Taking the "Project" out of Enrollment Projections: Simple Ways to Plan Effectively

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Prior to Projection Model

- Number based on historical data
  - "Enrollment has increased in the last 3 years by 3%, it will next year."
- This is method is risky in an uncertain and changing environment.

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Development of Projection Model

Dividing the number of undergraduate students registered at a point in time by the total number of undergraduate students creates a factor indicating distance from final enrollment.

Fall 2008

Number of Undergraduate Students Registered as of Registration Day 2:	→	Total Number of Undergraduate Students Registered:	→	Day 2 Registration Divided by Total Registration Creates a Factor of:
8,967		9,708		1.08

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Development of Projection Model

This model applied the previous Fall term factor for a particular day to the corresponding day in the upcoming term.

Undergraduate		Factors		2009
Day	2009	2008		Projected
Registration 2	9,177	1.08		9,935
Registration 3	9,241	1.08		9,945
Registration 4	9,287	1.07		9,948
Registration 5	9,322	1.07		9,957
Registration 6	9,366	1.06		9,964
Registration 7	9,368	1.06		9,885
Registration 8	9,400	1.06		9,922
Registration 9	9,413	1.06		9,936
Registration 10	9,416	1.06		9,977

Note: factors are shown to 2 decimals for demonstration purposes.

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Model 1: Registration Day 15

Undergraduate Projection - as of Registration Day 15				
Students Registered	Factor Used	Projected Enrollment	Fall 2008 Enrollment	% Increase
9,408	1.07	10,111	9,708	4.2%

Graduate Projection - as of Registration Day 15				
Students Registered	Factor Used	Projected Enrollment	Fall 2008 Enrollment	% Increase
1,229	1.61	1,975	1,782	10.8%

Total Enrollment Projection - as of Registration Day 15			
Students Registered	Projected Enrollment	Fall 2008 Enrollment	% Increase
10,637	12,086	11,490	5.2%

Accuracy: within 2.5% of total enrollment (12,391)

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Predicting New Freshmen

To predict the number of new freshmen we used the following elements:

- Number of new freshmen accepted (Admissions)
- Number of new freshmen accepted in previous years (Admissions)
- Number of new freshmen attending Orientation (Student Affairs)
  (used to create a separate projection calculation)

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Model 2: New Freshmen

Using previous terms' data, historic factors are calculated for a particular day by dividing the total for the term by the point in time cumulative total.

New Freshman Accepted							
ACCEPTED	Fall 2004	Fall 2005	Fall 2006	Fall 2007	Fall 2008	Fall 2009	Fall 2010
6/15	3,332	3,673	3,761	3,674	4,383	4,882	5,182
6/1	3,251	3,605	3,676	3,532	4,250	4,744	5,027
5/15	3,200	3,556	3,640	3,452	4,160	4,626	4,951
4/30	3,142	3,489	3,512	-	3,998	4,522	4,811
4/15	2,992	3,388	3,384	-	3,830	4,310	4,662
3/31	2,895	3,237	3,271	3,109	3,657	4,117	4,431
3/15	2,751	3,092	3,067	2,877	3,417	3,863	4,146
2/27	2,558	2,860	2,881	2,534	3,121	3,569	3,790
2/13	2,318	2,592	2,616	2,263	2,810	3,214	3,405
Final Total	1,839	1,875	2,119	2,117	2,171	2,529	?

Cumulative new Freshmen total as of 6/15

Factor = 0.518

Total Fall 2009 new Freshmen

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Model 2: New Freshmen

Repeating this process across multiple years of freshman acceptance data allows an average factor to be created and applied to current data.

New Freshman Accepted Factors								
Date	Fall 2004	Fall 2005	Fall 2006	Fall 2007	Fall 2008	Fall 2009	Avg	SD
6/15	0.552	0.510	0.563	0.576	0.495	0.518	53.6%	0.0324
6/1	0.566	0.520	0.576	0.599	0.511	0.533	55.1%	0.0349
5/15	0.575	0.527	0.582	0.613	0.522	0.547	56.1%	0.0353
4/30	0.585	0.537	0.603	-	0.543	0.559	56.6%	0.0281
4/15	0.615	0.553	0.626	-	0.567	0.587	59.0%	0.0308
3/31	0.635	0.579	0.648	0.681	0.594	0.614	62.5%	0.0373
3/15	0.668	0.606	0.691	0.736	0.635	0.655	66.5%	0.0450
2/27	0.719	0.656	0.736	0.835	0.696	0.709	72.5%	0.0605
2/13	0.793	0.723	0.810	0.935	0.773	0.787	80.4%	0.0710

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Model 2: New Freshmen

Applying the average factor to the number of current freshman acceptances for Fall 2010:

Accepted Date	Fall 2010	Avg. 6-Year Factor	2010 Projected
6/15	5,182	0.536	2,777
6/1	5,027	0.551	2,769
5/15	4,951	0.561	2,777
4/30	4,811	0.566	2,721
4/15	4,662	0.590	2,749
3/31	4,431	0.625	2,770
3/15	4,146	0.665	2,758
2/27	3,790	0.725	2,748
2/13	3,405	0.804	2,736

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Model 2: Returning Students

To predict the number of returning students we used the same factor formula as in enrollment model 1:

- Total number of students attending in previous years
- Number of students registered by day in previous years

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Model 2: Final 2010 Projections

	2010 Projected Enrollment	2010 Actual	Difference
Freshmen	3,789	3,836	47
Sophomore	2,119	2,197	78
Junior	2,338	2,094	(244)
Senior	2,533	2,636	103
Total UG	10,780	10,763	(17)
Total Grad	2,268	2,121	(147)
Actual Total	13,048	12,864	(184)

- Actual Fall 2010 enrollment indicates the projection model was **within 1.4%** of the actual total enrollment
  - Within 0.2% of undergraduate total
  - Within 6.5% of graduate total

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Model 2: Final Thoughts

- Start analysis again in November
  - Weekly tracking
- Look for ways to improve
  - Would like to integrate financial aid data (but that's complicated)
- Overall, we are pleased with our enrollment modeling system.

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