From Gaps to Greatness: Using Data Disaggregation to Improve Institutional Effectiveness

SSS 2017
October 11th, 2017
San Francisco

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Agenda

• Disaggregation of online vs. on-ground success rates

• Pass rates by ethnicity for each instructor
  • Aurora College case study

• Disaggregation of complex student identities
  • Multivariate disaggregation

• Further Resources on the PLN: The Data Disaggregation ASK
Disaggregation of online vs. on-ground success rates
Persistent Gap in Success

Fall 2016 Statewide Success Rates: Distance Education vs. Face-to-Face

<table>
<thead>
<tr>
<th>Category</th>
<th>Delayed Interaction (Internet Based)</th>
<th>Non Distance Education Methods</th>
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</thead>
<tbody>
<tr>
<td>Basic Skills</td>
<td>51%</td>
<td>63%</td>
</tr>
<tr>
<td>Credit</td>
<td>63%</td>
<td>72%</td>
</tr>
<tr>
<td>Degree Applicable</td>
<td>64%</td>
<td>72%</td>
</tr>
<tr>
<td>Transferable</td>
<td>64%</td>
<td>72%</td>
</tr>
<tr>
<td>Vocational</td>
<td>65%</td>
<td>79%</td>
</tr>
</tbody>
</table>
Case Study: Sierra College
The success rate gap before: 15%
Case Study: Sierra College

• Sierra enhanced its online training and review process in 2009
Case Study: Sierra College

Course success rates by Mode of Delivery

<table>
<thead>
<tr>
<th>Year</th>
<th>Delayed Interaction (Internet Based)</th>
<th>Non Distance Education Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall 2007</td>
<td>53%</td>
<td>50%</td>
</tr>
<tr>
<td>Fall 2008</td>
<td>68%</td>
<td>55%</td>
</tr>
<tr>
<td>Fall 2009</td>
<td>70%</td>
<td>60%</td>
</tr>
<tr>
<td>Fall 2010</td>
<td>71%</td>
<td>62%</td>
</tr>
<tr>
<td>Fall 2011</td>
<td>71%</td>
<td>64%</td>
</tr>
<tr>
<td>Fall 2012</td>
<td>72%</td>
<td>64%</td>
</tr>
<tr>
<td>Fall 2013</td>
<td>73%</td>
<td>66%</td>
</tr>
<tr>
<td>Fall 2014</td>
<td>73%</td>
<td>66%</td>
</tr>
<tr>
<td>Fall 2015</td>
<td>72%</td>
<td>67%</td>
</tr>
<tr>
<td>Fall 2016</td>
<td>73%</td>
<td>74%</td>
</tr>
</tbody>
</table>
Case Study: Sierra College

Success Rate in Online Classes minus Success Rate in On-ground classes

Online vs. On-ground Success Rate Gap
The success rate gap after: 7%
How did they cut the gap in half?

• DLIT Committee now reviews
  – Syllabus
  – Instructor presence
  – Effectiveness of online community
  – Assignments, external links, etc.
Case Study: Sierra College

• DLIT provides a popular five-week training
• The training focuses on developing the materials needed for approval by DLIT
• Instructors receive a stipend to develop a new course
Sierra College: Continuing Innovation

- Streaming support
- Instructional designer
- Review of ADA compliance
- Faculty mentor program
Dissaggregating Student Course Success by Instructor and Ethnicity
Student Success: Role of Classroom Practices

• “Most of the students in my class failed”
• The common refrain is that students are unprepared. While true in some cases, is there more to the story?
• College policies & procedures and common classroom practices share some of the blame for low student success rates.
College of Aurora

• Student Demographics
  – Serves over 10,000 annually
  – 79% are part-time students
  – Ethnic group breakdown:
    • 38% White/Caucasian
    • 24% Hispanic
    • 22% Black/African-American
    • 8% Asian/Pacific Islander
College of Aurora

• Leadership Academy
  – Variety of disciplines
  – Based on the idea that faculty should take a lead role in analyzing/interpreting data in collaborative environment
  – Also based on idea of challenging long-held beliefs about student success
    • Goal is to translate this into careful reflection of classroom practices
College of Aurora

• The focus on training faculty to approach the study of student success in the classroom as an anthropologist
• Deconstructing phase – proceeds as any researcher would in garnering access to evidence and interpreting its meaning
• Example: Syllabus review protocol
College of Aurora

• Faculty develop “experiments” to test effectiveness of various strategies
• Feedback is exclusively from other faculty colleagues
• Work has led to implementation of classroom strategies and even hiring practices
  • Faculty innovating widely with support from administration
    – Host of experiments have been developed
• Success rates for Latino students have climbed from 66% (2014) to 77% (2015)
### Disaggregated Data for Course “X” for Instructor A

<table>
<thead>
<tr>
<th>Ethnic Group</th>
<th>Success Rate</th>
<th>Success Rate (Overall)</th>
<th>Percentage Point Gap</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asian</td>
<td>75.9%</td>
<td>67.1%</td>
<td>9.8</td>
</tr>
<tr>
<td>Black Non-Hispanic</td>
<td>55.3%</td>
<td>67.1%</td>
<td>-11.8</td>
</tr>
<tr>
<td>Hispanic</td>
<td>62.5%</td>
<td>67.1%</td>
<td>-4.6</td>
</tr>
<tr>
<td>White Non-Hispanic</td>
<td>70.6%</td>
<td>67.1%</td>
<td>3.5</td>
</tr>
<tr>
<td>Overall</td>
<td>67.1%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Disaggregated Data for Course “X” for Instructor B

<table>
<thead>
<tr>
<th>Ethnic Group</th>
<th>Success Rate</th>
<th>Success Rate (Overall)</th>
<th>Percentage Point Gap</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asian</td>
<td>88.3%</td>
<td>76.9%</td>
<td>11.4</td>
</tr>
<tr>
<td>Black Non-Hispanic</td>
<td>69.8%</td>
<td>76.9%</td>
<td>-7.1</td>
</tr>
<tr>
<td>Hispanic</td>
<td>90.5%</td>
<td>76.9%</td>
<td>13.6</td>
</tr>
<tr>
<td>White Non-Hispanic</td>
<td>73.5%</td>
<td>76.9%</td>
<td>-3.4</td>
</tr>
<tr>
<td><strong>Overall</strong></td>
<td><strong>76.9%</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Disaggregated Data for James Gray’s Courses Prior to Intervention

<table>
<thead>
<tr>
<th>Ethnic Group</th>
<th>Success Rate</th>
<th>Success Rate (Overall)</th>
<th>Percentage Point Gap</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asian</td>
<td>62.2%</td>
<td>57.9%</td>
<td>4.3</td>
</tr>
<tr>
<td>Black Non-Hispanic</td>
<td>42.3%</td>
<td>57.9%</td>
<td>-15.6</td>
</tr>
<tr>
<td>Hispanic</td>
<td>57.9%</td>
<td>57.9%</td>
<td>0.0</td>
</tr>
<tr>
<td>White Non-Hispanic</td>
<td>62.8%</td>
<td>57.9%</td>
<td>4.9</td>
</tr>
<tr>
<td>Overall</td>
<td>57.9%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* Based upon 190 students in the cohort
College of Aurora: Example of Intervention

• James Gray’s experience
  – He contemplated how he structured his classes (i.e., in-class rules for behavior and communication)
  – He examined the in-class practices of other faculty members, some of whom did not identify disproportionate impact among the outcomes they examined
    • He observed high expectations set by the instructor:
      • “We’ll have fun, but we need to remember why we are here. So when you see rules like putting your cell phone away or come to class early, I mean it. We have to take our work seriously for us to meet our goal of everyone being successful”
      • She directed students to cross out the drop date for course….”You’re not going to need it. You can do this.”
College of Aurora: Example of Intervention

• James Gray’s experience (Cont’d)
  – Developed a new model of teaching
    • Preview videos with shortened lectures (resulted in more in-class practice with math problems)
    • More regular homework and quizzes to increase feedback to students (he could monitor how each student was progressing)
  – He intervened with students individually or adjusted entire class if broader patterns emerged
  – With new model, few students needed reminder to complete homework
College of Aurora: Example of Intervention

• James Gray’s experience (Cont’d)
  – With new model, few students needed reminder to complete homework
  – Gray: “The way I used to do homework taught students they didn’t need to do the homework to be successful in the class. It was thought of as practice for those who needed it, and so I might have a student who isn’t doing any homework and I would have no idea until a failed exam. By that time, it’s too late. Now, homework is done because that’s just the way things are done.”
Disaggregated Data for James Gray’s Courses After Intervention

<table>
<thead>
<tr>
<th>Ethnic Group</th>
<th>Success Rate</th>
<th>Success Rate (Overall)</th>
<th>Percentage Point Gap</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asian</td>
<td>81.8%</td>
<td>80.6%</td>
<td>1.2</td>
</tr>
<tr>
<td>Black Non-Hispanic</td>
<td>71.9%</td>
<td>80.6%</td>
<td>-8.7</td>
</tr>
<tr>
<td>Hispanic</td>
<td>83.7%</td>
<td>80.6%</td>
<td>3.1</td>
</tr>
<tr>
<td>White Non-Hispanic</td>
<td>86.8%</td>
<td>80.6%</td>
<td>6.2</td>
</tr>
<tr>
<td>Overall</td>
<td>80.6%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* Based upon 139 students in cohort
College of Aurora: Closing the Loop

• Faculty innovating widely with support from administration
  – Host of experiments have been developed
• Success rates for Latino students have climbed from 66% (2014) to 77% (2015)
Conclusions

• All levels of analysis are still critical (institutional, program, course)
  – There appears to be viability to extending that to instructor level

• Must be faculty-led initiative
  – Successful implementation requires faculty intent on an open and collegial process
  – Knowledge of data disaggregation and disproportionate impact methods
  – Embracing of both strengths and weaknesses
  – Reevaluation of our beliefs concerning student success
Discussion

• Could you see such an approach being adopted at your college?
• What might be the benefits of adopting a similar program?
• What are the potential obstacles to this approach?
Disaggregated Data (Univariate)

Mean Success Rates by Foster Youth Status at College of Marin (FA 12 and FA 13)

Foster Youth Status

Mean Success Rate (%)

Yes: 54.68
No: 72.33
Disaggregated Data (Univariate)

Mean Success Rates by Gender at College of Marin (FA 12 and FA 13)

- Males: 67.54%
- Females: 75.24%
Disaggregated Data (Multivariate) – Interaction Present

Mean Success Rates by Foster Youth Status and Gender at College of Marin (FA 12 and FA 13)

Foster Youth Status by Gender

- **Males**
  - Yes: 42.3%
  - No: 68.1%

- **Females**
  - Yes: 62.7%
  - No: 75.5%
Disaggregated Data (Multivariate)
Hypothetical Data Illustrating No Interaction

Hypothetical Data: Mean Success Rates by Foster Youth Status and Gender

Foster Youth Status by Gender

<table>
<thead>
<tr>
<th>Foster Youth Status</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>42.3</td>
<td>62.7</td>
</tr>
<tr>
<td>No</td>
<td>55.1</td>
<td>75.5</td>
</tr>
</tbody>
</table>
Veterans Data Disaggregation: Age- And Gender-Adjusted Access to Community College
Researcher Learning Outcomes:

- Virtually every CC in California found that veterans were not as likely to attend CC
  - Why?

- Why determining Veterans access to CC is not straightforward

- How to include gender and age (and other demographic characteristics) in access analyses for veterans.
Overview of the Problem

• SB 860 added requirements to examine student academic progress by veterans status in SEP plans

• Most colleges that examined veterans access to community college found substantial disproportionate impacts in terms of access
  – Across 50 SEPs, PI ranged from .05 to .64
  – IVC: 1.6% Veterans vs Service Area: 5.5% Veterans (PI = .28)

• Why?
Overview of the Problem

• As noted in several SEPs, there is a large discrepancy between the age and gender of the typical veteran and the typical college student.
  – Veterans: 92.5% are male and 89.8% are over the age of 34
  – CCC students: 45.5% are male and 20.7% are over the age of 34

• How should these potentially confounding characteristics be taken into account?
Examples of Good Practice

• The College of San Mateo SEP
  – found an overall PI for veterans’ access of .40, which is similar in magnitude to most other community colleges.
  – However, also examined the disproportionate impact of veterans status broken out by age group.
    • 18-34: PI = 1.56
    • 35-54: PI = 1.12
    • 55-64: PI = .46
    • 65-74: PI = .37
    • 75+: PI = .18
Examples of Good Practice

• Norco College SEP
  – found an overall PI for veterans’ access of .35.
  – However, also examined the disproportionate impact of veterans status broken out by gender.
    • Male : PI = .32
    • Female: PI = 1.35
Examples of Good Practice

• Irvine Valley College SEP
  – found an overall PI for veterans’ access of .28.
    • IVC: 1.6% Veterans vs Service Area: 5.5% Veterans
    • But only 1% of 18-34 Year Olds are Veterans
    • 23% of those 75+ are Veterans
      – 51% of males 75+
  – Adjusted for age: PI = .61
    • “If the age structure of the veteran population looked like that of our students, what would the PI be?”
Age- and gender-adjusted PI analyses

• Taken together, these approaches provide examples of how the overall PI for veterans access (or other outcomes) may be deceptive.

• Taking into account other related characteristics may better target outreach and services to those subgroups (such as older veterans or male veterans) where disproportionate impacts may be focused.

• Why might it be necessary to look at Age & Gender together?
Age- and gender-adjusted PI analyses

• Why might it be necessary to look at Age & Gender together?
  – At IVC:
    • 52% Female
    • **81% of IVC students 55+ are female (vs 54% in service area)**
    • Veterans under 55:
      – 4% of males
      – 0.5% of females
    • Veterans over 55:
      – 26% of males
      – 1.0% of females
      » 350k served in WW2, vs 300k in Iraq & Afghanistan 2001-present
      » <2% in WW2 vs 15% in Iraq & Afghanistan
Procedure

• Get veterans status for service area
  – broken down by age and gender

• Get veterans status for College
  – broken down by age and gender

• Calculate “expected” number of veterans in each age and gender grouping (e.g., Male veterans age 18-34, Female veterans age 18-34, etc.) group if veterans enrolled at College at same rate as non-veterans.

• Conduct separate disproportionate impact analyses for each age and gender grouping Calculate age- and gender-adjusted PI.
American Factfinder

- [https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml](https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml)
Age- and gender-adjusted PI analyses

- There were 5,354 male students at IVC between 18-34, including 120 veterans.

- If the same percentage of male veterans enrolled at IVC as are found in the general population (1.97%), there would be 106 male veterans at IVC aged 18-34; there are 14 more male veterans at IVC than would be expected.
  - \[5354 \times 0.0197 = 106.\]

- Running these calculations for each age group, there are 8 more male veterans between 35-54 at IVC, 6 fewer between 55-64, 15 fewer between 65-74, and 25 fewer over the age of 75.
Age- and gender-adjusted PI analyses

- There were 4,800 female students at IVC between 18-34, including 18 veterans.

- If the same percentage of female veterans enrolled at IVC as are found in the general population (0.42%), there would be 20 female veterans at IVC aged 18-34; there are 2 fewer female veterans at IVC than would be expected.

- Running these calculations for each age group, there are 3 fewer female veterans between 35-54 at IVC, 3 fewer between 55-64, 3 fewer between 65-74, and 5 fewer over the age of 75.
Veterans in the General Population and at IVC, by age and gender

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Gen Pop</th>
<th>IVC</th>
<th>Expected Veterans at IVC</th>
<th>PI Index</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Male 18+ Total:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vets</td>
<td>18,752</td>
<td>180</td>
<td>602.0</td>
<td>0.30</td>
</tr>
<tr>
<td>18-34</td>
<td>60,872</td>
<td>5354</td>
<td><strong>105.6</strong></td>
<td><strong>1.14</strong></td>
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<tr>
<td>35-54</td>
<td>76,380</td>
<td>448</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vets</td>
<td>4,400</td>
<td>34</td>
<td><strong>25.8</strong></td>
<td><strong>1.32</strong></td>
</tr>
<tr>
<td>55-64</td>
<td>26,421</td>
<td>80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>65-74</td>
<td>14,858</td>
<td>94</td>
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<tr>
<td>75+</td>
<td>9,477</td>
<td>60</td>
<td></td>
<td></td>
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<tr>
<td>Vets</td>
<td>4,877</td>
<td>6</td>
<td>30.9</td>
<td>0.19</td>
</tr>
<tr>
<td><strong>Female 18+ Total:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vets</td>
<td>1,361</td>
<td>22</td>
<td>46.7</td>
<td>0.47</td>
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<tr>
<td>18-34</td>
<td>59,005</td>
<td>4800</td>
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<td>35-54</td>
<td>80,527</td>
<td>1017</td>
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<tr>
<td>Vets</td>
<td>490</td>
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<td>6.2</td>
<td>0.48</td>
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<tr>
<td>55-64</td>
<td>29,844</td>
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<td>65-74</td>
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<td>Vets</td>
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<td>75+</td>
<td>13,190</td>
<td>281</td>
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<tr>
<td>Vets</td>
<td>226</td>
<td>0</td>
<td>4.8</td>
<td>0.00</td>
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<tr>
<td><strong>Total Vets:</strong></td>
<td><strong>20113</strong></td>
<td><strong>202</strong></td>
<td><strong>240.5</strong></td>
<td><strong>0.84</strong></td>
</tr>
<tr>
<td><strong>Under 55</strong></td>
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</tr>
<tr>
<td>Vets</td>
<td>175</td>
<td>157.8</td>
<td>1.11</td>
<td></td>
</tr>
<tr>
<td><strong>Over 55</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vets</td>
<td>27</td>
<td>82.7</td>
<td>0.33</td>
<td></td>
</tr>
</tbody>
</table>
Age- and gender-adjusted PI analyses

- Veterans access to IVC
  - Raw PI = .28

- After adjusting for age and gender:
  - There were 240.5 expected veterans at IVC
    - adjusting for both age and gender,
    - versus 202 veterans actually at IVC.
  - age- and gender-adjusted PI = .84
Age- and gender-adjusted PI analyses

• **55 and under:**
  – 175 veterans at IVC, versus 158 that would be expected based on the percentage of veterans in the general population
  – age- and gender-adjusted PI = **1.11**

• **55+:**
  – 27 veterans at IVC, versus the 83 that would be expected based on the percentage of veterans in the general population
  – age-and gender-adjusted PI = **.33**
  – Why are older veterans (both male and female) not enrolling at IVC at the same rate as other older adults?
Telling your own stories. Take a few minutes to consider the following questions:

• Which outcome or outcomes will you focus on?
• How will you access disaggregated data?
• Which student sub-groups are important to focus on?
• Who will do the data analysis?
• Will you use slope graphs to visualize disproportionate impact?
• What is the storyline for your data? Who are the heroes? What is the conflict? What is the resolution or call to action?
Thank you!!