



INNOVATION IN CHICAGO'S FOOD INDUSTRY

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Executive Summary

This is the second Chicago Business Bulletin to focus on food production. In the first issue, we introduced Chicagoland's food ecosystem — you can read a copy on the Research Center's web page. In this issue, we take a broader look at Chicagoland's food ecosystem and include agriculture and agtech, driven in part by our membership in the Greater Chicagoland Economic Partnership. We also provide additional context for Chicagoland's food ecosystem by first parsing Chicago's food production supply chain and then outlining Chicagoland's competitive advantages. **We found that Chicagoland's food ecosystem benefits from our robust manufacturing sector as well as our broader diverse economy** — food producers here have closer connections with suppliers and customers. We link the proximity to suppliers and other third parties to opportunities for innovation and conclude by pointing out areas where Chicagoland's food ecosystem can grow.

Throughout this issue, we use "Chicago" and "Chicagoland" interchangeably. Food manufacturing is a key industry for the entire region: nearly 40% of firms are located outside of Cook County. Each of the seven counties that make up the Greater Chicagoland Economic Partnership have different assets that contribute to the region's strengths — from farmlands, to transportation networks, to financial and tech hubs.

Findings:

- Agriculture and agtech are important parts of the metro area's food production ecosystem, reflecting that the entire Chicagoland region is involved in the food production supply chain — food producers here benefit from proximity to agriculture, other food producers, and critical suppliers like packaging manufacturers. Chicago's supply chain is larger and more localized than in comparable metro areas. Chicago also offers Midwestern agriculture access to specialized talent and services, like finance or tech.
- Investment in Chicago's food innovation ecosystem continues to grow: in 2022, there were 76 venture capital deals for Chicago's food innovation companies, a 27% increase from 2019. As of Q1 2023, deal flow remains steady, with 20 deals, the same pace as 2022.
- Chicago is a leader in biotech-based food production. Over 60% of Chicago's startups receiving seed funding were developers of alternative protein or dietary-specific food options developed through the application of biotechnology to food production.
- Detail into Chicago's food manufacturing industry offers insight into our competitive advantages and growth opportunities: sub-sectors like sugar & confectionary manufacturing or grain milling & bakeries over-perform here, while there is an opportunity to grow beverage & dairy manufacturing. As companies in these sub-sectors look to grow and bring new products to market, Chicago offers proximity to collaboration partners that offer specialized expertise and technology food companies need to bring new products to market.

FACT SHEET



Chicago's food and beverage manufacturing industry is the nation's largest, generating **\$9.1B annually** in output, and employing over **66K** individuals.



The U.S. Bureau of Economic Analysis reports Midwestern states had a combined agricultural output of **\$82.6B** in 2022.



WBC's Research Center found that in 2022, Chicago's food innovation companies raised **\$392M** in venture capital, a **68%** increase over 2019. In Q1 2023, companies raised **\$57M** in venture capital.



There are **69** known food and beverage companies in Chicago and over **2,500** companies holding active patents.



There have been **51** known food-related pro-Chicago decisions since 2021, with **6** since the beginning of 2023 alone.

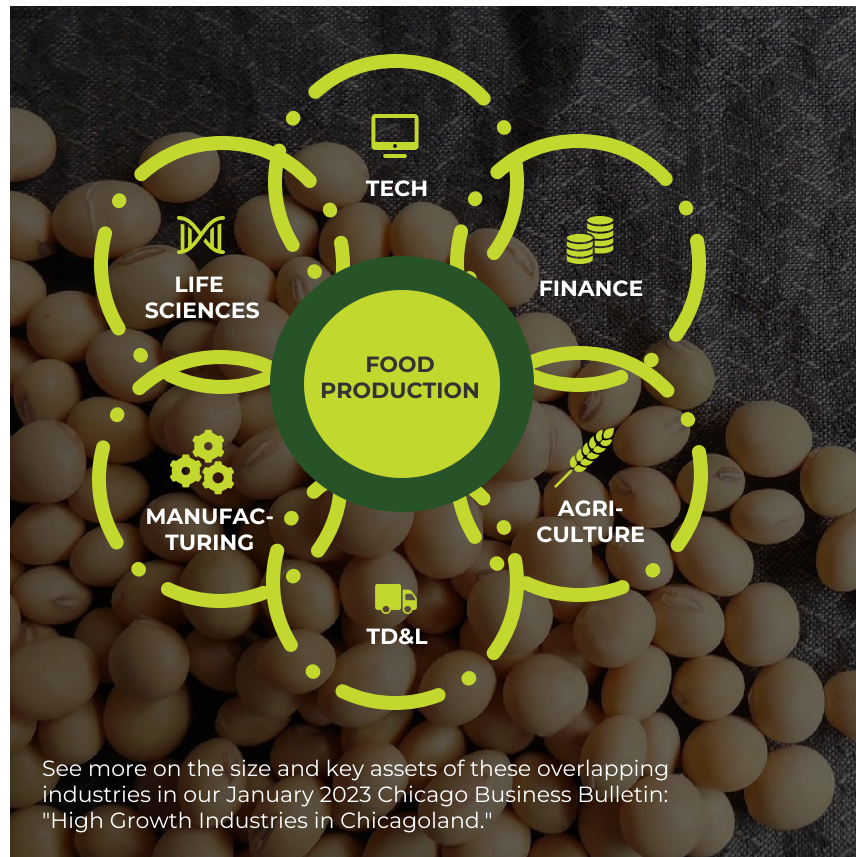
Chicago's Food Industry

Chicago's foodtech and food production industry is high-growth because of key assets across intersecting industries.

Throughout Chicago's history, food production evolved with our other major industries, including equipment manufacturing, transportation & logistics, and finance. Chicago's proximity to Midwestern farmland made it an axis of exchange — agricultural inputs could be processed into food products, and shipped across the United States. The city's finance industry developed in tandem; for example, the Chicago Board of Trade was founded as a cash market for grain.

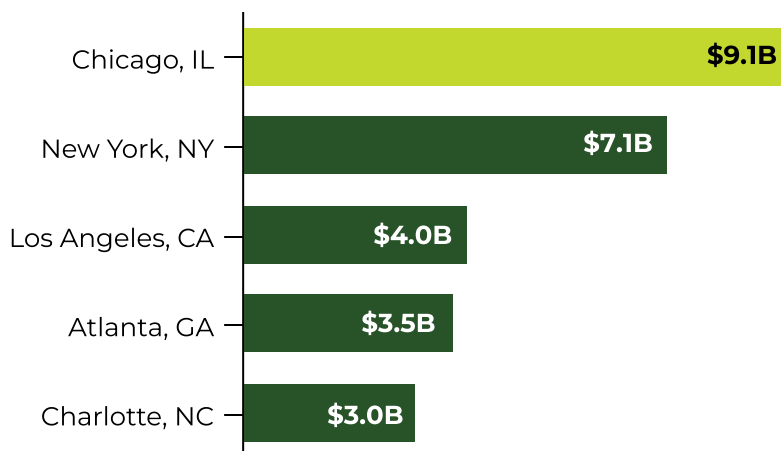
Chicago's modern food production industry is a well-connected ecosystem. Building on a historic legacy, our food industry continues to innovate — leveraging advantages like a diverse economy and proximity to collaborative partners, including transportation equipment manufacturers and logistics firms.

Today, Chicagoland's food industry is both #1 by total GDP value and absolute growth in GDP. In 2022, our region's output value was \$9.1B, with growth of \$1.7B from 2016 — more than in any compared metro area.



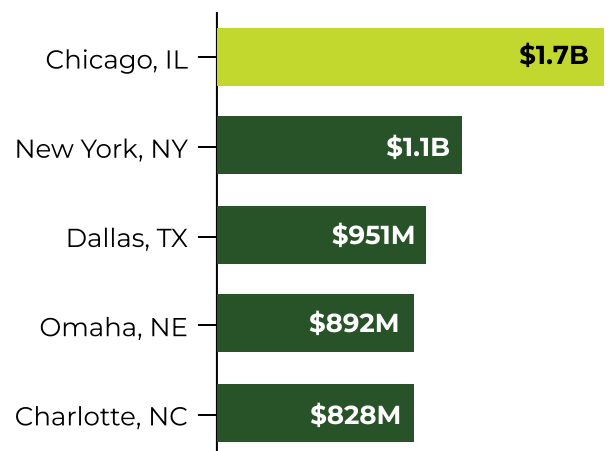
Total GDP value, 2022

Food manufacturing, top 5 metro areas



Absolute growth in GDP value, 2016-22

Food manufacturing, top 5 metro areas

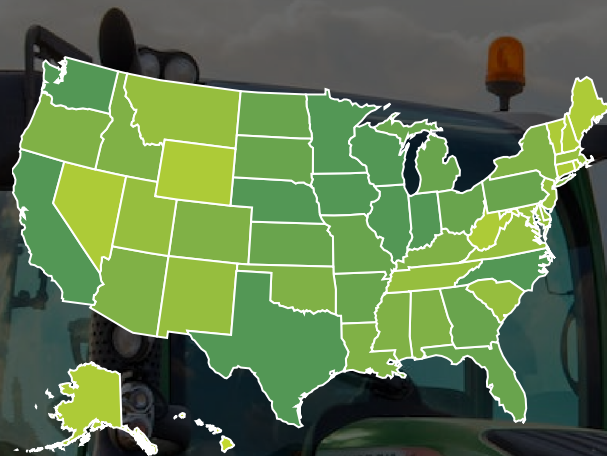


Agriculture & AgTech

Chicago is a gateway for tech and finance applications to agriculture.

The Chicago metro area not only plays a large part in the food manufacturing industry, but is at the center of the nation's most productive agriculture. The U.S. Bureau of Economic Analysis shares that Illinois has the nation's third largest agricultural output; Midwestern states have a combined agricultural output of \$82.6B, or 28.6% of national output.

Chicago's strategic location to farmland gives agriculture access to overlapping industries, including specialized expertise for technological advancement and the acquisition of capital. As technical workers choose to live in metro areas — for example, the top 100 metro areas employ 77% of all computer-related workers — the agriculture industry can still have proximate access to talent and clusters needed to innovate.



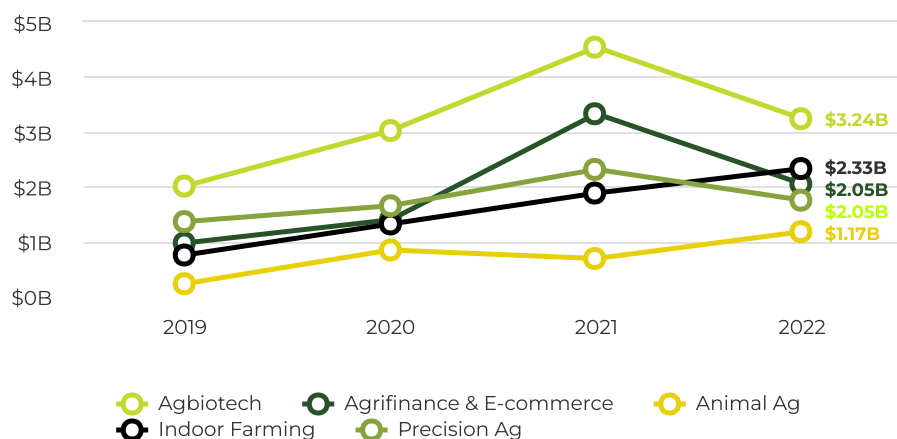
Agricultural GDP by state, 2022
(millions of current dollars)

Nationally, emerging technology in agriculture improves productivity.

AgTech is the application and intersection of technological elements to help drive profitability, crop yield, farming efficiency, and resilience within the agriculture industry. The vertical includes Agbiotech, Agrifinance & E-commerce, Animal Agriculture, Indoor Farming, and Precision Agriculture.

Nationwide, each of these sub-sectors experienced a growth in total deal value from 2019 to 2022. AgTech as a whole experienced a 104% growth in total deal value, from \$5.2B in 2019 to \$10.6B in 2022.

U.S. venture capital growth in AgTech sub-sectors



Top sub-sectors by growth (2019-22)

- Animal Ag: **+423%**
- Indoor Farming: **+211%**
- Agrifinance: **+111%**

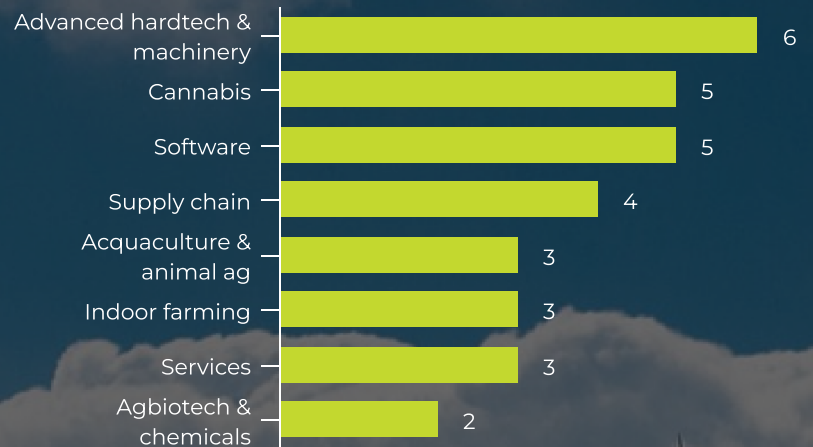
Agriculture & AgTech

Chicagoland's agtech companies have a variety of purposes.

Investment in agtech companies in Chicago's startup ecosystem continues to grow, building on the industry density publicly traded companies like ADM and John Bean Technologies have been established here. Since 2013, \$645M in growth capital has been raised by over 40 companies — including 10 of which went on to close later stage venture capital deals. In that same timeframe, over 19 companies have been acquired. Most deals occur in Chicago and Cook County.

Chicago's agtech ecosystem looks slightly different than nationwide: there are more machinery & hardtech companies raising capital here, as well as cannabis cultivators and companies that optimize the agriculture supply chain.

Early stage deals tend to include software applications to agriculture, while later stage deals involve cultivation, machinery & infrastructure, and financial services.



Count of companies with growth capital deals in Chicagoland since 2018

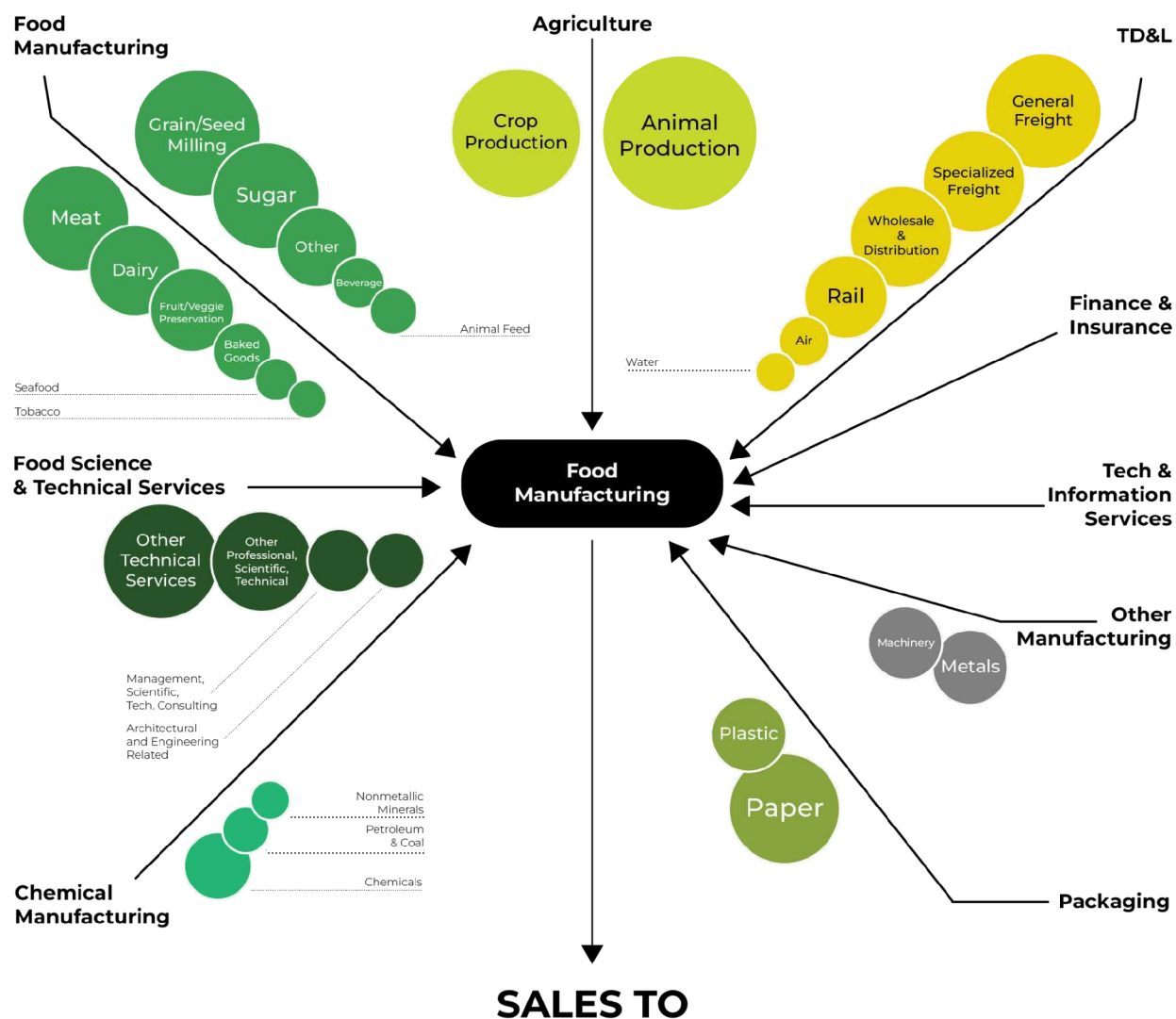
"The new space, located in the fast-growing Fulton Market neighborhood, will allow Deere to recruit from the deep bench of diverse talent in Chicago"

— Deere press release

In 2021, Deere announced a new office with 150 IT jobs in capabilities like e-commerce, cloud infrastructure, and data & analytics. Deere's **pro-Chicago decision** gave the agricultural machinery giant the right talent pool to continue innovating their products.

Supply Chain

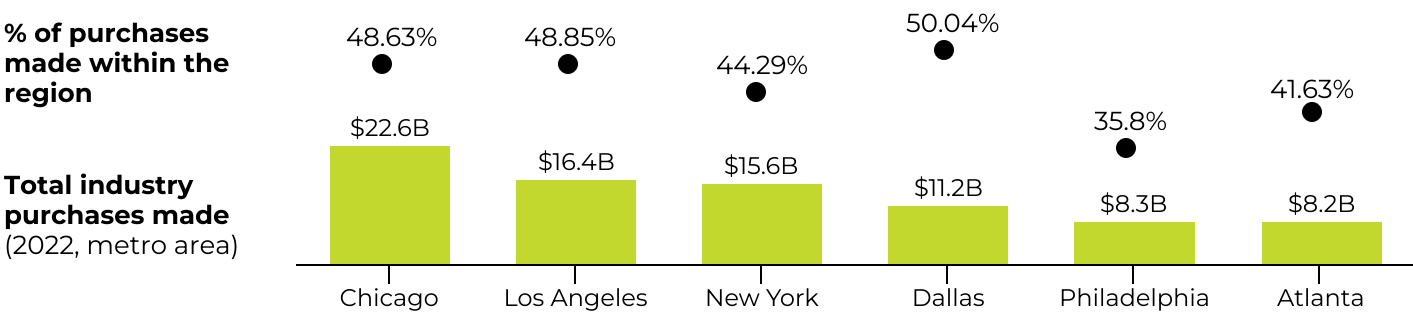
Chicagoland's food supply chain is diverse for both upstream industry purchases and downstream sales.



Supply Chain

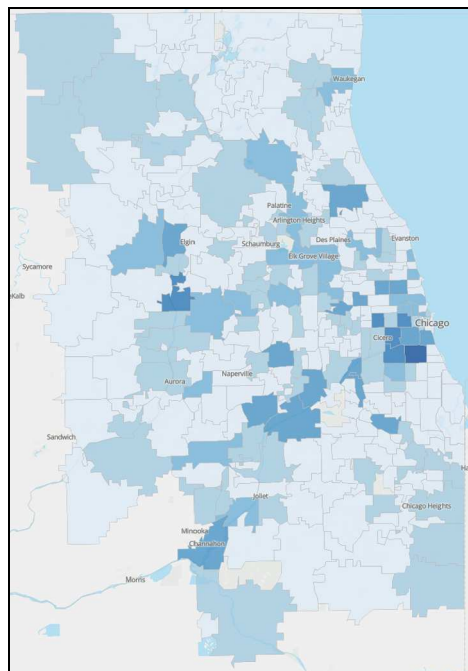
Chicagoland's supply chain is larger, more resilient, and more local than other major food production ecosystems.

Compared to other major food manufacturing ecosystems, Chicagoland firms purchase more inputs in-region. Nearly \$11B was spent on local businesses by food manufacturing firms here, with \$7.8B of that spent on other manufacturers, wholesalers, and TD&L firms. Downstream in the supply chain, food manufacturers trade more outside the region, with \$4.2B in output being sold locally.

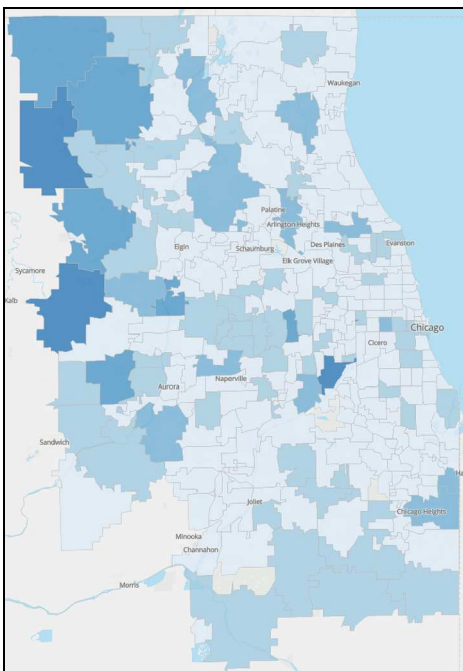


The entire Chicago metro area is involved in the food manufacturing supply chain. More food manufacturing and processing jobs are located in Chicago's South side, along the I-55 corridor, and in the western suburbs, while agriculture is concentrated to McHenry and Kane counties. Packaging manufacturing is especially concentrated in Kane, DuPage, Lake, and suburban Cook counties.

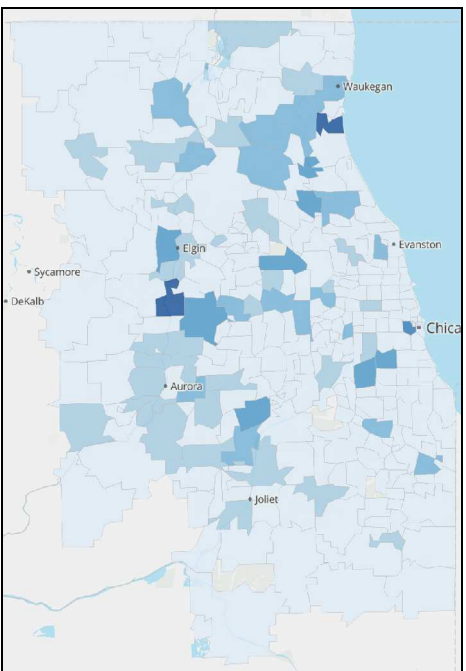
Food & beverage manufacturing



Agriculture



Paper & plastics manufacturing (packaging)



Jobs by zip code, 2023

Competitive Advantages

In 2022, Chicagoland was #1 in the U.S. for food manufacturing.

Chicago has the nation's largest food manufacturing economy by output or gross domestic product, the market value-added of goods and services produced. Between 2016 and 2022, Chicago's food manufacturing industry grew by \$1.7B, the most by total value compared to all metro areas in the United States. Furthermore, Chicago's food industry output is projected grow 9% between 2022 and 2026. Top sub-sectors reflect the regionality of the food manufacturing supply chain. For example, grain milling and bakeries are two of Chicago's top sub-sectors, producing the bread and cereals grown by Midwestern agriculture.

FOOD MANUFACTURING

Rank among metro areas (2022) **#1**

Growth in GDP (2016-22) **+25%**

GDP (Nominal, 2022) **\$9.1B**

GRAIN MILLING

Rank among metro areas (2022) **#1**

Growth in GDP (2016-22) **+11%**

GDP (Nominal, 2022) **\$816M**

BAKERIES & TORTILLERIAS

Rank among metro areas (2022) **#2**

Growth in GDP (2016-22) **+12%**

GDP (Nominal, 2022) **\$2.2B**

SUGAR & CONFECTIONS

Rank among metro areas (2022) **#1**

Growth in GDP (2016-22) **+12%**

GDP (Nominal, 2022) **\$973M**

FRUIT & VEG. PRESERVES

Rank among metro areas (2022) **#2**

Growth in GDP (2016-22) **-6.5%**

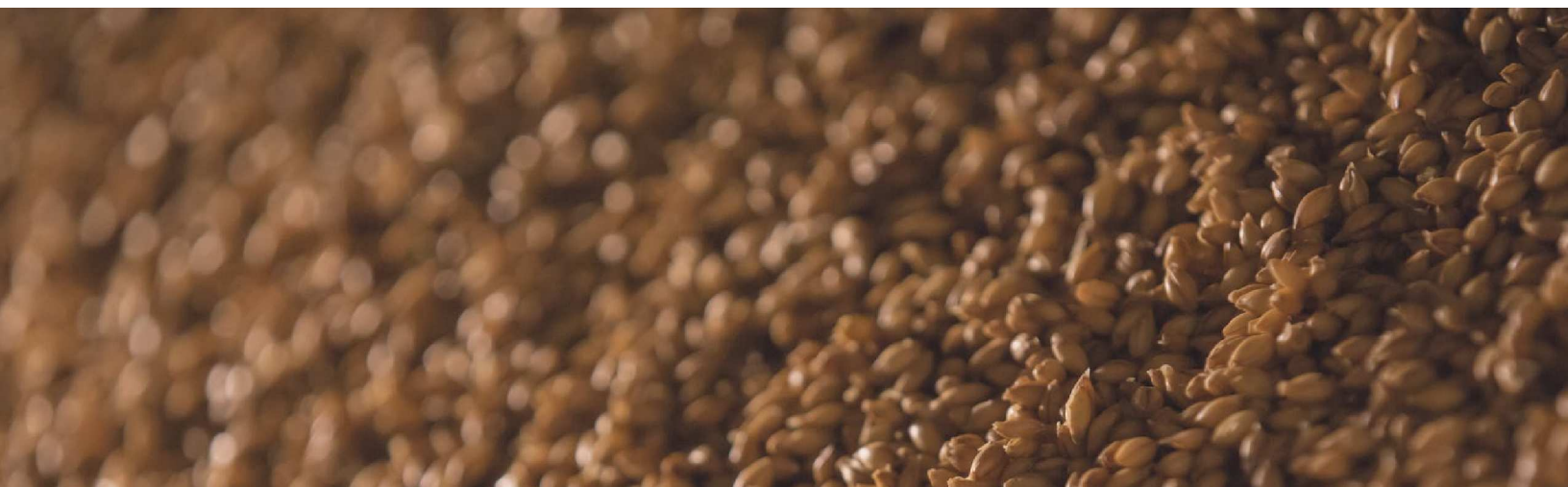
GDP (Nominal, 2022) **\$668M**

OTHER & ALT. PROTEIN

Rank among metro areas (2022) **#1**

Growth in GDP (2016-22) **+50%**

GDP (Nominal, 2022) **\$2.1B**



Competitive Advantages

Chicagoland's food industry flourishes because of strong regional assets, including our:

- **Clustered business ecosystem**

Chicagoland is a top business ecosystem for related products and services, like packaging, finance, and logistics. Business density means food producers are able to source their supply chain inputs easier, in addition to accessing necessary business services. Clustering within food manufacturing creates synergies that helps grow the industry. For example, Chicagoland's top business ecosystem for grain milling helps create a proliferation of bakeries — also a top ecosystem here.

- **Trained workforce**

Chicagoland has a huge, varied workforce. Over 66,000 people work in food manufacturing regionally, with nearly half employed as food processing workers. Chicagoland's labor pool includes highly specialized workers — like software developers, advanced manufacturing workers, and food scientists — as well as production occupations with lower barriers to entry. Chicagoland, including the University of Illinois at Urbana-Champaign, is also a top talent producer for specialized knowledge, with 167 food science degrees awarded in 2021.

- **Natural assets**

Chicagoland is located at the center of some of the world's most productive farmland. Chicago also connects the Mississippi Basin to the Great Lakes, and serves as a natural center point for American trade and commerce. And perhaps most importantly, Chicago's access to the Great Lakes — 84% of North American freshwater — provides an abundant natural resource for agriculture, food production, and manufacturing.

- **Transportation and logistics ecosystem**

Chicago is the nation's crossroads and freight hub. Significant infrastructure exists, including 6 of 7 Class 1 railroads and over 3,900 miles of railway; multiple airports — including O'Hare International Airport; and 10 interstate highways, representing over 30,000 miles of roadway. A dense warehousing and logistics business ecosystem — over 16,000 firms, the most in the nation — allows manufacturers to more easily get their products to market.

O'Hare International Airport is the nation's top port by value, with \$330B in trade in 2022.



Top food exports by value

- Animal reproductive materials
- Fresh & frozen beef and pork
- Prepared food products
- Fats & oils
- Live chickens
- Animal feed
- Sunflower seeds



Top food imports by value

- Live animals
- Prepared food products
- Vegetable saps & extracts
- Vanilla
- Malt extract
- Dried fruit
- Fresh salmon
- Protein concentrates

Victus Ars

Victus Ars — a boutique food development lab and small volume production company specializing in confectionery, pharmaceuticals and supplement products — is pioneering innovation in Chicago's food ecosystem. Working to further scale their operations, they currently work with an array of companies from mid-sized to conglomerates, providing consultative services, technology testing and product and process experimentation. Uniquely, Victus Ars provides technical training classes on manufacturing troubleshooting and carbohydrate chemistry as part of their Institute of Confectionery Excellence.



"Chicago is the prime location for not only Victus Ars, but also our Institute of Confectionery Excellence because it is the heart of the entire food industry in the US. From nearby farming communities growing our food, to ingredient and CPG food manufacturers, Chicago has the transportation network to move products efficiently. And our proximity to some of the best universities for STEM education – including food science – provides excellent candidates for our manufacturers. Our central location means most folks can fly in without layovers, even from other countries. And they want to come to Chicago! Chicago is consistently ranked as a top beautiful city and tourist destination. Finally, Chicago has world class organizations that we belong to. From technical to executive level, we stay on top of what is happening not only in the US food industry; but also broader topics at the city, state, country, and world stage."

— Michelle Frame, President & CEO of Victus Ars

Innovation is fast-moving, and constantly evolving in the food industry, malleable to things like the debut of new machinery, changes in food regulations, and health trends. In their line of business, Victus Ars observes:



Ingredients, like sugar, are becoming less refined and artificial: **workers require more knowledge** of ingredients and application chemistry.



Experimentation meets changing customer demand, such as for vegan, allergen-free and sustainable ingredients. It drives new ingredients, food pairings, and preservation methods. These are important to curate new textures and eating experiences. **"Chocolate in a meat sauce? Yes, please!"**



As processes evolve, employees need to be able to troubleshoot. Plant operators need to be familiar with the products and computer systems. Because processing lines are "closed systems," where the product isn't observed by the operator, they may not be. This is a reason Victus Ars started the **Institute of Confectionery Excellence**.



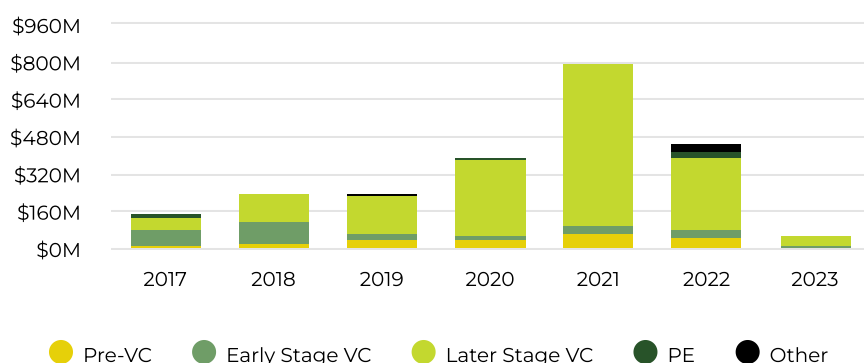
Packaging and package sizes are being redesigned as companies seek reduced waste, plastic alternatives that maintain freshness, and visible nutrition information for healthy consumers.

Investment & Innovation Trends

Chicagoland's newest food startups reflect top food trends.

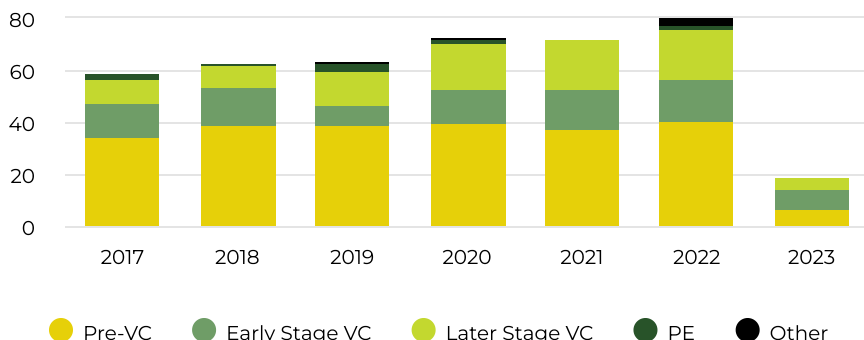
Although growth capital invested in Chicago's food ecosystem peaked in 2021, there were more deals in 2022. Deal count in 2023 remains steady, suggesting that interest in Chicago's food ecosystem continues despite restrictions on capital flows. Moreover, **seed funding has remained steady from Q1 2022 through Q1 2023**. Since the start of 2022, over 56 investors have provided seed capital to Chicago's startups.

Growth capital invested



Moreover, **startups receiving seed funding firmly establish Chicago as a leader in biotech-based food production**. Over 60% of Chicago's startups receiving seed funding have developed novel food products, especially alternative proteins, through applications of biotechnology to food production.

Growth capital deal count



Food manufacturers are not always considered at the forefront of innovation. However, recent national surveys show that food manufacturers are able to bring new products to market nearly as often as other high tech companies. Between 2017 and 2019, **approximately 18,000 food manufacturers across the US were able to bring nearly 1,200 new products to market — the fifth highest number of new products among all manufacturing sub-sectors**.

Food manufacturers are often overlooked as innovators because their innovation process is different from traditional research and development processes used by other high tech companies. In the National Center for Science and Engineering Statistics' Annual Business Survey, **food manufacturers report that they rely upon strong partnerships with suppliers that provide specialized services, like logistics companies that provide specialized cold storage or specialized packaging companies**. Additionally, food manufacturers rely on third party businesses to provide specialized technology solutions — **50% of food manufacturers reported they purchased new technology in order to help bring new products to market**.

Growth Opportunities

Chicago could lead in food bioengineering & production.

The foodtech and innovation vertical faced challenges in 2022, through both a general slowdown in growth capital investment, as well as a challenging consumer non-durables market given inflationary pressures on food prices. However, Pitchbook data show that **bioengineered foods** — including functional foods, future food forms, molecular engineering, novel ingredients, and upcycled foods — were one of the only foodtech segments nationally that continued to attract investment. Similarly, **alternative proteins** continues to grow as a foodtech segment, while new **sugar alternatives** start to gain traction.

Chicagoland could lead in these sub-verticals as they grow. Chicago's historic strengths in sub-sectors like meat processing and sugar & confectionary manufacturing create a platform for continued innovation. The region is already home to a cluster of companies manufacturing advanced food and ingredients, including at least 23 alternative protein manufacturers and 46 bioengineered & novel ingredient food producers. Chicago is also home to industry titans that continue to innovate — Kraft Heinz, for example, is taking steps to reduce sugar's negative effects through microencapsulation technology.

Chicagoland universities and the University of Illinois at Urbana-Champaign are also a major talent producer for food science degrees — 167 awarded in 2021, more than in any other metro area. Chicago's food industry benefits from a growing life sciences ecosystem, exemplified by nearly 3,700 biology, bioengineering, and biomedical science degrees being awarded in 2021 as well.



“One of Chicago’s newest unicorns, Nature’s Fynd, is reinventing the future of food on the South Side of our city by reclaiming the old Stockyards as an up-and-coming world leader in new protein”

— Mayor Lori Lightfoot, after Nature’s Fynd expanded its production facility by 200K square feet — including an R&D and innovation center — in the historic Union Stockyards in 2021.

Growth Opportunities

Chicagoland also has opportunities to foster growth in beverage & dairy manufacturing, meat processing, and other food manufacturing.

BEVERAGE MANUFACTURING

CURRENT STATUS

Chicago's **beverage manufacturing** sub-sector ranked 12th for output among U.S. metros from 2016 to 2022 with **\$853M** in GDP in 2022.

THE OPPORTUNITY

Chicago has access to abundant freshwater and a robust, cost-effective talent pool, both of which are key assets to Chicago's competitiveness.

DAIRY MANUFACTURING

CURRENT STATUS

With **\$617M** in GDP in 2022, Chicago's **dairy sub-sector** ranked first among U.S. metros. Future growth is projected to slow compared to past performance.

THE OPPORTUNITY

Dairy production is largely local and Chicago's efforts to drive regional collaboration offers an opportunity to sustain growth levels.

MEAT PRODUCTION

CURRENT STATUS

Chicago ranked first for output in **meat production** among U.S. metros with **\$1.4B** in GDP. Future growth is projected to slow compared to past performance.

THE OPPORTUNITY

Chicago's growth in alternative protein development aligns with trending food preferences, like cultured meat developed in laboratory environments.

OTHER FOOD PRODUCTION

CURRENT STATUS

Chicago's **other food & alternative protein sub-sector** ranked first among U.S. metros with **\$2.1B** in GDP in 2022. Future growth is projected to slow compared to past performance.

THE OPPORTUNITY

Chicago offers a broader innovative ecosystem that facilitates application of biotechnology to food production and processing.



Findings

1. Agriculture & agtech are important parts of the metro area's food production ecosystem.

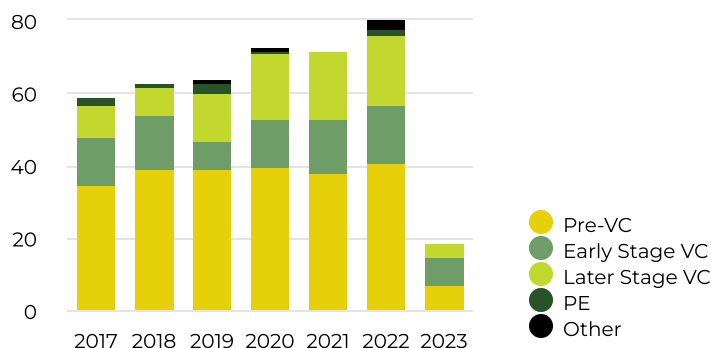
This reflects that the entire Chicagoland region is involved in the food production supply chain — food producers here benefit from proximity to agriculture, other food producers, and critical suppliers like packaging manufacturers.

Chicago offers Midwestern agriculture specialized talent and services, like finance or tech. Chicago's early stage agtech companies are more likely to include software applications, while later stage companies include advanced machinery & hardtech for optimized agriculture.

2. Investment in Chicago's food innovation ecosystem continues to grow.

In 2022, there were 76 venture capital deals for Chicago's food innovation companies, a 27% increase from 2019. As of Q1 2023, deal flow remains steady, with 20 deals, the same pace as 2022.

Growth capital deal count



3. Chicago is a leader in biotech-based food production.



Over 60% of Chicago's startups receiving seed funding produce alternative protein or dietary-specific food options developed through the application of biotechnology to food production. The region is already home to a cluster of companies manufacturing advanced food and ingredients, including at least 23 alternative protein manufacturers and 46 bioengineered & novel ingredients food producers.

4. There are multiple opportunities for additional growth in Chicagoland's food ecosystem.

Building upon current strengths like meat processing and sugar & confectionary manufacturing presents opportunities for additional innovation. As companies in these sub-sectors look to grow and bring new products to market, Chicago offers proximity to collaborative partners that offer the specialized expertise and technology food companies need to bring new products to market.



Sources

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- Nature's Fynd, "[Nature's Fynd Adds New 200,000 Sq. Ft. Facility in Chicago to Support Rapid Growth](#)"
- Pitchbook Data, LLC
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- U.S. Bureau of Labor Statistics
- U.S. Census Bureau, U.S. Trade Online
- U.S. EPA, "[Facts and Figures about the Great Lakes](#)"



Methodology

1. The Agtech industry includes Agbiotech, Agrifinance & E-commerce, Animal Agriculture, Indoor Farming, and Precision Agriculture.
2. Growth Capital is an expanded view of investments into tech startups, World Business Chicago includes venture capital investment, private equity for growth, and corporate venture as part of "growth capital." Growth capital helps companies start or expand their operations, which may translate to additional tangible economic activity, like hiring and office leasing. → See more from [Pitchbook](#).



Chicago Business Bulletin

About

World Business Chicago is Chicago's public-private economic development agency. Our mission is to drive inclusive economic growth and job creation, support businesses, and promote Chicago as a leading global city. Our vision is to ensure that all Chicagoans prosper.

The Research Center



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