NEW INSIGHTS ON THE CAREER AND ECONOMIC IMPACTS OF COLLEGE

Gregory Wolniak, New York University
Outline

- Introduction
  - CRHEO
  - Framing the research
- How College Affects Students, Vol 3
  - Overview and select key findings
- Career and Economic Impacts of College
  - What we know; What we don’t know
- Beyond Careers
- Recommendations
- Q&A, Discussion
Center for Research on Higher Education Outcomes

- CRHEO quick facts
  - Launched in 2013
  - NYU’s only research center focused on the measurement of higher education outcomes and postsecondary student development.
  - Always seeking potential research partners and collaborators
  - Areas of concentration:
    1. Student learning and development
    2. Institutional conditions for learning
    3. Evaluation and assessment

http://steinhardt.nyu.edu/crheo
Framing the Research: College impact

Inputs --> Environments --> Outcomes
Framing the Research: My take on college impact

- Pathways to college
- Feeder networks
- High school contexts
- Admissions strategies

- Persistence
- Best practices in undergrad ed
- Student development

- Early career earnings
- College majors and social mobility
Framing the Research

- Astin’s Taxonomy of Student Outcomes and Data

<table>
<thead>
<tr>
<th>Types of Data</th>
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Framing the Research

- Astin’s Taxonomy of Student Outcomes and Data
- IES Postsecondary and Adult Education Grants
  - Tend to focus on access / enrollment, remediation, completion

- What Works Clearinghouse “Relevant Outcome Domains” for Postsecondary Education:
  - Access and enrollment; Credit accumulation; Academic achievement;
    Attainment; Labor market
  - Measures of actual behavior are preferred.

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- Subject-matter knowledge
- Academic ability/achievement
- Critical thinking ability
- Etc.
- Values
- Attitudes
- Self-concept
- Etc.
- Enrollment
- Persistence
- Degree attainment
- Etc.
- Leadership
- Citizenship
- Interpersonal relationships
- Etc.

Our time with “the whale”

- Together, cited over 9500 times
- Each reviewed 2500+ studies
- Vol. 3: Contains the findings accumulated between 2002 and 2013
- Weight given to rigorous design
Organizing the Literature

- By Outcomes
  - Development of Verbal, Quantitative, & Subject Matter Competence
  - Cognitive Development
  - Psychosocial Change
  - Attitudes & Values
  - Moral Development
  - Educational Attainment & Persistence
  - Career & Economic Impacts
  - Quality of Life After College

- By Underlying Research Question
  - Change During College
    - Did change occur while in college?
  - Net Effects of College
    - Can outcomes be attributed to college-going, as opposed to maturation or other confounds?
  - Between-College Effects
    - Can outcomes be explained by institutional conditions, organizational characteristics, peer socialization, etc.?
  - Within-College Effects
    - Can outcomes be explained by exposure to and participating in specific educational experiences?
  - Conditional Effects
    - Are the effects that occurred as a result of participation in any given college experience based on student inputs, such as race, gender, or initial academic performance?
Methodological Limitations & Advancements

- *How College Affects Students* — implies causality but from research that is rarely causal....Difficulty of random assignment

- Series of trade-offs: Regression discontinuity, instrumental variables, propensity score matching (design trumps analysis)
  - Greater internal validity; reduced external validity
  - Enhanced rigor may result in smaller sample sizes which reduces statistical power

- Examining institutional context: Hierarchical Linear Modeling

- Estimating change over time: Panel analyses

- Potential causal mechanisms: Mediation and Structural Equation Modeling

- How good is the measure? Self-reported gains vs. more objective assessments
A few general key findings / the broad view

- Consistent (and Inconsistent) Findings Across Three Books
  - Less pervasive effect of living on campus, more attention to learning communities

- Significance of Good Teaching
  - Curricular innovation, technology

- Students Learn from Confronting Difference and Challenge – Importance of Diversity of People and Ideas
  - Diversity effects cannot be understated…

- Importance of Individual Differences among Students in shaping both the Impacts and Benefits of College

- Channeling resources towards instruction, not administration
Career & Economic Impacts of College

How College Affects Students, Vol 3
Why care about the career and economic outcomes of college?

- Students continue to enter college seeking “better” jobs (demand-side considerations)

Why care...

- Increasing accountability pressure – the “new” College Scorecard
Why care...

- Persistent stratification
  - Education is widely viewed as the primary mechanism of social mobility
    - Blau & Duncan’s (1967) status attainment model
    - Thomas Jefferson’s legislative proposals (Lee, 1961)
    - Horace Mann’s speeches to the Massachusetts Board of Ed (Kaestle, 1983)
    - Horatio Alger’s creative works (Gardner, 1971)
    - Etc.
  - And a college education remains a significant predictor of socioeconomic status

<table>
<thead>
<tr>
<th>Median Earnings: Ages 25-34 with Bachelor’s Degree or Higher vs. High School Graduates</th>
<th>2012</th>
<th>1992</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men</td>
<td>70%</td>
<td>57%</td>
</tr>
<tr>
<td>Women</td>
<td>82%</td>
<td>59%</td>
</tr>
</tbody>
</table>

Source: Baum (2014)
Where the research was focused (HCAS, Vol.3)

**Career and Economic Impacts of College**

- **Career Development**
  - Career choices
  - Career aspirations

- **Employment**
  - Labor force participation
  - Hours worked
  - Job satisfaction
  - Occupational status

- **Earnings & Rates of Return**
  - Annual earnings
  - Hourly wages
  - Return on Investment (IRR)
We must not ignore **theory**

<table>
<thead>
<tr>
<th>Theoretical Perspective</th>
<th>Citation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Status Attainment</strong></td>
<td>Liu, Thomas, &amp; Zhang, 2010; Long, 2008; Long, 2010; Rumberger, 2010; Thomas &amp; Zhang, 2005; Thomas, 2003; Wolniak &amp; Pascarella, 2007; Wolniak, Seifert, Reed, &amp; Pascarella, 2008; Xu, 2013; Zhang &amp; Thomas, 2005; Zhang, 2005; Zhang, 2008a</td>
</tr>
<tr>
<td><strong>Career Development</strong></td>
<td>Blanchard &amp; Lichtenberg, 2003; Diegelman &amp; Subich, 2001; Folsom &amp; Renardon, 2003; Jurek &amp; Armstrong, 2010; Neumann, Olitsky, &amp; Robbins, 2009; Reese &amp; Miller, 2006; Scott &amp; Ciani, 2008; Szelenyi, Denison, &amp; Inkelas, 2013</td>
</tr>
<tr>
<td><strong>Other (Specified)</strong></td>
<td>Flowers, 2004 (Theory of Student Involvement [Astin, 1984]); Taniguchi, 2005 (Life Course Theory [Elder, 1998])</td>
</tr>
<tr>
<td><strong>Unknown / Not Specified</strong></td>
<td>Flowers, 2002; Gill &amp; Leigh, 2003; Hu &amp; Kuh, 2003; Hubbard, 2011; Light &amp; Strayer, 2004; Sax &amp; Bryant, 2006</td>
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A “story” of data
Modeling College to Careers (Earnings)

- **General Model**

\[
\ln(Y) = a_0 + a_1X + a_2S + a_3C + e
\]

- **X**: Socio-demographic and academic background characteristics
- **S**: Schooling variables (institution type, majors, gpa)
- **C**: College to career transitions (congruence, grad attainment)
Key Findings

- Majors matter!
- Institutional quality also matters, but not as much
- From an investment standpoint, a college education pays off
- Still much to be done: Limitations & gaps
Earnings premiums: Net effects

Per Year of Higher Ed
Similar to previous decades, slightly greater.

Graduate Degrees (vs BA)
11% Non-business Master’s
33% Doctoral
Up to 70% JD, 115% MD

IRR
Equating PV costs to PV returns, with lots of assumptions
Earnings premiums: Within college effects

Also notable:

Between college effects

Differences by Institutional “Quality”:

Substantial variation in measures of quality, modeling strategy, etc.

High quality vs. Low quality (Barrons): 13-18% earnings difference for BA/BS

Increases with more years in the labor market.
Earnings premiums: Gender conditional effects

Race/Ethnicity & SES: Largely inconclusive evidence

Magnitude of Gender-conditional BA effect from 2000s mirrors AA effect from 1990s

- Per Year of College (Female > Male) (Varies by Race/Ethnicity): 9-25%
- Degree Attainment (Female > Male): 45%
- Majors (Female > Male): 17-33%
- Majors* (Male > Female): 9%

Degree Majors:
- Sci
- Phil
- Engr
- Soc
- Sci Biz
- Grad
- 5-10%
- 25%
- 6%
Emerging work:
A closer look at the college experience

- **General Model**
  \[
  \ln(Y) = a_0 + a_1 X + a_2 S + a_3 C + e
  \]

- **Major Conditional Model**
  \[
  \ln(Y)_m = b_0 + b_1 X_m + b_2 S' + b_3 C_m + e
  \]

- **X**: Socio-demographic and academic background characteristics
- **S**: Schooling variables (institution type, majors, involvement & engagement, gpa)
- **C**: College to career transitions (congruence, grad attainment)
### Summary of findings

- Compared to majors, institutions, and congruence, the earnings effects of other college experiences tend to be small and not consistently significant across datasets.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Statistically Significant Net Effects on $\text{LN(Earnings)}$</th>
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<tr>
<td>Majors (1/0)</td>
<td>5 – 42%</td>
</tr>
<tr>
<td>Institutional selectivity (1/0)</td>
<td>0 – 11%</td>
</tr>
<tr>
<td>Major–Job Congruence (1/0)</td>
<td>8 – 27%</td>
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| “High Impact” College Experiences (1/0)| Internship = 4%  
|                                        | Study abroad = 5%  
|                                        | Outside research project = -6%                                |
| Scaled or Indexed Measures of Engagement| College Involvement Index: NS  
|                                        | Academic Engagement Scale: NS  
|                                        | Social Engagement Scale: (+)                                  |

Source: Hu & Wolniak (2010); Melguizo & Wolniak (2012); Wolniak (in prep); Wolniak & Engberg (under review); Wolniak et al. (2008)
Summary of findings...

- The earnings effects of experiential measures appears highly conditional on major

Hu & Wolniak (2010)
- Academic Involvement Scale: (+) STEM; No effect among Non-STEM
- Social Involvement Scale: (+) Non-STEM; No effect among STEM

Wolniak & Engberg (under review)
- Internship: STEM (+), Business (+)
- Study Abroad: Social Sciences (+)
- Community involvement: Health & Human Services (+), STEM (-)
A final word on earnings

- We know plenty about the economic effects of such things as college major, institutional selectivity, and congruence.

- We are only beginning to illuminate the ways in which the kinds of activities that comprise the college experience may or may not translate to earnings advantages.

- Not all experiences yield equivalent value in the labor market. Evidence suggests earnings are shaped by experiences within majors.
Beyond earnings...

Additional years of college or degrees lead to:
- Higher likelihood of employment: Working more hours & higher rates of employment (particularly for women).
- Graduate degrees improve growth in occupational status
- Increase overall job satisfaction

The selectivity of institution attended influences employment outcomes:
- Hours worked
- Not job satisfaction.

Within-college experiences that affect Career Development:
- Career-oriented course interventions positively affect a range of career development outcomes: career decidedness, locus of control, self-efficacy, etc.
- Interactions with faculty cultivate vocational preparation, career aspirations, and tendencies towards innovation.

Within-college experiences that most affect Employment:
- Majors: Those that focus on more specific and applied training more often lead students to congruent (more closely matched) jobs. Differences in dimensions of Job Satisfaction.
Beyond careers...

Quality of Life After College

- Subjective Well-Being
  - Happiness
  - Life satisfaction
  - Sense of control

- Health & Health Behaviors
  - Self-assessed
  - Lifestyle: smoking, diet, physical activity
  - Mortality
  - Intergenerational transmission: healthier children

- Community-Civic Involvement
  - Volunteering and community service
  - Political involvement
Beyond careers...a few main findings

- The bulk of evidence points to **positive net effects** of college, either in terms of years of postsecondary education or degree/credential attainment, in terms of:
  - Subjective well-being, happiness, life satisfaction, sense of control.
  - As a protective factor against depression and depressive symptomology.
  - Health and healthy lifestyle: One’s own health & the health of one’s children.
  - Contributing time and effort to volunteering and community service.

- Little evidence to suggest effects of institution attended (between-college effects).

- Moderate evidence to suggest a positive effect of campus engagement (e.g., fraternity/sorority involvement, study abroad) on volunteering and community/civic involvement (within-college effects).
Takeaways

- We know a lot about earnings effects of degree attainment, majors, institutional selectivity, and congruence.

- We know a lot less about specific aspects of the college experience (transfer, working, “high impact practices”).

- Though substantial, the earnings effects of college are lower-bound estimates.
  - Why? See non-market, public benefits (i.e., quality of life effects).

- And...the main knowledge gap...
  - No evidence connecting student development (i.e., learning) to post-college outcomes!
Takeaways…

Precollege Inputs

Student Development

Post-college Outcomes
Implications

- **Institutional Stakeholders**
  - University Leadership
  - Strategic Planning/IR/ Assessment
  - Diversity Educators
  - Student Affairs
  - Graduate Programs in Higher Education
  - Faculty
  - Students

- **Policymakers**
  - Research for Policy Making
  - Economic Benefits
  - Policy Issues: Research Platforms

- **Researchers**
  - Privileging of design over analysis. Optimal designs:
    1) Emerge from theoretically grounded and thoughtfully considered research questions
    2) Are longitudinal
    3) Use some form of comparison group (e.g., control groups, matched samples)
    4) Use valid and reliable assessment tools
    5) Collect information on variable that influence both college experience and outcome
Questions, Comments, Discussion

Thank you!