Education, Skills, and Employer Preferences in the Middle-Skills Marketplace

April 13, 2017

Organized by the Federal Reserve Bank of Philadelphia

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- The CD function within the Federal Reserve System—consisting of individual departments at each of the 12 Federal Reserve Banks, as well as at the Board of Governors—promotes economic growth and financial stability for low- and moderate-income (LMI) communities and individuals through a range of activities, including:
  - Convening stakeholders, including practitioners, financial institutions, nonprofits, governmental agencies, and the philanthropic and private sectors
  - Conducting and sharing research to examine economic challenges facing LMI communities and attendant policy implications
  - Identifying emerging issues
Today’s Presenters and Agenda

- **Mels de Zeeuw**, Research Analyst II, Federal Reserve Bank of Atlanta
- **Keith Wardrip**, CD Research Manager, Federal Reserve Bank of Philadelphia
- **Sally Smyth**, Director of Community Finance and Impact, Opportunity@Work
- **Papia Debroy**, Director of Employer Solutions, Opportunity@Work
- **Andi Rugg**, Executive Director for Skillful Colorado, Markle Foundation

The following will be discussed:

- New research on the level of education employers seek in candidates for middle-skills jobs
- Efforts to connect prospective workers and employers that rely on candidates’ skills and competencies rather than on educational attainment
Exploring Employers’ Preferences for Education in the Middle-Skills Job Market

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Research Analyst II
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Research on “Opportunity Occupations”

• An “opportunity occupation” is one that:
  – Is generally considered accessible to a worker without a bachelor’s degree
  – Pays an annual median wage at or above the national annual median wage, adjusted for differences in local consumption prices

• The analysis uses three data sets to understand the level of education required or preferred for each occupation:
  – O*NET
  – Burning Glass Technologies

• Main findings:
  – In 2014, 37 million jobs (27.4 percent) were classified as an opportunity occupation, down from 38.7 million (29.8 percent) in 2005.
  – There is large variation among metro areas: e.g., opportunity occupations represented 32.1 percent of employment in Louisville-Jefferson County, Kentucky, but just 11.9 percent in New York-Northern New Jersey-Long Island.

Most Prevalent Opportunity Occupations in 100 Largest Metro Areas (May 2014)

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Employment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registered Nurse</td>
<td>1,763,300</td>
</tr>
<tr>
<td>First-Line Supervisor of Office and Administrative Support Workers</td>
<td>1,025,020</td>
</tr>
<tr>
<td>Bookkeeping, Accounting, and Auditing Clerk</td>
<td>848,100</td>
</tr>
<tr>
<td>Heavy and Tractor-Trailer Truck Driver</td>
<td>824,960</td>
</tr>
<tr>
<td>First-Line Supervisor of Retail Sales Workers</td>
<td>719,270</td>
</tr>
<tr>
<td>Executive Secretary and Executive Administrative Assistant</td>
<td>550,500</td>
</tr>
<tr>
<td>Maintenance and Repair Worker, General</td>
<td>538,510</td>
</tr>
<tr>
<td>Computer User Support Specialist</td>
<td>440,650</td>
</tr>
<tr>
<td>Police and Sheriff’s Patrol Officer</td>
<td>430,880</td>
</tr>
<tr>
<td>Licensed Practical and Licensed Vocational Nurse</td>
<td>415,170</td>
</tr>
<tr>
<td>Secretary and Administrative Assistant</td>
<td>406,620</td>
</tr>
<tr>
<td>Electrician</td>
<td>385,080</td>
</tr>
</tbody>
</table>

Note: Based on both the typical entry-level education and the views of current workers.
Percent of Online Job Ads Requesting a Bachelor’s Degree or Higher for Each Metro Area (2011–2014)

Note: Each bar represents one metro area. Only metro areas with at least 50 job ads are represented.
What Explains this Metro-to-Metro Variation?

• Research question: What factors explain the metro area variation in employers’ preferences for college-educated workers?

• Focus on four opportunity occupations:
  – Computer user support specialist
  – Registered nurse
  – Retail sales supervisor
  – Executive secretary
Methodology

• Used data from Burning Glass Technologies (26.9 million job ads), U.S. Bureau of Labor Statistics, U.S. Bureau of Economic Analysis, Integrated Postsecondary Education Data System (IPEDS), and U.S. Census Bureau

• Developed a series of binary logistic regression models to determine how certain job and metro area characteristics influence the probability that an employer requests a bachelor’s degree for these occupations

• Controlled for the industry of the employer, the level of experience requested, the number and type of skills requested, the year the ad was placed, and whether it was placed by a recruiter
### Findings

<table>
<thead>
<tr>
<th>Average Marginal Effects for Metro Area Characteristics</th>
<th>Computer user support specialist</th>
<th>Registered nurse</th>
<th>Retail sales supervisor</th>
<th>Executive secretary</th>
<th>All occupations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Census region (South is reference)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Northeast</td>
<td>4.2%</td>
<td>8.9%</td>
<td>2.7%</td>
<td>4.8%</td>
<td>1.9%</td>
</tr>
<tr>
<td>Midwest</td>
<td>1.3%</td>
<td>3.9%</td>
<td>0.6%</td>
<td>—</td>
<td>0.8%</td>
</tr>
<tr>
<td>West</td>
<td>-3.3%</td>
<td>4.6%</td>
<td>2.8%</td>
<td>1.7%</td>
<td>-0.2%</td>
</tr>
</tbody>
</table>

| **Population (<250,000 is reference)**                 |                                 |                 |                         |                     |                 |
| 250,000–499,999                                       | 3.1%                            | 0.8%            | 2.3%                    | -1.7%               | 0.4%            |
| 500,000–999,999                                       | 3.8%                            | —               | 1.5%                    | —                   | 0.6%            |
| 1,000,000–2,499,999                                   | 4.8%                            | 1.3%            | 3.1%                    | —                   | 1.3%            |
| >2,500,000                                             | 6.2%                            | 4.3%            | 2.9%                    | 3.7%                | 2.0%            |

| **Degree completions per 1,000 labor force participants (Quartile 1 is reference)** |                                 |                 |                         |                     |                 |
| Quartile 2                                             | 4.9%                            | 3.6%            | 1.7%                    | 3.1%                | 1.6%            |
| Quartile 3                                             | 4.5%                            | 3.8%            | 1.9%                    | 8.1%                | 2.2%            |
| Quartile 4                                             | 5.6%                            | 2.2%            | 0.7%                    | 11.0%               | 2.7%            |

| Average annual wages ($10,000s)                        |                                 |                 |                         |                     |                 |
|                                                       | 5.0%                            | 2.0%            | 1.2%                    | 4.5%                | 1.9%            |
| Unemployment rate                                     | 0.6%                            | —               | -0.7%                   | 0.6%                | 0.0%            |
| Percent foreign born                                  | 0.1%                            | -0.2%           | 0.2%                    | 0.1%                | 0.0%            |
| Presence of a research university                     | 0.5%                            | —               | —                       | -1.6%               | 0.2%            |

Notes: Values are statistically significant with at least 95 percent confidence (p < 0.05). “—” indicates the result was not statistically significant.
Relative Likelihood of Employers Requesting a Bachelor’s Degree (Compared with Atlanta Metro Area)

<table>
<thead>
<tr>
<th>METRO AREA</th>
<th>Computer user support specialist</th>
<th>Registered nurse</th>
<th>Retail sales supervisor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boston-Cambridge-Quincy, MA-NH</td>
<td>6%</td>
<td>9%</td>
<td>3%</td>
</tr>
<tr>
<td>Bridgeport-Stamford-Norwalk, CT</td>
<td>11%</td>
<td>—</td>
<td>6%</td>
</tr>
<tr>
<td>Colorado Springs, CO</td>
<td>-16%</td>
<td>22%</td>
<td>—</td>
</tr>
<tr>
<td>Huntsville, AL</td>
<td>-19%</td>
<td>-17%</td>
<td>—</td>
</tr>
<tr>
<td>Jacksonville, FL</td>
<td>-9%</td>
<td>-7%</td>
<td>—</td>
</tr>
<tr>
<td>Miami-Fort Lauderdale-Pompano Beach, FL</td>
<td>-9%</td>
<td>-9%</td>
<td>5%</td>
</tr>
<tr>
<td>Nashville-Davidson-Murfreesboro-Franklin, TN</td>
<td>-11%</td>
<td>-14%</td>
<td>—</td>
</tr>
<tr>
<td>New York-Northern New Jersey-Long Island, NY-NJ-PA</td>
<td>5%</td>
<td>18%</td>
<td>10%</td>
</tr>
<tr>
<td>Orlando-Kissimmee-Sanford, FL</td>
<td>-14%</td>
<td>10%</td>
<td>—</td>
</tr>
<tr>
<td>Portland-Vancouver-Hillsboro, OR-WA</td>
<td>-7%</td>
<td>18%</td>
<td>—</td>
</tr>
<tr>
<td>San Jose-Sunnyvale-Santa Clara, CA</td>
<td>6%</td>
<td>6%</td>
<td>19%</td>
</tr>
<tr>
<td>Seattle-Tacoma-Bellevue, WA</td>
<td>-13%</td>
<td>11%</td>
<td>21%</td>
</tr>
<tr>
<td>Tampa-St. Petersburg-Clearwater, FL</td>
<td>-10%</td>
<td>5%</td>
<td>—</td>
</tr>
<tr>
<td>Trenton-Ewing, NJ</td>
<td>7%</td>
<td>12%</td>
<td>5%</td>
</tr>
</tbody>
</table>

Notes: Values are statistically significant with at least 95 percent confidence (p < 0.05). “—” indicates the result was not statistically significant.
Inefficiencies and Opportunities in the Middle-Skills Jobs Market

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Questions Raised by the Research

• Why are employers in certain types of metro areas more likely to seek a college-educated candidate for some occupations?
  – Do less-educated workers lack hard skills that are best learned at a four-year institution?
  – Are employers using a college degree as a proxy for soft skills or other intangibles?
Difficulties Filling Middle-Skills Positions

- 38 percent of Harvard Business School alums consider it very or somewhat difficult to fill middle-skills openings.
- 56 percent of human resources (HR) executives report that middle-skills jobs are hard to fill. Leading reasons include:
  - Trained talent is difficult to find (54 percent).
  - Sufficient experience is difficult to find (50 percent).
  - They have to hire people with more education than the position requires to get the talent needed (38 percent).
  - Some skilled workers don’t have the right work ethic or ambition for the job (34 percent).

Difficulties Filling Middle-Skills Positions (Continued)

• Interviews and surveys suggest a variety of reasons that employers ask for more education than the job requires, including:
  – The need for soft skills such as leadership, reliability, and communication skills
  – An indication that the worker can advance, thanks to technical savvy, problem-solving skills, and adaptability

• Among employers hiring candidates with a college degree for jobs that once required only a high school diploma, some attribute the shift to an evolution of necessary skills.

Implications for Employers

• Research has shown that, for some middle-skills jobs, asking for a bachelor’s degree lengthens the time required to fill open positions.

• Sixty-nine percent of HR executives surveyed report that difficulties filling middle-skills jobs affect company performance.

• Delays in filling job openings can lead to:
  – Lower morale and motivation for current workers
  – Unfinished, delayed, or lower-quality work
  – Declines in customer service
  – Lost revenue
  – Higher turnover

Implications for Prospective Workers

% with Bachelor’s Degree or Higher

- **Asian alone**: 52%
- **White alone (not Hispanic)**: 34%
- **African American alone**: 20%
- **Other**: 17%
- **Hispanic (all races)**: 15%

Notes: Estimates apply to population 25 years and older. Racial groups other than white alone include those of Hispanic origin.
Source: U.S. Census Bureau, 2015 American Community Survey 1-Year Estimates, Table S1501.
Strategies to Improve the Status Quo

• Fostering partnerships between industries, educators, and training providers to clarify—and deliver—the hard and soft skills that businesses need
• Forecasting skills requirements
• Expanding internship and apprenticeship programs
• Investing in entry-level workers
• Developing job descriptions based on skills and competencies rather than on educational attainment

Introduction to TechHire

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Introduction to TechHire
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What Is TechHire?

TechHire is Opportunity@Work’s first national initiative in cities, states, and rural areas to “recode” the American economy by helping employers find outstanding tech talent, and overlooked job seekers get the training and connections they need to start successful technical careers.
AKRON, OH
ALACHUA AND BRADFORD COUNTIES, FL
ALBUQUERQUE, NM
ANCHORAGE, AK
ATLANTA, GA
AUSTIN, TX
BALTIMORE, MD
BELLEVUE, WA
BIRMINGHAM, AL
BOSTON, MA
BUFFALO COUNTY AND KEARNEY, NE
BURLINGTON, VT
CARROLL COUNTY, MD
CHATTANOOGA, TN
CINCINNATI, OH
COLORADO
DELAWARE
DETROIT, MI
EASTERN KENTUCKY
EL PASO COUNTY, TX
FLINT, MI
HAWAII
HOWARD COUNTY, MD
INDIANAPOLIS, IN
JACKSON, MS
JACKSON, TN
KANSAS CITY, MO
LOS ANGELES, CA
LOUISVILLE, KY
LYNCHBURG, VA
MAINE
MEMPHIS, TN
MIAMI, FL
MILWAUKEE, WI
MINNEAPOLIS, MN
MOBILE, AL
NASHVILLE, TN
NEW HAVEN, CT
NEW ORLEANS, LA
NEW YORK CITY, NY
NEWARK, NJ
OAKLAND, CA
OKLAHOMA CITY, OK
PENSACOLA, FL
PHILADELPHIA, PA
PORTLAND, OR
PUERTO RICO
RALEIGH, NC
RHODE ISLAND
RIVERSIDE, CA
ROCHESTER, NY
SAN ANTONIO, TX
SAN FRANCISCO, CA
SAN JOSE, CA
SANTA FE, NM
SEATTLE, WA
SOUTH CENTRAL APPALACHIA
ST. LOUIS, MO
STAMFORD, CT
TALLAHASSEE, FL
TAMPA BAY, FL
TOLEDO, OH
TRENTON, NJ
TULSA, OK
UTAH
VIRGINIA
WASHINGTON, DC

TECHHIRE IS A PLACE-BASED INITIATIVE WITH 70+ REGIONS ... AND GROWING
TechHire Year One Progress

TechHire “rewires” the technology job market, education, training, and support ecosystem for growth and inclusion in 71 U.S. communities (and growing).

- **4,015 PLACEMENTS**
  - Individuals placed into information technology (IT) jobs or internships across the TechHire network

- **6,062 TRAINED**
  - Individuals trained in IT skills in the TechHire network

- **1300+ EMPLOYERS**
  - Employers committed to interviewing TechHire candidates, sharing demand needs, and providing feedback

- **237 PARTNERS**
  - Local community partners engaged in supporting TechHire

- **193 EDUCATORS**
  - Education and training providers committed to providing accelerated training aligned with demand
TECHHIRE COMMUNITY LEAD ORGANIZATION

Marketplace Backbone Role

EMPLOYER CONVENER(S)

TRAINING PROVIDER CONVENER(S)

WORKFORCE DEVELOPMENT ORGANIZATION CONVENER(S)

TECHHIRE EMPLOYERS

TECHHIRE TRAINING PROVIDERS

TECHHIRE WORKFORCE DEVELOPMENT ORGANIZATIONS

TECHHIRE CANDIDATES

BACKBONE AND CONVENING

MARKETPLACE
Growing Gap in Tech Roles Is Pain Point for Employers

By 2020, there will be 1 million more IT jobs than computer science students in the United States.

Sample In-Demand Tech Jobs that Don’t Require a Four-Year Degree:

- User Experience Design
- Data Analytics
- Ad Operations
- Marketing Technology
- Software Development
- Applications
- Development
- Network Administration

Note: “Computing jobs” refers to jobs in the disciplines of computer engineering, computer science, information systems, IT, software engineering, and related fields.
Source: U.S. Bureau of Labor Statistics
Candidate submits an initial survey specifying skill sets, past project information, and work history.

Candidate takes an online assessment, evaluating fundamental coding skills in the programming language of the candidate’s choice.

Candidate is interviewed and evaluated on soft skills by volunteer HR staff and hiring managers.

Profiles of successful candidates are available to employers for review.
The partnership with TechHire helped us reach candidates that we had not found through our traditional recruiting methods.”

— Joe Carey, GE Digital
TechHire Benefits to Employers

**REDUCED DIFFICULTY IN FILLING ROLES**
- Increased talent supply reduces length of vacancy and reduces intensity of competition for hires.

**IMPROVED RETENTION**
- Candidates sourced from nontraditional talent pools report higher levels of loyalty to companies.

**REDUCED COST**
- Sourcing from local talent pools lowers recruiting costs.
- There is an advantage over traditional university recruiting in immediately available candidates.

**IMPROVED WORKFORCE DIVERSITY**
- Sourcing from a diverse pool improves workforce diversity.
- Diverse teams show higher percentage of collaboration and higher rates of retention.
Development of Solutions for New Roles

1. QA Tester
2. Network Architect
3. Information Security Analyst
4. Systems Engineer
5. Database Administrator
6. Business Intelligence Analyst
7. Computer Support Specialist
8. Systems Analyst
9. Data Scientist

Development of Technical Assessment
Development of Behavioral Interview
Recruitment and Training of Volunteer Network
Deployment of Product

Join us! Volunteer at techhire.org/volunteer
Skillful Overview

Andi Rugg
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Skillful Colorado, Markle Foundation
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Create a labor market built on skills, in which there are many pathways to career success for middle-skills jobseekers
Ecosystem Stakeholders
What Success Looks Like

Skillful measures of success based on our ability to help create an inclusive, skills-based labor market

- **Individual getting into a better pathway**
  - Middle-skills individual gets a job that offers an attractive career path and wage growth, e.g., in our target industries.

- **Individual pursuing training that leads to better pathway**
  - Middle-skills individual pursues and completes a training program that leads to an attractive career path and wage growth, e.g., in our target industries.

- **Employer implementing skills-based practices**
  - Employer enrolls middle-skills individual in a skills-based training program or hires middle-skills individual with a skills-based job description.
Skills-Based Hiring

A shift to skills-based hiring requires changes in a few core practices

<table>
<thead>
<tr>
<th>Hiring Process Overview</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Traditional Hiring</strong></td>
</tr>
<tr>
<td>Focus on college degrees and specific experiences in job postings, used as proxies for needed skills</td>
</tr>
<tr>
<td>A casual distinction between required and preferred skills is common</td>
</tr>
<tr>
<td>A relatively disconnected hiring through onboarding process, with each step taking place largely independent of the others</td>
</tr>
</tbody>
</table>

| **Skills-Based Hiring** |
| Focus on the needed skills regardless of how they were gained (e.g., college, military, previous employment, alternative education) |
| A rigorous distinction between required and preferred skills |
| An integrated, end-to-end hiring through onboarding process built on and informed by skills |

Skills-Based Hiring Beneficial Outcomes

- Upgrade recruiting
- Reduce costs
- Improve productivity
Employer Benefits

There are three major employer benefits of adopting skills-based practices:

- **Upgrade Recruiting**
  - Improve the quantity and quality of applicants
  - Enhance the recruiting through the hiring process

- **Improve Productivity**
  - Upgrade the employee on-boarding process
  - Enable better employee training

- **Reduce Costs**
  - Reduce direct recruiting, on-boarding, and overtime costs
  - Reduce the opportunity cost created by orders going unfilled due to too many open positions
  - Reduce turnover by hiring staff with the right skills
Skills-Based Practices

Six key action items employers can follow to adopt and deploy skills-based practices

1. Create a collaborative, cross-functional recruiting culture focused on skills-based hiring
2. Reformat job postings and descriptions to be skills-based
3. Enhance the recruiting through the hiring process to focus on candidates’ skills
4. Deploy a skills-based onboarding process for new hires
5. Create and define clear career paths within the organization based on the skills required for each role
6. Develop company talent by investing in skills-focused training programs
Skillful Has a Number of Employer Resources

1. Career Path Examples
2. Engagement Materials
3. Hiring Tools
4. Implementation Guides
5. Job Posting Templates
6. Job Seeker Journeys
7. Occupational Deep Dives
8. Skillful Research
9. Skillful Workshop Guides
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Join Us for Our Next Connecting Communities!

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• 2–3 p.m. CT/3–4 p.m. ET
• Presenters:
  – Heidi Kaplan, Senior CD Analyst,
    Board of Governors of the Federal Reserve System
  – Ofronama Biu, Senior Research Associate,
    The NYC Labor Market Information Service (NYCLMIS),
    Center for Urban Research
  – Amy Blair, Economic Opportunities Program,
    Aspen Institute Workforce Strategies Initiative
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You have two options to ask questions today:
1. Email us at: communities@stls.frb.org
2. Type your question into the chat box of the webinar
Thank you to today’s presenters and to all participants for joining this session.

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• All session materials are available on our website, and in the next few days we will be posting an audio file of today’s session.
• If you have topical suggestions for future sessions or any questions about this program, please feel free to contact us at communities@stls.frb.org.
• Information about future sessions will be posted on our website, along with archived materials from past sessions: www.stlouisfed.org/connectingcommunities/.
In connection with this session, you can find a variety of additional resources on this topic at www.fedcommunities.org.

It provides an array of practical resources to help you in your role as a CD professional, whether your work involves supporting people, places, the policy and practice of CD, or small business development.