Analyzing Houston Metropolitan Area’s Job-to-Job Flows Using US Census LEHD J2J Data

Pramod Sambidi, PhD
Houston-Galveston Area Council

2019 Local Employment Dynamics (LED) Partnership Annual Workshop, Suitland, MD
H-GAC serves:

- 13 counties
- 134 cities
- 7 million people
- 3 million jobs
- MPO for 8-county metro area
Houston MSA Employment

- Employment
- Unemployment_Rate
Houston MSA Employment by Industry

- 92, Public Administration
- 81, Other Services (except Public Administration)
- 72, Accommodation and Food Services
- 71, Arts, Entertainment, and Recreation
- 62, Health Care and Social Assistance
- 61, Educational Services
- 56, Administrative and Support and Waste...
- 55, Management of Companies and Enterprises
- 54, Professional, Scientific, and Technical Services
- 53, Real Estate and Rental and Leasing
- 52, Finance and Insurance
- 51, Information
- 48-49, Transportation and Warehousing
- 44-45, Retail Trade
- 42, Wholesale Trade
- 31-33, Manufacturing
- 23, Construction
- 22, Utilities
- 21, Mining, Quarrying, and Oil and Gas Extraction
- 11, Agriculture, Forestry, Fishing and Hunting
Does J2J have an answer to the following questions?

- At what magnitude are workers moving across industries and geographies?
- What industries are attracting workers from outside the region?
- Who are coming to the region?
- Who are leaving the region?
- What is the impact of labor mobility on earnings?
- How resilient are Houston area industries to economic crises?
Job Flow Origin

Within Houston MSA, 61% from other states, 12% from other Texas areas, 27% job-to-job flow origins.
Quarterly Job Inflows to and Outflows from Houston MSA
### Job Inflows - Demographics

#### Age Group
- Age: <25: 8%
- Age: 25-34: 33%
- Age: 35-54: 35%
- Age: >54: 24%

#### Race
- White: 48%
- Black: 30%
- Asian: 21%
- Other: 0%

#### Education
- High school or less: 5%
- Some college: 29%
- College or higher: 71%

#### Gender
- Male: 62%
- Female: 38%

#### Ethnicity
- Hispanic: 29%
- Non Hispanic: 71%

#### Race
- White: 72%
- Black: 20%
- Asian: 5%
- Other: 3%
Job Outflows - Demographics

**Age Group**
- Age: <25: 9%
- Age: 25-34: 36%
- Age: 35-54: 24%
- Age: >54: 31%

**Education**
- High school or less: 49%
- Some college: 30%
- College or higher: 20%

**Gender**
- Male: 63%
- Female: 37%

**Ethnicity**
- Hispanic: 70%
- Non Hispanic: 30%

**Race**
- White: 74%
- Black: 19%
- Asian: 4%
- Other: 3%
Job Flows by Industry in 2014 (Houston Economy at its Peak)

Job-to-Job Flows to and from Houston MSA by Industry

Inflow2014 • Outflow2014
Job Flow - Earnings

Annual Earnings Changes of Job Inflows to and Job Outflows from the Houston MSA

- Job Inflow
- Job Outflow
# Earnings Change by Industry

*Median earnings changes of job-to-job flows within the Houston MSA by industry origin-destination*

<table>
<thead>
<tr>
<th>Industry</th>
<th>Percent Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>29%</td>
</tr>
<tr>
<td>Mining</td>
<td>6%</td>
</tr>
<tr>
<td>Utilities</td>
<td>4%</td>
</tr>
<tr>
<td>Construction</td>
<td>14%</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>7%</td>
</tr>
<tr>
<td>Wholesale</td>
<td>9%</td>
</tr>
<tr>
<td>Retail</td>
<td>52%</td>
</tr>
<tr>
<td>Transportation</td>
<td>8%</td>
</tr>
<tr>
<td>Information</td>
<td>10%</td>
</tr>
<tr>
<td>Finance</td>
<td>10%</td>
</tr>
<tr>
<td>Real Estate</td>
<td>12%</td>
</tr>
<tr>
<td>Professional</td>
<td>7%</td>
</tr>
<tr>
<td>Management</td>
<td>2%</td>
</tr>
<tr>
<td>Administration</td>
<td>10%</td>
</tr>
<tr>
<td>Education</td>
<td>71%</td>
</tr>
<tr>
<td>Healthcare</td>
<td>21%</td>
</tr>
<tr>
<td>Arts</td>
<td>66%</td>
</tr>
<tr>
<td>Accommodation</td>
<td>96%</td>
</tr>
<tr>
<td>Other Svs</td>
<td>24%</td>
</tr>
<tr>
<td>Public Administration</td>
<td>38%</td>
</tr>
</tbody>
</table>

**Average percent change in annual earnings**

-50% to 50%
Earnings Change by Industry

Median earnings changes of job-to-job flows within the Houston MSA by industry origin-destination

<table>
<thead>
<tr>
<th>Industry</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>3%</td>
</tr>
<tr>
<td>Mining</td>
<td>-28%</td>
</tr>
<tr>
<td>Utilities</td>
<td>-31%</td>
</tr>
<tr>
<td>Construction</td>
<td>-23%</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>-20%</td>
</tr>
<tr>
<td>Wholesale</td>
<td>-15%</td>
</tr>
<tr>
<td>Retail</td>
<td>4%</td>
</tr>
<tr>
<td>Transportation</td>
<td>-13%</td>
</tr>
<tr>
<td>Information</td>
<td>-13%</td>
</tr>
<tr>
<td>Finance</td>
<td>-14%</td>
</tr>
<tr>
<td>Real Estate</td>
<td>-4%</td>
</tr>
<tr>
<td>Professional</td>
<td>-13%</td>
</tr>
<tr>
<td>Management</td>
<td>-3%</td>
</tr>
<tr>
<td>Administration</td>
<td>3%</td>
</tr>
<tr>
<td>Education</td>
<td>8%</td>
</tr>
<tr>
<td>Healthcare</td>
<td>-1%</td>
</tr>
<tr>
<td>Arts</td>
<td>14%</td>
</tr>
<tr>
<td>Accommodation</td>
<td>8%</td>
</tr>
<tr>
<td>Other Svcs</td>
<td>3%</td>
</tr>
<tr>
<td>Public Administration</td>
<td>-31%</td>
</tr>
</tbody>
</table>

Destination Industries
- Agriculture
- Mining
- Utilities
- Construction
- Manufacturing
- Wholesale
- Retail
- Transportation
- Information
- Finance
- Real Estate
- Professional
- Management
- Administration
- Education
- Healthcare
- Arts
- Accommodation
- Other Svcs
- Public Administration

Average percent change in annual earnings

-50%
Earnings Change by Age Group

The graph shows the earnings change percent and quarterly earnings change by age group. The highest earnings change percent is observed in the age group <25, followed by 25-34, 35-54, and the lowest in the age group >54. The quarterly earnings change shows a similar trend with the highest values in the age group <25.
Earnings Change by Origin

Median earnings changes of job inflows to the Houston MSA by origin geography levels

Measure Names
- Average earnings change
- Average earnings change percent
Job Mobility

Display Item

Job mobility: job flows/total employment counts
Regional Competitiveness

Display Item

- Job mobility: job flows/total employment counts
- Regional industry competitiveness: job flows from other regions/total job flows
### Job Inflow - Education

Demographic characteristics of job inflows to the Houston MSA from different geographic levels

<table>
<thead>
<tr>
<th>Demographic groups</th>
<th>Origin geography level</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>High school or less</td>
<td>Within Houston</td>
<td>48%</td>
</tr>
<tr>
<td></td>
<td>From Texas</td>
<td>48%</td>
</tr>
<tr>
<td></td>
<td>From Other States</td>
<td>42%</td>
</tr>
<tr>
<td></td>
<td>From 15 Non-TX Major Metros</td>
<td>36%</td>
</tr>
<tr>
<td>Some college</td>
<td>Within Houston</td>
<td>31%</td>
</tr>
<tr>
<td></td>
<td>From Texas</td>
<td>31%</td>
</tr>
<tr>
<td></td>
<td>From Other States</td>
<td>30%</td>
</tr>
<tr>
<td></td>
<td>From 15 Non-TX Major Metros</td>
<td>28%</td>
</tr>
<tr>
<td>College or higher</td>
<td>Within Houston</td>
<td>20%</td>
</tr>
<tr>
<td></td>
<td>From Texas</td>
<td>20%</td>
</tr>
<tr>
<td></td>
<td>From Other States</td>
<td>28%</td>
</tr>
<tr>
<td></td>
<td>From 15 Non-TX Major Metros</td>
<td>36%</td>
</tr>
</tbody>
</table>
Resilience During Crisis - Construction Industry

Net job inflows to the Houston MSA by industry and Recession period

- Before Recession
- During Recession
- After Recession

Industry:
- Agriculture
- Mining
- Utilities
- Construction
- Manufacturing
- Wholesales
- Retail
- Transportation
- Information
- Finance
- Real Estate
- Professional
- Management
- Administration
- Education
- Healthcare
- Arts
- Accommodation
- Other Svs
- Public Admin
Resilience During Crisis - Manufacturing Industry

Net job inflows to the Houston MSA by industry and Recession period

- Before Recession
- During Recession
- After Recession

Industry:
- Agriculture
- Mining
- Utilities
- Construction
- Manufacturing
- Wholesales
- Retail
- Transportation
- Information
- Finance
- Real Estate
- Professional
- Management
- Administration
- Education
- Healthcare
- Arts
- Accommodation
- Other Svcs
- Public Admin
Resilience During Crisis—Retail Industry

Net job inflows to the Houston MSA by industry and Recession period

- Industry:
  - Agriculture
  - Mining
  - Utilities
  - Construction
  - Manufacturing
  - Wholesales
  - Retail
  - Transportation
  - Information
  - Finance
  - Real Estate
  - Professional
  - Management
  - Administration
  - Education
  - Healthcare
  - Arts
  - Accommodation
  - Other Svs
  - Public Admin

- Percentage of net job flows of each industry to Houston MSA:
  - Before Recession
  - During Recession
  - After Recession
Resilience During Crisis - Health Care Industry

Net job inflows to the Houston MSA by industry and Recession period

- Before Recession
- During Recession
- After Recession

Industry:
- Agriculture
- Mining
- Utilities
- Construction
- Manufacturing
- Wholesales
- Retail
- Transportation
- Information
- Finance
- Real Estate
- Professional
- Management
- Administration
- Education
- Healthcare
- Arts
- Accommodation
- Other Svs
- Public Admin

Regional Collaboration • Transportation Planning • Multimodal Mobility
Resilience During Crisis

Percentage of job inflows by demographic group and Recession period

Demographic Group
- White
- Black
- Asian
- Other

Demographics
- Age Group
- Education
- Ethnicity
- Race
- Sex

Measure Names
- Before Recession
- During Recession
- After Recession
Conclusions

▪ Most of the job changes in the Houston MSA are workers changing jobs within the region, however share of out-of-region job inflows is on the rise

▪ Jobs flows to Houston area reflect a young and racially diverse workforce

▪ demographic characteristics of workers moving into and out of the region are very similar

▪ Administration and Construction industries have the highest job mobilities, whereas Education and Public Administration have the least

▪ Workers from outside of Texas have higher education and receive higher salary increment

▪ Job inflows to the Mining (Energy), Utility and Manufacturing industries are almost always associated with rises in earnings.

▪ Energy industry is the core of Houston MSA’s attractiveness
Website and Contact Information

- Houston MSA Job-to-Job Flows Interactive Report

- Houston MSA Job-to-Job Flows Explorer
  https://datalab.h-gac.com/j2jdata/

- Interactive web mapping applications
  www.h-gac.com/go/apps

- E-mail: forecast@h-gac.com

- Acknowledgements to The Socioeconomic Modeling Team at H-GAC