Making Labor Market Data Useful: In Practice not Theory

Clive R. Belfield
Thomas R. Bailey

April 11, 2016   |   AACC   |   Chicago
What are the employment/earnings benefits of CC?

What institutional programs and public policies improve student outcomes?

Big data:

- Transcripts: state-wide CC systems for FTIC cohorts
- Transfers: National Student Clearinghouse
- Earnings: UI wage records pre-, in-, post-college
- AR, CA, MI, NC, NY, OH, VA, WA in 2000s
Results from Big Data
Quarterly Earnings Gains:
AA over No Award 8 Years Post-FTIC (Fixed Effects)

<table>
<thead>
<tr>
<th>State</th>
<th>Male Mean</th>
<th>Female Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>AR</td>
<td>$1,040</td>
<td></td>
</tr>
<tr>
<td>WA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VA</td>
<td>$1,040</td>
<td></td>
</tr>
<tr>
<td>NC</td>
<td>$1,800</td>
<td></td>
</tr>
<tr>
<td>MI</td>
<td>$2,000</td>
<td></td>
</tr>
<tr>
<td>KY</td>
<td>$3,000</td>
<td></td>
</tr>
<tr>
<td>AR</td>
<td></td>
<td>$1,800</td>
</tr>
<tr>
<td>WA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VA</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Quarterly Earnings Gains:
AA over No Award 8 Years Post-FTIC (Fixed Effects)

PV gain for AA (30 years d=3%)
Male $75,000
Female $135,000
Quarterly Earnings Gains: Certificate over No Award 8 Years Post-FTIC

- AR
- VA
- WA
- Mean
  - $250
- KY
- NC
- MI
- AR
- NC
- KY
- AR
- Mean
  - $570
- MI
- WA

-300 $600 $1,500
Quarterly Earnings Gains:
Certificate over No Award 8 Years Post-FTIC

Gains are: modest, temporary, non-robust (except in health).
But certificates vary substantially in credits.
Quarterly Earnings Gain over Zero Credits (8 Years After FTIC in VA/NC)
Quarterly Earnings by Gender
Degree Completers (AR, KY, MI, OH)

$2,000
$4,000
$6,000
$8,000

College entry
18 Quarters later

Male
Female
Figure 3. Earnings of College Enrollees Ten Years Later [Aggregated by College]

Evaluating Big Data

Why isn’t it more useful?

① Time/resources for analysis
② Obvious or outdated or useless conclusions
③ Barriers to change

What can we do about it?
1. Time/Resources for Analysis

- Lots of data curating
- Lots of questions
- Identification problems (but not much methodological sensitivity)
- Cannot easily use short-cuts
Data Curating is a Lot of Work

Requirements:
• Individual-level data (not college-level or program-level)
• Long “windows” per student

Tasks:
• Collating data longitudinally and across systems
• Cleaning data for missings (transfers/earnings)
• Coding data from flat files over courses/colleges
## Labor Market Gains to Whom?

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>By Award</strong></td>
<td>• Associate degree, certificate/diploma, different non-award</td>
</tr>
<tr>
<td><strong>If Transfer</strong></td>
<td>• For-profit college, four-year college, with award</td>
</tr>
<tr>
<td><strong>On Entry Status</strong></td>
<td>• High school quality, college-ready, age</td>
</tr>
<tr>
<td><strong>Per Pathway</strong></td>
<td>• College, subject, sequence, aid, while working</td>
</tr>
</tbody>
</table>
2A. Obvious Conclusions

Get students to:
- accumulate more credits (!!)
- complete programs (?!)
- transfer onward (??)
Completion rate and average earnings: zero correlation per college
Transfer to Four-year Colleges

Students who transfer to a four-year public college have:

• Higher earnings than students who do not transfer (Reynolds, 2012)
• Lower earnings than those who started at a four-year college (Andrews et al., 2013)

Earnings gains are sensitive to pathways:

• Which type of college a student transfers to
• Whether student completes an award before transfer
Transfer to For-Profit Colleges

- Evidence (but weak) of earnings **penalty** from attending FP instead of CC
- No earnings gain from **even attending** FP after CC
- Big tuition / loan balance **penalty** to FP
- Bachelor's degrees from FPs have **worst callback outcomes** (Deming et al., 2016)
2B. Old News

Now
Students need ~4 years in labor market 2016
Students need ~3 years to complete AA 2012
Students need ~6 years to complete BA 2009

Ten years out of date
Labor market change over a decade…
2C. Useless Conclusions

Outcomes depend on differences across student characteristics…
Gender Differences?

Female characteristics:
- More prepared (HSGPA +0.15)
- Older and richer (Age > 24 +8%p; EFC +$1950)

Female choices:
- More intent on AA (+11%p)
- Study health/nursing (+++)

Female performance:
- Better in first semester (CGPA +0.24)
- More credits (+6) and more awards (+5%p)
Quarterly Earnings by Gender
Degree Completers (AR, KY, MI, OH)
Entry Status Differences?

- More prepared students earn more
- Controls for preparedness do not much influence returns to college
- Few high schools are relatively high-quality
- Younger entrants do better, after a time
Earnings Gains:
AA over No Award, Well-Prepared Students

Readiness

Male
HS GPA

Female
HS GPA

HS award

$0  $1,000  $2,000
Earnings Gains: AA over No Award, Ill-Prepared (Light Bars) and Well-Prepared Students

- Male
  - HS GPA
  - HS award
- Female
  - HS GPA
  - HS award

Readiness

$0  $1,000  $2,000
Quarterly Earnings Gaps of Arkansas Community College Students Across 147 High Schools
Quarterly Earnings Gaps of Arkansas Community College Students Across 147 High Schools

Earnings gaps are not statistically significantly different for schools within box
Earnings Growth: AA Completers by Age on Entry

Ages 18-20

Ages 21+

ENTRY

12 QTRS

24 QTRS

36 QTRS
2D. It Depends

Aid effects are extremely complicated:

- Type of aid
- Take-up of aid
- Incentives
- Targeting accuracy
- Changes in aid systems
3. Barriers to Change

• No point in having information if it does not change a decision
3A. No Incentive for CCs

• Not CC benefit
  • Students earn more, CCs do not get more

• Policy perversity: less funding whatever is done
  • Do well, can do well with less funding
  • Do poorly, must be inefficient
3B. Barriers to Change

• Health sciences departments; hospital placements
• Weak articulation of 2-year to 4-year college programs
3C. Do Not Know How to Change

- Requires a lot of change
- Guided pathways
- Technical substitution of faculty = ?
- Nudges
3D. Cannot Afford to Change

- Labor contracts prevent reduction in low-demand programs
- Cross subsidy of upper-level courses by introductory/remedial courses
- Expanding in first-semester cannot be sustained until completion
Making Big Data More Useful

What would change or can with this information?

• Work with policymakers
• Relate to actual decisions by senior personnel, faculty, counselors/advisors, students
Making Big Data More Useful

Choose approach:

- *Either* specific/narrow hypotheses
- *Or* stylized, ahistorical, “big picture” facts
- Who is audience? What will be useful in the future? What is economic value of information?
Actionable Narrow Questions

What is the labor market gain from:

• Summer session courses?
• First-semester course-loads (momentum)?
• Transfer with an Associate degree or as fast as possible?
• Higher instructor quality?
• Smaller class size?
Visit us on the web at capseecenter.org

We’re also on Facebook and Twitter.

Center for Analysis of Postsecondary Education and Employment
Teachers College, Columbia University
525 West 120th Street, Box 174, New York, NY 10027
capsee@columbia.edu
212.678.3091

CAPSEE is funded through a grant (R305C110011) from the Institute of Education Sciences, U.S. Department of Education.