

# Missouri Food, Agriculture and Forestry Workforce Needs Assessment

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# Agenda

- Our approach
- Broad workforce considerations
- In-demand occupations
- Building the pipeline: Talent attraction, hiring and training
- Automation opportunities and challenges
- Moving forward



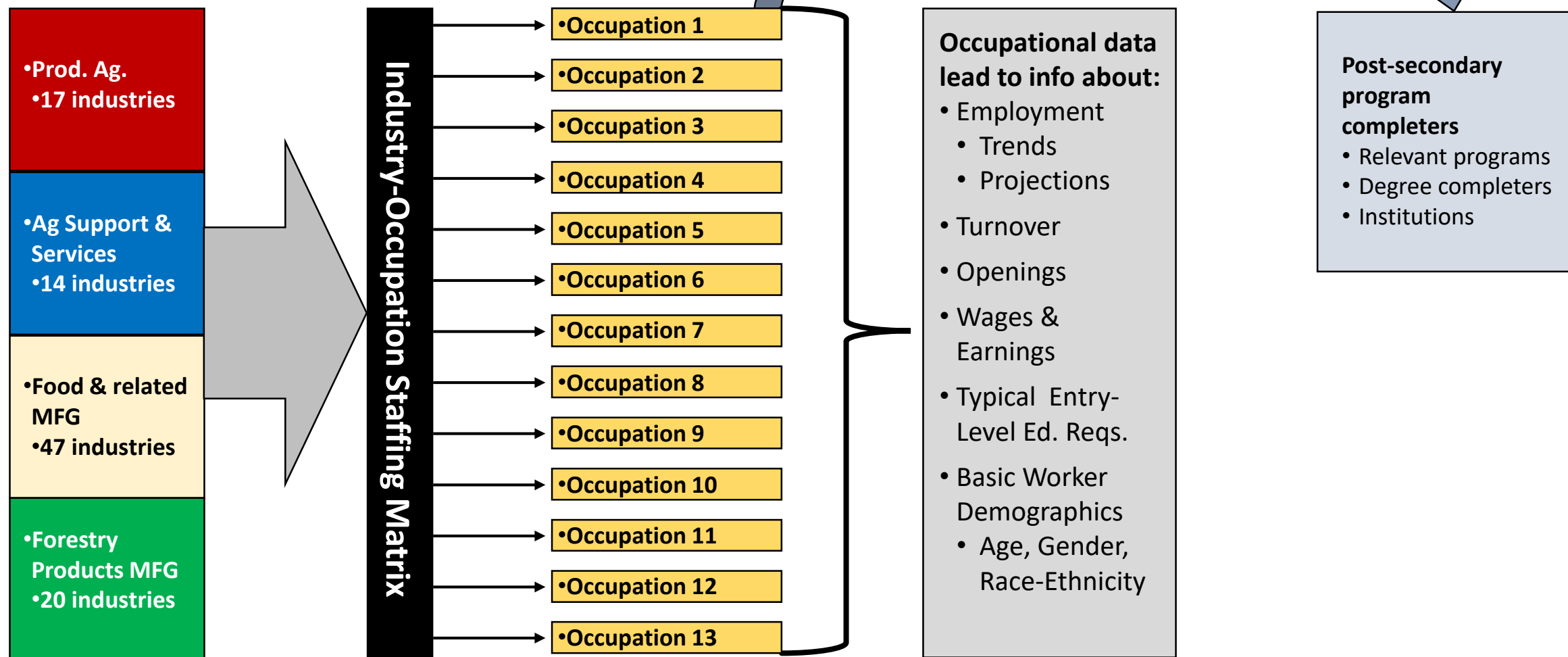
# Our approach

# Our first step was to define food, agriculture and forestry

- A previous economic impact study provided a starting point
  - We included **98** 6-digit NAICS industries covering 4 areas of activity
- Economic impact studies and workforce studies often serve different purposes.
- As a result, we needed to be clear that we were focusing on:
  - The **direct jobs** in the sector, not the total number of jobs touched by food, ag, and forestry.
  - Jobs in firms that have a workforce (e.g., QCEW definition of employment), which excludes self-employed and farm proprietorships.
- Employment data and projections are provided by Economic Modeling Specialists, Int'l (EMSI)



# Deriving information from secondary data sources



98 NAICS Industries  
comprise the Food, Ag,  
& Forestry Sector

Move from what  
companies make or sell,  
to what workers do

•775 Total Occupations  
•112 occupations have at  
least 100 jobs

# Qualitative data was gathered to complement the secondary data

## Employer survey

- 326 valid responses (after screening question)
  - Email (targeted and random)
  - Paper responses
- MERIC provided state N for select industries (6,695)
- Target of 261 for a 90% Confidence Level, 5% MoE

## Focus groups and interviews

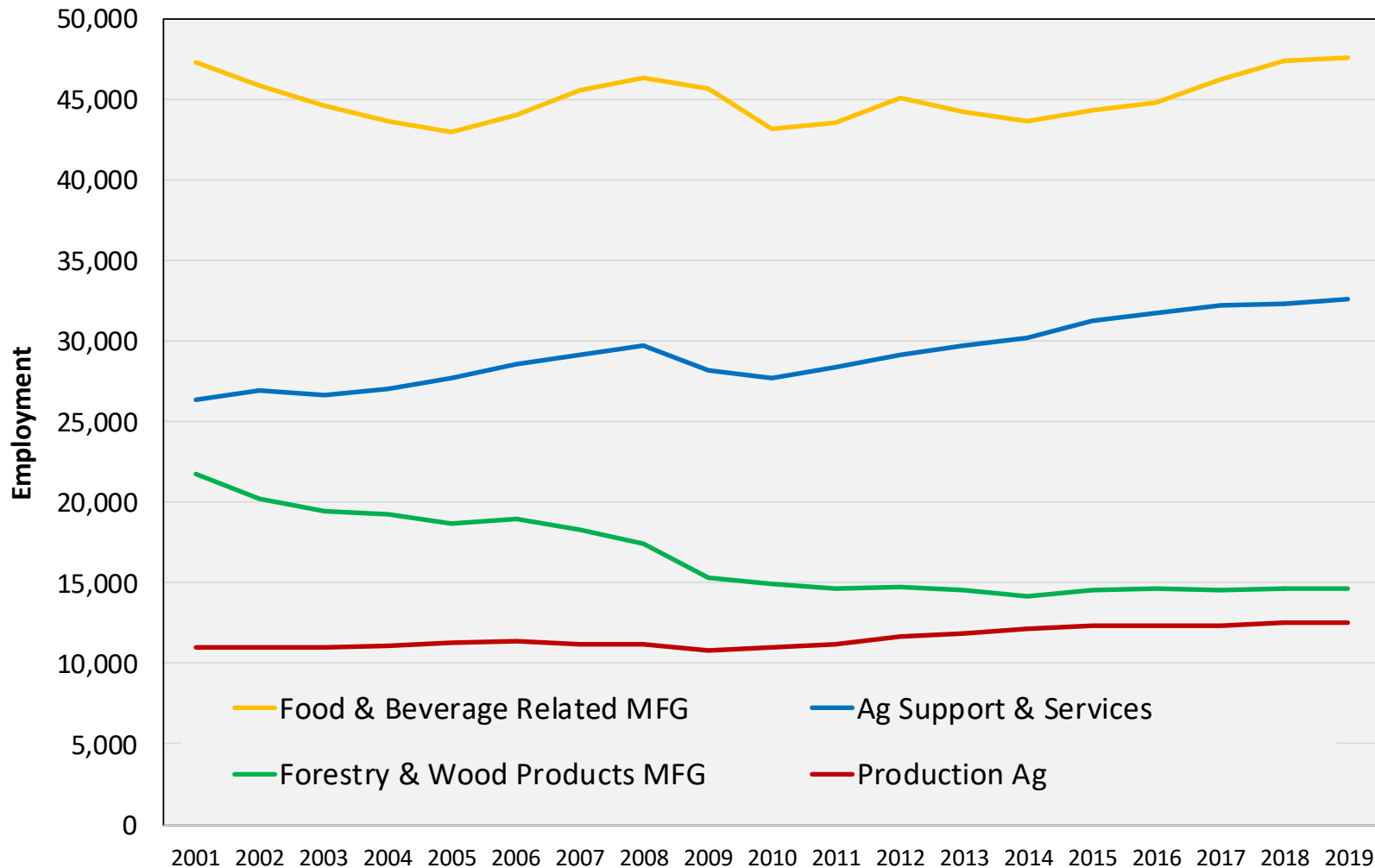
- Conversations with over 70 employers and stakeholders
  - Focus groups got us around the state, but more luck reaching people w/ individual conversations.
- Also spoke to a number of employers at an on-campus career fair organized by MU CAFNR

*The survey and interviews occurred between January and mid-March 2020*

# Broad industry and occupational trends in food, agriculture & forestry

# In 2019, food, agriculture & forestry-related industries accounted for 107,000 W&S jobs in the State of Missouri

Employment Change in Missouri's Food, Agricultural & Forestry Industries

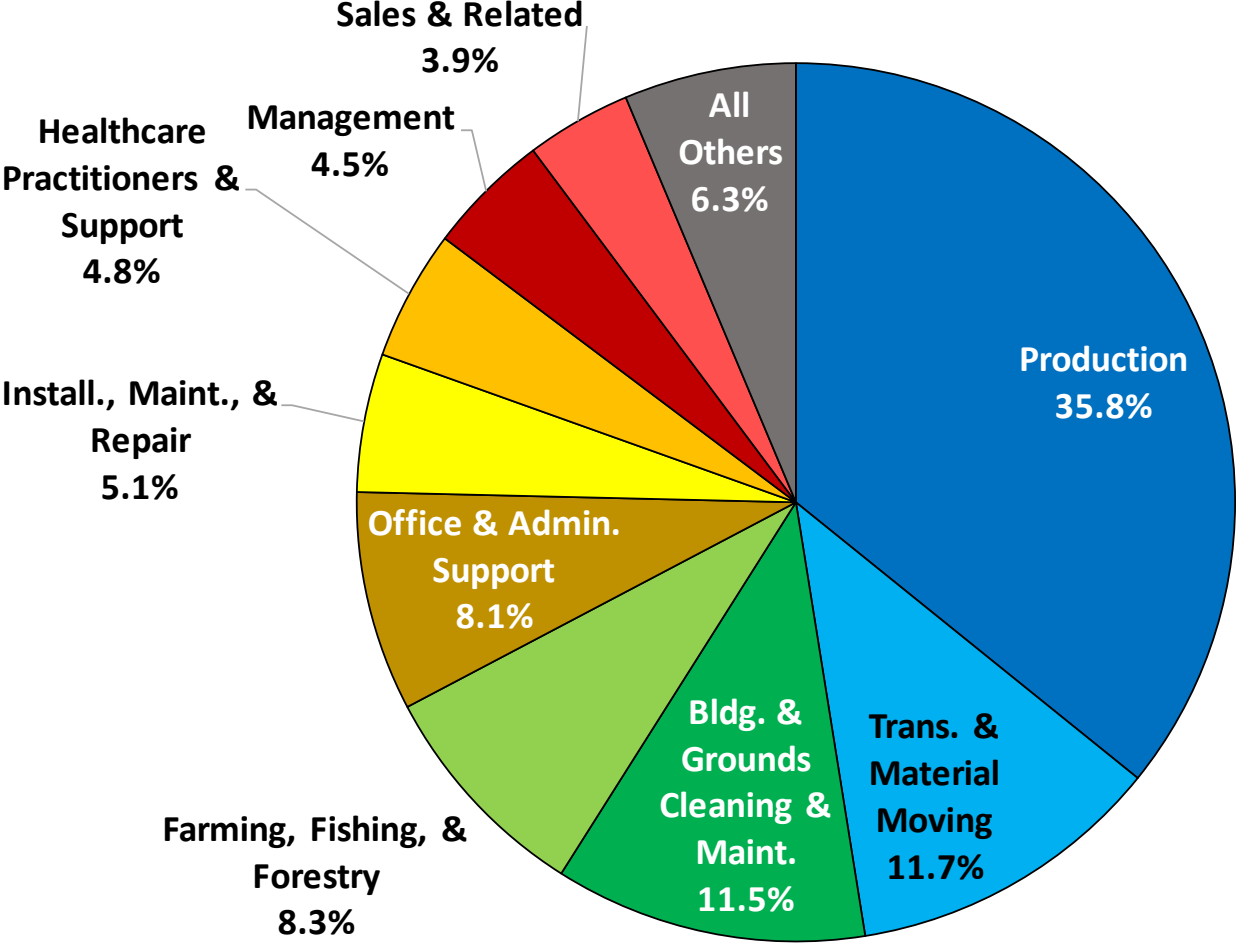


- Food and production agriculture remain steady
- Ag support and services contains many locally-serving industries, so growth driven by population growth.
- Forestry and wood products were impacted by the great recession, but has been steady over the past decade.



# Food, agriculture and forestry employers hire for a diverse array of jobs

Food, agriculture & forestry employment\* by occupational group  
(2019)



Source: Economic Modeling Specialists, Int'l (2019.Q4), \*Wage & Salary jobs

Some occupations are specific and unique to food, agriculture and forestry, but others are in-demand throughout the economy

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

## • 'Create'

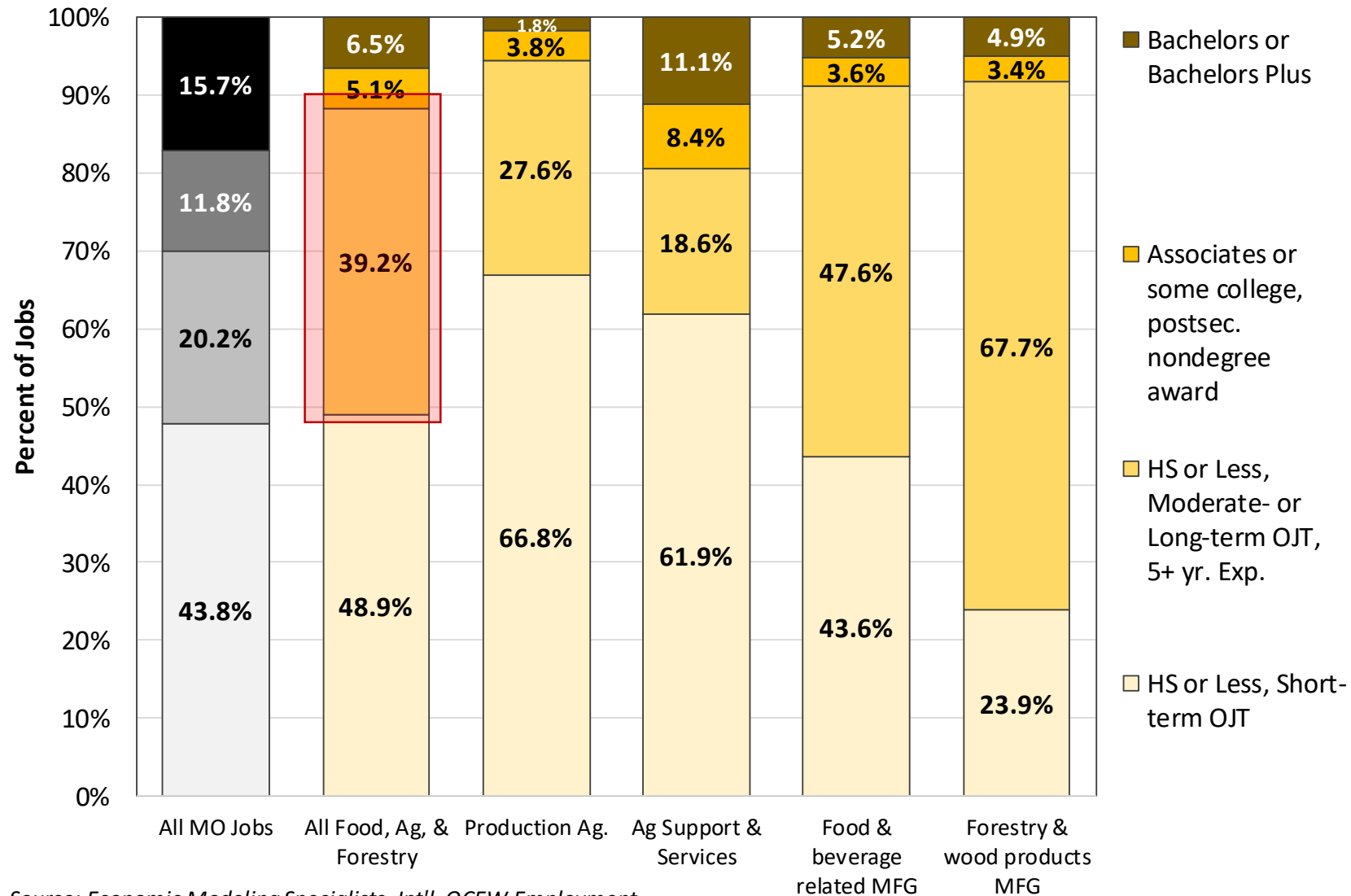
- Engaging students and new workers
- Providing specialized training and education

## • 'Compete'

- Making FAF jobs attractive, relative to similar jobs in other industries (e.g., construction, other manufacturing, admin, mgmt.)

# Most Food, Agriculture and Forestry jobs typically require training and experience, more so than post-secondary education

Share of wage & salary jobs by typical entry-level education (2019)



Source: Economic Modeling Specialists, Int'l, QCEW Employment

# In-demand occupations

Many of the occupations requiring HS or less and short-term OJT, often involve manual labor.

Occupation	Avg. Annual FAF Openings (19-29)	Create v. Compete	Prod. Agri.	Agri. support & services	Food MFG	For. & wood prod.
Landscaping & groundskeeping workers	1,192	Create		X		
Crop, nursery, & greenhouse farmworkers & laborers	644	Create	X			
Meat, poultry, & fish cutters & trimmers	553	Create			X	
Hand laborers & freight, stock, & material movers	490	Compete		X	X	X
Veterinary assistants	348	Create		X		
Farm, ranch, & aquacultural animals farmworkers	289	Create	X			
Helpers--production workers	274	Compete			X	X
Hand packers & packagers	264	Compete	X		X	X
Industrial truck & tractor operators	259	Compete			X	X
First-line spvrs. of production & operating workers	249	Compete			X	X

Source: Economic Modeling Specialist, Int'l (2019.4)

- Manual laborers needed in:

- Agriculture
  - Crops
  - Livestock
- Landscaping
- Manufacturing, especially meat processing

The most common middle skills occupations often require experience, independence and problem-solving skills.

Occupation	Avg. Annual FAF Openings (19-29)	Create v. Compete	Prod. Agri.	Agri. support & services	Food MFG	For. & wood products
Food batchmakers	764	Create			X	
Packaging & filling machine operators	651	Create			X	
Paper Goods machine operators	289	Create				X
Sales reps., wholesale & MFG, except tech. & sci. products	217	Compete		X	X	X
General maint. & repair workers	194	Compete		X	X	X
Wood sawing machine operators	171	Create				X
Inspectors, testers, sorters, samplers, & weighers	167	Compete			X	X
Food cooking machine operators	163	Create			X	
Woodworking machine operators, except sawing	147	Create				X
Team assemblers	145	Compete		X	X	X
Agricultural eqpt. operators	141	Create	X	X		
Mixing & blending machine operators	117	Compete		X	X	
Farm eqpt. mechanics & service techs.	111	Create		X		
Separating, clarifying, precipitating, & still machine operators	110	Create			X	
Industrial machinery mechanics	101	Compete		X	X	X

- Skilled production workers
- Equipment and machine operators
- Maintenance and repair
  - Industrial
  - Equipment
- Sales representatives

Source: Economic Modeling Specialist, Int'l (2019.4)

# Outside of specialists (e.g., vets), FAF employers often compete with other industries for workers with post-secondary degrees and certifications

Occupation	Avg. Annual FAF Openings (19-29)	Create v. Compete	Prod. Agri.	Agri. support & services	Food MFG	For. & wood products
Heavy & tractor-trailer truck drivers	248	Compete	X	X	X	X
Veterinary technologists & techs.	146	Create		X		
General & operations mgrs.	143	Compete		X	X	X
Bookkeeping, accounting, & auditing clerks	104	Compete	X	X	X	X
Veterinarians	76	Create		X		
Industrial production mgrs.	42	Compete		X	X	X
Accountants & auditors	41	Compete	X	X	X	X
Agricultural & food science techs.	35	Create	X		X	

Source: Economic Modeling Specialist, Int'l (2019.4)

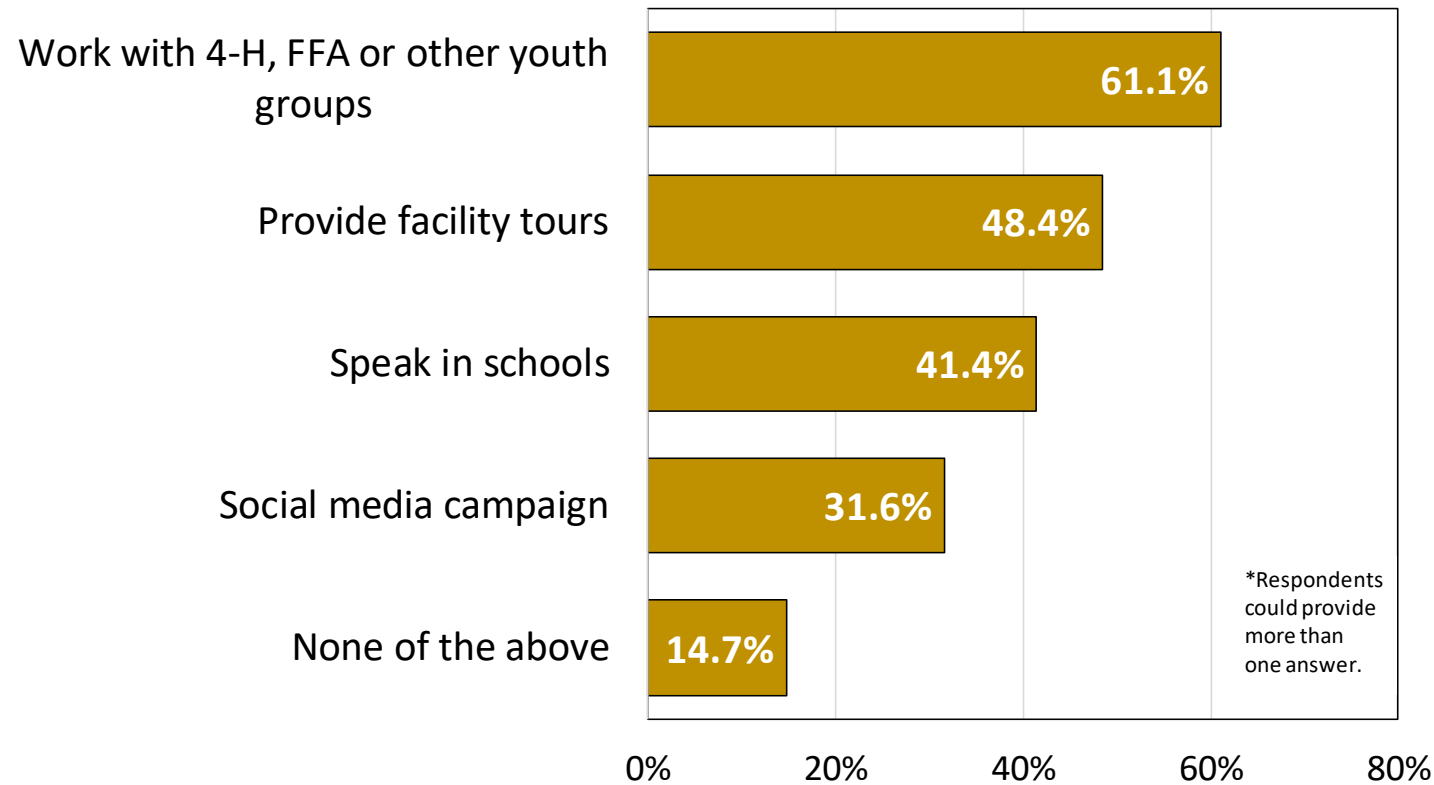
- Truck drivers (CDL)
- Office and administration
  - Managers
  - Accountants
  - Bookkeepers
- Veterinary medicine
  - Large animal vets
  - Vet techs

# Building the pipeline: Talent attraction, hiring and training



# Exposing young workers to consider careers in food, agriculture and forestry is an important first step in constructing a talent pipeline

**Respondent efforts to promote careers in food, agriculture, and/or forestry to youth**

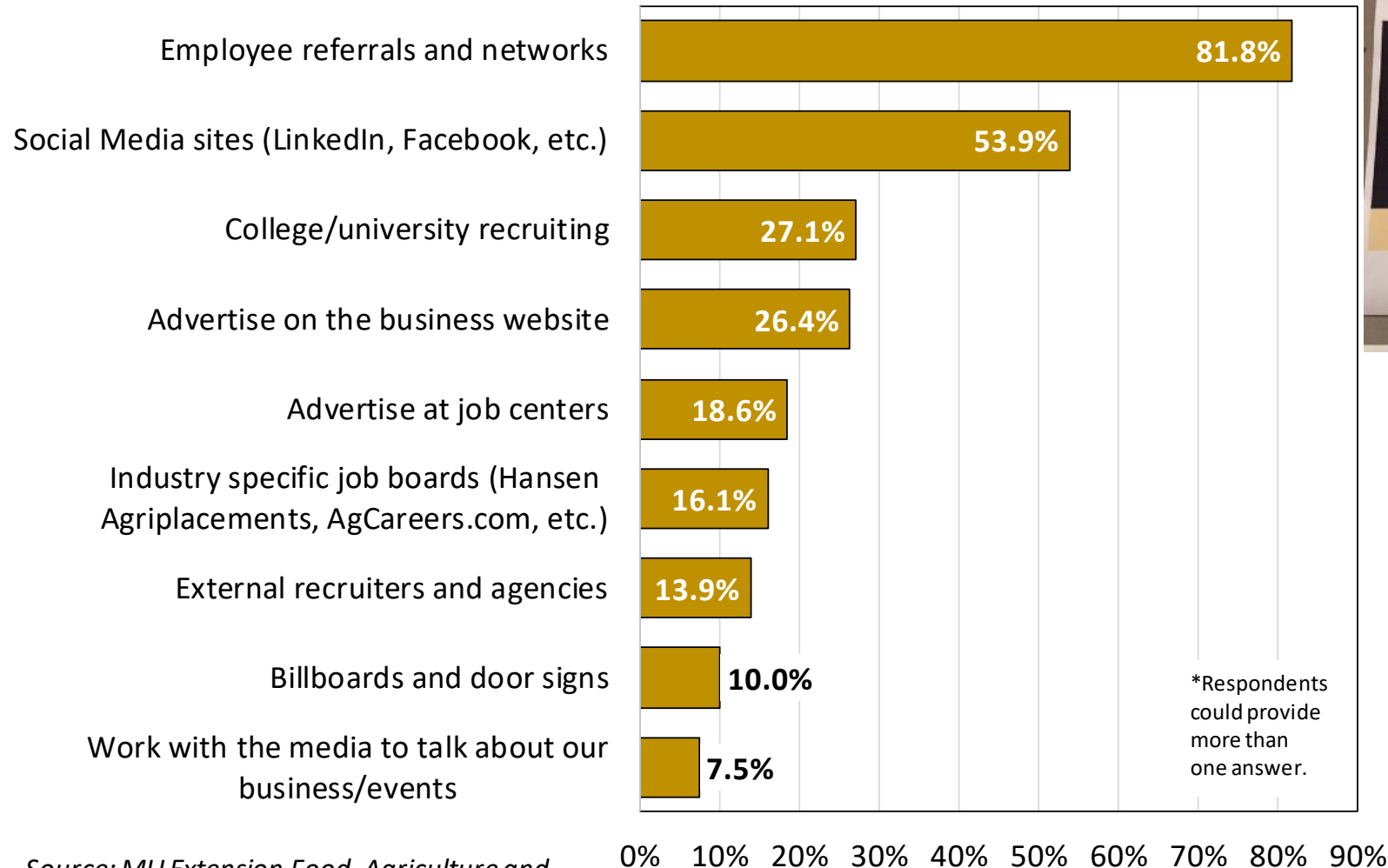


Source: MU Extension Food, Agriculture and Forestry Employer Survey, Jan.-March 2020

- Youth groups like 4-H and FFA generate interest in agricultural careers and/or education.
- CTE and agricultural education programs are also key partners.

# Most employers rely on employee referrals to fill open positions, but larger firms (50+) use more tools to fill open positions.

## Respondent recruitment practices to fill current jobs

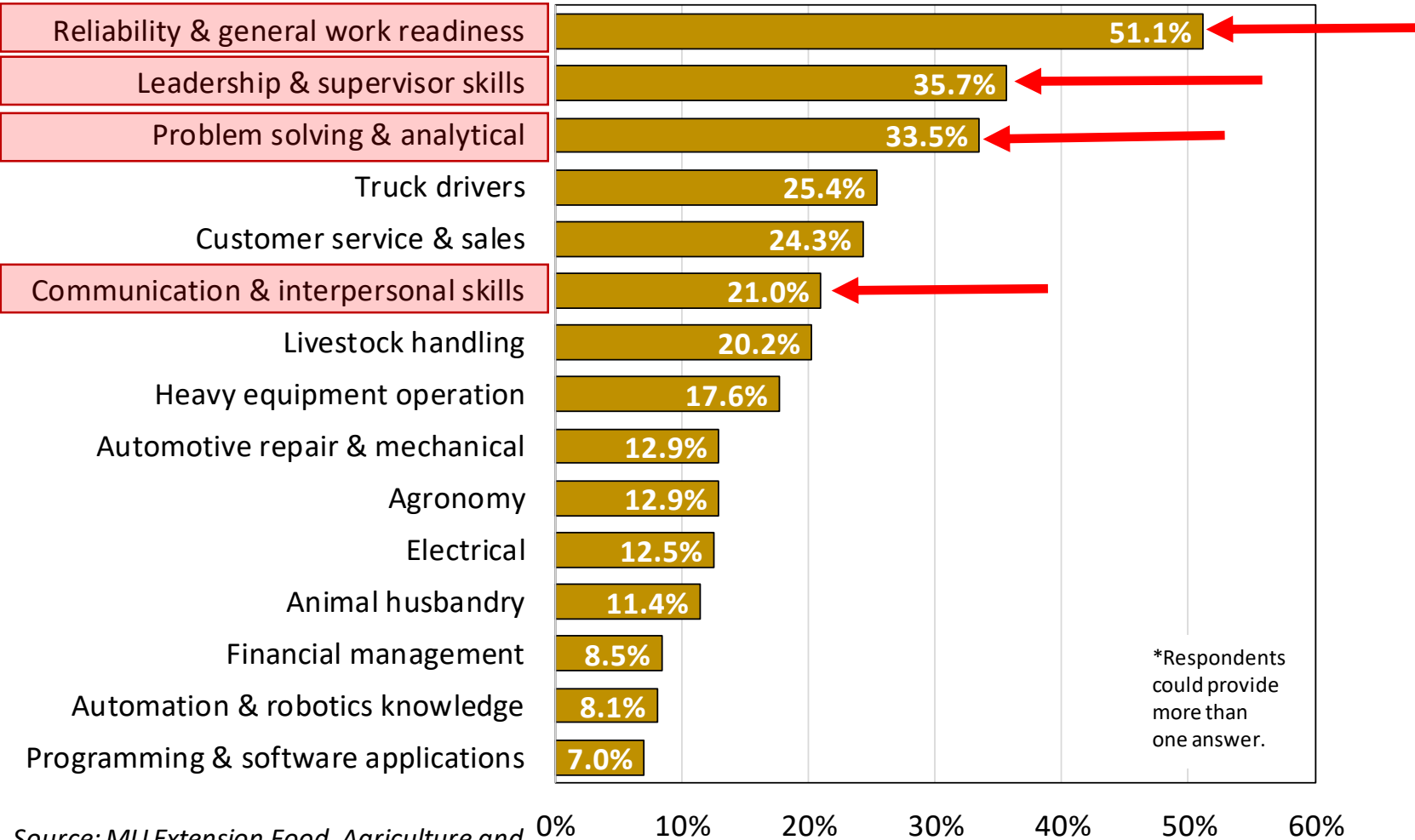


Source: MU Extension Food, Agriculture and Forestry Employer Survey, Jan.-March 2020



# During the study period, employers expressed difficulty in finding workers with basic work readiness

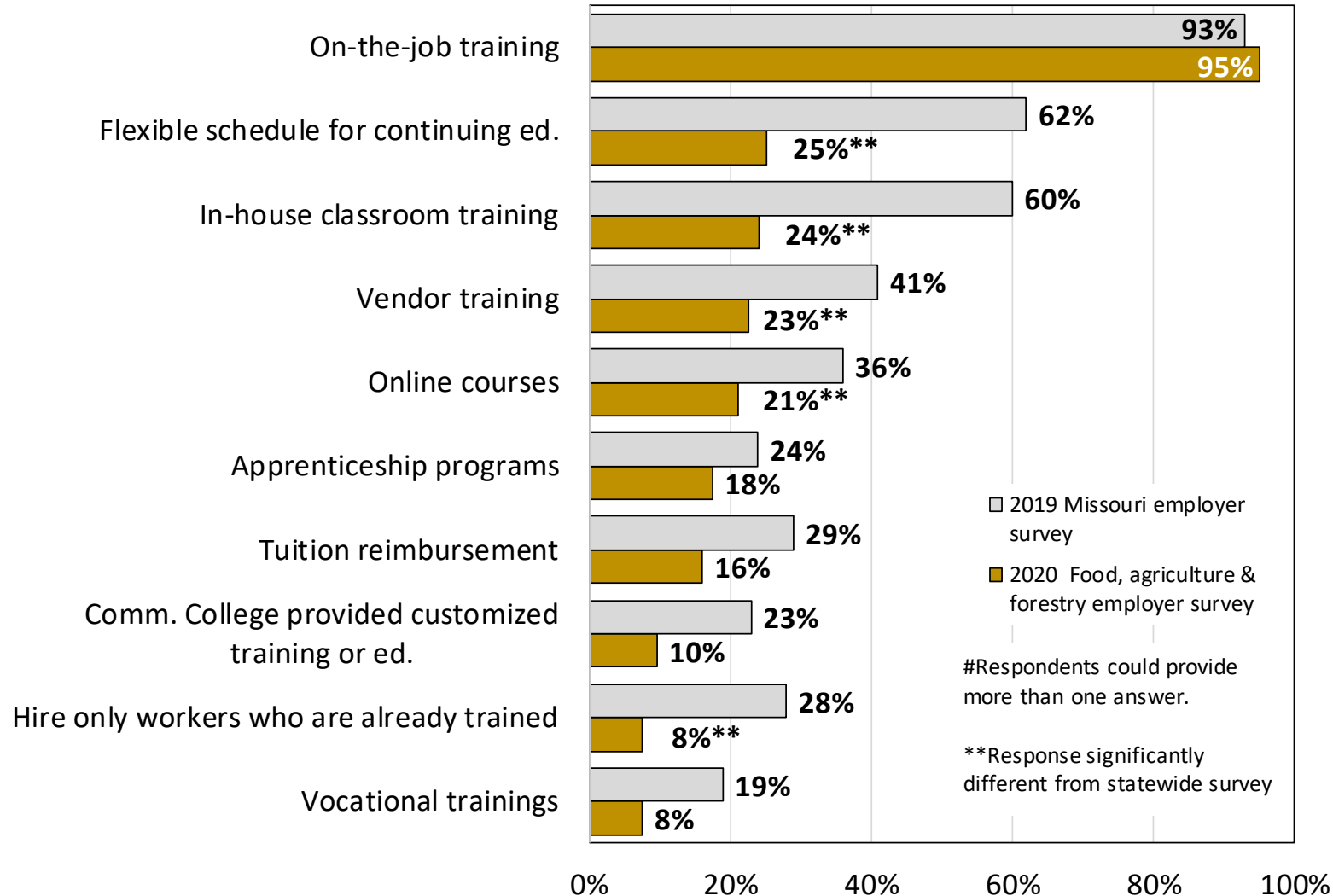
Most difficult skills to find when hiring



\*Respondents could provide more than one answer.

Source: MU Extension Food, Agriculture and Forestry Employer Survey, Jan.-March 2020

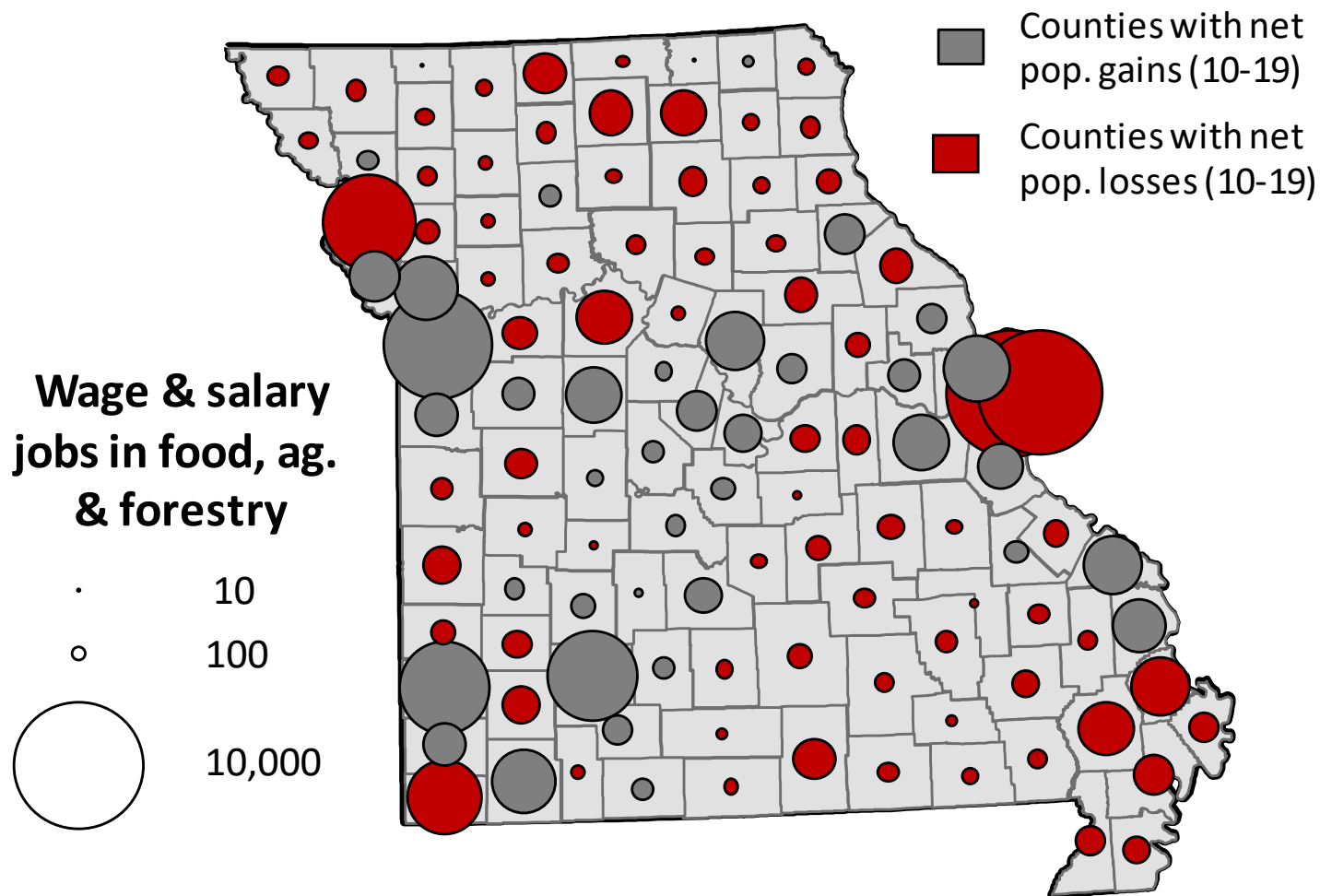
# FAF employers use on-the-job training (OJT) more than any other training method



Source: MU Extension Food, Agriculture & Forestry Employer Survey, Jan.-March 2020; MERIC Missouri Workforce 2019

- Relative to other firms, FAF firms are less likely to use wider variety of training methods.
- Smaller firms (<50 emp.) are less likely to work with community colleges on apprenticeships or customized training.

Demographic trends can limit the ability of employers to grow and expand, particularly in more rural locations.

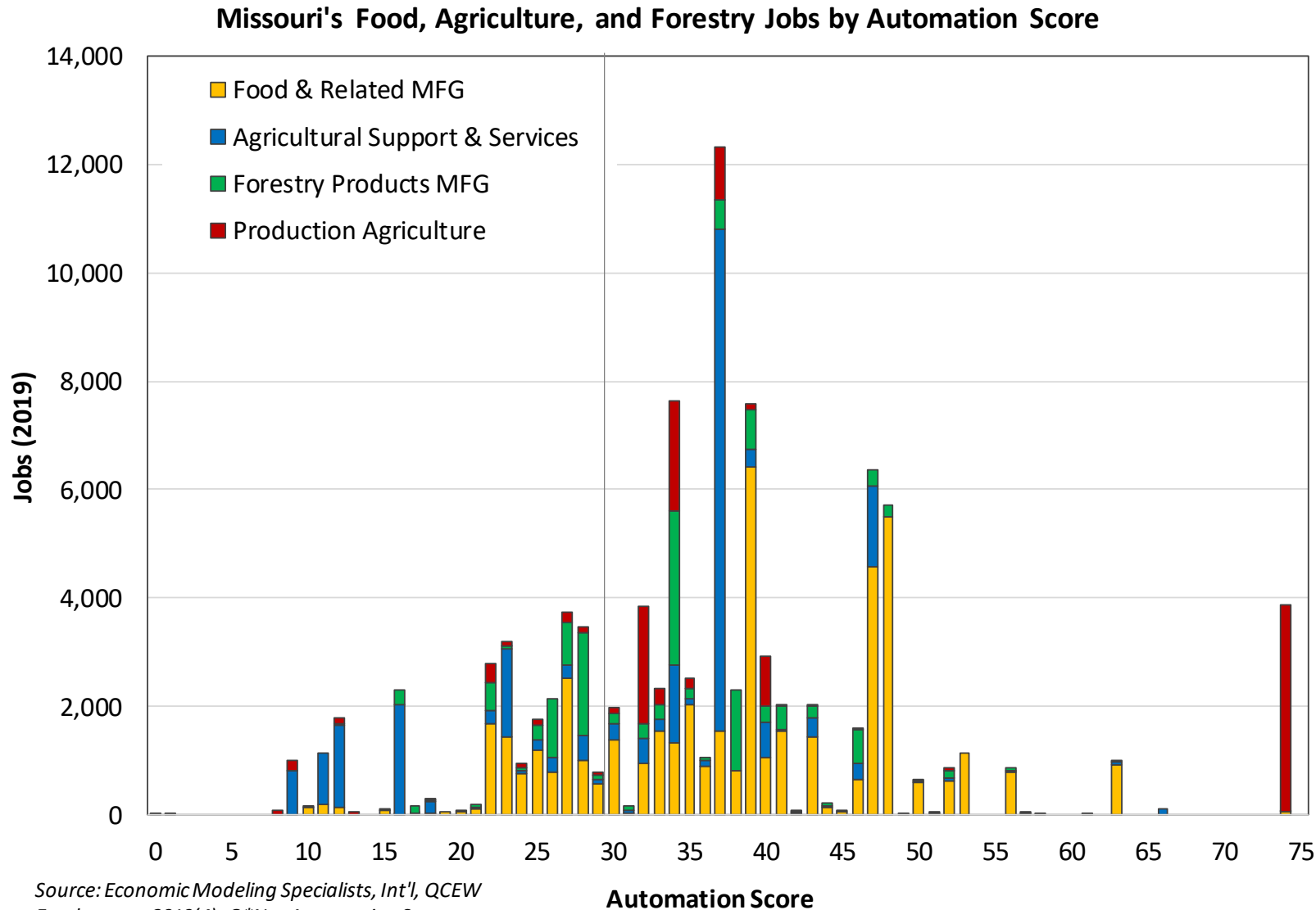


- Almost 53 percent of FAF wage and salary jobs are in the 76 Missouri counties that have net population losses since 2010.
- Rural areas may also experience issues related to transportation or workforce housing.

Source: Economic Modeling Specialists, Int'l (2019.4),  
US Census Bureau Population Estimates, v2019

# Automation challenges and opportunities

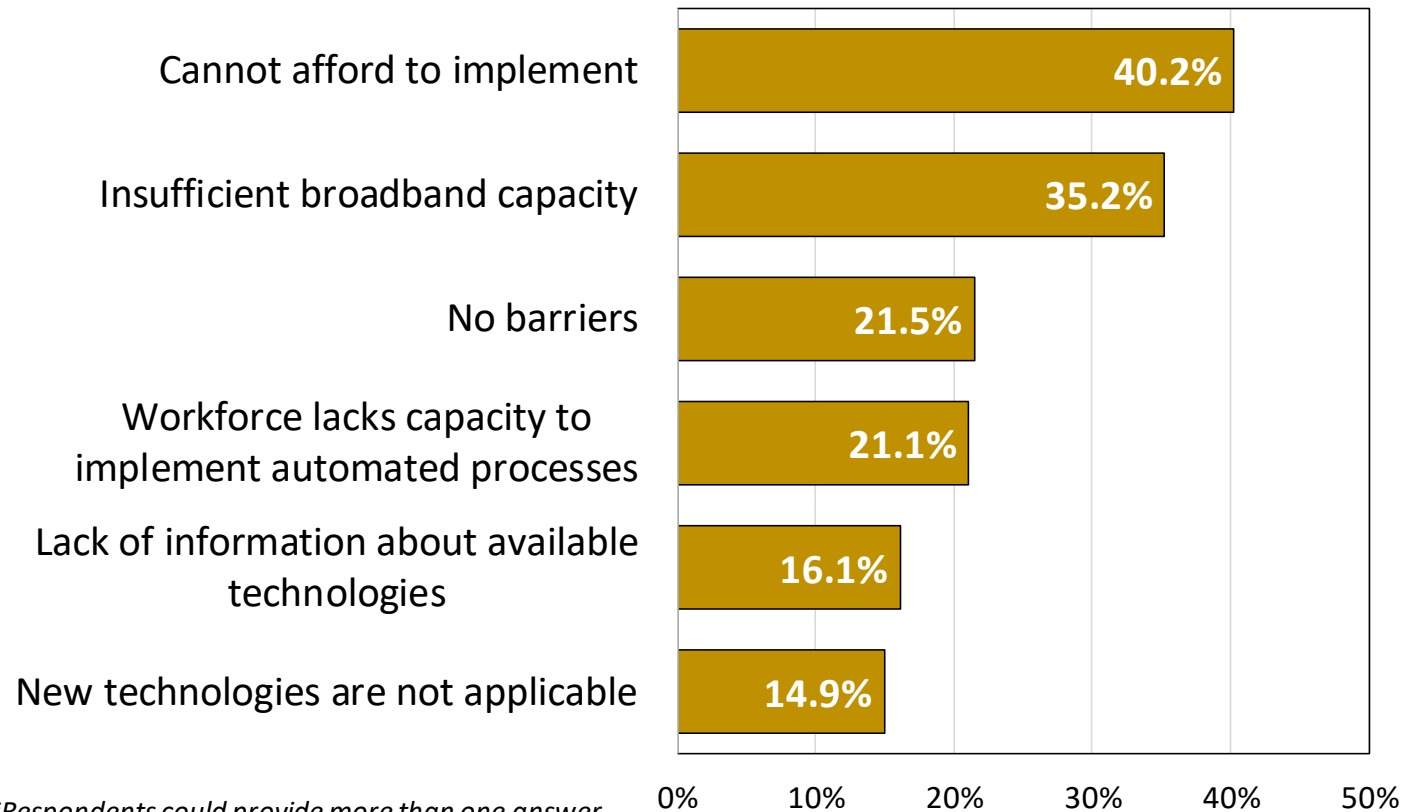
# Automation affects occupations differently



- Services tend to be less automated
- Production occupations are more automated

# Not all firms utilize automation, but these technologies can alter workforce needs for those that do.

## Barriers to greater adoption of automated technologies and processes



*\*Respondents could provide more than one answer  
Source: MU Extension Food, Agriculture and Forestry  
Employer Survey, Jan.-March 2020*

- Use of automated processes and technologies varies.
  - 38 percent not using automation.
  - 26 percent make significant investments, 17 percent planning to invest.
- These technologies can change workforce demand.
  - Increase demand for more skilled workers (e.g. maintenance staff).
  - Increase need for training.
  - Reduce headcount.



# Moving forward

# Moving forward, Missouri's leaders can address these workforce challenges by:

- Continuing to support and expand efforts to promote food, agriculture and forestry-related careers,
- Organizing statewide or regional sector strategies related to food, agriculture and forestry,
- Promoting existing support initiatives and services, and
- Investing in rural communities.

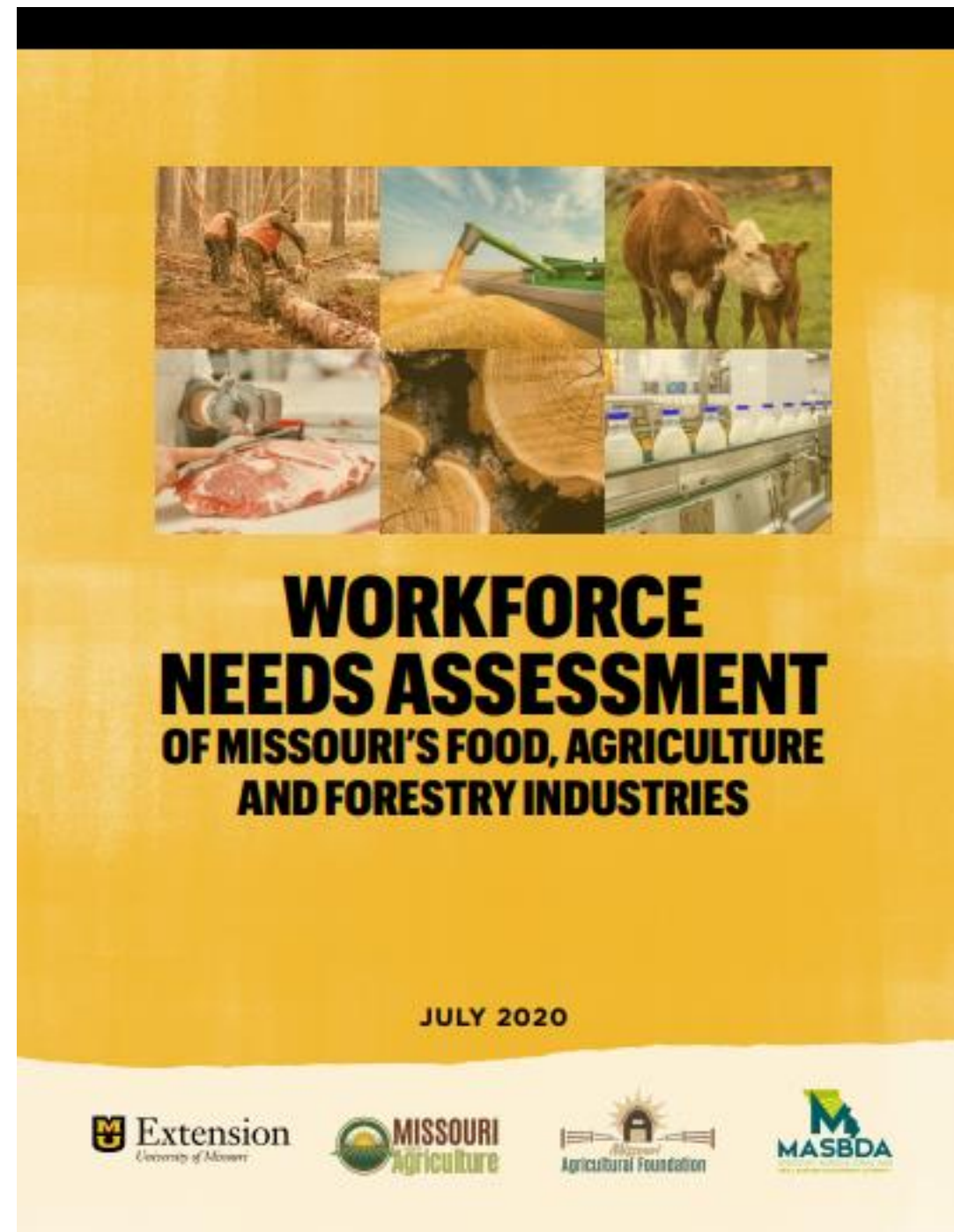


# For more information

- The full report is available on the MU Extension website:

- <https://extension2.missouri.edu/media/wysiwyg/Extensiondata/NewsAdmin/Workplace-Assessment-FINAL.pdf>

This work was supported by:



# Thank you. Questions?

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