Using Institutional Research Analysis to Inform Enrollment Management

2012 Assessment/Institutional Research
Joint Retreat
Brooklyn College, CUNY
June 15, 2012

Brooklyn College
The City University of New York

How Can IR Analysis Help EM?

1. Admissions and Enrollment Tracking
2. Forecasting and Setting Targets
3. Data Validation
4. Policy Assessment
5. Identifying Risk Factors

(this is not a complete list)

Admissions and Enrollment Tracking

- Updated reports by admissions phase, semester, week, and day.
- Comparison to past performance.
- Identify trends, differences, and anomalies.
- Inclusion of targets makes these reports an even more useful tool.

Projecting Enrollment

- Subjective Approach:
  - Best for entering and non-degree students.
  - Utilizes prior knowledge and skill of admissions.
- Objective Methods:
  - Best for continuing students.
  - Precise estimates drawn from past data.
  - Regression-Based Methods: respond to trends in indicator variables to forecast enrollment.

Forecasting and Setting Targets

- IR analysis provides the basis for objective enrollment forecasting and target-setting.
- Some objective forecasting methods:
  - Naïve Model
  - Moving Averages
  - Exponential Smoothing
  - Regression Models

Can We Use Objective Projection Methods?

1. What policies, procedural changes, or strategic decisions affect enrollment?
2. What does the time series look like?
   - Stationary (no change over time)
   - Trend (consistent rate of change over time)
   - Cyclical (no overall change over time; but change occurs at similar points within periods).
   - Irregular (no discernable pattern)

Can We Use Objective Projection Methods?

3. What measurable variables predict enrollment?
   - Are these variables available as data?
   - Do they correlate with the dependent variable?
   - Can a valid model be developed to fit enrollment trends?

Regression: Some Questions

1. Unit of Analysis: Student or Aggregate?
2. What type of trend is Y?
   - Stationary, Trend, Cycle, Irregular
   - Linearity of Trend?
   - Length of Trend?
3. Do trends of Y, indicators match?
4. Project a single number, or a confidence interval?

COMPARISON OF PROJECTION MODELS

Continuing, Degree-Seeking Non-SEEK Undergraduates

Method	Projected Value	RMSE (All Years)	RMSE : $RMSE_{NM}$	True Value	Error
Naïve Model	8,014	228	1.00	8,071	-57
Three-Year Flat Mean	7,983	383	1.68	8,071	-88
Weighted 3*2*1 Means	8,010	328	1.44	8,071	-61
Exponential Smoothing (α = .05)	8,017	241	1.06	8,071	-54
Regression: Simple Lag	8,148	205	0.90	8,071	77
Regression: Pool	7,848	187	0.82	8,071	-223
Regression: Pool + Grad + Attr	8,217	98	0.43	8,071	146
Regression: Pool +Lag + Grad + Attr	8,148	77	0.34	8,071	77
Regression: Pool +Lag + Attrition	8,087	82	0.36	8,071	16
Regression: Pool, Spring-to-Fall	8,004	93	0.41	8,071	-67

Std. Dev = 631

Setting Targets with Projected Values

- Our forecast is the average value of Y given the model.
- The forecast provides context for the target.
- Methods for setting targets based on the forecast:
  - Subjective
  - Upper Limit of Confidence Intervals
  - Arbitrary Percent Above Projected Value (e.g., 2% above the projection)

Fall 2012 Enrollment Projections: Brooklyn*

		Comparison and Inputs		Enrollment Target Work Area			
		Fall 2011 Preliminary	Spring 2012 Projected[1]	Multiplier	Projected Enrollment	Difference btw. projected and prior enrollment	
	Continuing Students[1]	N	N	**Spring to Fall Re-Enrollment Rate[1]**	N	N	%
	Regular Degree Undergraduates	8,071		1.058	9,000	929	11.5
	SEEK/CD Undergraduates	668		1.174	900	232	34.7
	Nondegree Undergraduates	121		0.872	90	- 31	- 25.6
	Degree Graduate Students	2,136		0.968	2,000	- 136	- 6.4
	Nondegree Graduate Students	400		1.000	400	0	0.0
	Total Continuing Students	**11,396**			**12,390**	**994**	**8.7**
	New Students[2]			**Multiplier**			
	Regular First-time Freshmen	883		0.98	1,100	217	24.6
	SEEK/CD First-time Freshmen	270		0.62	300	30	11.1
	Regular Undergraduate Re-admits	543		0.96	500	- 43	- 7.9
	SEEK/CD Undergraduate Re-admits	14		0.50	50	36	257.1
	Regular Transfers	1,677		0.95	2,200	523	31.2
	SEEK/CD Transfers	36		0.50	20	- 16	- 44.4
	New Nondegree Undergraduates	813		0.93	1,000	187	23.0
	New Graduate Students	996		0.99	1,100	104	0.0
	Graduate Re-admits	88		1.00	100	12	0.0
	New Nondegree Graduate Students	119		1.09	100	- 19	0.0
	Total New Students	**5,439**		--	**6,470**	**1,031**	**19.0**
	Total Enrollment - Headcount						
	Regular Degree Undergraduates	11,174			12,800	1,626	14.6
	SEEK/CD Degree Undergraudates	988			1,270	282	28.5
	Nondegree Undergraduates	934			1,090	156	16.7
	Degree Graduate Students	3,220			3,200	- 20	- 0.6
	Nondegree Graduate Students	519			500	- 19	0.0
	Total Undergraduates	**13,096**			**15,160**	**2,064**	**15.8**
	Total Graduate Students	**3,739**			**3,700**	**- 39**	**- 1.0**
	Total College - Headcount	**16,835**			**18,860**	**2,025**	**12.0**
	Total Enrollment - FTEs[3]			**FTE to Headcount Ratio**			
	Degree Undergraduates	10,008		0.823	11,578	1,570	15.7
	Nondegree Undergraduates	346		0.370	404	58	16.7
	Degree Graduate Students	1,936		0.601	1,924	- 12	- 0.6
	Nondegree Graduate Students	183		0.353	176	- 7	0.0
	Total Undergraduates	**10,354**		--	**10,838**	**484**	**4.7**
	Total Graduate Students	**2,119**		--	**2,035**	**- 84**	**- 4.0**
	Total College - FTEs	**12,473**		--	**12,873**	**400**	**3.2**

*NOTE: The figures provided by the Office of Institutional Research and Assessment in this worksheet show expected future enrollments if historical enrollment trends at the college continue. They are not targets or goals for enrollment.

[1]Continuing student enrollment based on projected spring enrollment and previous spring-to-fall re-enrollment rate (same student,same category).

[2]Fall 2012 new student enrollments are assumed to be equal to fall 2011 new student enrollments unless the multiplier is adjusted.

[3]Estimates for FTEs are based on the average number of FTEs per headcount for the prior fall.

Brooklyn College

Fall 2011 Enrollment Analysis

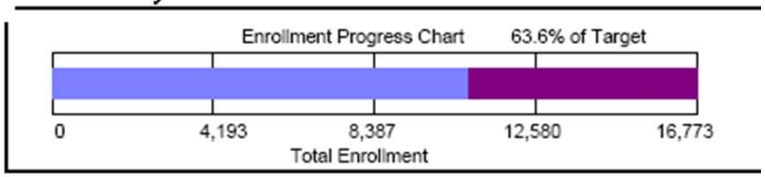
as of June 14, 2011

Targets established by Enrollment Management prior to enrollment period.

"Thermometer Chart" tracks progress toward that target.

Fall 2011 Enrollment Target

Enrollment Category	Fall 2011 target	as of 06/14/11	Balance
Total Enrollment	*16,773*	*10,672*	*-6,101*
Undergraduate Degree	11,540	8,854	-2,686
Graduate Degree	3,566	1,599	-1,967
Total Non-degree	1,667	219	-1,448



Current enrollment for key categories; comp with prior year (at this time and Form-A)

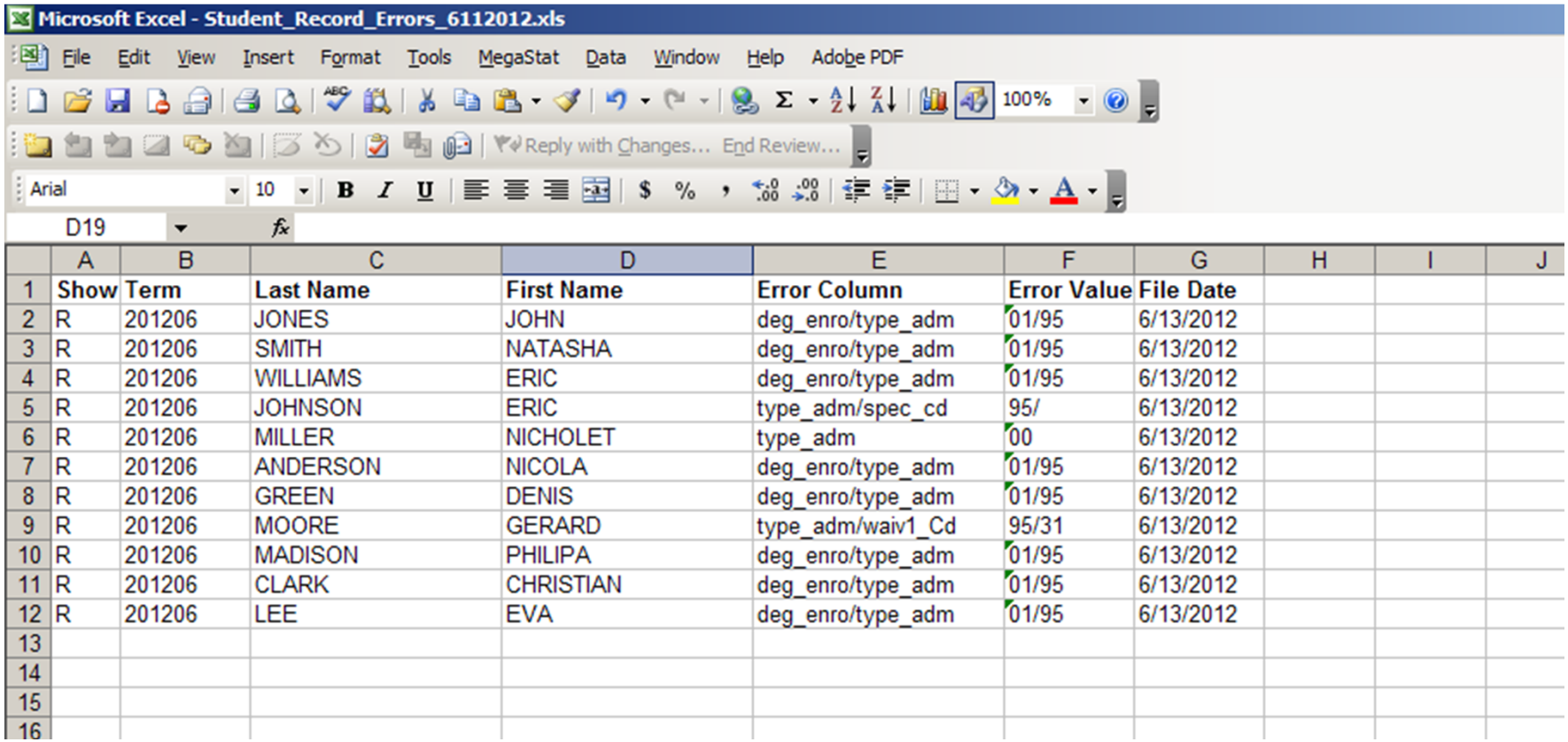
Fall 2011 Comparison to Fall 2010

Enrollment Category	Fall 2010 Form-A	Fall 2010 06/15/10	Fall 2011 06/14/11	Form-A to 06/14/11 Difference	Form-A to 06/14/11 % Change	06/15/10 to 06/14/11 Difference	06/15/10 to 06/14/11 % Change
Total Enrollment	*16,912*	*10,413*	*10,672*	*-6,240*	*-36.90*	*259*	*2.49*
Undergraduate Degree	11,740	8,405	8,854	-2,886	-24.58	449	5.34
Graduate Degree	3,505	1,749	1,599	-1,906	-54.38	-150	-8.58
Total Non-degree	1,667	259	219	-1,448	-86.86	-40	-15.44
Undergraduate	*12,804*	*8,576*	*8,997*	*-3,807*	*-29.73*	*421*	*4.91*
Entering Non-SEEK Freshmen	909	207	503	-406	-44.66	296	143.00
Entering SEEK Freshmen	248	0	0	-248	-100.00	0	n/a
Entering Transfers	1,428	265	363	-1,065	-74.58	98	36.98
Entering SEEK Transfers	21	0	8	-13	-61.90	8	n/a
Continuing Degree Non-SEEK	8,491	7,391	7,341	-1,150	-13.54	-50	-0.68
Continuing SEEK	643	542	639	-4	-0.62	97	17.90
Non-Degree	443	171	143	-300	-67.72	-28	-16.37
Non-Degree High School	621	0	0	-621	-100.00	0	n/a
Graduate	*4,108*	*1,837*	*1,675*	*-2,433*	*-59.23*	*-162*	*-8.82*
Entering Graduate	1,155	285	265	-890	-77.06	-20	-7.02
Continuing Degree	2,350	1,464	1,334	-1,016	-43.23	-130	-8.88
Non-Degree	603	88	76	-527	-87.40	-12	-13.64

Data Validation

- IR can identify anomalous, contradictory, or unlikely data entries and alert EM.
- Tracking reports sometimes draw attention to anomalies.
- EM can anticipate unexpected trends; ascertain which are real and which are due to data.
- In anticipation for PMP, IPEDS, etc.

Data Validation



	A	B	C	D	E	F	G	H	I	J
1	**Show**	**Term**	**Last Name**	**First Name**	**Error Column**	**Error Value**	**File Date**			
2	R	201206	JONES	JOHN	deg_enro/type_adm	01/95	6/13/2012			
3	R	201206	SMITH	NATASHA	deg_enro/type_adm	01/95	6/13/2012			
4	R	201206	WILLIAMS	ERIC	deg_enro/type_adm	01/95	6/13/2012			
5	R	201206	JOHNSON	ERIC	type_adm/spec_cd	95/	6/13/2012			
6	R	201206	MILLER	NICHOLET	type_adm	00	6/13/2012			
7	R	201206	ANDERSON	NICOLA	deg_enro/type_adm	01/95	6/13/2012			
8	R	201206	GREEN	DENIS	deg_enro/type_adm	01/95	6/13/2012			
9	R	201206	MOORE	GERARD	type_adm/waiv1_Cd	95/31	6/13/2012			
10	R	201206	MADISON	PHILIPA	deg_enro/type_adm	01/95	6/13/2012			
11	R	201206	CLARK	CHRISTIAN	deg_enro/type_adm	01/95	6/13/2012			
12	R	201206	LEE	EVA	deg_enro/type_adm	01/95	6/13/2012			
13										
14										
15										
16										

Policy Assessment

- Efforts to improve student outcomes can be assessed using tracking reports and targets.
- IR can help determine whether new policies (such as improved admissions qualifications) are having desired effects.
- IR can help assess effectiveness of programs to improve student outcomes on campus.

Policy Assessment

Brooklyn College Student Admissions Analysis

Fall 2011 First Time, Non-SEEK, Baccalaureate Degree-Seeking Freshmen

Mean SAT and CAA as of September 23, 2011

Current Fall 2011 Mean CAA and SAT					Fall 2010 By Comparison Date					Difference from 2010	
Report Date	CAA Valid Count	CAA Mean	SAT* Valid Count	SAT* Mean	Report Date	CAA Valid Count	CAA Mean	SAT* Valid Count	SAT* Mean	Variance, 2010-2011 Current CAA	Variance, 2010-2011 Current SAT*
April 21, 2011	202	89.4	192	1207	April 23, 2010	n/a	n/a	n/a	n/a	n/a	n/a
April 29, 2011	206	89.4	196	1211	April 30, 2010	2	91.9	2	1355	-2.5	-144
May 6, 2011	214	89.6	203	1218	May 7, 2010	73	93.3	72	1364	-3.7	-146
May 13, 2011	353	88.3	328	1177	May 14, 2010	82	93.3	81	1367	-5.0	-190
May 20, 2011	434	88.1	400	1165	May 21, 2010	86	93.3	85	1364	-5.2	-199
May 27, 2011	n/a	n/a	n/a	n/a	May 28, 2010	206	89.5	200	1208	n/a	n/a
June 3, 2011	446	88.2	412	1168	June 4, 2010	206	89.5	199	1208	-1.3	-40
June 10, 2011	446	88.2	412	1168	June 11, 2010	207	89.5	200	1207	-1.3	-39
June 17, 2011	551	87.8	512	1154	June 18, 2010	207	89.5	200	1207	-1.7	-53
June 24, 2011	598	87.6	555	1151	June 25, 2010	438	88.0	382	1144	-0.4	7
July 1, 2011	601	87.6	562	1150	July 2, 2010	551	87.6	531	1137	0.0	13
July 8, 2011	601	87.6	562	1150	July 9, 2010	553	87.6	533	1137	0.0	13
July 15, 2011	717	87.2	665	1135	July 16, 2010	755	86.8	702	1122	0.4	13
July 22, 2011	738	87.1	686	1139	July 23, 2010	806	86.6	750	1119	0.5	20
July 29, 2011	737	87.1	685	1139	July 30, 2010	804	86.6	748	1119	0.5	20
August 5, 2011	797	87.0	730	1136	August 6, 2010	865	86.5	796	1116	0.5	20
August 12, 2011	824	86.8	751	1133	August 13, 2010	913	86.5	821	1115	0.3	18
August 19, 2011	826	86.9	753	1134	August 20, 2010	916	86.5	837	1114	0.4	20
August 24, 2011	883	86.7	823	1126	August 27, 2010	918	86.5	840	1114	0.2	12

Risk Factors

- IR can help identify factors that predict student difficulty or attrition.
- Internal variables: satisfaction, grade performance, engagement, behaviors.
- External variables: work, family, economics.