KBOR-DOL Crosswalk: Transitions to the Labor Market and Implications for Policy

For Presentation at:
Kansas Board of Regents
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Background

- States are developing longitudinal data in large part, funded by the US Department of Labor’s Workforce Data Quality Initiative.
  - States with current projects include Maryland, Virginia, and Arkansas
- Our project links data from Kansas Board of Regents to Kansas Department of Labor records to examine:
  - Employment, earnings and occupation match
Goals of Study

- Link characteristics of 2008-2010 KBOR institution graduates to labor market outcomes
- Analyze earnings of recent graduates by degree type and major
- Explore whether graduates are using their degrees in their employment
- Discuss the strengths and weaknesses of these data for policy-makers.
Data Sources—Employment & Earnings

- **KBOR data:**
  - Graduates by year, institution, major, and degree level

- **Kansas Department of Labor records:**
  - Quarterly wages, employer, industry, and time span employed.
  - KDOL data do not include occupation or hours worked.
Data Sources—Matching Degree & Occupation

- US Department of Labor cross-walk that maps postsecondary majors to likely occupations and industries.

- American Community Survey data:
  - Individual-level data with information on undergraduate major, occupations, industry, wages, and demographics.
## Overview of Graduates: Most Recent Degree 2008-2010 by Residency Status

<table>
<thead>
<tr>
<th>Type of Institution</th>
<th>Total</th>
<th>Resident</th>
<th>Non-Resident</th>
<th>Unknown</th>
<th>% Resident</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research University</td>
<td>29,984</td>
<td>21,404</td>
<td>7,189</td>
<td>1,391</td>
<td>71.4</td>
</tr>
<tr>
<td>Other 4-year University</td>
<td>19,462</td>
<td>15,943</td>
<td>3,184</td>
<td>335</td>
<td>81.9</td>
</tr>
<tr>
<td>Community Colleges</td>
<td>30,673</td>
<td>26,768</td>
<td>2,991</td>
<td>914</td>
<td>87.3</td>
</tr>
<tr>
<td>Technical Colleges</td>
<td>9,638</td>
<td>9,587</td>
<td>23</td>
<td>28</td>
<td>99.5</td>
</tr>
</tbody>
</table>

### Percent of Grads with Resident Status

- **Technical**: 99.5%
- **Community**: 87.3%
- **Other 4-year**: 81.9%
- **Research**: 71.4%
Overview of Labor Market Outcomes
Most Recent Degree 2008-2010
Four-Year Institutions

<table>
<thead>
<tr>
<th>Residency Status</th>
<th>Percent Employed in Kansas</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 Year after Graduation</td>
</tr>
<tr>
<td>Resident</td>
<td>69.3</td>
</tr>
<tr>
<td>Non-Resident</td>
<td>21.2</td>
</tr>
</tbody>
</table>

% Employed in Kansas

![% Employed in Kansas Chart]

- Year 1
- Year 2
# Overview of Labor Market Outcomes

## Employment Outcomes by University Type

<table>
<thead>
<tr>
<th>Type of Institution</th>
<th>% Employed in Kansas</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 Year after Grad.</td>
</tr>
<tr>
<td>Research Univ.</td>
<td>50.9%</td>
</tr>
<tr>
<td>Other 4-Year Univ.</td>
<td>69.6%</td>
</tr>
<tr>
<td>Community Coll.</td>
<td>72.1%</td>
</tr>
<tr>
<td>Technical Coll.</td>
<td>82.5%</td>
</tr>
</tbody>
</table>
Overview of Labor Market Outcomes
Most Recent Degree 2008-2010
by Degree Type

- Labor market analysis limited to graduates who did not re-enroll in school and who did not earn additional degrees in the two years following graduation.
  - Those who re-enroll may not be available for full-time employment.
  - Those with additional degrees might end up in the wrong institution or degree category.
  - All earnings are reported in 2013 dollars.
Median Earnings by Degree Type 2008-2010
KBOR Graduates Employed in Kansas

<table>
<thead>
<tr>
<th>Degree Type</th>
<th>Year 1</th>
<th>Year 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certificate</td>
<td>18,276</td>
<td>19,147</td>
</tr>
<tr>
<td>Associate's</td>
<td>28,213</td>
<td>29,015</td>
</tr>
<tr>
<td>Bachelor's</td>
<td>29,176</td>
<td>32,362</td>
</tr>
<tr>
<td>Master's</td>
<td>43,670</td>
<td>44,500</td>
</tr>
<tr>
<td>Professional</td>
<td>48,437</td>
<td>51,645</td>
</tr>
<tr>
<td>Doctoral</td>
<td>53,602</td>
<td>58,967</td>
</tr>
</tbody>
</table>
Do Graduates Use Their Degrees?

- Three Indicators of the match between degree and employment.

- Indicator 1: Is the graduate earning wages comparable to others with the same degree type?
  
  - Used estimates of wages by degree type from the ACS data for people ages 20-30 in Midwest states.
  
  - If the person earns at least 30% (or more) of ACS respondents with degree type, the person is categorized as using the degree.
Do Graduates Use Their Degrees?

- Indicator 2: Is the graduate working in an occupation that is closely linked to the major degree?
  - The Bureau of Labor Statistics publishes information linking majors to (multiple) occupations.
  - Using ACS data we linked wages to occupations.
  - If the person earns as much as at least 30% of people in the linked occupations, then the student is categorized as using the degree.
Do Graduates Use Their Degrees?

- Indicator 3: Is the graduate working in an industry that is closely associated with her or his major?
  - The Bureau of Labor Statistics publishes information linking majors to (multiple) industries.
  - Kansas DOL data indicates industry of employer.
  - If the person works in a linked industry, then the person is categorized as using the degree.
Do Graduates Use Their Degrees?

- We determined that a person is using their degree if one of these three indicators is true:
  - **Indicator 1**: Is the graduate earning wages comparable to others with the same degree type?
  - **Indicator 2**: Is the graduate earning wages that are comparable to typical wages for the occupations linked to her or his major and degree?
  - **Indicator 3**: Is the graduate working in an industry that is closely associated with her or his major?
## Employment and Wages Two Years After Graduation
### By Selected Major: Certificates

<table>
<thead>
<tr>
<th>Major</th>
<th># Grads</th>
<th>% Grads Employed in KS</th>
<th>% of Employed Using Degree</th>
<th>Median Wage Using Degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nursing assistant</td>
<td>5,356</td>
<td>75.1</td>
<td>62.6</td>
<td>19,627</td>
</tr>
<tr>
<td>Health aides</td>
<td>2,023</td>
<td>81.2</td>
<td>81.7</td>
<td>20,607</td>
</tr>
<tr>
<td>Transportation equipment operator</td>
<td>1,719</td>
<td>37.8</td>
<td>70.8</td>
<td>32,363</td>
</tr>
<tr>
<td>LPN</td>
<td>1,042</td>
<td>85.3</td>
<td>89.9</td>
<td>33,774</td>
</tr>
<tr>
<td>Auto and other transport equip tech</td>
<td>863</td>
<td>74.78</td>
<td>67.1</td>
<td>29,819</td>
</tr>
<tr>
<td>Medical, clinical, other health assistants</td>
<td>559</td>
<td>52.4</td>
<td>78.8</td>
<td>25,908</td>
</tr>
<tr>
<td>Engineering technology</td>
<td>519</td>
<td>76.4</td>
<td>66.8</td>
<td>33,611</td>
</tr>
<tr>
<td>Construction/Building trades</td>
<td>453</td>
<td>75.9</td>
<td>76.5</td>
<td>31,608</td>
</tr>
</tbody>
</table>
## Employment and Wages Two Years After Graduation
### By Selected Major: Associate’s

<table>
<thead>
<tr>
<th>Major</th>
<th># Grads</th>
<th>% Grads Employed in KS</th>
<th>% of Employed Using Degree</th>
<th>Median Wage Using Degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Humanities and Liberal Arts</td>
<td>5,012</td>
<td>57.8</td>
<td>46.9</td>
<td>32,008</td>
</tr>
<tr>
<td>Nursing (RN)</td>
<td>2,283</td>
<td>81.2</td>
<td>93.5</td>
<td>46,410</td>
</tr>
<tr>
<td>Medical, clinical, other health assistants</td>
<td>597</td>
<td>71.2</td>
<td>84.5</td>
<td>37,243</td>
</tr>
<tr>
<td>Business, Accounting, Finance</td>
<td>461</td>
<td>67.5</td>
<td>64.0</td>
<td>32,520</td>
</tr>
<tr>
<td>Auto and other transport equipment</td>
<td>452</td>
<td>73.5</td>
<td>76.5</td>
<td>36,932</td>
</tr>
<tr>
<td>Computer and Information Technology</td>
<td>287</td>
<td>77.7</td>
<td>67.3</td>
<td>36,576</td>
</tr>
<tr>
<td>Engineering technology</td>
<td>279</td>
<td>76.0</td>
<td>75.0</td>
<td>39,980</td>
</tr>
</tbody>
</table>
## Employment and Wages Two Years After Graduation
### By Selected Major: Bachelor’s

<table>
<thead>
<tr>
<th>Major</th>
<th># Grads</th>
<th>% Grads Employed in KS</th>
<th>% of Employed Using Degree</th>
<th>Median Wage Using Degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business, Accounting, Finance</td>
<td>3,715</td>
<td>60.8</td>
<td>76.8</td>
<td>40,176</td>
</tr>
<tr>
<td>Education K-12 and Adult</td>
<td>2,650</td>
<td>78.3</td>
<td>90.8</td>
<td>34,778</td>
</tr>
<tr>
<td>Social Sciences</td>
<td>2,384</td>
<td>53.1</td>
<td>53.6</td>
<td>37,046</td>
</tr>
<tr>
<td>Communications and Journalism</td>
<td>2,088</td>
<td>49.6</td>
<td>61.4</td>
<td>34,577</td>
</tr>
<tr>
<td>Engineering</td>
<td>1,788</td>
<td>49.0</td>
<td>86.1</td>
<td>59,389</td>
</tr>
<tr>
<td>Humanities, Liberal Arts</td>
<td>1,442</td>
<td>56.9</td>
<td>44.3</td>
<td>35,682</td>
</tr>
<tr>
<td>Psychology, Behavioral Science</td>
<td>1,413</td>
<td>57.3</td>
<td>39.8</td>
<td>35,201</td>
</tr>
<tr>
<td>Nursing (BSN)</td>
<td>1,315</td>
<td>72.3</td>
<td>92.6</td>
<td>46,971</td>
</tr>
</tbody>
</table>
Evaluating the Quality of Employment Data

- Good measure of those working in Kansas.
  - Missing those who may live in Kansas but employed across state line.
  - For example, using KU Alumni data, over 36% of 2008-10 alumni live in the Kansas City metro area (over 80% on Kansas-side). No reliable data on how many work in MO but live in KS and vice versa.
  - Missing federal employees and self-employed.
Evaluating the Quality of Earnings Data

- Initial earnings may or may not reflect the impact of degree on earnings.
  
  • Questionable Labor Market
  
  • Return on the Human Capital Investment
2008-2010 KBOR Graduates confronted the worst labor market in a generation.
Human capital is an investment where individuals choose to attend postsecondary schooling and major as a function of abilities and ability to pay.
Human Capital Model

- Two types of Human Capital provided by KBOR Institutions
  - General—Four-year university degrees may or may not be closely related to occupation.
  - Occupation Specific—
    - Technical college training (e.g. Nursing, Welding)
    - Graduate/Professional programs (e.g. Medicine)
- Return on the Human Capital investment accrues over time.
Age-Earnings Profiles by Major

Median Annual Earnings, by Age-group and Area of Undergraduate Major, Midwestern States (2011-12 American Community Survey)

- Humanities and Social Sciences
- Professional and Preprofessional
- Physical Sciences, Natural Sciences, and Mathematics
- Engineering
- Some College or Associate's Degree
- High School Graduate Only
Earnings by Degree and Age


- **High School Graduate Only**: $22,225
- **Some College or Associate's Degree**: $24,437
- **Humanities and Social Sciences**: $24,452
- **Professional and Preprofessional**: $27,027
- **Physical Sciences, Natural Sciences, and Mathematics**: $33,414
- **Engineering**: $31,185

**Kansas New Graduates**

- **High School Graduate Only**: $34,096
- **Some College or Associate's Degree**: $41,580
- **Humanities and Social Sciences**: $57,173
- **Professional and Preprofessional**: $59,602
- **Physical Sciences, Natural Sciences, and Mathematics**: $79,806
- **Engineering**: $89,908

**New Graduates (Ages 23-25)**

- **High School Graduate Only**: $29,013
- **Some College or Associate's Degree**: $27,276
- **Humanities and Social Sciences**: $43,659
- **Professional and Preprofessional**: $41,580
- **Physical Sciences, Natural Sciences, and Mathematics**: $51,912
- **Engineering**: $43,659

**Peak Earning (Ages 56-60)**

- **High School Graduate Only**: $22,225
- **Some College or Associate's Degree**: $24,948
- **Humanities and Social Sciences**: $27,027
- **Professional and Preprofessional**: $31,185
- **Physical Sciences, Natural Sciences, and Mathematics**: $27,276
- **Engineering**: $89,908
Evaluating the Quality of Occupation Match to Major Data

- Initial earnings may or may not reflect the impact of degree on earnings.
- Not all degrees map directly onto occupations.
  - Economics BAs are not practicing economists (54% of Social Science majors are using their degrees).
  - Engineering BS usually work as engineers (86% of engineering majors are using their degrees).
Evaluating the Quality of Occupation Match to Major Data

- Rational individuals maximize utility by choosing degree/major that earns the highest return conditional on individual abilities.

- We don’t know the skills / occupations /careers of the future.

- Urge caution against picking “winners” and “losers” among degree programs.
"It's in Apple's DNA that technology alone is not enough — it's technology married with liberal arts, married with the humanities, that yields us the result that makes our heart sing." — Steve Jobs
Conclusions

- Employment in Kansas:
  - About 19% of nonresidents with bachelor’s degrees are employed in Kansas.
  - More than 65% of Kansas residents with bachelor’s degrees are employed in Kansas.

- The mobility of graduates varies widely by type of institution.
  - Research-institution graduates are more likely to leave the state.
Conclusions

- New Kansas graduates have wages comparable to new graduates in surrounding states.
- Kansas graduates show wage progression, earning more in the second year after graduation than in the first.
- As expected, individuals with occupation-specific majors are more likely to be using their degrees in employment.
Conclusions

- Care must be taken with interpreting these data:
  - Good measure of employment in Kansas
  - Initial earnings do not reflect the full return on the human capital investment
  - Use of degree in employment is suggestive at best
- To improve quality of data, I recommend sharing it with individual institutions
Conclusions