. We used the multiplier that has been estimated for construction spending in Minnesota by the Bureau of Economic Analysis of the U.S. Department of Commerce. The bureau publishes a Regional Input-Output Modeling System (RIMS II) that includes a multiplier for new construction of 2.25. The RIMS II system also includes employment multipliers that show the direct and induced employment effects of spending on construction. Thus, it is also possible to estimate how much additional employment has been generated by past capital spending and how much employment will be generated in Minnesota by planned capital projects.

Past capital spending

Table 3 presents estimates of the economic impact of capital improvements funded during the last two biennia. As the table shows, the impact on economic activity and employment has been substantial. If the figures are averaged over this four-year period, we estimate that system capital projects have generated an average of almost \$243 million per year in economic activity and have generated the equivalent of over 2,500 full-time jobs each year.⁴ This represents a substantial boost to the state's economy. Moreover, much of that spending occurred during a period when job overall job growth in the state was modest or when aggregate employment was actually contracting. Thus the added activity and added jobs were especially welcome.

⁴ To the extent that the appropriation from a biennium is spent over a longer period than two years, this average may overstate the annual impact, but we believe any such overstatement is modest.

3. Estimated economic impact of past system capital spending (fiscal years 2002-2005)

	2002/2003 biennium	2004/2005 biennium	Annual Average
Total Construction Spending	\$218.6 million	\$213.6 million	
X Construction multiplier	<u>2.2478</u>	<u>2.2478</u>	
Total economic activity	\$491.4 million	\$480.1 million	\$242.9 million
Total employment (in person-years)	5,362	4,934	2,574

Source: Wilder Research calculations; RIMS II multipliers for state of Minnesota.

Planned capital spending

Future capital projects that are planned for system institutions can be expected to produce similar increases in economic activity and additional job growth during upcoming years. In the 2006 legislative session, lawmakers approved bonding for \$191.4 million of new capital improvements at the state college and university campuses. Table 4 shows the projected impact of that spending.

4. Estimated economic impact of planned system capital spending (fiscal years 2006-2007)

	2006/2007 biennium
Total Construction Spending	\$191.4 million
X Construction multiplier	<u>2.2478</u>
Total economic activity	\$430.2 million
Total employment (in person-years)	4,309

Sources: Wilder Research calculations; RIMS II multipliers for state of Minnesota.

Spending on newly approved capital projects on the system campuses should generate an estimated \$430 million of activity during the next two years. An additional 4,300 jobs will also be created as a result of that construction spending. While many of the jobs will be of different durations, the total employment impact will be equivalent to generating over 2,000 full-time jobs for the two-year period. Approximately 40 percent of those jobs will be in the construction sector itself. The rest will be spread over a variety of different industries in different regions of the state.

Regional impact of four-year universities

In addition to estimates of the statewide impact, this report also includes estimates of the local economic impacts of the system's four-year universities. These estimates have been produced using methods similar to those used to produce the statewide estimates for the entire system. However, these estimates seek to characterize the impact on the local area that contains the campus. In the Twin Cities, the impact area may be thought of as the metropolitan area. In Greater Minnesota, the area of impact may be thought of as the city in which the campus is located and the contiguous surrounding townships. In many medium-sized cities that are county seats, this impact area is operationally almost equivalent to the county itself.

Since we are analyzing the local effects of campuses, there are some additional categories of direct spending that need to be considered in calculating economic impact. Spending by students and spending by guests who visit system campuses were not included in the statewide impact calculations because they represent a redistribution of spending within the state rather than an addition to overall spending in Minnesota. However, such redistributions should be included in measurements of the economic impact on a particular city or region. In fact, in the cases of the four-year residential colleges, spending by students is the single largest category of direct spending, surpassing the total direct spending of the school itself. So estimates of these two categories of spending were added to the direct spending by the institutions in calculating local economic impact.⁵

To calculate the local impact of four-year state universities, we used actual campus-by-campus data on direct spending by the school and assumed levels of student spending and visitor spending on a per-student basis. Estimated student and visitor spending were added to the school's expenditures to get total direct spending. Then a multiplier was applied to total direct spending in order to calculate the additional induced spending.

It could be argued that the multiplier for some categories of spending, such as supplies, should be lower for a smaller community because it is likely that a greater percentage of a school's purchases would be from suppliers located in other areas. It is also the case that somewhat different multipliers might be applied to communities that are located within driving distance of substantially larger communities on the theory that more spending might be diverted to those communities at each round of induced economic activity. A

⁵ In another study of local impact of a number of campuses, Anton, Lubov & Associates conducted actual surveys of student spending at 25 campuses, all of them technical colleges or two-year institutions. While such an approach would produce more accurate estimates, it was not feasible to do such surveys inside the time and resource constraints for this study. See the appendix for a discussion of the actual estimation methods used herein.

detailed analysis of different multipliers for different communities is outside of the scope of this study, however. So the multiplier of 1.8 that was used in the statewide estimates was also used for all of the individual campus estimates.

Table 5 below includes the final estimates of regional economic impact for the seven four-year universities in the system.

5. Estimated annual regional economic impact of four-year state universities (in 2005 dollars)

Institution	Regional impact
Bemidji State University	\$ 105.0 million
Metropolitan State University	\$ 154.1 million
Minnesota State University, Mankato	\$307.4 million
Minnesota State University, Moorhead	\$ 156.3 million
Southwest Minnesota State University	\$ 109.3 million
St. Cloud State University	\$369.4 million
Winona State University	\$194.4 million

Source: Wilder Research calculations; RIMS II multipliers for state of Minnesota.

It should be noted that these estimates of regional economic impact are likely to understate the true economic impact of each school for two reasons. First, these regional impact estimates do not include an estimate of the enhanced productivity of the each region's workforce analogous to the quantity included in the statewide estimates. This is because there is little data on the location of graduates and any attempt to distribute graduates across the state in different regions would be extremely arbitrary. However, since some graduates of these four-year institutions choose to live in the region where their college is located, the omission of this factor would tend to understate regional impact.

Second, we made conservative estimates of student and visitor spending in the region of each campus. In particular, there seems to be good reason to think that students spend somewhat more on average than the quantities we obtained from school financial aid offices. If such spending is actually higher, then the methods used here would further understate regional impact.

Appendix

Local student spending

Visitor spending

Annual earnings and state tax receipts

Local student spending

To determine the level of local student spending Wilder Research had to determine the number of students at each campus and their living status and the average dollar amount spent annually by students on housing and personal expenses.

Distribution of students

The number of credit enrolled students at each 4-year institution was determined by calculating the average student count for the academic semesters Fall 2004 and Spring 2005. This figure is listed in the column titled “Student total” in Figure A1.

A1. Student enrollment totals by campus, Academic year 2004-2005

	Living with parents	Living on campus	Living off campus	Student total
Bemidji State University	239	1,243	3,299	4,781
Metropolitan State University	200	-	6,466*	6,666
Minnesota State University, Mankato	1,366	2,596	9,701	13,664
Minnesota State University, Moorhead	745	1,564	5,138	7,447
St. Cloud State University	1,545	2,626	11,277	15,448
Southwest Minnesota State University	278	722	4,557	5,557
Winona State University	391	2,425	5,006	7,882

Source: Student total derived from data provided by the Office of the Chancellor Research and Planning.

Note: *Only 667 students are included in this analysis for calculating off campus housing expenditures.

Because Metropolitan State University does not offer on campus dormitory housing, all students must either live with parents or in off campus housing. However, because most of these students resided in the Twin Cities area prior to attending the university, this analysis did not include all of these students in the economic impact analysis. This analysis is interested only in the additional economic activity generated by the university. Wilder estimated that 10 percent of the students at Metropolitan State University moved to the area to attend the university and generated new economic activity. It is likely that the remaining 90 percent that were already in the Twin Cities area attended the university because it was located locally, but they would not necessarily have left the area to attend a different university. Therefore, only 667 students are included in the analysis of off campus housing expenditures.

Wilder had to estimate the number of students living on campus in dormitories. This figure was determined by multiplying the percent of students living on campus during Fall 2004 by the total number of enrolled students. The percent of students living on campus in dormitories is listed in Figure A2.

A2. Estimated percent of students living in dormitory housing by campus, Academic year 2004-2005

	Percent living on campus	Number living on campus
Bemidji State University	26%	1,243
Metropolitan State University	0%	-
Minnesota State University, Mankato	21%	2,596
Minnesota State University, Moorhead	19%	1,564
St. Cloud State University	17%	2,626
Southwest Minnesota State University	13%	722
Winona State University	31%	2,425

Source: Data table "Percent of Students Living on Campus Minnesota State Universities Fall 2004" provided by the Office of the Chancellor Research and Planning.

Because there was no available data about the number of students living with parents, Wilder Research developed assumptions regarding this population. These estimates are based in part on the geographic area in which each university is located as well as the distribution of students living off campus and in campus dormitories. Wilder used the estimates listed in Figure A3 to determine the number of students living with their parents.

A3. Estimated percent of students living with parents by campus, Academic year 2004-2005

	Percent living with parents	Number living with parents
Bemidji State University	5%	239
Metropolitan State University	3%	200
Minnesota State University, Mankato	10%	1,366
Minnesota State University, Moorhead	10%	745
St. Cloud State University	10%	1,545
Southwest Minnesota State University	5%	278
Winona State University	5%	391

Source: Student total derived from data provided by the Office of the Chancellor Research and Planning.

The estimated number of students living with parents and living in campus housing was then subtracted from the student total to determine the number of students living off campus. Each of these figures is displayed in Figure A1.

Average student spending

The two components of student spending included in this study are housing expenses and personal expenses. Each university must prepare a standard budget for students applying for federal financial aid that lists tuition, fees, room and board, books and supplies, and living expenses which may include incidental or personal expenses. For this analysis the living expenses for students at each university are included, as well as the estimate for room and board for those living with parents or off campus. Because dormitory charges are included in the revenue figures for the universities, they were not included in this portion of the analysis. The figures used for determining federal financial aid tend to be conservative, so the impact figures derived from this portion of the analysis represent a low estimate of the economic impact of local student spending. Figure A4 shows the estimated spending figures for this portion of the analysis.

A4. Annual local spending per student by campus, Academic year 2005-2006

	Room and board		Personal expenses
	With parents	Off campus	
Bemidji State University	\$2,100	\$5,274	\$1,998
Metropolitan State University	\$5,327	\$8,984	\$5,238
Minnesota State University, Mankato	\$4,908	\$4,908	\$2,538
Minnesota State University, Moorhead	\$1,800	\$4,922	\$2,452
St. Cloud State University	\$3,000	\$4,888	\$2,526
Southwest Minnesota State University	\$3,320	\$5,120	\$2,094
Winona State University	\$3,220	\$6,060	\$2,590

Source: Financial Aid website or office at each university. The "with parents" figure for Metropolitan State University was extrapolated from the ratio of "with parents" to "off campus" expenditures for the other universities.

The estimated number of students living with parents was multiplied by the estimated cost for room and board for students living with parents to determine the economic activity generated by through housing expenditures by these students. The same calculation was performed for students living off campus. The average amount spent on personal expenses was multiplied by the total number of enrolled students to determine economic activity generated through personal spending. The total spending figures for these sources of economic activity, as well as the figure for total student spending for each university are listed in Figure A5.

A5. Total local student spending by campus, Academic year 2005-2006

	Room and board		Personal expenses	Total
	With parents	Of campus		
Bemidji State University	\$502,005	\$17,398,346	\$9,552,438	\$27,452,789
Metropolitan State University	\$1,065,330	\$5,943,814	\$34,916,508	\$41,970,572
Minnesota State University, Mankato	\$6,706,291	\$47,614,668	\$34,679,232	\$89,000,191
Minnesota State University, Moorhead	&1,340,460	\$25,291,352	\$18,260,044	\$44,891,856
St. Cloud State University	\$4,634,400	\$55,122,172	\$39,021,648	\$98,778,220
Southwest Minnesota State University	\$922,462	\$23,330,509	\$11,636,358	\$35,889,329
Winona State University	\$1,259,342	\$30,336,845	\$20,258,980	\$51,855,167

Visitor spending

Visitor spending was calculated separately for parents visiting students at each campus and for friends of students visiting each campus. First, the total amount of visitor days was calculated by multiplying the estimated number of people visiting each student by the number of enrolled students at each campus. This total was then multiplied by the average dollar amount spent in Minnesota by each visitor per day to determine the total dollar amount spent annually by visitors. These figures were calculated separately for parent and friend visitors.

We estimated the average number of parent and friend visits per year judgmentally after inspecting a number of college economic impact studies where some amount of data had been collected on visitor frequency and visitor spending.⁶ This analysis resulted in an average number of parent visits per student per year at 1.7 and friend visits at 6. Because most of the students at Metropolitan State University resided in the Twin Cities area prior to attending the university and it is likely they would not have left the area to attend another university, spending by their visitors does not constitute additional economic activity that would not otherwise be present if the students chose not to attend the university. This analysis is only interested in the additional economic activity generated as a result of visitors to the area that would not have otherwise arrived if not for the presence of the university. Therefore, this analysis estimated the visitor spending for Metropolitan State University at \$0, obviously understating the true quantity.

A6. Visitor spending by campus

	Parent visits	Friend visits	Total
Bemidji State University	\$1,544,263	\$2,316,395	\$3,860,658
Metropolitan State University	\$0	\$0	\$0
Minnesota State University, Mankato	\$4,181,184	\$6,271,776	\$10,452,960
Minnesota State University, Moorhead	\$2,278,782	\$3,418,173	\$5,696,955
St. Cloud State University	\$4,727,088	\$7,090,632	\$11,817,720
Southwest Minnesota State University	\$1,794,911	\$2,692,367	\$4,487,278
Winona State University	\$2,526,506	\$3,789,759	\$6,316,265

Similarly, the average dollar amount spent by each visitor per visit was assumed after comparison with similar studies performed at other college campuses. This analysis resulted in an average dollar amount spent per visitor per day for parent visits at \$200 and for friends at \$85.

⁶ The most directly relevant study was “University of Wisconsin System’s Economic Contribution to Wisconsin,” September, 2002 by Dennis K. Winters and William A. Strang.

Annual earnings and state tax receipts

To determine the amount of additional tax revenue contributed to the State of Minnesota by graduates of Minnesota State Colleges and Universities, three pieces of information were necessary:

- The portion of graduates that remain in Minnesota after graduation;
- The average annual salary for college graduates in Minnesota; and
- The change in tax rates applied to those in higher income brackets.

Graduates remaining in Minnesota

Each year, graduates of Minnesota State Colleges and Universities contribute to the economy of Minnesota through spending and taxes. For this analysis, Wilder determined an estimate of the number of graduates that remained in Minnesota and contributed to the economy during the year. Individuals that earned a master's degree, a bachelor's degree, and an associate or two year degree receive different salaries on average. Therefore, the number of graduates in the workforce was determined for each degree type.

The economic impact study for Minnesota State Colleges and Universities produced by Anton, Lubov & Associates, Inc. in 2002 estimated the collective number of associate and two-year degree graduates in the workforce through 2001.⁷ Wilder updated this figure by adding the number of graduates produced by Minnesota State Colleges and Universities in the years 2002, 2003, and 2004.

The figure produced in 2001 for bachelor's degree graduates also included master's degree recipients. The number of master's degree graduates fluctuated between 14 percent and 19 percent of the bachelor's degree recipients in the years 1998-2004. Wilder assumed that some of the graduate programs were developed later than the undergraduate programs and produced fewer graduates before 1998. Therefore, Wilder used a conservative estimate of 10 percent of the number of bachelor's degree recipients calculated in 2001 as master's degree recipients. This figure was then updated with the actual number of master's degree recipients in 2002, 2003, and 2004.

A portion of graduates leave the Minnesota workforce each year, for example through retirement or moving to another state. Wilder estimated this figure as 8 percent and subtracted this percentage from the workforce total. Additionally, some graduates may

⁷ See Anton, Lubov & Associates, Inc., "The Economic Impact of Minnesota's State Colleges and Universities An Update," August, 2002.

leave Minnesota immediately after graduation and do not contribute to the economy throughout their careers. Wilder estimated that 20 percent of master's degree recipients leave the state after graduation, 20 percent of bachelor's degree recipients, and 10 percent of associate or two-year degree recipients. These percentages were also subtracted from the workforce total.

The figure that remains represents the estimated number of Minnesota State Colleges and Universities graduates that reside in Minnesota and have contributed to the economy through workforce participation in 2005. These estimates are shown in Figure A7.

A7. Graduates in the workforce in Minnesota, 2005

	Total
Associate degree	391,510
Bachelor's degree	173,118
Master's degree	20,090

Source: Extrapolated from data table "Graduates by Highest Level Award Minnesota State Colleges and Universities Fiscal Years 1998 to 2004" provided by the Office of the Chancellor Research and Planning.

Annual salary for graduates

Individuals that receive a higher education degree earn more on average than individuals with only a high school degree. This analysis is focused on the difference in earnings, because individuals that earn more also spend more and contribute more in taxes to the state government. The U.S. Census Bureau reports the national average earnings of degree holders based on data from the Annual Demographic Survey. The American Community Survey reports the median earnings of degree holders in Minnesota. Using the distribution of earnings as a percentage of national earnings, Wilder was able to determine the average annual earnings by degree holders in Minnesota from these two sources. Multiplying the net earnings of degree holders by the number of degree holders in the workforce yields the aggregate net earnings of Minnesota State Colleges and Universities graduates. The figures resulting from this analysis are reported in Figure A8.

A8. Average annual and net earnings in 2004 in Minnesota by type of degree

	Average earnings	Net earnings vs. high school diploma	Graduates in workforce	Aggregate net earnings
High school diploma	\$33,020	-	n/a	n/a
Associate degree	\$39,012	\$5,992	391,510	\$2,345,928,443
Bachelor's degree	\$54,391	\$21,371	173,118	\$3,699,698,021
Master's degree	\$63,983	\$30,963	20,090	\$622,048,335

Source: U.S. Census Bureau, *Current Population Survey 2005 Annual Social and Economic Supplement*; U.S. Census Bureau, *2004 American Community Survey*.

An analysis performed in 2002 found that approximately 60 percent of graduates from Minnesota State Colleges and Universities would have received higher education degrees at another institution.⁸ Therefore, for this analysis only 40 percent of the aggregate net earnings of graduates was included as increased productivity resulting from higher education degrees obtained through Minnesota State Colleges and Universities. Forty percent of the aggregates net earnings displayed in Figure A8 is \$2,418,250,586, the figure used in this analysis.

Change in tax rates

Individuals who earn more annually pay more in income taxes to the state government. For this analysis, Wilder determined the share of graduates' income earned as a result of obtaining a higher education degree. The difference between the estimated annual earnings of high school graduates and the average earnings of individuals with the highest degree currently held is the figure used in this portion of the analysis. The marginal income tax rate was then applied to the increase in earnings that can be attributed to the degree earned through Minnesota State Colleges and Universities. For every income bracket, regardless of the filing status of the individual, the marginal income tax rate is 7.05 percent.⁹

Wilder also applied the effective state sales tax rate to the increase in earnings attributed to the degree earned through Minnesota State Colleges and Universities. The effective state sales tax is approximately 2.1 percent for each of the average annual earning

⁸ See Anton, Lubov & Associates, Inc., "The Economic Impact of Minnesota's State Colleges and Universities An Update," August, 2002.

⁹ Minnesota Revenue "Minnesota Income Tax Calculations for Tax Year 2005," September, 2005.

brackets included in this study.¹⁰ This rate was multiplied by the net earnings for degree holders to determine the increase in sales tax revenue attributed to higher spending levels by those with higher annual earnings. Figure A10 displays the results of applying the marginal tax rates to the aggregate net earnings of graduates.

A10. Marginal tax receipts in 2005 from the earnings of graduates

	Associate's degree	Bachelor's degree	Master's degree	Total
Net earnings vs. high school diploma	\$5,992	\$21,371	\$30,963	-
Graduates in workforce	391,510	173,118	20,090	-
Aggregate net earnings	\$2,345,928,443	\$3,699,698,021	\$622,048,335	\$6,045,626,464
Income tax receipts at 7.05%	\$165,387,955	\$260,828,711	\$43,854,408	\$426,216,666
Sales tax receipts at 2.1%	\$49,264,497	\$77,693,658	\$13,063,015	\$126,958,156

Note: Totals may not equal individual sums due to rounding.

As with the figures produced for the increased productivity estimate, only 40 percent of the total tax receipts can be attributed to Minnesota State Colleges and Universities. Approximately 60 percent of these graduates would have gone on to earn higher education degrees from another university. Only 40 percent of the total increase in tax receipts is included in this analysis. Therefore, this analysis includes an increase in income tax receipts of \$170,486,666.

¹⁰ Minnesota Revenue Tax Research Division, "2005 Minnesota Tax Incidence Study," March, 2005 page 43.