INNOVATION starts with a CONVERSATION
Student Velocity
Towards Program Requirements
Program Velocity Definition

\[ \sum \frac{\text{Student Velocity in Program for semester}}{\text{# of students in program for semester}} = \text{Program Velocity} \]
Academic Program Velocity: Spring 2014

Size of bubble = Number of students in Academic program
X-axis = Academic Program Velocity
Y-axis = Change in Program Velocity from the Program’s Average

**QUADRANT I**
An academic program in this quadrant is doing better than its program average; however, its program velocity is still below the desired velocity.

**QUADRANT II**
An academic program in this quadrant is falling behind its program average, and its program velocity is below the desired velocity.

**QUADRANT III**
An academic program in this quadrant is falling behind its program average; however, its program velocity is still above the desired velocity.

**QUADRANT IV**
An academic program in this quadrant is doing better than its program average, and its program velocity is above the desired velocity.

Excludes students that are part time or double major
ACADEMIC PROGRAM VELOCITY
(Methodology: Mean Student Velocities through program for the Semester)

On-track Status of Students in BS Mechanical Engineering Spring 2014

- Off Track: 76%
- On Track: 8%
- Above Track: 16%

Excludes students that are part time or double major
Factors Contributing to Retention

* Hawaii Residency
* Federal Aid
* Transfer Status
* Ethnicity
* Initial Class Standing
* GPA
* Gender
* Program Change
* Part-time Status
* Average AY Velocity

Statistical Model: Binary Logistic Regression

Is “velocity” a significant predictor of retention?

**Note: Excludes pre majors, general majors, double majors, & majors with known inaccurate STAR representations.**
Strongest Predictors of Fall 2013 Retention

These variables account for approximately 24% of the variance in a student’s likelihood of returning the following fall (Pseudo R-Squared = .245)

All are statistically significant: p<.001

Stronger

- Avg Velocity: 0.98 (p<.001)
- Class Standing (90+ credits): 0.53 (p<.001)
- F12 End GPA: 0.47 (p<.001)
- Class Standing (60-89 credits): 0.46 (p<.001)
- F12 Program Change: -0.30 (p<.001)

Weaker

X-Standardized Logit Coefficients
The standardized coefficients are presented and allow us to compare the magnitude of the effect that our predictor variables have on retention. Coefficients represent the change in log-odds of retention for a 1 SD increase in the predictor variable.
# Model Results

Predicting the likelihood of being retained from Fall 2012 to Fall 2013

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>X-Standardized Logit Coefficient (Magnitude)</th>
<th>Wald Statistic (Relative Contribution)</th>
<th>Significance (p-values of .05 or below)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Velocity</td>
<td>0.98</td>
<td>127.95</td>
<td>.000</td>
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<tr>
<td>GPA (End F12)</td>
<td>0.47</td>
<td>66.47</td>
<td>.000</td>
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<tr>
<td>F12 Program Change</td>
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<td>33.24</td>
<td>.000</td>
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<tr>
<td>Transfer Student</td>
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<td>24.42</td>
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<tr>
<td>Initial Class Standing*</td>
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<tr>
<td>Senior</td>
<td>0.53</td>
<td>29.28</td>
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<tr>
<td>Junior</td>
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<td>Sophomore</td>
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<td>Part-time Student</td>
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<tr>
<td>Ethnicity*</td>
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<tr>
<td>Korean</td>
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<td>Mixed Asian</td>
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<td>Hawaii Resident</td>
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<tr>
<td>Female</td>
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<td>.342</td>
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<tr>
<td>Federal Aid Recipient</td>
<td>-0.00</td>
<td>.00</td>
<td>.968</td>
</tr>
</tbody>
</table>

Pseudo R2: 0.24, n=6,100
Percent Correctly Classified: 88.64%

*Ethnicity comparison group: Caucasians; Class Standing comparison group: Freshmen

**Note: Excludes pre majors, general majors, double majors, & majors with known inaccurate STAR representations.
### Predicted Probability of F13 Retention

Create a Hypothetical UH Student:
- Caucasian, Non-resident, 3.0 Cumulative GPA (end of F12), Not a Transfer Student,
- Freshman, No Academic Program Change, Full-time Student, Male, & Federal Aid Recipient

...and change value of Velocity

<table>
<thead>
<tr>
<th>Velocity</th>
<th>Probability of being retained</th>
</tr>
</thead>
<tbody>
<tr>
<td>6%</td>
<td>.78</td>
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<tr>
<td>9%</td>
<td>.87</td>
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<tr>
<td>12.5%</td>
<td>.93</td>
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</table>
Our Proposal

- STAR has specifically hired “Statistical Expertise" to lend out to programs at Manoa:

- Specifically: We now have a “Program Velocity Consultant” on staff.

- With your Dean’s approval, we will be contacting individual programs in a week or so, to see if you would like us to work along side you, in statistically analyzing the factors that could affect your program’s Velocity.

Constructs:

1. We believe every program is different: that is why we would like to work with individual Manoa programs to identify the factors that are affecting their individual program velocity.

2. We believe there 3 broad scope factors that affect program velocity: “Technology,” “Curriculum,” and “Advising.”