# The Workforce in the Age of AI
## Strategic Horizon Network

Joseph Fuller

Professor of Management Practice and Director, Managing the Future of Work Project, Harvard Business School

Visiting Fellow, American Enterprise Institute

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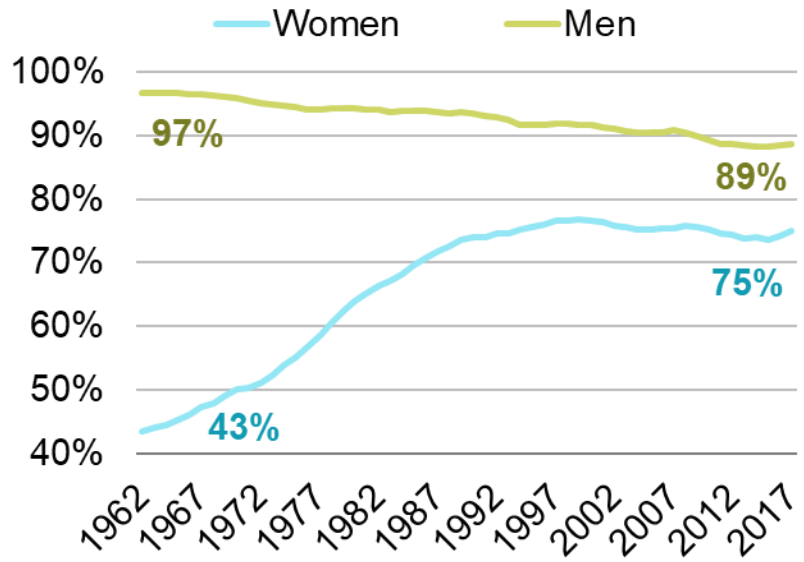
HARVARD | BUSINESS | SCHOOL

Managing the Future of Work

# The American workforce is undergoing several major demographic changes

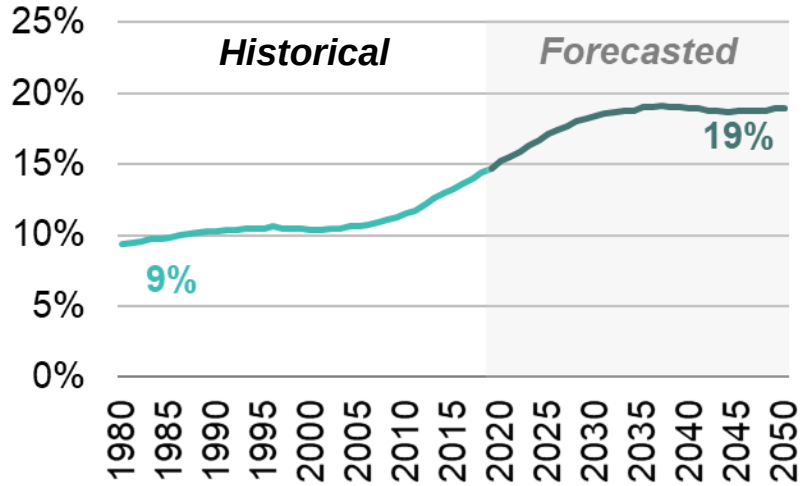
**Prime-Age Labor force Participation Rate by Gender***

United States, 1962 - 2017




**Percentage of Population Aged 65+**

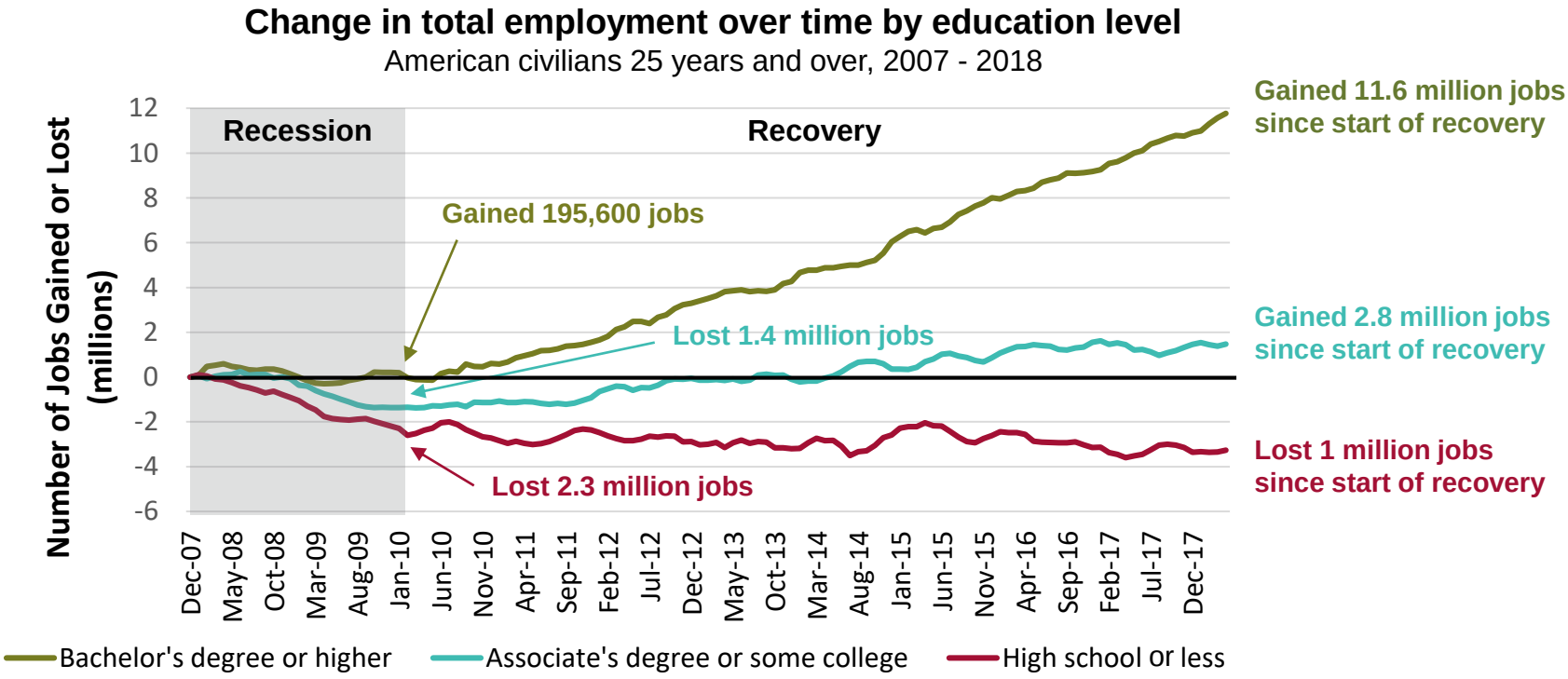
United States, 1980 - 2050




*Prime-age indicates workers between the ages of 25 and 54

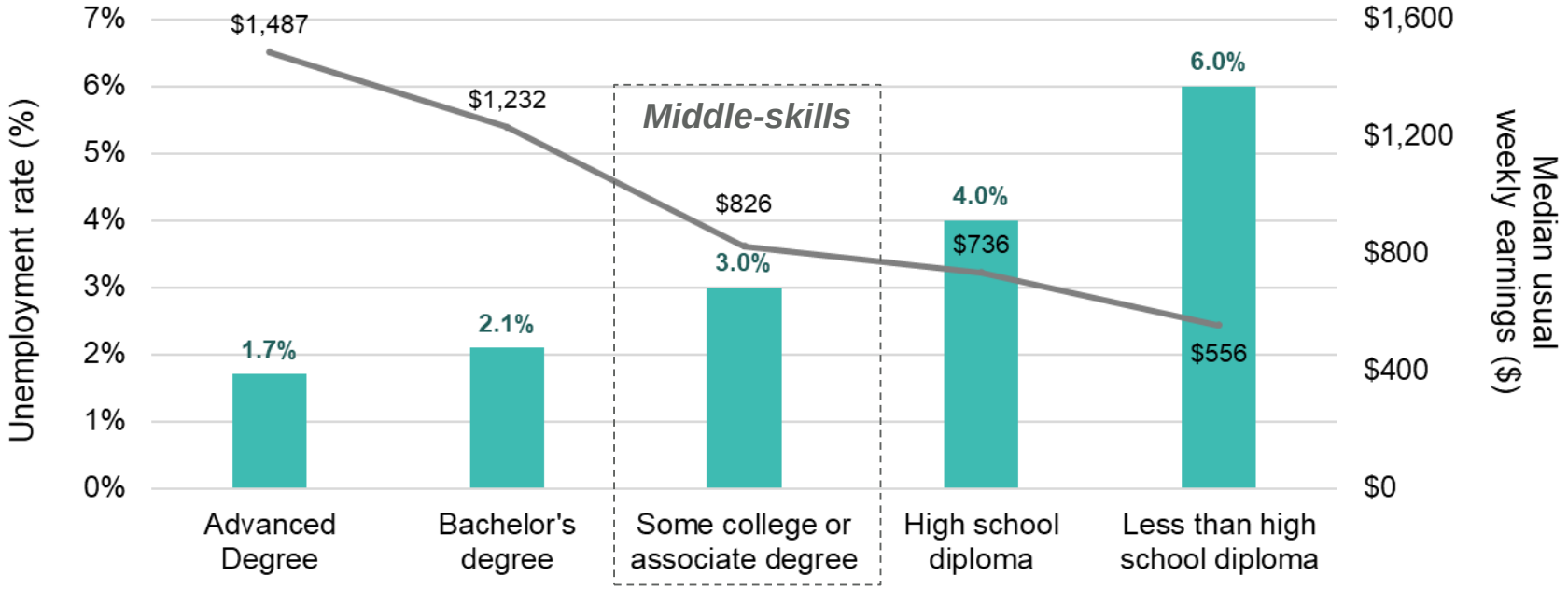
Sources: OECD Historical population data and projections (1950 – 2050);
"(Seas) Labor Force Participation Rate - 25-54 yrs." Labor Force Statistics from the Current Population Survey

# Since the recession, there has been increasing demand for educated workers



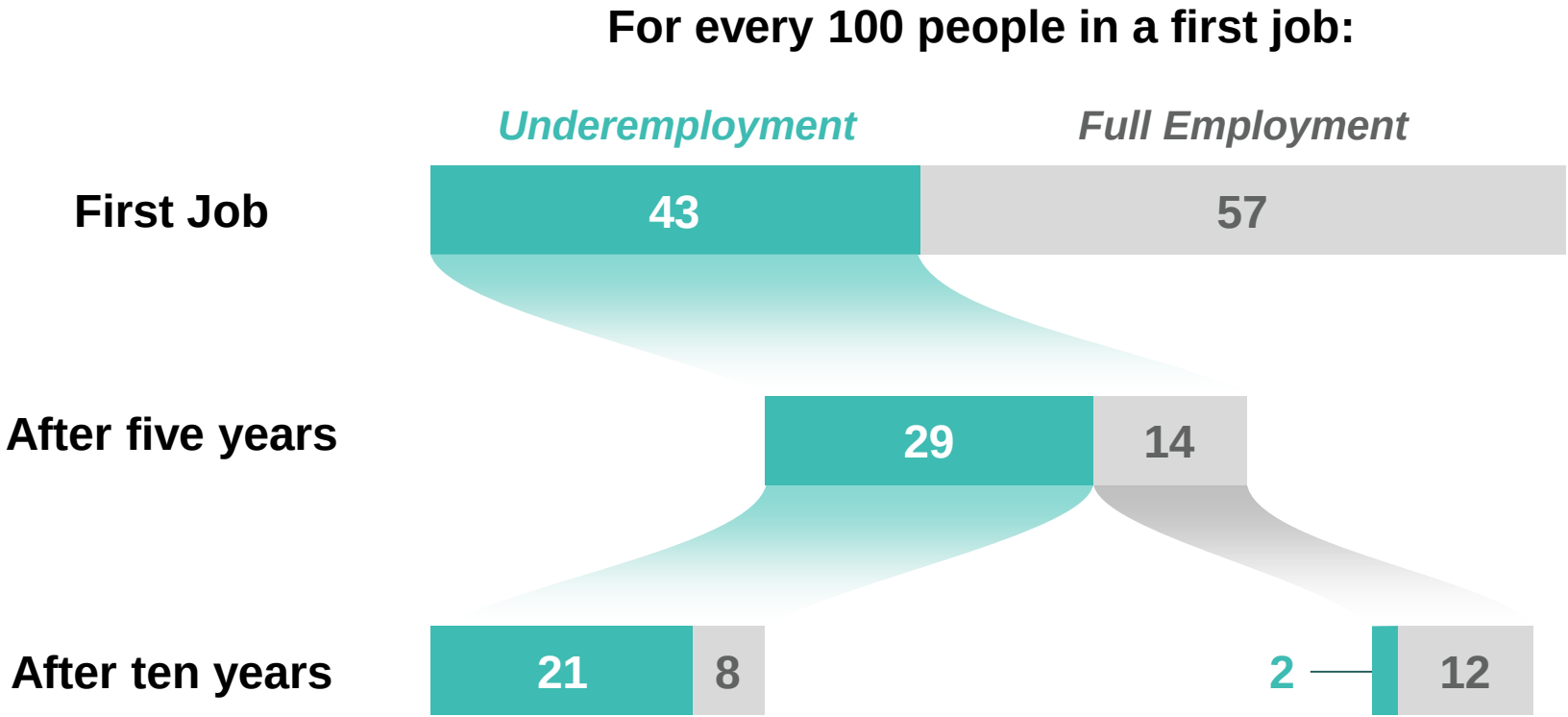

Source: Current Population Survey; Methodology adapted from Georgetown Center on Education and the Workforce Report, *America's Divided Recovery: College Haves and Have-Nots, 2016.*

# The market for middle-skills workers has tightened, but wage growth remains lackluster



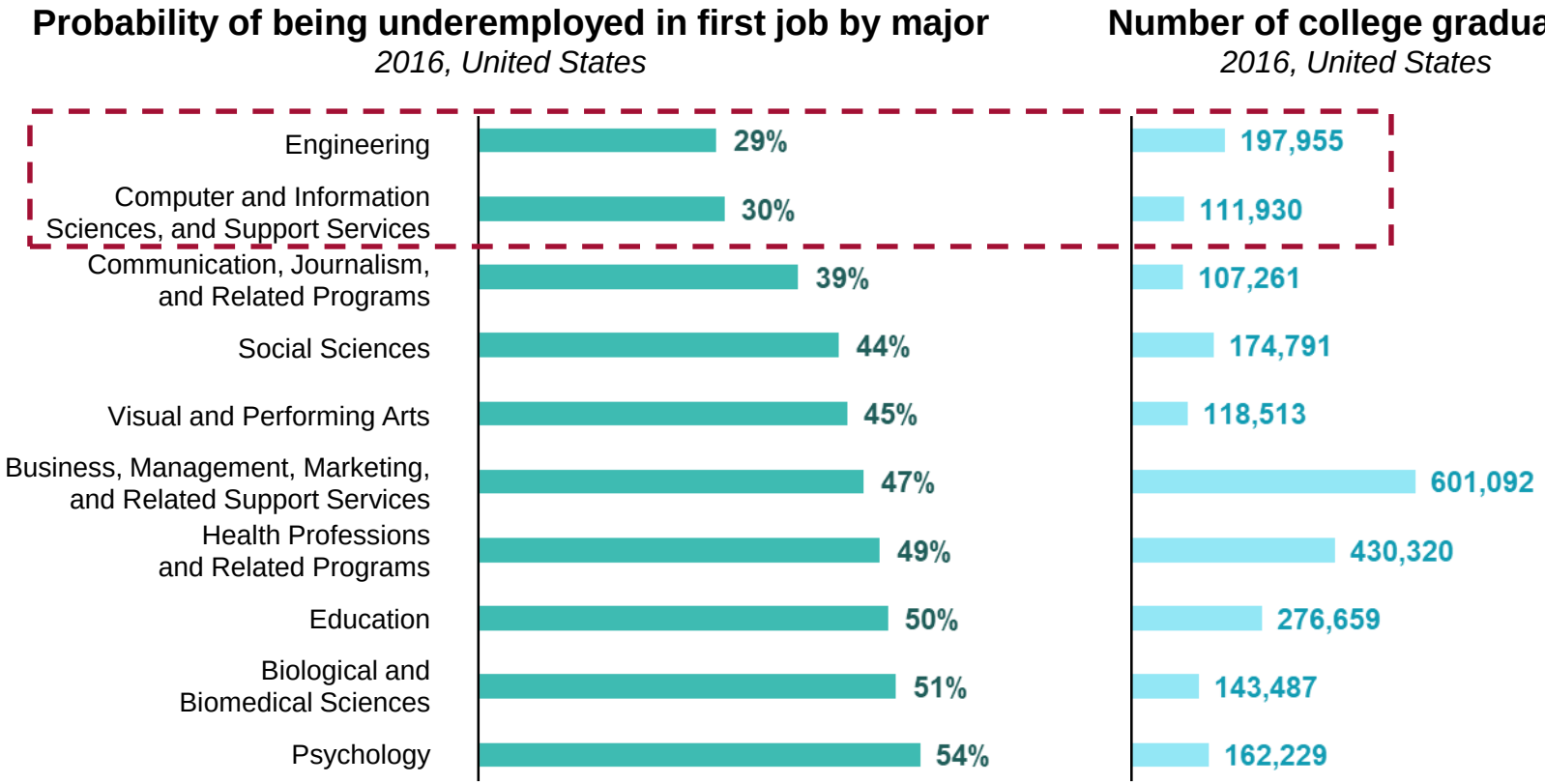

Note: Data are for persons age 25 and over. Earnings are for full-time wage and salary workers. "Some college or associate degree," "High school diploma," and "less than high school" have been seasonally adjusted. Bachelor's degree and Advanced degree are not seasonally adjusted.
Source: U.S. Bureau of Labor Statistics, Current Population Survey, October 2018.

# Underemployment at the start of a career can leave new graduates disadvantaged



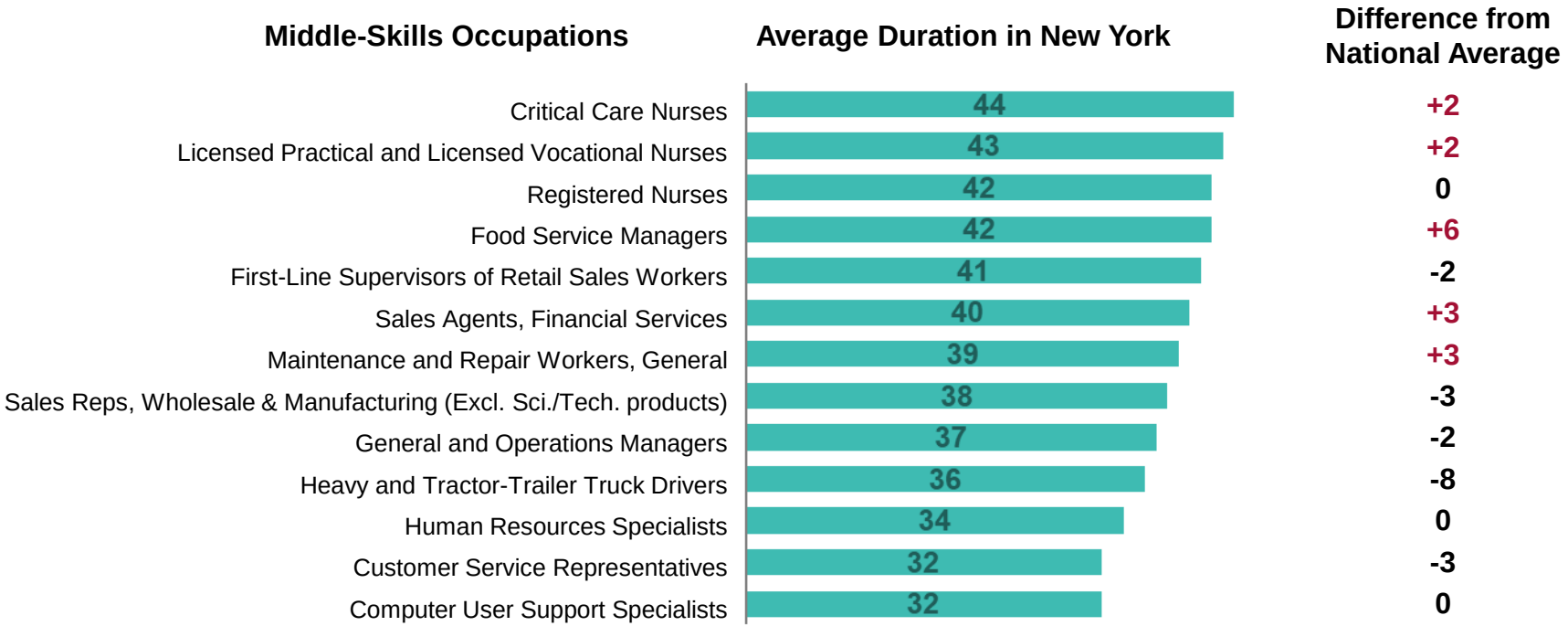

Source: Strada and Burning Glass Report, "The Permanent Detour: Underemployment's Long-Term Effects on the Careers of College Grads" (May, 2018)

# STEM majors have the lowest risk of underemployment



# The majority of New York's high-demand, middle-skills jobs take more than a month to fill

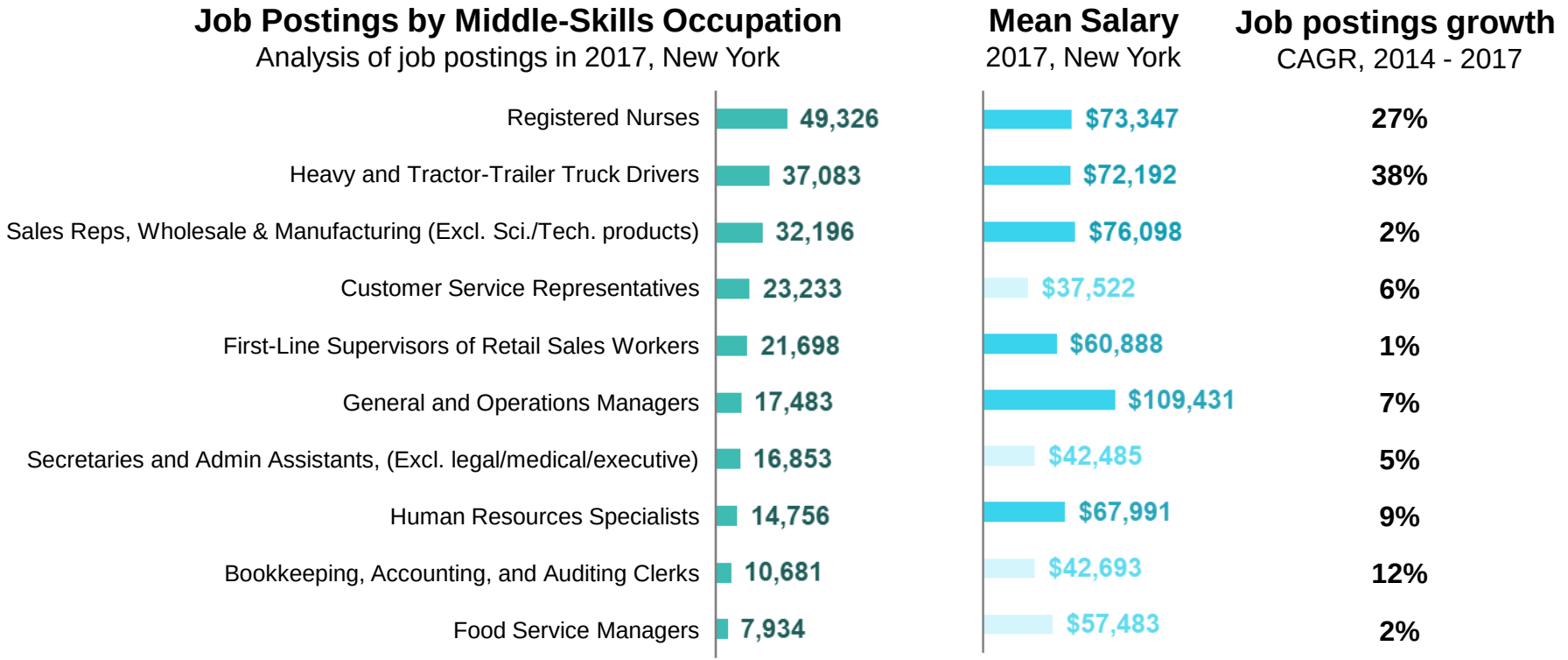
## Days Needed to Fill Middle-Skills Jobs in New York






Source: Burning Glass New York Job Postings Data

# Registered nurses and truck drivers made up 18% of New York's middle-skills job postings in 2017

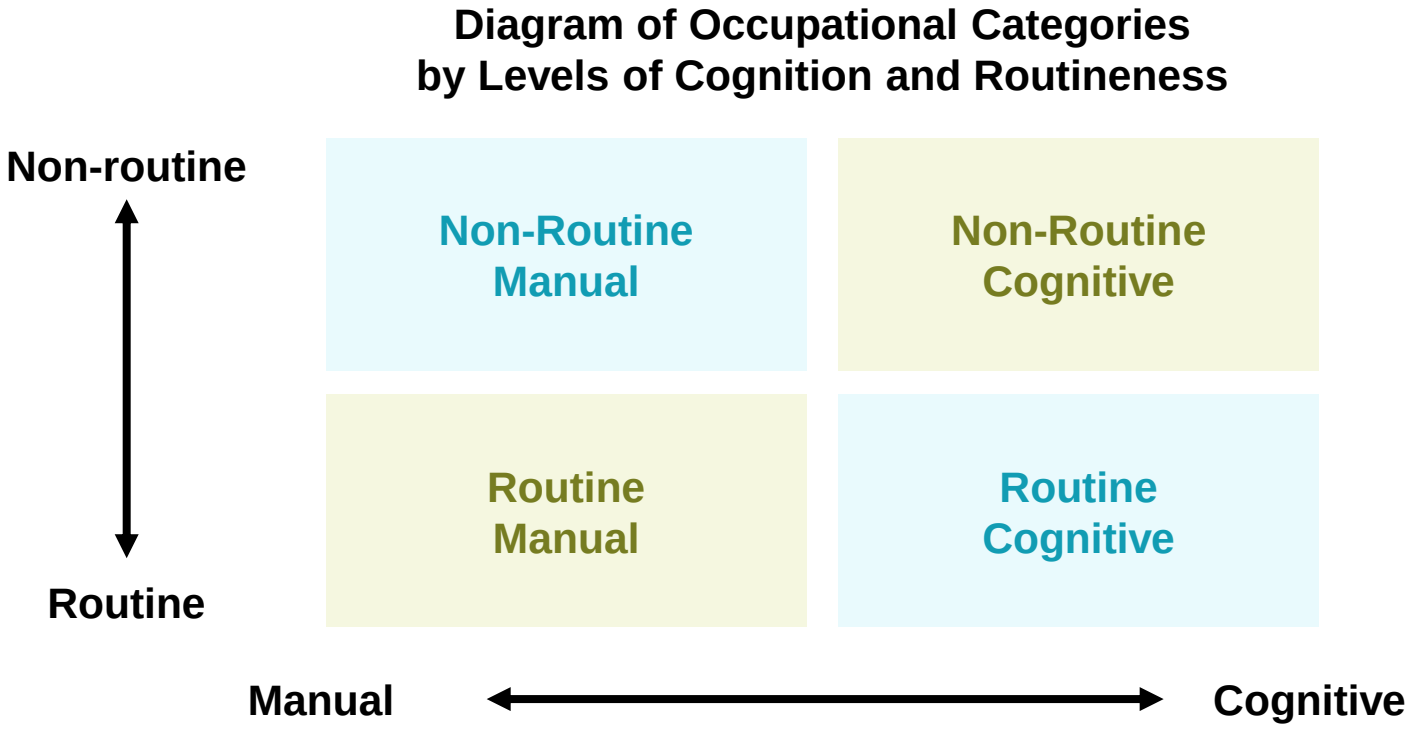





Source: Burning Glass New York Job Postings Data; Occupational Employment Statistics Dataset

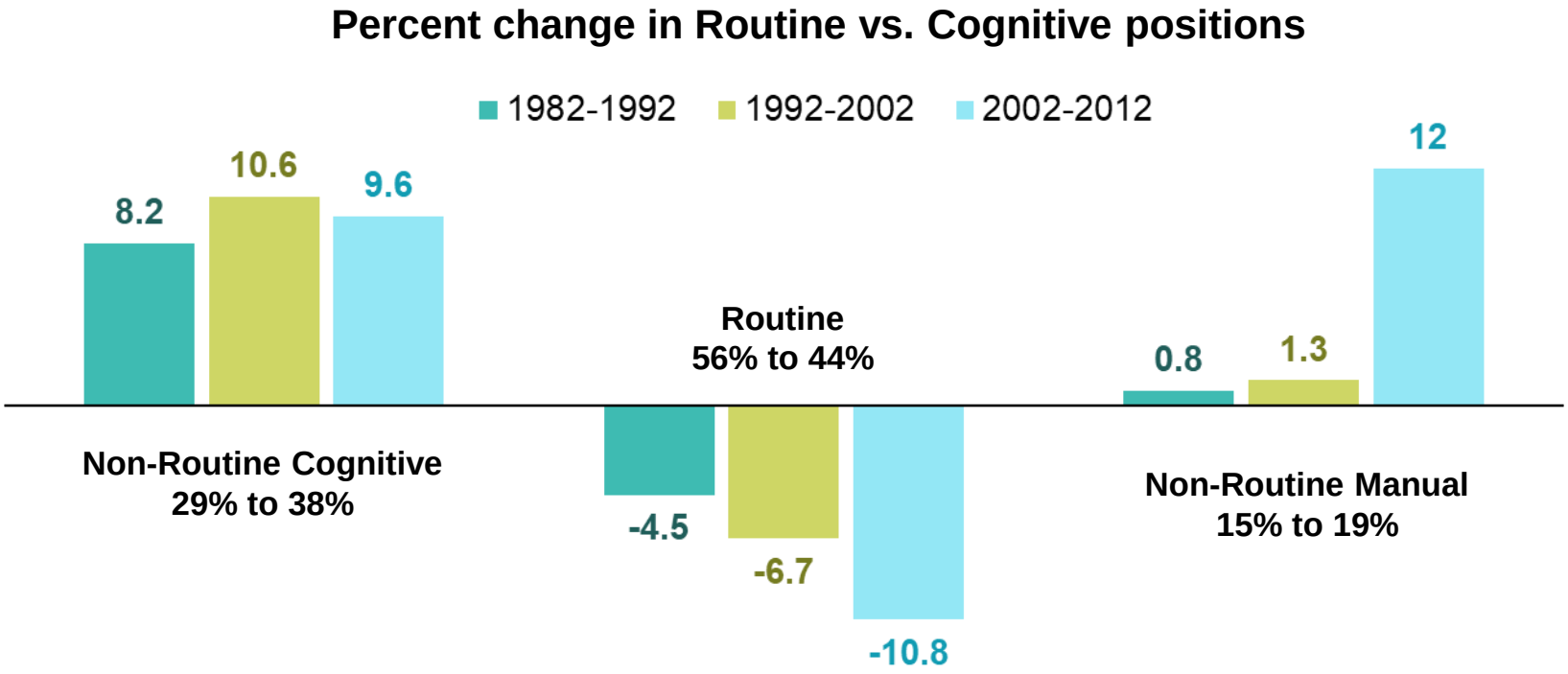
*New York Mean Salary*: $60,100

# Current and future occupations can be grouped into four categories based on work demands




Source: Source: "The Trend is the Cycle: Job Polarization and Jobless Recoveries," by Nir Jaimovich and Henry E. Siu. The National Bureau of Economic Research Working Paper No. 18334. March 2014

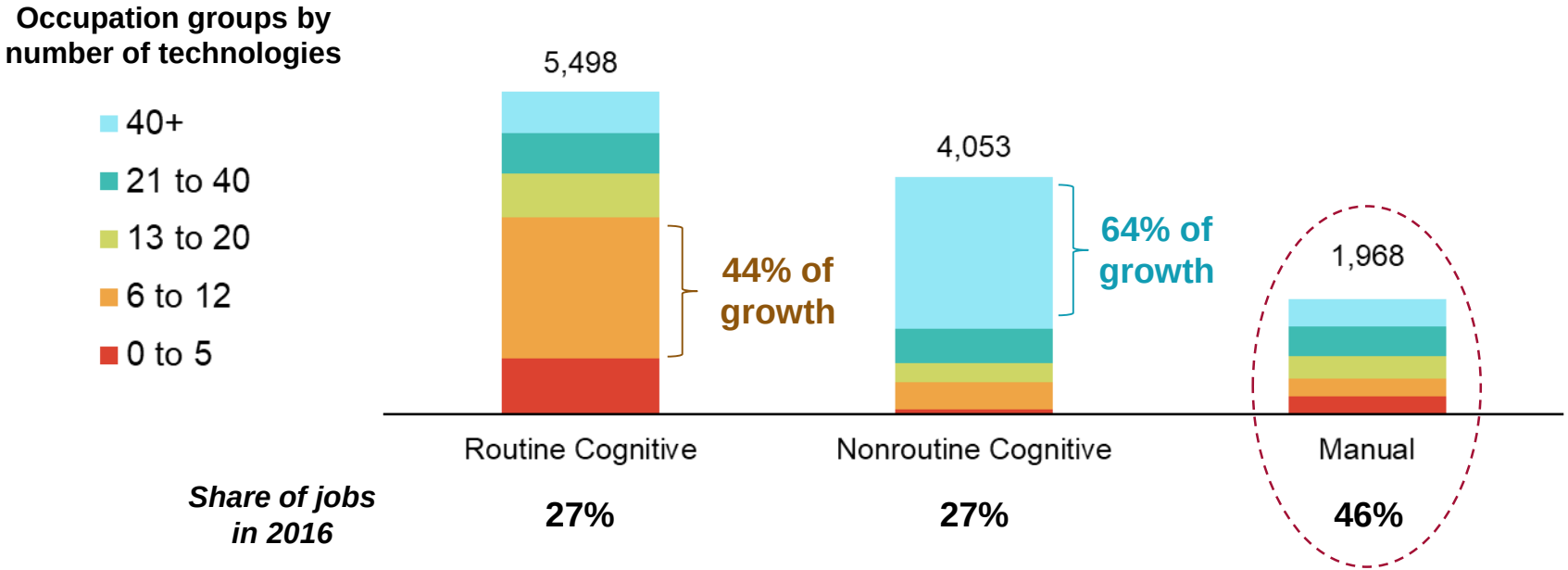
# Recent job growth has been concentrated in non-routine cognitive and non-routine manual jobs




Source: "The Trend is the Cycle: Job Polarization and Jobless Recoveries," by Nir Jaimovich and Henry E. Siu. The National Bureau of Economic Research Working Paper No. 18334. March 2014.

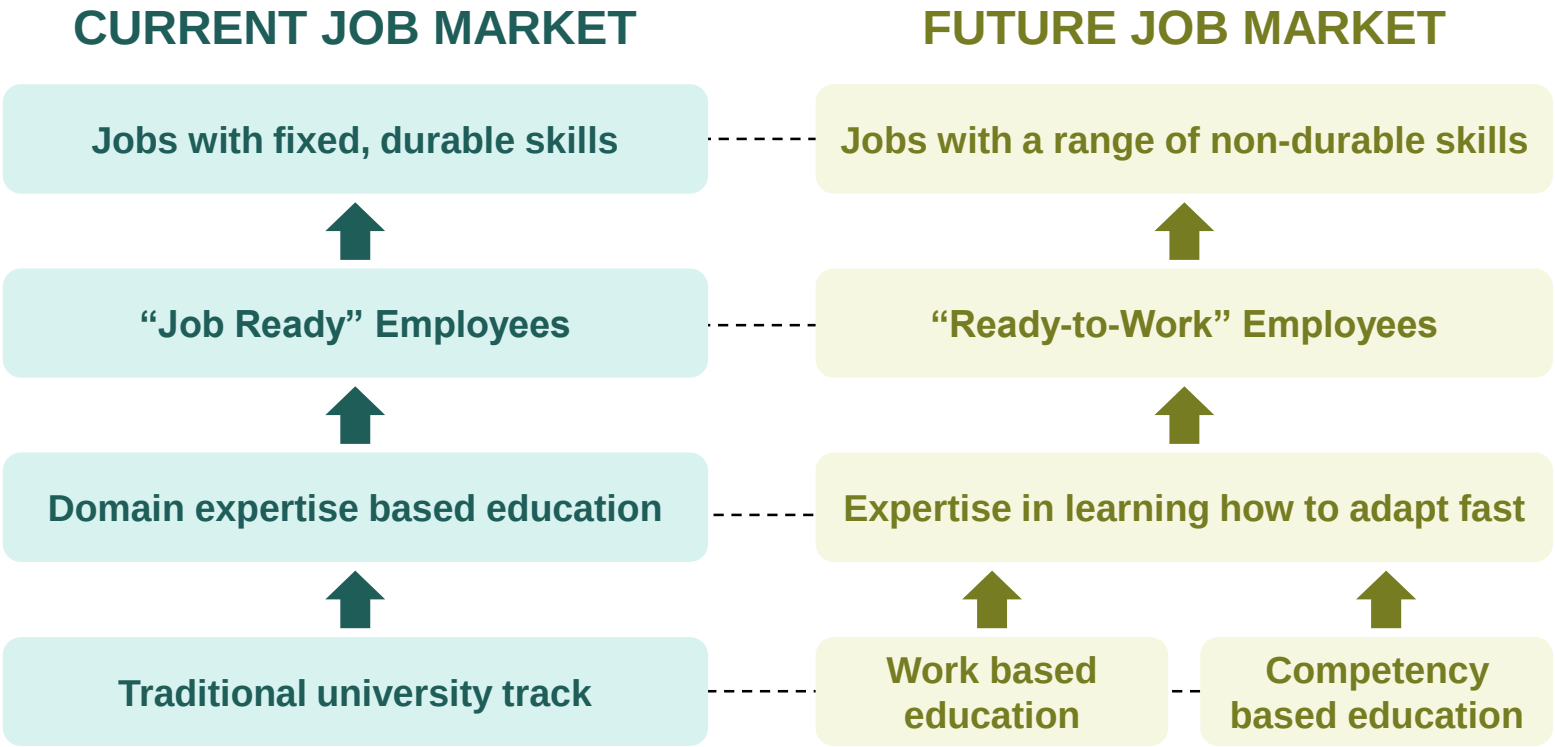
# Many future jobs in the U.S. will require that workers learn various skills in cognitive occupations

**Job growth by occupation type and number of technologies in occupations**
Thousands of new jobs from 2016 – 2026, United States




Note: "Low Tech" means jobs that are typically associated with fewer than 40 different types of technologies. "High Tech" indicates jobs where there is an association of 40 or more technologies. Most technologies referenced are software based (e.g., Microsoft Excel, Adobe Photoshop)
Source; O*NET Technology Database; Bureau of Labor Statistics

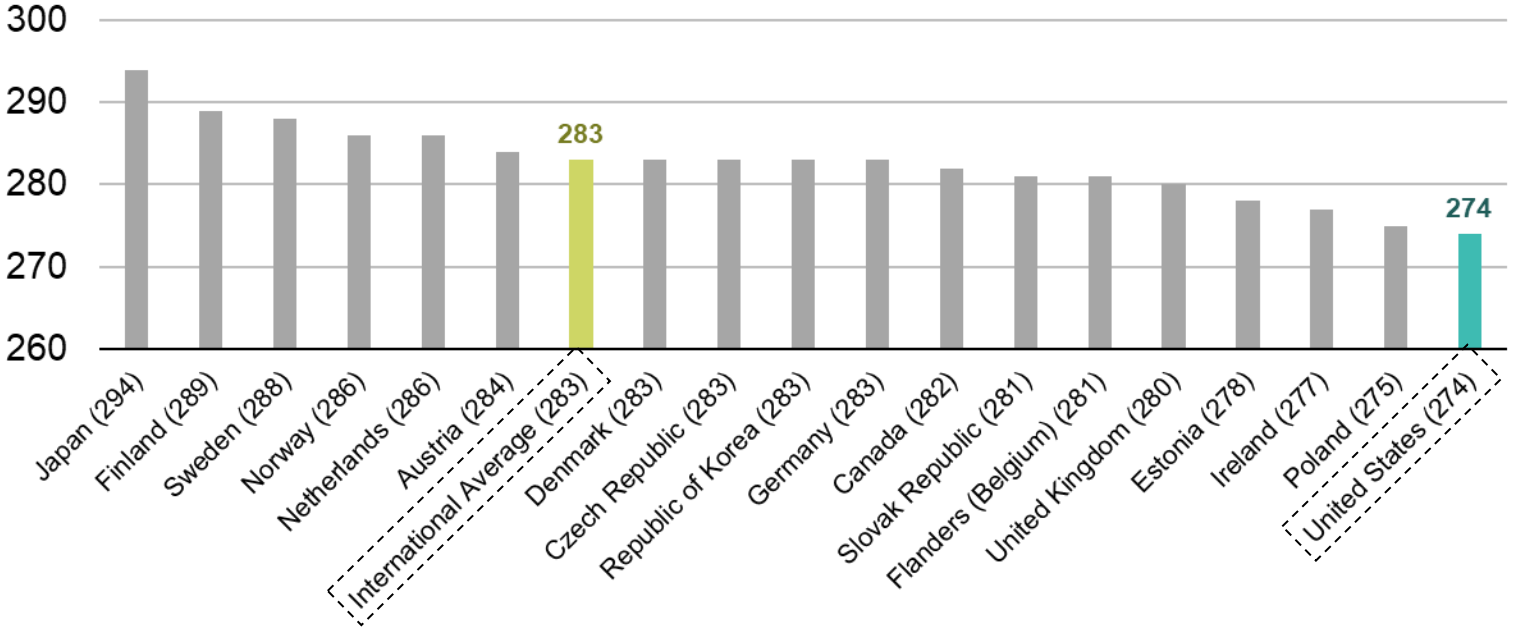
# The nature of the workforce is changing



# Americans trail international averages at solving problems in technology-rich environments

**Average scores on problem solving in technology-rich environments**

Adults aged 16-65, 2012/2014, Global

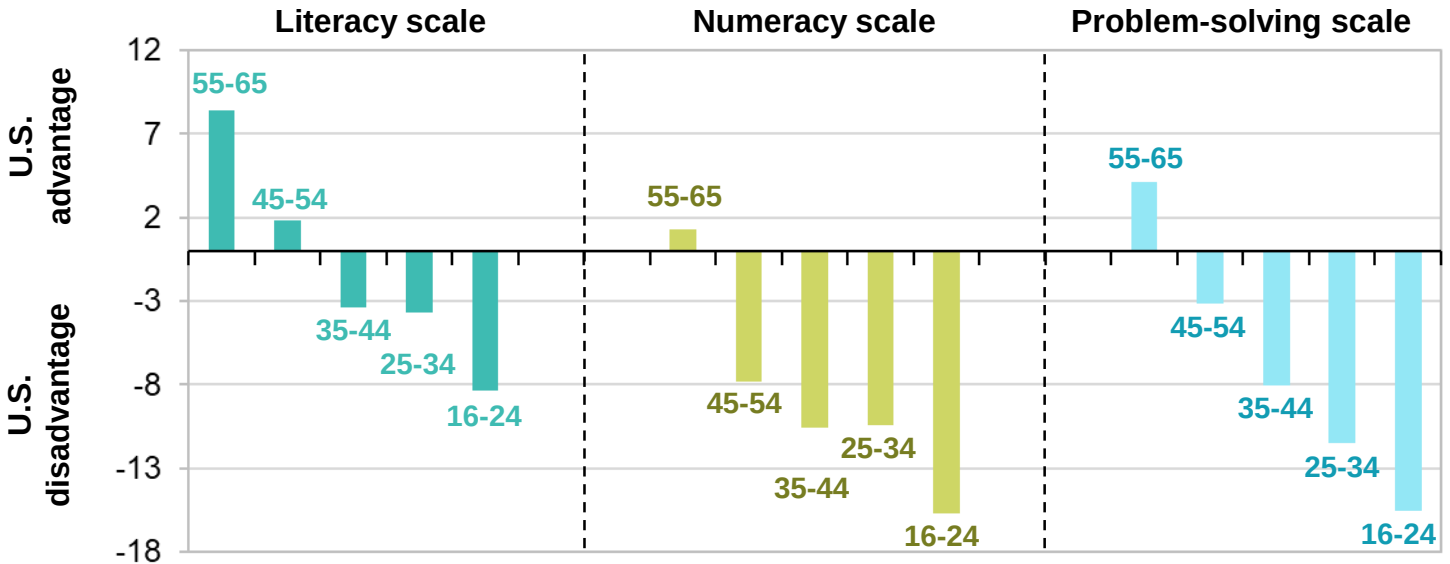



Source: "Skills of U.S. Unemployed, Young, and Older Adults in Sharper Focus: Results from the Program for the International Assessment of Adult Competencies (PIAAC) 2012/2014." U.S. Department of Education, March 2016.

# Young Americans trail global averages in literacy, numeracy, and problem solving skills in technology-rich environments

**Adult competencies by age cohort**

U.S. (2012/2014) Vs. International Peers (2012)

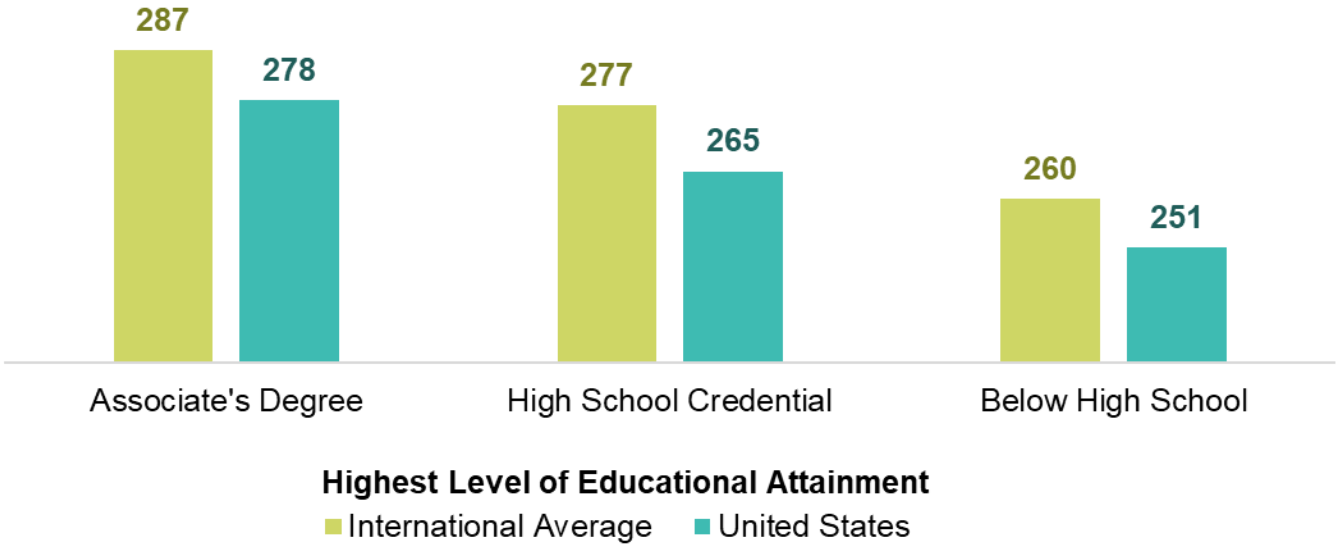



Definition of Y axis (performance) = % of U.S. adults in top two proficiency categories - % of all int'l. adults in top two proficiency categories.
Note: PIAAC international average calculated from 2012 international data (survey conducted from Aug. 25, 2011 – Apr. 3, 2012) for all countries except for the United States, for which combined 2012 and 2014 data (survey conducted from Aug. 26, 2013 - May 5, 2014 ) were used.
Source: U.S. Department of Education, National Center for Education Statistics,
Organization for Economic Cooperation and Development (OECD),
Program for the International Assessment of Adult Competencies (PIAAC), 2012 and 2014.

# Americans lag behind global averages at solving problems in tech-rich environments across various education levels

**Average scores on problem solving in technology-rich environments**

By highest level of education, adults 16-65, 2012/2014, global




Source: "Skills of U.S. Unemployed, Young, and Older Adults in Sharper Focus: Results from the Program for the International Assessment of Adult Competencies (PIAAC) 2012/2014." U.S. Department of Education, March 2016.

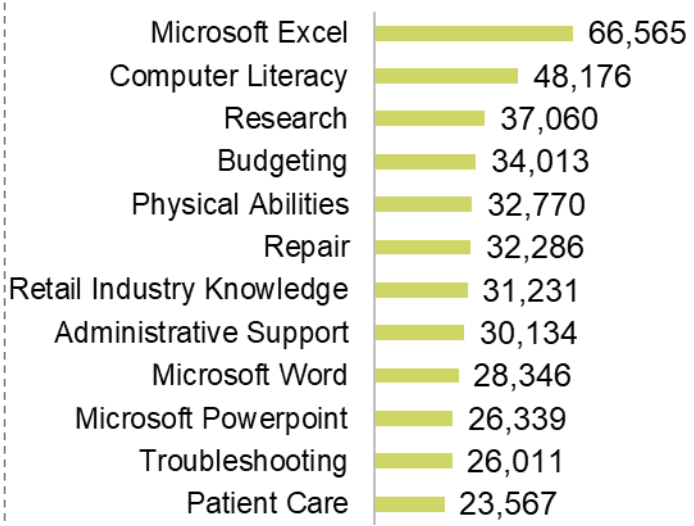
# Middle-skills workers in New York can boost their employability and wages by learning high-demand skills

**Selected Essential Skills in Top Middle-Skills Occupations**

Number of New York job postings seeking skill in 2017

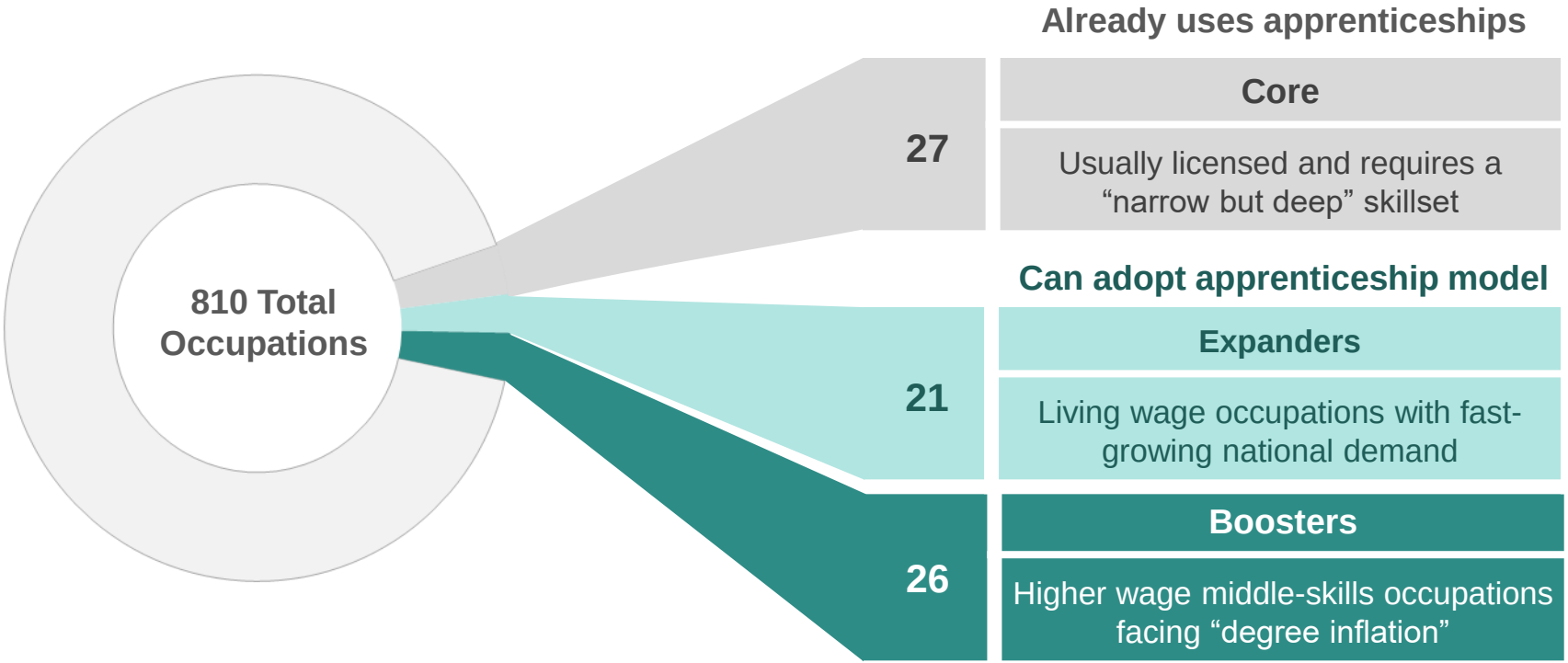

**Selected Technical Skills in Top Middle-Skills Occupations**

Number of New York job postings seeking skill in 2017




Note: These lists of skills were hand-picked to reflect interesting trends, not necessarily the most commonly requested skills.
Source: Burning Glass New York Job Postings Data

# The number of occupations commonly filled with apprenticeships can be nearly tripled from 27 to 74

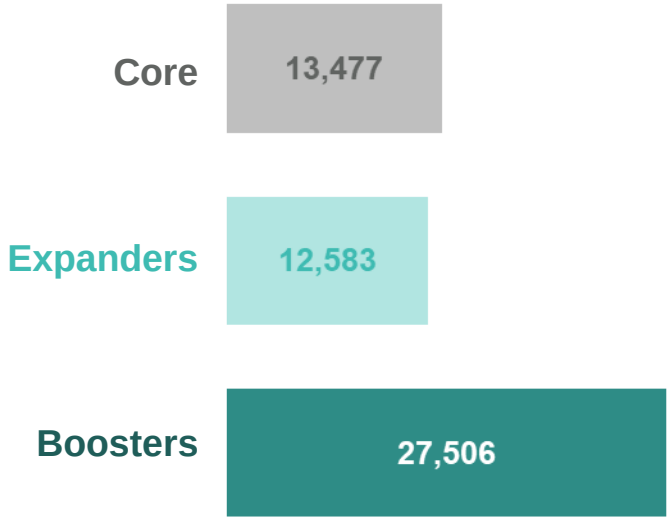




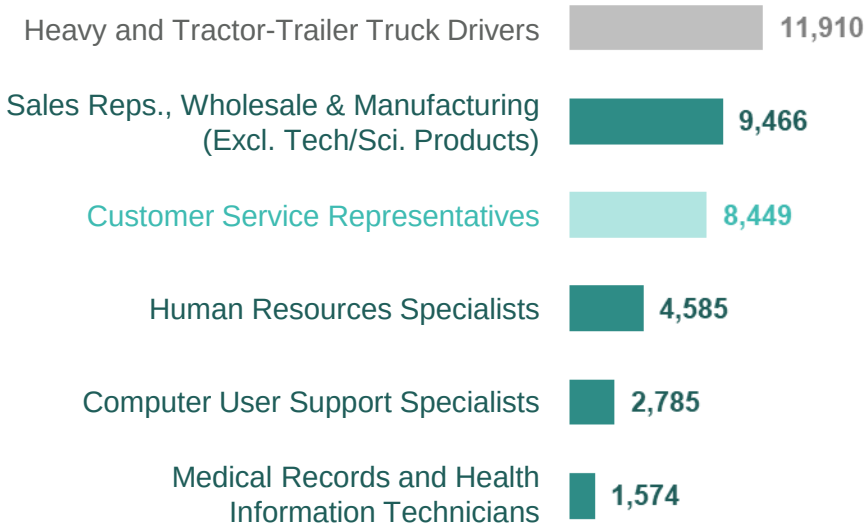

Source: "Room to Grow: Identifying New Frontiers" by Joseph Fuller and Matthew Sigelman. November, 2017.

# 20% of all jobs in New York that require 2 years or less of job experience could adopt an apprenticeship model

**Potential Apprenticeships by Category**
Job postings that could use an apprenticeship model




**Occupations with most potential for apprenticeships**
Job postings that could use an apprenticeship model

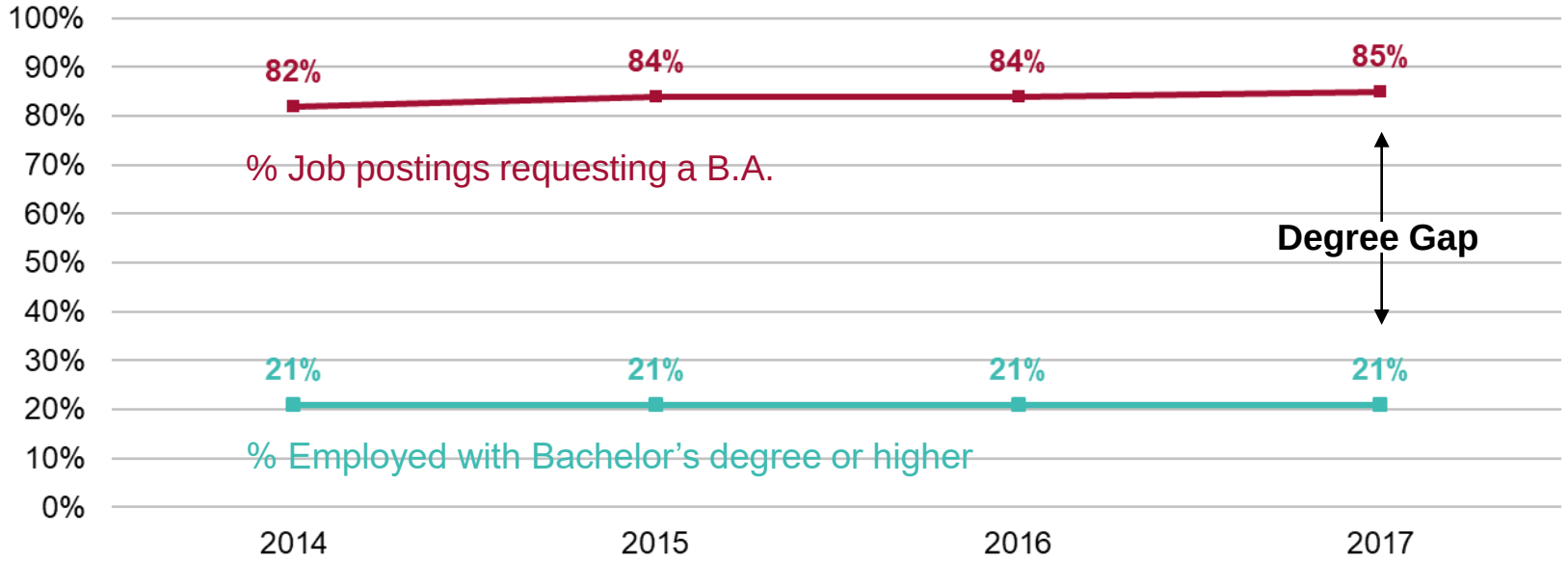



Source: Burning Glass New York Job Postings Data; Occupational Employment Statistics Dataset

# There is rising demand for four-year college degrees in jobs that previously did not require one

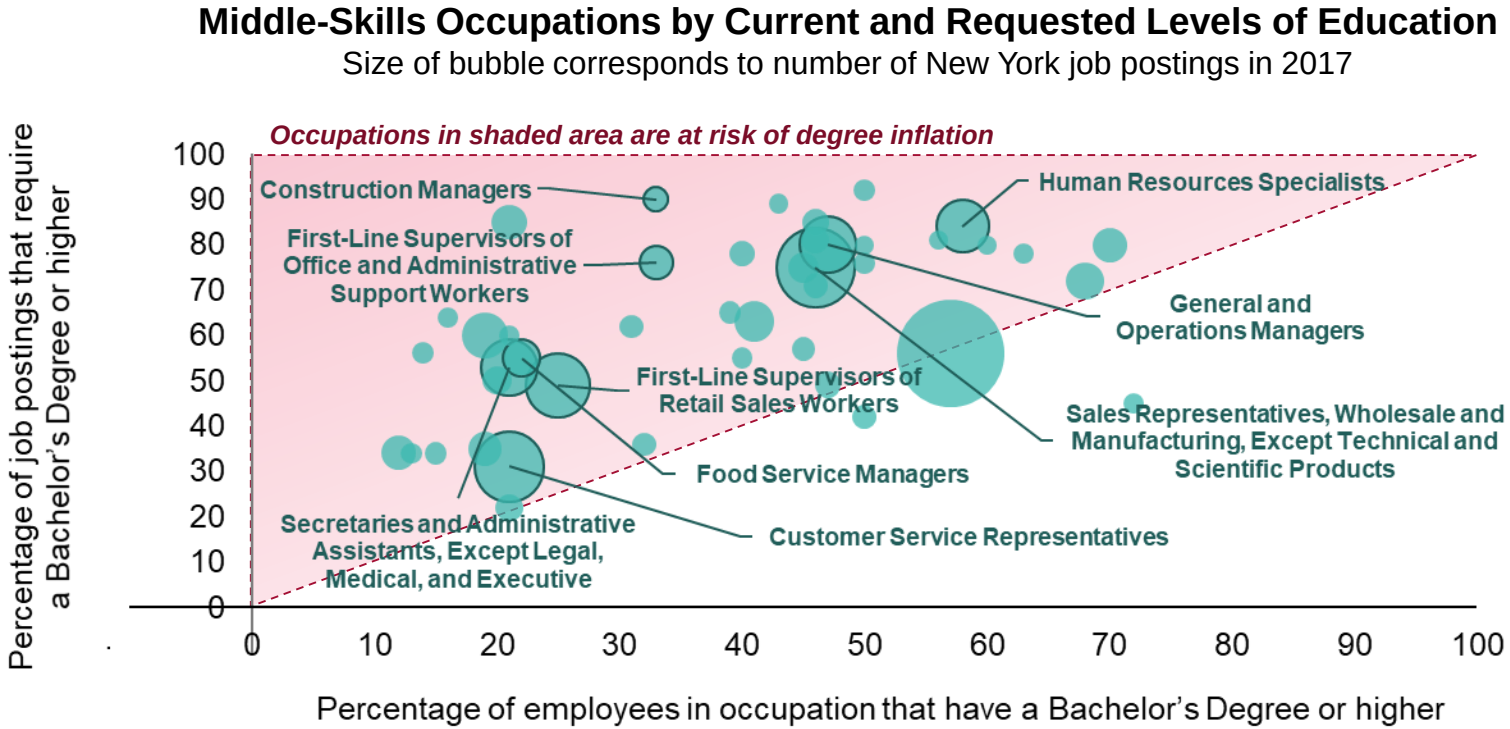
**Current and Requested Educational Levels of Executive Secretaries and Administrative Assistants**

Analysis of job postings and occupational data in New York from 2014 - 2017




Note: Data for the percentage of employees in an occupation who have Bachelor's Degree or Higher are based on 2015 American Community Survey data
Sources: Bureau of Labor Statistics, U.S. Department of Labor, Occupational Employment Statistics;
Burning Glass Technologies' database of online job postings for 2017

# Many occupations in New York are at risk of degree inflation




Note: Data for the percentage of employees in an occupation who have Bachelor's Degree or Higher are based on 2015 American Community Survey data
Source: Burning Glass New York Job Postings Data, American Community Survey Data

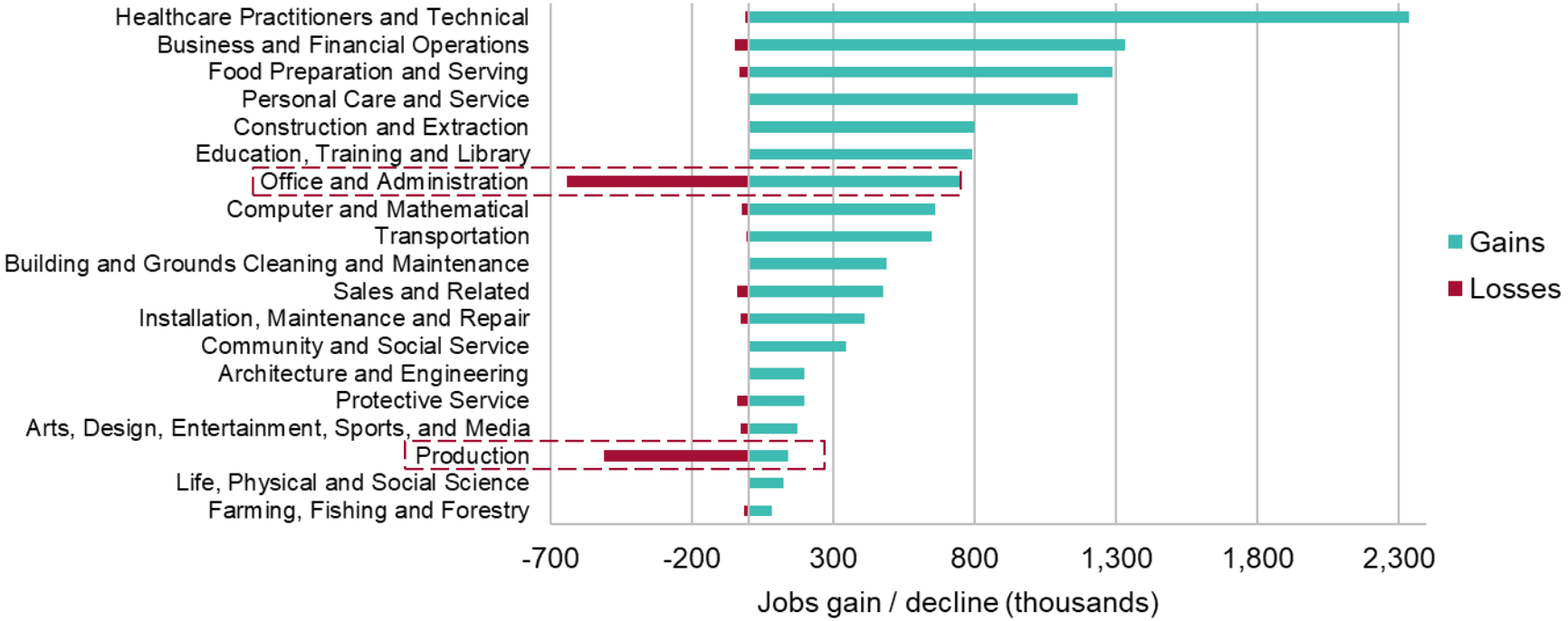
# Surveyed employers see little difference in productivity between graduates and non-degree workers

| Evaluated worker attributes<br>Positive attributes / Negative attributes | Recent college graduates | Both groups equally likely | Non-degree workers with experience | Don't know |
|---|---|---|---|---|
| Higher levels of productivity | 31% | **49%** | 19% | 0% |
| Higher rates of retention / longer tenure with company | 29% | **40%** | 31% | 0% |
| Faster time to reach full productivity | 37% | **44%** | 19% | 0% |
| Higher salary expectations | **59%** | 30% | 11% | 1% |
| Likely to leave for a competitor | **49%** | 38% | 12% | 1% |
| Likely to feel unengaged or underutilized | **40%** | 35% | 23% | 2% |

Source: 2016-2017 Accenture, Grads of Life and HBS Project on Managing the Future of Work, Hiring and Talent Management Survey.

# Office, administration, and production workers will likely lose their jobs to automation in the near future

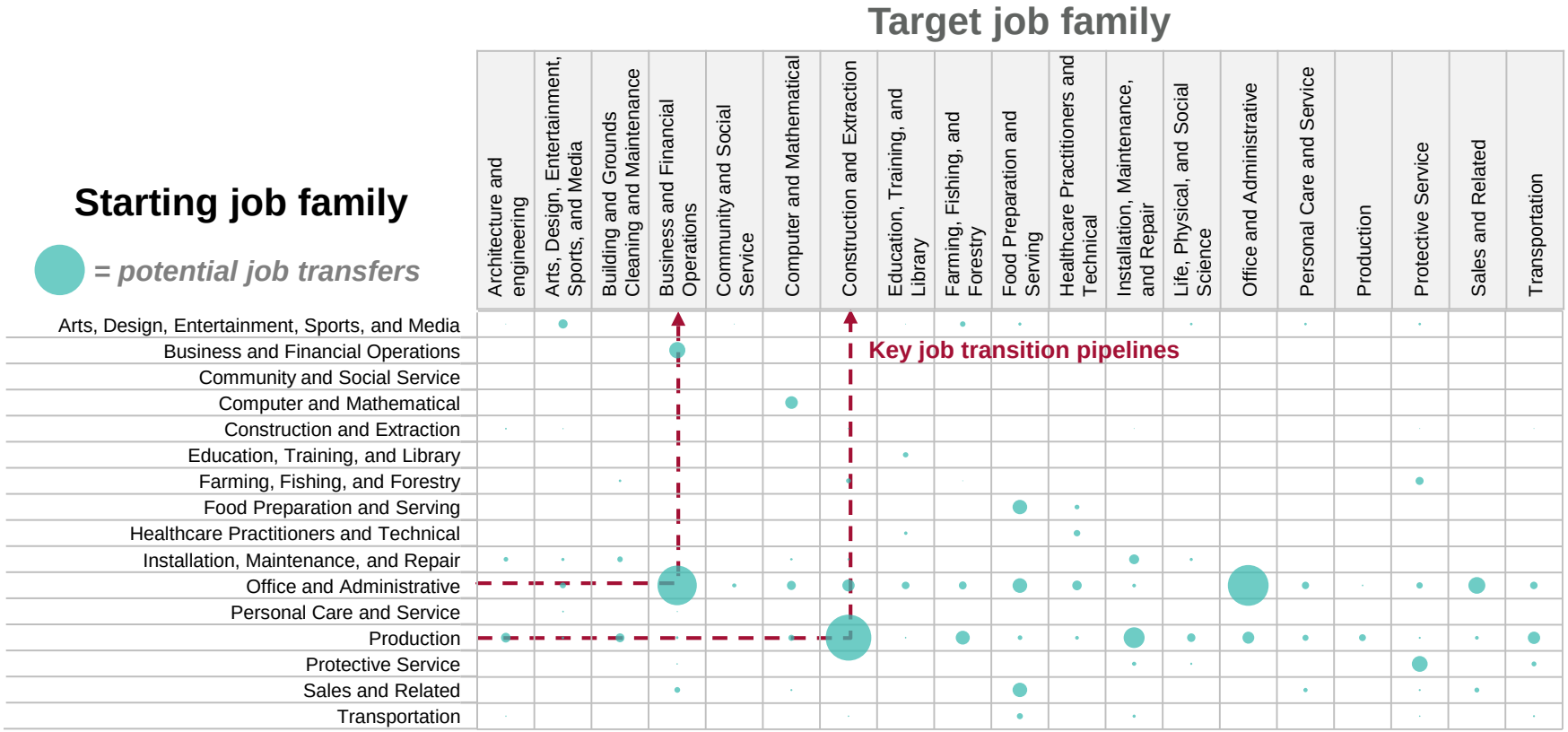
**Projected structural changes in the US job market by 2026**






Source: Burning Glass and World Economic Forum 2018 report, “Towards a Reskilling Revolution”

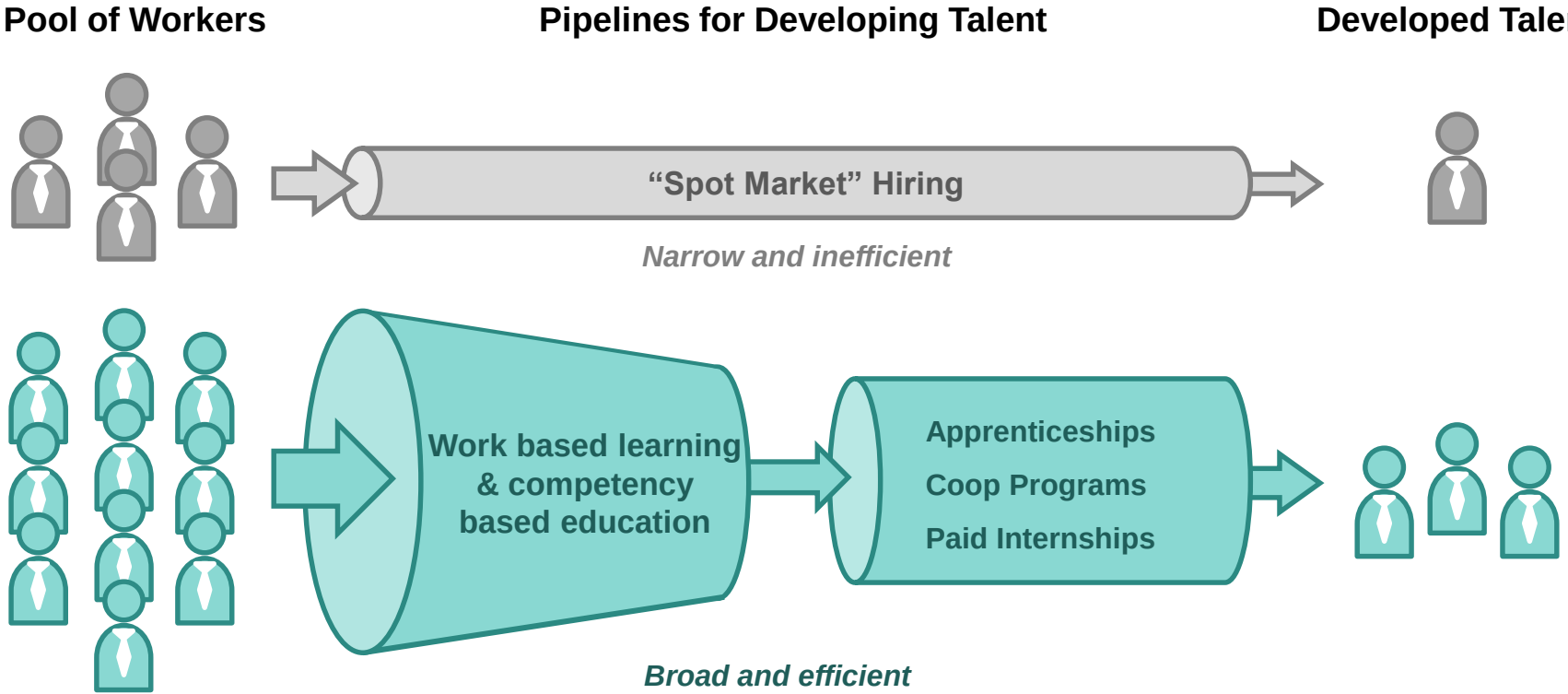
# Those occupations can transition to similar roles






Source: Burning Glass and World Economic Forum 2018 report, “Towards a Reskilling Revolution”

# Companies can tap into the labor pool more effectively by developing alternative talent development pipelines



# **Case Study**: Pathways to Prosperity in Delaware

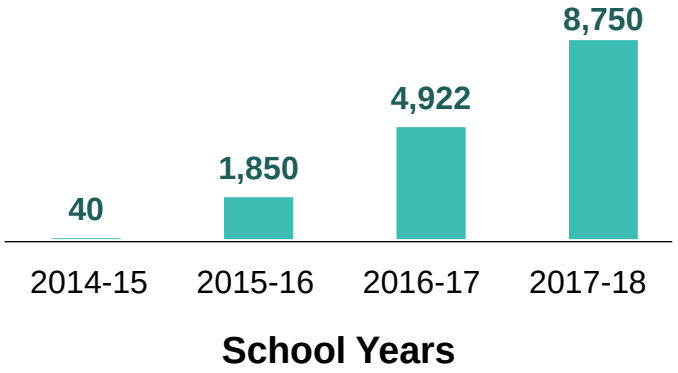
*"The American system for preparing young people to lead productive and prosperous lives as adults is clearly badly broken. Failure to aggressively overcome this challenge will surely erode the fabric of our society."*

*-Harvard Graduate School of Education, Pathways to Prosperity Project*

**The Goal: Develop a New College and Career Pathway for Young People**

1. Finish high school with 12 college credits and work-based learning experience
2. Attain postsecondary credential with value in regional labor market
3. Launch a career in a high-demand, high-growth, high-wage occupation
4. Advance in career and pursue further education as interested

**Delaware Pathways Student Participation**
School Years 2014-15 to 2017-18






Source: "Dismissed by Degrees," by Joseph Fuller and Manjari Raman, October 2017

# APPENDIX

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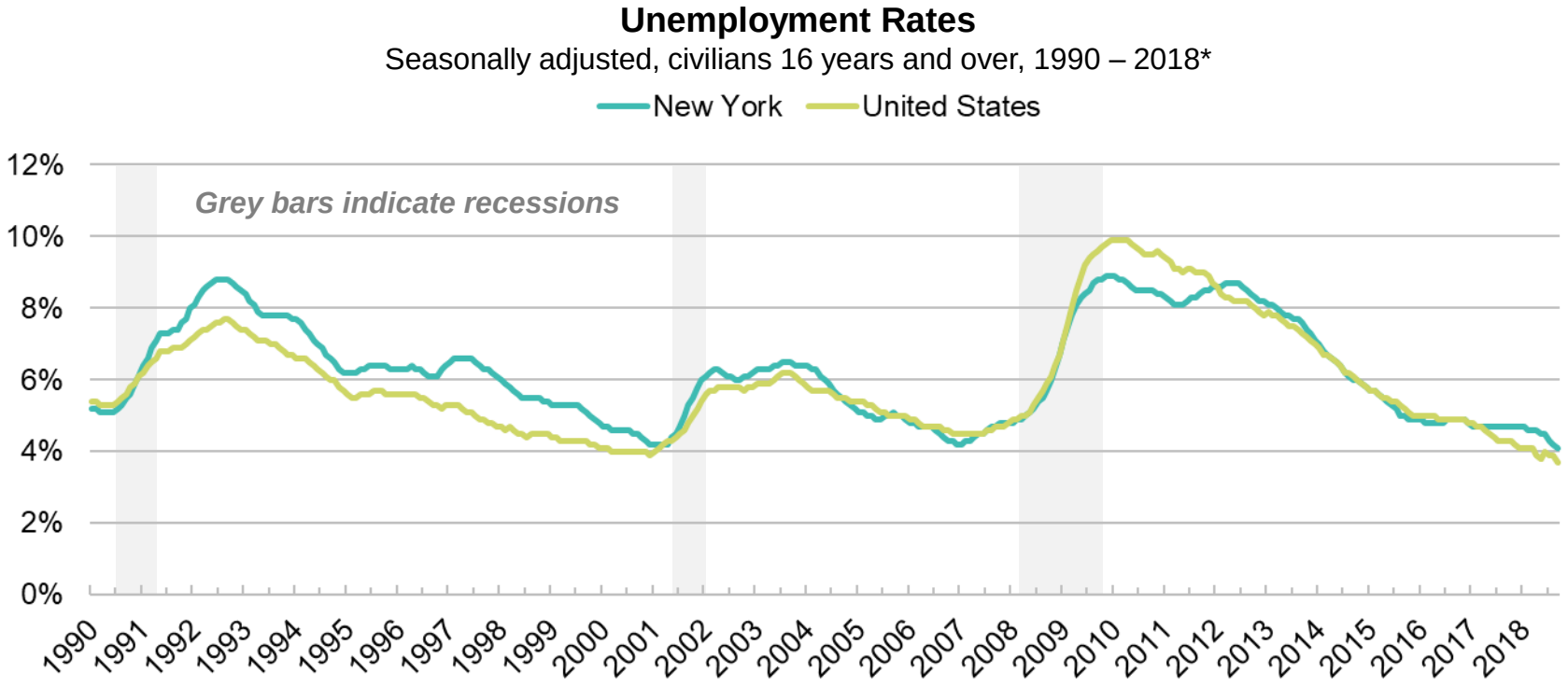
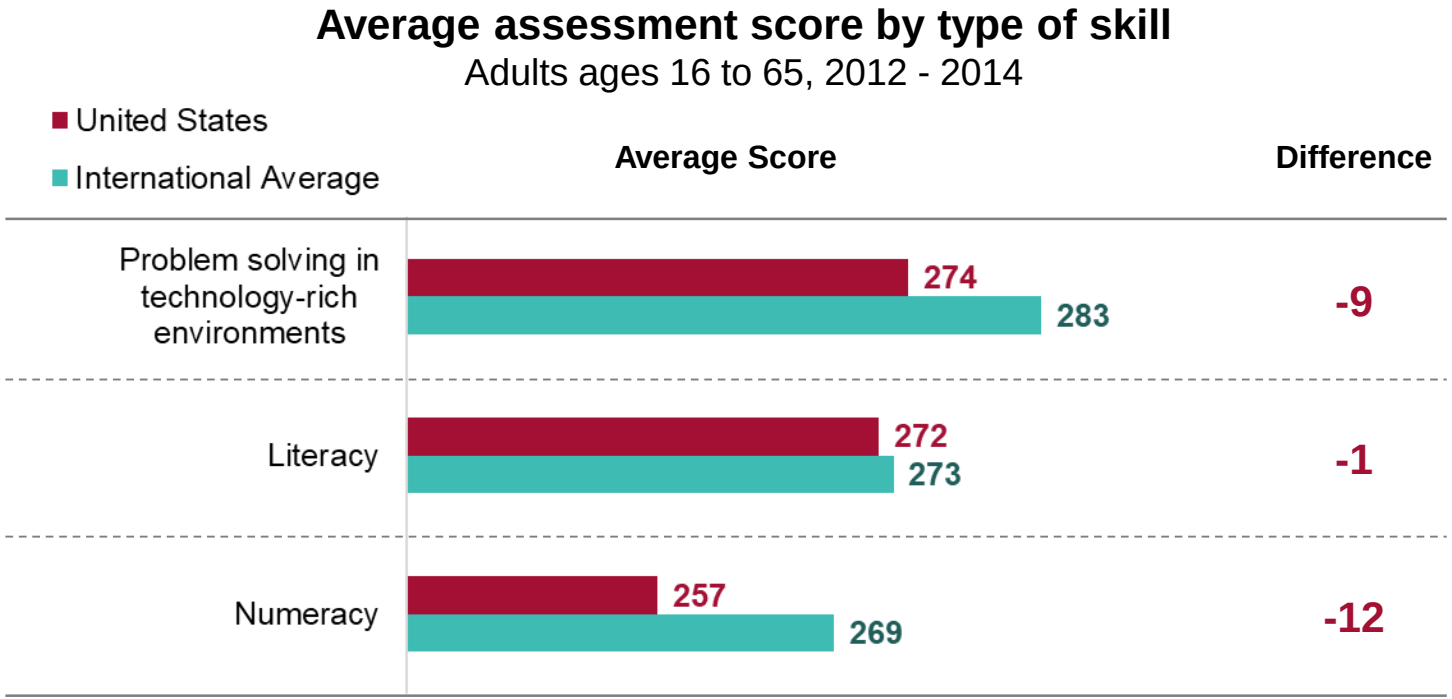
Managing the Future of Work

# While slightly higher than the national average, New York's unemployment rate is near record lows




*Figures represent 4-month smoothed rolling average
Source: Bureau of Labor Statistics, 2018

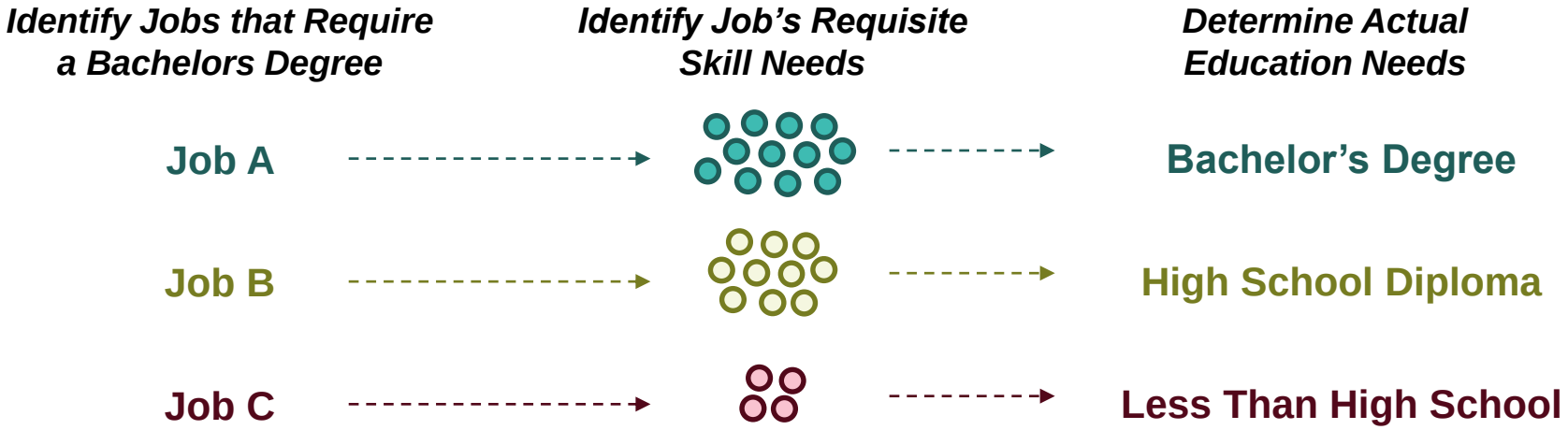
# Americans trail the rest of the world in problem solving and numeracy skills




Source: "Skills of U.S. Unemployed, Young, and Older Adults in Sharper Focus: Results from the Program for the International Assessment of Adult Competencies (PIAAC) 2012/2014." U.S. Department of Education, March 2016.

# **Case Study**: LifePoint Health reduced degree inflation by identifying its real skill needs

**LifePoint Health's Phases For Identifying Degree Inflation**



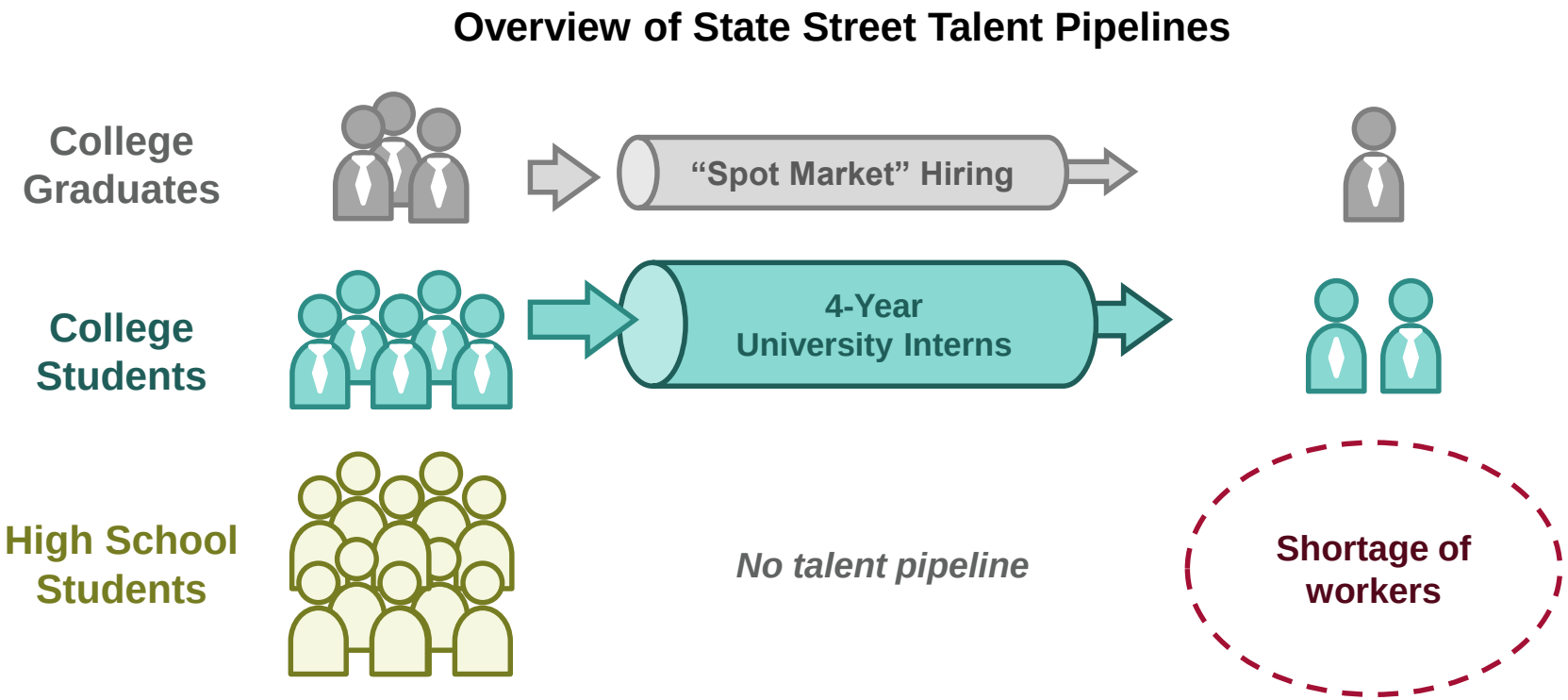

*"Why are you insisting on a person with a high-school diploma when your facility is located in an area where 25% of the population does not have a high-school diploma?"*

Pam Belcher, Senior Vice President of Human Resources and Talent Management



Source: "Dismissed by Degrees," by Joseph Fuller and Manjari Raman, October 2017

# **Case Study**: State Street expanded its talent pool by partnering with non-profits to target high school students

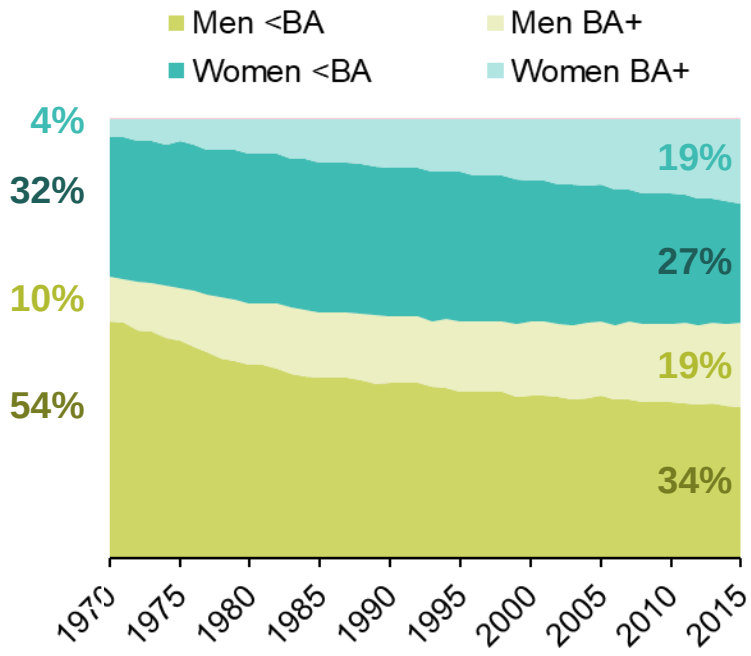




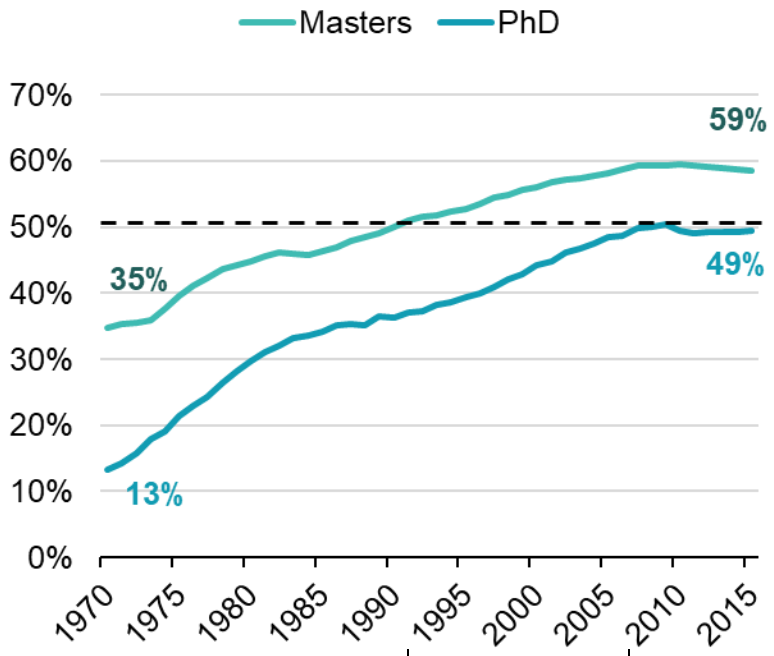

Source: "Dismissed by Degrees," by Joseph Fuller and Manjari Raman, October 2017

# As women make up a large share of the educated workforce, employers must support their caregiving needs

**Share of Labor Force by Gender and Education**
United States, 1970 - 2015

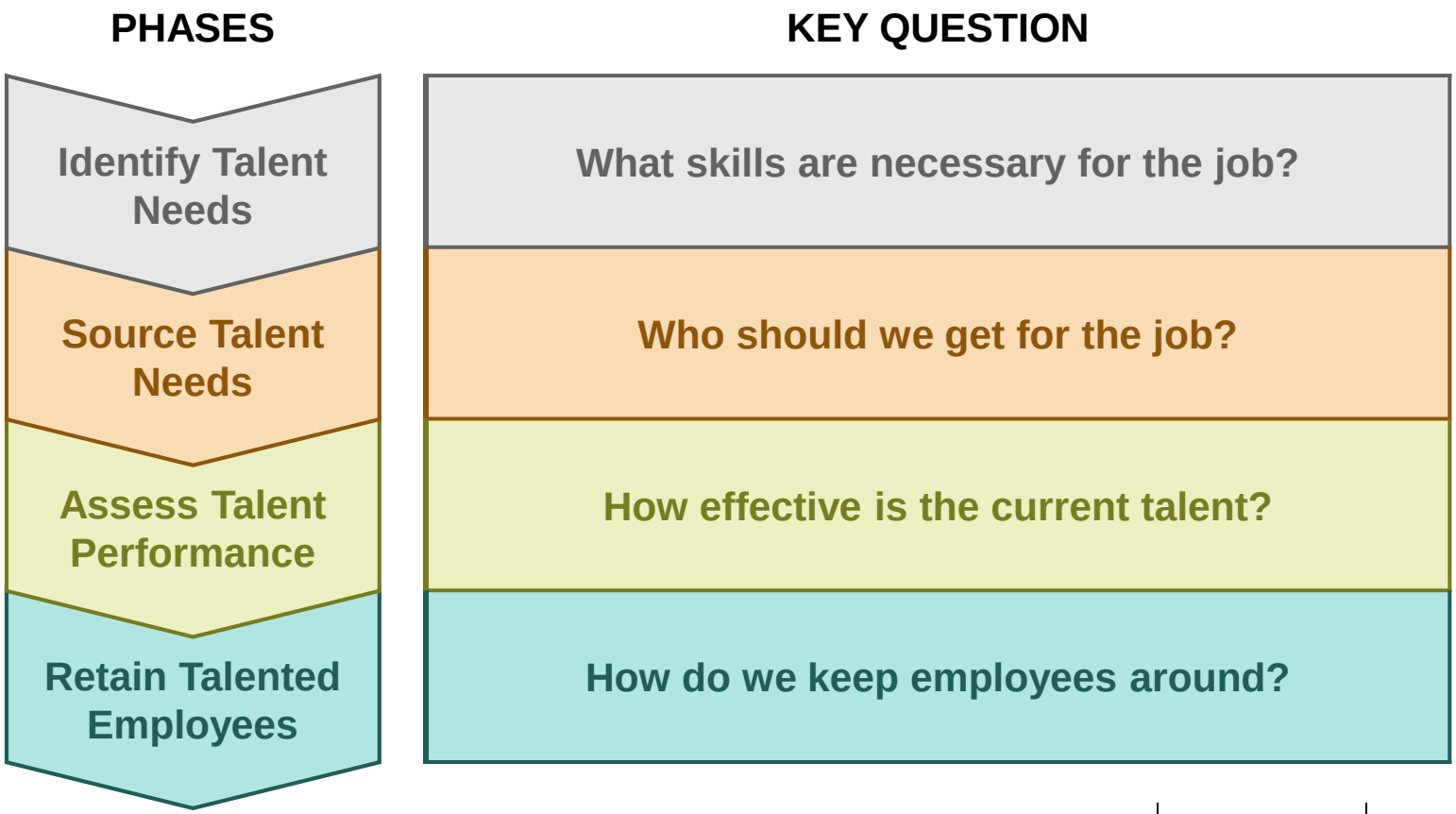



**Women's share of advanced degrees**
United States, 1970 - 2015




Source: National Center for Education Statistics

# Talent pipeline management can be broken into four phases

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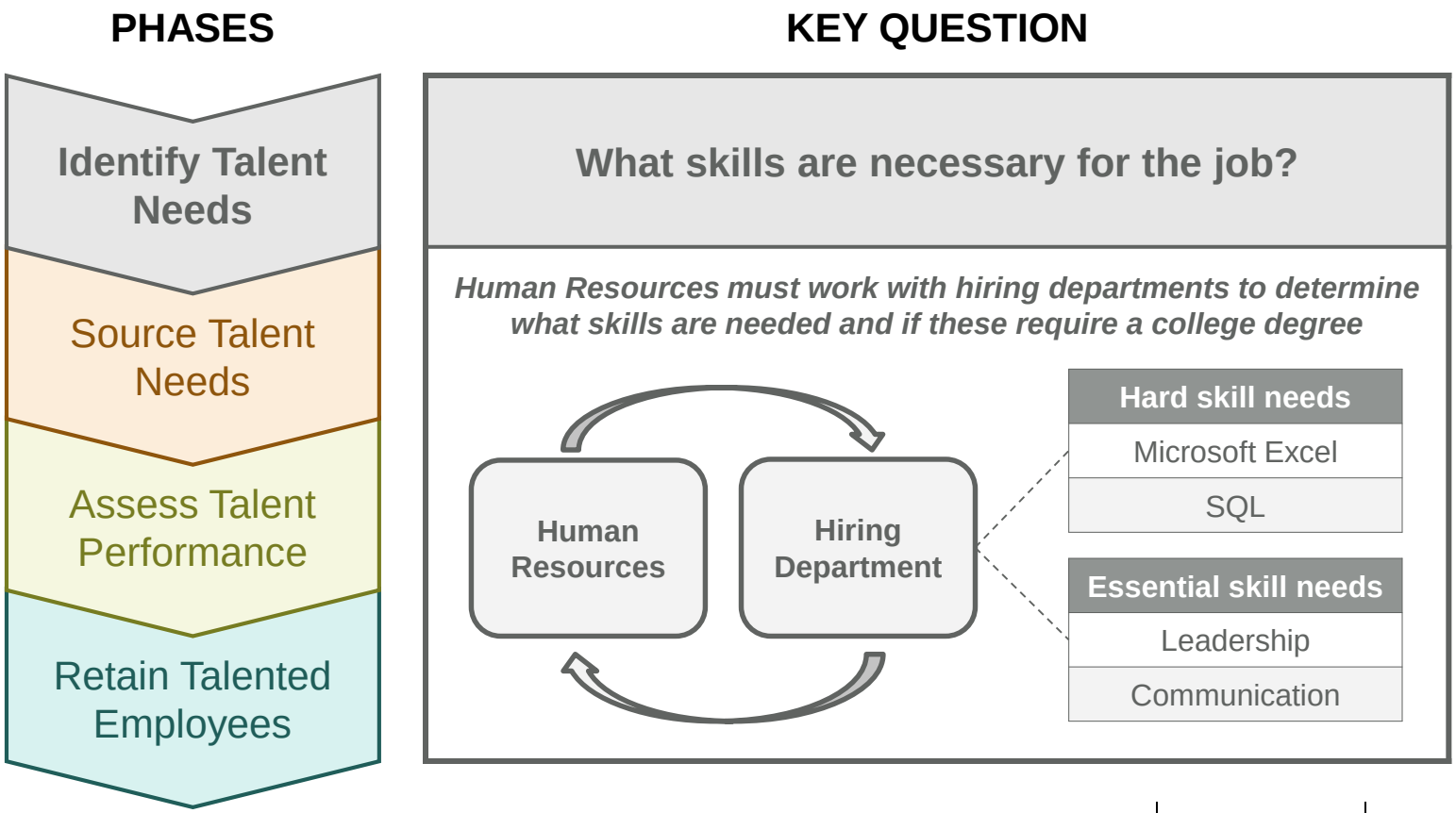




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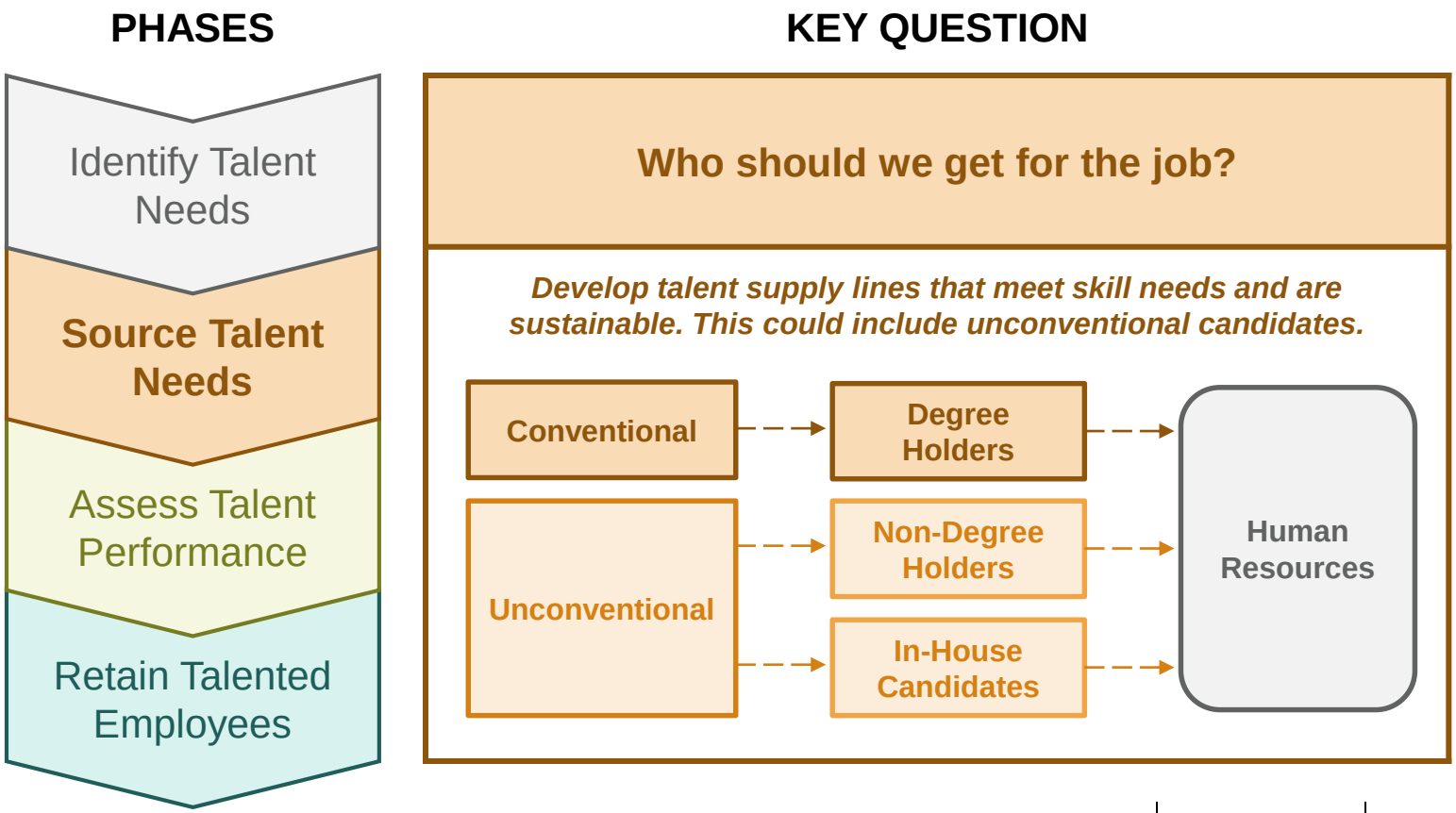




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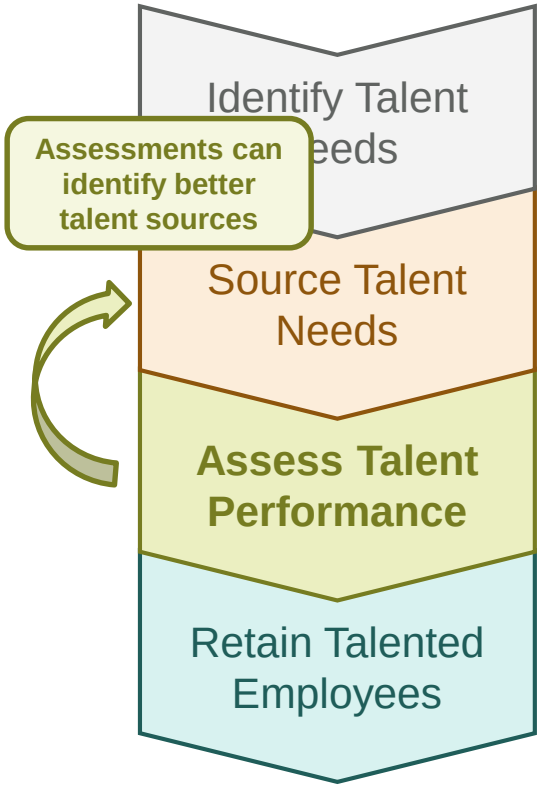
**PHASES**




**KEY QUESTION**

**How effective is the current talent?**

***Regularly evaluate talent sources to determine effectiveness***

| | *Degree workers* | *Non-degree workers* |
|---|---|---|
| **Time to fill position?** | X | ✓ |
| **Turnover rates?** | X | ✓ |
| **Time to train?** | ✓ | X |



Source: "Dismissed by Degrees," by Joseph Fuller and Manjari Raman, October 2017

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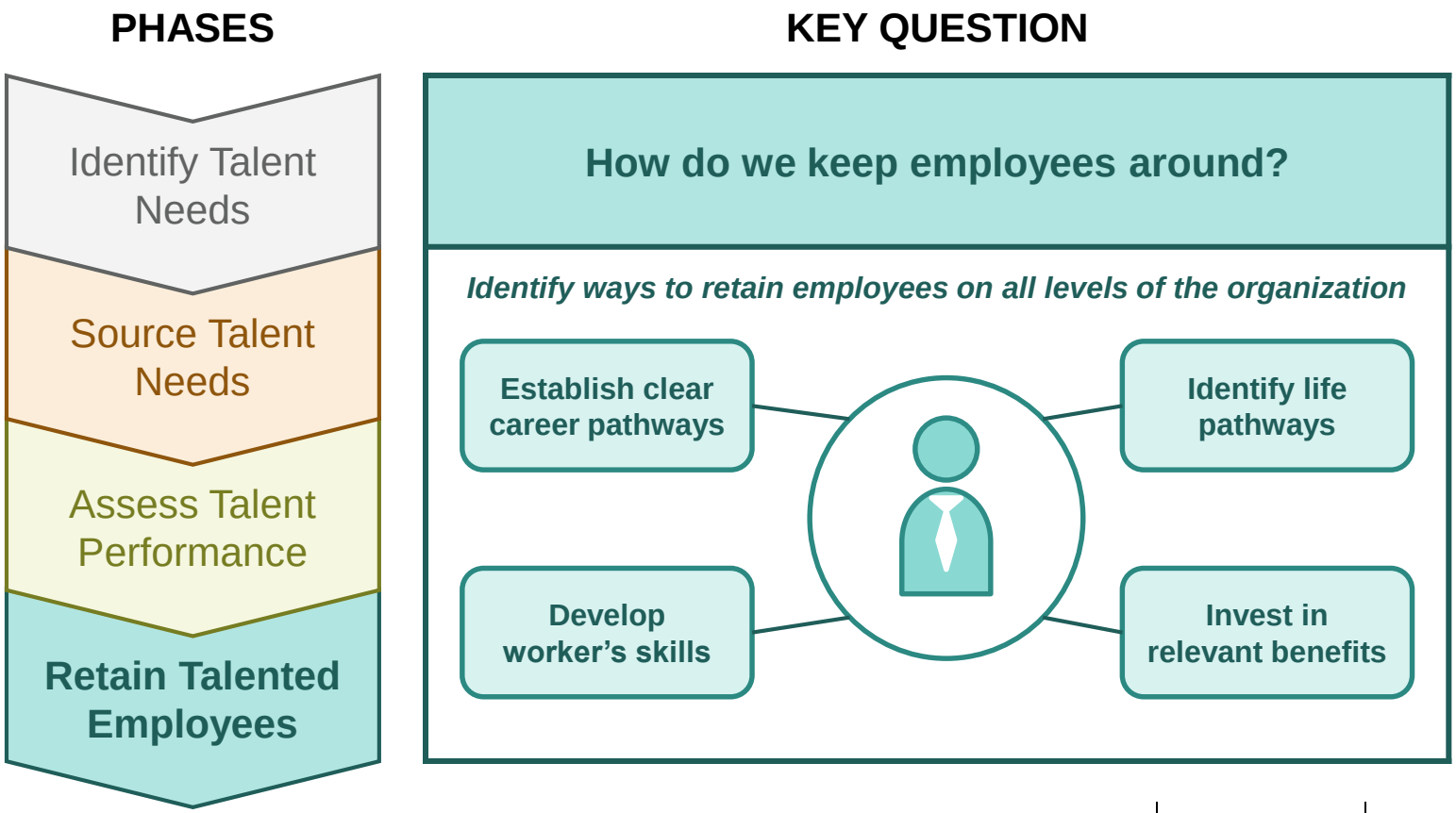




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