Exploring a Skills-Based Approach to Occupational Mobility

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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.
The labor market offers some economic opportunity for noncollege workers

- Opportunity employment — defined as employment accessible to workers without a bachelor’s degree and typically paying above the national annual median wage — accounts for 21.6 percent of total employment.

- Some of the largest opportunity occupations, including a number in healthcare and the skilled trades, are expected to experience above-average growth in the coming years.

Findings for the Kansas City metro area

- Kansas City’s level of opportunity employment ranked 10\textsuperscript{th} among the 121 metro areas we studied.
- While they do not typically require a bachelor’s degree, many of these jobs require some type of postsecondary education, on-the-job training, or experience.
- Question: Can we create pathways into these and other higher-wage jobs by leveraging workers’ existing skill sets?

Our guiding principles, data, and methods

Occupations Defined by Tasks and Skills

- An occupation can be thought of as a bundle of tasks, for which a worker needs a certain set of skills.
- Occupations differ in the types of skills they require and the frequency with which those skills are required.

Skills Described in Online Job Ads

- We analyzed nearly 60 million online job advertisements posted between 2014 and 2018.
- Our analysis covered the 33 metro areas with at least 1 million jobs.

Potential Transitions...

- Occur within and between lower-wage and opportunity occupations.
- Require at least a 10 percent pay increase but not a bachelor’s degree.
- Involve destinations projected to remain stable or grow nationally between 2018 and 2028.

Top Transitions...

- Represent potential transitions with a similarity score greater than 0.75.

Skills can be viewed as a bridge rather than as a gap

- Overall, we find a high degree of similarity between the skills required for lower-wage occupations and the skills required for opportunity occupations.

<table>
<thead>
<tr>
<th>Skill</th>
<th>Overall intensity</th>
<th>Overall Rank</th>
<th>Lower-wage occupations Rank</th>
<th>Opportunity occupations Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication skills</td>
<td>26.9%</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Customer service</td>
<td>17.7%</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Physical abilities</td>
<td>14.3%</td>
<td>3</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>Organizational skills</td>
<td>13.1%</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Teamwork/collaboration</td>
<td>11.8%</td>
<td>5</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>Scheduling</td>
<td>10.9%</td>
<td>6</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>Detail-oriented</td>
<td>10.2%</td>
<td>7</td>
<td>8</td>
<td>13</td>
</tr>
<tr>
<td>Sales</td>
<td>9.9%</td>
<td>8</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>Microsoft Excel</td>
<td>9.4%</td>
<td>9</td>
<td>16</td>
<td>5</td>
</tr>
<tr>
<td>Computer literacy</td>
<td>9.3%</td>
<td>10</td>
<td>11</td>
<td>7</td>
</tr>
<tr>
<td>Problem solving</td>
<td>8.8%</td>
<td>11</td>
<td>18</td>
<td>11</td>
</tr>
<tr>
<td>Writing</td>
<td>8.7%</td>
<td>12</td>
<td>14</td>
<td>15</td>
</tr>
<tr>
<td>Repair</td>
<td>8.4%</td>
<td>13</td>
<td>13</td>
<td>2</td>
</tr>
<tr>
<td>English</td>
<td>8.0%</td>
<td>14</td>
<td>10</td>
<td>21</td>
</tr>
<tr>
<td>Microsoft Office</td>
<td>7.7%</td>
<td>15</td>
<td>23</td>
<td>12</td>
</tr>
<tr>
<td>Planning</td>
<td>7.7%</td>
<td>16</td>
<td>36</td>
<td>14</td>
</tr>
<tr>
<td>Cleaning</td>
<td>7.0%</td>
<td>17</td>
<td>5</td>
<td>54</td>
</tr>
<tr>
<td>Building effective relationships</td>
<td>6.7%</td>
<td>18</td>
<td>19</td>
<td>17</td>
</tr>
<tr>
<td>Teaching</td>
<td>6.4%</td>
<td>19</td>
<td>30</td>
<td>64</td>
</tr>
<tr>
<td>Research</td>
<td>6.1%</td>
<td>20</td>
<td>47</td>
<td>19</td>
</tr>
</tbody>
</table>

Note: Ranks ≤10 shaded dark orange; ranks >30 shaded light orange.

Top transitions exist in every metro area

- In the 33 metro areas analyzed, we find 4,097 top transitions (similarity score >0.75).

Nearly half of lower-wage employment can be paired with a top transition

- The same is true for 29 percent of the jobs classified as opportunity occupations.

Top transitions can represent substantial wage gains

- Overall, top transitions would represent an increase in average annual median wages of 49%, from around $30,000 to just under $45,000.

<table>
<thead>
<tr>
<th>Type of transition</th>
<th>Origin occupations</th>
<th>Destination occupations</th>
<th>Increase</th>
<th>Percent increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower-wage occupation to lower-wage occupation</td>
<td>$21,508</td>
<td>$26,367</td>
<td>$6,859</td>
<td>32%</td>
</tr>
<tr>
<td>Lower-wage occupation to opportunity occupation</td>
<td>$28,547</td>
<td>$50,672</td>
<td>$22,125</td>
<td>78%</td>
</tr>
<tr>
<td>Opportunity occupation to opportunity occupation</td>
<td>$53,426</td>
<td>$76,128</td>
<td>$22,703</td>
<td>42%</td>
</tr>
<tr>
<td>Overall</td>
<td>$30,100</td>
<td>$44,974</td>
<td>$14,873</td>
<td>49%</td>
</tr>
</tbody>
</table>

## Kansas City’s highest-scoring top transitions span the occupational landscape

<table>
<thead>
<tr>
<th>Origin occupation</th>
<th>Origin annual median wages</th>
<th>Destination occupation</th>
<th>Destination annual median wages</th>
<th>Percent wage increase</th>
<th>Similarity score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products</td>
<td>$59,509</td>
<td>Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products</td>
<td>$72,446</td>
<td>22%</td>
<td>0.93</td>
</tr>
<tr>
<td>Installation, Maintenance, and Repair Workers, All Other</td>
<td>$44,158</td>
<td>Industrial Machinery Mechanics</td>
<td>$54,766</td>
<td>24%</td>
<td>0.91</td>
</tr>
<tr>
<td>Maintenance and Repair Workers, General</td>
<td>$38,314</td>
<td>Installation, Maintenance, and Repair Workers, All Other</td>
<td>$44,158</td>
<td>15%</td>
<td>0.91</td>
</tr>
<tr>
<td>Installation, Maintenance, and Repair Workers, All Other</td>
<td>$44,158</td>
<td>Industrial Engineering Technicians</td>
<td>$51,480</td>
<td>17%</td>
<td>0.90</td>
</tr>
<tr>
<td>Bill and Account Collectors</td>
<td>$34,403</td>
<td>Credit Counselors</td>
<td>$45,947</td>
<td>34%</td>
<td>0.89</td>
</tr>
<tr>
<td>Helpers--Installation, Maintenance, and Repair Workers</td>
<td>$26,707</td>
<td>Maintenance and Repair Workers, General</td>
<td>$38,314</td>
<td>43%</td>
<td>0.88</td>
</tr>
<tr>
<td>Sales Representatives, Services, All Other</td>
<td>$59,093</td>
<td>Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products</td>
<td>$72,446</td>
<td>23%</td>
<td>0.88</td>
</tr>
<tr>
<td>Electro-Mechanical Technicians</td>
<td>$29,702</td>
<td>Electrical and Electronics Engineering Technicians</td>
<td>$69,846</td>
<td>135%</td>
<td>0.87</td>
</tr>
<tr>
<td>Cooks, Short Order</td>
<td>$17,436</td>
<td>Cooks, Restaurant</td>
<td>$23,751</td>
<td>36%</td>
<td>0.87</td>
</tr>
<tr>
<td>Business Operations Specialists, All Other</td>
<td>$76,170</td>
<td>Managers, All Other</td>
<td>$109,699</td>
<td>44%</td>
<td>0.86</td>
</tr>
</tbody>
</table>

Skills-based hiring practices could expand applicant pools to include workers who do not have a bachelor’s degree – but who do have many of the skills required to do the job.

Targeted training could provide otherwise qualified workers with the skills necessary to make a successful transition.

Collaboration between employers, education providers, and workforce development organizations can ensure training meets local demand.
Six community colleges are participating in this pilot launched by Education Design Lab.

Philadelphia and Cleveland Feds are providing labor market data and research support.

The goal is to produce 18 employer-validated micro-pathways that can be implemented in other communities.

For more information: [https://eddesignlab.org/project/growthenginefund/](https://eddesignlab.org/project/growthenginefund/).
To follow along, go to philadelphiafed.org and search for “Occupational Mobility Explorer.”
Thank you

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Digital Skills for the 21st-Century Workforce

Ashley Putnam
Director, Economic Growth & Mobility Project

Alvaro Sanchez
Analyst, Economic Growth & Mobility Project

Evening with the Fed: Career Exploration and Education
Thursday, January 14, 2021
The views expressed here are those of the presenter and do not necessarily reflect those of the Federal Reserve Bank of Philadelphia or the Federal Reserve System.
The Economic Growth & Mobility Project (EGMP) is a new initiative of the Federal Reserve Bank of Philadelphia dedicated to promoting equal access to economic opportunity for all.
Listening Sessions

- Held during the summer of 2018
- Hosted at the Federal Reserve Bank of Philadelphia
- Participants were workforce development and business leaders from the Tech, Healthcare, Manufacturing and Finance sectors
Research Motivations

• Middle-skills jobs have increasingly required workers to cultivate a robust digital skillset.

• Research from Burning Glass Technologies has shown that about 8 in 10 middle-skills jobs now require a degree of digital proficiency.

• A need to think proactively about preparing incoming and incumbent workers for increasingly digitized occupations, especially in the face of automation.
Challenges of a Changing Digital Skills Market

Digital Literacy and Industry Knowledge

- Employers need workers with both a robust digital skillset and sector-specific, contextualized knowledge around tech.
- Business acumen to execute tasks efficiently is as important as conceptual knowledge of a technology.

Lifelong Learners

- Develop learning agility to maintain a dynamic and relevant skillset.
- De-emphasize specific tools, like coding, that can change quickly.
- Understand how innovative tech can be implemented within a company.

“The half-life for digital skills is much shorter than it used to be.”
Flexible Funding

Nontraditional programs lack adequate financial support.

Regulations may prohibit funding (e.g. Pell Grants) programs that don’t meet requirements.
- Impacts programs like coding boot camps that may be short-term.

Lack of flexibility harmful to low- and moderate-income job-seekers.

Innovative Training

Employer-side perceived risk around alternative talent pipelines.

Certain firms are not ready to shift their hiring practices and embrace innovative training programs.
Opportunities to Invest in Digital Skills

- Apprenticeships and Work-Learn-Earn Programs
- Upskilling and Reskilling Incumbent Workers
- Tech Training Partnerships
- New Credentials
- New Funding Models to Pilot and Scale
Apprenticeships and Work-Learn-Earn Programs

- Promotes on-the-job learning without forgoing income.
- Experiential learning promotes a deeper understanding of a sector, while learning occupational tasks.
- Offsets financial barriers of training for low- and moderate-income workers.
New Credentials

- Identifying new credentials (e.g. CompTIA and Amazon Web Services) as viable options for upskilling and training.
- Shift hiring practices away from identifying “qualified” workers based on holding a four-year degree.
- Maintain feedback loops from employers to training providers on efficacy of emerging credentials.
Upskilling and Reskilling Incumbent Workers

- Employer-led solutions to develop workers within a company.
- Support workers financially to go back to school while working.
- Promote opportunities to learn new skills on the job.
- Develop career pathways that are individualized for each worker.
New Funding Models to Pilot and Scale

• Consider collaborative funding models, which pool capital from national and local philanthropy for like-minded firms.

• Promote intentional program implementation that meets the shared priorities of regional businesses.
Partnerships within industries and between regional training providers to develop talent pipelines.

Collaboration can take several forms, including leadership councils and streamlining information sharing of tech talent needs.
What can we do?

• Continue identifying workforce development models to invest in digital skills, through the economic crisis.
• Strengthen feedback loops between training providers and employers.
• Shift organizational focus toward advancing innovative workforce development solutions.
• Develop workforce development models that account for digital disruption.
Thank You

Alvaro.Sanchez@phil.frb.org
Career Education Resources
Career Education Resources

• **Lesson plan:** Skilled Trade Pays
• **Teaching Tips 2.0:** Opportunity occupations
• **Infographics:** workforce development topics
• **Videos:**
  • Fed Opportunity Occupations at the Fed
  • 21st Century Career Leaders
Skilled Trade Pays Lesson

**Overview:** Students analyze charts and graphs detailing the scope of opportunity occupations within the United States and through video, meet real-life individuals working in these industries. Students then investigate a specific opportunity occupation and work collaboratively to construct a visual of what they learned to present to the class.

**Concepts:** Opportunity occupations, wages, labor market, human capital

**Grade:** 9-12

**Time:** Three class periods (55-60 minutes each) with additional work outside of class

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Skilled Trade Pays

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ECON EDUCATION from THE FED
preparing students for a workforce in transition
Skilled Trade Pays

Federal Reserve Bank of Kansas City
Skilled Trade Pays

Federal Reserve Bank of Kansas City
Teaching Tips 2.0

A Federal Reserve System initiative called “opportunity occupations” examines the impact of jobs that don't require a four-year college degree, yet typically pay above the national annual median wage. The research conducted shows that opportunity occupations not only are an important part of the nation's economy, but many careers in that employment sector are poised for solid growth. Access to more information about the initiative can be found at Investing In America's Workforce: Opportunity Occupations.

Reading Synopsis

Video Synopses

Links and Resources

About Teaching Tips 2.0

This resource offers a range of interdisciplinary activities centered on nonfiction reading about career education. The activities align with the topic and include data for students to calculate and analyze, multimedia for students to view and respond to and questions at two levels of complexity for students to answer. Additionally, economic and personal finance vocabulary and extension activities are provided. After students have read the text, teachers can assign any of the stand-alone activities. Through these, students can build their cognitive and critical thinking skills while supporting their learning in English language arts, math, economics and personal finance.
Teaching Tips 2.0

Student Activities:
- Vital Vocabulary
- Reading and Reflection
- Video Views
- Facts and Figures
- Extension Exercises

Why do 30% of college freshmen drop out?

Create graph of employment figures and percentage differences

Opportunity Occupations: Good pay; no degree required

Percentage change of median annual wage from 2017 to 2019. What will it be in 2021?

Federal Reserve Bank of Kansas City
Infographics

Opportunity Occupations vs. Similar Occupations

Finance Pathway

<table>
<thead>
<tr>
<th>Financial Clerk</th>
<th>Accountant</th>
</tr>
</thead>
<tbody>
<tr>
<td>$27,730-$56,160</td>
<td>$44,480-$126,450</td>
</tr>
</tbody>
</table>

Education Needed:
- High School Diploma or Equivalent
- Bachelor's Degree

Job Description:
- Prepare and examine financial records and assess financial operations to help ensure that organizations run efficiently
- Keep and update financial records, calculate bills and charges, offer customer assistance and carry out financial transactions

Projected Growth 2018-2020:
- 5%
- 6%

Employability Skills:
- Critical Thinking
- Organization
- Initiative
- Integrity
- Reliability

Opportunity Occupations in Select Tenth District Cities
Including annual median income and projected growth (for each job between 2018-2028)

- **Grand Rapids, WY**
  - Registered Nurse: $63,000
  - Sales Representative, Wholesale & Manufacturing: $51,200
  - Supervisor of Production & Operating Workers: $38,900
- **Oklahoma City, OK**
  - Registered Nurse: $65,500
  - Supervisors of Retail Sales Workers: $34,000
  - Molders, Cutters, Solderers, & Grinders: $44,100
- **Kansas City, MO**
  - Registered Nurse: $64,500
  - Heavy & Tractor-Trailer Truck Drivers: $54,700
  - Construction Laborers: $38,600
- **Boulder, Colorado Springs, Denver, Aurora, Lakewood, Fort Collins, CO**
  - Registered Nurse: $70,300
  - Securities, Commodities, and Financial Service Sales Agents: $35,500
  - Electricians: $55,100
- **Omaha, NE-Council Bluffs, IA**
  - Registered Nurse: $51,700
  - General & Operations Managers: $59,400
  - Plumbers, Pipefitters, & Steamfitters: $59,500

Employability Skills: A Toolkit for Success

Employability, or ‘soft’ skills, are core qualities that are useful in any career path you choose. As your job grows or changes, developing these traits can help you be more successful and marketable in a competitive job market.

Organization

Ways to Build Organization:
- Set reminders to help you keep track of tasks and meetings
- Establish steps to complete a goal or a big assignment

Careers: Accountant, Administrative Assistant, Editor, Event Planner, Statistician

Reliability

Ways to Build Reliability:
- Be on time to class and appointments
- Follow through on a commitment or provide a solid reason why you can’t

Careers: Court Reporter, Dental Hygienist, Electrician, Funeral Director, Truck Driver

Federal Reserve Bank of Kansas City
Fed Opportunity Occupations Videos

- Asset Management Specialist – IT Technology Support
- Information Security Technician – IT Application & Development
- Customer Support Specialist – Financial Services
- Cash Operations Specialist – Cash Services
- Facilities Technician – Facilities Management
- Law Enforcement Officer – Law Enforcement

Federal Reserve Bank of Kansas City
21st Century Careers Videos

Student Webinar Series:
- A Portrait of Leadership
- Today’s Leadership Landscape
- Skills for Success
- Opportunity Occupations

Federal Reserve Bank of Kansas City
Upcoming Evening with the Fed events:
• February – Climate Risks and the Economy
• March – COVID Effects on Agricultural Economy
• April – Energy and the Economy
• May – COVID Impact and Economic Recovery

KansasCityFed.org/Education and
KansasCityFed.org/community/workforce