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

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You might be attending this session if you…

- are responsible for predicting enrollment.
- are interested in enrollment modeling.

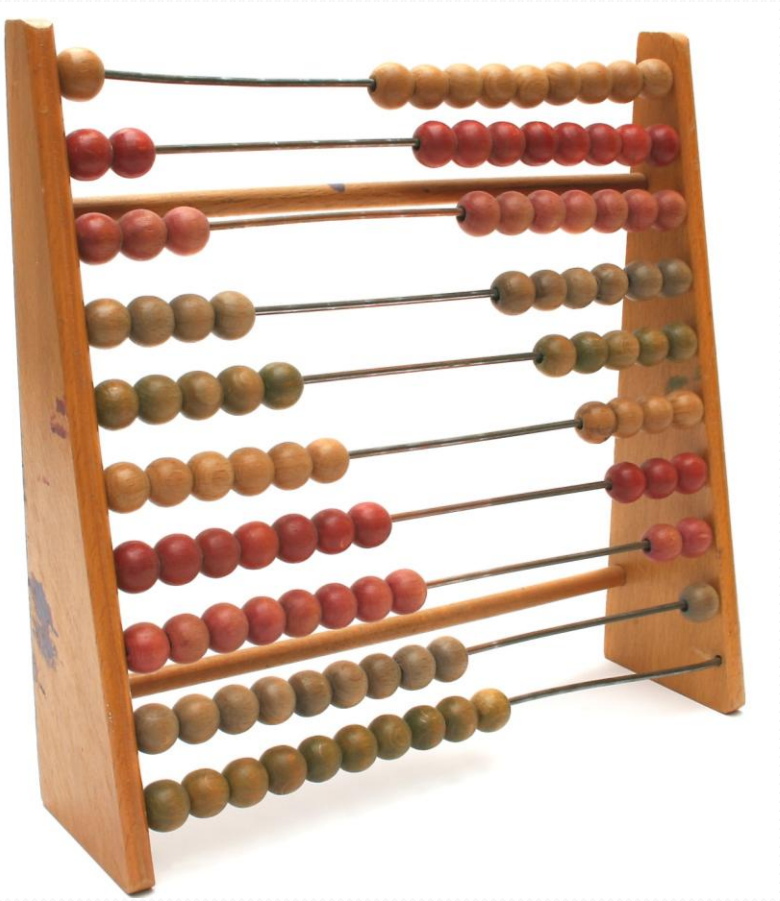
OR

- This was the best session available in this time slot.

Forecasting

- Enrollment and tuition revenue forecasting are important elements of institutional planning.

Forecasting



- Traditional methodologies are long range.
  - Not precise or timely
- Need new models which are sensitive to immediate change.
- Access to current data is necessary.

Accurate forecasting allows institutions to:

- adapt
- accommodate
- utilize
- maximize

Enrollment & Budget: Dual Demand

- Forecasting enrollments and predicting tuition revenues can help create a balanced budget when costs increase and budget cuts are imminent.

Building the Budget

HIGH Risk for Unbalanced Budget

Expenditure$ Revenue$

LOW Risk for Unbalanced Budget

Budget Impact

- Feeds into budget model to predict dollars
- Presented at Planning and Budget Council which determines distribution (or cuts) of funds

Framework

- As enrollment trends vary across institutions (Pascarella & Terenzini, 2005), a one-size-fits-all projection approach is not feasible.

Framework

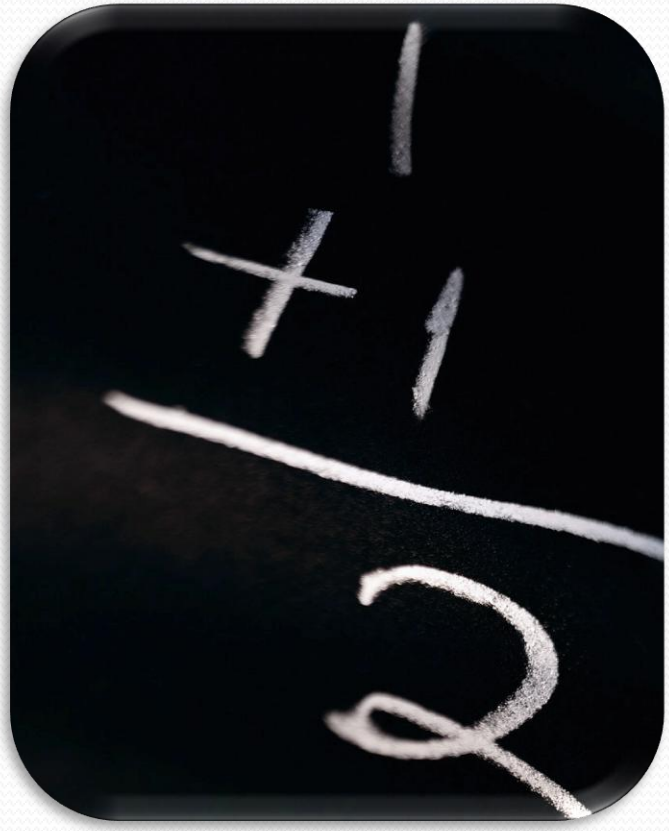
- The economic downturn further strengthened the point that enrollment is affected by a variety of factors as enrollment growth for Fall 2009 was not consistent with expected or historical data.

Framework

- "As the number of college applicants and applications have gone up, many colleges have seen other things go down, including their acceptance rates, their "yield" rates, and their confidence in predicting enrollment outcomes" (Hoover, 2009), suggesting old enrollment modeling will not suffice.

Purpose

- The purpose of this presentation is to provide institutions with a ***simple method of predicting enrollment*** based on institution-specific factors that the entire campus community can understand.



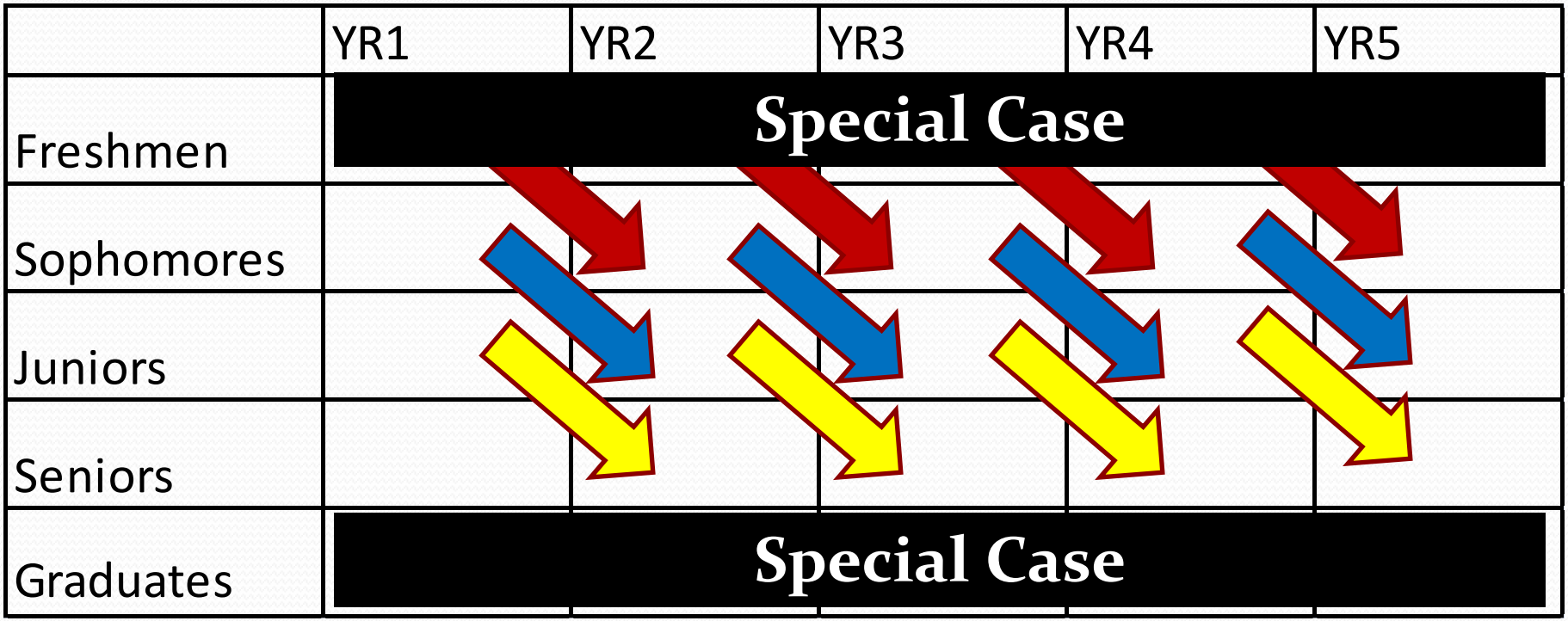
Prior to Projection Model

- 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.

Enrollment Projection Model 1

Class Progression



Development of Projection Model

First model:

- The first model focused only on total enrollment.
- Based on the number of students registered per day compared to total end of term registration.

Undergraduate				
Day	**2005**	**2006**	**2007**	**2008**
Registration 2	8,166	8,493	8,807	8,967
Registration 3	8,275	8,590	8,867	9,021
Registration 4	8,339	8,636	8,927	9,063
Registration 5	8,365	8,678	8,990	9,089
Registration 6	8,375	8,708	9,033	9,125
Registration 7	8,391	8,729	9,071	9,200
Registration 8	8,717	9,044	9,068	9,197
Registration 9	NA	NA	9,065	9,197
Registration 10	NA	NA	9,062	9,162
UG Total	9,093	9,489	9,728	9,708

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:

8,967

Total Number of Undergraduate Students Registered:

9,708

Day 2 Registration Divided by Total Registration Creates a Factor of:

1.08

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	
Day	2009
Registration 2	9,177
Registration 3	9,241
Registration 4	9,287
Registration 5	9,322
Registration 6	9,366
Registration 7	9,368
Registration 8	9,400
Registration 9	9,413
Registration 10	9,416

Factors
2008
1.08
1.08
1.07
1.07
1.06
1.06
1.06
1.06
1.06

2009 Projected
9,935
9,945
9,948
9,957
9,964
9,885
9,922
9,936
9,977

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

Model 1: Registration Day 2

Undergraduate Projection - as of Registration Day 2				
Students Registered	Factor Used	Projected Enrollment	Fall 2008 Enrollment	% Increase
9,177	1.08	9,935	9,708	2.3%

Graduate Projection - as of Registration Day 2				
Students Registered	Factor Used	Projected Enrollment	Fall 2008 Enrollment	% Increase
906	2.15	1,945	1,782	9.2%

Total Enrollment Projection - as of Registration Day 2			
Students Registered	Projected Enrollment	Fall 2008 Enrollment	% Increase
10,083	11,881	11,490	3.4%

Accuracy: within 4.3% of total enrollment (12,391)

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)

Enrollment Projection Model 2

Need to Revise Projection Model

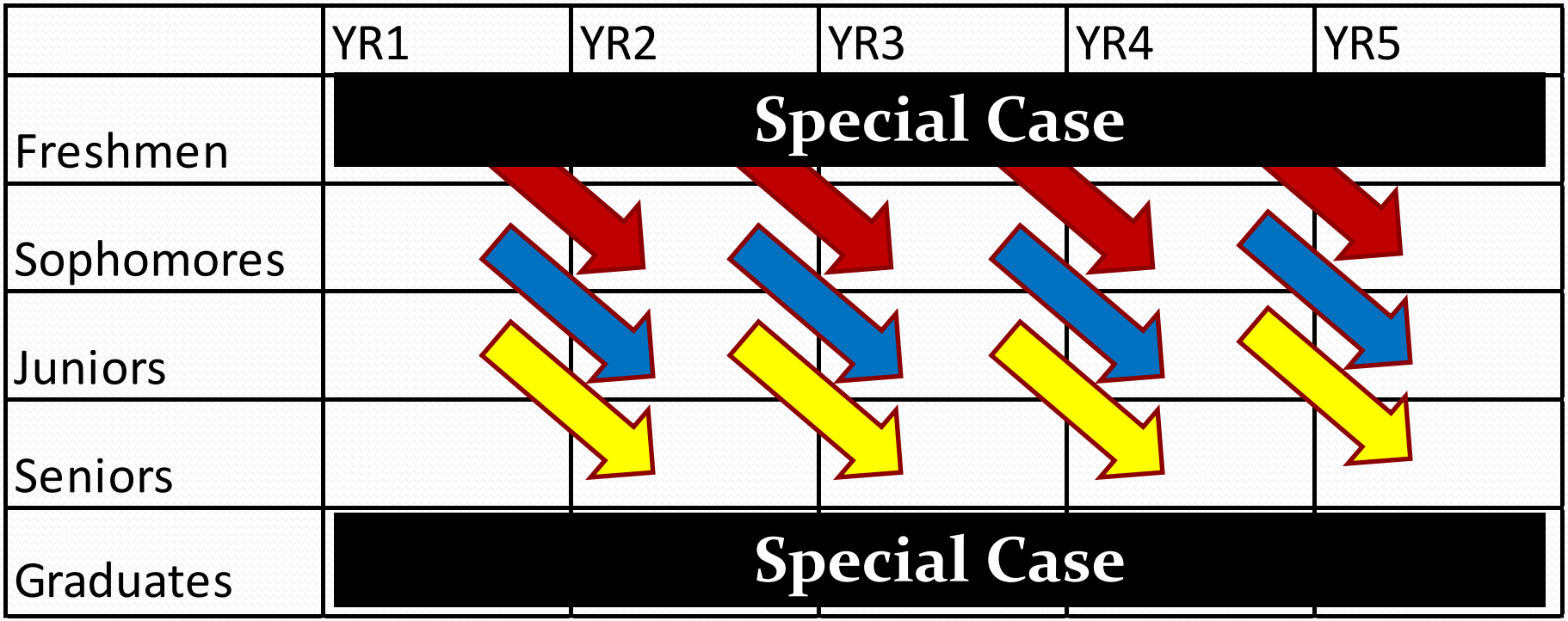
- The first model focused only on total enrollment.
- Revising the model allowed us to break out new freshmen from returning students and undergraduate from graduate students.

Revision of Projection Model

Factors added:

- Five years of Fall term data:
  - Count of admission applications
  - Count of admitted students accepted
  - Count of Orientation registrations

Class Progression



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)

Model 2: New Freshmen

From this information a matrix of weeks was created to align the data across the multiple years.

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	?

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
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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

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							Avg	SD
Date	Fall 2004	Fall 2005	Fall 2006	Fall 2007	Fall 2008	Fall 2009		
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

Model 2: New Freshmen

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

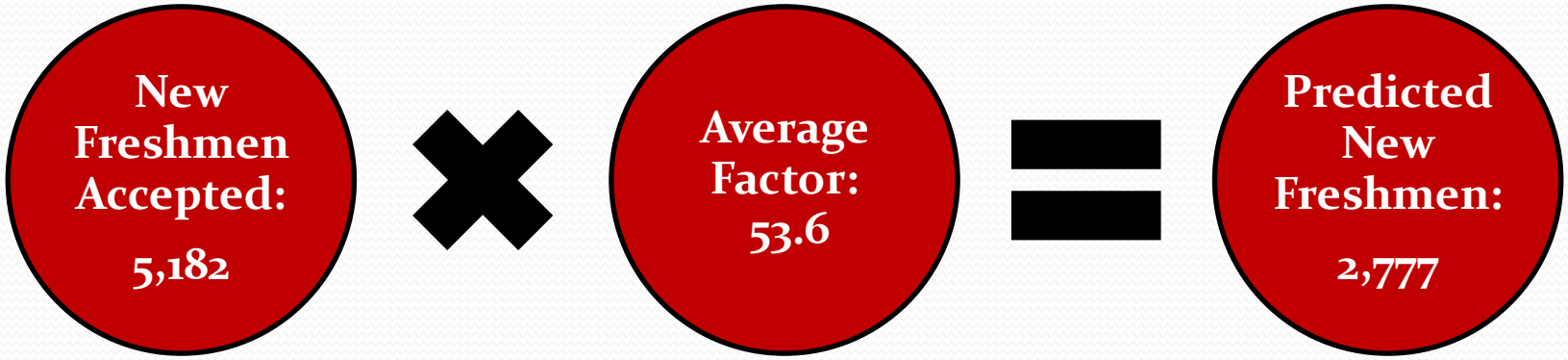
Accepted Date	Fall 2010	Avg. 6-Year Factor	2010 Projected
6/15	5,182	0.536	2,777
6/1	5,027	0.551	2,769
5/15	4,951	0.561	2,777
4/30	4,811	0.566	2,721
4/15	4,662	0.590	2,749
3/31	4,431	0.625	2,770
3/15	4,146	0.665	2,758
2/27	3,790	0.725	2,748
2/13	3,405	0.804	2,736

Interpreting the Freshmen Model

What does this mean?

It means that on average, by June 15th, we can predict that new freshman enrollment will be approximately 53% of the number of new freshman accepted.

As of June 15th, 2010



Orientation Attendance

- The number of students attending Fall 2010 Orientation sessions were compared to the number of students attending Fall 2009 Orientation.
- Factor analysis was applied to the day and a projection for the number of new freshmen was generated.

Date	2009 Total	2010 Total	Total Percent Change	Factor	Projected
Day 5	1,296	1,312	1.23%	2.10	2,755
Day 6	1,397	1,411	1.00%	1.95	2,748
Day 7	1,465	1,411	-3.69%	1.86	2,621
Day 8	1,510	1,512	0.13%	1.80	2,725
Day 9	1,561	1,554	-0.45%	1.74	2,709
Day 10	1,595	1,591	-0.25%	1.71	2,714
Day 11	1,595	1,665	4.39%	1.71	2,840
Day 12	1,685	1,723	2.26%	1.61	2,782
Day 13	1,740	1,775	2.01%	1.56	2,776
Day 14	1,797	1,811	0.78%	1.51	2,742
Day 15	1,797	1,841	2.45%	1.51	2,788

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

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

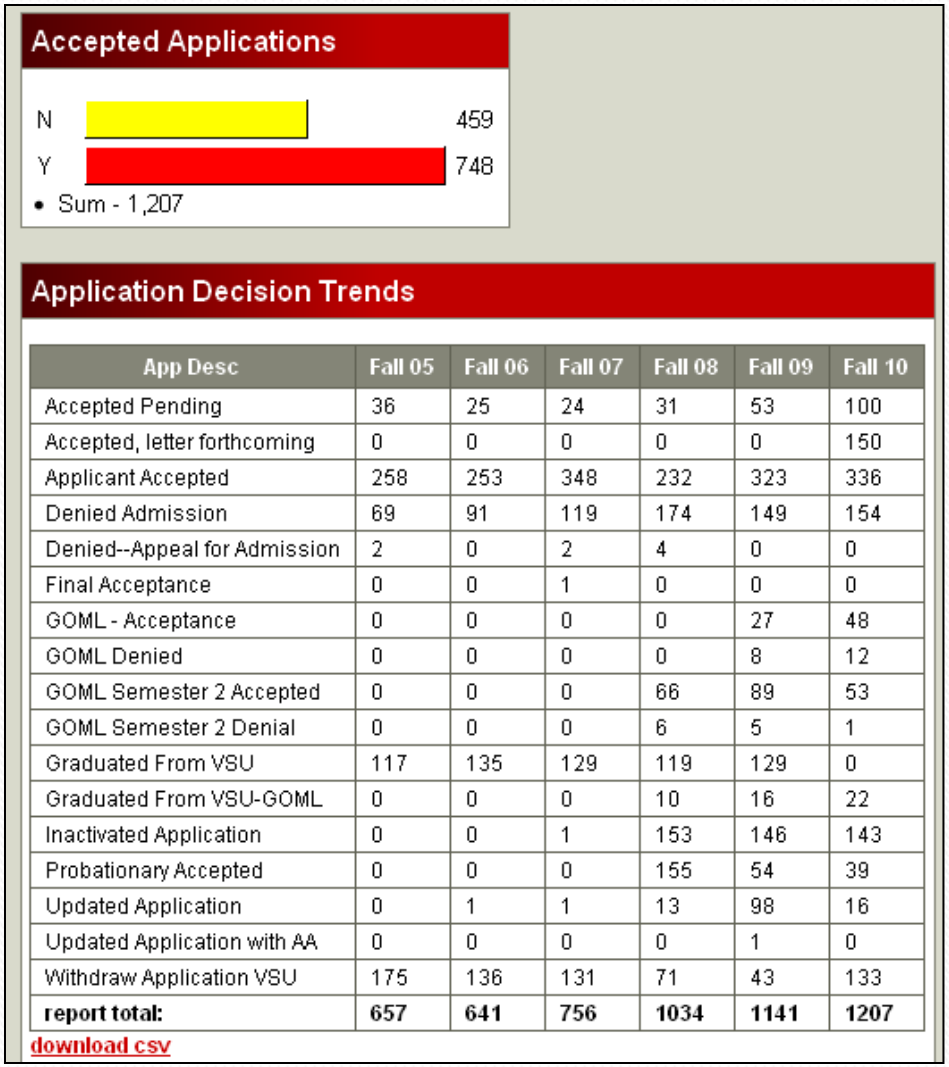
Model 2: Final Thoughts

- 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.

Additional Enrollment Tools

Automated Portals

- Implementation of an automated portal allows program coordinators to track applications, admittances, and enrollments electronically.



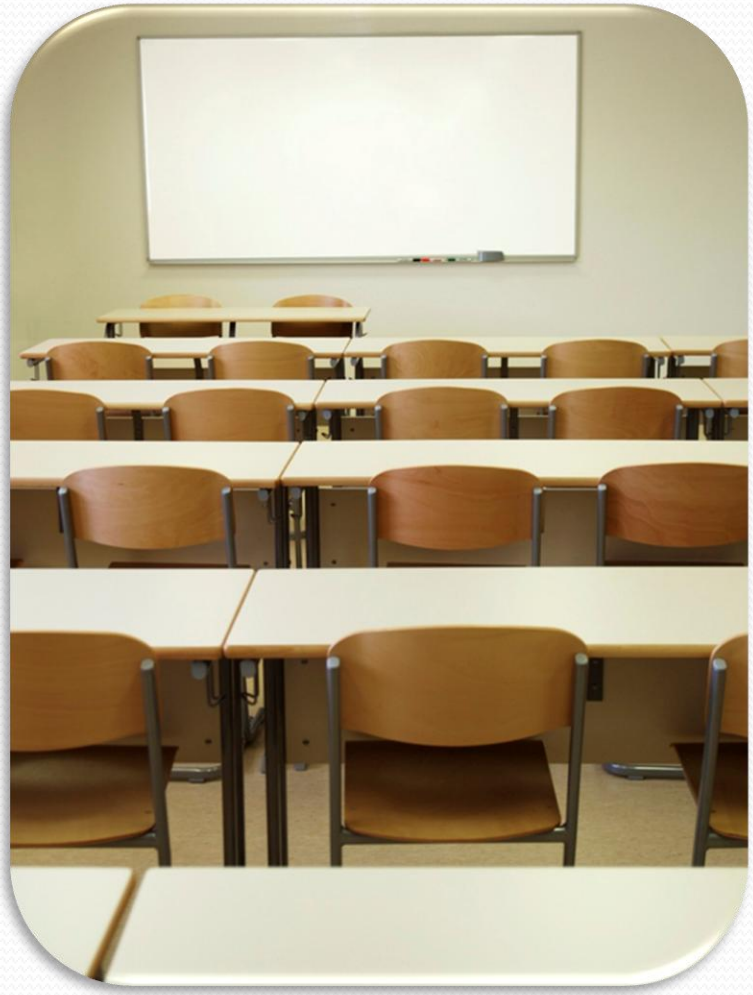
Application Decision Trends

App Desc	Fall 05	Fall 06	Fall 07	Fall 08	Fall 09	Fall 10
Accepted Pending	36	25	24	31	53	100
Accepted, letter forthcoming	0	0	0	0	0	150
Applicant Accepted	258	253	348	232	323	336
Denied Admission	69	91	119	174	149	154
Denied--Appeal for Admission	2	0	2	4	0	0
Final Acceptance	0	0	1	0	0	0
GOML - Acceptance	0	0	0	0	27	48
GOML Denied	0	0	0	0	8	12
GOML Semester 2 Accepted	0	0	0	66	89	53
GOML Semester 2 Denial	0	0	0	6	5	1
Graduated From VSU	117	135	129	119	129	0
Graduated From VSU-GOML	0	0	0	10	16	22
Inactivated Application	0	0	1	153	146	143
Probationary Accepted	0	0	0	155	54	39
Updated Application	0	1	1	13	98	16
Updated Application with AA	0	0	0	0	1	0
Withdraw Application VSU	175	136	131	71	43	133
report total:	**657**	**641**	**756**	**1034**	**1141**	**1207**

download csv

Seat Analysis Tool

- This reports allows the institution to plan adequate course and seat availability in conjunction with the enrollment model.
- Projections for each course are provided based on previous years' data and enrollment increases.



Fall 2007	Fall 2008	Fall 2009

Year 1

BIOL 1010 (Biol Evolution and Diversity) Fall 2007

Classification	#	% Course	% Univ.
1. Freshman (New)	253	49.2	12.6
1. Freshman(Cont./Other)	34	6.6	7.6
2. Sophomore(Cont./Other)	138	26.8	6.5
3. Junior(Cont./Other)	56	10.9	2.8
4. Senior(Cont./Other)	31	6	1
7. Graduate(Cont.)	1	.2	.1
Joint Enrolled	1	.2	3.3
All Students	**514**	**100%**	**4.5438**

Course Details

Sections	6
Seats Offered	529
Total Enroll	514
SCH	1542
Avg. Section Enroll	85.67
Avg. Max Enroll	88.17

Faculty Details

Full Time	Professor	1
Full Time	Temporary Instructor	3
Part Time	Instructor	2

BIOL 1020L (Biodiversity Lab) Fall 2007

Classification	#	% Course	% Univ.
1. Freshman (New)	219	46.4	10.9
1. Freshman(Cont./Other)	31	6.6	6.9
2. Sophomore(Cont./Other)	134	28.4	6.3
3. Junior(Cont./Other)	55	11.7	2.7
4. Senior(Cont./Other)	31	6.6	1
7. Graduate(Cont.)	1	.2	.1
Joint Enrolled	1	.2	3.3
All Students	**472**	**100%**	**4.1726**

Course Details

Sections	21
Seats Offered	505
Total Enroll	472
SCH	472
Avg. Section Enroll	22.48
Avg. Max Enroll	24.05

Faculty Details

Full Time	Instructor	2
Full Time	Temporary Instructor	3
Part Time	Graduate Assistant	14
Part Time	Instructor	2

Year 2

BIOL 1010 (Biol Evolution and Diversity) Fall 2008

Classification	#	% Course	% Univ.
1. Freshman (New)	190	44.2	9.1
1. Freshman(Cont./Other)	20	4.7	4.6
2. Sophomore(Cont./Other)	103	24	5
3. Junior(Cont./Other)	99	23	4.7
4. Senior(Cont./Other)	18	4.2	.6
All Students	**430**	**100%**	**3.733**

Course Details

Sections	5
Seats Offered	433
Total Enroll	430
SCH	1290
Avg. Section Enroll	86
Avg. Max Enroll	86.6

Faculty Details

Full Time	Associate Professor	1
Full Time	Temporary Instructor	3
Part Time	Instructor	1

BIOL 1020L (Biodiversity Lab) Fall 2008

Classification	#	% Course	% Univ.
1. Freshman (New)	175	42.1	8.4
1. Freshman(Cont./Other)	22	5.3	5.1
2. Sophomore(Cont./Other)	90	21.6	4.4
3. Junior(Cont./Other)	108	26	5.1
4. Senior(Cont./Other)	21	5	.7
All Students	**416**	**100%**	**3.6114**

Course Details

Sections	18
Seats Offered	433
Total Enroll	416
SCH	416
Avg. Section Enroll	23.11
Avg. Max Enroll	24.06

Faculty Details

Full Time	Instructor	3
Part Time	Graduate Assistant	14
Part Time	Instructor	1

Year 3

BIOL 1010 (Biol Evolution and Diversity) Fall 2009

Classification	#	% Course	% Univ.
1. Freshman (New)	134	25.3	5.6
1. Freshman(Cont./Other)	33	6.2	7.2
2. Sophomore(Cont./Other)	217	40.9	10
3. Junior(Cont./Other)	109	20.6	5.1
4. Senior(Cont./Other)	36	6.8	1.1
Joint Enrolled	1	.2	6.7
All Students	**530**	**100%**	**4.2704**

Course Details

Sections	5
Seats Offered	535
Total Enroll	530
SCH	1590
Avg. Section Enroll	106
Avg. Max Enroll	107

Faculty Details

Full Time	Associate Professor	1
Full Time	Temporary Instructor	3
Part Time	Instructor	1

BIOL 1020L (Biodiversity Lab) Fall 2009

Classification	#	% Course	% Univ.
1. Freshman (New)	118	23.8	4.9
1. Freshman(Cont./Other)	29	5.8	6.3
2. Sophomore(Cont./Other)	198	39.9	9.1
3. Junior(Cont./Other)	116	23.4	5.5
4. Senior(Cont./Other)	34	6.9	1
Joint Enrolled	1	.2	6.7
All Students	**496**	**100%**	**3.9965**

Course Details

Sections	21
Seats Offered	505
Total Enroll	496
SCH	496
Avg. Section Enroll	23.62
Avg. Max Enroll	24.05

Faculty Details

Full Time	Instructor	3
Full Time	Temporary Instructor	1
Part Time	Graduate Assistant	16
Part Time	Instructor	1

Prediction Fall 2010

Prediction Year 4

BIOL 1010 (Biol Evolution and Diversity) Fall 2010

Classification	#	% Course	% Univ.
1. Freshman (New)	245	40.563	8.8756
1. Freshman(Cont./Other)	97	16.06	6.4925
2. Sophomore(Cont./Other)	150	24.834	7.1933
3. Junior(Cont./Other)	88	14.57	4.2105
4. Senior(Cont./Other)	22	3.642	.8786
7. Graduate(Cont.)	2	.331	.1048
All Students	**604**	**100%**	**4.526**

Course Prediction Details

Sections	6.56
Total Enroll	604
SCH	1812
Avg. Section Enroll	92.13
Avg. Max Enroll	93.56

BIOL 1020L (Biodiversity Lab) Fall 2010

Classification	#	% Course	% Univ.
1. Freshman (New)	217	38.339	7.8757
1. Freshman(Cont./Other)	92	16.254	6.1194
2. Sophomore(Cont./Other)	139	24.558	6.6279
3. Junior(Cont./Other)	93	16.431	4.4498
4. Senior(Cont./Other)	23	4.064	.889
7. Graduate(Cont.)	2	.353	.1048
All Students	**566**	**100%**	**4.2413**

Course Prediction Details

Sections	24.54
Total Enroll	566
SCH	566
Avg. Section Enroll	23.07
Avg. Max Enroll	24.05

Current Fall 2010

Current Year 4

BIOL 1010 (Biol Evolution and Diversity) Fall 2010

Classification	#	% Course	% Univ.
1. Freshman (New)	272	69.4	11.5
1. Freshman(Cont./Other)	19	4.8	1.2
2. Sophomore(Cont./Other)	58	14.8	2.8
3. Junior(Cont./Other)	29	7.4	1.5
4. Senior(Cont./Other)	14	3.6	.6
All Students	**392**	**100%**	**3.473**

Course Details

Sections	9
Seats Offered	421
Total Enroll	392
SCH	1176
Avg. Section Enroll	43.56
Avg. Max Enroll	46.78

Faculty Details

Full Time	Not-Reported	1
Full Time	Temporary Instructor	7
Part Time	Instructor	1

BIOL 1020L (Biodiversity Lab) Fall 2010

Classification	#	% Course	% Univ.
1. Freshman (New)	268	70	11.3
1. Freshman(Cont./Other)	17	4.4	1.1
2. Sophomore(Cont./Other)	60	15.7	2.9
3. Junior(Cont./Other)	25	6.5	1.3
4. Senior(Cont./Other)	13	3.4	.6
All Students	**383**	**100%**	**3.3933**

Course Details

Sections	17
Seats Offered	421
Total Enroll	383
SCH	383
Avg. Section Enroll	22.53
Avg. Max Enroll	24.76

Faculty Details

Full Time Instructor	4
Full Time Not-Reported	12
Part Time Instructor	1

Analytical method

These tools, based on historical trend data, provide timely indicators of likely enrollment growth and corresponding enrollment revenue.

Thank You

Questions and Comments

This PowerPoint presentation can be downloaded at
http://www.valdosta.edu/sra/presentations.shtml

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