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Workforce Trends in the Midwest's Food, Agriculture, and Forestry Industries

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Many industries face workforce challenges, and industries related to food, agriculture, and forestry are no exception. These activities often take place in rural areas, where demographic challenges—like aging populations and out migration—limit the number of available workers with the requisite skills and experience particularly challenging. Ensuring this future workforce will greatly affect both the competitiveness of food, agriculture, and forestry related industries and the communities whose economic futures rely on these activities.

This article describes several employment trends within the Midwest's food, agriculture, and forestry industries.¹ Here we consider a group of activities that extend well beyond what happens on the farm. As a result, our analysis explores employment trends within industries related to production agriculture, agricultural support and services, food and beverage manufacturing, and forestry and wood products.² Importantly, we examine these activities through an occupational lens. Whereas industry data show a

¹ Here we define the Midwest as Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin.

² Our definition of food, agriculture, and forestry is based upon 98 different 6-digit North American Industrial Classification System (NAICS) industries. These 98 industries include 17 industries related to production agriculture, 14 related to agricultural support and services, 47 related to food and beverage manufacturing and 20 related to forestry and wood products manufacturing. A full list of these industries can be found in White et. al. (2020).

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company's primary line of business (e.g., dairy product manufacturing), occupational data better reflect the jobs that employers must fill (e.g., farm equipment mechanics, veterinary technicians).¹

This article first examines broad occupational groups found within food, agriculture, and forestry. We then highlight some specific occupations that employers must fill, and how filling those different positions requires different strategies. Lastly, we will consider how the demand for food, agriculture, and forestry workers varies throughout the Midwest. This work is part of a much broader USDA Agriculture and Food Research Initiative (AFRI) grant—led by 4-H leaders in 8 Midwestern states—that will develop programs that will encourage youth and adults to pursue career and employment pathways in agriculture and food systems (You can further support these efforts by completing the employer survey at the end of this article).

Food, Agriculture, and Forestry Employs a Diverse Set of Occupations

To capture the diversity of these activities we define food, agriculture, and forestry very broadly. Figure 1 shows the share of jobs by broad occupational group.² Production occupations—critical to the region's manufacturers—account for roughly 1 out of every 4 jobs in food, agriculture, and forestry.³ Management occupations represent another 15 percent of all food, agriculture, and forestry jobs. Although these management jobs are relatively ubiquitous, many of these jobs directly relate to agriculture; approximately 75 percent of these management jobs are held by farmers, ranchers, and other agricultural managers. Other notable categories include transportation and material moving (e.g., truck drivers); farming, fishing, and forestry occupations (e.g., farmworkers and laborers, logging equipment operators); and building and grounds, cleaning and maintenance occupations (e.g., groundskeepers, tree trimmers). Food, agriculture, and forestry also needs workers for administrative and sales positions, as well as critical healthcare-related occupations (e.g., veterinary technicians).

Not only do these activities create a wide array of different jobs, but they also require workers with a diverse set of skills and experience. Many occupations do not require extension education or training, as roughly 45% of the jobs in the Midwest's food, agriculture and forestry industries require a high school degree or less, and/or short-term on the job training (OJT).⁴ This figure, however, is consistent with the Midwest's overall workforce (40%).⁵ Food, agriculture, and forestry employers do, however, create a disproportionate number of middle-skill jobs. Roughly 46% of the jobs within food, agriculture, and forestry require either moderate- or long-term OJT and/or a 2-year degree or some kind of post-

¹ We can determine the occupational composition of these industries by analyzing the staffing patterns of these 98 industries. This information not only allows us to determine the types of jobs that these employers must fill, but other considerations as well such as the typical education and training requirements, average wages, or level of automation involved with each occupation. Importantly, this information can also show the occupations that are unique to food, agriculture, and forestry, and those that are sought by employers throughout the economy.

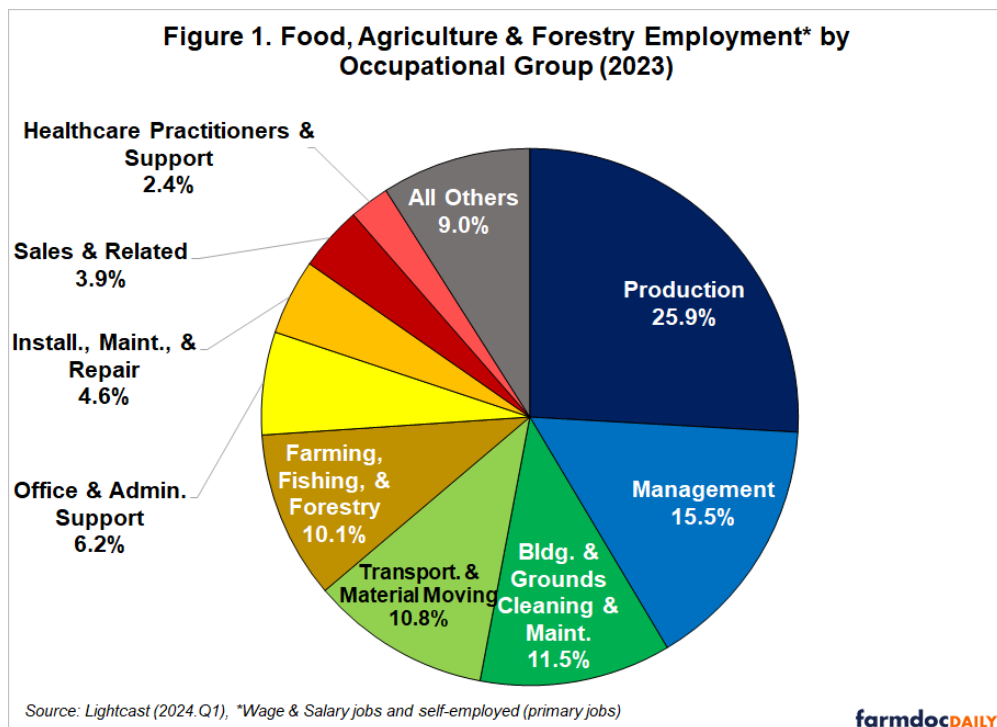
² The occupations presented in this article are based upon the Standard Occupational Classification (SOC) system. Whereas the NAICS system identifies an establishment's primary line of business (e.g., animal production, farm management services, poultry processing), SOC codes are used to collect and analyze data about what workers actually do (e.g., farmers, ranchers, and other agricultural managers; agricultural technicians; industrial machinery mechanics, etc.). More information about the SOC system can be found on the US Bureau of Labor Statistics website at: <http://www.bls.gov/SOC>

³ We use a definition of employment that includes wage and salary jobs. Wage and salary workers are employees that receive wages, salaries, commissions, etc. from their employers for their work. We have also included self-employed workers that consider self-employment to be their primary jobs. For instance, this would include farm operators whose primary income comes from farming, but not someone whose only income from farming may come from a roadside stand.

⁴ The Bureau of Labor Statistics defines short-term OJT as less than 1 month, moderate OJT as 1 month to 1 year, and long-term OJT as more than 1 year.

⁵ The typical entry-level education level required to enter an occupation is based on education and training categories from the U.S. Bureau of Labor Statistics Employment Projections program. These education and experience levels are what commonly apply to these occupations but are not the case everywhere and always.

secondary certification. By contrast, only 32% of jobs within the 12 midwestern states require similar levels of education and experience.



Occupations that typically require 4-year and/or advanced degrees are less common, but these jobs are often mission critical occupations (e.g., large animal veterinarians). It is important to note these data are based on typical entry-level educational categories developed by the U.S. Bureau of Labor Statistics. Some jobs within these occupations will require workers with greater education and experience, others with less. As activities like production agriculture and food manufacturing become more automated and technology intensive, the skill requirements will likely grow.

The Nature of the Work Dictates the Strategies Required to Build the Future Food, Agriculture, and Forestry Workforce

The diversity of food, agriculture, and forestry occupations also means that employers must adopt multiple strategies to meet their workforce needs. In some instances, the positions they must fill are unique to food, agriculture, and forestry (e.g., agricultural equipment operators), but other positions are more in-demand throughout the broader economy (e.g., computer user support specialists). Figure 2 highlights some select occupations found within food, agriculture, and forestry related industries.

Figure 2. Select Occupations Unique to Food, Agriculture, and Forestry and throughout the Economy

Typical Entry Level Education	Unique to Food, Agriculture & Forestry industries ('Create')	In-demand throughout the workforce ('Compete')
High School or less; Short-term OJT	<ul style="list-style-type: none"> • Lands. & grounds keeping workers • Meat, poultry, & fish cutters & trimmers • Farmworkers & laborers (crops & animals) • Vet. assts. & lab. animal caretakers 	<ul style="list-style-type: none"> • Hand laborers & freight, stock, & material movers • Hand packers and packagers • 1st line spvrs. of production workers • Industrial truck & tractor operators
HS or less; Medium- or Long-term OJT; Sig. work experience	<ul style="list-style-type: none"> • Food batchmakers • Packaging & filling machine operators • Farm eqpt. mechanics & service techs. • Agricultural eqpt. operators 	<ul style="list-style-type: none"> • General maintenance & repair workers • Assemblers & fabricators • Wholesale & MFG sales representatives • Industrial machinery mechanics
Associates or some college, postsec. non-degree award	<ul style="list-style-type: none"> • Veterinary technicians • Agricultural & food science technicians 	<ul style="list-style-type: none"> • Heavy & tractor-trailer truck drivers • Bookkeeping, accounting & auditing clerks • Computer user support specialists • HVAC mechanics and installers • Industrial engineering technicians • HR assistants
Bachelor's or Bachelor's Plus	<ul style="list-style-type: none"> • Veterinarians • Food scientists & technologists 	<ul style="list-style-type: none"> • General & operations mgrs. • Industrial production mgrs. • Accountants & auditors • Industrial engineers • Buyers and purchasing agents

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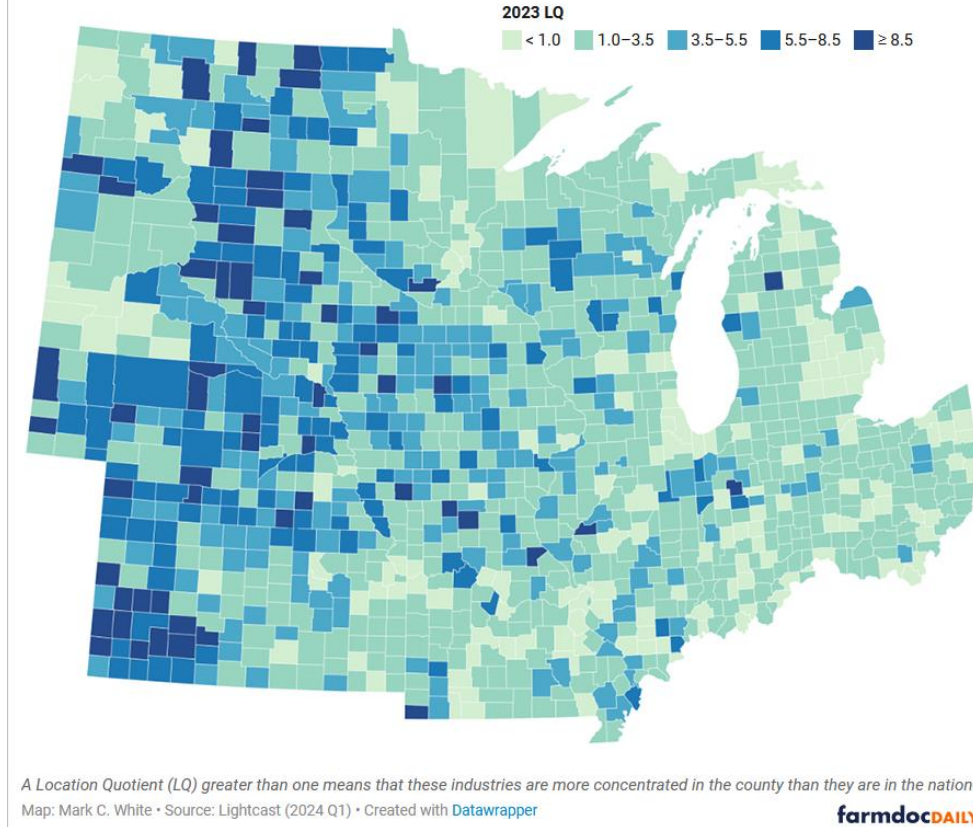
We consider an occupation unique to food, agriculture, and forestry if more than half of its employment is found in these industries (White et. al., 2020). For instance, 79 percent of the Midwest’s food science technicians work within our defined set of 98 food, agriculture, and forestry industries. This same set of industries employs almost 29,500 tractor-trailer truck drivers, but the demand for truck drivers is more ubiquitous as this total represents just 5 percent of the Midwest’s truck drivers.

This is an important distinction because it informs efforts to meet current and future workforce needs. For example, occupations that are unique to agriculture necessitate strategies that **create** workers to fill these jobs. Filling these positions, therefore, requires longer-term strategies that involve engaging students in middle school, providing specialized training and education, and establishing pathways that lead them directly into an agricultural career. By contrast, agricultural employers that must fill jobs sought through the whole economy must **compete** for workers because those workers can find similar jobs in other industries. In these instances, employers must work to make careers in food, agriculture, and forestry more attractive than those in competing industries.

Workforce Needs Vary by Region

Food, agriculture, and forestry jobs are found throughout the Midwest, but the highest relative concentration of these activities often occurs in rural counties (Figure 3). For many rural communities, food, agriculture, and forestry is vital to their current and future economic vitality. Over the past decade, however, these communities have also faced many pressing workforce challenges such as an aging workforce and the loss of many prime age workers to outmigration (Johnson, 2023). Simply put, there are relatively fewer people available to work, let alone workers with the requisite skills and experience. This can be particularly challenging for agricultural employers because they often draw workers from agricultural communities. In many rural communities, the declining numbers of farm families and young people means that relatively fewer young people are exposed to agriculture. Employers within these industries must now find ways to get better at recruiting workers with a broader set of backgrounds and experiences and less direct exposure to agriculture.

Figure 3. Relative Concentration of Food, Agriculture, and Forestry Employment (2023)



It should also be noted that the nature of these activities—and therefore their workforce needs—varies greatly between regions and communities. In some regions, production agriculture represents the majority of food, agriculture, and forestry activities. Food manufacturing may be more prominent in other, perhaps more urban, communities. Forestry and wood products have a larger economic impact in places like northern Wisconsin, Michigan’s Upper Peninsula, or parts of the Ozarks in MO. Consequently, workforce strategies must also account for these regional differences to ensure that they effectively meet local needs.

More Information Is Needed to Build Effective Career Pathways to Move Young People into Ag Careers

The broad trends described above highlight some of the diversity of challenges and needs. There is no turnkey solution for the workforce challenges facing food, agriculture, and forestry. Rather we must develop multiple strategies that meet the diverse needs both between, and within, these industries. Moreover, these strategies must work within the local context of different communities through the Midwest. One consistent theme, however, is that there remains an ongoing need to expand efforts that expose young people to the career opportunities available in food, agriculture, and forestry—especially to those who currently have a limited exposure to agriculture.

As noted earlier, this analysis is a small part of a much larger USDA-funded effort designed to encourage youth and adults—particularly from diverse and historically underserved communities—to consider career and employment pathways in agriculture and food systems. You can help better inform these efforts by sharing your insights. As a result, if you live in one of the 8 participating states (listed below)—and are an employer in a food and agriculture-related business (broadly defined)—***please take 10 minutes to complete the survey for your state.***

This survey (administered by the University of Missouri and the University of Illinois) will help us better identify ways to more effectively recruit and train new workers—especially young people—for careers in food and agriculture.

- Illinois: https://missouri.qualtrics.com/jfe/form/SV_cCIP5SYImJpSKGO
- Indiana: https://missouri.qualtrics.com/jfe/form/SV_6DbJVbleoebRU4S
- Iowa: https://missouri.qualtrics.com/jfe/form/SV_b91TLHkFKraDd8G
- Kansas: https://missouri.qualtrics.com/jfe/form/SV_0diW6Ex4bpTw4pE
- Missouri: https://missouri.qualtrics.com/jfe/form/SV_9TZkbLa9kdK6QRw
- Nebraska: https://missouri.qualtrics.com/jfe/form/SV_9RZx1tCH8uvvcii
- Ohio: https://missouri.qualtrics.com/jfe/form/SV_bJ9n2gLYWolAY74
- Wisconsin: https://missouri.qualtrics.com/jfe/form/SV_d5s48nUk9hZ8Ng2

References

Johnson, K. (2023a) “Population Redistribution Trends in Nonmetropolitan America, 2010 to 2021.” *Rural Sociology*. 88(1): 193-219. <https://doi.org/10.1111/ruso.12473>

White, M., Rahe, M., Milhollin, R., Horner, J., Russell, R., Presberry, R., and Kuhns, M. *Workforce Needs Assessment of Missouri’s Food, Agriculture and Forestry Industries*. Prepared by University of Missouri Extension, July 2020.