



FEDERAL RESERVE BANK OF PHILADELPHIA

Exploring Economic Opportunities for Sub-Baccalaureate Workers Across Metro Areas and Over Time

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COMMUNITY DEVELOPMENT & REGIONAL OUTREACH

Disclaimer



The views expressed here are those of the presenter and do not necessarily represent the views of the Federal Reserve Bank of Philadelphia or the Federal Reserve System.

Background



Presentation draws heavily on *Opportunity Occupations Revisited: Exploring Employment for Sub-Baccalaureate Workers Across Metro Areas and Over Time*, by Kyle Fee, Keith Wardrip, and Lisa Nelson, 2019.

Opportunity Employment

- Employment accessible to workers without a bachelor's degree and typically paying above the national annual median wage (\$37,690), adjusted for cost-of-living differences

Opportunity Occupation

- An occupation characterized by work that frequently meets the definition of opportunity employment

Research Questions



Question 1

- What share of total employment can be classified as opportunity employment?

Question 2

- Which occupations offer the most opportunity employment for sub-baccalaureate workers?

Question 3

- Do employers' educational expectations exhibit variability across regional economies or over time?

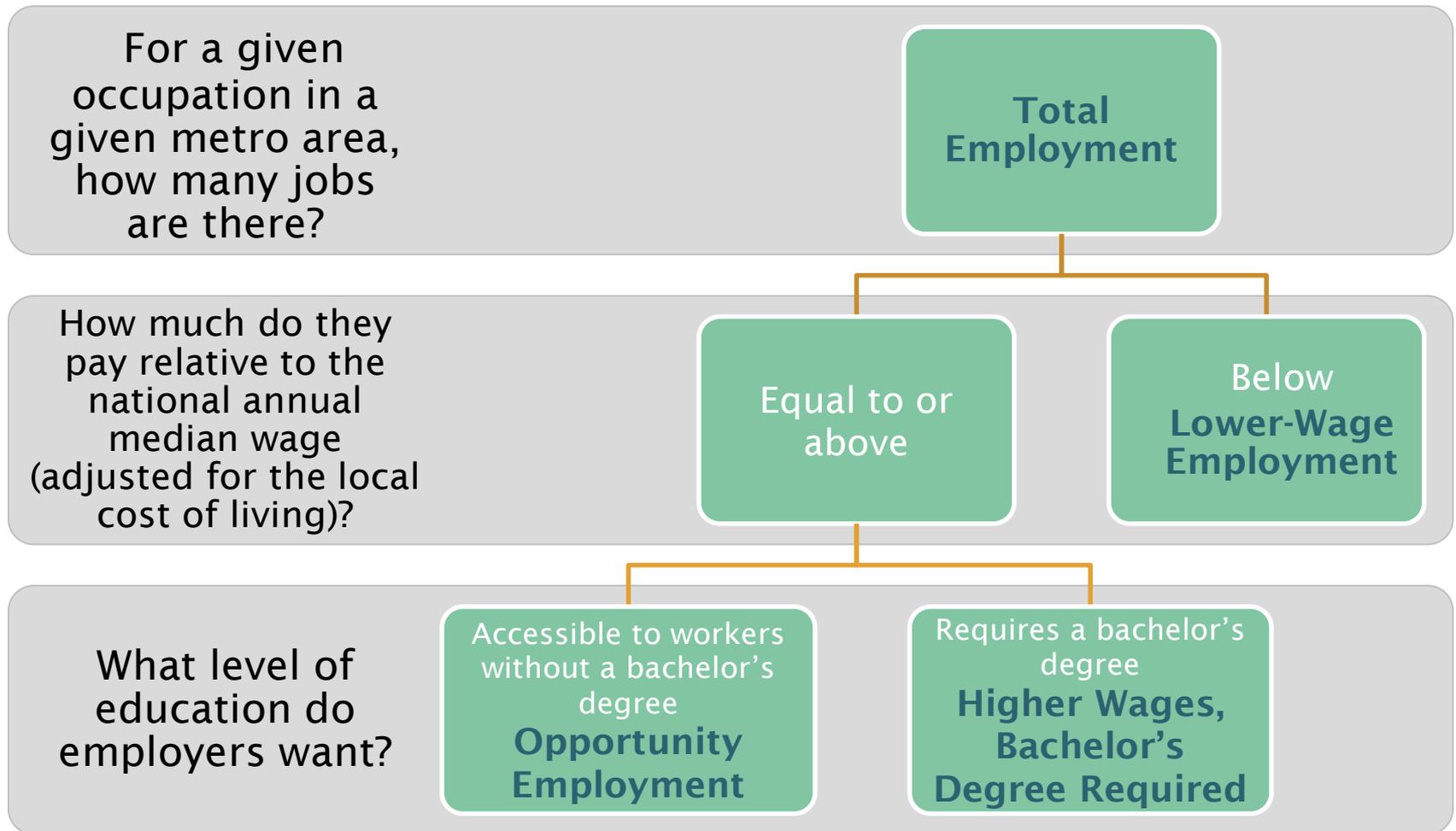
Question 4

- How vulnerable to automation are the largest opportunity occupations?

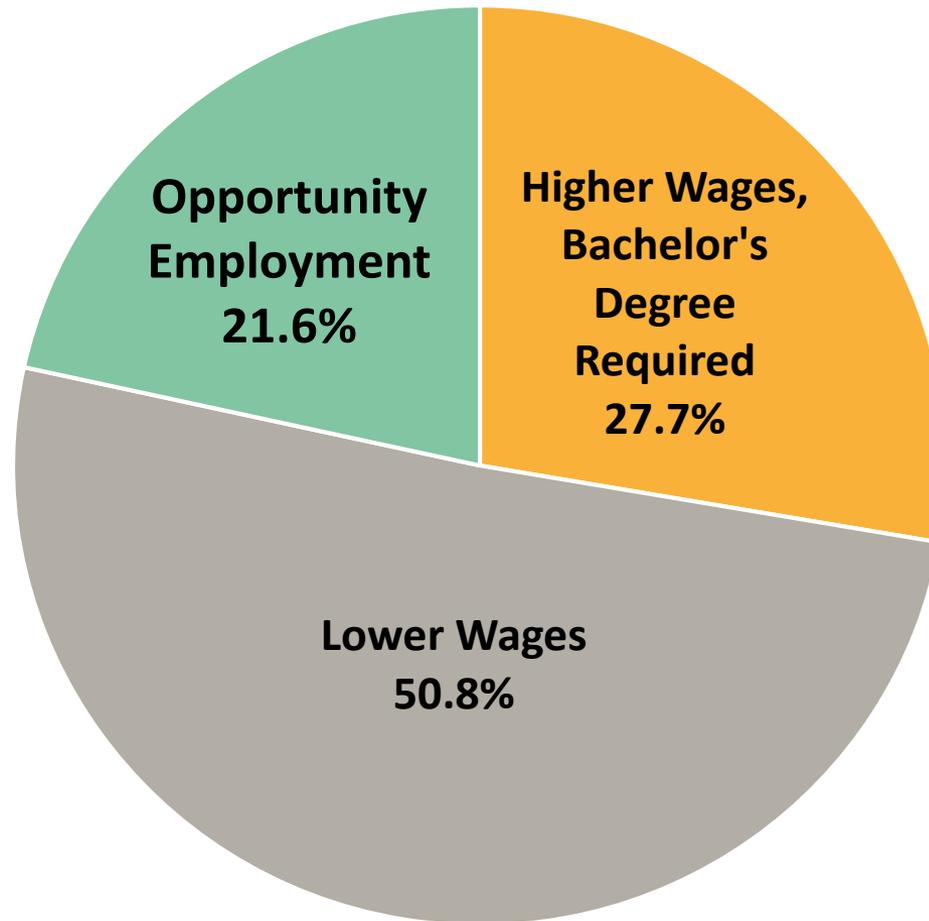
Data and Sources

- BLS Occupational Employment Statistics (2017) for metro area employment and wages by occupation
- American Community Survey (2012–2016) for national estimates of typical weekly hours worked by occupation
- BEA Regional Price Parities (2016) for metro area cost-of-living adjustments
- Burning Glass Technologies (primarily 2015–2017) for minimum level of education requested by employers
- Estimates provided for 121 of the largest metro areas in the U.S.

Classifying an Occupation's Employment

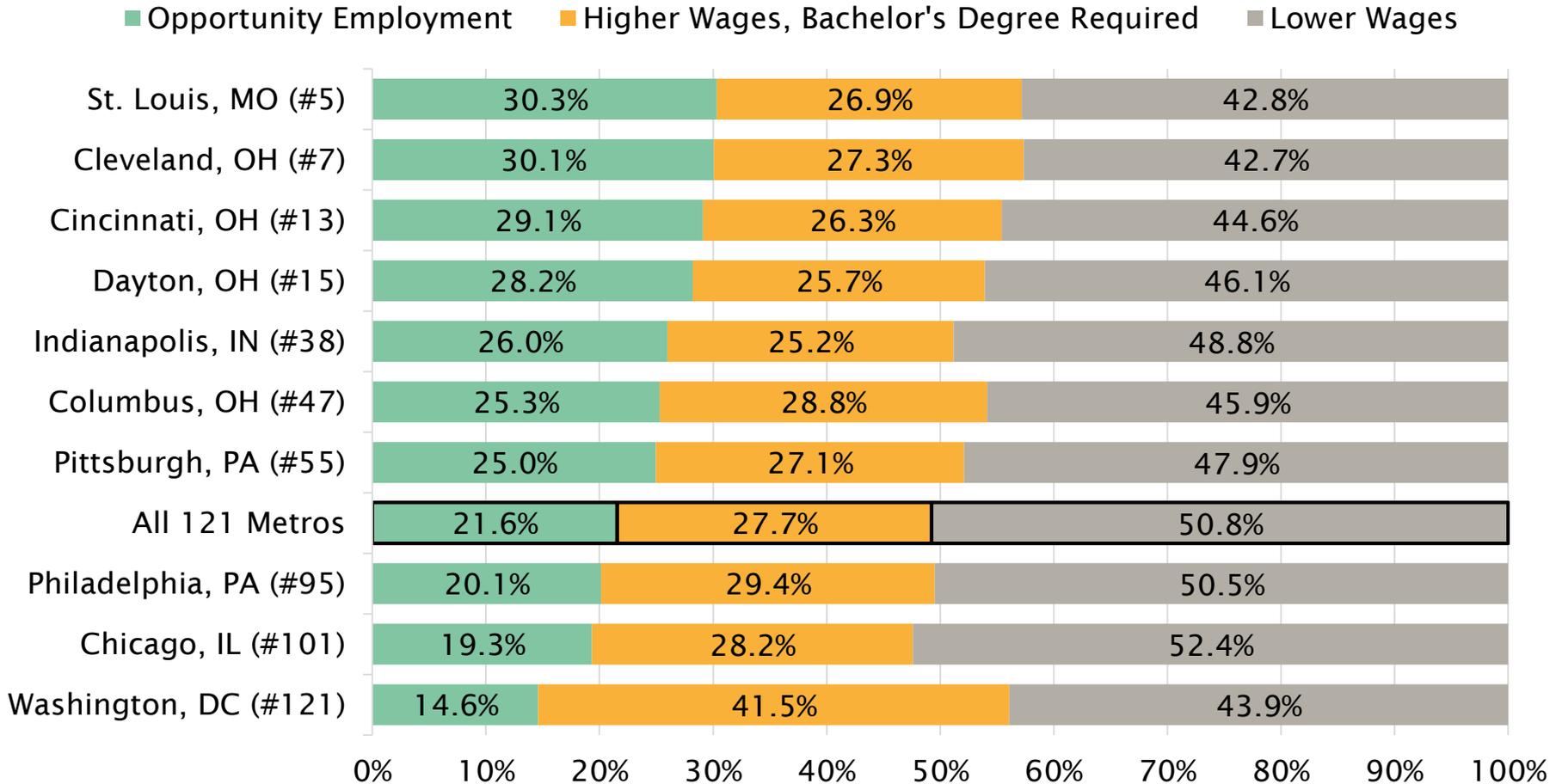


Q1: What share of total employment can be classified as opportunity employment?



Sources: Authors' calculations using data from BLS Occupational Employment Statistics (May 2017), Burning Glass Technologies (2015–2017), BEA Regional Price Parities (2016), and American Community Survey Five-Year Public Use Microdata Sample (2012–2016)

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Q2: Which are the largest opportunity occupations?



Distribution of Employment for the 15 Largest Opportunity Occupations	Opportunity Employment	Higher Wages, Bachelor's Degree Required	Lower-Wage Employment
Registered Nurses	65.9%	34.1%	---
Heavy and Tractor-Trailer Truck Drivers	93.1%	---	6.9%
Bookkeeping, Accounting, and Auditing Clerks	52.8%	37.4%	9.8%
Maintenance and Repair Workers	54.0%	---	46.0%
Carpenters	91.7%	---	8.3%
Electricians	100.0%	---	---
Licensed Practical and Licensed Vocational Nurses	100.0%	---	---
Supervisors of Office and Administrative Support Workers	39.5%	60.5%	---
General and Operations Managers	26.0%	74.0%	---
Sales Representatives, Wholesale and Manufacturing	40.3%	59.5%	0.3%
Police and Sheriff's Patrol Officers	87.9%	12.1%	---
Sales Representatives, Services	45.0%	53.8%	1.2%
Supervisors of Retail Sales Workers	45.1%	21.3%	33.7%
Automotive Service Technicians and Mechanics	76.9%	---	23.1%
Plumbers, Pipefitters, and Steamfitters	99.7%	---	0.3%

Sources: Authors' calculations using data from BLS Occupational Employment Statistics (May 2017), Burning Glass Technologies (2015–2017), BEA Regional Price Parities (2016), and American Community Survey Five-Year Public Use Microdata Sample (2012–2016)

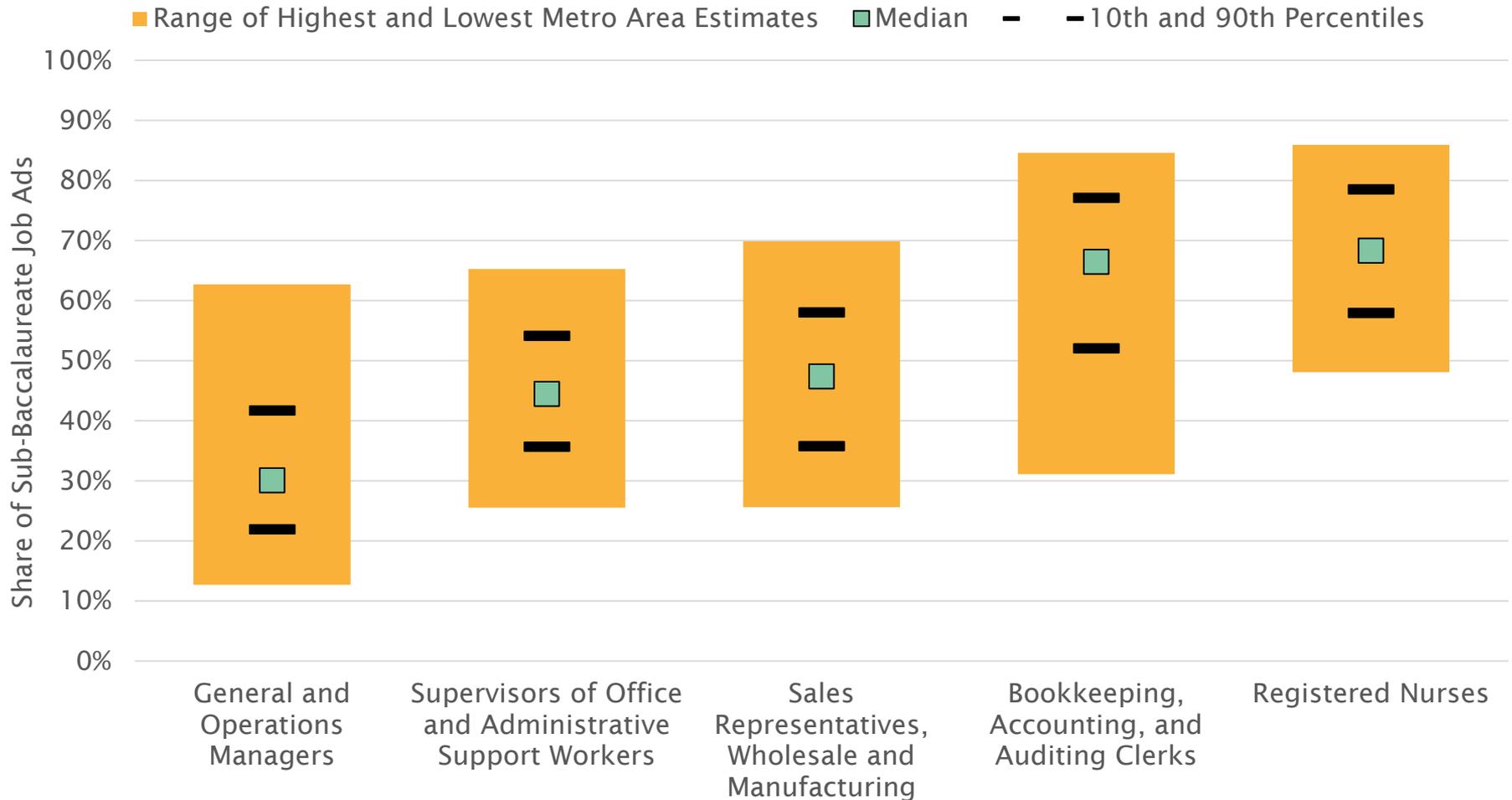
Q2: Which are the largest opportunity occupations?



15 Largest Opportunity Occupations	Typical Education Needed for Entry (BLS)	Typical On-the-Job Training Needed for Competency (BLS)
Registered Nurses	Bachelor's degree	None or short-term
Heavy and Tractor-Trailer Truck Drivers	Postsecondary nondegree	None or short-term
Bookkeeping, Accounting, and Auditing Clerks	Some college, no degree	Moderate-term
Maintenance and Repair Workers	High school diploma	Moderate-term
Carpenters	High school diploma	Apprenticeship
Electricians	High school diploma	Apprenticeship
Licensed Practical and Licensed Vocational Nurses	Postsecondary nondegree	None or short-term
Supervisors of Office and Administrative Support Workers	High school diploma	None or short-term
General and Operations Managers	Bachelor's degree	None or short-term
Sales Representatives, Wholesale and Manufacturing	High school diploma	Moderate-term
Police and Sheriff's Patrol Officers	High school diploma	Moderate-term
Sales Representatives, Services	High school diploma	Moderate-term
Supervisors of Retail Sales Workers	High school diploma	None or short-term
Automotive Service Technicians and Mechanics	Postsecondary nondegree	None or short-term
Plumbers, Pipefitters, and Steamfitters	High school diploma	Apprenticeship

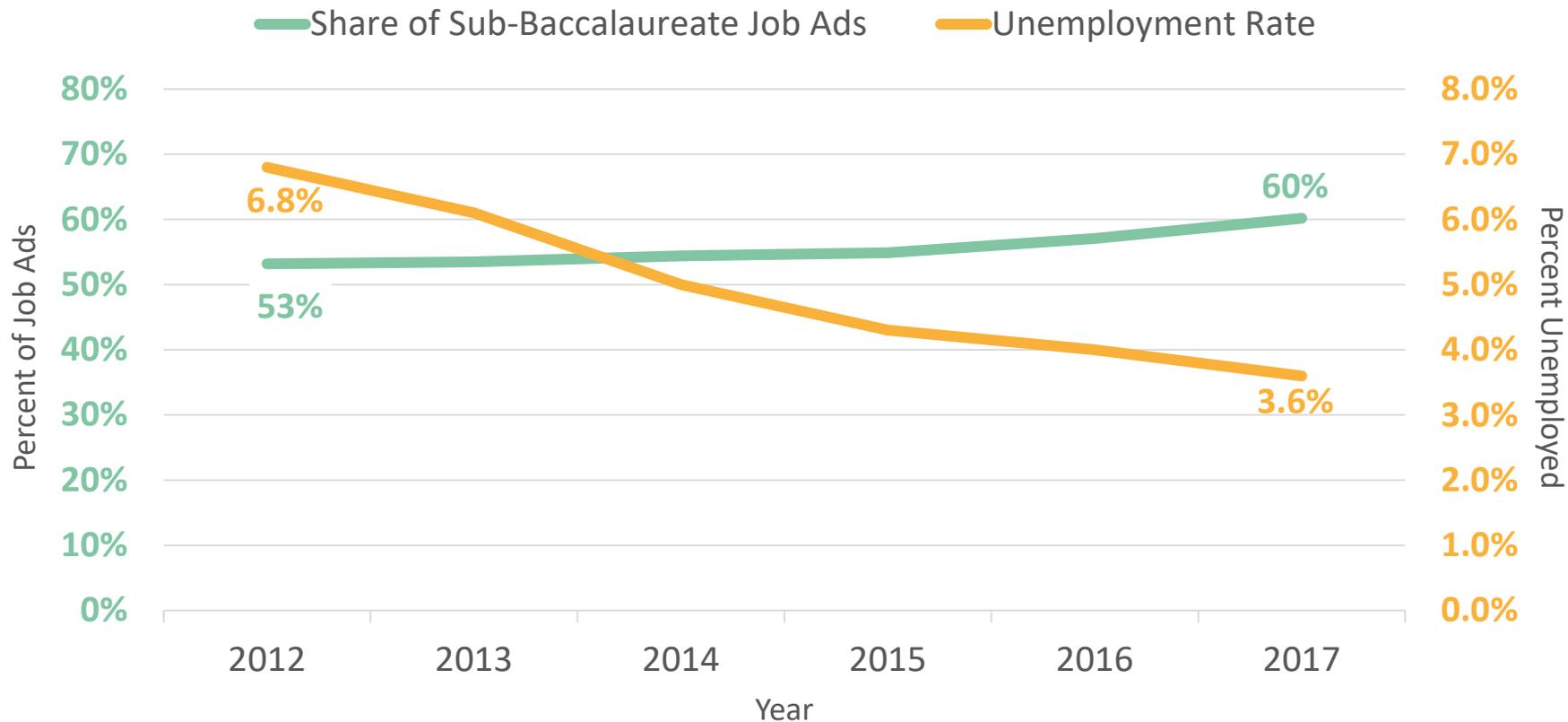
Source: Table 1.7 from Employment Projections program, U.S. Bureau of Labor Statistics (2016–2026)

Q3: How do employers' educational expectations vary across metro areas?



Source: Burning Glass Technologies (2015-2017)

Q3: How did employers' educational expectations change in recent years?



Note: Job ads analysis includes 16 of the 25 largest opportunity occupations for which the share of sub-baccalaureate job ads is below 100 percent, and the annual percentages are calculated using ads posted in the 121 metro areas analyzed. The national unemployment rate is for those 25 and over, not seasonally adjusted.

Sources: Burning Glass Technologies (2012–2017); Current Population Survey (2012–2017)

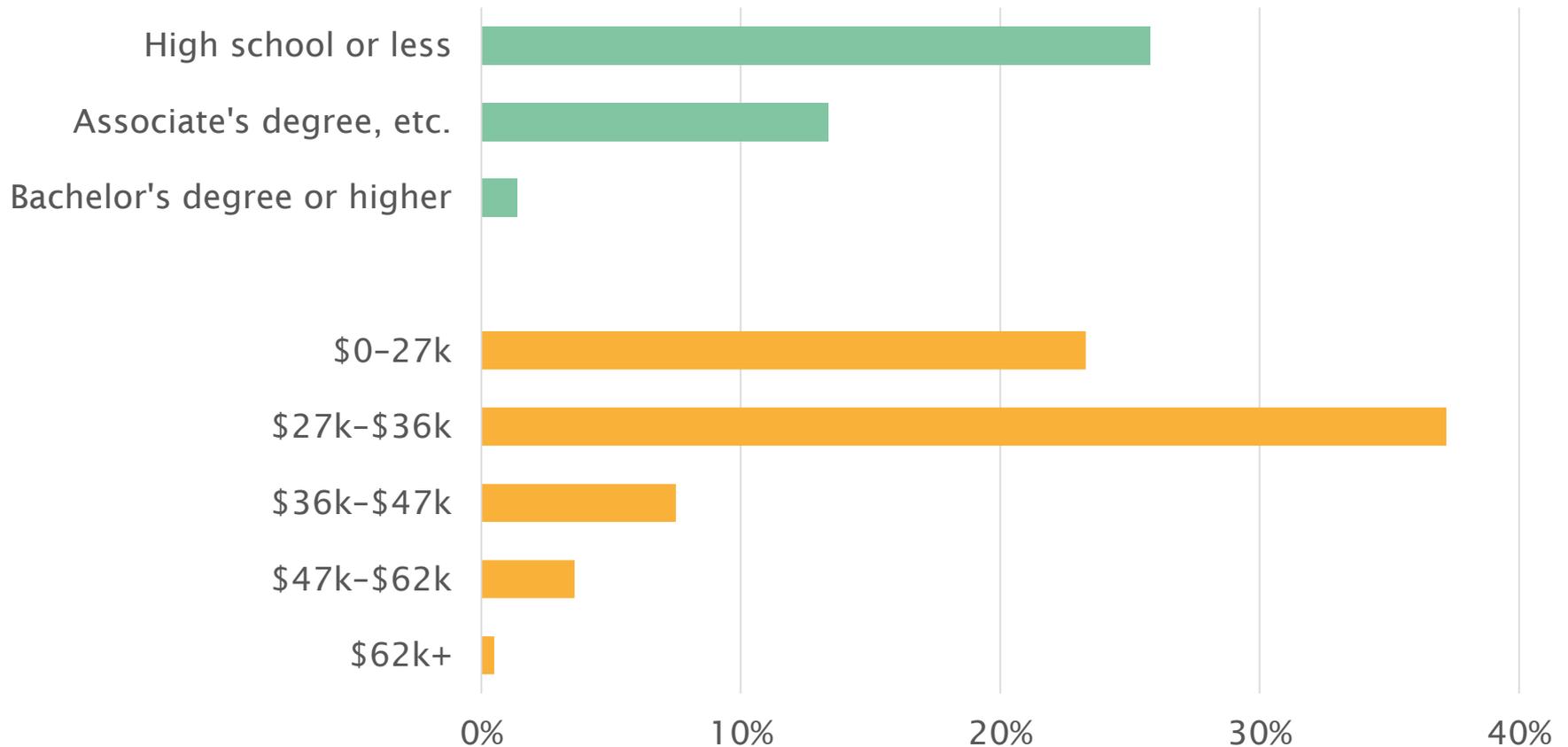
Q4: How vulnerable to automation are the largest opportunity occupations?

	Higher Growth	Lower Growth
Less Vulnerable to Automation	<ul style="list-style-type: none"> • Plumbers • Registered Nurses • Heating & A/C Installers • Supervisors of Construction Workers • Licensed Practical Nurses • Computer Support Specialists • General and Operations Managers • Electricians • Maintenance Workers • Supervisors of Transportation Workers 	<ul style="list-style-type: none"> • Supervisors of Mechanics • Police Officers • Securities Sales Agents • Automotive Service Technicians • Supervisors of Retail Workers • Supervisors of Office Workers • Supervisors of Production Workers
More Vulnerable to Automation	<ul style="list-style-type: none"> • Construction Laborers • Carpenters 	<ul style="list-style-type: none"> • Truck Drivers • Sales Reps, Wholesale/Mfg • Bookkeeping Clerks • Secretaries • Executive Secretaries

Note: An occupation's projected growth rate compared to the overall projected employment growth rate of 7.4 percent is used to classify the occupation as higher or lower growth. An automation probability of 70 percent as calculated by Frey and Osborne (2017) is used to separate occupations into automation vulnerability categories. Both the automation probability and the projected growth for supervisors of transportation workers represent the average of two constituent occupations. The automation probability for sales representatives, services, all other was not available, so the occupation is excluded from this table.

Sources: BLS Employment Projections (2016–2026); Frey and Osborne (2017)

Share of U.S. Jobs with a High Risk of Automation



Sources: Ding, Lei, Elaine W. Leigh, and Patrick Harker. *Automation and Regional Employment in the Third Federal Reserve District*. Philadelphia: Federal Reserve Bank of Philadelphia, 2018.

Discussion

- For sub-baccalaureate workers, *economic opportunity today* varies greatly across regional economies.
- Many of the largest opportunity occupations require some level of postsecondary training, on-the-job experience, or both.
- Differences in employers' educational preferences across places and over time create openings for skills development that stops short of a four-year degree.
- Economic opportunity is certainly affected by technological change, but it is also influenced by factors such as the business cycle and how employers source talent and assess candidates' skills.
- Intelligence from the private sector can help workforce development efforts not only emphasize the skills employers need today but also highlight the skills that will be important in *tomorrow's job market*.

Thank You



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