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Economic Contribution of Museums in Minnesota

A REPORT OF THE ECONOMIC IMPACT ANALYSIS PROGRAM

Authored by Brigid Tuck and Bruce Schwartau



In Partnership With: Minnesota Association of Museums and the University of Minnesota Carlson Chair for Travel, Tourism, and Hospitality

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BACKGROUND OF THE STUDY

Museums are an integral part of the fabric of Minnesota. From the founding of the Minnesota Historical Society in 1849 to 2012, museums have preserved Minnesota's cultural and ethnic heritage, inspired creative artists, entertained children, conserved the natural world, captured scientific advancements, and archived valuable historical documents.

Minnesota's museums entertain, educate, and preserve. However, museums vary from each other in size, target audience, and resources. Minnesota is home to large-scale, nationally recognized museums such as the Walker Art Center, the American Swedish Institute, the Minneapolis Institute of Arts, the Minnesota Children's Museum, and the Science Museum of Minnesota. These museums attract hundreds of thousands of visitors annually. Minnesota is also home to smaller, but valuable museums, such as the Minnesota Marine Art Museum in Winona, the William and Joan Soderlund Pharmacy Museum in St. Peter, and the Mille Lacs Indian Museum and Trading Post on the Mille Lacs Indian Reservation. Minnesota museums are diverse. Minnesota hosts history museums (many operated by local historical societies), historic houses, art museums, science museums, natural history museums, historic sites, nature centers, zoos, and arboreta. There are even specialty museums which focus on a single event or topic. There are museums in Minnesota with relatively large staffs and operating budgets. However, many are operated primarily with volunteer labor.

Museums are also numerous in Minnesota. The Minnesota Historical Society operates 32 museums and sites. Eighty-six out of eighty-seven county historical societies operate at least one stand-alone museum. Several county historical societies run multiple sites. Historical organizations generally have diverse responsibilities and operating museums is one way they serve the public. In fact, their local focus as a whole is a museum because historically significant resources are integral to the built environment.

The Minnesota Association of Museums (MAM) is a non-profit organization that exists to provide a forum for those working with museums in Minnesota. Its goals include: 1) to foster and encourage communication among museum professionals in Minnesota; 2) to increase the visibility of MAM and promote Minnesota museums as a public resource for learning and recreation; and 3) to provide educational opportunities and training for museum staff, both paid and volunteer. In order to accomplish the second goal, the organization realized the need to compile a list of museums in Minnesota and to measure the economic contribution of Minnesota's museums.

Given the diverse nature, the sheer number of, and changes in, museums in Minnesota, an accurate count and list of museums in Minnesota has been difficult to construct and maintain. Subsequently, this has made analyzing the contribution of the state's museums a challenge.

The Minnesota Association of Museums applied for and received funding from the University of Minnesota's Tourism Center Carlson Travel, Tourism, and Hospitality Chair grant to conduct a survey of Minnesota's museums. With funding from this grant, MAM undertook an extensive process to identify and document museums in Minnesota. MAM then engaged University of Minnesota Extension's Economic Impact Analysis program to measure the economic impact of museums in Minnesota. The program has two deliverables, a written report and a presentation with facilitated discussion of the results. This report is the first deliverable of the program.



“The Economic Contribution of Museums in Minnesota”: Summary

The following is a summary of the results of a recent University of Minnesota Extension study titled “The Economic Contribution of Museums in Minnesota.” The study was conducted in partnership with the Minnesota Association of Museums (MAM) and with funding from the University of Minnesota Tourism Center Carlson Chair for Travel, Tourism, and Hospitality.

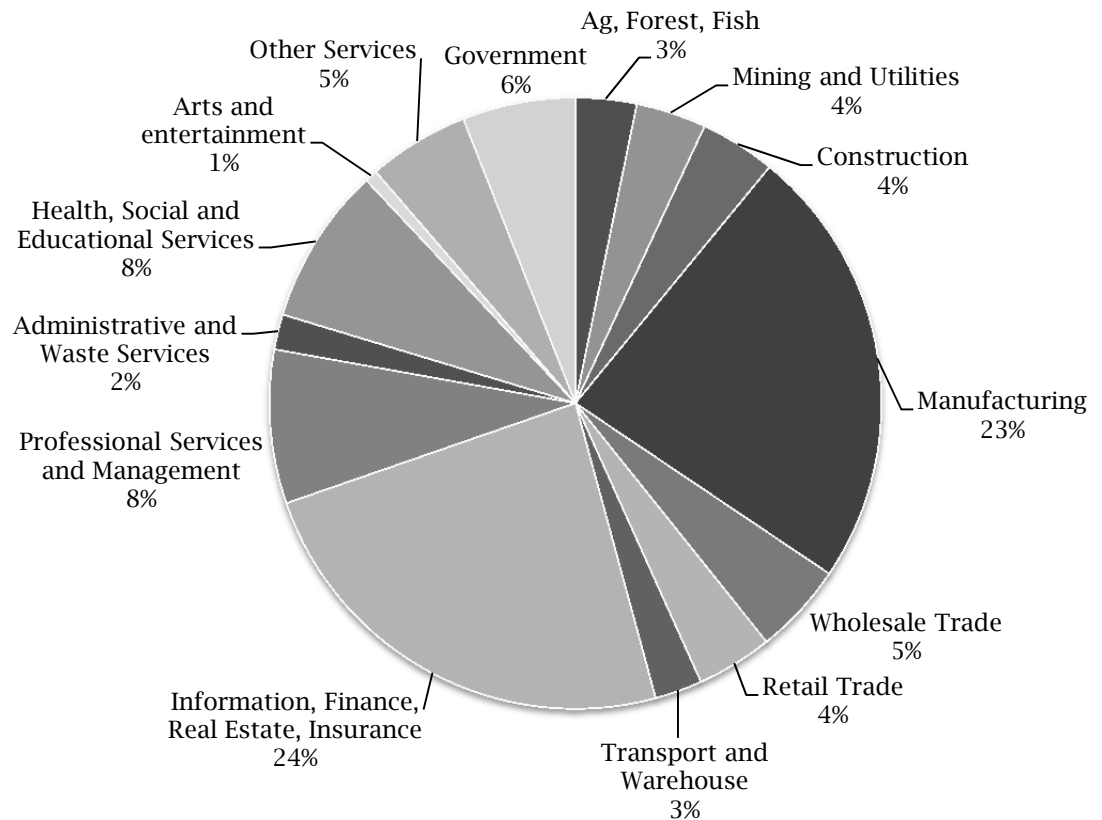
- ***The Survey:*** The Minnesota Association of Museums identified 562 museums, historic sites, historic houses, nature centers, zoos, and arboreta operating in Minnesota. 245 (43 percent) responded to a survey collecting information regarding their operations, expenditures, and visitors. Responses were extrapolated to represent all 562 museums known to be operating in the state.
- ***Museum Function:*** History museums, historic sites, and historic houses are the most common types of museums in Minnesota. Many museums indicated that in addition to their primary function, they also served as a research library or archive, highlighting the importance of museums in preserving written documentation and reflecting the role of archiving in the formation of museums.
- ***Direct Spending:*** In 2011, Minnesota’s 562 museums directly infused \$337 million in spending into Minnesota’s economy. Of this, \$180 million was expended for daily operations, including \$80 million which was paid to employees as labor income. Museums also spent \$157 million on capital improvements. Museums employed 1,700 full- and part-time workers to conduct daily operations and 1,100 full- and part-time workers to implement capital improvements.
- ***Economic Impact:*** As a result of spending in 2011, Minnesota’s 562 museums contributed an estimated \$674 million in economic activity to the state’s economy. This included \$250 million of wages paid to an estimated 5,300 employees with jobs supported by museum activity.
- ***Tourism:*** In addition, Minnesota’s museum tourists generated an estimated \$53 million in economic activity in Minnesota. To create this output, 690 workers were employed and paid \$18 million in compensation. It is estimated that 1.7 million people visited museums outside of their home region in 2011.
- ***Effect on Industry:*** Top industries affected by museum spending in Minnesota include construction, restaurants, health care, and real estate.
- ***Importance of Volunteers:*** The average Minnesota museum employs two paid staff members (part-time or full-time) to implement the museum’s mission. However, nearly a third (29 percent) of museums are volunteer-operated alone and do not have employees. In total, volunteers at Minnesota’s 562 documented museums contributed an estimated 1.1 million hours of labor in 2011.
- ***What’s Not Included:*** This study does not include any measure of the positive benefits generated by the charitable activities of Minnesota museums or by any grants or tax credits administered by museums.



PROFILE OF THE STUDY AREA ECONOMY

The study area for this analysis is Minnesota. Museums contribute to Minnesota's \$500 billion economy. Nearly three-quarters of all output generated in Minnesota derives from two major industry sectors (see figure 1). Twenty-four percent of total output is attributable to the manufacturing industry and another twenty-four percent to the information, finance, insurance, and real estate industry. Altogether, the service industry generates fifty percent of Minnesota's output.

Figure 1: Output by Industry Sector, Minnesota 2010
[Source: IMPLAN]



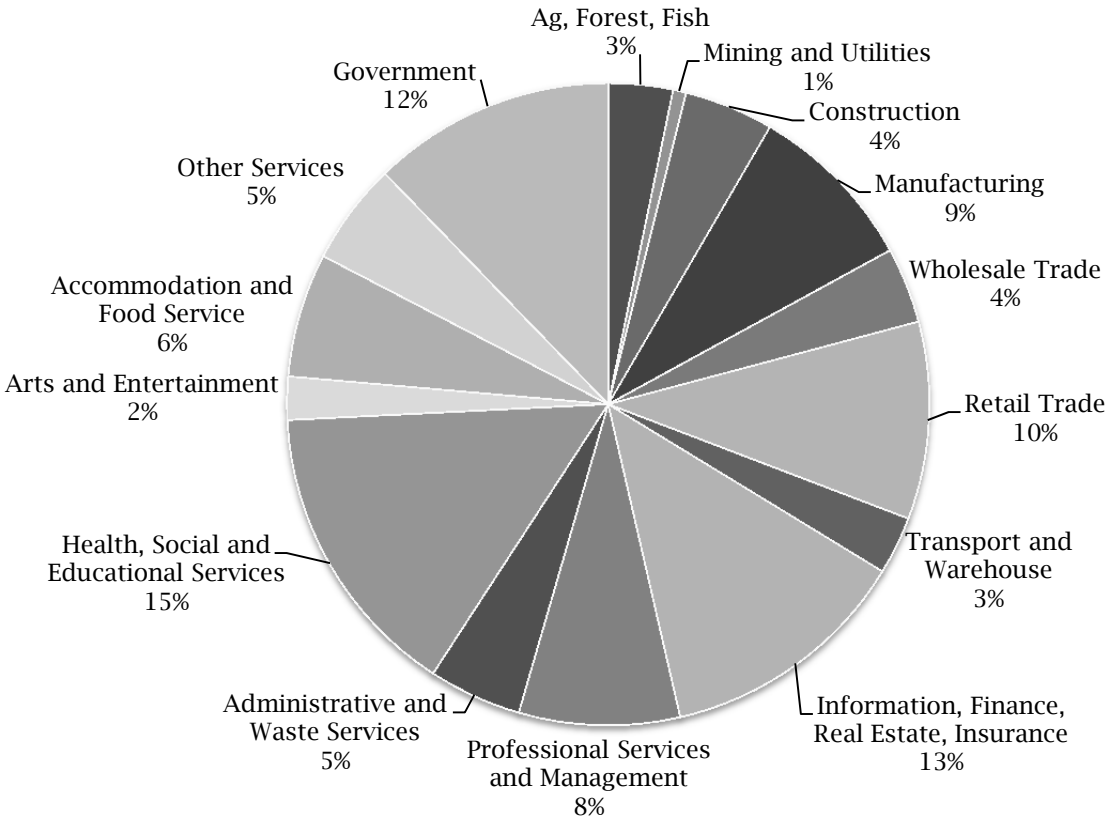
Museums fall into two industries, depending on their operations. Those operated by private organizations, including non-profits, are in the arts and entertainment industry. In 2010, this industry produced \$3.4 billion of output. Museums operated by government agencies, such as the Minnesota Zoo, are accounted for in the government industry. The government sector, which

includes federal and state government, including public education, produced \$30.5 billion of output in 2010.

In 2010, there were 3.4 million employment positions in Minnesota. The majority (57 percent) were in a service sector, as shown in figure 2. The major service sector employers include health, social, and educational services (private) and information, finance, real estate, and insurance. While manufacturing creates 24 percent of output, it only employs 9 percent of workers. There are two possible explanations for this fact. One, in the database, one job is one job regardless of its status as part-time, full-time, or seasonal. Since the service sector tends to employ more part-time workers and the manufacturing sector more full-time, manufacturing’s share of employment may appear lower. Second, manufacturing tends to have higher dollar-volume-productivity per worker.

In 2010, the arts and entertainment industry, where most museum operations are categorized, employed just over 74,000 individuals which accounted for approximately 2 percent of Minnesota’s workforce. The government sector, including public education, employed 420,000 individuals, or 12% of the labor force.

Figure 2: Employment by Industry Sector, Minnesota 2010
 [Source: IMPLAN]

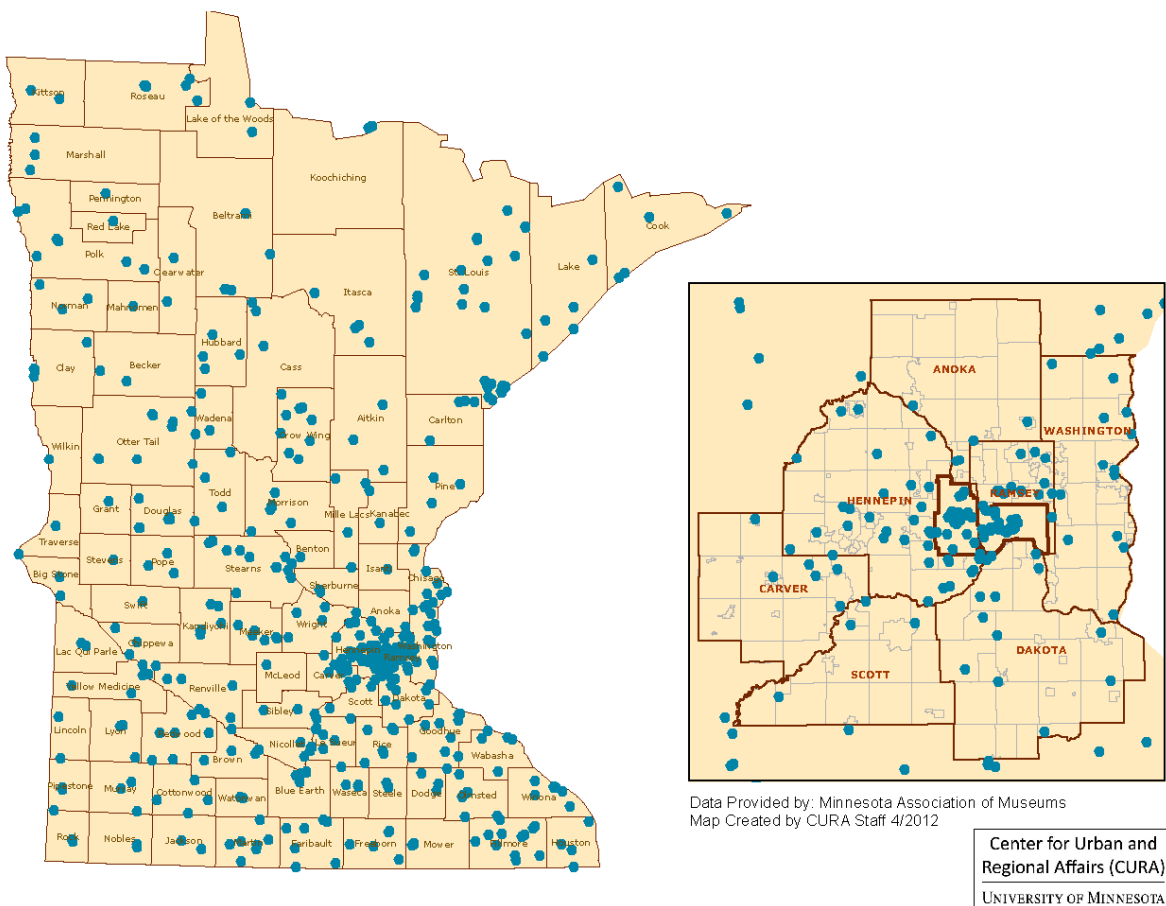


PROFILE OF MINNESOTA MUSEUMS

In early 2012, the Minnesota Association of Museums (MAM), in partnership with the University of Minnesota Tourism Center, conducted a survey of museums in Minnesota. MAM identified 562 operating museums in Minnesota. When the survey ended in early March, 213 museums had responded. Respondents included the Minnesota Historical Society which responded for its 32 museums and sites. Thus, 245 museums were represented in the survey results. The overall response rate was 43 percent. The following section reports the average responses for the responding museums. Later in this report these results will be extrapolated to all museums in Minnesota to calculate the total economic impact.

Each of Minnesota's counties hosts at least one museum. Figure 3 shows the location of each museum. Not surprisingly, many museums are located in the metropolitan area. However, museums are also clustered in regional centers, such as St. Cloud, Duluth, Rochester, and Mankato.

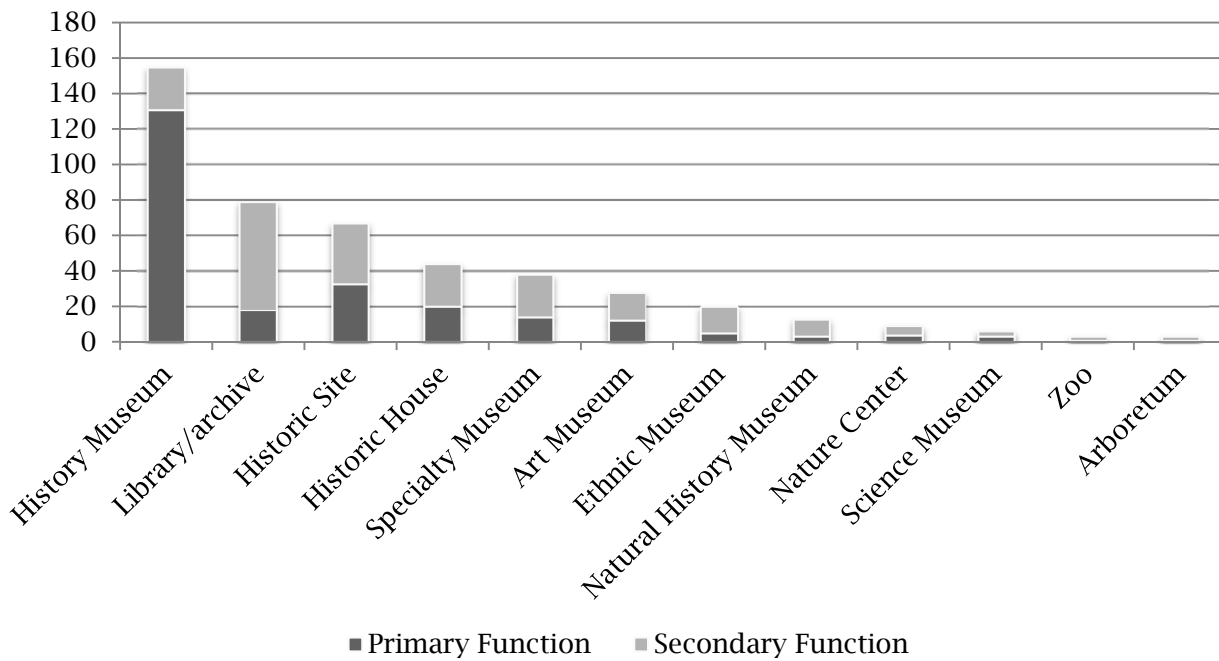
Figure 3: Documented Minnesota Museums by Location



The survey yielded a wealth of information regarding museums in Minnesota. The most common function for responding museums was related to history (see figure 4). Other frequently identified museum functions include: research libraries and archives, historic sites, historic houses, and specialty museums. Interestingly, many museums indicated a research library or archive function as a secondary function, indicating the importance of museums in keeping written documentation of their subject area. According to the Minnesota Historical Society, many history organizations began with impetus from programs that were strongly focused on the preservation of written records.

Many survey respondents selected multiple primary and secondary functions. One hundred fifty-five respondents indicated “history museum” as either their primary function (131) or their secondary function (24). Eighteen respondents selected “library/archives” as a primary function and 61 a secondary function. See appendix 3 for a more detailed breakdown of museum function.

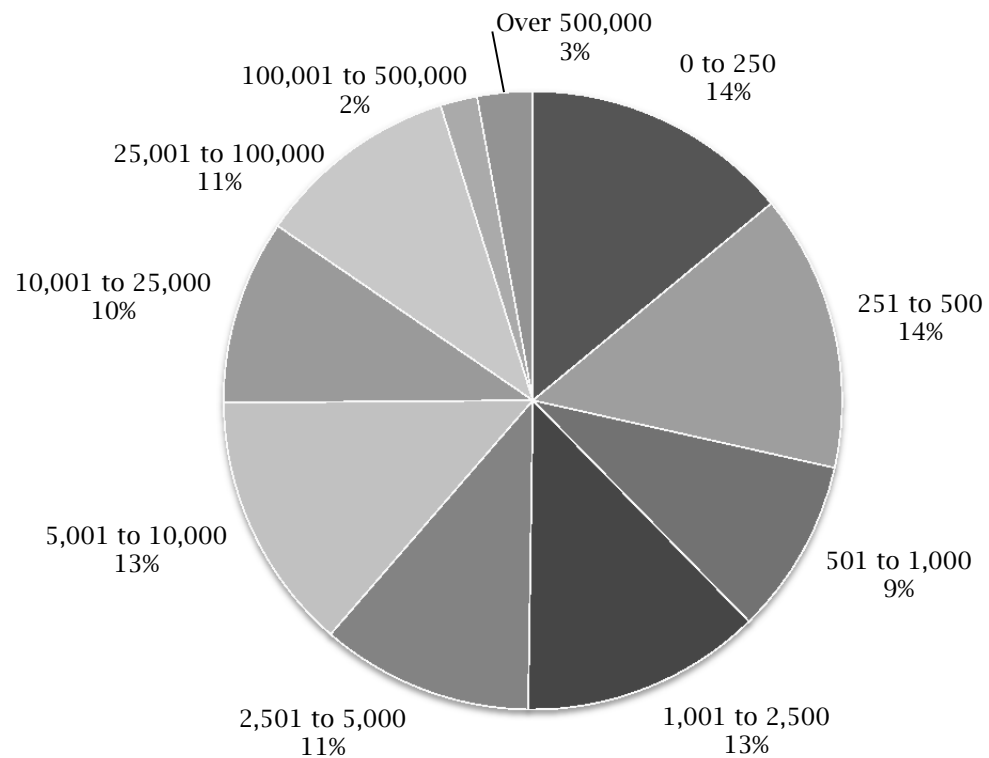
Figure 4: Which Best Describes Your Institution?
[n=245]



The 29 smallest responding museums (less than 250 visitors) tended to be historical in nature. Thirteen of these museums reported being history museums, seven historic sites, and four historic houses. The 29 largest museums were a bit more diverse. Thirteen reported being history museums and five art museums with the balance spread across function types.

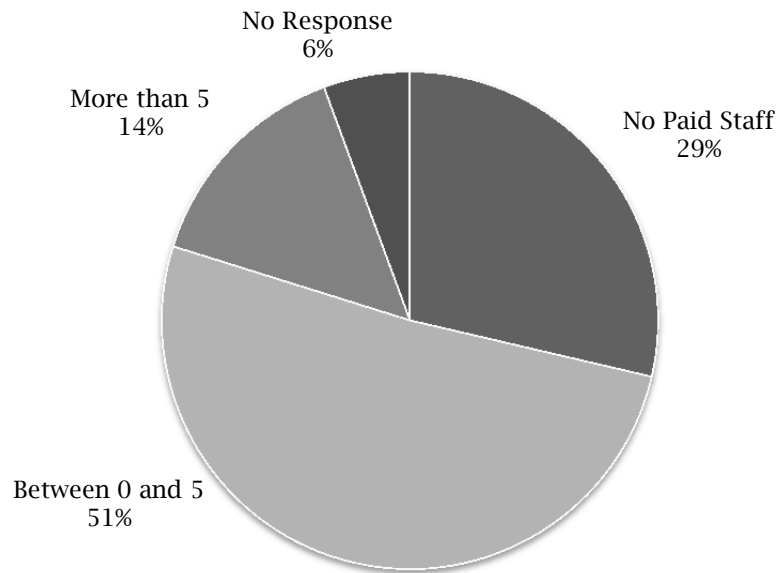
Museums responding to the survey varied in the number of visitors they hosted. The surveyed museums reported serving over 6.3 million visitors in 2011. Museum representatives estimate 37 percent were tourists who traveled over 50 miles to arrive at the site. Thus, the responding museums report 2.3 million tourists in 2011 (figure 5).

**Figure 5: How Many Visitors Did Your Museum Have in 2011?
[n=245]**



On average, the responding museums had a total of 2 (full-or part-time) staff members receiving pay. Total employment ranged from 0 employees to 400 employees. Of the 245 responding museums, 61, or 29 percent reported having no paid staff at all, see figure 6. Volunteers are significant contributors to the staffing of Minnesota’s museums. On average, each museum reported having 45 volunteers: that is 22 volunteers per paid staff member. According to responding museums, their volunteers contributed nearly 490,000 hours of work in 2011: it would take 236 full-time employees to do the work of these volunteers.

**Figure 6: Number of Paid Full- or Part-Time Staff Members
[n=245]**



ECONOMIC CONTRIBUTION

Total economic contribution is equal to the summation of direct, indirect, and induced effects. In terms of Minnesota's museums, direct effects include: expenditures by museums for day-to-day operations, expenditures by museums for annual capital improvements, and spending by tourists. Direct effects initiate additional economic activity to occur, therefore setting off a ripple in the local economy. These ripples fall into two categories, indirect effects, created by business-to-business transactions, and induced effects, created by business-to-consumer transactions. In an economic contribution analysis, researchers quantify the direct effects. An input-output model then measures the indirect and induced effects. In this study, researchers collected primary data on the direct effect by surveying museums in Minnesota. The input-output model used was IMPLAN (MIG, Inc). For more explanation of the terms direct, indirect, and induced effects, please see appendix 1.

Direct Effect

The direct effect of Minnesota's museums is derived from spending by the museums for operations, for capital improvements, and from tourist expenditures. In order to quantify spending by museums, the University of Minnesota teamed with the Minnesota Association of Museums (MAM) to conduct a survey. MAM identified 562 operating museums in Minnesota. Of these, 32 museums and sites are operated under the umbrella of the Minnesota Historical Society. In early February 2012, each museum was extended an invitation to participate in the survey. Museums with active email addresses were sent an invitation to an online survey and those without an email address were mailed a paper survey. Invitations were also sent via email. A link to the survey was advertised via email, website, and Facebook. Personal phone calls were placed both by MAM and by a University of Minnesota intern to follow-up with non-respondents. When the survey ended in early March, 213 museums had responded. Respondents included the Minnesota Historical Society which responded for all of its sites. Thus, 245 museums were represented in the survey results. The overall response rate was 43 percent. A copy of the questionnaire is in appendix 2.

On average, the responding museums had operating budgets of \$170,000.¹ Just under one-third of the budget (\$54,000) was spent on paid labor for the museum. The average museum reported capital expenditures in 2011 of \$157,000. Museums were allowed to self-identify what constituted a capital expenditure. Typically, capital expenditures indicate a construction project, such as building improvements. However, given the relatively high value per museum, it is likely that museums included other items, such as purchases of collection items into this category.

To calculate the total economic impact of museums in Minnesota, the average expenditure per museum was extrapolated to the total count of museums in Minnesota (562 documented).

Table 1 details the direct effect of museums in Minnesota. In 2011, Minnesota's museums employed an estimated 1,700 individuals. In this study, each job is counted as one individual, whether the job is full-time or part-time. Museums spent \$180 million to operate, \$80 million of which was paid to employees as labor income. Museums also spent \$157 million on capital

¹ There were several large museums that responded to this study. Their expenditure data was significantly higher than the other museums, such that they were considered "outliers". Their information (including operating expenditures, capital expenditures, employment, and volunteer labor) was not used to calculate the averages. The average responses were applied to 527 museums and then the "outlier" museums total responses were added back in for total museum figures.

improvements. In total, Minnesota’s museums directly infused \$337 million in spending into the economy.

	Total
Employment	1,700
Gross Payroll (millions)	\$82
Operating Expenditures (millions, excluding payroll)	\$97
Capital Outlays (millions)	\$157
Museum Tourists (millions)	\$42
Estimates by the University of Minnesota Extension Center for Community Vitality.	

Museums, by their nature, attract visitors. Respondents estimated the majority of museum visitors are from within the local region. However, a portion of visitors are also tourists. Tourists spend money in the regional economy as part of their trip. Since tourists come from outside the region, the money they spend in the region is considered “new money” or money that would not have been spent in the economy if not for the trip to the museum. New money contributes to the economic impact of a museum.

In order to determine the economic impact of tourists, an expenditure profile for each tourist is needed. In other words, how much does a tourist spend when in the area to visit the museum and on what items do they spend their money? Primary data collection, through intercept surveys of tourists, is the ideal method for compiling a spending profile. However, primary data collection on tourists was not feasible in this project. Therefore, this report uses secondary data on similar tourists.

In 2006, the Minnesota Citizens for the Arts and the Forum of Regional Arts Councils of Minnesota conducted a study on the economic impact of arts in Minnesota.² The study found that the average nonprofit arts attendee spent \$24.35 above the cost of admission while engaged in an arts-related experience. Of total visitors, 12 percent were tourists. Visitors spent an average of \$9 on meals/refreshments, \$5 on souvenirs/gifts, \$4 on transportation, \$3 on lodging, and \$3 on other expenditures. Arts tourists are similar in nature to museum tourists (in fact, there are many arts museums in Minnesota). Therefore, these expenditure patterns will be applied to Minnesota museum visitors.

The 562 documented Minnesota museums attracted an estimated 14 million visitors in 2011. Of these, 12 percent are assumed to be tourists. Therefore, there were 1.7 million museum tourists in 2011. On average, they each spent \$24.35 for total tourist spending of \$42 million. This is a direct effect, as shown in table 1.

² Full report “The Arts: A Driving Force in Minnesota’s Economy” is available for download at www.mncitizensforthearts.org/learn/artsresearch.

Indirect and Induced Effects

Now that the estimated direct effects are quantified, the data can be entered into 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.

Indirect effects are those associated with a change in economic activity due to spending for goods and services directly tied to the industry. In this case, these are the changes in the local economy occurring because museums need to purchase materials (office supplies and electricity, for example) and related services (accounting and advertising, for example). These are business-to-business effects.

Induced effects are those associated with a change in economic activity due to spending by the employees of businesses (labor) and by households. Primarily, in this study, these are economic changes related to spending by museum employees and by workers contracted for capital improvements. It also includes household spending related to indirect effects. These are business-to-consumer effects.

Total Effect

In 2011, museums in Minnesota contributed an estimated \$674 million in economic activity to the state's economy, see table 2. This included \$253 million of wages paid to an estimated 5,300 employees with jobs supported by museum activity. This is economic activity generated via spending by museums for operations and for capital improvements. Museums themselves employed an estimated 1,700 employees for daily operations. Museums also hired contract workers to implement capital improvement projects. These projects employed an estimated 1,100 additional workers which are quantified in the direct effects.

	Direct	Indirect	Induced	Total
Output (millions)	\$337	\$142	\$195	\$674
Employment*	2,700	1,000	1,600	5,300
Labor Income (millions)	\$138	\$49	\$66	\$253

Estimates by the University of Minnesota Extension Center for Community Vitality.

*This table includes expenditures made by museums for operations and capital improvements. Direct employment effects include the 1,700 jobs in museums and the construction jobs generated to implement capital improvements.

Museum tourists contribute to the economic impact of museums in Minnesota. In 2011, an estimated 1.7 million people traveled outside their home regional economy to visit museums. In total, tourists spent an estimated \$42 million while visiting museums. Of this, a significant portion was spent on retail items and on gasoline purchases. Retail and gas purchases must be margined in the impact analysis. The process of margining involves assigning a dollar value to all the individual components of the 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 to 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 the margining calculations.

After margining, the estimated direct impact of spending by museum tourists was \$28 million, as shown in table 3. As a result of the tourist dollars being spent, an estimated additional \$25 million in economic output was generated. Therefore, in 2011 museum tourists generated an estimated \$53 million of economic activity in Minnesota. To create this output, 690 workers were employed and paid \$18 million in compensation.

Table 3: Total Estimated Economic Contribution of Minnesota’s Museum Tourists, 2011				
	Direct	Indirect	Induced	Total
Output (millions)*	\$28	\$11	\$14	\$53
Employment	500	80	110	690
Labor Income (millions)	\$9	\$4	\$5	\$18

Estimates by the University of Minnesota Extension Center for Community Vitality.

*This table includes an estimate of expenditures made by tourists visiting Minnesota’s museums. Direct effects of output are margined, to account for the difference between retail prices in expenditure profiles and producer prices in the model.

TOP INDUSTRIES IMPACTED

The total effect provides a broad overview of how museums connect with Minnesota’s economy. Results from the analysis can provide more detail on how museums affect other specific industries. In fact, the model can show the top industries affected by museum operations and capital improvements. This is useful because it can demonstrate in further detail the complex interactions between industries in the economy.

As revealed in table 4, the biggest impacts are derived from direct operating and capital improvement spending by museums. Other industries that benefit most greatly from spending by museums include the real estate market, restaurants, health care, engineering and architecture, and employment services. Service industries, such as restaurants and health care, often appear in the top impacts due to spending by employees.

Table 4: Top Industries Affected by Minnesota’s Museums, Sorted by Estimated Employment		
Industry	Total Estimated Employment Effect	Associated Output Effect (millions)
Museums, historical sites, zoos and parks	1,700	\$180
Construction of other new nonresidential structures	1,100	\$157
Real estate establishments	230	\$36
Food services and drinking places	186	\$10
Architectural, engineering, and related services	110	\$13
Employment services	100	\$4
Private hospitals	80	\$11
Wholesale trade	70	\$13
Offices of physicians, dentists, and other health care	70	\$10
Nursing and residential care	60	\$3
Estimates by the University of Minnesota Extension Center for Community Vitality.		
This table includes museum spending: operating budget, wages and salaries, and capital improvements.		

NOTES ON THE ANALYSIS

This study was completed using economic contribution analysis methodology. Economic contribution analysis quantifies the amount of economic activity generated by a project or industry. Economic contribution studies differ slightly from the methodological viewpoint of economic impact studies. Economic impact studies require a “*but for*” test to be met. That is, but for, the industry, what would the economy look like? Clearly, this type of analysis would not be feasible for museums.

This study also assumes that respondents have accurately estimated important measures used to carry out this economic analysis, including for example, expenditures for labor, operations, and capital investments. Errors in this regard would affect the accuracy of the results. Further, tourism expenditures were based on a prior study, error in those results would affect the accuracy of this analysis as well.

The focus of this study is on museum spending. The study does not include activities such as foundations or charitable giving in which museums might participate. For example, the Minnesota Historical Society administers grants using Minnesota’s Arts and Cultural Heritage funds. The Minnesota Historical Society also assists in administering the Minnesota Historic Rehabilitation Tax Credit. Each of these programs generates economic impacts, as researched previously by University of Minnesota Extension, that are not included in this report.

SUMMARY

Museums are an integral part of the fabric of Minnesota. From the founding of the Minnesota Historical Society in 1849 to 2012, museums have preserved Minnesota's cultural and ethnic heritage, inspired creative artists, entertained children, conserved the natural world, captured scientific advancements, and archived valuable historical documents.

The Minnesota Association of Museums (MAM) applied for and received funding from the University of Minnesota's Tourism Center Carlson Travel, Tourism, and Hospitality Chair grant to conduct a survey of Minnesota's museums. With funding from this grant, MAM engaged University of Minnesota Extension's Economic Impact Analysis program to measure the economic impact of museums in Minnesota.

In 2011, museums in Minnesota contributed an estimated \$674 million in economic activity to the state's economy. This included \$250 million of wages paid to an estimated 5,300 employees with jobs supported by museum activity. This is economic activity generated via spending by museums for operations and for capital improvements. Museums themselves employ an estimated 1,700 employees for daily operations. Museums also hire contract workers to implement capital improvement projects. These projects employed an estimated 1,100 additional workers.

Minnesota's museum tourists generated an estimated \$53 million in economic activity in Minnesota. To create this output, 690 workers were employed and paid \$18 million in compensation. It is estimated that 1.7 million people visited museums outside of their home region in 2011.

Top industries affected by museum spending include construction, restaurants, health care, and real estate.

The focus of this study is on museum spending. This study does not include any measure of the positive benefits generated by the charitable activities of museums or by any grants or tax credits administered by museums.

APPENDIX 1: METHODOLOGY

Special models, called input-output models, exist to conduct economic impact analysis. There are several input-output models available. IMPLAN (Impact Analysis for PLANning, Minnesota IMPLAN Group)³ is one such model. Many economists use IMPLAN for economic contribution analysis because it can measure output and employment impacts, is available on a county-by-county basis, and is flexible for the user. 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 capabilities, and its limitations will help ensure the best results from the model.

One of the most critical aspects of understanding economic impact analysis is the distinction between the “local” and “non-local” economy. The local economy is identified as part of the model-building process. Either the group requesting the study or the analyst defines the local area. Typically, the study area (the local economy) is a county or a group of counties that share economic linkages. In this study, the study area is the entire State of Minnesota.

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

Output

Output is measured in dollars and is equivalent to total sales. The output measure can include significant “double counting.” Think of corn, for example. 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 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, not full-time equivalents (FTE’s). IMPLAN includes total wage and salaried employees, as well as the self-employed, in employment estimates. 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 added to the product by the labor component. So, in the corn example when the corn is sold to the mill, a certain percentage of the sale goes to the farmer for his/her labor. Then when the mill sells the corn as feed to dairy farmers, it includes some markup for its labor costs in the price. When dairy farmers sell the milk to the cheese manufacturer, they include a value for their labor. These individual value increments for labor can be measured, which amounts to labor income. Labor income does *not* include double counting.

Direct Impact

Direct impact is equivalent to the initial activity in the economy. In this study, it is spending by museums on operations, wages and salaries, and capital improvements. Tourism spending is also measured.

Indirect Impact

³ IMPLAN Version 3.0 was used in this analysis. The trade flows model with SAM multipliers was implemented.

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 inputs, such as electricity, steel, and equipment. As the plant increases purchases of these items, its suppliers must also increase 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. In this study, indirect impacts are those associated with spending by museums for operating items and for capital outlays.

Induced Impact

The induced impact is the summation of changes in the local economy that occur due to **spending by labor**. 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. Induced impacts also include spending by labor generated by indirect impacts. So, if the museum purchases services from a local tax preparer, spending of the tax preparer's wages would also create induced impacts. Primarily, in this study, the induced impacts are those economic changes related to spending by museum employees and construction workers hired to implement capital improvements.

Total Impact

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

Input-Output, Supply and Demand, and Size of Market

Care must be taken when using regional input-output models to ensure they are being used in the appropriate type of analysis. If input-output models are used to examine the impact or the contribution of an industry that is so large that its expansion or contraction results in such major shifts in supply and demand that prices of inputs and labor change, input-output can overstate the impacts or contributions. While the museum industry is a major component of the Minnesota economy, it is not likely that its existence has an impact on national prices. Hence, the model should estimate the contributions reliably.

APPENDIX 2: MUSEUM QUESTIONNAIRE

Thank you in advance for taking the time to participate in this brief survey from the Minnesota Association of Museums (MAM), with support from the University of Minnesota's Tourism Center.

This survey is an effort to understand the economic value and impact of museums in Minnesota. It is part of a larger effort building to a Minnesota Museums Month in May 2012, immediately following the American Association of Museums Annual Meeting in Minneapolis. MAM's goal is to better understand the number of museums existing in Minnesota, along with their economic value, in order to have more fruitful discussions with decision makers about the role of our institutions in our state.

Your participation will make you eligible to win one of twenty free MAM memberships OR waived registration to the Fall 2012 MAM Annual Meeting.

Please, one response per site. All responses will remain confidential. Results will only be provided in aggregate.

If you have any questions regarding this survey, please contact Brigid Tuck, University of Minnesota, at tuckb@umn.edu or 507 389 6979.

1. What best describes your institution? (please select only one response as your "primary" function)

Art museum

History museum

Science museum

Natural history museum

Historic house museum

Specialty museum

Historic site

Ethnic museum

Library/archive

Nature center

Zoo

Arboretum/botanical garden

Other (please indicate if primary or secondary)

2. Please give us your best estimate of how many visitors you had in 2011.

3. Using your best estimate, what percentage of your visitors traveled more than 50 miles to reach your site?

4. How many paid staff do you have? (Please use fulltime equivalents; decimal fractions may be used, i.e. 0.5 or 2.5)
5. How many people are on your Board and/or all governance committees?
6. How many volunteers (total) dedicated time to your institution in 2011? Your best guess estimate is appreciated.
7. About how many hours did volunteers dedicate to your institution last year?
8. What was the operating budget for your organization's fiscal year ending in 2011?
9. What was the amount of your budget dedicated to wages (including benefits) in fiscal year 2011?
10. If your institution undertook any capital projects (new construction or renovation) between January 2009 and December 2011, please give us the cost of the project(s) rounded to the nearest thousand dollars.
11. Optional: Share a story of your institution's economic value to your local economy or to the Minnesota economy.
12. Comments: Is there anything else you would like to add or share?

We are collecting your contact information for two purposes.

1. To compile a comprehensive catalog of museums in Minnesota
2. To distribute completion awards (free memberships/registrations).

The Minnesota Association of Museums (MAM) and University of Minnesota do not share their mailing lists with other organizations or businesses.

Further, responses to this survey will remain CONFIDENTIAL. Results will only be shared in the aggregate.

13. What is your organization's name?
14. What is your organization's street address?
15. What is your mailing address city?



16. What is your mailing address zip code?
17. What is your organization's phone number?
18. What is your organization's website address?
19. What is your email address?
20. Your first name?
21. Your last name?

APPENDIX 3: MUSEUM FUNCTION DETAIL

Two hundred and forty-five museums responded to the museum survey. Museums were directed to select one primary function and all secondary functions they performed. Many museums, however, selected multiple primary functions. Table A1 lists the number of responses by function and by designation of primary or secondary.

Table A1: Museum Function, Primary and Secondary (What best describes your institution?)		
Function	Primary	Secondary
Art Museum	12	16
History Museum	131	24
Science Museum	3	3
Natural History Museum	3	10
Historic House	20	24
Specialty Museum	14	24
Historic Site	33	34
Ethnic Museum	5	15
Research library/archive	18	61
Nature Center	4	5
Zoo	1	2
Arboretum	1	2
Data from an online survey of Minnesota museums conducted in February 2012.		

