Program Agenda

- St. Louis Economy
- Employer Survey
- Startups
- Spotlight on Startups and Job Creation
2023 STATE OF THE ST. LOUIS WORKFORCE

Featured panelist:

Kory Mathews
Advanced Manufacturing Innovation Center
CEO
2023 STATE OF THE ST. LOUIS WORKFORCE

Featured panelist:
Chauncey Nelson
Gateway South Innovation District
President/CEO
2023 STATE OF THE ST. LOUIS WORKFORCE

Featured speaker:
Charles Gascon
Federal Reserve Bank of St. Louis
Senior Economist
Welcome and Introductions
Jeff Pittman, Ph.D., Chancellor
St. Louis Community College

Business Journal Partnership
Robert Bobroff, Market President/Publisher
St. Louis Business Journal

National and Regional Trends in Manufacturing:
Charles Gascon, Senior Economist
Federal Reserve Bank of St. Louis

State of the St. Louis Workforce
Phyllis Ellison, Associate Vice Chancellor
St. Louis Community College

Panel Discussion:
Jeff Pittman, Ph.D., Chancellor (moderator)
St. Louis Community College
Kory Mathews, CEO
American Manufacturing Innovation Center
Chauncey Nelson, President/CEO
Gateway South Innovation District
Kevin Webb, COO
API Innovation Center
Opinions expressed are those of the authors and do not necessarily reflect those of the Federal Reserve Bank of St. Louis or the Federal Reserve System.
Outline for today

• Two key themes to keep in mind today
  – Divergence in manufacturing output and employment
  – Unprecedented speed of the U.S. economic recovery
• Economic outlook for U.S. and regional economy
• Current trends in manufacturing
• Forecasts
Output and employment in manufacturing have diverged

Sources: BLS; Board of Governors myf.red/g/17FTQ
Economy experiences an unprecedented recovery after pandemic shock

US= 7.9% at 1982-84 trend
3.5% (US)
2.9% (St. Louis)

Source: U.S. Bureau of Labor Statistics
myf.red/g/17HnU
Economic growth has slowed significantly, near longer-run averages

US: 1.8% (Q1) 2.6% (Q2)
Missouri 1.0% (Q1)
St. Louis 0.8% (Q1)
Households accumulated significant savings during pandemic

Source: U.S. Bureau of Economic Analysis

Area represents $2.3 trillion in excess savings

About $750 billion remains
Spending growth healthy, with pivot back to services

Durable Goods: +30%
Nondurable Goods: +11%
Total: +9%
Services: +5%
Supply chains are returning to “normal” operations

FRBNY Global Supply Chain Pressure Index
Std. Dev. Pts

Source: Federal Reserve Bank of New York (link to data)
Strong demand + constrained supply = high inflation

Ex. Food and Energy: +4.7%
Consumer Prices: +3.3%
Producer Prices: +0.8%
Job growth consistent with a healthy economy

2021-22: +503k
2011-19: +194k
July: +187k
Smaller labor force inhibiting continued job growth in the region
Manufacturers in St. Louis hiring at a slower rate than MO and US
Production slows as firms face weaker demand

Source: Board of Governors of the Federal Reserve System (US)
Order backlog is helping firms maintain production levels.

Real Manufacturer’s Unfilled Orders (deflated by PPI)

Sources: U.S. Bureau of Labor Statistics; U.S. Census Bureau
Manufacturers new orders and shipments improved during the spring
If recession occurs, it will be the one of the most anticipated in history

The Anxious Index
Probability of Decline in real GDP

Note: Shaded areas indicate NBER recessions
Source: Federal Reserve Bank of Philadelphia, Survey of Professional Forecasters (link to data)
FOMC Economic projections point to a “soft landing”

<table>
<thead>
<tr>
<th>Projections for end of 2023</th>
<th>Real GDP Growth</th>
<th>Inflation Rate</th>
<th>Unemployment Rate</th>
<th>Fed Funds Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median</td>
<td>1.0</td>
<td>3.2</td>
<td>4.1</td>
<td>5.6</td>
</tr>
<tr>
<td>Top</td>
<td>2.0</td>
<td>4.1</td>
<td>4.5</td>
<td>6.1</td>
</tr>
<tr>
<td>Bottom</td>
<td>0.5</td>
<td>2.9</td>
<td>3.9</td>
<td>5.1</td>
</tr>
</tbody>
</table>

My projections for the St. Louis, MSA

|                      | 0.3             | 3.0            | 3.5              | --            |

Note: Projections are under the assumption of appropriate monetary policy. Real GDP, PCE Inflation are Q4/Q4 Growth, Unemployment and Fed Funds are Q4 Averages. Parentheses indicate change from May Projections. Source: Federal Open Market Committee (FOMC) Summary of Economic Projections June 2023. See Macro Snapshot for Data.
Summary

• Data indicate the economy continued to expand through July
• Economic outlook started the year very dim and has been brightening throughout the year
• The forecast is for slower growth ahead, which should lead to lower inflation and slower job growth
• Weakness in manufacturing and construction a driving force of recession predictions
• Reasons for pessimism
  – Inflation remains elevated and more persistent, pushing interest rates higher
  – Tightening credit conditions reigns in household and business investment
• Reasons for optimism
  – Housing market has bottomed out and showing signs of improvement
  – Labor constraints easing, higher participation rates and recovering immigration
  – Low unemployment and healthy wage growth sustain consumer spending
Overview

• St. Louis Economy
• Employer Survey
• Spotlight on Startups and Job Creation
• Spotlight on Advanced Manufacturing
Economic Overview

Seasonally Adjusted Unemployment Rate by Quarter

- St. Louis MSA
- Missouri
- United States
Economic Overview

St. Louis MSA Unemployment Rates by Age and Sex

- Age 29 or younger:
  - Male: 10%
  - Female: 8%

- Age 30 to 54:
  - Male: 4%
  - Female: 4%

- Age 55 or Older:
  - Male: 3%
  - Female: 5%

- All Ages:
  - Male: 5%
  - Female: 5%
Educational Attainment of the Population*

- No High School diploma: St. Louis 7%, Missouri 9%
- High school diploma (or equivalent): St. Louis 26%, Missouri 30%
- Some college, no degree: St. Louis 21%, Missouri 21%
- Associate degree: St. Louis 9%, Missouri 8%
- Bachelor's degree: St. Louis 22%, Missouri 20%
- Graduate or professional degree: St. Louis 15%, Missouri 12%
### Education Pays

Education affects both earning and unemployment.

<table>
<thead>
<tr>
<th>Missouri</th>
<th>Unemployment Rates</th>
<th>Educational Attainment</th>
<th>Median Earnings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>9.0%</td>
<td>Less than high school graduate</td>
<td>$26,315</td>
</tr>
<tr>
<td></td>
<td>5.9%</td>
<td>High school graduate (includes equivalency)</td>
<td>$33,899</td>
</tr>
<tr>
<td></td>
<td>4.2%</td>
<td>Some college or associate's degree</td>
<td>$39,481</td>
</tr>
<tr>
<td></td>
<td>2.0%</td>
<td>Bachelor's degree or higher</td>
<td>$59,668</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>St. Louis MSA</th>
<th>Unemployment Rates</th>
<th>Educational Attainment</th>
<th>Median Earnings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>12.4%</td>
<td>Less than high school graduate</td>
<td>$27,173</td>
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<tr>
<td></td>
<td>6.1%</td>
<td>High school graduate (includes equivalency)</td>
<td>$35,603</td>
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<td></td>
<td>4.8%</td>
<td>Some college or associate's degree</td>
<td>$41,259</td>
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<tr>
<td></td>
<td>2.1%</td>
<td>Bachelor's degree or higher</td>
<td>$67,803</td>
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</table>

*Bachelors ($53,855) and Graduate ($65,480) degree medians. Source: US Census Bureau, 2021 American Community Survey 1-year estimates.*

Biggest salary jump with 4-year degree.

Education post-HS provides stability.
Aging Workforce

St. Louis Mirrors the national trend of an aging workforce

St. Louis MSA Age of the Workforce

<table>
<thead>
<tr>
<th>Age Group</th>
<th>2012</th>
<th>2022</th>
</tr>
</thead>
<tbody>
<tr>
<td>14-18</td>
<td>2%</td>
<td>3%</td>
</tr>
<tr>
<td>19-21</td>
<td>5%</td>
<td>5%</td>
</tr>
<tr>
<td>22-24</td>
<td>6%</td>
<td>5%</td>
</tr>
<tr>
<td>25-34</td>
<td>22%</td>
<td>21%</td>
</tr>
<tr>
<td>35-44</td>
<td>21%</td>
<td>22%</td>
</tr>
<tr>
<td>45-54</td>
<td>23%</td>
<td>20%</td>
</tr>
<tr>
<td>55-64</td>
<td>16%</td>
<td>17%</td>
</tr>
<tr>
<td>65+</td>
<td>5%</td>
<td>7%</td>
</tr>
</tbody>
</table>
Economic Overview

15% growth in healthcare in the last decade

Top 10 St. Louis Industry Clusters

- Educational Services: 102,981 (2022), 106,826 (2012)
Methodology

Live interview survey of St. Louis MSA employers

Each interview takes about 20 minutes
2023 State of the St. Louis Workforce Employer Survey

<table>
<thead>
<tr>
<th>NAICS</th>
<th>Category Description</th>
<th>Businesses Surveyed</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAICS 23</td>
<td>Construction</td>
<td>35</td>
<td>5.8%</td>
</tr>
<tr>
<td>NAICS 31-33</td>
<td>Manufacturing</td>
<td>29</td>
<td>4.8%</td>
</tr>
<tr>
<td>NAICS 42</td>
<td>Wholesale trade</td>
<td>29</td>
<td>4.8%</td>
</tr>
<tr>
<td>NAICS 44-45</td>
<td>Retail trade</td>
<td>88</td>
<td>14.7%</td>
</tr>
<tr>
<td>NAICS 48-49</td>
<td>Transportation and warehousing</td>
<td>12</td>
<td>2.0%</td>
</tr>
<tr>
<td>NAICS 51</td>
<td>Information</td>
<td>17</td>
<td>2.8%</td>
</tr>
<tr>
<td>NAICS 52</td>
<td>Finance and insurance</td>
<td>34</td>
<td>5.7%</td>
</tr>
<tr>
<td>NAICS 53</td>
<td>Real estate and rental and leasing</td>
<td>21</td>
<td>3.5%</td>
</tr>
<tr>
<td>NAICS 54</td>
<td>Professional and technical services</td>
<td>65</td>
<td>10.8%</td>
</tr>
<tr>
<td>NAICS 56</td>
<td>Administrative and waste services</td>
<td>25</td>
<td>4.2%</td>
</tr>
<tr>
<td>NAICS 61</td>
<td>Educational services</td>
<td>6</td>
<td>1.0%</td>
</tr>
<tr>
<td>NAICS 62</td>
<td>Health care and social assistance</td>
<td>95</td>
<td>15.8%</td>
</tr>
<tr>
<td>NAICS 71</td>
<td>Arts, entertainment, and recreation</td>
<td>15</td>
<td>2.5%</td>
</tr>
<tr>
<td>NAICS 72</td>
<td>Accommodation and food services</td>
<td>64</td>
<td>10.7%</td>
</tr>
<tr>
<td>NAICS 81</td>
<td>Other services</td>
<td>59</td>
<td>9.8%</td>
</tr>
<tr>
<td></td>
<td>Other small sectors and unclassified*</td>
<td>6</td>
<td>1.0%</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>600</td>
<td>100.00%</td>
</tr>
</tbody>
</table>
Employment Impacts

Change in Employment Levels over the Last 12 Months

Nearly 30% of companies hired employees in the last 12 months

16% cut employees
Employment Optimism

Future Plans to Change Employment Levels in the Next 12 Months

46% plan to hire in the next 12 months
Businesses Experiencing a Shortage of Skilled Applicants

- 2023: 46%
- 2022: 63%
- 2021: 66%
- 2019: 34%
- 2017: 31%
Barriers to Growth

2023 STATE OF THE ST. LOUIS WORKFORCE

Shortage of workers with knowledge or skills still # 1
Adding Workers

2023 STATE OF THE ST. LOUIS WORKFORCE

67% plan to hire new full-time employees
Measures Taken to Address Skill Shortages

59% of companies forced to hire less experienced workers and train

49% are offering increased wages
Shortcomings Seen in Job Applicants

- Poor Work Habits (Ethic)
  - 2023: 64%
  - 2021: 65%
  - 2019: 56%
  - 2013: 56%

- Lack of General Business or Industry Knowledge
  - 2023: 52%
  - 2021: 57%
  - 2019: 44%
  - 2013: 50%

- Lack of Communication or Interpersonal Skills
  - 2023: 51%
  - 2021: 53%
  - 2019: 56%
  - 2013: 59%

- Lack of Critical Thinking and Problem Solving
  - 2023: 50%
  - 2021: 56%
  - 2019: 49%
  - 2013: 55%

- Unwillingness or Inability to Learn
  - 2023: 43%
  - 2021: 44%
  - 2019: 38%
  - 2013: 24%

- Inability to Think Creatively
  - 2023: 42%
  - 2021: 44%
  - 2019: 39%
  - 2013: 44%

- Lack of Teamwork or Collaboration
  - 2023: 40%
  - 2021: 42%
  - 2019: 47%
  - 2013: 35%

Poor work habits still #1
## Strengths Seen in More Job Applicants

<table>
<thead>
<tr>
<th>Strength</th>
<th>4- Saw in many</th>
<th>5 - Saw in all</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respectfulness</td>
<td>159</td>
<td>223</td>
<td>65%</td>
</tr>
<tr>
<td>Honesty</td>
<td>157</td>
<td>200</td>
<td>62%</td>
</tr>
<tr>
<td>Positivity</td>
<td>178</td>
<td>173</td>
<td>60%</td>
</tr>
<tr>
<td>Dependability</td>
<td>140</td>
<td>149</td>
<td>50%</td>
</tr>
<tr>
<td>Responsibility</td>
<td>160</td>
<td>145</td>
<td>52%</td>
</tr>
<tr>
<td>Verbal communication skills</td>
<td>186</td>
<td>144</td>
<td>57%</td>
</tr>
<tr>
<td>Curiosity</td>
<td>154</td>
<td>133</td>
<td>49%</td>
</tr>
<tr>
<td>Ambition</td>
<td>139</td>
<td>128</td>
<td>46%</td>
</tr>
<tr>
<td>Determination</td>
<td>148</td>
<td>119</td>
<td>47%</td>
</tr>
<tr>
<td>Technical skills</td>
<td>156</td>
<td>115</td>
<td>48%</td>
</tr>
<tr>
<td>Writing skills</td>
<td>150</td>
<td>115</td>
<td>47%</td>
</tr>
<tr>
<td>Taking the initiative</td>
<td>144</td>
<td>101</td>
<td>42%</td>
</tr>
<tr>
<td>Personal discipline</td>
<td>125</td>
<td>97</td>
<td>39%</td>
</tr>
<tr>
<td>Creativity</td>
<td>133</td>
<td>95</td>
<td>40%</td>
</tr>
</tbody>
</table>
Methods for New or Increased Skill Acquisition

- On-the-job Training: 80%
- In-house Classroom Training: 41%
- Flexible Schedule for Continuing Education: 29%
- Online Courses: 24%
- Vendor Training: 20%
- Internship Programs: 18%
- Tuition Reimbursement: 16%
- Apprenticeship Programs: 14%
- Vocational Training: 10%
- Community College Provided Customized Training or Education: 10%

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2023 STATE OF THE ST. LOUIS WORKFORCE
Educational Skill Levels

High-skill
requiring a four-year degree or higher

Middle-skill
requiring a training or education beyond a high school diploma
but less than a four-year degree

Low-skill
requiring a high school diploma or less
Skill Shortages by Business Functional Areas

Skill Levels Needed to Meet Skill Shortages

- **High Skill**
  - Business Management: 39%
  - Accounting/Finance: 44%
  - Information Technology: 38%
  - Customer Service: 11%
  - Skilled Trades: 20%
  - Manufacturing/Maintenance: 13%
  - Patient Care: 28%

- **Middle Skill**
  - Business Management: 46%
  - Accounting/Finance: 42%
  - Information Technology: 43%
  - Customer Service: 41%
  - Skilled Trades: 57%
  - Manufacturing/Maintenance: 42%
  - Patient Care: 41%

- **Low Skill**
  - Business Management: 15%
  - Accounting/Finance: 14%
  - Information Technology: 19%
  - Customer Service: 48%
  - Skilled Trades: 23%
  - Manufacturing/Maintenance: 45%
  - Patient Care: 31%

Skill Levels Legend:
- High Skill
- Middle Skill
- Low Skill
Skill Shortages by Business Functional Areas

- Skilled Trades: 63%
- Patient Care: 51%
- Manufacturing/Maintenance: 46%
- Customer Service: 33%
- Business Management: 20%
- Accounting/Finance: 16%
- Information Technology: 13%

Firms reporting applicant shortages in functional areas.
Increasing Opportunities

Current Partnerships to Source Talent

- Nonprofit Organizations: 21%
- 2-year Colleges: 15%
- School Districts or Individual K-12 Schools: 15%
- 4-year Colleges: 13%
- Training Institutions: 12%
- Job Centers or Workforce Investment Boards: 7%
- Missouri Dept of Higher Education and Workforce Development: 5%
**Young Adult Work-based Learning Experiences Offered**

- **Career shadowing**: 33%
- **Paid internships**: 21%
- **Classroom presentations**: 19%
- **Unpaid internships**: 16%
- **Youth apprenticeships**: 15%
- **Field trips**: 11%
Companies Requiring Pre-employment Screening Checks

- Criminal check: 74% (2021), 74% (2022), 57% (2023)
- Financial check: 16% (2021), 21% (2022), 11% (2023)
- Drug screen: 52% (2021), 45% (2022), 29% (2023)
- eVerify check: 42% (2021), 40% (2022), 19% (2023)
- Social media check: 29% (2021), 26% (2022), 16% (2023)
- Professional license or certification check: 50% (2021), 47% (2022), 26% (2023)
- Check by an outside service: 31% (2021), 25% (2022), 18% (2023)
Employment Barriers

Employer Positions for Justice-involved Individuals

- Depends on Felony
- Any Job Qualified
- Would Not Consider
- Some Jobs

### Employees Working Remotely

<table>
<thead>
<tr>
<th>Year</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020</td>
<td>61%</td>
</tr>
<tr>
<td>2021</td>
<td>23%</td>
</tr>
<tr>
<td>2022</td>
<td>26%</td>
</tr>
<tr>
<td>2023</td>
<td>23%</td>
</tr>
</tbody>
</table>
Remote Work

Expected change in number of remote workers over the next 12 months

Increase
- 2023: 13%
- 2022: 22%
- 2021: 10%

Stay the same
- 49%
- 59%
- 75%

Decrease
- 12%
- 19%
- 41%
Employers Define a Good Job

Top Five Characteristics of a “Good Job” from Employers

1. Pay rate
2. Job stability
3. Health insurance
4. Inclusiveness, and a sense of belonging
5. Paid time off (vacation or sick leave)

Top Five Characteristics of a “Good Job” from Workers

1. Job Stability
2. Flexibility
3. Career Pathway
4. Pay Rate Matches Responsibilities
5. Job Satisfaction

St. Louis region added 15,313 new jobs by startups in 2022
St. Louis Region Jobs Created by First-time Startups by Year

2015: 12,812
2016: 12,687
2017: 17,503
2018: 15,405
2019: 14,945
2020: 14,818
2021: 14,884
2022: 15,313
<table>
<thead>
<tr>
<th>Industry</th>
<th>Jobs Created</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Care and Social Assistance (NAICS 62)</td>
<td>40,034</td>
</tr>
<tr>
<td>Accommodation and Food Services (NAICS 72)</td>
<td>15,247</td>
</tr>
<tr>
<td>Retail Trade (NAICS 44)</td>
<td>11,056</td>
</tr>
<tr>
<td>Professional, Scientific, and Technical Services (NAICS 54)</td>
<td>8,758</td>
</tr>
<tr>
<td>Other Services except Public Administration (NAICS 81)</td>
<td>6,666</td>
</tr>
<tr>
<td>Construction (NAICS 23)</td>
<td>6,077</td>
</tr>
<tr>
<td>Administrative and Support and Waste Management (NAICS 56)</td>
<td>5,324</td>
</tr>
<tr>
<td>Finance and Insurance (NAICS 52)</td>
<td>4,207</td>
</tr>
<tr>
<td>Transportation and Warehousing (NAICS 48)</td>
<td>4,162</td>
</tr>
<tr>
<td>Wholesale Trade (NAICS 42)</td>
<td>3,596</td>
</tr>
<tr>
<td>Real Estate and Rental and Leasing (NAICS 53)</td>
<td>3,390</td>
</tr>
<tr>
<td>Arts, Entertainment, and Recreation (NAICS 71)</td>
<td>2,908</td>
</tr>
<tr>
<td>Manufacturing (NAICS 31)</td>
<td>1,980</td>
</tr>
<tr>
<td>Educational Services (NAICS 61)</td>
<td>1,910</td>
</tr>
<tr>
<td>Information (NAICS 51)</td>
<td>1,532</td>
</tr>
<tr>
<td>Management of Companies and Enterprises (NAICS 55)</td>
<td>823</td>
</tr>
<tr>
<td>Agriculture, Forestry, Fishing and Hunting (NAICS 11)</td>
<td>341</td>
</tr>
<tr>
<td>Public Administration (NAICS 92)</td>
<td>148</td>
</tr>
<tr>
<td>Utilities (NAICS 22)</td>
<td>128</td>
</tr>
<tr>
<td>Mining, Quarrying, and Oil and Gas Extraction (NAICS 21)</td>
<td>80</td>
</tr>
</tbody>
</table>
Top Five St. Louis Industry Employment

<table>
<thead>
<tr>
<th>Industry</th>
<th>2022</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Care &amp; Social Assistance</td>
<td>217,927</td>
<td>189,154</td>
</tr>
<tr>
<td>Wholesale &amp; Retail Trade</td>
<td>205,687</td>
<td>207,329</td>
</tr>
<tr>
<td>Leisure &amp; Hospitality</td>
<td>145,453</td>
<td>147,038</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>118,792</td>
<td>108,011</td>
</tr>
<tr>
<td>Educational Services</td>
<td>102,981</td>
<td>106,826</td>
</tr>
</tbody>
</table>
Spotlight on Advanced Manufacturing

St. Louis MSA Employment Growth for Top 5 Manufacturing Subsectors from 2012-2022

- Transportation Equipment Manufacturing: 17.0% (St. Louis MSA), 32.6% (National)
- Machinery Manufacturing: 0.3% (St. Louis MSA), 7.5% (National)
- Chemical Manufacturing: 14.1% (St. Louis MSA), 17.0% (National)
- Fabricated Metal Product Manufacturing: 1.2% (St. Louis MSA), 0.8% (National)
- Food Manufacturing: 11.0% (St. Louis MSA), 15.4% (National)