The Proof is in the Data: Harnessing the Power of ‘Big Data’ to Examine the Effects of Education Abroad

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Where does EA data live?

We know that experiences abroad matter for students, but does anyone have the data to prove it?

Where might you find Education Abroad data/research to answer some of your questions about the effect of Education Abroad on student outcomes?
Education Abroad Research

• Historically, EA research focused on:
  – demographic,
  – academic,
  – program design
  – And their relation to participation rates

• Specifically, EA research examples:
  – Soft Skills
    • Intercultural sensitivity and personal growth
    • Knowledge and skills acquired abroad
    • Impacts on personal traits such as self-efficacy
  – Effect on ‘internationalness’
    • Proficiency in world languages
    • Post-graduation international careers
  – Timely graduation
    • Assumption that EA has negative impact on semesters to graduation, especially for “lock-step” STEM and pre-professional

• How does CASSIE differ?
  – Large data set, analyzes contribution of EA on student success
Presentation Overview

• Details of the CASSIE study
• Sampling strategy
• Research design
• Statistical methodology
• Preliminary USG findings
• Your data & potential stakeholders
• Advocacy
• Contribution to HE policy & practice
What is CASSIE?

• GLOSSARI
  – Georgia Learning Outcomes of Students Studying Abroad Research Initiative
  – 2006-2010; Dept. of Education

• CASSIE
  – Consortium for the Analysis of Student Success through International Education
  – 2017-2020; Dept. of Education; partner with IIE

• CASSIE broadens the scope of GLOSSARI:
  – Adds Language study & Title VI participation
  – Non-USG institutions
  – Refined econometric and statistical techniques
What does CASSIE do?

• Builds capacity
  – collaboration between Institutional Research and IE
  – promote better assessment

• Power of ‘big data’
  – Aggregated database enables studies of under-represented groups such as male students, minorities, Pre-professional/STEM, students who receive aid
  – Ultimately, seeks to better understand **actual** impact of international education

• Benchmarking
  – Provides participating campuses a comparison between themselves and with other, similar, institutions

• “Proof is in the data” → better advocacy efforts
Sampling Strategy

• Term-by-term data
  – Prior academic achievement-SAT, high school GPA
  – Demographic characteristics-Sex, Race/Ethnicity, Pell receipt
  – IEA experiences (e.g. education abroad, foreign language study, Title VI)
  – Academic progress-Hours earned, degrees awarded, college GPA

• Population
  – All IPEDS First Time Freshman in Fall 2010 & 2011 who sought an Associate’s, Bachelor’s, or Bachelor’s with combined Master’s
  – All students, not just those with IE experience, to create treated and control groups
Research Universities
- Augusta University
- Georgia State University
- Georgia Tech
- University of Georgia

State Universities
- Albany State University*
- Clayton State University
- Columbus State University
- Fort Valley State University*
- Georgia College & State Univ.
- Georgia Southwestern St. Univ.
- Middle Georgia State Univ.
- Savannah State University*
- University of North Georgia

Comprehensive Universities
- Georgia Southern University
- Kennesaw State University
- University of West Georgia
- Valdosta State University

State Colleges
- Abraham Baldwin Agricultural Coll.
- Atlanta Metropolitan State College
- College of Coastal Georgia
- Dalton State College*
- East Georgia State College
- Georgia Gwinnett College
- Georgia Highlands College
- Gordon State College
- South Georgia State College

* = SA population not large enough to include in analysis
Non-USG CASSIE Institutions

- Central Michigan University
- California State University-Long Beach*
- Howard University*
- Middle Tennessee State University
- New York University
- Tulane University
- University of Alabama*
- University of Arizona
- University of Delaware
- University of Iowa
- University of Kansas
- University of Kentucky
- University of Massachusetts Amherst*
- University of South Carolina
- University of Texas at Austin
- Virginia Tech
- Webster University

* = Pending data submission
Research Design

Focal Experiences
- Education Abroad -- duration, location, provider-type
- World Language Learning -- # of courses, major, minor
- Intensive International Ed -- FLAS, Flagship, etc.

Controls/Special Populations
- Need-Based Aid -- Pell, Other
- Academic Major -- STEM, pre-professional programs
- Underrepresented minorities
- Matching variables: Race/ethnicity, gender, HS GPA, SAT, etc.

Outcomes
- Timely Graduation
- Terms and Credits to Degree
- Credit completion ratio and GPA
Statistical Methodology

- Participation in international education is self-selected

- Impact on student outcomes may not be due to the international education experience itself, but other unobserved factors the student possesses

- Simple comparison of treated and control can result in biased estimates

- Exact and nearest neighbor Matching to find “statistical twin”
Preliminary USG Findings
Infographic Handout
General Information

- 10% of student body in 2010 and 2011 cohorts studied abroad
- 85% of programs taught in English
- 7,106 out of a total of 69,251 students studied abroad

**5 Top Visited Countries**
- France = 1,075 students
- UK = 801 students
- Italy = 704 students
- Spain = 631 students
- Costa Rica = 375 students

**Program Length**
- < 2 weeks: 21%
- 2 to 8 weeks: 13%
- 8 to 1 semester: 1%
- 1 semester: 10%
- > 1 semester: 55%

**Program Type**
- Provider: 9%
- Exchange: 6%
- Home Program: 85%
Student Characteristics

**STUDY ABROAD**
- High School GPA = 3.63
- SAT Score = 1213
- % Received Need-Based Aid = 28%
- % Female = 65%
- % Underrepresented minority = 17%

**DID NOT STUDY ABROAD**
- High School GPA = 3.22
- SAT Score = 1057
- % Received Need-Based Aid = 52%
- % Female = 54%
- % Underrepresented minority = 36%
Descriptive Outcomes

**STUDY ABROAD**
- Degree in 6 years = 93%
- Degree in 4 years = 57%
- Semesters to Degree = 12.4
- Credit Hours Earned at Degree = 136.9
- Hours Earned/Hours Attempted = 94%
- GPA at Degree = 3.4

These descriptive statistics suggest that students who Study Abroad have higher 6 and 4-year graduation rates, and higher GPA at graduation compared to non Study Abroad students.

**DID NOT STUDY ABROAD**
- Degree in 6 years = 52%
- Degree in 4 years = 23%
- Semesters to Degree = 13.2
- Credit Hours Earned at Degree = 133.3
- Hours Earned/Hours Attempted = 94%
- GPA at Degree = 3.16

It is imperative to note however that these students also differ in academic preparation, demographic, and socio-economic characteristics. As a result, these descriptive statistics do not reveal the impact of Study Abroad per se, but rather the influence of a number of other factors that contribute to student success.
Matching Analysis Outcomes

- **Degree in 6 Years**: 8.7pp
  - SA students are more likely (8.7pp) to graduate in 6 years compared with non-SA students.

- **Degree in 4 Years**: 10.1pp
  - SA students are more likely (10.1pp) to graduate in 4 years compared with non-SA students.

- **Semesters to Degree**: -0.17
  - SA students finish their degree about 3 weeks faster than non-SA students, showing that study abroad slightly accelerates but does not delay graduation.

- **Credit Hours Earned**: 3.22
  - SA students earn 3.22 more credit hours upon graduation compared with non-SA students, showing that SA students do not earn considerably more, or less, credit hours than non-SA students.

- **Hours Earned/Hours Attempted [NSS]**: No difference between SA and non-SA students.

- **GPA at Degree**: .12
  - SA students earn a .12 higher GPA than non-SA students.
Need-Based Aid (vs. non)

Descriptives

**NEED-BASED AID**
- 6% of need-based aid students studied abroad

**STUDY ABROAD vs. NO STUDY ABROAD**

- High School GPA = 3.53 vs. 3.14
- SAT Score = 1141 vs. 1009
- % Female = 70% vs. 58%
- % Underrep. minority = 36% vs. 52%
- Degree in 6 years = 90% vs. 46%
- Semesters to Degree = 12.9 vs. 13.4
- Credit Hours at Degree = 136.2 vs. 133.5
- % Hours Earned/Attempted = 93% vs. 93%
- GPA at Degree = 3.29 vs. 3.09

**NO NEED-BASED AID**
- 14% of no need-based aid students studied abroad

**STUDY ABROAD vs. NO STUDY ABROAD**

- = 3.67 vs. 3.31
- = 1245 vs. 1108
- = 63% vs. 50%
- = 9% vs. 18%
- = 94% vs. 60%
- = 12.2 vs. 12.9
- = 137.2 vs. 133.2
- = 95% vs. 95%
- = 3.42 vs. 3.21
# Need-Based Aid (vs. non) Matching Analysis

<table>
<thead>
<tr>
<th>Metric</th>
<th>Need-Based Aid</th>
<th>No Need-Based Aid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree in 6 years</td>
<td>12.2pp</td>
<td>9.9pp</td>
</tr>
<tr>
<td>Degree in 4 years</td>
<td>10.1pp</td>
<td>12.4pp</td>
</tr>
<tr>
<td>Semesters to Degree</td>
<td>-0.29</td>
<td>-0.22</td>
</tr>
<tr>
<td>Credit Hours Earned</td>
<td>2.24</td>
<td>2.79</td>
</tr>
<tr>
<td>Hours Earned/Hours Attempted</td>
<td>[NSS]</td>
<td>[NSS]</td>
</tr>
<tr>
<td>GPA at Degree</td>
<td>0.11</td>
<td>.09</td>
</tr>
</tbody>
</table>

- Among students who receive need-based aid, those who SA are 12.2pp more likely to graduate in 6 years compared with non-SA students. For students who do not receive need-based aid, the differential is 9.9pp.
- Among students who receive need-based aid, those who SA are 10.1pp more likely to graduate in 4 years compared with non-SA students. For students who do not receive need-based aid, the differential is 12.4pp.
- Among students who receive need-based aid, those who SA graduate 0.29 semesters faster compared with non-SA students. For students who do not receive need-based aid, the differential is 0.22 semesters. These results suggest that SA slightly accelerates but does not delay graduation.
- Among students who receive need-based aid, those who SA earn 2.24 more credit hours compared with non-SA students. For students who do not receive need-based aid, the differential is 2.79 credit hours. These results suggest that SA students do not earn considerably more, or less, credit hours than non-SA students.
- There is no statistical difference between SA and non-SA students with respect to the ratio of hours earned to hours attempted.
- Among students who receive need-based aid, those who SA earn a 0.11 higher GPA compared with non-SA students. For students who do not receive need-based aid, the differential is .09.
Need-Based Aid (vs. non) Matching Analysis – Degree in 6 years

Among students who receive need-based aid, those who SA are 12.2pp more likely to graduate in 6 years compared with non-SA students. For students who do not receive need-based aid, the differential is 9.9pp.
STEM Student (vs. non) Descriptives

**STEM Program Students**
- 12% of STEM students studied abroad
- Study Abroad vs. No Study Abroad
  - High School GPA = 3.79 vs. 3.38
  - SAT Score = 1284 vs. 1112
  - % Underrep. minority = 15% vs. 35%
  - % Female = 53% vs. 44%
  - Degree in 6 years = 92% vs. 56%
  - Semesters to Degree = 12.5 vs. 13.0
  - Credit Hours at Degree = 141.8 vs. 136.6
  - Hours Earned/Attempted = 90% vs. 92%
  - GPA at Degree = 3.38 vs. 3.17

**Not STEM Program Students**
- 10% of not STEM students studied abroad
- Study Abroad vs. No Study Abroad
  - = 3.55 vs. 3.16
  - = 1177 vs. 1035
  - = 18% vs. 36%
  - = 72% vs. 58%
  - = 93% vs. 51%
  - = 12.0 vs. 12.7
  - = 134.5 vs. 131.9
  - = 96% vs. 95%
  - = 3.44 vs. 3.25
STEM Student (vs. non) Matching Analysis

<table>
<thead>
<tr>
<th>Measure</th>
<th>STEM Program Students</th>
<th>Non-STEM Students</th>
<th>Differential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree in 6 years</td>
<td>8.9pp</td>
<td>11.5pp</td>
<td>-2.6pp</td>
</tr>
<tr>
<td>Degree in 4 years</td>
<td>6.6pp</td>
<td>13.7pp</td>
<td>-7.1pp</td>
</tr>
<tr>
<td>Semesters to degree</td>
<td>-0.10</td>
<td>-0.30</td>
<td>0.20</td>
</tr>
<tr>
<td>Credit hours earned</td>
<td>3.12</td>
<td>2.55</td>
<td>0.57</td>
</tr>
<tr>
<td>Hours earned/hours attempted</td>
<td>-0.8%</td>
<td>.39%</td>
<td>-1.19%</td>
</tr>
<tr>
<td>GPA at degree</td>
<td>0.11</td>
<td>.09</td>
<td>0.02</td>
</tr>
</tbody>
</table>
STEM Student (vs. non) Matching Analysis – Semesters to degree

Among STEM program students, those who SA graduate 0.10 semesters faster compared with non-SA students. For non-STEM students, the differential is 0.30 semesters. These results suggest that SA slightly accelerates but does not delay graduation.
Underrepresented Minority (vs. non) Descriptives

**UNDERREPRESENTED MINORITY (URM)**
- 6% of underrepresented minority students studied abroad
  - **STUDY ABROAD** vs. **NO STUDY ABROAD**
  - High School GPA = 3.47 vs. 3.03
  - SAT Score = 1111 vs. 968
  - % Female = 72% vs. 59%
  - Degree in 6 years = 42% vs. 46%
  - Semesters to Degree = 12.5 vs. 13.4
  - Credit Hours at Degree = 136.7 vs. 133.4
  - Hours Earned/Attempted = 94% vs. 93%
  - GPA at Degree = 3.29 vs. 3.04

**NOT URM**
- 13% of not underrep. minority students studied abroad
  - **STUDY ABROAD** vs. **NO STUDY ABROAD**
  - = 3.67 vs. 3.36
  - = 1241 vs. 1119
  - % Female = 63% vs. 51%
  - = 93% vs. 60%
  - = 12.0 vs. 12.7
  - = 137.0 vs. 133.3
  - % = 94% vs. 94%
  - = 3.44 vs. 3.25
Underrepresented Minority (vs. non) Matching Analysis

<table>
<thead>
<tr>
<th>Measure</th>
<th>Underrepresented Minority (URM)</th>
<th>Not URM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree in 6 years</td>
<td>14.9pp</td>
<td>9.5pp</td>
</tr>
<tr>
<td>Degree in 4 years</td>
<td>11.9pp</td>
<td>11.6pp</td>
</tr>
<tr>
<td>Semesters to degree</td>
<td>-0.27</td>
<td>-0.23</td>
</tr>
<tr>
<td>Credit hours earned</td>
<td>2.95</td>
<td>2.45</td>
</tr>
<tr>
<td>Hours earned/ hours attempted</td>
<td>[NSS]</td>
<td>[NSS]</td>
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<tr>
<td>GPA at degree</td>
<td>0.12</td>
<td>0.09</td>
</tr>
</tbody>
</table>
Underrepresented Minority (vs. non) Matching Analysis – GPA at Degree

Among URM students, those who SA earn a 0.12 higher GPA compared with non-SA students. For non-URM students, the differential is .09.
Your data

• Where does your data live?
  – Institutional Research
  – Registrar
  – Financial Aid Office
  – Development Office

• What did we learn from non-USG institutions?
  – Asked if they had formal systems;
  – Could we link up softwares (e.g. Terra Dotta to Banner)?
  – Found that data lives in silos, much like USG…
Potential Stakeholders

• What are you trying to accomplish?
• Who do you need to inform and what are their interests and concerns?
• What types of information will be most compelling to them?
  – At what level?
  – In what format?

- Senior Leadership
- Department Heads
- International Education
- Policy Makers
- Accreditors
- Faculty
- Students
How to create your own Descriptive Statistics infographic
Advocacy – Broaden the Circle

- CASSIE → data from numerous, diverse institutions & demonstrates, statistically, the effect of IE on student success
  - How can you combine CASSIE results with your own data?

- CASSIE → specifically examines participation of underrepresented students
  - How can we use this data strategically to support these students?

- CASSIE → pulls together colleagues from EA, World Languages, Institutional Research and broader academic circles
  - How can you, on your campus, pull together your colleagues as well?

- CASSIE results → can be used to advocate for support/resources
  - How can you combine CASSIE results with your campus data to advocate on your campus and grow curricular and financial support?

CASSIE + your campus data = evidence-based advising and marketing tools
CASSIE Contribution to Higher Education Policy and Practice

- Big data approach
  - Measure contribution of IE on student success outcomes
  - These student success outcomes are of most concern today to administrators and policy maker

- Ability to show how impacts vary for important subpopulations:
  - E.g. income, race/ethnicity, specific majors

- Critical in evaluation of policies that affect IE
  - E.g. curricular, student affairs, and financial aid policy

- Essential in advocacy for institutional and government funding
Discussion & Questions?

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