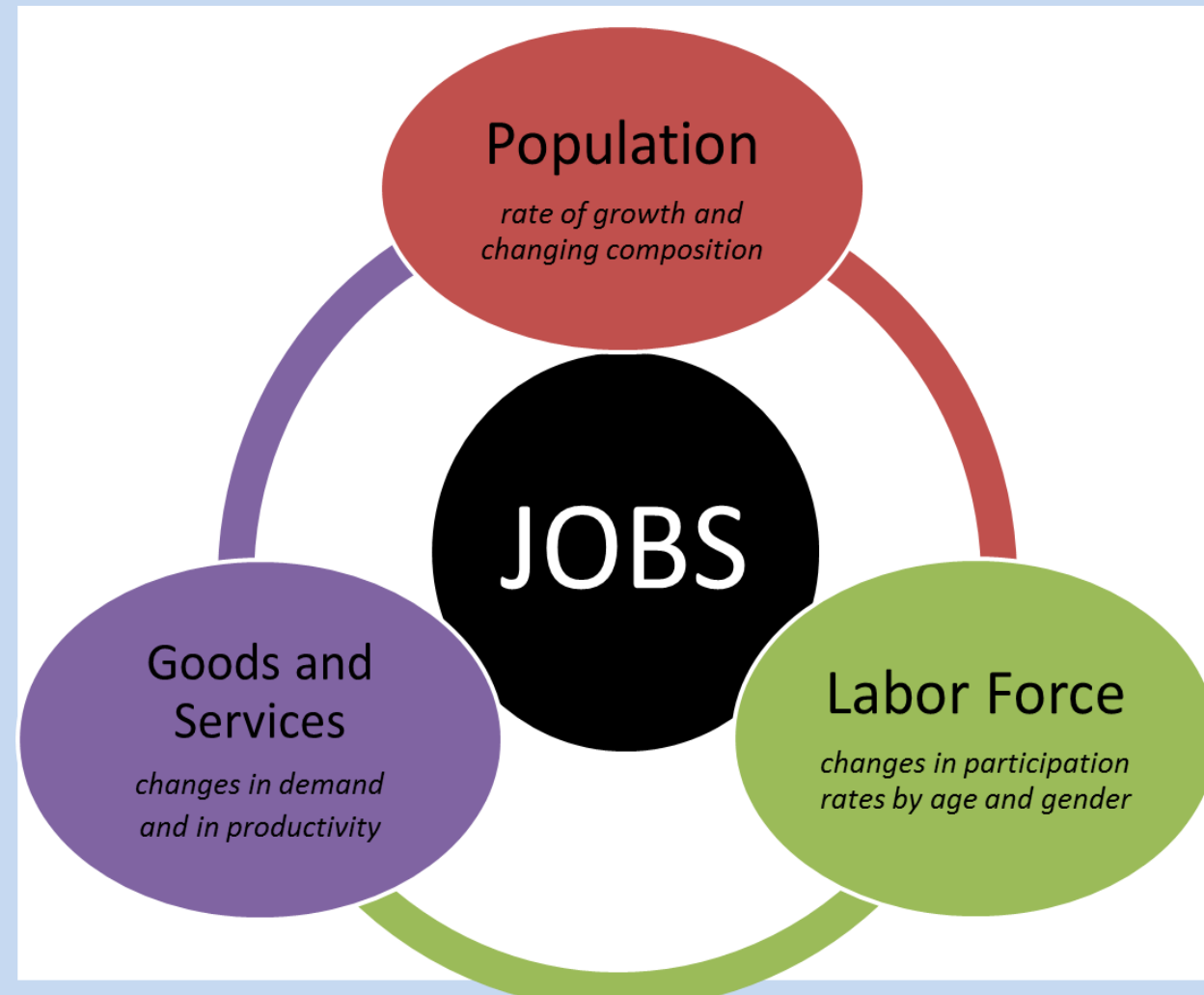


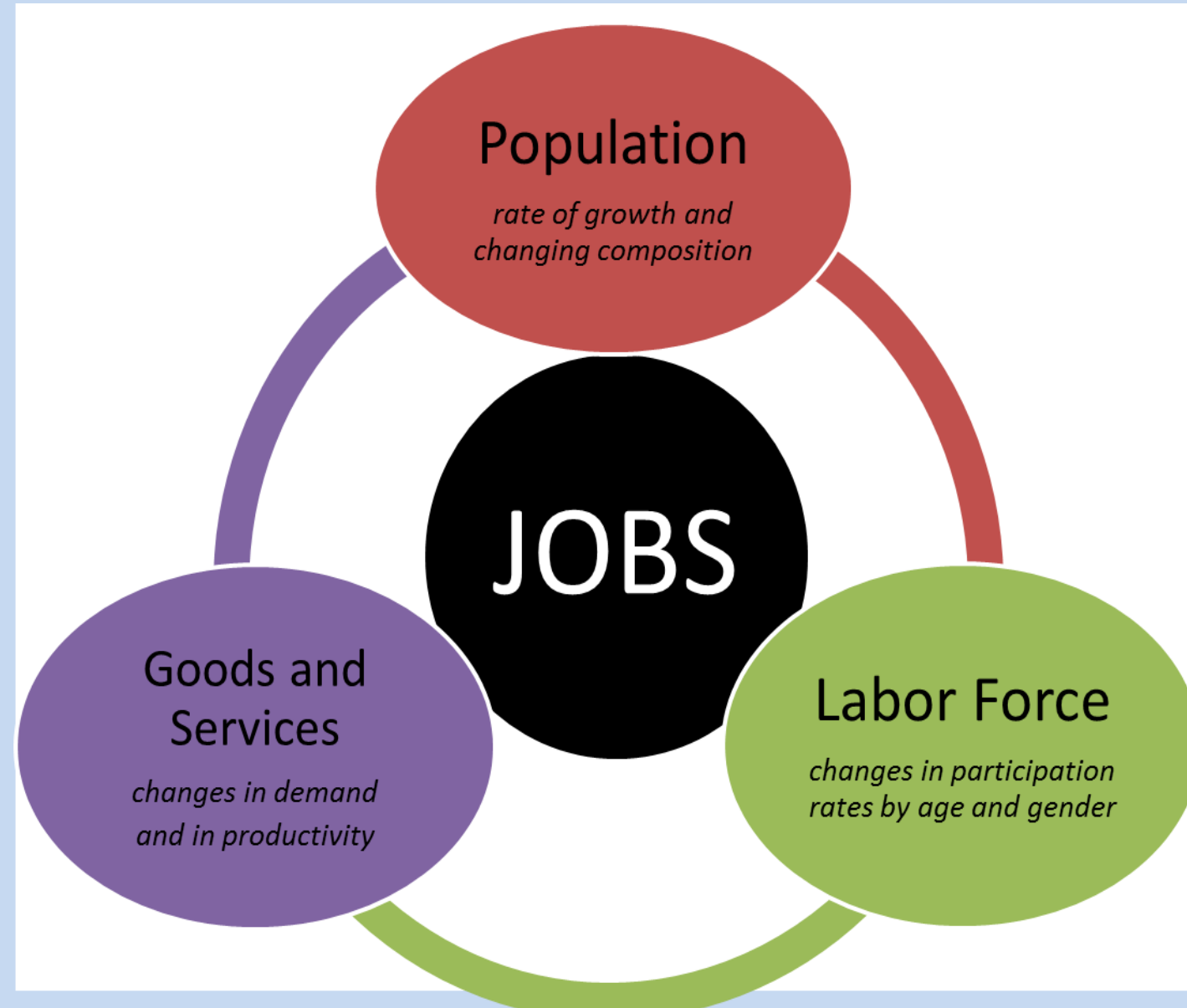
Maine Workforce Outlook

2014 to 2024



Center for Workforce Research
Maine Dept. of Labor
www.maine.gov/labor/cwri

The labor force is constantly in flux



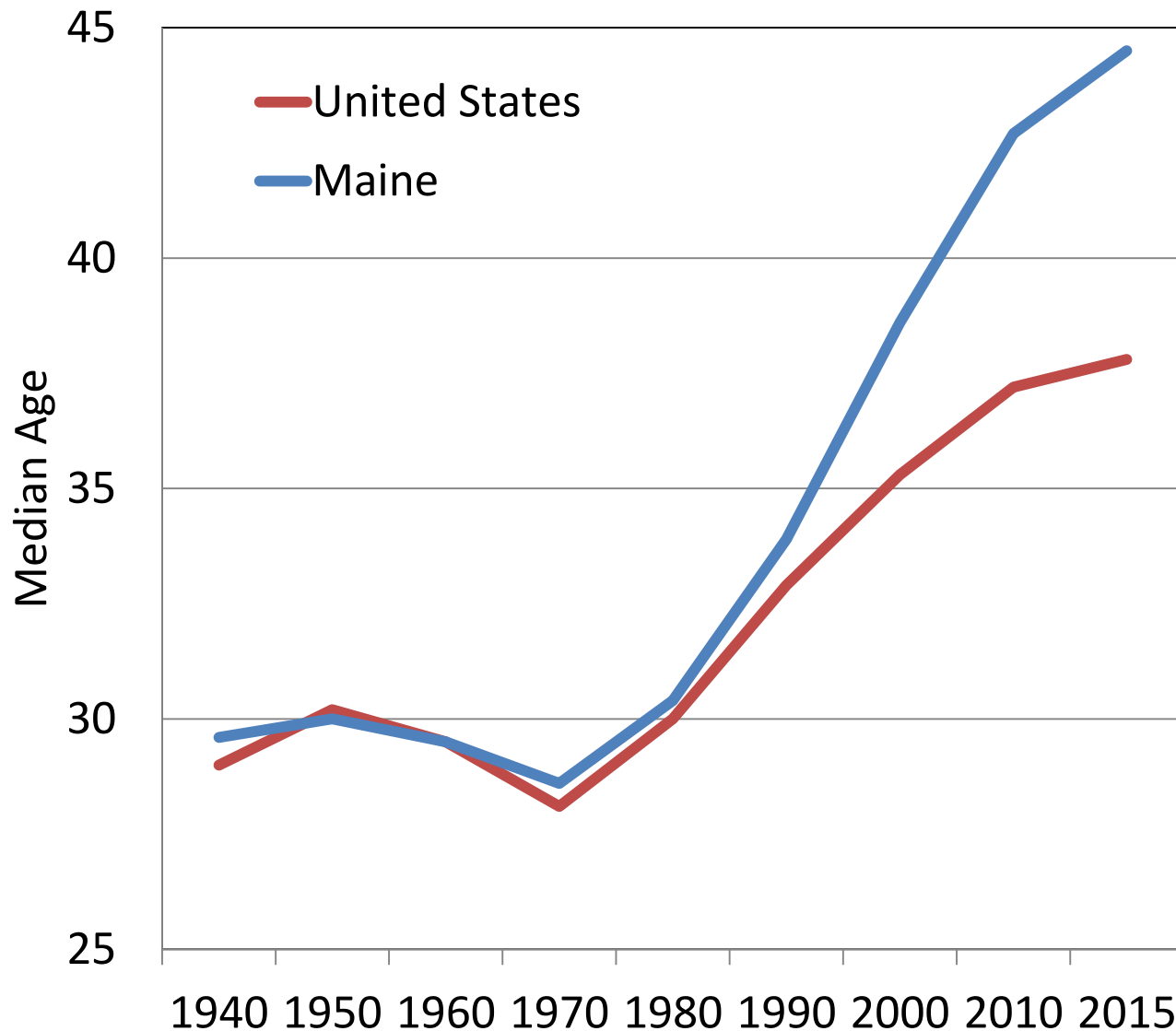
The supply of workers changes with growth in the population and changes in its composition. Changes in demand for products and services, and in technology and means of production and service delivery, impact demand for workers across industries and occupations, and for certain education and job skills.

Three primary steps in a top down approach to developing a forecast

1. **Labor force** – We look at population and labor force participation trends to develop a top line rate of job growth.
2. **Industry employment** – Some industries are gaining and others are losing jobs. Changes in technology, the competitive environment, product demand, and a range of other factors impact growth prospects for industries.
3. **Occupational employment** – Many occupations are primarily found in certain industries (carpenters in construction, doctors in healthcare, etc.) so occupational trends are partly driven by industry trends. Additionally, occupational staffing changes as technology and work practices evolve.

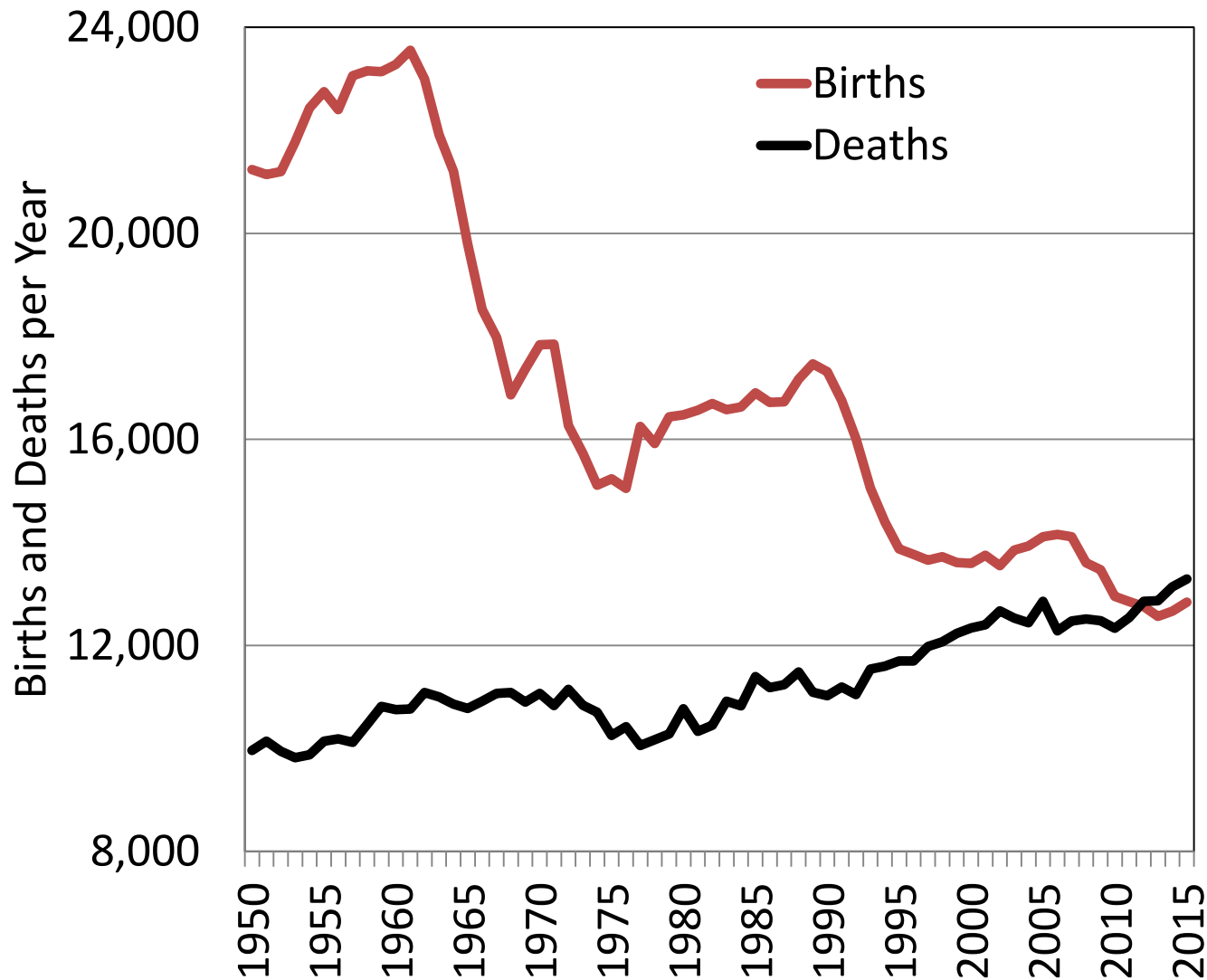
Demographic Trends & the Labor Force Outlook

The median age in Maine increased even more sharply than the nation over the last four decades



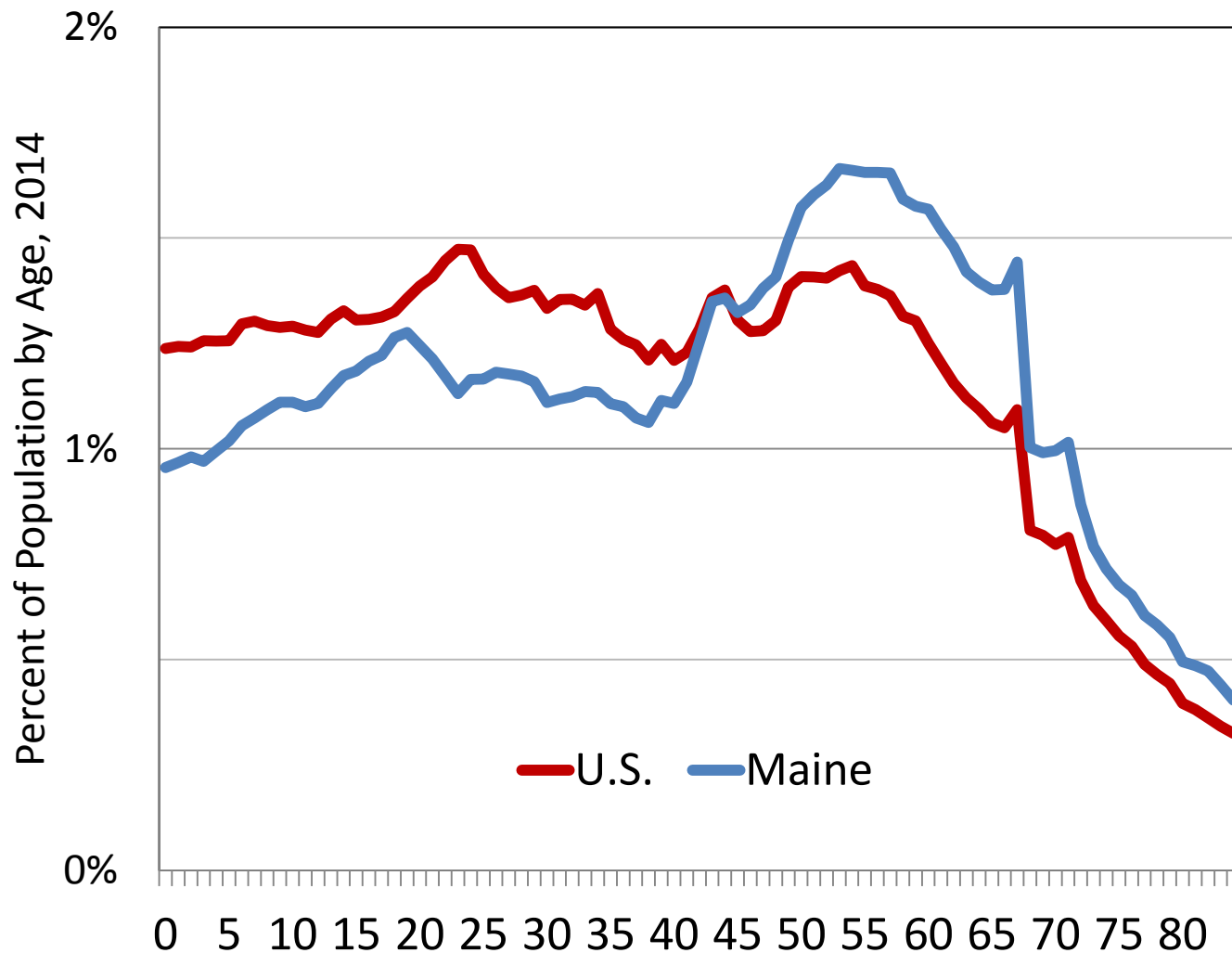
The population is getting older throughout the entire advanced world. In the U.S., the median age increased nearly 10 years since 1970. Aging is most pronounced in the northeast, especially the three northern New England states. Maine is now the oldest state by median age at 44.5 years in 2015, nearly seven years above the U.S. figure.

The population is aging so rapidly because the number of births declined precipitously



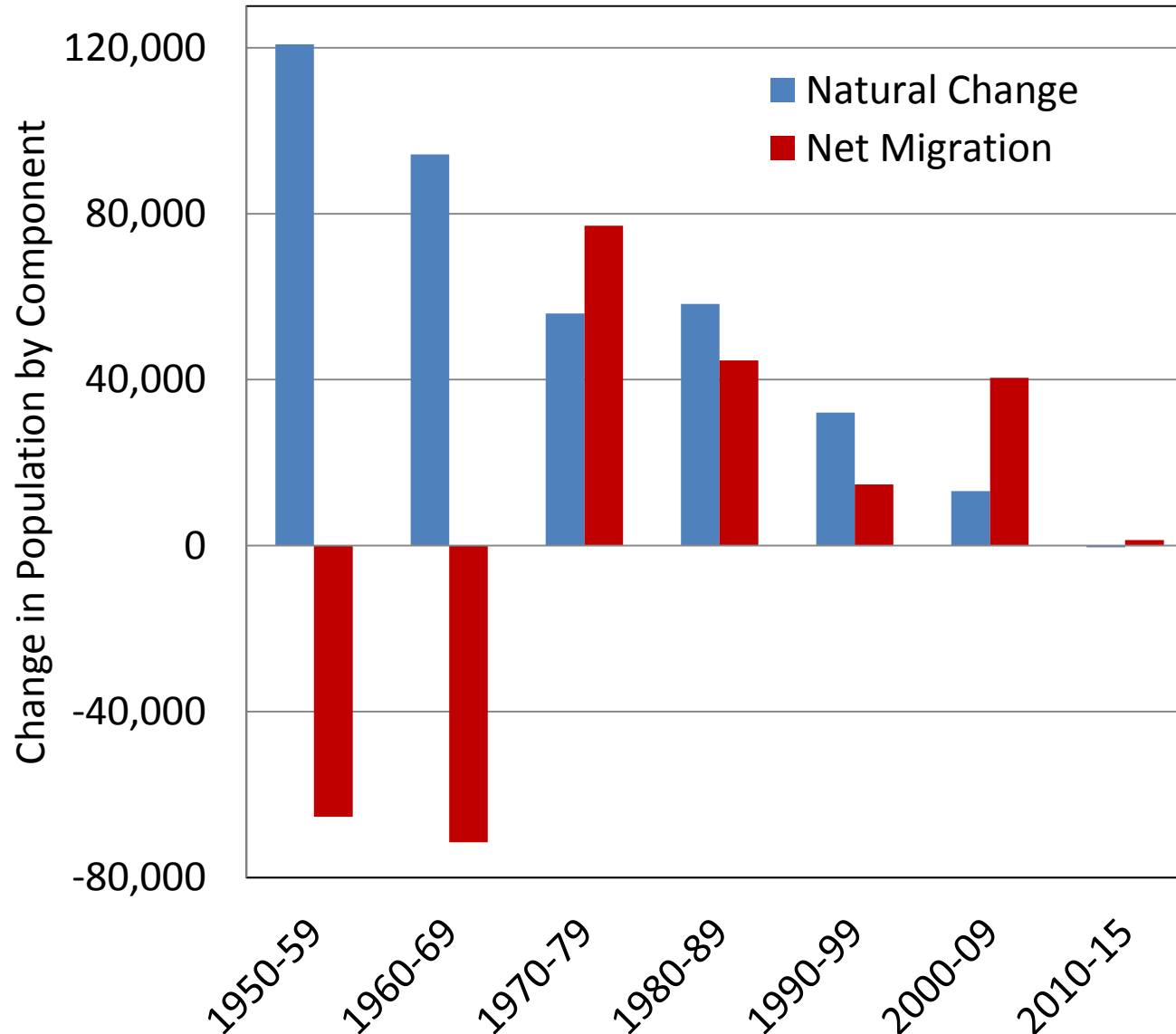
Natural population change—the difference between births and deaths—has been slightly negative since 2011, a pattern that is expected to continue over the next decade.

Fewer births caused an imbalance in our population structure, that now has a high share of people in their 50s and 60s and low share of young people relative to the U.S.



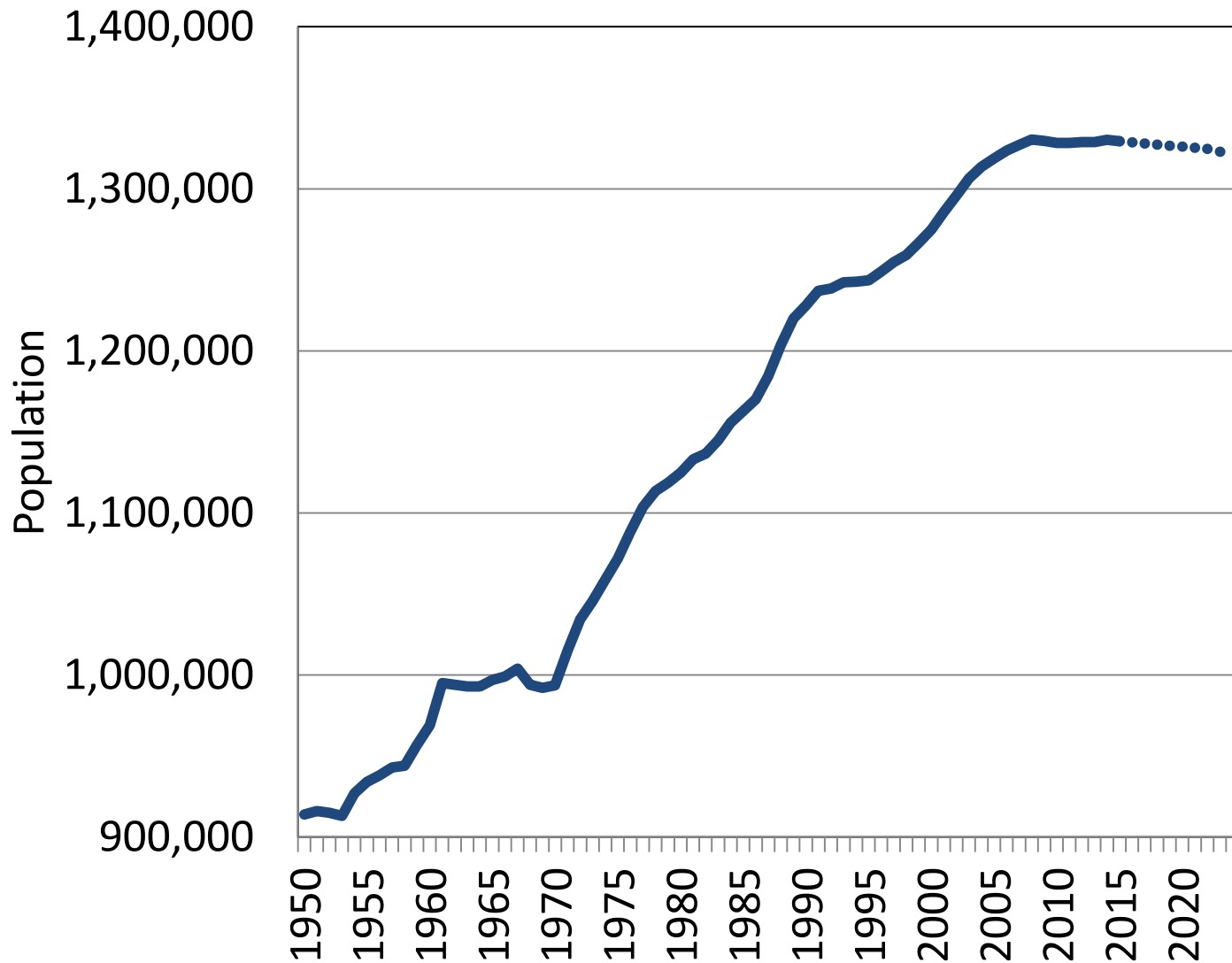
The large gap between the number of people who will retire and the number of young people who will enter the workforce will put significant downward pressure on the size labor force over the next two decades.

Since 2010 net-migration has also been unusually low



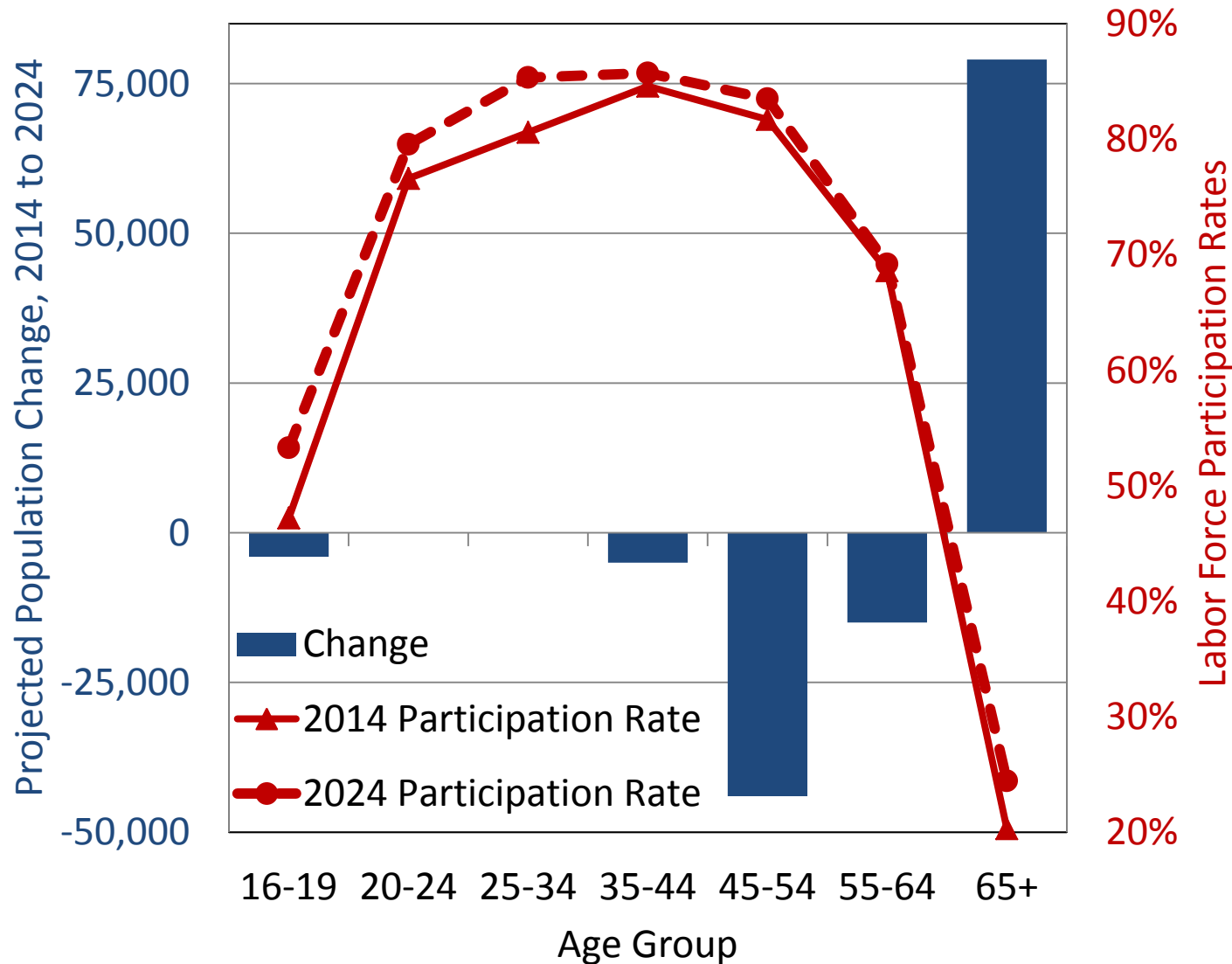
Net in-migration—the difference between those who move into and out of the state—has only been enough to offset the natural decline from more deaths than births since 2010. An increase in in-migration of working-age people to 1970s levels will be needed if we are to sustain the size of the workforce in the years ahead.

The total population has been nearly unchanged since 2008 and is expected to contract modestly through 2024



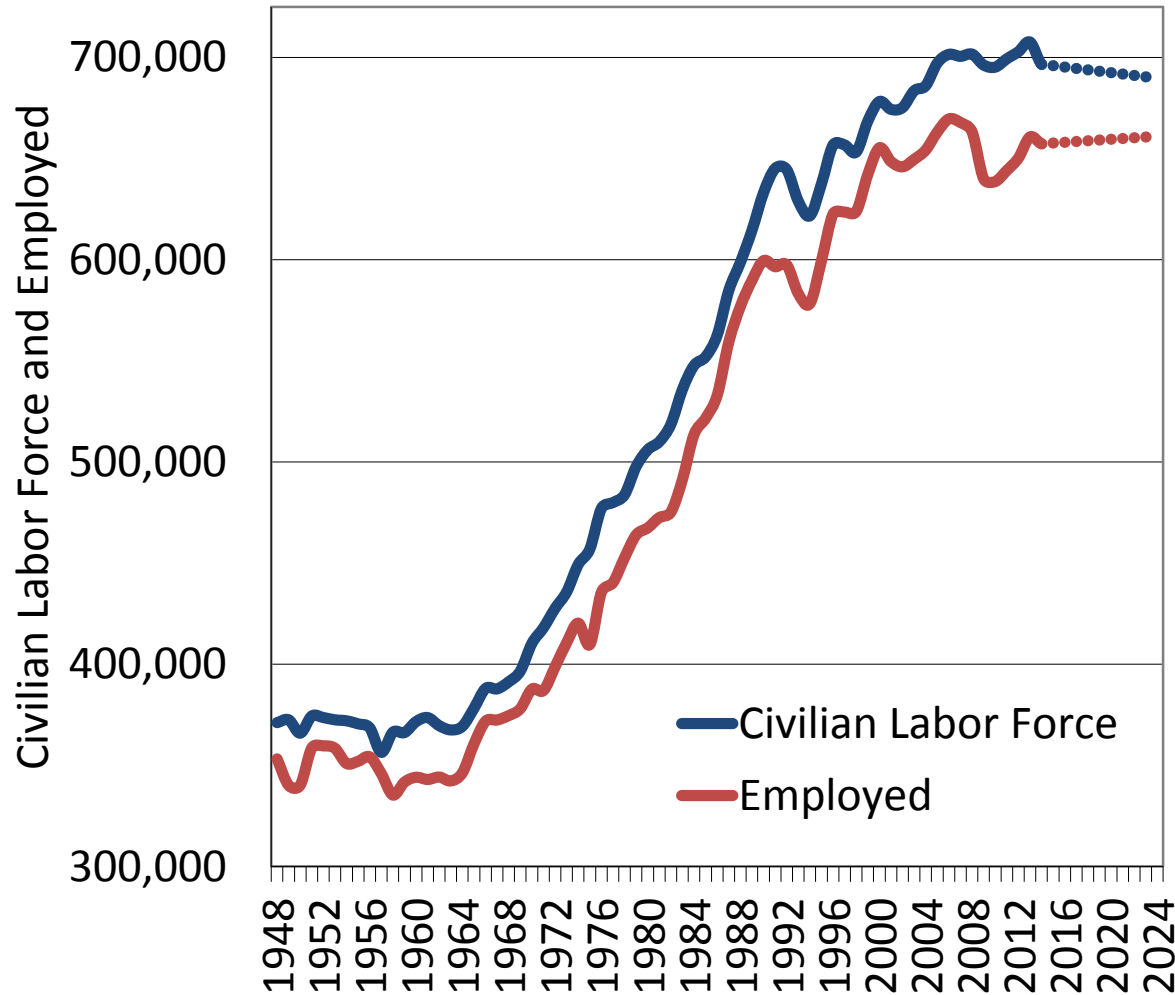
If net migration does not pick up significantly, the total population is likely to gradually decline.

The number of prime-age workers is expected to continue to decline as more baby boomers become seniors



Labor force participation rates are expected to rise in all age groups, but the total participation rate will decline because more of the population will be retirement age.

As a result of these trends, the labor force is expected to decline slightly between 2014 and 2024, though employment is expected to rise somewhat due to fewer unemployed

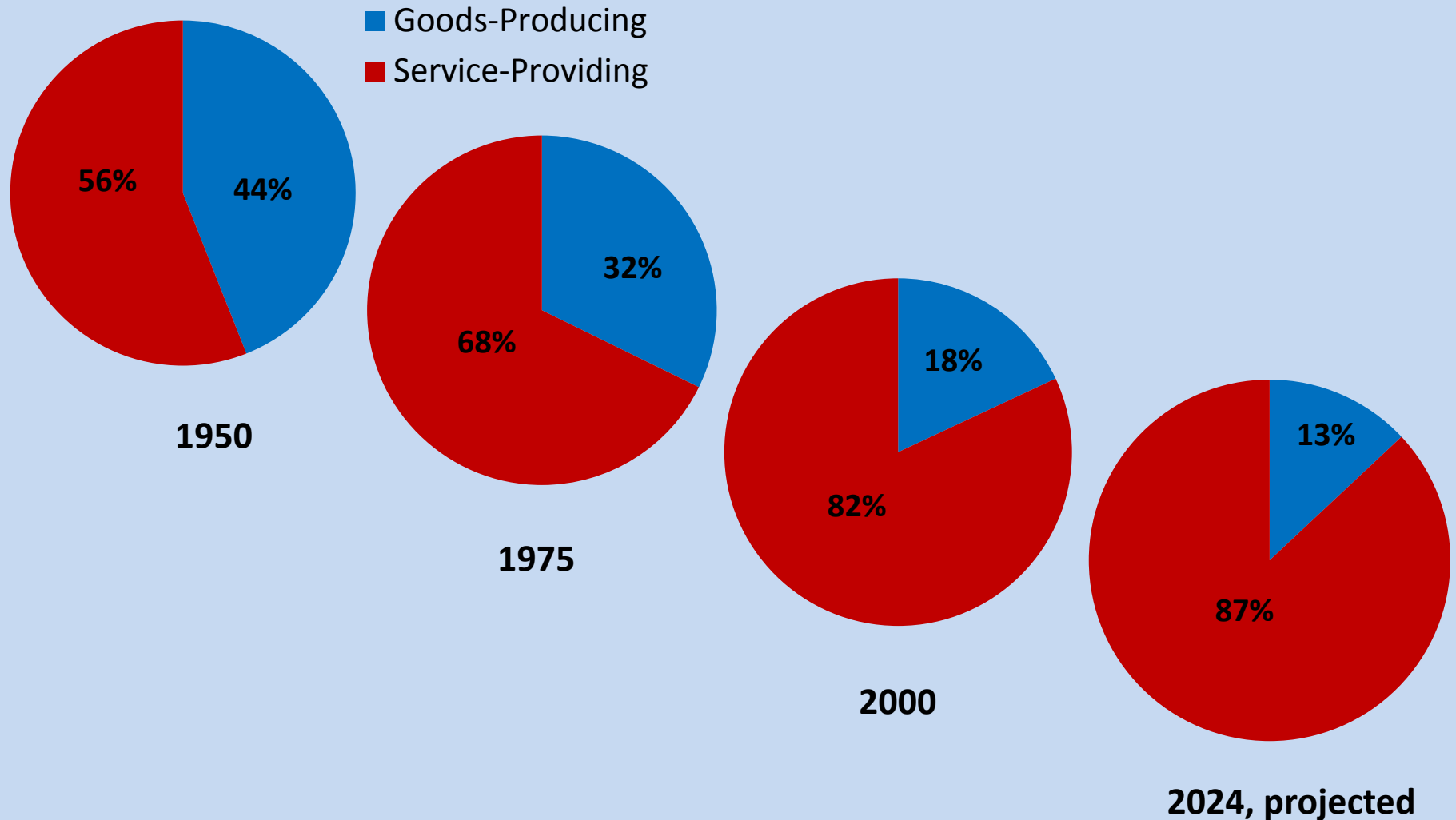


Baby boomers reaching working-age drove rapid growth from the mid-1960s through 1980s. Their exit from the workforce over the next two decades is a serious constraint to workforce, GDP, personal income, and other measures of economic growth.

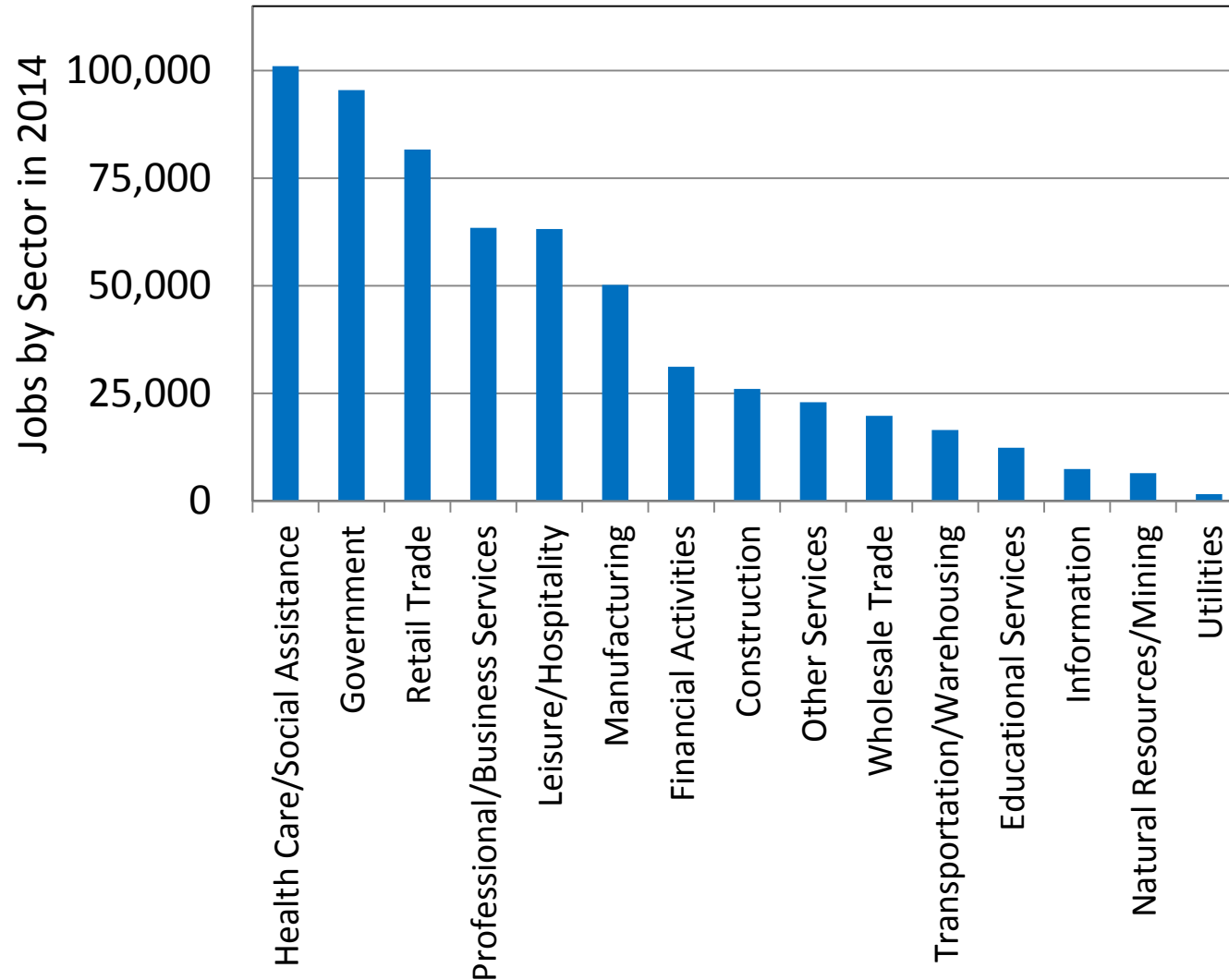
The reduction in unemployment that is expected to cause employment to rise (despite a modest decline in the labor force) between 2014 and 2024 had already occurred by the middle of 2016.

Industry Job Trends & Outlook

Employment has long been shifting from businesses that produce goods to those that provide services

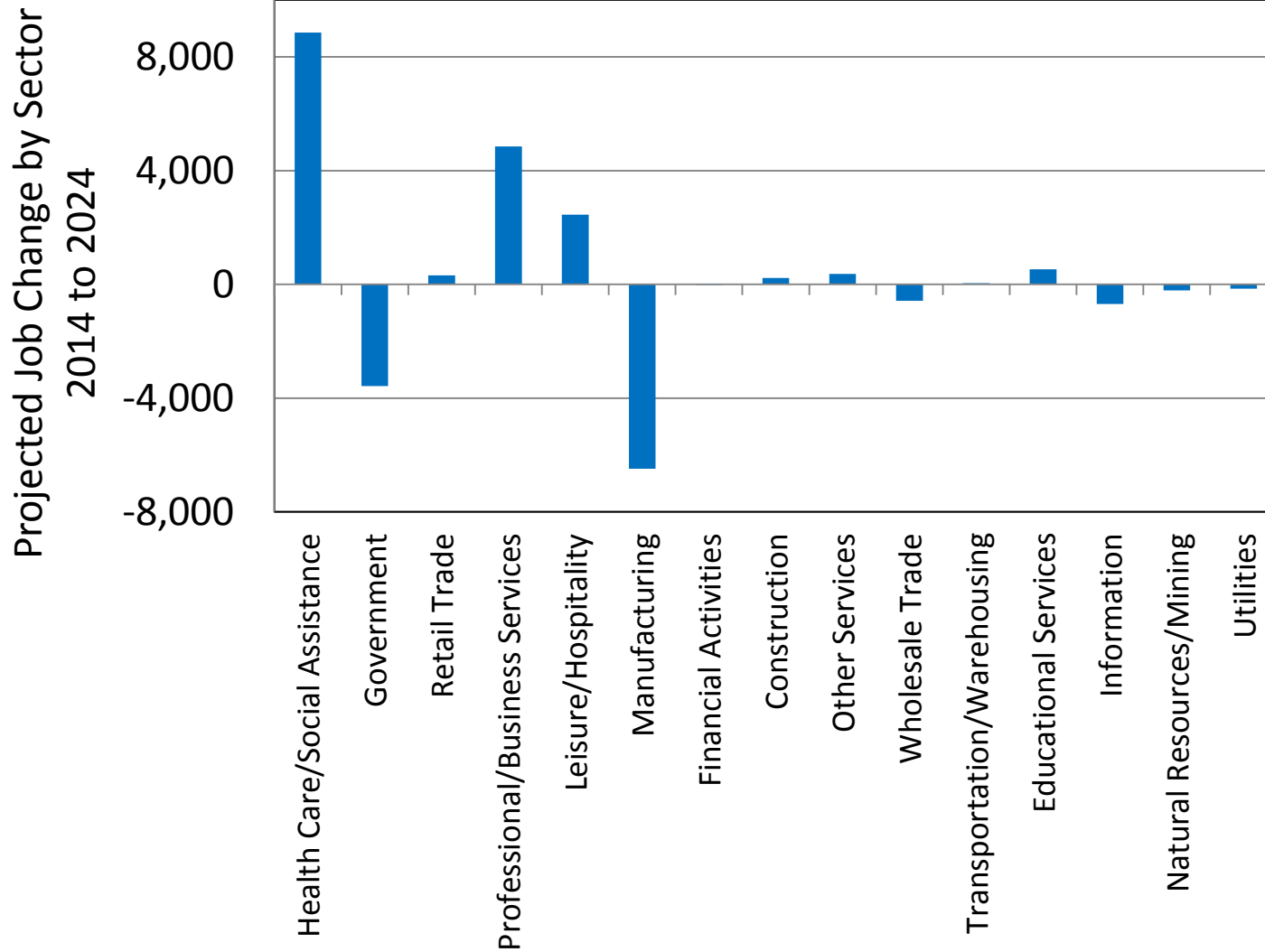


Three-quarters of jobs are in healthcare, government, retail, professional services, hospitality, or manufacturing



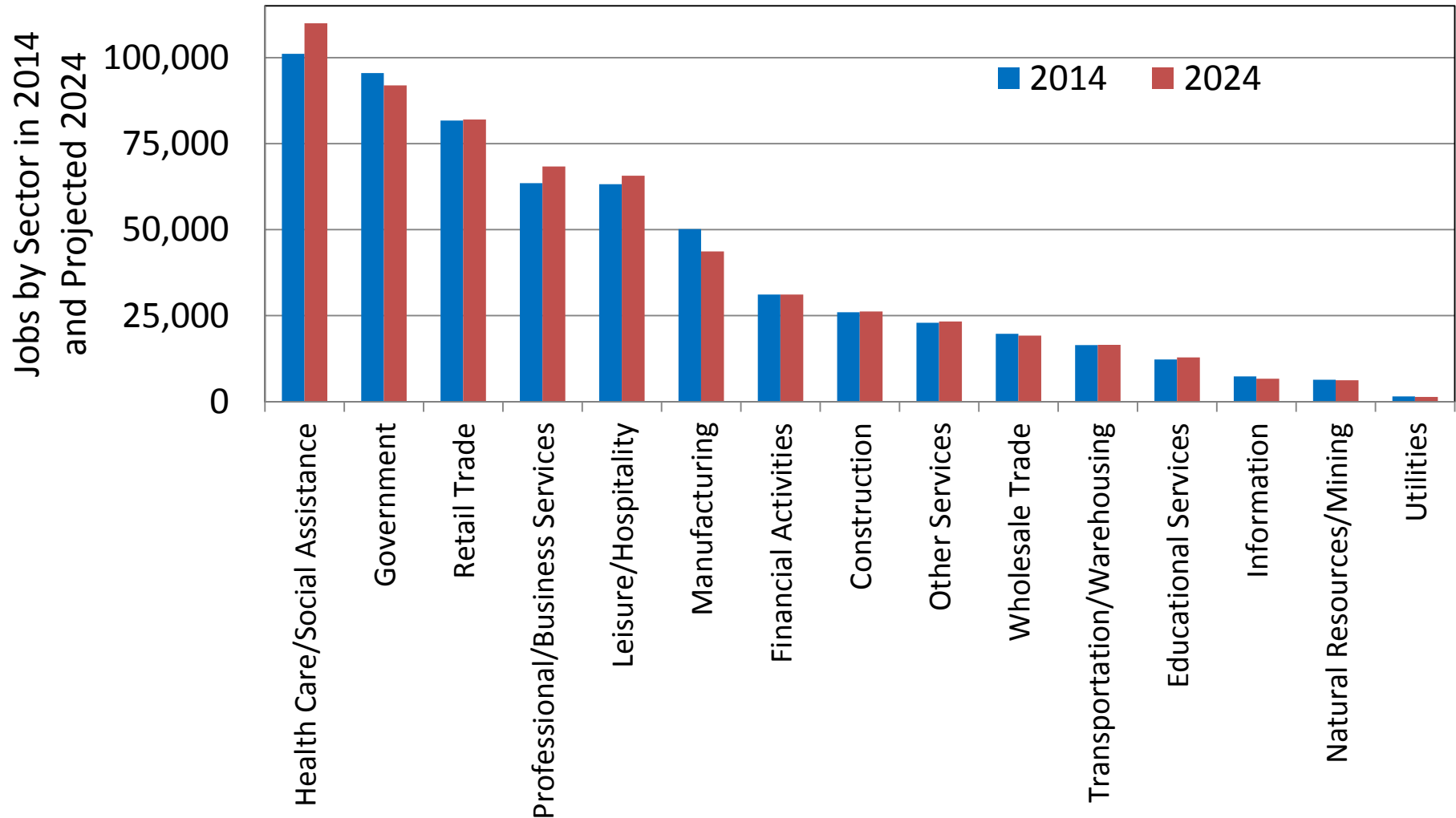
At a broad sector level, the structure of employment in Maine is similar to the nation. Healthcare and social assistance, with more than 100,000 jobs, is the largest sector. Federal, state, and local government, including public schools, the University and Community College systems, U.S. Postal Service, and Portsmouth Naval Shipyard, was second with 95,000 jobs.

Job gains are expected in three sectors, with losses in two, and little change in others



The advancing age structure of the population is a primary factor driving job gains in healthcare and losses in government, mostly in public education. The long-term downward trend in manufacturing jobs is expected to persist.

Though job losses are expected in government and manufacturing, they will remain among the largest employing sectors



Industries Projected to Gain or Lose the Largest Number of Jobs in Maine Between 2014 and 2024

Industries Expected to Gain Jobs		Industries Expected to Lose Jobs	
Ambulatory health care services	3,728	Paper manufacturing	-1,851
Administrative and support services	3,132	Transportation equipment manufacturing	-881
Hospitals	2,310	Wood product manufacturing	-685
Nursing and residential care facilities	1,942	Food manufacturing	-595
Food services and drinking places	1,785	Computer and electronic product manufacturing	-458
Professional, scientific and technical services	1,424	Merchant wholesalers, durable goods	-440
Social assistance	873	Plastics and rubber products manufacturing	-419
Educational services	530	Printing and related support activities	-407
Chemical manufacturing	414	Fabricated metal product manufacturing	-385
Motor vehicle and parts dealers	375	Publishing industries, except Internet	-362
Accommodation	344	Leather and allied product manufacturing	-297
Gasoline stations	220	Clothing and clothing accessories stores	-276
Management of companies and enterprises	219	Textile mills	-259
Securities, commodity contracts, investments	160	Merchant wholesalers, nondurable goods	-238
Amusements, gambling, and recreation	158	Forestry and logging	-208
Private households	142	Credit intermediation and related activities	-198
Construction of buildings	124	Telecommunications	-185
Building material and garden supply stores	112	Furniture and related product manufacturing	-183
Electronic markets and agents and brokers	102	Nonstore retailers	-174
Support activities for transportation	88	Textile product mills	-166
Membership associations and organizations	88	Utilities	-151
Real estate	87	Broadcasting, except Internet	-128
Performing arts and spectator sports	86	Apparel manufacturing	-116
Health and personal care stores	82	Insurance carriers and related activities	-103
Museums, historical sites, zoos, and parks	77	Furniture and home furnishings stores	-94

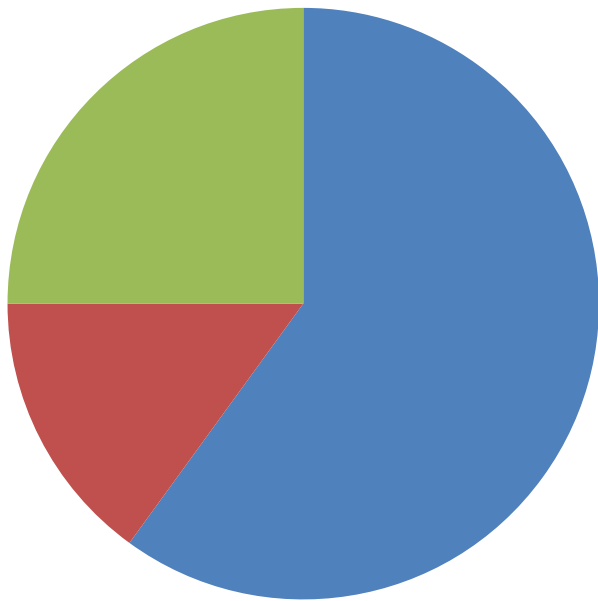
Occupational Job Trends & Outlook

Occupational Job Trends & Outlook

- 1. Broad trends*
- 2. By educational requirement*
- 3. STEM jobs*

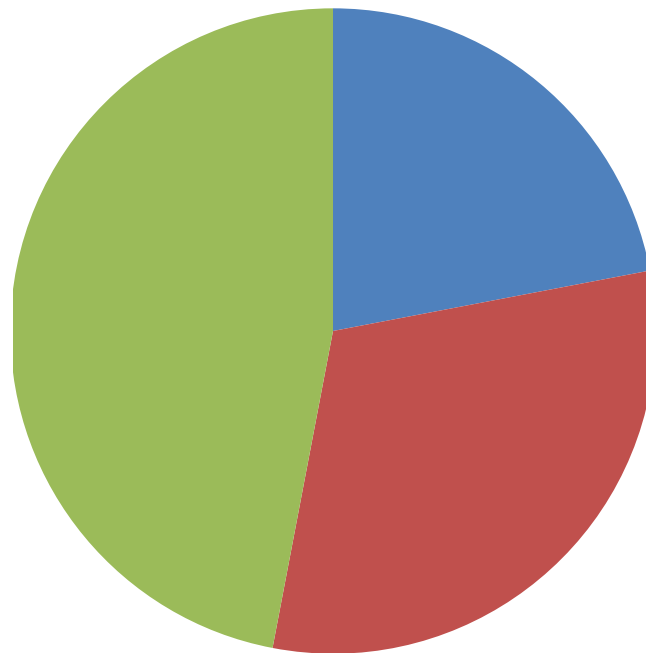
The occupational structure of employment has shifted away from blue-collar jobs

1950



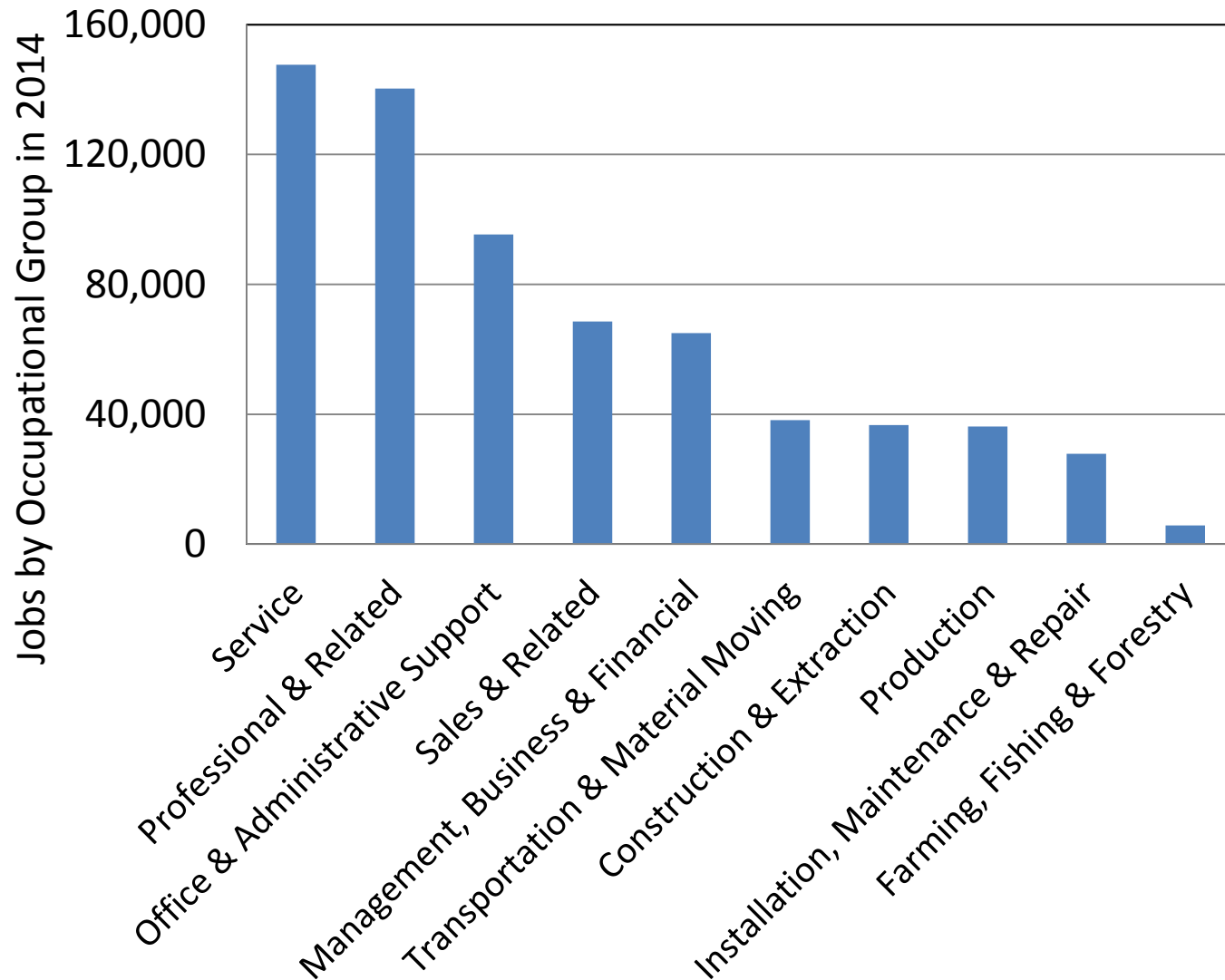
■ Blue collar
■ Mgmt, pro/tech
■ Office, sales, service

2014



As massive as the changes in employment have been across industries, the changes in the occupational structure of employment have been equally large.

Today, most jobs are in service, professional, administrative support, sales, or management occupations



The occupational structure of employment shifted due to the reallocation of jobs across industries, as well as a reallocation of functions, as technology and work-practice improvements changed how we produce goods or deliver services.

Skill Demands are Changing

- **High Skill Occupations** – Functions require analytical ability, critical thinking, problem solving, reasoning, and creativity. Most require post-secondary education.
- **Middle Skill Occupations** – Routine and repetitive tasks that tend to be procedural. Often require on the job or other forms of training.
- **Low Skill Occupations** – Physical work that cannot be (or has not yet been) automated. Limited educational requirements.

Skill Demands are Changing

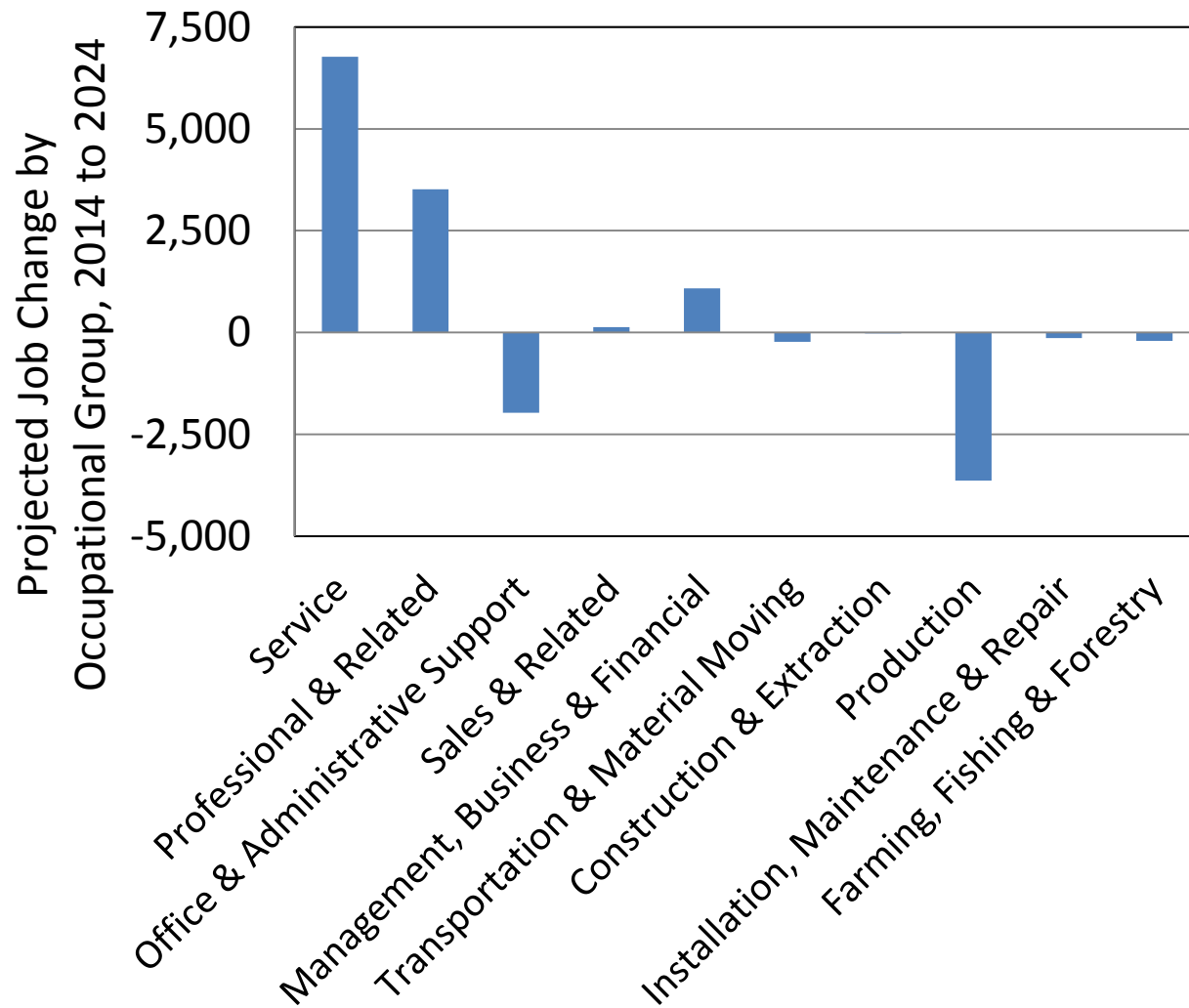
- **High Skill Occupations** – Functions require analytical ability, critical thinking, problem solving, reasoning, and creativity. Most require post-secondary education.

Many middle skill jobs being eliminated by automation

Middle Skill Occupations – Functions that tend to be procedural. Often require on the job or other forms of training.

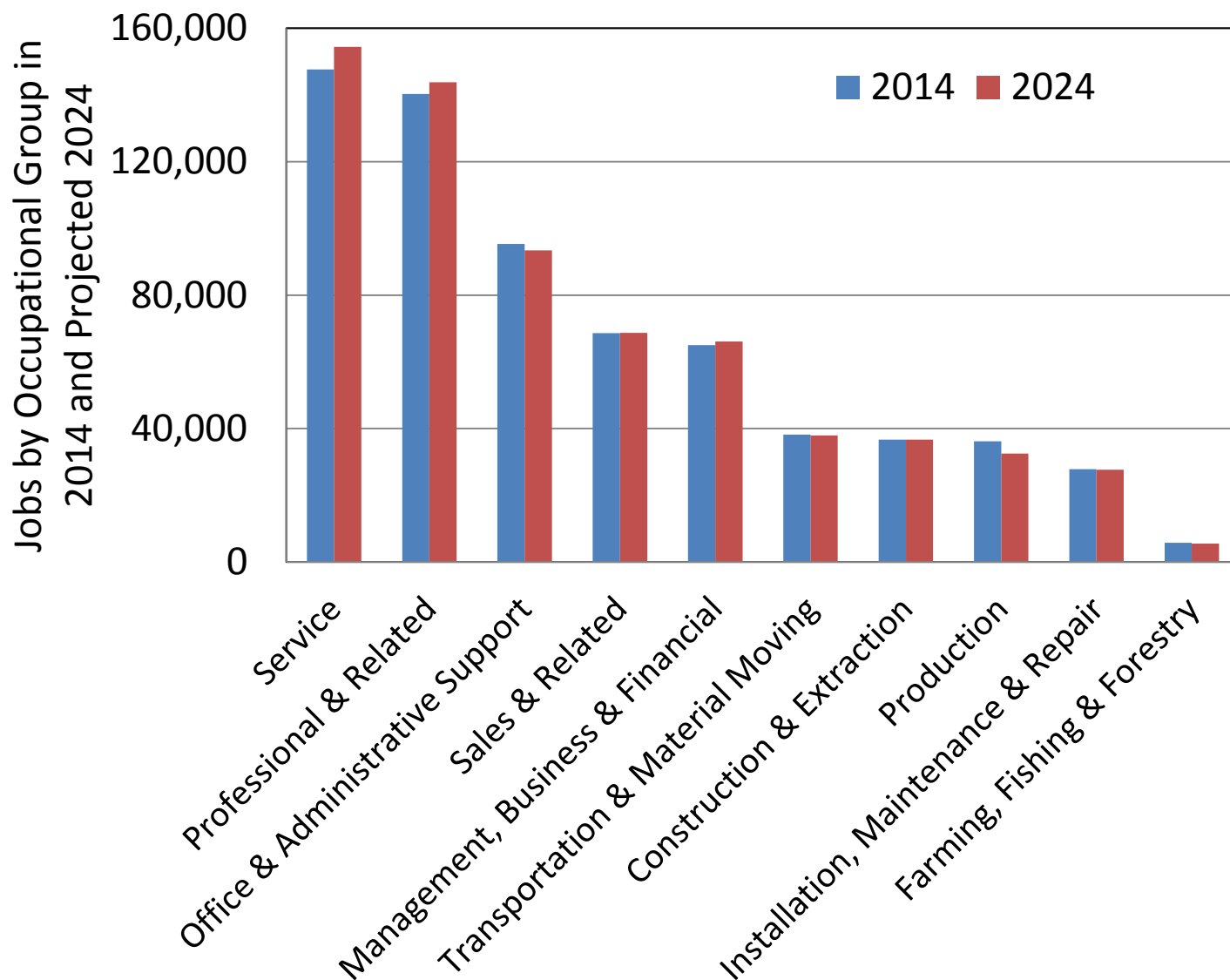
- **Low Skill Occupations** – Physical work that cannot be (or has not yet been) automated. Limited educational requirements.

Job gains are expected to be concentrated in three occupational groups with losses in two and little change in others



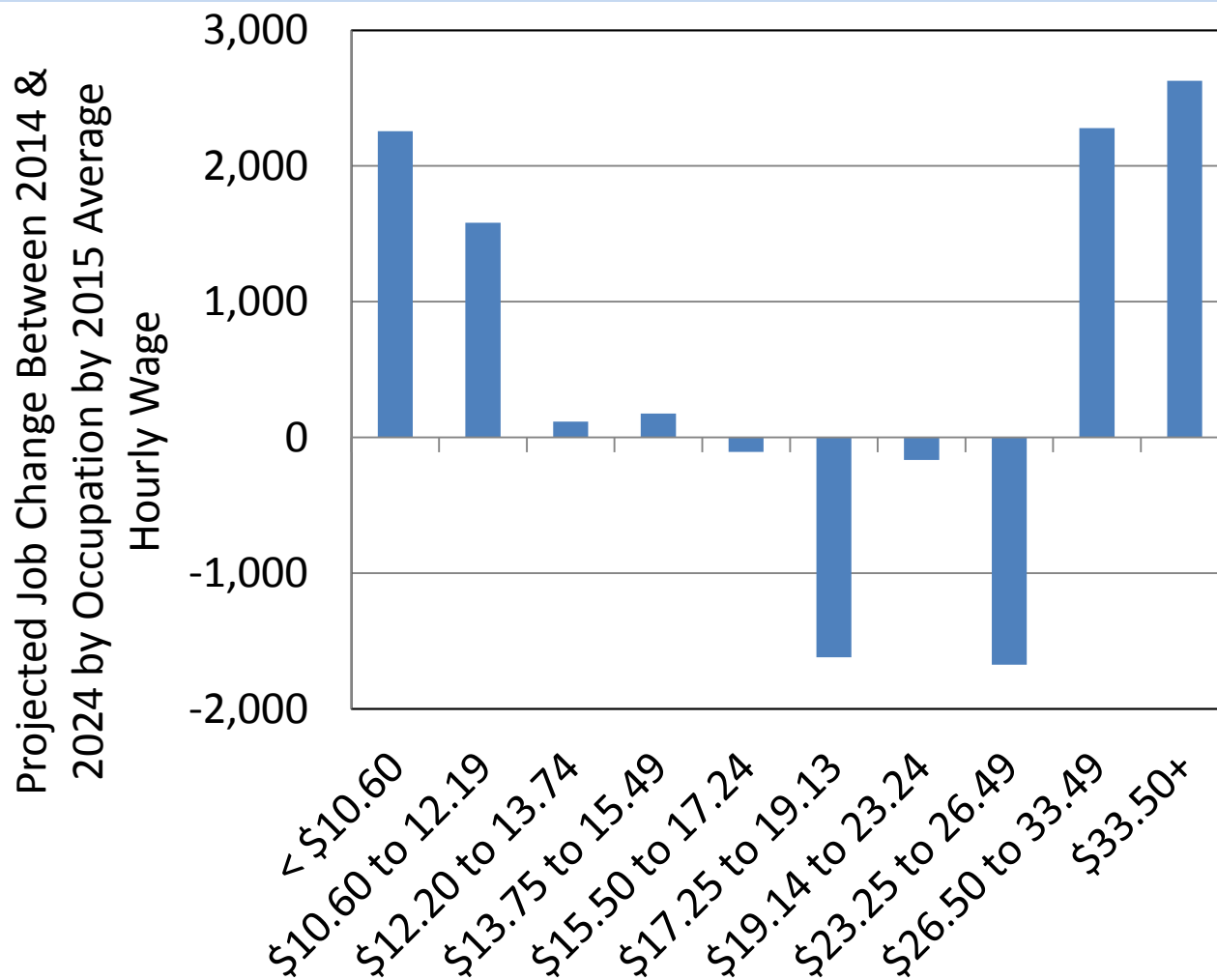
Job gains are primarily expected in professional and management occupations, which generally require post-secondary education and offer higher than average earnings, and in service occupations, which generally have limited education and skill requirements and offer lower than average pay. Job losses are primarily expected in production and administrative support occupations, which have long been the path to middle class earnings for people without a college degree.

Though stark differences in growth are expected, the structure of employment will be quite similar in 2024



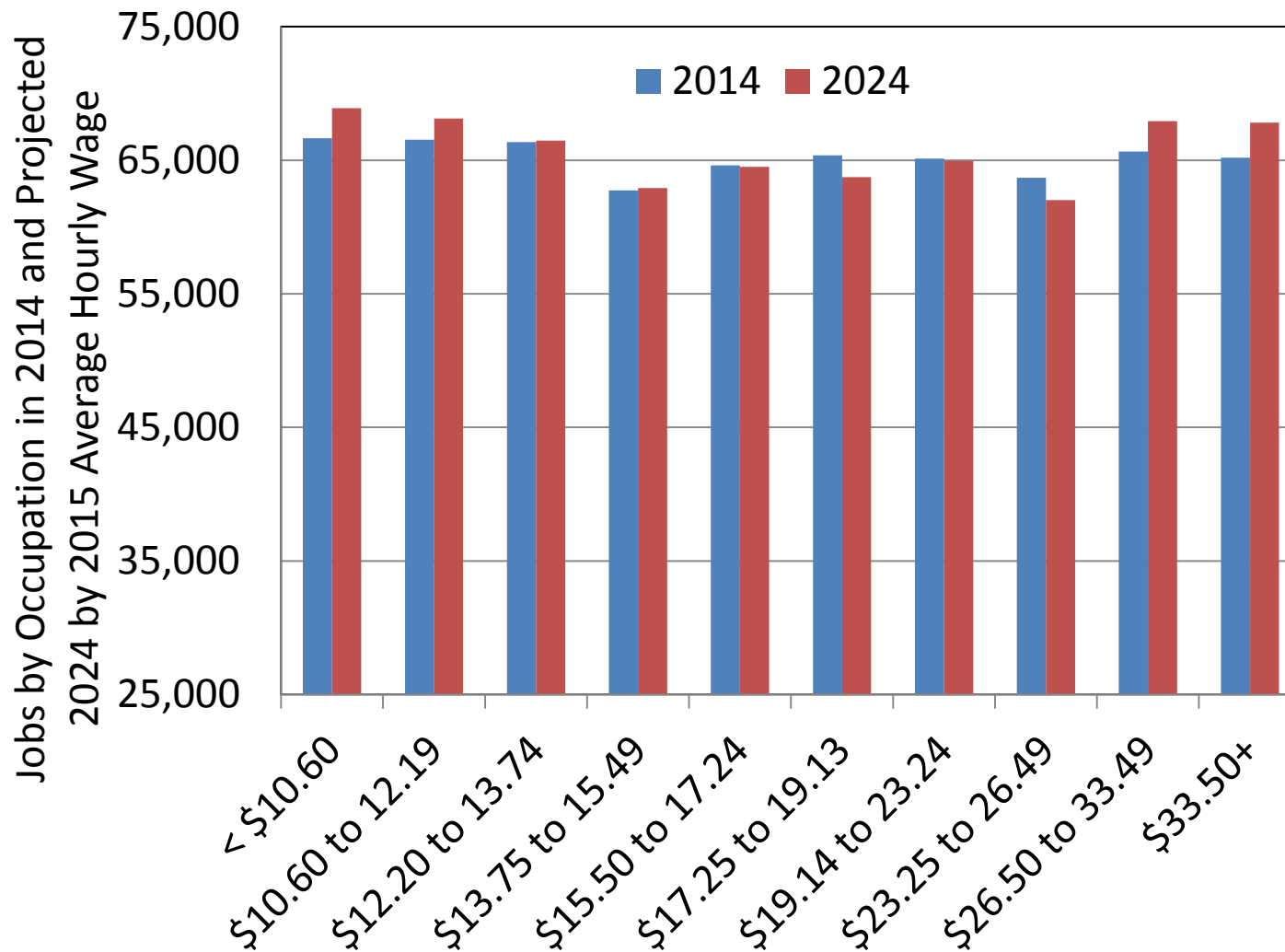
Changes in the structure of the labor market are very large over the course of an individual's worklife. Over a single decade the changes in jobs by occupation tend to be gradual.

Reflecting rising professional, managerial, and service jobs, growth is expected to be concentrated at the upper and lower ends of the earnings spectrum with little job change in the middle.



Projected net loss of jobs with average wages between \$23.25 and \$26.50 is primarily due to expected declines in teaching and postal occupations. The number of jobs in most occupations in this wage bracket are expected to rise. Projected net loss of jobs with average wages between \$17.25 and \$19.13 is primarily due to expected declines among bookkeeping & accounting clerks and shipping clerks.

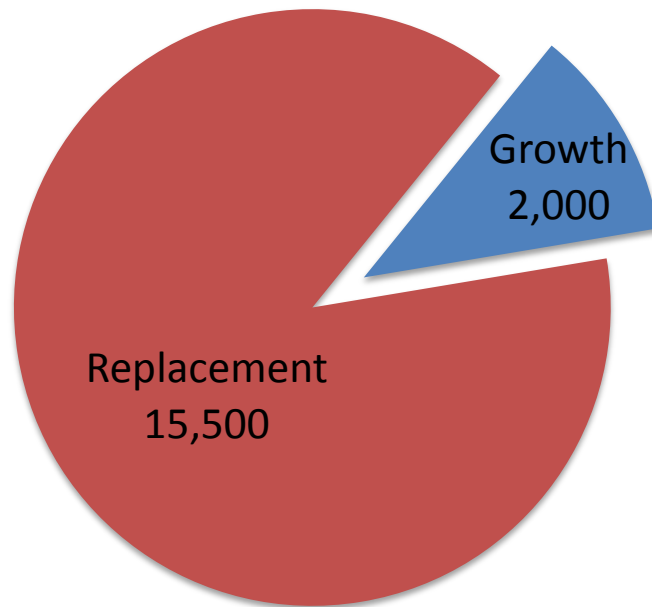
Though losses are expected in many middle earning occupations, they will continue to comprise a majority of jobs



A high share of jobs in the middle of the earnings spectrum are in administrative support, production, installation and repair, construction trades, and transportation occupations.

7 of 8 openings will be due to replacement demand

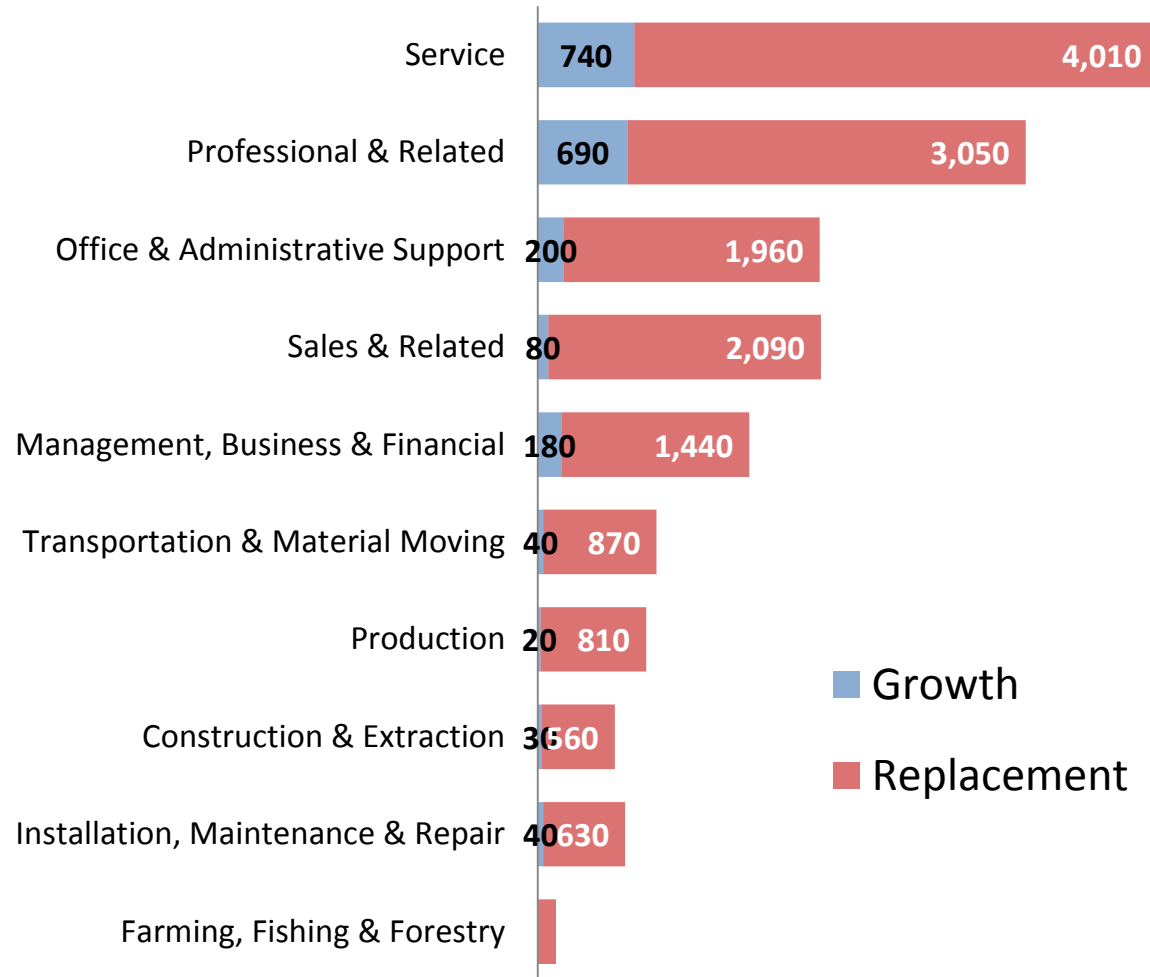
Job openings by source



The number of job openings is very high in some occupations with little or no growth, especially in lower-paying, high-turnover functions, such as retail clerks and hospitality occupations.

Alternatively, the number of openings is relatively low in some jobs with high rates of growth, especially those with low levels of employment.

Replacement openings are expected even in occupations losing jobs



Retirements and turnover create openings in all occupational groups. There will still be substantial numbers of openings in production, transportation, and installation occupations, despite the continued decline in manufacturing jobs. Similarly, the workforce in retail and food services is younger and turnover rates are high, leading to large numbers of jobs openings in those kinds of occupations.

Employment by Occupational Group in Maine in 2014 and Projected 2024

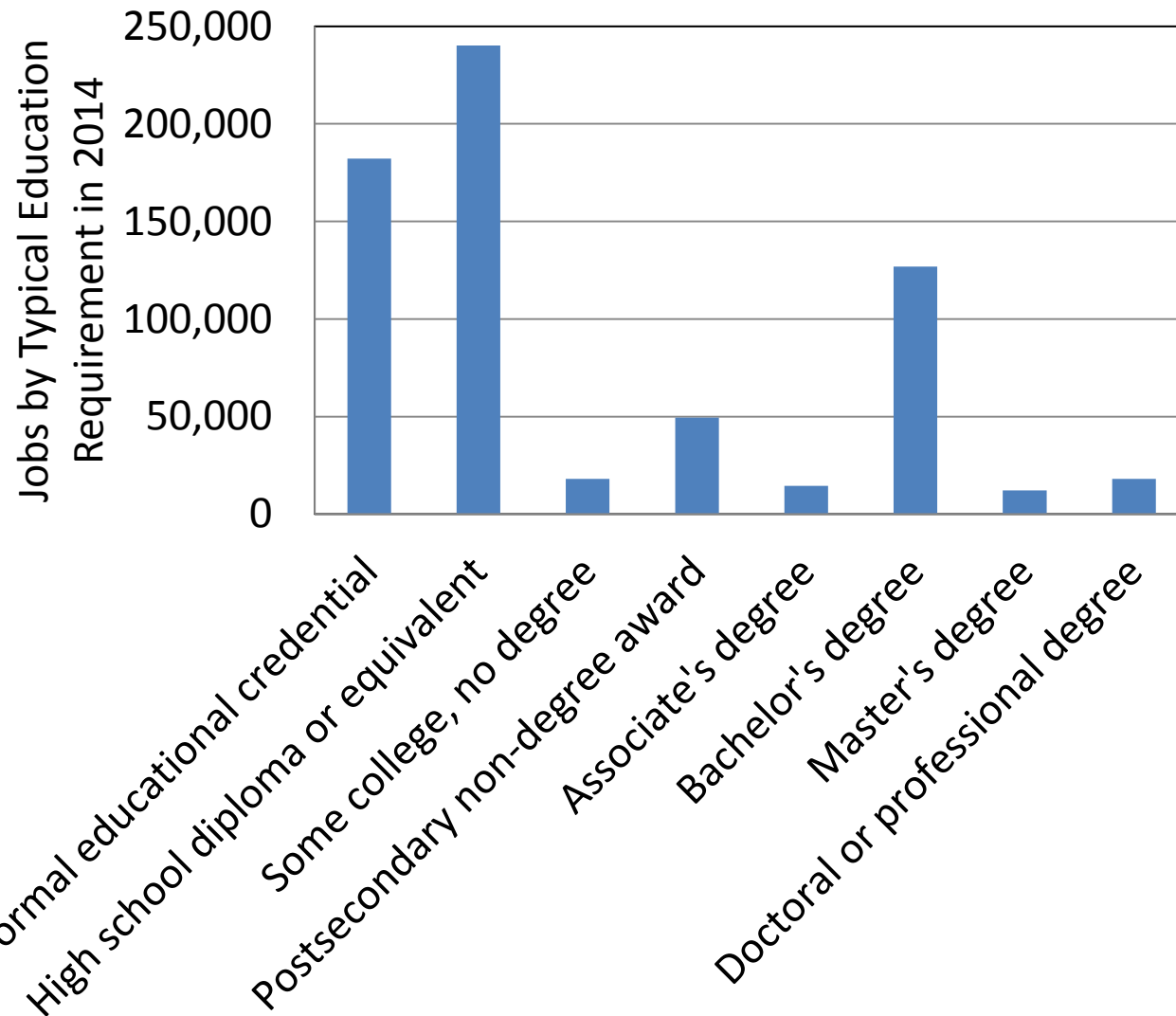
Occupational Group	Average Employment		Percent of Total Employment		Change in Employment		Average Annual Openings			2015 Average Wage
	2014	2024	2014	2024	Net	Percent	Growth	Replacement	Total	
Total	661,444	666,763	100.0%	100.0%	5,319	0.8%	2,027	15,549	17,576	\$20.80
Management, Business and Financial	64,988	66,075	9.8%	9.9%	1,087	2.7%	180	1,437	1,617	\$38.32
Management	41,509	41,799	6.3%	6.3%	290	0.7%	80	934	1,014	\$43.36
Business and Financial Operations	23,479	24,276	3.5%	3.6%	797	3.4%	100	503	603	\$29.40
Professional and Related	140,267	143,784	21.2%	21.6%	3,517	2.5%	686	3,045	3,731	\$29.41
Computer and Mathematical	10,881	11,839	1.6%	1.8%	958	8.8%	105	159	264	\$33.90
Architecture and Engineering	9,746	9,468	1.5%	1.4%	-278	-2.9%	18	231	249	\$34.76
Life, Physical, and Social Science	4,578	4,792	0.7%	0.7%	214	4.7%	23	134	157	\$28.73
Community and Social Services	14,954	15,486	2.3%	2.3%	532	3.6%	59	323	382	\$21.08
Legal	4,951	5,066	0.7%	0.8%	115	2.3%	13	83	96	\$36.91
Education, Training, and Library	40,215	38,509	6.1%	5.8%	-1,706	-4.2%	42	891	933	\$22.87
Arts, Design, Entertainment, Sports, and Media	11,656	11,209	1.8%	1.7%	-447	-3.8%	12	286	298	\$18.68
Healthcare Practitioners and Technical	43,286	47,415	6.5%	7.1%	4,129	9.5%	414	938	1,352	\$38.15
Service	147,638	154,409	22.3%	23.2%	6,771	4.6%	742	4,007	4,749	\$12.50
Healthcare Support	22,503	24,622	3.4%	3.7%	2,119	9.4%	214	485	699	\$13.57
Protective Service	11,985	12,473	1.8%	1.9%	488	4.1%	52	300	352	\$18.87
Food Preparation and Serving Related	56,101	57,835	8.5%	8.7%	1,734	3.1%	232	2,099	2,331	\$10.90
Building and Grounds Cleaning and Maintenance	26,557	27,341	4.0%	4.1%	784	3.0%	78	537	615	\$13.28
Personal Care and Service	30,492	32,138	4.6%	4.8%	1,646	5.4%	166	586	752	\$11.47
Sales and Related	68,565	68,699	10.4%	10.3%	134	0.2%	80	2,094	2,174	\$15.46
Office and Administrative Support	95,344	93,376	14.4%	14.0%	-1,968	-2.1%	199	1,960	2,159	\$16.37
Farming, Fishing, and Forestry	5,781	5,580	0.9%	0.8%	-201	-3.5%	2	142	144	\$16.53
Construction and Extraction	36,697	36,675	5.5%	5.5%	-22	-0.1%	34	557	591	\$19.46
Installation, Maintenance, and Repair	27,825	27,690	4.2%	4.2%	-135	-0.5%	44	626	670	\$21.42
Production	36,177	32,543	5.5%	4.9%	-3,634	-10.0%	19	811	830	\$17.78
Transportation and Material Moving	38,162	37,932	5.8%	5.7%	-230	-0.6%	38	868	906	\$16.09

Average wages are for wage and salary workers and do not include the self-employed. The average by occupational group is as estimate calculated using 2015 wages and 2014 employment.

Occupational Job Trends & Outlook

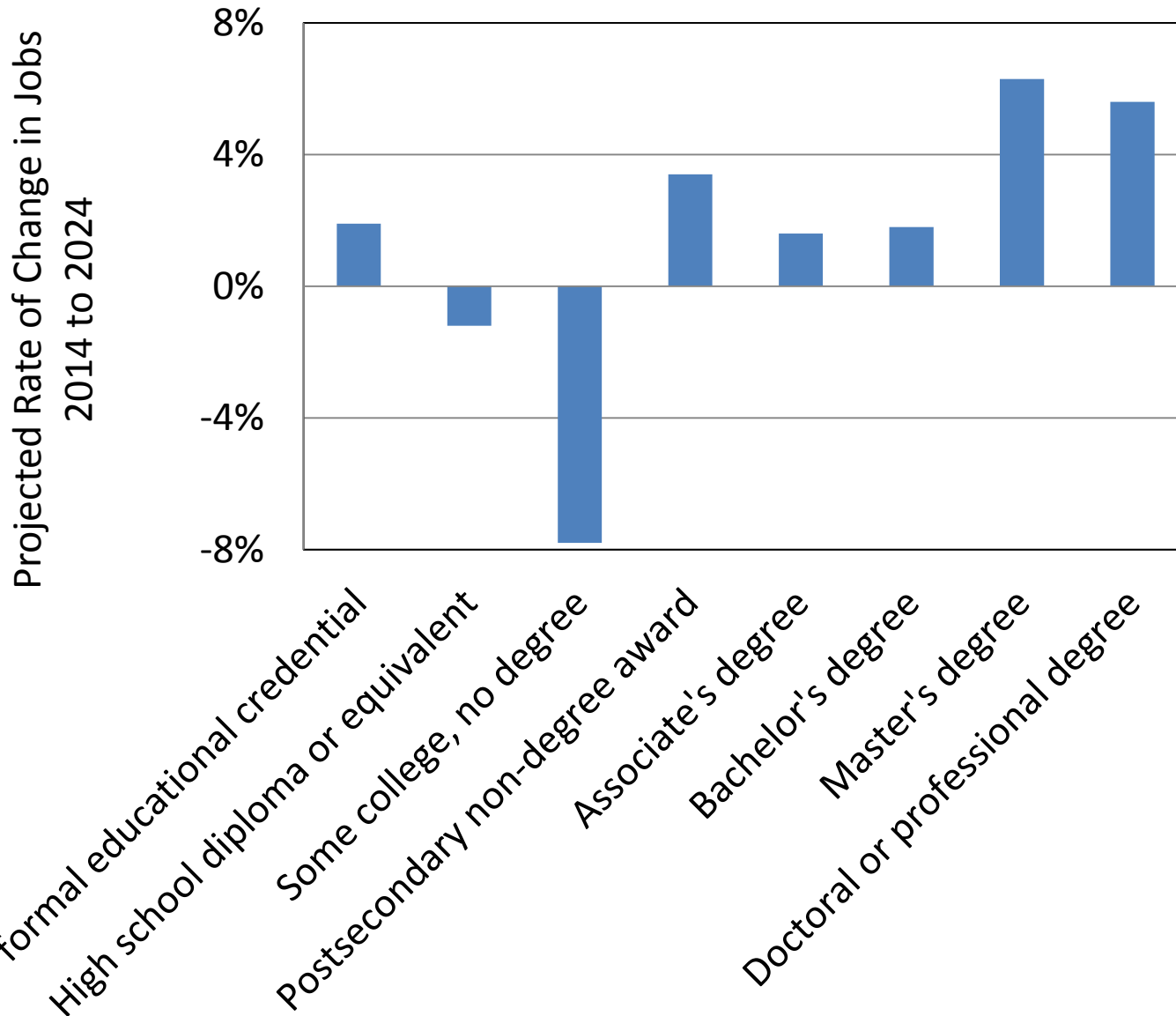
- 1. Broad trends*
- 2. By educational requirement*
- 3. STEM jobs*

In 2014 most jobs were in occupations that do not require more than high school education



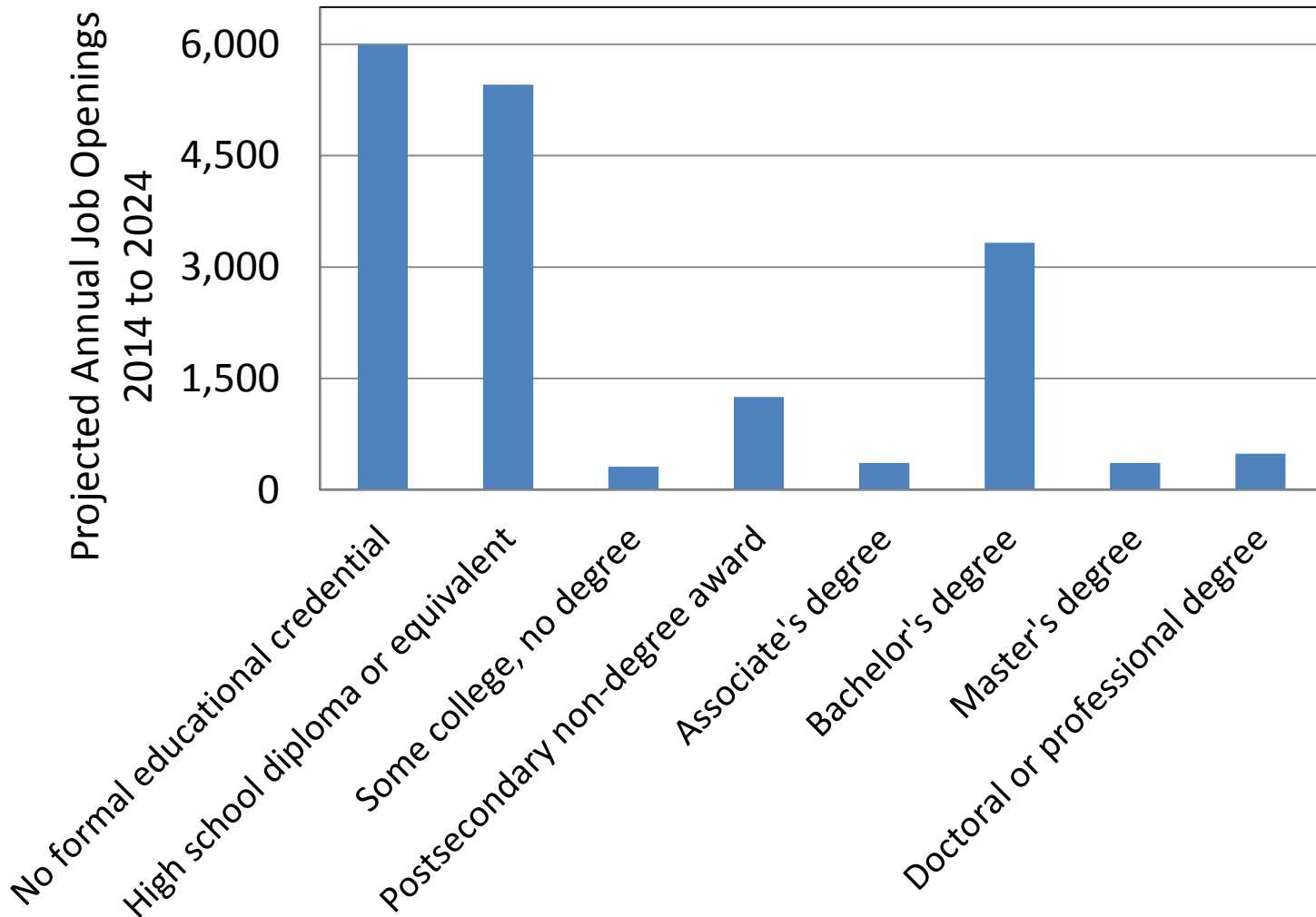
In 2014, nearly 64% of jobs were in occupations that typically require a high school diploma or no formal education credential; 26% required an Associate's degree or higher; 24% required a Bachelor's degree or higher; 5% required a Master's degree or higher.

The fastest rate of job growth is expected in occupations with the highest education requirements



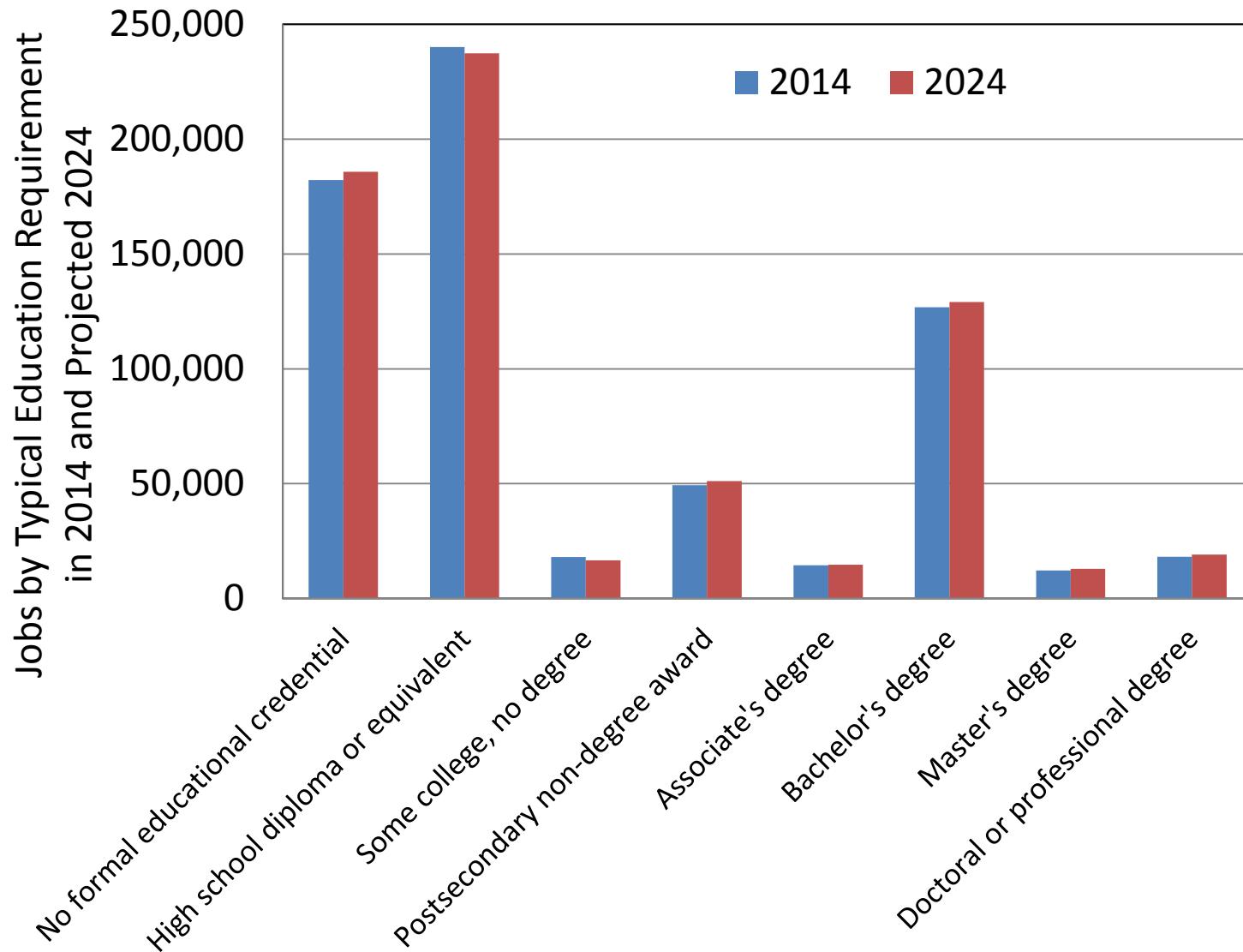
The fastest rate of job growth is expected in human capital-intensive occupations that typically require a post-secondary award or degree; the fastest rate of job loss is expected in labor-intensive occupations that do not require any kind of post-secondary award or degree.

88% of job openings will be for replacement needs, not growth; two-thirds of openings are expected in occupations that require a high school diploma or less



Growth is the source of just 12% of annual job openings. Most job openings will stem from the need to replace the large numbers of baby boomers who will be retiring.

In 2024 most jobs are expected to continue to be in occupations that do not require more than high school



The faster growth of jobs in occupations that require a post-secondary award or degree will increase their share from 33% to 34% of jobs.

Occupational Employment by Educational Requirement in Maine in 2014 and Projected 2024

Educational Requirement	Average Employment		Percent of Total Employment		Change in Employment		Average Annual Openings			2015 Average Wage
	2014	2024	2014	2024	Net	Percent	Growth	Replacement	Total	
<i>Total</i>	<i>661,444</i>	<i>666,763</i>	<i>100.0%</i>	<i>100.0%</i>	<i>5,319</i>	<i>0.8%</i>	<i>2,027</i>	<i>15,549</i>	<i>17,576</i>	<i>\$20.80</i>
No formal educational credential	182,269	185,802	27.6%	27.9%	3,533	1.9%	570	5,422	5,992	\$11.84
High school diploma or equivalent	240,177	237,385	36.3%	35.6%	-2,792	-1.2%	468	4,986	5,454	\$18.72
Some college, no degree	18,011	16,602	2.7%	2.5%	-1,409	-7.8%	15	294	309	\$17.26
Postsecondary non-degree award	49,391	51,070	7.5%	7.7%	1,679	3.4%	202	1,047	1,249	\$16.88
Associate's degree	14,477	14,701	2.2%	2.2%	224	1.6%	70	292	362	\$25.11
Bachelor's degree	126,832	129,123	19.2%	19.4%	2,291	1.8%	494	2,833	3,327	\$32.37
Master's degree	12,154	12,925	1.8%	1.9%	771	6.3%	93	268	361	\$33.43
Doctoral or professional degree	18,133	19,155	2.7%	2.9%	1,022	5.6%	100	386	486	\$60.81

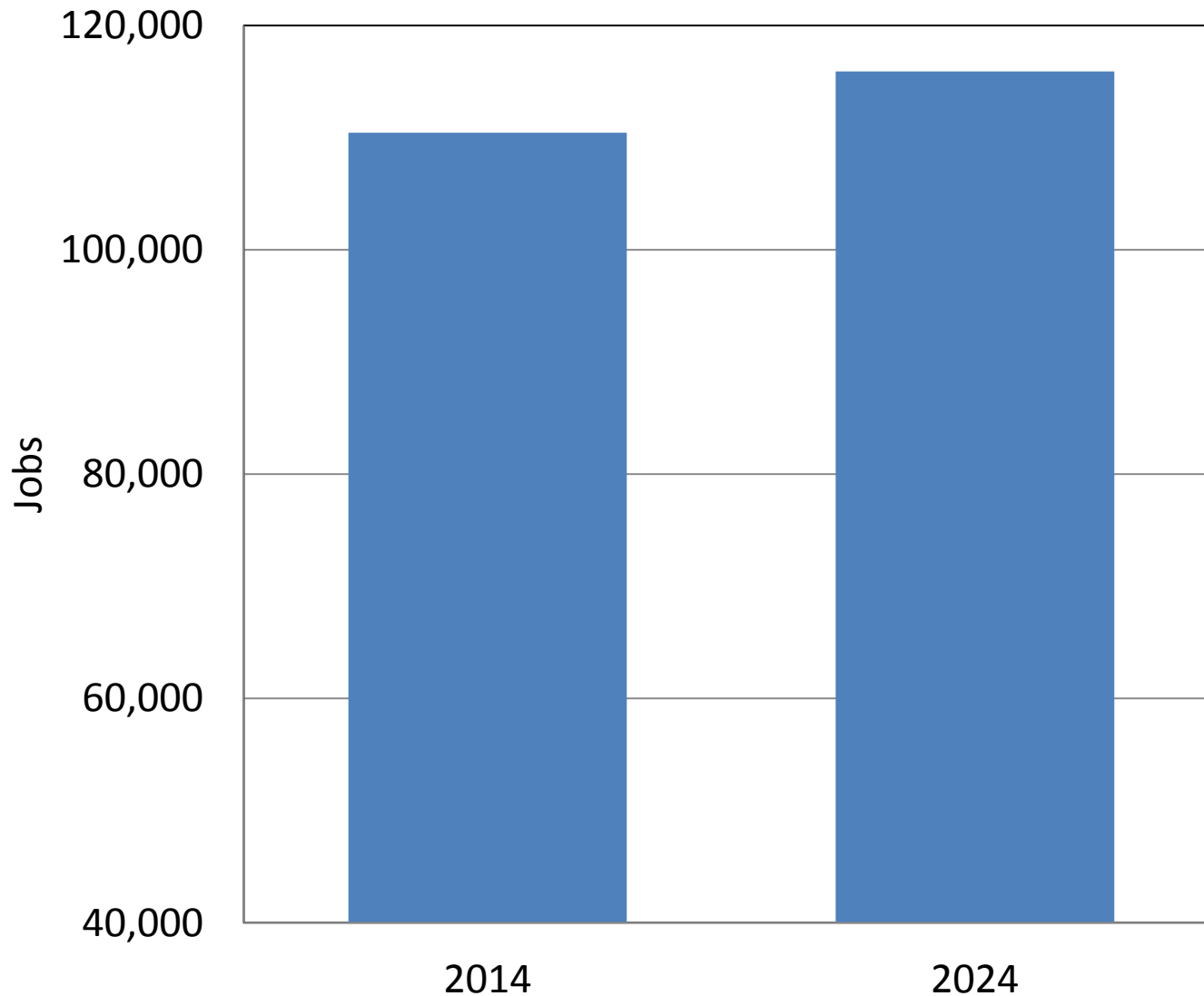
Occupational Job Trends & Outlook

- 1. Broad trends*
- 2. By educational requirement*
- 3. STEM jobs*

STEM occupations

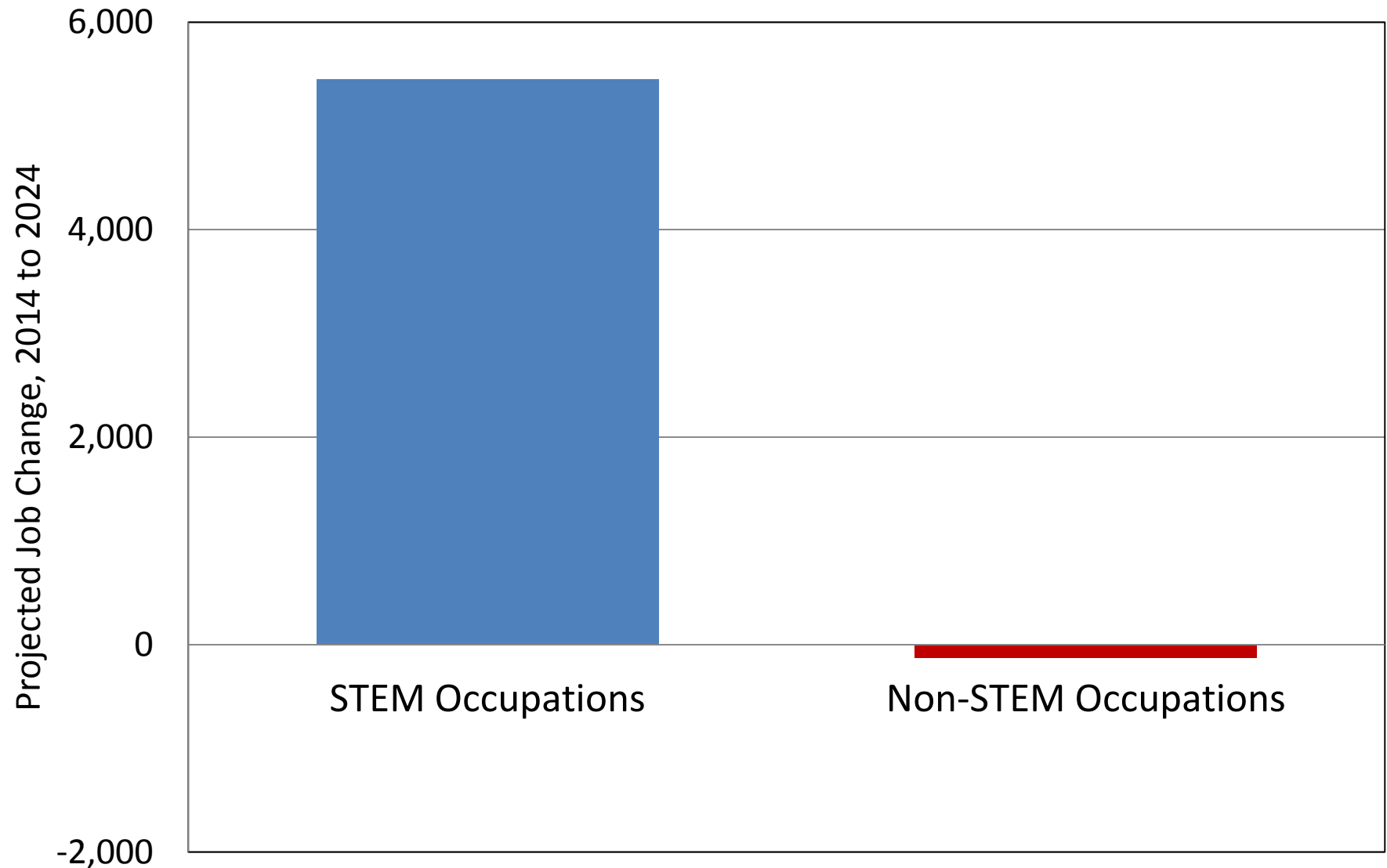
- The U.S. Bureau of Labor Statistics designates 184 occupations as STEM
- The O*Net Consortium designates 167 occupations as STEM
- We use a combined list, totaling 197 occupations
- STEM occupations are not a homogeneous group; education and skill requirements, wage levels, and job outlook differ greatly

Jobs in STEM occupations are expected to increase by about 5,400 to 115,900 in 2024

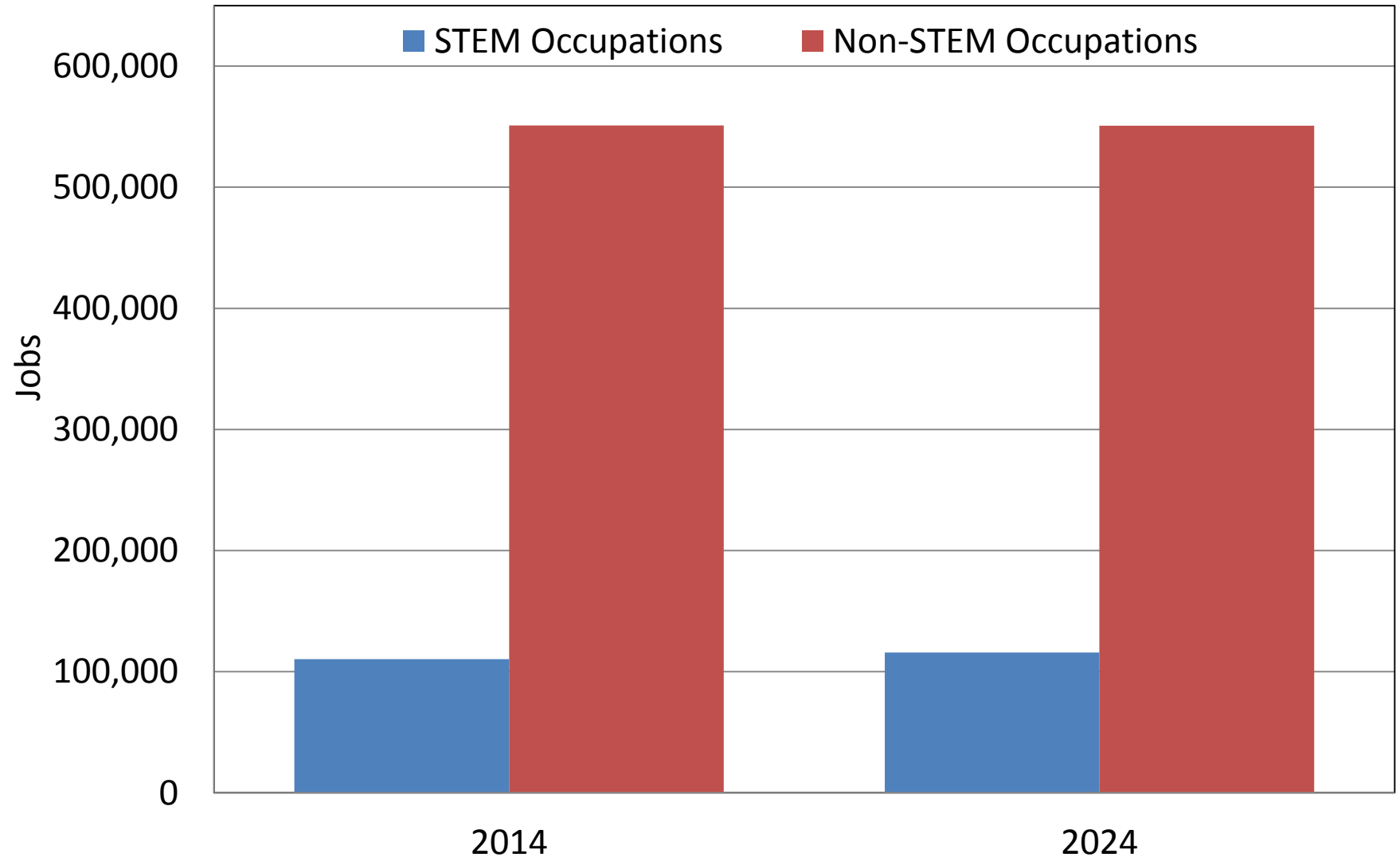


Of 197 STEM occupations, jobs in 120 are expected increase at a faster rate than the average, but jobs in 77 occupations are projected to increase at a rate below the average or to lose jobs.

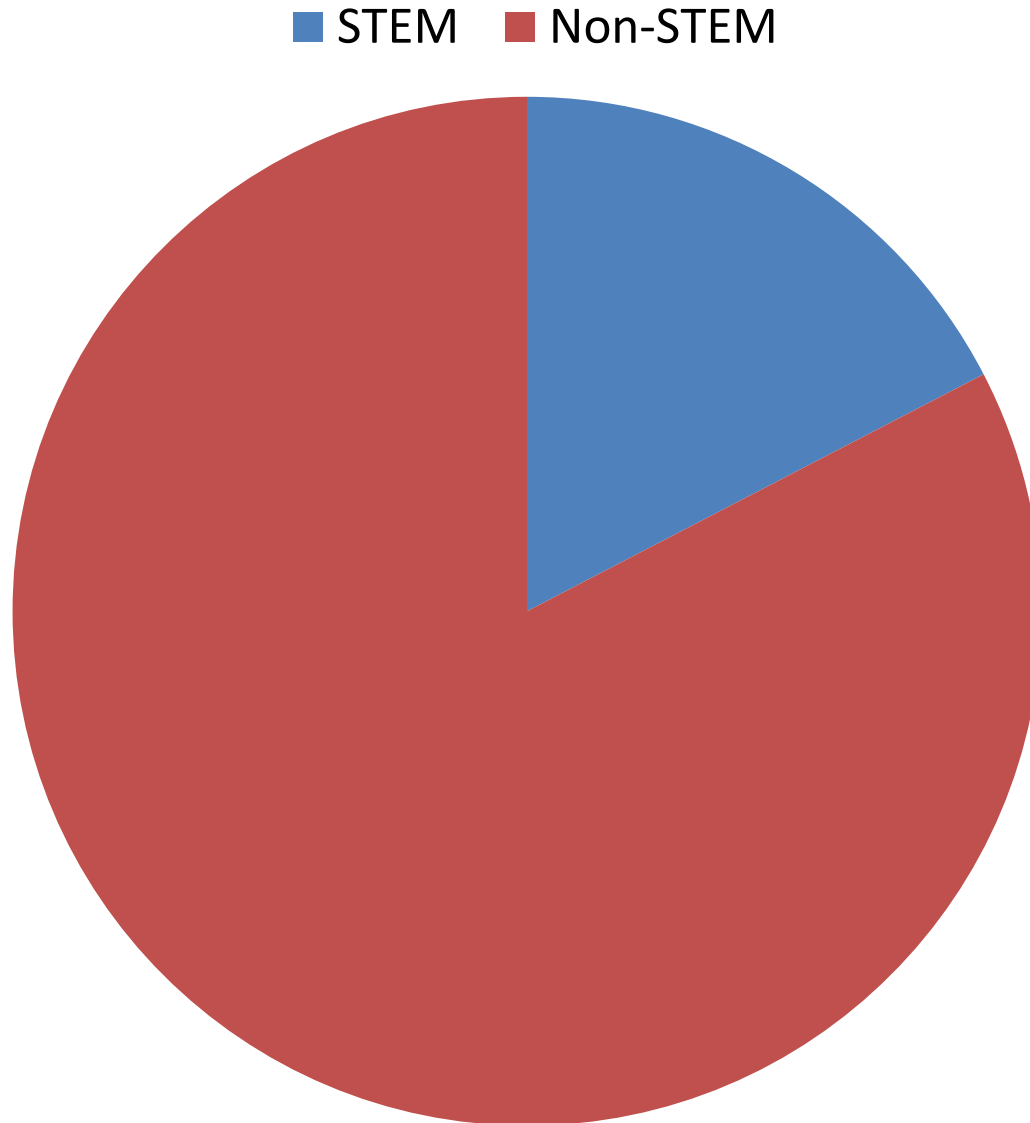
In contrast, the number of jobs in non-STEM occupations is not expected to change much



And the share of jobs in STEM occupations is expected to rise slightly, from 16.7% to 17.4% of all jobs

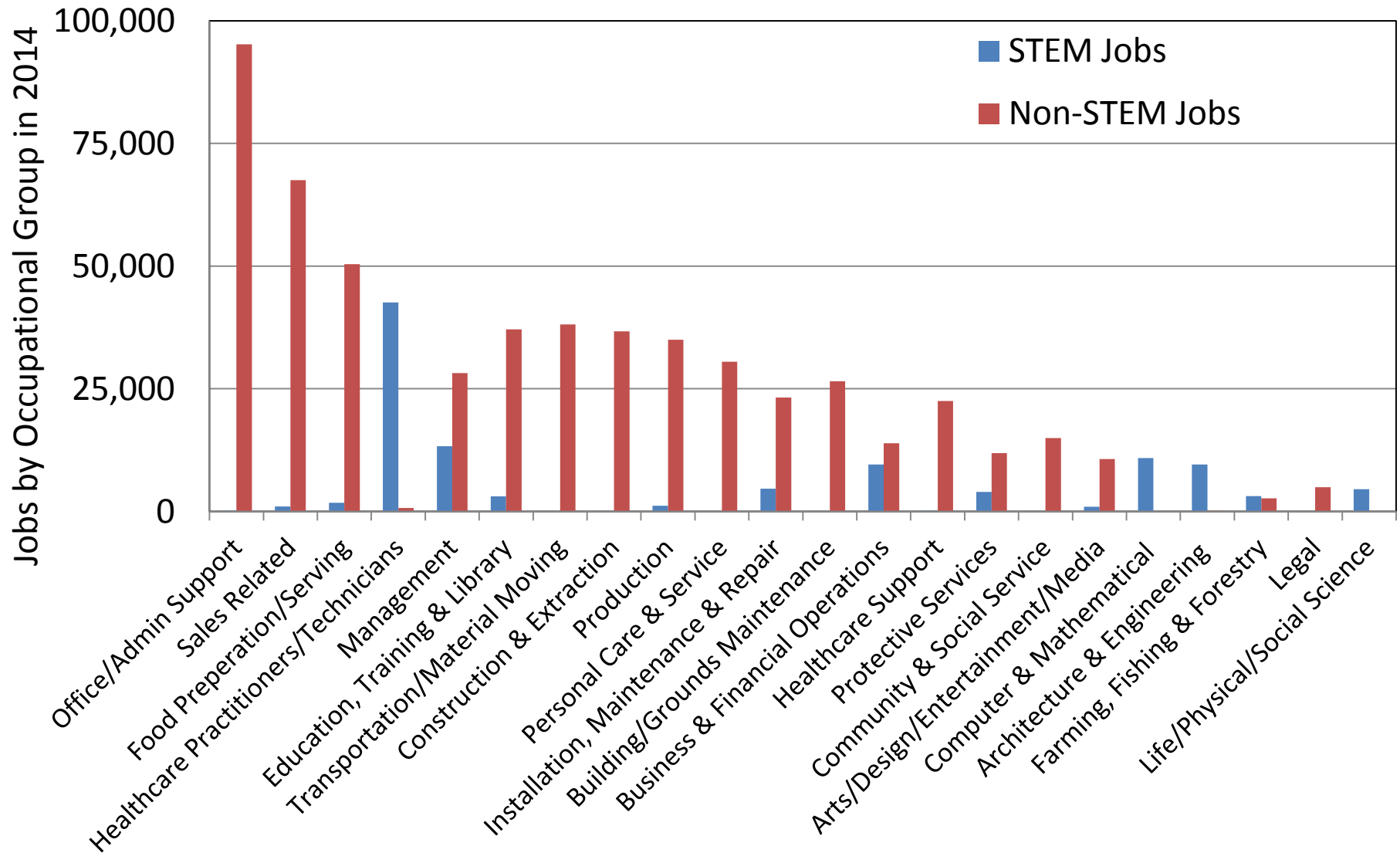


17% of job openings are expected in STEM occupations



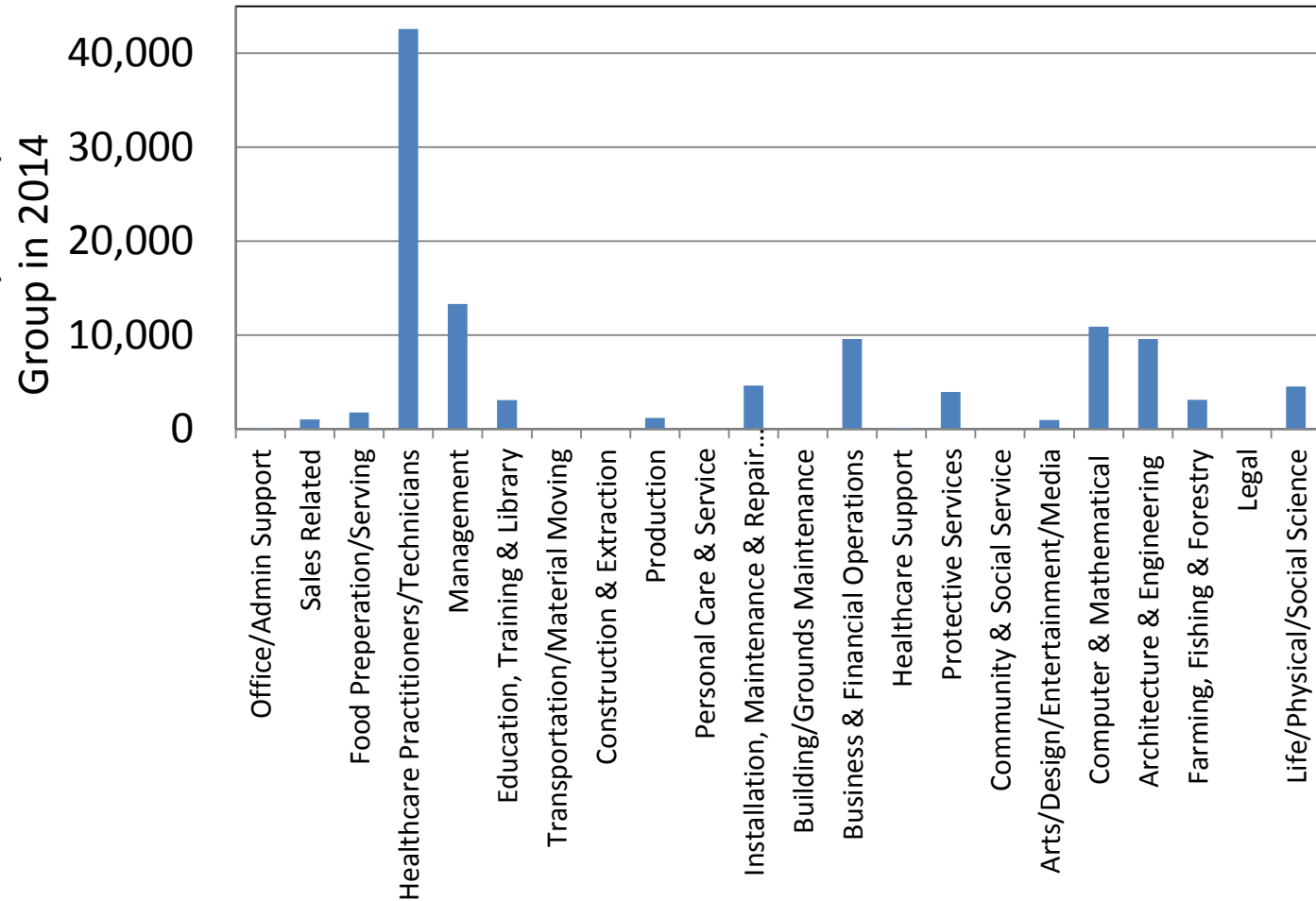
In STEM occupations, 22% of openings are expected from growth between 2014 and 2024; in non-STEM occupations, just 9% of openings are expected to be due to growth.

STEM jobs are found in 15 of 22 broad occupational groups; the largest share are healthcare practitioners & technicians



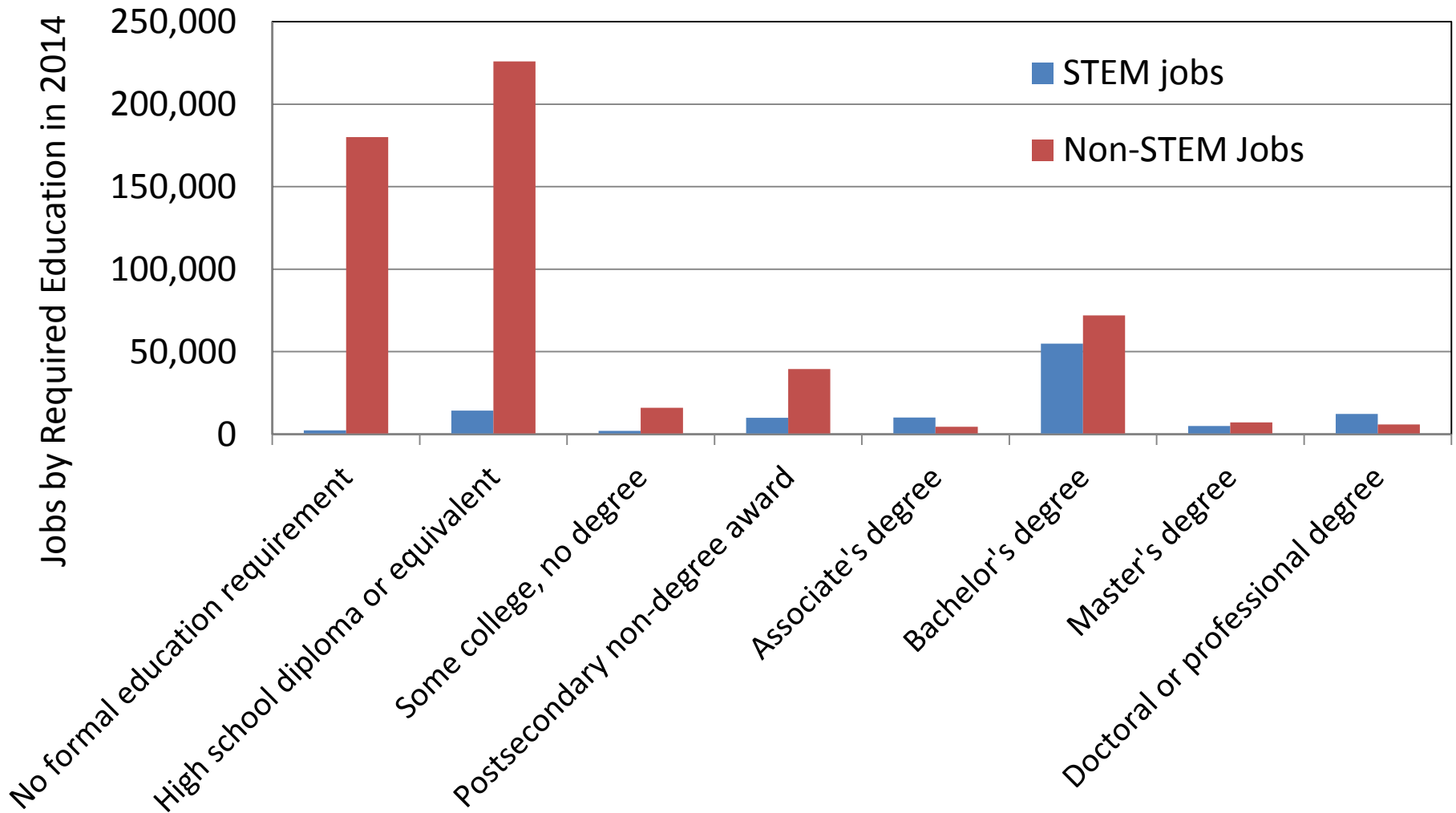
**39% of STEM jobs are in health practitioner/technician,
12% in management, 10% in computer/mathematics,
9% in business/finance, and 9% in
architecture/engineering occupations**

STEM Jobs by Occupational
Group in 2014

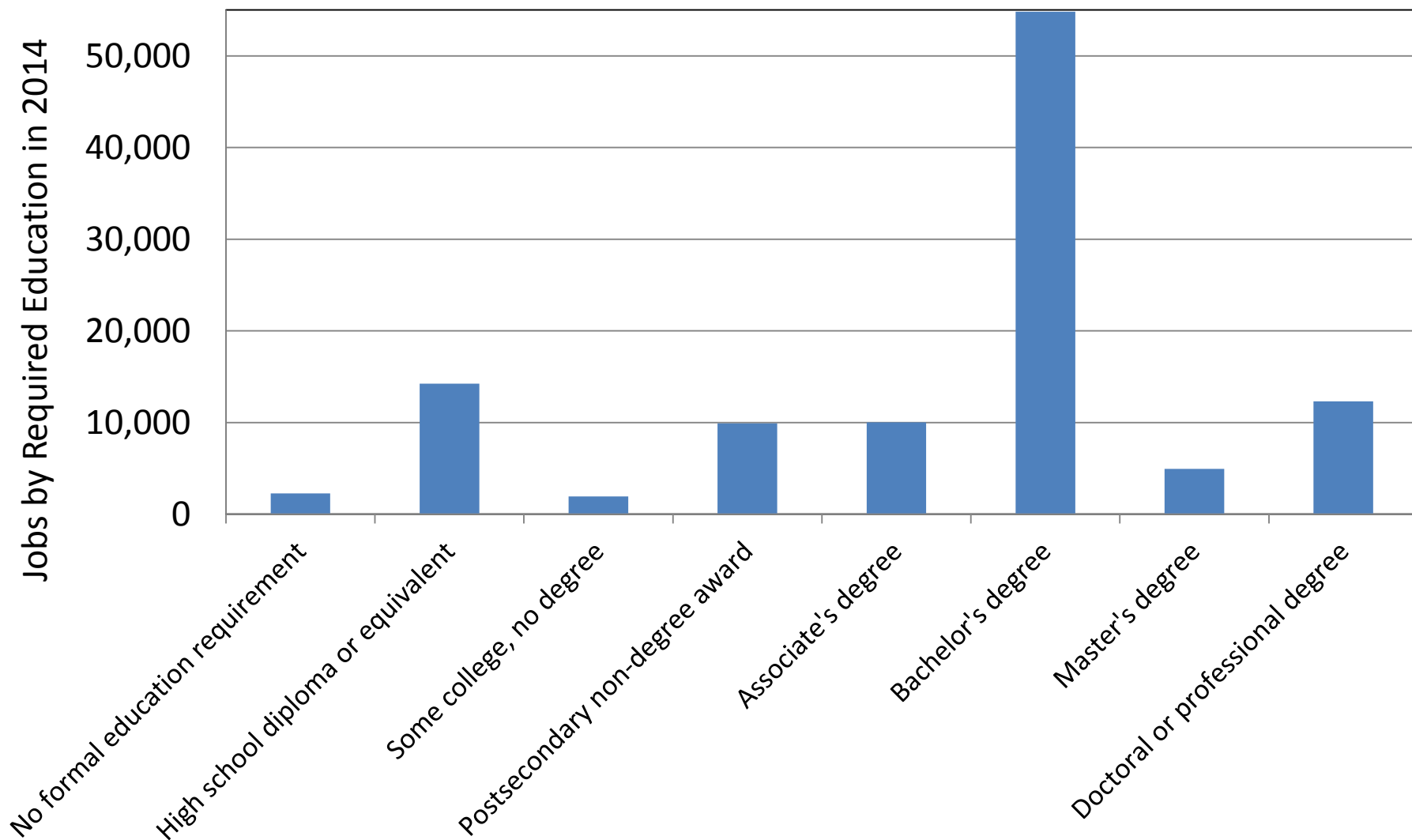


STEM occupations are not a homogeneous group; education and skill requirements, wage levels, and job outlook differ greatly.

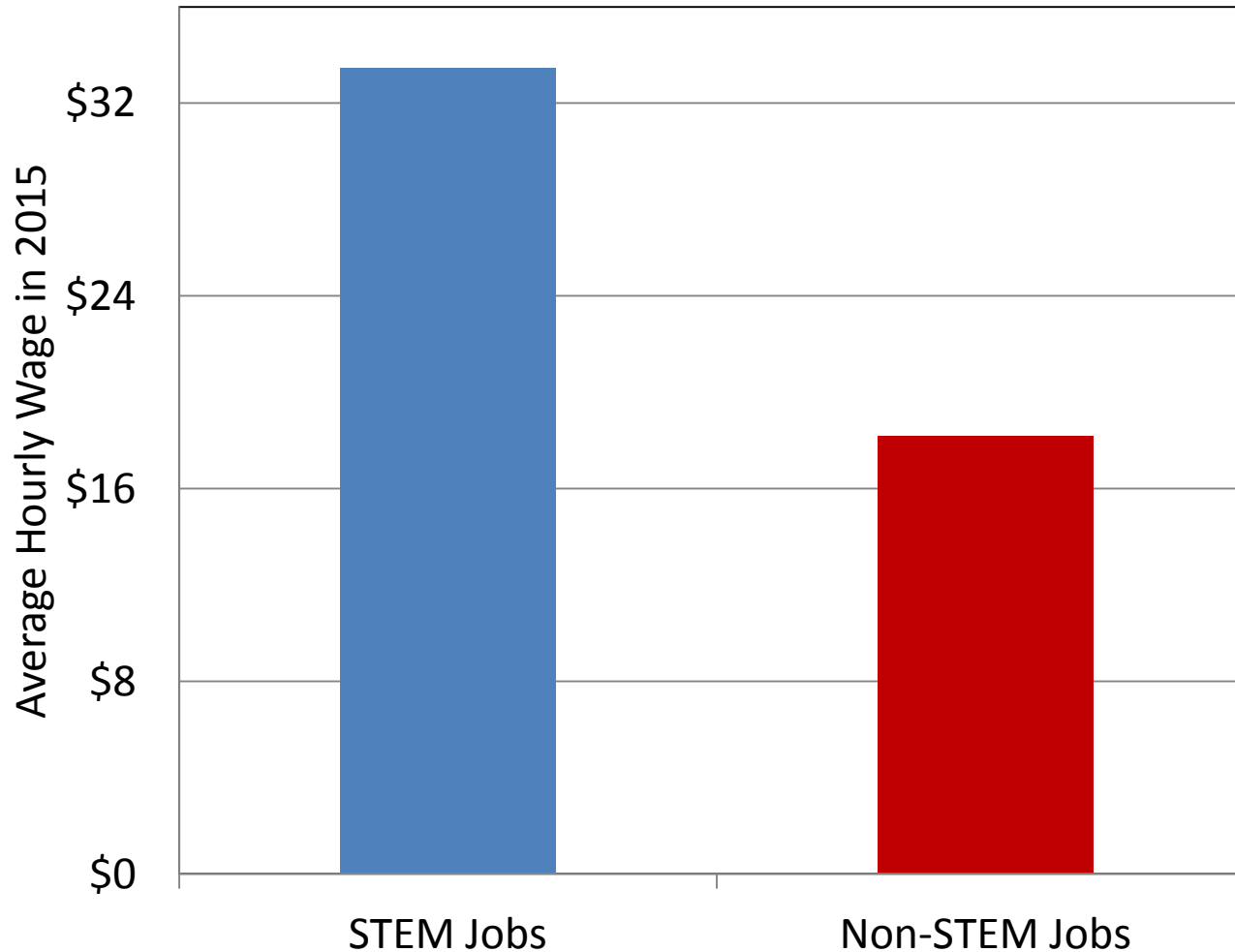
There are a wide range of education requirements among STEM occupations, though 75% require an associate's degree or higher



About half of jobs in STEM occupations require a Bachelor's degree, 15% require an advanced degree, and nearly 1/3 do not require a degree

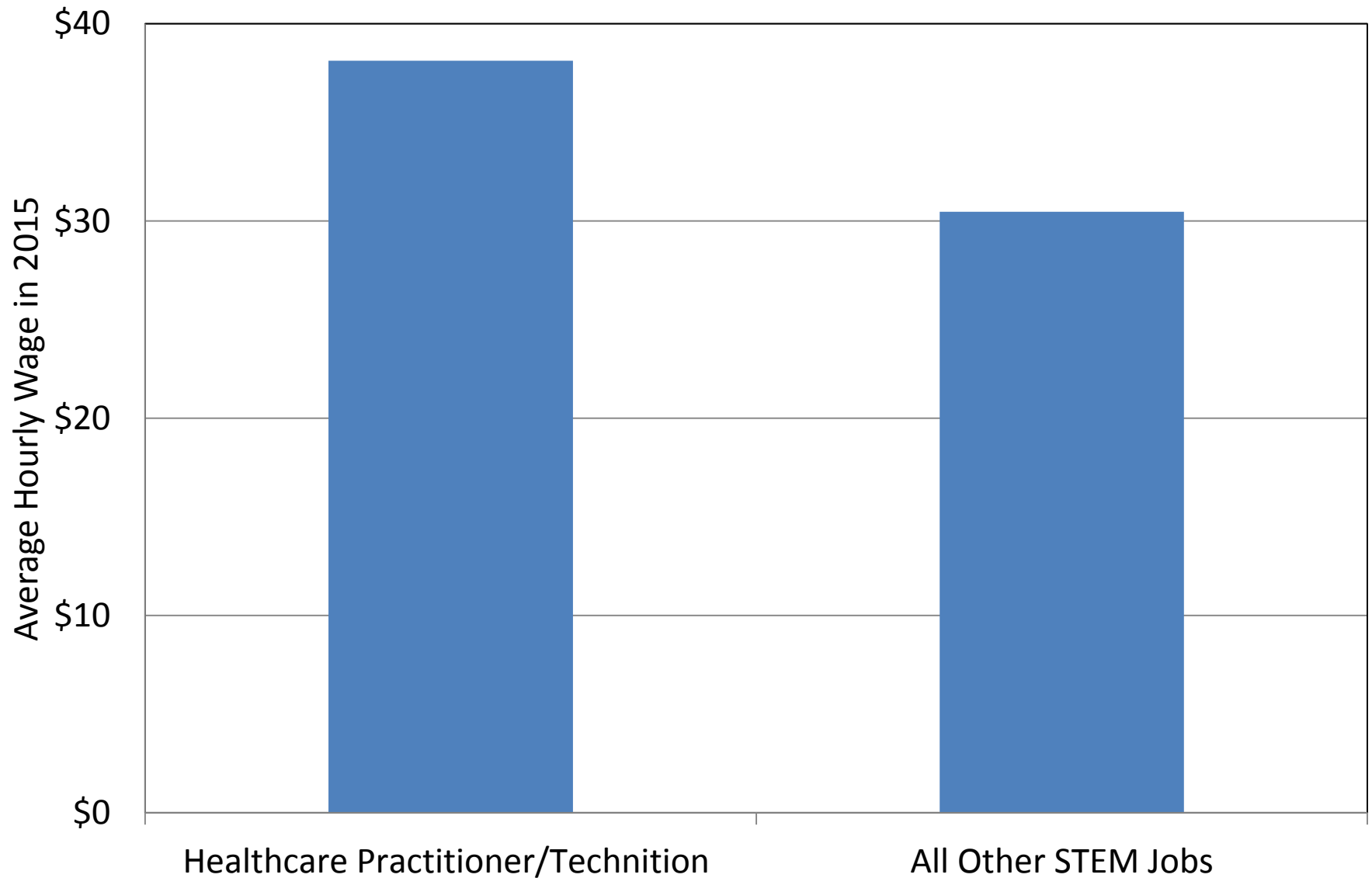


The average hourly wage of jobs in STEM occupations is 84% higher than for non-STEM jobs

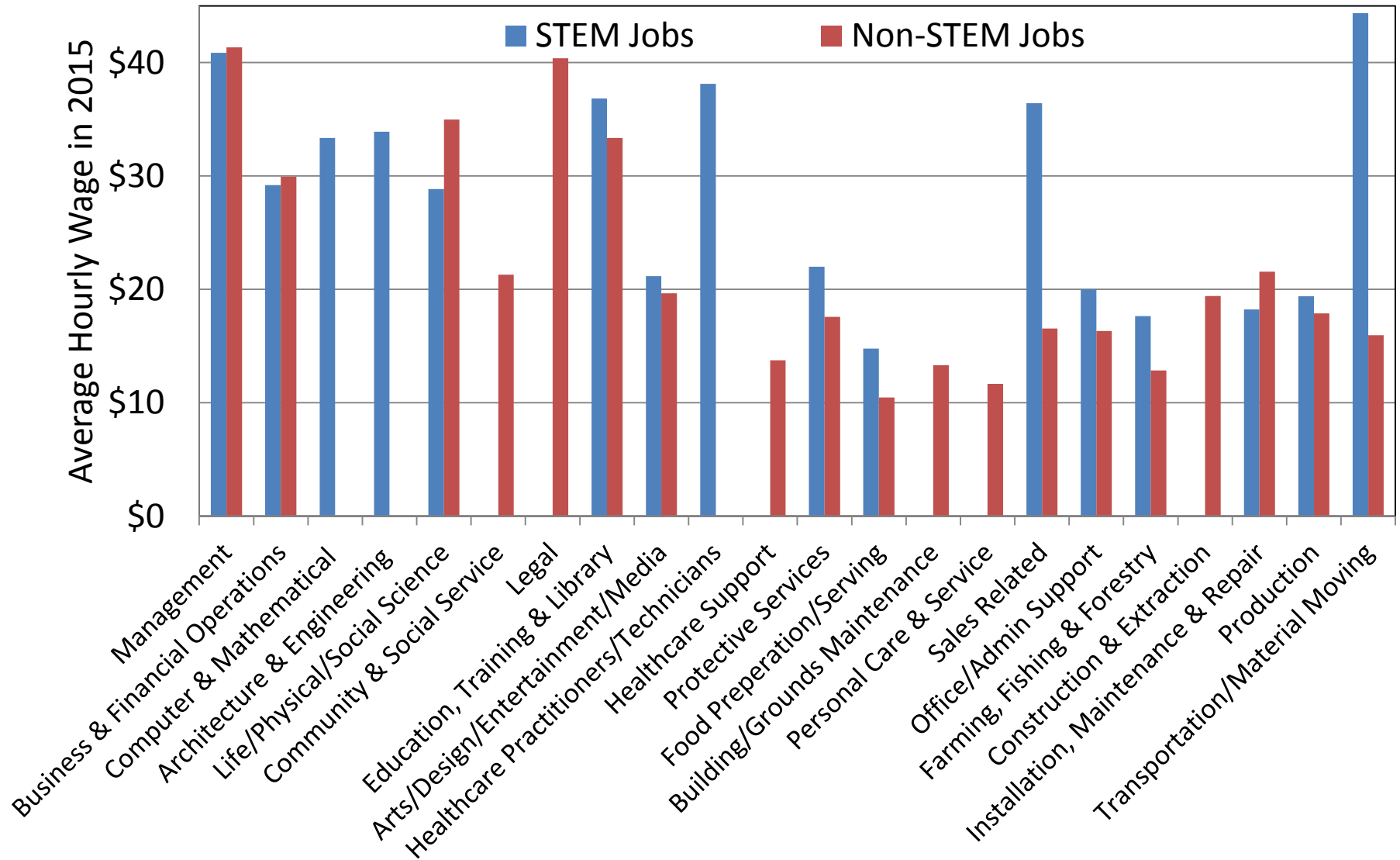


The average is skewed somewhat by high wages of Physicians and other health practitioners, which comprise the 10 highest paying STEM occupations. Average wages for 28 STEM occupations are below the average for all occupations.

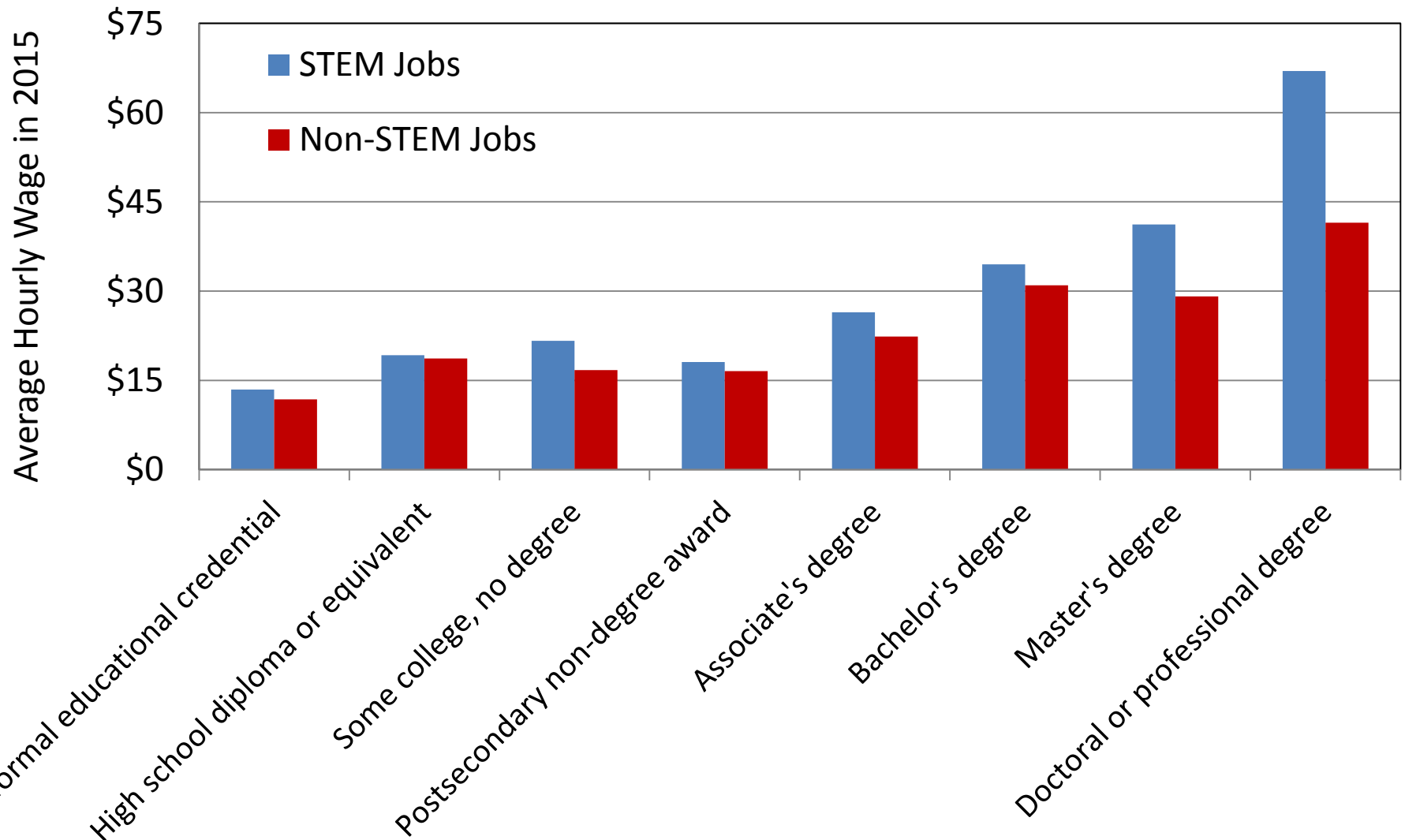
The highest average wages are in healthcare occupations



Within occupational groups, average wages are generally similar for STEM and non-STEM jobs



STEM jobs offer higher average wages no matter the education requirement for the occupation, with larger differentials at higher levels of required education



More on the job outlook from 2014 to 2024

- Detail on the demographic outlook is at www.maine.gov/labor/cwri/outlookDemographic.html
- Detail on the job outlook for industries and occupations is at www.maine.gov/labor/cwri/outlook.html
- Detail on the STEM job outlook is at www.maine.gov/labor/cwri/data/projections/2024/STEM.xlsx

Questions or comments? Contact

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