Ph. D. Completion and Attrition: Analysis of Baseline Data

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A FRESH LOOK AT Ph.D. EDUCATION
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CGS Ph.D. Completion Project
Quantitative Data Submitted by Institutions
12 Years (1992-93 through 2003-04)

- Program completion and attrition
  - 30 Institutions
  - 5 Broad Fields
  - 54 Disciplines
  - 330 Programs
  - ~49,000 Students

- Broad field demographic completion
  - Gender (G)
  - Citizenship/Ethnicity (CE)
  - 24 Institutions (G)
  - 23 Institutions (CE)
  - ~40,000 Students (G)
  - ~ 40,000 Students (CE)
Ten-Year Completion and Attrition Analysis: For Students Entering Ph.D. Programs 1992-93 through 1994-95 (A Cohorts)

- **Completion**
  - Program Data: Overall, broad field, discipline
  - Gender Data: Broad field
  - Citizenship/Ethnicity: Broad field

- **Attrition**
  - Program Data: Overall, broad field
## Profile of Data (A-Cohorts) for Ten-Year Completion Analysis

<table>
<thead>
<tr>
<th>Category</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program Data</td>
<td>12,135</td>
</tr>
<tr>
<td>Gender Data</td>
<td>9,683</td>
</tr>
<tr>
<td>Citizenship &amp; Ethnicity Data</td>
<td>9,359</td>
</tr>
</tbody>
</table>

### Approximate distribution across fields

- Engineering: 31%
- Math & Physical Sci.: 21%
- Social Sciences: 19%
- Life Sciences: 17%
- Humanities: 12%
Overall Ten-Year Completion Rates

Cumulative Completion Rate (%)

3 4 5 6 7 8 9 10
5 11 23 36 46 51 55 57

Source: Council of Graduate Schools Completion and Attrition Program Data
Ten-Year Cumulative Completion Rates by Broad Field

- Engineering
- Mathematics & Physical Sciences
- Social Sciences
- Life Sciences
- Humanities
## Ten-Year Completion Rates for Selected Disciplines

<table>
<thead>
<tr>
<th>Engineering</th>
<th>64%</th>
<th>Mathematics and Physical Sciences</th>
<th>55%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Civil Engineering</td>
<td>78%</td>
<td>Chemical Engineering</td>
<td>62%</td>
</tr>
<tr>
<td>Mechanical Engineering</td>
<td>66%</td>
<td>Physics</td>
<td>59%</td>
</tr>
<tr>
<td>Chemical Engineering</td>
<td>63%</td>
<td>Mathematics</td>
<td>51%</td>
</tr>
<tr>
<td>Biomedical Engineering</td>
<td>63%</td>
<td>Computer Science</td>
<td>41%</td>
</tr>
<tr>
<td>Electrical Engineering</td>
<td>56%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Life Science</th>
<th>63%</th>
<th>Social Science</th>
<th>56%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Genetics</td>
<td>69%</td>
<td>Psychology</td>
<td>65%</td>
</tr>
<tr>
<td>Microbiology/Immunology</td>
<td>69%</td>
<td>Economics</td>
<td>52%</td>
</tr>
<tr>
<td>Neuroscience</td>
<td>65%</td>
<td>Anthropology</td>
<td>46%</td>
</tr>
<tr>
<td>Molecular/Cell Biology</td>
<td>64%</td>
<td>Sociology</td>
<td>45%</td>
</tr>
<tr>
<td>Biology</td>
<td>59%</td>
<td>Political Science</td>
<td>44%</td>
</tr>
</tbody>
</table>
Ten-Year Completion Rates: Broad Field and Gender

Completion Rate (%)

- **Engineering**: 65 (Female), 56 (Male)
- **Life Sciences**: 64 (Female), 56 (Male)
- **Math & Physical Sciences**: 59 (Female), 52 (Male)
- **Social Sciences**: 53 (Female), 57 (Male)
- **Humanities**: 47 (Female), 52 (Male)
Annual Ph.D. Completion Rates by Gender in Mathematics & Physical Sciences
Annual Ph.D. Completion Rates by Gender in Social Sciences

Completion Rate %

Year

Female
Male

Council of Graduate Schools
Ten-Year Completion Rates: Broad Field and Citizenship

Completion Rate (%)

- Engineering: Domestic 59, International 70
- Life Sciences: Domestic 58, International 66
- Math & Physical Sciences: Domestic 51, International 68
- Social Sciences: Domestic 56, International 63
- Humanities: Domestic 50, International 52

Legend:
- Domestic
- International
Annual Ph.D. Completion Rates by US Citizenship in Social Sciences

![Graph showing annual Ph.D. completion rates by US citizenship in social sciences. The graph compares domestic and international completion rates over a 10-year period.]
Annual Ph.D. Completion Rates by US Citizenship in Engineering
Ten-Year Completion Rates: Broad Field and Ethnicity
Ten-Year Completion Rates: Ethnicity + Int’l and Broad Field

<table>
<thead>
<tr>
<th>Field</th>
<th>African American</th>
<th>Asian</th>
<th>Hispanic</th>
<th>White</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completion Rate</td>
<td>47</td>
<td>47</td>
<td>55</td>
<td>61</td>
</tr>
<tr>
<td></td>
<td>37</td>
<td>44</td>
<td>37</td>
<td>52</td>
</tr>
<tr>
<td></td>
<td>52</td>
<td>46</td>
<td>51</td>
<td>51</td>
</tr>
</tbody>
</table>

- **Engineering**
- **Life Sciences**
- **Math & Physical Sciences**
- **Social Sciences**
- **Humanities**
Cumulative 10-Year Ph.D. Completion Rates by Broad Fields for African American Students

Completion Rate (%)

Year

Engineering
Math & Physical Sci
Social Sciences
Life Sciences
Humanities

Completion Rates:
- Engineering: 47%
- Math & Physical Sci: 52%
- Social Sciences: 47%
- Life Sciences: 60%
- Humanities: 37%
Cumulative Overall Ten-Year Attrition Rates

Source: Council of Graduate Schools Completion and Attrition Program Data
Cumulative Ten-year Attrition Rates by Broad Field

- Engineering
- Mathematics & Physical Sciences
- Social Sciences
- Life Sciences
- Humanities
Other Analysis

- By Institution Type (Private vs. Public)
- By cohort sizes (Large, Medium, and Small)
- By entering time (Seven- and four-year completion and attrition)
- Early Attrition (Status of student leaving program)
CGS Ph.D. Completion Project: Other Institutional Input

- Conduct student exit surveys
- Provide pre-project factor assessment data (for the institution and each participating program)
- Implement new interventions aimed at improving completion and reducing attrition
Categories of New Interventions

- Selection/Matching
- Mentoring and Advising
- Financial Support and Structure
- Program Environments
- Research Experiences
- Curricular and Administrative Processes and Procedures
Future Questions to be Addressed in the Ph.D. Completion Project

- Why do students say they complete (or not)? What are the perceptions about graduate school of completers and non-completers?
- What is the impact of the six categories of interventions? How does efficacy vary across broad field and for which populations?
- Can we project ultimate completion and time to degree from our completion and attrition data?