

**ECONOMIC
IMPACT
ANALYSIS**

**An Extension
Community
Economics Program**

The Economic Contribution of the University of Minnesota Crookston



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**Economic Contribution of the University of Minnesota Crookston
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Introduction

“The University of Minnesota , Crookston (UMC) is integral to the University's statewide land grant mission. The college provides its unique contribution through applied, career-oriented learning programs that combine theory, practice and experimentation in a technologically rich environment. UMC connects its teaching, research and outreach to serve the public good.”¹

The University of Minnesota Crookston (UMC) is located in the Red River Valley in northwestern Minnesota. It is one of five campuses of the University of Minnesota and educates over 2,000 students annually. UMC offers degrees through the four main academic departments of agriculture and natural resources; arts, humanities and social sciences; business; and math, science and technology. Its core values are integrity, excellence, diversity, innovation, and learner centered.

UMC was founded in 1906 as the Northwest School of Agriculture, a regional residential high school with a focus on agriculture. Over the years, the school gradually increased its focus to include home economics, home nursing and business training related to agriculture. In 1965, the Minnesota State Legislature approved funds for an agricultural and technical institute with a college-level focus. In 1968, the final class of the Northwest School of Agriculture graduated and the school was renamed the University of Minnesota Technical College. The name was subsequently changed to University of Minnesota Crookston in 1988. In 1992, UMC received approval to offer baccalaureate programs.

As the history of the University has evolved in the Crookston area, so has its role in the economy. In 2010, the University of Minnesota Crookston commissioned University of Minnesota Extension to answer the question “What is the economic contribution of the University of Minnesota Crookston in the Crookston/Grand Forks regional economy”?

Economic contribution studies quantify the overall economic importance of an activity or project.² The University of Minnesota Crookston contributes to the economy of the region through spending on its operations, spending on construction projects, spending by faculty and staff, spending by students and through spending by visitors drawn to the campus by events.

The primary study area for this report is the greater Crookston region including Polk County, Minnesota and Grand Forks County, North Dakota.

¹ University of Minnesota Crookston Mission Statement

² Economic contribution studies examine the overall economic influence an industry or activity has on an economy. Economic impact studies examine a marginal change – such as the loss or gain of jobs. For further explanation, see the methodology section of this report.

This project is being conducted under the University of Minnesota Extension Center for Community Vitality's Economic Impact Analysis (EIA) program. The EIA program deliverables include: a written report and a presentation and facilitated discussion of the results. This report is one deliverable of the program. The EIA program used a conservative approach in measuring the economic contribution and in interpreting the results.

Highlights of the 2010 University of Minnesota Crookston Economic Contribution Study

In a 2010 study conducted by the University of Minnesota Extension Center for Community Vitality examining the economic contribution of the University of Minnesota Crookston, it was found that:

- The University of Minnesota Crookston contributed (via direct expenditures and related ripple effects) a total of \$50 million in economic activity, 602 jobs, and \$25.1 million in labor income to the economy of the Crookston/Grand Forks region in 2009.
- Spending by the University on *daily operations* contributed (via direct expenditures and related ripple effects) a total of \$7.2 million in output, 73 jobs, and \$2.3 million in labor income to the regional economy in 2009.
- Spending by the University on *construction projects* on campus contributed (via direct expenditures and related ripple effects) \$7.5 million in output, 65 jobs, and \$2.3 million in labor income to the regional economy in 2009.
- Spending by *faculty and staff* employed by the University contributed (via direct expenditures and related ripple effects) \$27.4 million in output, 366 jobs, and \$18.2 million in labor income to the regional economy in 2009.
- Spending by University of Minnesota Crookston *students* contributed (via direct expenditures and related ripple effects) \$6.96 million in output, 81 jobs, and \$1.9 million in labor income to the regional economy in 2009.
- Spending by *visitors to events* held on the University campus contributed (via direct expenditures and related ripple effects) \$1.1 million in output, 19 jobs, and \$375,764 in labor income to the regional economy in 2009.



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Economic Contribution

The University of Minnesota Crookston (UMC) contributes significantly to the Crookston/Grand Forks regional economy. The following section details the total economic contribution of the institution and the five components of that economic contribution measured in this report. Those components are: **campus operations, campus construction, faculty and staff spending, student spending, and campus visitor spending**. The section ends with a comment on future areas of research regarding colleges and universities and economic contribution.

The economic contribution of UMC was calculated using an input-output model. Input-output models trace the flow of dollars throughout a local economy and can capture the indirect and induced, or ripple effects, of an economic activity. The input-output modeling software and data from IMPLAN (Minnesota IMPLAN Group) was used in this report. For more, please see the methodology section.

For this report, the expenditures used to calculate the economic contribution include those by the University of Minnesota Crookston campus, its direct faculty and staff, its students, and its visitors. The University of Minnesota Crookston collaborates closely with University of Minnesota Extension and the Northwest Research and Outreach Center (ROC). Extension personnel are located on the campus and Crookston faculty conduct research at the ROC, for example. The expenditures by Extension and the ROC, along with the employment and visitors for both of these operations, were **not** included in this report. There were two main reasons for this omission: one, it was determined that both operations would likely continue in Crookston even if the campus were not located there (an important determinant in input-output modeling) and two, the funding for both of these operations is primarily derived from the University of Minnesota – Twin Cities campus.

Total Economic Contribution

In 2009, the University contributed \$50 million in total economic output to the economy, as shown in Table 1.³ It also contributed to the creation of 602 jobs that paid over \$25 million in income to labor.

	Direct	Indirect	Induced	Total
Output	\$32,448,516	\$3,548,014	\$14,205,232	\$50,201,761
Employment	427	34	141	602
Labor Income	\$19,360,943	\$1,226,331	\$4,495,058	\$25,082,332

Estimates by the University of Minnesota Extension Center for Community Vitality

³ Total output in Polk and Grand Forks counties totaled \$8.1 billion in 2008. Thus, UMC's contribution is roughly 0.6 percent.

Of this total economic contribution, nearly \$33 million in output, 427 jobs, and \$19.4 million in labor income was directly generated by the University of Minnesota Crookston through the five components of economic activity. The ripple effects, measured as indirect and induced, created almost \$18 million in output, 175 jobs, and \$5.7 million in labor income. The induced impacts account for nearly 80 percent of the total ripple (indirect plus induced) effects. Induced impacts are created by household spending. Since spending by faculty and staff (measured as household spending) is a significant portion of total spending related to University of Minnesota Crookston, the induced impacts are a major component of the ripple effects. Indirect effects capture the additional spending in an economy related to the purchase of goods and services as inputs. Thus, indirect effects would be primarily driven from the direct spending of the University through its operating and construction budgets. For more on the definition of indirect and induced effects, the reader should refer to the methodology section of this report.

The next sections will detail the economic contribution of each of the five following individual economic activities:

- Campus Operations
- Campus Construction
- Faculty and Staff Spending
- Student Spending
- Event Visitor Spending

Campus Operations

The University of Minnesota Crookston makes regular expenditures within the region to support the operations of the campus. The campus buys fuel to heat the buildings, the dining hall must purchase food to feed the students, faculty members need paper to make copies of tests, and the cleaning crews need supplies to keep the buildings sanitary. As UMC makes these expenditures, they stimulate the creation of more spending in the regional economy. The suppliers to UMC must purchase more supplies and inputs, thereby stimulating the creation of more economic output.

Table 2 highlights the economic contribution of campus operations to the regional economy. In the fiscal year 2009, University of Minnesota Crookston's non-sponsored funds spending totaled \$29.3 million. Of this, a significant portion (52 percent) was paid in wages, salaries, and benefits to its employees. The economic impact of spending by employees will be considered later in this report. Of the remainder of the UMC operation expenditures, approximately \$5.1 million was spent in the Crookston/Grand Forks region. Because of this spending for operations, UMC contributed \$7.2 million in output, 73 jobs, and \$2.3 million in labor income to the Crookston/Grand Forks economy in 2009.

Table 2: Economic Contribution of University of Minnesota Crookston: Campus Operations 2009				
	Direct	Indirect	Induced	Total
Output	\$5,068,919	\$1,046,235	\$1,080,314	\$7,195,468
Employment	53	9	11	73
Labor Income	\$1,628,971	\$355,952	\$344,234	\$2,329,157

Estimates by the University of Minnesota Extension Center for Community Vitality

Campus Construction

In addition to expenditures for the day-to-day operations of UMC, the University also makes investments in the upkeep and improvement of the facilities and infrastructure on campus. Primarily this funding comes from the state bonding bill. Between July 2008 and June 2009, UMC spent \$5,083,000 on infrastructure investments, as shown in Table 3. According to the model, it took 39 individuals who were paid \$1.4 million in labor income to perform the one-time infrastructure upgrades and improvements. Due to the direct spending for infrastructure projects, UMC contributed a total of \$7.5 million in output, 65 jobs, and \$2.3 million in labor income to the regional economy.

Table 3: Economic Contribution of University of Minnesota Crookston: Campus Construction 2009				
	Direct	Indirect	Induced	Total
Output	\$5,083,000	\$1,348,140	\$1,053,546	\$7,484,686
Employment	39	15	11	65
Labor Income	\$1,442,424	\$509,099	\$335,933	\$2,287,456

Estimates by the University of Minnesota Extension Center for Community Vitality

It is important to note that campus construction impacts can vary from year-to-year. The total amount spent on construction projects on campus is dependent on the projects under consideration and funding. This may be the one component of economic activity that is subject to the most variation.

Faculty and Staff Spending

There are 257 faculty and staff employees at the University of Minnesota Crookston. In 2009, the University paid these employees \$14.7 million in labor income (includes wages, salaries, and benefits) and the employees generated an estimated \$16.4 million in output in the region. These faculty and staff members spent their wages in the regional economy to buy groceries, pay for housing, go out to dinner, and buy gas among other things. As they made purchases within the region, the industries that supplied them had to hire more people and buy more of their own inputs, therefore, increasing total output, employment and labor income in the region. It was assumed that only 70 percent of wages and salaries were spent in the Crookston/Grand Forks area.

The results of this additional output, employment, and income being generated are shown in Table 4. There are no indirect (business to business) impacts because the income earned by employees is all spent by the household and therefore only creates induced (household spending) impacts.⁴ In total, spending by University of Minnesota Crookston faculty and staff contributed \$27.4 million in output, 366 in employment, and \$18.2 in labor income to the regional economy in 2009.

	Direct	Indirect	Induced	Total
Output	\$16,376,346	\$0	\$11,033,900	\$27,410,246
Employment	257	0	109	366
Labor Income	\$14,748,486	\$0	\$3,484,346	\$18,232,832

Estimates by the University of Minnesota Extension Center for Community Vitality

Student Spending

Students also contribute to the regional economy through their spending. In order to quantify the amount of student spending and develop a student spending profile, a survey of UMC students was conducted. In March of 2010, all UMC students were sent an email invitation to participate in an online survey. The survey asked students to report their expenditures for a variety of items in the Crookston/ Grand Forks region.⁵ In the 2009-2010 academic year, there were 1310 degree-seeking students enrolled at UMC. Of these, 125 successfully completed the survey for a response rate of 10 percent.

In total, students spent an estimated \$8,082,700 in the Crookston/Grand Forks region in 2009. The largest purchases were for food, gasoline, entertainment, rent, and supplies. A detailed breakdown of student expenditures can be found in Appendix 3.

Of this, a significant portion was spent on retail items. Retail purchases must be margined in the contribution analysis. The process of margining involves assigning a dollar value to all the individual components of a retail sale. When a person makes a retail purchase, they pay a price that includes the raw cost of the item, along with a mark-up for the retailer and a cost for transportation and storage of the product. Typically, the item is not produced locally, so the only portion of the spending that benefits the local economy is the mark-up to the retailer and perhaps a portion of the transportation and storage expenditure. The input-output modeling software used for this analysis has an average breakdown for each of these components and thereby performs margining calculations.

⁴ For more on the definition of indirect and induced effects, see the methodology section.

⁵ Please see Appendix 1 for a copy of the student survey.

After margining, the direct effect of UMC student spending in the region was an estimated \$5,130,657 in 2009, as shown in Table 5. Due to spending by students, a total of nearly \$7 million dollars of economic activity is generated in the Crookston/Grand Forks economy, 81 jobs exist and \$1.9 million in labor income is paid to residents.

	Direct	Indirect	Induced	Total
Output	\$5,130,657	\$969,935	\$864,027	\$6,964,619
Employment	64	8	9	81
Labor Income	\$1,281,349	\$300,521	\$275,234	\$1,857,104

Estimates by the University of Minnesota Extension Center for Community Vitality

Event Visitor Spending

University of Minnesota Crookston hosts a wide variety of events on campus during the year which draw visitors to the campus and to Crookston. These events fall into two broad categories: sporting and non-sporting events.

In 2009, UMC sporting events attracted 19,000 people to their activities.⁶ Of these, the majority (74%) were local residents or students. These individuals do not represent new spending in the regional economy and therefore do not create an economic contribution. Only visitors from outside the region create an economic contribution related to events. The economic contribution of putting on and hosting the event is captured under the daily expenditures of the University.

In order to quantify the economic contribution of visitors to sporting events on the UMC campus, a survey was conducted at a basketball game in January of 2010. All attendees of the game were invited to participate in the survey and were entered in a raffle upon completion of the survey. A copy of the survey can be found in the appendix. In all, 142 people completed the survey. Of those 37, or 26 percent, were from outside the region. Therefore, based on survey results an estimated 4,940 visitors attended UMC sporting events in 2009.

Visitors to UMC sporting events spent an estimated \$584,070 in 2009. The survey results reveal that on average, each household attending a UMC sporting event spent \$63 on dining, \$96 on lodging, \$38 on retail items, \$54 on transportation, \$9 on entertainment and \$4 on miscellaneous items. The survey results also indicate that each household brought an average of 2.24 people to the game. Therefore, the 4,940 visitors to UMC sporting events represent 2,205 households.

There are four major non-sporting events that draw visitors to the UMC campus. These are homecoming, the Northwest School of Agriculture (NWSA) reunion,

⁶ Estimate by University of Minnesota Crookston.

move in/out days, and graduation. Homecoming draws approximately 200 individuals, the NWSA reunion 200 individuals, move in/out days draws around 400 individuals for each day, and graduation attracts 195 attendees.⁷ After determining how many of these attendees are non-local, it is estimated that non-sporting events drew 984 visitors in 2009.

It total, these visitors spent an estimated \$551,040 in the region while attending non-sporting events. This assumes an average expenditure per person of \$280 per day. This average expenditure per person is based on previous research conducted by the University of Minnesota Tourism Center. Of this \$280, 13 percent was for lodging, 12 percent for transportation, 26 percent for dining and drinking, 24 percent for shopping and 25 percent for other entertainment. It was further assumed these visitors stayed for two days in the region.

Visitors to events at the UMC campus (both sporting and non-sporting) spent an estimated \$1,859,568 in 2009 in the Crookston/Grand Forks region. Of this, a significant portion was spent on retail items and on gasoline purchases. Retail and gas purchases must be margined in the contribution analysis as explained earlier in this report.

After margining, visitors spent \$788,870 in the region during their visit. This is reflected as the direct impact in Table 6. Because of this spending, a total of \$1.1 million of economic activity exists in the Crookston area along with 19 jobs and \$375,700 of labor income.

	Direct	Indirect	Induced	Total
Output	\$788,870	\$183,704	\$173,445	\$1,146,019
Employment	15	2	2	19
Labor Income	\$259,713	\$60,759	\$55,293	\$375,765

Estimates by the University of Minnesota Extension Center for Community Vitality

A Comment on Future Areas of Research Regarding Colleges and Universities

This study focuses on the economic contribution of **spending** by the University of Minnesota Crookston, its employees, its students and its visitors. This is perhaps the strictest interpretation of economic contribution and is focused on *backward linkages* from the educational institution. Current research related to the economic contribution of colleges and universities is focusing on the economic contribution related to the productivity and creativity of students and faculty, or the *forward linkages* of educational institutions. The research on forward linkages is still relatively new and the methods for measuring them relatively untested. This study did not include them; however, those economic benefits do certainly exist and could potentially be significant for the regional economy.

⁷ Estimates by University of Minnesota Crookston

Methodology

This study was completed using economic contribution analysis methodology. Economic contribution analysis quantifies the amount of economic activity generated by a project or industry. An example of an economic contribution study would be “The Economic Contribution of Grape Growers and Wineries to the State of Minnesota”.⁸ Economic contribution studies differ slightly from the methodological viewpoint of economic impact studies. Economic impact studies look at the marginal changes that occur due to a change in the economy. In economic impact studies a comparison is being made between two situations and the marginal difference is being quantified. An example here would be “The Economic Impact of Railroad Abandonment: Carrington-to-Turtle Lake Rail Line”.⁹ This study, rather than looking at how much the railroad contributes to the local economy, quantifies what would happen in the local economy if the rail was abandoned.

Special economic models, called input-output models, have been developed to conduct economic contribution analysis. There are several input-output models available. One particular input-output model is called IMPLAN (IMPact Analysis for PLANning, Minnesota IMPLAN Group). IMPLAN is widely used by economists for economic contribution analysis because it: can measure output and employment impacts; is available on a county-by-county basis; and it is flexible for the user. Due to these reasons, the IMPLAN model was used for this analysis. IMPLAN has some limitations and qualifications, but it is one of the best tools available to economists for input-output modeling. Understanding the IMPLAN tool, its definitions, and its limitations will help ensure the best results from the model.

One of the most critical aspects of understanding contribution analysis is the distinction between the “local” and “non-local” economy. The local economy is defined as part of the model building process. The local economy, also known as the study area, can be defined by either the group requesting the study or by the analyst. Typically, the study area is a county or a group of counties that share economic linkages. By contrast, the non-local economy is the rest of the world that is not modeled directly.

There are a few definitions that are essential to understand in order to properly read the results of an IMPLAN analysis. The terms and their definitions are provided below.

⁸ Gartner, William and Brigid Tuck. *The Economic Contribution of Grape Growers and Wineries to the State of Minnesota*. Department of Applied Economics. University of Minnesota. August 2008.

⁹ Honeyman, Joel, Dean Bangsund, and F. Larry Leistritz. *Economic Impact of Railroad Abandonment: Carrington-to-Turtle Lake Rail Line*. Department of Agricultural Economics and The Upper Great Plains Transportation Institute. North Dakota State University. August 1996.

Output

Output is measured in dollars and is equivalent to total sales. The output measure can include significant double counting. For example, think of corn. The value of the corn is counted when it is sold to the mill, again when it is sold to the dairy farmer, again as part of the price of fluid milk, and then yet again when it is sold as cheese. The value of the corn is built into the price of each of these items and then the sales of each of these items are added up to get total sales (or output).

Employment

Employment includes full- and part-time workers and is measured in annual average jobs. This employment definition calculates one job for every full-time, part-time and seasonal worker. It is not in FTE (full-time equivalents). Total wage and salaried employees as well as the self-employed are included in employment estimates in IMPLAN. Because employment is measured in jobs and not in dollar values, it tends to be a very stable metric.

Labor Income

Labor income measures the value that is added to the product by the labor component. For example, in the corn example, when the corn is sold, a certain percentage of the sale goes to the farmer for his/her labor. Then when the mill sells the corn as feed to the dairy farmer it includes in the price some markup for its labor costs. When the dairy farmer sells the milk to the cheese manufacturer, he/she includes a value for his/her labor. These individual value increments for labor can be measured. This is labor income. Labor income does not include double counting. Labor income is a component of output and should not be added to output.

Direct Impact

The direct impact is equivalent to the initial activity in the economy. In this study, it will be spending by the University, its employees, its students and visitors to on-campus events.

Indirect Impact

The indirect impact is the summation of changes in the local economy that occur due to **spending for inputs** (goods and services) by the industry or industries directly impacted. For instance, if employment in a manufacturing plant increases by 100 jobs, this implies a corresponding increase in output by the plant. As the plant increases output, it must also purchase more of its inputs, such as electricity, steel, and equipment. As it increases its purchase of these items, its suppliers must also increase their production, and so forth. As these ripples move through the economy, they can be captured and measured. Ripples related to the purchase of goods and services are indirect impacts.

Induced Impact

The induced impact is the summation of changes in the local economy that occur due to **spending by labor** by the employees in the industry or industries directly impacted. For instance, if employment in a manufacturing plant increases by 100 jobs, the new employees will have more money to spend to purchase housing, buy groceries, and go out to dinner. As they spend their new income, more activity occurs in the local economy. This can be quantified and is called the induced impact.

Total Impact

The total impact is the summation of the direct, indirect and induced impacts.

Conclusion

The University of Minnesota Crookston (UMC) has a long history of educating students in northwestern Minnesota. From its roots as an agricultural high school, UMC has evolved into a highly-regarded campus of the University of Minnesota offering bachelorette degrees and educating over 2,000 students annually. As the University has grown and evolved, so has its contribution to the economy of the Crookston/Grand Forks region.

In 2009, the University of Minnesota Crookston contributed \$50 million in economic activity, 602 jobs and \$25.1 million in labor income to the economy of the Crookston/Grand Forks region. This activity and related jobs came from spending for the day-to-day operations of the campus, from spending on construction projects, from spending by faculty and staff, from spending by students and from spending by visitors to events held on the UMC campus.

The largest portion of this economic activity is generated by spending of the faculty and staff of the University. Universities provide a service to students; therefore, much of their budget is spent on employees. These employees typically live in the communities in and around the University and spend their paychecks in the region, thereby generating economic activity. Spending for University operations and student spending create the second and third largest contribution to the economy.

- c. Large Home Appliances _____
(e.g. dorm refrigerator, washer/dryer)
- d. Furniture _____
 - i. (e.g. chairs, couch, desk, bookshelves)

6. Are you considered an international student? Yes No

7. What is the zip code of your permanent residence? (Skip if you're an international student)

Appendix 3: Profile of Student Spending Reported in the Crookston/Grand Forks Region

Monthly Expenditures (Average per Student)

Rent	\$161
Cell/Smart Phone	\$31
Internet	\$12
Cable	\$9
Landline Phone	\$1
Water	\$5
Electric	\$14
Heat/AC	\$8
Clothing	\$34
Supplies	\$22
Other	\$7
Estimates by the University of Minnesota Extension Center for Community Vitality	

Weekly Expenditures (Average per Student)

Groceries	\$35
Dining Out (off campus)	\$14
Entertainment	\$10
Gasoline	\$27
Parking	\$1
Hobby	\$5
Other	\$0.06
Estimates by the University of Minnesota Extension Center for Community Vitality	

Annual Expenditures (Average per Student)

Electronics	\$79
Small Appliances	\$29
Large Appliances	\$14
Furniture	\$37
Estimates by the University of Minnesota Extension Center for Community Vitality	