

# **The Economic Value of Arts and Cultural Organizations to the Central Iowa Economy**

**A Report for Bravo Greater Des Moines**

Prepared by

David Swenson\*  
Consulting Analyst

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\* Associate scientist in the Department of Economics at Iowa State University. This report was prepared privately and should not be construed as an Iowa State University study.

## Summary of Findings

This is a study of the economic activity of 37 organizations that received funding from the Bravo Greater Des Moines (Bravo) organization in 2006. The data collection instrument identified income, expenses, employment, and characteristics of attendance at area educational, cultural, and artistic venues. Portions of the survey data were used to build an input-output econometric model of the central Iowa economy to ascertain the extent to which Bravo funded events and programs, along with the visitors that are attracted, support economic activity in the greater metropolitan region.

### **The Findings**

According to their survey, the Bravo-funded organizations had \$46.63 million in operating income in 2006, were responsible for 1,384 jobs, and produced an estimated \$44.1 million in economic output. Economic output is a measure of the sales value of all goods and services that were produced by the Bravo organizations in the last year.

Using an input-output model of the regional economy, it was estimated that

- The \$33.72 million in organizational output required \$16.7 million in regionally supplied inputs, which in turn stimulated 222 additional jobs.
- When the workers in the Bravo organizations and the workers that are supported in the supplying industries spend their paychecks, they support an additional \$14.1 million in regional sales and 149 more jobs.
- In total, Bravo organizations' total economic values yielded \$74.96 million in output in the region, \$37.1 million in value added, of which \$25.6 million found its way into labor incomes supporting a total of 1,755 central Iowa jobs.

The additional economic effects to the region that were due to visitorship to events and activities were also isolated.

- According to the Bravo survey, of the 2.4 million total visitors, 574,454 came from 100 miles away or more.
- Those visitors spent \$8.1 million directly to purchase retail goods and services in the area incidental to those visits. That direct spending supported \$2.83 million in labor income in the region and 144 jobs, most of which were in service and retail establishments.
- When the visitor spending worked its way through the remainder of the regional economy, it accounted, in total, for \$12.8 million in total regional sales (or output), \$7.5 million in value added, \$4.35 million in labor income, and 190 total jobs.

Combined, the visitors that Bravo funded organizations enticed to the region accounted for or linked to \$87.74 million in industrial output (sales), \$44.55 million in value added, \$29.9 million in labor income, and 1,944 jobs.

# The Value of Arts and Cultural Organizations to the Central Iowa Economy

## Introduction

This is a report estimating the economic values that are attributable to the combined activities of Bravo Greater Des Moines (Bravo) funded organizations in the Des Moines/Polk County metropolitan region. This research identifies the extent to which those entities link economically with the remainder of the regional economy. Thirty-seven Greater Des Moines Community Foundation institutions, centers, or funding recipients completed a survey of their resources, their spending, employment, volunteer effort, the number and estimated residential characteristics of their visitors, along with information about the educational efforts of these centers.

Table 1 displays the survey participants. It also categorizes them as either primarily artistic or entertainment or as educational or heritage in their orientation in order to align the economic activity with the modeling system that was employed.

**Table 1. Survey Respondents by Primary Cultural Category**

Artistic and Entertainment	
Ankeny Community Chorus	Des Moines Public Art Foundation
Ballet Theater of Des Moines/Ballet Des Moines	Stage West Theater Company
Central Iowa Repertory Theatre	
Civic Center of Greater Des Moines	Education and Heritage
Civic Music Association	Blank Park Zoo
Des Moines Art Center	Des Moines Botanical Center
Des Moines Arts Festival	Fort Des Moines Memorial Park
Des Moines Choral Society	Iowa Historical Society
Des Moines Metro Opera	Hometown Perry
Des Moines Playhouse	Iowa Asian Alliance
Des Moines Symphony	Iowa Hall of Pride
Des Moines Music Coalition	Johnston Historical Society
Drama Workshop	Living History Farms
Gateway Dance Theater	Polk County Heritage Gallery
Heartland Youth Choir	Salisbury House
Hoyt Sherman Place	Science Center of Iowa
Iowa Scottish Pipes and Drums	Terrace Hill Foundation
Iowa Youth Chorus	Urbandale Historical Society
Metro Arts Alliance	West Des Moines Historical Society
Pointe Academy	

From an economic point of view, all of these organizations produce goods or services that are consumed by the region’s citizens and by visitors to the region. This research will estimate the value of that consumption, it will identify the kinds and the amount of linkages that the institutions have with the remainder of the

economy, and it will estimate the visitor effects that can be attributed to their combined attractiveness for persons who are not residents of the region.

### **An Introduction to Economic Analysis Measures**

There are several economic measures that are reported. An important value is the *industrial output*. Output is the value of goods or services that are produced for sale or inventory in the economy. Generally, for most goods and services, output and gross sales are the same thing. For public or non-profit organizations, output is usually the value of annual spending.

*Value added* is the next economic variable that we report. Value added is the amount of wages and salaries paid to workers, normal profits paid to business owners, payments made to investors and rents paid to property owners, and indirect tax payments to governments. A subset of value added is *labor income*. Labor income is the value of wages, salaries, and benefits to workers and the normal profits paid to business owners. Labor income is reported separately because it represents the amount of value added that is highly likely to be retained and re-spent in the local economy.

Our remaining standard economic measure is *jobs*. Jobs come in all forms and sizes. Some are full-time and others are part-time. Some are year round and some are seasonal. In our model, a job is a job, and there is no differentiation between full-time jobs or part-time jobs. Accordingly, we need to scrutinize the value of the jobs that we are reporting, which will vary by the kind of industry that we are measuring. In traditional manufacturing firms, most jobs are full time and year round, for example; in many recreation industries jobs are seasonal and mostly part-time.<sup>1</sup>

We also report three different types of economic activities:

- ♦ *Direct effects* are those that are directly attributable to the firm – its output, value added, labor income, and jobs. The direct industries/institutions that we are measuring (Bravo Greater Des Moines (Bravo) funded organizations) all require inputs to produce their services. Inputs take the form of wholesale goods, financial and legal assistance, utilities, rents and maintenance services, along with a host of other goods and services.

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<sup>1</sup> Many of the participants in this study rely heavily on volunteer labor. The value of that labor is calculated when discerning the institution's overall regional industrial output, but the volunteer jobs are not for purposes of modeling treated as jobs.

- ◆ The extent to which these goods and services can be purchased locally constitutes the *indirect effect*.
- ◆ Finally, in the last analytic iteration of the modeling process, all workers in the direct industry or those supported in the indirect industries by the direct industry's demand for inputs must make purchases of household goods and services. These are called the *induced effects* or *household effects*. The sum of the direct, indirect, and induced effects constitutes the *total economic effects*.

Multipliers are also reported. Multipliers are obtained for industrial output, value added, labor income, and jobs. They are the total effect divided by the direct effect. They reveal to us the linkage that the direct industry has with the remainder of the regional economy. Multipliers do not denote *causation*, as many people are prone to conclude. Instead, they identify the magnitude and scope of linkages that firms have with an economy. The amount of causation associated with a change in employment in a firm is subject to additional interpretation and analysis beyond the multiplier.

### **The Direct Values**

Bravo conducted a detailed survey of its members to obtain financial, attendance, and programmatic information from its members. The respondents provided a high amount of information about their revenue sources and expenditures, which allowed for adjusting the model (or calibrating it) to be sensitive to the kind of spending that the participants were expected to make in the local economy considering their output levels, payments to workers, and the number of jobs that they require. The model that was compiled was responsive, therefore, to the economic structure of the participating institutions.

Table 2 contains a summary of some of the important direct data for the participants. Combined, the participants generated \$46.625 million in income and \$40.4 million in spending. Total full- and part-time jobs numbered 1,384, and total payroll was \$15.3 million. As many of these organizations are dependent on donated labor from members, estimates of the value of that labor were added to the value of services that were produced. Combining total spending, payments to reserves, plus the imputed value of donated labor, yielded \$44.1 million in estimated direct output of the Bravo funded organizations. That table also contains estimates of attendance. The fractions of attendance from outside the primary service area are used to infer

economic effects attributable to visitorship. An additional assessment of attendance is contained in Appendix B.

**Table 2. Survey Participant Financial, Personnel, and Output Summary**

	Artistic and Entertainment	Education and Heritage	All Participants
<b>Income</b>			
Contributions and Grants	10,269,587	13,254,528	23,524,115
Earnings	15,035,007	8,837,454	23,872,461
Total Operating Income	\$ 25,304,594	\$ 21,320,773	\$ 46,625,367
<b>Spending</b>			
Personnel	7,551,634	7,771,438	15,323,072
All Other	17,035,686	8,012,358	25,048,044
Total Spending	\$ 24,587,319	\$ 15,807,654	\$ 40,394,973
<b>Personnel</b>			
Full Time	122	232	354
Part Time	770	260	1,030
<b>Estimated Annual Output</b>			
<i>Volunteers</i>	3,503	3,132	6,635
<i>Volunteer Hours</i>	159,665	105,492	265,156
<i>Imputed Value of Volunteers</i>	\$ 1,297,274	\$ 857,118	\$ 2,154,393
<i>Total Attendance</i>	1,427,053	1,118,884	2,545,937
<i>Greater Des Moines Area Attendance</i>	1,299,889	671,594	1,971,483
<i>Outside Greater Des Moines Area (100 miles or more)</i>	127,164	447,290	574,454

### **Bravo Greater Des Moines Economic Values**

The regional economic values of the Bravo organizations were determined by entering the direct data into our model and, effectively, shocking the model to see how the area economy responds. Two separate scenarios were compiled – one for the heritage and education group and one for the artistic and entertainment group – to make sure that we were sensitive to each group’s operational characteristics. Just the totals for the Bravo organizations, however, are reported in Table 3 as the participants are treated as a complete economic entity just like if measuring any other major industrial category such as insurance, manufacturing, or banking.

Table 3. Survey Respondent Economic Values

	Direct	Indirect	Induced	Total	Total Multiplier
Industrial Output	\$ 44,106,964	\$ 16,744,014	\$ 14,112,964	\$ 74,963,944	1.70
Value Added	\$ 19,235,062	\$ 9,333,443	\$ 8,508,435	\$ 37,076,940	1.93
Labor Income	\$ 15,323,072	\$ 5,504,551	\$ 4,555,711	\$ 25,583,334	1.67
Jobs	1,384	222	149	1,754	1.21

Looking just at the survey values, those institutions were responsible for \$44.1 million in direct output and directly paid \$15.3 million in labor income to their 1,384 job holders. The organizations required over \$16.7 million in regionally supplied inputs (the indirect effects), which in turn caused another \$5.5 million in labor income to be stimulated for 222 more jobs. When the workers in the direct industries (the Bravo survey participants) and the indirect industries (the suppliers) spent their paychecks, they induced an additional \$14.1 million in industrial output in the form of household purchases of goods and services in the regional economy. This in turn sparked another round of labor income in the amount of \$4.6 million to the 149 more workers required to supply these household goods and services. In all, the Bravo funded institutions alone are linked to \$74.96 million in total regional sales (or output), \$37.1 million in value added, \$25.6 million in labor income (a subset of value added), and 1,754 jobs.

Total multipliers are also listed. For the Bravo organizations as a group, their multipliers were similar to other service industries in the region. The 1.70 output multiplier means that for every dollar's worth of direct output by the organizations, another \$.70 in sales are supported in the region. The value added multiplier is the most robust. At 1.93, the value added multiplier means that for every \$1 of value added attributable directly to the organizations, \$.93 in value added will be sustained elsewhere locally. The multiplier of 1.67 for labor income means that for every dollar of wage and salary paid by Bravo organizations, another \$.67 in labor income is supported in the remainder of the economy. Finally, the multiplier of 1.21 for jobs means that for every direct job in Bravo funded organizations, another 21/100<sup>ths</sup> of a job is supported in the central Iowa economy. The jobs multiplier is very low because a large fraction of the jobs that are stimulated are part-time or seasonal. Were the jobs restated on a full-time equivalency basis, the jobs multiplier would be higher.

Table 4 restates the values in Table 3. It reports them as values per \$1,000,000 of direct output either in the separate subgroups or in total. This table standardizes the overall economic effects in a manner that allows administrators and planners to gauge growth or decline in industrial output for the group of institutions as a whole. It also allows each survey participant to estimate their expected regional economic values based on their output levels.

Table 4. Survey Respondent Economic Values Per \$1,000,000 of Industrial Output

	Direct	Indirect	Induced	Total	Total Multiplier
Industrial Output	\$ 1,000,000	\$ 379,623	\$ 319,971	\$ 1,699,594	1.70
Value Added	\$ 436,100	\$ 211,609	\$ 192,905	\$ 840,614	1.93
Labor Income	\$ 347,407	\$ 124,800	\$ 103,288	\$ 580,029	1.67
Jobs	31.4	5.0	3.4	39.8	1.27

We see from this table that per million dollars of direct output, \$1.7 million in total output is realized in the regional economy, \$.841 million in value added, \$.580 million in labor income, and almost 40 jobs. This table is useful for individual institutions for estimating their unique economic effects separate from the group totals. For example, if one of the participants posted total output (total costs plus a reasonable value of donated labor) of, say, \$3.5 million, they would simply multiply every value (except the multiplier) in Table 4 times 3.5. If another institution had an output estimate of \$750,000, they would multiply the values in Table 4 by .75.

### **Bravo Greater Des Moines Visitor Effects**

When measuring economic activity that is attributable to an organization or a set of organizations, it is useful to investigate the dimensions of the primary service area and the secondary service area. In short, we want to know where the visitors come from. When an industry attracts visitors, it is stimulating a measure of local spending that might not have otherwise occurred. If one can identify the magnitude of visitorship and the amount of spending, then one can estimate an increment to local economic activity. This increment is called the *visitor effect*. It assumes that visitors to the greater Des Moines area necessarily must make, for example, food and fuel purchases. Some others will purchase other retail goods and services, and still others will be expected to purchase lodging and additional transportation services.

In isolating the visitor effects, we are relying on very broad generalizations about visitor behavior. A recent and reliable scientific sample of the visitors to

Bravo funded institution's activities is not available, but visitor spending estimates for the Polk County area have been done based on several other studies in the region and elsewhere and help to inform these estimates.\* The most critical component of this analysis is the estimate by the responding institution of the number of visitors from outside of the Polk County area. In this survey, the estimate that 23 percent of their visitors actually come from 100 miles or more, and a significant fraction of all other visitors come from counties that are on the fringe of the metropolitan statistical area.

The next issue is determining whether visitorship was primarily due to organization's event or if visitorship was incidental to some other activity in the region. Again, absent a careful survey over time, one cannot be sure whether visitorship was primarily versus indirectly due to a Bravo organization event. In the face of that uncertainty, this analysis estimates the total visitor effects to the region regardless of the primary cause for the visit – we have estimated visitor impacts to which Bravo funded organizations and their programs have contributed significantly but are, perhaps, not the sole cause of the visit.

Table 5 lists our findings. Based on information from the survey, it is estimated that 574,454 visitors who lived significantly outside of the primary service region of Polk County came to Bravo organizations' events. In addition, a substantial fraction of the remaining 1.971 million visitors resides outside of the primary metropolitan region. Whatever their reasons for visiting, it was estimated that they spent \$8.1 million in direct purchases on retail and service goods in the area, which directly supported \$4.75 million in value added, \$2.83 million in labor income, and 144 jobs. When this spending multiplied its way through the regional metropolitan economy, it was estimated that \$12.8 million in total sales (output) occurred, \$7.5 million in value added was sustained, along with \$4.35 million in labor incomes for 190 jobs.

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\* In particular, estimates compiled in 1999 for the Polk County Events Center, along with subsequent separate assessments for the Iowa Cubs, the Science Center of Iowa, and major sporting events have allowed us to compile indexes of probable spending by kind of event being attended by kinds of attendees. The estimates used for this analysis also included information from two different non-metropolitan area surveys of visitor to recreational areas and entertainment events.

Table 5. Estimated Visitor Economic Values

	Direct	Indirect	Induced	Total	Total Multiplier
Industrial Output	\$ 8,103,825	\$ 2,272,447	\$ 2,396,246	\$ 12,772,518	1.58
Value Added	\$ 4,752,259	\$ 1,273,137	\$ 1,444,648	\$ 7,470,043	1.57
Labor Income	\$ 2,832,057	\$ 741,244	\$ 773,519	\$ 4,346,820	1.53
Jobs	144	21	25	190	1.32

The multipliers are also listed. As these are primarily service and retail sales, the multipliers are relatively low. Per dollar of direct visitor sales, \$.58 in additional sales are stimulated in the region. Per dollar of labor income paid because of the direct visitor sales, \$.53 in additional labor income is sustained. Per direct job supported by visitor spending produces 32/100<sup>ths</sup> of a job (about a third) in the rest of the economy. The jobs multiplier is low because most retail and service jobs are part-time and comparatively lower-paying.

### Combined Economic Effects

The final table combines total effects with their visitor effects. This represents the sum of economic activity that we identified as either directly or indirectly attributable to Bravo Greater Des Moines events and activities, and the associated visitorship that they stimulated or helped to stimulate. Total industrial output (sales, mostly) amounted to \$87.74 million. These sales supported \$44.55 million in regional value added, \$29.93 million in labor income, and 1,944 jobs.

Table 6. Combined Economic Values

	Direct	Indirect	Induced	Total	Total Multiplier
Industrial Output	\$ 52,210,789	\$ 19,016,461	\$ 16,509,210	\$ 87,736,462	1.68
Value Added	\$ 23,987,321	\$ 10,606,580	\$ 9,953,083	\$ 44,546,983	1.86
Labor Income	\$ 18,155,129	\$ 6,245,795	\$ 5,329,230	\$ 29,930,154	1.65
Jobs	1,528	243	174	1,944	1.27

### Discussion and Comparison with the Previous Study

The reader will notice that the term *economic impact* is not used, opting instead to list the total economic values. Some economic impacts can be inferred, however. According to the survey, about 23 percent of the visitors to Bravo organization events and activities came from substantially beyond the Polk County metropolitan area; accordingly, we can assume that roughly a quarter of the

combined output found in Table 3 and associated value added production, labor income, and total jobs may be called an economic impact in that they are serving an export market. The remainder of the organizations' output, about 75 percent, primarily serves regional residents and can be classified as a regional educational or entertainment good that is in competition for spending with all other private or public entertainment and education goods sold in the region.

It is less ambiguous to assign economic impact status to the visitor effects for two reasons. First, it is likely that many of the organizations' activities are among the primary reasons for visiting the region by many out-of-town patrons. A trip to the zoo, a show at the Civic Center, a day at Living History Farms – these account for a large fraction of visitorship, a large fraction of out-of-region attendance, and are likely the primary reason for a visit to the region. Second, the visitor effects that were calculated are reasonable yet conservative estimates. That said, it must be emphasized that it is not possible to gauge overall visitor effects absent a detailed survey of venue patrons that includes questions about their spending.

A study like this was conducted previously for the Greater Des Moines Cultural Alliance in 2002. This study has more survey participants than the previous research. Following are notes on comparing the two studies.

- There is a high amount of continuity between the two studies as the survey instrument was nearly identical.
- The study area for the modeling activity included, as was the case before, Polk, Dallas, and Warren Counties. The current questionnaire for estimating visitors, however, included attendees from a nine-county area; hence the visitor effects are conservatively estimated as we cannot discern which came from Story, Marshall, Jasper, Boone, or Marion County, as examples. By the methods deployed in this study, all of those fringe county visitors would be considered export sales.
- This study, as an adjustment to the previous study, allows for a greater probability of lodging for visitors from 100 miles away or more, which in turn stimulates an extra day's worth of spending in the area.

These kinds of studies are designed to help organizations and institutions to understand the relationships that their activities have with the remainder of the regional economy. The educational, cultural, and entertainment institutions that

comprise Bravo Greater Des Moines exist in large part because of the size and scope of the regional economy. Cultural, artistic, and educational activities contribute directly and indirectly to the overall regional economy, as well. They are part of the quality-of-life fabric of any community, but they exist as well to serve a region that is often-times larger than the primary economic region. When the health of an economy is measured, great attention is paid to private and public organizations that are able to provide a range of goods and services that are demanded by more than the local population, as these special services help to drive other forms of urban growth.

In recent years, a body of research has emerged noting that a region's growth prospects can be conditioned strongly by broad sets of cultural, recreational, and entertainment opportunities that are available visitors and potential new residents. These studies suppose that an area economy is linked not just to its industrial strengths, but to the creative outlets and opportunities that exist in a region, as, increasingly, workers in a knowledge economy weigh those factors as much if not more so than traditional criteria when choosing a community to live and work.

## **Appendix A: Regional Fiscal Impacts**

The economic activity described in the foregoing analyses can be used to discern sets of fiscal impacts. In specific, estimates of the local and state own-source revenues that might be expected given the estimates of total labor income generated in our analyses can be made. Own source revenues are comprised of the taxes, charges, and fees that are part of general local and state government operations. There are other revenues, as well, that governments count on. Local governments receive considerable assistance from state government, most notably in funding local schools and in highway funding. State government receives considerable assistance from the federal government, most noticeably for funding income maintenance, food security, and medical services for the poor and the disabled. This analysis does not measure intergovernmental transfers.

The accompanying table describes the expected fiscal outcomes. The labor income generated in Table 6 in the main portion of the study would support the following own source revenues. Local governments would realize \$2.1 million, of which \$1.05 million would be property taxes and \$667,194 would derive from charges and fees. State government own source receipts would be \$2.7 million, of which \$1.8 million would be taxes, and \$596,542 would be charges and fees. Combined, \$4.8 million in local and state government own source receipts would be supported.

**Appendix Table A: Fiscal Impacts Associated With Bravo  
Total Economic Values**

	Local	State
General revenue from own sources	\$ 2,094,763	\$ 2,698,726
Taxes	1,260,138	1,832,615
Property	1,052,369	-
Sales and gross receipts	168,198	837,319
Individual income	18,736	718,341
Corporate income	-	59,424
Motor vehicle license	5,074	121,855
Other taxes	15,762	95,677
Current charges	667,194	596,542
Miscellaneous	167,431	269,569

These receipts are generated to fund direct government services – they represent the amount of resources available to provide public goods. Accordingly, as local and state government budgets balance yearly and governments generate funds to pay for services, one would expect that all receipts are consumed and that there is no

meaningful surplus in revenues accumulating to either level of government.

## Appendix B: Analysis of Attendance to Bravo Organization Events

Overall attendance from the Bravo organization surveys was over 2.5 million. There are several categories of paid and unpaid attendance in the accompanying table. Of the total, 54 percent were paid and 46 percent were unpaid. When we look at the two groupings, however, the prevalence of paid and unpaid attendance is much different. For the Artistic and Entertainment grouping, just 33 percent were paid attendees; for the Education and Heritage organizations, over 80 percent were paid attendees.

While this study measures the overall economic values of cultural, educational, and other artistic and entertainment activities in the region, it cannot measure the overall social values of the contributions of these entities to the community at large. Because these organizations are able to provide a wide range of services to non-paying customers, there are overall social benefits not measured by the economic analysis.

**Appendix Table B. Attendance Characteristics**

	Artistic and Entertainment	Education and Heritage	All Participants
Total Number of Members/Subscribers	39,145	17,346	56,491
Number of Individual/General/Full Price Admissions	330,279	757,936	1,088,215
Total Reduced Rate Admissions	41,344	9,045	50,389
Number of Attendees at Fundraising Performances	8,948	54,197	63,145
Other Paid Attendance/Admissions	57,553	60,454	118,007
<b>Total Paid Attendance/Admissions</b>	<b>477,269</b>	<b>898,978</b>	<b>1,376,247</b>
Complimentary Attendance/Admissions	490,345	168,301	658,646
School Tours Attendance/Admissions	27,634	10,158	37,792
Volunteer Activity Attendance/Admissions	6,188	11,701	17,889
Other Unpaid Attendance/Admissions	425,617	29,746	455,363
<b>Total Unpaid Attendees/Admissions</b>	<b>949,784</b>	<b>219,906</b>	<b>1,169,690</b>
<b>Total Attendance Paid and Unpaid</b>	<b>1,427,053</b>	<b>1,118,884</b>	<b>2,545,937</b>

### **Appendix C: Basic Terminology and Modeling Procedures**

This research is conducted utilizing two very important sources of information and research capacity. Reasonably detailed financial, employment, and attendance data were gathered from the participants via a survey. Information about the overall industrial structure of the region of study was compiled using an input-output model. An input-output model (I-O) is an accounting of the sales and purchases of nearly 300 industries in the central Iowa economy. The data that were gathered from the survey were organized in a way that they could be input into our I-O model in order to calibrate it so that it was mathematically sensitive to the overall economic structure of our Greater Des Moines Community Foundation group.

I-O model data are compiled at the county, multi-county, or the state levels.\* We can aggregate the data to form cohesive economic regions. In this study, we built a model that contained the Polk, Warren, and Dallas County economies, as they comprise the primary central Iowa Metropolitan Statistical Area, although the official Des Moines / West Des Moines metropolitan statistical area would also include Madison County and Guthrie County.

I-O models were originally constructed to assist policy makers and planners to understand the economic impact of plant closings or of major industrial restructurings. The models are now frequently used to isolate and estimate the value of inter-industrial relationships and the intricacies of regional industrial dependencies, along with traditional economic impact measures.

Regional scientists are generally cautious about using the term *economic impact* in our research, as the term has very specific meaning to regional scientists. An economic impact occurs when productivity in an industry in a region results in a surplus of goods that are sold outside the region and that, as a consequence, bring money into a region. We call these sales *exports*. A positive economic impact occurs as production produces a surplus. A negative economic impact occurs when production scales back or ceases.

Many goods and services can fit into this definition. Durable goods manufacturing is primarily geared for export sales. Recreation and tourism industries usually cater primarily to out-of-region visitors. Higher value health and education services also fit into this category as they draw from a geographic territory

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\* The I-O model used in this analysis is called IMPLAN (IMpact PLANning). It is the most widely used and systematically reliable I-O modeling system in use in the U.S.

that is much larger than the primary service area of a region. The same can be said of many of the cultural and educational institutions in Greater Des Moines. A portion of what they collectively produce is ultimately destined to be an export sale – out-of-region consumers purchase them. These entities also entice additional, ancillary visitor spending for goods and services as visitors are prone to spend money elsewhere locally during their stay. These effects are called *visitor impacts*.

There are two other traditional kinds of economic impacts. If an industry in a region begins to produce a good for local consumption that historically had been imported, then it is retaining sales locally that previously escaped out of the region. This loss of sales is called *leakage*. When we stem leakage by producing locally, we call this *import substitution*. A genuine import substitute constitutes an economic impact to a region as money that used to leak out is retained locally.

The last kind of traditional economic impact involves public spending choices. The concentration of state or federal spending in a particular area for, as examples, universities, state department headquarters, prisons, federal buildings and services, and military bases, all result in a localized concentration of public spending and employment. The value of that spending (both operational and spending for workers) also constitutes a positive economic impact (for a new prison, for example), or a negative economic impact if a state or federal installation were to close. We call these values the *institutional impacts*.

The I-O models that we use allow us to initially determine the value of economic inter-relationships within a region. We generally call these values the *economic effects*. If data are available, we will parse out the regional economic impact that might contained within them to isolate the potential impact value of the institutions that we are measuring to the regional economy.