

Midwestern Economic and Labor Market Outlook

Presentation to the Midwest
Council of Governments

Mike Horrigan, President

November 17, 2023

AGENDA

- FOCUS ON ENERGY

- Trends in Energy Employment
- Occupational projections for Lithium-Ion Battery Production in the U.S

- CURRENT ECONOMIC CONDITIONS

- Inflation is easing
- Real GDP growth has returned to pre-pandemic rates
- Payroll employment has recovered pre-pandemic levels
- Labor force participation rates and employment population ratios are nearly recovered from the pandemic
- Labor shortages have eased in some industries and persist in others

AGENDA

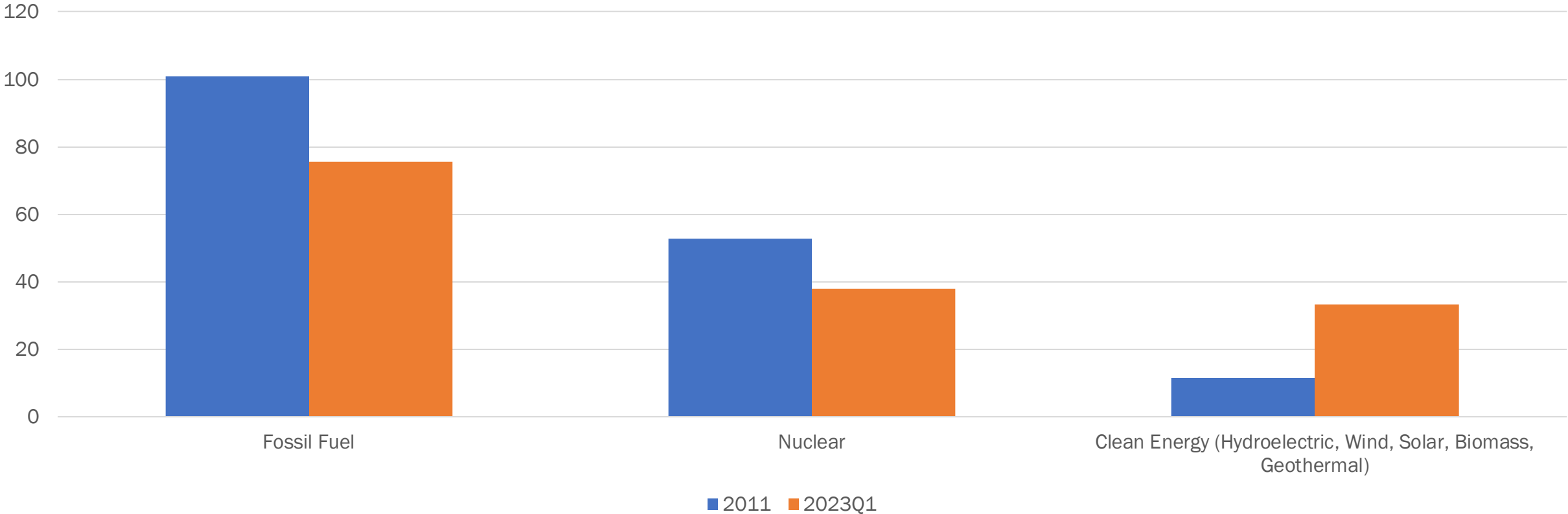
- A LOOK TO THE FUTURE
 - Some headwinds emerging
 - The forecast
 - Population and employment projections

FOCUS ON ENERGY

Trends in Energy Employment

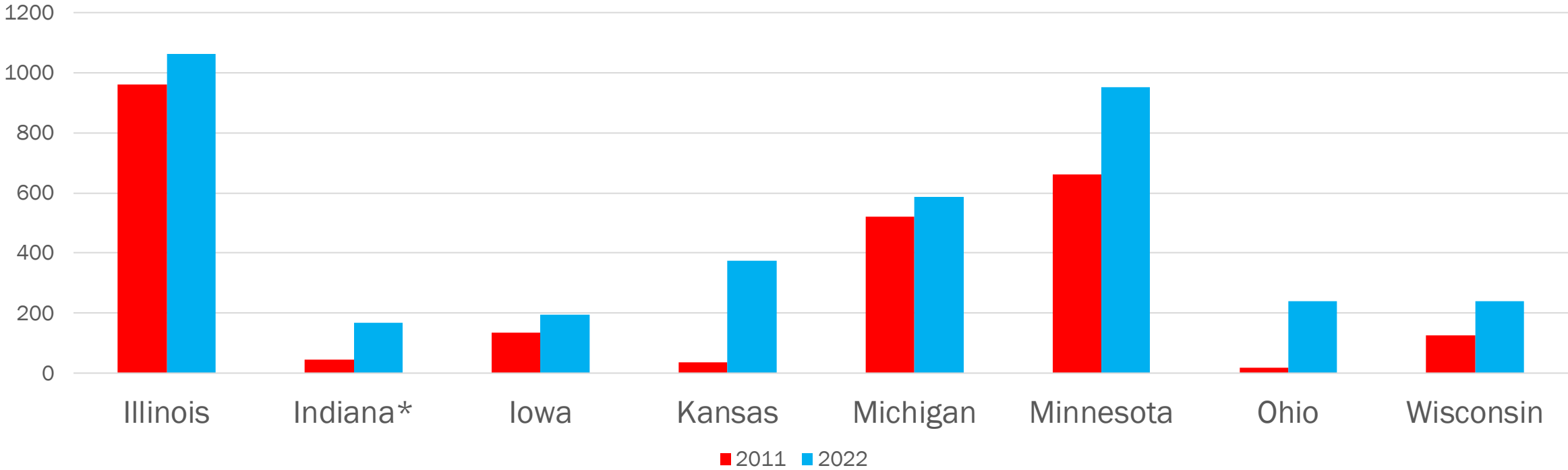
US Employment in Electric Power Generation by Energy Source

Employment in private industry, 2011-2023Q1, thousands



Midwest Employment in Clean Electric Power Generation (Hydroelectric, Wind, Solar, and Biomass)

Employment in private industry, 2011-2022, individuals



* Chart data for Indiana reflect employment 2012-2022

Recent employment changes in Electric Power Generation reflect the shift toward Clean Energy sources in the US and Midwest

Employment in Private Electric Power Generation, NAICS 22111									
Geography	Clean Energy Electric Power Generation (Hydroelectric, Wind, Solar, Biomass, Geothermal)		Clean Energy Share of Employment (2022)	Clean Energy Percent Change (2019-2022)	Fossil Fuel Electric Power Generation		Fossil Fuel Share of Employment (2022)	Fossil Fuel Percent Change (2019-2022)	Electric Power Generation, All Sources (2022)
	2019	2022			2019	2022			
Illinois	1,229	1,063	15.2%	-13.5%	2,740	2,223	31.7%	-18.9%	7,012
Indiana	131	168	4.6%	28.2%	4,364	3,471	94.6%	-20.5%	3,670
Iowa	216	252	15.4%	16.7%	1,448	1,168	71.5%	-19.3%	1,634
Kansas	457	375	18.6%	-17.9%	1,100	860	42.7%	-21.8%	2,015
Michigan*	503	588	6.1%	16.9%	5,984	6,199	64.5%	3.6%	9,604
Minnesota	846	953	21.8%	12.6%	1,745	1,707	39.0%	-2.2%	4,379
Ohio	145	240	6.6%	65.5%	2,646	2,180	59.9%	-17.6%	3,642
Wisconsin	211	239	7.3%	13.3%	2,978	2,572	78.2%	-13.6%	3,288
United States**	20,049	33,364	22.1%	66.4%	82,423	75,482	50.1%	-8.4%	150,688

*Michigan's Fossil Fuel Employment reflects the most-recently disclosed data, the three-year period from 2015-2018

**United States data for Clean Energy, Fossil Fuel, and Total Electric Power Generation Employment reflect the period from 2019-2023Q1

FOCUS ON ENERGY

Occupational Projections
for Lithium-Ion Battery
Production in the United States

Goals of the project

- Provide guidance to the Michigan LEO ‘EV Academy’
- Develop a model that projects the demand for occupations in both Michigan and the U.S. that are highly relevant to EV production – in this case, starting with a model for lithium-ion battery production

Michigan Department of Labor and Economic Opportunity EV Jobs Academy

- More than 100 partners include employers, labor, industry stakeholders and educational institutions
- Five-year grant initiative aims to identify electrified vehicle occupational skill needs while developing and scaling postsecondary credentialing programs
- Designed to provide Michiganders with tuition assistance and supportive services, including “earn while you learn” opportunities through a Registered Apprenticeship, to support and streamline on-ramps to high-wage, in-demand careers



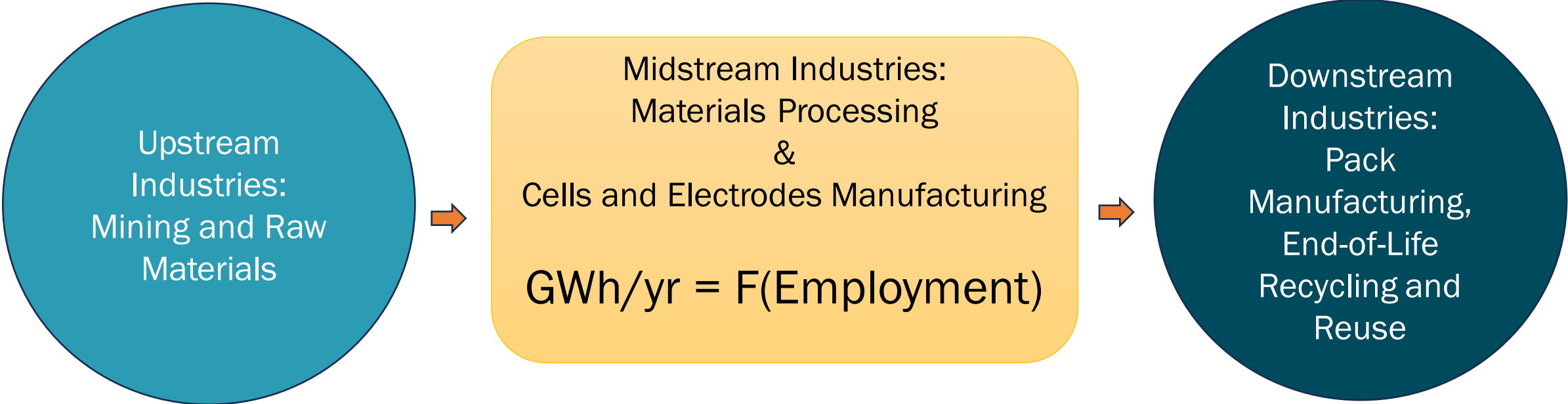
North American Lithium-Ion Battery Supply Chain Database

NAATBatt International and the National Renewable Energy Laboratory created a publicly available directory of North American companies in the lithium-ion supply chain



- **For the more than 600 facilities in the directory, the database provides:**
 - Name, address, website, Headquarter information
 - Supply chain segment, Products or services
 - Employment
 - Installed battery manufacturing capacity (in gigawatt-hours)
 - Plans for future capacity,

Methodology: Establishing the relationship between supply chain employment and productive capacity



Employment forecasting assumes a stable relationship between supply chain employment and productive capacity in cells and electrodes manufacturing

US Lithium-Ion Battery Employment Across the Supply Chain

The following levels of employment in eleven supply chain segments are associated with 200 GWh/yr annual production capacity in the year 2023:

Supply Chain Segment	Description	NAATBatt US Employment in 2023 associated with 200 Gigawatt hours of battery production	Relative Share of Total Employment in 2023
1	Raw Materials	1,825	2.9%
2	Battery Grade Materials	4,701	7.4%
3	Other Battery Component	6,743	10.6%
4	Electrodes and Cells	10,585	16.6%
5	Modules and Packs	13,903	21.8%
6	End of Life	2,963	4.7%
7	Equipment	4,228	6.6%
8	Service and Repair	9,809	15.4%
9	Research and Development	6,160	9.7%
10	Modeling	2,675	4.2%
11	Distributors	75	0.1%
	Total	63,667	

US Lithium-Ion Battery Employment by Industry NAICS

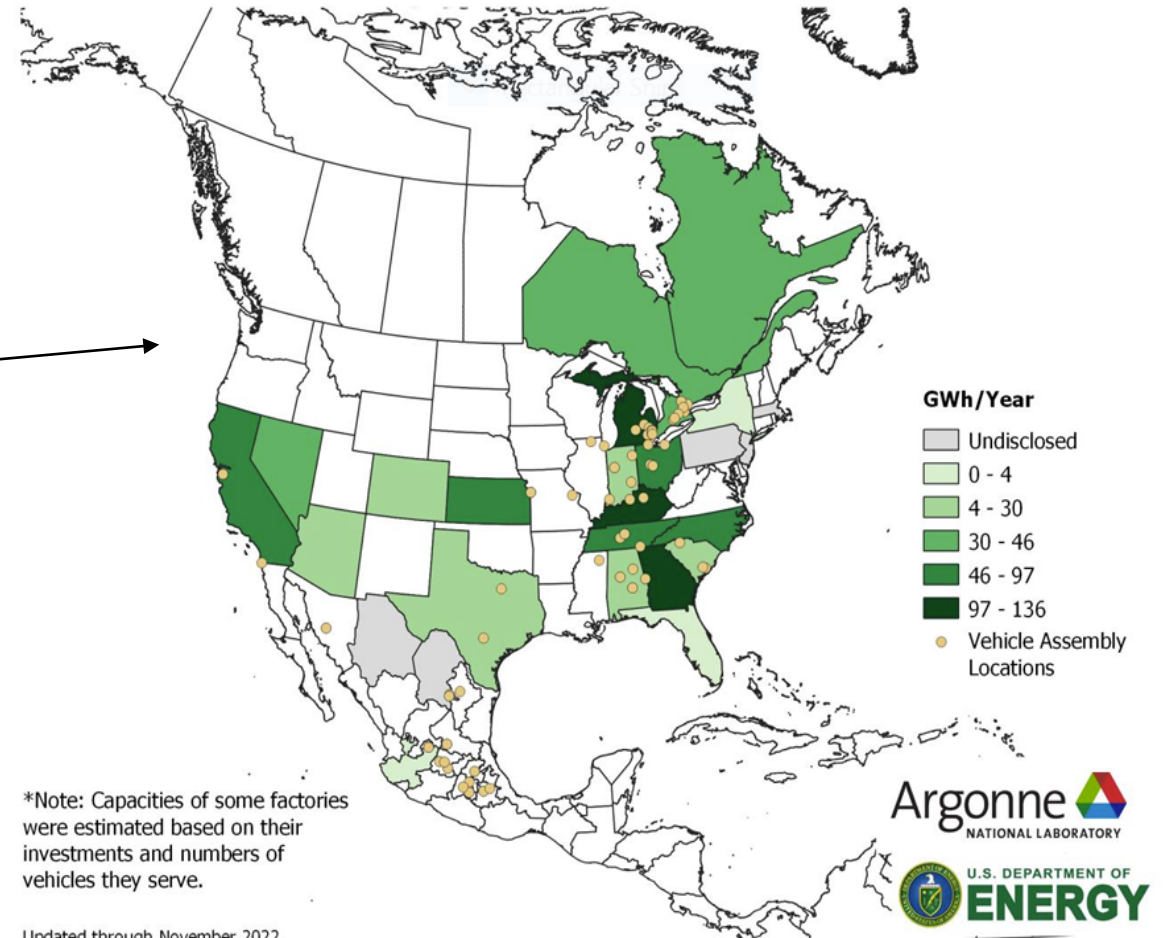
Employment in 2023 is shown using 21 three-digit NAICS industries

NAICS 3-Digit	Description	NAATBatt US Employment in 2023 associated with 200 Gigawatt hours of battery production	Relative Share of Total Employment in 2023
212	Mining (except Oil and Gas)	2,012	3.2%
237	Heavy and Civil Engineering Construction	385	0.6%
325	Chemical Manufacturing	15,299	24.0%
326	Plastics and Rubber Products Manufacturing	1,455	2.3%
327	Nonmetallic Mineral Product Manufacturing	1,452	2.3%
331	Primary Metal Manufacturing	447	0.7%
332	Fabricated Metal Product Manufacturing	335	0.5%
333	Machinery Manufacturing	1,509	2.4%
334	Computer and Electronic Product Manufacturing	3,935	6.2%
335	Electrical Equipment, Appliance, and Component Manufacturing	22,347	35.1%
336	Transportation Equipment Manufacturing	2,506	3.9%
339	Miscellaneous Manufacturing	335	0.5%
423	Merchant Wholesalers, Durable Goods	2,576	4.0%
424	Merchant Wholesalers, Nondurable Goods	215	0.3%
441	Motor Vehicle and Parts Dealers	165	0.3%
488	Support Activities for Transportation	200	0.3%
513	Publishing Industries (incl. Software)	739	1.2%
541	Professional, Scientific, and Technical Services	7,008	11.0%
561	Administrative and Support Services	99	0.2%
562	Waste Management and Remediation Services	483	0.8%
811	Repair and Maintenance	165	0.3%
	Total	63,667	

Battery Production Capacity for the United States

- NAATBatt/ NREL data currently active:
200 GWh/yr
- Argonne National Laboratory projection:
1000 GWh/yr
- NAATBatt/ NREL data current & planned:
1397 GWh/yr

Planned Battery Plant Capacity in North America by 2030



Employment Projections by Industry NAICS, 2023-2030

- Assuming a stable production relationship between Gigawatt hour production and supply-chain employment between 2023 and 2030, solve for Employment levels in 2030
 - Future work will look at likely trends in productivity in the production of lithium-ion batteries and its implication for employment by industry and occupation
- Assign the employment levels to NAICS industries in 2030 in the same proportion as 2023
- The next slide assumes that the change in employment across the supply chain from 2023-2030 is proportionate to the projected increased capacity of battery manufacturers in the US, using Argonne National Lab estimates

NAICS 3-Digit	Description	NAATBatt US Employment in 2023 associated with 200 GWh of battery production	Projected US Employment in 2030 associated with 1000 GWh of battery production
212	Mining (except Oil and Gas)	2,012	2,012*
237	Heavy and Civil Engineering Construction	385	1,925
325	Chemical Manufacturing	15,299	76,495
326	Plastics and Rubber Products Manufacturing	1,455	7,275
327	Nonmetallic Mineral Product Manufacturing	1,452	7,260
331	Primary Metal Manufacturing	447	2,235
332	Fabricated Metal Product Manufacturing	335	1,675
333	Machinery Manufacturing	1,509	7,545
334	Computer and Electronic Product Manufacturing	3,935	19,675
335	Electrical Equipment, Appliance, and Component Manufacturing	22,347	111,735
336	Transportation Equipment Manufacturing	2,506	12,530
339	Miscellaneous Manufacturing	335	1,675
423	Merchant Wholesalers, Durable Goods	2,576	12,880
424	Merchant Wholesalers, Nondurable Goods	215	1,075
441	Motor Vehicle and Parts Dealers	165	825
488	Support Activities for Transportation	200	1,000
513	Publishing Industries (incl. Software)	739	3,695
541	Professional, Scientific, and Technical Services	7,008	35,040
561	Administrative and Support Services	99	495
562	Waste Management and Remediation Services	483	2,415
811	Repair and Maintenance	165	825
	Total	63,667	308,275

*Employment in Raw Materials held constant over the projection period. We exclude Mining from our projections based on uncertainty over the supply of, permitting for, and the development of economically viable sites for extraction of critical mining inputs

Projecting Occupational Employment for Lithium-ion Battery Production

- For each 3-digit NAICS industry involved in lithium-ion battery production, identify its occupational staffing pattern in the US in 2022 using the Occupational Employment and Wage Survey Data (latest data available)
- Use US projections data on occupational shares by 3-digit NAICS industry in 2030 for each occupation in that industry
- Apply these projected occupation/industry shares to the projected 3-digit NAICS employment associated with the 1000 GWh production capacity to generate projected occupational employment in 2030 by these NAICS industries
 - Exclude NAICS 212 – Mining, where growth in employment is conditioned upon the supply of, permitting for, and the development of economically viable sites for extraction of critical mining inputs

Projecting Occupational Employment for Lithium-ion Battery Production

- For each occupation, add up the projected occupational needs across all the relevant NAICS codes to generate an estimate of overall occupational requirements
- In addition, separate estimates of annual job openings are developed based on the assumption that the existing relationship between annual job openings and base year employment for the full occupation will approximate the same relationship for battery-related occupational employment

Occupation Code	Occupational title	US Annual Median Salary	Battery-related occupational employment		Employment change	Annual job openings
			2023	2030		
51-2000	Assemblers and Fabricators	\$ 38,246	8,881	43,101	34,220	4,427
51-9000	Other Production Occupations	\$ 42,529	7,934	38,344	30,410	4,154
51-4000	Metal Workers and Plastic Workers	\$ 46,114	3,816	18,964	15,148	1,814
17-2000	Engineers	\$ 90,884	3,723	19,434	15,711	1,166
53-7000	Material Moving Workers	\$ 38,440	3,145	15,472	12,328	2,151
13-1000	Business Operations Specialists	\$ 73,972	3,639	18,211	14,572	1,536
49-9000	Other Installation, Maintenance, and Repair Occupations	\$ 53,252	2,203	11,361	9,159	1,024
11-3000	Operations Specialties Managers	\$ 123,531	2,148	10,966	8,818	828
51-1000	Supervisors of Production Workers	\$ 66,605	1,895	9,548	7,653	884
41-4000	Sales Representatives, Wholesale and Manufacturing	\$ 72,501	1,828	9,160	7,332	812
43-5000	Material Recording, Scheduling, Dispatching, and Distributing Workers	\$ 43,654	1,684	8,019	6,334	761
11-1000	Top Executives	\$ 118,413	1,736	8,485	6,749	675

Occupation Code	Occupational title	US Annual Median Salary	Battery-related occupational employment		Employment change	Annual job openings
			2023	2030		
43-4000	Information and Record Clerks	\$ 42,681	1,302	5,991	4,689	757
17-3000	Drafters, Engineering Technicians, and Mapping Technicians	\$ 59,539	1,343	6,702	5,359	622
53-3000	Motor Vehicle Operators	\$ 43,381	1,043	4,585	3,542	517
11-9000	Other Management Occupations	\$ 131,533	1,028	5,158	4,130	422
13-2000	Financial Specialists	\$ 79,775	1,082	5,330	4,248	401
43-3000	Financial Clerks	\$ 46,202	887	4,004	3,117	426
43-9000	Other Office and Administrative Support Workers	\$ 39,851	809	3,610	2,801	407
11-2000	Advertising, Marketing, Promotions, Public Relations, and Sales Managers	\$ 136,685	754	3,758	3,004	290
19-4000	Life, Physical, and Social Science Technicians	\$ 52,309	614	3,069	2,455	370
47-2000	Construction Trades Workers	\$ 53,366	910	3,500	2,590	295
43-6000	Secretaries and Administrative	\$ 45,809	753	3,203	2,450	330
19-2000	Physical Scientists	\$ 86,147	578	2,982	2,404	222

Occupation Code	Occupational title	US Annual Median Salary	Battery-related occupational employment		Employment change	Annual job openings
			2023	2030		
43-1000	Supervisors of Office and Administrative Support Workers	\$ 65,384	460	2,119	1,659	196
49-3000	Vehicle and Mobile Equipment Mechanics, Installers, and Repairers	\$ 56,272	444	1,852	1,408	160
19-1000	Life Scientists	\$ 105,403	393	2,001	1,608	138
51-8000	Plant and System Operators	\$ 55,177	378	1,759	1,381	156
41-3000	Sales Representatives, Services	\$ 69,641	338	1,657	1,319	149
41-2000	Retail Sales Workers	\$ 39,024	219	1,094	875	177
27-1000	Art and Design Workers	\$ 58,828	285	1,412	1,127	133
49-2000	Electrical and Electronic Equipment Mechanics, Installers, and Repairers	\$ 59,025	284	1,371	1,088	131
49-1000	Supervisors of Installation, Maintenance, and Repair Workers	\$ 78,907	310	1,436	1,126	120
37-2000	Building Cleaning and Pest Control Workers	\$ 34,378	215	1,062	847	149
23-1000	Lawyers, Judges, and Related Workers	\$ 176,904	351	1,780	1,429	78
53-1000	Supervisors of Transportation and Material Moving Workers	\$ 61,288	248	1,208	961	123

Detailed Occupations

Assemblers and Fabricators				
SOC Code	Description	US Annual Median Wage	Typical Education Needed for Entry	Typical On-The-Job Training Needed to Attain Competency
51-2021	Coil Winders, Tapers, and Finishers	\$ 42,409	High school	Moderate OJT
51-2028	Electrical, Electronic, and Electromechanical Assemblers, Except Coil Winders, Tapers, and Finishers	\$ 38,392	High school	Moderate OJT
51-2031	Engine and Other Machine Assemblers	\$ 45,048	High school	Moderate OJT
51-2041	Structural Metal Fabricators and Fitters	\$ 45,380	High school	Moderate OJT
51-2051	Fiberglass Laminators and Fabricators	\$ 39,707	High school	Moderate OJT
51-2061	Timing Device Assemblers and Adjusters	\$ 38,380	High school	Moderate OJT
51-2090	Miscellaneous Assemblers and Fabricators	\$ 37,503	High school	Moderate OJT

Other Production Occupations

SOC Code	Description	US Annual Median Wage	Typical Education Needed for Entry	Typical On-The-Job Training Needed to Attain Competency
51-9011	Chemical Equipment Operators and Tenders	\$ 51,141	High school	Moderate OJT
51-9012	Separating, Filtering, Clarifying, Precipitating, and Still Machine Setters, Operators, and Tenders	\$ 48,787	High school	Moderate OJT
51-9023	Mixing and Blending Machine Setters, Operators, and Tenders	\$ 46,126	High school	Moderate OJT
51-9032	Cutting and Slicing Machine Setters, Operators, and Tenders	\$ 39,287	High school	Moderate OJT
51-9041	Extruding, Forming, Pressing, and Compacting Machine Setters, Operators, and Tenders	\$ 39,187	High school	Moderate OJT
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	\$ 45,541	High school	Moderate OJT
51-9111	Packaging and Filling Machine Operators and Tenders	\$ 36,913	High school	Moderate OJT
51-9124	Coating, Painting, and Spraying Machine Setters, Operators, and Tenders	\$ 42,145	High school	Moderate OJT
51-9141	Semiconductor Processing Technicians	\$ 44,513	High school	Moderate OJT
51-9161	Computer Numerically Controlled Tool Operators	\$ 45,521	High school	Moderate OJT
51-9195	Molders, Shapers, and Casters, Except Metal and Plastic	\$ 40,952	High school	Long-term OJT
51-9198	Helpers--Production Workers	\$ 36,549	High school	Short-term OJT
51-9199	Production Workers, All Other	\$ 39,248	High school	Moderate OJT

Metal and Plastics Workers

SOC Code	Description	US Annual Median Wage	Typical Education Needed for Entry	Typical On-The-Job Training Needed to Attain Competency
51-4021	Extruding and Drawing Machine Setters, Operators, and Tenders	\$ 39,998	High school	Moderate OJT
51-4022	Forging Machine Setters, Operators, and Tenders	\$ 42,763	High school	Moderate OJT
51-4023	Rolling Machine Setters, Operators, and Tenders	\$ 45,977	High school	Moderate OJT
51-4031	Cutting, Punching, and Press Machine Setters, Operators, and Tenders	\$ 39,714	High school	Moderate OJT
51-4032	Drilling and Boring Machine Tool Setters, Operators, and Tenders	\$ 39,874	High school	Moderate OJT
51-4033	Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators, and Tenders	\$ 39,401	High school	Moderate OJT
51-4034	Lathe and Turning Machine Tool Setters, Operators, and Tenders	\$ 46,554	High school	Moderate OJT
51-4035	Milling and Planing Machine Setters, Operators, and Tenders	\$ 44,742	High school	Moderate OJT
51-4041	Machinists	\$ 48,231	High school	Long-term OJT
51-4051	Metal-Refining Furnace Operators and Tenders	\$ 39,960	High school	Moderate OJT
51-4052	Pourers and Casters, Metal	\$ 61,628	High school	Moderate OJT
51-4061	Model Makers	\$ 59,214	High school	Moderate OJT
51-4062	Patternmakers	\$ 51,653	High school	Moderate OJT
51-4071	Foundry Mold and Coremakers	\$ 41,798	High school	Moderate OJT
51-4072	Molding, Coremaking, and Casting Machine Setters, Operators, and Tenders	\$ 37,496	High school	Moderate OJT
51-4081	Multiple Machine Tool Setters, Operators, and Tenders	\$ 40,042	High school	Moderate OJT
51-4111	Tool and Die Makers	\$ 57,574	Postsecondary nondegree	Long-term OJT
51-4121	Welders, Cutters, Solderers, and Brazers	\$ 48,794	High school	Moderate OJT
51-4122	Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	\$ 44,581	High school	Moderate OJT
51-4191	Heat Treating Equipment Setters, Operators, and Tenders	\$ 39,395	High school	Moderate OJT
51-4192	Layout Workers	\$ 50,051	High school	Moderate OJT
51-4193	Plating and Coating Machine Setters, Operators, and Tenders	\$ 40,369	High school	Moderate OJT
51-4194	Tool Grinders, Filers, and Sharpeners	\$ 39,670	High school	Moderate OJT
51-4199	Metal Workers and Plastic Workers, All Other	\$ 39,734	High school	Moderate OJT

Engineers

SOC Code	Description	US Annual Median Wage	Typical Education Needed for Entry	Typical On-The-Job Training Needed to Attain Competency
17-2041	Chemical Engineers	\$ 97,371	Bachelor's	None
17-2051	Civil Engineers	\$ 95,964	Bachelor's	None
17-2061	Computer Hardware Engineers	\$ 112,978	Bachelor's	None
17-2071	Electrical Engineers	\$ 99,816	Bachelor's	None
17-2072	Electronics Engineers, Except Computer	\$ 99,558	Bachelor's	None
17-2081	Environmental Engineers	\$ 96,367	Bachelor's	None
17-2111	Health and Safety Engineers, Except Mining Safety Engineers and Inspectors	\$ 92,877	Bachelor's	None
17-2112	Industrial Engineers	\$ 96,852	Bachelor's	None
17-2131	Materials Engineers	\$ 92,385	Bachelor's	None
17-2141	Mechanical Engineers	\$ 86,442	Bachelor's	None
17-2151	Mining and Geological Engineers, Including Mining Safety Engineers	\$ 95,600	Bachelor's	None
17-2199	Engineers, All Other	\$ 92,459	Bachelor's	None

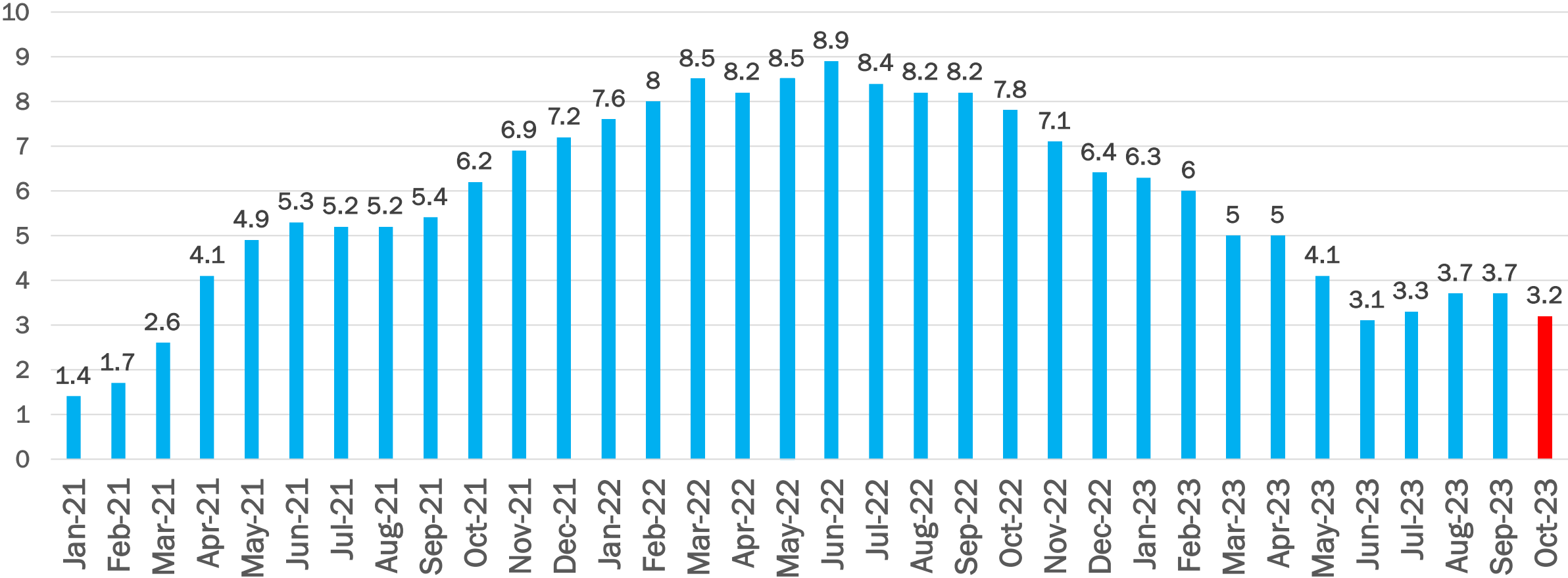
Material Moving Workers

SOC Code	Description	US Annual Median Wage	Typical Education Needed for Entry	Typical On-The-Job Training Needed to Attain Competency
53-7011	Conveyor Operators and Tenders	\$ 43,637	No formal credential	Short-term OJT
53-7021	Crane and Tower Operators	\$ 56,628	High school	Moderate OJT
53-7041	Hoist and Winch Operators	\$ 58,916	No formal credential	Short-term OJT
53-7051	Industrial Truck and Tractor Operators	\$ 40,713	No formal credential	Short-term OJT
53-7061	Cleaners of Vehicles and Equipment	\$ 37,400	No formal credential	Short-term OJT
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	\$ 38,461	No formal credential	Short-term OJT
53-7063	Machine Feeders and Offbearers	\$ 38,159	No formal credential	Short-term OJT
53-7064	Packers and Packagers, Hand	\$ 40,441	No formal credential	Short-term OJT
53-7065	Stockers and Order Fillers	\$ 34,318	High school	Short-term OJT
53-7081	Refuse and Recyclable Material Collectors	\$ 37,120	No formal credential	Short-term OJT
53-7121	Tank Car, Truck, and Ship Loaders	\$ 49,201	No formal credential	Short-term OJT
53-7199	Material Moving Workers, All Other	\$ 41,983	No formal credential	Short-term OJT

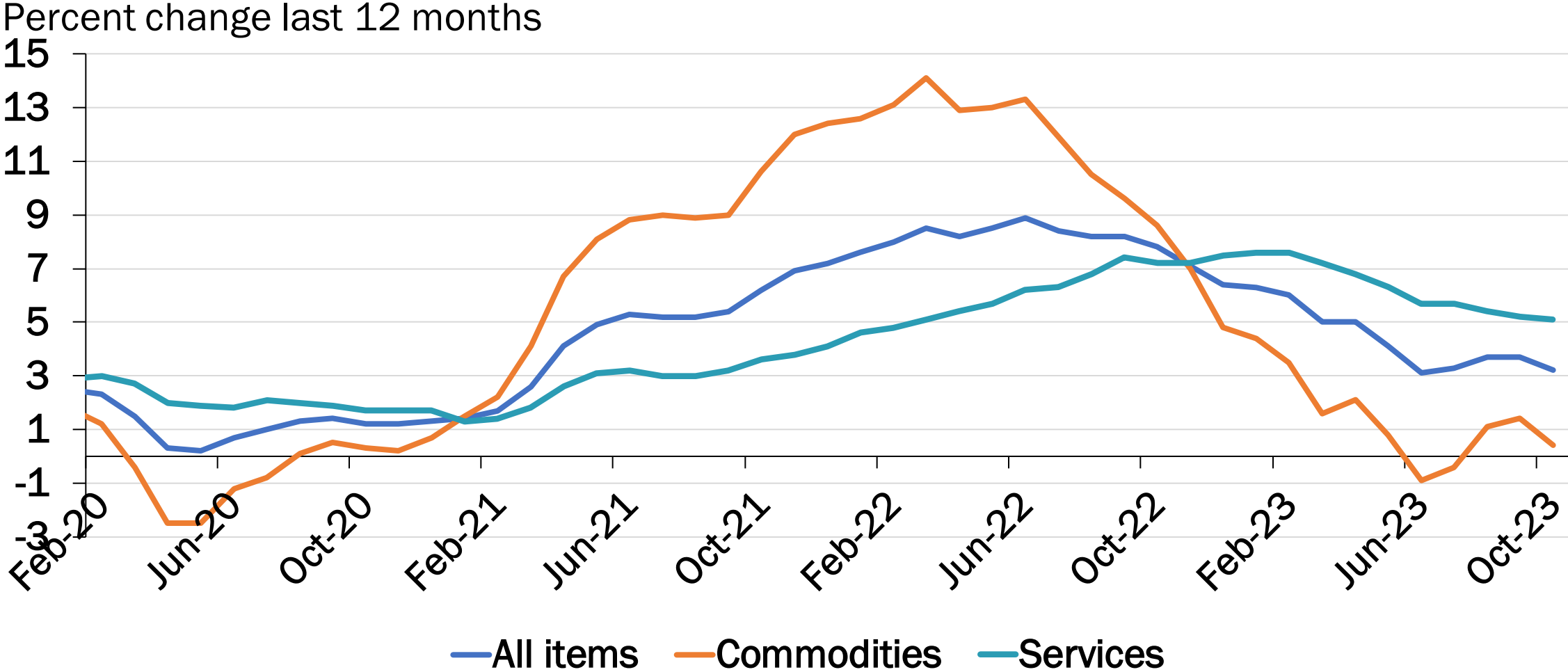
CURRENT ECONOMIC TRENDS

Inflation is easing

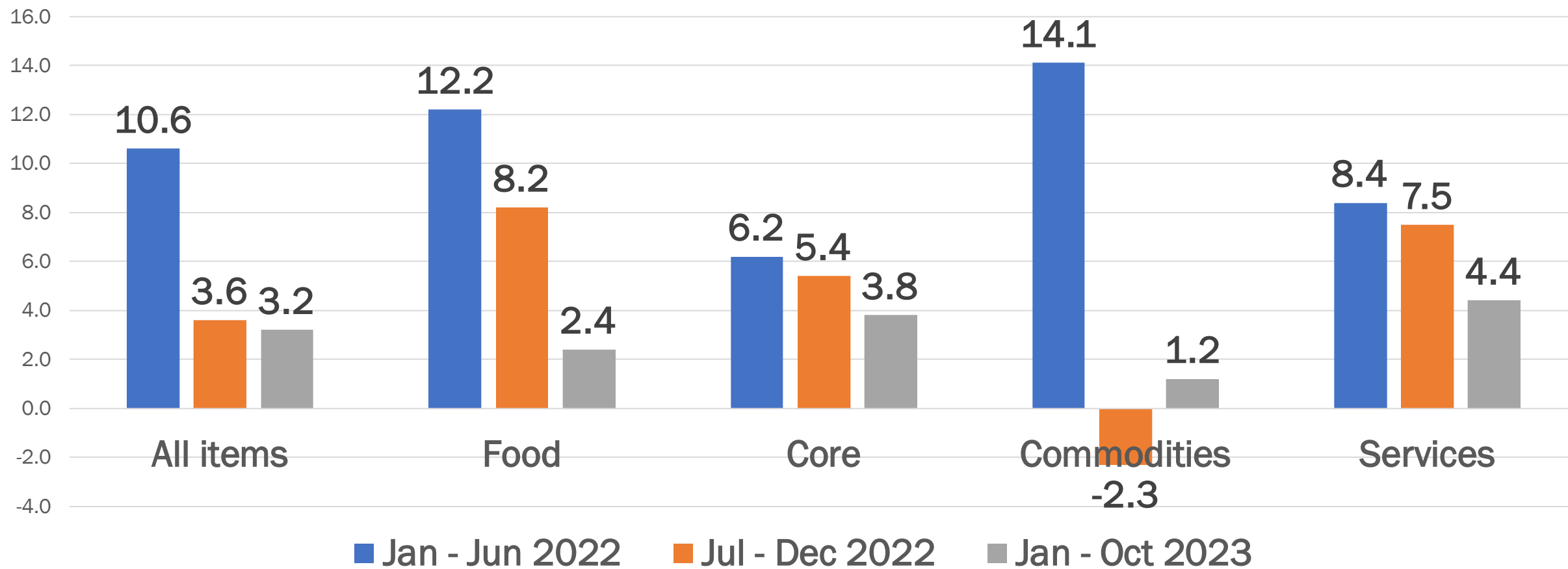
At 3.2%, the percentage change in overall prices from 12-months declined in October



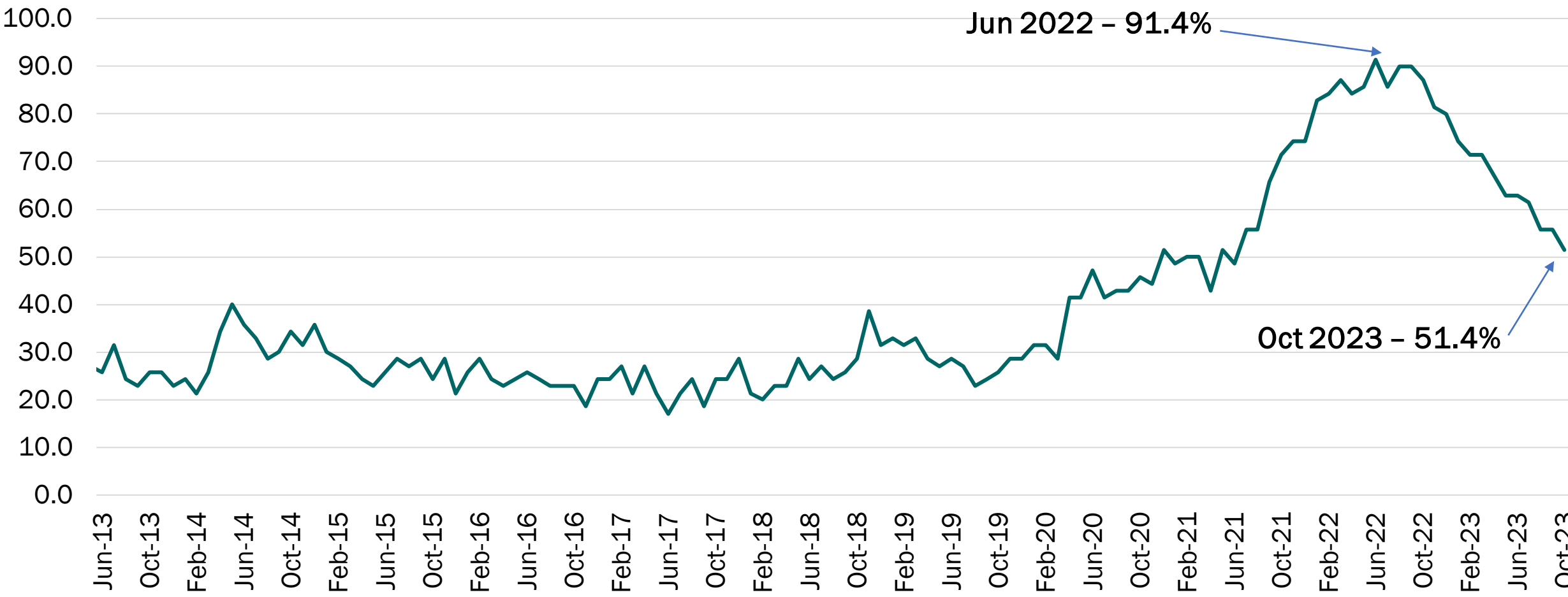
Inflation in services is dominating overall inflation behavior



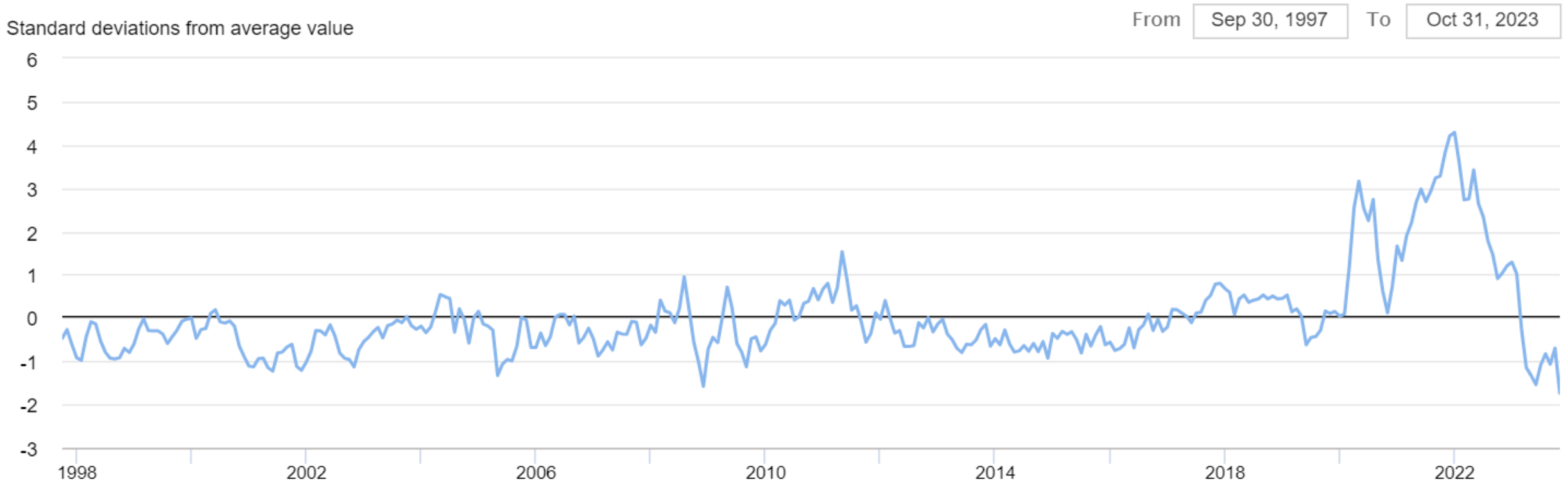
Comparison of annualized rate of inflation for selected CPI categories between the 1st and 2nd half of 2022 and Jan-Oct 2023



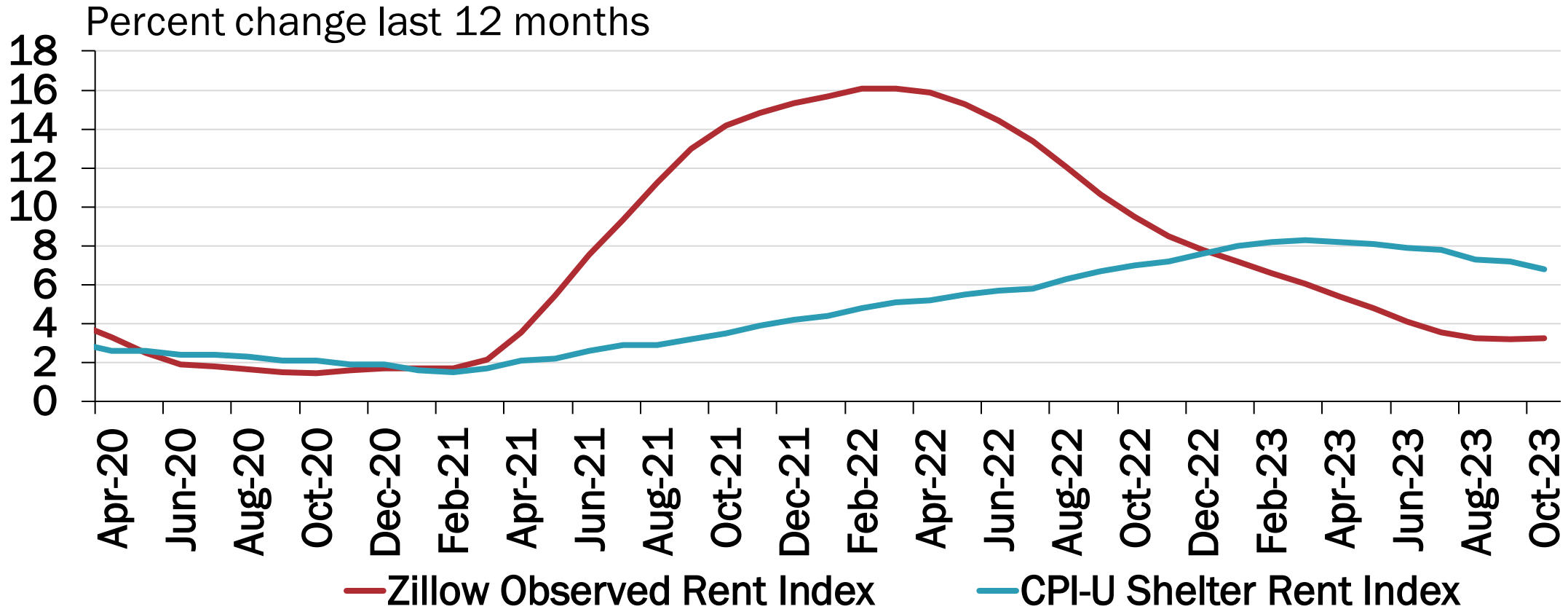
Percentage of CPI expenditure items with inflation rates over the prior 12-months that are greater than the adjusted target of 2.5% inflation



The Global Supply Chain Pressure Index has slowed significantly in recent months



The Zillow Index, which captures changes in rent prices 6-12 months before the CPI-U shelter index, shows a coming easing in rental inflation



Despite the recent lowering of inflation rates, the average prices of goods that form our views of inflation seem stubbornly high

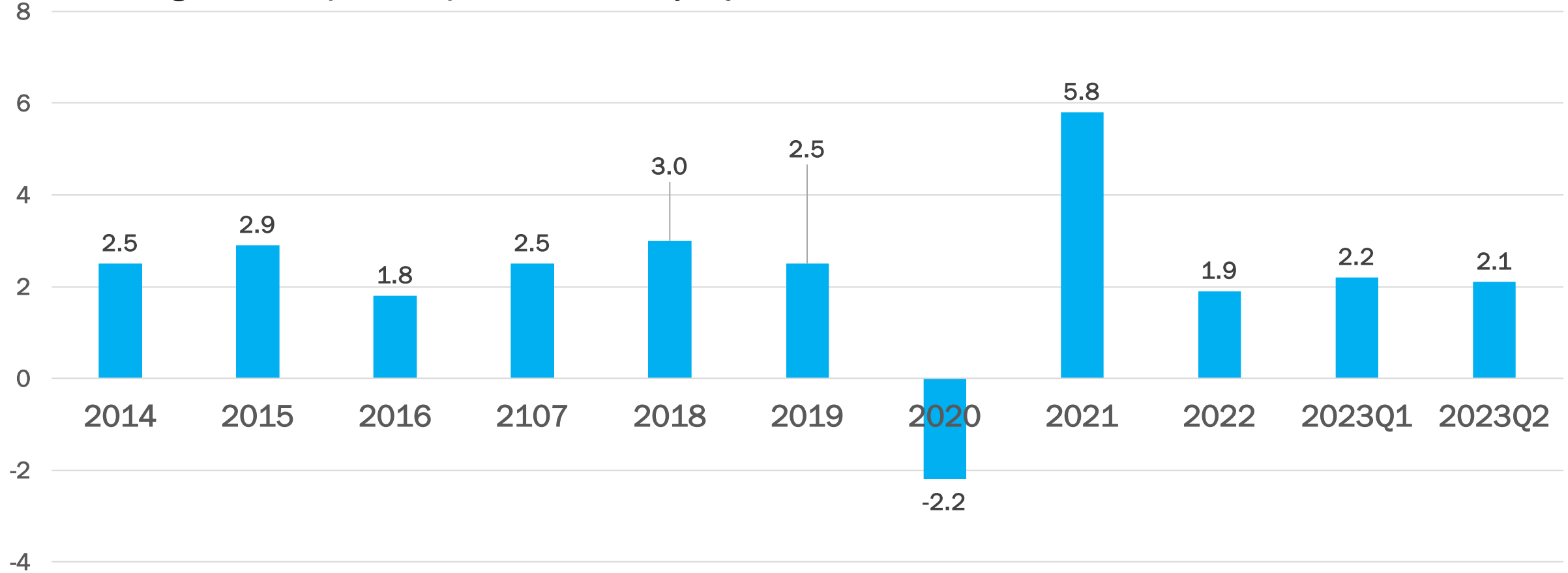
Concept	Feb-20	Max price month	Max price	Oct-23
Eggs, Grade A, large, per dozen	\$ 1.45	Jan-23	\$ 2.81	\$ 1.77
Milk, fresh, whole, gallon	\$ 3.20	Nov-22	\$ 3.95	\$ 3.85
Fuel Oil #2, per gallon	\$ 2.81	May-22	\$ 5.90	\$ 4.47
Gasoline, unleaded, regular	\$ 2.47	Jun-22	\$ 4.51	\$ 3.47

CURRENT ECONOMIC CONDITIONS

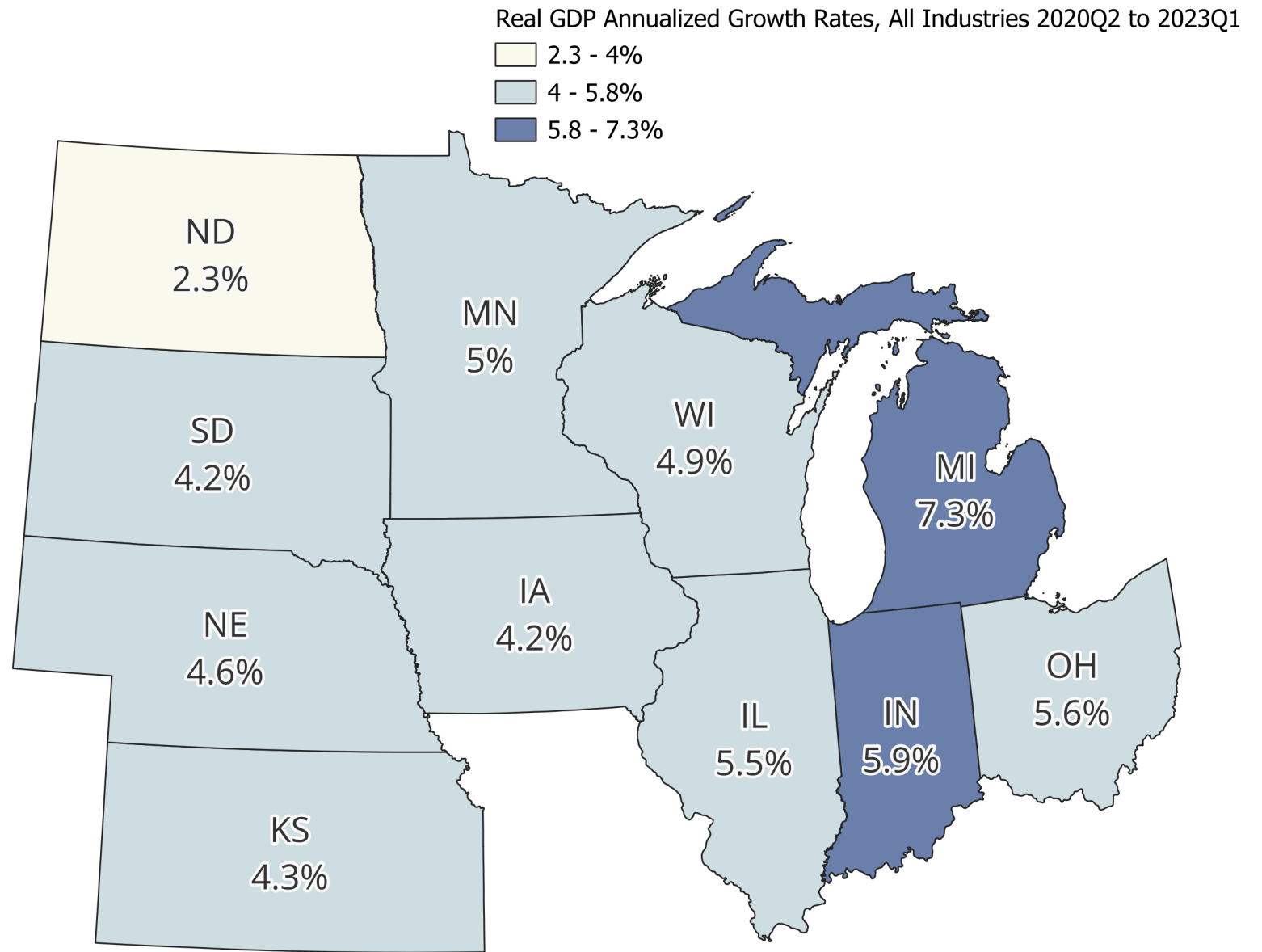
Real GDP growth has returned to pre-pandemic rates

Real GDP growth has normalized to rates seen prior to the pandemic

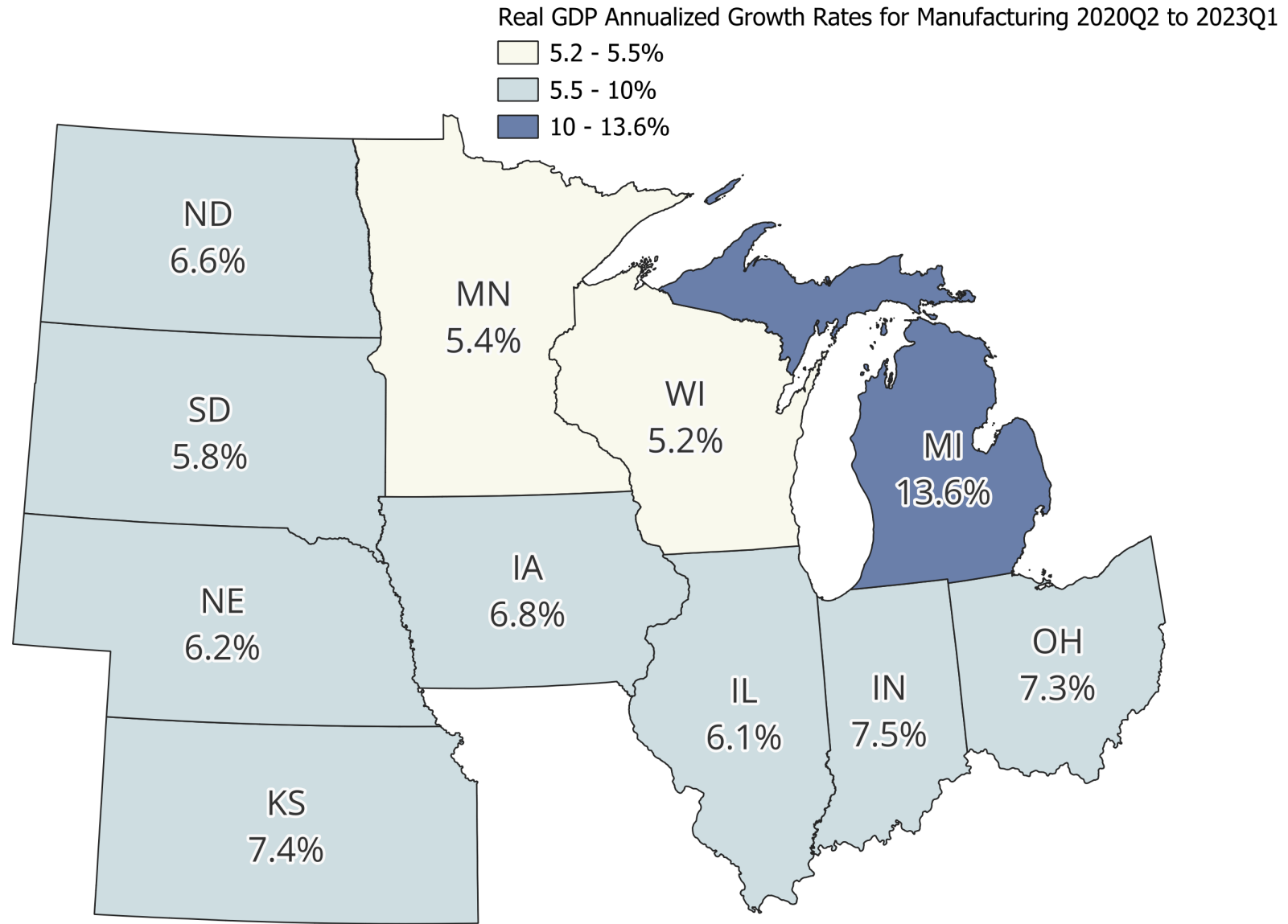
Percent change from the previous period, seasonally adjusted at annual rates



Michigan and Indiana's GDP annual growth rates exceeded the US average (5.8%) from 2020Q2 to 2023Q1

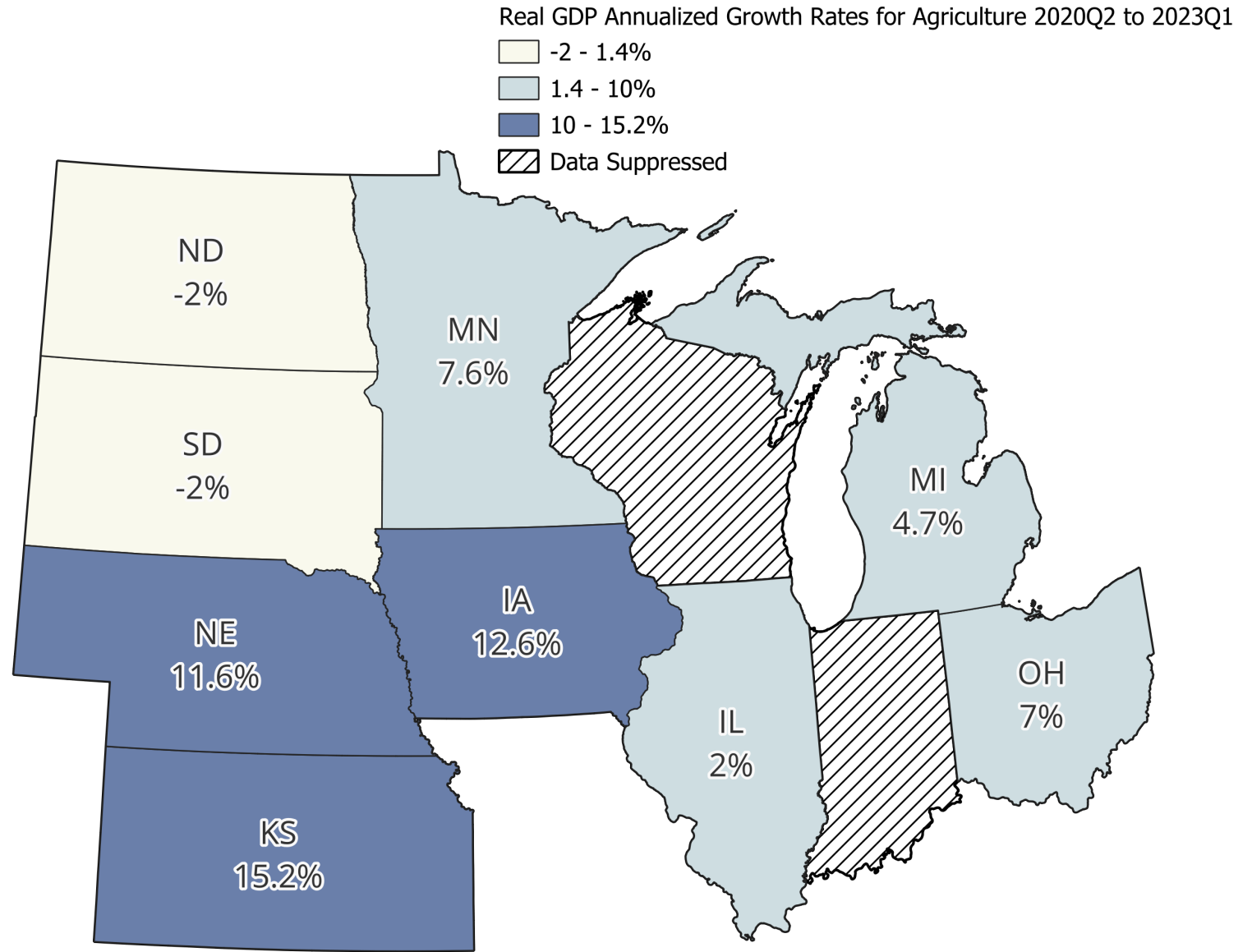


Led by Michigan, much of the region exceeded the US GDP growth rate for **Manufacturing** (5.5%) from 2020Q2 to 2023Q1



Much of the region had GDP growth rates for **Agriculture** exceeding the US average (1.4%)

Three Midwest States had GDP growth rates for **Agriculture** that were above 10% per annum between 2020 Q2 and 2023 Q1

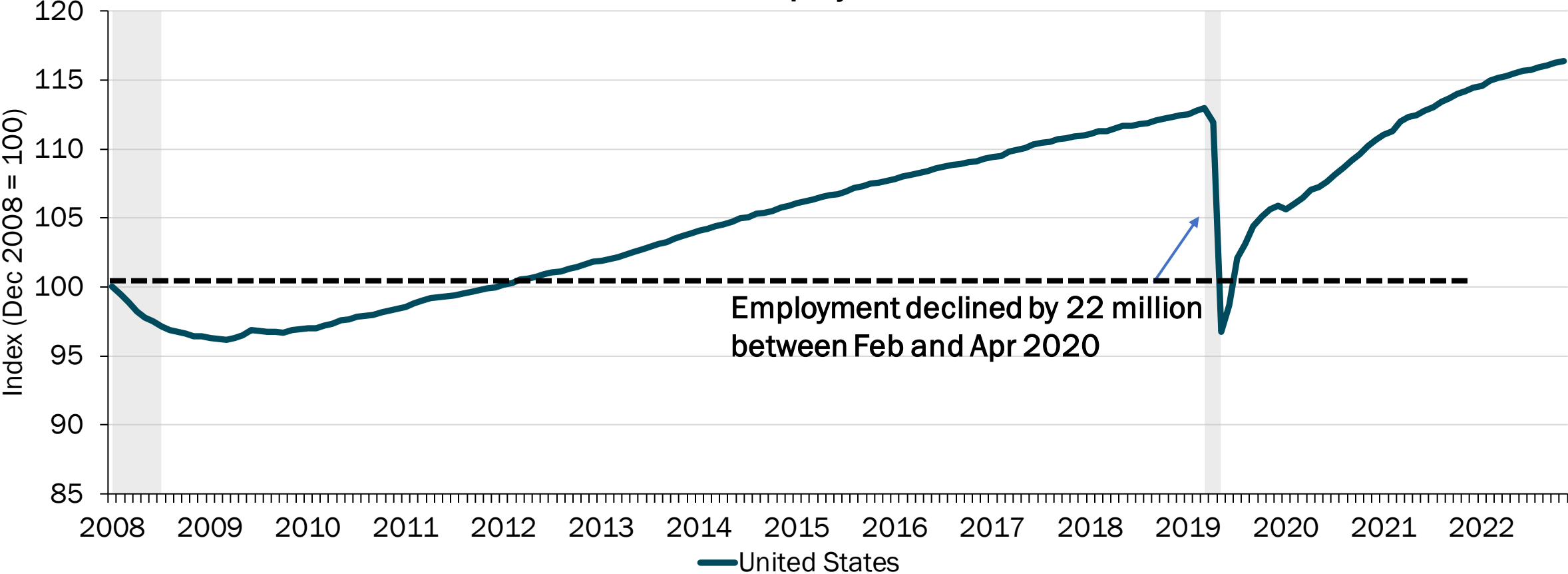


CURRENT ECONOMIC CONDITIONS

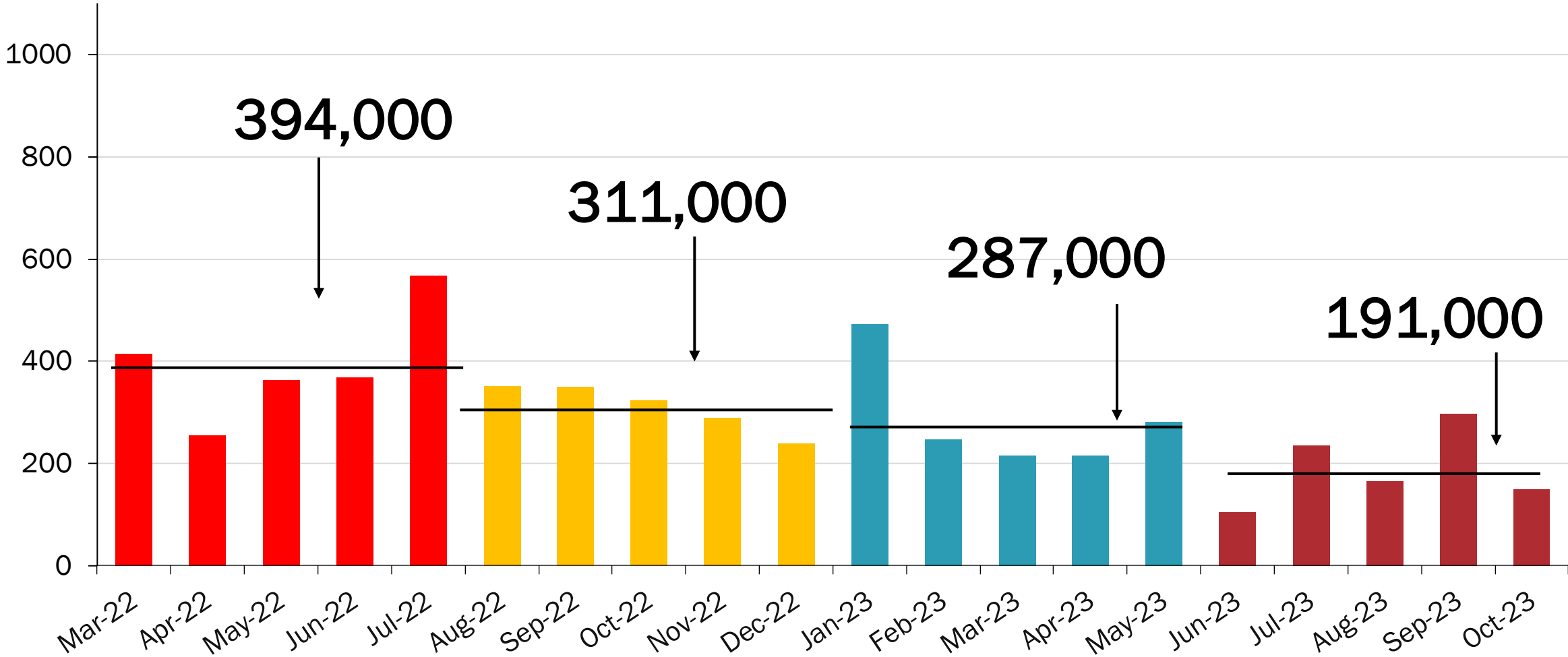
Payroll employment has
recovered pre-pandemic levels

With October's gain of 150,000 jobs, employment exceeds the Feb 2020 peak by 4.5 million jobs

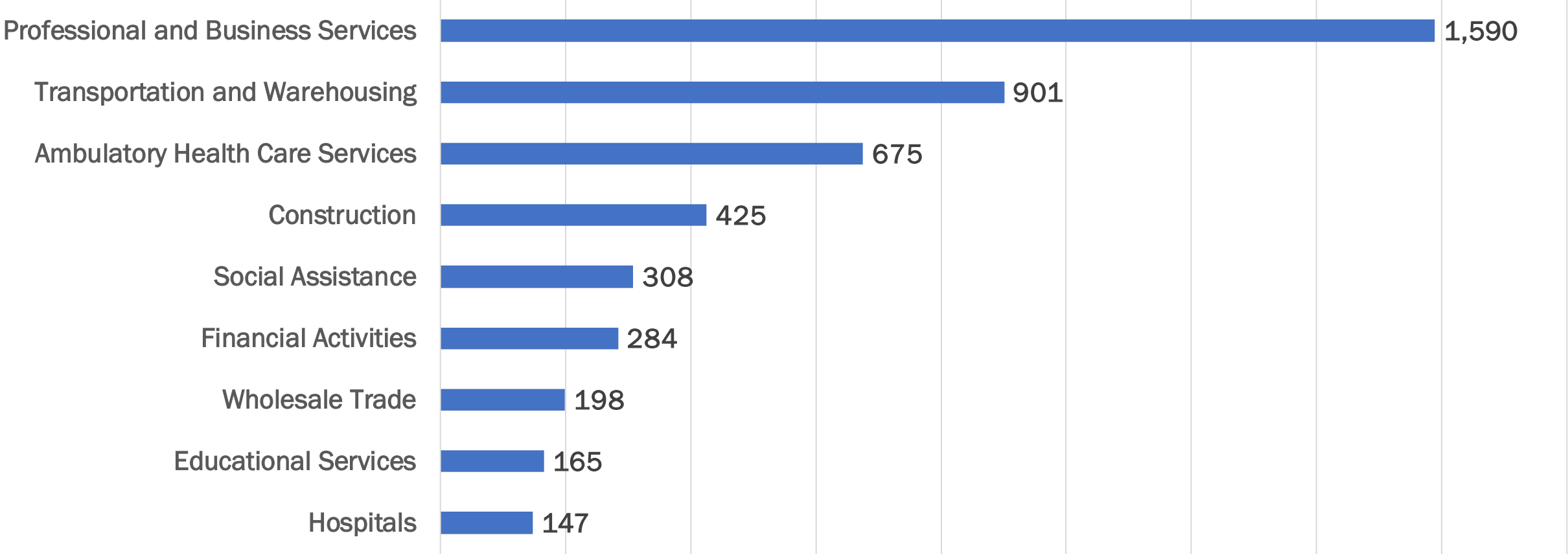
Nonfarm Employment Index



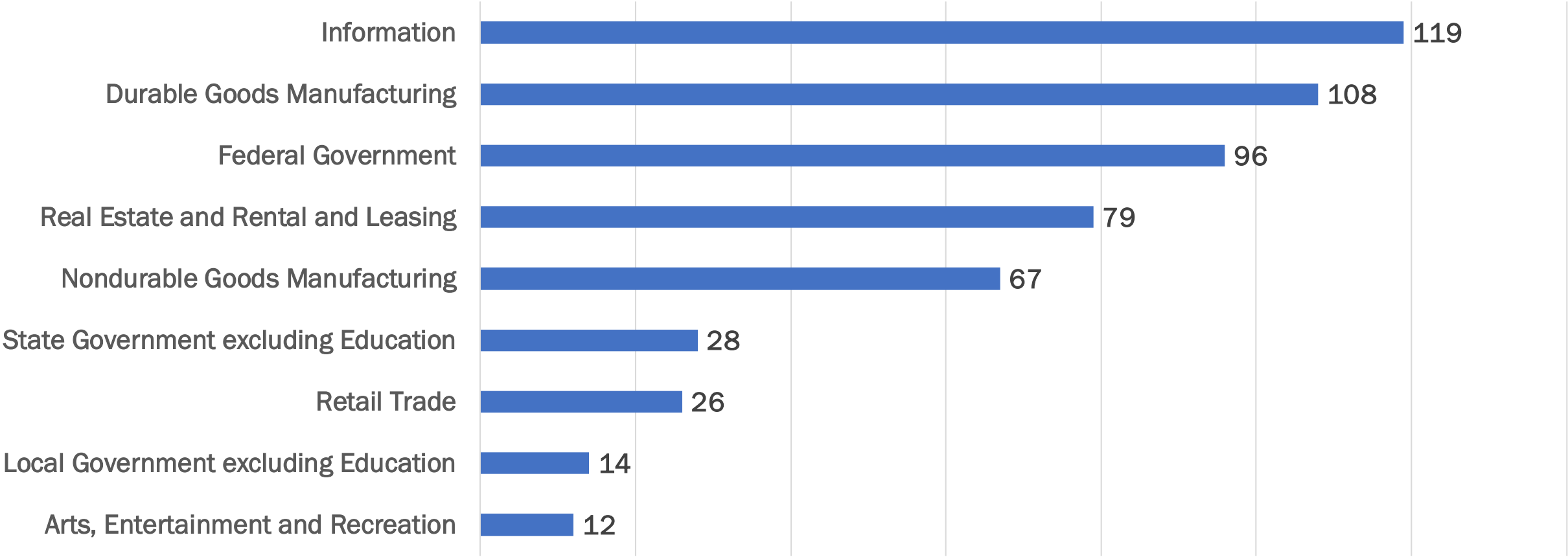
Monthly payroll changes have eased throughout 2022 and 2023



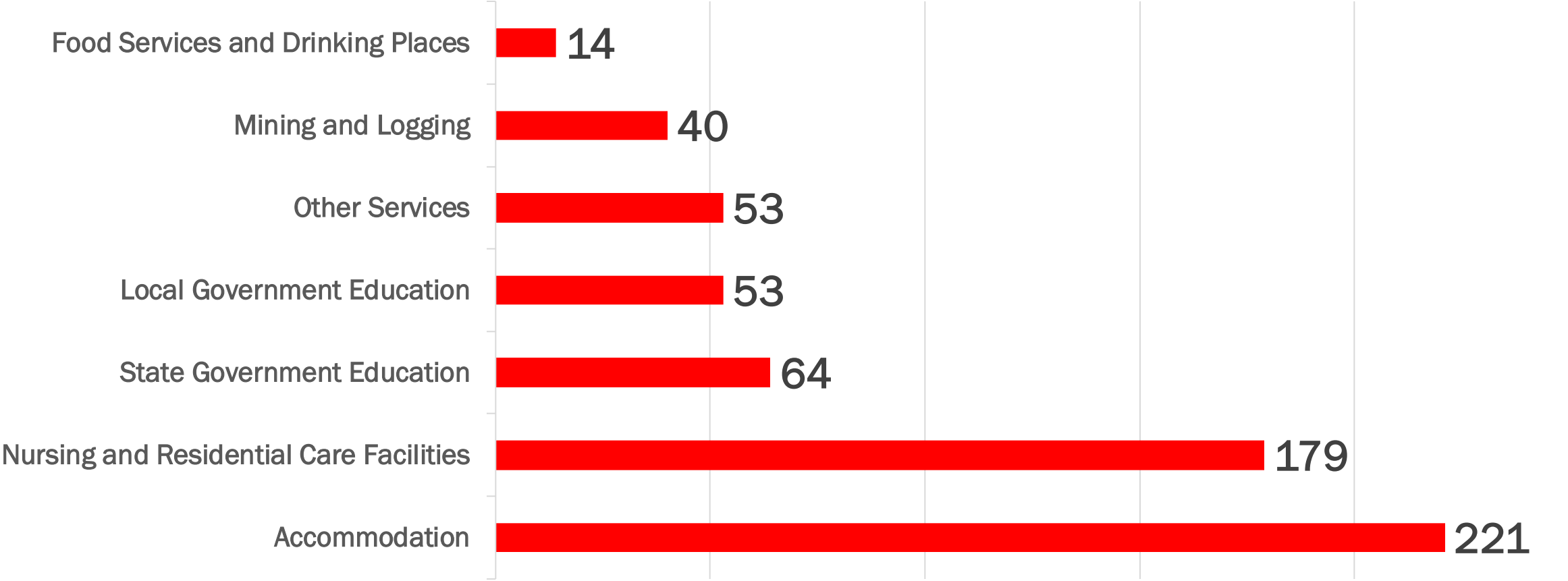
Employment in nonfarm industries, Feb 2020 – Oct 2023, in thousands



Employment in nonfarm industries, Feb 2020 – Oct 2023, in thousands

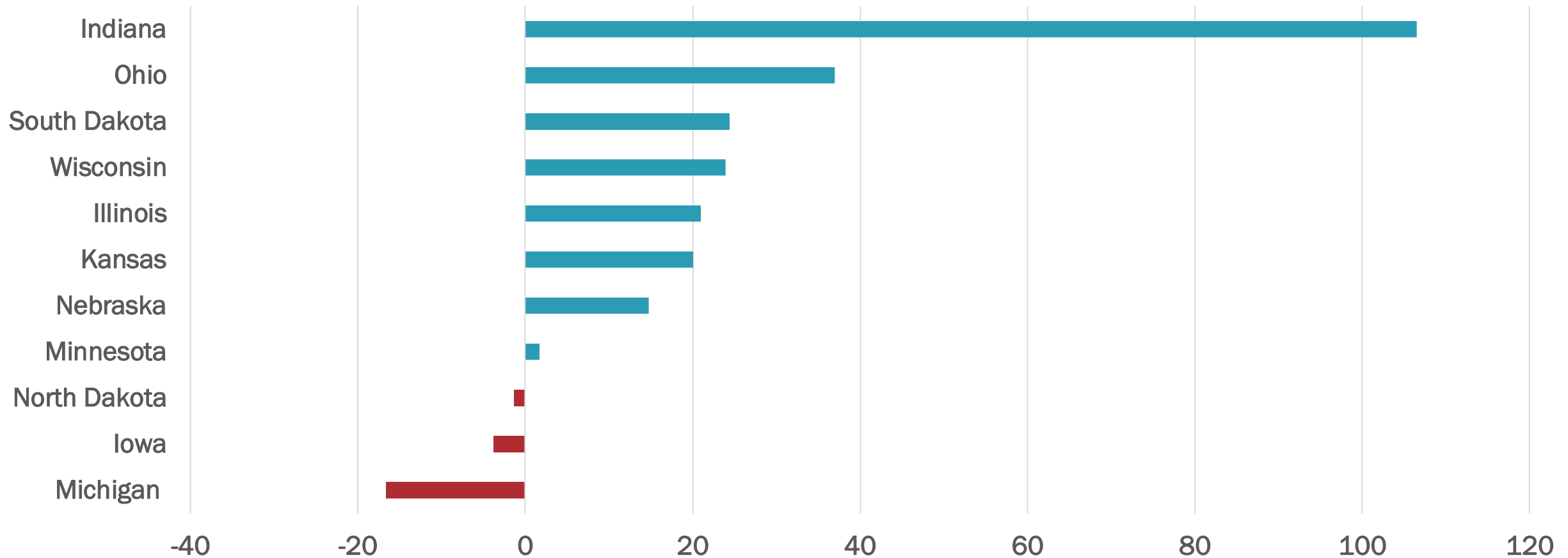


Employment in nonfarm industries, Feb 2020 – Oct 2023, in thousands



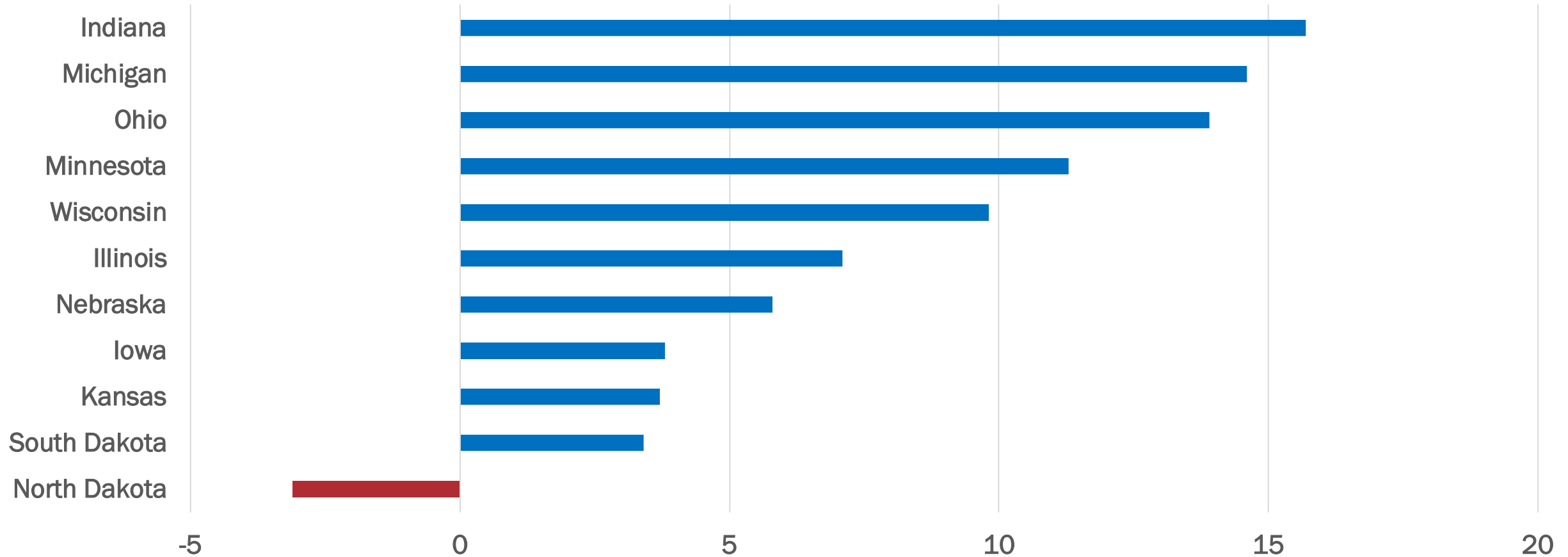
Midwest States Nonfarm Payroll Employment February 2020 to September 2023

Total Nonfarm Payroll Feb 2020 - Sep 2023, thousands



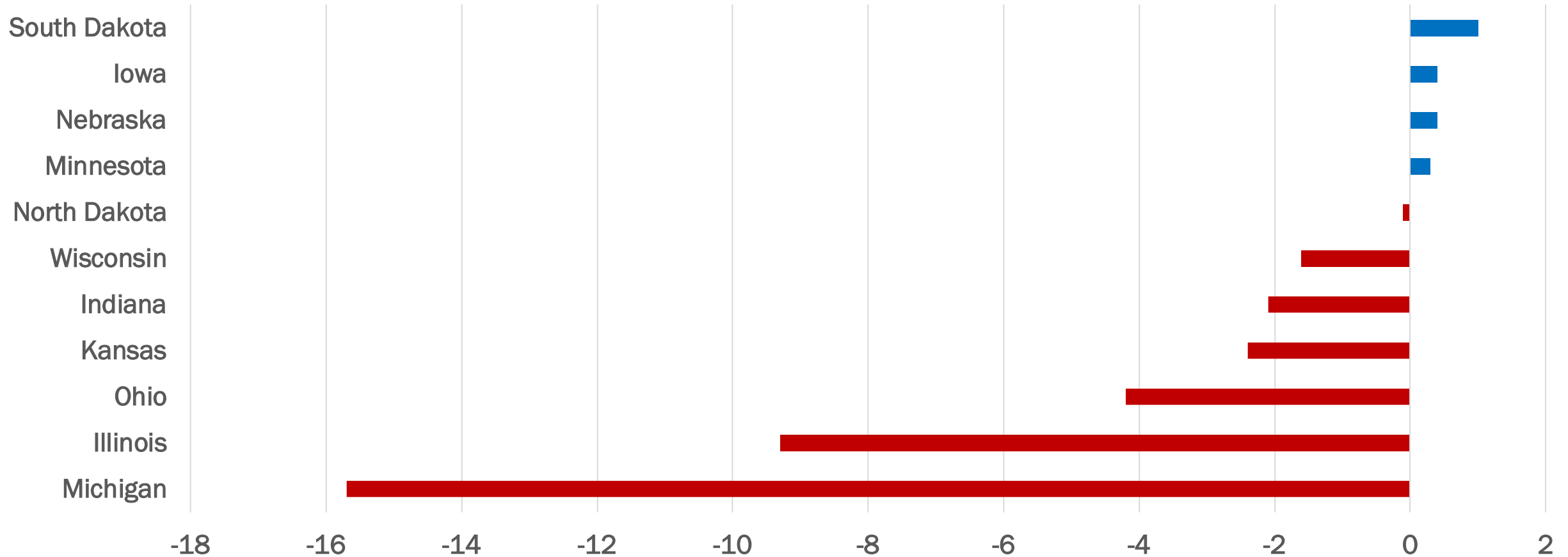
Construction

Construction Industry Employment Feb 2020 - Sep 2023, thousands



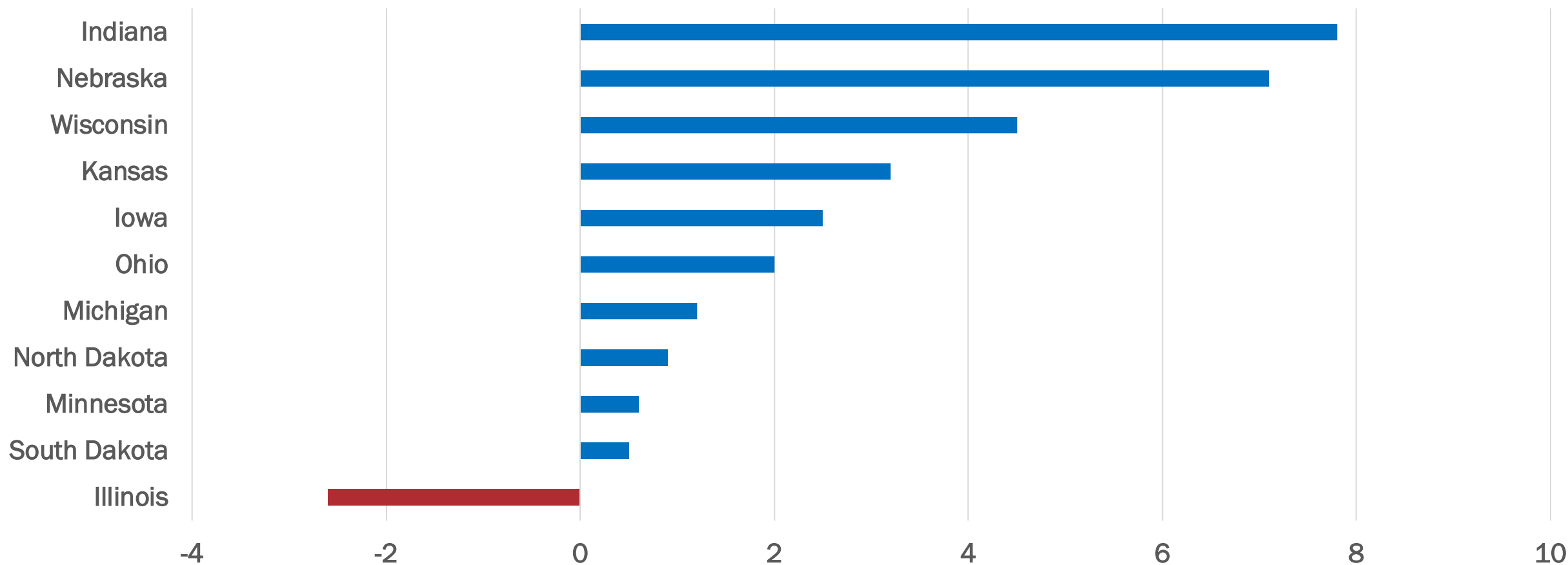
Durable Goods Manufacturing

Durable Goods Manufacturing Employment Feb 2020 - Sep 2023, thousands



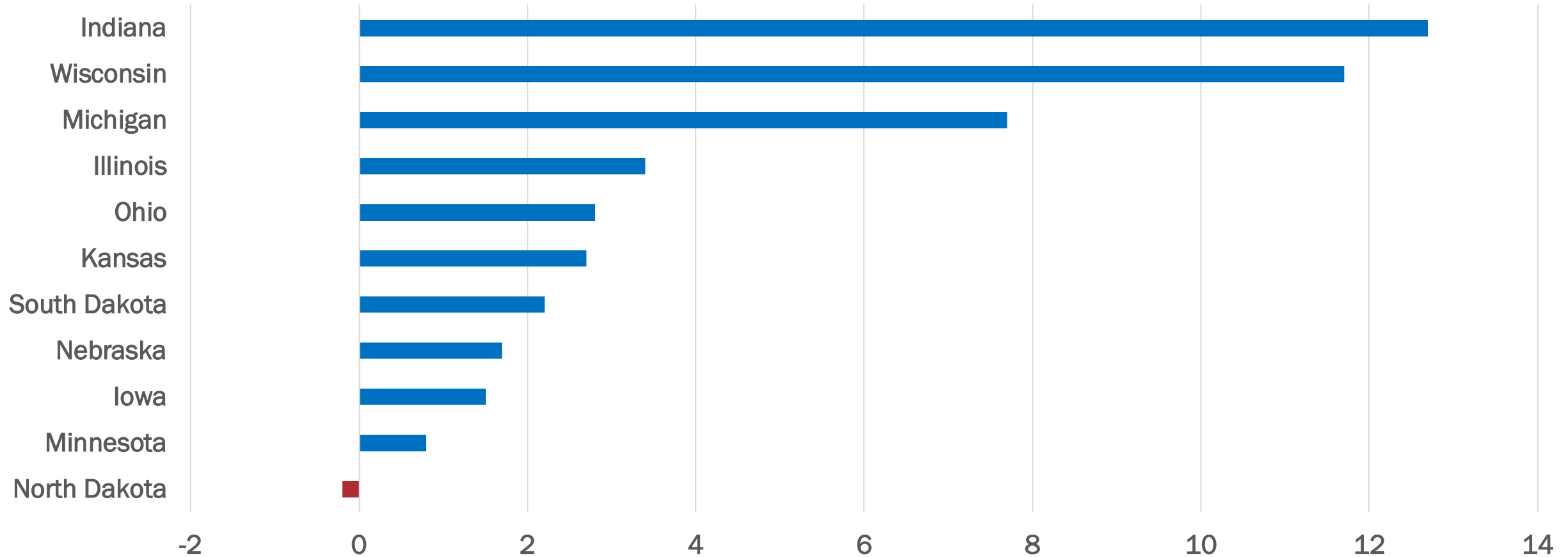
Nondurable Goods Manufacturing

Nondurable Manufacturing Employment Feb 2020 - Sep 2023, thousands



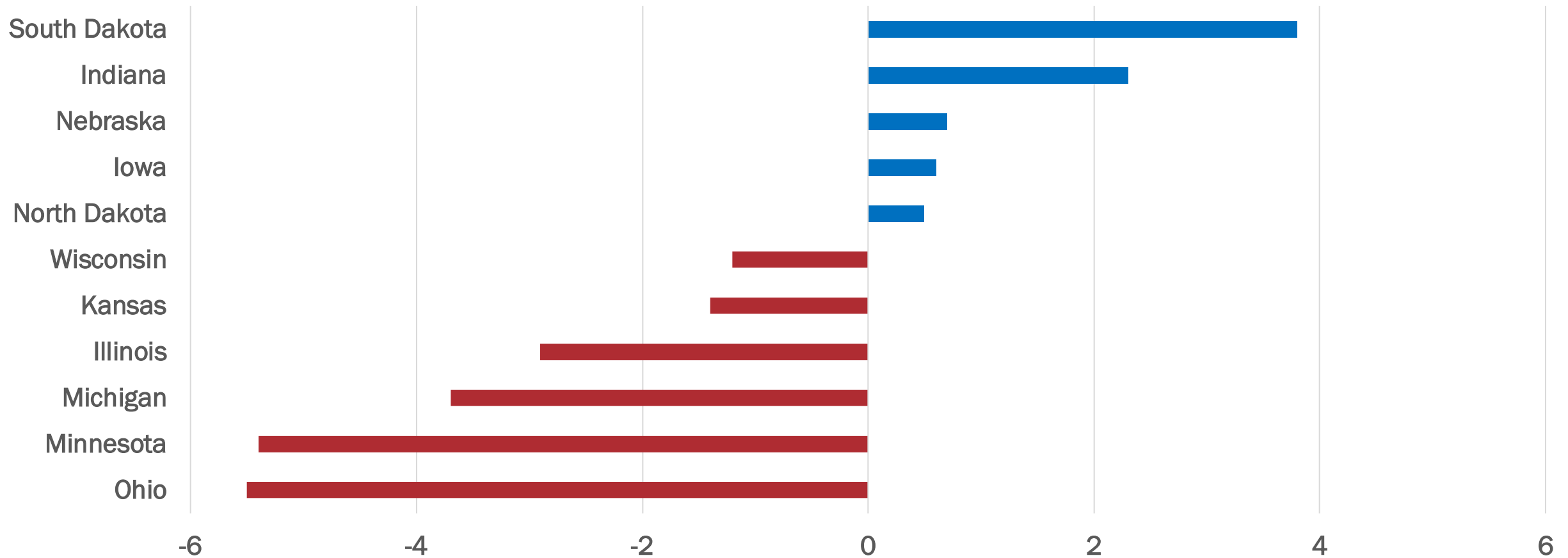
Wholesale Trade

Wholesale Industry Employment Feb 2020 - Sep 2023, thousands



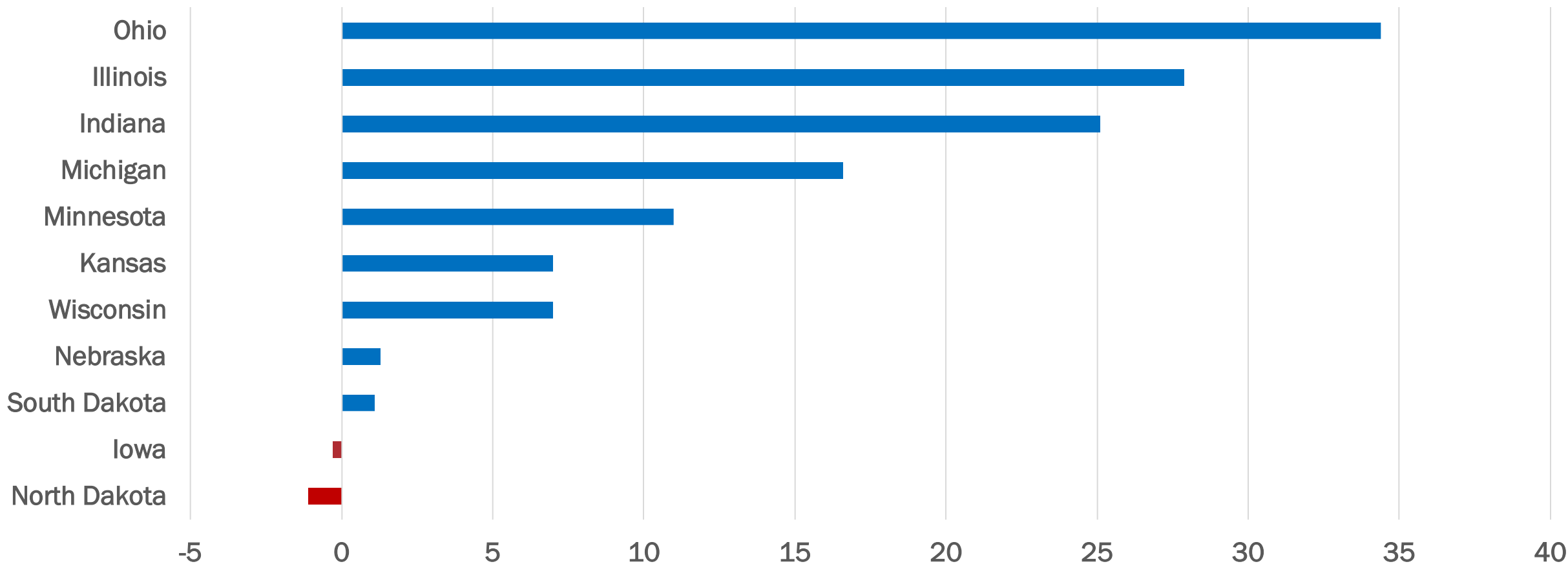
Retail Trade

Retail Industry Employment Feb 2020 - Sep 2023, thousands



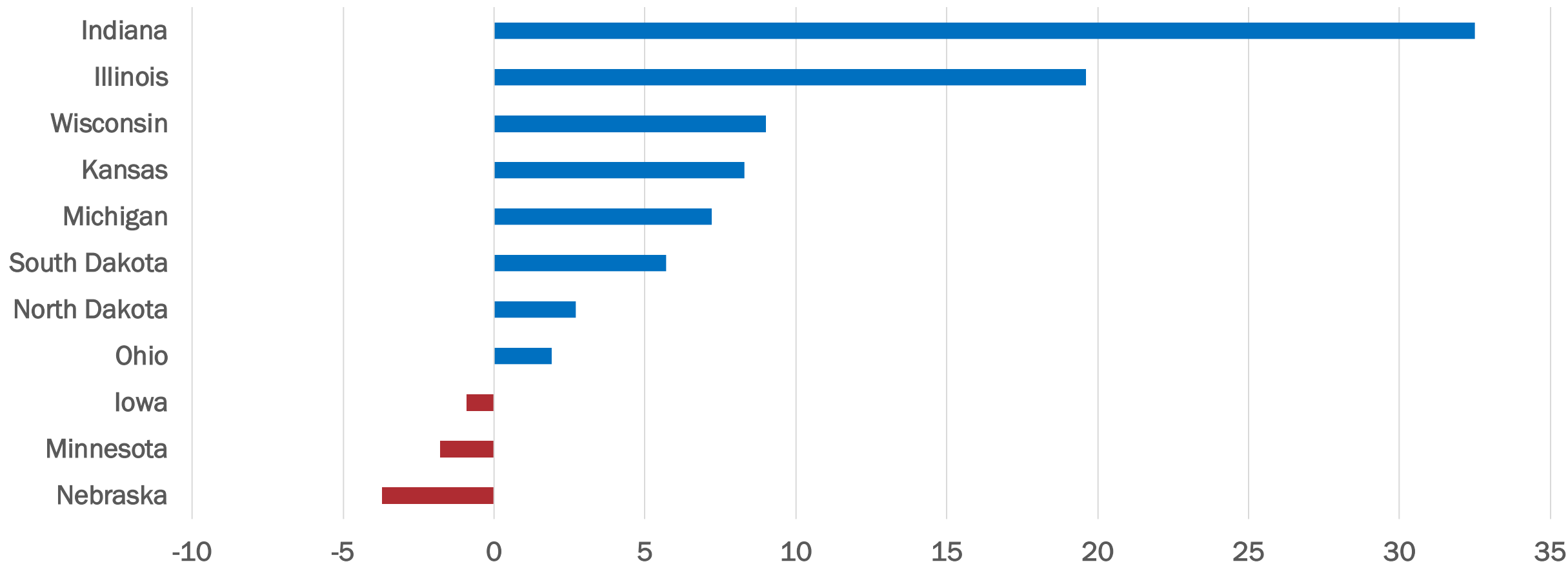
Transportation, Warehousing, and Utilities

Industry Employment Feb 2020 - Sep 2023, thousands



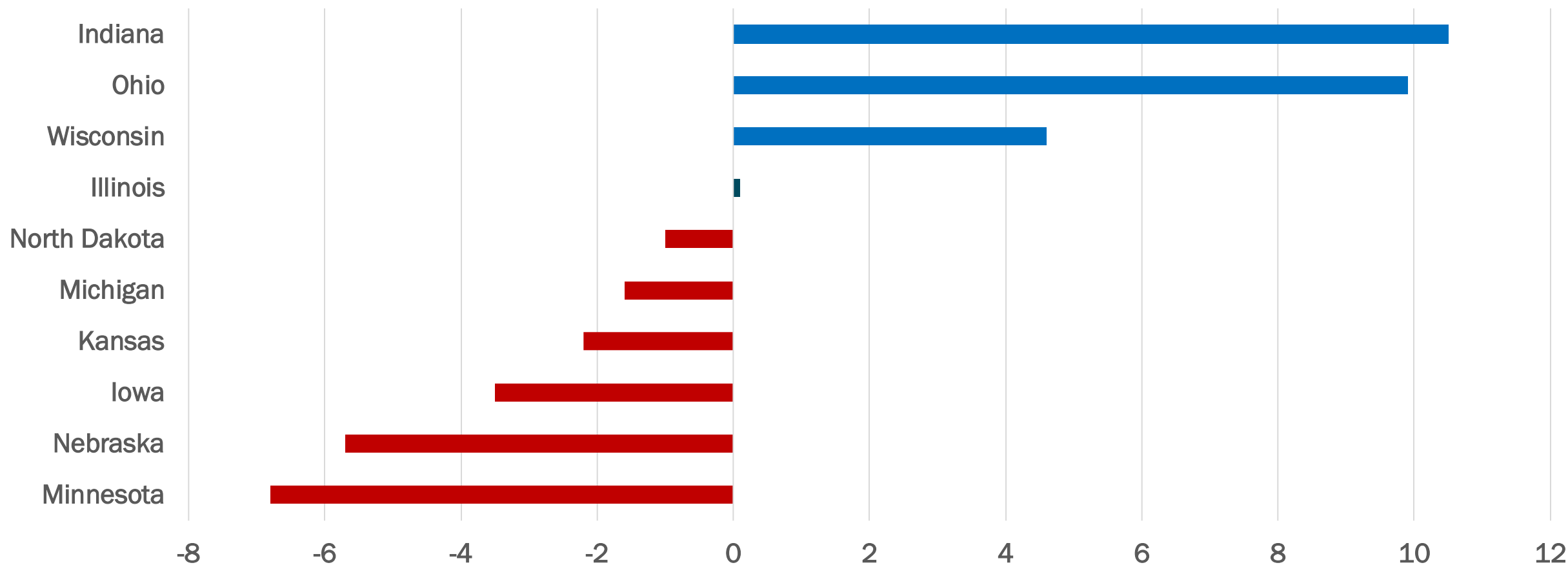
Professional and Business Services

Industry Employment Feb 2020 - Sep 2023, thousands



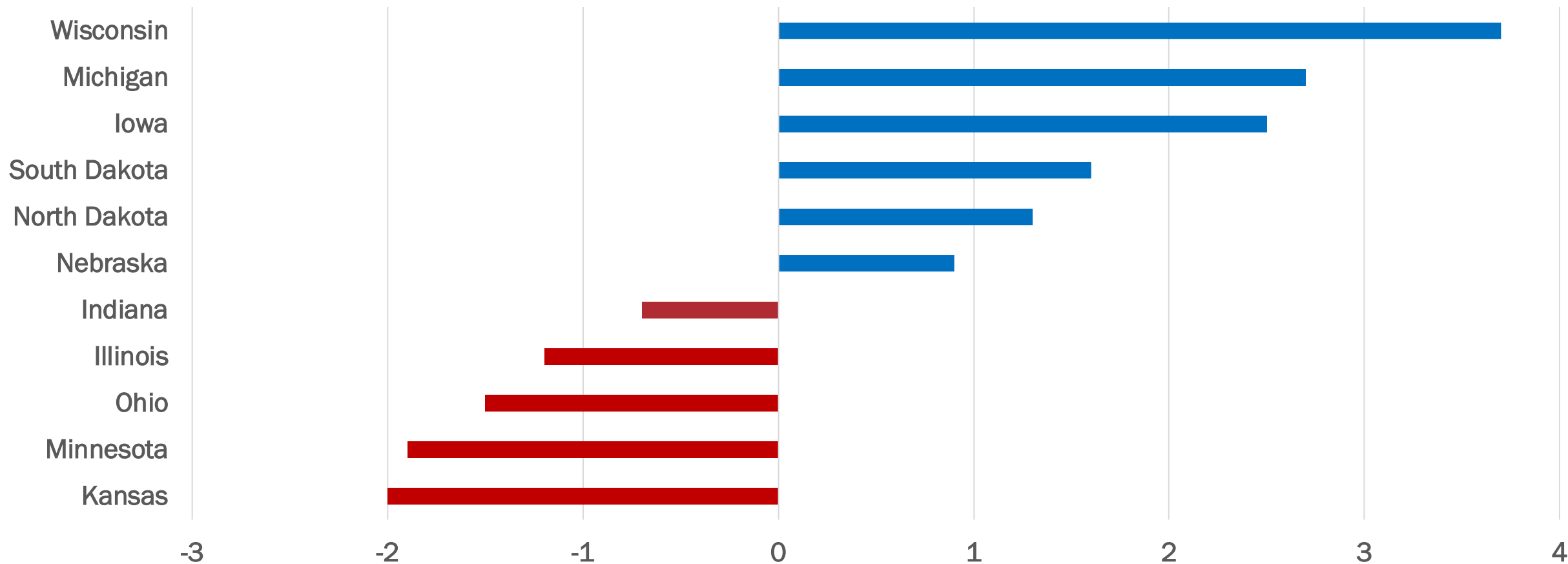
Finance and Insurance

Finance and Insurance Industry Employment Feb 2020 - Sep 2023, thousands



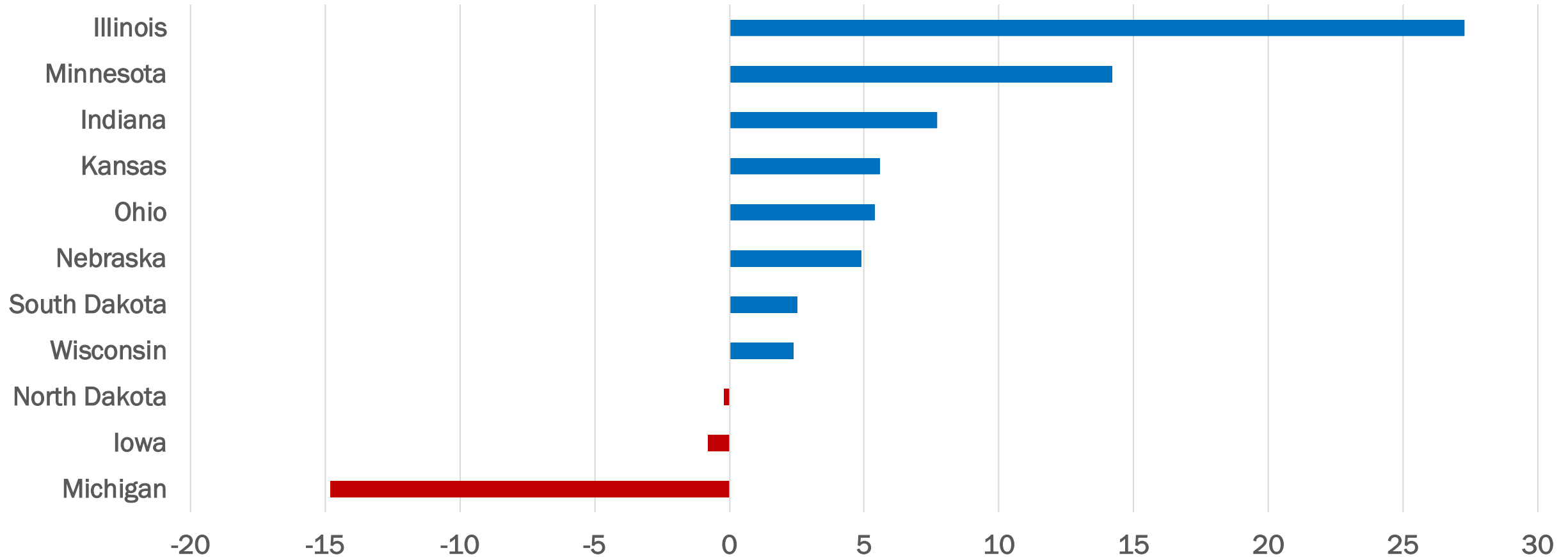
Educational Services

Educational Services Employment Feb 2020 - Sep 2023, thousands



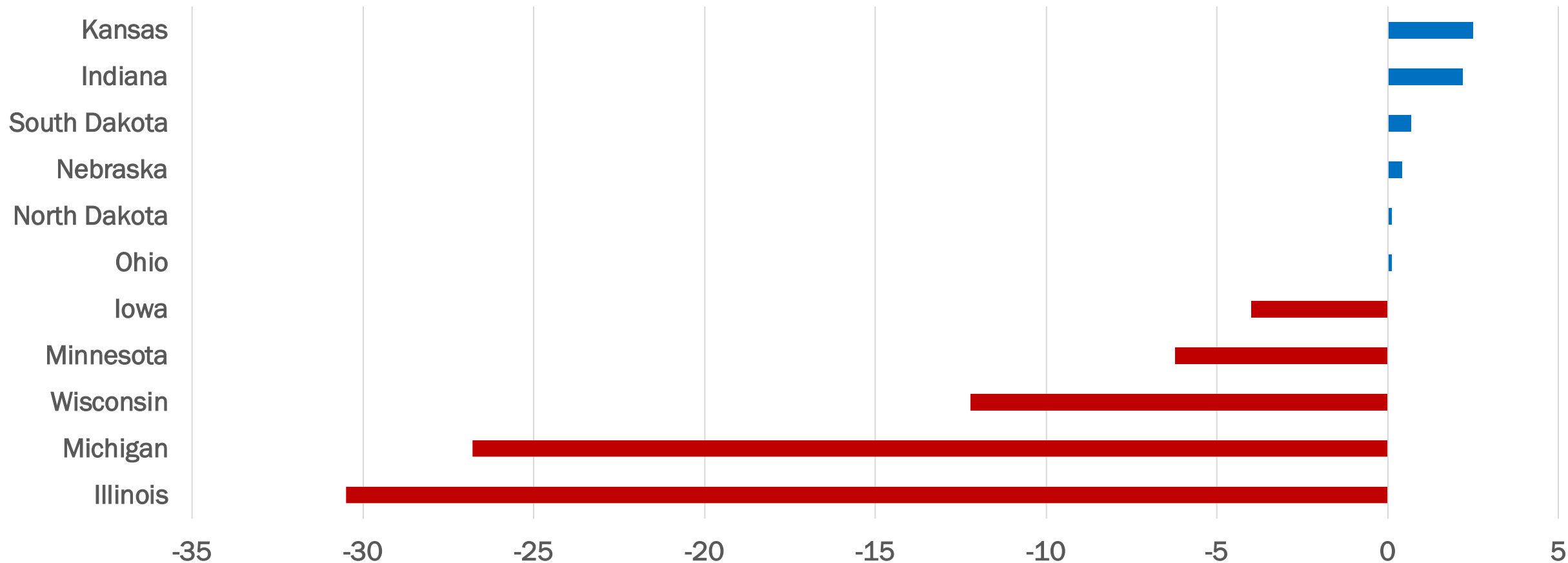
Health Care and Social Assistance

Health Care and Social Assistance Employment Feb 2020 - Sep 2023, thousands



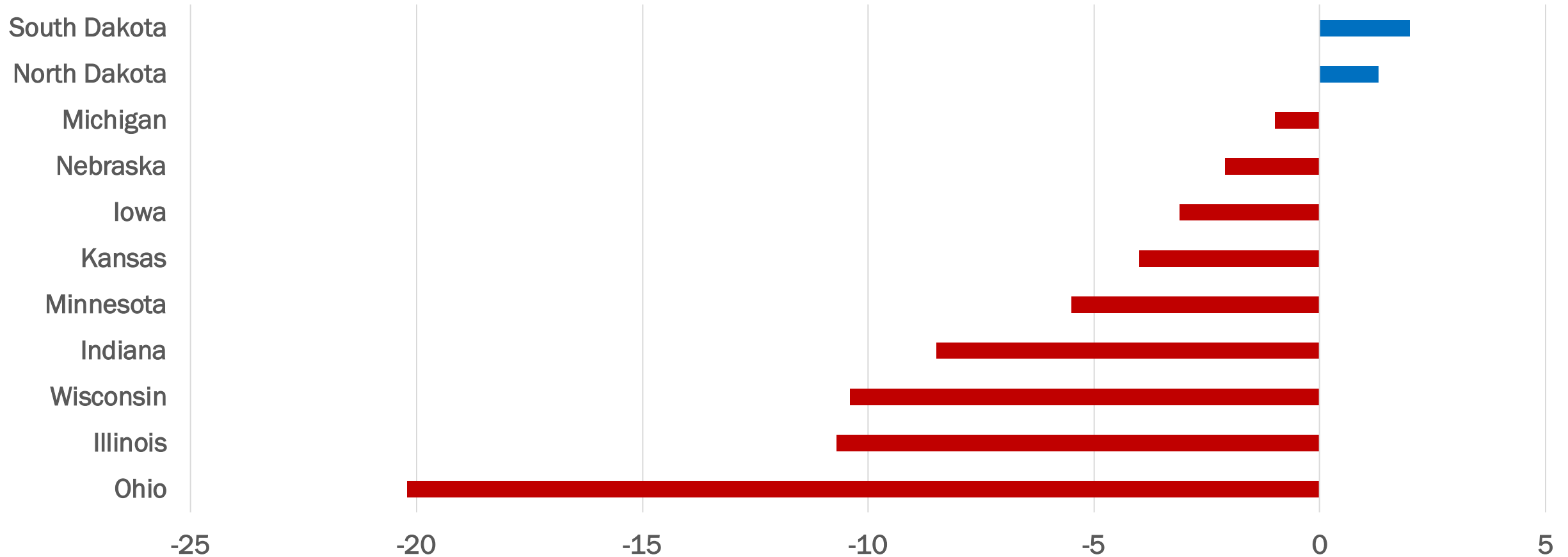
Leisure and Hospitality

Industry Employment Feb 2020 - Sep 2023, thousands



Government

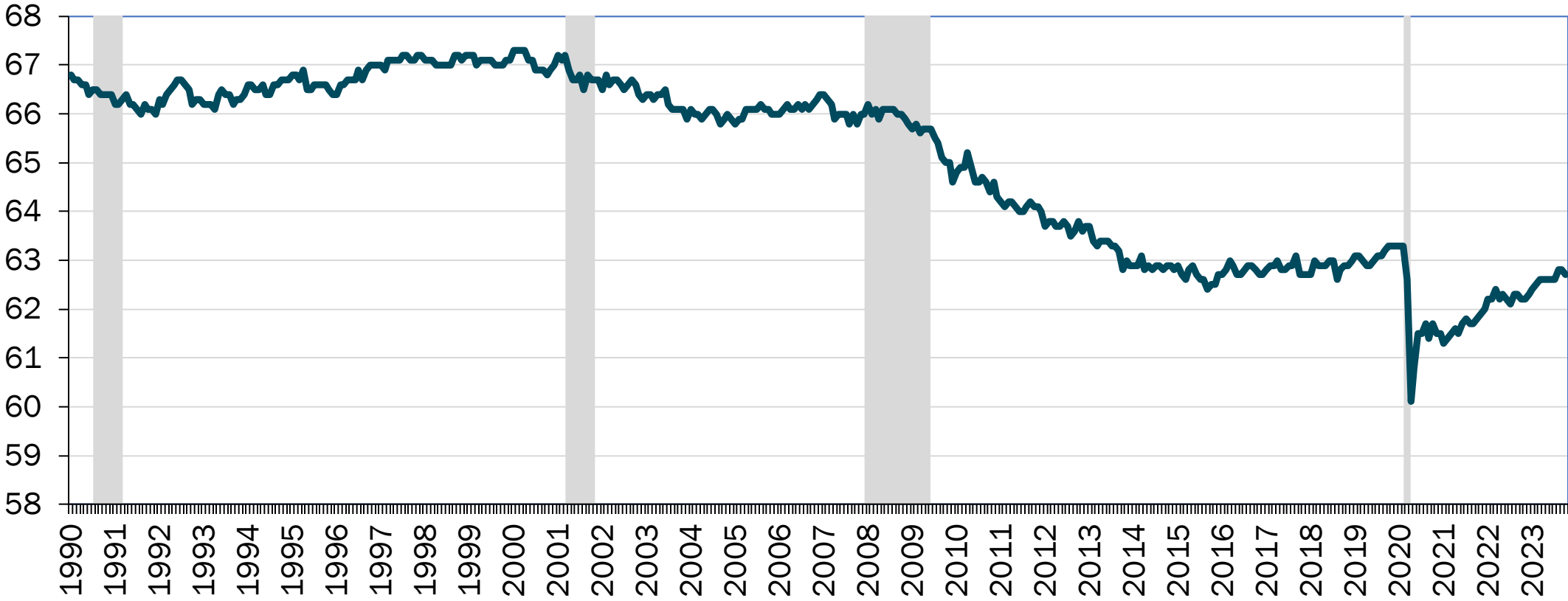
Government Employment Feb 2020 - Sep 2023, thousands



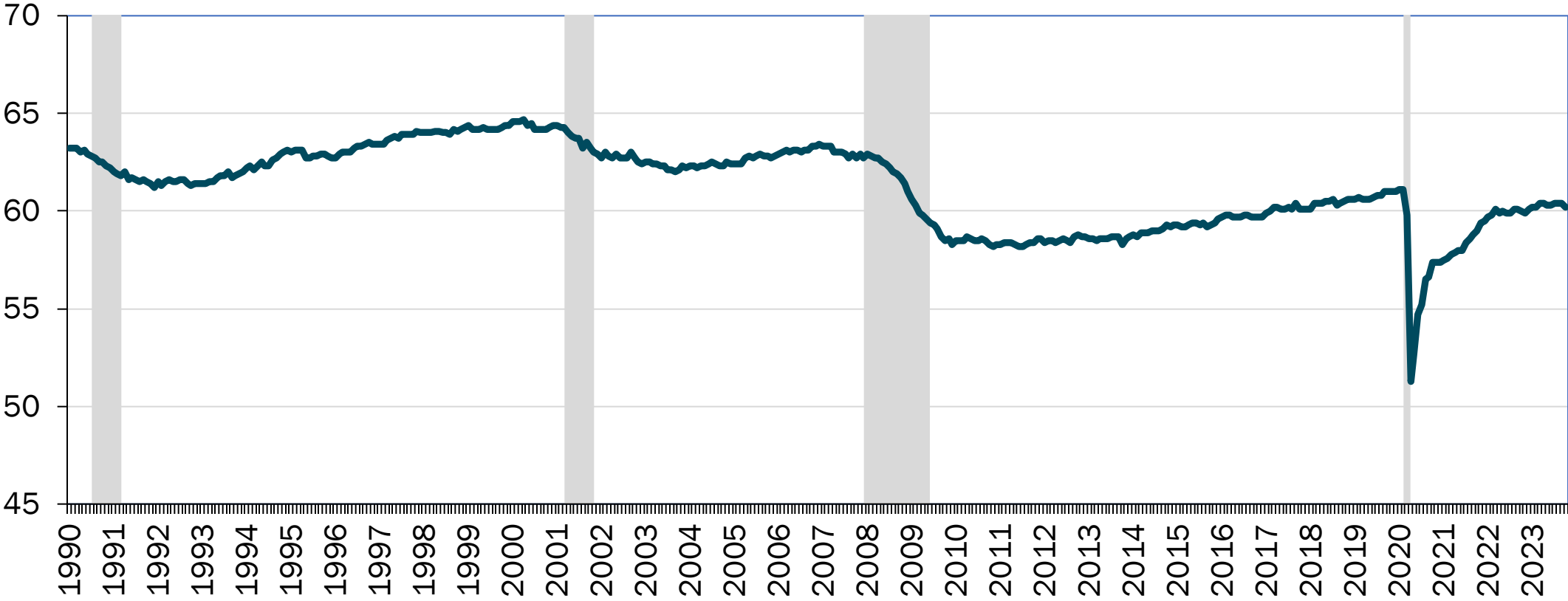
CURRENT ECONOMIC CONDITIONS

Labor force participation rates and employment population ratios are nearly recovered from the pandemic

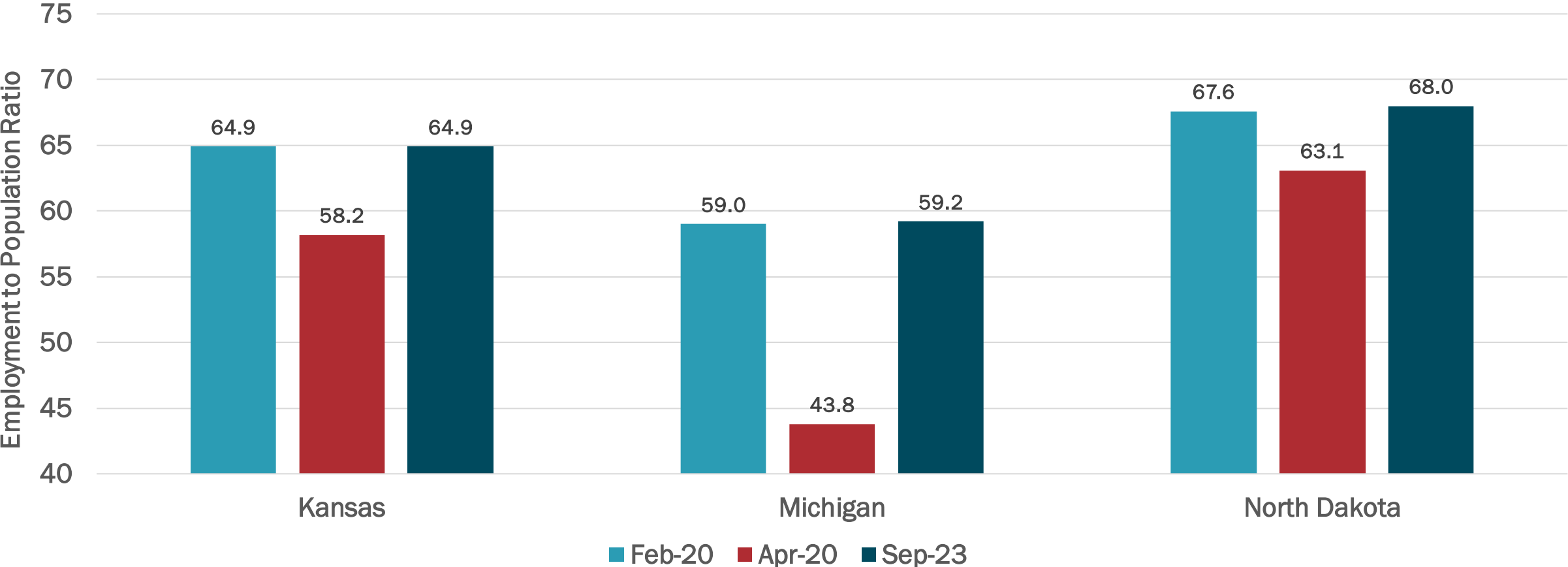
At 62.7 percent in October 2023, the U.S. labor force participation rate is still below the pre-pandemic rate of 63.3 in Feb 2020



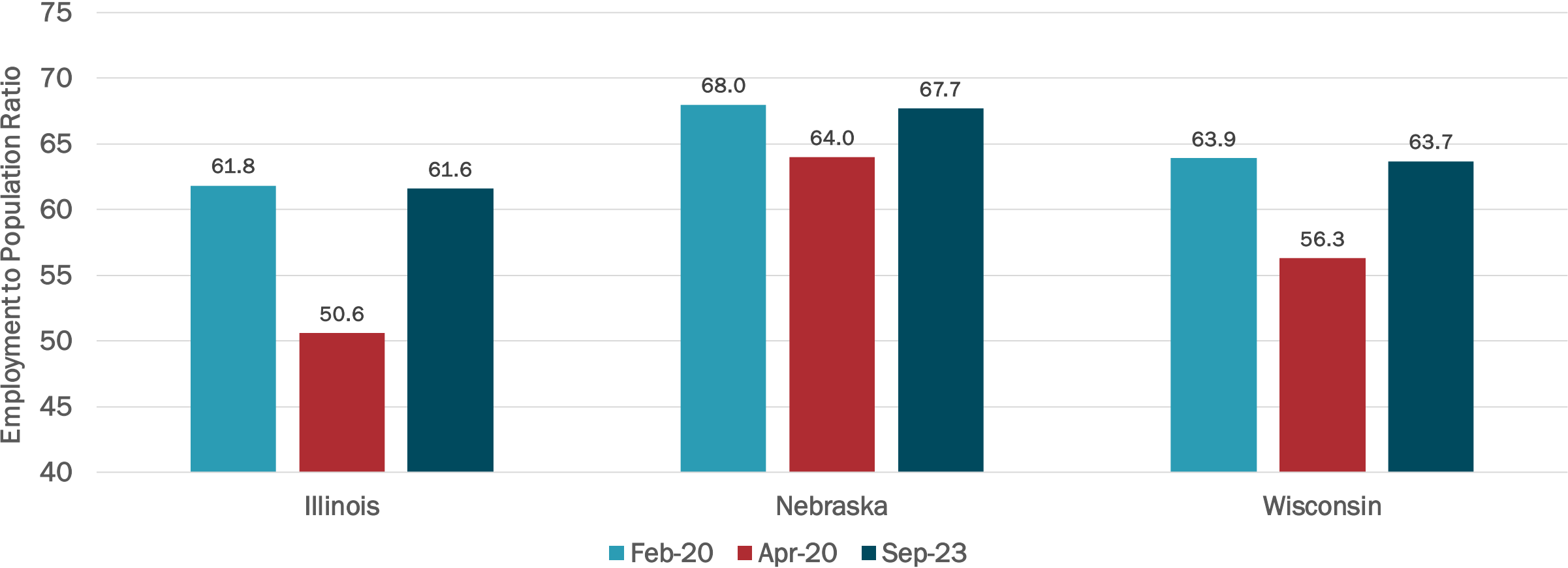
At 60.2 percent in October 2023, the U.S. employment-population ratio is still below the pre-pandemic rate of 61.1 in Feb 2020



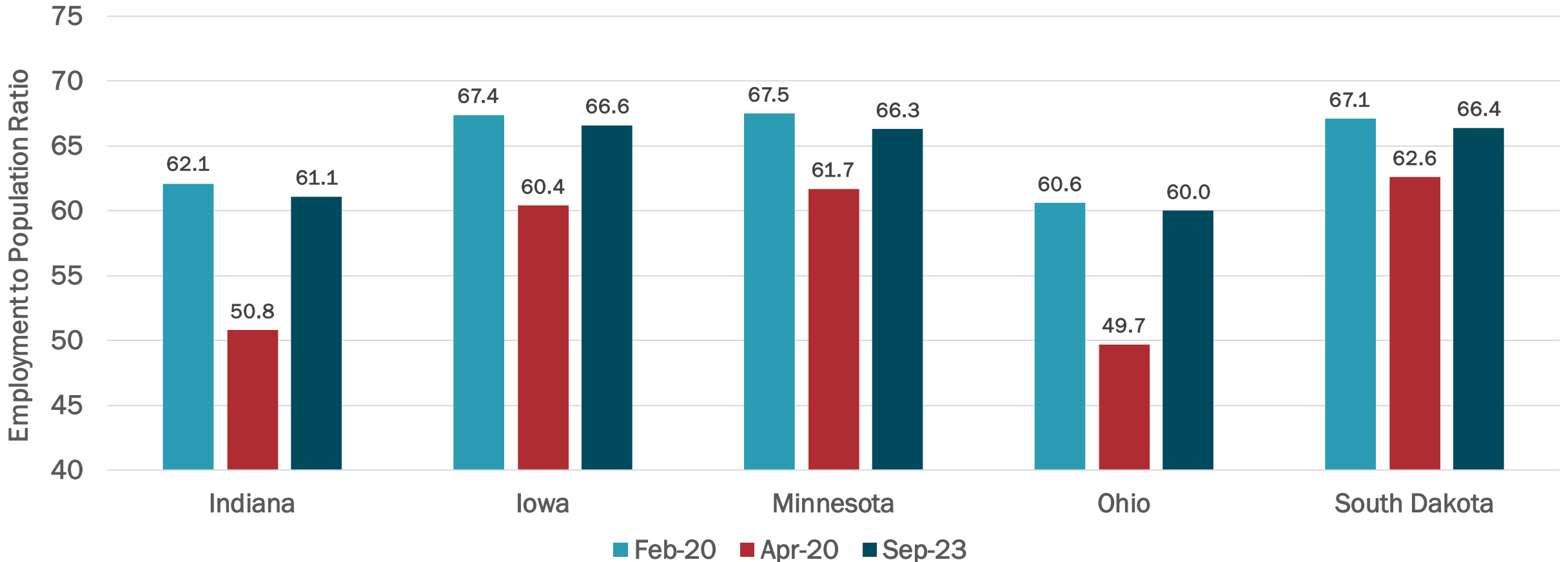
Employment-to-population ratios have recovered their pre-pandemic levels in Kansas, Michigan, and North Dakota



Employment-to-population ratios are nearing recovery in Illinois, Nebraska, and Wisconsin



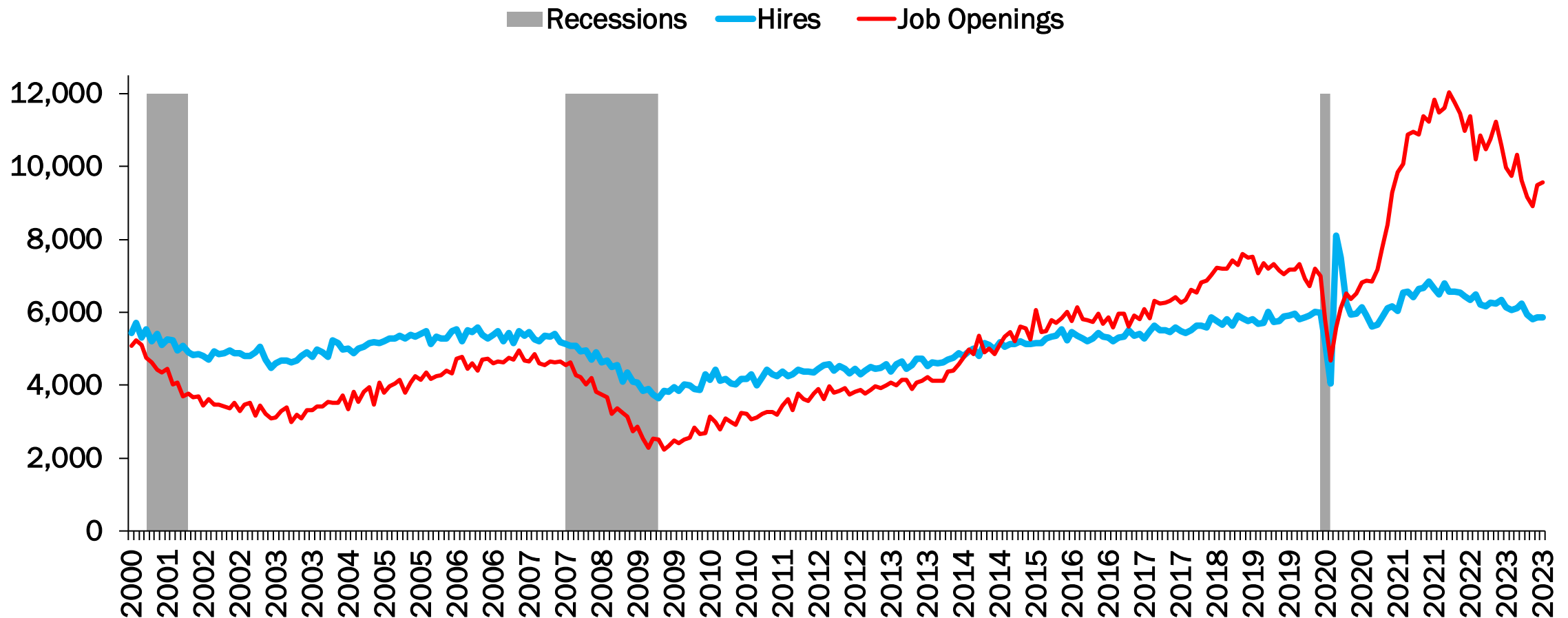
Employment-to-population ratios remain at least six tenths of a percentage point below Feb-20 peaks in Indiana, Iowa, Minnesota, Ohio, and South Dakota



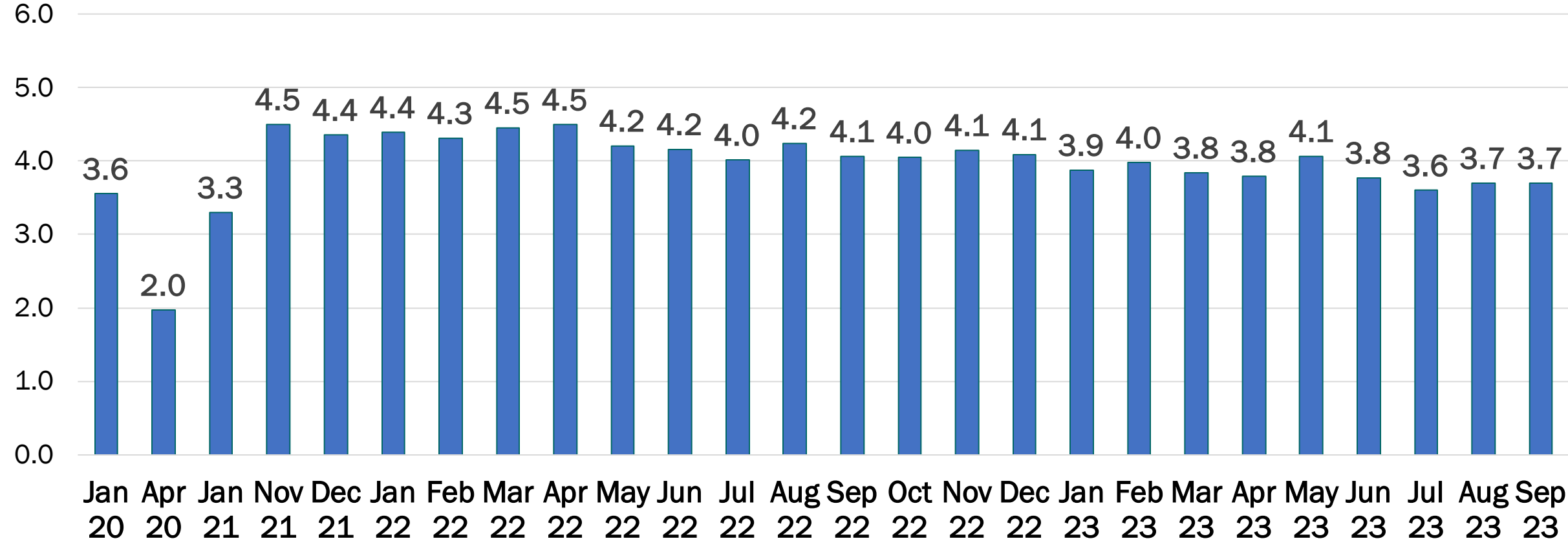
CURRENT ECONOMIC CONDITIONS

Labor Shortages have eased in some industries and persist in others

Job openings have greatly exceeded hires since late 2020, although the gap has closed somewhat in recent months

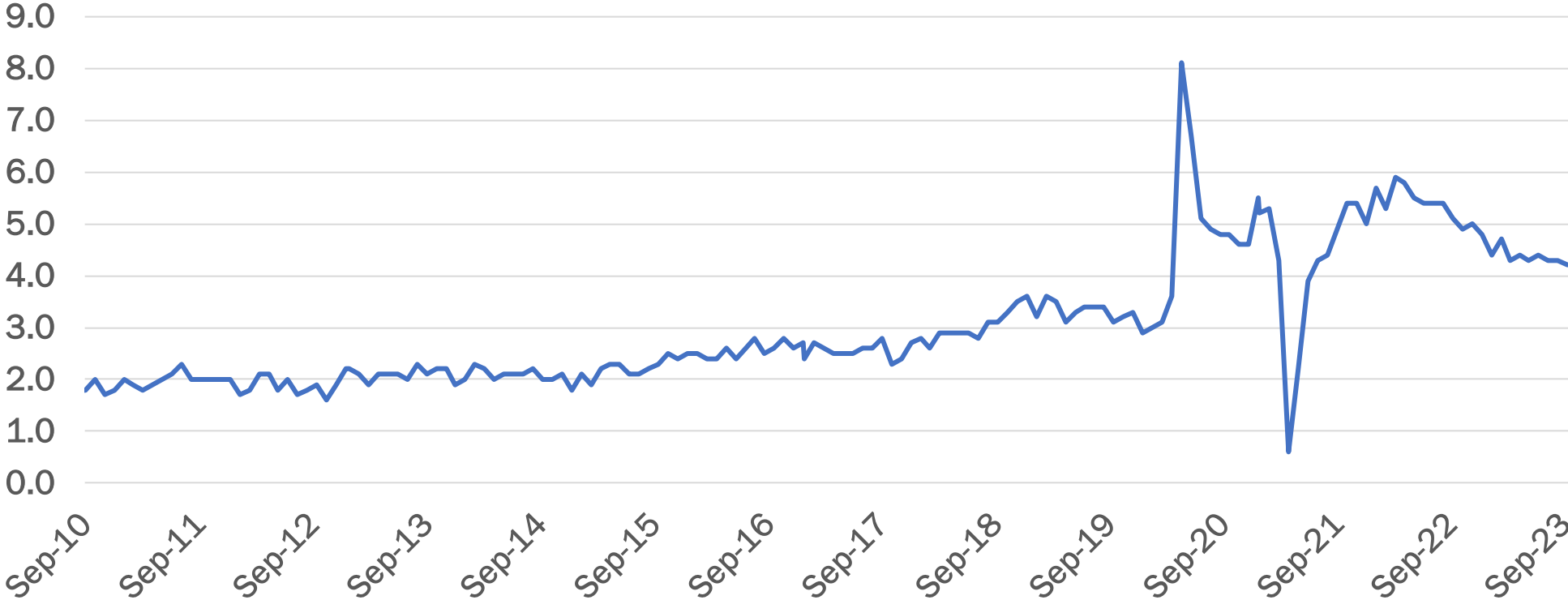


The number of workers quitting their jobs each month was at 3.7 million in September 2023. Late 2021 and early 2022 saw the highest Quits levels ever recorded.

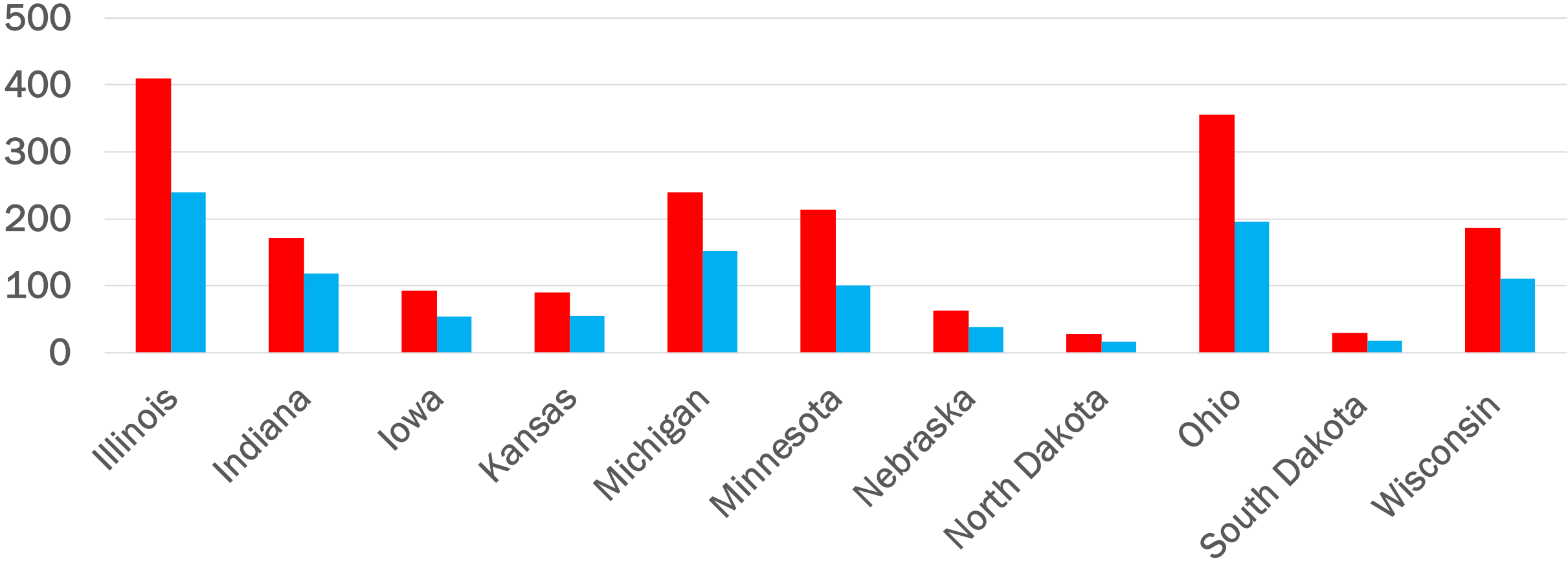


After sharp swings related to the pandemic, average hourly earnings remain elevated relative to historical trends

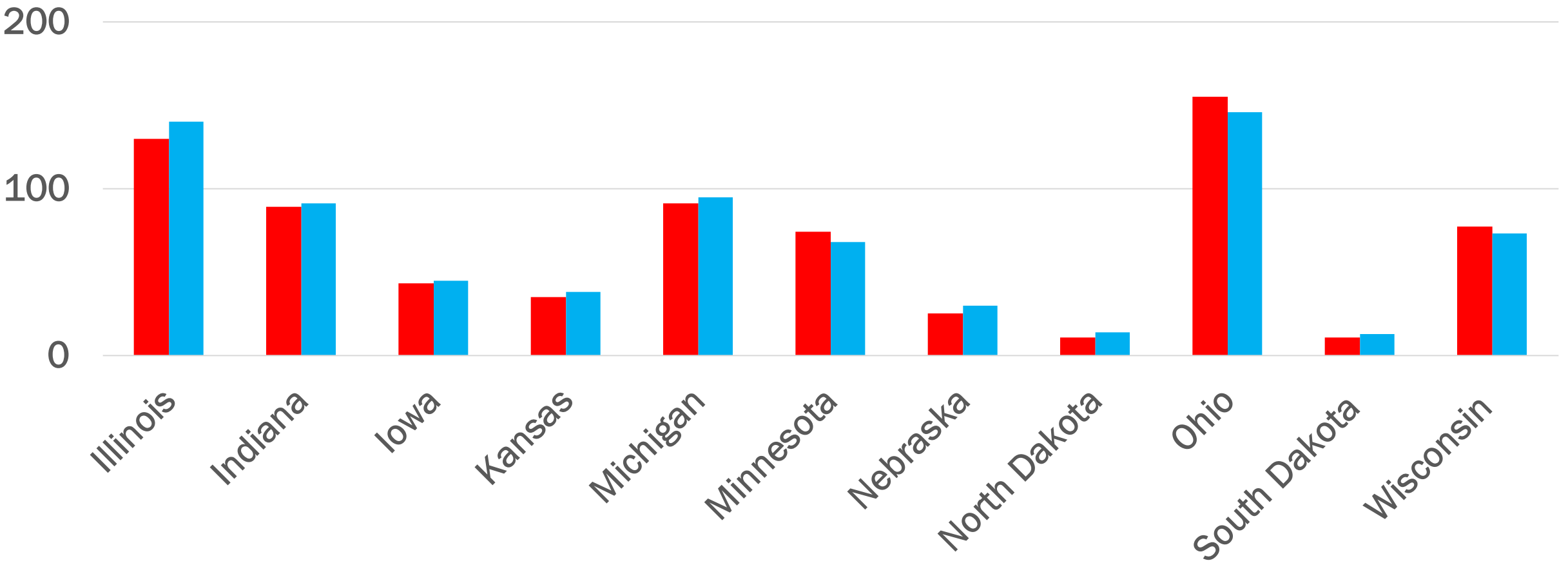
Percent change from 12 months ago



Job openings and hires in August 2023

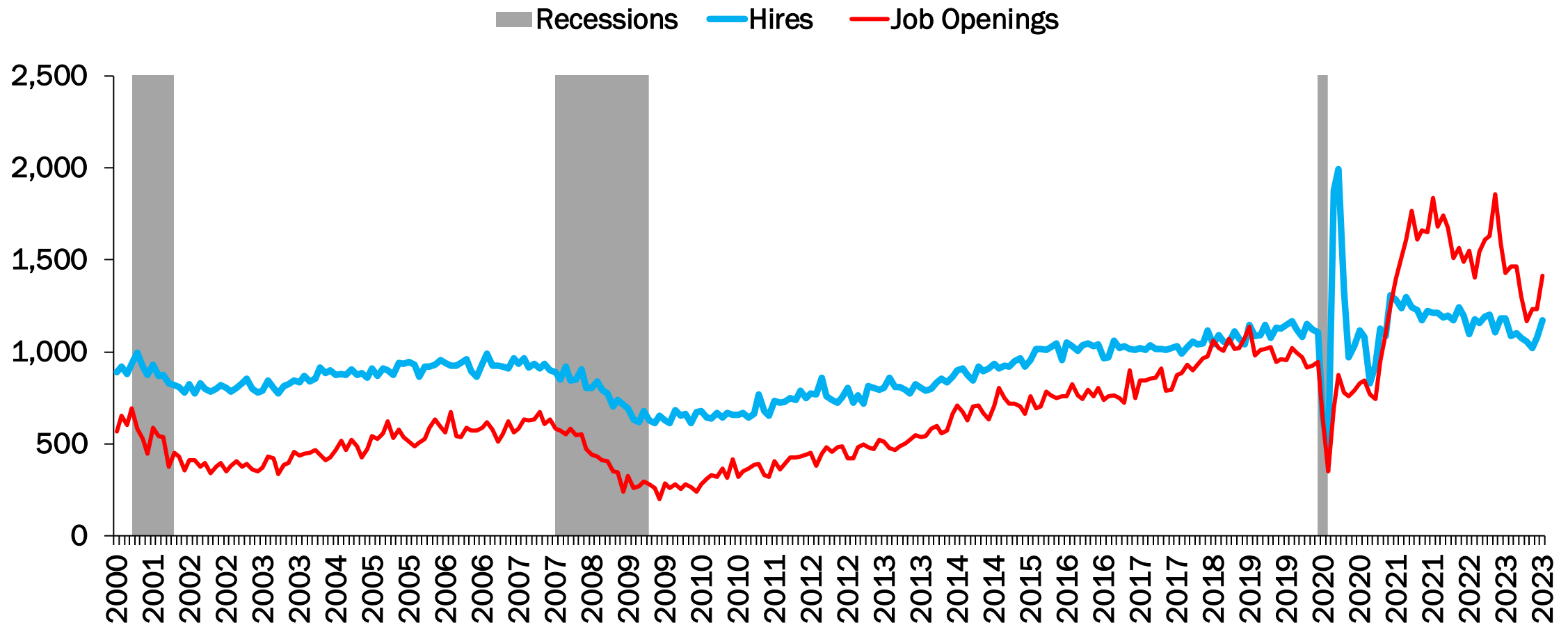


Changes in quit levels from **Aug-22** to **Aug-23**

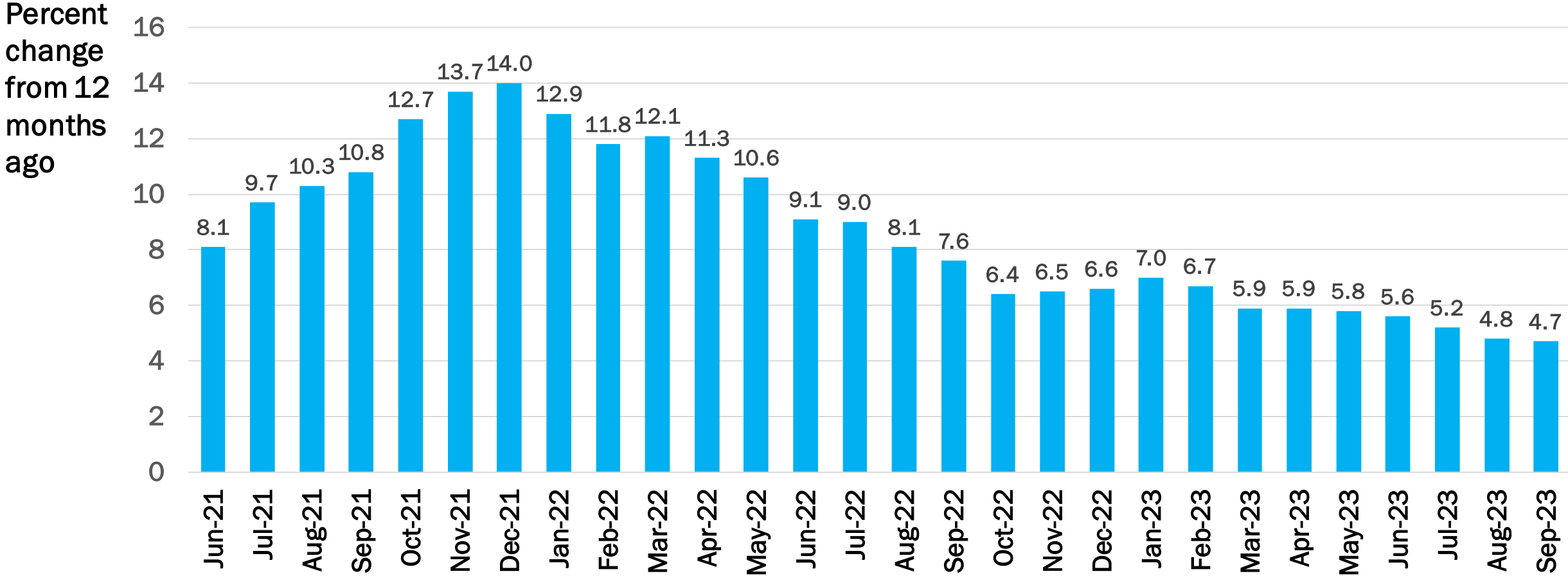


**There is evidence to suggest
that the current cycle of labor
shortages is ending in many
industries**

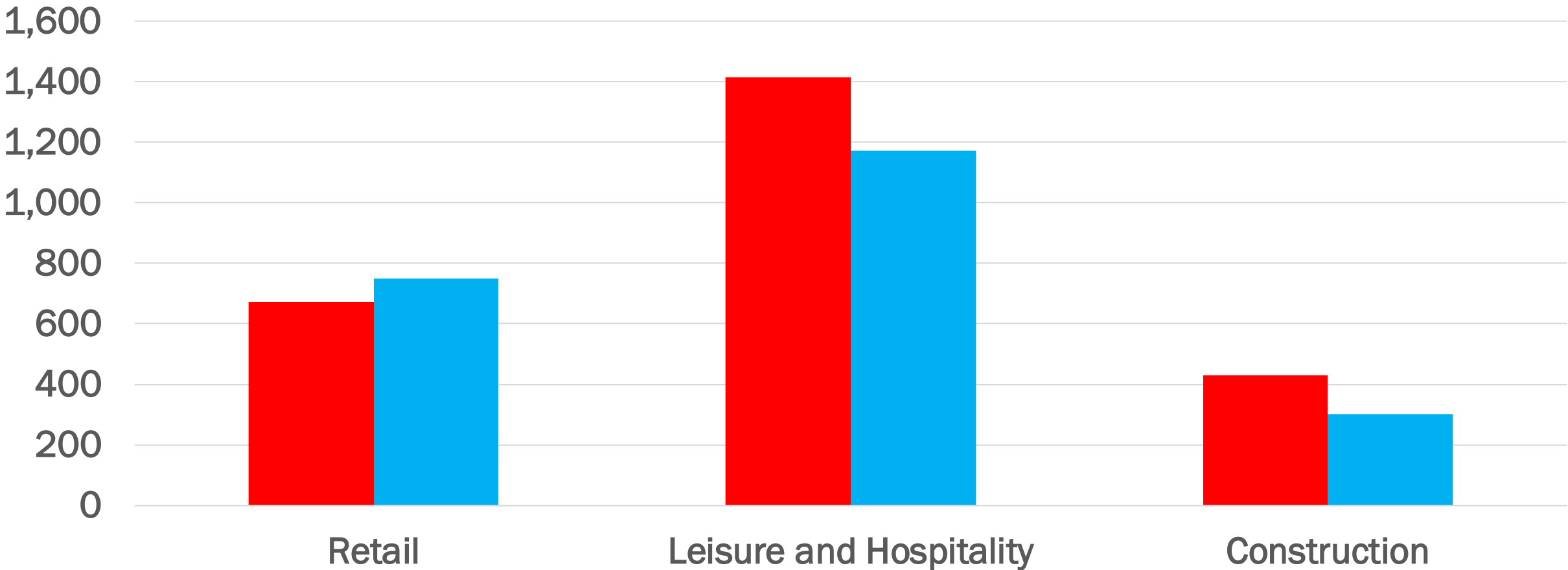
Job openings vs hires in Leisure and Hospitality



Changes in Average Hourly Earnings in the Leisure and Hospitality industry

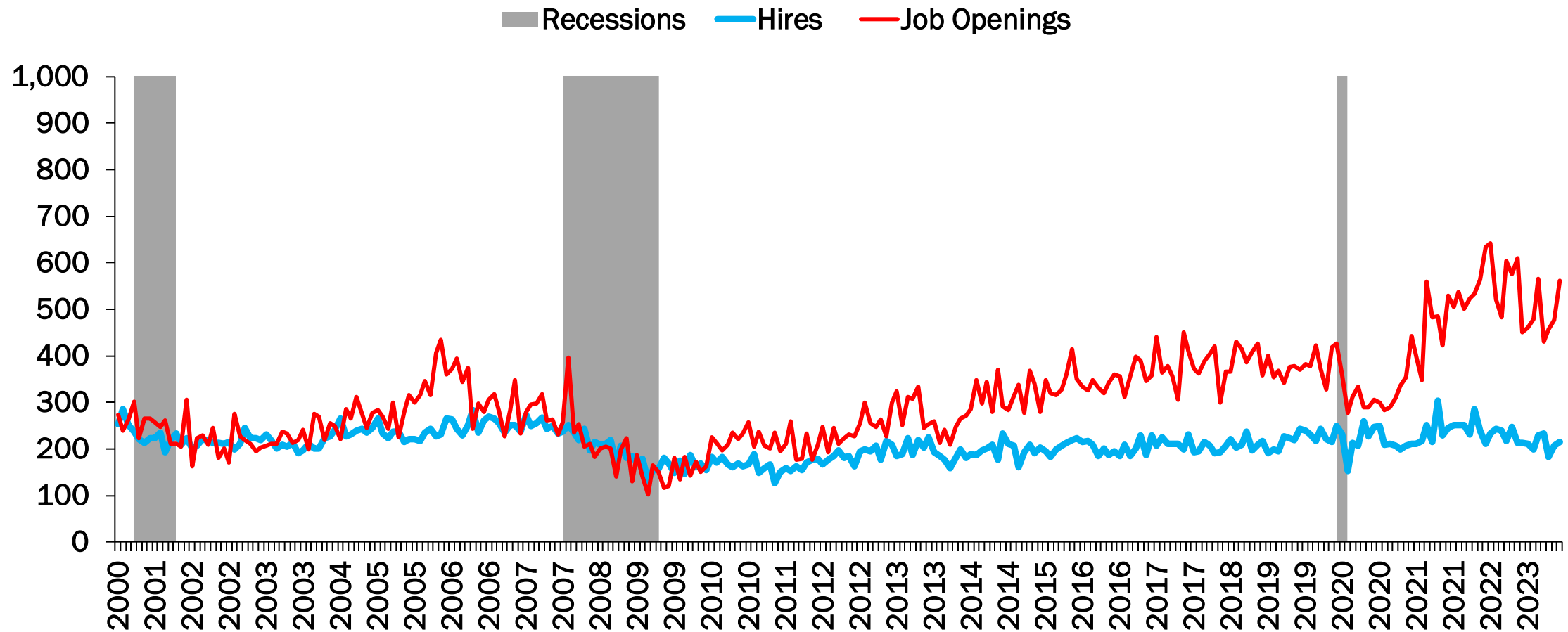


The gap between **job openings** and **hires** has narrowed among select industries as of September 2023

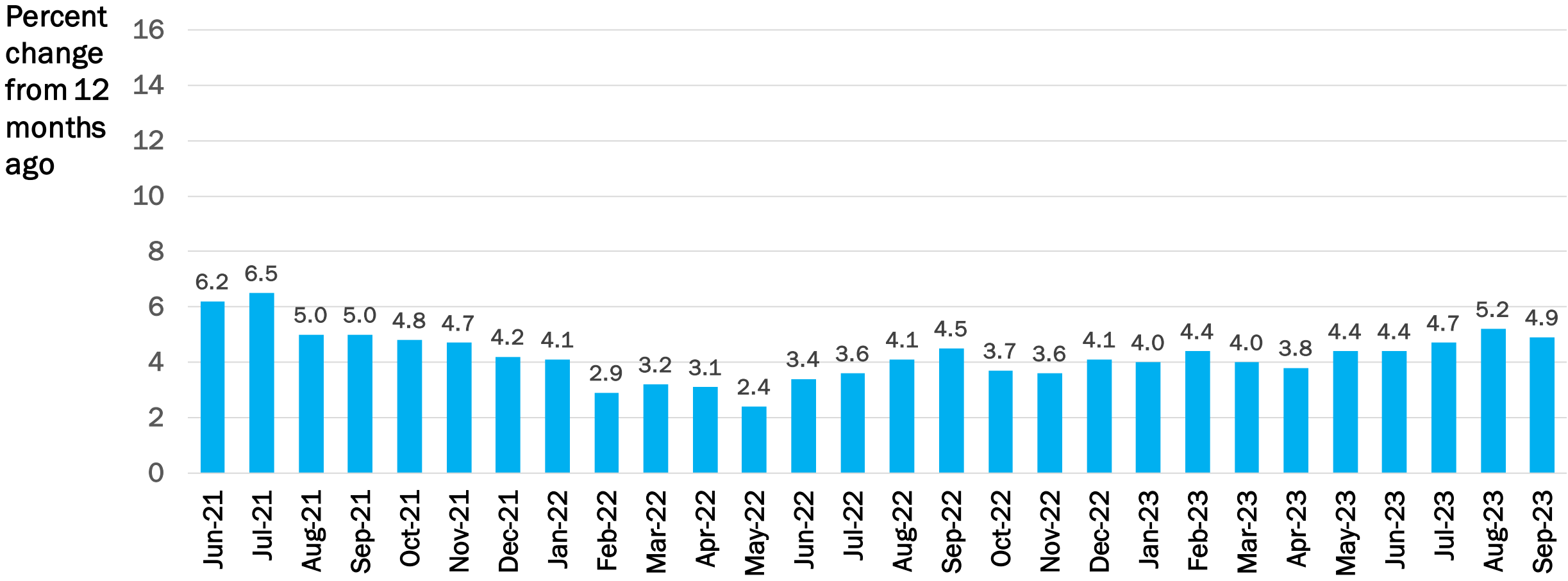


**Labor shortages are showing
persistence in many other
industries**

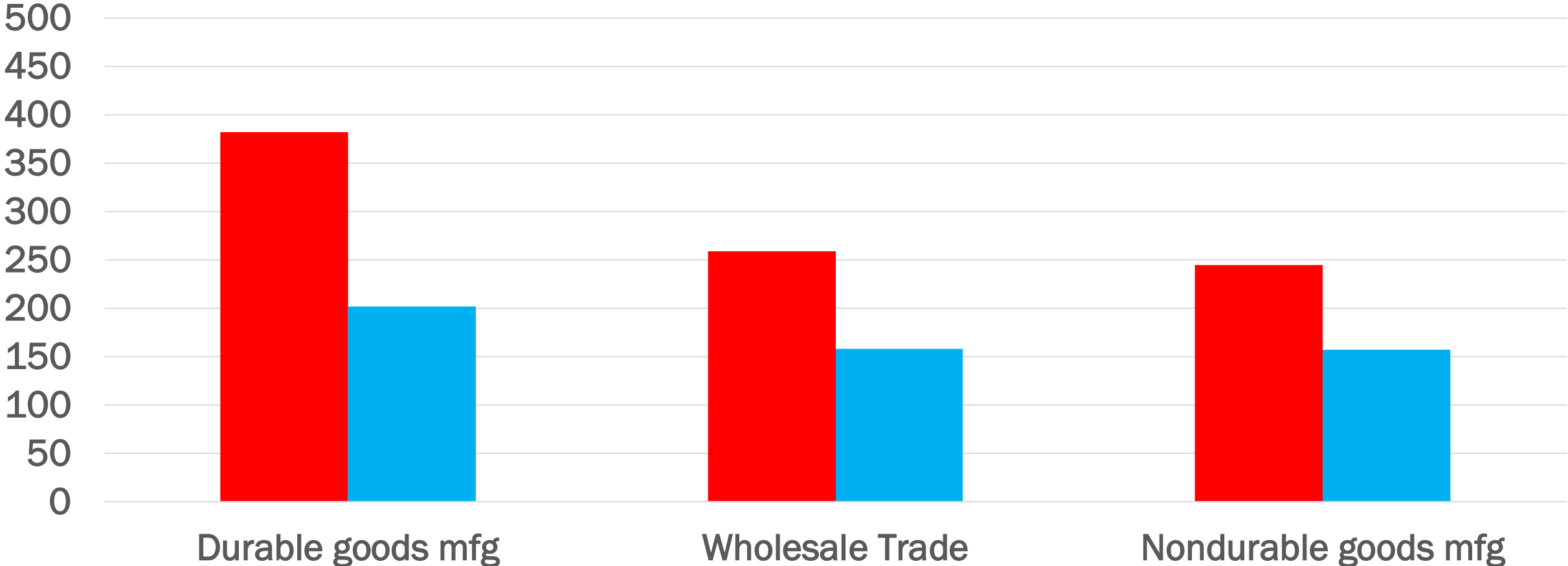
Job openings vs hires in Financial Activities



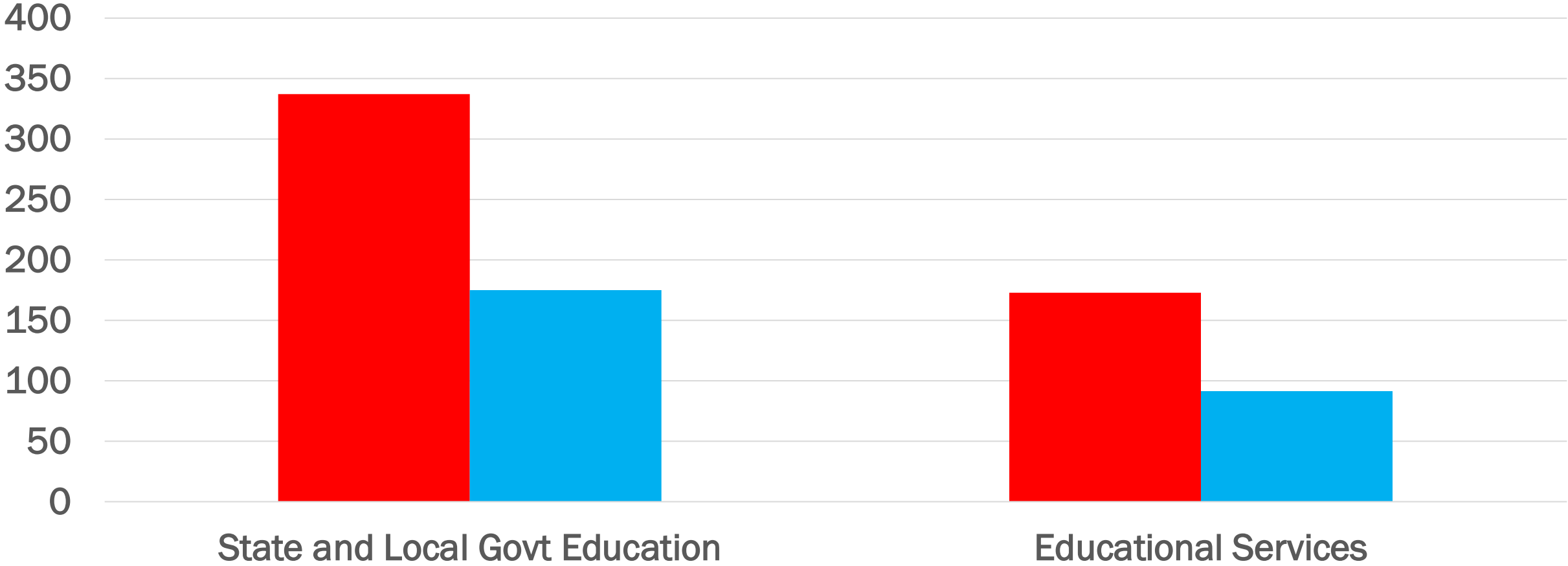
Changes in Average Hourly Earnings in Financial Activities



Job openings continue to exceed hires among select industries as of September 2023



Job openings continue to exceed hires among select industries as of September 2023

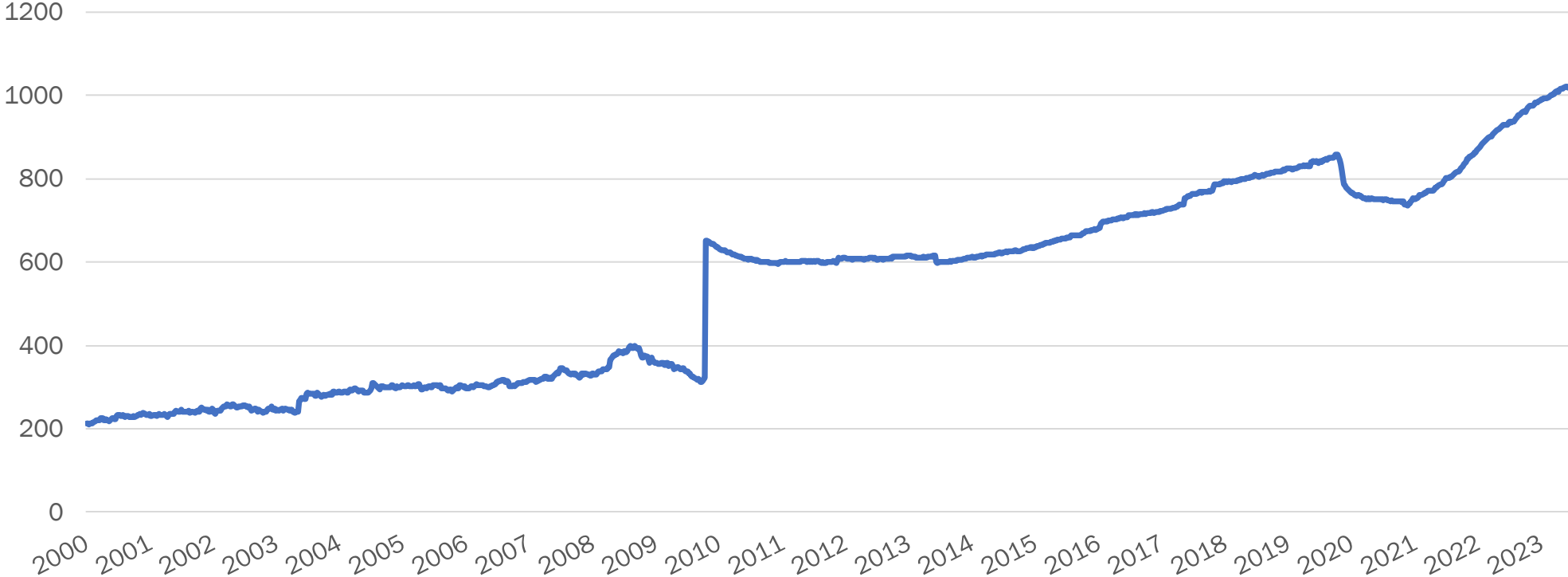


A LOOK TO THE FUTURE:

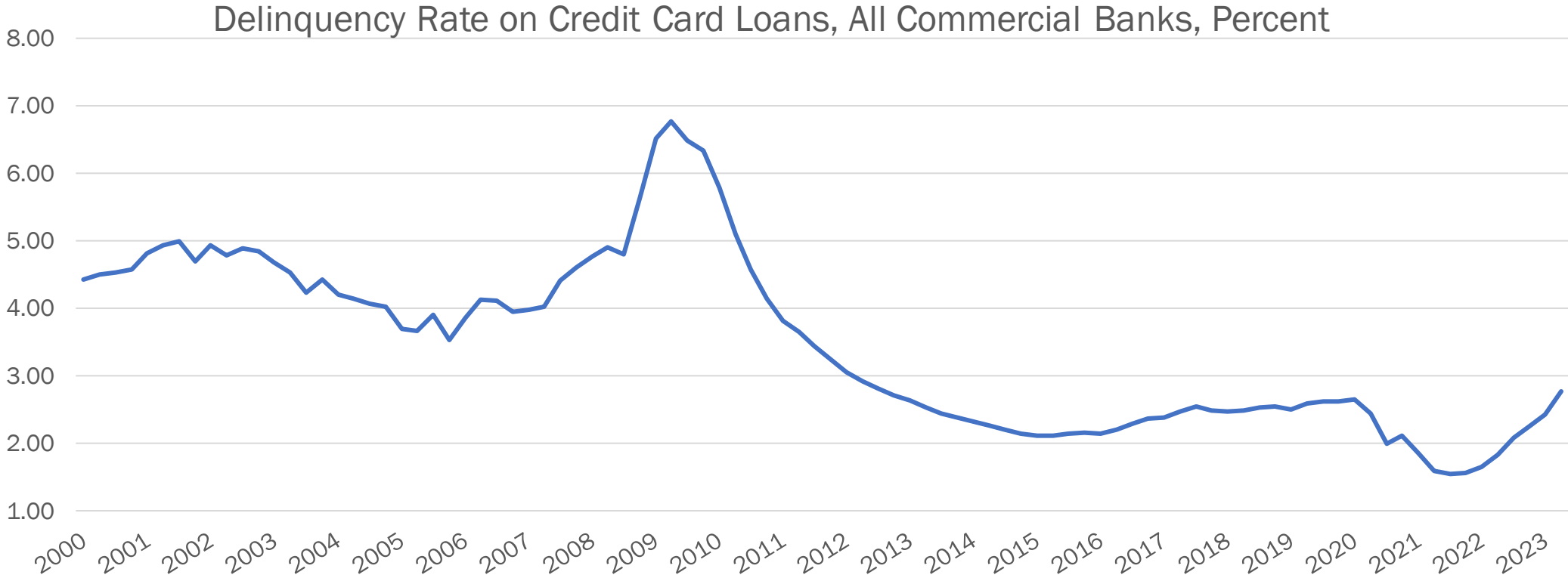
Some headwinds emerging

Consumer credit balances have risen sharply since the beginning of 2021, exceeding \$1 trillion in 2023

Consumer Loans: Credit Cards and Other Revolving Plans, All Commercial Banks, Billions of USD



Delinquency rates on credit card loans reached historic lows in 2021, but have increased steadily starting in 2022



A LOOK TO THE FUTURE:

The forecast

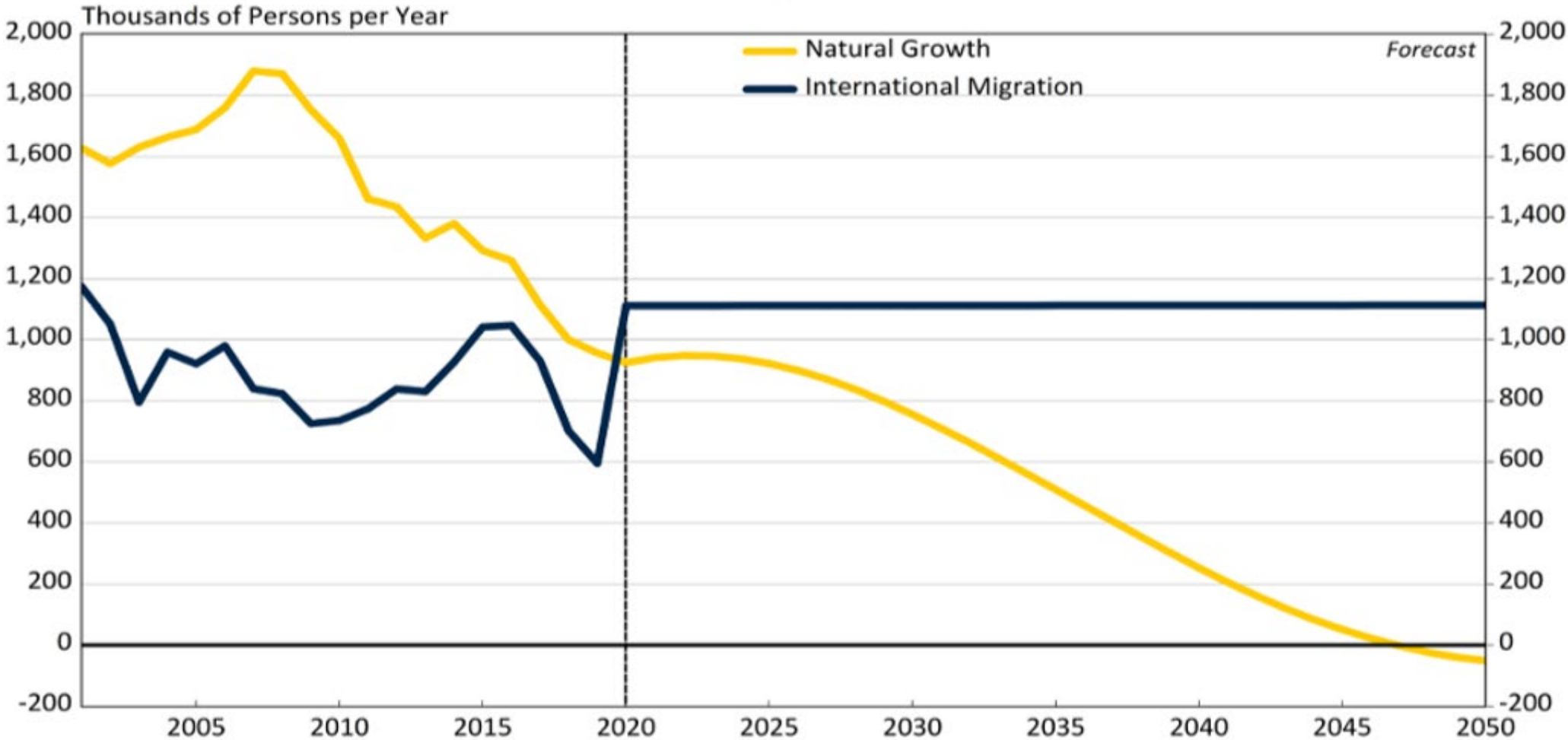
University of Michigan/RSQE August 2023 national forecast

Measure	2022	2023 (Forecast)	2024 (Forecast)	2025 (Forecast)
Real GDP (2012\$) % change yr-over-yr	2.1	2.1	1.1	2.1
Employment (millions)	152.6	156.1	157.1	157.9
Light Vehicle Sales (millions)	13.8	15.6	16.0	16.5
Unemployment Rate	3.6	3.5	3.9	4.0
Housing Starts (thousands)	1551.3	1424.3	1425.0	1435.0
CPI-U/Inflation	8.0	4.1	2.8	2.5

A LOOK TO THE FUTURE:

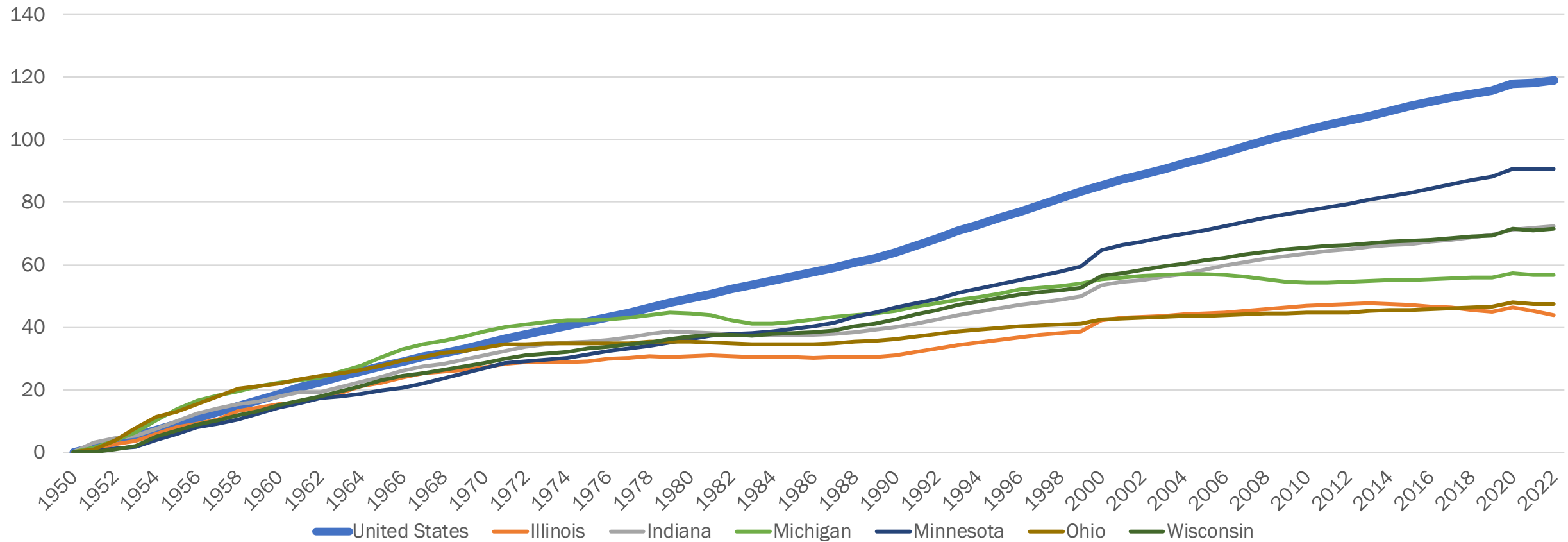
Population and employment projections

Figure 1
Components of U.S. Population Change



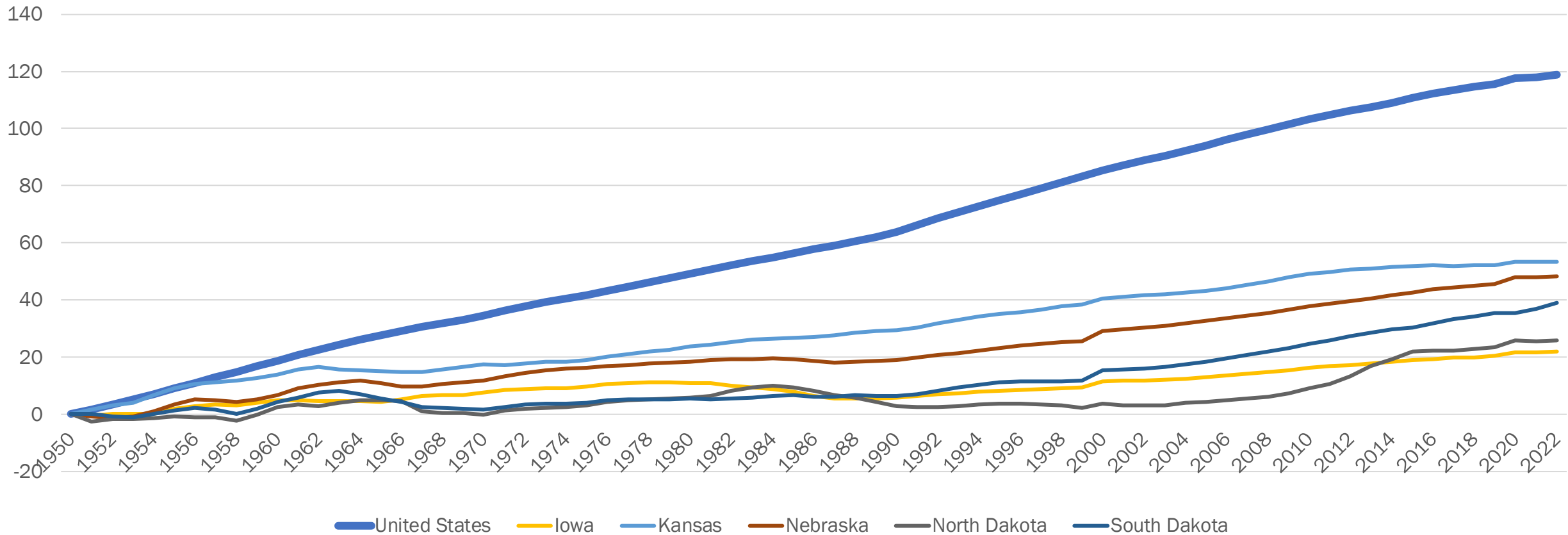
Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin saw population growth on trend with the United States until the 1970s

Cumulative Population, Percentage Change from 1950



Iowa, Kansas, Nebraska, North Dakota and South Dakota have grown at rates below the national trend since 1950

Cumulative Population, Percentage Change from 1950



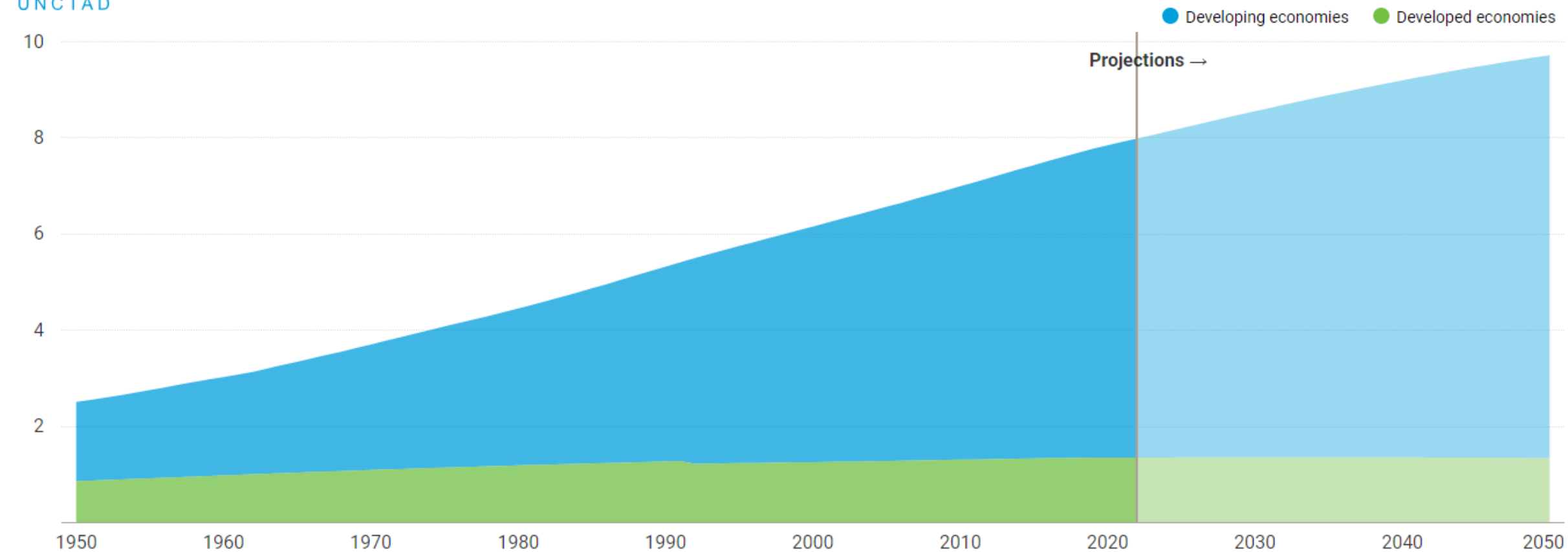
The world's population growth has become increasingly concentrated in developing countries, highlighting the need to address inequalities and ensure a just transition towards a low-carbon future.



UNITED NATIONS
UNCTAD

World population growth is mostly in developing economies

People living in developing and developed economies, billions



Source: UNCTADstat based on UN DESA Population Division, World Population Prospects 2022.

Note: The graph provides estimates from 1950 to 2021 and projections from 2022 to 2050 of total population

Average monthly changes in employment will slow down significantly over the next ten years

BLS US Occupational Employment Projections 2022-2032

Year	BLS Projections Current Employment Statistics and Current Population Survey data	Average Monthly Employment Change
2012	145,356,000	--
2022	164,482,600	159,388
2032	169,148,100	38,879

Published September 2023

CBO Budget and Economic Outlook 2023-2033

Year	CBO Baseline Projections Civilian Employment Current Population Survey concept	Average Monthly Employment Change
2012	142,474,000	--
2022	158,255,000	131,508
2032	164,637,000	53,183

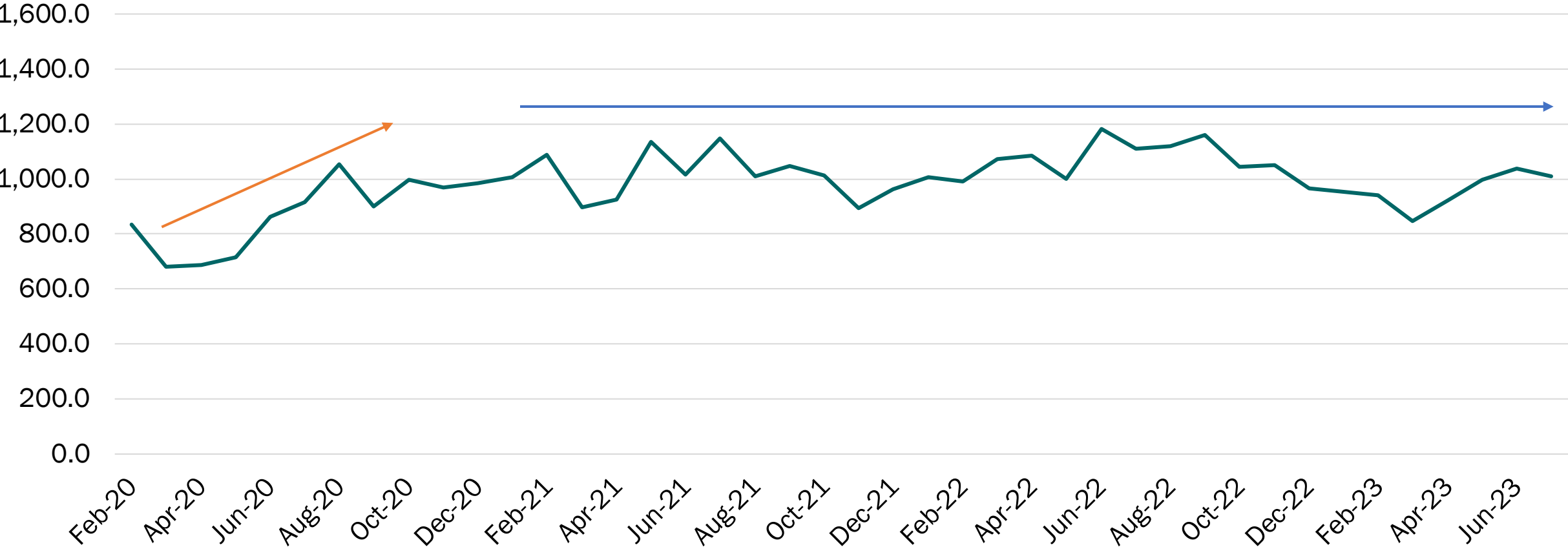
Published July 2023

Questions?

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 - Email: horrigan@upjohn.org
 - Phone: 269-385-0401
 - Twitter: @MHorriganUpjohn

Near unemployment

Number of individuals who are out of the labor force and currently want a job now, but cite child-care, family responsibilities or transportation issues as barriers to looking for work



As of July 2023, 57 percent of that group are females with less than a BA

