Analytics in Hawaii

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Challenges for Institutional Research

- Compliance vs. Self-Improvement
- Developing a culture of evidence
- From reporting to analysis
- Converting data into ‘actionable’ information
- Follow highest standards, best practices
- Know your customers, mission
- Leverage technology, stay abreast of tech
- Empower staff, continuous honing of skills
- Leadership working with IR (and IT too)
What is Analytics?

- Learning Analytics
- Predictive Analytics
- Academic Analytics
- Business Intelligence
- Optimization
- Visualization
- Big Data
Eg. #1

Explanatory Analytics

15 to Finish Institute

COMPLETE COLLEGE AMERICA

April 9, 2013
**Eg. #1**

**Strongest Predictors of Degree Completion**
(from Leading Indicators Analysis, Manoa Study)

**Credits Earned Yr. 1**

*Strongest*

1. First Term GPA
2. Dual Enrollment
3. Ethnicity
4. Enrollment in College Level Math Year 1
5. Geographic Origin

*Odds Ratio = 3.5x!*

*Weakest*

1. High School GPA

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*Significance Levels:*

- 14.494 (<.001)*
- 13.888 (<.001)*
- 12.634 (<.001)*
- 11.601 (.001)*
- 86.647 (<.001)*
- 6.852 (.009)*
- 2.974 (.085)*
Probability of Completion by First-Year Credits Earned
(from Leading Indicators Analysis, Manoa Study)

First Year Credits Earned

0-3  >3-6  >6-9  >9-12  >12-15  >15-18  >18-21  >21-24  >24-27  >27-30  >30

Percentage Completing
0%  20%  40%  60%  80%  100%

6.7%  78.9%
4-year Graduation Rate
University of Hawaii at Manoa

<table>
<thead>
<tr>
<th>Year</th>
<th>Graduation Rate</th>
</tr>
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<tbody>
<tr>
<td>2005</td>
<td>18.4</td>
</tr>
<tr>
<td>2006</td>
<td>17.5</td>
</tr>
<tr>
<td>2007</td>
<td>18.6</td>
</tr>
<tr>
<td>2008</td>
<td>19.8</td>
</tr>
<tr>
<td>2009</td>
<td>21.2</td>
</tr>
<tr>
<td>2010</td>
<td>24.7</td>
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</table>
The Power of Prediction and Prescription

- **Predictive Analytics** uses historical data to predict or forecast future behaviors, trends, or outcomes.
Eg. #2

Example: Student X is at risk of dropping out of school

Student X:
- is from the continental U.S. (0)
- has a below average high school GPA (3.0)
- is enrolled in 12 credits (12)
- has a low % of financial need met (.65)
- isn’t not working on campus (0)
- isn’t enrolled in FYE 110 class (0)
- didn’t specify any educational goals in survey (0)
- sparse user activity in STAR and Laulima (.085)

• Probability of Dropping: 0.75
Early Warning Model Example

These variables account for approximately 17% of the variance in a student's likelihood of returning for a third semester (Pseudo R Square = .168).

*Wald statistic (sig.)
0.05 (*), 0.01 (**), and 0.001 (***)

The Wald test statistic was used to indicate strength of the variable instead of the coefficient, standardized beta. Because of the nature of the logistic regression, the coefficient is not easily interpretable to indicate strength.
### Student Risk Data for Advisors/Success Coaches

**Objective 1**

<table>
<thead>
<tr>
<th>UH ID</th>
<th>LAST NAME</th>
<th>FIRST NAME</th>
<th>EMAIL</th>
<th>CURRENT CREDITS</th>
<th>RESIDENT</th>
<th>AP/CLEP</th>
<th>HS GPA</th>
<th>WORK ON CAMP</th>
<th>1st YR EXP CLASS</th>
<th>% FIN NEED MET</th>
<th>STAR LOGINS</th>
<th>ADVISOR PREVIOUS CONTACT</th>
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<tbody>
<tr>
<td>001</td>
<td></td>
<td></td>
<td></td>
<td>15</td>
<td>HI</td>
<td>6</td>
<td>3.80</td>
<td>Y</td>
<td>Y</td>
<td>77%</td>
<td>5</td>
<td>Y</td>
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<tr>
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<td></td>
<td></td>
<td></td>
<td>14</td>
<td>HI</td>
<td>0</td>
<td>3.33</td>
<td>N</td>
<td>Y</td>
<td>63%</td>
<td>3</td>
<td>N</td>
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<tr>
<td>003</td>
<td></td>
<td></td>
<td></td>
<td>12</td>
<td>CA</td>
<td>6</td>
<td>3.00</td>
<td>N</td>
<td>N</td>
<td>45%</td>
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<table>
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<tr>
<th>UH ID</th>
<th>AGE</th>
<th>GENDER</th>
<th>ETHNICITY</th>
<th>COLLEGE</th>
<th>MAJOR</th>
<th>DEGREE</th>
<th>Ed Goal Specified</th>
<th>Relative Risk Value</th>
<th>Risk Level</th>
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<tr>
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<td>18</td>
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<td>CH</td>
<td>CA&amp;H</td>
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<td>SOC</td>
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<td>36.88</td>
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<tr>
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<td>18</td>
<td>M</td>
<td>UNDEC</td>
<td>UNDEC</td>
<td>UNDEC</td>
<td>UNDEC</td>
<td>No</td>
<td>89.18</td>
<td>HIGH</td>
</tr>
</tbody>
</table>
Academic Analytics

• “Analytics” that examine students’ academic journeys.
• Data may be available in degree audit systems, which are often home-grown.
• Degree audit systems provide advising and degree attainment support, but also capture important “data trails” about students.
See how a change in major affects progress towards degree
UHWO First-Time Full-Time Freshmen Retention Rates by STAR Logins (Fall 2013 Cohort)

Baseline Retention Rate = 61%

Number of STAR Logins (First 10 weeks of semester)
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