ECONOMIC PROFILE OF FOOD AND BEVERAGE MANUFACTURING IN IOWA

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INDUSTRY DEFINITION

The food manufacturing industrial subsector transforms livestock and agricultural products into products for intermediate or final consumption. The food products manufactured in these establishments are typically sold to other manufacturers as inputs, to wholesalers or to retailers for distribution to consumers. This includes establishments primarily engaged in retailing bakery and candy products made on the premises not for immediate consumption. This industry produces food products for humans and animals, as well as byproducts that may be used in other industrial applications such as pharmaceuticals, fertilizers, and cosmetics. This sector includes beverage production, to include soft drinks, brewed beverages, wines, and spirits.

31111 ANIMAL FOOD MANUFACTURING

- Manufacture food and feed for animals from animal and vegetable sources
  - Products: Milled grains, seeds, bagged and canned animal and pet food products

92 establishments with 2,874 payroll employees in 2014

31121 FLOUR MILLING AND MALT MANUFACTURING

- Mill flour or meal from grains or vegetables, polish rice, or produce malts
  - Products: Grain flours, doughs, other polished or processed grains, or barley or rye malts

210 establishments with536 payroll employees in 2014

31122 STARCH AND VEGETABLE FATS AND OILS MANUFACTURING

- Wet milling corn, crushed oils seeds, and nuts, and vegetable oil refining and blending
  - Products: Vegetable oils, margarine, cooking oil, vegetable byproducts for other industrial uses, corn sweeteners

37 establishments with 3,482 payroll employees in 2014

311221 WET CORN MILLING

- Process raw corn using wet milling processes
  - Products: Corn sweeteners, glucose, dextrose, corn oil, starches, gluten feed and flour, maltodextrins, syrups, and tapioca.

12 establishments with 2,422 payroll employees in 2014

311224 SOYBEAN AND OTHER OILSEED PROCESSING

- Crushes oilseeds such as soybean, cottonseed, linseeds, peanuts, and sunflower seeds.
  - Products: Oilseed cakes, oils, meals, and protein isolates; canola oil, castor oil, flaxseed oil, soybean flour and grits, soybean oil, vegetable oils.

19 establishments with 939 payroll employees in 2014

31123 Breakfast Cereal Manufacturing

- Breakfast cereal foods
  - Products: Cereals, farina, granola, hominy grits, infant cereals, and hot cereals

6 establishments with 1,908 payroll employees in 2014

31131 Sugar Manufacturing

- Manufacture raw sugar or liquid sugar from sugarcane, raw cane sugar, and sugar beets
  - Products: Powdered sugar, liquid sugar, and sugar solids

2 establishments with 25 payroll employees in 2014

31134 Nonchocolate Confectionary Manufacturing

- Nonchocolate confectionaries including products not meant for immediate consumption
  - Products: Breakfast bars, cakes, candy bars, candied fruits, cough drops, gum, soft and hard candies, lozenges, marshmallows, marzipan, and toffee

5 establishments with 329 payroll employees in 2014

31135 Chocolate and Confectionary Manufacturing

- Products manufactured from cacao beans or from chocolates manufactured elsewhere
  - Products: Candy bars or other chocolate candies, liquid and powdered chocolates, sweetened and unsweetened chocolate for baking and other uses.

14 establishments and 148 payroll employees in 2014

31141 Frozen Food Manufacturing

- Frozen fruit, juice, vegetables, and dinners.
  - Products: Frozen fruit juice, vegetable side dishes, meal entrees, pizzas, whipped toppings, waffles, pancakes, and French toast.

14 establishments and 1,653 payroll employees in 2014

31142 Fruit and Vegetable Canning, Pickling, and Drying

- Produced canned, pickled, and dried fruits, vegetables, and specialty foods.
  - Products: Canned juices, baby foods, soups, tomato-based sauces and catsup, salsa, chili, spaghetti, pickles, relishes, jams and jellies, dried soup mixes, and sauerkraut.

7 establishments and 337 payroll employees in 2014

31151 Dairy Product (except frozen) Manufacturing

- Manufacture dairy products from raw milk, dairy substitutes from soybeans, and dry, condensed, or evaporated milk products.
  - Products: Liquid milk and cream, butter, whey powder, dried or evaporated milk, soy milk, and dairy substitutes

20 establishments and 2,178 payroll employees in 2014

31152 Ice Cream and Frozen Dessert Manufacturing

- Manufacture frozen dairy and related confections
  - Products: Ice cream, frozen yogurts, ices, sherbets, frozen tofu, juice pops, ice milk, and ice cream specialties

3 establishments and 1,381 payroll employees in 2014

31161 Animal Slaughtering and Processing

- Slaughter animals, prepare meat and meat byproducts, render animals, and package meat
  - Products: Cleaned animal carcasses and slaughtering byproducts, boxed or packaged meat, processed meat, and finished meat cuts.

159 establishments and 26,399 payroll employees in 2014

311611 Animal (except poultry) Slaughtering

- Establishments primarily engaged in slaughtering animals (except poultry and small game).
  - Products: Beef, poultry, and lamb carcasses, hides, and by products; boxed meats, other inedible products, casings, lard, luncheon meats, hot dogs, and tallow

80 establishments and 14,788 payroll employees in 2014

311612 Meat Processed From Carcasses

- Process and preserve meat and meat byproducts from purchased meats.
  - Products: Bacon, beef stew, bologna, cooked meats, corned meats, dried and frozen meats, hams, cooked or pickled pigs' feet, other cooked or processed meats, salted or smoked meats, and variety meats.

55 establishments and 8,686 payroll employees in 2014

311615 Poultry Processing

- Slaughtering, processing, and preparing poultry and small game
  - Products: Canned poultry, fresh or frozen chickens, waterfowl, rabbits, small game, fresh or frozen turkeys, hot dogs and luncheon meats.

8 establishments and 2,829 payroll employees in 2014

31181 Bread and Bakery Product Manufacturing

- Firms manufacturing fresh and frozen bread and other bakery products, this includes both retail bakeries and commercial bakeries
  - Products: Breads, rolls, pastries, and frozen bread and cake products

51 establishments and 703 payroll employees in 2014

31182 Cookie, Cracker, and Pasta Manufacturing

- Firms manufacturing cookies and crackers, preparing flour and dough mixes, manufacturing dry pasta
  - Products: Cookies, crackers, and pasta

13 establishments and 1,361 payroll employees in 2014

31183 Tortilla Manufacturing

- Firms manufacturing flour, corn, or other grain tortillas
  - Products: Tortillas

1 establishments and 16 payroll employees in 2014

31191 Snack Food Manufacturing

- Firms salting, roasting, drying or cooking nuts; processing seeds into snacks; and manufacturing other snack foods
  - Products: Roasted or canned nuts, peanut butter, potato and corn chips, popped popcorn, pretzels, pork rinds, and cheese curds

3 establishments and 170 payroll employees in 2014

31192 Coffee and Tea Manufacturing

- Firms roasting coffee, manufacturing coffee and tea from concentrates (including freeze-dried and instant)
  - Products: Bean, ground, or instant coffee, tea and herbal tea, coffee extracts and syrups, and other tea or coffee extracts

2 establishments and 30 payroll employees in 2014

31193 Flavoring Syrup and Concentrate Manufacturing

- Firms manufacturing flavoring syrup drink concentrates and related products for soda fountain use or for the manufacture of soft drinks.
  - Products: Beverage bases, flavorings, and syrups; non frozen concentrates; flavoring pastes, powders, and syrups for soft drink manufacturing; fruit syrups and flavorings; and soft drink concentrates

1 establishments and 321 payroll employees in 2014

31194 Seasoning and Dressing Manufacturing

- Firms roasting coffee, manufacturing coffee and tea from concentrates (including freeze-dried and instant)
  - Products: Bean, ground, or instant coffee, tea and herbal tea, coffee extracts and syrups, and other tea or coffee extracts

1 establishments and 321 payroll employees in 2014

31199 All Other Food Manufacturing

- Firms making all other food and food-related products, to include those mixing dried or dehydrated ingredients.
  - Products: Baking powder, dessert puddings, egg substitutes, fresh pasta or pizza, honey, popcorn, powdered drinks, and sweetening syrups

35 establishments and 3.056 payroll employees in 2014

31311 Soft Drink and Ice Manufacturing

- Firms that make soft drinks, ice, or bottled water
  - Products: Carbonated and noncarbonated beverages, fruit and vegetable drinks, pop or soda, iced coffee, iced tea, flavored water, purified or carbonated water, block and cube ice.

6 establishments and 655 payroll employees in 2014

31213 Wineries

- Firms growing grapes and manufacturing wines and brandies, firms manufacturing wines and brandies from externally sourced feedstock, and firms blending wines and brandies
  - Products: brandy distilling, wines, blended winces, cider, nonalcoholic wines, wine coolers, cooking wines.

29 establishments and 249 payroll employees in 2014

31214 Distilleries

- Firms distilling potable liquors (excluding brandies), distilling and blending liquors, and blending liquors with other ingredients
  - Products: Alcoholic beverages, liquors, eggnog, potable ethyl alcohol, alcoholic mixed drinks, bleneded distilled beverages, neutral spirits, and distilled spirits.

6 establishments and 52 payroll employees in 2014

Industry Size and composition

Gross Domestic Product (GDP)

Iowa's food and beverage manufacturing is a major nondurable goods sector in the Iowa economy and produced $6.59 billion in GDP and accounted for 21.4 percent of Iowa's manufacturing GDP and 4.0 percent of its total GDP for all industries in 2013. Nationally, fabricated metals contributed 21.8 percent of manufacturing GDP and 1.4 percent of national GDP in 2013.

Jobs

Food and beverage manufacturing's 52,071 jobs represented 24.0 percent of Iowa's manufacturing payroll employment and 3.4 percent of its total employment in 2014. In the U.S., food and beverage manufacturing accounted for 12.4 percent of manufacturing sector jobs and 1.1 percent of all jobs.

Iowa's food and beverage manufacturing activities are mostly distributed across animal slaughtering and processing (at 53.1 percent of jobs), grain and oilseed processing (12.9 percent), all other foods (7.5 percent), and animal food processing (7.2 percent). These subsectors combined accounted for more than 81 percent of total employment in this sector. U.S. jobs in those subsectors are distributed somewhat differently. Animal Slaughtering and processing accounted for most U.S. jobs at 28.6 percent, followed by bakeries and tortilla products at 17.3 percent, beverages at 11.7 percent, and all other foods at 11.2 percent. See Figure 1

Business Establishments

Iowa had 548 food and beverage manufacturing establishments in 2014. The largest number were in animal slaughtering and processing firms with 159, followed by animal food processors, bakeries, other foods, and grain and oil seed processors.

County Business Pattern data from 2014 show establishments with 500 or more workers accounting for 4.6 percent of all establishments. About 12 percent had 100 to 499 workers. Nearly 59 percent of Iowa's food and beverage manufacturing establishments had fewer than 20 employees.

Animal slaughtering averaged 174 workers per establishment, followed by dairy products at 140 workers and grain and oilseed processing at 127. The smallest number of employees per firm is found in seafood products at 18. Iowa's overall food and beverage manufacturing sector averaged 95 workers per establishment.

Figure 2 shows the distribution of Iowa's fabricated metals establishments by size and detailed industry. Figure 3 maps the approximate distribution of establishments by employment size across the state.

FIGURE 1

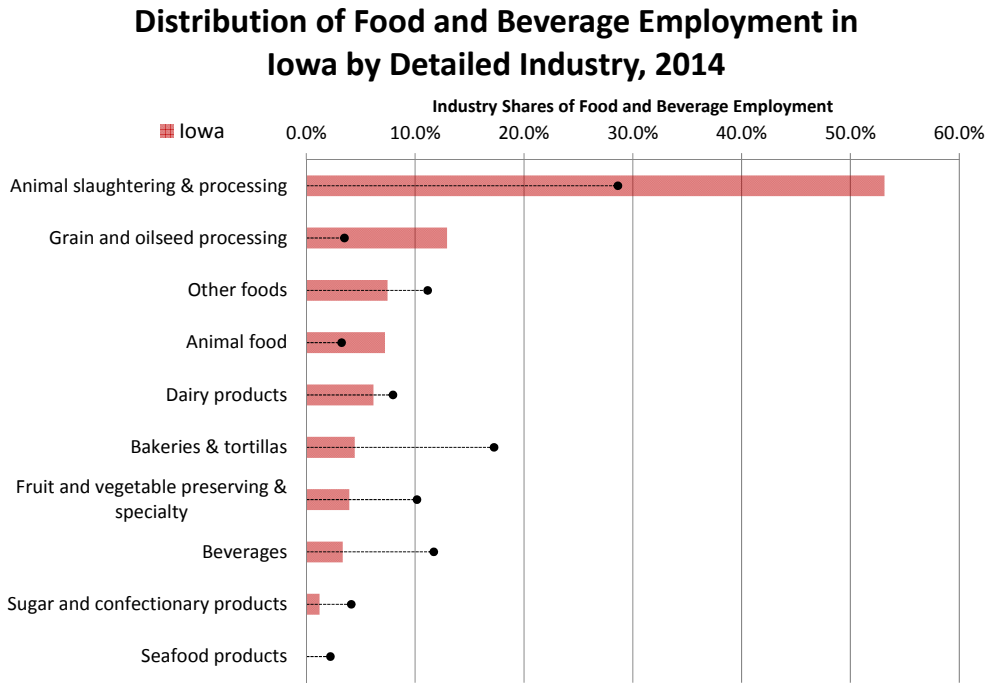


FIGURE 2

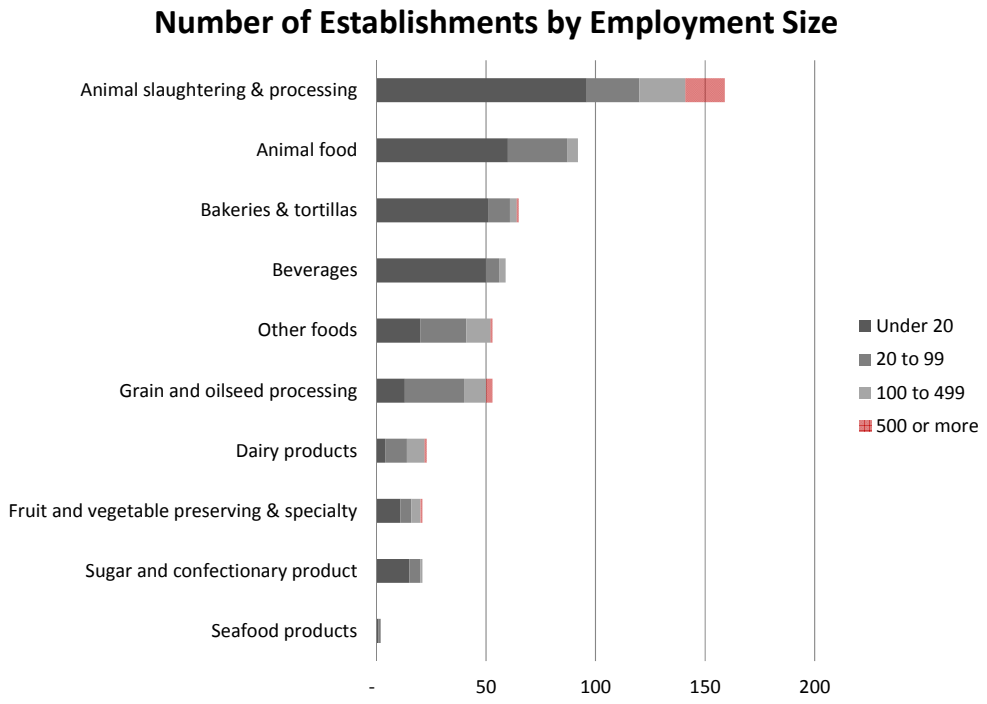
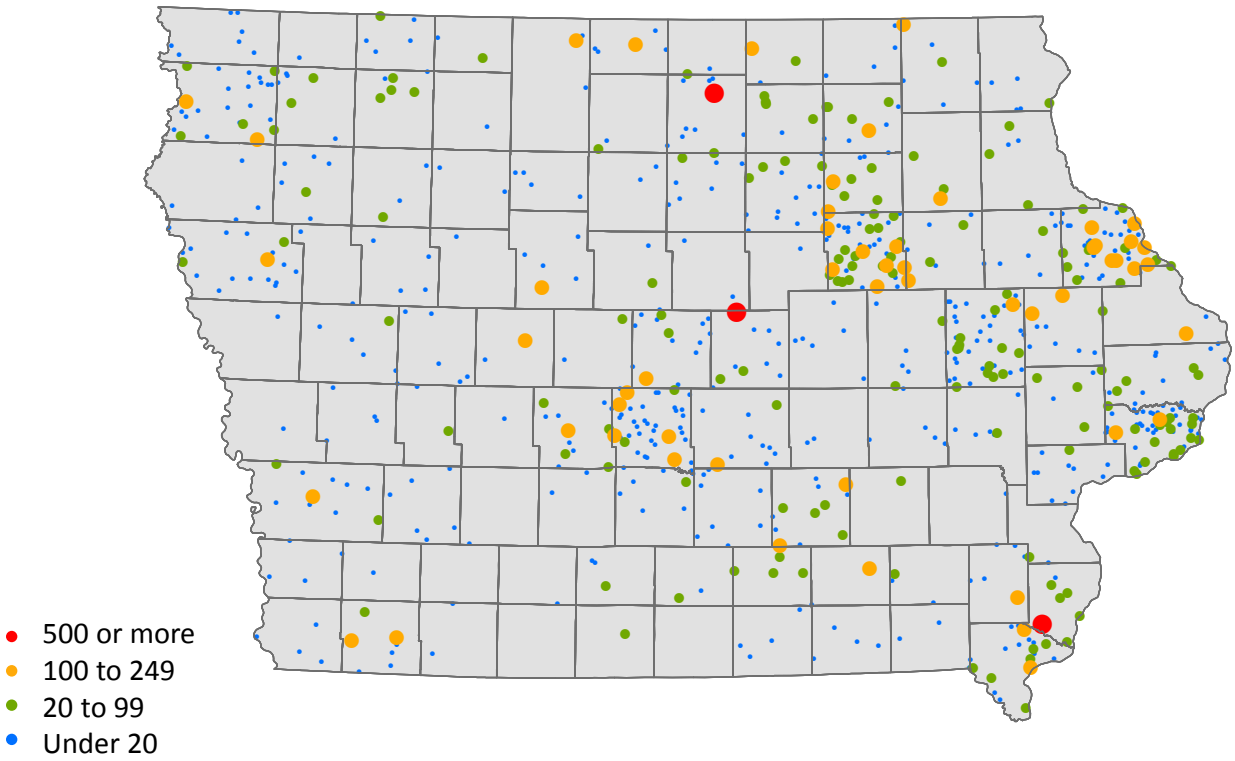


FIGURE 3. FABRICATED METALS ESTABLISHMENTS BY EMPLOYMENT SIZE



IOWA'S COMPETITIVE POSITION

EMPLOYMENT CONCENTRATION

Iowa demonstrates a strong competitive advantage in food and beverage manufacturing: In 2014, 3.5 percent of the nation's food and beverage manufacturing jobs were located in Iowa, while Iowa had just 1.1 percent of U.S. jobs across all industries. Figure 4 shows Iowa's percentage of food and beverage manufacturing employment by detailed industry. Iowa's prominence in grain and oilseed processing, animal food manufacturing, and animal slaughtering and processing is demonstrable.

Location quotients, which measure the state's share of national employment in a particular industry in relation to the state's share of all U.S. jobs, show that Iowa has about 2.8 times more food and beverage sector employment than the U.S. average (LQ=2.79, where 1.0 = the U.S. average). Iowa's strongest competitive advantages are in animal foods processing and in animal slaughtering and processing. Iowa also has strong competitive advantages in dairy products and all other foods. Iowa does not demonstrate production dominance in sugar and confectionary products, beverages, bakery goods, and seafood products. Figure 5 illustrates Iowa's food and beverage location quotients by industry.

FIGURE 4

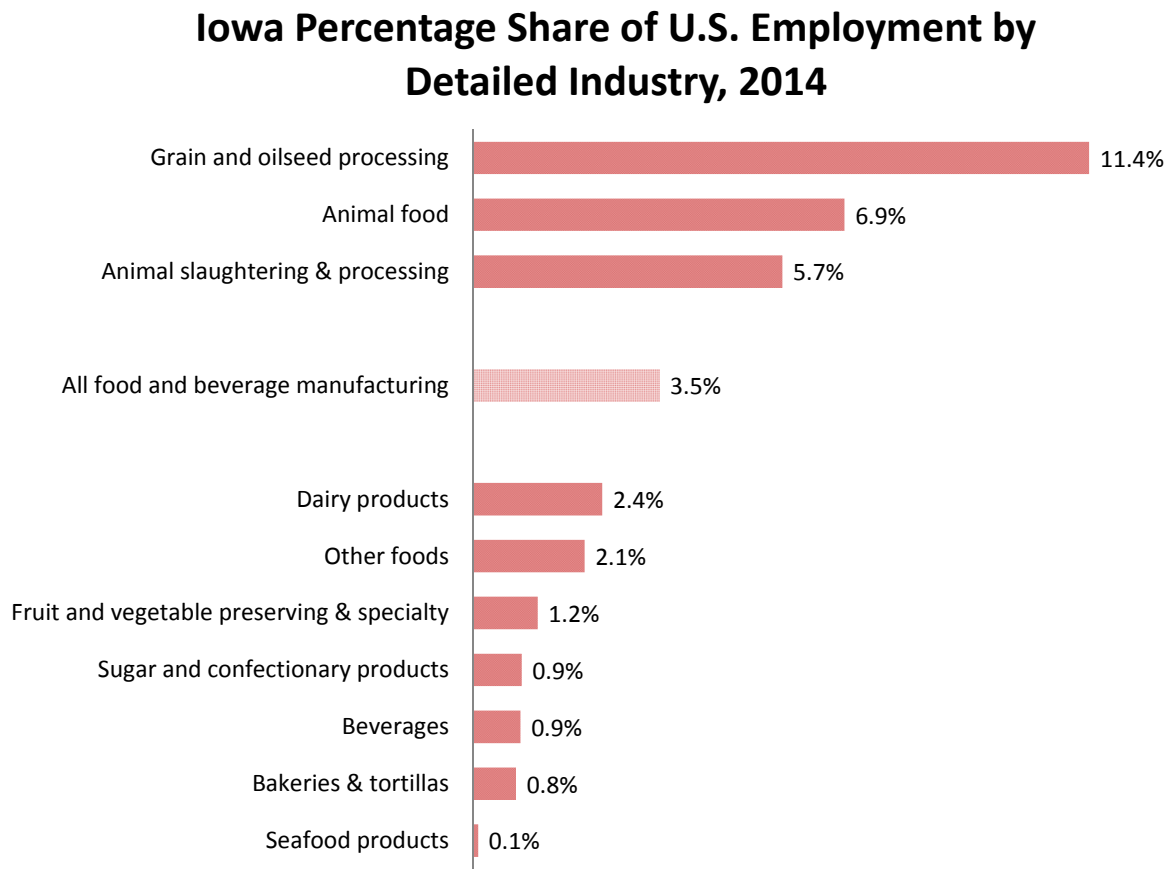
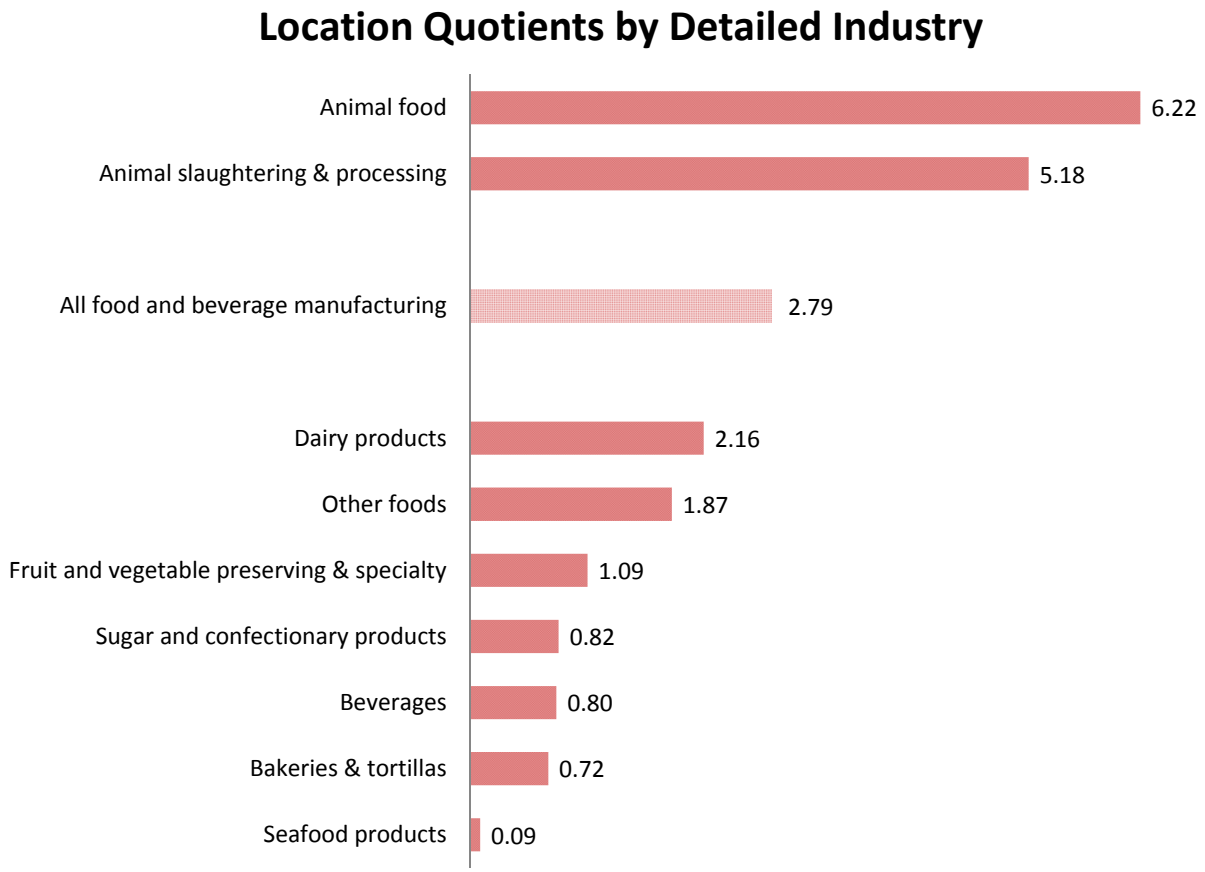


FIGURE 5

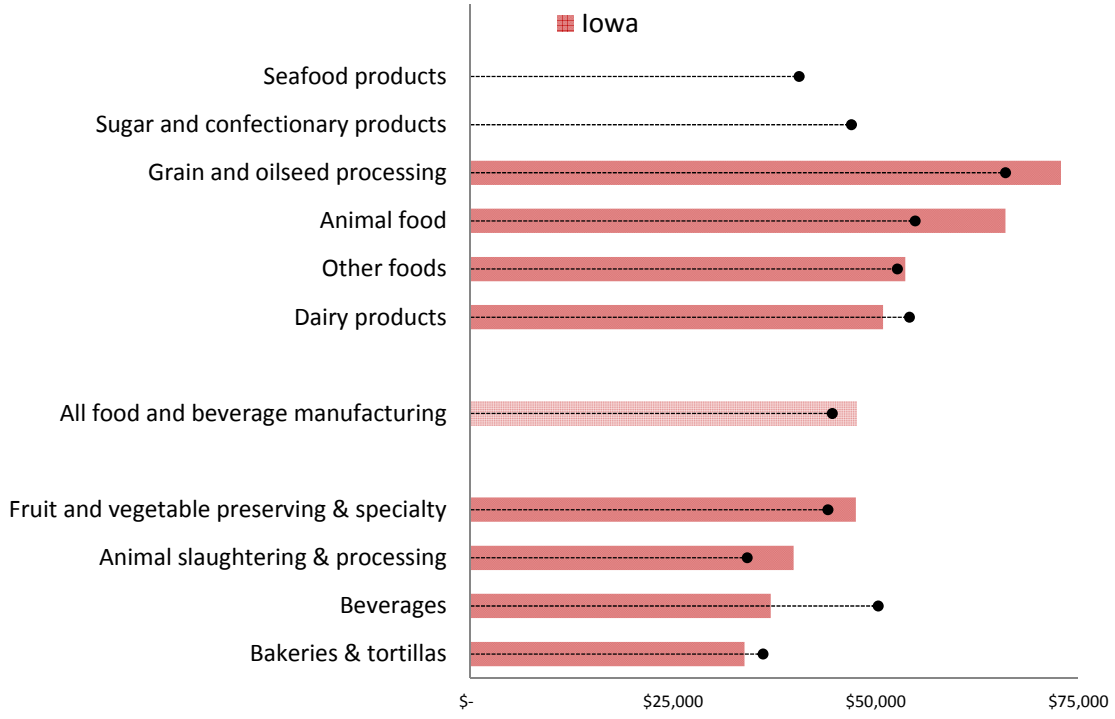


AVERAGE EARNINGS

Iowa's food and beverage manufacturing workers earned $$47,580 in wages and salaries per job in 2014, which was 6.5 percent higher than the national average for the subsector. The highest pay was found in the grain and oilseed processing industries at $72,834 where U.S. pay in that sector was just $66.012. Overall, Iowa pay exceeded or matched U.S. pay in five subsectors. Average earnings per job by detailed industry are shown in Figure 6. Two sectors, which are comparatively small, reported no data for Iowa.

FIGURE 6

Average Wage and Salary Per Job by Detailed Industry, 2014, Iowa and the U.S.

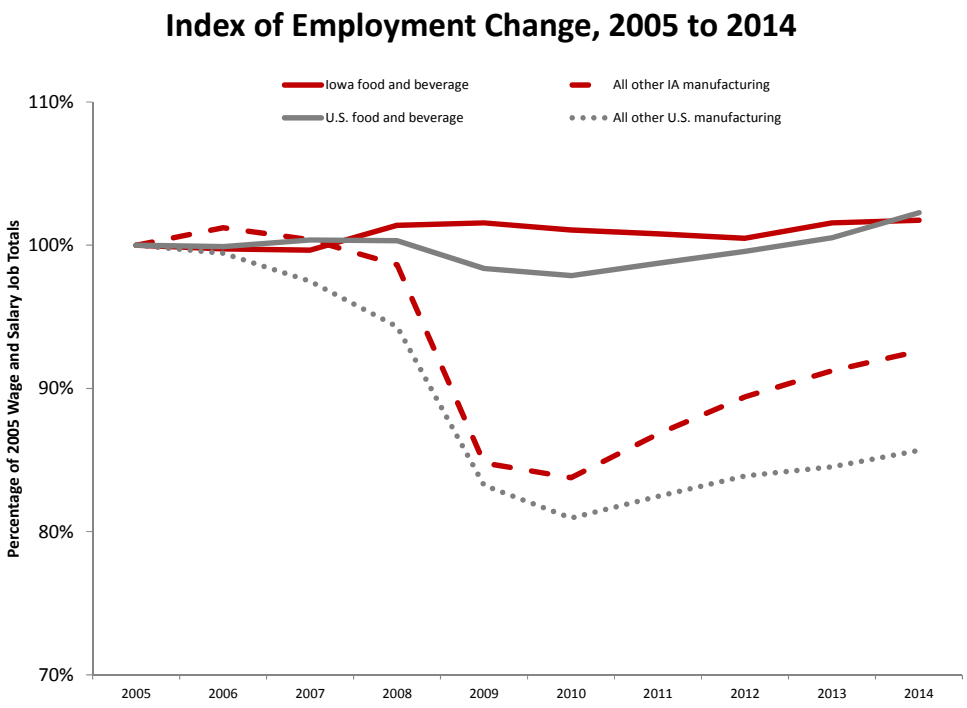


EMPLOYMENT TRENDS

OVERALL TREND

The U.S. food and beverage sectors had 1,681,568 jobs in 2014. Nationally, the sector is 2.3 percent larger than it was in 2005. Iowa's food and beverage sectors grew by 1.7 percent over 2005 levels. Both in Iowa and nationally, the food and beverage sectors have mostly remained comparatively stable over time. Though the U.S. did see a dip in employment coincident with the Great Recession and recovery, Iowa employment, in distinction, actually improved during that time. The stability of the food and beverage sectors compared to all other manufacturing in the U.S. and in Iowa is stark. The remaining manufacturing sectors contracts sharply during the Great Recession and have not returned to 2005 levels. Figure 7 shows recent state and national employment trends. Employment values are indexed to base year levels in 2005.

FIGURE 7



COMPOSITION OF CHANGE

The composition of recent food and beverage job changes by subsector in the U.S. and in Iowa since 2005 are substantially similar. The U.S. realized a gain of 37,400 jobs, while Iowa gains were about 890. Minor to sharp losses were realized in all other areas of this subsector. Both the U.S. and Iowa realized increases in beverage, other foods, and bakery products. Both saw declines in animal slaughtering and processing. Iowa stands out more in the gain in animal food related jobs. It also saw a comparatively strong reduction in dairy products whereas that sector posted minor gains at the U.S. level. Finally, two minor sectors in Iowa, seafood products and the sugar and confectionary products, had suppressed job totals and could not be compared to the U.S.

FIGURE 8.

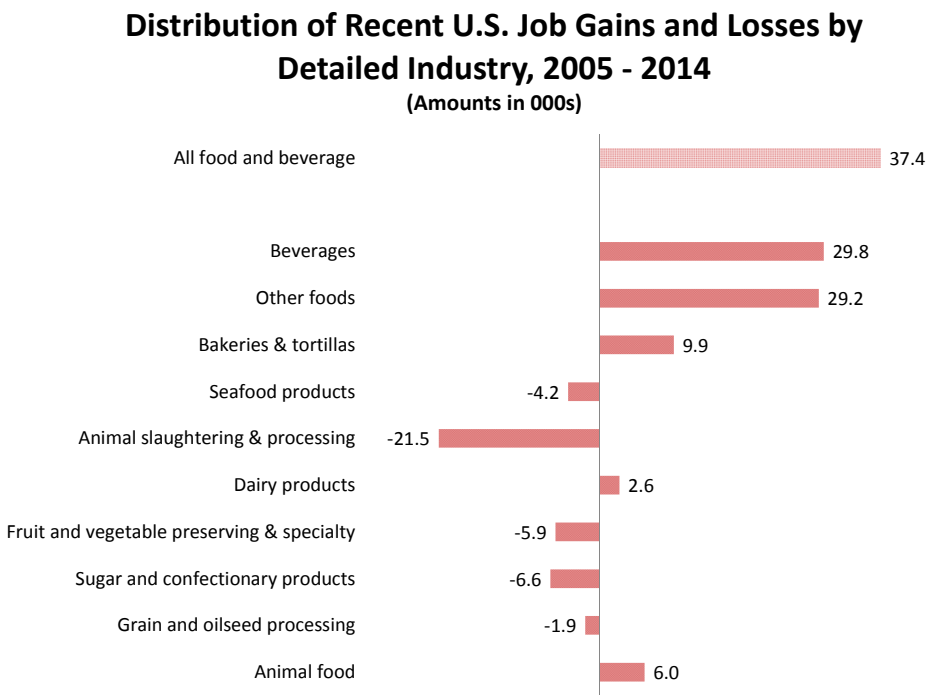
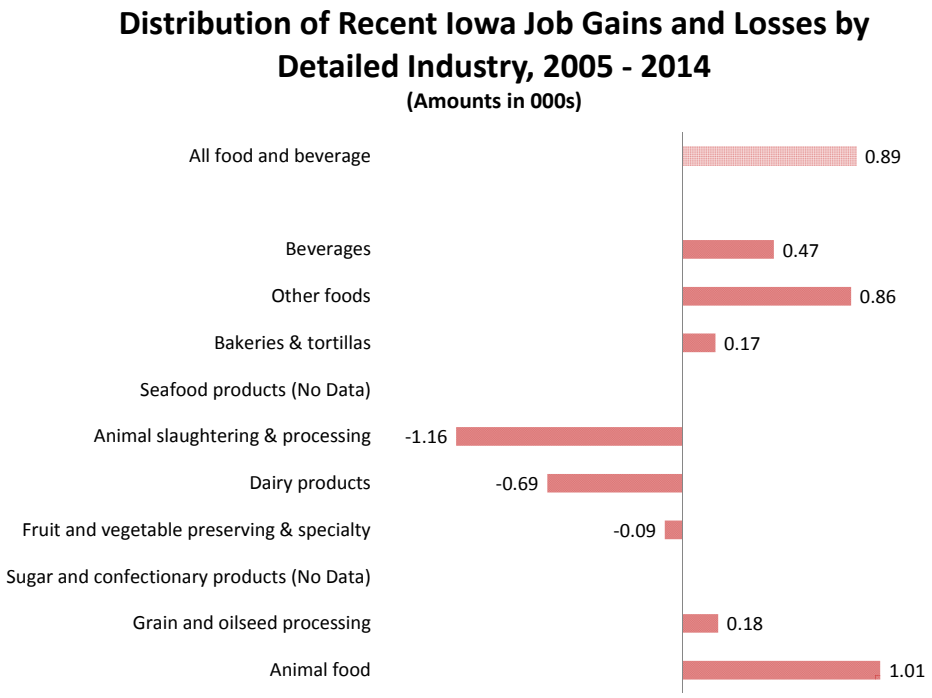


FIGURE 9.



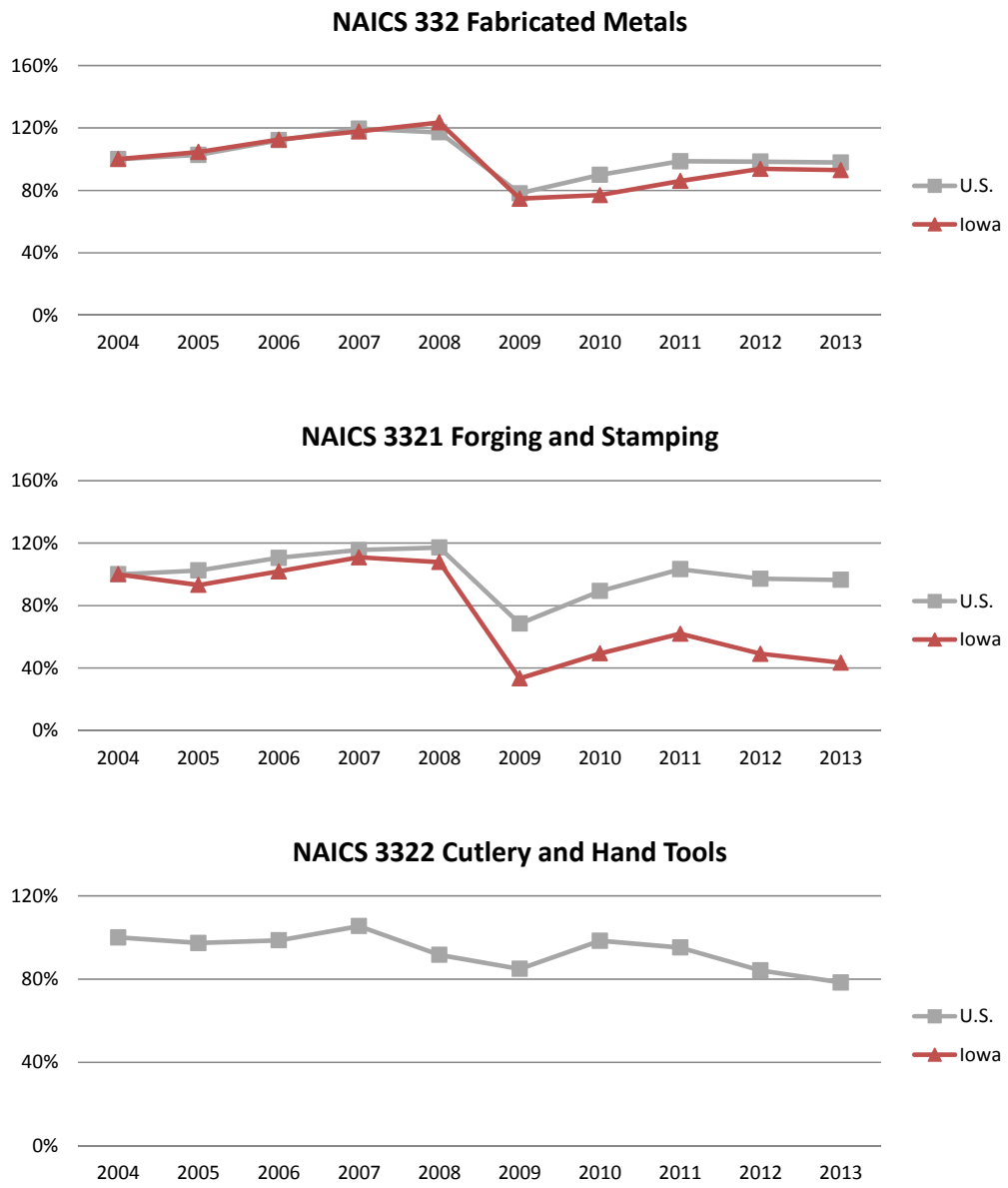
PRODUCTIVITY TRENDS

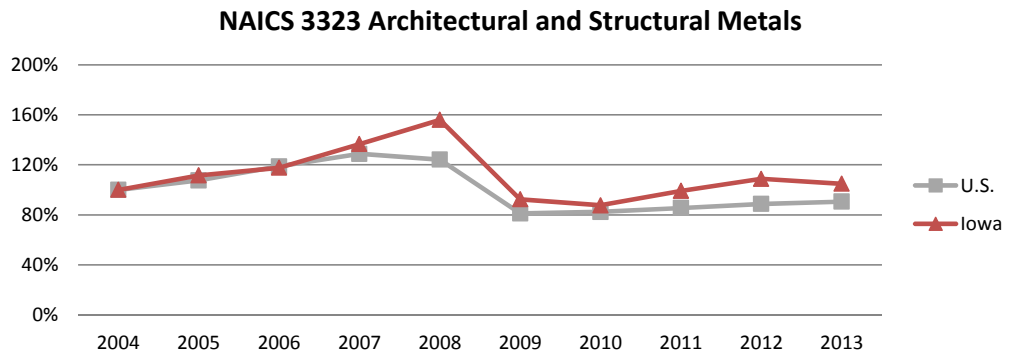
Gross domestic product (GDP) measures the market value of all goods and services produced in a region. GDP includes all payments made to labor, returns to ownership, and indirect tax payments. Real change in GDP over time is used to monitor the economic performance of a region or industry.

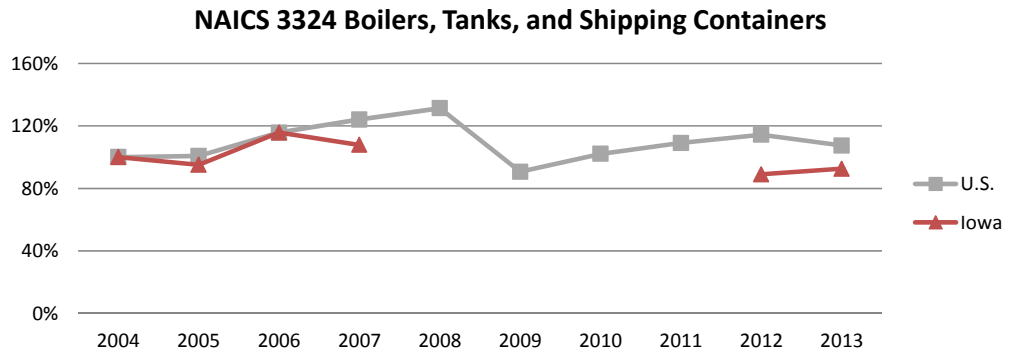
REAL GDP BY INDUSTRY

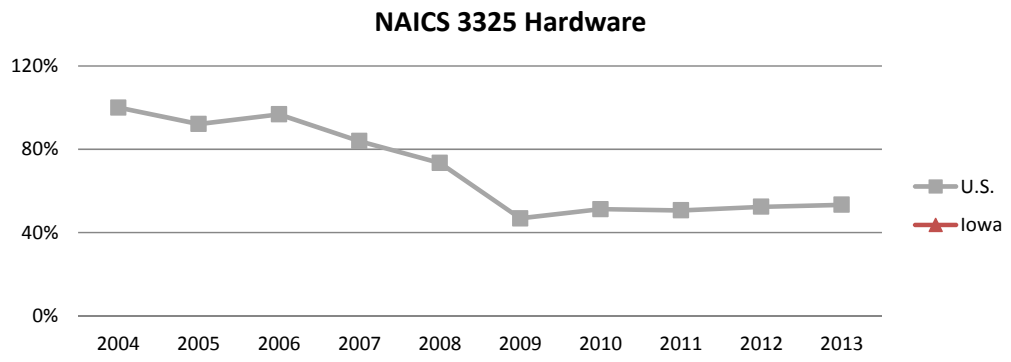
At the industry level, GDP measures the contribution of labor and capital toward the industry's gross output. Also referred to as value added, GDP is roughly equivalent to an industry's sales and other operating income less the value of intermediate inputs of goods and services purchased from other industries. Figure 10 shows trends in real GDP in fabricated metals manufacturing and its component industries. Values are indexed to a base year of 2004.

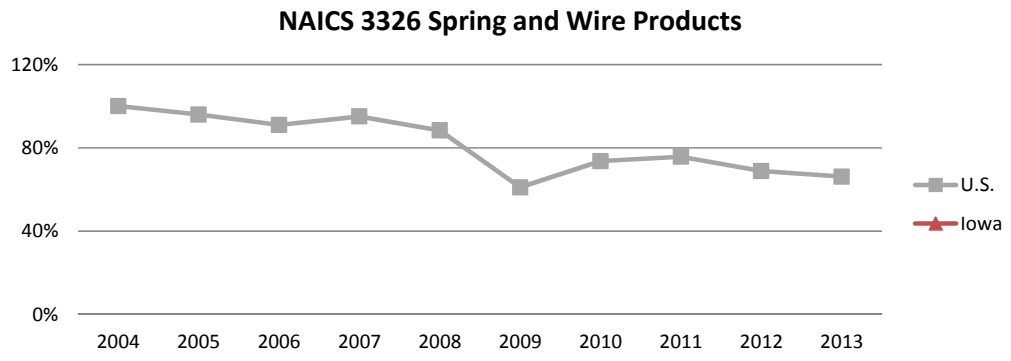
FIGURE 10. INDEX OF REAL GDP

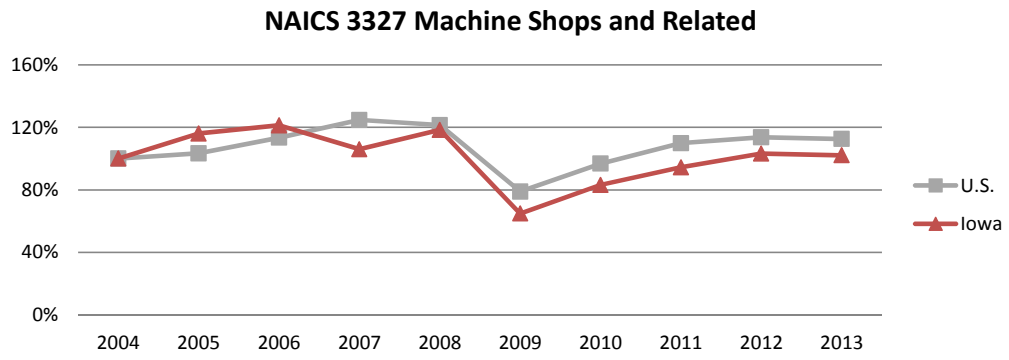


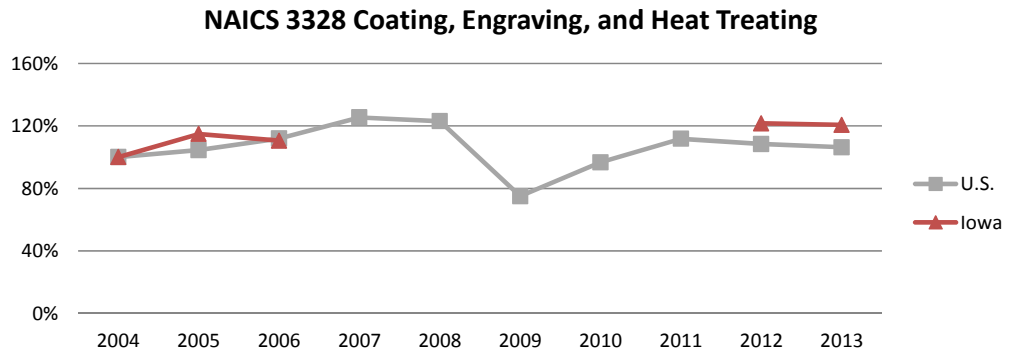

NAICS 3323 Architectural and Structural Metals
200%
160%
120%
80%
40%
0%
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
U.S.
Iowa

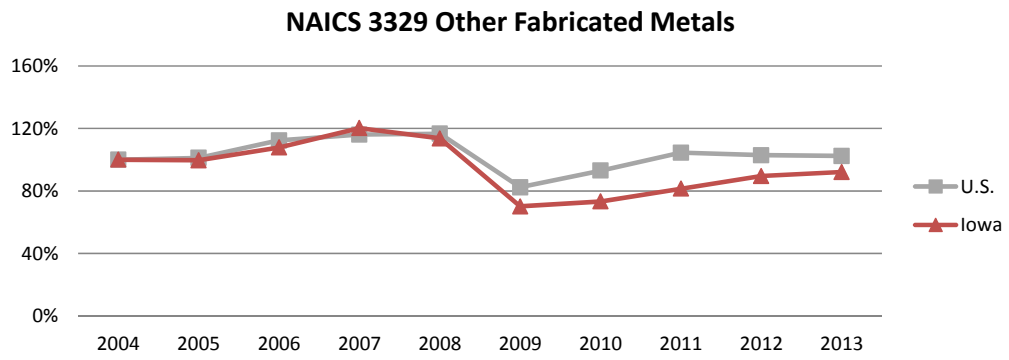

NAICS 3324 Boilers, Tanks, and Shipping Containers
160%
120%
80%
40%
0%
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
U.S.
Iowa


NAICS 3325 Hardware
120%
80%
40%
0%
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
U.S.
Iowa


NAICS 3326 Spring and Wire Products
120%
80%
40%
0%
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
U.S.
Iowa





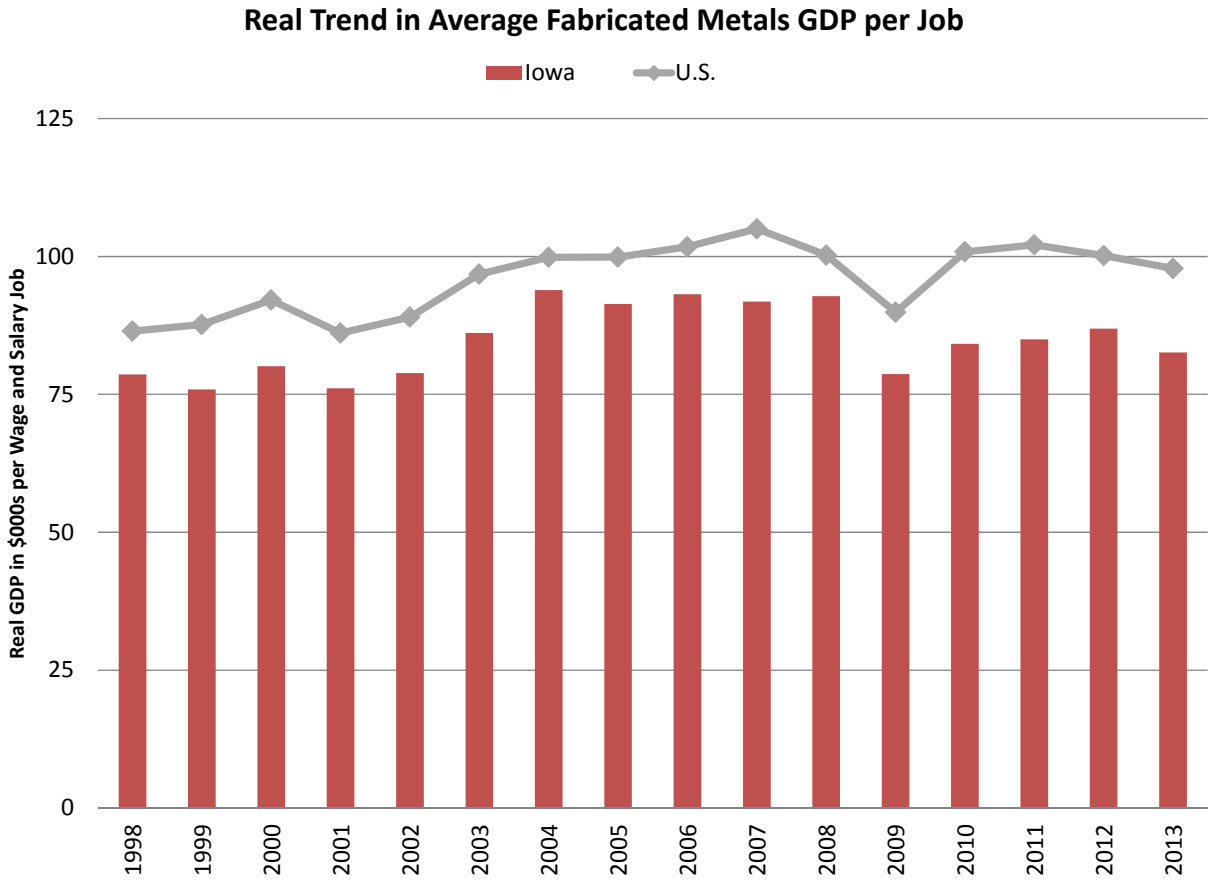


Average GDP per Job

Standardizing real GDP on a per job basis provides an indirect measure of an industry's productivity over time. Growth in real GDP per job may result from numerous sources including production efficiency gains, increased firm or industry profitability, or adoption of more capital-intensive production processes. Declining GDP per job ratios may indicate falling worker productivity levels or market conditions that contribute to lower firm or industry profitability. Rapid declines in an industry's GDP per job ratio may signal impending workforce reductions.

Figure 11 shows recent Iowa and U.S. trends in real average GDP per job in the fabricated metals manufacturing subsector. The U.S. GDP per job ratio has remained relatively flat since 1998, with slightly higher values from 2004-8, compared to 2009-13. Iowa's real GDP per job ratio has consistently trailed the national average with values usually ranging between 85-95 percent of U.S. levels.

FIGURE 11


Real Trend in Average Fabricated Metals GDP per Job
Iowa
U.S.
Real GDP in $000s per Wage and Salary Job
125
100
75
50
25
0
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013

EXPORT SALES

U.S. MACHINERY EXPORTS

Export sales account for 17 percent of the total sales of U.S. machinery manufacturing industries. In all other manufacturing subsectors, foreign exports account for an average of 16 percent of sales.

Figure 12 shows export shares of total output by detailed fabricated metals manufacturing industry in 2012. Hardware and cutlery and handtool manufacturing had the highest percentage of their sales to foreign markets at 38 percent and 35 percent, respectively. Forging and stamping and architectural and structural metals industries had the lowest fraction of sales to foreign exports.

By dollar value of export sales, architectural and structural metals account for the largest fraction of U.S. fabricated metals exports. Machine shops and related products are the second largest category of exports by dollar value. Figure 13 shows the dollar value of U.S. fabricated metals exports by industry group in 2012.

The real value of U.S. machinery exports has grown by 64 percent since 2004. Exports of products within the other fabricated metals industry group drove much of the recent growth, accounting for 59 percent of fabricated metals export growth from 2004-2014. Boilers, tanks, and shipping containers explain 13 percent of the growth.

FIGURE 12

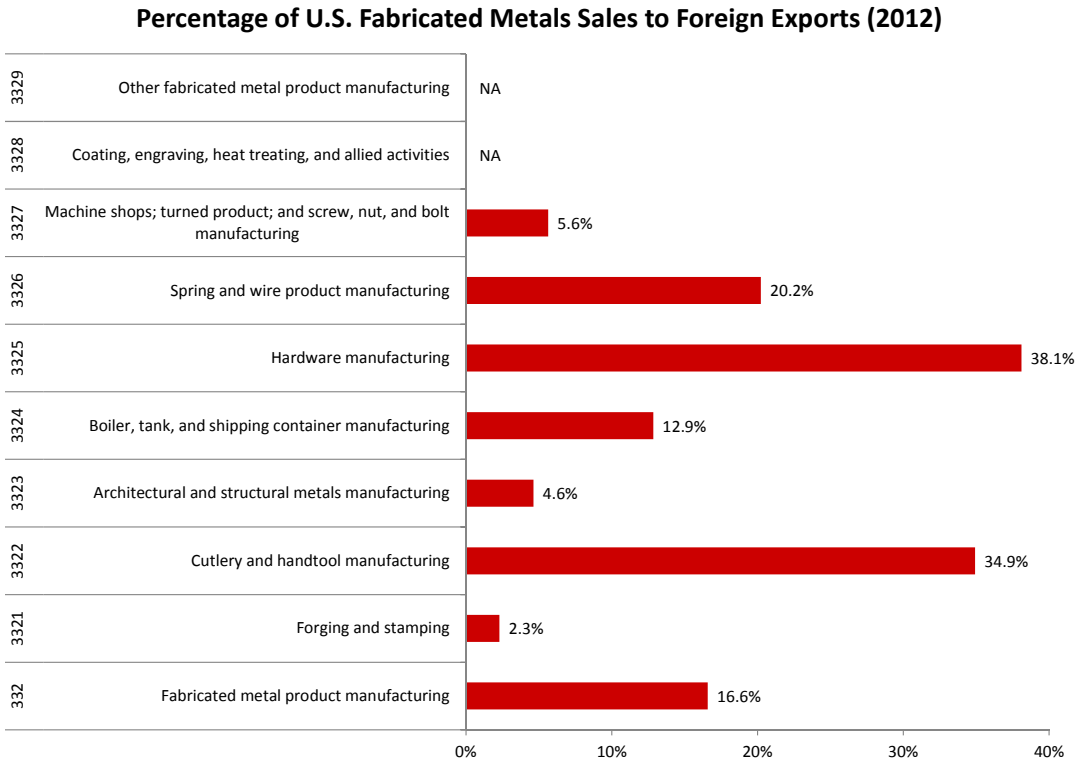
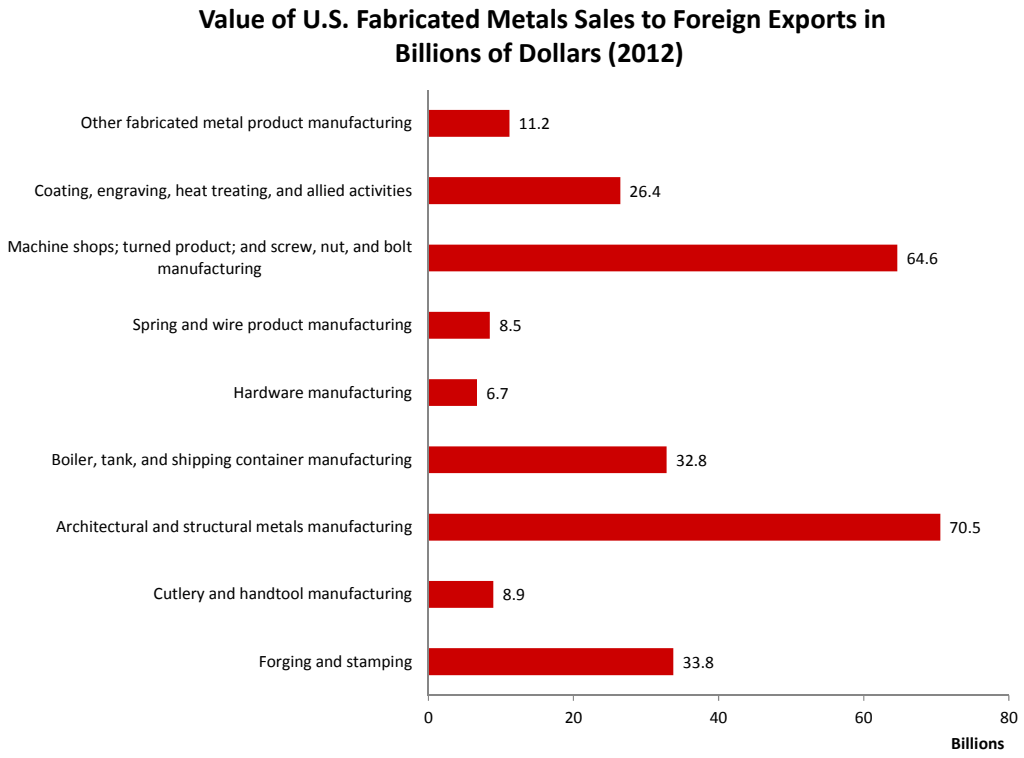


FIGURE 13. U.S. MACHINERY MANUFACTURING EXPORTS BY TYPE, IN BILLIONS OF DOLLARS



IOWA EXPORTS

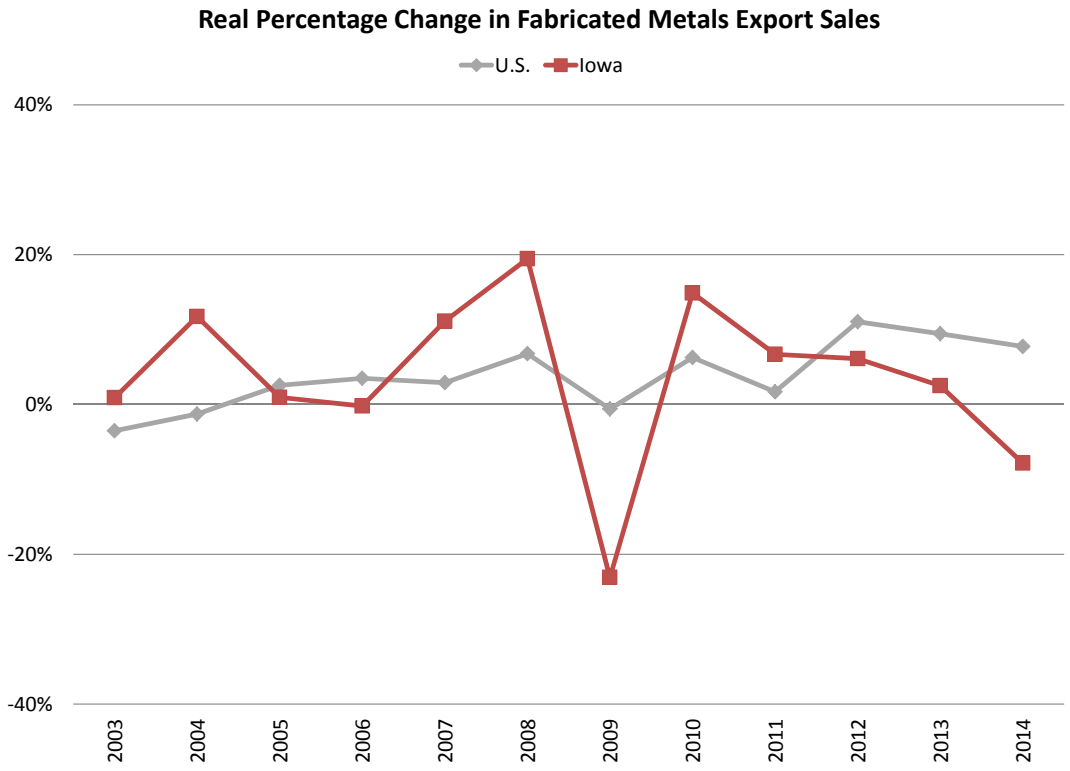
Iowa produced 0.7 percent of the fabricated metals products exported from the United States in 2014. The state's share of U.S. export sales has generally hovered near the one percent mark since 2002. Architectural and structural metals manufacturing is Iowa's strongest export industry within the subsector, accounting for 1.9 percent of U.S. exports.

Figure 14 compares real annual percentage growth in the value of Iowa and U.S. fabricated metals exports. Real export sales from the U.S. have grown steadily since 2004, other than a slight decline of less than one percent in 2009. Iowa experienced a much sharper decline in 2009, and has seen slower growth than the U.S. since 2012. In 2014, Iowa's $357 million in machinery exports were down 8 percent from their most recent inflation-adjusted peak in 2013.

IOWA'S TRADING PARTNERS

The top trading partners for Iowa's fabricated metals exports in 2014 included Canada, Mexico, and Brazil. China, Germany, the United Kingdom, Saudi Arabia, South Korea, Japan, and Denmark rounded out the top ten.

FIGURE 14


Real Percentage Change in Fabricated Metals Export Sales
U.S.
Iowa
40%
20%
0%
-20%
-40%
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014

OCCUPATIONAL PROFILE

About 61 percent of food and beverage jobs are in production occupations. Transportation and material moving occupations are 13 percent, and a combined 10 percent of jobs are associated with office and administrative support and management. Though not shown in detail, a scant .8 percent of the jobs are engineering or related positions. Figure 15 shows the distribution of fabricated metal employment by major occupational group in 2014. Table 1 shows, for the slice that is production workers, the major occupations in that subset of food and beverage manufacturing jobs. Food processing jobs, slaughterers and packers, along with cutters and trimmers are the dominant occupations

FIGURE 15.

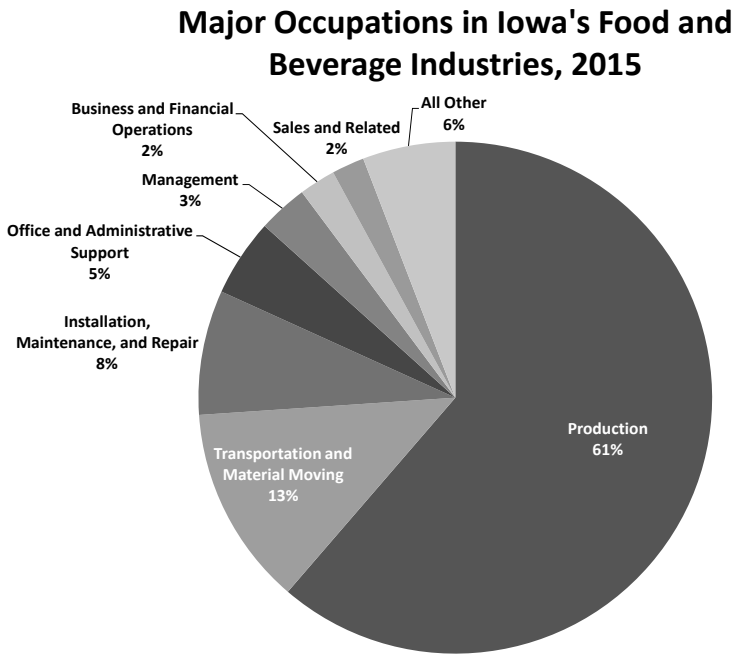


TABLE 1

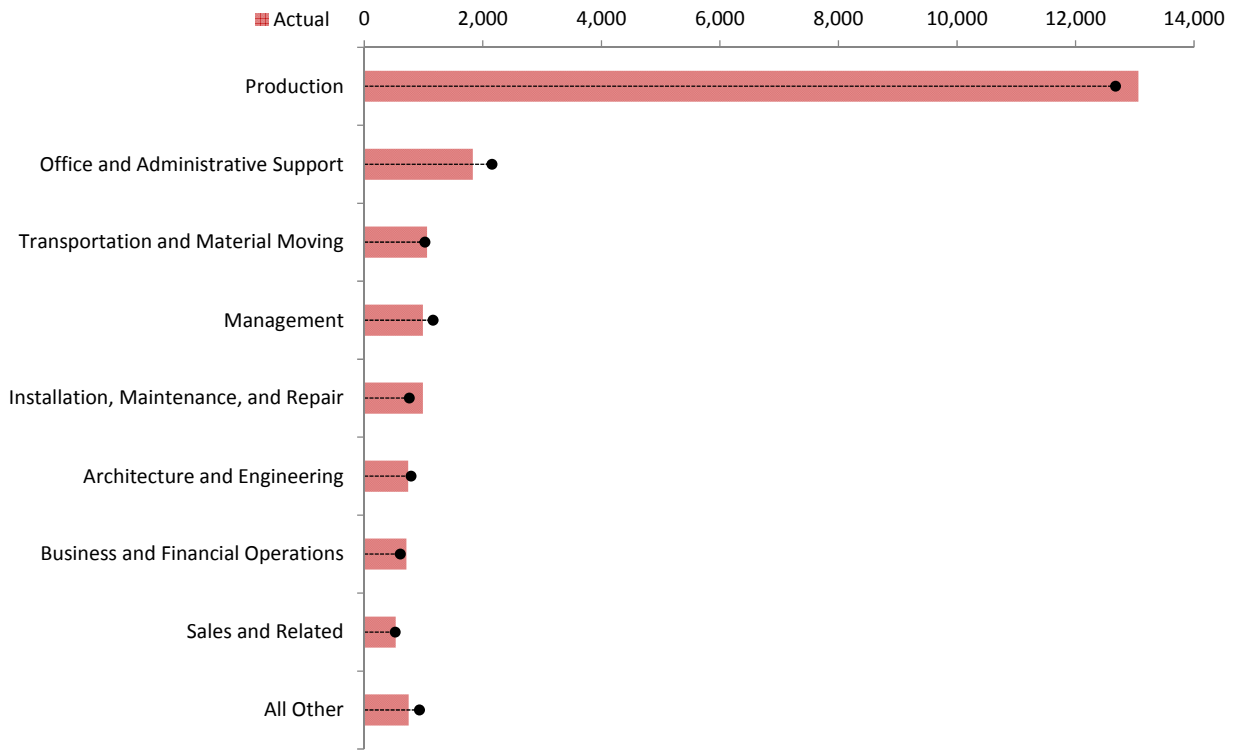
Production Occupations by Major Category in 2015

Food Processing Workers, All Other	5,690
Slaughterers and Meat Packers	5,000
Meat, Poultry, and Fish Cutters and Trimmers	4,130
Packaging and Filling Machine Operators and Tenders	3,390
Food Batchmakers	2,760
First-Line Supervisors of Production and Operating Workers	1,610
Helpers--Production Workers	1,330
Inspectors, Testers, Sorters, Samplers, and Weighers	1,190
Mixing and Blending Machine Setters, Operators, and Tenders	1,170
All Others	5,880
All Production Workers	32,150

Figure 16 displays the broad occupational distribution for the state of Iowa. It also, using national staffing patterns to predict expected occupations, displays how Iowa deviates from the U.S. food and beverage industry occupational distributions. Overall, Iowa has significantly more workers than would be expected in production jobs, but the state has many fewer than would be expected in office and administrative support, management, architecture and engineering, and in the all-encompassing all other category.

FIGURE 16

Actual and Expected Occupational Staffing (Based on National Averages) for Iowa Fabricated Metals Manufacturing, 2014



RESEARCH AND DEVELOPMENT

R&D SPENDING

Only 12 percent of U.S. fabricated metals manufacturing firms pursued R&D activities in 2010. The R&D engagement rate for the manufacturing sector as a whole was 23 percent. Spending by R&D performers within the U.S. fabricated metals subsector averaged $0.6 million per firm for worldwide R&D efforts. In 2011, R&D spending by active performers was equivalent to 1.3 percent of worldwide sales.

Iowa's fabricated metals firms account for about one penny of every dollar spent on R&D in the manufacturing sector. Nationally, the fabricated metals subsector's share of manufacturing R&D is also one percent.

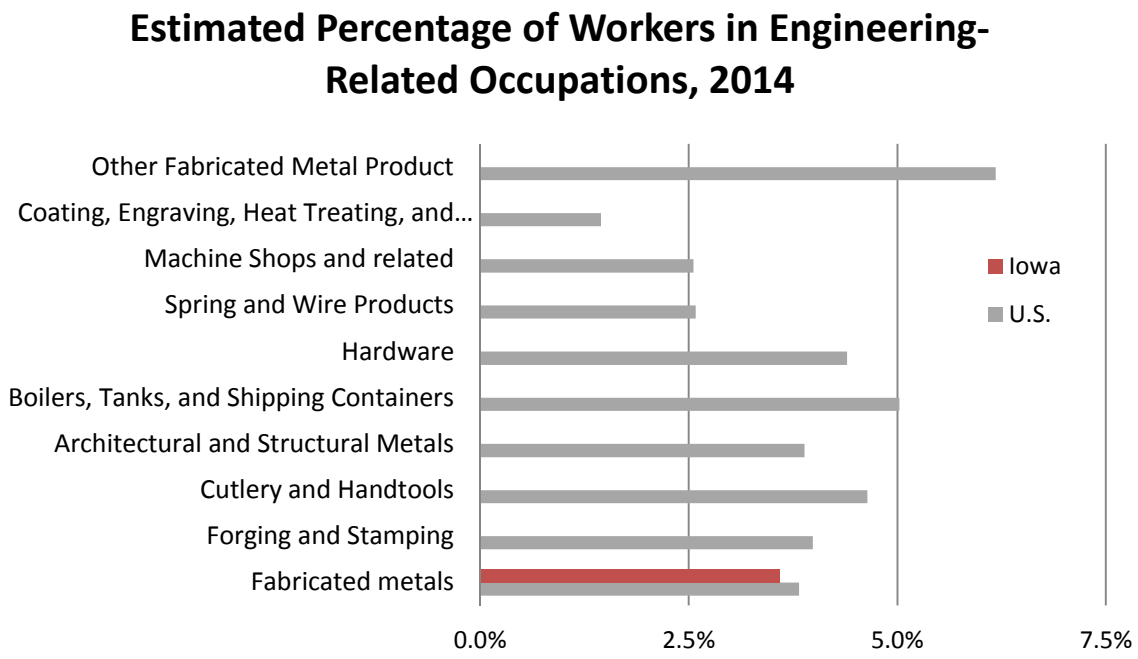
PATENTING ACTIVITY

Patenting activity provides one of the few available measures for monitoring R&D level by industry within states. According to data from the U.S. Patent and Trademark Office, 223 fabricated metals manufacturing-related utility patents originated from Iowa during 2008-2012. These patents accounted for 1.1 percent of the national total. When standardized by number of firms in the industry, Iowa's fabricated metals-related patenting efforts rank 26th among all states. Iowa originates an average of one patent per every 14 fabricated metals firms per year. Leading states on this measure include Maryland, Delaware, and Arizona.

RESEARCH STAFF

Staffing levels of engineering-related workers provide another indirect measure of R&D intensity within a state's industries. Among U.S. fabricated metals companies with R&D efforts, an average of five percent of their domestic workforce is involved in the R&D activities. That five percent includes scientists and engineers and their managers, technicians and technologists, and clerical and other support staff for R&D programs. Research estimates produced by the U.S. Bureau of Labor Statistics suggest that Iowa slightly lags the national average in its percentage of engineering-related workers in fabricated metals manufacturing. In Iowa, engineers and engineering technicians account for an estimated 3.6 percent of all fabricated metals subsector workers. The U.S. average for the industry is 3.8 percent. Figure 171 shows the estimated U.S. and Iowa percentages for the subsector as a whole and U.S. estimates for individual fabricated metals industries.

FIGURE 17


Estimated Percentage of Workers in Engineering-Related Occupations, 2014
Other Fabricated Metal Product
Coating, Engraving, Heat Treating, and…
Machine Shops and related
Spring and Wire Products
Hardware
Boilers, Tanks, and Shipping Containers
Architectural and Structural Metals
Cutlery and Handtools
Forging and Stamping
Fabricated metals
Iowa
U.S.
0.0%
2.5%
5.0%
7.5%

BACKWARD AND FORWARD INDUSTRIAL LINKAGES

BACKWARD LINKAGES: AMOUNTS

Iowa's food and beverage manufacturers require Iowa-supplied manufactured inputs, and they make sales to Iowa manufacturers. As is the intrinsic nature of food and beverage manufacturing, these industries also make extensive purchases from the state's agriculture sector. These relationships are estimated using an input-output model of the entire state economy, which accounts for all production related transactions among all industries and other economic institutions in the state. Table 2 provides an estimate of the backward or supply chain linkages the food and beverage industry relies on in Iowa. More than $9.7 billion in inputs were required from Iowa ag sources in 2014. That compares to $2.8 billion in input purchases from other Iowa manufacturers. The higher amounts of input purchases were processed oilseeds, milled corn, nonpoultry animals, processed meat carcasses. Twelve of the seventeen top manufactured inputs were food and beverage manufacturing industries.

TABLE 2

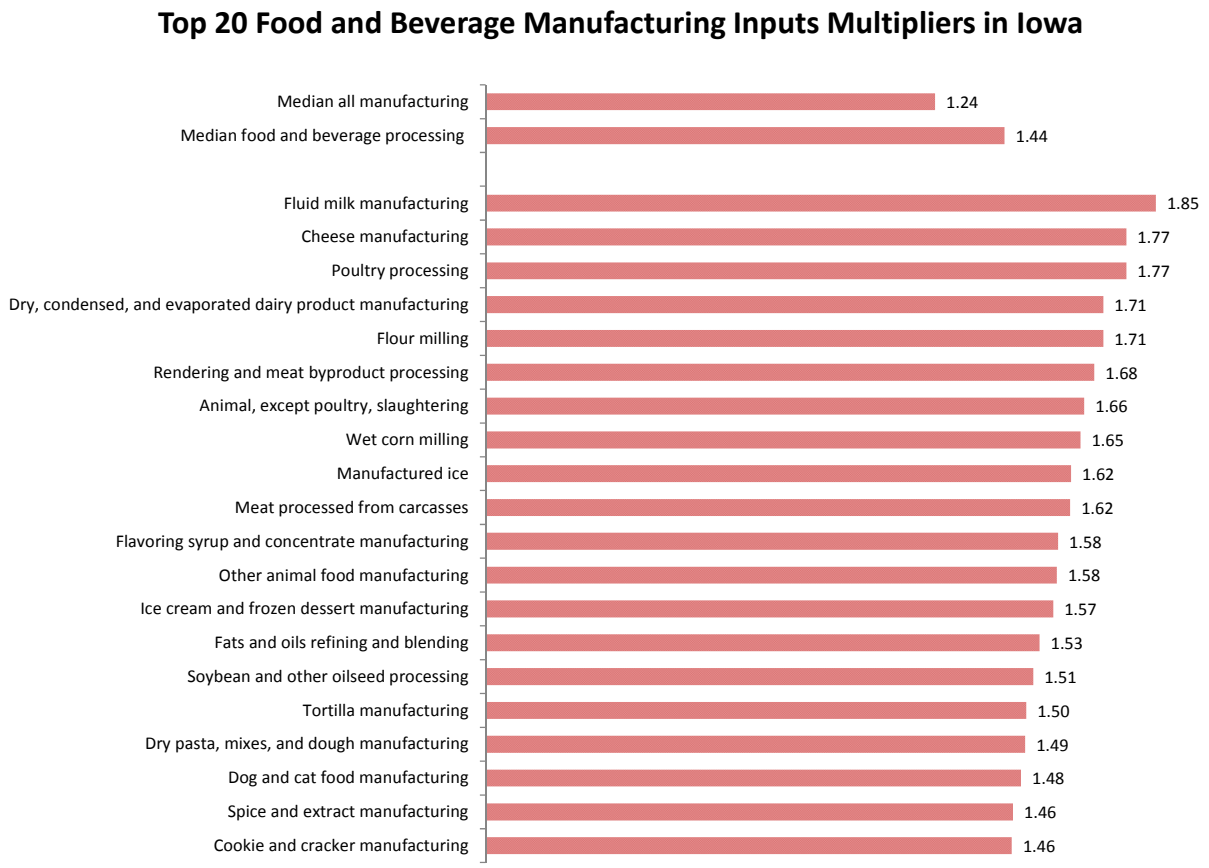
Food and Beverage Manufacturer Estimated Purchases from Iowa Agriculture and Manufacturer Sources, 2014 ($ Amounts in Millions)

Ag animals	7,053.5
Ag crops	2,675.0
Total agriculture-based inputs	$ 9,728.5
Soybean and other oilseed processing	596.6
Wet corn milling	546.0
Animal, except poultry, slaughtering	503.2
Meat processed from carcasses	289.3
Flour milling	182.4
Paperboard container manufacturing	116.0
Fluid milk manufacturing	104.4
Poultry processing	70.5
Dry, condensed, and evaporated dairy product manufacturing	67.6
Paper bag and coated and treated paper manufacturing	37.1
Flavoring syrup and concentrate manufacturing	34.9
Metal cans manufacturing	30.9
Other animal food manufacturing	29.0
Medicinal and botanical manufacturing	23.2
Plastics bottle manufacturing	22.6
Cheese manufacturing	14.6
Fats and oils refining and blending	10.9
All other manufacturing	125.9
Total manufacturing inputs	$ 2,805

BACKWARD LINKAGES: MULTIPLIERS

Inter-industrial modeling systems allow us to compile an indexed value of industrial reliance on in-state suppliers for manufactured goods and other services. This index is called an inputs multiplier, and it describes the relationship an industry has with the rest of the state's manufacturing and nonmanufacturing inputs suppliers. The median inputs multiplier in Iowa for manufacturing firms was 1.24 in 2014. That value means this: for every $1 of total production input expenditures, the median Iowa manufacturing firm required $.24 worth of input supplies from some other Iowa industry. Figure 18 displays the multipliers for the fabricated metal industrial categories in the input-output modeling system for Iowa. Food and beverage multipliers are much higher than the overall manufacturing average because of Iowa based feedstocks as well as robust inter-industry purchases. Pictured are the 20 subsectors with values in excess of the median value for all food and beverage processing of 1.44. Fluid milk, cheese, and poultry processing had the highest multipliers.

FIGURE 18



FORWARD LINKAGES

Iowa's food and beverage manufacturers have forward linkages within the Iowa economy and outside of the Iowa economy. Table 3 shows, by broad category, which sectors of the Iowa and external economies receive the $45.2 billion in food and beverage manufactured goods produced in Iowa. Firstly, the vast majority, 87 percent or $39.3 billion), of food and beverage products are sold to the rest of the country or to the rest of the world as export sales. Other food and beverage manufacturers buy 5.5 percent, followed by households at 3.5 percent, and agriculture at 2.5 percent.

TABLE 3

The Distribution of Iowa Food and Beverage Industry Sales, 2014

	Amount of Sales ($Millions)	Percent of Total
Domestic and Foreign Exports	39,316.5	87.0%
Sales Within Iowa		
Food and Beverage Manufacturers	2,505.6	5.5%
Households	1,588.7	3.5%
Agriculture	1,116.4	2.5%
All Other	259.9	0.6%
Dining and Drinking	204.4	0.5%
Governments	102.5	0.2%
Other Manufacturing	75.1	0.2%
Trade*	10.9	0.02%
Total Food and Beverage Industry Sales	$ 45,180.2	100.0%

* Trade values do not include food or beverage products that are subsequently resold to households or to government institutions.

KEY DATA SOURCES

International Trade Administration, U.S. Department of Commerce

Science and Engineering Indicators, National Science Foundation

U.S. Bureau of Economic Analysis

U.S. Bureau of Labor Statistics

U.S. Census Bureau

U.S. Patent and Trademark Office

2014 Input-output model of the Iowa economy