

Regional Economic Impacts of the 2008 Cedar Rapids Flood



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Executive Summary

Why a report on the regional economic development effects of flooding?

- The U.S. Army Corps of Engineers (Corps) Principles and Guidelines clearly support the recommending of projects where factors beyond national economic development (NED) justify the project. Although much of the US Army Corps of Engineers project evaluation procedures are based on NED benefits, the Corps acknowledges that regional economic development (RED) effects may be important factors in the success of a project.
- Using the NED rule (i.e., choosing the project options having the largest net benefits) only ensures that a project will generate the largest possible economic “pie” (so-to-speak). However, having a larger economy says nothing about how the distribution of the economy’s components--in other words, more is not necessarily better (Robinson, 1999).
- Regional economic development effects of flooding include the impacts that not implementing a flood management project can have on the local and regional economy. RED effects are usually measured in terms of business activities such as the employment they provide and the income the workers are paid.
- The Corps of Engineers (2010) has undertaken a RED analysis of alternative flood management options on the Cedar River at Cedar Rapids, Iowa. The regional economic development effects of not having a flood management system in Cedar Rapids are not currently being evaluated by the Corps of Engineers.

The Cedar Rapids flood was a huge natural disaster with major community impacts

On the last day of May 2008 the Cedar River at Cedar Rapids, Iowa rose above its average gage height (7 feet) and then reached near flood stage (12 feet) on June 2. It reached a historical high water mark of over 31 feet on Friday, June 13 (over 11 feet higher than the previous record set in 1851). The Cedar River remained above flood stage until June 21 and continued at or above the average level through the third week of July.

The flooding waters caused devastation throughout the city on its citizens, businesses, property owners, public buildings, religious and cultural organizations and transportation facilities (City of Cedar Rapids, 2010).

- The flooding waters extended well beyond the 500-year floodplain and covered more than 10 square miles of the city.
- There were 18,000 residents displaced by the muddy and sewage-filled waters that damaged over 5,000 homes and 310 public facilities including City Hall, the Linn County Courthouse and the City's central fire facility.

- Total number of businesses directly or indirectly impacted by the flood: 1,281
 - Number of businesses lost as a result of the flood: 131
 - Number of businesses that have reopened: 671
 - Number of businesses that reopened outside the city or flooded area: 143
- Number of jobs in the flood impacted area before the flood: 11,814
- Number of jobs lost as a result of the flood: 1,865
 - Permanent: 1,324
 - Temporary: 541
- Only one of seven bridges in the City (and metro area) across the Cedar River was accessible (I-380) limiting access to the hospitals on the east side of the river.

The Cedar Rapids flood had large local and regional impacts that may persist long into the future

Three types of regional economic development analysis are addressed in this report. First, the direct, indirect and induced economic impacts of business lost as a result of the 2008 Cedar Rapids Flood during the recovery period.

- The cumulative economic impacts caused by the 2008 Cedar Rapids Flood during the period of business recovery. We estimate that the economic impacts due to the 2008 Cedar Rapids Flood generated losses in Linn County totaling:
 - \$2.5 billion in business sales over the flood recovery period,
 - 14,500 work-years of employment and nearly \$590 million in employee compensation,
 - \$60 million in proprietor's income,
 - \$466 million in rents, dividends, profits, etc. were lost or not paid,
 - \$103 million in indirect business taxes, and
 - \$1.2 billion in gross domestic product (value added).
- We estimate that the cumulative economic impacts due to the 2008 Flood generated losses in rest of Iowa totaling:
 - \$105.8 million in business sales over the flood recovery period,
 - 513 work-years of employment and nearly \$19.2 million employee compensation,
 - \$4.9 million in proprietor's income,
 - \$18.8 million in rents, dividends, profits, etc. were lost or not paid,
 - \$2.4 million in indirect business taxes, and
 - \$45.2 million in gross domestic product (value added).
- We estimate that the cumulative economic impacts due to the 2008 Flood generated losses in State of Iowa totaling:

- \$2.6 billion in business sales over the flood recovery period,
- 15,000 work-years of employment and nearly \$609 million employee compensation,
- \$4.9 million in proprietor’s income,
- \$64.7 million in rents, dividends, profits, etc. were lost or not paid,
- \$105.6 million in indirect business taxes, and
- \$1.3 billion in gross domestic product (value added).

Second, the direct, indirect and induced economic impacts of the 1,324 permanent job losses caused by the 2008 Cedar Rapids Flood as measured in economic output, employment, labor income and economic value added.

Total Multiregional Economic Losses Due to Permanent Flood-Related Job Losses

	Output	Employment (jobs)	Value Added	Labor Income
Linn County	\$590,665	3,543	\$265,967	\$161,520
Rest of Iowa	\$25,195	125	\$9,868	\$5,786
State of Iowa	\$615,860	3,668	\$275,835	\$167,306
Monetary impacts in thousands of 2010 dollars				

Third, properties that are flooded periodically and not protected through some type of mitigation facility (such as flood walls) will find that it is less productive in the future as firms and households seek locations that are more protected, other things being equal. During the time since the 2008 Flood existing firms and businesses seeking to locate in Cedar Rapids have related to city staff and officials that they would be reluctant to undertake major investments as long as flood protection is not implemented.

Without flood protection nearby firms will see increased costs due to periodic damages and the associated higher insurance rates. This is likely to affect locations both in and outside the flood impact area because of the costs associated with major flooding. Existing firms and businesses seeking to locate in Cedar Rapids have related to city staff and officials that they would be reluctant to undertake major investments as long as the major flood protection is not implemented. As a result, property that is flooded periodically and not protected through some type of mitigation facility (such as flood walls) will find that it is less productive in the future as firms and households seek locations that are more protected, other things being equal.

Table of Contents

Executive Summary	ii
Tables	vi
Figures	vii
1. The 2008 Flood in Cedar Rapids, Iowa	1
2. Regional Economic Impacts of Floods	5
3. The Economic Consequences of the 2008 Cedar Rapids Flood Due to Business Losses During the Recovery Period	6
A Flood Impact Survey of Cedar Rapids Businesses	7
4. The Recovery Period Economic Consequences of the 2008 Cedar Rapids Flood Due to Business Losses	8
Graphical Comparisons of the Recovery Period Economic Impacts of the 2008 Cedar Rapids Flood on the Economies of Linn County and the Rest of Iowa	12
5. The Permanent Economic Consequences of the 2008 Cedar Rapids Flood Due to Business Losses	21
6. The Economic Consequences of the 2008 Cedar Rapids Flood Due to Business Losses	24
References	27
Appendix A: Theoretical Effects of Flooding on Urban Economic and Demographic Structures	28
Appendix B: Multiregional Economic Multiplier Effects and Multipliers	30

Tables

1. Top 10 Historical Crests	1
2. Employment and Business Survey Results	8
3. Direct Effects (Losses) due to the 2008 Cedar Rapids Flood	9
4. Indirect and Induced Effects (Losses) of the 2008 Cedar Rapids Flood on the Linn County Economy	10
5. Total Effects (Losses) of the 2008 Cedar Rapids Flood on the Linn County Economy	10
6. Indirect and Induced Effects (Losses) of the 2008 Cedar Rapids Flood on the Economy of the Rest of Iowa	11
7. Total Effects (Losses) of the 2008 Cedar Rapids Flood on the Economy of the Rest of Iowa	12
8. Total Effects (Losses) of the 2008 Cedar Rapids Flood on the Economy of the State of Iowa	12
9. Linn County Output (Sales), Employment and Value Added	22
10. Linn County Output and Value Added to Employment Ratios	22
11. Direct Economic Losses Due to Loss of 1,325 Permanent Flood-Related Jobs	23
12. Implicit Multiregional Input-Output Multipliers for the 2008 Cedar Rapids Flood	23
13. Total Multiregional Economic Losses Due to Permanent Flood-Related Job Losses	23
14. Growth Rates in Private Non-Farm Employment: Linn County, State of Iowa and United States	25
15. Linn County Private Non-Farm Employment Projections	26

Figures

1. 2008 Cedar River Flooding Levels in Cedar Rapids, Iowa	1
2. May to August 2008 Average Daily Gage Height on the Cedar River at Cedar Rapids, Iowa	2
3. 2008 Cedar Rapids Flood Impact Area	2
4. Industry Output (Sales) Impacts—Linn County vs. Rest of Iowa	14
5. Industry Output Impact Shares: Linn County vs. Rest of Iowa	15
6. Industry Employment Impacts—Linn County vs. Rest of Iowa	16
7. Industry Employment Impact Shares: Linn County vs. Rest of Iowa	17
8. Industry Value Added Impacts—Linn County vs. Rest of Iowa	18
9. Industry Value Added Impact Shares: Linn County vs. Rest of Iowa	19
10. Industry Labor Income Impacts—Linn County vs. Rest of Iowa	20
11. Industry Labor Income Impact Shares: Linn County vs. Rest of Iowa	21
12. Employment Indices for Linn County, State of Iowa and United States	24
13. Alternative Linn County Private Non-Farm Employment Projections	25

REGIONAL ECONOMIC IMPACTS OF THE 2008 CEDAR RAPIDS FLOOD

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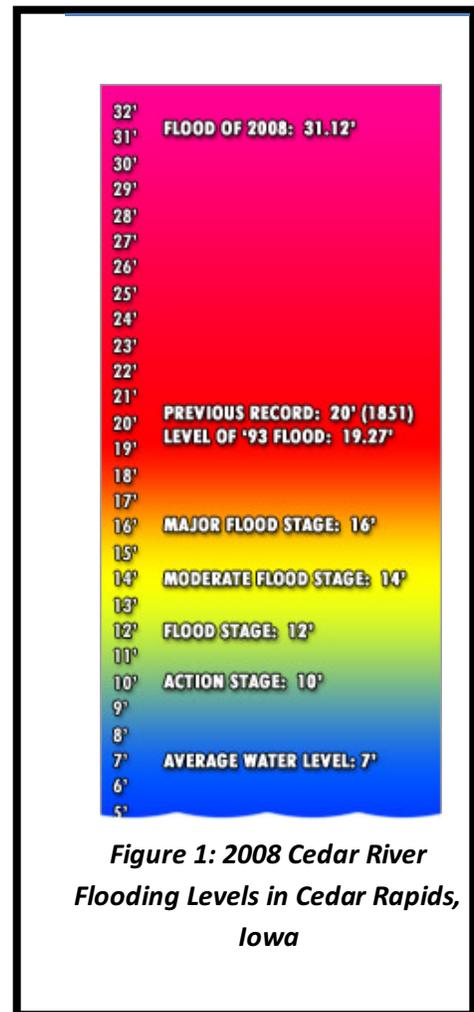
1. The 2008 Flood in Cedar Rapids, Iowa

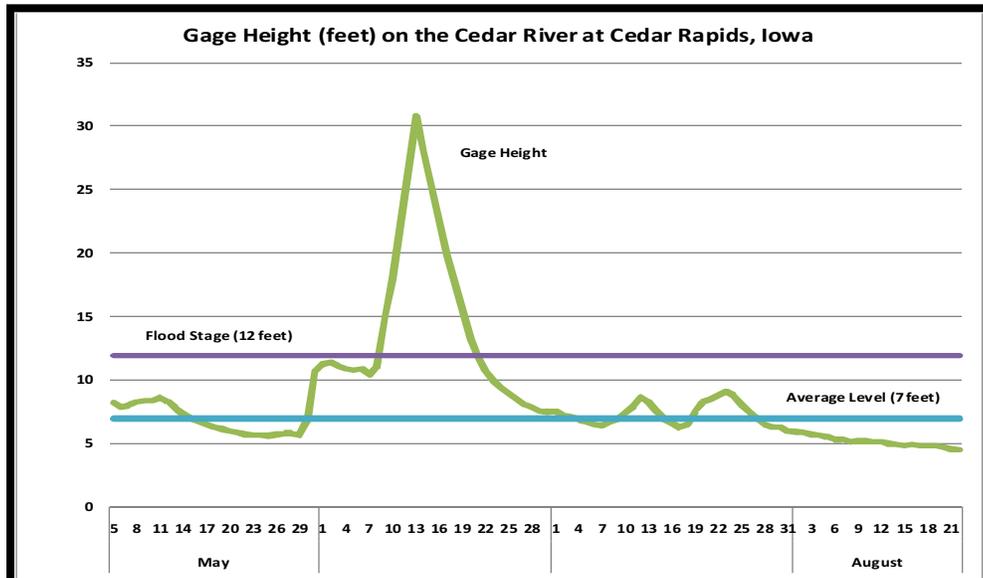
On the last day of May 2008 the Cedar River at Cedar Rapids, Iowa rose above its average gage height (7 feet) and then reached near flood stage (12 feet) on June 2 (Figure 1). After leveling off for a week, the Cedar River started to rise quickly again where it reached a historical high water mark over 31 feet on Friday, June 13 (over 11 feet higher than the previous record set in 1851).

Table 1
Top 10 Historical Crests

1.	31.12 ft	06/13/2008
2.	20.00 ft	06/01/1851
3.	20.00 ft	03/18/1929
4.	19.66 ft	03/31/1961
5.	19.27 ft	04/04/1993
6.	18.60 ft	04/04/1933
7.	18.51 ft	04/10/1965
8.	18.31 ft	07/25/1999
9.	18.30 ft	05/27/2004
10.	18.23 ft	06/16/1947

The Cedar River remained above flood stage until June 21 and continued at or above the average level through the third week of July (Figure 2).

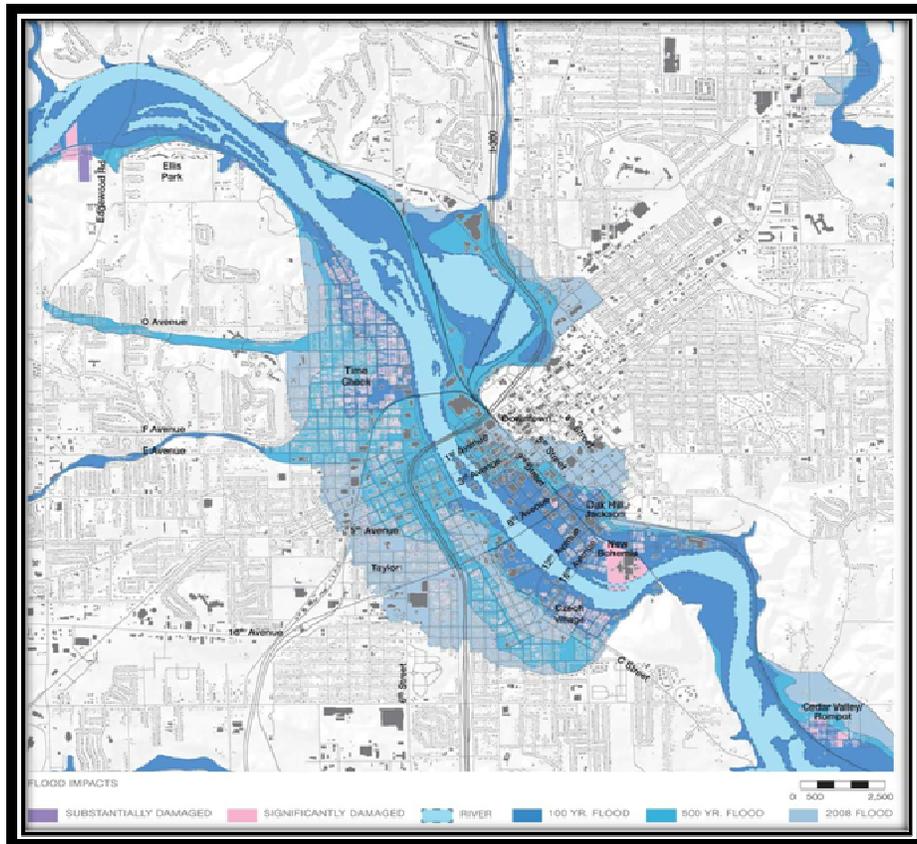




Source: USGS Surface-Water Daily Data for Iowa (<http://waterdata.usgs.gov/ia/nwis>)

Figure 2

May to August 2008 Average Daily Gage Height on the Cedar River at Cedar Rapids, Iowa



Source: City of Cedar Rapids (2010) Other Social Effects Report—Flood of 2008

Figure 3: 2008 Cedar Rapids Flood Impact Area

The water overtook neighborhoods no one ever dreamed would flood; it flowed through nearly every downtown business and most public buildings, displacing city and county services. More than 80,000 tons of debris have been collected and removed to landfills. When the Cedar River crested, the flooding waters extended well beyond the 500-year floodplain and covered more than 10 square miles of the city (14% of its land area). A year later, thousands of residents are struggling to rebuild. While Iowans are known for strength and resilience, the people of Cedar Rapids can only do so much and are left behind by a federal disaster funding system that some suggest may be broken. This is not the first national disaster, and it probably won't be the last. In addition to trying to recover from the flood damages, businesses are also struggling to rebuild and survive a national recession.

The flooding waters caused devastation throughout the city on its citizens, businesses, property owners, public buildings, religious and cultural organizations and transportation facilities. How do we measure the overall economic value of disasters? We begin by carefully accounting the direct losses (damages), like our personal or business properties as well as the value of public goods and infrastructure that were destroyed to the extent that they can be known—for example,



People

- 18,623 estimated persons in flood impacted area
- 120 families in flood areas receiving Section 8 housing assistance
- 1,360 estimated job loss as a result of the flood
- More than 57,218 flood recovery related volunteer hours donated
- 169 citizens in temporary shelters (during first three weeks of disaster)
- 268 currently occupy FEMA trailers

Property

- 7,198 affected parcels (5,390 residential)
- \$2.4 billion estimated cost in damage to public infrastructure and future flood management options
- As many as 1,500 properties will be demolished – 71 prior to Jan. 1, 2009
- 86 farms in Linn County were damaged



Cedar Rapids Downtown

- 900 (100%) people residing downtown displaced
- 450 (100%) downtown businesses impacted
- 35 (95%) restaurants impacted
- 9,000 (69%) people working downtown displaced
- 101 of 132 greater downtown blocks were impacted by the flood

Cedar Rapids Community Schools

- Six District Facilities were flooded
- An estimated 1,834 students flood-affected (The school district has 33 schools and 17,000 students)
- The District sustained \$33.5 million in flood damage
- 180 staff members were displaced



Community Development Organizations

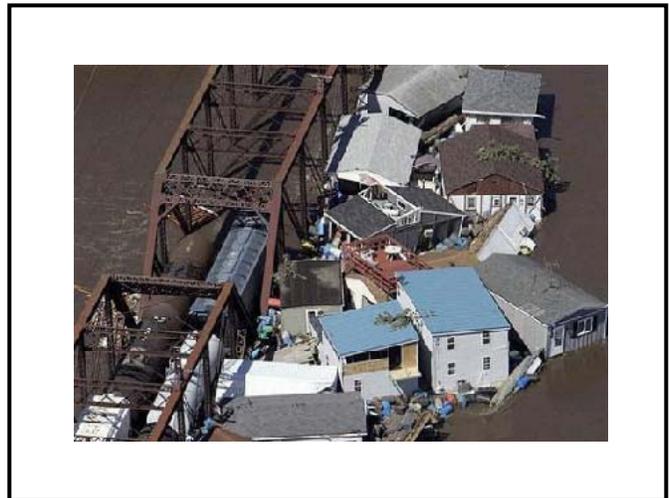
- \$258,200 in estimated total flood related damages
- Downtown District
- Cedar Rapids Area Convention and Visitors Bureau
- Entrepreneurial Development Center

Cedar Rapids Public Library

- Books damaged: 128,953
- Media items damaged (CDs, DVDs, etc.): 13,445
- Magazines damaged: 9,252

Churches, Worship Centers and Ministries

- 25 organizations displaced/destroyed
- \$11.7 million in total flood related damages



Transportation

- Ground Transportation, municipal city transportation hub, completely displaced
- \$90 million in total flood related damages to railroads
- \$172 million in total flood related damages to future disaster evacuation routes

Source: *CedarRapidsFloodStory.com*

2. Regional Economic Impacts of Floods

There are four types of regional economic impacts of floods that are discussed in this section of this report—(1) damages, (2) recovery effort effects, (3) business losses, and (4) changes in business productivity.

First, damages are the physical outcomes of flooding: houses destroyed, roads damaged, bridges washed out, households affected and businesses disrupted (as illustrated above for case of the 2008 Cedar Rapids Flood). The economic impacts of these damages are difficult to measure because it is hard to assess how much the regional and state economies are changed as a consequence of just these damages. Many types of damages are difficult to monetize due to the physical nature (especially environmental harms) because they are not valued in the marketplace. Direct losses are the financial value of the damages, to the extent that they can be determined. These are mainly the value of destroyed homes and personal belongings or the destruction of business machinery or inventories. Direct losses, however, are only known to the extent that individuals, businesses, or governments itemize those losses when seeking assistance.

Second, recovery efforts can have significant regional economic effects on the local economy to the extent that they create local spending. Insurance payments are designed to mitigate much of the personal and business direct losses caused by the damages. However, not all losses are compensated so there is a gap between the declared value of the losses and the value of the payments to households, businesses, and industries. Although the direct losses due to flooding can heavily impact individual businesses and households, the aggregate economy may not change much (Swenson, 2010).

Public assistance is intended to provide temporary aide to flood victims with shelter, food, clothing and other personal comfort items. Reconstruction of public infrastructure (such as flood protection facilities, roads, public buildings, etc.) will replace existing structures or provide future flood protection. The regional impacts of public assistance (including the re-construction of private and public facilities and infrastructure) related to the 2008 Cedar River Flood on the State of Iowa and Linn County has been computed by Swenson, et.al. (2008), Swenson (2010) and the U.S. Army Corps of Engineers (2010).

Third, local businesses located in the flood impact area will likely experience lost inventories, sales, productivity and profits. Many businesses may not be insured for losses due to flooding. There may also be business failures and job losses. As vital as many of these indicators are to the individual businesses (lost sales), they may not be the most appropriate economic impact measures. Some of these business losses are temporary that continue only as long as it takes for the businesses to recover while others will be permanent business losses due the closure of the affected firms. The losses sustained by households, businesses, and communities suggest dire direct and indirect economic consequences. When an economy is “impacted” changes in local industrial activity affect payments made to workers, owners, and investors. Ultimately, all economic activity finds its way into personal income, so loss in personal income.

The dollar value of lost sales overstates the impacts on the local economy because it does not include offsetting costs there are not incurred locally or are the losses of other local businesses. As a result, a better impact measure is “net operating losses”. Operating losses can occur for a variety of reasons—reductions in revenues, inventory losses, delays in production due to damages in plant or equipment, transportation problems, absence of or stresses on employees, or other disruptions to normal business operations. Operating losses, in turn, reduce reduction in regional income. In the jargon of economic impact analysis, operating losses are referred to as reductions in “value added”. Value added is defined as the sum of employment compensation (i.e., wages and salaries plus employer contributions to employee benefit programs such as social security, health insurance, etc.), proprietors’ income, other property-type income (rents, dividends, profits), and indirect business taxes. Labor income is defined to the sum of employee compensation and proprietors’ income.

Fourth, property that is flooded periodically and not protected through some type of mitigation facility (such as flood walls) will find that it is less productive in the future as firms and households seek locations that are more protected, other things being equal. During the time since the 2008 Flood existing firms and businesses looking to locate in Cedar Rapids have related to city staff and officials that they would be reluctant to undertake major investments as long as the major flood protection were not implemented. Without flood protection nearby firms would see increased costs due to periodic damages (see above) and the associated higher insurance rates. This business behavior is likely to affect locations both in and outside the flood impact area because the costs associated with major flooding affects businesses inside and outside the flood impact areas (see Appendix A).

3. The Economic Consequences of the 2008 Cedar Rapids Flood Due to Business Losses During the Recovery Period

Two types of economic effects of flood-related business losses are addressed herein. First, we evaluate the direct, indirect and induced economic impacts associated with the loss of business in the flood impact area caused by the 2008 Cedar Rapids Flood during the period of business recovery. The recovery times shown in Table 2 below indicate that the operations of firms in different kinds of industries were impacted for variable periods of time. The resulting economic effects on Linn County and the rest of Iowa are commuting in a cumulative manner—i.e., for the entire recovery period. In reality, the impacts will be most intense during the earlier stages of the recovery and less so later. Second, most of the firms in the first scenario have recovered and resumed their operations. Their workers have been recalled or rehired. As a consequence, the economic effects associated by their business losses will diminish over time. However, there are some firms that either have shut down their operations permanently or have left the Cedar Rapids area or even Iowa because of the 2008 Flood. In a recent report on the social effect of the 2008 Cedar Rapids Flood (City of Cedar Rapids, 2010) it was reported that

- Total number of businesses directly or indirectly impacted by the flood: 1,281
 - Number of businesses lost as a result of the flood: 131
 - Number of businesses that have reopened: 671
 - Number of businesses that reopened outside the city or flooded area: 143
- Number of jobs in the flood impacted area before the flood: 11,814

- Number of jobs lost as a result of the flood: 1,865
 - Permanent: 1,324
 - Temporary: 541

Source: City of Cedar Rapids (2010)

We also address the permanent business loss of the 1,324 jobs.

We computed the local economic consequences of flooding on the economy of Linn County, Iowa (where Cedar Rapids is located). In addition, we also simultaneously evaluated the economic effects on the rest of the State of Iowa. We measure the economic effects using four economic impact variables—output (sales), jobs (person-years of employment), value added and labor income. All impacts are computed at the most detailed industrial level available (i.e., IMPLAN's 440 sectors) using monetary units expressed in 2008 dollars. After computing the impact estimates all monetary values have been re-expressed in thousands of 2010 dollars and then aggregated industrially to a 10-sector level.

A Flood Impact Survey of Cedar Rapids Businesses

There are two key indicators of how extensive an industry's impact will be due to flooding. One is the percentage of the industry's firms are located in the flood impact area. And, two is the length of time that the firms are shut down due to flooding. These data are not available from published or unpublished secondary data sources. They have to be collected via special surveys. Recently the City of Cedar Rapids conducted such a business impact survey for this study. The results of the survey are shown in Table 2.

The recovery time was calculated as the industry-specific (2-digit NAICS) average length of recovery time reported by individual firms weighted by the number of employees of each firm affected by the flooding.¹ On average, approximate 17.8 percent of Linn County's industry employment is located with the 2008 Flood impact area within Cedar Rapids and the businesses located there were out of business for 1.3 months due to flooding.

¹ There were two exceptions to the weighted average computations. First, NAICS 311230 was treated individually. Second, the remaining parts of manufacturing were handled as a single sector.

Table 2

Employment and Business Survey Results			
Code	NAICS Sector	Linn County Employment Share Located in Flood Impact Area (%)	Recovery Time (months)
11	Agriculture, Forestry, Fishing and Hunting	0.0%	0.0
21	Mining, Quarrying, and Oil and Gas Extraction	0.0%	0.0
22	Utilities	52.2%	1.3
23	Construction	10.2%	1.6
31	Food, Textiles & Apparel Manufacturing	39.9%	1.7
32	Wood, Paper, Petroleum, Chemicals & Nonmetallic Goods Manufacturing	13.1%	1.7
33	Metals, Machinery, Equipment and Miscellaneous Product Manufacturing	10.4%	1.7
42	Wholesale Trade	8.5%	3.3
44	Motor Vehicle, Furniture, Food, Clothing & Gasoline Retail Stores	3.6%	2.9
45	Other Retail Stores	1.1%	2.9
48	Transportation	5.4%	1.0
49	Couriers, messengers and Warehousing	43.2%	1.3
51	Information	6.6%	6.0
52	Finance and Insurance	12.3%	2.4
53	Real Estate and Rental and Leasing	15.7%	7.6
54	Professional, Scientific, and Technical Services	16.7%	3.5
55	Management of Companies and Enterprises	11.4%	1.3
56	Administrative and Support and Waste Management and Remediation Services	12.6%	3.5
61	Educational Services	24.7%	6.0
62	Health Care and Social Assistance	41.8%	0.2
71	Arts, Entertainment, and Recreation	11.5%	15.5
72	Accommodation and Food Services	8.2%	9.6
81	Other Services (except Public Administration)	16.6%	8.8
92	Public Administration	35.1%	1.3
All Sector Average		17.8%	1.3

Source: Survey of businesses conducted by the City of Cedar Rapids (2010)—author’s calculations.

4. The Recovery Period Economic Consequences of the 2008 Cedar Rapids Flood Due to Business Losses

The direct economic consequences due to business losses associated with the 2008 Cedar Rapids Flood represent the activities immediately affected in the flood impact area. The economic data available for our study is specific only for Linn County, Iowa. We assume a proportional relationship between the sales of firms and number of their employees. The annual sales of the firms located in the flood impact area of Cedar Rapids is calculated by the product of the 2-digit NAICS Linn County employment shares located in the flood impact area (shown in Table 10) and the level of sales of each industry that is part of respective NAICS categories. Assuming proportional average monthly sales for each industry, we divided the annual sales levels by 12 and then multiplied by the average recovery times (in months) also given in Table 2. Finally, using output ratios for employment (jobs per million in sales), employee compensation, proprietors’ income, other property-type income and indirect business taxes (all in per dollar of sales) we calculated employment, proprietors’ income, other property-type income and indirect business taxes using the average sales over the recovery in the flood impact area estimated above (aggregated results are shown in Table 3). Jobs are interpreted as person-years of employment.

**Table 3
Direct Effects (Losses) due to the 2008 Cedar Rapids Flood**

Direct Impacts in Linn County (monetary values in thousands of 2010 dollars)								
NAICS	Sector	Output	Employment (person years of work)	Employee Compensation	Proprietors' Income	Other Property- Type Income	Indirect Business Taxes	Value Added
11	Agriculture	\$0	0	\$0	\$0	\$0	\$0	\$0
21	Mining	\$0	0	\$0	\$0	\$0	\$0	\$0
22	Utilities	\$53,430	86	\$11,060	\$135	\$22,610	\$6,575	\$40,380
23	Construction	\$20,832	136	\$7,793	\$632	\$709	\$120	\$9,254
31, 32 & 33	Manufacturing	\$348,530	444	\$39,205	\$54	\$34,121	\$1,098	\$74,477
42, 44 & 45	Wholesale & Retail Trade	\$29,248	243	\$10,712	\$656	\$3,791	\$4,078	\$19,237
48, 49 & 51	Transportation & Information	\$67,993	272	\$14,195	\$288	\$13,023	\$2,319	\$29,825
52 & 53	Finance, Insurance & Real Estate	\$199,877	688	\$27,375	\$4,055	\$79,937	\$16,911	\$128,278
54 - 81	Services	\$289,384	3,514	\$114,355	\$17,213	\$33,150	\$7,958	\$172,676
92	Public Administration	\$6,638	40	\$3,020	\$0	\$323	\$0	\$3,343
	Sector Total	\$1,015,933	5,423	\$227,714	\$23,033	\$187,665	\$39,059	\$477,471

Based on the calculations described above, it is estimated that within the flood impact area

- Businesses lost a total of more than \$1 billion in sales over the flood recovery period,
- Workers lost more than 5,400 years of employment² and more than \$227.7 million in lost employee compensation (an average of \$42,000 per work-year),
- Proprietors' lost \$23.0 million in income,
- \$187.7 million in rents, dividends, profits, etc. were lost or not paid,
- Indirect business taxes were lower by \$39.1 million, and
- The nation lost \$447.5 million in gross domestic product (value added).

These direct effects within the flood impact area of Cedar Rapids have further economic consequences via a multiplier effect (described above) in both Linn County and the rest of Iowa. The indirect and induced effects on the economy of Linn County are provided in Table 4.

² Please note that the employment impacts are reported here in person-years of employment loss—not jobs loss. The “job” losses reported by the City of Cedar Rapids (2010) are included in the person-years of employment lost shown above.

Table 4
Indirect and Induced Effects (Losses) of the 2008 Cedar Rapids Flood on the Linn County Economy

Indirect Impacts in Linn County (monetary values in thousands of 2010 dollars)								
NAICS	Sector	Output	Employment (person years of work)	Employee Compensation	Proprietors' Income	Other Property-Type Income	Indirect Business Taxes	Value Added
11	Agriculture	\$988	4	\$15	\$70	\$277	\$23	\$385
21	Mining	\$5	0	\$2	\$0	\$1	\$0	\$2
22	Utilities	\$66,736	108	\$13,813	\$169	\$28,228	\$8,207	\$50,417
23	Construction	\$28,428	200	\$11,342	\$963	\$1,590	\$155	\$14,050
31, 32 & 33	Manufacturing	\$355,493	463	\$40,433	\$55	\$34,617	\$1,140	\$76,245
42, 44 & 45	Wholesale & Retail Trade	\$54,469	422	\$19,904	\$1,133	\$7,120	\$7,562	\$35,719
48, 49 & 51	Transportation & Information	\$120,200	511	\$25,923	\$661	\$22,433	\$3,891	\$52,908
52 & 53	Finance, Insurance & Real Estate	\$257,333	1,013	\$41,476	\$5,946	\$97,260	\$19,904	\$164,586
54 - 81	Services	\$357,962	4,342	\$140,739	\$21,450	\$41,776	\$9,390	\$213,354
92	Public Administration	\$11,781	74	\$5,622	\$0	\$531	\$0	\$6,153
	Sector Total	\$1,253,396	7,137	\$299,268	\$30,446	\$233,833	\$50,271	\$613,820
Induced Impacts in Linn County (monetary values in thousands of 2010 dollars)								
NAICS	Sector	Output	Employment (person years of work)	Employee Compensation	Proprietors' Income	Other Property-Type Income	Indirect Business Taxes	Value Added
11	Agriculture	\$234	1	\$8	\$16	\$64	\$4	\$93
21	Mining	\$1	0	\$0	\$0	\$0	\$0	\$0
22	Utilities	\$5,853	9	\$1,212	\$15	\$2,469	\$717	\$4,413
23	Construction	\$1,838	16	\$765	\$104	\$297	\$7	\$1,174
31, 32 & 33	Manufacturing	\$4,010	8	\$538	\$0	\$317	\$19	\$874
42, 44 & 45	Wholesale & Retail Trade	\$39,167	550	\$14,212	\$1,648	\$4,804	\$5,649	\$26,312
48, 49 & 51	Transportation & Information	\$15,776	70	\$3,498	\$104	\$2,711	\$520	\$6,833
52 & 53	Finance, Insurance & Real Estate	\$64,139	190	\$8,163	\$1,133	\$26,889	\$5,207	\$41,391
54 - 81	Services	\$78,671	1,077	\$33,253	\$3,363	\$7,023	\$1,771	\$45,409
92	Public Administration	\$3,176	17	\$1,254	\$0	\$186	\$0	\$1,439
	Sector Total	\$212,865	1,939	\$62,901	\$6,383	\$44,761	\$13,894	\$127,939

Table 5
Total Effects (Losses) of the 2008 Cedar Rapids Flood on the Linn County Economy

Total Impacts in Linn County (monetary values in thousands of 2010 dollars)								
NAICS	Sector	Output	Employment (person years of work)	Employee Compensation	Proprietors' Income	Other Property-Type Income	Indirect Business Taxes	Value Added
11	Agriculture	\$1,223	5	\$24	\$86	\$341	\$27	\$478
21	Mining	\$5	0	\$2	\$0	\$1	\$0	\$3
22	Utilities	\$126,019	204	\$26,085	\$319	\$53,307	\$15,499	\$95,211
23	Construction	\$51,098	351	\$19,899	\$1,699	\$2,597	\$282	\$24,478
31, 32 & 33	Manufacturing	\$708,033	915	\$80,176	\$109	\$69,056	\$2,256	\$151,597
42, 44 & 45	Wholesale & Retail Trade	\$122,884	1,215	\$44,828	\$3,437	\$15,715	\$17,288	\$81,268
48, 49 & 51	Transportation & Information	\$203,969	853	\$43,616	\$1,054	\$38,167	\$6,730	\$89,567
52 & 53	Finance, Insurance & Real Estate	\$521,349	1,892	\$77,013	\$11,133	\$204,086	\$42,022	\$334,255
54 - 81	Services	\$726,017	8,933	\$288,346	\$42,025	\$81,948	\$19,119	\$431,438
92	Public Administration	\$21,596	131	\$9,895	\$0	\$1,040	\$0	\$10,935
	Sector Total	\$2,482,193	14,499	\$589,884	\$59,862	\$466,259	\$103,224	\$1,219,229

Table 5 shows the total economic effects on Linn County (they are just the sum of the direct, indirect and induced effects). We estimate that the economic impacts due to the 2008 Cedar Rapids Flood generated losses in Linn County totaling

- Almost \$2.5 billion in business sales over the flood recovery period,
- 14,500 work-years of employment and nearly \$590 million employee compensation (an average of \$40,700 per work-year),
- \$60 million in proprietor's income,
- \$466 million in rents, dividends, profits, etc. were lost or not paid,
- \$103 million in indirect business taxes, and
- \$1.2 billion in gross domestic product (value added).

Table 6 contains the estimated indirect and induced economic losses in the rest of Iowa due the 2008 Cedar Rapids Flood. There are no direct economic effects of the 2008 Cedar Rapids Flood because the flood impact area is contained within Cedar Rapids (part of Linn County).

Table 6
Indirect and Induced Effects (Losses) of the 2008 Cedar Rapids Flood on the Economy of the Rest of Iowa

Indirect Impacts in Rest of Iowa (monetary values in thousands of 2010 dollars)								
NAICS	Sector	Output	Employment (person years of work)	Employee Compensation	Proprietors' Income	Other Property- Type Income	Indirect Business Taxes	Value Added
11	Agriculture	\$24,077	88	\$307	\$2,436	\$7,375	\$423	\$10,541
21	Mining	\$272	1	\$36	\$16	\$33	\$4	\$88
22	Utilities	\$2,607	4	\$349	\$37	\$338	\$85	\$808
23	Construction	\$111	1	\$49	\$6	\$3	\$1	\$58
31, 32 & 33	Manufacturing	\$18,135	36	\$2,084	\$252	\$883	\$80	\$3,300
42, 44 & 45	Wholesale & Retail Trade	\$4,072	25	\$1,377	\$161	\$535	\$551	\$2,624
48, 49 & 51	Transportation & Information	\$8,360	45	\$2,114	\$190	\$1,303	\$146	\$3,753
52 & 53	Finance, Insurance & Real Estate	\$13,244	71	\$3,497	\$502	\$3,503	\$240	\$7,742
54 - 81	Services	\$11,343	88	\$4,146	\$616	\$1,309	\$142	\$6,212
92	Public Administration	\$871	4	\$286	\$0	\$57	\$0	\$342
	Sector Total	\$83,092	363	\$14,244	\$4,214	\$15,338	\$1,671	\$35,467
Induced Impacts in Rest of Iowa (monetary values in thousands of 2010 dollars)								
NAICS	Sector	Output	Employment (person years of work)	Employee Compensation	Proprietors' Income	Other Property- Type Income	Indirect Business Taxes	Value Added
11	Agriculture	\$1,229	5	\$46	\$63	\$322	\$21	\$453
21	Mining	\$34	0	\$5	\$2	\$4	\$0	\$12
22	Utilities	\$734	2	\$123	\$12	\$108	\$19	\$263
23	Construction	\$21	0	\$7	\$2	\$2	\$0	\$11
31, 32 & 33	Manufacturing	\$5,546	14	\$743	\$38	\$336	\$22	\$1,139
42, 44 & 45	Wholesale & Retail Trade	\$1,834	15	\$639	\$69	\$230	\$252	\$1,190
48, 49 & 51	Transportation & Information	\$1,949	12	\$503	\$44	\$243	\$30	\$820
52 & 53	Finance, Insurance & Real Estate	\$5,530	25	\$1,114	\$178	\$1,340	\$142	\$2,775
54 - 81	Services	\$5,365	73	\$1,579	\$250	\$812	\$241	\$2,882
92	Public Administration	\$546	3	\$190	\$0	\$35	\$0	\$226
	Sector Total	\$22,789	150	\$4,950	\$660	\$3,432	\$727	\$9,770

Table 7**Total Effects (Losses) of the 2008 Cedar Rapids Flood on the Economy of the Rest of Iowa**

Total Impacts in Rest of Iowa (monetary values in thousands of 2010 dollars)								
NAICS	Sector	Output	Employment (person years of work)	Employee Compensation	Proprietors' Income	Other Property- Type Income	Indirect Business Taxes	Value Added
11	Agriculture	\$25,307	93	\$354	\$2,499	\$7,697	\$444	\$10,994
21	Mining	\$306	1	\$40	\$18	\$37	\$4	\$100
22	Utilities	\$3,341	6	\$472	\$49	\$446	\$104	\$1,071
23	Construction	\$132	1	\$56	\$8	\$5	\$1	\$69
31, 32 & 33	Manufacturing	\$23,681	50	\$2,827	\$291	\$1,218	\$102	\$4,438
42, 44 & 45	Wholesale & Retail Trade	\$5,905	40	\$2,016	\$230	\$765	\$803	\$3,814
48, 49 & 51	Transportation & Information	\$10,309	57	\$2,617	\$234	\$1,546	\$176	\$4,573
52 & 53	Finance, Insurance & Real Estate	\$18,774	96	\$4,611	\$680	\$4,844	\$382	\$10,517
54 - 81	Services	\$16,708	162	\$5,724	\$866	\$2,121	\$383	\$9,094
92	Public Administration	\$1,417	7	\$476	\$0	\$92	\$0	\$568
	Sector Total	\$105,881	513	\$19,194	\$4,874	\$18,770	\$2,398	\$45,236

We estimate that the economic impacts due to the 2008 Cedar Rapids Flood generated losses in rest of Iowa totaling

- Almost \$105.8 million in business sales over the flood recovery period,
- 513 work-years of employment and nearly \$19.2 million employee compensation,
- \$4.9 million in proprietor's income,
- \$18.8 million in rents, dividends, profits, etc. were lost or not paid,
- \$2.4 million in indirect business taxes, and
- \$45.2 million in gross domestic product (value added).

The total economic effects of the 2008 Cedar Rapids Flood on the rest of Iowa are substantially smaller than the total economic impacts on Linn County (Table 7). Finally, the total economic impacts of the 2008 Flood on the entire State of Iowa are the sum of the impacts on Linn County and the impacts on the rest of Iowa (Table 8).

Table 8**Total Effects (Losses) of the 2008 Cedar Rapids Flood on the Economy of the State of Iowa**

Total Impacts in State of Iowa (monetary values in thousands of 2010 dollars)								
NAICS	Sector	Output	Employment (person years of work)	Employee Compensation	Proprietors' Income	Other Property- Type Income	Indirect Business Taxes	Value Added
11	Agriculture	\$26,529	98	\$377	\$2,585	\$8,038	\$471	\$11,471
21	Mining	\$311	1	\$42	\$18	\$38	\$4	\$103
22	Utilities	\$129,360	210	\$26,557	\$368	\$53,753	\$15,603	\$96,281
23	Construction	\$51,230	353	\$19,955	\$1,707	\$2,602	\$283	\$24,547
31, 32 & 33	Manufacturing	\$731,715	965	\$83,003	\$399	\$70,274	\$2,358	\$156,035
42, 44 & 45	Wholesale & Retail Trade	\$128,789	1,256	\$46,844	\$3,667	\$16,480	\$18,091	\$85,082
48, 49 & 51	Transportation & Information	\$214,278	910	\$46,233	\$1,288	\$39,712	\$6,906	\$94,139
52 & 53	Finance, Insurance & Real Estate	\$540,124	1,988	\$81,625	\$11,814	\$208,930	\$42,404	\$344,772
54 - 81	Services	\$742,725	9,095	\$294,071	\$42,891	\$84,069	\$19,502	\$440,532
92	Public Administration	\$23,013	137	\$10,371	\$0	\$1,132	\$0	\$11,503
	Sector Total	\$2,588,074	15,012	\$609,078	\$64,736	\$485,029	\$105,622	\$1,264,465

We estimate that the economic impacts due to the 2008 Cedar Rapids Flood generated losses in State of Iowa totaling

- Almost \$2.6 billion in business sales over the flood recovery period,
- 15,000 work-years of employment and nearly \$609 million employee compensation,
- \$4.9 million in proprietor's income,
- \$64.7 million in rents, dividends, profits, etc. were lost or not paid,
- \$105.6 million in indirect business taxes, and
- \$1.3 billion in gross domestic product (value added).

Graphical Comparisons of the Recovery Period Economic Impacts of the 2008 Cedar Rapids Flood on the Economies of Linn County and the Rest of Iowa

There are some interesting comparisons of the industrial structure of the impacts of the 2008 Cedar Rapids Flood on the economies of Linn County and the rest of Iowa. It is clear that the industrial patterns of the flood-related business loss direct, indirect and induced impacts on Linn County are similar but that the induced impacts are much smaller than either the direct or indirect impacts.

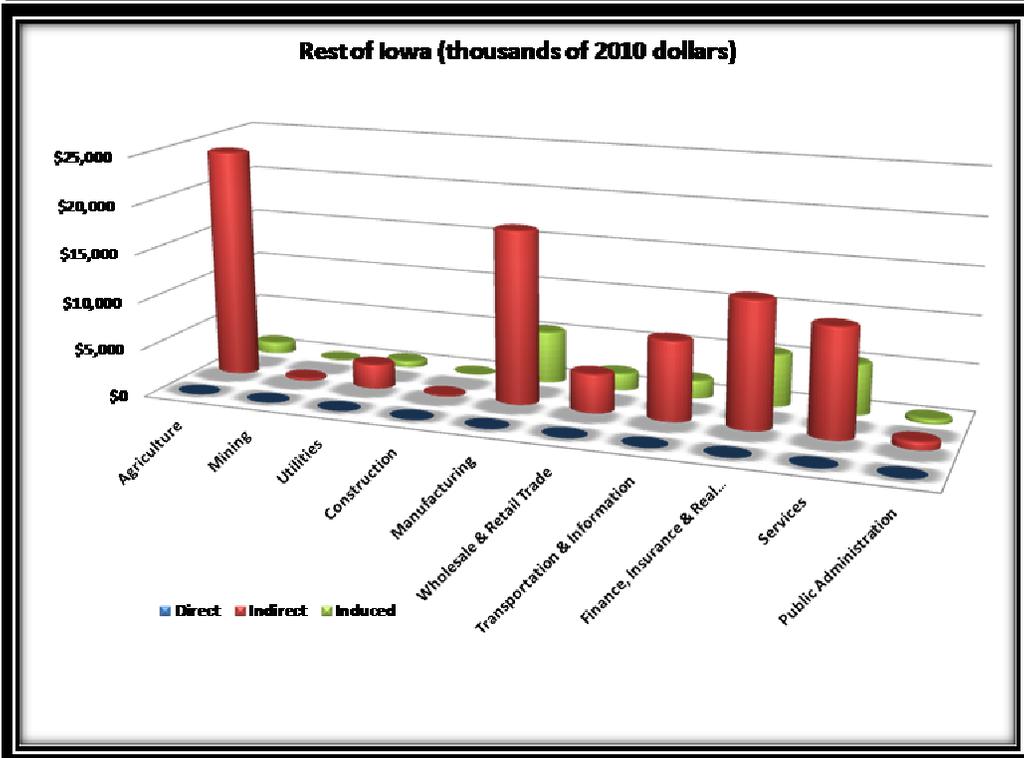
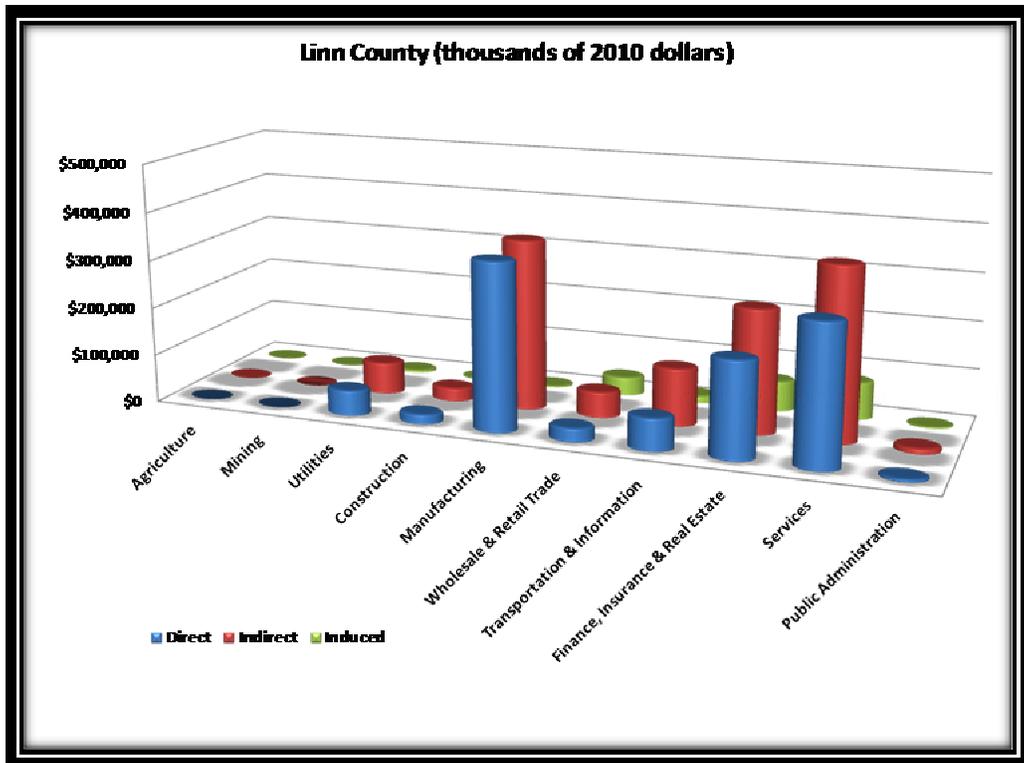


Figure 4: Industry Output (Sales) Impacts—Linn County vs Rest of Iowa

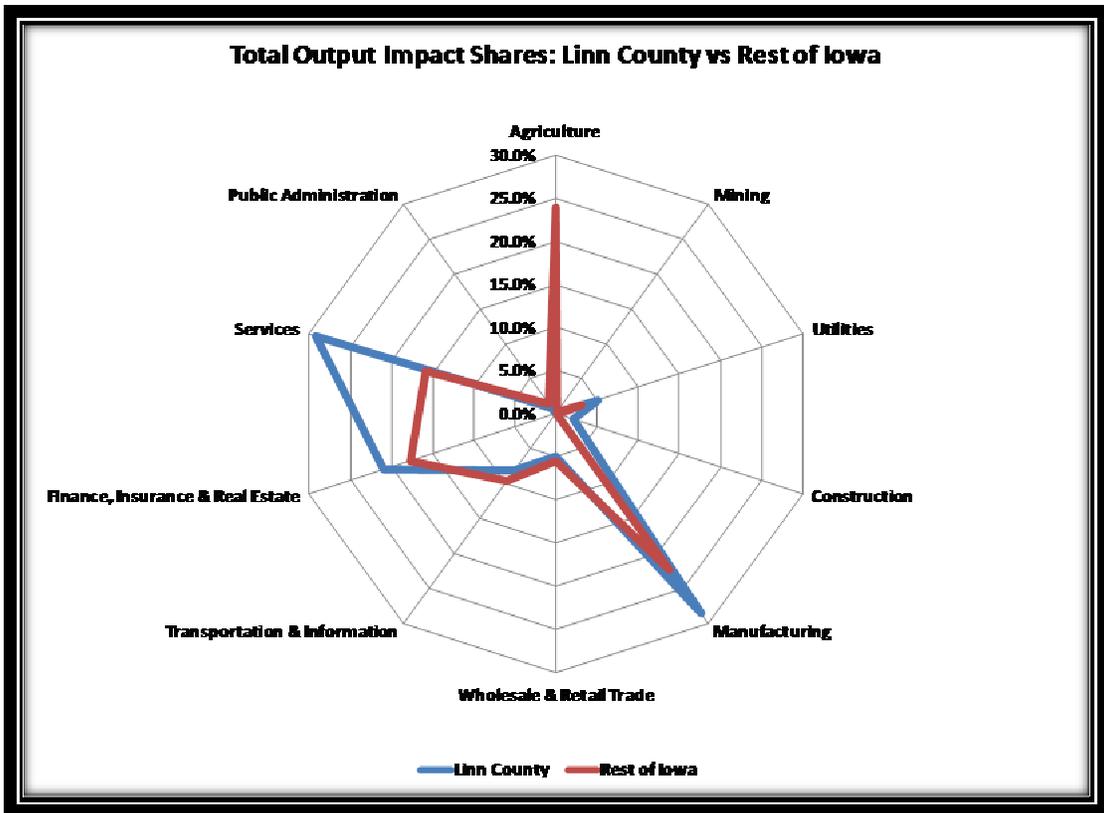


Figure 5: Industry Output Impact Shares: Linn County vs Rest of Iowa

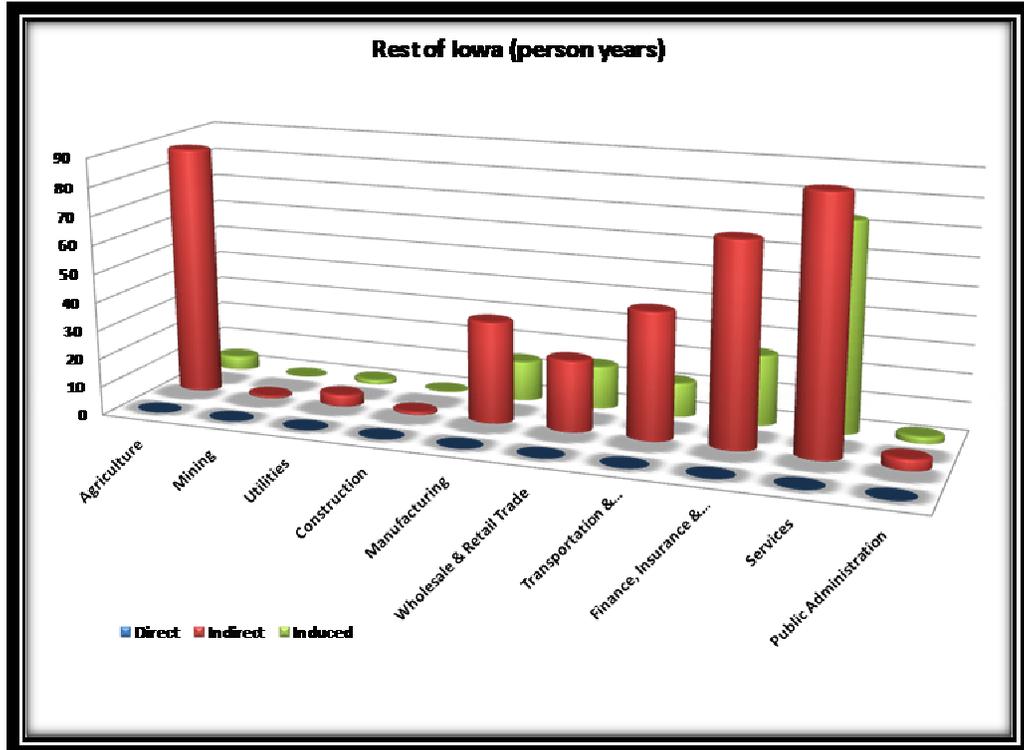
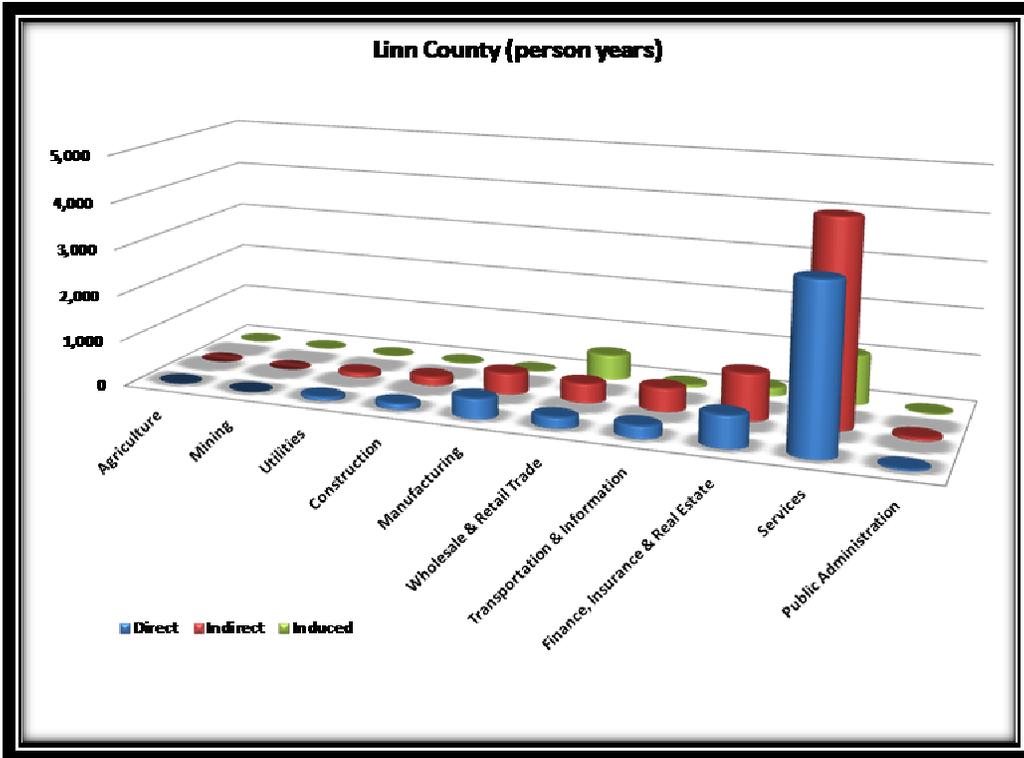


Figure 6: Industry Employment Impacts—Linn County vs Rest of Iowa

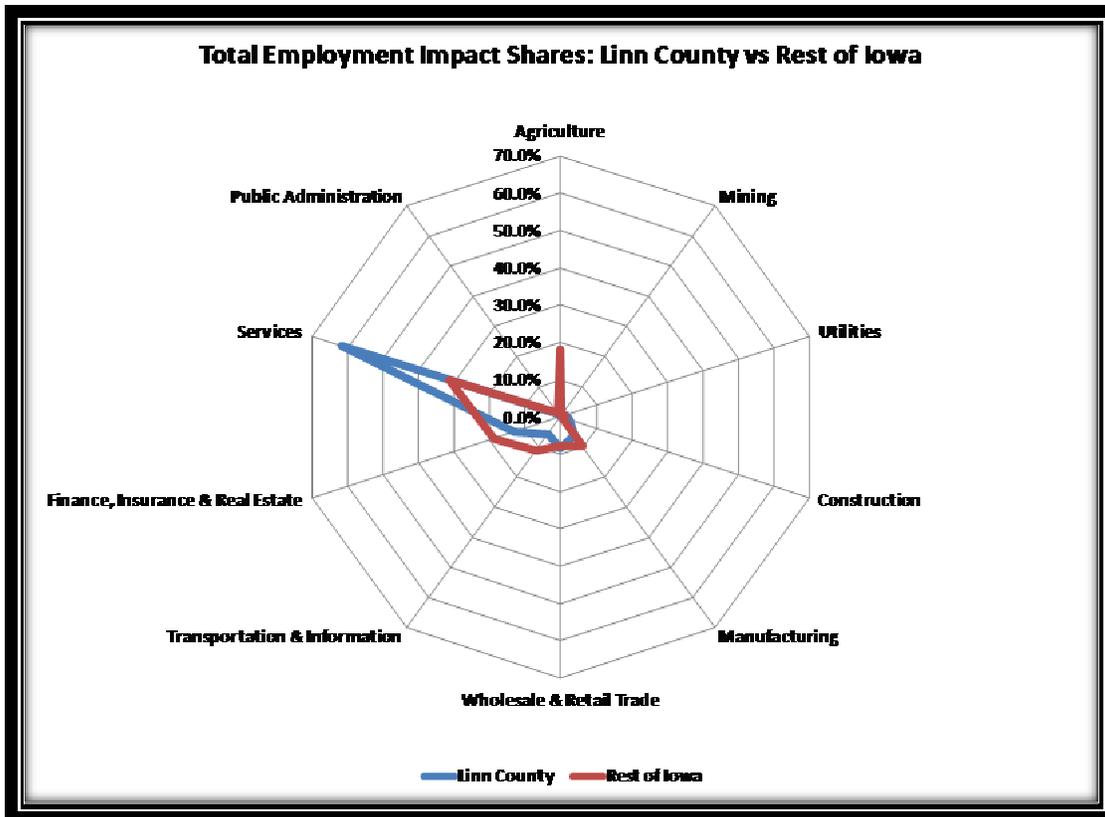


Figure 7: Industry Employment Impact Shares: Linn County vs Rest of Iowa

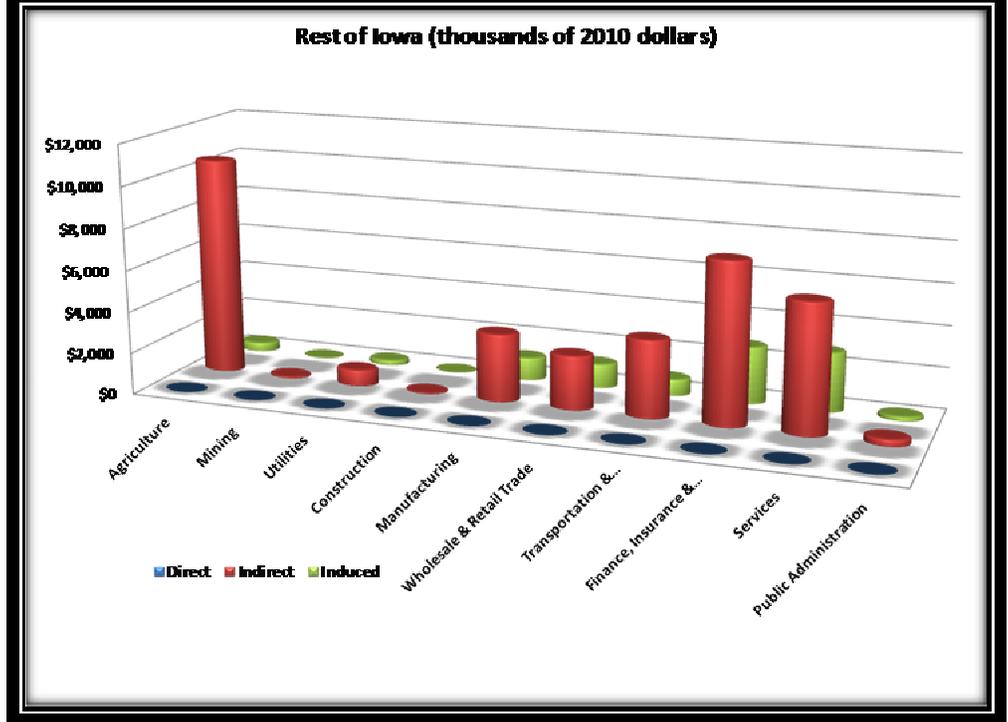
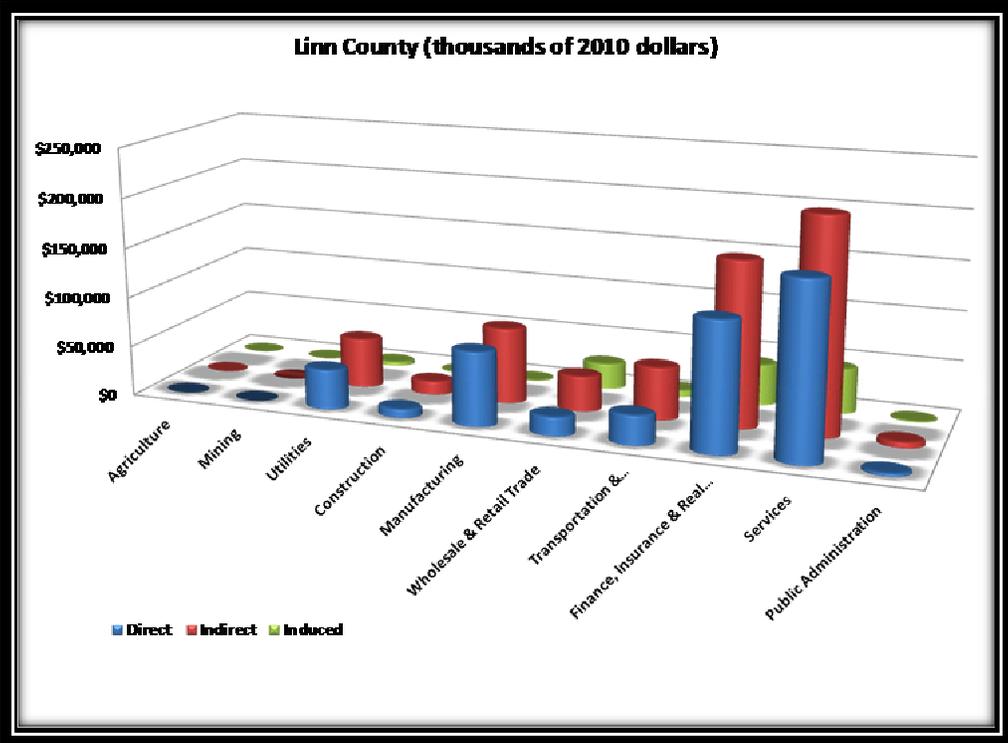


Figure 8: Industry Value Added Impacts—Linn County vs Rest of Iowa

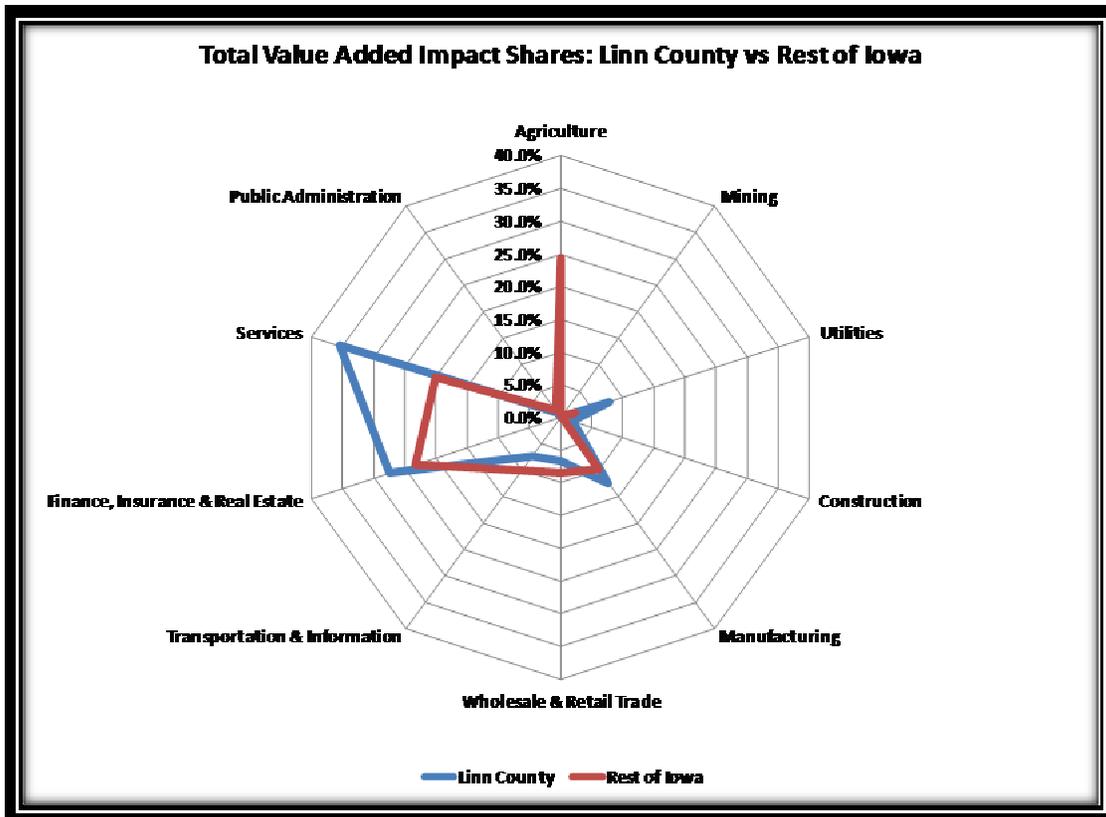


Figure 9: Industry Value Added Impact Shares: Linn County vs Rest of Iowa

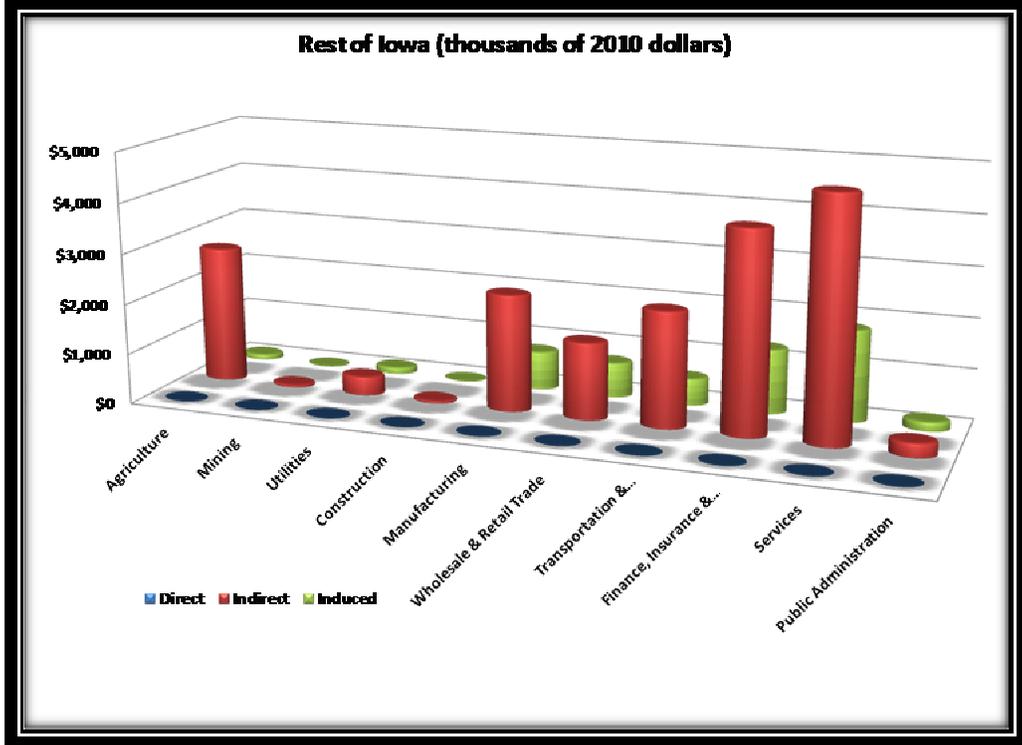
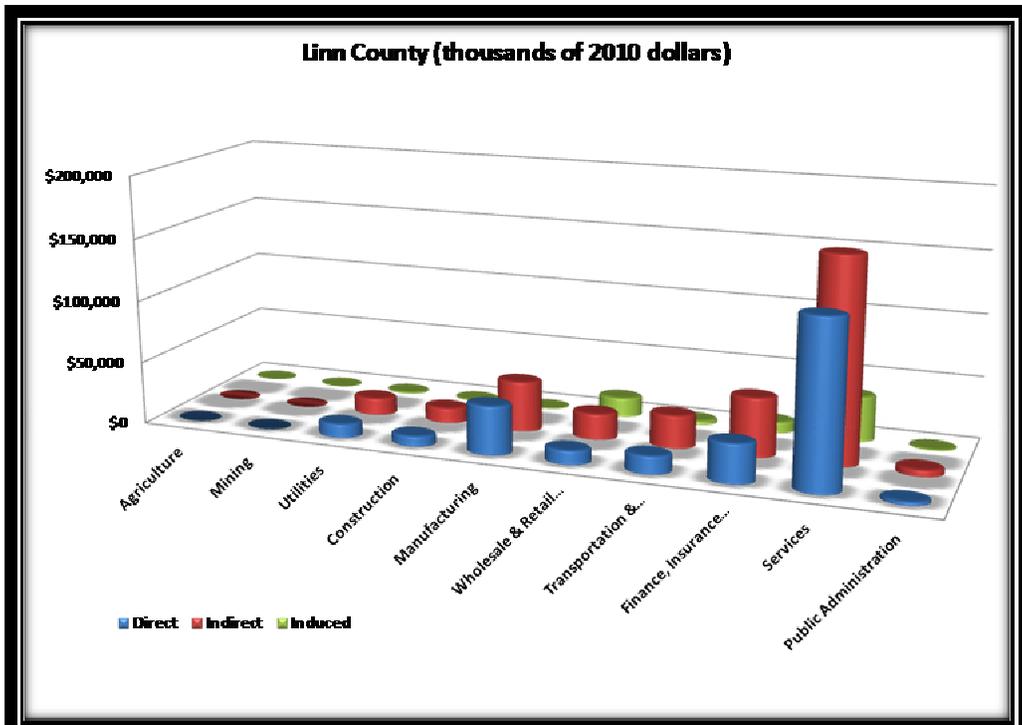


Figure 10: Industry Labor Income Impacts—Linn County vs Rest of Iowa

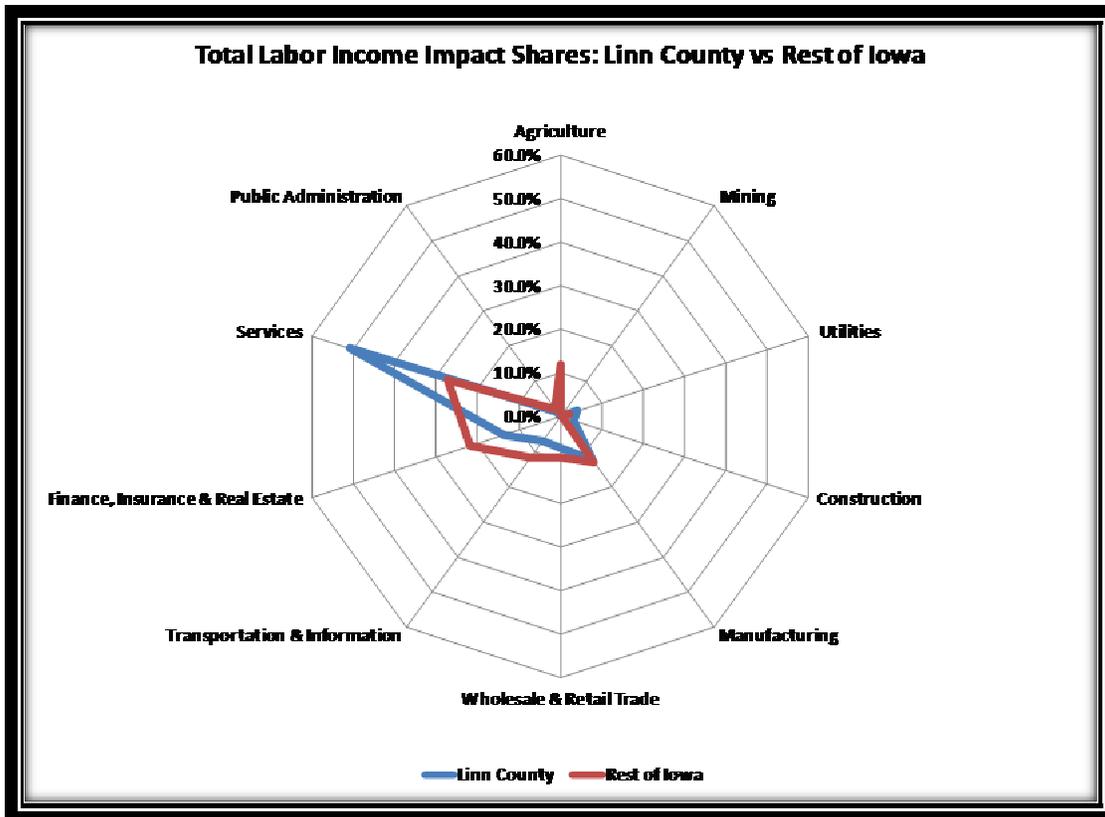


Figure 11: Industry Labor Income Impact Shares: Linn County vs Rest of Iowa

5. The Permanent Economic Consequences of the 2008 Cedar Rapids Flood Due to Business Losses

It is reported that 1,865 jobs were lost as a result of the 2008 Cedar Rapids Flood due to business losses within the flood impact area (1,324 permanently and 541 temporarily). Unlike most of direct employment consequences shown above (in Table 1),³ the permanent job losses represent a shift in employment levels due to local business closures or firms moving out of Cedar Rapids area (and probably out of the State of Iowa).

Because we don't know accurately know the industrial distribution of the permanent job losses, the multiregional economic effects of the permanent job losses via an aggregate impact estimation process. We can first convert the permanent job losses into direct losses in business sales (or output) and value added via region-wide average output and value added to employee ratios based on the 2008 IMPLAN data base for Linn County (Table 9).⁴

³ Again, the direct, indirect and induced employment effects estimated in the previous section are measured in person-years of employment lost over duration of the recovery period. A person-year of employment is one person work for one year.

⁴ Linn County data are used for this calculation because Cedar Rapids is located within Linn County.

Table 9
Linn County Output (Sales), Employment and Value Added

NAICS	Sector	Output	Employment (jobs)	Employee Compensation	Proprietors' Income	Other Property-Type Income	Indirect Business Taxes	Value Added
11	Agriculture	\$292	1,714	\$7	\$26	\$81	\$5	\$119
21	Mining	\$29	129	\$9	\$1	\$7	\$1	\$17
22	Utilities	\$907	1,482	\$188	\$2	\$383	\$111	\$684
23	Construction	\$1,401	9,808	\$524	\$43	\$48	\$8	\$622
31, 32 & 33	Manufacturing	\$10,221	18,536	\$1,588	\$2	\$752	\$40	\$2,382
42, 44 & 45	Wholesale & Retail Trade	\$2,183	27,983	\$751	\$85	\$315	\$310	\$1,462
48, 49 & 51	Transportation & Information	\$2,642	12,666	\$610	\$22	\$464	\$75	\$1,171
52 & 53	Finance, Insurance & Real Est	\$3,651	13,769	\$730	\$54	\$1,132	\$227	\$2,143
54 - 81	Services	\$3,992	52,575	\$1,650	\$205	\$356	\$90	\$2,301
92	Public Administration	\$165	1,012	\$76	\$0	\$4	\$0	\$80
Sector Total		\$25,484	139,674	\$6,131	\$440	\$3,542	\$866	\$10,980

Monetary values in millions of 2010 dollars.
Source: 2008 IMPLAN data base for Linn County.

The computed Linn County output (or sales) and value added to employee ratios are shown in Table 10. Ratios are also computed for the value added components as well (i.e., employee compensation, proprietors' income, other property-type income and indirect business taxes).

Table 10
Linn County Output and Value Added to Employment Ratios

NAICS	Sector	Output	Employment (jobs)	Employee Compensation	Proprietors' Income	Other Property-Type Income	Indirect Business Taxes	Value Added
11	Agriculture	\$170,282	1	\$3,987	\$15,347	\$47,188	\$2,775	\$69,296
21	Mining	\$227,348	1	\$66,210	\$4,852	\$53,566	\$4,300	\$128,928
22	Utilities	\$612,381	1	\$126,640	\$1,543	\$258,409	\$75,060	\$461,651
23	Construction	\$142,851	1	\$53,437	\$4,333	\$4,865	\$821	\$63,457
31, 32 & 33	Manufacturing	\$551,408	1	\$85,660	\$101	\$40,565	\$2,165	\$128,491
42, 44 & 45	Wholesale & Retail Trade	\$78,014	1	\$26,842	\$3,034	\$11,274	\$11,088	\$52,238
48, 49 & 51	Transportation & Information	\$208,574	1	\$48,166	\$1,721	\$36,650	\$5,904	\$92,441
52 & 53	Finance, Insurance & Real Est	\$265,166	1	\$52,990	\$3,939	\$82,246	\$16,451	\$155,626
54 - 81	Services	\$75,935	1	\$31,381	\$3,907	\$6,766	\$1,707	\$43,761
92	Public Administration	\$163,332	1	\$74,869	\$0	\$4,077	\$0	\$78,945
All Sectors		\$182,454	1	\$43,898	\$3,150	\$25,361	\$6,200	\$78,609

All values in 2010 dollars per employee (except employment)
Author's calculation

Using the "all sector" average output and value added to employee ratio, we estimate that the permanent losses of 1,325 jobs in Cedar Rapids due to the 2008 Flood also caused permanent losses in business sales of \$241.8 million, labor income losses of \$62.3 million (\$58.2 in employee compensation and \$4.2 million in proprietors' income) and \$104.2 million in value added (Table 11).

Table 11
Direct Economic Losses Due to Loss of 1,325 Permanent Flood-Related Jobs

Output	Employment (person years of work)	Employee Compensation	Proprietors' Income	Other Property- Type Income	Indirect Business Taxes	Value Added
\$241,752	1,325	\$58,165	\$4,174	\$33,604	\$8,215	\$104,157

Author's calculations

The direct economic effects due to the permanent job losses can be used to compute the total permanent economic impacts of the 2008 Cedar Rapids Flood on the economies of Linn County and the rest of the State of Iowa by employing the aggregate “implicit” multiregional economic multipliers (Table 12). The implicit multiregional economic multipliers are generated by dividing the total economic effects by region (Linn County, rest of Iowa and the State of Iowa) found in Tables 5, 7 and 8 (for Linn County, rest of Iowa and the State of Iowa, respectively) by the corresponding aggregate direct economic effects from Table 3. Implicit multipliers need to be employed with care and can be easily misused. Since they are the simple ratios of the total to the direct economic effects, the implicit multipliers have limited value due to their dependences on the specific assumptions, circumstances and scenario in which they are generated.

Table 12
Implicit Multiregional Input-Output Multipliers for the 2008 Cedar Rapids Flood

Implicit Multipliers	Output	Employment (jobs)	Employee Compensation	Proprietors' Income	Other Property- Type Income	Indirect Business Taxes	Value Added
Linn County	2.443	2.674	2.590	2.599	2.485	2.643	2.554
Rest of Iowa	0.104	0.095	0.084	0.212	0.100	0.061	0.095
State of Iowa	2.547	2.768	2.675	2.811	2.585	2.704	2.648

The total multiregional economic losses due to the permanent flood-related job losses (Table 13) are calculated by multiplying the direct economic effects by the appropriate multipliers. Labor income effects are just the sum of the employee compensation and proprietors' income effects.

Table 13
Total Multiregional Economic Losses Due to Permanent Flood-Related Job Losses

	Output	Employment (jobs)	Value Added	Labor Income
Linn County	\$590,665	3,543	\$265,967	\$161,520
Rest of Iowa	\$25,195	125	\$9,868	\$5,786
State of Iowa	\$615,860	3,668	\$275,835	\$167,306
Monetary impacts in thousands of 2010 dollars				

6. The Economic Consequences of the 2008 Cedar Rapids Flood Due to Business Losses

Although it is not possible to know how Cedar Rapids will develop economically in the future, we can look at past trends in growth as indicators of near-term development prospects (say, over the next ten years or so)—see Figure 12. Figure 12 presents indices of non-farm employment where the values are the ratios of annual employment to the respective 1969 value (1969 = 1). Using the employment indices permits us to compare the growth trends in the economies of Linn County, State of Iowa and United States. The growth trend of the U.S. economy has been higher than either Linn County or the State of Iowa and since 1990 the growth trend for Linn County has been slightly higher than that for the State of Iowa.

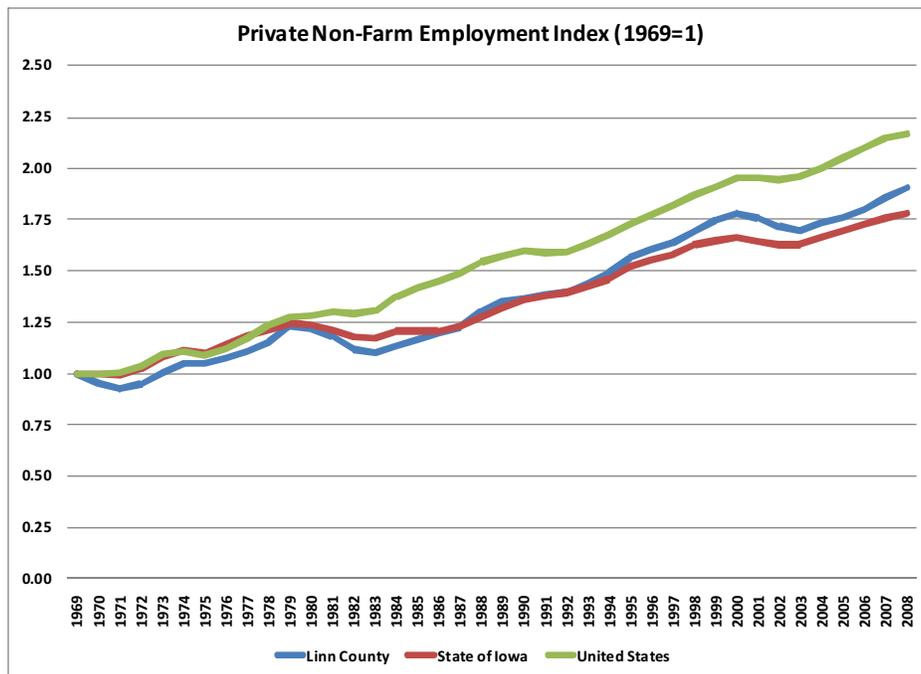


Figure 12
Employment Indices for Linn County, State of Iowa and United States

Using 2007 as an ending date and the available employment data from the U.S. Bureau of Economic Analysis we compute 2-year, 5-year and 10-year annual average growth rates in private non-farm employment for Linn County, the State of Iowa and the United States as a whole (Table 14).⁵ The reason and the interpretation for the different growth rates is that the 2-year growth rate represents the most recent experiences during an expansion in the economy, the 5-year growth rate represents what has happened over an entire business cycle, and the 10-year growth rate tells us something about long term trends.

⁵ BEA does not compile sub-county economic data (employment, income, etc.).

Table 14
Growth Rates in Private Non-Farm Employment:
Linn County, State of Iowa and United States

Area	Private Non-Farm Employment		
	Average Annual Percentage Change		
	1997-2007	2002-07	2005-07
	10-year	5-year	2-year
Linn County	1.26%	1.58%	2.61%
State of Iowa	1.07%	1.51%	1.77%
United States	1.68%	1.99%	2.34%

Source: U.S. Bureau of Economic Analysis

Based on the growth rates and employment indices shown above, the City of Cedar Rapids staff member were asked to provide their judgment concerning the most likely near-term future economic growth rate for Cedar Rapids—especially in light of the current national economic recession. The consensus judgment was for the 5-year or a 1.6% average annual growth rate. Four alternative private non-farm employment projections were prepared and are graphed in Figure 13. The 1.6% growth rate was used as a “baseline” projection—meaning that it represents the “expected” growth trend had there not been a flood in 2008 (although it does consider the affects of the national recession). The 10-year growth rate (1.25% growth rate) is used for an alternative local future growth trend based on historical data. Two other growth rates were used: one that fell about midway between the 5-year (baseline) growth rate and the 10-year growth rate (1.40%) and the other that was a little lower than the 10-year growth rate (1.15%).

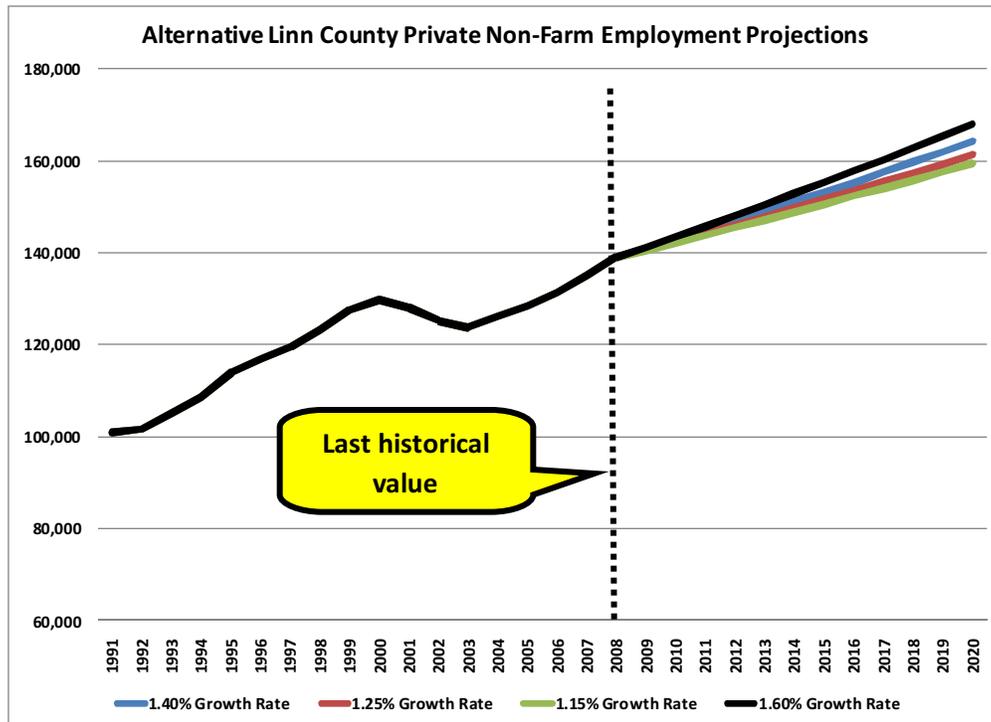


Figure 13
Alternative Linn County Private Non-Farm Employment Projections

Table 15
Linn County Private Non-Farm Employment Projections

	Private Non-Farm Employment Projections				Employment Differences with the 1.60% Projection		
	Average Annual Growth Rates				Average Annual Growth Rates		
	1.60%	1.40%	1.25%	1.15%	1.40%	1.25%	1.15%
2009	141,270	140,992	140,783	140,644	278	487	626
2010	143,530	142,966	142,543	142,261	565	987	1,269
2011	145,827	144,967	144,325	143,897	859	1,502	1,929
2012	148,160	146,997	146,129	145,552	1,163	2,031	2,607
2013	150,530	149,055	147,955	147,226	1,476	2,575	3,304
2014	152,939	151,141	149,805	148,919	1,797	3,134	4,020
2015	155,386	153,257	151,677	150,632	2,129	3,708	4,754
2016	157,872	155,403	153,573	152,364	2,469	4,299	5,508
2017	160,398	157,579	155,493	154,116	2,819	4,905	6,282
2018	162,964	159,785	157,437	155,889	3,180	5,528	7,076
2019	165,572	162,022	159,405	157,681	3,550	6,167	7,890
2020	168,221	164,290	161,397	159,495	3,931	6,824	8,726
Author's calculations							

The alternative projections for the years 2009 to 2020 are shown in Table 15. The differences between the baseline projection and the three alternative projections indicate how much lower private non-farm employment would be under the alternative growth rate assumptions. For example, if Linn County private non-farm employment grows according to the 1.40% growth rate then by the year 2020 there will be approximately 3,900 fewer jobs than if the county's employment had grown as expected.

One very good reason that employment growth might be lower than expected is if the downtown area (specifically the flood impact area) were not protected from future floods. It is now recognized that the earth's climate is changing as a result of increasing concentrations of greenhouse gases due to human activities. Climate change analysis to date suggests that the magnitude and frequency of large riverine floods will increase significantly in the coming decades, particularly in watersheds in which major floods are caused by a combination of both rain and melting snow. The record-setting 2008 flood occurred in mid-June as a result of several days of heavy rainfall on soils that were still wet from an unusually wet spring. Also, four of the historically highest floods out of the top ten have occurred in the last twenty years (Table 1). This strongly suggests that analyses based on the historical streamflow record of the Cedar River significantly underestimated the probability of the 2008 flood (City of Cedar Rapids, 2010).

Without flood protection nearby firms will see increased costs due to periodic damages and the associated higher insurance rates. This is likely to affect locations both in and outside the flood impact area because of the costs associated with major flooding. Existing firms and businesses seeking to locate in Cedar Rapids have related to city staff and officials that they would be reluctant to undertake major investments as long as the major flood protection is not implemented. As a result, property that is flooded periodically and not protected through some type of mitigation facility (such as flood walls) will find that it is less productive in the future as firms and households seek locations that are more protected, other things being equal.

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Appendix A

Theoretical Effects of Flooding on Urban Economic and Demographic Structures

Mono-centric City Model

Economists like to start with mono-centric city model while they study urban economies because it provides a simple understanding of urban geographic structures of cities—Sullivan (1990) and Hoover and Giarratani (1999). The monocentric model of urban spatial development was developed by Alonso (1964), Mills (1967), and Muth (1969). In a mono-centric model, it is assumed that (Mills, 1967):

- 1) The city forms on a featureless plain and land is homogeneous. The outer edge of the city is located where market rent equals the rent on agricultural land where the rent per unit of agricultural land is assumed constant.
- 2) The city has a predetermined center, say, a port or rail terminal (called the central business district or CBD) to which all output is shipped and to which all households commute. It is because of agglomeration economy which comes from transportation technologies, scale economies and informational and shopping externalities.
- 3) Workers travel to center and transportation costs depend only on radial distance to the city center.

In this model, all employment is concentrated at the CBD and location choice is modeled solely on the basis of access to the employment center. Population and employment densities or human activities decrease with distance from the CBD (Figure A1).

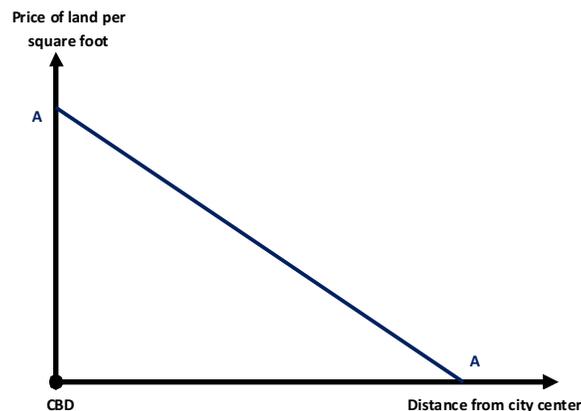


Figure A1
Employment Density and Human Activity Decrease
with Distance from the CBD

It is the competition for land and the rents that households and business place almost exclusive emphasis on the location for a site relative to markets and sources of inputs. Location determines how much rent any particular activity can afford to pay for the use of a site. Households and businesses then distribute themselves within the urban area according to their preferences for being close to the CBD and their ability to pay for those sites. The purchase

price is explained as simply the capitalized value of the expected stream of future rents. This creates the basis for an index of location value.

Transportation (or commuting) costs and production characteristics help to determine the ability of an activity to bid for locations at various distances from the market center. The savings in transportation and commuting costs associated with more central locations depends crucially on two factors: household preferences for central spaces or the quantity of transported output produced for a given total outlay and the transportation rate per unit of output (or commuting cost per unit of distance). Production cost advantages accrue at more central locations to those activities that can use land more intensively and have higher fixed costs per geographic unit (e.g., square foot, acre, etc.).

The Theoretical Effect of Flooding on the Urban Economic and Demographic Structure

The analysis above has treated the central business district as a very desirable location. But what might happen if for some reason the central business district becomes undesirable? For example, suppose that a river flows through the downtown area including the CBD. Without flooding issues, for example, the previous analysis would not change. In fact, the presence of a river could make locating near the CBD even more desirable than without the river.

However, flooding presents an interesting effect for locations near the river. Instead of being desirable, sites located near the river can be less desirable than locations further away from the CBD (where the river is also located). From some distance, d , away from the river (and CBD) the urban rent gradient will twist counter clockwise (Figure A2). The distance, d , represents the distance from the river that will not be affected by the flooding. How much the rent gradient twists depends on the severity of flooding or the perception of businesses and household concerning the severity of flooding.

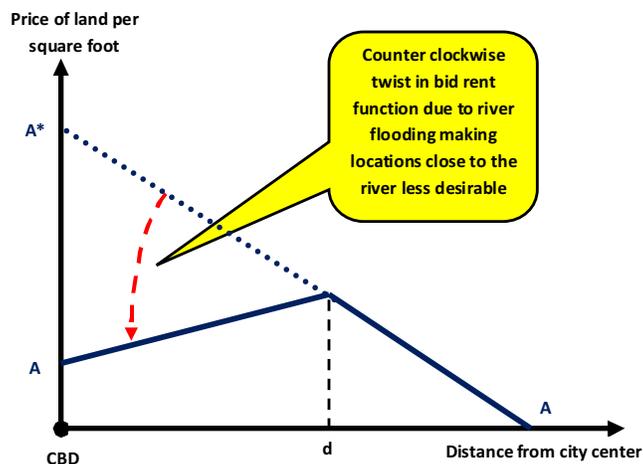


Figure A2
How Employment Density and Human Activity Change in Response to Flooding

Appendix B

Multiregional Economic Multiplier Effects and Multipliers

Regional Economic Multiplier Process

To introduce the regional economic multiplier, one can think of a household with one wage earner. Obviously, the household's income and its standard-of-living increases and decreases as the wages earned by the head fluctuate. Just like the household, one can envision a local economy that has a great dependence on external sources of demand for the level of its internal welfare; in other words, it is an "open" economy. The regional economic multiplier process provides a simple framework in which to analyze such situations. Local economic activity can be split into two general categories; either into an export or into a service sector. The export sector includes those firms that sell their products to businesses and households outside the boundaries of the local economy. In addition, establishments within the local economy which cause funds to flow into the study area by their activities (such as tourist activities and federal government facilities) are also considered part of the export sector. The local service sector, in contrast, is made up of those firms that sell their goods and services within the local economy; either to firms in the export sector or to the local populace.

The model works to the extent that, external changes resulting in increases (decreases) in export activity cause increases (decreases) in the payroll of export firms which are then transmitted to the local service sector establishments. Furthermore, the inflow or outflow of money causes activity in local services to change by a multiple of the original change (i.e., the regional economic multiplier) as the influx of funds is spent and re-spent in the local economy or as the initial withdrawal of funds causes decreases in local sales which, in turn, causes further decreases in local sales as payrolls and employment shrink. For expansions, recirculation continues until the leakages from the system (such as imports, savings, and taxes) exhaust the amount of initial influx. In cases of decreases in export activity, the cumulative decline is halted by decreases in imports, savings, and taxes. Note that export base models predict that, without "new" injections of funds to the local economy through its export sector, the local economy will stagnate because service activities can only respond to changes in local economic conditions.

The discussion above focused on a type of regional economic impact analysis that is called "economic base" analysis in that it splits an economy into two types of activities—base or export activities and service activities. The result of such an analysis will be that all types of impact scenarios will be analyzed using just one multiplier for a region. In most cases this is inadequate because different scenarios are thought to affect the economy differently to the extent that the combinations of sectors initially affected by the scenarios are different.

To address this issue most regional economic impact analysts use regional input-output analysis. In regional input-output analysis the economy is composed to a myriad of industrial sectors—each producing goods or services to be sold to customers both locally and other places. Using regional economic impact analysis an impact scenario is addressed by combinations of directly affected industrial sectors (weighted by their respective changes in sales).

However, it is not possible to use regional economic impact analysis to analyzed impact scenarios that involve scenario effects that occur in more than one area at a time or the effect that

an impact scenario will have on places not located near the impact site (for example, the impact that a flood will have on places within Iowa that are outside Cedar Rapids or Linn County). This is called a multiregional input-output analysis because it explicitly considers the interrelationships between industrial sectors and among the regions of an economy (such as Linn County and the State of Iowa).

Until very recently, multiregional input-output analyses were rarely done due to the time and expense of creating and implementing the necessary multiregional input-output models. The introduction of IMPLAN, Version 3.0 has allowed regional economic impact analysts to implement multiregional input-output analysis for any multi-county area within the United States.

Multiregional Economic Impact Multiplier Effects and Multipliers

There are many types of multipliers depending on the model you use and what you are trying to measure. In this report we compute and use four types of regional economic impact effects and multipliers. Impact effects are the direct, indirect and induced consequences of a scenario measured relative to the direct output or sales changes. Impact multipliers are the direct, indirect and induced consequences of a scenario measured relative to the direct change in the impact variable being considered (i.e., jobs or employment).

Note that the multipliers and multiplier effects shown directly below are highly aggregated industrially and are not the ones used in this report to compute economic impacts. The multipliers and multiplier effects shown here are shown only for illustrative purposes. The detailed multiregional multipliers and multiplier effects that are used in this report are given in Tables B9 to B12.

Output or Sales Effects and Multipliers: Sales multipliers show a change in total sales for one industry will change total sales in other industries. Output is the broadest measure of industrial activity since it covers all business costs. The direct effect is the initial change in sales. The indirect effects are the consequences that occur due to the suppliers spending and re-spending. The induced effects are the extra interactions created by including workers earning their incomes and consuming goods and services. Table B1 shows the calculated average multiregional input-output output or sales effects for Linn County. The effects include not only the multiplier effects on the Linn County economy but also the interregional multiplier effects on the rest of Iowa. The multiregional multiplier effects on the State of Iowa economy are found by summing the Linn County effects and rest of Iowa effects.

Table B1
Linn County Multiregional Column Output Effects

Average Multiregional Column Output Effects												
Linn County Sector	Linn County				Rest of Iowa				State of Iowa			
	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total
Agriculture	1.000	0.228	0.117	1.345	0.000	0.089	0.014	0.103	1.000	0.317	0.131	1.448
Mining	1.000	0.184	0.244	1.428	0.000	0.081	0.024	0.105	1.000	0.265	0.267	1.532
Utilities	1.000	0.056	0.147	1.202	0.000	0.016	0.013	0.029	1.000	0.071	0.160	1.231
Construction	1.000	0.228	0.320	1.548	0.000	0.074	0.023	0.098	1.000	0.303	0.343	1.646
Manufacturing	1.000	0.197	0.145	1.341	0.000	0.062	0.012	0.074	1.000	0.259	0.156	1.415
Wholesale & Retail Trade	1.000	0.238	0.302	1.540	0.000	0.035	0.029	0.065	1.000	0.273	0.332	1.605
Transportation & Information	1.000	0.361	0.228	1.589	0.000	0.046	0.023	0.069	1.000	0.407	0.251	1.658
Finance, Insurance & Real Estate	1.000	0.268	0.202	1.470	0.000	0.065	0.022	0.087	1.000	0.333	0.224	1.557
Services	1.000	0.261	0.361	1.621	0.000	0.043	0.031	0.074	1.000	0.304	0.392	1.695
Public Administration	1.000	0.261	0.355	1.616	0.000	0.053	0.028	0.081	1.000	0.314	0.383	1.697
All Sector Average	1.000	0.228	0.231	1.459	0.000	0.056	0.022	0.077	1.000	0.284	0.252	1.536

Average based on output weights (2010 = 1): author's calculation

Table B2 provides the multiregional input-output output or sales multipliers for Linn County. The multiregional multipliers are just the ratio of the various effects to the direct effect. The output multipliers are the same as the multiplier effects in the case of output multipliers.⁶

Table B2
Linn County Multiregional Column Output Multipliers

Average Multiregional Column Output Multipliers												
Linn County Sector	Linn County				Rest of Iowa				State of Iowa			
	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total
Agriculture	1.000	0.228	0.117	1.345	0.000	0.089	0.014	0.103	1.000	0.317	0.131	1.448
Mining	1.000	0.184	0.244	1.428	0.000	0.081	0.024	0.105	1.000	0.265	0.267	1.532
Utilities	1.000	0.056	0.147	1.202	0.000	0.016	0.013	0.029	1.000	0.071	0.160	1.231
Construction	1.000	0.228	0.320	1.548	0.000	0.074	0.023	0.098	1.000	0.303	0.343	1.646
Manufacturing	1.000	0.197	0.145	1.341	0.000	0.062	0.012	0.074	1.000	0.259	0.156	1.415
Wholesale & Retail Trade	1.000	0.238	0.302	1.540	0.000	0.035	0.029	0.065	1.000	0.273	0.332	1.605
Transportation & Information	1.000	0.361	0.228	1.589	0.000	0.046	0.023	0.069	1.000	0.407	0.251	1.658
Finance, Insurance & Real Estate	1.000	0.268	0.202	1.470	0.000	0.065	0.022	0.087	1.000	0.333	0.224	1.557
Services	1.000	0.261	0.361	1.621	0.000	0.043	0.031	0.074	1.000	0.304	0.392	1.695
Public Administration	1.000	0.261	0.355	1.616	0.000	0.053	0.028	0.081	1.000	0.314	0.383	1.697
All Sector Average	1.000	0.228	0.231	1.459	0.000	0.056	0.022	0.077	1.000	0.284	0.252	1.536

Average based on output weights (2010 = 1): author's calculation

The output or sales multiplier effects and multipliers should be used with caution since there is some double-counting involved. Sales or output multipliers and multiplier effects tend to artificially inflate the impacts due to the all inclusive nature of output or sales. That is they include all of the costs of business. This includes the cost of goods and services purchased for production purposes and those goods and services are the output of other firms and industries. As a result, it is advised to focus on other impact measures, such as employment, value added or labor income.

Jobs (Employment) Effects and Multipliers: A jobs multiplier indicates how important an industry is in regional job creation. A jobs multiplier of 3, for example, would mean that for every new “direct” job in that industry, 2 more jobs would be created in other industries (for a total of 3 jobs). Typically, these additional jobs include many “fractions” of jobs spread over many industries. In this report jobs are measure in person-years of work. A person-year is one person employed for one year.

⁶ This will not be the same for the other impact variables.

Jobs multiplier effects are easily misinterpreted—jobs multiplier effects of 17 or higher are sometimes seen—but a high jobs multiplier effect for a set of one or more industries in an added-jobs scenario does not necessarily mean that attracting businesses in those industries to the region is the best or most viable option for regional economic growth.

Tables B3 and B4 provide the average multi-regional employment multiplier effects and multipliers for Linn County.

Table B3
Linn County Multi-regional Column Employment Multiplier Effects

Average Multi-regional Column Employment Effects												
Linn County Sector	Linn County				Rest of Iowa				State of Iowa			
	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total
Agriculture	11.400	1.105	1.745	14.250	0.000	0.570	0.111	0.680	11.400	1.675	1.856	14.930
Mining	4.574	1.120	2.392	8.086	0.000	0.252	0.168	0.420	4.574	1.372	2.560	8.506
Utilities	1.640	0.446	1.394	3.480	0.000	0.044	0.089	0.132	1.640	0.490	1.483	3.613
Construction	7.102	2.114	3.066	12.282	0.000	0.336	0.125	0.461	7.102	2.449	3.191	12.743
Manufacturing	2.845	1.457	1.770	6.073	0.000	0.195	0.084	0.279	2.845	1.653	1.854	6.352
Wholesale & Retail Trade	16.952	1.921	2.889	21.763	0.000	0.221	0.167	0.388	16.952	2.142	3.056	22.150
Transportation & Information	7.355	2.410	2.541	12.306	0.000	0.274	0.163	0.438	7.355	2.684	2.704	12.744
Finance, Insurance & Real Estate	5.952	1.882	2.290	10.124	0.000	0.434	0.154	0.589	5.952	2.316	2.444	10.712
Services	19.544	2.166	3.522	25.233	0.000	0.234	0.185	0.419	19.544	2.401	3.708	25.652
Public Administration	7.444	1.876	3.973	13.293	0.000	0.183	0.184	0.366	7.444	2.058	4.157	13.660
All Sector Average	13.407	1.813	3.078	18.298	0.000	0.243	0.176	0.418	13.407	2.056	3.254	18.717

Average based on employment weights: author's calculation

Table B4
Linn County Multi-regional Column Employment Multipliers

Average Multi-regional Column Employment Multipliers												
Linn County Sector	Linn County				Rest of Iowa				State of Iowa			
	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total
Agriculture	1.000	0.097	0.153	1.250	0.000	0.050	0.010	0.060	1.000	0.147	0.163	1.310
Mining	1.000	0.245	0.523	1.768	0.000	0.055	0.037	0.092	1.000	0.300	0.560	1.860
Utilities	1.000	0.272	0.850	2.122	0.000	0.027	0.054	0.081	1.000	0.299	0.904	2.202
Construction	1.000	0.298	0.432	1.729	0.000	0.047	0.018	0.065	1.000	0.345	0.449	1.794
Manufacturing	1.000	0.512	0.622	2.134	0.000	0.069	0.029	0.098	1.000	0.581	0.652	2.232
Wholesale & Retail Trade	1.000	0.113	0.170	1.284	0.000	0.013	0.010	0.023	1.000	0.126	0.180	1.307
Transportation & Information	1.000	0.328	0.345	1.673	0.000	0.037	0.022	0.059	1.000	0.365	0.368	1.733
Finance, Insurance & Real Estate	1.000	0.316	0.385	1.701	0.000	0.073	0.026	0.099	1.000	0.389	0.411	1.800
Services	1.000	0.111	0.180	1.291	0.000	0.012	0.009	0.021	1.000	0.123	0.190	1.313
Public Administration	1.000	0.252	0.534	1.786	0.000	0.025	0.025	0.049	1.000	0.276	0.558	1.835
All Sector Average	1.000	0.135	0.230	1.365	0.000	0.018	0.013	0.031	1.000	0.153	0.243	1.396

Average based on employment weights: author's calculation

Value Added Effects and Multipliers: Value added is the broadest measure of income that is available in regional economic impact analysis. It is the sum of employment compensation (wages and salaries plus employer contributions to health benefit programs, social security, etc.), proprietors' income (income of sole proprietors and partnerships), other property-type income (rents dividends, profits, etc.), and indirect business taxes. Value added when aggregated over all industries in an area is equal to the region's contribution to the nation gross domestic product (GDP). By industry, it accounts for each sector's contribution to both the region's and the nation's GDP. The average value added multiplier effects and multipliers are given in Tables B5 and B6.

Table B5
Linn County Multiregional Column Value Added Multiplier Effects

Average Multiregional Column Value Added Effects												
Linn County Sector	Linn County				Rest of Iowa				State of Iowa			
	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total
Agriculture	0.4438	0.1025	0.0763	0.6226	0.0000	0.0344	0.0060	0.0404	0.4438	0.1368	0.0823	0.6630
Mining	0.6033	0.1001	0.1510	0.8543	0.0000	0.0236	0.0118	0.0354	0.6033	0.1237	0.1628	0.8897
Utilities	0.7577	0.0312	0.0879	0.8767	0.0000	0.0041	0.0054	0.0095	0.7577	0.0352	0.0933	0.8862
Construction	0.4559	0.1311	0.1937	0.7807	0.0000	0.0265	0.0080	0.0345	0.4559	0.1575	0.2017	0.8152
Manufacturing	0.2933	0.1088	0.0991	0.5013	0.0000	0.0176	0.0056	0.0232	0.2933	0.1264	0.1048	0.5245
Wholesale & Retail Trade	0.6717	0.1387	0.1805	0.9909	0.0000	0.0171	0.0108	0.0279	0.6717	0.1558	0.1913	1.0187
Transportation & Information	0.4640	0.1819	0.1416	0.7874	0.0000	0.0165	0.0091	0.0256	0.4640	0.1984	0.1506	0.8130
Finance, Insurance & Real Estate	0.6121	0.1475	0.1150	0.8745	0.0000	0.0283	0.0081	0.0364	0.6121	0.1757	0.1231	0.9109
Services	0.5968	0.1432	0.2206	0.9606	0.0000	0.0149	0.0115	0.0264	0.5968	0.1581	0.2321	0.9870
Public Administration	0.5444	0.1359	0.2408	0.9210	0.0000	0.0167	0.0114	0.0281	0.5444	0.1526	0.2522	0.9492
All Sector Average	0.5617	0.1233	0.1613	0.8462	0.0000	0.0186	0.0099	0.0285	0.5617	0.1418	0.1712	0.8747

Average based on value added weights (2010 = 1): author's calculation

Table B6
Linn County Multiregional Column Value Added Multipliers

Average Multiregional Column Value Added Multipliers												
Linn County Sector	Linn County				Rest of Iowa				State of Iowa			
	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total
Agriculture	1.000	0.231	0.172	1.403	0.000	0.077	0.014	0.091	1.000	0.308	0.185	1.494
Mining	1.000	0.166	0.250	1.416	0.000	0.039	0.020	0.059	1.000	0.205	0.270	1.475
Utilities	1.000	0.041	0.116	1.157	0.000	0.005	0.007	0.012	1.000	0.046	0.123	1.170
Construction	1.000	0.288	0.425	1.712	0.000	0.058	0.018	0.076	1.000	0.346	0.443	1.788
Manufacturing	1.000	0.371	0.338	1.709	0.000	0.060	0.019	0.079	1.000	0.431	0.357	1.788
Wholesale & Retail Trade	1.000	0.207	0.269	1.475	0.000	0.025	0.016	0.041	1.000	0.232	0.285	1.517
Transportation & Information	1.000	0.392	0.305	1.697	0.000	0.036	0.020	0.055	1.000	0.427	0.325	1.752
Finance, Insurance & Real Estate	1.000	0.241	0.188	1.429	0.000	0.046	0.013	0.059	1.000	0.287	0.201	1.488
Services	1.000	0.240	0.370	1.609	0.000	0.025	0.019	0.044	1.000	0.265	0.389	1.654
Public Administration	1.000	0.250	0.442	1.692	0.000	0.031	0.021	0.052	1.000	0.280	0.463	1.743
All Sector Average	1.000	0.219	0.287	1.507	0.000	0.033	0.018	0.051	1.000	0.253	0.305	1.557

Average based on value added weights (2010 = 1): author's calculation

Labor Income Effects and Multipliers: Industry labor income is the total amount of employee compensation paid out by employers in the industry and the proprietors' income. A labor income multiplier of 1.5 means that for every dollar of compensation entered as a "direct effect" in a new scenario, an additional \$0.50 is paid out in wages, salaries, and other compensation throughout your economy. This is important for understanding how a given scenario will not affect the number of jobs in your region, but the income-quality of those jobs. A scenario whose ripple effect brought two dozen lawyers and accountants into your region would have a much higher earnings multiplier than if that scenario brought the same number of indirect jobs mostly in food services and hotels.

Note that there is a tendency for industries with low labor income multipliers to have high jobs multipliers, and vice versa. In other words, there is a tradeoff that industries tend to either create a lot of jobs with lower than average earnings, or fewer jobs with higher than average earnings. The average labor income multiplier effects and multipliers are shown in Tables B7 and B8.

Table B7
Linn County Multiregional Column Labor Income Multiplier Effects

Average Multiregional Column Labor Income Effects												
Linn County Sector	Linn County				Rest of Iowa				State of Iowa			
	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total
Agriculture	0.2705	0.0433	0.0741	0.3879	0.0000	0.0164	0.0045	0.0209	0.2705	0.0596	0.0786	0.4088
Mining	0.3380	0.0582	0.0824	0.4786	0.0000	0.0126	0.0071	0.0197	0.3380	0.0708	0.0895	0.4983
Utilities	0.2096	0.0197	0.0473	0.2766	0.0000	0.0022	0.0032	0.0054	0.2096	0.0219	0.0505	0.2820
Construction	0.4151	0.0865	0.1048	0.6064	0.0000	0.0176	0.0045	0.0222	0.4151	0.1041	0.1093	0.6285
Manufacturing	0.2179	0.0724	0.0599	0.3502	0.0000	0.0102	0.0031	0.0133	0.2179	0.0826	0.0630	0.3634
Wholesale & Retail Trade	0.4068	0.0796	0.1018	0.5883	0.0000	0.0112	0.0066	0.0179	0.4068	0.0908	0.1085	0.6061
Transportation & Information	0.2981	0.1036	0.0834	0.4851	0.0000	0.0107	0.0060	0.0167	0.2981	0.1142	0.0894	0.5017
Finance, Insurance & Real Estate	0.2969	0.0937	0.0812	0.4718	0.0000	0.0300	0.0067	0.0367	0.2969	0.1236	0.0879	0.5085
Services	0.5105	0.0830	0.1248	0.7183	0.0000	0.0093	0.0072	0.0165	0.5105	0.0923	0.1320	0.7348
Public Administration	0.5831	0.0809	0.1368	0.8009	0.0000	0.0093	0.0071	0.0164	0.5831	0.0903	0.1439	0.8173
All Sector Average	0.4115	0.0740	0.1011	0.5867	0.0000	0.0112	0.0067	0.0179	0.4115	0.0852	0.1079	0.6046

Average based on labor income weights (2010 = 1): author's calculation

Table B8
Linn County Multiregional Column Labor Income Multipliers

Average Multiregional Column Labor Income Multipliers												
Linn County Sector	Linn County				Rest of Iowa				State of Iowa			
	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total
Agriculture	1.000	0.160	0.274	1.434	0.000	0.061	0.017	0.077	1.000	0.220	0.291	1.511
Mining	1.000	0.172	0.244	1.416	0.000	0.037	0.021	0.058	1.000	0.210	0.265	1.474
Utilities	1.000	0.094	0.226	1.320	0.000	0.010	0.015	0.026	1.000	0.105	0.241	1.345
Construction	1.000	0.208	0.252	1.461	0.000	0.042	0.011	0.053	1.000	0.251	0.263	1.514
Manufacturing	1.000	0.332	0.275	1.607	0.000	0.047	0.014	0.061	1.000	0.379	0.289	1.668
Wholesale & Retail Trade	1.000	0.196	0.250	1.446	0.000	0.028	0.016	0.044	1.000	0.223	0.267	1.490
Transportation & Information	1.000	0.347	0.280	1.627	0.000	0.036	0.020	0.056	1.000	0.383	0.300	1.683
Finance, Insurance & Real Estate	1.000	0.315	0.274	1.589	0.000	0.101	0.023	0.124	1.000	0.416	0.296	1.713
Services	1.000	0.163	0.244	1.407	0.000	0.018	0.014	0.032	1.000	0.181	0.259	1.439
Public Administration	1.000	0.139	0.235	1.373	0.000	0.016	0.012	0.028	1.000	0.155	0.247	1.402
All Sector Average	1.000	0.180	0.246	1.426	0.000	0.027	0.016	0.044	1.000	0.207	0.262	1.469

Average based on labor income weights (2010 = 1): author's calculation

**Table B9
Multiregional Output Multiplier Effects and Multipliers**

Code	IMPLAN Sector	Output Multiplier Effects			Output Multipliers		
		Linn County	Rest of Iowa	State of Iowa	Linn County	Rest of Iowa	State of Iowa
1	Oilseed farming	1.292	0.119	1.410	1.292	0.119	1.410
2	Grain farming	1.242	0.092	1.334	1.242	0.092	1.334
3	Vegetable and melon farming	1.374	0.137	1.511	1.374	0.137	1.511
4	Fruit farming	1.387	0.193	1.580	1.387	0.193	1.580
5	Tree nut farming	1.304	0.098	1.402	1.304	0.098	1.402
6	Greenhouse, nursery, and floriculture production	1.386	0.106	1.492	1.386	0.106	1.492
7	Tobacco farming	1.000	0.000	1.000	1.000	0.000	1.000
8	Cotton farming	1.000	0.000	1.000	1.000	0.000	1.000
9	Sugarcane and sugar beet farming	1.000	0.000	1.000	1.000	0.000	1.000
10	All other crop farming	1.361	0.124	1.485	1.361	0.124	1.485
11	Cattle ranching and farming	1.592	0.073	1.665	1.592	0.073	1.665
12	Dairy cattle and milk production	1.425	0.091	1.516	1.425	0.091	1.516
13	Poultry and egg production	1.596	0.185	1.780	1.596	0.185	1.780
14	Animal production, except cattle and poultry and eggs	1.305	0.104	1.408	1.305	0.104	1.408
15	Forest nurseries, forest products, and timber tracts	1.000	0.000	1.000	1.000	0.000	1.000
16	Logging	1.000	0.000	1.000	1.000	0.000	1.000
17	Fishing	1.000	0.000	1.000	1.000	0.000	1.000
18	Hunting and trapping	1.472	0.071	1.542	1.472	0.071	1.542
19	Support activities for agriculture and forestry	1.797	0.102	1.899	1.797	0.102	1.899
20	Oil and gas extraction	1.425	0.162	1.588	1.425	0.162	1.588
21	Coal mining	1.000	0.000	1.000	1.000	0.000	1.000
22	Iron ore mining	1.000	0.000	1.000	1.000	0.000	1.000
23	Copper, nickel, lead, and zinc mining	1.000	0.000	1.000	1.000	0.000	1.000
24	Gold, silver, and other metal ore mining	1.000	0.000	1.000	1.000	0.000	1.000
25	Stone mining and quarrying	1.428	0.076	1.504	1.428	0.076	1.504
26	Sand, gravel, clay, and ceramic and refractory minerals mining and quarrying	1.458	0.079	1.538	1.458	0.079	1.538
27	Other nonmetallic mineral mining and quarrying	1.000	0.000	1.000	1.000	0.000	1.000
28	Drilling oil and gas wells	1.230	0.059	1.288	1.230	0.059	1.288
29	Support activities for oil and gas operations	1.000	0.000	1.000	1.000	0.000	1.000
30	Support activities for other mining	1.000	0.000	1.000	1.000	0.000	1.000
31	Electric power generation, transmission, and distribution	1.203	0.032	1.235	1.203	0.032	1.235
32	Natural gas distribution	1.000	0.000	1.000	1.000	0.000	1.000
33	Water, sewage and other systems	1.530	0.047	1.577	1.530	0.047	1.577
34	Construction of new nonresidential commercial and health care structures	1.502	0.094	1.596	1.502	0.094	1.596
35	Construction of new nonresidential manufacturing structures	1.453	0.073	1.527	1.453	0.073	1.527
36	Construction of other new nonresidential structures	1.562	0.092	1.654	1.562	0.092	1.654
37	Construction of new residential permanent	1.609	0.115	1.724	1.609	0.115	1.724

	site single- and multi-family structures						
38	Construction of other new residential structures	1.600	0.110	1.711	1.600	0.110	1.711
39	Maintenance and repair construction of nonresidential maintenance and repair	1.596	0.086	1.682	1.596	0.086	1.682
40	Maintenance and repair construction of residential structures	1.463	0.098	1.560	1.463	0.098	1.560
41	Dog and cat food manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
42	Other animal food manufacturing	1.355	0.193	1.548	1.355	0.193	1.548
43	Flour milling and malt manufacturing	1.398	0.186	1.584	1.398	0.186	1.584
44	Wet corn milling	1.378	0.202	1.580	1.378	0.202	1.580
45	Soybean and other oilseed processing	1.164	0.355	1.519	1.164	0.355	1.519
46	Fats and oils refining and blending	1.000	0.000	1.000	1.000	0.000	1.000
47	Breakfast cereal manufacturing	1.239	0.135	1.373	1.239	0.135	1.373
48	Sugar cane mills and refining	1.000	0.000	1.000	1.000	0.000	1.000
49	Beet sugar manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
50	Chocolate and confectionery manufacturing from cacao beans	1.000	0.000	1.000	1.000	0.000	1.000
51	Confectionery manufacturing from purchased chocolate	1.331	0.160	1.490	1.331	0.160	1.490
52	Nonchocolate confectionery manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
53	Frozen food manufacturing	1.393	0.195	1.587	1.393	0.195	1.587
54	Fruit and vegetable canning, pickling, and drying	1.000	0.000	1.000	1.000	0.000	1.000
55	Fluid milk and butter manufacturing	1.646	0.240	1.885	1.646	0.240	1.885
56	Cheese manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
57	Dry, condensed, and evaporated dairy product manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
58	Ice cream and frozen dessert manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
59	Animal (except poultry) slaughtering, rendering, and processing	1.000	0.000	1.000	1.000	0.000	1.000
60	Poultry processing	1.000	0.000	1.000	1.000	0.000	1.000
61	Seafood product preparation and packaging	1.000	0.000	1.000	1.000	0.000	1.000
62	Bread and bakery product manufacturing	1.482	0.144	1.625	1.482	0.144	1.625
63	Cookie, cracker, and pasta manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
64	Tortilla manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
65	Snack food manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
66	Coffee and tea manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
67	Flavoring syrup and concentrate manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
68	Seasoning and dressing manufacturing	1.338	0.149	1.487	1.338	0.149	1.487
69	All other food manufacturing	1.455	0.140	1.595	1.455	0.140	1.595
70	Soft drink and ice manufacturing	1.270	0.149	1.419	1.270	0.149	1.419
71	Breweries	1.000	0.000	1.000	1.000	0.000	1.000
72	Wineries	1.000	0.000	1.000	1.000	0.000	1.000
73	Distilleries	1.000	0.000	1.000	1.000	0.000	1.000
74	Tobacco product manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
75	Fiber, yarn, and thread mills	1.000	0.000	1.000	1.000	0.000	1.000
76	Broadwoven fabric mills	1.000	0.000	1.000	1.000	0.000	1.000
77	Narrow fabric mills and schiffli machine embroidery	1.000	0.000	1.000	1.000	0.000	1.000

78	Nonwoven fabric mills	1.000	0.000	1.000	1.000	0.000	1.000
79	Knit fabric mills	1.000	0.000	1.000	1.000	0.000	1.000
80	Textile and fabric finishing mills	1.361	0.074	1.434	1.361	0.074	1.434
81	Fabric coating mills	1.000	0.000	1.000	1.000	0.000	1.000
82	Carpet and rug mills	1.000	0.000	1.000	1.000	0.000	1.000
83	Curtain and linen mills	1.316	0.045	1.361	1.316	0.045	1.361
84	Textile bag and canvas mills	1.385	0.065	1.450	1.385	0.065	1.450
85	All other textile product mills	1.323	0.063	1.386	1.323	0.063	1.386
86	Apparel knitting mills	1.000	0.000	1.000	1.000	0.000	1.000
87	Cut and sew apparel contractors	1.000	0.000	1.000	1.000	0.000	1.000
88	Men's and boys' cut and sew apparel manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
89	Women's and girls' cut and sew apparel manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
90	Other cut and sew apparel manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
91	Apparel accessories and other apparel manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
92	Leather and hide tanning and finishing	1.000	0.000	1.000	1.000	0.000	1.000
93	Footwear manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
94	Other leather and allied product manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
95	Sawmills and wood preservation	1.437	0.401	1.838	1.437	0.401	1.838
96	Veneer and plywood manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
97	Engineered wood member and truss manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
98	Reconstituted wood product manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
99	Wood windows and doors and millwork	1.451	0.181	1.632	1.451	0.181	1.632
100	Wood container and pallet manufacturing	1.391	0.153	1.544	1.391	0.153	1.544
101	Manufactured home (mobile home) manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
102	Prefabricated wood building manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
103	All other miscellaneous wood product manufacturing	1.491	0.201	1.692	1.491	0.201	1.692
104	Pulp mills	1.000	0.000	1.000	1.000	0.000	1.000
105	Paper mills	1.000	0.000	1.000	1.000	0.000	1.000
106	Paperboard Mills	1.000	0.000	1.000	1.000	0.000	1.000
107	Paperboard container manufacturing	1.382	0.064	1.446	1.382	0.064	1.446
108	Coated and laminated paper, packaging paper and plastics film manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
109	All other paper bag and coated and treated paper manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
110	Stationery product manufacturing	1.389	0.079	1.468	1.389	0.079	1.468
111	Sanitary paper product manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
112	All other converted paper product manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
113	Printing	1.446	0.065	1.511	1.446	0.065	1.511
114	Support activities for printing	1.580	0.069	1.649	1.580	0.069	1.649
115	Petroleum refineries	1.000	0.000	1.000	1.000	0.000	1.000
116	Asphalt paving mixture and block manufacturing	1.229	0.076	1.305	1.229	0.076	1.305
117	Asphalt shingle and coating materials manufacturing	1.000	0.000	1.000	1.000	0.000	1.000

118	Petroleum lubricating oil and grease manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
119	All other petroleum and coal products manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
120	Petrochemical manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
121	Industrial gas manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
122	Synthetic dye and pigment manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
123	Alkalies and chlorine manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
124	Carbon black manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
125	All other basic inorganic chemical manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
126	Other basic organic chemical manufacturing	1.180	0.070	1.251	1.180	0.070	1.251
127	Plastics material and resin manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
128	Synthetic rubber manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
129	Artificial and synthetic fibers and filaments manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
130	Fertilizer manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
131	Pesticide and other agricultural chemical manufacturing	1.208	0.100	1.309	1.208	0.100	1.309
132	Medicinal and botanical manufacturing	1.316	0.104	1.420	1.316	0.104	1.420
133	Pharmaceutical preparation manufacturing	1.296	0.094	1.391	1.296	0.094	1.391
134	In-vitro diagnostic substance manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
135	Biological product (except diagnostic) manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
136	Paint and coating manufacturing	1.237	0.088	1.325	1.237	0.088	1.325
137	Adhesive manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
138	Soap and cleaning compound manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
139	Toilet preparation manufacturing	1.303	0.100	1.403	1.303	0.100	1.403
140	Printing ink manufacturing	1.194	0.088	1.282	1.194	0.088	1.282
141	All other chemical product and preparation manufacturing	1.247	0.107	1.354	1.247	0.107	1.354
142	Plastics packaging materials and unlaminated film and sheet manufacturing	1.228	0.053	1.281	1.228	0.053	1.281
143	Unlaminated plastics profile shape manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
144	Plastics pipe and pipe fitting manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
145	Laminated plastics plate, sheet (except packaging), and shape manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
146	Polystyrene foam product manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
147	Urethane and other foam product (except polystyrene) manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
148	Plastics bottle manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
149	Other plastics product manufacturing	1.318	0.066	1.384	1.318	0.066	1.384
150	Tire manufacturing	1.388	0.062	1.450	1.388	0.062	1.450
151	Rubber and plastics hoses and belting manufacturing	1.328	0.066	1.394	1.328	0.066	1.394
152	Other rubber product manufacturing	1.349	0.077	1.426	1.349	0.077	1.426
153	Pottery, ceramics, and plumbing fixture manufacturing	1.421	0.114	1.536	1.421	0.114	1.536
154	Brick, tile, and other structural clay product manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
155	Clay and nonclay refractory manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
156	Flat glass manufacturing	1.000	0.000	1.000	1.000	0.000	1.000

157	Other pressed and blown glass and glassware manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
158	Glass container manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
159	Glass product manufacturing made of purchased glass	1.000	0.000	1.000	1.000	0.000	1.000
160	Cement manufacturing	1.419	0.086	1.506	1.419	0.086	1.506
161	Ready-mix concrete manufacturing	1.451	0.157	1.609	1.451	0.157	1.609
162	Concrete pipe, brick, and block manufacturing	1.401	0.112	1.512	1.401	0.112	1.512
163	Other concrete product manufacturing	1.421	0.128	1.549	1.421	0.128	1.549
164	Lime and gypsum product manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
165	Abrasive product manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
166	Cut stone and stone product manufacturing	1.537	0.092	1.630	1.537	0.092	1.630
167	Ground or treated mineral and earth manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
168	Mineral wool manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
169	Miscellaneous nonmetallic mineral products	1.000	0.000	1.000	1.000	0.000	1.000
170	Iron and steel mills and ferroalloy manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
171	Steel product manufacturing from purchased steel	1.000	0.000	1.000	1.000	0.000	1.000
172	Alumina refining and primary aluminum production	1.000	0.000	1.000	1.000	0.000	1.000
173	Secondary smelting and alloying of aluminum	1.000	0.000	1.000	1.000	0.000	1.000
174	Aluminum product manufacturing from purchased aluminum	1.000	0.000	1.000	1.000	0.000	1.000
175	Primary smelting and refining of copper	1.000	0.000	1.000	1.000	0.000	1.000
176	Primary smelting and refining of nonferrous metal (except copper and aluminum)	1.000	0.000	1.000	1.000	0.000	1.000
177	Copper rolling, drawing, extruding and alloying	1.267	0.034	1.301	1.267	0.034	1.301
178	Nonferrous metal (except copper and aluminum) rolling, drawing, extruding and alloying	1.000	0.000	1.000	1.000	0.000	1.000
179	Ferrous metal foundries	1.000	0.000	1.000	1.000	0.000	1.000
180	Nonferrous metal foundries	1.000	0.000	1.000	1.000	0.000	1.000
181	All other forging, stamping, and sintering	1.392	0.112	1.503	1.392	0.112	1.503
182	Custom roll forming	1.000	0.000	1.000	1.000	0.000	1.000
183	Crown and closure manufacturing and metal stamping	1.392	0.109	1.500	1.392	0.109	1.500
184	Cutlery, utensil, pot, and pan manufacturing	1.295	0.079	1.374	1.295	0.079	1.374
185	Handtool manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
186	Plate work and fabricated structural product manufacturing	1.368	0.114	1.481	1.368	0.114	1.481
187	Ornamental and architectural metal products manufacturing	1.410	0.112	1.523	1.410	0.112	1.523
188	Power boiler and heat exchanger manufacturing	1.345	0.093	1.438	1.345	0.093	1.438
189	Metal tank (heavy gauge) manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
190	Metal can, box, and other metal container (light gauge) manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
191	Ammunition manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
192	Arms, ordnance, and accessories manufacturing	1.000	0.000	1.000	1.000	0.000	1.000

193	Hardware manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
194	Spring and wire product manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
195	Machine shops	1.462	0.090	1.552	1.462	0.090	1.552
196	Turned product and screw, nut, and bolt manufacturing	1.385	0.093	1.478	1.385	0.093	1.478
197	Coating, engraving, heat treating and allied activities	1.366	0.089	1.455	1.366	0.089	1.455
198	Valve and fittings other than plumbing	1.336	0.077	1.412	1.336	0.077	1.412
199	Plumbing fixture fitting and trim manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
200	Ball and roller bearing manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
201	Fabricated pipe and pipe fitting manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
202	Other fabricated metal manufacturing	1.338	0.101	1.438	1.338	0.101	1.438
203	Farm machinery and equipment manufacturing	1.315	0.106	1.421	1.315	0.106	1.421
204	Lawn and garden equipment manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
205	Construction machinery manufacturing	1.290	0.114	1.405	1.290	0.114	1.405
206	Mining and oil and gas field machinery manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
207	Other industrial machinery manufacturing	1.403	0.099	1.502	1.403	0.099	1.502
208	Plastics and rubber industry machinery manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
209	Semiconductor machinery manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
210	Vending, commercial, industrial, and office machinery manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
211	Optical instrument and lens manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
212	Photographic and photocopying equipment manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
213	Other commercial and service industry machinery manufacturing	1.356	0.081	1.437	1.356	0.081	1.437
214	Air purification and ventilation equipment manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
215	Heating equipment (except warm air furnaces) manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
216	Air conditioning, refrigeration, and warm air heating equipment manufacturing	1.319	0.098	1.417	1.319	0.098	1.417
217	Industrial mold manufacturing	1.530	0.099	1.629	1.530	0.099	1.629
218	Metal cutting and forming machine tool manufacturing	1.436	0.097	1.533	1.436	0.097	1.533
219	Special tool, die, jig, and fixture manufacturing	1.494	0.106	1.600	1.494	0.106	1.600
220	Cutting tool and machine tool accessory manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
221	Rolling mill and other metalworking machinery manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
222	Turbine and turbine generator set units manufacturing	1.356	0.082	1.438	1.356	0.082	1.438
223	Speed changer, industrial high-speed drive, and gear manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
224	Mechanical power transmission equipment manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
225	Other engine equipment manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
226	Pump and pumping equipment manufacturing	1.357	0.097	1.454	1.357	0.097	1.454
227	Air and gas compressor manufacturing	1.000	0.000	1.000	1.000	0.000	1.000

228	Material handling equipment manufacturing	1.356	0.116	1.472	1.356	0.116	1.472
229	Power-driven handtool manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
230	Other general purpose machinery manufacturing	1.381	0.092	1.473	1.381	0.092	1.473
231	Packaging machinery manufacturing	1.436	0.083	1.520	1.436	0.083	1.520
232	Industrial process furnace and oven manufacturing	1.402	0.115	1.517	1.402	0.115	1.517
233	Fluid power process machinery	1.375	0.107	1.482	1.375	0.107	1.482
234	Electronic computer manufacturing	1.225	0.047	1.272	1.225	0.047	1.272
235	Computer storage device manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
236	Computer terminals and other computer peripheral equipment manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
237	Telephone apparatus manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
238	Broadcast and wireless communications equipment	1.359	0.067	1.425	1.359	0.067	1.425
239	Other communications equipment manufacturing	1.344	0.089	1.433	1.344	0.089	1.433
240	Audio and video equipment manufacturing	1.384	0.071	1.454	1.384	0.071	1.454
241	Electron tube manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
242	Bare printed circuit board manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
243	Semiconductor and related device manufacturing	1.470	0.135	1.605	1.470	0.135	1.605
244	Electronic capacitor, resistor, coil, transformer, and other inductor manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
245	Electronic connector manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
246	Printed circuit assembly (electronic assembly) manufacturing	1.262	0.054	1.315	1.262	0.054	1.315
247	Other electronic component manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
248	Electromedical and electrotherapeutic apparatus manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
249	Search, detection, and navigation instruments manufacturing	1.461	0.095	1.556	1.461	0.095	1.556
250	Automatic environmental control manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
251	Industrial process variable instruments manufacturing	1.458	0.109	1.567	1.458	0.109	1.567
252	Totalizing fluid meters and counting devices manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
253	Electricity and signal testing instruments manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
254	Analytical laboratory instrument manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
255	Irradiation apparatus manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
256	Watch, clock, and other measuring and controlling device manufacturing	1.384	0.099	1.483	1.384	0.099	1.483
257	Software, audio, and video media reproducing	1.000	0.000	1.000	1.000	0.000	1.000
258	Magnetic and optical recording media manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
259	Electric lamp bulb and part manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
260	Lighting fixture manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
261	Small electrical appliance manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
262	Household cooking appliance manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
263	Household refrigerator and home freezer	1.000	0.000	1.000	1.000	0.000	1.000

	manufacturing						
264	Household laundry equipment manufacturing	1.292	0.091	1.383	1.292	0.091	1.383
265	Other major household appliance manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
266	Power, distribution, and specialty transformer manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
267	Motor and generator manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
268	Switchgear and switchboard apparatus manufacturing	1.290	0.066	1.356	1.290	0.066	1.356
269	Relay and industrial control manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
270	Storage battery manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
271	Primary battery manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
272	Communication and energy wire and cable manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
273	Wiring device manufacturing	1.306	0.076	1.382	1.306	0.076	1.382
274	Carbon and graphite product manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
275	All other miscellaneous electrical equipment and component manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
276	Automobile manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
277	Light truck and utility vehicle manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
278	Heavy duty truck manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
279	Motor vehicle body manufacturing	1.301	0.116	1.417	1.301	0.116	1.417
280	Truck trailer manufacturing	1.379	0.138	1.517	1.379	0.138	1.517
281	Motor home manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
282	Travel trailer and camper manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
283	Motor vehicle parts manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
284	Aircraft manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
285	Aircraft engine and engine parts manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
286	Other aircraft parts and auxiliary equipment manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
287	Guided missile and space vehicle manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
288	Propulsion units and parts for space vehicles and guided missiles	1.000	0.000	1.000	1.000	0.000	1.000
289	Railroad rolling stock manufacturing	1.257	0.089	1.346	1.257	0.089	1.346
290	Ship building and repairing	1.000	0.000	1.000	1.000	0.000	1.000
291	Boat building	1.000	0.000	1.000	1.000	0.000	1.000
292	Motorcycle, bicycle, and parts manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
293	Military armored vehicle, tank, and tank component manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
294	All other transportation equipment manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
295	Wood kitchen cabinet and countertop manufacturing	1.616	0.106	1.721	1.616	0.106	1.721
296	Upholstered household furniture manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
297	Nonupholstered wood household furniture manufacturing	1.430	0.102	1.533	1.430	0.102	1.533
298	Metal and other household furniture (except wood) manufacturing ¹	1.336	0.090	1.426	1.336	0.090	1.426
299	Institutional furniture manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
300	Wood television, radio, and sewing machine cabinet manufacturing ¹	1.388	0.061	1.449	1.388	0.061	1.449

301	Office furniture and custom architectural woodwork and millwork manufacturing ¹	1.383	0.083	1.466	1.383	0.083	1.466
302	Showcase, partition, shelving, and locker manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
303	Mattress manufacturing	1.340	0.076	1.416	1.340	0.076	1.416
304	Blind and shade manufacturing	1.395	0.118	1.513	1.395	0.118	1.513
305	Surgical and medical instrument manufacturing	1.457	0.077	1.534	1.457	0.077	1.534
306	Surgical appliance and supplies manufacturing	1.430	0.087	1.517	1.430	0.087	1.517
307	Dental equipment and supplies manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
308	Ophthalmic goods manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
309	Dental laboratories	1.575	0.074	1.649	1.575	0.074	1.649
310	Jewelry and silverware manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
311	Sporting and athletic goods manufacturing	1.433	0.099	1.532	1.433	0.099	1.532
312	Doll, toy, and game manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
313	Office supplies (except paper) manufacturing	1.404	0.073	1.477	1.404	0.073	1.477
314	Sign manufacturing	1.515	0.082	1.597	1.515	0.082	1.597
315	Gasket, packing, and sealing device manufacturing	1.461	0.079	1.540	1.461	0.079	1.540
316	Musical instrument manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
317	All other miscellaneous manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
318	Broom, brush, and mop manufacturing	1.000	0.000	1.000	1.000	0.000	1.000
319	Wholesale trade	1.533	0.068	1.601	1.533	0.068	1.601
320	Retail - Motor vehicle and parts	1.617	0.067	1.683	1.617	0.067	1.683
321	Retail - Furniture and home furnishings	1.587	0.067	1.654	1.587	0.067	1.654
322	Retail - Electronics and appliances	1.637	0.072	1.709	1.637	0.072	1.709
323	Retail - Building material and garden supply	1.577	0.064	1.641	1.577	0.064	1.641
324	Retail - Food and beverage	1.601	0.068	1.669	1.601	0.068	1.669
325	Retail - Health and personal care	1.557	0.057	1.614	1.557	0.057	1.614
326	Retail - Gasoline stations	1.483	0.052	1.535	1.483	0.052	1.535
327	Retail - Clothing and clothing accessories	1.525	0.057	1.582	1.525	0.057	1.582
328	Retail - Sporting goods, hobby, book and music	1.606	0.060	1.667	1.606	0.060	1.667
329	Retail - General merchandise	1.599	0.067	1.666	1.599	0.067	1.666
330	Retail - Miscellaneous	1.598	0.057	1.655	1.598	0.057	1.655
331	Retail - Nonstore	1.417	0.045	1.462	1.417	0.045	1.462
332	Air transportation	1.406	0.055	1.462	1.406	0.055	1.462
333	Rail transportation	1.461	0.048	1.509	1.461	0.048	1.509
334	Water transportation	1.429	0.106	1.535	1.429	0.106	1.535
335	Truck transportation	1.566	0.058	1.624	1.566	0.058	1.624
336	Transit and ground passenger transportation	1.462	0.072	1.535	1.462	0.072	1.535
337	Pipeline transportation	1.000	0.000	1.000	1.000	0.000	1.000
338	Scenic and sightseeing transportation and support activities for transportation	1.540	0.055	1.595	1.540	0.055	1.595
339	Couriers and messengers	1.425	0.045	1.470	1.425	0.045	1.470
340	Warehousing and storage	1.534	0.058	1.592	1.534	0.058	1.592
341	Newspaper publishers	1.416	0.206	1.622	1.416	0.206	1.622
342	Periodical publishers	1.543	0.109	1.652	1.543	0.109	1.652

343	Book publishers	1.593	0.072	1.666	1.593	0.072	1.666
344	Directory, mailing list, and other publishers	1.454	0.053	1.506	1.454	0.053	1.506
345	Software publishers	1.634	0.078	1.712	1.634	0.078	1.712
346	Motion picture and video industries	1.666	0.115	1.781	1.666	0.115	1.781
347	Sound recording industries	1.835	0.058	1.893	1.835	0.058	1.893
348	Radio and television broadcasting	1.591	0.116	1.707	1.591	0.116	1.707
349	Cable and other subscription programming	1.000	0.000	1.000	1.000	0.000	1.000
350	Internet publishing and broadcasting	1.596	0.075	1.671	1.596	0.075	1.671
351	Telecommunications	1.678	0.052	1.730	1.678	0.052	1.730
352	Data processing, hosting, and related services	1.640	0.103	1.742	1.640	0.103	1.742
353	Other information services	1.000	0.000	1.000	1.000	0.000	1.000
354	Monetary authorities and depository credit intermediation	1.461	0.053	1.515	1.461	0.053	1.515
355	Nondepository credit intermediation and related activities	1.595	0.078	1.673	1.595	0.078	1.673
356	Securities, commodity contracts, investments, and related activities	1.807	0.117	1.924	1.807	0.117	1.924
357	Insurance carriers	1.500	0.177	1.677	1.500	0.177	1.677
358	Insurance agencies, brokerages, and related activities	1.637	0.113	1.751	1.637	0.113	1.751
359	Funds, trusts, and other financial vehicles	1.799	0.134	1.933	1.799	0.134	1.933
360	Real estate	1.318	0.025	1.343	1.318	0.025	1.343
361	Imputed rental value for owner-occupied dwellings	1.334	0.029	1.363	1.334	0.029	1.363
362	Automotive equipment rental and leasing	1.621	0.093	1.714	1.621	0.093	1.714
363	General and consumer goods rental except video tapes and discs	1.673	0.096	1.770	1.673	0.096	1.770
364	Video tape and disc rental	1.596	0.114	1.711	1.596	0.114	1.711
365	Commercial and industrial machinery and equipment rental and leasing	1.652	0.107	1.760	1.652	0.107	1.760
366	Lessors of nonfinancial intangible assets	1.398	0.040	1.438	1.398	0.040	1.438
367	Legal services	1.672	0.060	1.732	1.672	0.060	1.732
368	Accounting, tax preparation, bookkeeping, and payroll services	1.667	0.065	1.732	1.667	0.065	1.732
369	Architectural, engineering, and related services	1.734	0.064	1.799	1.734	0.064	1.799
370	Specialized design services	1.629	0.059	1.688	1.629	0.059	1.688
371	Custom computer programming services	1.780	0.054	1.834	1.780	0.054	1.834
372	Computer systems design services	1.811	0.078	1.889	1.811	0.078	1.889
373	Other computer related services, including facilities management	1.616	0.062	1.678	1.616	0.062	1.678
374	Management, scientific, and technical consulting services	1.708	0.078	1.786	1.708	0.078	1.786
375	Environmental and other technical consulting services	1.679	0.067	1.746	1.679	0.067	1.746
376	Scientific research and development services	1.743	0.083	1.826	1.743	0.083	1.826
377	Advertising and related services	1.712	0.080	1.792	1.712	0.080	1.792
378	Photographic services	1.625	0.060	1.685	1.625	0.060	1.685
379	Veterinary services	1.534	0.074	1.608	1.534	0.074	1.608
380	All other miscellaneous professional, scientific, and technical services	1.511	0.071	1.583	1.511	0.071	1.583

381	Management of companies and enterprises	1.701	0.075	1.776	1.701	0.075	1.776
382	Employment services	1.680	0.070	1.750	1.680	0.070	1.750
383	Travel arrangement and reservation services	1.601	0.061	1.662	1.601	0.061	1.662
384	Office administrative services	1.617	0.057	1.674	1.617	0.057	1.674
385	Facilities support services	1.711	0.086	1.798	1.711	0.086	1.798
386	Business support services	1.657	0.059	1.716	1.657	0.059	1.716
387	Investigation and security services	1.650	0.059	1.709	1.650	0.059	1.709
388	Services to buildings and dwellings	1.512	0.045	1.557	1.512	0.045	1.557
389	Other support services	1.500	0.050	1.550	1.500	0.050	1.550
390	Waste management and remediation services	1.574	0.092	1.666	1.574	0.092	1.666
391	Elementary and secondary schools	1.663	0.061	1.724	1.663	0.061	1.724
392	Junior colleges, colleges, universities, and professional schools	1.653	0.090	1.743	1.653	0.090	1.743
393	Other educational services	1.678	0.078	1.756	1.678	0.078	1.756
394	Offices of physicians, dentists, and other health practitioners	1.609	0.057	1.666	1.609	0.057	1.666
395	Home health care services	1.571	0.054	1.625	1.571	0.054	1.625
396	Medical and diagnostic labs and outpatient and other ambulatory care services	1.514	0.049	1.563	1.514	0.049	1.563
397	Hospitals	1.623	0.071	1.694	1.623	0.071	1.694
398	Nursing and residential care facilities	1.645	0.072	1.717	1.645	0.072	1.717
399	Child day care services	1.532	0.087	1.620	1.532	0.087	1.620
400	Individual and family services	1.630	0.088	1.718	1.630	0.088	1.718
401	Community food, housing, and other relief services, including rehabilitation services	1.772	0.088	1.860	1.772	0.088	1.860
402	Performing arts companies	1.708	0.108	1.816	1.708	0.108	1.816
403	Spectator sports	1.634	0.160	1.793	1.634	0.160	1.793
404	Promoters of performing arts and sports and agents for public figures	1.760	0.094	1.854	1.760	0.094	1.854
405	Independent artists, writers, and performers	1.629	0.065	1.695	1.629	0.065	1.695
406	Museums, historical sites, zoos, and parks	1.669	0.075	1.744	1.669	0.075	1.744
407	Fitness and recreational sports centers	1.708	0.096	1.804	1.708	0.096	1.804
408	Bowling centers	1.724	0.090	1.814	1.724	0.090	1.814
409	Amusement parks, arcades, and gambling industries	1.573	0.068	1.641	1.573	0.068	1.641
410	Other amusement and recreation industries	1.639	0.085	1.724	1.639	0.085	1.724
411	Hotels and motels, including casino hotels	1.591	0.068	1.659	1.591	0.068	1.659
412	Other accommodations	1.656	0.082	1.738	1.656	0.082	1.738
413	Food services and drinking places	1.538	0.108	1.645	1.538	0.108	1.645
414	Automotive repair and maintenance, except car washes	1.499	0.072	1.572	1.499	0.072	1.572
415	Car washes	1.528	0.064	1.592	1.528	0.064	1.592
416	Electronic and precision equipment repair and maintenance	1.434	0.047	1.481	1.434	0.047	1.481
417	Commercial and industrial machinery and equipment repair and maintenance	1.394	0.053	1.447	1.394	0.053	1.447
418	Personal and household goods repair and maintenance	1.455	0.062	1.517	1.455	0.062	1.517
419	Personal care services	1.600	0.063	1.663	1.600	0.063	1.663
420	Death care services	1.607	0.114	1.721	1.607	0.114	1.721

421	Dry-cleaning and laundry services	1.501	0.056	1.557	1.501	0.056	1.557
422	Other personal services	1.582	0.045	1.627	1.582	0.045	1.627
423	Religious organizations	1.520	0.148	1.668	1.520	0.148	1.668
424	Grantmaking, giving, and social advocacy organizations	2.003	0.128	2.132	2.003	0.128	2.132
425	Civic, social, professional, and similar organizations	1.938	0.120	2.058	1.938	0.120	2.058
426	Private households	1.558	0.055	1.612	1.558	0.055	1.612
427	Postal service	1.682	0.072	1.755	1.682	0.072	1.755
428	Federal electric utilities	1.000	0.000	1.000	1.000	0.000	1.000
429	Other Federal Government enterprises	1.613	0.059	1.672	1.613	0.059	1.672
430	State and local government passenger transit	1.648	0.070	1.718	1.648	0.070	1.718
431	State and local government electric utilities	1.161	0.043	1.203	1.161	0.043	1.203
432	Other state and local government enterprises	1.574	0.086	1.660	1.574	0.086	1.660

Table B10
Multiregional Employment Multiplier Effects and Multipliers

Code	IMPLAN Sector	Employment Multiplier Effects			Employment Multipliers		
		Linn County	Rest of Iowa	State of Iowa	Linn County	Rest of Iowa	State of Iowa
1	Oilseed farming	6.595	0.773	7.367	1.581	0.185	1.766
2	Grain farming	7.519	0.627	8.146	1.356	0.113	1.469
3	Vegetable and melon farming	4.710	1.180	5.891	2.963	0.743	3.706
4	Fruit farming	6.120	1.915	8.035	2.049	0.641	2.690
5	Tree nut farming	5.061	0.938	5.999	2.058	0.382	2.439
6	Greenhouse, nursery, and floriculture production	6.535	0.850	7.385	2.062	0.268	2.330
7	Tobacco farming	0.000	0.000	0.000	1.000	0.000	1.000
8	Cotton farming	0.000	0.000	0.000	1.000	0.000	1.000
9	Sugarcane and sugar beet farming	0.000	0.000	0.000	1.000	0.000	1.000
10	All other crop farming	4.486	0.981	5.467	2.682	0.586	3.269
11	Cattle ranching and farming	6.688	0.399	7.087	1.819	0.109	1.927
12	Dairy cattle and milk production	4.709	0.504	5.214	1.632	0.175	1.806
13	Poultry and egg production	3.204	0.687	3.891	4.471	0.959	5.430
14	Animal production, except cattle and poultry and eggs	14.399	0.859	15.258	1.147	0.068	1.215
15	Forest nurseries, forest products, and timber tracts	0.000	0.000	0.000	1.000	0.000	1.000
16	Logging	0.000	0.000	0.000	1.000	0.000	1.000
17	Fishing	0.000	0.000	0.000	1.000	0.000	1.000
18	Hunting and trapping	18.882	0.339	19.221	1.271	0.023	1.294
19	Support activities for agriculture and forestry	45.765	0.408	46.174	1.195	0.011	1.206
20	Oil and gas extraction	5.668	0.528	6.196	2.377	0.221	2.599
21	Coal mining	0.000	0.000	0.000	1.000	0.000	1.000
22	Iron ore mining	0.000	0.000	0.000	1.000	0.000	1.000
23	Copper, nickel, lead, and zinc mining	0.000	0.000	0.000	1.000	0.000	1.000
24	Gold, silver, and other metal ore mining	0.000	0.000	0.000	1.000	0.000	1.000
25	Stone mining and quarrying	7.914	0.399	8.313	1.792	0.090	1.883
26	Sand, gravel, clay, and ceramic and refractory minerals mining and quarrying	9.766	0.395	10.161	1.613	0.065	1.678
27	Other nonmetallic mineral mining and quarrying	0.000	0.000	0.000	1.000	0.000	1.000
28	Drilling oil and gas wells	3.448	0.213	3.661	2.170	0.134	2.304
29	Support activities for oil and gas operations	0.000	0.000	0.000	1.000	0.000	1.000
30	Support activities for other mining	0.000	0.000	0.000	1.000	0.000	1.000
31	Electric power generation, transmission, and distribution	3.468	0.135	3.603	2.136	0.083	2.219
32	Natural gas distribution	0.000	0.000	0.000	1.000	0.000	1.000
33	Water, sewage and other systems	11.132	0.250	11.382	1.738	0.039	1.777
34	Construction of new nonresidential commercial and health care structures	10.658	0.428	11.087	1.694	0.068	1.763
35	Construction of new nonresidential manufacturing structures	9.913	0.315	10.227	1.651	0.052	1.703
36	Construction of other new nonresidential structures	11.918	0.410	12.328	1.727	0.059	1.786
37	Construction of new residential permanent	13.587	0.567	14.154	1.854	0.077	1.932

	site single- and multi-family structures						
38	Construction of other new residential structures	13.882	0.495	14.377	1.830	0.065	1.896
39	Maintenance and repair construction of nonresidential maintenance and repair	13.808	0.440	14.248	1.682	0.054	1.735
40	Maintenance and repair construction of residential structures	14.883	0.534	15.417	1.453	0.052	1.505
41	Dog and cat food manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
42	Other animal food manufacturing	2.933	0.720	3.653	2.935	0.720	3.656
43	Flour milling and malt manufacturing	3.594	1.023	4.617	4.145	1.180	5.325
44	Wet corn milling	3.229	1.064	4.293	5.870	1.935	7.805
45	Soybean and other oilseed processing	1.450	1.659	3.110	4.972	5.688	10.660
46	Fats and oils refining and blending	0.000	0.000	0.000	1.000	0.000	1.000
47	Breakfast cereal manufacturing	2.836	0.524	3.360	2.734	0.505	3.239
48	Sugar cane mills and refining	0.000	0.000	0.000	1.000	0.000	1.000
49	Beet sugar manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
50	Chocolate and confectionery manufacturing from cacao beans	0.000	0.000	0.000	1.000	0.000	1.000
51	Confectionery manufacturing from purchased chocolate	5.596	0.558	6.154	1.725	0.172	1.897
52	Nonchocolate confectionery manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
53	Frozen food manufacturing	5.971	0.703	6.674	1.971	0.232	2.203
54	Fruit and vegetable canning, pickling, and drying	0.000	0.000	0.000	1.000	0.000	1.000
55	Fluid milk and butter manufacturing	4.700	0.790	5.490	3.261	0.548	3.809
56	Cheese manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
57	Dry, condensed, and evaporated dairy product manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
58	Ice cream and frozen dessert manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
59	Animal (except poultry) slaughtering, rendering, and processing	0.000	0.000	0.000	1.000	0.000	1.000
60	Poultry processing	0.000	0.000	0.000	1.000	0.000	1.000
61	Seafood product preparation and packaging	0.000	0.000	0.000	1.000	0.000	1.000
62	Bread and bakery product manufacturing	10.762	0.598	11.359	1.607	0.089	1.697
63	Cookie, cracker, and pasta manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
64	Tortilla manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
65	Snack food manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
66	Coffee and tea manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
67	Flavoring syrup and concentrate manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
68	Seasoning and dressing manufacturing	4.603	0.524	5.127	2.191	0.250	2.441
69	All other food manufacturing	6.563	0.653	7.215	2.166	0.215	2.382
70	Soft drink and ice manufacturing	3.571	0.409	3.980	2.316	0.265	2.581
71	Breweries	0.000	0.000	0.000	1.000	0.000	1.000
72	Wineries	0.000	0.000	0.000	1.000	0.000	1.000
73	Distilleries	0.000	0.000	0.000	1.000	0.000	1.000
74	Tobacco product manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
75	Fiber, yarn, and thread mills	0.000	0.000	0.000	1.000	0.000	1.000
76	Broadwoven fabric mills	0.000	0.000	0.000	1.000	0.000	1.000
77	Narrow fabric mills and schiffli machine embroidery	0.000	0.000	0.000	1.000	0.000	1.000

78	Nonwoven fabric mills	0.000	0.000	0.000	1.000	0.000	1.000
79	Knit fabric mills	0.000	0.000	0.000	1.000	0.000	1.000
80	Textile and fabric finishing mills	7.802	0.324	8.126	1.614	0.067	1.681
81	Fabric coating mills	0.000	0.000	0.000	1.000	0.000	1.000
82	Carpet and rug mills	0.000	0.000	0.000	1.000	0.000	1.000
83	Curtain and linen mills	9.534	0.257	9.791	1.389	0.037	1.426
84	Textile bag and canvas mills	10.981	0.461	11.442	1.420	0.060	1.479
85	All other textile product mills	10.507	0.417	10.924	1.352	0.054	1.405
86	Apparel knitting mills	0.000	0.000	0.000	1.000	0.000	1.000
87	Cut and sew apparel contractors	0.000	0.000	0.000	1.000	0.000	1.000
88	Men's and boys' cut and sew apparel manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
89	Women's and girls' cut and sew apparel manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
90	Other cut and sew apparel manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
91	Apparel accessories and other apparel manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
92	Leather and hide tanning and finishing	0.000	0.000	0.000	1.000	0.000	1.000
93	Footwear manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
94	Other leather and allied product manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
95	Sawmills and wood preservation	7.170	1.219	8.389	1.721	0.293	2.014
96	Veneer and plywood manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
97	Engineered wood member and truss manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
98	Reconstituted wood product manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
99	Wood windows and doors and millwork	9.791	0.999	10.790	1.600	0.163	1.764
100	Wood container and pallet manufacturing	12.432	0.830	13.262	1.342	0.090	1.431
101	Manufactured home (mobile home) manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
102	Prefabricated wood building manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
103	All other miscellaneous wood product manufacturing	13.722	1.044	14.766	1.398	0.106	1.504
104	Pulp mills	0.000	0.000	0.000	1.000	0.000	1.000
105	Paper mills	0.000	0.000	0.000	1.000	0.000	1.000
106	Paperboard Mills	0.000	0.000	0.000	1.000	0.000	1.000
107	Paperboard container manufacturing	5.866	0.328	6.195	2.171	0.121	2.292
108	Coated and laminated paper, packaging paper and plastics film manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
109	All other paper bag and coated and treated paper manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
110	Stationery product manufacturing	6.394	0.430	6.824	1.970	0.133	2.103
111	Sanitary paper product manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
112	All other converted paper product manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
113	Printing	10.602	0.344	10.946	1.603	0.052	1.655
114	Support activities for printing	15.759	0.406	16.166	1.506	0.039	1.544
115	Petroleum refineries	0.000	0.000	0.000	1.000	0.000	1.000
116	Asphalt paving mixture and block manufacturing	3.226	0.526	3.752	2.608	0.425	3.033
117	Asphalt shingle and coating materials manufacturing	0.000	0.000	0.000	1.000	0.000	1.000

118	Petroleum lubricating oil and grease manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
119	All other petroleum and coal products manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
120	Petrochemical manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
121	Industrial gas manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
122	Synthetic dye and pigment manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
123	Alkalies and chlorine manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
124	Carbon black manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
125	All other basic inorganic chemical manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
126	Other basic organic chemical manufacturing	1.855	0.222	2.077	4.365	0.522	4.887
127	Plastics material and resin manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
128	Synthetic rubber manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
129	Artificial and synthetic fibers and filaments manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
130	Fertilizer manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
131	Pesticide and other agricultural chemical manufacturing	2.204	0.419	2.623	3.760	0.714	4.474
132	Medicinal and botanical manufacturing	4.522	0.532	5.053	2.339	0.275	2.614
133	Pharmaceutical preparation manufacturing	3.185	0.505	3.690	3.526	0.559	4.086
134	In-vitro diagnostic substance manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
135	Biological product (except diagnostic) manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
136	Paint and coating manufacturing	3.573	0.368	3.941	2.163	0.223	2.386
137	Adhesive manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
138	Soap and cleaning compound manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
139	Toilet preparation manufacturing	3.847	0.498	4.345	3.075	0.398	3.473
140	Printing ink manufacturing	3.867	0.442	4.309	1.697	0.194	1.891
141	All other chemical product and preparation manufacturing	4.028	0.510	4.538	1.954	0.247	2.202
142	Plastics packaging materials and unlaminated film and sheet manufacturing	4.157	0.174	4.331	1.851	0.077	1.928
143	Unlaminated plastics profile shape manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
144	Plastics pipe and pipe fitting manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
145	Laminated plastics plate, sheet (except packaging), and shape manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
146	Polystyrene foam product manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
147	Urethane and other foam product (except polystyrene) manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
148	Plastics bottle manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
149	Other plastics product manufacturing	7.134	0.265	7.399	1.598	0.059	1.658
150	Tire manufacturing	5.802	0.337	6.139	2.045	0.119	2.164
151	Rubber and plastics hoses and belting manufacturing	5.850	0.276	6.126	1.906	0.090	1.996
152	Other rubber product manufacturing	7.356	0.405	7.761	1.571	0.086	1.658
153	Pottery, ceramics, and plumbing fixture manufacturing	10.701	0.571	11.271	1.464	0.078	1.542
154	Brick, tile, and other structural clay product manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
155	Clay and nonclay refractory manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
156	Flat glass manufacturing	0.000	0.000	0.000	1.000	0.000	1.000

157	Other pressed and blown glass and glassware manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
158	Glass container manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
159	Glass product manufacturing made of purchased glass	0.000	0.000	0.000	1.000	0.000	1.000
160	Cement manufacturing	4.534	0.299	4.833	2.815	0.186	3.000
161	Ready-mix concrete manufacturing	6.972	0.685	7.657	2.205	0.217	2.422
162	Concrete pipe, brick, and block manufacturing	7.028	0.544	7.573	1.962	0.152	2.114
163	Other concrete product manufacturing	9.884	0.574	10.458	1.577	0.092	1.669
164	Lime and gypsum product manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
165	Abrasive product manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
166	Cut stone and stone product manufacturing	13.759	0.521	14.279	1.504	0.057	1.561
167	Ground or treated mineral and earth manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
168	Mineral wool manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
169	Miscellaneous nonmetallic mineral products	0.000	0.000	0.000	1.000	0.000	1.000
170	Iron and steel mills and ferroalloy manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
171	Steel product manufacturing from purchased steel	0.000	0.000	0.000	1.000	0.000	1.000
172	Alumina refining and primary aluminum production	0.000	0.000	0.000	1.000	0.000	1.000
173	Secondary smelting and alloying of aluminum	0.000	0.000	0.000	1.000	0.000	1.000
174	Aluminum product manufacturing from purchased aluminum	0.000	0.000	0.000	1.000	0.000	1.000
175	Primary smelting and refining of copper	0.000	0.000	0.000	1.000	0.000	1.000
176	Primary smelting and refining of nonferrous metal (except copper and aluminum)	0.000	0.000	0.000	1.000	0.000	1.000
177	Copper rolling, drawing, extruding and alloying	2.790	0.167	2.957	2.857	0.171	3.028
178	Nonferrous metal (except copper and aluminum) rolling, drawing, extruding and alloying	0.000	0.000	0.000	1.000	0.000	1.000
179	Ferrous metal foundries	0.000	0.000	0.000	1.000	0.000	1.000
180	Nonferrous metal foundries	0.000	0.000	0.000	1.000	0.000	1.000
181	All other forging, stamping, and sintering	6.005	0.324	6.329	2.222	0.120	2.342
182	Custom roll forming	0.000	0.000	0.000	1.000	0.000	1.000
183	Crown and closure manufacturing and metal stamping	7.993	0.328	8.321	1.692	0.069	1.762
184	Cutlery, utensil, pot, and pan manufacturing	5.778	0.280	6.058	1.792	0.087	1.879
185	Handtool manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
186	Plate work and fabricated structural product manufacturing	6.303	0.366	6.669	2.108	0.122	2.230
187	Ornamental and architectural metal products manufacturing	8.176	0.373	8.549	1.728	0.079	1.807
188	Power boiler and heat exchanger manufacturing	6.492	0.313	6.805	1.833	0.088	1.922
189	Metal tank (heavy gauge) manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
190	Metal can, box, and other metal container (light gauge) manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
191	Ammunition manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
192	Arms, ordnance, and accessories manufacturing	0.000	0.000	0.000	1.000	0.000	1.000

193	Hardware manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
194	Spring and wire product manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
195	Machine shops	9.722	0.396	10.118	1.721	0.070	1.792
196	Turned product and screw, nut, and bolt manufacturing	7.333	0.349	7.682	1.779	0.085	1.864
197	Coating, engraving, heat treating and allied activities	8.242	0.320	8.562	1.587	0.062	1.649
198	Valve and fittings other than plumbing	5.658	0.299	5.957	1.975	0.104	2.079
199	Plumbing fixture fitting and trim manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
200	Ball and roller bearing manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
201	Fabricated pipe and pipe fitting manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
202	Other fabricated metal manufacturing	6.975	0.322	7.298	1.674	0.077	1.751
203	Farm machinery and equipment manufacturing	4.370	0.378	4.748	2.453	0.212	2.665
204	Lawn and garden equipment manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
205	Construction machinery manufacturing	3.818	0.379	4.197	2.929	0.291	3.220
206	Mining and oil and gas field machinery manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
207	Other industrial machinery manufacturing	6.901	0.398	7.299	1.948	0.112	2.060
208	Plastics and rubber industry machinery manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
209	Semiconductor machinery manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
210	Vending, commercial, industrial, and office machinery manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
211	Optical instrument and lens manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
212	Photographic and photocopying equipment manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
213	Other commercial and service industry machinery manufacturing	6.247	0.354	6.601	1.843	0.105	1.948
214	Air purification and ventilation equipment manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
215	Heating equipment (except warm air furnaces) manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
216	Air conditioning, refrigeration, and warm air heating equipment manufacturing	5.575	0.403	5.978	1.835	0.133	1.968
217	Industrial mold manufacturing	10.380	0.412	10.792	1.786	0.071	1.857
218	Metal cutting and forming machine tool manufacturing	7.374	0.436	7.810	1.972	0.116	2.088
219	Special tool, die, jig, and fixture manufacturing	9.530	0.457	9.987	1.826	0.088	1.913
220	Cutting tool and machine tool accessory manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
221	Rolling mill and other metalworking machinery manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
222	Turbine and turbine generator set units manufacturing	5.072	0.306	5.378	3.164	0.191	3.355
223	Speed changer, industrial high-speed drive, and gear manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
224	Mechanical power transmission equipment manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
225	Other engine equipment manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
226	Pump and pumping equipment manufacturing	5.099	0.365	5.464	2.358	0.169	2.526
227	Air and gas compressor manufacturing	0.000	0.000	0.000	1.000	0.000	1.000

228	Material handling equipment manufacturing	5.368	0.424	5.792	2.216	0.175	2.391
229	Power-driven handtool manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
230	Other general purpose machinery manufacturing	6.366	0.382	6.748	1.952	0.117	2.069
231	Packaging machinery manufacturing	7.170	0.388	7.558	2.032	0.110	2.142
232	Industrial process furnace and oven manufacturing	7.156	0.518	7.674	1.890	0.137	2.026
233	Fluid power process machinery	6.130	0.389	6.518	1.977	0.125	2.102
234	Electronic computer manufacturing	2.370	0.266	2.636	3.551	0.398	3.949
235	Computer storage device manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
236	Computer terminals and other computer peripheral equipment manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
237	Telephone apparatus manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
238	Broadcast and wireless communications equipment	4.787	0.374	5.162	2.681	0.210	2.890
239	Other communications equipment manufacturing	5.224	0.464	5.688	2.121	0.189	2.310
240	Audio and video equipment manufacturing	4.576	0.383	4.958	3.010	0.252	3.261
241	Electron tube manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
242	Bare printed circuit board manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
243	Semiconductor and related device manufacturing	5.144	0.732	5.877	4.405	0.627	5.031
244	Electronic capacitor, resistor, coil, transformer, and other inductor manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
245	Electronic connector manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
246	Printed circuit assembly (electronic assembly) manufacturing	4.846	0.298	5.144	1.693	0.104	1.797
247	Other electronic component manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
248	Electromedical and electrotherapeutic apparatus manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
249	Search, detection, and navigation instruments manufacturing	6.443	0.515	6.959	2.580	0.206	2.786
250	Automatic environmental control manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
251	Industrial process variable instruments manufacturing	6.469	0.532	7.002	2.622	0.216	2.838
252	Totalizing fluid meters and counting devices manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
253	Electricity and signal testing instruments manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
254	Analytical laboratory instrument manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
255	Irradiation apparatus manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
256	Watch, clock, and other measuring and controlling device manufacturing	6.173	0.506	6.679	2.070	0.170	2.240
257	Software, audio, and video media reproducing	0.000	0.000	0.000	1.000	0.000	1.000
258	Magnetic and optical recording media manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
259	Electric lamp bulb and part manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
260	Lighting fixture manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
261	Small electrical appliance manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
262	Household cooking appliance manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
263	Household refrigerator and home freezer	0.000	0.000	0.000	1.000	0.000	1.000

	manufacturing						
264	Household laundry equipment manufacturing	5.336	0.323	5.659	1.861	0.113	1.974
265	Other major household appliance manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
266	Power, distribution, and specialty transformer manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
267	Motor and generator manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
268	Switchgear and switchboard apparatus manufacturing	4.550	0.296	4.845	2.073	0.135	2.208
269	Relay and industrial control manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
270	Storage battery manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
271	Primary battery manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
272	Communication and energy wire and cable manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
273	Wiring device manufacturing	6.643	0.323	6.966	1.597	0.078	1.675
274	Carbon and graphite product manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
275	All other miscellaneous electrical equipment and component manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
276	Automobile manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
277	Light truck and utility vehicle manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
278	Heavy duty truck manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
279	Motor vehicle body manufacturing	5.626	0.424	6.050	1.794	0.135	1.929
280	Truck trailer manufacturing	7.302	0.448	7.750	1.765	0.108	1.873
281	Motor home manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
282	Travel trailer and camper manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
283	Motor vehicle parts manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
284	Aircraft manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
285	Aircraft engine and engine parts manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
286	Other aircraft parts and auxiliary equipment manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
287	Guided missile and space vehicle manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
288	Propulsion units and parts for space vehicles and guided missiles	0.000	0.000	0.000	1.000	0.000	1.000
289	Railroad rolling stock manufacturing	3.604	0.363	3.967	2.319	0.233	2.553
290	Ship building and repairing	0.000	0.000	0.000	1.000	0.000	1.000
291	Boat building	0.000	0.000	0.000	1.000	0.000	1.000
292	Motorcycle, bicycle, and parts manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
293	Military armored vehicle, tank, and tank component manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
294	All other transportation equipment manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
295	Wood kitchen cabinet and countertop manufacturing	13.087	0.563	13.651	1.646	0.071	1.717
296	Upholstered household furniture manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
297	Nonupholstered wood household furniture manufacturing	11.334	0.539	11.873	1.483	0.071	1.554
298	Metal and other household furniture (except wood) manufacturing ¹	7.675	0.384	8.059	1.549	0.077	1.626
299	Institutional furniture manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
300	Wood television, radio, and sewing machine cabinet manufacturing ¹	16.867	0.337	17.205	1.269	0.025	1.295

301	Office furniture and custom architectural woodwork and millwork manufacturing1	7.537	0.369	7.906	1.825	0.089	1.915
302	Showcase, partition, shelving, and locker manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
303	Mattress manufacturing	5.882	0.422	6.304	1.885	0.135	2.020
304	Blind and shade manufacturing	11.457	0.596	12.052	1.361	0.071	1.432
305	Surgical and medical instrument manufacturing	8.355	0.395	8.749	1.865	0.088	1.954
306	Surgical appliance and supplies manufacturing	6.969	0.417	7.386	2.088	0.125	2.213
307	Dental equipment and supplies manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
308	Ophthalmic goods manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
309	Dental laboratories	19.507	0.434	19.941	1.359	0.030	1.389
310	Jewelry and silverware manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
311	Sporting and athletic goods manufacturing	7.432	0.462	7.894	1.928	0.120	2.048
312	Doll, toy, and game manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
313	Office supplies (except paper) manufacturing	9.263	0.349	9.611	1.587	0.060	1.647
314	Sign manufacturing	11.676	0.401	12.077	1.621	0.056	1.676
315	Gasket, packing, and sealing device manufacturing	9.142	0.380	9.522	1.767	0.073	1.840
316	Musical instrument manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
317	All other miscellaneous manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
318	Broom, brush, and mop manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
319	Wholesale trade	10.384	0.435	10.819	1.860	0.078	1.938
320	Retail - Motor vehicle and parts	20.408	0.407	20.815	1.372	0.027	1.399
321	Retail - Furniture and home furnishings	15.790	0.418	16.208	1.480	0.039	1.519
322	Retail - Electronics and appliances	19.456	0.436	19.893	1.415	0.032	1.447
323	Retail - Building material and garden supply	17.136	0.397	17.533	1.418	0.033	1.451
324	Retail - Food and beverage	22.031	0.415	22.446	1.316	0.025	1.340
325	Retail - Health and personal care	23.099	0.338	23.437	1.274	0.019	1.293
326	Retail - Gasoline stations	16.517	0.316	16.833	1.343	0.026	1.369
327	Retail - Clothing and clothing accessories	21.131	0.343	21.475	1.277	0.021	1.298
328	Retail - Sporting goods, hobby, book and music	31.681	0.357	32.038	1.203	0.014	1.217
329	Retail - General merchandise	23.071	0.412	23.483	1.296	0.023	1.319
330	Retail - Miscellaneous	43.403	0.326	43.729	1.144	0.009	1.152
331	Retail - Nonstore	23.217	0.280	23.497	1.191	0.014	1.205
332	Air transportation	8.223	0.462	8.685	1.822	0.102	1.924
333	Rail transportation	6.496	0.270	6.766	2.505	0.104	2.609
334	Water transportation	5.576	0.938	6.514	3.493	0.588	4.081
335	Truck transportation	14.142	0.372	14.514	1.666	0.044	1.710
336	Transit and ground passenger transportation	14.510	0.474	14.984	1.419	0.046	1.465
337	Pipeline transportation	0.000	0.000	0.000	1.000	0.000	1.000
338	Scenic and sightseeing transportation and support activities for transportation	23.009	0.357	23.366	1.296	0.020	1.316
339	Couriers and messengers	22.033	0.290	22.323	1.233	0.016	1.249
340	Warehousing and storage	17.383	0.384	17.768	1.404	0.031	1.435
341	Newspaper publishers	11.104	0.638	11.742	1.508	0.087	1.594
342	Periodical publishers	8.701	0.485	9.186	2.209	0.123	2.332

343	Book publishers	8.806	0.450	9.256	2.286	0.117	2.403
344	Directory, mailing list, and other publishers	7.155	0.315	7.471	2.169	0.096	2.265
345	Software publishers	8.882	0.466	9.348	3.271	0.171	3.442
346	Motion picture and video industries	15.568	0.997	16.564	1.583	0.101	1.684
347	Sound recording industries	7.779	0.388	8.167	4.971	0.248	5.219
348	Radio and television broadcasting	13.597	1.398	14.995	1.682	0.173	1.855
349	Cable and other subscription programming	0.000	0.000	0.000	1.000	0.000	1.000
350	Internet publishing and broadcasting	4.825	0.374	5.200	3.033	0.235	3.269
351	Telecommunications	6.794	0.309	7.103	3.009	0.137	3.145
352	Data processing, hosting, and related services	9.096	0.575	9.671	2.402	0.152	2.554
353	Other information services	0.000	0.000	0.000	1.000	0.000	1.000
354	Monetary authorities and depository credit intermediation	8.652	0.322	8.974	1.859	0.069	1.928
355	Nondepository credit intermediation and related activities	11.765	0.494	12.259	1.771	0.074	1.846
356	Securities, commodity contracts, investments, and related activities	12.721	0.716	13.436	2.067	0.116	2.183
357	Insurance carriers	7.268	1.240	8.507	2.194	0.374	2.568
358	Insurance agencies, brokerages, and related activities	12.916	0.727	13.643	1.881	0.106	1.987
359	Funds, trusts, and other financial vehicles	8.601	0.818	9.419	3.027	0.288	3.315
360	Real estate	11.592	0.136	11.727	1.320	0.015	1.336
361	Imputed rental value for owner-occupied dwellings	2.965	0.172	3.137	#DIV/0!	#DIV/0!	#DIV/0!
362	Automotive equipment rental and leasing	10.365	0.552	10.917	2.001	0.107	2.107
363	General and consumer goods rental except video tapes and discs	18.660	0.583	19.243	1.463	0.046	1.509
364	Video tape and disc rental	25.758	0.646	26.405	1.227	0.031	1.258
365	Commercial and industrial machinery and equipment rental and leasing	8.776	0.644	9.420	2.909	0.213	3.123
366	Lessors of nonfinancial intangible assets	5.008	0.199	5.207	2.783	0.111	2.894
367	Legal services	15.582	0.349	15.932	1.658	0.037	1.695
368	Accounting, tax preparation, bookkeeping, and payroll services	15.641	0.385	16.026	1.647	0.041	1.687
369	Architectural, engineering, and related services	14.283	0.355	14.638	1.941	0.048	1.989
370	Specialized design services	16.239	0.348	16.588	1.609	0.035	1.644
371	Custom computer programming services	15.269	0.294	15.563	1.813	0.035	1.848
372	Computer systems design services	22.552	0.461	23.012	1.516	0.031	1.547
373	Other computer related services, including facilities management	12.973	0.382	13.355	1.822	0.054	1.876
374	Management, scientific, and technical consulting services	14.055	0.429	14.484	1.912	0.058	1.971
375	Environmental and other technical consulting services	11.823	0.398	12.221	2.224	0.075	2.299
376	Scientific research and development services	16.814	0.465	17.278	1.703	0.047	1.750
377	Advertising and related services	18.084	0.610	18.695	1.516	0.051	1.567
378	Photographic services	18.900	0.373	19.274	1.456	0.029	1.485
379	Veterinary services	19.488	0.343	19.831	1.325	0.023	1.348
380	All other miscellaneous professional, scientific, and technical services	7.165	0.426	7.592	2.884	0.172	3.055

381	Management of companies and enterprises	10.972	0.434	11.405	2.143	0.085	2.228
382	Employment services	33.806	0.409	34.215	1.243	0.015	1.258
383	Travel arrangement and reservation services	15.625	0.360	15.985	1.491	0.034	1.525
384	Office administrative services	13.336	0.332	13.668	1.792	0.045	1.837
385	Facilities support services	25.835	0.463	26.298	1.378	0.025	1.402
386	Business support services	23.658	0.339	23.997	1.361	0.020	1.381
387	Investigation and security services	35.556	0.334	35.890	1.198	0.011	1.209
388	Services to buildings and dwellings	23.880	0.239	24.119	1.242	0.012	1.254
389	Other support services	11.688	0.287	11.975	1.688	0.041	1.729
390	Waste management and remediation services	10.914	0.520	11.433	1.851	0.088	1.940
391	Elementary and secondary schools	50.195	0.327	50.522	1.139	0.007	1.147
392	Junior colleges, colleges, universities, and professional schools	20.093	0.350	20.442	1.359	0.024	1.383
393	Other educational services	21.205	0.418	21.623	1.386	0.027	1.414
394	Offices of physicians, dentists, and other health practitioners	13.325	0.312	13.637	1.746	0.041	1.787
395	Home health care services	25.842	0.303	26.145	1.270	0.015	1.285
396	Medical and diagnostic labs and outpatient and other ambulatory care services	12.807	0.261	13.067	1.610	0.033	1.643
397	Hospitals	15.225	0.351	15.575	1.600	0.037	1.637
398	Nursing and residential care facilities	29.940	0.364	30.303	1.251	0.015	1.267
399	Child day care services	27.739	0.473	28.213	1.207	0.021	1.228
400	Individual and family services	27.157	0.525	27.683	1.268	0.025	1.293
401	Community food, housing, and other relief services, including rehabilitation services	43.545	0.442	43.986	1.200	0.012	1.212
402	Performing arts companies	38.319	1.090	39.409	1.223	0.035	1.258
403	Spectator sports	42.395	2.802	45.196	1.179	0.078	1.257
404	Promoters of performing arts and sports and agents for public figures	37.970	0.735	38.704	1.272	0.025	1.297
405	Independent artists, writers, and performers	28.694	0.569	29.263	1.321	0.026	1.348
406	Museums, historical sites, zoos, and parks	23.787	0.493	24.280	1.331	0.028	1.359
407	Fitness and recreational sports centers	31.919	0.590	32.509	1.237	0.023	1.260
408	Bowling centers	28.218	0.447	28.666	1.237	0.020	1.257
409	Amusement parks, arcades, and gambling industries	12.164	0.391	12.556	1.660	0.053	1.713
410	Other amusement and recreation industries	14.080	0.478	14.558	1.651	0.056	1.707
411	Hotels and motels, including casino hotels	20.255	0.376	20.630	1.342	0.025	1.367
412	Other accommodations	17.795	0.447	18.241	1.512	0.038	1.550
413	Food services and drinking places	24.730	0.441	25.171	1.221	0.022	1.243
414	Automotive repair and maintenance, except car washes	14.624	0.378	15.003	1.478	0.038	1.516
415	Car washes	26.640	0.337	26.977	1.204	0.015	1.219
416	Electronic and precision equipment repair and maintenance	11.133	0.282	11.415	1.607	0.041	1.647
417	Commercial and industrial machinery and equipment repair and maintenance	9.117	0.268	9.385	1.619	0.048	1.667
418	Personal and household goods repair and maintenance	11.620	0.296	11.916	1.546	0.039	1.585
419	Personal care services	26.665	0.379	27.045	1.275	0.018	1.293
420	Death care services	19.188	0.590	19.779	1.398	0.043	1.441

421	Dry-cleaning and laundry services	27.893	0.325	28.218	1.197	0.014	1.211
422	Other personal services	14.516	0.324	14.839	1.606	0.036	1.642
423	Religious organizations	7.771	0.971	8.742	2.314	0.289	2.603
424	Grantmaking, giving, and social advocacy organizations	33.398	0.775	34.173	1.376	0.032	1.408
425	Civic, social, professional, and similar organizations	29.361	0.619	29.980	1.386	0.029	1.415
426	Private households	171.615	0.322	171.937	1.032	0.002	1.034
427	Postal service	16.078	0.370	16.447	1.670	0.038	1.708
428	Federal electric utilities	0.000	0.000	0.000	1.000	0.000	1.000
429	Other Federal Government enterprises	12.439	0.312	12.752	1.799	0.045	1.844
430	State and local government passenger transit	24.844	0.357	25.201	1.292	0.019	1.310
431	State and local government electric utilities	3.658	0.134	3.792	1.624	0.059	1.683
432	Other state and local government enterprises	8.652	0.366	9.018	2.276	0.096	2.372

Table B11
Multiregional Value Added Multiplier Effects and Multipliers

Code	IMPLAN Sector	Value Added Multiplier Effects			Value Added Multipliers		
		Linn County	Rest of Iowa	State of Iowa	Linn County	Rest of Iowa	State of Iowa
1	Oilseed farming	0.585	0.048	0.633	1.462	0.120	1.581
2	Grain farming	0.633	0.035	0.668	1.321	0.074	1.395
3	Vegetable and melon farming	0.639	0.057	0.695	1.566	0.139	1.705
4	Fruit farming	0.536	0.086	0.622	1.794	0.287	2.081
5	Tree nut farming	0.833	0.042	0.875	1.287	0.065	1.352
6	Greenhouse, nursery, and floriculture production	0.700	0.046	0.746	1.501	0.099	1.600
7	Tobacco farming	0.000	0.000	0.000	1.000	0.000	1.000
8	Cotton farming	0.000	0.000	0.000	1.000	0.000	1.000
9	Sugarcane and sugar beet farming	0.000	0.000	0.000	1.000	0.000	1.000
10	All other crop farming	0.509	0.051	0.560	1.795	0.181	1.976
11	Cattle ranching and farming	0.392	0.028	0.420	2.273	0.165	2.437
12	Dairy cattle and milk production	0.540	0.035	0.575	1.429	0.092	1.521
13	Poultry and egg production	0.396	0.058	0.454	2.043	0.298	2.341
14	Animal production, except cattle and poultry and eggs	0.635	0.045	0.680	1.275	0.091	1.366
15	Forest nurseries, forest products, and timber tracts	0.000	0.000	0.000	1.000	0.000	1.000
16	Logging	0.000	0.000	0.000	1.000	0.000	1.000
17	Fishing	0.000	0.000	0.000	1.000	0.000	1.000
18	Hunting and trapping	0.450	0.023	0.473	2.293	0.115	2.408
19	Support activities for agriculture and forestry	1.217	0.031	1.248	1.634	0.041	1.675
20	Oil and gas extraction	0.333	0.078	0.412	4.315	1.012	5.327
21	Coal mining	0.000	0.000	0.000	1.000	0.000	1.000
22	Iron ore mining	0.000	0.000	0.000	1.000	0.000	1.000
23	Copper, nickel, lead, and zinc mining	0.000	0.000	0.000	1.000	0.000	1.000
24	Gold, silver, and other metal ore mining	0.000	0.000	0.000	1.000	0.000	1.000
25	Stone mining and quarrying	0.871	0.034	0.905	1.405	0.055	1.459
26	Sand, gravel, clay, and ceramic and refractory minerals mining and quarrying	0.791	0.032	0.822	1.525	0.061	1.586
27	Other nonmetallic mineral mining and quarrying	0.000	0.000	0.000	1.000	0.000	1.000
28	Drilling oil and gas wells	0.709	0.019	0.729	1.232	0.034	1.266
29	Support activities for oil and gas operations	0.000	0.000	0.000	1.000	0.000	1.000
30	Support activities for other mining	0.000	0.000	0.000	1.000	0.000	1.000
31	Electric power generation, transmission, and distribution	0.879	0.010	0.889	1.157	0.013	1.170
32	Natural gas distribution	0.000	0.000	0.000	1.000	0.000	1.000
33	Water, sewage and other systems	1.061	0.018	1.078	1.428	0.024	1.452
34	Construction of new nonresidential commercial and health care structures	0.715	0.033	0.748	1.696	0.078	1.774
35	Construction of new nonresidential manufacturing structures	0.696	0.025	0.721	1.620	0.059	1.679
36	Construction of other new nonresidential structures	0.760	0.032	0.792	1.768	0.075	1.844
37	Construction of new residential permanent	0.787	0.042	0.829	1.871	0.099	1.970

	site single- and multi-family structures						
38	Construction of other new residential structures	0.707	0.039	0.745	2.057	0.113	2.170
39	Maintenance and repair construction of nonresidential maintenance and repair	0.970	0.032	1.003	1.574	0.052	1.626
40	Maintenance and repair construction of residential structures	0.935	0.037	0.972	1.422	0.057	1.479
41	Dog and cat food manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
42	Other animal food manufacturing	0.291	0.062	0.353	2.183	0.468	2.651
43	Flour milling and malt manufacturing	0.361	0.092	0.453	2.986	0.759	3.745
44	Wet corn milling	0.319	0.091	0.411	3.511	1.004	4.515
45	Soybean and other oilseed processing	0.136	0.144	0.280	3.381	3.593	6.975
46	Fats and oils refining and blending	0.000	0.000	0.000	1.000	0.000	1.000
47	Breakfast cereal manufacturing	0.471	0.046	0.517	1.414	0.139	1.553
48	Sugar cane mills and refining	0.000	0.000	0.000	1.000	0.000	1.000
49	Beet sugar manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
50	Chocolate and confectionery manufacturing from cacao beans	0.000	0.000	0.000	1.000	0.000	1.000
51	Confectionery manufacturing from purchased chocolate	0.432	0.050	0.482	1.751	0.202	1.953
52	Nonchocolate confectionery manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
53	Frozen food manufacturing	0.462	0.058	0.520	1.957	0.244	2.201
54	Fruit and vegetable canning, pickling, and drying	0.000	0.000	0.000	1.000	0.000	1.000
55	Fluid milk and butter manufacturing	0.411	0.073	0.484	3.397	0.604	4.001
56	Cheese manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
57	Dry, condensed, and evaporated dairy product manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
58	Ice cream and frozen dessert manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
59	Animal (except poultry) slaughtering, rendering, and processing	0.000	0.000	0.000	1.000	0.000	1.000
60	Poultry processing	0.000	0.000	0.000	1.000	0.000	1.000
61	Seafood product preparation and packaging	0.000	0.000	0.000	1.000	0.000	1.000
62	Bread and bakery product manufacturing	0.543	0.050	0.593	2.029	0.187	2.216
63	Cookie, cracker, and pasta manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
64	Tortilla manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
65	Snack food manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
66	Coffee and tea manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
67	Flavoring syrup and concentrate manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
68	Seasoning and dressing manufacturing	0.322	0.045	0.367	2.347	0.328	2.675
69	All other food manufacturing	0.536	0.051	0.587	1.931	0.182	2.113
70	Soft drink and ice manufacturing	0.251	0.036	0.287	2.359	0.336	2.695
71	Breweries	0.000	0.000	0.000	1.000	0.000	1.000
72	Wineries	0.000	0.000	0.000	1.000	0.000	1.000
73	Distilleries	0.000	0.000	0.000	1.000	0.000	1.000
74	Tobacco product manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
75	Fiber, yarn, and thread mills	0.000	0.000	0.000	1.000	0.000	1.000
76	Broadwoven fabric mills	0.000	0.000	0.000	1.000	0.000	1.000
77	Narrow fabric mills and schiffli machine embroidery	0.000	0.000	0.000	1.000	0.000	1.000

78	Nonwoven fabric mills	0.000	0.000	0.000	1.000	0.000	1.000
79	Knit fabric mills	0.000	0.000	0.000	1.000	0.000	1.000
80	Textile and fabric finishing mills	0.472	0.025	0.497	1.832	0.098	1.930
81	Fabric coating mills	0.000	0.000	0.000	1.000	0.000	1.000
82	Carpet and rug mills	0.000	0.000	0.000	1.000	0.000	1.000
83	Curtain and linen mills	0.522	0.018	0.540	1.554	0.055	1.608
84	Textile bag and canvas mills	0.537	0.030	0.567	1.724	0.097	1.821
85	All other textile product mills	0.396	0.027	0.423	1.923	0.130	2.053
86	Apparel knitting mills	0.000	0.000	0.000	1.000	0.000	1.000
87	Cut and sew apparel contractors	0.000	0.000	0.000	1.000	0.000	1.000
88	Men's and boys' cut and sew apparel manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
89	Women's and girls' cut and sew apparel manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
90	Other cut and sew apparel manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
91	Apparel accessories and other apparel manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
92	Leather and hide tanning and finishing	0.000	0.000	0.000	1.000	0.000	1.000
93	Footwear manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
94	Other leather and allied product manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
95	Sawmills and wood preservation	0.470	0.078	0.548	1.936	0.321	2.257
96	Veneer and plywood manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
97	Engineered wood member and truss manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
98	Reconstituted wood product manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
99	Wood windows and doors and millwork	0.595	0.065	0.660	1.752	0.191	1.943
100	Wood container and pallet manufacturing	0.531	0.053	0.584	1.730	0.174	1.904
101	Manufactured home (mobile home) manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
102	Prefabricated wood building manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
103	All other miscellaneous wood product manufacturing	0.508	0.066	0.573	2.206	0.285	2.491
104	Pulp mills	0.000	0.000	0.000	1.000	0.000	1.000
105	Paper mills	0.000	0.000	0.000	1.000	0.000	1.000
106	Paperboard Mills	0.000	0.000	0.000	1.000	0.000	1.000
107	Paperboard container manufacturing	0.476	0.028	0.504	1.911	0.110	2.021
108	Coated and laminated paper, packaging paper and plastics film manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
109	All other paper bag and coated and treated paper manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
110	Stationery product manufacturing	0.459	0.034	0.493	2.009	0.151	2.159
111	Sanitary paper product manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
112	All other converted paper product manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
113	Printing	0.701	0.026	0.727	1.606	0.059	1.665
114	Support activities for printing	0.937	0.029	0.965	1.583	0.049	1.632
115	Petroleum refineries	0.000	0.000	0.000	1.000	0.000	1.000
116	Asphalt paving mixture and block manufacturing	0.471	0.034	0.506	1.408	0.102	1.510
117	Asphalt shingle and coating materials manufacturing	0.000	0.000	0.000	1.000	0.000	1.000

118	Petroleum lubricating oil and grease manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
119	All other petroleum and coal products manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
120	Petrochemical manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
121	Industrial gas manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
122	Synthetic dye and pigment manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
123	Alkalies and chlorine manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
124	Carbon black manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
125	All other basic inorganic chemical manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
126	Other basic organic chemical manufacturing	0.176	0.020	0.196	2.605	0.302	2.907
127	Plastics material and resin manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
128	Synthetic rubber manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
129	Artificial and synthetic fibers and filaments manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
130	Fertilizer manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
131	Pesticide and other agricultural chemical manufacturing	0.355	0.036	0.391	1.523	0.153	1.677
132	Medicinal and botanical manufacturing	0.458	0.040	0.498	1.707	0.148	1.855
133	Pharmaceutical preparation manufacturing	0.390	0.040	0.430	1.772	0.180	1.952
134	In-vitro diagnostic substance manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
135	Biological product (except diagnostic) manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
136	Paint and coating manufacturing	0.336	0.032	0.368	1.682	0.160	1.842
137	Adhesive manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
138	Soap and cleaning compound manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
139	Toilet preparation manufacturing	0.409	0.039	0.448	1.741	0.165	1.906
140	Printing ink manufacturing	0.233	0.036	0.269	1.947	0.301	2.248
141	All other chemical product and preparation manufacturing	0.294	0.042	0.335	1.974	0.280	2.254
142	Plastics packaging materials and unlaminated film and sheet manufacturing	0.499	0.015	0.514	1.374	0.042	1.416
143	Unlaminated plastics profile shape manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
144	Plastics pipe and pipe fitting manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
145	Laminated plastics plate, sheet (except packaging), and shape manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
146	Polystyrene foam product manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
147	Urethane and other foam product (except polystyrene) manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
148	Plastics bottle manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
149	Other plastics product manufacturing	0.535	0.022	0.557	1.545	0.065	1.610
150	Tire manufacturing	0.567	0.023	0.590	1.620	0.067	1.687
151	Rubber and plastics hoses and belting manufacturing	0.650	0.022	0.672	1.422	0.049	1.471
152	Other rubber product manufacturing	0.457	0.029	0.486	1.784	0.113	1.897
153	Pottery, ceramics, and plumbing fixture manufacturing	0.600	0.041	0.640	1.713	0.116	1.829
154	Brick, tile, and other structural clay product manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
155	Clay and nonclay refractory manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
156	Flat glass manufacturing	0.000	0.000	0.000	1.000	0.000	1.000

157	Other pressed and blown glass and glassware manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
158	Glass container manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
159	Glass product manufacturing made of purchased glass	0.000	0.000	0.000	1.000	0.000	1.000
160	Cement manufacturing	0.598	0.025	0.623	1.790	0.075	1.864
161	Ready-mix concrete manufacturing	0.536	0.069	0.605	1.909	0.245	2.154
162	Concrete pipe, brick, and block manufacturing	0.642	0.046	0.688	1.579	0.113	1.691
163	Other concrete product manufacturing	0.606	0.048	0.654	1.682	0.133	1.815
164	Lime and gypsum product manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
165	Abrasive product manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
166	Cut stone and stone product manufacturing	0.695	0.041	0.736	1.816	0.108	1.925
167	Ground or treated mineral and earth manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
168	Mineral wool manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
169	Miscellaneous nonmetallic mineral products	0.000	0.000	0.000	1.000	0.000	1.000
170	Iron and steel mills and ferroalloy manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
171	Steel product manufacturing from purchased steel	0.000	0.000	0.000	1.000	0.000	1.000
172	Alumina refining and primary aluminum production	0.000	0.000	0.000	1.000	0.000	1.000
173	Secondary smelting and alloying of aluminum	0.000	0.000	0.000	1.000	0.000	1.000
174	Aluminum product manufacturing from purchased aluminum	0.000	0.000	0.000	1.000	0.000	1.000
175	Primary smelting and refining of copper	0.000	0.000	0.000	1.000	0.000	1.000
176	Primary smelting and refining of nonferrous metal (except copper and aluminum)	0.000	0.000	0.000	1.000	0.000	1.000
177	Copper rolling, drawing, extruding and alloying	0.254	0.015	0.268	2.287	0.132	2.419
178	Nonferrous metal (except copper and aluminum) rolling, drawing, extruding and alloying	0.000	0.000	0.000	1.000	0.000	1.000
179	Ferrous metal foundries	0.000	0.000	0.000	1.000	0.000	1.000
180	Nonferrous metal foundries	0.000	0.000	0.000	1.000	0.000	1.000
181	All other forging, stamping, and sintering	0.458	0.026	0.485	2.014	0.115	2.129
182	Custom roll forming	0.000	0.000	0.000	1.000	0.000	1.000
183	Crown and closure manufacturing and metal stamping	0.565	0.028	0.592	1.676	0.082	1.758
184	Cutlery, utensil, pot, and pan manufacturing	0.630	0.022	0.652	1.377	0.048	1.425
185	Handtool manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
186	Plate work and fabricated structural product manufacturing	0.585	0.031	0.616	1.587	0.083	1.671
187	Ornamental and architectural metal products manufacturing	0.573	0.030	0.603	1.713	0.089	1.802
188	Power boiler and heat exchanger manufacturing	0.507	0.025	0.532	1.655	0.083	1.738
189	Metal tank (heavy gauge) manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
190	Metal can, box, and other metal container (light gauge) manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
191	Ammunition manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
192	Arms, ordnance, and accessories manufacturing	0.000	0.000	0.000	1.000	0.000	1.000

193	Hardware manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
194	Spring and wire product manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
195	Machine shops	0.752	0.033	0.785	1.567	0.068	1.635
196	Turned product and screw, nut, and bolt manufacturing	0.678	0.029	0.708	1.499	0.065	1.564
197	Coating, engraving, heat treating and allied activities	0.553	0.025	0.579	1.649	0.075	1.724
198	Valve and fittings other than plumbing	0.605	0.025	0.630	1.478	0.061	1.539
199	Plumbing fixture fitting and trim manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
200	Ball and roller bearing manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
201	Fabricated pipe and pipe fitting manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
202	Other fabricated metal manufacturing	0.598	0.027	0.625	1.500	0.068	1.568
203	Farm machinery and equipment manufacturing	0.418	0.031	0.449	1.770	0.131	1.901
204	Lawn and garden equipment manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
205	Construction machinery manufacturing	0.366	0.032	0.398	1.883	0.167	2.050
206	Mining and oil and gas field machinery manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
207	Other industrial machinery manufacturing	0.567	0.034	0.601	1.721	0.103	1.824
208	Plastics and rubber industry machinery manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
209	Semiconductor machinery manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
210	Vending, commercial, industrial, and office machinery manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
211	Optical instrument and lens manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
212	Photographic and photocopying equipment manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
213	Other commercial and service industry machinery manufacturing	0.461	0.030	0.491	1.801	0.118	1.920
214	Air purification and ventilation equipment manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
215	Heating equipment (except warm air furnaces) manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
216	Air conditioning, refrigeration, and warm air heating equipment manufacturing	0.406	0.032	0.437	1.834	0.143	1.977
217	Industrial mold manufacturing	0.811	0.034	0.845	1.633	0.068	1.700
218	Metal cutting and forming machine tool manufacturing	0.614	0.035	0.649	1.710	0.097	1.808
219	Special tool, die, jig, and fixture manufacturing	0.822	0.037	0.859	1.550	0.070	1.620
220	Cutting tool and machine tool accessory manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
221	Rolling mill and other metalworking machinery manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
222	Turbine and turbine generator set units manufacturing	0.467	0.023	0.490	1.777	0.087	1.864
223	Speed changer, industrial high-speed drive, and gear manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
224	Mechanical power transmission equipment manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
225	Other engine equipment manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
226	Pump and pumping equipment manufacturing	0.518	0.032	0.550	1.679	0.103	1.782
227	Air and gas compressor manufacturing	0.000	0.000	0.000	1.000	0.000	1.000

228	Material handling equipment manufacturing	0.552	0.038	0.590	1.608	0.110	1.718
229	Power-driven handtool manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
230	Other general purpose machinery manufacturing	0.507	0.034	0.541	1.782	0.118	1.899
231	Packaging machinery manufacturing	0.627	0.033	0.660	1.678	0.087	1.766
232	Industrial process furnace and oven manufacturing	0.626	0.046	0.672	1.596	0.116	1.712
233	Fluid power process machinery	0.500	0.034	0.534	1.787	0.122	1.908
234	Electronic computer manufacturing	0.245	0.024	0.268	2.212	0.213	2.425
235	Computer storage device manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
236	Computer terminals and other computer peripheral equipment manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
237	Telephone apparatus manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
238	Broadcast and wireless communications equipment	0.332	0.031	0.364	2.719	0.256	2.975
239	Other communications equipment manufacturing	0.346	0.042	0.387	2.395	0.289	2.684
240	Audio and video equipment manufacturing	0.335	0.029	0.364	3.141	0.275	3.416
241	Electron tube manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
242	Bare printed circuit board manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
243	Semiconductor and related device manufacturing	0.650	0.062	0.712	1.755	0.168	1.922
244	Electronic capacitor, resistor, coil, transformer, and other inductor manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
245	Electronic connector manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
246	Printed circuit assembly (electronic assembly) manufacturing	0.254	0.026	0.280	2.592	0.263	2.854
247	Other electronic component manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
248	Electromedical and electrotherapeutic apparatus manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
249	Search, detection, and navigation instruments manufacturing	0.534	0.044	0.578	2.021	0.168	2.189
250	Automatic environmental control manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
251	Industrial process variable instruments manufacturing	0.677	0.049	0.725	1.655	0.119	1.774
252	Totalizing fluid meters and counting devices manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
253	Electricity and signal testing instruments manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
254	Analytical laboratory instrument manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
255	Irradiation apparatus manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
256	Watch, clock, and other measuring and controlling device manufacturing	0.406	0.046	0.452	2.211	0.249	2.460
257	Software, audio, and video media reproducing	0.000	0.000	0.000	1.000	0.000	1.000
258	Magnetic and optical recording media manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
259	Electric lamp bulb and part manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
260	Lighting fixture manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
261	Small electrical appliance manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
262	Household cooking appliance manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
263	Household refrigerator and home freezer	0.000	0.000	0.000	1.000	0.000	1.000

	manufacturing						
264	Household laundry equipment manufacturing	0.555	0.029	0.583	1.460	0.075	1.535
265	Other major household appliance manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
266	Power, distribution, and specialty transformer manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
267	Motor and generator manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
268	Switchgear and switchboard apparatus manufacturing	0.646	0.026	0.672	1.364	0.054	1.418
269	Relay and industrial control manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
270	Storage battery manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
271	Primary battery manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
272	Communication and energy wire and cable manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
273	Wiring device manufacturing	0.520	0.026	0.546	1.530	0.077	1.607
274	Carbon and graphite product manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
275	All other miscellaneous electrical equipment and component manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
276	Automobile manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
277	Light truck and utility vehicle manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
278	Heavy duty truck manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
279	Motor vehicle body manufacturing	0.423	0.037	0.460	1.718	0.150	1.867
280	Truck trailer manufacturing	0.461	0.037	0.497	1.894	0.150	2.044
281	Motor home manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
282	Travel trailer and camper manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
283	Motor vehicle parts manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
284	Aircraft manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
285	Aircraft engine and engine parts manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
286	Other aircraft parts and auxiliary equipment manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
287	Guided missile and space vehicle manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
288	Propulsion units and parts for space vehicles and guided missiles	0.000	0.000	0.000	1.000	0.000	1.000
289	Railroad rolling stock manufacturing	0.374	0.034	0.408	1.661	0.150	1.811
290	Ship building and repairing	0.000	0.000	0.000	1.000	0.000	1.000
291	Boat building	0.000	0.000	0.000	1.000	0.000	1.000
292	Motorcycle, bicycle, and parts manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
293	Military armored vehicle, tank, and tank component manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
294	All other transportation equipment manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
295	Wood kitchen cabinet and countertop manufacturing	0.678	0.038	0.716	2.049	0.115	2.164
296	Upholstered household furniture manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
297	Nonupholstered wood household furniture manufacturing	0.731	0.037	0.769	1.519	0.078	1.597
298	Metal and other household furniture (except wood) manufacturing ¹	0.472	0.027	0.499	1.691	0.096	1.786
299	Institutional furniture manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
300	Wood television, radio, and sewing machine cabinet manufacturing ¹	0.733	0.023	0.756	1.462	0.046	1.508

301	Office furniture and custom architectural woodwork and millwork manufacturing1	0.708	0.028	0.736	1.470	0.058	1.528
302	Showcase, partition, shelving, and locker manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
303	Mattress manufacturing	0.564	0.028	0.592	1.518	0.076	1.593
304	Blind and shade manufacturing	0.398	0.040	0.438	2.328	0.234	2.563
305	Surgical and medical instrument manufacturing	0.530	0.033	0.563	2.014	0.127	2.141
306	Surgical appliance and supplies manufacturing	0.737	0.034	0.771	1.509	0.069	1.578
307	Dental equipment and supplies manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
308	Ophthalmic goods manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
309	Dental laboratories	1.005	0.032	1.037	1.510	0.048	1.558
310	Jewelry and silverware manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
311	Sporting and athletic goods manufacturing	0.652	0.036	0.688	1.612	0.088	1.700
312	Doll, toy, and game manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
313	Office supplies (except paper) manufacturing	0.683	0.027	0.711	1.521	0.060	1.581
314	Sign manufacturing	0.840	0.032	0.872	1.556	0.059	1.615
315	Gasket, packing, and sealing device manufacturing	0.741	0.031	0.772	1.577	0.066	1.644
316	Musical instrument manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
317	All other miscellaneous manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
318	Broom, brush, and mop manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
319	Wholesale trade	0.963	0.030	0.993	1.485	0.047	1.532
320	Retail - Motor vehicle and parts	1.095	0.027	1.122	1.503	0.037	1.541
321	Retail - Furniture and home furnishings	0.984	0.029	1.013	1.545	0.045	1.591
322	Retail - Electronics and appliances	1.093	0.030	1.123	1.529	0.042	1.571
323	Retail - Building material and garden supply	0.993	0.027	1.020	1.525	0.042	1.566
324	Retail - Food and beverage	0.997	0.029	1.026	1.555	0.045	1.600
325	Retail - Health and personal care	1.058	0.023	1.081	1.454	0.032	1.486
326	Retail - Gasoline stations	0.976	0.022	0.998	1.415	0.032	1.447
327	Retail - Clothing and clothing accessories	0.967	0.024	0.991	1.474	0.037	1.511
328	Retail - Sporting goods, hobby, book and music	0.973	0.025	0.998	1.584	0.041	1.625
329	Retail - General merchandise	1.005	0.028	1.033	1.546	0.044	1.589
330	Retail - Miscellaneous	1.101	0.023	1.124	1.477	0.030	1.507
331	Retail - Nonstore	0.956	0.019	0.976	1.350	0.027	1.377
332	Air transportation	0.456	0.028	0.484	2.004	0.122	2.126
333	Rail transportation	0.852	0.019	0.871	1.454	0.032	1.487
334	Water transportation	0.640	0.058	0.698	1.683	0.153	1.835
335	Truck transportation	0.805	0.025	0.831	1.728	0.054	1.782
336	Transit and ground passenger transportation	0.987	0.031	1.018	1.382	0.043	1.426
337	Pipeline transportation	0.000	0.000	0.000	1.000	0.000	1.000
338	Scenic and sightseeing transportation and support activities for transportation	1.215	0.022	1.237	1.364	0.024	1.389
339	Couriers and messengers	0.982	0.019	1.001	1.352	0.026	1.378
340	Warehousing and storage	1.129	0.025	1.154	1.405	0.031	1.437
341	Newspaper publishers	0.733	0.045	0.779	1.500	0.093	1.593
342	Periodical publishers	0.669	0.037	0.706	1.888	0.105	1.993

343	Book publishers	0.705	0.032	0.737	1.930	0.088	2.018
344	Directory, mailing list, and other publishers	0.700	0.024	0.723	1.598	0.054	1.652
345	Software publishers	0.815	0.035	0.850	1.835	0.080	1.915
346	Motion picture and video industries	0.592	0.043	0.635	2.541	0.184	2.725
347	Sound recording industries	0.421	0.021	0.443	7.369	0.372	7.742
348	Radio and television broadcasting	0.707	0.041	0.748	1.802	0.104	1.907
349	Cable and other subscription programming	0.000	0.000	0.000	1.000	0.000	1.000
350	Internet publishing and broadcasting	0.358	0.026	0.384	2.678	0.193	2.871
351	Telecommunications	0.759	0.019	0.778	1.866	0.047	1.913
352	Data processing, hosting, and related services	0.813	0.042	0.855	1.765	0.092	1.857
353	Other information services	0.000	0.000	0.000	1.000	0.000	1.000
354	Monetary authorities and depository credit intermediation	0.983	0.025	1.007	1.373	0.035	1.407
355	Nondepository credit intermediation and related activities	0.968	0.037	1.004	1.564	0.059	1.623
356	Securities, commodity contracts, investments, and related activities	0.846	0.055	0.901	2.168	0.140	2.308
357	Insurance carriers	0.773	0.091	0.864	1.577	0.187	1.764
358	Insurance agencies, brokerages, and related activities	0.934	0.053	0.988	1.679	0.096	1.776
359	Funds, trusts, and other financial vehicles	0.446	0.068	0.514	14.691	2.249	16.939
360	Real estate	0.983	0.010	0.993	1.247	0.013	1.259
361	Imputed rental value for owner-occupied dwellings	0.894	0.014	0.908	1.293	0.020	1.314
362	Automotive equipment rental and leasing	0.850	0.044	0.894	1.731	0.089	1.820
363	General and consumer goods rental except video tapes and discs	1.063	0.043	1.106	1.593	0.064	1.657
364	Video tape and disc rental	0.861	0.056	0.917	1.736	0.113	1.849
365	Commercial and industrial machinery and equipment rental and leasing	0.814	0.053	0.868	1.906	0.125	2.031
366	Lessors of nonfinancial intangible assets	0.841	0.014	0.855	1.393	0.023	1.416
367	Legal services	1.023	0.024	1.047	1.627	0.038	1.665
368	Accounting, tax preparation, bookkeeping, and payroll services	1.030	0.027	1.057	1.611	0.042	1.653
369	Architectural, engineering, and related services	1.009	0.025	1.033	1.747	0.043	1.790
370	Specialized design services	0.876	0.023	0.899	1.720	0.045	1.765
371	Custom computer programming services	1.084	0.020	1.105	1.729	0.033	1.761
372	Computer systems design services	1.236	0.030	1.265	1.634	0.040	1.673
373	Other computer related services, including facilities management	1.128	0.025	1.153	1.473	0.032	1.505
374	Management, scientific, and technical consulting services	0.964	0.031	0.995	1.753	0.056	1.809
375	Environmental and other technical consulting services	1.020	0.028	1.047	1.651	0.045	1.696
376	Scientific research and development services	0.831	0.032	0.863	2.101	0.081	2.182
377	Advertising and related services	0.805	0.034	0.838	1.972	0.083	2.054
378	Photographic services	0.826	0.024	0.850	1.784	0.052	1.836
379	Veterinary services	0.730	0.025	0.755	1.736	0.059	1.794
380	All other miscellaneous professional, scientific, and technical services	0.783	0.032	0.815	1.593	0.065	1.657

381	Management of companies and enterprises	0.962	0.030	0.992	1.689	0.053	1.741
382	Employment services	1.156	0.029	1.184	1.528	0.038	1.565
383	Travel arrangement and reservation services	0.902	0.024	0.926	1.580	0.042	1.621
384	Office administrative services	1.072	0.023	1.095	1.509	0.032	1.541
385	Facilities support services	0.888	0.032	0.920	1.909	0.069	1.978
386	Business support services	0.987	0.023	1.010	1.627	0.038	1.665
387	Investigation and security services	1.053	0.022	1.076	1.554	0.033	1.587
388	Services to buildings and dwellings	0.832	0.016	0.848	1.560	0.031	1.591
389	Other support services	0.939	0.019	0.958	1.443	0.030	1.473
390	Waste management and remediation services	0.734	0.039	0.773	1.774	0.093	1.867
391	Elementary and secondary schools	0.984	0.021	1.004	1.667	0.035	1.701
392	Junior colleges, colleges, universities, and professional schools	0.906	0.026	0.933	1.728	0.050	1.778
393	Other educational services	0.899	0.029	0.928	1.734	0.056	1.790
394	Offices of physicians, dentists, and other health practitioners	1.056	0.022	1.078	1.521	0.031	1.552
395	Home health care services	1.072	0.021	1.093	1.467	0.029	1.495
396	Medical and diagnostic labs and outpatient and other ambulatory care services	0.932	0.019	0.951	1.491	0.030	1.522
397	Hospitals	0.872	0.025	0.898	1.771	0.051	1.823
398	Nursing and residential care facilities	1.130	0.025	1.154	1.517	0.033	1.550
399	Child day care services	0.932	0.032	0.964	1.489	0.052	1.541
400	Individual and family services	1.007	0.034	1.041	1.584	0.054	1.638
401	Community food, housing, and other relief services, including rehabilitation services	0.961	0.031	0.992	1.934	0.062	1.996
402	Performing arts companies	0.984	0.052	1.035	1.719	0.090	1.809
403	Spectator sports	0.732	0.065	0.797	1.904	0.169	2.073
404	Promoters of performing arts and sports and agents for public figures	0.736	0.044	0.781	2.318	0.139	2.457
405	Independent artists, writers, and performers	1.132	0.026	1.158	1.458	0.033	1.491
406	Museums, historical sites, zoos, and parks	1.045	0.031	1.076	1.628	0.048	1.676
407	Fitness and recreational sports centers	0.936	0.040	0.977	1.819	0.078	1.897
408	Bowling centers	0.777	0.032	0.808	2.192	0.089	2.282
409	Amusement parks, arcades, and gambling industries	0.783	0.026	0.808	1.708	0.056	1.764
410	Other amusement and recreation industries	0.732	0.034	0.766	2.054	0.096	2.150
411	Hotels and motels, including casino hotels	0.930	0.026	0.956	1.571	0.043	1.614
412	Other accommodations	0.900	0.033	0.933	1.753	0.065	1.818
413	Food services and drinking places	0.777	0.033	0.810	1.667	0.071	1.739
414	Automotive repair and maintenance, except car washes	0.888	0.025	0.913	1.505	0.043	1.548
415	Car washes	0.887	0.024	0.911	1.541	0.042	1.583
416	Electronic and precision equipment repair and maintenance	0.911	0.019	0.930	1.400	0.029	1.429
417	Commercial and industrial machinery and equipment repair and maintenance	0.882	0.019	0.901	1.357	0.030	1.386
418	Personal and household goods repair and maintenance	0.844	0.021	0.865	1.463	0.037	1.500
419	Personal care services	0.972	0.025	0.997	1.577	0.041	1.618
420	Death care services	0.914	0.041	0.955	1.637	0.073	1.710

421	Dry-cleaning and laundry services	1.046	0.022	1.068	1.400	0.030	1.430
422	Other personal services	0.809	0.018	0.827	1.722	0.039	1.761
423	Religious organizations	0.860	0.070	0.930	1.531	0.125	1.656
424	Grantmaking, giving, and social advocacy organizations	0.807	0.050	0.858	3.527	0.219	3.746
425	Civic, social, professional, and similar organizations	0.905	0.049	0.954	2.578	0.139	2.716
426	Private households	1.333	0.020	1.353	1.333	0.020	1.353
427	Postal service	1.100	0.027	1.127	1.581	0.039	1.620
428	Federal electric utilities	0.000	0.000	0.000	1.000	0.000	1.000
429	Other Federal Government enterprises	1.207	0.020	1.227	1.424	0.024	1.448
430	State and local government passenger transit	0.418	0.024	0.442	14.168	0.820	14.987
431	State and local government electric utilities	0.372	0.009	0.381	1.337	0.034	1.370
432	Other state and local government enterprises	0.681	0.030	0.711	2.002	0.088	2.090

**Table B12
Multiregional Labor Income Multiplier Effects and Multipliers**

Code	IMPLAN Sector	Labor Income Multiplier Effects			Labor Income Multipliers		
		Linn County	Rest of Iowa	State of Iowa	Linn County	Rest of Iowa	State of Iowa
1	Oilseed farming	0.200	0.025	0.225	1.780	0.222	2.001
2	Grain farming	0.168	0.020	0.188	1.742	0.204	1.947
3	Vegetable and melon farming	0.351	0.036	0.387	1.492	0.154	1.646
4	Fruit farming	0.353	0.056	0.409	1.532	0.243	1.775
5	Tree nut farming	0.354	0.028	0.381	1.373	0.108	1.481
6	Greenhouse, nursery, and floriculture production	0.456	0.029	0.485	1.372	0.087	1.459
7	Tobacco farming	0.000	0.000	0.000	1.000	0.000	1.000
8	Cotton farming	0.000	0.000	0.000	1.000	0.000	1.000
9	Sugarcane and sugar beet farming	0.000	0.000	0.000	1.000	0.000	1.000
10	All other crop farming	0.266	0.031	0.297	1.689	0.194	1.883
11	Cattle ranching and farming	0.125	0.014	0.139	3.740	0.412	4.153
12	Dairy cattle and milk production	0.109	0.017	0.127	4.144	0.657	4.802
13	Poultry and egg production	0.209	0.026	0.235	2.204	0.275	2.479
14	Animal production, except cattle and poultry and eggs	0.116	0.018	0.134	2.359	0.358	2.717
15	Forest nurseries, forest products, and timber tracts	0.000	0.000	0.000	1.000	0.000	1.000
16	Logging	0.000	0.000	0.000	1.000	0.000	1.000
17	Fishing	0.000	0.000	0.000	1.000	0.000	1.000
18	Hunting and trapping	0.213	0.014	0.227	4.049	0.266	4.314
19	Support activities for agriculture and forestry	1.223	0.016	1.239	1.263	0.017	1.280
20	Oil and gas extraction	0.197	0.026	0.223	6.858	0.910	7.768
21	Coal mining	0.000	0.000	0.000	1.000	0.000	1.000
22	Iron ore mining	0.000	0.000	0.000	1.000	0.000	1.000
23	Copper, nickel, lead, and zinc mining	0.000	0.000	0.000	1.000	0.000	1.000
24	Gold, silver, and other metal ore mining	0.000	0.000	0.000	1.000	0.000	1.000
25	Stone mining and quarrying	0.474	0.020	0.494	1.417	0.061	1.478
26	Sand, gravel, clay, and ceramic and refractory minerals mining and quarrying	0.531	0.018	0.549	1.387	0.048	1.435
27	Other nonmetallic mineral mining and quarrying	0.000	0.000	0.000	1.000	0.000	1.000
28	Drilling oil and gas wells	0.169	0.012	0.181	1.897	0.135	2.032
29	Support activities for oil and gas operations	0.000	0.000	0.000	1.000	0.000	1.000
30	Support activities for other mining	0.000	0.000	0.000	1.000	0.000	1.000
31	Electric power generation, transmission, and distribution	0.277	0.006	0.283	1.320	0.027	1.347
32	Natural gas distribution	0.000	0.000	0.000	1.000	0.000	1.000
33	Water, sewage and other systems	0.631	0.010	0.641	1.454	0.024	1.477
34	Construction of new nonresidential commercial and health care structures	0.543	0.021	0.564	1.471	0.057	1.528
35	Construction of new nonresidential manufacturing structures	0.507	0.016	0.523	1.438	0.045	1.483
36	Construction of other new nonresidential structures	0.602	0.020	0.622	1.485	0.050	1.535
37	Construction of new residential permanent	0.625	0.027	0.652	1.514	0.066	1.581

	site single- and multi-family structures						
38	Construction of other new residential structures	0.536	0.025	0.561	1.653	0.077	1.731
39	Maintenance and repair construction of nonresidential maintenance and repair	0.791	0.020	0.812	1.342	0.034	1.376
40	Maintenance and repair construction of residential structures	0.561	0.023	0.584	1.391	0.056	1.447
41	Dog and cat food manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
42	Other animal food manufacturing	0.165	0.025	0.190	2.172	0.333	2.505
43	Flour milling and malt manufacturing	0.199	0.036	0.235	2.942	0.529	3.472
44	Wet corn milling	0.175	0.033	0.208	3.367	0.637	4.004
45	Soybean and other oilseed processing	0.076	0.054	0.131	3.251	2.312	5.563
46	Fats and oils refining and blending	0.000	0.000	0.000	1.000	0.000	1.000
47	Breakfast cereal manufacturing	0.180	0.025	0.204	1.757	0.242	1.999
48	Sugar cane mills and refining	0.000	0.000	0.000	1.000	0.000	1.000
49	Beet sugar manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
50	Chocolate and confectionery manufacturing from cacao beans	0.000	0.000	0.000	1.000	0.000	1.000
51	Confectionery manufacturing from purchased chocolate	0.241	0.032	0.273	1.728	0.227	1.955
52	Nonchocolate confectionery manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
53	Frozen food manufacturing	0.310	0.032	0.342	1.697	0.173	1.870
54	Fruit and vegetable canning, pickling, and drying	0.000	0.000	0.000	1.000	0.000	1.000
55	Fluid milk and butter manufacturing	0.194	0.030	0.224	2.565	0.398	2.963
56	Cheese manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
57	Dry, condensed, and evaporated dairy product manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
58	Ice cream and frozen dessert manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
59	Animal (except poultry) slaughtering, rendering, and processing	0.000	0.000	0.000	1.000	0.000	1.000
60	Poultry processing	0.000	0.000	0.000	1.000	0.000	1.000
61	Seafood product preparation and packaging	0.000	0.000	0.000	1.000	0.000	1.000
62	Bread and bakery product manufacturing	0.387	0.031	0.418	1.678	0.134	1.812
63	Cookie, cracker, and pasta manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
64	Tortilla manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
65	Snack food manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
66	Coffee and tea manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
67	Flavoring syrup and concentrate manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
68	Seasoning and dressing manufacturing	0.221	0.027	0.248	1.912	0.235	2.147
69	All other food manufacturing	0.355	0.027	0.382	1.648	0.126	1.774
70	Soft drink and ice manufacturing	0.179	0.022	0.201	1.864	0.228	2.093
71	Breweries	0.000	0.000	0.000	1.000	0.000	1.000
72	Wineries	0.000	0.000	0.000	1.000	0.000	1.000
73	Distilleries	0.000	0.000	0.000	1.000	0.000	1.000
74	Tobacco product manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
75	Fiber, yarn, and thread mills	0.000	0.000	0.000	1.000	0.000	1.000
76	Broadwoven fabric mills	0.000	0.000	0.000	1.000	0.000	1.000
77	Narrow fabric mills and schiffli machine embroidery	0.000	0.000	0.000	1.000	0.000	1.000

78	Nonwoven fabric mills	0.000	0.000	0.000	1.000	0.000	1.000
79	Knit fabric mills	0.000	0.000	0.000	1.000	0.000	1.000
80	Textile and fabric finishing mills	0.333	0.015	0.348	1.559	0.072	1.632
81	Fabric coating mills	0.000	0.000	0.000	1.000	0.000	1.000
82	Carpet and rug mills	0.000	0.000	0.000	1.000	0.000	1.000
83	Curtain and linen mills	0.348	0.011	0.359	1.427	0.046	1.473
84	Textile bag and canvas mills	0.376	0.018	0.394	1.504	0.071	1.575
85	All other textile product mills	0.278	0.015	0.293	1.607	0.087	1.694
86	Apparel knitting mills	0.000	0.000	0.000	1.000	0.000	1.000
87	Cut and sew apparel contractors	0.000	0.000	0.000	1.000	0.000	1.000
88	Men's and boys' cut and sew apparel manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
89	Women's and girls' cut and sew apparel manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
90	Other cut and sew apparel manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
91	Apparel accessories and other apparel manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
92	Leather and hide tanning and finishing	0.000	0.000	0.000	1.000	0.000	1.000
93	Footwear manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
94	Other leather and allied product manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
95	Sawmills and wood preservation	0.319	0.043	0.363	1.642	0.224	1.866
96	Veneer and plywood manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
97	Engineered wood member and truss manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
98	Reconstituted wood product manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
99	Wood windows and doors and millwork	0.437	0.044	0.482	1.499	0.152	1.651
100	Wood container and pallet manufacturing	0.348	0.035	0.383	1.582	0.159	1.741
101	Manufactured home (mobile home) manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
102	Prefabricated wood building manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
103	All other miscellaneous wood product manufacturing	0.315	0.043	0.357	2.052	0.280	2.332
104	Pulp mills	0.000	0.000	0.000	1.000	0.000	1.000
105	Paper mills	0.000	0.000	0.000	1.000	0.000	1.000
106	Paperboard Mills	0.000	0.000	0.000	1.000	0.000	1.000
107	Paperboard container manufacturing	0.363	0.017	0.380	1.542	0.071	1.613
108	Coated and laminated paper, packaging paper and plastics film manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
109	All other paper bag and coated and treated paper manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
110	Stationery product manufacturing	0.332	0.021	0.353	1.636	0.103	1.739
111	Sanitary paper product manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
112	All other converted paper product manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
113	Printing	0.468	0.016	0.484	1.475	0.051	1.526
114	Support activities for printing	0.711	0.019	0.730	1.387	0.036	1.423
115	Petroleum refineries	0.000	0.000	0.000	1.000	0.000	1.000
116	Asphalt paving mixture and block manufacturing	0.292	0.019	0.311	1.343	0.088	1.431
117	Asphalt shingle and coating materials manufacturing	0.000	0.000	0.000	1.000	0.000	1.000

118	Petroleum lubricating oil and grease manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
119	All other petroleum and coal products manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
120	Petrochemical manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
121	Industrial gas manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
122	Synthetic dye and pigment manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
123	Alkalies and chlorine manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
124	Carbon black manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
125	All other basic inorganic chemical manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
126	Other basic organic chemical manufacturing	0.102	0.012	0.114	2.509	0.285	2.794
127	Plastics material and resin manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
128	Synthetic rubber manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
129	Artificial and synthetic fibers and filaments manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
130	Fertilizer manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
131	Pesticide and other agricultural chemical manufacturing	0.127	0.022	0.149	2.295	0.395	2.690
132	Medicinal and botanical manufacturing	0.293	0.025	0.318	1.589	0.135	1.725
133	Pharmaceutical preparation manufacturing	0.183	0.026	0.210	2.271	0.327	2.598
134	In-vitro diagnostic substance manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
135	Biological product (except diagnostic) manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
136	Paint and coating manufacturing	0.226	0.020	0.245	1.530	0.133	1.663
137	Adhesive manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
138	Soap and cleaning compound manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
139	Toilet preparation manufacturing	0.181	0.026	0.207	2.343	0.335	2.678
140	Printing ink manufacturing	0.177	0.021	0.198	1.587	0.189	1.776
141	All other chemical product and preparation manufacturing	0.198	0.025	0.223	1.735	0.222	1.957
142	Plastics packaging materials and unlaminated film and sheet manufacturing	0.264	0.009	0.273	1.383	0.049	1.432
143	Unlaminated plastics profile shape manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
144	Plastics pipe and pipe fitting manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
145	Laminated plastics plate, sheet (except packaging), and shape manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
146	Polystyrene foam product manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
147	Urethane and other foam product (except polystyrene) manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
148	Plastics bottle manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
149	Other plastics product manufacturing	0.337	0.014	0.351	1.438	0.059	1.497
150	Tire manufacturing	0.347	0.014	0.361	1.523	0.060	1.583
151	Rubber and plastics hoses and belting manufacturing	0.397	0.014	0.411	1.362	0.048	1.410
152	Other rubber product manufacturing	0.274	0.017	0.291	1.670	0.103	1.773
153	Pottery, ceramics, and plumbing fixture manufacturing	0.398	0.026	0.424	1.524	0.101	1.625
154	Brick, tile, and other structural clay product manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
155	Clay and nonclay refractory manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
156	Flat glass manufacturing	0.000	0.000	0.000	1.000	0.000	1.000

157	Other pressed and blown glass and glassware manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
158	Glass container manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
159	Glass product manufacturing made of purchased glass	0.000	0.000	0.000	1.000	0.000	1.000
160	Cement manufacturing	0.241	0.015	0.256	2.197	0.135	2.332
161	Ready-mix concrete manufacturing	0.342	0.039	0.381	1.791	0.205	1.996
162	Concrete pipe, brick, and block manufacturing	0.375	0.028	0.403	1.562	0.115	1.677
163	Other concrete product manufacturing	0.408	0.029	0.438	1.516	0.109	1.625
164	Lime and gypsum product manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
165	Abrasive product manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
166	Cut stone and stone product manufacturing	0.526	0.025	0.551	1.505	0.072	1.577
167	Ground or treated mineral and earth manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
168	Mineral wool manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
169	Miscellaneous nonmetallic mineral products	0.000	0.000	0.000	1.000	0.000	1.000
170	Iron and steel mills and ferroalloy manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
171	Steel product manufacturing from purchased steel	0.000	0.000	0.000	1.000	0.000	1.000
172	Alumina refining and primary aluminum production	0.000	0.000	0.000	1.000	0.000	1.000
173	Secondary smelting and alloying of aluminum	0.000	0.000	0.000	1.000	0.000	1.000
174	Aluminum product manufacturing from purchased aluminum	0.000	0.000	0.000	1.000	0.000	1.000
175	Primary smelting and refining of copper	0.000	0.000	0.000	1.000	0.000	1.000
176	Primary smelting and refining of nonferrous metal (except copper and aluminum)	0.000	0.000	0.000	1.000	0.000	1.000
177	Copper rolling, drawing, extruding and alloying	0.148	0.009	0.157	2.161	0.130	2.291
178	Nonferrous metal (except copper and aluminum) rolling, drawing, extruding and alloying	0.000	0.000	0.000	1.000	0.000	1.000
179	Ferrous metal foundries	0.000	0.000	0.000	1.000	0.000	1.000
180	Nonferrous metal foundries	0.000	0.000	0.000	1.000	0.000	1.000
181	All other forging, stamping, and sintering	0.300	0.016	0.316	1.776	0.095	1.871
182	Custom roll forming	0.000	0.000	0.000	1.000	0.000	1.000
183	Crown and closure manufacturing and metal stamping	0.390	0.016	0.406	1.469	0.061	1.530
184	Cutlery, utensil, pot, and pan manufacturing	0.298	0.014	0.312	1.488	0.069	1.557
185	Handtool manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
186	Plate work and fabricated structural product manufacturing	0.351	0.019	0.370	1.552	0.083	1.635
187	Ornamental and architectural metal products manufacturing	0.380	0.019	0.399	1.557	0.076	1.633
188	Power boiler and heat exchanger manufacturing	0.307	0.016	0.323	1.594	0.081	1.675
189	Metal tank (heavy gauge) manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
190	Metal can, box, and other metal container (light gauge) manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
191	Ammunition manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
192	Arms, ordnance, and accessories manufacturing	0.000	0.000	0.000	1.000	0.000	1.000

193	Hardware manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
194	Spring and wire product manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
195	Machine shops	0.518	0.020	0.539	1.414	0.055	1.469
196	Turned product and screw, nut, and bolt manufacturing	0.410	0.018	0.428	1.433	0.064	1.497
197	Coating, engraving, heat treating and allied activities	0.335	0.015	0.351	1.536	0.070	1.607
198	Valve and fittings other than plumbing	0.313	0.015	0.328	1.546	0.075	1.621
199	Plumbing fixture fitting and trim manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
200	Ball and roller bearing manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
201	Fabricated pipe and pipe fitting manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
202	Other fabricated metal manufacturing	0.353	0.017	0.370	1.449	0.069	1.518
203	Farm machinery and equipment manufacturing	0.230	0.019	0.249	1.848	0.149	1.997
204	Lawn and garden equipment manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
205	Construction machinery manufacturing	0.207	0.020	0.228	1.928	0.190	2.118
206	Mining and oil and gas field machinery manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
207	Other industrial machinery manufacturing	0.407	0.021	0.429	1.496	0.079	1.575
208	Plastics and rubber industry machinery manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
209	Semiconductor machinery manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
210	Vending, commercial, industrial, and office machinery manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
211	Optical instrument and lens manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
212	Photographic and photocopying equipment manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
213	Other commercial and service industry machinery manufacturing	0.306	0.019	0.324	1.611	0.099	1.710
214	Air purification and ventilation equipment manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
215	Heating equipment (except warm air furnaces) manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
216	Air conditioning, refrigeration, and warm air heating equipment manufacturing	0.247	0.019	0.266	1.748	0.137	1.885
217	Industrial mold manufacturing	0.628	0.021	0.649	1.392	0.047	1.439
218	Metal cutting and forming machine tool manufacturing	0.442	0.022	0.465	1.492	0.075	1.567
219	Special tool, die, jig, and fixture manufacturing	0.640	0.024	0.664	1.336	0.050	1.386
220	Cutting tool and machine tool accessory manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
221	Rolling mill and other metalworking machinery manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
222	Turbine and turbine generator set units manufacturing	0.240	0.015	0.255	2.168	0.132	2.300
223	Speed changer, industrial high-speed drive, and gear manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
224	Mechanical power transmission equipment manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
225	Other engine equipment manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
226	Pump and pumping equipment manufacturing	0.324	0.020	0.344	1.584	0.099	1.683
227	Air and gas compressor manufacturing	0.000	0.000	0.000	1.000	0.000	1.000

228	Material handling equipment manufacturing	0.378	0.024	0.402	1.453	0.093	1.546
229	Power-driven handtool manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
230	Other general purpose machinery manufacturing	0.340	0.021	0.361	1.590	0.099	1.689
231	Packaging machinery manufacturing	0.467	0.020	0.487	1.437	0.063	1.500
232	Industrial process furnace and oven manufacturing	0.431	0.030	0.461	1.432	0.101	1.533
233	Fluid power process machinery	0.326	0.022	0.348	1.637	0.109	1.746
234	Electronic computer manufacturing	0.168	0.016	0.184	1.878	0.177	2.055
235	Computer storage device manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
236	Computer terminals and other computer peripheral equipment manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
237	Telephone apparatus manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
238	Broadcast and wireless communications equipment	0.243	0.021	0.264	2.081	0.177	2.258
239	Other communications equipment manufacturing	0.249	0.026	0.275	1.907	0.203	2.110
240	Audio and video equipment manufacturing	0.243	0.019	0.262	2.537	0.202	2.739
241	Electron tube manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
242	Bare printed circuit board manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
243	Semiconductor and related device manufacturing	0.484	0.042	0.526	1.494	0.128	1.623
244	Electronic capacitor, resistor, coil, transformer, and other inductor manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
245	Electronic connector manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
246	Printed circuit assembly (electronic assembly) manufacturing	0.182	0.017	0.200	1.974	0.187	2.160
247	Other electronic component manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
248	Electromedical and electrotherapeutic apparatus manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
249	Search, detection, and navigation instruments manufacturing	0.416	0.028	0.444	1.638	0.110	1.748
250	Automatic environmental control manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
251	Industrial process variable instruments manufacturing	0.547	0.028	0.576	1.387	0.072	1.459
252	Totalizing fluid meters and counting devices manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
253	Electricity and signal testing instruments manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
254	Analytical laboratory instrument manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
255	Irradiation apparatus manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
256	Watch, clock, and other measuring and controlling device manufacturing	0.304	0.026	0.330	1.752	0.150	1.902
257	Software, audio, and video media reproducing	0.000	0.000	0.000	1.000	0.000	1.000
258	Magnetic and optical recording media manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
259	Electric lamp bulb and part manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
260	Lighting fixture manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
261	Small electrical appliance manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
262	Household cooking appliance manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
263	Household refrigerator and home freezer	0.000	0.000	0.000	1.000	0.000	1.000

	manufacturing						
264	Household laundry equipment manufacturing	0.368	0.019	0.387	1.361	0.069	1.430
265	Other major household appliance manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
266	Power, distribution, and specialty transformer manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
267	Motor and generator manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
268	Switchgear and switchboard apparatus manufacturing	0.313	0.016	0.329	1.448	0.074	1.522
269	Relay and industrial control manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
270	Storage battery manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
271	Primary battery manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
272	Communication and energy wire and cable manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
273	Wiring device manufacturing	0.279	0.016	0.295	1.578	0.089	1.667
274	Carbon and graphite product manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
275	All other miscellaneous electrical equipment and component manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
276	Automobile manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
277	Light truck and utility vehicle manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
278	Heavy duty truck manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
279	Motor vehicle body manufacturing	0.299	0.024	0.323	1.506	0.122	1.628
280	Truck trailer manufacturing	0.359	0.024	0.383	1.527	0.102	1.629
281	Motor home manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
282	Travel trailer and camper manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
283	Motor vehicle parts manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
284	Aircraft manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
285	Aircraft engine and engine parts manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
286	Other aircraft parts and auxiliary equipment manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
287	Guided missile and space vehicle manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
288	Propulsion units and parts for space vehicles and guided missiles	0.000	0.000	0.000	1.000	0.000	1.000
289	Railroad rolling stock manufacturing	0.229	0.021	0.250	1.603	0.150	1.753
290	Ship building and repairing	0.000	0.000	0.000	1.000	0.000	1.000
291	Boat building	0.000	0.000	0.000	1.000	0.000	1.000
292	Motorcycle, bicycle, and parts manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
293	Military armored vehicle, tank, and tank component manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
294	All other transportation equipment manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
295	Wood kitchen cabinet and countertop manufacturing	0.533	0.026	0.559	1.581	0.077	1.658
296	Upholstered household furniture manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
297	Nonupholstered wood household furniture manufacturing	0.438	0.026	0.464	1.467	0.087	1.554
298	Metal and other household furniture (except wood) manufacturing ¹	0.266	0.016	0.283	1.679	0.103	1.783
299	Institutional furniture manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
300	Wood television, radio, and sewing machine cabinet manufacturing ¹	0.445	0.015	0.460	1.413	0.048	1.460

301	Office furniture and custom architectural woodwork and millwork manufacturing1	0.380	0.018	0.398	1.500	0.073	1.572
302	Showcase, partition, shelving, and locker manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
303	Mattress manufacturing	0.280	0.019	0.300	1.637	0.113	1.750
304	Blind and shade manufacturing	0.266	0.024	0.289	1.923	0.173	2.096
305	Surgical and medical instrument manufacturing	0.357	0.020	0.376	1.741	0.097	1.838
306	Surgical appliance and supplies manufacturing	0.451	0.021	0.472	1.450	0.067	1.517
307	Dental equipment and supplies manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
308	Ophthalmic goods manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
309	Dental laboratories	0.814	0.020	0.833	1.297	0.031	1.328
310	Jewelry and silverware manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
311	Sporting and athletic goods manufacturing	0.441	0.023	0.463	1.455	0.075	1.530
312	Doll, toy, and game manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
313	Office supplies (except paper) manufacturing	0.458	0.017	0.475	1.403	0.052	1.455
314	Sign manufacturing	0.658	0.020	0.678	1.337	0.040	1.377
315	Gasket, packing, and sealing device manufacturing	0.588	0.019	0.607	1.338	0.043	1.380
316	Musical instrument manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
317	All other miscellaneous manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
318	Broom, brush, and mop manufacturing	0.000	0.000	0.000	1.000	0.000	1.000
319	Wholesale trade	0.558	0.020	0.577	1.476	0.052	1.528
320	Retail - Motor vehicle and parts	0.771	0.017	0.787	1.348	0.029	1.377
321	Retail - Furniture and home furnishings	0.584	0.018	0.602	1.478	0.046	1.523
322	Retail - Electronics and appliances	0.788	0.019	0.807	1.352	0.032	1.384
323	Retail - Building material and garden supply	0.587	0.017	0.604	1.463	0.042	1.505
324	Retail - Food and beverage	0.612	0.018	0.630	1.462	0.043	1.505
325	Retail - Health and personal care	0.646	0.014	0.660	1.384	0.031	1.415
326	Retail - Gasoline stations	0.456	0.014	0.469	1.515	0.046	1.561
327	Retail - Clothing and clothing accessories	0.491	0.015	0.506	1.524	0.047	1.571
328	Retail - Sporting goods, hobby, book and music	0.570	0.015	0.586	1.519	0.041	1.560
329	Retail - General merchandise	0.629	0.018	0.647	1.442	0.040	1.482
330	Retail - Miscellaneous	0.712	0.014	0.726	1.370	0.027	1.396
331	Retail - Nonstore	0.344	0.012	0.356	1.628	0.058	1.685
332	Air transportation	0.305	0.020	0.324	1.748	0.113	1.862
333	Rail transportation	0.417	0.012	0.430	1.653	0.049	1.703
334	Water transportation	0.353	0.042	0.395	1.771	0.212	1.983
335	Truck transportation	0.557	0.016	0.573	1.597	0.046	1.643
336	Transit and ground passenger transportation	0.656	0.020	0.676	1.305	0.041	1.346
337	Pipeline transportation	0.000	0.000	0.000	1.000	0.000	1.000
338	Scenic and sightseeing transportation and support activities for transportation	0.885	0.014	0.899	1.259	0.019	1.278
339	Couriers and messengers	0.593	0.012	0.606	1.331	0.027	1.358
340	Warehousing and storage	0.768	0.016	0.784	1.300	0.027	1.328
341	Newspaper publishers	0.554	0.028	0.582	1.330	0.068	1.398
342	Periodical publishers	0.465	0.021	0.485	1.649	0.074	1.722

343	Book publishers	0.394	0.020	0.414	2.013	0.101	2.113
344	Directory, mailing list, and other publishers	0.319	0.014	0.333	1.847	0.082	1.930
345	Software publishers	0.459	0.022	0.481	1.944	0.092	2.036
346	Motion picture and video industries	0.355	0.030	0.384	2.354	0.199	2.553
347	Sound recording industries	0.236	0.014	0.251	11.004	0.671	11.675
348	Radio and television broadcasting	0.681	0.027	0.708	1.406	0.055	1.461
349	Cable and other subscription programming	0.000	0.000	0.000	1.000	0.000	1.000
350	Internet publishing and broadcasting	0.169	0.016	0.184	3.942	0.371	4.313
351	Telecommunications	0.341	0.011	0.352	2.261	0.076	2.337
352	Data processing, hosting, and related services	0.508	0.022	0.530	1.649	0.073	1.721
353	Other information services	0.000	0.000	0.000	1.000	0.000	1.000
354	Monetary authorities and depository credit intermediation	0.426	0.015	0.441	1.560	0.055	1.615
355	Nondepository credit intermediation and related activities	0.590	0.025	0.614	1.486	0.062	1.548
356	Securities, commodity contracts, investments, and related activities	0.648	0.038	0.686	1.691	0.098	1.789
357	Insurance carriers	0.434	0.066	0.500	1.630	0.248	1.878
358	Insurance agencies, brokerages, and related activities	0.656	0.038	0.694	1.505	0.087	1.592
359	Funds, trusts, and other financial vehicles	0.321	0.045	0.365	7.238	1.005	8.243
360	Real estate	0.269	0.006	0.275	1.607	0.036	1.643
361	Imputed rental value for owner-occupied dwellings	0.117	0.009	0.125	#DIV/0!	#DIV/0!	#DIV/0!
362	Automotive equipment rental and leasing	0.441	0.029	0.470	1.846	0.119	1.965
363	General and consumer goods rental except video tapes and discs	0.826	0.028	0.854	1.362	0.047	1.408
364	Video tape and disc rental	0.520	0.035	0.555	1.604	0.107	1.710
365	Commercial and industrial machinery and equipment rental and leasing	0.467	0.034	0.501	1.940	0.142	2.082
366	Lessors of nonfinancial intangible assets	0.186	0.009	0.195	3.263	0.154	3.418
367	Legal services	0.701	0.015	0.716	1.442	0.030	1.472
368	Accounting, tax preparation, bookkeeping, and payroll services	0.749	0.016	0.765	1.408	0.030	1.438
369	Architectural, engineering, and related services	0.819	0.015	0.834	1.438	0.026	1.464
370	Specialized design services	0.564	0.014	0.578	1.601	0.041	1.642
371	Custom computer programming services	0.842	0.012	0.854	1.400	0.020	1.420
372	Computer systems design services	1.195	0.018	1.213	1.288	0.019	1.307
373	Other computer related services, including facilities management	0.793	0.015	0.808	1.339	0.025	1.364
374	Management, scientific, and technical consulting services	0.717	0.018	0.735	1.498	0.038	1.536
375	Environmental and other technical consulting services	0.740	0.017	0.757	1.467	0.034	1.500
376	Scientific research and development services	0.702	0.018	0.720	1.573	0.041	1.614
377	Advertising and related services	0.557	0.021	0.579	1.658	0.064	1.721
378	Photographic services	0.496	0.015	0.511	1.686	0.053	1.739
379	Veterinary services	0.554	0.015	0.568	1.446	0.038	1.484
380	All other miscellaneous professional, scientific, and technical services	0.270	0.018	0.289	2.694	0.184	2.877

381	Management of companies and enterprises	0.651	0.018	0.669	1.529	0.041	1.570
382	Employment services	0.926	0.018	0.944	1.321	0.025	1.347
383	Travel arrangement and reservation services	0.474	0.015	0.489	1.645	0.051	1.696
384	Office administrative services	0.743	0.014	0.757	1.386	0.026	1.412
385	Facilities support services	0.686	0.020	0.706	1.607	0.046	1.654
386	Business support services	0.672	0.014	0.686	1.492	0.031	1.524
387	Investigation and security services	0.792	0.014	0.806	1.360	0.023	1.384
388	Services to buildings and dwellings	0.603	0.010	0.613	1.386	0.023	1.409
389	Other support services	0.468	0.012	0.480	1.547	0.040	1.587
390	Waste management and remediation services	0.448	0.024	0.472	1.732	0.094	1.825
391	Elementary and secondary schools	0.777	0.013	0.790	1.355	0.022	1.377
392	Junior colleges, colleges, universities, and professional schools	0.684	0.015	0.699	1.395	0.031	1.425
393	Other educational services	0.630	0.018	0.648	1.520	0.044	1.564
394	Offices of physicians, dentists, and other health practitioners	0.800	0.013	0.813	1.336	0.022	1.358
395	Home health care services	0.766	0.013	0.779	1.331	0.022	1.353
396	Medical and diagnostic labs and outpatient and other ambulatory care services	0.531	0.012	0.543	1.493	0.034	1.527
397	Hospitals	0.671	0.016	0.687	1.431	0.034	1.466
398	Nursing and residential care facilities	0.928	0.015	0.943	1.291	0.021	1.312
399	Child day care services	0.544	0.021	0.565	1.460	0.057	1.517
400	Individual and family services	0.773	0.023	0.797	1.360	0.041	1.400
401	Community food, housing, and other relief services, including rehabilitation services	0.883	0.019	0.903	1.400	0.031	1.430
402	Performing arts companies	0.732	0.037	0.768	1.477	0.074	1.551
403	Spectator sports	0.524	0.047	0.571	1.612	0.146	1.759
404	Promoters of performing arts and sports and agents for public figures	0.477	0.029	0.506	2.092	0.126	2.218
405	Independent artists, writers, and performers	0.784	0.017	0.801	1.348	0.029	1.377
406	Museums, historical sites, zoos, and parks	0.760	0.018	0.779	1.385	0.034	1.419
407	Fitness and recreational sports centers	0.701	0.027	0.728	1.461	0.056	1.517
408	Bowling centers	0.481	0.021	0.502	1.872	0.081	1.954
409	Amusement parks, arcades, and gambling industries	0.347	0.017	0.364	2.233	0.109	2.342
410	Other amusement and recreation industries	0.408	0.023	0.431	2.013	0.113	2.126
411	Hotels and motels, including casino hotels	0.515	0.017	0.532	1.591	0.051	1.642
412	Other accommodations	0.578	0.019	0.597	1.624	0.053	1.677
413	Food services and drinking places	0.486	0.020	0.505	1.534	0.062	1.597
414	Automotive repair and maintenance, except car washes	0.561	0.016	0.577	1.418	0.041	1.460
415	Car washes	0.501	0.015	0.516	1.511	0.045	1.556
416	Electronic and precision equipment repair and maintenance	0.496	0.012	0.508	1.435	0.035	1.470
417	Commercial and industrial machinery and equipment repair and maintenance	0.432	0.012	0.445	1.427	0.040	1.467
418	Personal and household goods repair and maintenance	0.472	0.014	0.486	1.461	0.042	1.503
419	Personal care services	0.576	0.016	0.592	1.508	0.042	1.550
420	Death care services	0.700	0.028	0.728	1.400	0.055	1.455

421	Dry-cleaning and laundry services	0.657	0.014	0.671	1.329	0.028	1.358
422	Other personal services	0.349	0.012	0.361	2.276	0.080	2.356
423	Religious organizations	0.395	0.049	0.444	1.792	0.223	2.014
424	Grantmaking, giving, and social advocacy organizations	0.888	0.030	0.918	1.608	0.054	1.662
425	Civic, social, professional, and similar organizations	0.905	0.029	0.934	1.499	0.048	1.546
426	Private households	1.052	0.012	1.064	1.205	0.014	1.219
427	Postal service	0.978	0.016	0.994	1.298	0.021	1.319
428	Federal electric utilities	0.000	0.000	0.000	1.000	0.000	1.000
429	Other Federal Government enterprises	1.000	0.012	1.012	1.238	0.015	1.253
430	State and local government passenger transit	0.778	0.015	0.794	1.406	0.027	1.433
431	State and local government electric utilities	0.207	0.006	0.213	1.330	0.037	1.367
432	Other state and local government enterprises	0.466	0.018	0.484	1.791	0.069	1.860