Idaho Manufacturing Sector Supply Chain Study

A Two-Part Study of the Idaho Manufacturing Sector Supply Chain

Idaho Manufacturing Alliance

Idaho Manufacturing Sector Supply Chain Study

TWO PART STUDY:

PART I

MANUFACTURING SUPPLY CHAIN INTERVIEW AND SURVEY RESULTS

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PART II

ANALYSIS OF THE IDAHO MANUFACTURING SUPPLY CHAIN

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Idaho Manufacturing Alliance

The Manufacturing Supply Chain: Interview & Survey Results

A Two-Part Study of the Idaho Manufacturing Sector Supply Chain

Idaho Manufacturing Alliance

Introduction

This study is part of a project to evaluate manufacturing supply chain efficiencies in Idaho and the potential to increase supply chain development at state and regional levels. The purpose of this project is to help manufactures, regulators, agencies, and other stakeholders identify and understand opportunities, needs, barriers, and other issues affecting the growth and resiliency of Idaho's manufacturing sector.

This report summarizes the results of interviews and a survey of Idaho manufacturers conducted by Arrowleaf Consulting. The results of the economic and secondary data analyses conducted by Steve Peterson and Tim Nadreau are available as a companion report.

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INTERVIEW AND SURVEY RESULTS

Executive Summary

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December 2022 – June 2023

15 Interviews

19 Interviewees

107

Idaho manufacturers surveyed

LOCAL AND REGIONAL SUPPLY CHAINS

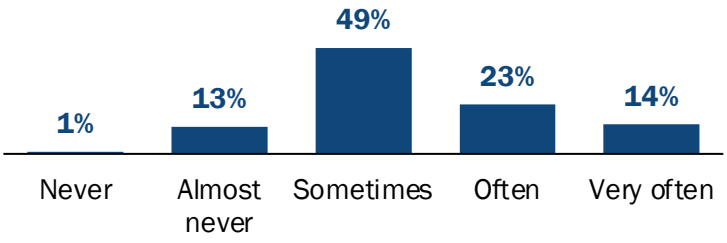
Interview results suggest Idaho manufacturers are motivated to source materials and services locally and that there is already supply chain collaboration from which to build.

Nearly all interviewees are already sourcing inputs, providing services to, and selling to customers in Idaho and the US Northwest.

96% of survey respondent businesses have suppliers in Idaho

However, **for 54%, only a quarter or less** of their suppliers are in the state.

49% of survey respondents source the inputs they need from other Idaho businesses at least sometimes.



The **biggest challenges** to sourcing inputs in Idaho for the greatest number of survey respondents were:

Availability ↓ **93%** of survey respondents

Price ↓ **75%** of survey respondents

Lead Time ↓ **72%** of survey respondents

Examples of inputs manufacturers said they already commonly source from other businesses in Idaho:

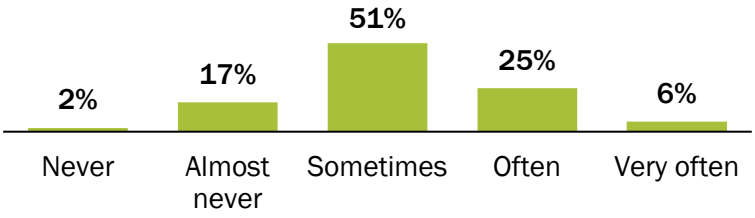
- Shop supplies and hardware
- Welding supplies
- Aluminum
- Steel
- Machined parts
- Sheet metal
- Logs and lumber
- Packaging

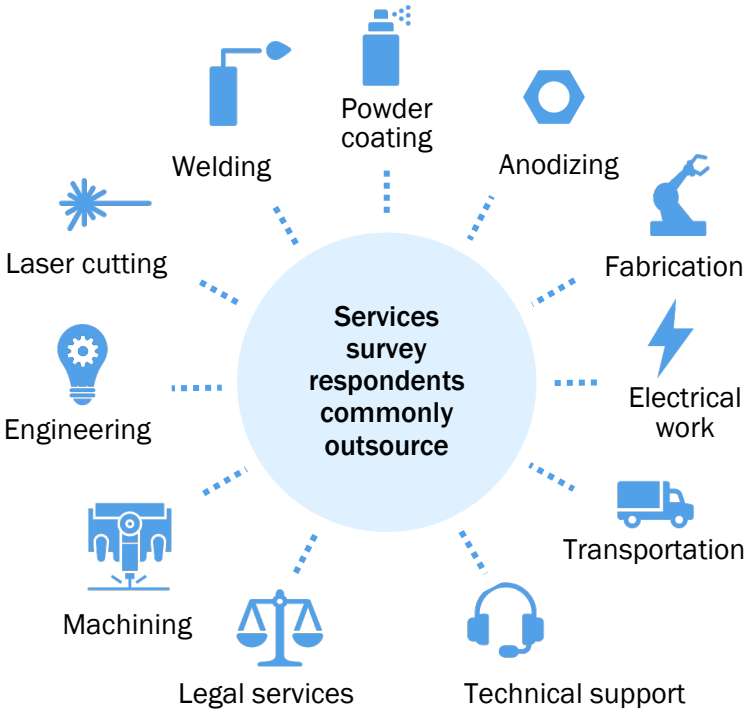
> **"I try to stick with Idaho companies.** And, when I can't, we go to other sources. We always try to start as close as possible. Literally starting across the street and then working out from there."
>
> *- Interview participant*

International supply chain disruptions and delays related to COVID-19, geopolitical conflicts and tensions, and chemical plant disasters, have led many manufacturer interviewees to seek closer-to-home supply options and increased willingness to pay more if it means getting needed inputs sooner and more reliably.

SERVICES

81% of survey respondents said their business hires another business to provide services at least sometimes:





NATIONAL AND INTERNATIONAL SUPPLY CHAINS

No survey respondents are completely sourcing their supplies from Idaho; however:

76% said 75% or more of their suppliers are in the United States.

66% said at least one of their suppliers is outside the United States.

CUSTOMERS

Of 107 survey respondent businesses...

94% have customers in Idaho.

100% have customers in the United States.

68% have customers outside the United States.

Interviewee businesses tended to have **customers concentrated in the US Northwest** region, especially if their product is heavy and expensive to transport.

Of the 31 respondent businesses who do not currently have customers outside of the United States, **42% expressed interest in selling products internationally**.

STABILITY AND RESILIENCE

Manufacturers who participated in the survey generally felt their business is in a strong position

80% of respondents grossed $1 million or more in 2022 (n=76)

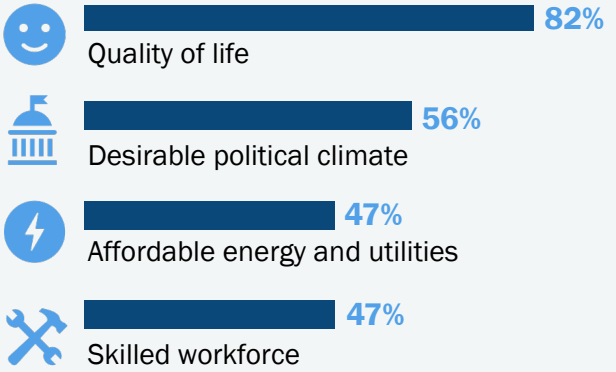
68% expect their company's gross revenue to increase in the next 12 months (n=76)

65% said all their employees work in Idaho

61% plan to increase their workforce* (n=77)

78% are "very unlikely" to move to a different state (n=76)

"Very important" factors to the largest proportion:



*Although challenges related to finding and retaining employees could be a complicating factor. If they can find workers, then they would create jobs.

STABILITY AND RESILIENCE (CONT.)

77% feel either "somewhat" or "very" prepared to survive supply chain disruptions like the COVID-19 pandemic caused

The COVID-19 pandemic prompted (n=58):

- **33%** to diversify suppliers
- **17%** to create a business continuity plan
- **17%** to update financial planning

CHALLENGES

Workforce challenges were among the most pressing issues facing study participants.

Participants considered the following to be a "large" or "moderate" challenge:

- **79%** Availability of skilled workers
- **76%** Cost of employee wages/benefits
- **71%** Recruiting employees
- **69%** Local cost of living for employees
- **64%** Local rent/housing prices
- **51%** Child care availability for employees

Availability and cost of needed inputs and shipping costs were also substantial challenges for many participants.

Participants considered the following to be a "large" or "moderate" challenge:

- Availability of needed inputs/supplies: **62%** (n=82)
- Cost of needed inputs/supplies: **63%** (n=82)
- Cost of shipping/ transportation: **63%** (n=83)

62% of survey respondents said Idaho business regulations are **not a challenge**.

Infrastructure

Survey respondents believed the following infrastructure improvements in their communities or in Idaho would help their businesses:

- Affordable housing
- Road improvement
- Workforce development
- Commercial and industrial space

OPPORTUNITIES AND SUGGESTIONS

Are there ways the Idaho Manufacturing Alliance, Idaho Department of Commerce, or Idaho Legislature could help address the barriers your company experiences?

- Provide opportunities for manufacturers to network, market their business, build supply chain relationships, and co-learn or troubleshoot challenges.
- Promote Idaho manufacturers and raise awareness of the manufacturing services and products available in the state.
- Promote and develop vocational and technical training programs statewide, including high school, college, and apprenticeship programs.
- Increase awareness of Idaho Manufacturing Alliance and Idaho Department of Commerce programs and services.
- Address affordable housing and child care challenges for the manufacturing workforce.
- The business or industrial park model is one strategy for supporting local supply chain collaboration.

Methods

Interviews and interviewee characteristics

The Idaho Manufacturing Alliance team provided us with the contact information for representatives of 20 Idaho manufacturing companies. We completed interviews with all representatives on the list who agreed to participate. We conducted 15 interviews involving 19 participants. We completed eight of the interviews in person at the Idaho Manufacturing Trade Show and Conference December 1st, 2022. We completed the final seven interviews by phone from December 2022 to February 2023. Interviews were audio recorded and transcribed with permission from participants and analyzed to identify key themes and topics using ATLAS.ti software.

Interviewees represented a range of manufacturers including aerospace components, computer chips, memory storage devices, 3D printing, electric generators and motors, electric assembly, solar power, metal finishing, water pumps, metal fabrication, water jet cutting, trailer manufacturing, pharmaceuticals, value-added food products, and knives. Nine of the manufacturers represented by interviewees are in southern Idaho, and six are in northern Idaho. The companies ranged from having one employee to 500 employees. One outlier reported their company has approximately 40,000 employees, most of whom are not in Idaho, and another has approximately 1,600 employes, 500 of whom work in Idaho.

Survey and respondent characteristics

After we analyzed the interviews with manufacturing company representatives, we used the results to inform development of a manufacturer survey aimed to increase the breadth of our data collection and to complement the in-depth interview data. We created the survey instrument in collaboration with partners from the Idaho Manufacturing Alliance and Idaho Department of Commerce. We conducted the survey from May through June 2023 using Qualtrics, a web-based survey platform. The Idaho Manufacturing Alliance and Idaho Department of Commerce sent requests to participate to their respective contact lists and the Idaho Manufacturing Alliance sent manufacturers several reminders asking them to participate. In all, 107 representatives of manufacturing businesses participated in the survey. Figure 1 shows respondents' location by zip code throughout the state, although only 75 of 107 (70%) provided their zip code. Table 1 reports the location of survey respondents for the zip codes that had more than one respondent. The largest number of survey respondents were clustered around Nampa, Boise, and Caldwell.

Figure 1 | Survey respondent businesses' zip codes by number of respondents (n=75)

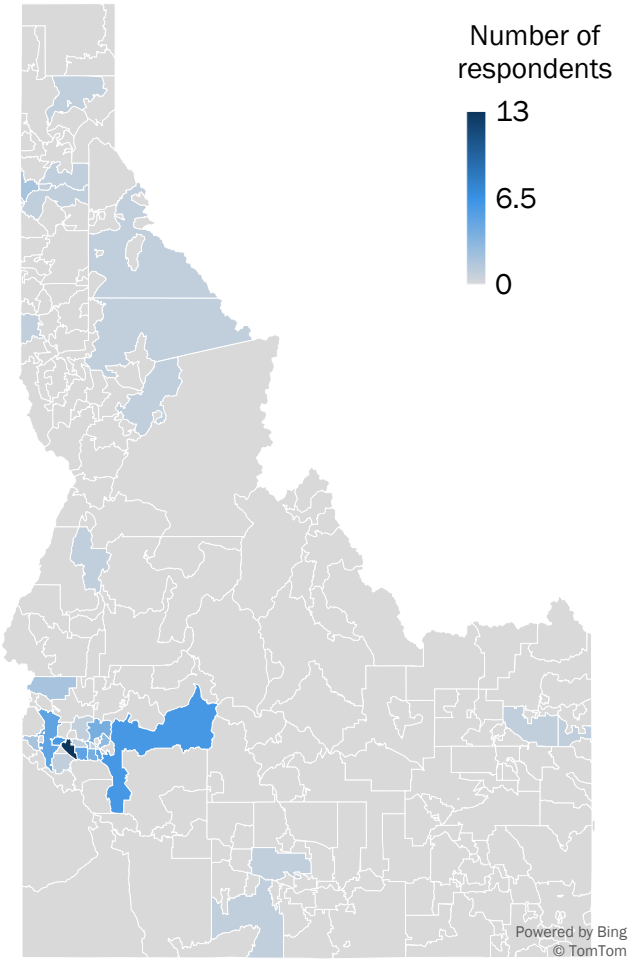


Table 1 | Location of survey respondents for the zip codes that had more than one respondent

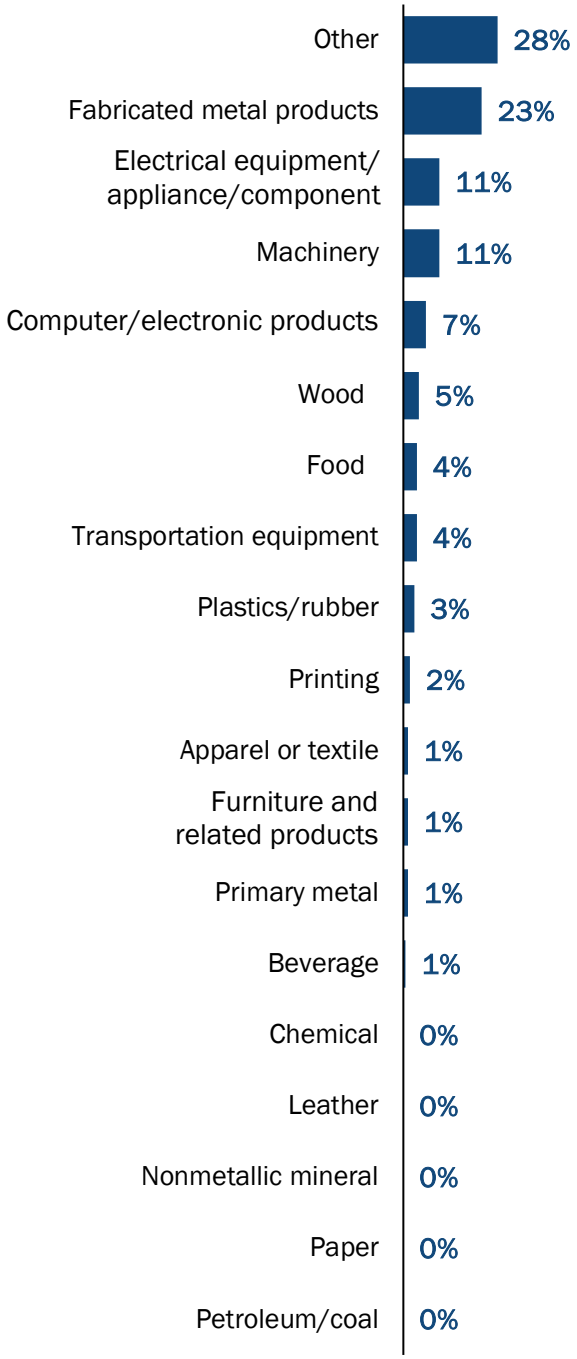
Zip code	City	Number of respondents
83687	Nampa	13
83605	Caldwell	6
83716	Boise	6
83607	Caldwell	5
83642	Meridian	5
83705	Boise	5
83709	Boise	4
83714	Garden City	4
83702	Boise	3
83713	Boise	3
83661	Payette	2
83676	Wilder	2
83854	Post Falls	2

As with interviewees, survey respondents represented a variety of manufacturing businesses (Figure 2). The largest percentage (23%) identified themselves as fabricators of metal products (n=107). Survey respondents could select all product types that applied to them and 28% included "other" as one of their selections. Those who specified the "other" types of products their businesses manufacture wrote in the following responses:

- Additive manufactured parts
- Aircraft lighting, aircraft light filters
- Anodizing
- Aviation lighting filters
- Biotechnology instrumentation and laboratory consumables
- Blockchain, distributed-ledger technology solutions
- Building materials
- Cabinets
- Chemical and gas process tools
- Custom CNC machined
- Electric and digitally printed signage
- Electronic components
- Firearms
- Housing
- Industrial robotic automation solutions
- Innovation company (inventors)
- LED lighting
- Lumber mill
- Metal finishing
- Non-metallic industrial tooling (composite tooling)
- Outdoor recreational toys
- Packaging
- Packaging services
- Pedestrian crosswalks
- Pharmaceuticals
- Pump stations
- Pumps
- Recreational technology
- Recycled metals
- Robotic cells
- Scientific equipment
- Showers
- Sign manufacturer
- Ski lifts
- Special coating
- Sporting goods
- Supply chain technology for manufacturers
- Tooling
- Tungsten disulfide
- Water filters
- Wood trusses

The survey also asked respondents to list the primary products or services their business provides, the answers of which are available in Appendix A.

Figure 2 | Type of products survey respondent businesses manufacture (respondents could select all responses that applied to them) (n=107)



The survey asked respondents to provide 1-3 of their businesses' North American Industrial Classification (NAIC) codes if they knew them. Thirty-six respondents provided NAIC codes, which are listed in Table 2. Machine Shops, NAIC code 332710, was the most common with seven respondents listing it.

Table 2 | Survey respondent businesses' North American Industrial Classification (NAIC) codes (n=36)

NAIC codes listed	Number of survey respondents
332710[a]	7
333911[b]	2
339950[c]	2
326	1
311920	1
322211	1
332211	1
332813	1
333120	1
333314	1
333511	1
333515	1
333998	1
333999	1
334413	1
334519	1
335122	1
336212	1
336413	1
337110	1
339900	1
339920	1
323100, 323120, 323111*	1
332710, 332721*	1
3599, 332710*	1
541613, 541614, 541330*	1
541715, 541330, 339999*	1
334000, 334111, 334419*	1

[a] Machine Shops
[b] Pump and Pumping Equipment Manufacturing
[c] Sign Manufacturing
* Unique combination listed by a survey respondent.

Respondents tended to be owners, executive suite, or management level (Figure 3). Those who specified "other" wrote in "Board Member," "Buyer," "Management Support," "P.I.C.," "Sales and Marketing," and "Team Member."

Figure 3 | How survey respondents would categorize their position in the business (they could select all that applied) (n=77)

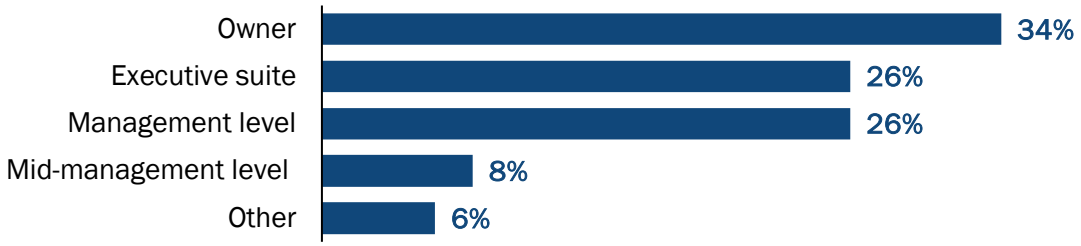
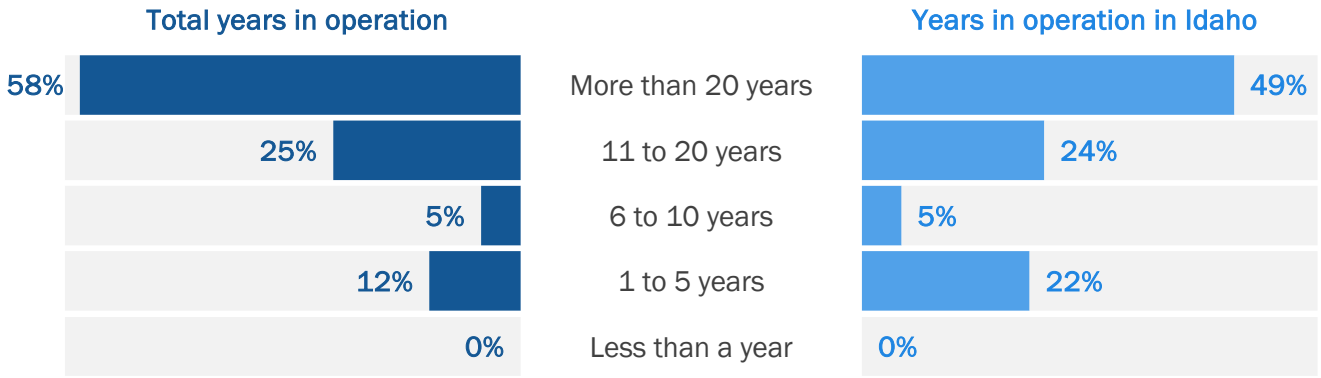


Figure 4 compares the total number of years respondent businesses have been in operation to the number of years they have been in operation in Idaho specifically. Most have operated in Idaho for as long as they have been in business. Roughly half of respondent businesses have been in operation for more than 20 years.

Figure 4 | Number of years respondents' businesses have been in operation overall and in Idaho specifically (n=76)



Eighty percent of respondent businesses grossed $1 million or more in 2022 (n=76) (Figure 5). The largest proportion (43%) grossed $1 million to $9.9 million in 2022. Sixty-eight percent of survey respondents expect their company's gross revenue to increase in the next 12 months (n=76) (Figure 6).

Figure 5 | Survey respondent businesses' gross revenue in 2022, by percent of respondents (n=76)

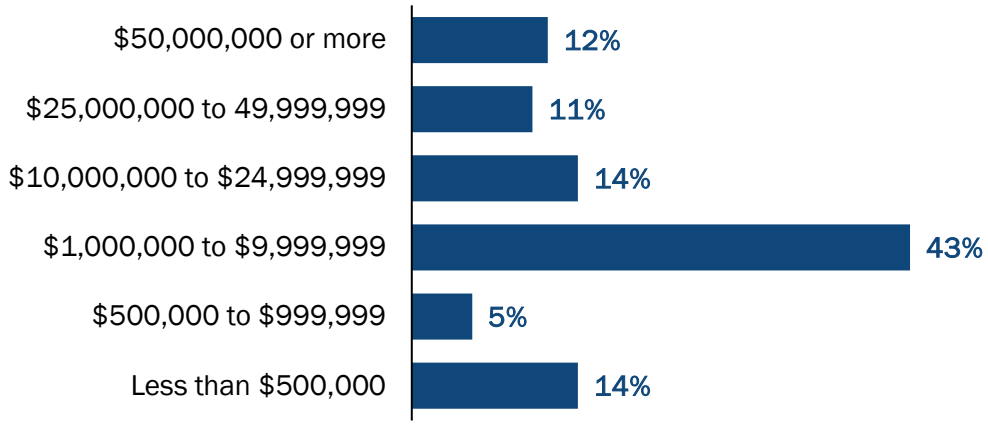


Figure 6 | Sixty-eight percent of survey respondents expect their company's **gross revenue** to increase in the next 12 months (n=76)

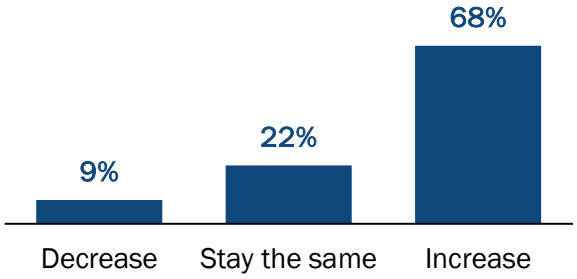


Figure 7 shows the number of people employed by respondent businesses, including owners. Ninety-six percent of respondent businesses have less than 500 employees, 75% have less than 100 employees, and 60% have less than 50 employees (n=77). Sixty-five percent of respondents said all their employees work in Idaho (Figure 8) and 61% said they plan to increase their workforce in the next 12 months (Figure 9).

Figure 7 | Including owners, number of employees survey respondents' businesses have, percent of respondents (n=77)

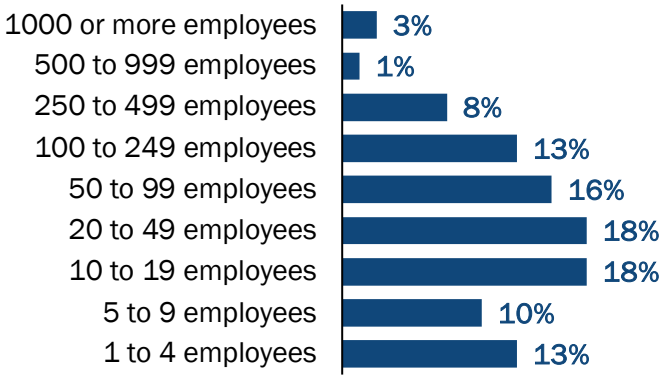


Figure 8 | Percentage of respondents' companies' employees that work in Idaho. Sixty-five percent of respondents said all their employees work in Idaho (n=77).

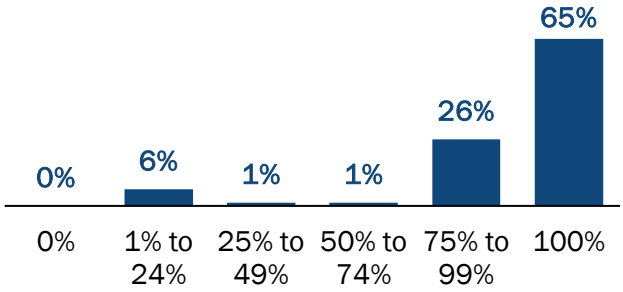
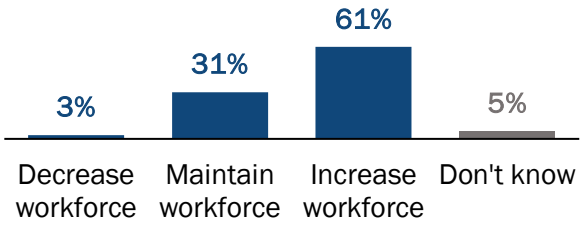


Figure 9 | Sixty-one percent of respondents said their company plans to **increase its workforce** in the next 12 months (n=77)



Customer type and location

We asked interviewees to describe who and where their customers are. Of course, the answers to these questions varied widely by business. Some sell to national and international markets and, due to the nature of their products, only a small (if any) portion of their product goes to buyers in Idaho or the US Northwest. For example, one interviewee whose company fell into this category said, "We make components that people use to make computer chips. We have a wide variety of customers who want very specific products. From phones to computers, etcetera—all kinds of chips." Some interviewees had government contracts, such as with the US Department of Defense.

Most companies represented in the interviews have a large proportion of customers in Idaho and the Northwest region. For example, manufacturers who work with heavy materials such as steel are more likely to have a smaller geographic customer radius due to practicalities such as transportation economics:

> *We will occasionally send some stuff out of state, and there's been more of that lately. The issue there, though, most of the time, is that steel's heavy. And so, we take a flat piece of steel, we laser cut it, we bend it. Now, all of a sudden, the part kind of gets bigger, so then you start dealing with shipping issues. So, to compete with somebody in Portland that has the same equipment set that I have, once you deal with all the issues of shipping it down the road and all that, it's hard for me to compete, and vice versa. It's hard for them to compete with me in the [Magic] Valley as well. So that metal work stuff, there are some big guys out there that just ship all*

over the country, but you tend to have a little bit more of a regional customer base.

The majority of interviewees described a concentration of customers in proximity to where the manufacturing of the product is with increasingly fewer customers as they get farther away. That is, most interviewees' companies are selling their products and services primarily within Idaho and adjoining states. Here are excerpts from three different interviews to illustrate what interviewees said in this theme:

> *The majority of [our customers] are local. We only have a couple that we source out to. We focus on the Pacific Northwest, so Utah is a big focus for us, Reno is a good one, Washington also is one, but Salt Lake really is the main focus, except for Idaho. Idaho obviously is probably 75% of our business, I would think.*

> *Speaker 1: In general, [our customers are] all in the [Magic] Valley, but not all of them. [But] there's a lot. Most of them are in the Valley and then we'd branch out to Mountain Home, Twin Falls.*
> *Speaker 2: Northern Utah, Montana.*
> *Speaker 1: And then we're branching out and up to Washington.*
> *Speaker 2: Regional, Northwest.*
> *Speaker 1: We got a few things that come to us from the Midwest area probably, but most of it's right around…the Northwest.*
> *Speaker 2: So, I'd say 85% is within a hundred miles.*

> *I would say on the component side [of our business] probably 80% of our customers are in the region. On our [other product] side, probably 60% of our customers are in this region, and then the rest are around the country. We sell our [other product] to numerous places in Florida, and Texas, and Michigan, South Carolina, all over the country. And even, we're starting to cross borders into Canada now.*

We also asked survey respondents where their customers are. All survey respondent businesses have customers in the United States, 94% have customers in Idaho, and 68% have customers outside the United States (n=107). No survey respondents said their customers are exclusively international (outside the country). Figures 10-12 show the percentage of customers in Idaho, in the United States, and internationally by percentage of respondents. Figure 13 shows the same data side by side by number of respondents.

Figure 10 | Percentage of respondent businesses' customers that are in **Idaho** (n=107)

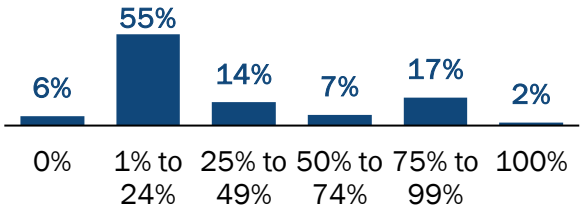


Figure 11 | Percentage of respondent businesses' customers that are in the **United States** (n=107)

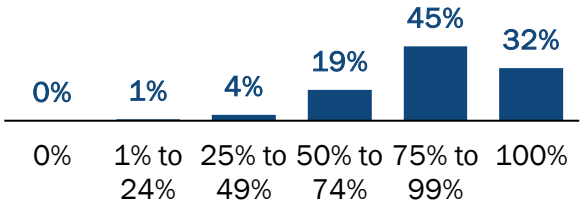
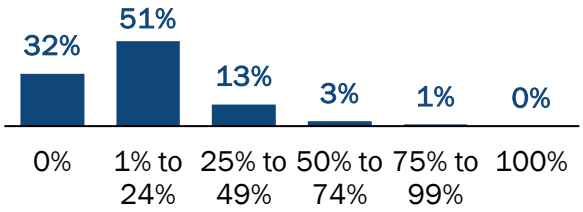
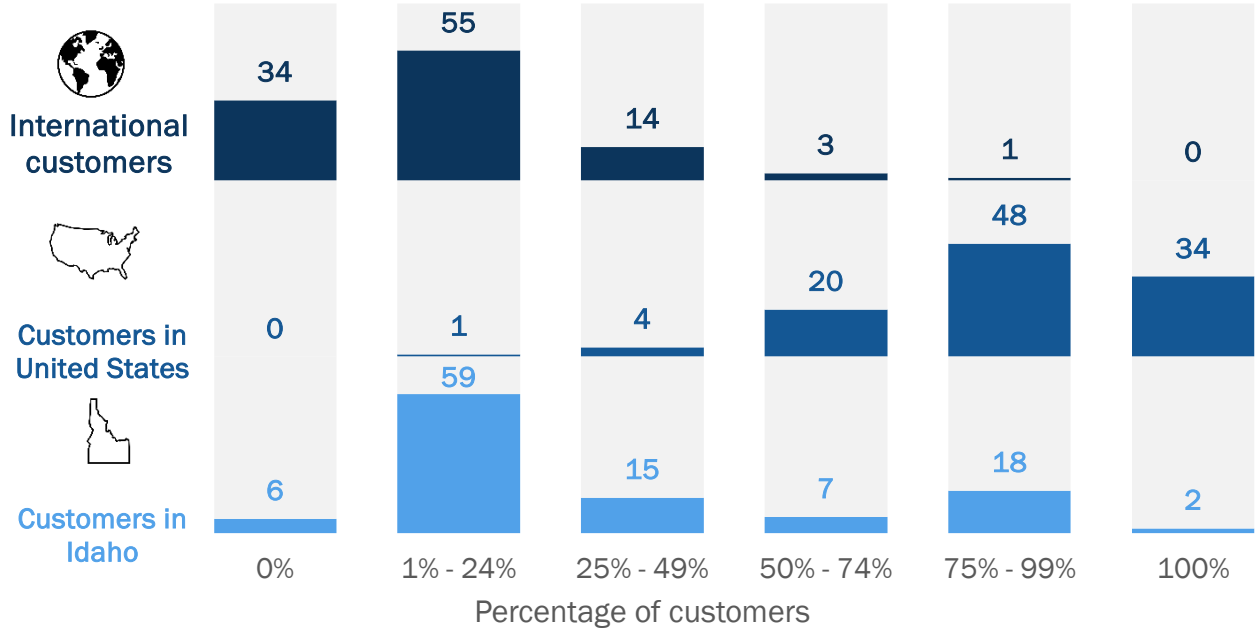


Figure 12 | Percentage of respondent businesses' customers that are **international** (outside the United States) (n=107)



Only 34 of 107 survey respondents (32%) said they do not have any international customers (Figures 11 and 12). Of the 73 respondent businesses that have international customers, international customers make up less than one quarter of customers for 55 respondent businesses (51% of respondents). A large proportion of survey respondent businesses' customers are in the United States but not necessarily in Idaho.

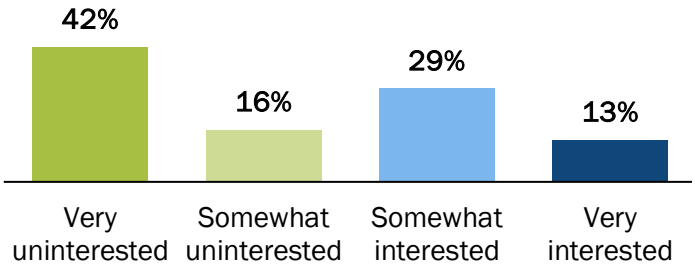
Figure 13 | Percentage of survey respondents' customers that are international (outside the United States), in the United States, and in Idaho by number of respondents (n=107). Fifty-nine respondents said 1% to 24% of their customers are in Idaho. This is the same data as presented in Figures 10-12.



Interest in selling products internationally

Survey respondents who indicated they do not have customers outside the United States were asked how interested or uninterested they are in selling their products internationally. The largest proportion (42%) were very uninterested; however, 42% expressed some level of interest (n=31) (Figure 14).

Figure 14 | Survey respondents who do not currently have customers outside the United States indicated their interest level in selling products internationally (n=31)



Primary inputs and source

As with customer type and location, the primary inputs manufacturers need and where they source them vary by business. The types of inputs that came up in the interviews were highly business specific. Even metals, which many manufacturers need, can vary as there are different types of steel and aluminum and the specific type of steel, for example, one needs may not be the same type needed by a different manufacturer. At the same time, there are likely common metals many manufacturers need as well as personal protective equipment (PPE), cardboard boxes, and other inputs.

Specifically, types of inputs interviewees described included abrasives, adhesives, batteries, carbon fiber, cardboard boxes, castings, electricity, fiber glass, metals (steels, aluminum), microchips, nuts/bolts, natural gas, paints, pallets, piping, plastics, powder coating, pumps, rectifiers, rubbers, safety supplies and PPE, tanks, tires, variable frequency drives (VFDs), water, and welding supplies (e.g., gas and wire). Value-added food processing inputs that came up included dairy products like milk and blue cheese; garlic (dried); onions (dried); eggs; fruits; berries; vegetables; herbs (fresh and dried); pasta; and vegetable, soybean, and canola oils. Pharmaceutical manufacturing inputs included industry-specific chemicals, containers, filters, pollens, reagents, and yeast.

As far as where manufacturer interviewees are sourcing their inputs, the unsurprising summary

answer from the interviews is from wherever they can get the best price, followed by wherever they can source what they need given systemically long waits on orders and global supply shortages. With recent international and national supply chain disruptions related to the COVID-19 pandemic, tariffs, the Russian-Ukraine War, China-Taiwan tensions, and chemical plant fires and explosions, some interviewees said they have become more motivated to source locally, regionally, and domestically, even if the products are more expensive, to ensure they have what they need in the timeline that they need it. Of course, where the inputs are sourced also depends on where they are extracted or manufactured—some inputs are not available in Idaho, the Northwest, nor the country.

Most interviewees are sourcing inputs from all over, based on where they are available: 13 of the interviewees mentioned that they source at least some of their inputs internationally, seven mentioned that they source at least some of their inputs domestically but outside the Northwest region, nine mentioned that they source at least some of their inputs from within the Northwest region, and nine mentioned that they source at least some of their inputs from Idaho (n=15 manufacturers). Unpacking whether the companies that interviewees source from are "local" or "regional" is complicated because many are national, international, or multinational corporations with local or regional branches. As one interviewee said,

> *Technically, I'm not sure that anything comes from in-state as far as Idaho-produced raw products. We buy steel from [company] across the street, but they're not based in Idaho, so their outreach might be across the street, but it's still not necessarily an Idaho-based company.*

Some interviewees provided names of specific companies from which they source:

- Univar, DuBois, Chemetall, Chemithon, CHEMEON, Reliant, Tachivan, McMaster-Carr, and US Specialty Color came up as companies from which Idaho manufacturers are sourcing chemical inputs.
- Rocky Mountain Steel, Affiliated Metal, and Pacific Metal came up as suppliers of steel and other metals.
- Dixon Container came up as a supplier of cardboard boxes.
- Airgas and Norco came up as suppliers of welding inputs.

We also asked survey respondents to indicate the percentage of their suppliers that are in Idaho (Figure 15). Nearly all (101 of 105 respondents, or 96%) had suppliers in Idaho; however, for 57 respondent businesses (54% of respondents), only a quarter or less of their suppliers are in Idaho. All respondents source some proportion of supplies from outside the state. Half of respondents said they source the inputs (for example, materials, supplies, products) their business needs from other Idaho businesses "sometimes" and another 37% said they "often" or "very often" do (Figure 16).

Figure 15 | Percentage of survey respondents' suppliers that are in Idaho (n=105)

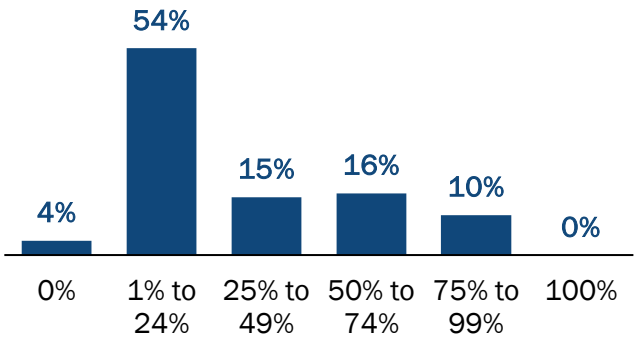
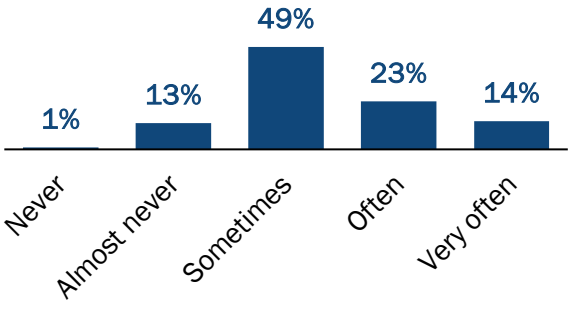
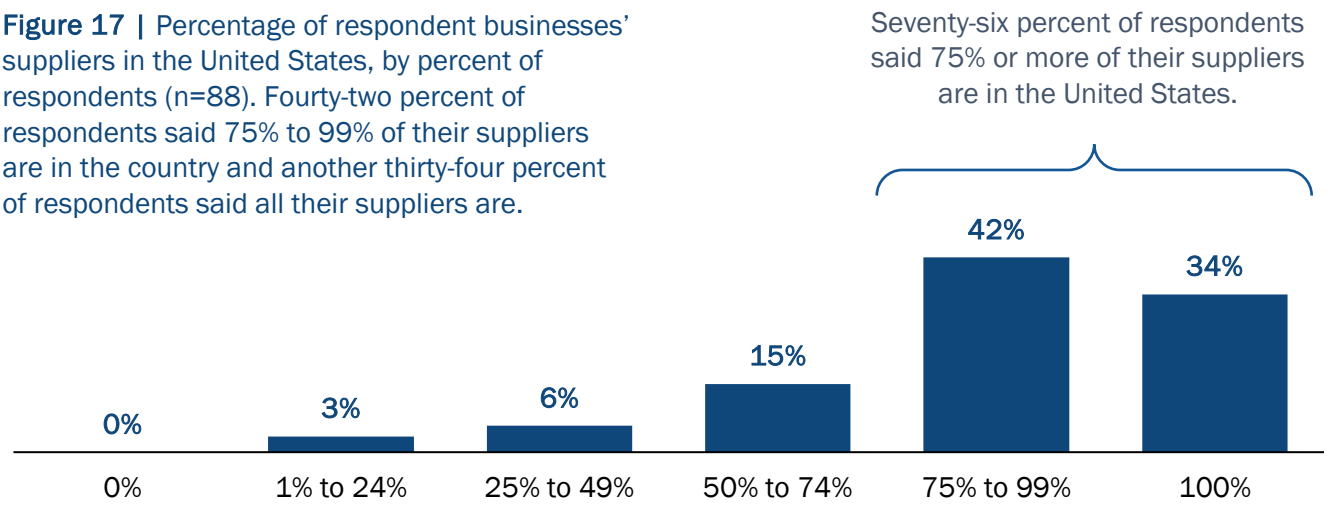


Figure 16 | How often survey respondent businesses source the inputs (for example, materials, supplies, products) they need from other businesses located in Idaho (n=95)



Appendix B provides survey respondents' answers when asked to list the primary inputs (e.g., supplies, materials, products) their business buys from other Idaho businesses. Common responses included shop supplies and hardware, aluminum, steel, welding supplies, cardboard and packaging, logs and lumber, machined parts, and sheet metal.

Figure 17 | Percentage of respondent businesses' suppliers in the United States, by percent of respondents (n=88). Fourty-two percent of respondents said 75% to 99% of their suppliers are in the country and another thirty-four percent of respondents said all their suppliers are.



Seventy-six percent of respondents said 75% or more of their suppliers are in the United States (Figure 17). Survey respondents who said their business sources supplies, materials, or other inputs from outside the United States provided the following responses specifying what they source internationally:

- Activated carbon
- Castings
- DC motors, custom fabrics and films, machined parts, and magnets
- Electrical components, specialized tools and/or instruments
- Electrical components
- Electronic parts and supplies; metal parts that are too expensive to have made in the United States
- I2C IO boards
- Large columns and booms are sourced from our Chinese sister company
- Laser cut steel, injection molded plastics, printed circuit board assemblies
- Lots of plastic parts
- Machinery
- Many times they are bought from a US company that is procuring the items outside the US, for example winches. As this is a casted product, those items are bought many times outside of the US.
- Materials
- Metal castings
- Metal castings, constant current drivers, lenses, LED chips
- Microfiber cloths from Korea
- Motors and gas train valves
- Neoprene
- Paperboard
- Plated and sintered diamond supplies
- Raw material
- Raw materials and batteries
- Robots and robotic tooling and peripherals
- Robots, electrical control components
- Small steel parts, fasteners, fabric
- Some controls products
- Some plastic resins are made in Tiawan and South Korea and maybe other countries
- Some plastic resins unavailable in the US
- Special shanks that are not available in the US
- Specialty packaging
- Stell castings, some wiring and hardware, promotional items (hats, etc.)
- Tracks
- Tracks, belts, hydraulic pumps/motors, electrical plugs, pins, wires
- Wood and metal products to build homes

Interest and motivations to sourcing in Idaho and the region

The primary conditions from the interviews affecting manufactures' interest and motivation in sourcing inputs from within the state and region are price and availability, and relatedly, the amount of time it will take to get the input from a geographically closer supplier in contrast to another farther away or across seas. As one interviewee articulated:

> *I can get it quicker [locally], and they've got what I need. There's times where something urgent comes in or we forgot to order something, and we literally have to drive to Nampa, Caldwell, or whatever, wherever some of the suppliers might be. Some of them are still in Boise. And we have to go pick the sheet up and bring it back ourselves, or we're trying to help somebody out of a jam. Things like that. Of course, when they're local, that just makes it easier to do. I've driven down to Salt Lake in the middle of the night to pick up a sheet in the morning and drive back one sheet, because it was the only place I could find some. None of that ever happened before the steel industry went nuts.*

Another factor that arose from the interviews is quality of service, which some thought is superior closer to home and when they have closer relationships with the suppliers and supply chain partners. Overall, interview results suggest Idaho manufacturers are motivated to source what they can as locally as feasible, as all companies represented in the interviews already are. Some interviewees, including the two cited here, explicitly stated they prefer to support other local businesses, given the option:

> *I'm going to probably take my cutting gas out to bid.... And I'll probably bid Norco. They're a local company. The other one, Airgas, they have a local presence, but they're owned by some company in France, I believe. I think Norco's a local, homegrown company, so I'd probably rather take...them.*

> *We do buying from different sources. I try to stick with Idaho companies. And, when I can't, we go to other sources. We always try to start as close as possible. Literally starting across the street and then working out from there. There are certain products on our list that you simply cannot buy in the United States. It doesn't exist. We might assemble stuff. But there's products that there's no way around the fact that they manufacture out of China.*

Opportunities for local and regional supply chain development

We asked interviewees what they see as the primary opportunities for developing local and regional manufacturing supply chains. In general, they responded by brainstorming products or services that many Idaho manufactures need that are currently unavailable or in greater demand than existing manufacturers can provide. They tried to think of services that they and others might commonly outsource. For example, one interviewee said,

> *[In] a lot of manufacturing processes there's stuff that you might do in-house and stuff that it doesn't make sense to [do in-house] 'cause you don't do enough of it in-house. There's no reason to buy the equipment and keep it in-house. So, you outsource it.*

Providing warehouse or storage space for metals and other supplies that small companies do not have space for (and therefore cannot order in large enough volumes to get wholesale prices) was an idea of a needed service along with painting, equipment servicing, and injection molding (i.e., making parts by injecting molten material into a mold). Another opportunity could be to develop truck drivers as the shortage of truck drivers also emerged as a barrier impacting distribution, a service every manufacturer needs.

At least one manufacturer interviewed is in an industrial park with several other complementary businesses that provide services it needs. This is an example of how some manufacturers are already working together and of a strategy that counties, cities, and other entities can develop to facilitate this type of supply chain collaboration and localized system development, particularly as an option for startups and recruiting new complementary manufacturers.

Although it is not a manufacturing role, another example of a service that many manufacturing

businesses need mentioned by an interviewee is advertising. As participants pointed out, another strategy to increase sourcing of products and services from within Idaho is to continue connecting manufacturers and advertising their services so other manufacturers are aware of what they could be getting locally.

Most interviewees struggled to name specific manufacturing services that are missing in the supply chain that a new or existing company could provide; however, they believed there are likely opportunities. Part of their challenge identifying manufacturing service gaps or points of collaboration was slight skepticism that businesses that are competing on some level will find areas of cooperation, although there are many examples of how they already are working together and evidence of further interest in mutually beneficial relationships. Furthermore, as presented in Figure 20 in the next section, 75% of survey respondents indicated concern about competition is not a challenge at all when it comes to buying the inputs they need from suppliers in Idaho (n=88).

Interviewees also struggled to brainstorm common products that a local or regional manufacturer could provide to further localize or regionalize manufacturing supply chains, but did identify some possibilities:

- Safety supplies like N-95 masks and nitrile gloves, which many manufacturers need and are having a hard time accessing or getting a good price on since COVID-19.
- Steel, aluminum, and other commonly used metals.
- Variable Frequency Drives (VFDs).
- Shipping and storage materials like cardboard boxes, pallets, and bagging supplies.
- Standard shop supplies.
- One interviewee mentioned that many manufacturers need pumps, so it could be good to attract a pump manufacturer to Idaho:

  I do believe that some of the manufacturer suppliers to us could be located in the region and in the state. Certain cities have already attracted more of those services into the area than have been here before. I'll use a pump manufacturer. It seems like that would be someone that could move to the [Magic] Valley and which would be very helpful, because pumps are not only used for our product in our industry, but multiple other industries. The majority of manufacturing facilities have a need to move water throughout their facility, whether it's part of their processor or just part of their cleaning. And so, they all have pumps. And so, if there was a pump manufacturer closer to this area…everyone would benefit. It's a missing part of the process for a lot of people.

We also asked survey respondents to list 1-5 **products or services that their manufacturing business needs that they would like to see provided within Idaho**. Respondents provided the following responses, notably, many of the services they listed are already available in Idaho:

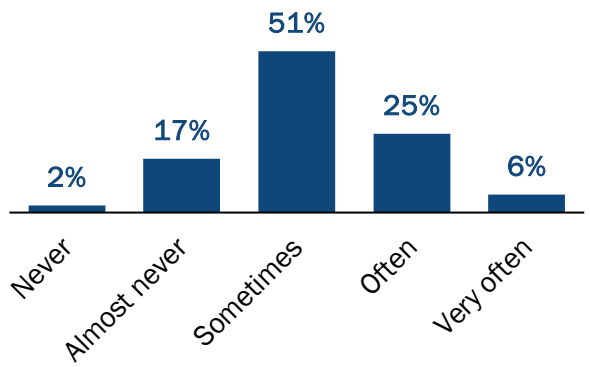
- 1) Packaging Foam / Light Manufacturing, 2) Competitive fabrication and powder coating, 3) Specialized mechanical (motor components), 4) Motor manufacturing.
- 1) Service that provides a Pipeline of skilled/experienced workers, 2) Aluminum and steel forging houses, machine shops with FFLs, surface finish (anodizing, parkerizing, heat treating).
- Better first level technical schooling for forklifts drivers and quality technicians. Idaho freight lanes and costing are terrible. Suitable food grade storage.
- Brass and copper plate sales.
- CAD Services
- Cleanroom gowning, sterilization (irradiation) facilities, stainless steel equipment manufacturing
- Electric Motor/Controllers,
- Electrical enclosure manufacturing
- Electroless nickel plating, Tumbling/Finishing
- Exotic metal alloys, metal 3D printing services
- Fastener Companies, Steel Suppliers, Galvanizing Companies,
- Foundries

- Foundry - Large size cast iron and/or cast aluminum, Stamping - Relatively large scale, metal supplies/suppliers, plating/black oxide
- Heat treaters and platers.
- I don't believe US manufacturers exist that can provide competitive prices to justify buying and operating equipment ourselves
- Industrial hemp cultivation and processing
- Many of our suppliers are nearby in Spokane, WA.
- Metal castings
- Metal fabrication, electric motors, gas train valves
- Metal plating, heat treatment
- Metal supplier, powder coating, machinery dealers, cutting tool dealer
- Mined tungsten, chemical analysis labs
- Mold building companies
- More affordable small parts metal manufacturing; More affordable electronic component manufacturing (like fans, heat sinks, etc).
- More Electronic OEMs
- Nadcap certified plating/Anodizing/painting, etc. OD grinding
- NADCAP registered heat treating, plating, anodizing and NDT
- Other Contract Manufactures, New IP based electronics development and manufacturing, Solar cell and battery manufacturing, Other electronics manufacturing branches.
- Packaging Machinery Manufacturing, Continuous Improvement consulting firms.
- Plastic Injection Molding
- Plastics suppliers, metal suppliers, industrial suppliers
- Post machining process houses. ie. anodizing Zinc, Nitride, electroless nickel, Black oxide
- Precision Grinding, more plating options
- Printed circuit boards, rubber molded parts
- Process houses (Zinc platting, Electroless Nickle, Nitride)
- Semiconductors
- Sheet metal stamping, plastics injection molding, springs
- Sodium Hydroxide Supplier
- Steel Casting, Foundries, Specialized Trailer products
- Surface mount technology, LED chip suppliers, injection molding for plastics.
- Textiles, molding, machining/tooling
- Tumbling/Deburring, High end powder coating, Electroless Nickel plating. Aluminum Foundry
- We would be interested in subcontracting components for other manufacturers for assembly of their final products.
- Wholesale Hydraulic parts sales.

Services manufacturers are outsourcing

Based on the interview results, we asked survey respondents how often their business hires another business to provide services it needs (Figure 18). Respondent businesses commonly hire others to provide services: 82% said they hire another business to provide services either "sometimes" (51%), "often" (25%), or "very often" (6%) (n=89). Only two respondents said their business "never" outsources services. Appendix C lists the **primary services respondents said their business outsources to other businesses**. Common responses included anodizing, powder coating, welding, electrical work, engineering, fabrication, laser cutting, legal services, machining, technical support, and transportation.

Figure 18 | Fifty-one percent of survey respondents said their business hires another business to provide services it needs at least "sometimes," and another thirty-one percent of respondents said they hire another business "often" or "very often" (n=89)



Challenges

The themes related to challenges interviewees' manufacturing businesses experience that present barriers to expanding local, state, and regional supply chains are summarized in Table 3. One barrier to more localized sourcing for many industries, including those who manufacture aerospace, military, pharmaceutical, and food products, is that the inputs must meet specific regulatory standards and requirements that might not be generalizable or available locally.

Table 3 | Primary interview themes related to local, state, and regional supply chain development barriers

Theme	Summary	Example Quote(S)
Customer location	*Many customers are not within the study region.*	"We have a military line of customers, both US and foreign military."
Supplier/input location	*Some or all of what the company needs is unavailable in the study region.*	"I don't even know how many vendors we have. There's got to be thousands of vendors…we purchase from. I don't even know who we would source from locally." "There's just no way that the United States, especially Idaho, is going to be able to produce the type of materials that we need to make the products that we do. There's some things that Idaho could do a little bit better, but for the majority of it, it's got to come from larger manufacturing facilities."
Competitive pricing	*Inputs may be less expensive elsewhere.*	"It's 60%, 70% cheaper to get it out of [China], as long as you can wait." "When you're talking about places like China, you have to compete against other companies that are heavily subsidized by the government."
Localizing supply chain undesirable	*Supply chains can have greater resilience if they are not geographically concentrated.*	"We source from countries all over the world. And we do that intentionally because the more diversified your supply chain is, the more resilient it can be. So, when you have COVID shutting down certain countries, or you have geopolitical challenges from one country to another, having that diversification or even natural disasters, you have hurricanes and typhoons and so on."
Undesirable industries	*It is not feasible nor desirable to bring some industries here.*	"I mean, are you going to set up a glycolic acid plant?" "We don't want somebody that's going to decrease the quality of life here because of harming the environment. A heavy industry manufacturer coming in that's going to pollute the air would not be…very favorable for us."

Many labor-related challenge themes and subthemes emerged from the interviews; therefore, these are summarized separately in Table 4. One interesting topic that arose was the impact of the Amazon centers opening around the Boise area on labor availability and wages. Several interviewees expressed frustration related to how Amazon coming to Idaho impacts the manufacturing sector:

> *One thing that drives me nuts is…when people come in and [the state is] offering all these major tax incentives and all that, for somebody like Amazon to come in. Is that good for me? No. It's terrible for me because Amazon gets major tax benefits, I'm suspecting. I don't know for sure, but I wouldn't doubt it…and then they suck up the labor pool. So, I get to keep paying my taxes to subsidize Amazon. And my labor cost just went up by, in the last two years—I was paying above market at $13 to $14 an hour and now I'm below market at $18 an hour…. I think that's wrong. If Amazon gets a tax cut, I*

should have it because I've bought the school already once. Why am I buying it again? And they're getting the break and bringing in people that require another school to be bought. Really irritates me. I'm paying the extra…tax so that they can be bribed to come in.

Some also mentioned the challenges of being near Washington: "I think it's also hard because we're obviously in Idaho…but we're very close to Spokane, and I think we struggle a little bit with not being able to compete with Washington wages."

Table 4 | Primary interview themes related to labor

Theme	Summary	Example quote(s)
Labor shortages	*Finding, keeping employees*	"I think everybody clear cross the US, all our suppliers were dealing with labor. Hard time to find people. Couldn't pay them enough." "People are still dealing with the labor shortages."
Wages + benefits	*Wages have gone up a lot; competing with Washington wages; providing health insurance is costly*	"Labor rates are killing us. Medical insurance costs are killing us. None of them were matching our ability to raise prices." "So, increasing wages, increasing everything just to keep people on has been very hard."
Need for training programs	*Need for more manufacturing-relevant vocational and technical training programs*	"Keep the schools producing, like, labor schools. And promote manufacturing. Tech schools." "So, we mentioned that the [State] support that we have for our driver apprenticeship program. Just expand that to other educational opportunities for people who might be wanting to go into those trades, I think, would be terrific, not only for manufacturing companies [but]…to be able to keep our families here and…to have good jobs here that people can do."
Housing prices & cost of living	*It is expensive for employees to live in some localities.*	"Any growth will probably happen out of the city because the cost of living in Boise is so high it's hard to do business because most of our employees have to come into the city. So, we may…move to where they can afford to live." "What we're seeing as a big problem is the housing market, especially up here in the Sandpoint area. We can just not attract talent, and…somebody who's going to work a manufacturing job when you can't buy a house for under $600,000. It's not adding up. So, we're hoping for more higher density housing and things that work for people who are starting out, who aren't necessarily college grads, and for people that would find a manufacturing job attractive."

The primary themes that emerged from the interviews related to all other barriers are summarized in Table 5. Another consideration that came up is that suppliers are not always willing to work with small-scale manufacturers that do not buy a minimum threshold of materials, affecting the suppliers and location of suppliers that certain manufacturers work with.

Table 5 | Primary interview themes related to manufacturers' challenges in general

Theme	Summary	Example quote(s)
COVID-related disruptions	*Also relatedly, sourcing PPE*	"So, nitrile gloves were nonexistent and so we went from paying $7 a box to paying $27 a box within a matter of weeks. N95 masks." "The day Trump threw that monkey wrench in and put the tariffs on the Chinese steel, the market just went nuts. And then COVID hit, made it even worse."
Tariffs		"Tariffs really hurt us a couple years ago because they tariffed anything that was coming from overseas. And even some of my steel, if I had steel made here and it was shipped overseas to get hardened or something, when it came back it got tariffed. And then certain castings."
Sourcing inputs	*COVID, the Russian-Ukraine War, China-Taiwan tensions, and chemical plant explosions made sourcing materials hard.*	"Raw materials for our vendors was a nightmare. We ran out of paint because paint binder became scarce. Rubber was scarce and our tire suppliers couldn't get us certain tires and they had to quit making certain models. Or we couldn't get certain products because the demand was too high all of a sudden because transportation equipment orders went through the roof…So that put a strain on the supply chain. And then there was weird catastrophic godlike events that happened with forging plants explosions and chemical plants that make parts of the paint. It was a weird year."
Inflation	*Increasing costs of everything.*	"Inflation and getting material has been very hard." "We say quotes are valid for 30 days, except the fact that if the raw materials goes up, we don't have any control of that. And so that's been very frustrating for a lot of customers."
Finding affordable space	*Costs to lease or buy increasing.*	"I've been too big for that building for about two years, so I'm desperately trying to find someplace locally. The prices are just keep going up, so I'm chasing the wind with that."
Permitting & approval processes	*Slow or cumbersome permitting & approval processes.*	"The process of permitting and getting approval for certain things has slowed way down." "This form will take you 20 minutes. This form will take you 15 minutes. Well, that's after I understand it. And then every week I'm doing something for some government entity. It's either garnishments or labor issues or unemployment issues—government we're their free secretaries."
Shipping	*Shipping delays and reliability; truck driver shortage.*	"Number one is having the product ready to ship, and then when it is ready to ship, having the availability of the transportation, whether it be containers or train or just even LTO equipment, and the drivers for that equipment. But another major hurdle has become the communication process. It's like you'll be given information, you'll be told that certain product is moving, it's on the way, and in reality, it's not. Or it's mishandled and sent to a different part of the country."

Workforce issues were also some of the most challenging factors that emerged in the survey results (Figure 19). It is worth noting that while only 10% of respondents identified child care availability for employees as a "large challenge," 41% said it is a "moderate challenge" and another 20% said it is a "slight challenge" (n=83). Idaho business regulations stand out as the factor the greatest proportion of respondents said is not a challenge.

Figure 19 | Extent select factors challenge survey respondents' businesses. Forty-nine percent and 48% of respondents, respectively, said availability of skilled workers and recruiting employees are "large" challenges while 62% said Idaho business regulations are not a challenge.

	Large challenge	Moderate challenge	Slight challenge	Not a challenge	Not applicable
Availability of skilled workers (n=83)	**49%**	30%	12%	6%	2%
Recruiting employees (n=83)	**48%**	23%	18%	8%	2%
Local cost of living for employees (n=84)	38%	31%	14%	13%	4%
Cost of employee wages/benefits (n=83)	36%	40%	16%	7%	1%
Local rent or housing prices for employees (n=83)	31%	33%	18%	16%	2%
Availability of needed inputs/supplies (n=82)	23%	39%	32%	6%	0%
Cost of needed inputs/supplies (n=83)	23%	40%	31%	6%	0%
Business real estate prices (n=80)	20%	19%	20%	29%	11%
Retaining employees (n=82)	20%	27%	34%	18%	1%
Rising interest rates for financing (n=82)	20%	27%	24%	23%	6%
Cost of shipping or transportation (n=83)	18%	45%	29%	8%	0%
International competition (n=82)	15%	21%	23%	31%	10%
National competition (n=81)	14%	38%	29%	18%	3%
Availability of suitable space (n=81)	14%	21%	15%	40%	10%
Business real estate lease rates (n=80)	10%	20%	25%	33%	11%
Child care availability for employees (n=83)	10%	41%	20%	25%	4%
Utilities costs (n=83)	7%	24%	40%	29%	0%
Competition with other Idaho-based manufacturers (n=81)	5%	13%	26%	**51%**	5%
Getting business financing (n=82)	5%	10%	22%	**54%**	10%
Idaho business taxes (n=80)	4%	14%	38%	44%	0%
Adopting new technologies (n=82)	4%	29%	44%	22%	1%
Availability of shipping or transportation (n=83)	2%	29%	40%	28%	1%
Idaho business regulations (n=83)	1%	6%	30%	**62%**	0%

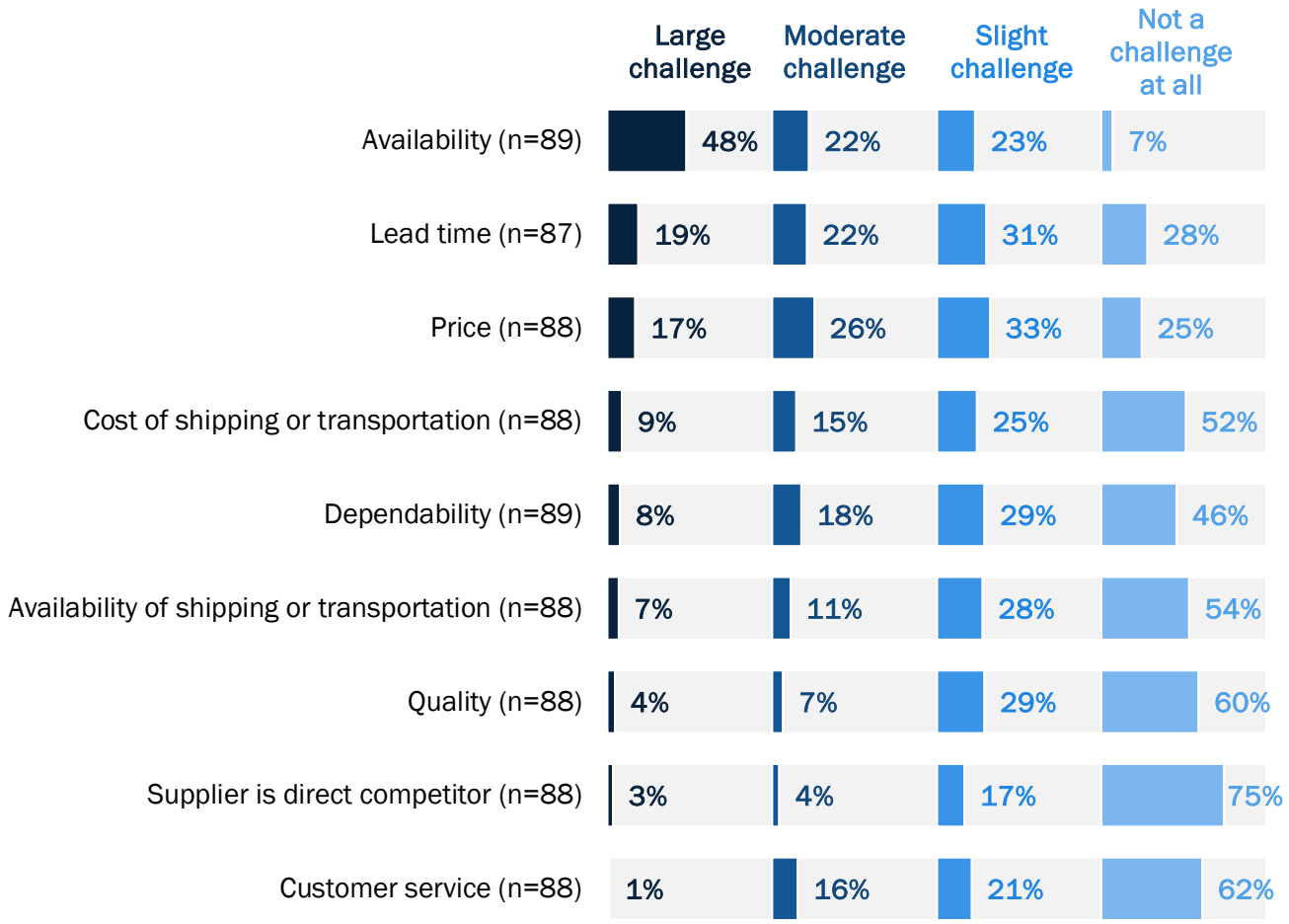
Asked if there are other significant challenges their business experiences, survey respondents provided the following answers:

- As a start up in medical devices, all our assets are in our IP (we have dozens of US and international patents). Banks have a dim view of IP as collateral as it's arguably the least liquid asset a company can own, so business loans for operations and growth have been a huge challenge.
- Availability of dependable hourly staff is our primary challenge.
- Idaho extremist Right politics may limit tourism and is a concern being downtown near capital building where these extremists have protested with guns and caused business disruptions (during Covid).
- Not enough 2000-5000 sq ft buildings with the ample power needed.
- The State of Idaho Correctional facility runs a cabinet shop. Many multi-family housing developers use this product. We can't compete when our competitor is paying their employees (inmates) .35cents/hour.
- Vendors Staying in Business.

Challenges to sourcing inputs in Idaho

On the survey, we asked respondents to evaluate the extent to which select factors challenge their businesses' ability to buy the inputs they need from Idaho suppliers specifically (Figure 20). The factors that were the largest challenge for the greatest number of respondents were availability, lead time, and price.

Figure 20 | Extent select factors challenge survey respondent business's ability to buy the inputs (e.g., materials, supplies) they need from suppliers in Idaho



Respondents provided the following answers when asked "Are there other factors that challenge your business's ability to buy the inputs (e.g., materials, supplies) you need from suppliers in Idaho?":

- As a DoD contractor, we need to be able to buy more supplies in Idaho, or at least in the US.
- Distributor Territory Monopolies.
- Idaho does not produce nuts and other raw materials I use.
- I'm unaware of any steel suppliers in Idaho. They are all out of state, to my knowledge.
- Lack of production volume.
- Largely price and mostly availability.
- Largely, pricing is not competitive. In my experience, manufacturers in Idaho have so much business / product backlog that they are not as responsive because they feel they do not need to be.
- Most materials and supplies come from out-of-state manufacturers.
- most of what we need is not made or offered in the state.
- Most suppliers don't exist. When we need something, it's coming from Spokane if it's local.
- NADCAP registration. Some materials and services are not available from Idaho suppliers.

- No - it's difficult in the Panhandle.
- Not available from Idaho suppliers
- Not manufactured in Idaho, most chemicals are produced by large international organizations.
- Only if the item is not available from an Idaho supplier.
- Our industry uses materials from a limited number of manufacturers, most located outside of Idaho.
- Our inputs are generally electronic components, cables, motors, amplifiers, welder power supplies, torches, and steel. Most of these things are simply not built in Idaho.
- Our primary inputs are natural fibers, such as hemp and cotton. We source our hemp fiber from Montana where there is a more established industrial hemp fiber industry.
- Significant portion of parts and services are not available in Idaho.
- Some products we use do not have distributors in Idaho.
- Some things we buy just aren't made here in Idaho, magnets, circuit boards etc.
- Suppliers who have machine capability & capacity
- Supplies are not available in Idaho. We try to buy Idaho products, but much of what we need is simply not made in Idaho.
- The biggest factor is availability. Not all of the items we need can be sourced locally because they just aren't made locally.
- The wood and metal products we buy are manufactured in other countries.
- There just aren't a lot of suppliers in Idaho. A lot of our products and materials come from Washington.
- We don't have plastic resin suppliers in Idaho.

Resilience to supply chain disruptions

The survey asked respondents "Overall, how prepared is your business to survive supply chain disruptions like the COVID-19 pandemic caused?" (Figure 21). Only 21% said their business is "very prepared" (n=75), although many made changes due to the COVID-19 pandemic that improved their preparedness (Figure 22). Thirty-two percent diversified suppliers, for example (n=58). The three respondents who wrote in additional actions they took due to the COVID-19 pandemic said, "Cost reductions, near shoring, right cash management, layoffs," "Diversify products," and "Hybrid workforce."

Figure 21 | Survey respondents' assessment of their businesses' preparedness to survive supply chain disruptions like the COVID-19 pandemic caused (n=75)

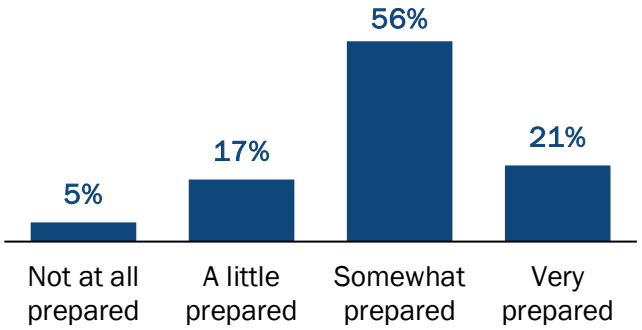
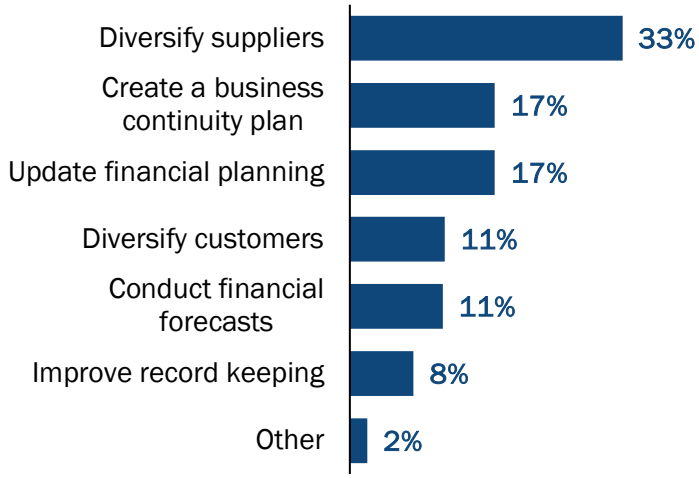


Figure 22 | Percentage of survey respondent businesses that made select changes due to the COVID-19 pandemic (respondents could select all that applied) (n=58)



Infrastructure improvements or development

Table 6 presents survey participants' answers related to infrastructure improvements or developments that would help their business.

Table 6 | Survey respondents answers related to the infrastructure that could be improved or developed in their communities or in Idaho that would help their business, by theme

Theme	Responses
Housing and community infrastructure	• Affordable housing is top of the list for us. Our employees cannot afford a home, especially if they are first-time home buyers or are new to the area. • Continuing to make downtown walkable, bike friendly, tourism friendly, conventions. Perhaps having the State support safer crosswalks on Myrtle and Front Streets.
Workforce development	• More technical schools • I think our infrastructure is okay but I believe the job pool will remain a challenge for a few years. • Machinist training
Roads	• Alternate routes to the interstate! • Better/cheaper transportation/roads • Improved roads, less traffic congestion • Roadways! • Roads that can handle the growth • Roads; Secondary arterials! • Traffic Infrastructure
Commercial space	• More 3 phase power availability, commercial/industrial real-estate in Moscow area. • More available light industrial land.
Specific manufacturing	• Electronic component manufacturing for example, intel, AMD, etc. • Medical device manufacturing ecosystem

Intentions and motivations to stay in Idaho

Idaho Department of Commerce was interested in knowing more about manufacturers' intentions and motivations to stay in Idaho. All interviewees indicated an intention to continue operating their business in Idaho. Here are examples of what interviewees said:

> *I don't have any plans to leave Idaho and the business [will] stay here.*
>
> *We have a nice facility right now and 15 acres to expand onto.*
>
> *We are a family-owned business, the…family's been here since the beginning, and so they have no reason to move it unless they were to retire and sell it to somebody who's going to ship it off or break it down. [We'll stay in Idaho] just because that's where it's grown. It started here, it'll stay here.*
>
> *I've been here since 1968, second grade. I love Idaho, except for the legislature (laughs).*

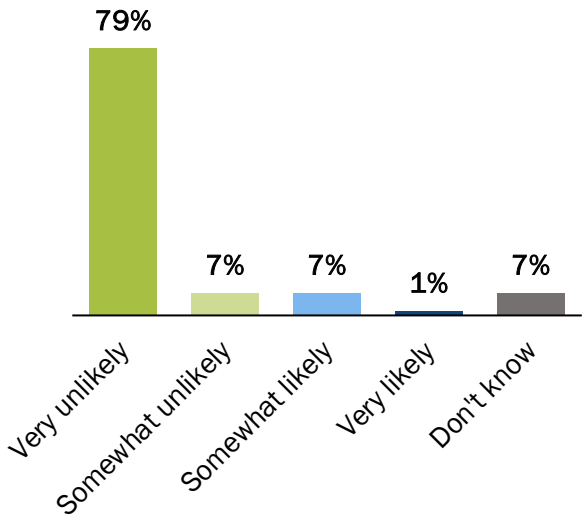
Several themes emerged related to why interviewees' businesses chose to locate to Idaho or continue operating in Idaho as well as related to why other manufacturers interviewees know decided to locate to Idaho. Here is a summary of motivations described in interviews:

- Inexpensive energy costs
- Complementary manufacturers and needed services available (e.g., "[Manufacturers exploring moving to Idaho] start looking to see if we have a large enough economy of all the services they need and the suppliers they need or if they can still have stuff brought in from their other suppliers.")
- Availability of commercial space
- Lower overhead costs compared to other states
- Tax advantage
- Competitive advantage due to distance from competitors
- Shipping and distribution system access
- Airports
- Desirable political climate
- Lifestyle and high quality of life
- Access to water
- Workforce (e.g., "I know that we've built some pretty good relationships with Boise State and University of Idaho, which also produces a lot of talent for us.")
- It is difficult to move (e.g., "It would be very hard for us to pick up and just move facilities. We have a lot of assets and equipment that's like severely bolted to the ground in a way. So, it would be extremely difficult to just pack up and leave.")

We followed up on this theme in the survey by asking respondents how likely or unlikely their business is to move to a different state (Figure 23). Seventy-nine percent are "very unlikely" to move to a different state (n=76). Those who said they are somewhat or very likely to move to a different state had the opportunity to explain why. Seven respondents offered the following explanations:

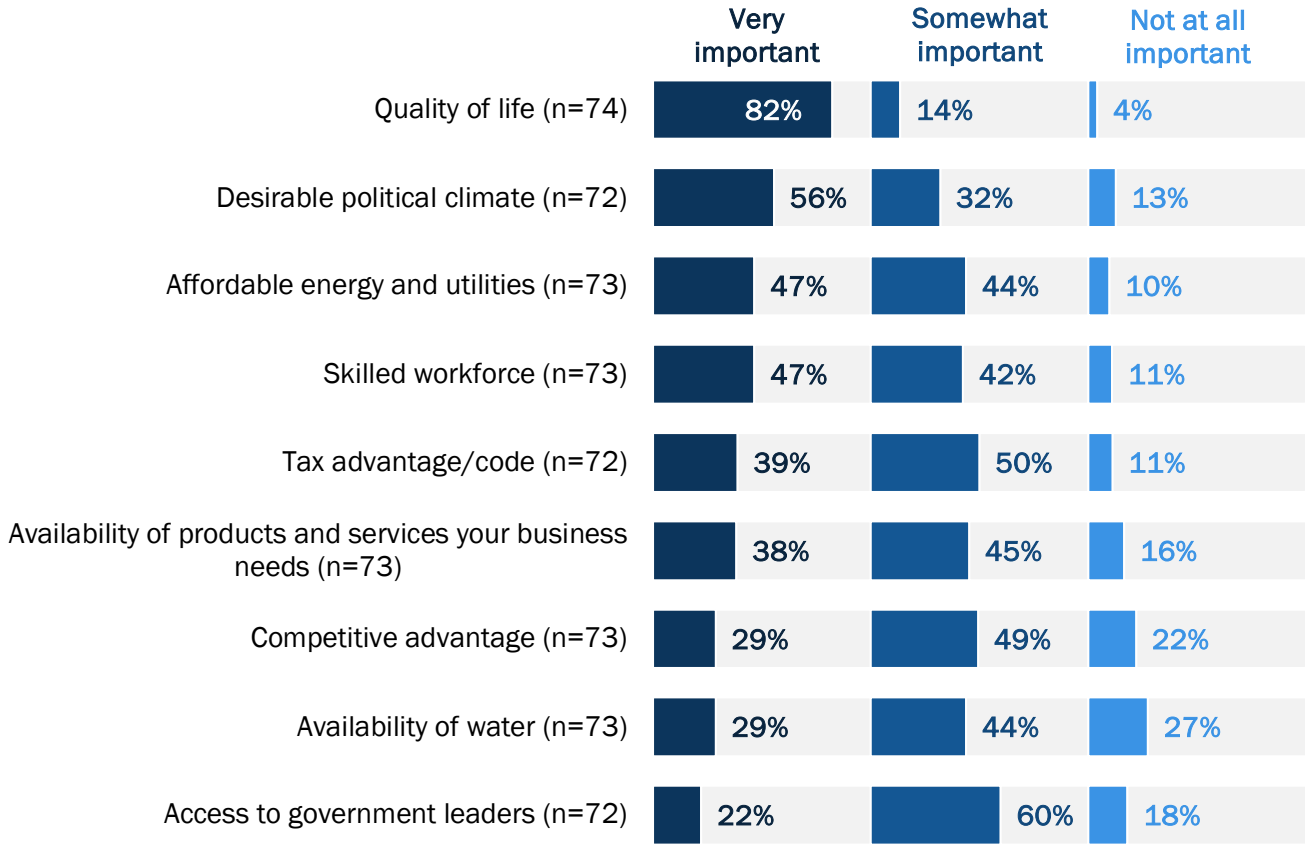
- Expansion beyond just this state.
- Expansion opportunities.
- Irrational conservatism.
- Political environment/lack of investment in education etc.
- To be closer to some outside processing and more companies that would need my services.
- We may expand to have other offices out of Idaho.
- We may expand to other states, not necessarily move out of Idaho. What would cause us to move out of Idaho is a worsening political climate that affects our ability to recruit women due to Idaho's abortion laws.

Figure 23 | How likely or unlikely respondents' businesses are to move to a different state (n=76)



We also asked respondents to weigh how important select factors are in their businesses' decision to operate in Idaho (Figure 24). Quality of life stands out as the factor that was "very important" to the greatest percentage of respondents by far (82%, n=74). "Other" motivations to operate in Idaho are provided as Appendix D.

Figure 24 | How important select factors are to respondents' businesses' decision to operate in Idaho, percent of respondents



Ways the Idaho Manufacturing Alliance is helping or could help address barriers

We asked interviewees "Are there ways the Idaho Manufacturing Alliance could help address the barriers your company experiences?" Several themes emerged related to ways the Idaho Manufacturing Alliance could or already is helping the industry.

Events and networking opportunities

One of the most salient themes was the value of hosting events, such as the Trade Show and Conference that provide manufacturers the opportunity to network, market their business and build supply chain relationships, and co-learn or troubleshoot challenges. Here are examples of what interviewees said about Idaho Manufacturing Alliance events and networking opportunities:

> *We really, really loved the round table aspect of the Twin Falls conference, where we were able to interact with one another and get to know each other and bounce ideas off other manufacturers' heads. We were head over heels about that. So, if you guys can do more stuff like that to get us in other manufacturers' faces and build that trust and build that relationship, that is exactly what we're looking for. That's huge.*

> *When this first started up, I was one of about 10 companies, and then all of a sudden there was about 20, and now there's a whole bunch. So yeah, let's pull it all together and figure out how to do this, damn it. The events like they put on down here that bring us all together, and I've already made three contacts where a couple of these companies might be able to help me, and I might be able to help them.*

> *Just things like that where we can actually come together better to be able to share more within the state, within the city,*

within the county, within the region, and work out from there. Those type of things would probably be good opportunities to grow more local purchasing as well.

Several interviewees emphasized that such events need to continue to be high-quality and provide value that the members want. If events do not have a clear benefit that merits their time investment, manufacturers will not continue to participate. For example, one interviewee said,

> *I've been a member of lots of associations over the years [with all] the companies I've owned. [My advice is for IMA to] provide new services or whatever they're going to do and make it simple for me to participate and to be involved because…I can't take too much time to do that stuff.*

Promotion and marketing

Another theme was the value of promoting Idaho manufacturers and helping to raise awareness of the manufacturing services and products available from within the state and region. One idea from an interviewee was to promote, market, and grow the manufacturing sector by partnering with commercial realtors, such as through the Building Owners and Managers Association (BOMA) or other associations. Specifically, the interviewee suggested the Idaho Manufacturing Alliance could provide commercial realtors handouts and other resources to share with the companies looking for commercial property to start a business or relocate their business so the newcomers can easily discover what services and partners are available. The interviewee noted there was at least one commercial agent at the Idaho Manufacturing Alliance Trade Show and Conference but believed this type of partnership with realtors could be expanded.

Recruiting complementary manufacturers

Another theme was that the Idaho Manufacturing Alliance could have a role in identifying and recruiting complementary (and desirable) manufacturers to Idaho to fill supply chain and service needs. As described above, interviewees did not necessarily know off the top of their head what the systemic gaps are, and many said they would like to see complimentary services and products available in the state that already are available, again pointing to the need to increase mutual awareness.

Cooperative purchasing and warehousing

Several interviewees suggested that perhaps the Idaho Manufacturing Alliance could have a role in bringing companies together to leverage buying power for better prices on steel, aluminum, and other commonly used metals or other supplies, such as PPE. They were not sure manufacturers would want to collaborate in this way with competitors, but still thought it was worth exploring.

Another idea of a service many smaller manufacturers might be interested in was cooperative warehousing of materials that do not fit in their primary space. In this theme, one interviewee suggested this could be a service an existing or new manufacturer could provide, but maybe the Idaho Manufacturing Alliance could help with the cooperation and coordination aspects of the service. Relatedly, one interviewee suggested the Idaho Manufacturing Alliance could help Idaho manufacturers negotiate contracts and form better "dealership relationships."

Other suggestions from interviewees

- Continue to expand the Idaho Manufacturing Alliance's membership and support for manufacturers in North Idaho.
- Promote vocational and technical training programs across the state and provide opportunities for youth to interact and explore manufacturing careers. Relatedly, help manufacturers establish or participate in apprenticeship programs. One interviewee described a state-supported truck driver apprenticeship program at their business as an example of something that is working well. More apprenticeship programs could help address the labor shortage.
- Continue providing professional development opportunities. Ensure they are high-quality.
- Create a series of brief pamphlets on common-interest topics, such as Small Business Innovation Research (SBIR) and other grant opportunities for businesses,

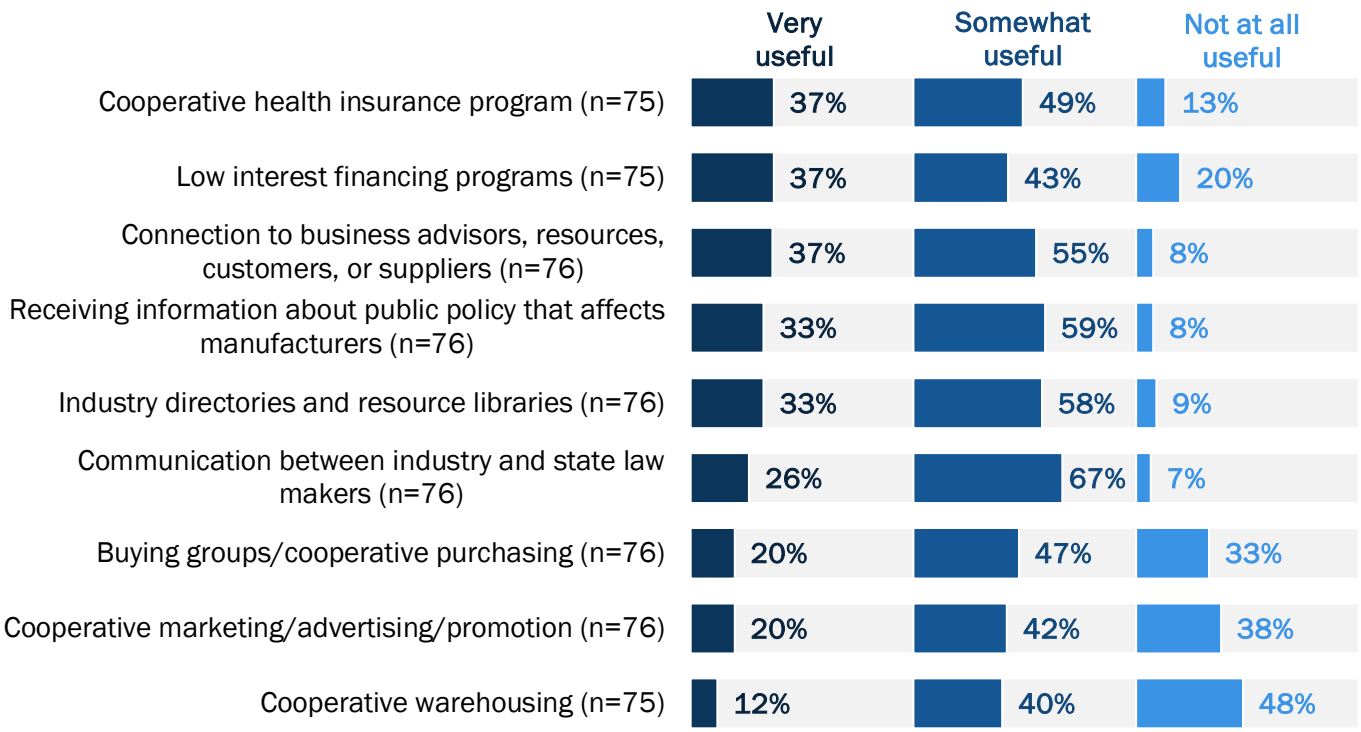
government contracting, and understanding tax code.

- Hire lobbyists to advocate for manufacturers, which could help inform the development of more business-friendly and supportive policies. Many interviewees shared the perspective that Idaho's policies could be improved to support small businesses and overall be more business friendly. At the same time, the primary barrier described by interviewees was the amount of time it takes to do paperwork and inspections and challenges understanding tax code. As shown in Figure 19, only 1% of survey respondents said Idaho business regulations are a "large challenge" in contrast to the 62% who said they are "not a challenge at all" (n=83). Table 4 also includes insightful quotations on this topic.
- Continue raising manufacturers' awareness of the Idaho Manufacturing Alliance's services and programs. Several interviewees said they like what the Idaho Manufacturing Alliance offers regarding medical benefits and the 401K option.

Usefulness of services: Survey results

On the survey we asked respondents how useful a list of products and services would be to their business if available. Figure 25 reports the results. Two survey respondents wrote in answers to the open-ended category saying "machinist training" and "preference of Idaho products for public local projects."

Figure 25 | Extent select products and services would be useful to respondents' businesses, if available



Ways the Idaho Department of Commerce is helping or could help address barriers

We asked interviewees "Are there ways the Idaho Department of Commerce could help address the barriers your company experiences?" Many of the ideas that came up related to how the Idaho Manufacturing Alliance might help may also be relevant for the Idaho Department of Commerce, such as related to promotion, marketing, recruitment, accessible information briefs, and professional development opportunities, including apprenticeship program development. Working on

policy and planning to help address unaffordable housing for the manufacturing workforce may also be in the realm of the Department of Commerce.

Importantly, a primary theme that emerged in response to this question was that many interviewees said they did not know what the Idaho Department of Commerce's role is or how it might benefit manufacturers. This suggests the Idaho Department of Commerce could increase outreach and communication with manufacturers. Other interviewees believed their business was "too small" to benefit from or be of interest to the Idaho Department of Commerce. Here are some examples of what interviewees said:

> *I'm not too familiar with [Idaho Department of Commerce], so I'm not quite sure how to answer that one.... I mean, I believe I know a little bit about how they help business, but what is their thrust? I guess, what do they do?*

> *I've got no idea if [Idaho Department of Commerce] can [help address barriers my company faces], to be honest. And I don't know that I can. I mean if the [Idaho Manufacturing Alliance] could come to me as a member and say, "Hey, the Idaho Department of Commerce can help with this," I'd love to know that. But my assumption is that for a company my size, there's probably nothing there that they do that I'm either going to influence or that's going to benefit me directly that's not already benefiting probably some larger players out there.*

Ways the Idaho legislature is helping or could help address barriers

We also asked interviewees "Are there ways the Idaho legislature could help address the barriers your company experiences?" The primary themes are summarized in Table 4.

Table 4 | Primary interview themes related to how the Idaho legislature could help address manufacturers' barriers

Theme	Summary	Example quote(s)
Restrict property tax increases	*Rapidly growing property taxes are affecting the manufacturing workforce and commercial property values.*	"It's expanding because a bunch of people moved in and my taxes keep going up and I haven't moved, I haven't done anything. I knew people in McCall years ago, they got pushed out their homes, lived there for 50 years, just couldn't afford to pay the taxes anymore. And so, they got kicked out. And I see that happening across the state right now. I tell you, when I retire in a couple years, I'm going to start a Prop 13 in Idaho and I'll be very unpopular. Do you know what I'm talking about, right? The Prop 13 in California where you can't reevaluate the value of the property from a selling price except for interest or inflation changes until it's sold. Now the communities will hate that, but it's the new people that are increasing the value. They come in to spend the high-value dollars for the house, let them pay the taxes for it. We got people who can't afford a home."
Do not give large and out-of-state businesses special tax incentives	*Amazon was the primary example.*	"Yeah, where I was at with taxes is, I think it's ethically wrong for any community to have the opportunity to forego or treat one entity differently than the others to get them to move in. I think that's ethically and legally wrong. I don't know if anybody's sued and I couldn't afford to, but the fact that they'll get somebody to move in and tell them, "You don't have to pay property taxes for X number of years, and I'll give you all these benefits and all that." I've been here for a long time and I'm not getting treated that well.... So, it should be level playing field because I'm already having to pay because they come in because of higher wages and they're getting incentivized with no taxes and that too or decreased taxes or training programs that I can't qualify for because I don't have enough employees to move around that way. It's not a fair of playing field."

Reduce tariffs		"But tax purposes-wise and everything like that, really it would be nice to not get taxed, which it's not really Idaho, but we don't have to get taxed 30% or more on tariffs. That kills us."
Simplify tax and regulatory compliance		"If I were to equate how much time I spend doing product development with three engineering degrees versus all the other things that are more regulatory and tax and accounting based, are probably 10% engineering and development. I'm 75% taxes and accounting and regulatory issues, and the rest is dealing with the human resources issues internally. We have to change that. That does not improve technology and innovation."
Supportive regulation rather than gatekeeping	*Complying with regulations is very time-consuming and complicated to navigate*	"What affects us directly or can, is regulations. Right now, where we're at, it's not too bad, but my fear is that more and more and more regulations come in and it makes it harder to do business. It makes it harder. And some of it's good stuff, but some of it is overreaching and can be painful, can shut places down." "To either get a conditional use permit or to build a new building for a new manufacturer, the process to get that done, the red tape that you go through is arduous and time-consuming. I know there's a bullet manufacturer that just was working at Caldwell, it's taking them almost a year to get approval to move forward with the plans. So, if there was some way to [streamline] and the challenge is there's state regulations, county regulations, city regulations that everybody's dealing with and all that."
Invest in vocational and technical training programs	*Manufacturers need a labor force*	"Teach it. Even bring it up more into the elementary level too. Start planting that seed early. You know what I mean? I feel like that would be a huge benefit to go into the elementary schools, into middle schools and say—bring the creativity out in the kid and show them what they can do when they do it. You know what I mean?"

Appendices

Appendix A: Primary products and services provided by survey respondent manufacturers

Please list the primary products and/or services your business provides:

- 3D design, 3D reverse engineering, 3D printing, 3D scanning
- Accurate CNC services is a full-service precision CNC machine shop that specializes in machining jobs of any nature. We provide CNC machining and cutting services, with an expert focus on CNC routing services. We serve several local and worldwide customers in a variety of industries.
- Aftermarket motorcycle clutches, contract machining
- Agricultural and industrial repair/fabrication
- Allergy vaccines
- Anodizing
- Apartment buildings
- Assembly hardware
- Automated welding machine solutions
- Barrel accessories, suppressors
- Building materials
- Cabinetry
- Cabinets
- Carbide tooling

- Centrigugal and air operated disphragm pumps
- Chemical and gas process tools for the semiconductor industry
- CMOS image sensors
- CNC machine tending automation
- CNC machined components
- CNC machined parts
- CNC milling and turning
- Coated metal
- Coffee roasters
- Co-manufacturing of food products
- Commercial LED lights
- Composite layup molds and vacuum mill fixtures
- Consumer based custom electronics manufacturing
- Contract manufacturing for defense, space, and industrial equipment
- Corrugated shipping boxes
- Folding cartons
- Wooden crates
- Packaging supplies
- Crosswalk pushbuttons
- Custom CNC machined
- Design, manufacture, and installation of commercial signage
- DoD-approved manufacturing process product pedigree software
- Electric motors, variable speed drives, pumps, LV controls
- Custom UL electrical panels and complete skidded pump stations
- Electrical instrumentation automation mechanical
- Electrical sign and graphic displays
- Electronic components
- Ethernet adapters and charging products for tablets and phones
- Exterior lighting for aircraft
- Film industry grip equipment, CNC milling and turning
- Firearm parts and accessories
- Food co-packing
- Food co-manufacturing
- Food storage
- Industrial chillers, backup power, generators
- Industrial grinders
- Industrial grinders for green waste recycling
- Industrial grinders, grinder wear parts, grinder replacement parts
- Industrial robotic automation solutions - we are currently focused on the wood truss manufacturing industry. We engineer, assemble, and install roof/floor truss robotic automation systems for truss manufacturers.
- Injection molded plastic
- 3D prototype
- Plastic prototypes
- Job shop Mfg., machining, welding, laser cutting, forming, powder coating, etc.
- KinExA instruments, SeptaSecure centrifuge tubes, and we provide contract research services in our lab
- Large backup generator enclosures, E-house enclosures, and thermal cooler units
- Lumber
- Machine shop
- Machined parts
- Machines for cutting and polishing rocks and glass
- Machining services
- Machining, design, precision welding, helium leak checking, vacuum components
- Manufacturing and packaging of various types of frozen, refrigerated, and shelf-stable food products
- Manufacturing of mining equipment and mining consumable parts for said equipment
- Night vision goggle sales, cockpit filters and lighting, equipment training for crews
- Non-electric set lighting holders and accessories, camera, cinematographic
- NVG use and a/c training, A/C cockpit modifications, NV goggles, A/C filters, NV goggle service
- Nylon pouches and holsters, gun magazines
- Offset and digital printing, die cutting, packaging, foil, and embossing.
- Outdoor signage, indoor signage
- Paddleboard and surfboard manufacturing

- Pedestrian crosswalks
- Pine shop for door/window manufactures
- Pine boards and dimension lumber
- Plastic injection molds and plastic injection molded parts
- Precision CNC machining, grinding and mechanical sub-assembly
- Precision machined components supporting various industries including Aerospace, Medical, Oil & Gas, Semi-Conductor, Firearms, Construction
- Precision machined parts
- Pumps
- Recycling services
- Refurbish machined parts
- Robotic and cobotic employees for industry
- Rotary encoders and accessories
- Rotomolded coolers
- Semi trailers, freight, and bulk commodity trailers
- Semiconductor
- semiconductors
- Showers, pans, walk-in tubs
- Ski bindings
- Ski lift parts
- Smoke and fire protection equipment
- Sporting and utility fixed blade and folding knives
- Stainless commercial countertops, kitchen range hoods, steel fabricating and welding
- Supply chain expertise, education, research and software for US manufacturers
- Supply chain transparency
- Technologies and products in pressure, temperature, and flow. Industries (so far) include stadiums, beverage, and medical.
- Thermal insulation materials
- Tool belts and holsters
- Tortillas
- Tractor trailers
- Trailers
- Tree nuts, peanuts, nut brittles and flavored popcorns
- Tungsten disulphide
- Water filters
- We are a build to print CNC machine shop
- We are a wholesale packaging company
- We manufacture tool holders for the metal working industry
- Wood roof and floor trusses

Appendix B: Primary inputs survey respondent businesses source from other Idaho businesses

Responses to the survey prompt, “Please list the primary inputs (e.g., supplies, materials, products) your business buys from Idaho businesses:”

- Shop supplies, hardware
- aluminum handles, plastic cooler dividers.
- Aluminum, steel
- Aluminum, steel, carbide tools
- Aluminum, Steel, sign components
- anodizing, water jet cutting, welding supplies
- Assorted hardware
- boxes/labels
- Cardboard
- Chemicals, utilities
- Circuit boards, steel, electronics
- Components of builds that we assemble then sell
- Corrugated board
- Corrugated boxes, poly Bags, Raw Materials (Food Ingredients)
- Dispensable goods such as cardboard
- Distribution Supplies
- Electrical, hydraulic, bearings, hardware components
- EMG, They have a warehouse in Middleton
- Excess metals from manufacturing
- Fabricated metal, raw material, distributed components
- Fasteners, machined parts, fabricated powder coated steel.
- Fasteners, packaging supplies, shop consumables, lumber
- HARDWARE

- Hardware, lumber and lumber products
- Hydraulic, electrical, fluid products. Hoses, nuts/bolts.
- Laser cut steel, injection molded plastics, printed circuit board assemblies
- Leather sheaths and accessories, stainless steel round bar, heat treatment, machine tools, steel and aluminum for fixtures
- Logs
- Logs from IDL, FS and private land owners
- Lumber
- lumber and building materials
- Machine coolant
- Machine Equipment
- Machine parts, shipping supplies, injection molding
- Machined parts
- Machined parts, aluminum or steel
- Machining supplies
- Manufacturing equipment, agricultural supplies and equipment, raw materials (water, power, etc)
- Material, cutting tools and fluids
- Materials
- Materials, supplies
- Metal and plastic bar stock, anodizing,
- Metal fabricated items and custom assembly fixture
- Metal parts
- Metal sheets and tubing, powder coating, electrical componentry, shop supplies, MRO
- Metals, plastics, hardware
- Metals, powder coating
- Most of the core materials to build a trailer are Idaho businesses
- Outside Process Black Oxide
- Packaging
- Packaging Materials (cardboard, poly bags, tape, ink, etc..)
- Paint
- Paper, ink, machine repair parts
- Plastic
- Plastics, steel
- printed card stock, silk screens, packaging materials.
- Raw aluminum metal, Electronics, PCB, Powder Coat, Misc tools
- Raw material, Metal Cutting tools, Coolant and oils for cutting tools.
- Raw material, tooling
- Raw materials, supplies
- Raw materials: metals, plastics, etc
- Raw materials; steel, aluminum. Supplies, lumber; hardware, electrical components, some lighting products, finishing products; paint, vinyl films.
- Raw metal
- Raw metals and Tooling
- Screw Machine parts, Laser cut stainless steel parts, cardboard boxes, paper posters.
- Sensors and electronic components
- Services
- Services
- Sheet metal, coating, electronic parts, packaging,
- Sheet metal and rolled steel. Fasteners. Paper goods.
- Shipping materials, services, lubricants
- shop supplies, fittings, electrical components, chemicals
- Steel materials, powder coating
- Steel, fasteners, repair services, components from distributors with presence in Idaho
- Steel, grinding disks, paper goods.
- Steel, metal castings
- Subcontractors and shop supplies
- Sugar, sauces, spices, honey, packaging,
- Supplies
- Supplies and materials.
- Supplies, Chemicals
- Supplies, materials
- Supplies, Raw Materials, Tools
- Tooling, material,
- Usually outside processing like material (metal) and plating
- Wood products
- Wood, hardware

Appendix C: Primary services survey respondent businesses commonly outsource

Responses to the survey prompt, "Please list the primary services your business outsources to other businesses:"

- Accounting, bookkeeping, insurance, banking
- Anodize, heat treatment, plating, some engineering contract work
- Anodizing, sewing
- Anodizing, welding, powder coating
- cable manufacturing, component packaging, electrical work, etc.
- Cleaning - landscaping - coffee -office supplies
- Coatings, Welding
- Construction, cleaning
- Consulting
- Contract software development, consulting services
- Die cast and injection molding.
- Electrical
- Electrical and Instrumentation Maintenance Janitorial Services
- Electrical work
- Electrical, plumbing, carpentry
- Electrical, powder coating, welding
- Engineering
- Equipment repair/ heating and cooling
- Fabrication
- Fabrication, assembly
- Final finishing work (Anodizing for instance)
- Flat packed precut melaminie boxes, doors and drawer fronts
- Heat treat, anodizing, painting
- Heat Treatment, Black oxide, anodize, contract machining
- Heating/cooling repairs, window washing, specialty glassware customizing, local food products, wine/beer, customized clothing
- HR
- Labor
- Laser cutting
- Laser Cutting, Rotomolding, Janitorial, Anodizing/Plating, Shipping, Blanchard Grinding, Cast Products from Foundry
- Legal, accounting, sales
- Legal/compliance audits
- Machine tool repair, recycling, plating, anodizing, heat treating, NDT
- Machined fixtures
- Machined parts
- Machining, anodizing, metal working
- Machining, heat treating, coating
- machining, welding, engineering
- Maintenance items for most sawmill equipment. example is air compressors are maintained quarterly by supplier. We do not have the staff or the expertise to maintain ourselves, so we contract out.
- MAINTENANCE
- Manual Machining
- Marketing. Partial assembly.
- Metal fabrication, laser and metal cutting, long forming
- Metal fabrication, PCB Design, coating, coding,...
- Metal finishing
- Metal finishing, equipment maintenance
- Metal work
- Mold making
- Mostly Maintenance type services on machines, property, etc.
- NadCap certified Plating, anodizing, heat treat to support AS9100 requirements. Specialty Raw materials - nickel alloys.
- None (except CPA and Legal)
- payroll
- PCA MFGing
- Plating
- Plating, anodizing, powder coating, tumbling/deburring
- post machining coatings, heat treating, laser engraving
- powder coat, laser
- powder coating
- Powder coating, anodizing, CNC Machining,
- Powder Coating, Paint, Weld Cameras
- Public Relations
- R and D -R and D contract mfg.
- Repairs, facility services, computer services.

- Safety, CE/CSA/UL compliance
- Sign installation, crane services, concrete footings, steel
- silk screen creation
- software development
- Software support & 3rd party specialty installation work.
- Some repairs and maintenance, recruiting, insurance, some accounting
- Sub assemblies
- Subcontractors for installation on a nationwide basis
- Technical help with equipment
- Technical Support, Engineering
- The use of subcontractors for installation of signs in other states, provinces or territories, manufactured right here in Nampa, Idaho.
- Transportation
- Transportation for local pick ups
- Transportation Services, Painting Services, Outsource various machine work.
- Transportation, equipment servicing
- Welding

Appendix D: Other factors that motivate survey respondents' businesses to operate in Idaho

Are there other factors that motivate your business to operate in Idaho?

- Cause it's the best state in the Union.
- Clean air, open space, tourism draw
- Climate - 4 seasons. Culture - all the advantages of being a capital city and college town with a friendly small-town feel.
- Cost of living, labor wages and employment laws
- Electronic OEM
- Having been in business in Idaho for over 50 years we are a very established company and staying in Idaho, no matter what.
- I am an Idaho resident and have been all my life. I want to support Idaho and its residents. If the political climate changes similar to Ada County we will sell or relocate.
- Idaho Laws
- Our business relocated from Wyoming to be closer to HP in Boise several decades ago. That situation has changed.
- Our market is in Idaho, founder lives in Idaho.
- Our product was created in Boise, and we have expanded the number of professional employees at this location because of the quality of life that the Boise area provides for employees.
- Since it is a family owned and operated business, I would say that is the most important thing. They reside in the state.

Analysis of the Idaho Manufacturing Supply Chain

Part II of the Idaho Manufacturing Sector Supply Chain Study

Idaho Manufacturing Alliance

Table of Contents

Summary and Overview

Idaho's economic performance over the last decade has made it one of the fastest-growing states in the nation and this trend will likely continue into the next decade. This has buoyed all sectors of the economy including manufacturing.

Idaho's manufacturing supply chain is fragmented because of Idaho's vast rural and mountainous landscape and its political boundaries. In terms of economic boundaries, Idaho has three distinct economies: 1) The Boise economy, which includes eastern Oregon, southwest Idaho, and central Idaho; 2) The Spokane economy, comprised of eastern Washington and northern Idaho, and 3) The Salt Lake City economy, which includes most of Utah, a portion of northwestern Nevada, and southeast Idaho. Most of the broad regional manufacturing trade-flows run east-west, not north-south, creating distinct markets between north and south Idaho.

Manufacturing ranks 6th place in terms of total Idaho employment with 74,406 jobs, with an average compensation package of $82,871. It ranks 8th place in terms of Idaho's industry ranking of average compensation packages (at the 2-digit NAICS level of aggregation).

Idaho was the 4th fastest growing manufacturing state in the U.S. from 2012 to 2022 at 25% job growth or 15,020 new jobs, behind only Nevada, Utah, and Florida.

Using shift-share analysis that identifies the causal effects of job growth into national trends, industry trends, and regional competitive advantage, Idaho ranked 13th in the country with the creation of 11,715 jobs due to regional competitive advantage, despite the fact the state ranks 38th in terms of population.

Manufacturing concentration measured by location quotients (LQ) for Idaho was 1.02 in 2012 and 1.03 in 2022. LQ measures the concentration of manufacturing jobs in Idaho relative to the U.S. In terms of an industrial SWOT, manufacturing represents a strength. Idaho manufacturing has a relatively larger concentration than the U.S. and that concentration is increasing over time.

The demographics of Idaho manufacturing employment for age distribution is similar to Idaho's overall workforce. In terms of gender, manufacturing employment is 72% men and 28% women, versus 70% men and 30% women for the U.S. manufacturing sector. Overall, Idaho workforce is composed of 52% men and 48% women.

Manufacturing supports $22.7 billion in direct exports out of Idaho to the rest of the nation and to international markets or 20.3% of Idaho's total exports (as measured by the Lightcast input-output model). Manufacturing ranks second place only behind government (at all levels). Of the total manufacturing sales ($28.9 billion), 79% or $22.7 billion are exported out of the state.

In terms of industry demand for manufacturing goods and services, only 23% is met within Idaho ($6.1 billion) and 77% ($20.6 billion) is imported. In terms of manufacturing industry purchases (alone), 43% or $6.1 billion is met within Idaho and 57% or $8.1 billion is imported. These metrics clearly demonstrate vast and multiple avenues to expand the supply chain for Idaho manufactured products and deepen backward linkages and the overall supply chain .

For the individual Idaho manufacturing sectors (at the 3-digit NAICS aggregation level), the largest industry is food processing/production (19,987 jobs), followed by computer and electronic manufacturing (10,917), wood products (7,347), and fabricated metal products (6,817 jobs).

In terms of employment growth from 2012 to 2022, food products were first (3,880 jobs), followed by wood products (1,959), fabricated metal products (1,795), and machinery (1,493). Industries that lost jobs include Petroleum and Coal Production with a loss of 17 jobs, Primary Metal (234), Apparel (262), and Computer and Electronic Product (747). With the advent of renewed U.S. investment in chip manufacturing, Idaho stands to regain some of our electronic manufacturing jobs. The fastest growing industries over the decade include Beverage and Tobacco Product (145%), Electrical Equipment, Appliance (96%), Nonmetallic Mineral Production (79%), and Miscellaneous (56%).

A shift share analysis was applied to Idaho's manufacturing industries at the 3-digit level of NAICS aggregation. For example, food manufacturing/food processing increased 3,880 jobs from 2012 to 2022; of which 1,743 jobs is from national overall growth trends, 452 jobs are from U.S. food industry trends, and 1,685 jobs is from Idaho's competitive effect or advantage. Food processing is one of Idaho's strongest and fastest growing manufacturing sectors with strong regional competitive effects (I.e., that Idaho has a competitive advantage). This is followed by Fabricated Metal Product Machinery (1679), Miscellaneous (1031), and Nonmetallic Mineral Product (820). At the other end of the spectrum is Computer and Electronic Product which lost 747 jobs from 2012 to 2022. The Idaho manufacturing industries faces headwinds because national trends are negative (-1516) with a loss of Idaho competitive advantage of (-500) jobs.

Idaho's average manufacturing compensation package (salary + benefits) ranked 32nd in the nation at $82,871, which is 86.2% of the national average of $96,088 in 2022. The highest state's manufacturing salary was California at $139,741, followed by Massachusetts ($121,850), New Jersey ($114,105), Connecticut ($113,545), and Maryland ($108,441).

The report presents county-level data for manufacturing in Idaho for the largest 35 counties. They report jobs change 2012 to 2022, average earnings per job, and shift-share analysis. Ada, Canyon, and Kootenai counties have the largest manufacturing employment. The City of Boise is the epicenter of manufacturing in Idaho with 18,785 jobs. Other important manufacturing counties include Twin Falls, Bonneville, Nez Perce, Bingham, Bonner, Jerome, Cassia, Minidoka, and Payette.

The COVID-19 recession and supply chain disruptions affected every industry in Idaho including manufacturing. It was one of the most disruptive in U.S. history. Mild by some measures, severe by others. The disruption of the U.S. and world supply chains caused economic havoc. Idaho, however, weathered the storm much better than many other states and the U.S. Recently, there have been labor shortages throughout the Idaho manufacturing industry that accompanied the supply chain disruptions. They represent a serious challenge for Idaho manufacturing firms.

Most of Idaho's manufacturing firms and employment are situated in the urban regions of the state in roughly the same proportions as population, about 80% in the urban areas and 20% in the rural areas. Manufacturing job growth has been slower in the rural areas and wages are about 10% lower

than urban regions. It appears that the challenges manufacturing firms face in terms of attracting and holding good employees may be greater as well as greater supply chain issues.

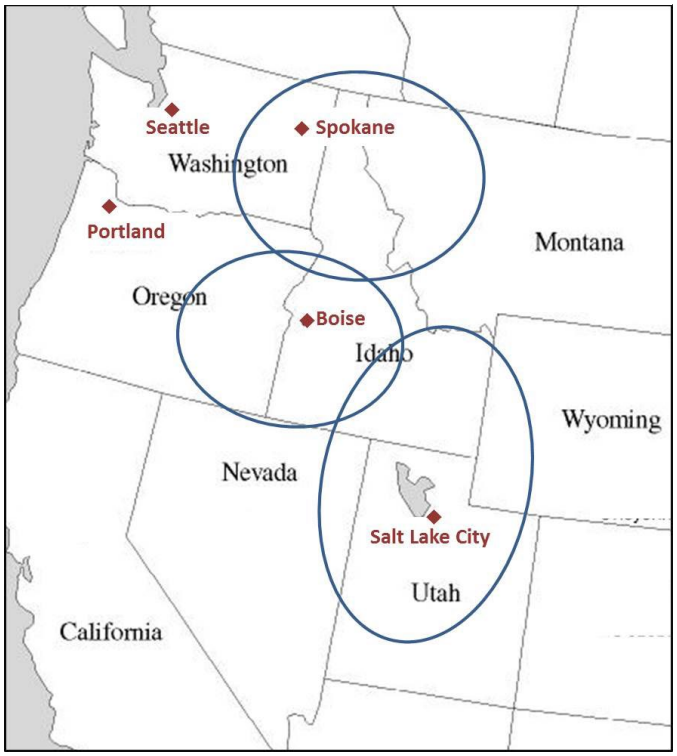
Idaho's Fast Population Growth Rate

Idaho's economic performance over the last decade has made it one of the fastest-growing states in the nation and this trend will likely continue into the next decade. From 2010 and 2020, Idaho's population increased by 271,525. During these ten years, Idaho was the 2nd fastest growing state in the U.S., reaching 1,839,106 people and supporting a population growth rate of 17.3%. Only Utah had a faster population growth rate of 18.4%. From 2020 to 2021, Idaho's population grew 2.9% making it the fastest growing state in the U.S. followed by Utah (1.7%), Arizona (1.7%), and Montana (1.4%). This year, from 2021 to 2022 Idaho was the second fastest growing state behind Florida: Florida (1.9%), Idaho (1.8%), South Carolina (1.7), Texas (1.6%) South Dakota (1.5%). Idaho's population has been fast-growing since 1990, ranking in the top five fastest-growing states annually, interrupted only occasionally by recessions (Source: U.S. Census. State Population Totals: 2020-2022 (census.gov)).

Economic Boundaries of Idaho's Economy

In terms of political boundaries, Idaho is a single state. However, in terms of economic boundaries, Idaho has three distinct economies. The U.S. Bureau of Economic Analysis divides the state of Idaho into 1) The Boise economy, which includes eastern Oregon, southwest Idaho, and central Idaho; 2) The Spokane economy, comprised of eastern Washington, northern Idaho, the southwestern region of Canada, and part of western Montana; and 3) The Salt Lake City economy, which includes most of Utah, a portion of northwestern Nevada, and southeast Idaho. Political boundaries rarely coincide with the integrated economic regions focused on these market centers. The manufacturing supply chain linkages will flow to the central place of each of the three economic regions. In the north, the flows will be linked to Spokane, Washington, outside the state. In the east, the flows will be to the Salt Lake City regional economy, also outside the state. The Boise economic region lies primarily inside the state and will most likely have the most robust supply chains for manufacturing in Idaho.

Economic Regions of Idaho



Idaho Industry Rankings

Figure 1 presents the two-digit level of aggregation of Idaho industries based on the North American Industrial Classification System (NICAS). The jobs metrics are based on the Bureau of Economic Analysis (BEA) metric that includes covered jobs (i.e., reported to the government by employers) and an estimate for self-employed workers. The average earnings per job includes salary and benefits. Manufacturing ranks 6th place in total Idaho jobs behind government, health care, retail trade, construction, and accommodation and food service.

Figure 1: Idaho Industry Ranking by Total 2022 Jobs (Two-Digit NAICS Code Aggregation)

Rank	Description	2012 Jobs	2022 Jobs	2012 - 2022 Change	% Change	Avg. Earnings Per Job
1	Government	125,208	134,661	9,453	8%	$65,234
2	Health Care/Social Assist.	84,457	110,850	26,393	31%	$62,891
3	Retail Trade	81,209	98,880	17,671	22%	$45,598
4	Construction	39,972	76,529	36,557	91%	$63,104
5	Accommodation/Food Ser.	53,315	75,250	21,934	41%	$24,865
6	Manufacturing	59,386	74,406	15,020	25%	$82,871
7	Prof./ Scientific/Tech. Ser.	37,618	56,131	18,512	49%	$90,070
8	Waste Management	42,424	54,843	12,419	29%	$54,250
9	Other Services	33,268	41,514	8,246	25%	$32,755
10	Wholesale Trade	27,780	34,506	6,726	24%	$91,993
11	Transportation/Warehousing	21,205	34,129	12,924	61%	$60,688
12	Agriculture/Forestry	32,166	33,795	1,629	5%	$53,413
13	Finance/Insurance	22,602	31,840	9,238	41%	$99,296
14	Educational Services	13,845	21,234	7,389	53%	$32,959
15	Arts/Entertain./Rec.	10,552	15,778	5,227	50%	$30,291
16	Real Estate	9,520	15,098	5,578	59%	$60,332
17	Information	9,664	9,395	(269)	(3%)	$92,300
18	Management of Companies	5,914	7,971	2,057	35%	$135,786
19	Utilities	2,826	3,141	315	11%	$135,357
20	Mining	2,822	2,867	45	2%	$102,308
	Total	715,827	932,817	216,990	30%	$61,631

Source: Lightcast/Emsi

Figure 2 presents the two-digit level of aggregation of Idaho industries based on the NICAS system ranked by 2012 to 2022 jobs change and average earnings per job. Average earnings per job includes benefits. Manufacturing ranked 6th place in the increase in jobs over the previous decade

at 15,202. Construction was in first place with an increase of 36,557 jobs. Manufacturing ranked 8th place in overall earnings per worker behind management of companies, utilities, mining, finance and insurance, information technology, wholesale trade, and professional and scientific services.

Figure 2: Idaho Industry Ranking by Jobs Change and Earnings Per Worker (2012 to 2022)

Rk	Description	2012 - 2022 Change	% Change	Rk	Description	Avg. Earnings Per Job
1	Construction	36,557	91%	1	Management of Companies	$135,786
2	Health Care/Social Assistance	26,393	31%	2	Utilities	$135,357
3	Accommodation/Food Ser.	21,934	41%	3	Mining	$102,308
4	Prof./ Scientific/Tech. Ser.	18,512	49%	4	Finance/Insurance	$99,296
5	Retail Trade	17,671	22%	5	Information	$92,300
6	Manufacturing	15,020	25%	6	Wholesale Trade	$91,993
7	Transportation/Warehousing	12,924	61%	7	Prof./ Scientific/Tech. Ser.	$90,070
8	Waste Management	12,419	29%	8	Manufacturing	$82,871
9	Government	9,453	8%	9	Government	$65,234
10	Finance/Insurance	9,238	41%	10	Construction	$63,104
11	Other Services	8,246	25%	11	Health Care/Social Assistance	$62,891
12	Educational Services	7,389	53%	12	Transportation/Warehousing	$60,688
13	Wholesale Trade	6,726	24%	13	Real Estate	$60,332
14	Real Estate	5,578	59%	14	Waste Management	$54,250
15	Arts/Entertain./Rec.	5,227	50%	15	Agriculture/Forestry	$53,413
16	Management of Companies	2,057	35%	16	Retail Trade	$45,598
17	Agriculture/Forestry	1,629	5%	17	Educational Services	$32,959
18	Utilities	315	11%	18	Other Services	$32,755
19	Mining	45	2%	19	Arts/Entertain./Rec.	$30,291
20	Information	(269)	(3%)	20	Accommodation/Food Ser.	$24,865
	Total	216,990	30%		Total	$61,631

Source: Lightcast/Emsi

Age and Demographic Profile of Manufacturing

Figure 3 presents the age profile matrix for Idaho's manufacturing industries at the 2-digit NIACS level of aggregation. The age profile for manufacturing is similar to Idaho employment as a whole, with it being slightly higher in the 35-44 age range, 45-54, age range, and the 55-64 age range. It is slightly lower over the age of 65, and lower under the age of 24. The age profiles are younger for retail trade, arts and entertainment, and accommodation and food services industries than manufacturing or the overall Idaho age profile (as is expected). Interestingly, it runs older in the upper age groups for agriculture and forestry, transportation and warehousing, and real estate.

Figure 3: 2022 Age Profile by Idaho Industry

Industry	14-18	19-21	22-24	25-34	35-44	45-54	55-64	65+	Total
Agriculture/Forestry	4%	4%	6%	17%	21%	17%	19%	12%	100%
Mining	1%	3%	5%	21%	23%	22%	20%	5%	100%
Utilities	-	1%	2%	16%	30%	26%	21%	5%	100%
Construction	2%	5%	6%	23%	24%	19%	14%	6%	100%
Manufacturing	1%	3%	5%	22%	23%	23%	18%	5%	100%
Wholesale Trade	1%	3%	4%	20%	24%	23%	19%	6%	100%
Retail Trade	6%	9%	8%	20%	18%	16%	15%	7%	100%
Transportation/Warehousing	1%	5%	5%	21%	21%	20%	18%	8%	100%
Information	3%	3%	4%	23%	25%	22%	15%	6%	100%
Finance/Insurance	0%	2%	4%	21%	25%	24%	18%	6%	100%
Real Estate	2%	3%	4%	16%	21%	20%	22%	12%	100%
Prof./ Scientific/Tech. Services	1%	2%	4%	21%	25%	21%	17%	9%	100%
Management of Companies	2%	4%	5%	23%	24%	21%	17%	4%	100%
Waste Management	3%	5%	7%	22%	24%	19%	15%	6%	100%
Educational Services	2%	4%	6%	19%	22%	23%	17%	7%	100%
Health Care and Social Assistance	2%	5%	6%	22%	24%	20%	15%	6%	100%
Arts, Entertainment, and Recreation	13%	8%	8%	22%	17%	13%	11%	9%	100%
Accommodation and Food Services	20%	14%	9%	19%	15%	11%	8%	4%	100%
Other Services	4%	6%	5%	20%	21%	17%	18%	9%	100%
Government	2%	6%	7%	20%	23%	19%	18%	5%	100%
Total	4%	6%	6%	21%	22%	19%	16%	7%	100%

Source: Lightcast/Emsi

Figure 4 graphically illustrates the demographic for Idaho as a whole, Idaho manufacturing, and the U.S.

Figure 4: 2022 Age Profile Manufacturing Compared to Idaho Overall

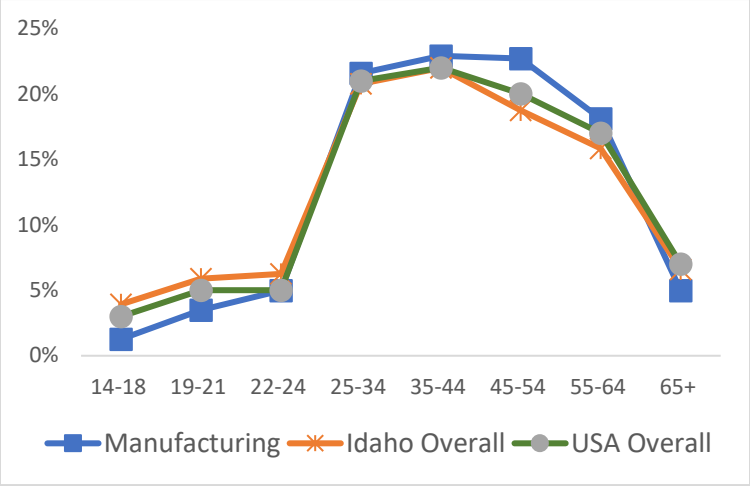


Figure 5 presents the age profile of manufacturing industries at the 3-digit NAICS code level, Most of the individual manufacturing industries are similar to Idaho manufacturing as a whole, but some industries tend to run older in the 45-54 and 55-64 age groups including food manufacturing, textile product mills, wood products and paper manufacturing, plastics, nonmetallic mineral production, primary metal, computer and electronic production, and others.

Figure 5: 2022 Age Profile by Idaho Manufacturing Industries at the 3 Digit NAICS Aggregation

Description	14-18	19-21	22-24	25-34	35-44	45-54	55-64	65+	Total
Food	2%	4%	5%	22%	23%	21%	19%	5%	100%
Beverage and Tobacco Prod.	3%	4%	8%	31%	25%	15%	9%	5%	100%
Textile Mills*	-	-	-	-	21%	28%	-	-	50%
Textile Prod. Mills	3%	4%	5%	14%	21%	20%	24%	9%	100%
Apparel	5%	7%	5%	21%	24%	18%	13%	8%	100%
Leather and Allied Prod.	0%	-	-	19%	34%	15%	21%	-	89%
Wood Prod.	2%	5%	6%	22%	22%	21%	18%	6%	100%
Paper	-	2%	4%	17%	21%	30%	23%	3%	99%
Printing and Related	3%	3%	5%	19%	21%	21%	21%	7%	100%
Petroleum and Coal Prod.	0%	0%	-	-	46%	-	-	-	46%
Chemical	1%	4%	6%	23%	25%	22%	16%	4%	100%
Plastics and Rubber Prod.	1%	4%	5%	20%	24%	23%	18%	5%	100%
Nonmetallic Mineral Prod.	1%	3%	5%	19%	21%	24%	19%	7%	100%
Primary Metal	-	-	4%	17%	22%	28%	22%	5%	98%
Fabricated Metal Prod.	1%	5%	6%	24%	23%	20%	17%	5%	100%
Machinery	1%	3%	5%	24%	23%	21%	18%	6%	100%
Computer and Electronic Prod.	0%	1%	3%	19%	24%	31%	20%	3%	100%
Electrical Equipment, Appliance	-	4%	5%	27%	21%	21%	17%	5%	100%
Transportation Equipment	1%	6%	7%	25%	22%	19%	15%	5%	100%
Furniture and Related Prod.	2%	4%	7%	19%	23%	21%	16%	8%	100%
Miscellaneous	1%	3%	4%	18%	22%	24%	20%	8%	100%
Manufacturing Total	4%	6%	6%	21%	22%	19%	16%	7%	100%

Source: Lightcast/Emsi *(-) Data is unavailable

Figure 6 presents the gender distribution of employment in Idaho's industries at the 2-digit NAICS level of aggregation. The majority of industries have more men employees than women except for finance and insurance, educational services, health care and social assistance, accommodation and food services, other services, and government which have a greater number of women employees. Overall, in Idaho, men represent 52% of total employees and 48% are represented by women. In the U.S. it is 51% men and 49% women. Idaho manufacturing employes are 72% men and 28% women. Nationally, manufacturing is 70% men and 30% women. Figure 6 also presents the gender breakdown by 3-digit NAICS code which suggests a wider distribution of gender in the individual industries. For example, nonmetallic mineral production is 86% men while apparel manufacturing is 60% female.

Figure 6: Idaho Worker Male/Female Breakdown by 2-Digit NAICS Code and by 3-Digit Manufacturing Industry

Industry	Males	Females	Industry	Males	Females
Agriculture/Forestry	69%	31%	Food	65%	35%
Mining	86%	14%	Beverage and Tobacco Prod.	63%	37%
Utilities	76%	24%	Textile Mills	59%	41%
Construction	85%	15%	Textile Prod. Mills	39%	61%
Manufacturing	72%	28%	Apparel	40%	60%
Wholesale Trade	72%	28%	Leather and Allied Prod.	67%	33%
Retail Trade	51%	49%	Wood Prod.	81%	19%
Transportation/Warehousing	72%	28%	Paper	83%	17%
Information	63%	37%	Printing and Related	56%	44%
Finance/Insurance	38%	62%	Petroleum and Coal Prod.*	88%	-
Real Estate	54%	46%	Chemical	64%	36%
Prof./ Scientific/Tech. Services	54%	46%	Plastics and Rubber Prod.	72%	28%
Management of Companies	51%	49%	Nonmetallic Mineral Prod.	86%	14%
Waste Management	57%	43%	Primary Metal	82%	18%
Educational Services	42%	58%	Fabricated Metal Prod.	81%	19%
Health Care/Social Assistance	23%	77%	Machinery	84%	16%
Arts/Entertain./Rec.	47%	53%	Computer and Electronic Prod.	73%	27%
Accommodation/Food Services	44%	56%	Electrical Equipment, Appliance	69%	31%
Other Services	42%	58%	Transportation Equipment	80%	20%
Government	43%	57%	Furniture and Related Prod.	78%	22%
Overall	52%	48%	Miscellaneous	62%	38%

Source: Lightcast/Emsi *(-) Data is unavailable

Figure 7 presents employment by race and ethnicity. Idaho is approximately 79% white and 21% minorities. For manufacturing, Idaho 74% white and 26% minorities.

Figure 7: 2022 Race and Ethnicity by Idaho Industry

Industry	Hispanic or Latino	White	Black or African American	American Indian or Alaska Native	Asian	Native Hawaiian or Other Pacific Islander	Two or More Races
Agriculture/Forestry	32%	59%	2%	1%	3%	0%	3%
Mining*	7%	90%	1%	1%	1%	-	1%
Utilities	4%	93%	0%	-	1%	-	1%
Construction	16%	79%	1%	1%	1%	0%	2%
Manufacturing	18%	74%	2%	1%	4%	0%	1%
Wholesale Trade	11%	84%	1%	0%	2%	0%	1%
Retail Trade	12%	83%	1%	1%	2%	0%	2%
Transportation/Warehousing	15%	78%	3%	1%	1%	0%	2%
Information	7%	87%	2%	0%	2%	-	2%
Finance/Insurance	9%	86%	1%	0%	2%	0%	1%
Real Estate	9%	86%	1%	0%	1%	0%	2%
Prof./ Scientific/Tech.	7%	86%	1%	0%	2%	0%	2%
Management of Companies	12%	83%	1%	0%	2%	0%	2%
Waste Management	17%	76%	2%	1%	2%	0%	2%
Educational Services	6%	88%	1%	0%	2%	0%	2%
Health Care and Social Assist.	12%	81%	2%	1%	2%	0%	2%
Arts/Entertain./Rec.	10%	84%	2%	0%	1%	0%	3%
Accommodation/Food Services	16%	75%	2%	1%	3%	0%	2%
Other Services	12%	81%	1%	1%	2%	0%	3%
Government	13%	77%	2%	1%	2%	0%	5%
Total	14%	79%	2%	1%	2%	0%	2%

Source: Lightcast/Emsi *(-) Data is unavailable

Idaho Exported Sales by Industry

Manufacturing ranked second in Idaho in total industry and service sales made outside of Idaho (i.e., exports). The level of exports is measured by the Lightcast input-output model. Exports in this context include both sales to businesses in other U.S. states and international sales as well. Total 2022 Idaho exports for all Idaho industries was $112.1 billion. Manufacturing produced $22.7 billion in sales or 20.3% of Idaho's total. Only the federal, state, and local government sector is bigger (Figure 8), mostly from federal dollars supporting governmental programs in Idaho. Exported sales represent the strength of an industry as a base economic activity, that is an important economic driver. Base industries bring new revenues and expenditures into the state, that alone with the multiplier effects, have significant impact on the state's economy.

Figure 8: 2022 Exported Sales by Industry

Description	2022 Exported Sales $ billions	% Total Idaho Exports
Government	$39.0	34.8%
Manufacturing	$22.7	20.3%
Retail Trade	$7.9	7.0%
Wholesale Trade	$6.9	6.1%
Agriculture/Forestry	$6.1	5.5%
Construction	$4.5	4.0%
Finance/Insurance	$3.8	3.4%
Prof./ Scientific/Tech. Services	$3.5	3.1%
Health Care and Social Assistance	$3.0	2.7%
Waste Management	$2.8	2.5%
Transportation/Warehousing	$2.7	2.4%
Real Estate	$2.7	2.4%
Utilities	$1.3	1.2%
Mining	$1.3	1.2%
Accommodation/Food Services	$1.1	1.0%
Information	$0.9	0.8%
Other Services	$0.6	0.5%
Management of Companies	$0.4	0.4%
Arts/Entertainment/Recreation	$0.4	0.4%
Educational Services	$0.4	0.4%
Total	$112.1	100%

Source: Lightcast/Emsi

Basic Versus Non-Basic Industries

Manufacturing is a key basic industry. Regional economies have two types of industries: base industries and non-base industries. Any economic activity that brings money into the local economy from the outside is considered a base industry. A base industry is sometimes identified as an export industry, which is defined as any economic activity that brings new monies into the community from outside the region. For example, base industries can include high-technology companies, manufacturing, federal government operations, and other industries. Firms providing services to individuals living outside the region such as medical and legal services, are included in the region's economic base. Payments from state and federal governments (including Social Security, Medicare, university funding, retirement accounts, and welfare payments) are sources of outside income to businesses and residents. These are counted as part of the economic base.

Non-base industries are defined as economic activity within a region that supports local consumers and businesses within the base sector. They re-circulate incomes generated within the region from the base industries. Such activities include, but are not limited to, shopping malls that serve the local population, business and personal services consumed locally, barbers, food and beverage establishments, medical services consumed locally, and local construction contracts. Non-base industries support the base industries.

Approximately 79% of manufacturing sales are from outside of Idaho and the industry ranks second to government in the percentage of total sales that are driven by exports (Figure 9) making it a primary base industry. Manufacturing's total sales is $28.9 billion of which $22.7 billion are exports or 79% of the total.

Figure 9: Percentage of Each Industry's Sales that are Exports.

Industry	Total Sales	Exported Sales	% Exported Sales
Government	$48.1	$39.0	81%
Manufacturing	$28.9	$22.7	79%
Mining	$1.7	$1.3	78%
Agriculture/Forestry	$8.7	$6.1	70%
Retail Trade	$13.6	$7.9	58%
Wholesale Trade	$11.9	$6.9	58%
Utilities	$2.9	$1.3	46%
Transportation/Warehousing	$6.3	$2.7	43%
Waste Management	$7.0	$2.8	40%
Educational Services	$1.2	$0.4	35%
Arts, Entertainment, and Recreation	$1.2	$0.4	35%
Prof./ Scientific/Tech. Services	$10.6	$3.5	33%
Construction	$13.8	$4.5	33%
Finance/Insurance	$12.6	$3.8	30%
Real Estate	$10.2	$2.7	26%
Health Care and Social Assistance	$13.1	$3.0	23%
Information	$4.0	$0.9	22%
Management of Companies	$2.1	$0.4	20%
Other Services	$3.0	$0.6	19%
Accommodation and Food Services	$6.5	$1.1	17%
Total	$207	$112	54%

Source: Lightcast/Emsi

Industry Demand

Demand is an estimate of the total amount of goods and services that is needed or required by a region regardless of whether it is produced inside the region by local industries or purchased outside

the region (i.e., demand can be met by imports). Figure 10 illustrates demand by industry. Idaho Construction had the highest-level demand met in-region at 86% and manufacturing had the lowest demand at 23%. Approximately 77% of the resources used for manufacturing were purchased from out-of-state. This illustrates the potential opportunity to increase and deepen the manufacturing supply chain in Idaho. It also illustrates the need for manufacturing resources, component parts, materials and supplies supplied from within Idaho.

Figure 10: Industry Demand Met Within Idaho (Billions $)

Description	2022 Demand met In-Idaho	2022 % Demand met In-Idaho	2022 Demand met by Imports	2022 % Demand met by Imports	2022 Total Demand
Construction	$9.2	86%	$1.5	14%	$10.7
Accommodation and Food Services	$5.3	83%	$1.1	17%	$6.4
Real Estate	$7.5	81%	$1.7	19%	$9.2
Health Care and Social Assistance	$10.0	75%	$3.4	25%	$13.4
Other Services	$2.4	71%	$1.0	29%	$3.4
Waste Management	$4.2	67%	$2.0	33%	$6.3
Finance/Insurance	$8.9	59%	$6.2	41%	$15.1
Prof./ Scientific/Tech. Services	$7.0	55%	$5.6	45%	$12.6
Utilities	$1.6	52%	$1.5	48%	$3.0
Agriculture/Forestry	$2.5	51%	$2.4	49%	$4.9
Transportation/Warehousing	$3.6	51%	$3.4	49%	$7.0
Arts, Entertainment, and Recreation	$0.8	50%	$0.8	50%	$1.5
Management of Companies	$1.7	50%	$1.7	50%	$3.4
Retail Trade	$5.7	49%	$5.8	51%	$11.5
Wholesale Trade	$5.0	43%	$6.5	57%	$11.5
Educational Services	$0.8	42%	$1.0	58%	$1.8
Government	$20.3	40%	$30.6	60%	$50.9
Information	$3.1	33%	$6.3	67%	$9.4
Mining	$0.4	25%	$1.0	75%	$1.4
Manufacturing	$6.1	23%	$20.6	77%	$26.7
Total	$105.8	50%	$104.3	50%	$210.1

Source: Lightcast/Emsi

Manufacturing State Rankings

Idaho ranks 4th place in the growth of manufacturing jobs from 2012 to 2022 at 25%, behind Nevada (61%), Utah (29%), and Florida (27%) (Figure 11). Note, Idaho ranks 3rd place from the 2010 to 2022, a twelve-year time period (Figure 10). Fifteen states including Washington DC lost manufacturing jobs from 2012 to 2022. New York had the largest loss of jobs, (41,518) or-9%. Washington State lost 16,299 jobs or 6% of the total manufacturing jobs (Figure 12).

Figure 11: Manufacturing Job *Growth* Ranking by State 2012 to 2022

Rank	State Name	2012 Jobs	2022 Jobs	2012 - 2022 Change	2012 - 2022 % Change
1	Nevada	40,871	65,852	24,981	61%
2	Utah	118,523	152,900	34,377	29%
3	Florida	327,549	414,529	86,980	27%
4	Idaho	59,386	74,406	15,020	25%
5	Montana	18,952	23,563	4,610	24%
6	Arizona	160,063	193,375	33,312	21%
7	South Carolina	224,370	260,147	35,777	16%
8	Georgia	360,393	415,266	54,874	15%
9	Colorado	136,809	157,364	20,555	15%
10	Tennessee	320,739	366,276	45,537	14%
11	Missouri	253,453	281,464	28,011	11%
12	Alabama	246,447	273,462	27,015	11%
13	Michigan	545,911	605,243	59,333	11%
14	Indiana	487,450	539,580	52,130	11%
15	Kentucky	226,581	250,403	23,822	11%
16	Oregon	177,562	195,606	18,044	10%
17	South Dakota	41,806	45,722	3,916	9%
18	Mississippi	138,757	149,622	10,865	8%
19	Maine	52,809	56,881	4,072	8%
20	Wyoming	9,935	10,638	702	7%
21	DC	1,245	1,333	88	7%
22	North Carolina	448,968	478,892	29,924	7%
23	Nebraska	96,597	102,781	6,183	6%
24	North Dakota	25,683	27,210	1,527	6%
25	Iowa	212,840	224,450	11,610	5%
26	California	1,291,719	1,356,957	65,238	5%
27	Texas	885,999	930,119	44,120	5%
28	New Hampshire	68,074	71,331	3,258	5%
29	Minnesota	311,641	325,112	13,471	4%
30	Wisconsin	461,400	480,685	19,285	4%
31	Virginia	235,496	245,265	9,769	4%
32	Maryland	111,326	114,739	3,412	3%
33	Arkansas	158,131	162,810	4,679	3%
34	Ohio	668,611	687,573	18,962	3%
35	Kansas	165,406	167,139	1,733	1%
36	New Jersey	250,234	251,709	1,475	1%

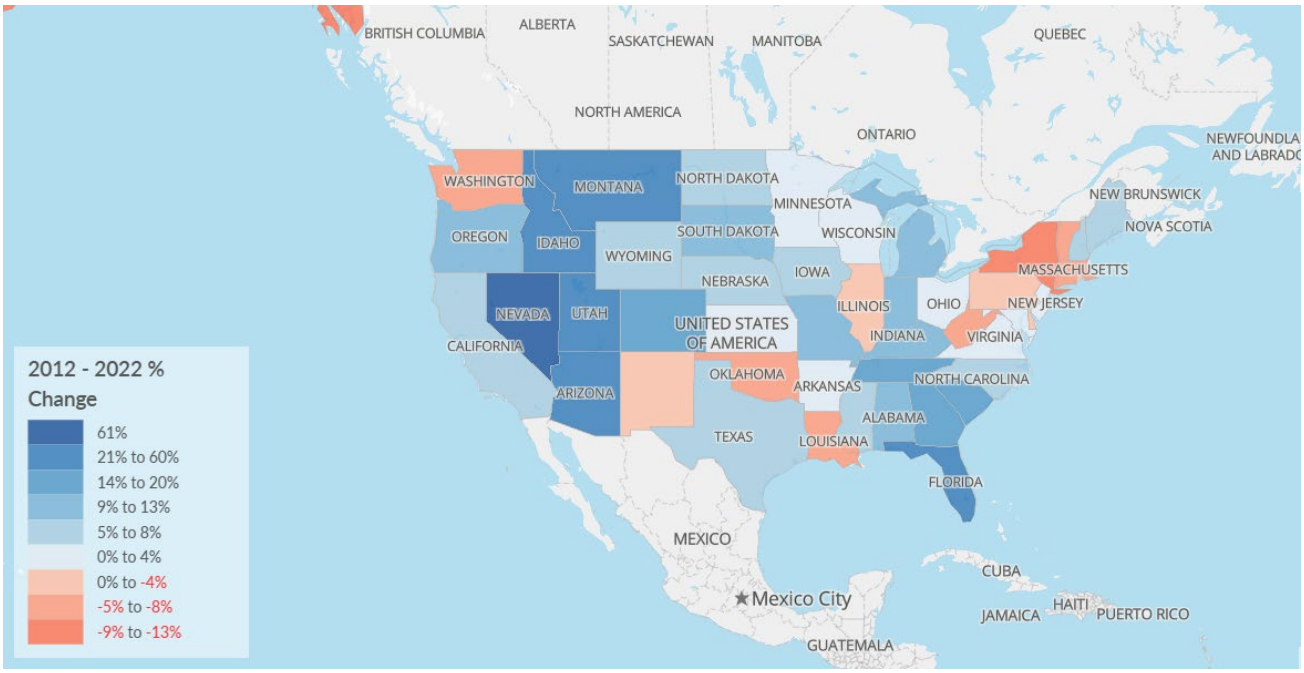
Source: Lightcast/Emsi

Figure 12: Manufacturing Job *Decline* Ranking by State 2012 to 2022

Rank	State Name	2012 Jobs	2022 Jobs	2012 - 2022 Change	2012 - 2022 % Change
37	Rhode Island	40,775	40,484	(290)	(1%)
38	Delaware	26,649	26,314	(334)	(1%)
39	Pennsylvania	578,274	568,833	(9,441)	(2%)
40	New Mexico	32,635	31,488	(1,147)	(4%)
41	Illinois	591,135	570,199	(20,937)	(4%)
42	Oklahoma	141,270	134,752	(6,517)	(5%)
43	Washington	286,946	270,647	(16,299)	(6%)
44	Connecticut	168,353	157,955	(10,398)	(6%)
45	Massachusetts	257,855	241,780	(16,075)	(6%)
46	West Virginia	50,609	47,371	(3,238)	(6%)
47	Louisiana	144,996	134,750	(10,246)	(7%)
48	Hawaii	14,857	13,756	(1,102)	(7%)
49	Vermont	33,163	30,608	(2,554)	(8%)
50	New York	470,749	429,231	(41,518)	(9%)
51	Alaska	15,128	13,263	(1,865)	(12%)
	Grand Total	12,195,131	12,871,836	676,705	6%

Source: Lightcast/Emsi

Manufacturing -- Percentage Job Change 2021 to 2022 (Source Lightcast)



Competitive Edge: Shift-Share Manufacturing State Rankings

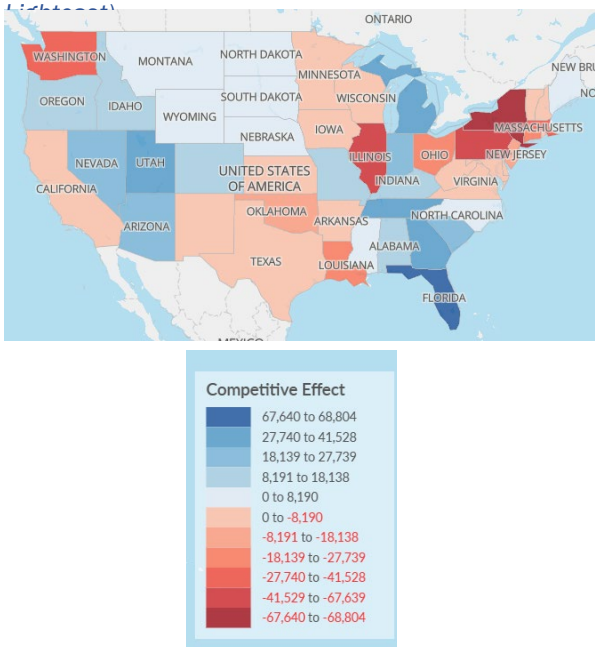
Shift share is a regional science metric that allocates jobs changes by industry to 1) National trends, 2) industry trends, and 3) Regional competitive factors. Figure 13 presents a ranking of the regional competitive factors by jobs change from 2012 to 2022. Idaho ranked 13th place in manufacturing competitive advantage even though the state ranks 38th in the nation in total population (1,920,562 people in 2023).

Figure 13: Shift-Share State Manufacturing Competitive Ranking (Top 15 States)

State	State Name	Competitive Effect
1	Florida	68,804
2	Georgia	34,875
3	Michigan	29,040
4	Utah	27,800
5	Tennessee	27,740
6	Indiana	25,082
7	Arizona	24,430
8	South Carolina	23,327
9	Nevada	22,713
10	Missouri	13,947
11	Alabama	13,339
12	Colorado	12,964
13	Idaho	11,725
14	Kentucky	11,249
15	Oregon	8,191

Source: Lightcast/Emsi

Shift-Share – Competitive Effect Change in Jobs (Source: Lightcast)



State Manufacturing Rankings by Location Quotients (LQ)

Location quotient (LQ) is a regional science metric that identifies the regional or state level of industry concentration relative to the rest of the nation. For example, (hypothetically) if wood products manufacturing represents 5% of a state's total jobs; and wood products manufacturing represents 4% of total jobs at the national level, the LQ is 5%/4% =1.25. The state is 1.25 more concentrated in wood products jobs than the rest of the nation.

Local Concentration = (Wood Products Employment - State) / (Total employment - Idaho)
National Concentration = (Wood Products Employment – U.S.) / (Total employment – U.S.)
Location Quotient = Local Concentration / National Concentration

A location quotient greater than one indicates the industry is concentrated in your region or state and likely (but not always) an important export industry. LQ has many important uses including identifying the industries that are specialized and likely to be concentrated in the region and export-based, bring new monies into the economy. The analysis can also be used to identify eroding or endangered export industries. The analysis also can be used to identify regional needs and opportunities for expanding industries and new businesses. Figure 14 identifies the LQ for manufacturing by state for 2012, 2022 and the net change. Idaho ranked 25th with an LQ of 1.03 in 2022, just slightly more concentrated than the national average. The states net increase of 1.02 (2012) to 1.03 (2022) also ranked 25th in the nation.

Figure 14: Location Quotient (LQ) and Change for Manufacturing by State

RK	State	2012 LQ	2022 LQ	Change LQ	RK	State	2012 LQ	2022 LQ	Change LQ
1	Indiana	1.91	2.06	0.14	26	Maine	0.96	1.03	0.07
2	Wisconsin	1.89	1.98	0.08	27	Georgia	1.00	1.03	0.02
3	Iowa	1.55	1.68	0.13	28	Rhode Island	0.99	0.98	(0.01)
4	Michigan	1.53	1.68	0.14	29	Oklahoma	0.97	0.95	(0.03)
5	Alabama	1.45	1.55	0.11	30	Washington	1.04	0.89	(0.15)
6	Ohio	1.46	1.51	0.05	31	California	0.91	0.87	(0.04)
7	Kentucky	1.38	1.51	0.13	32	West Virginia	0.79	0.83	0.04
8	Arkansas	1.48	1.50	0.01	33	Louisiana	0.83	0.83	(0.01)
9	Mississippi	1.37	1.49	0.13	34	Texas	0.89	0.82	(0.07)
10	South Carolina	1.33	1.38	0.05	35	Massachusetts	0.86	0.79	(0.08)
11	Kansas	1.33	1.37	0.04	36	North Dakota	0.65	0.74	0.09
12	Tennessee	1.30	1.35	0.04	37	Arizona	0.71	0.74	0.03
13	Minnesota	1.29	1.34	0.05	38	New Jersey	0.74	0.73	(0.01)
14	New Hampshire	1.20	1.24	0.03	39	Virginia	0.70	0.71	0.02
15	Nebraska	1.11	1.18	0.07	40	Delaware	0.73	0.68	(0.04)
16	North Carolina	1.22	1.18	(0.05)	41	Colorado	0.64	0.64	0.00
17	Oregon	1.16	1.17	0.01	42	New York	0.60	0.55	(0.05)
18	South Dakota	1.08	1.16	0.07	43	Nevada	0.40	0.54	0.14
19	Missouri	1.05	1.15	0.10	44	Montana	0.45	0.53	0.07
20	Illinois	1.17	1.15	(0.02)	45	Florida	0.48	0.52	0.04
21	Pennsylvania	1.14	1.14	0.00	46	Maryland	0.48	0.50	0.02
22	Vermont	1.15	1.14	(0.01)	47	Alaska	0.47	0.46	(0.01)
23	Connecticut	1.13	1.11	(0.02)	48	Wyoming	0.38	0.44	0.06
24	Utah	1.06	1.09	0.03	49	New Mexico	0.44	0.43	(0.01)
25	Idaho	1.02	1.03	0.01	50	Hawaii	0.25	0.24	(0.01)
					51	Wash. DC	0.02	0.02	0.00

Source: Lightcast/Emsi

Manufacturing Purchases

Manufacturing purchases are the goods and services purchased for production by Idaho manufacturing firms. Purchases differ from the *total demand for manufacturing* because they represent only the purchases by Idaho manufacturing firms. The total demand for manufacturing includes Idaho manufactured products and manufactured goods acquired out-of-state. This can be confusing because Idaho manufacturing firms purchase inputs both within the state and from imports out of state. Manufacturing purchased the largest amount of goods and services from itself, from other manufacturing firms followed by agriculture/forestry, wholesale trade, and transportation/warehousing. In total, Idaho manufacturing purchased $6.1 billion in region and imported $8.1 billion out-of-region (imports) (Figure 15). (See Appendix 1 for the total manufacturing purchases by industry at the 3-Digit NICAS Level of aggregation.)

Figure 15: Manufacturing Industry Purchases (2022) - Two-Digit Aggregated NAICS Industry ($ Millions)

Manufacturing Purchases	In-Idaho	% In-Idaho	Imported	% Imported	Total
Manufacturing	$2,003	33.4%	$3,990	66.6%	$5,993
Agriculture/Forestry	$1,368	50.9%	$1,320	49.1%	$2,687
Wholesale Trade	$841	42.5%	$1,138	57.5%	$1,979
Transportation/Warehousing	$632	56.4%	$488	43.6%	$1,120
Management of Companies	$242	39.7%	$366	60.3%	$608
Prof./ Scientific/Tech. Services	$238	55.8%	$188	44.2%	$426
Waste Management	$140	63.1%	$82	36.9%	$222
Utilities	$81	41.4%	$115	58.6%	$197
Real Estate	$147	75.2%	$48	24.8%	$195
Information	$48	26.5%	$133	73.5%	$180
Finance/Insurance	$109	61.7%	$68	38.3%	$177
Retail Trade	$60	45.7%	$72	54.3%	$132
Mining	$37	30.5%	$85	69.5%	$122
Other Services	$53	81.6%	$12	18.4%	$64
Accommodation/Food Services	$20	77.3%	$6	22.7%	$26
Construction	$19	83.1%	$4	16.9%	$22
Arts/ Enter./Rec	$4	44.8%	$5	55.2%	$8
Educational Services	$2	30.6%	$4	69.4%	$6
Government	$3	85.4%	$0	14.6%	$3
Health Care/Social Assistance	$2	77.8%	$1	22.2%	$3
Total	$6,048	43%	$8,124	57%	$14,173

Source: Lightcast/Emsi

Manufacturing Industry Metrics by 3-Digit Aggregated Manufacturing Industries

2022 Job Rankings

The largest Idaho manufacturing industry ranked by jobs is Food Processing (19,897) followed by Computer and Electronic Product manufacturing (10,917), Wood Products (7,347), Fabricated Metal Product (6,817) and Machinery (4,182). The smallest manufacturing sectors are Leather and Allied Product (123), Textile Mills (56), and Petroleum and Coal Products (35) (Figure 16). (See Appendix 2 for the 4-digit detailed NAICS industry level)

Figure 16: Ranking Manufacturing Industries by Employment (3-Digit NAICS Level of Aggregation)

Rk	Description	2012 Jobs	2022 Jobs	Change	% Change	Avg. Earnings Per Job	2022 Pay rolled Business Locations
1	Food	16,016	19,897	3,880	24%	$68,899	402
2	Computer and Electronic P	11,664	10,917	(747)	(6%)	$165,423	235
3	Wood Prod.	5,388	7,347	1,959	36%	$66,773	250
4	Fabricated Metal Prod.	5,112	6,817	1,705	33%	$63,462	496
5	Machinery	2,689	4,182	1,493	55%	$71,874	263
6	Transportation Equipment	2,885	3,999	1,114	39%	$69,940	147
7	Chemical	2,733	3,402	669	24%	$89,885	156
8	Miscellaneous	2,112	3,297	1,185	56%	$65,092	355
9	Furniture and Related Prod.	1,814	2,252	438	24%	$51,999	188
10	Plastics and Rubber Prod.	1,625	2,179	554	34%	$65,745	108
11	Nonmetallic Mineral Prod.	1,208	2,167	958	79%	$72,021	120
12	Paper	1,656	1,838	181	11%	$100,568	26
13	Electrical Equip. Appliance.	817	1,603	786	96%	$85,347	97
14	Beverage/Tobacco Prod.	642	1,573	931	145%	$45,880	134
15	Printing and Related	1,181	1,473	292	25%	$44,170	171
16	Primary Metal	727	494	(234)	(32%)	$74,709	37
17	Textile Prod. Mills	315	442	126	40%	$53,432	46
18	Apparel	579	316	(262)	(45%)	$52,611	33
19	Leather and Allied Prod.	109	123	14	13%	$43,108	19
20	Textile Mills	61	56	(5)	(8%)	$71,120	15
21	Petroleum and Coal Prod.	52	35	(17)	(33%)	$111,061	7
	Total	59,386	74,406	15,020	25%	$82,871	3,303

Source: Lightcast/Emsi

Manufacturing Job Change Rankings

Figure 17 ranks Idaho's manufacturing industries by net employment change from 2012 to 2022 (in the first section of the table) and by the percentage of change of jobs by industry (in the second section of the table). Food manufacturing had the greatest increase in jobs (3,880) followed by Wood Products (1959), Fabricated Metal Product (1,705), Machinery (1,493), and Miscellaneous (1,185). Industries that lost jobs include Petroleum and Coal Production with a loss of 17 jobs, Primary Metal (234), Apparel (262), and Computer and Electronic Product (747).

The fastest growing industries over the decade include Beverage and Tobacco Product (145%), Electrical Equipment, Appliance (96%), Nonmetallic Mineral Production (79%), and Miscellaneous (56%).

Figure 17: Ranking Manufacturing Industries by Employment Change 2012-2022 (3-Digit NAICS Level of Aggregation)

Rk	Manufacturing Industry	2022 Jobs	Change	Rk	Manufacturing Industry	% Change Jobs
1	Food	19,897	3,880	1	Beverage and Tobacco Prod.	145%
2	Wood Prod.	7,347	1,959	2	Electrical Equipment, Appl.	96%
3	Fabricated Metal Prod.	6,817	1,705	3	Nonmetallic Mineral Prod.	79%
4	Machinery	4,182	1,493	4	Miscellaneous	56%
5	Miscellaneous	3,297	1,185	5	Machinery	55%
6	Transportation Equipment	3,999	1,114	6	Textile Prod. Mills	40%
7	Nonmetallic Mineral Prod.	2,167	958	7	Transportation Equipment	39%
8	Beverage and Tobacco Prod.	1,573	931	8	Wood Prod.	36%
9	Electrical Equipment, Appl.	1,603	786	9	Plastics and Rubber Prod.	34%
10	Chemical	3,402	669	10	Fabricated Metal Prod.	33%
11	Plastics and Rubber Prod.	2,179	554	11	Printing and Related Support	25%
12	Furniture and Related Prod.	2,252	438	12	Chemical	24%
13	Printing and Related Support	1,473	292	13	Food	24%
14	Paper	1,838	181	14	Furniture and Related Prod.	24%
15	Textile Prod. Mills	442	126	15	Leather and Allied Prod.	13%
16	Leather and Allied Prod.	123	14	16	Paper	11%
17	Textile Mills	56	(5)	17	Computer and Electronic Prod.	(6%)
18	Petroleum and Coal Prod.	35	(17)	18	Textile Mills	(8%)
19	Primary Metal	494	(234)	19	Primary Metal	(32%)
20	Apparel	316	(262)	20	Petroleum and Coal Prod.	(33%)
21	Computer and Electronic Prod.	10,917	(747)	21	Apparel	(45%)
	Total	74,406	15,020		Total	25%

Shift-Share Analysis Manufacturing Industries (3 Digit NAICS Level of Aggregation)

A shift-share analysis for the Idaho manufacturing industry is presented in Figure 17 (previous page). The 2012 to 2022 jobs change is decomposed into three factors: 1) National overall growth trends, 2) National trends per manufacturing industry, 3) Regional competitive (effect) advantage or disadvantage.

The national growth trends apply the overall U.S. job growth rate to each Idaho manufacturing industry. The industrial mix category applies each U.S. industry growth rate (net of the national overall rate) to its respective Idaho manufacturing industry. The regional competitive effect explains the jobs difference of what is expected from the national and industry growth trends and the actual change in job growth. Figure 18 illustrates the shift share analysis to Idaho's manufacturing industries at the 3-digit level of NAICS aggregation. For example, food manufacturing/food processing increased 3,880 jobs from 2012 to 2022; of which 1,743 jobs is from national overall growth trends, 452 jobs is from U.S. food industry trends, and 1,685 jobs is from Idaho's competitive effect or advantage. Food processing is one of Idaho's strongest and fastest growing manufacturing sectors with strong regional competitive effects. This is followed by Fabricated Metal Product Machinery (1679), Miscellaneous (1031), and Nonmetallic Mineral Product (820). At the other end of the spectrum is Computer and Electronic Product which lost 747 jobs from 2012 to 2022. The industry faces headwinds in the industrial trends are negative (-1516) with a loss of Idaho competitive advantage of (-500) jobs. (See Appendix 3 for shift-share at the 4-digit detailed level of NAICS aggregation)

Figure 18: Shift-Share Idaho Industry Analysis (3 Digit NAICS Level of Aggregation) (2012-2022)

Manufacturing Industry	2022 Jobs	Ind. Mix Effect	Nat'l Growth Effect	Competitive Effect	2012 - 2022 Change
Food	19,897	452	1,743	1,685	3,880
Fabricated Metal Product	6,817	(530)	556	1,679	1,705
Machinery	4,182	(325)	293	1,525	1,493
Miscellaneous	3,297	(76)	230	1,031	1,185
Nonmetallic Mineral Prod.	2,167	6	132	820	958
Electrical Equipment, Appliance	1,603	(36)	89	733	786
Transportation Equipment	3,999	94	314	705	1,114
Wood Prod.	7,347	728	586	644	1,959
Printing and Related Support	1,473	(345)	129	509	292
Beverage and Tobacco Prod.	1,573	360	70	500	931
Chemical	3,402	42	297	330	669
Furniture and Related Prod.	2,252	(79)	197	320	438
Plastics and Rubber Prod.	2,179	59	177	318	554
Paper	1,838	(274)	180	275	181

Textile Product Mills	442	(53)	34	145	126
Leather and Allied Prod.	123	(17)	12	19	14
Textile Mills	56	(18)	7	6	(5)
Petroleum and Coal Prod.	35	(10)	6	(13)	(17)
Apparel	316	(267)	63	(58)	(262)
Primary Metal	494	(164)	79	(149)	(234)
Computer and Electronic Prod.	10,917	(1,516)	1,269	(500)	(747)

Source: Lightcast/Emsi

Location Quotients and Industrial SWOT Analysis

We conducted a manufacturing industry SWOT (Strength, Weaknesses, Opportunities, and Threats) analysis. This was conducted at the 3-digit NAICS level of aggregation. The concentration of each industry regionally is compared to the concentration of the industry nationally. If an industry has a concentration greater than one (i.e., LQ >1), it is more concentrated regionally than it is nationally, suggesting a regional competitive effect. If the concentration is growing for an industry with an already high concentration the industry represents a *strength* for the regional economy. A highly concentrated industry (i.e., LQ >1) that is becoming less concentrated is a threat, as it acts as a pillar of the economy but is beginning to show signs of decline. An opportunity for the region is defined by an industry that is under concentrated (i.e., LQ <1) regionally but growing. A weakness refers to an under concentrated industry (i.e., LQ <1) that is shrinking (Figure 19). (See Appendix 4 for location quotients at the 4-digit NIACS level of aggregation and exported sales).

Figure 19: L Q and Industrial SWOT (2012-2022) at the 3 Digit NAICS Level of Aggregation

Description	2022 Jobs	2012 LQ	2022 LQ	Change in LQ	SWOT
Wood Prod.	7,347	3.14	2.93	(0.2)	Threats
Food	19,897	2.25	2.09	(0.2)	Threats
Computer and Electronic Prod.	10,917	2.23	1.81	(0.4)	Threats
Furniture and Related Prod.	2,252	1.00	1.00	(0.0)	Threats
Nonmetallic Mineral Prod.	2,167	0.67	0.92	0.2	Opportunities
Paper	1,838	0.91	0.91	0.0	Opportunities
Beverage and Tobacco Prod.	1,573	0.70	0.87	0.2	Opportunities
Fabricated Metal Prod.	6,817	0.75	0.85	0.1	Opportunities
Electrical Equipment, Appliance	1,603	0.46	0.72	0.3	Opportunities
Leather and Allied Prod.	123	0.70	0.71	0.0	Opportunities
Textile Prod. Mills	442	0.54	0.69	0.1	Opportunities
Machinery	4,182	0.51	0.68	0.2	Opportunities
Printing and Related	1,473	0.51	0.67	0.2	Opportunities
Transportation Equipment	3,999	0.41	0.42	0.0	Opportunities
Chemical	3,402	0.72	0.68	(0.0)	Weaknesses

Apparel	316	0.74	0.53	(0.2)	Weaknesses
Plastics and Rubber Prod.	2,179	0.53	0.52	(0.0)	Weaknesses
Primary Metal	494	0.38	0.25	(0.1)	Weaknesses
Textile Mills	56	0.10	0.10	(0.0)	Weaknesses
Petroleum and Coal Prod.	35	0.10	0.06	(0.0)	Weaknesses

Source: Lightcast/Emsi and Authors' Calculations

The LQ and Industrial SWOT are sensitive to the level of NAICS aggregation and the metrics change depending on the level of aggregation.

Manufacturing is an Industrial SWOT Strength

At the two-digit level of aggregation, manufacturing represents a strength to Idaho. The LQ was 1.02 in 2012 and 1.03 in 2013, an increase of 0.01 over the decade. The LQ is greater than one and growing.

Manufacturing Staffing Patterns

Figure 20 reports the 2022 manufacturing staffing pattern at the 2-digit Standard Occupational Classification (SOC) code. A staffing pattern represents all the occupations for each industry. (Appendix 5 reports the manufacturing staffing pattern at the 3-digit SOC Level of aggregation.) Production occupations increased their jobs by 40% from 2012 to 2022 and represent 55.3% of all positions within Idaho's manufacturing industry. Figure 21 presents production workers occupation (aggregated) per county in Idaho. It also presents the salary range including medium and mean hourly wages, and the distribution of salaries at the 10%, 25%, 75%, and 90% percentile ranges.

Figure 20: 2022 Manufacturing Staffing Pattern at the 2-Digit Standard Occupational Classification (SOC)

SOC	Description	Employed in Industry (2012)	Employed in Industry (2022)	Change (2012 - 2022)	% Change (2012 - 2022)	% of Total Jobs in Industry (2022)	Median Hourly Earnings
51-0000	Production	29,464	41,163	11,699	40%	55.3%	$17.07
53-0000	Transportation and Material Moving	5,226	6,520	1,294	25%	8.8%	$17.11
43-0000	Office and Administrative Support	4,885	4,964	79	2%	6.7%	$16.82
11-0000	Management	4,004	4,444	440	11%	6.0%	$31.00
49-0000	Installation, Maintenance, and Repair	2,994	3,648	654	22%	4.9%	$21.28
17-0000	Architecture and Engineering	4,367	3,581	(786)	(18%)	4.8%	$36.93
41-0000	Sales and Related	1,896	2,326	430	23%	3.1%	$14.57
13-0000	Business and Financial Operations	1,538	1,962	425	28%	2.6%	$29.25
15-0000	Computer and Mathematical	1,539	1,356	(182)	(12%)	1.8%	$32.92

47-0000	Construction and Extraction	885	1,096	210	24%	1.5%	$19.93
45-0000	Farming, Fishing, and Forestry	861	769	(92)	(11%)	1.0%	$13.34
19-0000	Life, Physical, and Social Science	515	673	158	31%	0.9%	$25.93
35-0000	Food Preparation and Serving Related	222	658	436	196%	0.9%	$10.77
27-0000	Arts, Design, Entertainment, Sports, and Media	440	624	183	42%	0.8%	$17.42
37-0000	Building and Grounds Cleaning and Maintenance	447	541	94	21%	0.7%	$14.00
33-0000	Protective Service	52	31	(21)	(41%)	0.0%	$21.29
23-0000	Legal	23	18	(4)	(19%)	0.0%	$31.05
29-0000	Healthcare Practitioners and Technical	21	11	(10)	(48%)	0.0%	$33.87
25-0000	Educational Instruction and Library	<10	11	8	286%	0.0%	$22.26
39-0000	Personal Care and Service	<10	<10	5	246%	0.0%	$11.99
31-0000	Healthcare Support	<10	<10	2	387%	0.0%	$13.82
21-0000	Community and Social Service	<10	<10	0	28%	0.0%	$22.56
55-0000	Military-only	0	0	0	0%	0.0%	$19.43
	Total	59,379	74,395	15,020	25%	100.0%	

Source: Lightcast/Emsi

Figure 21: 2022 Production Occupation (Aggregated) Jobs and Salary Ranges by County

County	2012 Jobs	2022 Jobs	Median Hourly Earnings	Avg. Hourly Earnings	Pct. 10 Hourly Earnings	Pct. 25 Hourly Earnings	Pct. 75 Hourly Earnings	Pct. 90 Hourly Earnings
Ada	10,042	15,704	$18.42	$20.08	$12.86	$14.98	$22.39	$28.50
Canyon	4,952	8,385	$16.32	$18.03	$12.13	$13.63	$20.48	$25.10
Kootenai	3,729	4,195	$17.50	$19.18	$12.36	$14.09	$21.42	$28.27
Twin Falls	3,109	4,013	$16.68	$17.81	$11.41	$13.35	$19.84	$25.06
Bonneville	2,425	3,292	$16.93	$19.73	$10.92	$13.17	$22.69	$35.08
Nez Perce	2,275	2,832	$19.90	$22.37	$14.31	$16.80	$25.65	$34.91
Bonner	1,457	1,341	$18.23	$19.67	$11.80	$14.14	$22.85	$28.41
Bannock	1,430	2,131	$16.40	$18.25	$11.34	$13.36	$20.61	$26.54
Bingham	1,417	1,855	$17.83	$18.54	$11.42	$13.37	$22.06	$26.06
Jerome	936	1,245	$16.43	$17.75	$11.14	$13.12	$19.51	$25.00
Cassia	927	1,262	$17.64	$18.45	$10.85	$13.04	$21.71	$26.76
Payette	877	878	$16.51	$17.40	$10.88	$12.85	$19.47	$24.56
Minidoka	697	916	$17.57	$18.58	$10.95	$13.65	$21.96	$26.44
Madison	684	1,057	$16.09	$17.38	$10.37	$12.28	$20.49	$25.78

County	2012 Jobs	2022 Jobs	Median Hourly Earnings	Avg. Hourly Earnings	Pct. 10 Hourly Earnings	Pct. 25 Hourly Earnings	Pct. 75 Hourly Earnings	Pct. 90 Hourly Earnings
Jefferson	604	710	$15.75	$18.99	$11.09	$12.77	$21.61	$32.23
Gooding	574	684	$18.41	$20.25	$11.30	$14.04	$23.53	$32.70
Power	567	630	$19.25	$20.43	$12.33	$14.57	$24.39	$30.51
Blaine	490	642	$18.35	$19.51	$11.23	$13.82	$23.04	$27.98
Caribou	438	461	$20.80	$23.05	$12.63	$15.99	$28.11	$38.28
Latah	417	468	$18.33	$19.26	$12.32	$13.96	$22.08	$28.12
Elmore	385	575	$17.50	$18.81	$11.43	$13.90	$21.75	$27.59
Washington	377	441	$17.40	$18.19	$11.47	$13.72	$19.92	$25.13
Butte	364	377	$21.56	$24.75	$13.10	$16.13	$31.83	$45.45
Benewah	316	358	$18.71	$20.16	$11.79	$15.25	$23.50	$27.09
Idaho	303	362	$17.63	$18.95	$11.16	$14.26	$22.55	$27.25
Shoshone	294	285	$16.92	$18.34	$10.81	$12.91	$21.82	$28.29
Franklin	259	364	$14.13	$15.44	$10.30	$11.46	$17.47	$22.61
Boundary	236	368	$17.45	$18.15	$11.16	$13.67	$21.26	$24.37
Lewis	202	133	$16.18	$17.26	$10.27	$12.86	$19.91	$24.43
Clearwater	157	248	$16.72	$18.33	$10.93	$13.27	$20.90	$27.74
Owyhee	144	142	$17.27	$20.26	$12.15	$13.87	$22.63	$30.38
Gem	135	298	$16.62	$18.71	$11.97	$13.48	$21.15	$27.61
Valley	103	131	$18.95	$20.39	$12.24	$14.50	$24.08	$31.98
Lincoln	93	126	$18.70	$21.05	$11.84	$14.87	$24.58	$34.81
Lemhi	88	138	$15.45	$16.45	$10.11	$11.65	$19.13	$23.68
Adams	84	79	$17.99	$20.87	$11.45	$14.90	$23.73	$34.79
Teton	82	208	$17.63	$18.74	$11.10	$13.15	$21.99	$27.13
Fremont	76	166	$15.98	$16.95	$10.30	$12.36	$19.56	$24.68
Custer	67	46	$16.47	$18.30	$10.39	$13.12	$21.39	$27.96
Bear Lake	60	155	$16.20	$17.18	$10.68	$12.08	$20.20	$25.46
Boise	35	62	$18.96	$20.60	$13.27	$15.70	$23.05	$28.96
Oneida	32	60	$17.73	$19.39	$10.54	$13.83	$21.95	$32.35
Clark	27	16	$19.86	$21.66	$12.69	$15.37	$25.57	$32.85
Camas	13	15	$17.44	$19.49	$9.66	$12.68	$24.06	$27.85

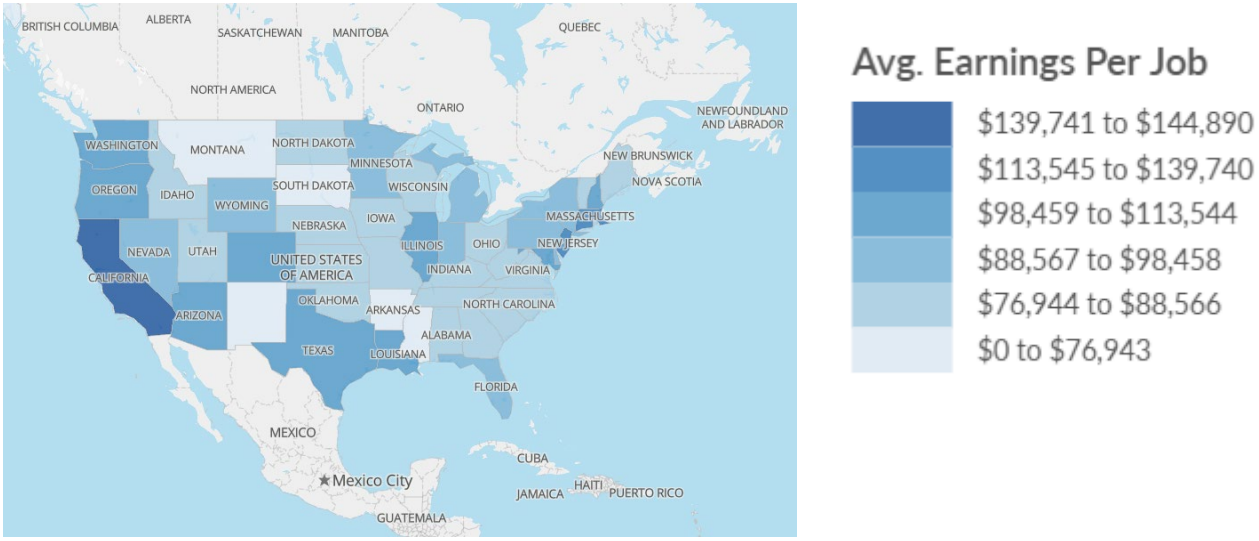
Source: Lightcast/Emsi

Manufacturing Salaries and Compensation Packages Nationwide

Idaho's average compensation package (salary + benefits) ranked 32nd in the nation at $82,871, which is 86.2% of the national average of $96,088 in 2022. The highest state's manufacturing

salary was California at $139,741, followed by Massachusetts ($121,850), New Jersey ($114,105), Connecticut ($113,545), and Maryland ($108,441). The lowest states were Montana ($74,640), South Dakota ($71,337), New Mexico ($70,985), Mississippi ($70,471), Arkansas ($68,578), and Hawaii ($65,769).

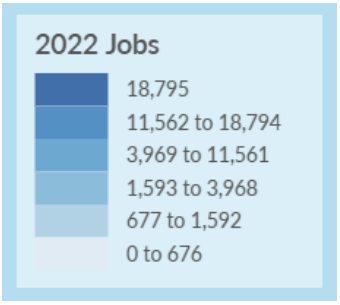
Average Compensation Packages Per State Manufacturing 2022



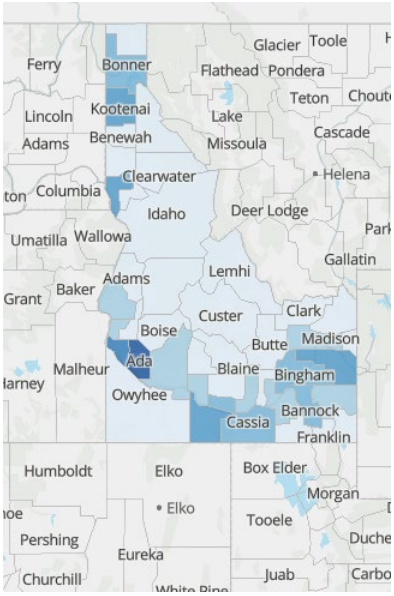
County-Level Manufacturing Data

Figure 22 and Figure 23 presents county-level data for manufacturing in Idaho for the largest 35 counties. They report jobs change 2012 to 2022, average earnings per job, and shift-share analysis. Ada, Canyon, and Kootenai counties have the largest manufacturing employment. Boise is the epicenter of manufacturing in Idaho with 18,785 jobs. Other important manufacturing counties include Twin Falls, Bonneville, Nez Perce, Bingham, Bonner, Jerome, Cassia, Minidoka, and Payette.

Figure 22: Idaho Manufacturing by County 2012-2022 for Top 35 Counties



Manufacturing Job Change 2012-2022.
(Source: Lightcast)



RK	County Name	2012 Jobs	2022 Jobs	Change	% Change	Avg. Earnings Per Job
1	Ada	16,687	18,795	2,107	13%	$119,963
2	Canyon	7,961	11,562	3,601	45%	$69,623
3	Kootenai	4,657	5,468	810	17%	$68,812
4	Twin Falls	3,358	5,012	1,654	49%	$69,018
5	Bonneville	2,699	4,181	1,482	55%	$63,207
6	Nez Perce	2,839	3,969	1,131	40%	$80,736
7	Bingham	2,239	2,395	156	7%	$64,080
8	Bannock	2,142	2,219	78	4%	$71,021
9	Bonner	2,169	2,120	(49)	(2%)	$70,321
10	Jerome	1,521	1,948	427	28%	$66,238
11	Cassia	1,286	1,593	307	24%	$66,422
12	Minidoka	1,126	1,278	152	13%	$66,860
13	Payette	1,097	1,260	163	15%	$56,124
14	Madison	763	1,126	363	48%	$49,162
15	Jefferson	977	1,124	147	15%	$68,091
16	Power	1,083	1,093	10	1%	$82,315
17	Gooding	805	949	144	18%	$69,608
18	Caribou	735	767	32	4%	$129,329
19	Elmore	411	765	354	86%	$50,552
20	Washington	526	677	151	29%	$55,768
21	Benewah	501	557	55	11%	$75,718
22	Boundary	339	555	216	64%	$65,746
23	Idaho	395	491	96	24%	$62,646
24	Latah	433	401	(33)	(8%)	$62,819
25	Franklin	158	399	241	153%	$76,633
26	Blaine	442	395	(48)	(11%)	$65,666
27	Clearwater	179	388	210	117%	$63,279
28	Gem	120	376	257	214%	$57,829
29	Shoshone	225	194	(31)	(14%)	$48,285
30	Teton	88	178	90	103%	$48,508
31	Lewis	282	176	(106)	(38%)	$51,357
32	Fremont	43	170	127	293%	$41,041
33	Lincoln	141	149	8	6%	$85,348
34	Owyhee	167	142	(25)	(15%)	$73,364
35	Adams	122	112	(10)	(8%)	$60,657
	All others	654	1,420	750	6	586,684
	Total	59,370	74,405	15,018	25%	$82,871

Source: Lightcast/Emsi and Authors' Calculations

Figure 23: Idaho Manufacturing by County 2012-2022 with Shift-Share Analysis

County Name	2022 Jobs	Ind. Mix Effect	Nat'l Growth Effect	Competitive Effect	Total Change
Ada	18,795	(890)	1,816	1,181	2,107
Canyon	11,562	(425)	866	3,160	3,601
Kootenai	5,468	(248)	507	552	810
Twin Falls	5,012	(179)	365	1,468	1,654
Bonneville	4,181	(144)	294	1,332	1,482
Nez Perce	3,969	(151)	309	973	1,131
Bingham	2,395	(119)	244	32	156
Bannock	2,219	(114)	233	(41)	78
Bonner	2,120	(116)	236	(169)	(49)
Jerome	1,948	(81)	166	343	427
Cassia	1,593	(69)	140	236	307
Minidoka	1,278	(60)	123	89	152
Payette	1,260	(59)	119	102	163
Madison	1,126	(41)	83	321	363
Jefferson	1,124	(52)	106	93	147
Power	1,093	(58)	118	(50)	10
Gooding	949	(43)	88	99	144
Caribou	767	(39)	80	(8)	32
Elmore	765	(22)	45	331	354
Washington	677	(28)	57	122	151
Benewah	557	(27)	55	28	55
Boundary	555	(18)	37	197	216
Idaho	491	(21)	43	74	96
Latah	401	(23)	47	(57)	(33)
Franklin	399	(8)	17	232	241
Blaine	395	(24)	48	(72)	(48)
Clearwater	388	(10)	19	200	210
Gem	376	(6)	13	250	257
Shoshone	194	(12)	24	(44)	(31)
Teton	178	(5)	10	85	90
Lewis	176	(15)	31	(122)	(106)
Fremont	170	(2)	5	124	127
Lincoln	149	(8)	15	(0)	8
Owyhee	142	(9)	18	(34)	(25)
Adams	112	(7)	13	(17)	(10)
All Others	374	(13)	28	107	115
Total	74,405	(3,168)	6,463	11,725	15,034

Source: Lightcast/Emsi and Authors' Calculations

Idaho Manufacturing and the COVID-19 Recession

Overview and Conclusions

The COVID-19 recession was the shortest on record according to the National Bureau of Economic Analysis (NBER), with the peak occurring in February 2020 and the trough in April 2020 (two months).[1] It followed the largest expansion phase in history, from the previous trough occurring in June 2009 to the peak in February 2020. However, the COVID-19 recession was one of the most disruptive in U.S. history. Mild by some measures, severe by others. The disruption of the U.S. and world supply chains caused havoc in the manufacturing and service industries.

A severe bout of inflation exploded in 2021 to levels not seen since the early 1980s. Many economists were predicting a recession in early 2023, and as of September of 2023, that recession has yet to materialize. The Federal Reserve System (i.e., the FED) has been raising the federal funds interest rates nearly every six weeks to fight inflation. The Federal Open Market Committee (FOMC) have been increasing rates from ¼ to ½ percentage point at each meeting. As a result, mortgage rates have increased from around 2.5% to over 7% in the last two years (most other interest rates are benchmarked to the federal funds rate).

Yet, many economists are talking about a soft-landing, bringing down inflation without causing a recession. This is very rare in U.S. history. Usually, eras of high inflation are followed by a recession.

Recently, there have been severe labor shortages throughout the industry and service sectors in the U.S. that have accompanied the supply chain disruptions. They also represent serious challenges for Idaho manufacturing firms. The labor shortages have subsequently only been partially alleviated and both labor shortages and employee turnover are often cited as key concerns of Idaho's manufacturing employers.

On top of these issues, U.S. housing prices have nearly doubled throughout the U.S., and increased much higher in some urban areas. Housing affordability is threatening the ability of new manufacturing firms to locate in Idaho and existing firms to expand their operations. Idaho over the last decade has been transformed from one of the most affordable states in the U.S. in housing costs to one of the most expensive. Idaho has had one of the fastest increases in housing prices in the country .

Idaho manufacturing employment fell briefly during 2020 and then rebounded robustly. Idaho was the second fastest growing state in population (2021-2022) and the state has experienced rapid population growth for many decades. This has partially shielded Idaho from some of the effects of

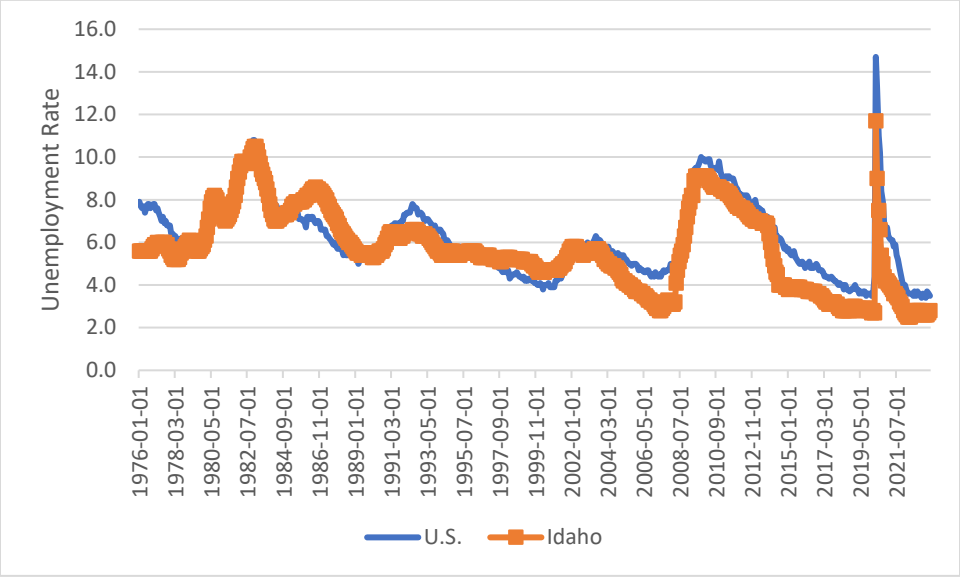
[1] Daily recession dates in FRED | FRED Blog (stlouisfed.org)

economic downturns and recessions including the COVID-19 recession. The top challenges for Idaho manufacturing firms are labor shortages, employee turnover, and supply chain constraints.

COVID-19 Recession Related Unemployment

Unemployment spiked to depression level highs during the U.S. COVID-19 related shutdowns, lasting for only a couple of months but enough to throw the economy into a recession. In April 2020, the U.S. unemployment rate spiked at 14.7% while Idaho fared better at 11.7% (Figure 24). Not all sectors were affected equally. The tourism, hospitality, and recreation industries were severely hurt. Economies dependent on these industries were put into severe recessions. Other industries were much less affected. Some service and high technology industries were only mildly affected. Many government sectors and employees were also spared. Critical care services such as hospitals and physician services capacity limits were severely stressed.

Figure 24: U.S. and Idaho Unemployment Rates 1976-2023 (July)



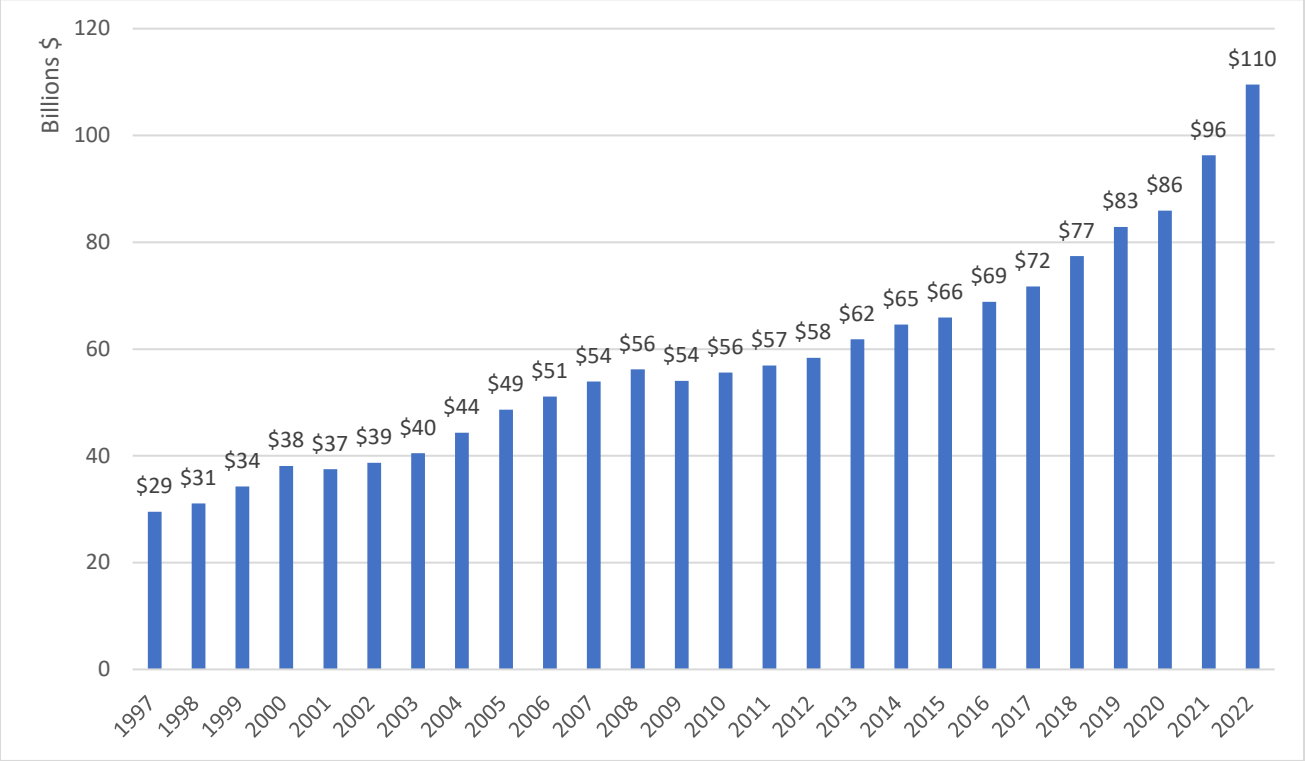
Source: U.S. Bureau of Labor Statistics, Unemployment Rate in Idaho [IDUR], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/IDUR

Idaho fared better than many states during the pandemic and recovered much more quickly than many other states. As of July 2023, Idaho's unemployment rate was 2.8%, and ranked 20/51, lowest among the states.[2]

COVID-19 Recession Related Effects on Output

Idaho's average annual nominal gross state product (GSP) has been growing robustly at 5.4% per year since 1997, as compared to the U.S. (4.4%). Idaho's nominal GSP actually increased 3.7% during the COVID-19 pandemic (2020), as compared to a -1.5% U.S. GDP decline (Figure 25 and Figure 26). Nevada's GSP, in contrast, fell -5.3% in 2020. Idaho's total GSP stood at $110 billion in 2022.

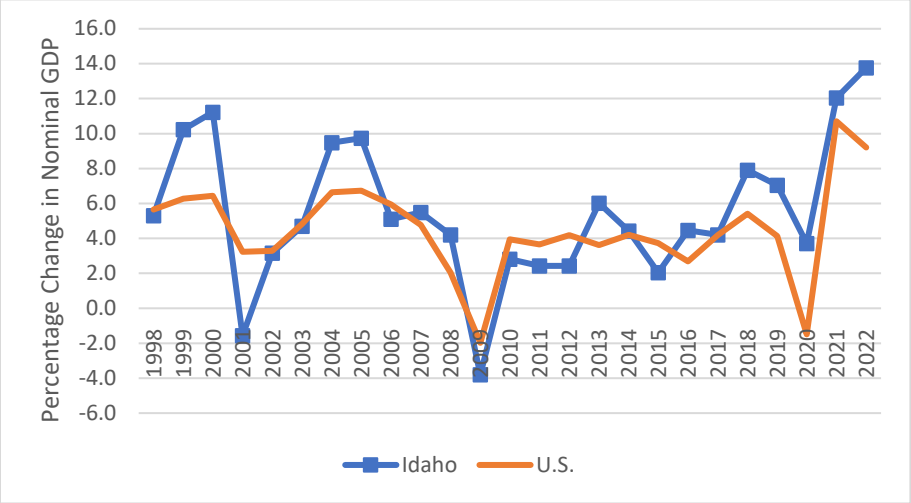
Figure 25: Idaho Gross State Product 1997—2022 (Nominal $ Billions)



Source: U.S. Bureau of Economic Analysis, Gross Domestic Product: All Industry Total in Idaho [IDNGSP], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/IDNGSP

[2] Unemployment Rates for States (bls.gov)

Figure 26: Percentage Change in nominal U.S. GDP and Idaho Gross State Product 1997—2022

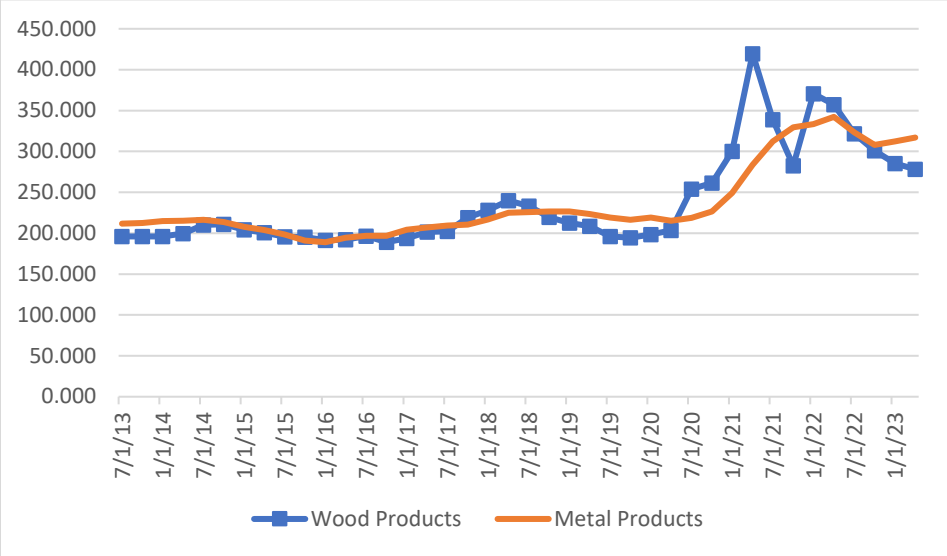


Source: U.S. Bureau of Economic Analysis, Gross Domestic Product [GDP], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/GDP

Supply Chain, Producer Prices, Inflation, and Interest Rates

Some key input prices to the construction and manufacturing industries spiked during the COVID-19 recession. For example, from 1/1/2020 to 4/1/2021, wood product prices increased by 111% (more than doubling) and metal prices increased 30%. Metal prices would eventually peak in April2022 with a 56% increase in prices (Figure 27). Many Idaho manufacturing firms were severely impacted by these input price spikes. Some of these price pressures have been alleviated but other prices are still increasing rapidly or have stabilized at a very high level.

Figure 27: Percentage Change in nominal U.S. GDP and Idaho Gross State Product 1997—2022

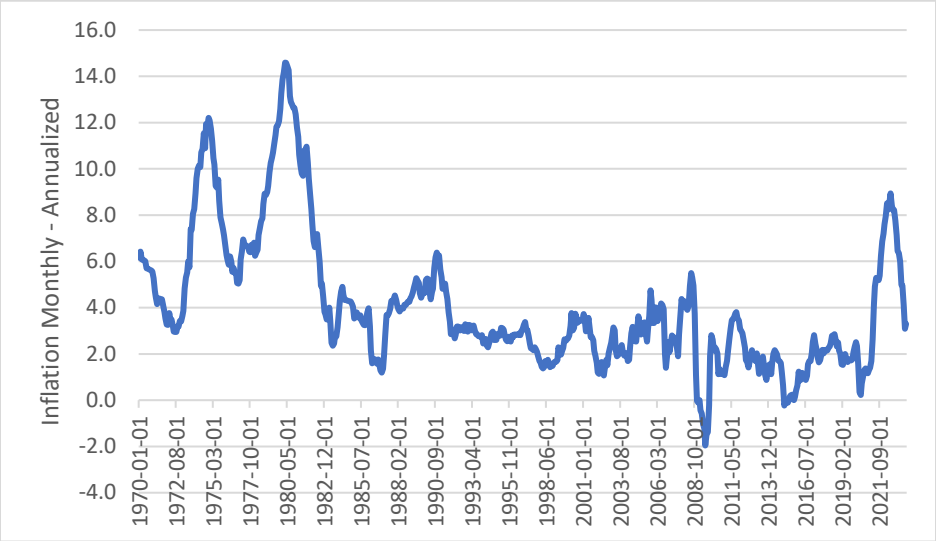


Source: U.S. Bureau of Labor Statistics, Producer Price Index by Commodity: Lumber and Wood Products: Plywood [WPU083], retrieved from

FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/WPU083.

Inflation overall spiked in 2021-2022 peaking at 8.9% (monthly annualized). It has fallen sharply and now stands at 3.3%. It is uncertain whether the FED will continue to raise interest rates to fight inflation. They risk causing a recession if they continue (Figure 28).

Figure 28: Inflation Rate as Measured by the Consumer Price Index (Monthly Annualized) 1970 to 2023 (July)



Source: U.S. Bureau of Labor Statistics, Consumer Price Index for All Urban Consumers: All Items in U.S. City Average [CPIAUCSL], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/CPIAUCSL,

In order to fight inflation, the FED has been systemically raising interest rates for the last two years. The 30-year mortgage rate has increased from 2.65% in January of 2020 to 7.12% in August 2023. Across the board interest rates have been increasing, threatening affordability for manufacturer workers and potentially making capital investment in manufacturing facilities more expensive (Figure 29).

Figure 29: 30 Year Mortgage Rate, 1971 to 2023 (August)

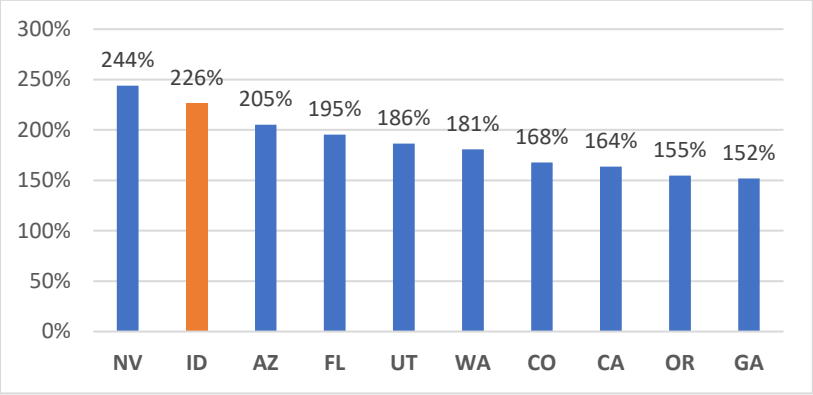
Source: Freddie Mac, 30-Year Fixed Rate Mortgage Average in the United States [MORTGAGE30US], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/MORTGAGE30US

Housing Prices and Challenges to Manufacturing Growth

Housing prices have become a major disruptive force in the economy beginning in 2016 and accelerating during the COVID-19 shutdowns and recession. From July 2018 to July 2022 (Peak), U.S. home prices overall increased 49.8% according to the Case-Shiller home price index. U.S. housing prices were 64.9% higher than their previous peak in 2006.

Idaho now ranks 12th in the nation in terms of the highest-"typical "single-family housing prices ($443,638), according to Zillow. *Idaho had the nation's second fastest increase in housing prices from 2012 (Q2) to 2022 (Q2 Peak) with a 226% increase (Figure 30.*

Figure 30: State Rankings in Percentage Increase in Home Purchase Prices 2012 (Q2) to 2022 (Q2) (Peak)



Source: House Price Index Datasets | Federal Housing Finance Agency (fhfa.gov); and the Kootenai County Housing Study

Employers, including many manufacturing firms, are having great difficulty in finding employees because they cannot find affordable housing in Idaho. According to the updated 2023 Kootenai County Housing Study, as of July 2023, only 20% of Kootenai County households could afford to purchase a median priced home ($525,000) with a 6.96% mortgage rate. *Approximately 80% of the Kootenai County households are currently priced out of the market.*[3]

The same dynamic is true in Boise. According to Intermountain MLS, the median price of a home in Ada County (Boise) is even higher than Kootenai County at $540,000 and the average price was even higher at $635,311 in July 2023.[4] Ada County is the hub location of many manufacturing industries in the state. *Only about 20% of the Ada County households can afford a median-priced home at current prices and interest rates.*

Idaho housing prices peaked around the second quarter of 2022 and then fell -7.3% on average due to high mortgage rates. There is considerable volatility in the market. In some Idaho counties, prices initially fell and then stabilized or increased in the summer of 2023. *There is no indication that Idaho housing prices will significantly decline or decline at all in the long-run.*

The lack of affordable housing is costing Idaho jobs including manufacturing jobs. Firms are unable to relocate to Idaho due to the high housing prices and lack of availability. In Kootenai County, for example, from the lack of affordability housing there is an estimated 1) loss of 5,340 jobs in the local economy; 2) a reduction of $535.6 million in gross regional product; and 3) a loss of $435.4 million in local payroll, and 4) $28.0 million in total lost taxes.[5]

Manufacturing Employment

Manufacturing employment increased from about 59,500 jobs in 2012 to 75,700[6] jobs in 2022. Recently, manufacturing jobs increased 3.2% from 2016 to 2017. The growth rate then declined steadily to -0.7% in 2020 due to COVID-19, rebounding to 3.8% in 2021 and 3.7% in 2022.

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[3] Coeur d'Alene EDC, 2021 Kootenai County Housing Study. 6fba29_f7cd54f0827c4ad79a72db544e6f6898.pdf (cdaedc.org). Note: the 2023 updated study will be published in October 2023.

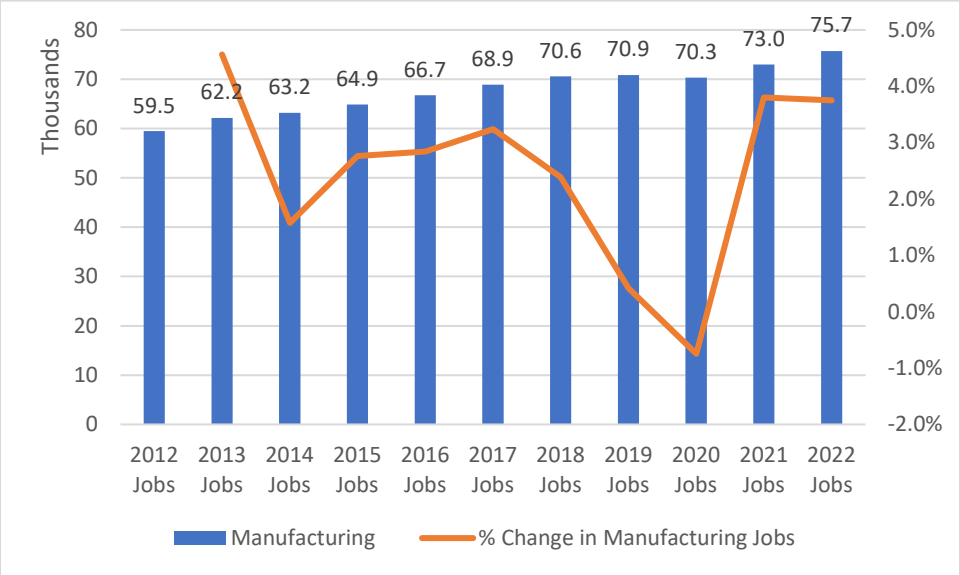
[4] IMLS (imlsmembers.com).

[5] Upcoming Updated 2023 Kootenai County Housing Study.

[6] Total manufacturing jobs differ slightly in this section of the report than earlier sections (74,406 jobs) due to updated Lightcast numbers. Lightcast revises its database quarterly.

Manufacturing job growth slowed from 2018 to 2019, turned negative in 2020, and then recovered robustly (Figure 31).

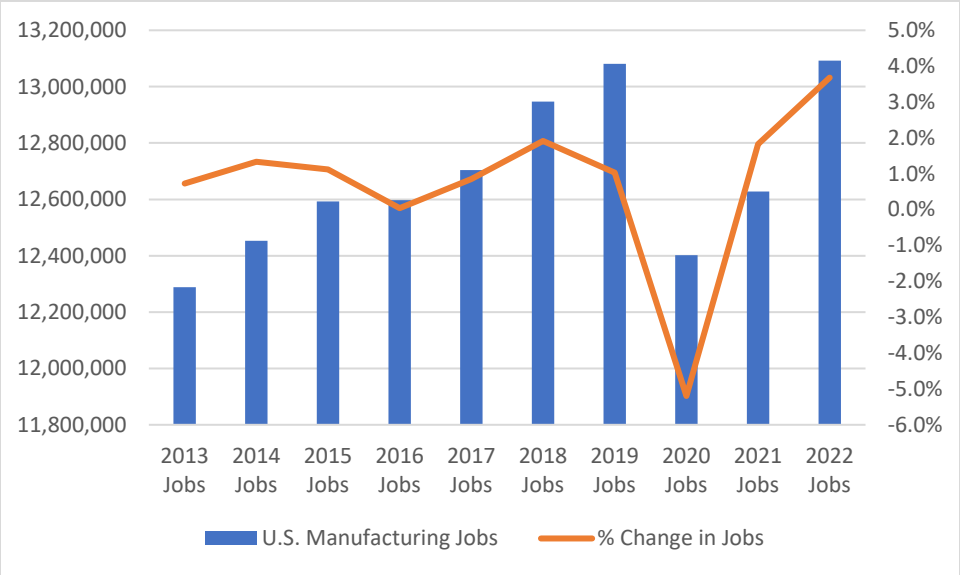
Figure 31: Idaho Manufacturing from 2012-2022 and Percentage Change in Manufacturing Employment



Source: Lightcast (Formely, Emsi)

The volatility of manufacturing jobs in the U.S, was much greater than Idaho. Manufacturing jobs fell by -5.3% in 2020 (Figure 32)

Figure 32: *U.S. Manufacturing* from 2012-2022 and Percentage Change in Manufacturing Employment



Manufacturing Wages and Benefits

Idaho manufacturing wages and benefits (i.e., total compensation) increased in real terms (unevenly) from $74,705 in 2001 to $84,676 (in constant $2022 dollars). Real wages increased from 2019 to 2020, thus faring well during the COVID-19 recession. They previously peaked, however, in 2018 at $89,367. Wages declined from $88,791 in 2020 to $84,676 in 2022 (after adjusting for inflation). The recent high inflation has been a threat to the earning power of manufacturing workers. Inflation is slowing, dropping from 8.9% in June 2022 to 3.3% in July 2023 (Figure 33 and Figure 34).

Figure 33: Nominal and Real Wages and Benefits Idaho Manufacturing Workers 2001-

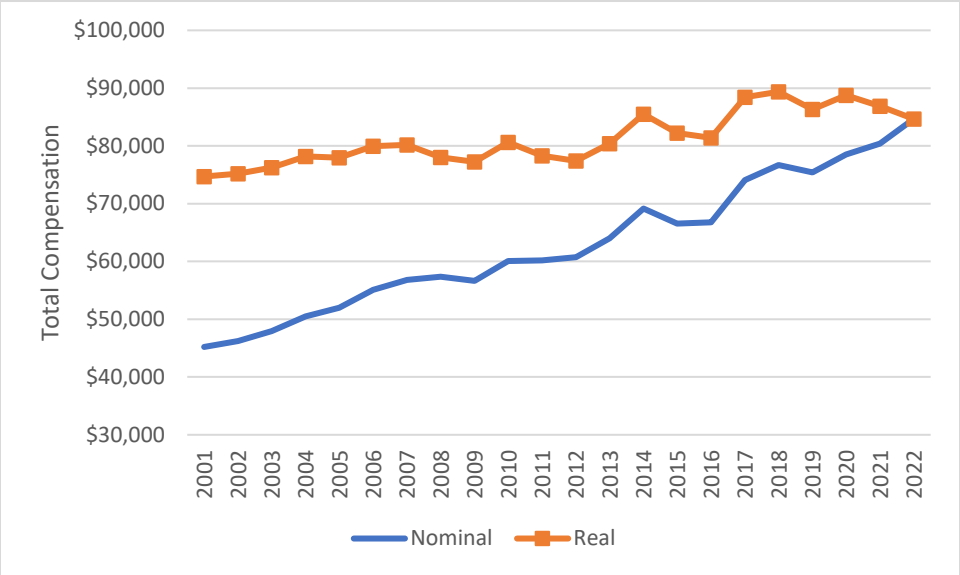


Figure 34: Real Wages and Benefits Idaho Manufacturing Workers 2017-2002

Year	Real Compensation
2017	$88,457
2018	$89,367
2019	$86,348
2020	$88,791
2021	$86,858
2022	$84,676

Employment in the Manufacturing Industries

Overall, manufacturing fared reasonably well during the COVID-19 recession but total employment did decline overall (529 jobs) and then recovered in 2021 and 2022 (Figure 35).

Figure 35: Total Idaho Jobs Per Manufacturing Industry (3-Digit NACIS Code) from 2018 to 2022

Industry	2018	2019	2020	2021	2022
Food	18,872	19,341	19,328	19,632	20,246
Beverage and Tobacco Product	1,138	1,182	1,256	1,498	1,653
Textile Mills	40	46	40	54	52
Textile Product Mills	540	367	375	417	449
Apparel	263	264	298	312	321
Leather and Allied Product	81	94	110	124	120
Wood Product	7,065	7,254	7,047	7,296	7,372
Paper	1,841	1,852	1,871	1,864	1,835
Printing and Related Support Activities	1,379	1,442	1,386	1,398	1,526
Petroleum and Coal Products	64	52	42	37	42
Chemical	2,973	2,897	2,984	3,313	3,303
Plastics and Rubber Products	1,965	2,150	2,111	2,134	2,177
Nonmetallic Mineral Product	1,728	1,913	1,854	2,082	2,169
Primary Metal	520	582	547	495	505
Fabricated Metal Product	6,068	5,822	5,921	6,598	7,068
Machinery	3,326	3,471	3,640	3,925	4,447
Computer and Electronic Product	12,843	12,241	11,425	10,912	11,247
Electrical Equipment, Appliance	1,300	1,355	1,406	1,513	1,794
Transportation Equipment	3,825	3,798	3,657	3,974	3,878
Furniture and Related Product	2,124	1,993	2,051	2,201	2,233
Miscellaneous	2,598	2,735	2,975	3,215	3,292
Total	70,556	70,851	70,322	72,994	75,729

Figure 36 illustrates the year-by-year change in total manufacturing jobs. From 2019 to 2020, the industries' worst hit was Computer and Electronic Product (-816 jobs), Wood Products (-207), and Transportation Equipment (-142). Overall, the decline was 529 manufacturing jobs.

Figure 36: Change in Total Jobs Per Manufacturing Industry in Idaho (3-Digit NACIS Code) from 2018 to 2022

Industry	2018-2019	2019-2020	2020-2021	2021-2022
Food	469	(13)	304	614
Beverage and Tobacco Product	43	74	242	156
Textile Mills	6	(6)	14	(2)
Textile Product Mills	(173)	7	42	32
Apparel	1	34	14	9

Leather and Allied Product	13	16	14	(4)
Wood Product	188	(207)	249	76
Paper	12	18	(6)	(30)
Printing and Related Support Activities	63	(56)	12	128
Petroleum and Coal Products	(12)	(10)	(5)	5
Chemical	(76)	87	329	(10)
Plastics and Rubber Products	185	(39)	23	43
Nonmetallic Mineral Product	184	(59)	228	87
Primary Metal	61	(35)	(52)	10
Fabricated Metal Product	(246)	99	677	469
Machinery	145	170	284	523
Computer and Electronic Product	(602)	(816)	(513)	336
Electrical Equipment, Appliance	55	51	107	282
Transportation Equipment	(26)	(142)	318	(96)
Furniture and Related Product	(131)	57	150	31
Miscellaneous	137	240	241	77
Total	296	(529)	2,672	2,736

Urban Versus Rural Regions

Overview and Conclusions

The manufacturing industries are split between the urban and rural regions in roughly the same proportions. About 80% of manufacturing employment is situated in the urban areas and 20% in the rural areas. Manufacturing job growth has been slower in the rural areas and wages are about 10% lower than urban regions. It appears that the challenges manufacturing firms face in terms of attracting and holding good employees may be greater as well as greater supply chain issues.

Urban Versus Rural Split

There are many metrics to separate urban versus rural regions. The method chosen in this analysis is to categorize as urban any county that has a city with a population over 10,000 people. There are thirteen counties that fit that criterion:

Figure 36: Urban Counties:

Ada	*Jerome*
Bannock	*Kootenai*
Bingham	*Latah*
Bonneville	*Madison*
Canyon	*Nez Perce*
Cassia	*Twin Falls*
Elmore	

The remaining 32 counties (out of 44 counties) are defined as rural regions.

The 2022 population of the combined rural region was 405,338 (about 21% of Idaho's population) which had increased cumulatively by 11.8% since 2017, or 42,902 people.

The 2022 population of the urban region was 1,554,817 (about 79% of Idaho's population) which had increased cumulatively by 14.6% since 2017, or 42,902 people.

Of Idaho's manufacturing jobs, approximately 60,357 (80%) are urban jobs and 15,372 (20%) rural. The urban share is up slightly from 2012, from 79% to 80%, and the rural share down slightly from 21% to 20%. Job growth increased cumulatively 29% in the urban counties and 21% in the urban counties. Overall job growth was 27% state-wide (Figure 37).

Figure 37: Change in Total Jobs Per Manufacturing Industry Urban Versus Rural from 2018 to 2022

Region	2012	2022	Jobs	%
Urban	46,749	60,357	13,608	29%
Rural	12,716	15,372	2,656	21%
Total	59,465	75,729	16,264	27%

There are substantial wage differences between the urban and rural manufacturing jobs. Average urban wages and benefits are $86,627 while rural manufacturing workers make $77,015, or 89% of urban workers (Figure 37).

Figure 37: Urban Versus Rural Average Wages and Salaries

Region	Wage/Benefits	%
Rural	$77,015	89%
Urban	$86,627	100%

Figure 38 and Figure 39 present the manufacturing job growth for the urban and rural regions at the 3-digit NAICS level of aggregation.

Figure 38: Change in Urban Total Jobs Per Manufacturing Industry in Idaho (3-Digit NACIS Code) from 2018 to 2022

Industry	2012	2022	Change	% Change
Food	11,493	15,009	3,517	31%
Beverage and Tobacco Product	425	1,263	838	197%
Textile Mills	57	49	(7)	(13%)
Textile Product Mills	217	414	197	91%
Apparel	432	159	(273)	(63%)
Leather and Allied Product	68	70	2	3%
Wood Product	2,772	4,325	1,553	56%
Paper	1,566	1,490	(76)	(5%)
Printing and Related Support Activities	1,022	1,292	270	26%
Petroleum and Coal Products	48	40	(7)	(16%)
Chemical	1,521	2,303	782	51%
Plastics and Rubber Products	1,366	1,918	553	40%
Nonmetallic Mineral Product	941	1,827	886	94%
Primary Metal	588	411	(178)	(30%)
Fabricated Metal Product	4,417	6,188	1,771	40%
Machinery	2,292	3,761	1,469	64%
Computer and Electronic Product	11,246	10,638	(609)	(5%)
Electrical Equipment, Appliance	714	1,630	916	128%
Transportation Equipment	2,480	3,137	657	26%
Furniture and Related Product	1,481	1,869	388	26%
Miscellaneous	1,602	2,563	961	60%
Total	46,749	60,357	13,608	29%

Figure 39: Change in Rural Total Jobs Per Manufacturing Industry (3-Digit NACIS Code) from 2018 to 2022

Industry	2012	2022	Change	% Change
Food	4,523	5,236	714	16%
Beverage and Tobacco Product	217	390	173	80%
Textile Mills	<10	<10	NA	NA
Textile Product Mills	99	35	(64)	(65%)
Apparel	144	161	18	12%
Leather and Allied Product	41	49	9	22%
Wood Product	2,616	3,047	431	16%
Paper	90	345	255	282%
Printing and Related Support Activities	159	234	76	48%
Petroleum and Coal Products	<10	<10	NA	NA
Chemical	1,213	1,000	(213)	(18%)
Plastics and Rubber Products	258	259	1	0%
Nonmetallic Mineral Product	267	342	75	28%
Primary Metal	139	95	(45)	(32%)
Fabricated Metal Product	695	879	184	27%
Machinery	397	687	289	73%
Computer and Electronic Product	417	610	193	46%
Electrical Equipment, Appliance	103	164	61	59%
Transportation Equipment	485	741	255	53%
Furniture and Related Product	333	363	31	9%
Miscellaneous	509	729	219	43%
Total	12,705	15,368	2,663	21%

Appendix 1: 2022 Total Manufacturing Purchases by Industry at the 3-Digit NICAS Level of Aggregation ($ Millions)

NAICS	Manufacturing Industry Purchases	In-region Purchases	% In-region Purchases	Imported Purchases	% Imported Purchases	Total Purchases
311	Food Manufacturing	$1,038.50	54.0%	$883.56	46.0%	$1,922.06
112	Animal Production and Aquaculture	$866.23	49.3%	$892.00	50.7%	$1,758.23
424	Merchant Wholesalers, Nondurable Goods	$494.96	45.1%	$602.19	54.9%	$1,097.15
423	Merchant Wholesalers, Durable Goods	$322.42	40.5%	$474.59	59.5%	$797.00
484	Truck Transportation	$497.25	73.0%	$183.77	27.0%	$681.02
111	Crop Production	$326.63	49.9%	$328.43	50.1%	$655.06
551	Management of Companies and Enterprises	$241.61	39.7%	$366.30	60.3%	$607.91
332	Fabricated Metal Product Manufacturing	$130.00	22.9%	$437.27	77.1%	$567.27
331	Primary Metal Manufacturing	$30.84	5.7%	$514.36	94.3%	$545.20
321	Wood Product Manufacturing	$352.98	67.1%	$173.29	32.9%	$526.27
325	Chemical Manufacturing	$76.32	14.7%	$441.42	85.3%	$517.74
322	Paper Manufacturing	$76.80	15.5%	$418.82	84.5%	$495.62
541	Professional, Scientific, and Technical Services	$237.81	55.8%	$188.45	44.2%	$426.26
336	Transportation Equipment Manufacturing	$133.73	32.6%	$276.74	67.4%	$410.47
326	Plastics and Rubber Products Manufacturing	$19.03	7.0%	$251.67	93.0%	$270.70
113	Forestry and Logging	$171.90	70.6%	$71.46	29.4%	$243.36
493	Warehousing and Storage	$26.28	12.5%	$183.27	87.5%	$209.55
561	Administrative and Support Services	$126.59	63.3%	$73.44	36.7%	$200.03
221	Utilities	$81.49	41.4%	$115.11	58.6%	$196.60
333	Machinery Manufacturing	$19.34	12.8%	$132.21	87.2%	$151.55
327	Nonmetallic Mineral Product Manufacturing	$31.73	21.7%	$114.26	78.3%	$145.99
531	Real Estate	$120.83	84.7%	$21.84	15.3%	$142.67
482	Rail Transportation	$81.68	60.7%	$52.96	39.3%	$134.64
334	Computer and Electronic Product Manufacturing	$51.99	43.2%	$68.24	56.8%	$120.23
212	Mining (except Oil and Gas)	$35.70	32.5%	$74.29	67.5%	$109.99
324	Petroleum and Coal Products Manufacturing	$5.32	5.0%	$100.36	95.0%	$105.68

NAICS	Manufacturing Industry Purchases	In-region Purchases	% In-region Purchases	Imported Purchases	% Imported Purchases	Total Purchases
335	Electrical Equipment, Appliance, and Component Manufacturing	$12.95	14.4%	$76.83	85.6%	$89.79
425	Wholesale Electronic Markets and Agents and Brokers	$23.54	27.7%	$61.53	72.3%	$85.07
522	Credit Intermediation and Related Activities	$44.25	56.6%	$33.94	43.4%	$78.18
524	Insurance Carriers and Related Activities	$51.85	78.3%	$14.38	21.7%	$66.23
441	Motor Vehicle and Parts Dealers	$27.87	44.9%	$34.24	55.1%	$62.10
518	Data Processing, Hosting, and Related Services	$15.91	26.9%	$43.31	73.1%	$59.22
811	Repair and Maintenance	$48.60	87.3%	$7.07	12.7%	$55.67
519	Other Information Services	$2.88	5.9%	$45.50	94.1%	$48.38
312	Beverage and Tobacco Product Manufacturing	$11.10	23.6%	$35.93	76.4%	$47.02
533	Lessors of Nonfinancial Intangible Assets (except Copyrighted Works)	$20.17	45.5%	$24.18	54.5%	$44.34
488	Support Activities for Transportation	$15.80	40.9%	$22.85	59.1%	$38.65
313	Textile Mills	$2.38	7.1%	$31.00	92.9%	$33.37
523	Securities, Commodity Contracts, and Other Financial Investments and Related Activities	$13.25	41.1%	$18.96	58.9%	$32.21
114	Fishing, Hunting and Trapping	$2.89	9.4%	$27.79	90.6%	$30.68
517	Telecommunications	$13.23	43.8%	$16.94	56.2%	$30.17
444	Building Material and Garden Equipment and Supplies Dealers	$12.49	45.5%	$14.99	54.5%	$27.48
481	Air Transportation	$5.89	23.6%	$19.06	76.4%	$24.95
511	Publishing Industries (except Internet)	$7.44	29.9%	$17.47	70.1%	$24.91
483	Water Transportation	$1.15	5.0%	$21.69	95.0%	$22.83
562	Waste Management and Remediation Services	$13.80	61.8%	$8.53	38.2%	$22.33
339	Miscellaneous Manufacturing	$4.77	23.4%	$15.59	76.6%	$20.37
722	Food Services and Drinking Places	$15.57	84.1%	$2.94	15.9%	$18.51
515	Broadcasting (except Internet)	$8.06	49.1%	$8.36	50.9%	$16.42
238	Specialty Trade Contractors	$11.93	86.8%	$1.81	13.2%	$13.74
445	Food and Beverage Stores	$4.63	36.1%	$8.20	63.9%	$12.82
452	General Merchandise Stores	$7.74	61.4%	$4.86	38.6%	$12.60

NAICS	Manufacturing Industry Purchases	In-region Purchases	% In-region Purchases	Imported Purchases	% Imported Purchases	Total Purchases
337	Furniture and Related Product Manufacturing	$3.00	29.8%	$7.06	70.2%	$10.07
211	Oil and Gas Extraction	$1.20	12.6%	$8.28	87.4%	$9.48
323	Printing and Related Support Activities	$1.49	16.1%	$7.77	83.9%	$9.26
454	Nonstore Retailers	$3.21	36.6%	$5.56	63.4%	$8.77
532	Rental and Leasing Services	$5.63	70.0%	$2.41	30.0%	$8.04
813	Religious, Grantmaking, Civic, Professional, and Similar Organizations	$3.59	44.7%	$4.44	55.3%	$8.03
721	Accommodation	$4.75	61.2%	$3.01	38.8%	$7.76
711	Performing Arts, Spectator Sports, and Related Industries	$2.71	39.8%	$4.11	60.2%	$6.83
611	Educational Services	$1.81	30.6%	$4.11	69.4%	$5.92
236	Construction of Buildings	$4.51	79.8%	$1.14	20.2%	$5.65
485	Transit and Ground Passenger Transportation	$1.66	40.9%	$2.40	59.1%	$4.07
901	Federal Government	$2.88	85.4%	$0.49	14.6%	$3.37
314	Textile Product Mills	$0.73	23.4%	$2.39	76.6%	$3.12
237	Heavy and Civil Engineering Construction	$2.10	71.7%	$0.83	28.3%	$2.93
213	Support Activities for Mining	$0.26	10.6%	$2.24	89.4%	$2.51
453	Miscellaneous Store Retailers	$0.96	46.9%	$1.09	53.1%	$2.05
486	Pipeline Transportation	$0.49	24.1%	$1.53	75.9%	$2.02
448	Clothing and Clothing Accessories Stores	$0.74	41.9%	$1.03	58.1%	$1.78
622	Hospitals	$1.37	80.4%	$0.34	19.6%	$1.71
447	Gasoline Stations	$1.36	83.8%	$0.26	16.2%	$1.62
492	Couriers and Messengers	$1.05	71.2%	$0.43	28.8%	$1.48
713	Amusement, Gambling, and Recreation Industries	$0.92	72.5%	$0.35	27.5%	$1.27
621	Ambulatory Health Care Services	$0.88	74.5%	$0.30	25.5%	$1.18
512	Motion Picture and Sound Recording Industries	$0.18	16.3%	$0.92	83.7%	$1.10
443	Electronics and Appliance Stores	$0.39	36.1%	$0.69	63.9%	$1.07
442	Furniture and Home Furnishings Stores	$0.53	53.4%	$0.46	46.6%	$0.99
487	Scenic and Sightseeing Transportation	$0.37	46.3%	$0.43	53.7%	$0.80

NAICS	Manufacturing Industry Purchases	In-region Purchases	% In-region Purchases	Imported Purchases	% Imported Purchases	Total Purchases
451	Sporting Goods, Hobby, Musical Instrument, and Book Stores	$0.46	58.6%	$0.33	41.4%	$0.79
812	Personal and Laundry Services	$0.39	55.9%	$0.31	44.1%	$0.70
521	Monetary Authorities-Central Bank	$0.09	13.9%	$0.54	86.1%	$0.63
315	Apparel Manufacturing	$0.05	10.2%	$0.45	89.8%	$0.50
316	Leather and Allied Product Manufacturing	$0.07	19.1%	$0.30	80.9%	$0.37
446	Health and Personal Care Stores	$0.10	44.0%	$0.13	56.0%	$0.23
712	Museums, Historical Sites, and Similar Institutions	$0.03	35.4%	$0.06	64.6%	$0.09
525	Funds, Trusts, and Other Financial Vehicles	$0.02	45.5%	$0.02	54.5%	$0.04
623	Nursing and Residential Care Facilities	$0.02	70.3%	$0.01	29.7%	$0.03
624	Social Assistance	$0.02	66.9%	$0.01	33.1%	$0.03
491	Postal Service	$0.00	52.5%	$0.00	47.5%	$0.01
115	Support Activities for Agriculture and Forestry	$0.00	70.2%	$0.00	29.8%	$0.00
	Total	$6,048	43%	$8,124	57%	$14,173

Appendix 2: 2012-2022 Manufacturing Employment Changes, Average Compensation Packages, and Pay-Rolled Locations

NAICS	Manufacturing Industry	2012 Jobs	2022 Jobs	Change	% Change	Avg. Earnings Per Job	2022 Pay-rolled Business Locations
3111	Animal Food	389	638	248	64%	$76,488	41
3112	Grain and Oilseed Milling	361	308	(54)	(15%)	$83,434	16
3113	Sugar and Confectionery Product	1,810	1,685	(125)	(7%)	$76,065	26
3114	Fruit and Vegetable Preserving and Specialty Food	7,499	6,992	(506)	(7%)	$69,065	58
3115	Dairy Product	2,694	4,605	1,910	71%	$73,122	36
3116	Animal Slaughtering and Processing	1,454	2,407	953	65%	$65,578	60
3117	Seafood Product Preparation and Packaging	370	302	(68)	(18%)	$65,406	10
3118	Bakeries and Tortilla	845	1,649	804	95%	$50,438	87
3119	Other Food	593	1,311	718	121%	$66,986	70
3121	Beverage	642	1,572	930	145%	$45,860	133
3122	Tobacco	0	<10	-	-	-	1
3131	Fiber, Yarn, and Thread Mills	<10	13	-	-	$86,366	3
3132	Fabric Mills	31	<10	-	-	-	4
3133	Textile and Fabric Finishing and Fabric Coating Mills	27	38	11	41%	$62,648	8
3141	Textile Furnishings Mills	63	33	(31)	(48%)	$35,275	7
3149	Other Textile Product Mills	252	409	157	62%	$54,882	39
3151	Apparel Knitting Mills	97	0	(97)	(100%)	$0	0
3152	Cut and Sew Apparel	378	93	(285)	(75%)	$28,708	15
3159	Apparel Accessories and Other Apparel	103	223	120	117%	$62,577	18
3161	Leather and Hide Tanning and Finishing	29	11	(19)	(63%)	$57,754	5
3162	Footwear	19	20	2	8%	$66,002	3
3169	Other Leather and Allied Product	61	92	31	51%	$36,361	11
3211	Sawmills and Wood Preservation	1,801	2,124	323	18%	$77,398	49
3212	Veneer, Plywood, and Engineered Wood Product	661	1,158	496	75%	$65,692	32
3219	Other Wood Product	2,926	4,066	1,140	39%	$61,531	169
3221	Pulp, Paper, and Paperboard Mills	1,034	744	(290)	(28%)	$109,610	5
3222	Converted Paper Product	622	1,093	471	76%	$94,414	21
3231	Printing and Related Support Activities	1,181	1,473	292	25%	$44,170	171
3241	Petroleum and Coal Products	52	35	(17)	(33%)	$111,061	7
3251	Basic Chemical	101	167	65	65%	$95,405	21

NAICS	Manufacturing Industry	2012 Jobs	2022 Jobs	Change	% Change	Avg. Earnings Per Job	2022 Pay-rolled Business Locations
3252	Resin, Synthetic Rubber, Synthetic	70	<10	-	-	-	3
3253	Pesticide, Fertilizer, and Other Agricultural	962	930	(32)	(3%)	$116,894	38
3254	Pharmaceutical and Medicine	411	464	53	13%	$108,837	45
3255	Paint, Coating, and Adhesive	10	16	6	60%	$97,432	9
3256	Soap, Cleaning Compound, and Toilet Preparation	706	1,203	498	71%	$57,082	23
3259	Other Chemical Product and Preparation	473	616	144	30%	$97,181	18
3261	Plastics Product	1,525	2,063	537	35%	$65,323	82
3262	Rubber Product	100	116	16	16%	$73,248	26
3271	Clay Product and Refractory	21	116	95	463%	$51,632	5
3272	Glass and Glass Product	114	37	(77)	(67%)	$70,204	7
3273	Cement and Concrete Product	952	1,620	668	70%	$76,416	65
3274	Lime and Gypsum Product	<10	13	-	-	$69,295	3
3279	Other Nonmetallic Mineral Product	116	381	265	229%	$59,793	41
3311	Iron and Steel Mills and Ferroalloy	39	<10	-	-	-	5
3312	Steel Product from Purchased Steel	51	32	(18)	(36%)	$62,508	8
3313	Alumina and Aluminum Production and Processing	<10	44	-	-	$73,394	3
3314	Nonferrous Metal (except Aluminum) Prod.	267	179	(87)	(33%)	$76,249	9
3315	Foundries	362	232	(130)	(36%)	$72,496	14
3321	Forging and Stamping	27	72	44	162%	$52,191	10
3322	Cutlery and Handtool	401	547	146	36%	$56,817	18
3323	Architectural and Structural Metals	1,150	1,719	570	50%	$64,932	135
3324	Boiler, Tank, and Shipping Container	422	416	(6)	(1%)	$75,378	22
3325	Hardware	205	84	(121)	(59%)	$63,240	9
3326	Spring and Wire Product	33	22	(11)	(33%)	$69,706	5
3327	Machine Shops; Turned Product; and Screw	1,262	1,275	13	1%	$59,466	142
3328	Coating, Engraving, Heat Treating, and Allied	119	226	108	91%	$48,826	28
3329	Other Fabricated Metal Product	1,494	2,456	962	64%	$65,596	127
3331	Agriculture, Construction, and Mining Machinery	912	1,502	590	65%	$67,732	65
3332	Industrial Machinery	504	920	416	83%	$75,574	47
3333	Commercial and Service Industry Machinery	542	633	91	17%	$75,668	23
3334	Ventilation, Heating, Air-Conditioning,	106	205	99	93%	$67,191	19
3335	Metalworking Machinery	247	292	45	18%	$71,265	29
3336	Engine, Turbine, and Power Transmission Equip.	23	13	(11)	(45%)	$157,439	12

NAICS	Manufacturing Industry	2012 Jobs	2022 Jobs	Change	% Change	Avg. Earnings Per Job	2022 Pay-rolled Business Locations
3339	Other General-Purpose Machinery	355	617	262	74%	$72,640	69
3341	Computer and Peripheral Equipment	2,756	1,676	(1,080)	(39%)	$184,035	37
3342	Communications Equipment	98	514	416	423%	$147,609	32
3343	Audio and Video Equipment	41	13	(28)	(68%)	$151,925	8
3344	Semiconductor and Other Electronic Component	8,452	8,009	(443)	(5%)	$169,769	62
3345	Navigational, Measuring, Electromedical	307	675	368	120%	$81,375	78
3346	and Reproducing Magnetic and Optical Media	<10	29	-	-	$166,640	17
3351	Electric Lighting Equipment	20	44	24	118%	$88,140	13
3352	Household Appliance	61	145	83	136%	$77,183	12
3353	Electrical Equipment	495	971	477	96%	$83,352	24
3359	Other Electrical Equipment and Component	241	443	202	84%	$92,106	49
3361	Motor Vehicle	97	108	11	11%	$80,100	6
3362	Motor Vehicle Body and Trailer	1,369	2,328	959	70%	$66,758	41
3363	Motor Vehicle Parts	307	431	124	40%	$66,733	31
3364	Aerospace Product and Parts	332	565	233	70%	$89,684	29
3365	Railroad Rolling Stock	497	23	(473)	(95%)	$91,573	4
3366	Ship and Boat Building	139	249	110	79%	$62,590	15
3369	Other Transportation Equipment	144	294	150	104%	$62,665	23
3371	Household and Institutional Furniture/Kitchen Cab.	1,236	1,866	630	51%	$52,042	151
3372	Office Furniture (including Fixtures)	532	328	(204)	(38%)	$52,179	34
3379	Other Furniture Related Product	45	57	12	26%	$49,589	4
3391	Medical Equipment and Supplies	792	774	(18)	(2%)	$81,573	110
3399	Other Miscellaneous	1,320	2,523	1,203	91%	$60,034	245

Appendix 3: Shift-share Analysis of Manufacturing Industries at the 4-Digit Level of NAICS Aggregation

NAICS	Manufacturing Industry	2012 Jobs	2022 Jobs	Nat'l Growth Effect	Ind. Mix Effect	Competitive Effect	Total Change
3111	Animal Food	389	638	42	82	124	248
3112	Grain and Oilseed Milling	361	308	39	(28)	(65)	(54)
3113	Sugar and Confectionery Product	1,810	1,685	197	51	(373)	(125)
3114	Fruit and Vegetable Preserving	7,499	6,992	816	(580)	(743)	(506)
3115	Dairy Product	2,694	4,605	293	200	1,417	1,910
3116	Animal Slaughtering and Processing	1,454	2,407	158	(51)	845	953
3117	Seafood Product Preparation	370	302	40	(81)	(28)	(68)
3118	Bakeries and Tortilla	845	1,649	92	29	683	804
3119	Other Food	593	1,311	64	176	478	718
3121	Beverage	642	1,572	70	405	455	930
3122	Tobacco	0	<10	0	(0)	1	-
3131	Fiber, Yarn, and Thread Mills	<10	13	0	(1)	10	-
3132	Fabric Mills	31	<10	3	(9)	(19)	-
3133	Textile and Fabric Finishing and Fabric	27	38	3	(10)	18	11
3141	Textile Furnishings Mills	63	33	7	(14)	(23)	(31)
3149	Other Textile Product Mills	252	409	27	(32)	162	157
3151	Apparel Knitting Mills	97	0	11	(60)	(47)	(97)
3152	Cut and Sew Apparel	378	93	41	(181)	(146)	(285)
3159	Apparel Accessories and Other Apparel	103	223	11	(10)	119	120
3161	Leather and Hide Tanning and Finishing	29	11	3	(6)	(15)	(19)
3162	Footwear	19	20	2	(5)	4	2
3169	Other Leather and Allied Product	61	92	7	(2)	27	31
3211	Sawmills and Wood Preservation	1,801	2,124	196	(44)	171	323
3212	Veneer, Plywood, and Engineered	661	1,158	72	154	270	496
3219	Other Wood Product	2,926	4,066	318	507	314	1,140
3221	Pulp, Paper, and Paperboard Mills	1,034	744	113	(297)	(106)	(290)
3222	Converted Paper Product	622	1,093	68	(73)	476	471
3231	Printing and Related Support Activities	1,181	1,473	129	(345)	509	292
3241	Petroleum and Coal Products	52	35	6	(10)	(13)	(17)
3251	Basic Chemical	101	167	11	(7)	62	65
3252	Resin, Synthetic Rubber, Synthetic	70	<10	8	(6)	(66)	-

NAICS	Manufacturing Industry	2012 Jobs	2022 Jobs	Nat'l Growth Effect	Ind. Mix Effect	Competitive Effect	Total Change
3253	Pesticide, Fertilizer, and Other	962	930	105	(73)	(64)	(32)
3254	Pharmaceutical and Medicine	411	464	45	63	(55)	53
3255	Paint, Coating, and Adhesive	10	16	1	0	5	6
3256	Soap, Cleaning Compound, and Toilet	706	1,203	77	22	399	498
3259	Other Chemical Product/Preparation	473	616	51	(70)	162	144
3261	Plastics Product	1,525	2,063	166	102	269	537
3262	Rubber Product	100	116	11	(9)	14	16
3271	Clay Product and Refractory	21	116	2	(4)	97	95
3272	Glass and Glass Product	114	37	12	(11)	(79)	(77)
3273	Cement and Concrete Product	952	1,620	104	84	481	668
3274	Lime and Gypsum Product	<10	13	1	(0)	7	-
3279	Other Nonmetallic Mineral Product	116	381	13	7	245	265
3311	Iron and Steel Mills and Ferroalloy	39	<10	4	(9)	(27)	-
3312	Steel Product from Purchased Steel	51	32	6	(9)	(14)	(18)
3313	Alumina and Aluminum Production	<10	44	1	(1)	34	-
3314	Nonferrous Metal (except Aluminum)	267	179	29	(54)	(63)	(87)
3315	Foundries	362	232	39	(109)	(60)	(130)
3321	Forging and Stamping	27	72	3	(5)	46	44
3322	Cutlery and Hand tool	401	547	44	(65)	167	146
3323	Architectural and Structural Metals	1,150	1,719	125	53	392	570
3324	Boiler, Tank, and Shipping Container	422	416	46	(70)	18	(6)
3325	Hardware	205	84	22	(11)	(132)	(121)
3326	Spring and Wire Product	33	22	4	(4)	(10)	(11)
3327	Machine Shops; Turned Product	1,262	1,275	137	(232)	107	13
3328	Coating, Engraving, Heat Treating	119	226	13	(21)	116	108
3329	Other Fabricated Metal Product	1,494	2,456	163	(133)	933	962
3331	Agriculture, Constr./ Mining Machinery	912	1,502	99	(251)	742	590
3332	Industrial Machinery	504	920	55	47	314	416
3333	Commercial and Service Machinery	542	633	59	(62)	95	91
3334	Ventilation, Heating, Air-Conditioning,	106	205	12	0	87	99
3335	Metalworking Machinery	247	292	27	(48)	66	45
3336	Engine, Turbine, and Powe Trans.	23	13	3	(6)	(8)	(11)
3339	Other General-Purpose Machinery	355	617	39	(9)	232	262
3341	Computer and Peripheral Equipment	2,756	1,676	300	(313)	(1,067)	(1,080)
3342	Communications Equipment	98	514	11	(32)	437	416
3343	Audio and Video Equipment	41	13	4	(6)	(26)	(28)

NAICS	Manufacturing Industry	2012 Jobs	2022 Jobs	Nat'l Growth Effect	Ind. Mix Effect	Competitive Effect	Total Change
3344	Semiconductor and Other Electronic	8,452	8,009	920	(1,051)	(312)	(443)
3345	Navigational, Meas./Electromedical	307	675	33	(20)	355	368
3346	Media	<10	29	1	(5)	24	-
3351	Electric Lighting Equipment	20	44	2	(5)	27	24
3352	Household Appliance	61	145	7	8	69	83
3353	Electrical Equipment	495	971	54	(67)	490	477
3359	Other Electrical Equipment	241	443	26	13	163	202
3361	Motor Vehicle	97	108	11	41	(41)	11
3362	Motor Vehicle Body and Trailer	1,369	2,328	149	299	511	959
3363	Motor Vehicle Parts	307	431	33	4	87	124
3364	Aerospace Product and Parts	332	565	36	(42)	239	233
3365	Railroad Rolling Stock	497	23	54	(148)	(380)	(473)
3366	Ship and Boat Building	139	249	15	6	89	110
3369	Other Transportation Equipment	144	294	16	22	113	150
3371	Household Furniture/Kitchen Cab.	1,236	1,866	135	1	494	630
3372	Office Furniture (including Fixtures)	532	328	58	(69)	(192)	(204)
3379	Other Furniture Related Product	45	57	5	(4)	11	12
3391	Medical Equipment and Supplies	792	774	86	(37)	(67)	(18)
3399	Other Miscellaneous	1,320	2,523	144	(32)	1,091	1,203

Appendix 4: Location Quotient, Exported Sales, and Total Sales at the 4-Digit Level of NAICS Aggregation

NAICS	Manufacturing Industry	2012 Location Quotient	2022 Location Quotient	Change in LQ	2022 Exported Sales	2022 % Exported Sales	2022 Total Sales
3111	Animal Food	1.52	1.61	0.09	$487	72%	$672
3112	Grain and Oilseed Milling	1.25	0.88	(0.37)	$258	77%	$333
3113	Sugar and Confectionery Product	5.46	3.81	(1.66)	$763	95%	$806
3114	Fruit and Vegetable Preserving and Specialty Food	9.13	7.03	(2.11)	$2,393	93%	$2,560
3115	Dairy Product	4.22	5.19	0.97	$2,812	74%	$3,785
3116	Animal Slaughtering and Processing	0.63	0.82	0.20	$1,009	72%	$1,399
3117	Seafood Product Preparation and Packaging	2.05	1.60	(0.45)	$69	79%	$88
3118	Bakeries and Tortilla	0.59	0.85	0.27	$251	73%	$342
3119	Other Food	0.71	0.95	0.24	$464	82%	$565
3121	Beverage	0.75	0.90	0.15	$226	45%	$509
3122	Tobacco	0.00	0.01	0.01	$1	32%	$2
3131	Fiber, Yarn, and Thread Mills	0.02	0.09	0.06	$5	75%	$6
3132	Fabric Mills	0.11	0.02	(0.09)	$1	34%	$2
3133	Textile and Fabric Finishing and Fabric Coating Mills	0.15	0.25	0.09	$6	68%	$9
3141	Textile Furnishings Mills	0.25	0.12	(0.12)	$2	52%	$4
3149	Other Textile Product Mills	0.77	1.08	0.31	$48	72%	$66
3151	Apparel Knitting Mills	1.23	0.00	(1.23)	$0	0%	$0
3152	Cut and Sew Apparel	0.59	0.20	(0.40)	$5	71%	$7
3159	Apparel Accessories and Other Apparel	1.62	2.94	1.33	$27	85%	$31
3161	Leather and Hide Tanning and Finishing	1.42	0.50	(0.92)	$3	78%	$4
3162	Footwear	0.27	0.30	0.02	$6	88%	$7
3169	Other Leather and Allied Product	0.92	1.11	0.18	$17	81%	$21
3211	Sawmills and Wood Preservation	4.27	3.95	(0.32)	$697	72%	$974
3212	Veneer, Plywood, and Engineered Wood Product	2.20	2.44	0.24	$334	77%	$431
3219	Other Wood Product	2.95	2.72	(0.23)	$827	71%	$1,157
3221	Pulp, Paper, and Paperboard Mills	1.99	1.48	(0.51)	$642	92%	$696
3222	Converted Paper Product	0.48	0.72	0.24	$430	85%	$509
3231	Printing and Related Support Activities	0.51	0.67	0.15	$152	74%	$206
3241	Petroleum and Coal Products	0.10	0.06	(0.04)	$12	30%	$39
3251	Basic Chemical	0.15	0.20	0.05	$162	74%	$220

NAICS	Manufacturing Industry	2012 Location Quotient	2022 Location Quotient	Change in LQ	2022 Exported Sales	2022 % Exported Sales	2022 Total Sales
3252	Resin, Synthetic Rubber, and Artificial and Synthetic Fibers and Filaments	0.16	0.01	(0.15)	$4	60%	$6
3253	Pesticide, Fertilizer, and Other Agricultural Chemical	5.48	4.36	(1.12)	$936	87%	$1,079
3254	Pharmaceutical and Medicine	0.32	0.24	(0.08)	$132	62%	$213
3255	Paint, Coating, and Adhesive	0.04	0.04	0.01	$7	46%	$15
3256	Soap, Cleaning Compound, and Toilet Preparation	1.41	1.80	0.39	$434	84%	$517
3259	Other Chemical Product and Preparation	1.16	1.34	0.18	$279	86%	$326
3261	Plastics Product	0.62	0.61	(0.01)	$499	86%	$583
3262	Rubber Product	0.16	0.16	(0.01)	$30	75%	$40
3271	Clay Product and Refractory	0.10	0.52	0.42	$5	28%	$19
3272	Glass and Glass Product	0.29	0.08	(0.21)	$4	20%	$18
3273	Cement and Concrete Product	1.20	1.45	0.25	$237	45%	$530
3274	Lime and Gypsum Product	0.09	0.15	0.06	$4	64%	$6
3279	Other Nonmetallic Mineral Product	0.35	0.83	0.48	$38	48%	$80
3311	Iron and Steel Mills and Ferroalloy	0.09	0.01	(0.07)	$7	49%	$15
3312	Steel Product from Purchased Steel	0.18	0.10	(0.07)	$6	63%	$10
3313	Alumina and Aluminum Production and Processing	0.04	0.13	0.10	$27	90%	$29
3314	Nonferrous Metal (except Aluminum) Production and Processing	0.88	0.56	(0.33)	$146	91%	$160
3315	Foundries	0.58	0.39	(0.19)	$53	85%	$62
3321	Forging and Stamping	0.06	0.14	0.08	$30	59%	$50
3322	Cutlery and Handtool	2.06	2.52	0.46	$74	79%	$94
3323	Architectural and Structural Metals	0.70	0.77	0.07	$246	61%	$406
3324	Boiler, Tank, and Shipping Container	0.92	0.82	(0.10)	$86	66%	$130
3325	Hardware	1.83	0.61	(1.23)	$15	65%	$23
3326	Spring and Wire Product	0.16	0.10	(0.07)	$3	51%	$5
3327	Machine Shops; Turned Product; and Screw, Nut, and Bolt	0.71	0.66	(0.05)	$142	66%	$215
3328	Coating, Engraving, Heat Treating, and Allied Activities	0.18	0.32	0.14	$23	60%	$39
3329	Other Fabricated Metal Product	1.15	1.58	0.43	$478	80%	$600
3331	Agriculture, Construction, and Mining Machinery	0.77	1.29	0.52	$434	73%	$595
3332	Industrial Machinery	1.00	1.29	0.29	$187	86%	$218

NAICS	Manufacturing Industry	2012 Location Quotient	2022 Location Quotient	Change in LQ	2022 Exported Sales	2022 % Exported Sales	2022 Total Sales
3333	Commercial and Service Industry Machinery	1.26	1.26	0.00	$130	85%	$152
3334	Ventilation, Heating, Air-Conditioning, and Commercial Refrigeration Equipment	0.17	0.26	0.08	$39	70%	$56
3335	Metalworking Machinery	0.29	0.32	0.03	$45	72%	$62
3336	Engine, Turbine, and Power Transmission Equipment	0.05	0.03	(0.02)	$10	80%	$12
3339	Other General Purpose Machinery	0.29	0.40	0.11	$167	75%	$222
3341	Computer and Peripheral Equipment	3.63	1.89	(1.74)	$607	94%	$647
3342	Communications Equipment	0.19	1.06	0.87	$206	83%	$248
3343	Audio and Video Equipment	0.41	0.12	(0.29)	$3	83%	$4
3344	Semiconductor and Other Electronic Component	4.59	3.76	(0.83)	$2,434	93%	$2,612
3345	Navigational, Measuring, Electromedical, and Control Instruments	0.16	0.29	0.13	$112	82%	$136
3346	and Reproducing Magnetic and Optical Media	0.09	0.44	0.34	$5	68%	$8
3351	Electric Lighting Equipment	0.09	0.20	0.10	$7	58%	$12
3352	Household Appliance	0.22	0.37	0.14	$31	76%	$40
3353	Electrical Equipment	0.72	1.24	0.52	$184	89%	$206
3359	Other Electrical Equipment and Component	0.40	0.53	0.14	$158	86%	$183
3361	Motor Vehicle	0.12	0.07	(0.04)	$173	55%	$314
3362	Motor Vehicle Body and Trailer	2.25	2.45	0.20	$662	76%	$876
3363	Motor Vehicle Parts	0.13	0.14	0.01	$85	47%	$180
3364	Aerospace Product and Parts	0.14	0.21	0.07	$149	75%	$198
3365	Railroad Rolling Stock	4.30	0.21	(4.09)	$3	22%	$15
3366	Ship and Boat Building	0.22	0.30	0.07	$23	37%	$62
3369	Other Transportation Equipment	0.91	1.26	0.35	$74	61%	$123
3371	Household and Institutional Furniture and Kitchen Cabinet	1.10	1.27	0.17	$185	70%	$264
3372	Office Furniture (including Fixtures)	1.06	0.57	(0.49)	$48	75%	$64
3379	Other Furniture Related Product	0.25	0.27	0.01	$10	75%	$14
3391	Medical Equipment and Supplies	0.52	0.41	(0.11)	$131	79%	$166
3399	Other Miscellaneous	0.91	1.37	0.45	$362	81%	$448

Appendix 5: Staffing Patterns and Hourly Wage for Manufacturing at the 3-Digit Level of SOC Aggregation

SOC	Description	Employed in Industry (2012)	Employed in Industry (2022)	Change	% Change	% of Total Jobs in Industry	Median Hourly Earnings
51-9000	Other Production Occupations	8,922	12,572	3,650	41%	16.9%	$16.67
51-2000	Assemblers and Fabricators	6,413	11,008	4,595	72%	14.8%	$14.65
51-4000	Metal Workers and Plastic Workers	4,813	5,820	1,007	21%	7.8%	$21.45
53-7000	Material Moving Workers	3,736	5,009	1,273	34%	6.7%	$14.49
51-3000	Food Processing Workers	3,289	3,584	295	9%	4.8%	$14.66
51-1000	Supervisors of Production Workers	2,083	3,582	1,500	72%	4.8%	$28.39
49-9000	Other Installation, Maintenance, and Repair Occupations	2,397	3,042	644	27%	4.1%	$20.65
51-7000	Woodworkers	2,213	2,887	674	30%	3.9%	$17.88
17-2000	Engineers	3,146	2,382	(763)	(24%)	3.2%	$42.58
11-1000	Top Executives	1,352	1,983	630	47%	2.7%	$29.65
13-1000	Business Operations Specialists	1,169	1,617	449	38%	2.2%	$29.62
41-4000	Sales Representatives, Wholesale and Manufacturing	1,356	1,557	201	15%	2.1%	$26.77
43-5000	Material Recording, Scheduling, Dispatching, and Distributing Workers	1,230	1,461	231	19%	2.0%	$18.74
15-1200	Computer Occupations	1,514	1,332	(182)	(12%)	1.8%	$32.69
53-3000	Motor Vehicle Operators	1,307	1,311	4	0%	1.8%	$20.30
17-3000	Drafters, Engineering Technicians, and Mapping Technicians	1,201	1,198	(3)	(0%)	1.6%	$25.47
11-3000	Operations Specialties Managers	1,219	1,136	(83)	(7%)	1.5%	$44.96
11-9000	Other Management Occupations	1,093	1,059	(34)	(3%)	1.4%	$26.93
47-2000	Construction Trades Workers	824	1,042	218	26%	1.4%	$19.23
43-9000	Other Office and Administrative Support Workers	852	978	126	15%	1.3%	$15.75
43-4000	Information and Record Clerks	1,121	975	(146)	(13%)	1.3%	$14.70
51-5100	Printing Workers	568	762	194	34%	1.0%	$16.72
51-6000	Textile, Apparel, and Furnishings Workers	846	719	(128)	(15%)	1.0%	$13.36
43-3000	Financial Clerks	935	703	(232)	(25%)	0.9%	$17.83
27-1000	Art and Design Workers	374	572	197	53%	0.8%	$14.96
45-2000	Agricultural Workers	606	539	(67)	(11%)	0.7%	$12.79
37-2000	Building Cleaning and Pest Control Workers	427	528	101	24%	0.7%	$13.33

SOC	Description	Employed in Industry (2012)	Employed in Industry (2022)	Change	% Change	% of Total Jobs in Industry	Median Hourly Earnings
41-2000	Retail Sales Workers	314	508	194	62%	0.7%	$12.60
43-6000	Secretaries and Administrative Assistants	481	475	(7)	(1%)	0.6%	$17.74
35-3000	Food and Beverage Serving Workers	89	406	317	356%	0.5%	$9.74
43-1000	Supervisors of Office and Administrative Support Workers	265	372	107	40%	0.5%	$23.22
13-2000	Financial Specialists	369	345	(24)	(7%)	0.5%	$28.54
49-1000	Supervisors of Installation, Maintenance, and Repair Workers	245	310	65	26%	0.4%	$29.03
19-4000	Life, Physical, and Social Science Technicians	218	307	89	41%	0.4%	$18.02
11-2000	Advertising, Marketing, Promotions, Public Relations, and Sales Managers	340	266	(74)	(22%)	0.4%	$41.57
51-8000	Plant and System Operators	317	229	(88)	(28%)	0.3%	$25.35
45-4000	Forest, Conservation, and Logging Workers	232	200	(32)	(14%)	0.3%	$23.95
53-1000	Supervisors of Transportation and Material Moving Workers	182	199	17	10%	0.3%	$23.53
49-3000	Vehicle and Mobile Equipment Mechanics, Installers, and Repairers	128	196	68	53%	0.3%	$20.40
35-2000	Cooks and Food Preparation Workers	97	159	62	64%	0.2%	$12.07
19-1000	Life Scientists	186	153	(34)	(18%)	0.2%	$32.29
19-2000	Physical Scientists	63	113	49	78%	0.2%	$33.13
41-9000	Other Sales and Related Workers	92	101	9	10%	0.1%	$15.05
49-2000	Electrical and Electronic Equipment Mechanics, Installers, and Repairers	223	100	(123)	(55%)	0.1%	$22.49
19-5000	Occupational Health and Safety Specialists and Technicians	43	98	55	127%	0.1%	$29.44
41-1000	Supervisors of Sales Workers	114	91	(22)	(20%)	0.1%	$19.01
41-3000	Sales Representatives, Services	21	69	48	228%	0.1%	$23.49
35-1000	Supervisors of Food Preparation and Serving Workers	25	54	29	116%	0.1%	$14.64
27-3000	Media and Communication Workers	64	49	(15)	(24%)	0.1%	$22.01
47-1000	Supervisors of Construction and Extraction Workers	37	42	5	15%	0.1%	$28.49
35-9000	Other Food Preparation and Serving Related Workers	11	38	27	254%	0.1%	$11.03
33-9000	Other Protective Service Workers	52	28	(24)	(46%)	0.0%	$14.81

SOC	Description	Employed in Industry (2012)	Employed in Industry (2022)	Change	% Change	% of Total Jobs in Industry	Median Hourly Earnings
15-2000	Mathematical Science Occupations	25	24	(0)	(1%)	0.0%	$37.07
45-1000	Supervisors of Farming, Fishing, and Forestry Workers	16	17	1	7%	0.0%	$20.42
23-1000	Lawyers, Judges, and Related Workers	19	15	(3)	(18%)	0.0%	$39.32
45-3000	Fishing and Hunting Workers	<10	13	5	72%	0.0%	$15.04
25-3000	Other Teachers and Instructors	<10	10	7	269%	0.0%	$14.54
47-3000	Helpers, Construction Trades	<10	<10	(4)	(59%)	0.0%	$17.48
53-5000	Water Transportation Workers	0	<10	0	5320%	0.0%	$31.72
47-4000	Other Construction and Related Workers	<10	<10	(5)	(68%)	0.0%	$21.46
53-2000	Air Transportation Workers	<10	<10	(1)	(73%)	0.0%	$48.60
47-5000	Extraction Workers	11	<10	(4)	(36%)	0.0%	$23.70
39-3000	Entertainment Attendants and Related Workers	<10	<10	1	197%	0.0%	$10.23
29-2000	Health Technologists and Technicians	14	<10	(11)	(78%)	0.0%	$21.50
21-1000	Counselors, Social Workers, and Other Community and Social Service Specialists	0	<10	0	Insf. Data	0.0%	$22.56
27-4000	Media and Communication Equipment Workers	<10	<10	1	63%	0.0%	$18.78
29-1000	Healthcare Diagnosing or Treating Practitioners	<10	<10	1	10%	0.0%	$37.58
39-9000	Other Personal Care and Service Workers	<10	<10	0	108%	0.0%	$12.17
25-1000	Postsecondary Teachers	0	<10	0	17516%	0.0%	$35.66
31-1100	Home Health and Personal Care Aides; and Nursing Assistants, Orderlies, and Psychiatric Aides	<10	<10	1	427%	0.0%	$12.10
23-2000	Legal Support Workers	<10	<10	(1)	(24%)	0.0%	$21.73
31-9000	Other Healthcare Support Occupations	0	<10	0	266%	0.0%	$17.42
21-2000	Religious Workers	<10	<10	(0)	(7%)	0.0%	$22.90
33-3000	Law Enforcement Workers	<10	<10	2	864%	0.0%	$25.91
37-1000	Supervisors of Building and Grounds Cleaning and Maintenance Workers	16	<10	(13)	(78%)	0.0%	$18.89
37-3000	Grounds Maintenance Workers	<10	<10	5	127%	0.0%	$14.58
19-3000	Social Scientists and Related Workers	<10	<10	(2)	(55%)	0.0%	$30.56
17-1000	Architects, Surveyors, and Cartographers	20	<10	(20)	(99%)	0.0%	$32.00

SOC	Description	Employed in Industry (2012)	Employed in Industry (2022)	Change	% Change	% of Total Jobs in Industry	Median Hourly Earnings
39-7000	Tour and Travel Guides	<10	<10	5	1340%	0.0%	$20.21
27-2000	Entertainers and Performers, Sports and Related Workers	<10	<10	1	137%	0.0%	$17.42
25-2000	Preschool, Elementary, Middle, Secondary, and Special Education Teachers	0	0	0	0%	0.0%	$23.39
53-4000	Rail Transportation Workers	0	0	0	Insf. Data	0.0%	$30.53
53-6000	Other Transportation Workers	<10	0	(1)	(100%)	0.0%	$13.73
55-9000	Military-only occupations	0	0	0	0%	0.0%	$19.43
43-2000	Communications Equipment Operators	0	0	0	0%	0.0%	$14.27
25-4000	Librarians, Curators, and Archivists	0	0	(0)	(100%)	0.0%	$17.16
25-9000	Other Educational Instruction and Library Occupations	0	0	0	0%	0.0%	$13.45
29-9000	Other Healthcare Practitioners and Technical Occupations	0	0	0	0%	0.0%	$22.56
31-2000	Occupational Therapy and Physical Therapist Assistants and Aides	0	0	0	0%	0.0%	$16.51
33-1000	Supervisors of Protective Service Workers	0	0	(0)	(100%)	0.0%	$29.83
33-2000	Firefighting and Prevention Workers	0	0	0	0%	0.0%	$19.43
39-1000	Supervisors of Personal Care and Service Workers	0	0	0	0%	0.0%	$18.75
39-2000	Animal Care and Service Workers	<10	0	(0)	(88%)	0.0%	$11.11
39-4000	Funeral Service Workers	0	0	0	0%	0.0%	$19.18
39-5000	Personal Appearance Workers	<10	0	(1)	(100%)	0.0%	$12.59
39-6000	Baggage Porters, Bellhops, and Concierges	0	0	0	0%	0.0%	$11.21
99-9000	Unclassified Occupation	0	0	0	0%	0.0%	$0.00

Idaho Manufacturing Sector Supply Chain Study

TWO PART STUDY:

PART I

MANUFACTURING SUPPLY CHAIN INTERVIEW AND SURVEY RESULTS

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PART II

ANALYSIS OF THE IDAHO MANUFACTURING SUPPLY CHAIN

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