Developing a Dashboard to Compare Predicted and Actual Graduation Rates

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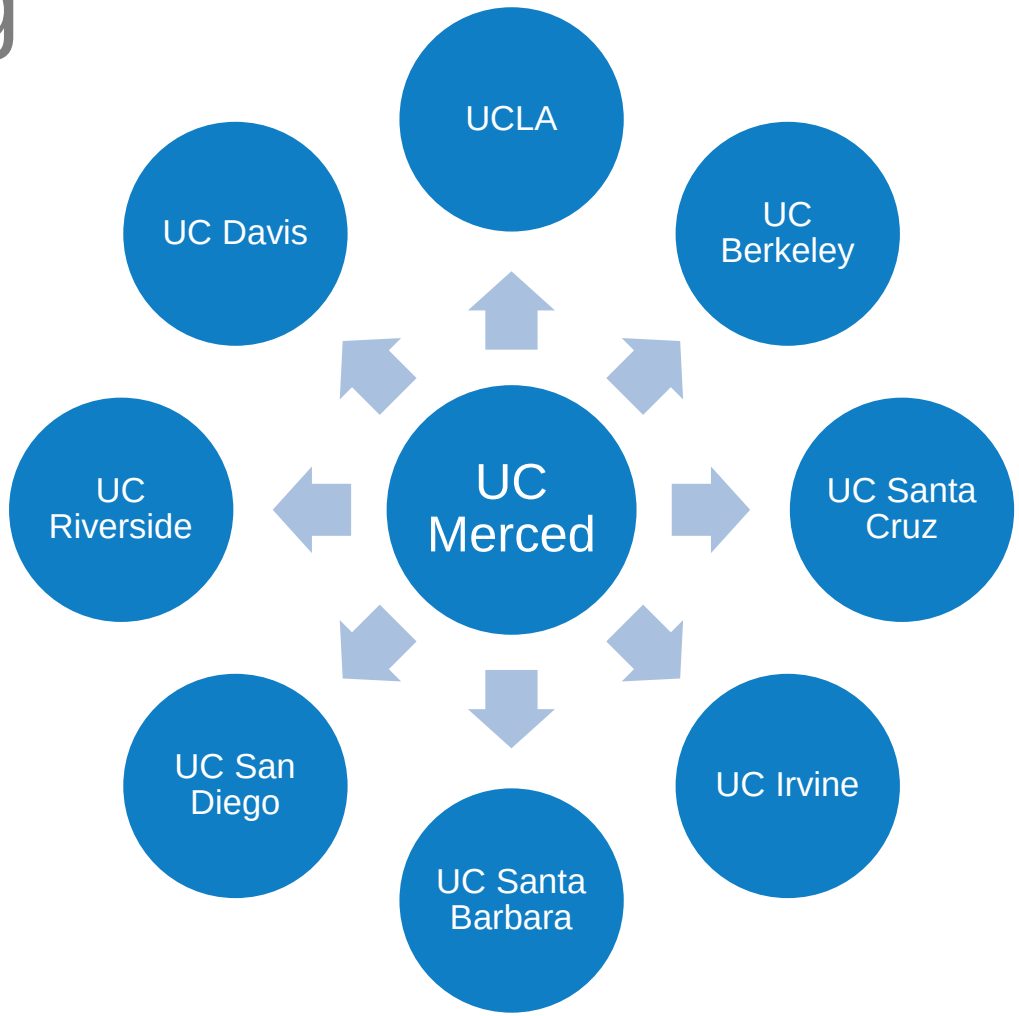
Session learning outcomes:

You will learn one approach for developing predicted graduation rate models for your campus.

You will learn how to use the model results to develop a dashboard to engage campus leaders to use the results to develop a strategic plan for student completion.

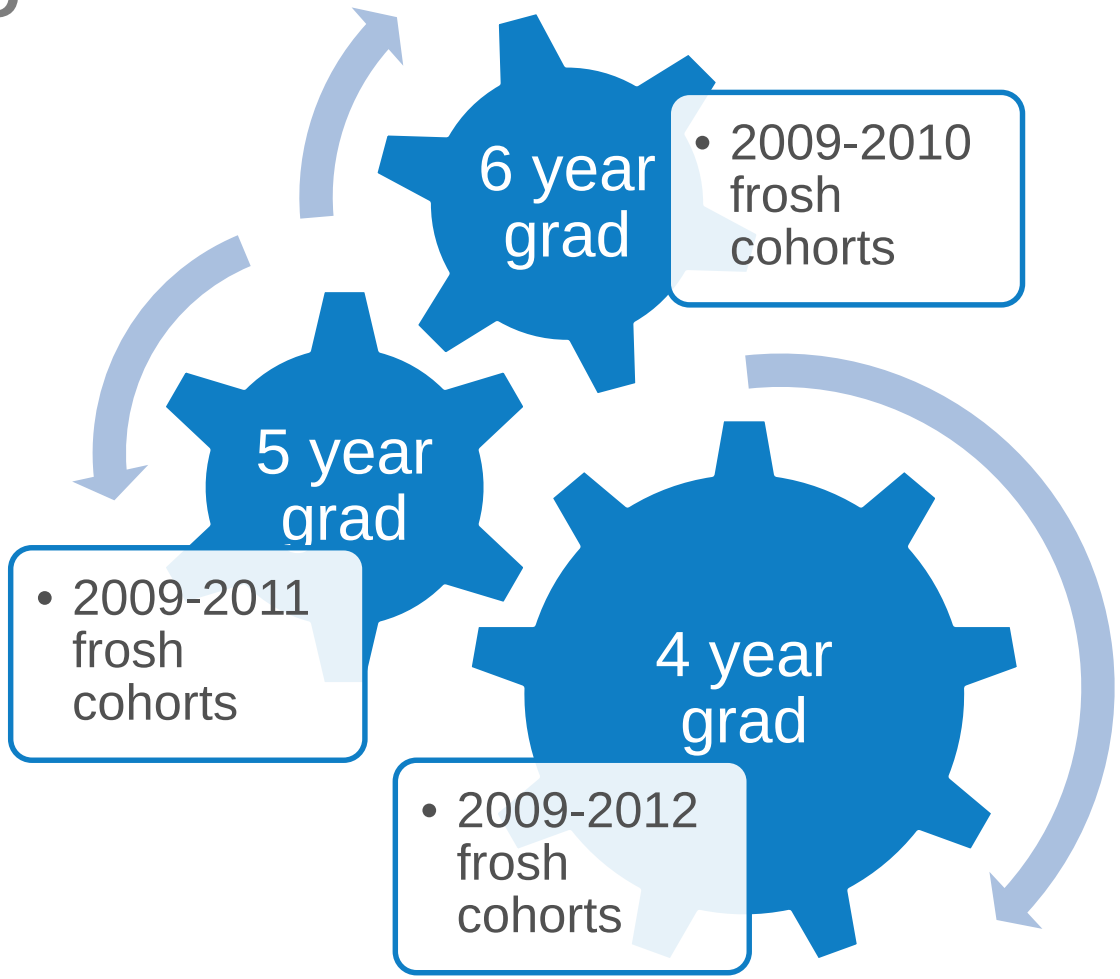
Modeling Methodology – Model Building



Modeling Methodology - Inputs

Residency	First Generation Status	Race/Ethnicity
Pell Grant Status	Gender	High School GPA
Test Scores	Pre-UC Units	Major Discipline

Modeling Methodology – Model Building



Modeling Methodology – Predictive Accuracy

	4 year grad	5 year grad	6 year grad
Pseudo R-squared	16.0%	12.4%	11.9%

Modeling Methodology – Logistic Regression & Predicted Probabilities

Step 1: obtain coefficients for each predictor variable (Beta weights)

Step 2: apply coefficients to get predictions at student level

- EXP(Y)/[1+EXP(Y)] where Y = a + b1x1 + b2x2 + … + bixi

Step 3: Calculate average predicted probabilities overall and across student groups

Dashboard Development Steps

Clarify goals for end user interaction with the dashboard

Consider data structure and variables to ensure execution of dashboard design goals

Dashboard Goals for User

Use predicted grad rates to set grad targets and/or view progress relative to targets

Use gaps between predicted and actual grad rates to identify intervention targets

Dataset Structure and content

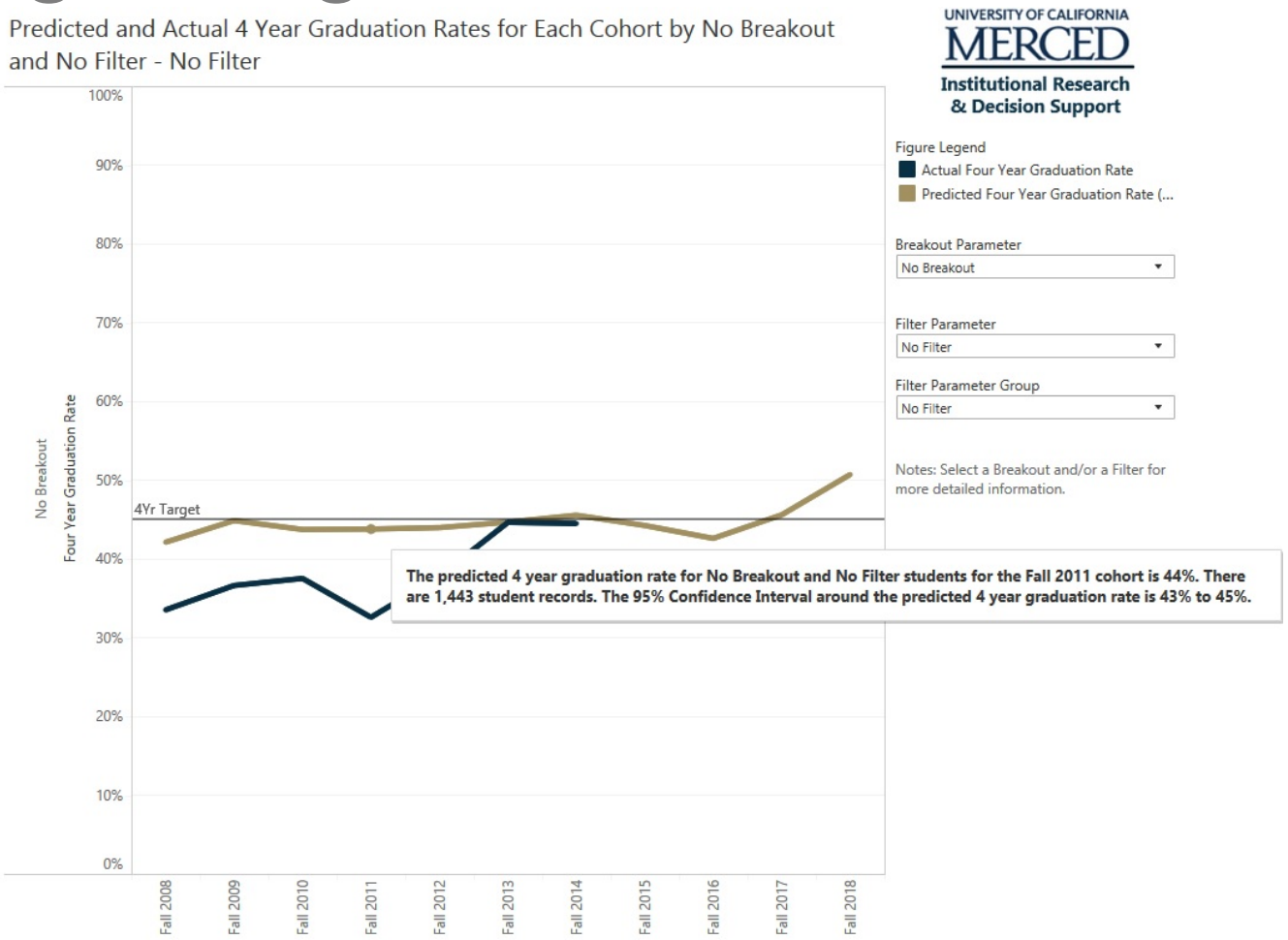
	pidm	cohort	gender	graduated_in_4_yrs	gender_OPmodel	predicted_prob_4yrgrad
1		200930	F	1	1	.51
2		201030	M	0	0	.60
3		200830	F	1	1	.38
4		200830	F	1	1	.72
5		200830	F	0	1	.59
6		200830	M	0	0	.49
7		200830	M	0	0	.35
8		200830	M	1	0	.40
9		200830	M	0	0	.39
10		200830	F	0	1	.36
11		200830	F	1	1	.61
12		200830	M	0	0	.27
13		200830	F	0	1	.51
14		200830	M	1	0	.26
15		200830	F	0	1	.47
16		200830	F	1	1	.42
17		200830	M	0	0	.33

In Tableau

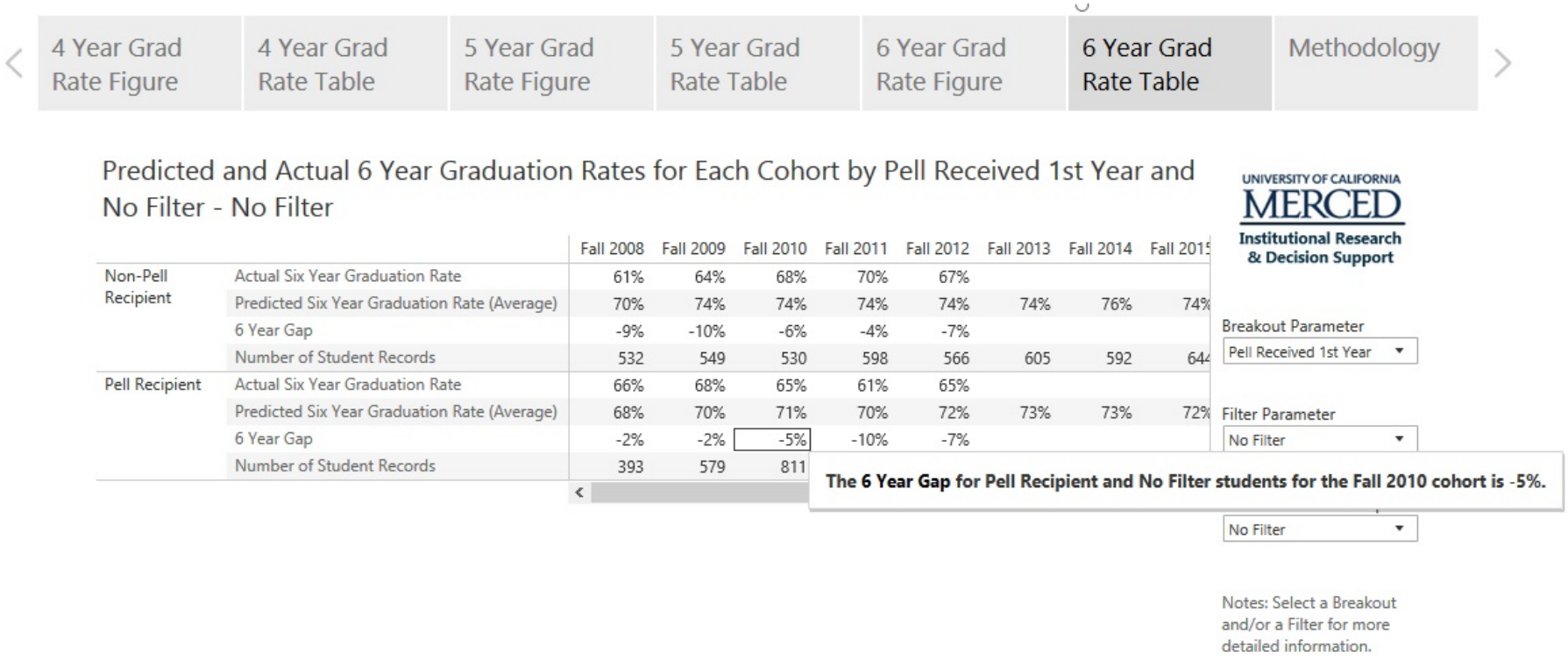
Calculated average predicted probabilities

Calculated actual graduation rates

Dashboard Demo – 6 year grad figure



Dashboard Demo – 6 year grad table



Summary

Shared one approach for developing predicted graduation rate models for your campus.

Shared how to use the model results to develop a dashboard. Can be used to engage campus leaders develop a strategic plan for student completion.

Lessons Learned About Dashboards

- Get feedback from colleagues (not just in IR)
- (Ironically) Increases engagement between campus stakeholders and IR office
  - "How do I find the information I need?" (the firehose problem)
  - Changes questions from "what" to "why"?
  - Demos are important for increasing comfort with self-service
  - Users still want personal connection

Resources

Logistic Regression

- Percontor workshop - Exploring the power of predictive analytics: A step-by-step introduction to building a student-at-risk prediction model
- The Analysis Factor workshop - Logistic Regression for Binary, Ordinal, and Multinomial Outcomes

Tableau

- Free training webinars
- Community resources and forums

Questions?

Thank you!
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