What’s Ahead

Alpaugh Scholars—February 21, 2017
Questions?
Election Map by County
Share of Counties Matching or Exceeding National Job Growth

- 1992-1996: 58%
- 2002-2006: 44%
- 2010-2014: 28%
Number of Counties Accounting for Half of Recovery Establishment Growth
Share of U.S. Net Job Creation by County Size

1992-1996:
- Under 100,000 people: 27%
- Between 100,000 and 500,000 people: 36%
- Between 500,000 and 1 million people: 21%
- Over 1 million people: 16%

2002-2006:
- Under 100,000 people: 20%
- Between 100,000 and 500,000 people: 39%
- Between 500,000 and 1 million people: 19%
- Over 1 million people: 23%
Change in per capita government spending during recoveries of the last four recessions
Advanced Industries

- R&D spending per worker ranks in top 20% of all industries

- Proportion of workers with STEM knowledge is higher than national average

- ≈35 manufacturing; 3 energy; 12 service industries
Why Important

- Growth
- Prosperity
- Inclusion
How Are Advanced Industries Doing?

- Between 2013 and 2015
  - grew faster than rest of economy
  - Added 611,000 jobs
  - Directly or indirectly accounts for 28% of workforce
  - Accounts for larger share of GDP than in 1980, but smaller share of employment = automation
Advanced industries' share of U.S. totals

2015

- U.S. Workers: 8.7%
- U.S. GDP: 17.2%
- Exports: 60.0%
- Engineers: 80.0%
- Patents: 81.2%
- Private Sector R&D: 89.0%

Source: Brookings’s analysis of Moody’s Analytics, Export Nation 2013, Bureau of Labor
Advanced industries output and employment growth
Indexed performance, 1980–2015 (1980=100)

Output

Employment


100 120 187 288

Output

Employment

100 114
Subsectors Driving Growth

- 2010-2013—balanced growth across sectors
- 2013-2015—rise of services
Advanced industries output growth


Compound Annual Growth Rate, 2010–2013
Compound Annual Growth Rate, 2013–2015
Advanced industries employment growth


Compound Annual Growth Rate, 2010–2013
Compound Annual Growth Rate, 2013–2015
Advanced industries employment percent growth, 2013–2015

-1.7% to 0.0%
0.0% to 1.4%
1.4% to 3.0%
3.0% to 4.6%

Source: Brookings's analysis Moody's Analytics estimates.
## Cincinnati MSA

<table>
<thead>
<tr>
<th>Category</th>
<th>Value</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced industries jobs, 2015</td>
<td>92,998</td>
<td>29</td>
</tr>
<tr>
<td>Advanced industries' share of all jobs, 2015</td>
<td>8.6%</td>
<td>50</td>
</tr>
<tr>
<td>Annual average percent change in advanced industries jobs, 2010–2013</td>
<td>+2.9%</td>
<td>43</td>
</tr>
<tr>
<td>Annual average percent change in advanced industries jobs, 2013–2015</td>
<td>+3.2%</td>
<td>35</td>
</tr>
</tbody>
</table>
Share of Imports Contained in U.S. Exports
Value Added by Imports to Exports of Each Industry

- **AUTOS**
  1. Japan
  2. China
  3. Canada
  4. Mexico
  5. Germany

- **PETROLEUM PRODUCTS AND NUCLEAR FUEL**
  1. Canada
  2. Saudi Arabia
  3. Mexico
  4. Colombia
  5. Russia

- **TEXTILES**
  1. China
  2. Canada
  3. Germany
  4. Japan
  5. Mexico

- **OVERALL**
  1. Canada
  2. China
  3. Mexico
  4. Japan
  5. Germany

Top five countries whose imports contribute the most to each U.S. export.
Local Economy & Trade

- Trade generates 14% of local output
- Cincinnati the 13th largest metro area of goods exports in the US; leading exporter of goods in Ohio.
- $24.1B in exports; about 50% of OH
- There was an 8.29% increase in export value from 2014.
- Small and medium sized companies accounted for 83% of goods exported.
Local Export Market and Sectors

Top 5 Export Sectors by NAICS sector Classification ($million)

- TRANSPORTATION EQUIPMENT
  - $13,699
- CHEMICAL
  - $2,770
- ELECTRICAL EQUIPMENT; APPLIANCE; AND COMPONENT
  - $1,898
- COMPUTER AND ELECTRONIC PRODUCT
  - $933
- MACHINERY EXCEPT ELECTRICAL
  - $786
Local Export Market and Trading Partners

<table>
<thead>
<tr>
<th>Country</th>
<th>Top Exports market ($million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MALAYSIA</td>
<td>349</td>
</tr>
<tr>
<td>SINGAPORE</td>
<td>780</td>
</tr>
<tr>
<td>UNITED KINGDOM</td>
<td>2,391</td>
</tr>
<tr>
<td>BRAZIL</td>
<td>2,458</td>
</tr>
<tr>
<td>MEXICO</td>
<td>3,613</td>
</tr>
<tr>
<td>CANADA</td>
<td>4,492</td>
</tr>
</tbody>
</table>
Ten Highest Growth Occupations: 2016-2026 (# of Workers)

- Registered Nurses
- Personal Care Aides
- Customer Service Reps
- Home Health Aides
- Nursing Assistants
- Laborers/Freight, Stock Movers
- Food Prep and Serving
- General/Operations Managers
- Janitors and Cleaners
- Cooks

Registered Nurses: 5,000
Personal Care Aides: 4,000
Customer Service Reps: 3,000
Home Health Aides: 3,000
Nursing Assistants: 2,000
Laborers/Freight, Stock Movers: 2,000
Food Prep and Serving: 1,500
General/Operations Managers: 1,500
Janitors and Cleaners: 1,500
Cooks: 1,000
Health Care biggest driver of growth in jobs

Source: EMSI  Time Frame: 2006 to 2016 (Actual), 2016 to 2026 (Projected)
Percent Share of Jobs by Gender: 2016

**Percent Share of Total Jobs**
- **Healthcare and Social Assistance**
  - 2006: 11.75%
  - 2016: 13.53%
  - 2026 (Projected): 15.13%

- **Manufacturing**
  - 2006: 75%
  - 2016: 25%
  - 2026 (Projected): 19%

**Percent Share of Total Jobs**
- 2006: 11.18%
- 2016: 10.35%
- 2026 (Projected): 9.59%
## Transition Manufacturing Careers

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Median Wage</th>
<th>Annual Openings</th>
<th>Automation Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Helpers (Prod.)</td>
<td>$11.37</td>
<td>147</td>
<td>66%</td>
</tr>
<tr>
<td>Assemblers/Fabric.</td>
<td>12.57</td>
<td>99</td>
<td>78%</td>
</tr>
<tr>
<td>Prod. Workers (all)</td>
<td>15.81</td>
<td>62</td>
<td>78%</td>
</tr>
<tr>
<td>Molding/Casting</td>
<td>15.76</td>
<td>27</td>
<td>95%</td>
</tr>
<tr>
<td>Pressers/Textile</td>
<td>10.19</td>
<td>23</td>
<td>81%</td>
</tr>
<tr>
<td>Electrical/Assemb.</td>
<td>14.14</td>
<td>25</td>
<td>95%</td>
</tr>
<tr>
<td>Cutting/Punching/Press Machine</td>
<td>14.43</td>
<td>21</td>
<td>78%</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td><strong>$13.00</strong></td>
<td><strong>400+</strong></td>
<td><strong>78%</strong></td>
</tr>
</tbody>
</table>
## Intermediate Manufacturing Careers

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Median Wage</th>
<th>Annual Openings</th>
<th>Automation Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Packaging Machine Operators</td>
<td>$15.12</td>
<td>255</td>
<td>98%</td>
</tr>
<tr>
<td>Team Assemblers</td>
<td>15.06</td>
<td>228</td>
<td>97%</td>
</tr>
<tr>
<td>Computer-controlled Machine Tool Operators</td>
<td>16.73</td>
<td>114</td>
<td>86%</td>
</tr>
<tr>
<td>Welders/Cutters</td>
<td>17.88</td>
<td>89</td>
<td>94%</td>
</tr>
<tr>
<td>Printing Press Op.</td>
<td>17.30</td>
<td>54</td>
<td>83%</td>
</tr>
<tr>
<td>Paper Goods Machine Setters/Op</td>
<td>16.01</td>
<td>32</td>
<td>67%</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td><strong>$16.35</strong></td>
<td><strong>742</strong></td>
<td><strong>87.5%</strong></td>
</tr>
</tbody>
</table>
## Target Manufacturing Occupations

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Median Wage</th>
<th>Annual Openings</th>
<th>Automation Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Machinists</td>
<td>$20.47</td>
<td>198</td>
<td>65%</td>
</tr>
<tr>
<td>First-Line Supervisor</td>
<td>26.77</td>
<td>97</td>
<td>1.6%</td>
</tr>
<tr>
<td>Inspectors/Testers</td>
<td>18.22</td>
<td>167</td>
<td>98%</td>
</tr>
<tr>
<td>Mixing/Blending Machine Setters</td>
<td>19.23</td>
<td>49</td>
<td>83%</td>
</tr>
<tr>
<td>Chemical Equip. Operators</td>
<td>25.04</td>
<td>31</td>
<td>76%</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td><strong>$21.62</strong></td>
<td><strong>550</strong></td>
<td><strong>60%</strong></td>
</tr>
</tbody>
</table>
Manufacturing Job Change, Cincinnati MSA 2015-2024

- 2015 Jobs: 112,875
- National Effects: 11,551
- Industry Mix Job Change: -13,856
- Local Effects Job Change: 1,576
- 2024 Jobs: 112,146
Construction Job Change, Cincinnati MSA 2015-2024

- 2015 Jobs: 40,955
- National Effects: 4,191
- Industry Mix Job Change: 1,822
- Local Effects Job Change: -2,007
- 2024 Jobs: 44,960
Health Care and Social Assistance Job Change, Cincinnati MSA 2015-2024

Number of Jobs

- 2015 Jobs: 141,345
- National Effects: 14,464
- Industry Mix Job Change: 14,875
- Local Effects Job Change: -2,345
- 2024 Jobs: 168,340
Arts, Entertainment, and Recreation Job Change, Cincinnati MSA 2015-2024

- 2015 Jobs: 22,294
- National Effects: 2,281
- Industry Mix Job Change: 663
- Local Effects Job Change: 1,559
- 2024 Jobs: 26,798

Number of Jobs
Challenges Ahead

- Protectionist trade policy
  = higher prices
  = lost jobs
  = retaliation

- Infrastructure spending
  = inflation
  = increased debt
  = labor shortages in construction
Challenges, con’t

- Focus on bygone manufacturing model
  - decreasing productivity
  - slower economic growth
  - loss of competitive advantage in advanced industries
Questions?