Noel-Levitz

Enhancing Your Student Retention Initiatives with Predictive Modeling, featuring Clarkson University

March 26, 2013

Kathryn Johnson and Catherine Clark, Clarkson University
Lew Sanborne and Beth Richter, Noel-Levitz

Welcome!

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Today's presenters

Kathryn Johnson
Vice President for University Outreach and Student Affairs
Clarkson University

Catherine Clark
Associate Vice President Student Success Center

Lew Sanborne
Associate Vice President, Consulting Services
Noel-Levitz

Beth Richter
Associate Vice President, Retention Solutions
Noel-Levitz

Today's Agenda

1. **Welcome & Introductions**, Beth Richter
2. **The Value of Predictive Modeling in Adding Focus and Precision to Interventions,** Lew Sanborne
3. **Early Alert and Intervention Initiatives at Clarkson University,** Kathryn Johnson and Cathy Clark
4. **Other Campus' uses of the Student Retention Predictor to Inform Student Success Initiatives**, Lew Sanborne
5. **Discussion**

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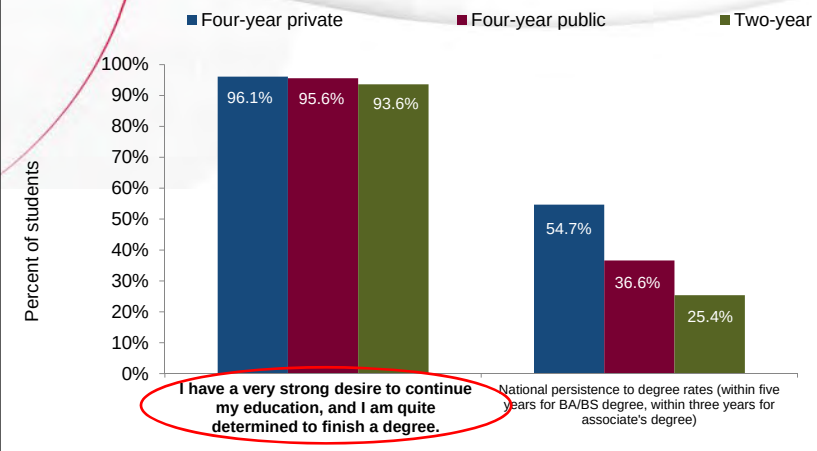
How can we sustain more students' initial determination to finish their degree through to actual graduation?



2013 National Freshman Attitudes Report

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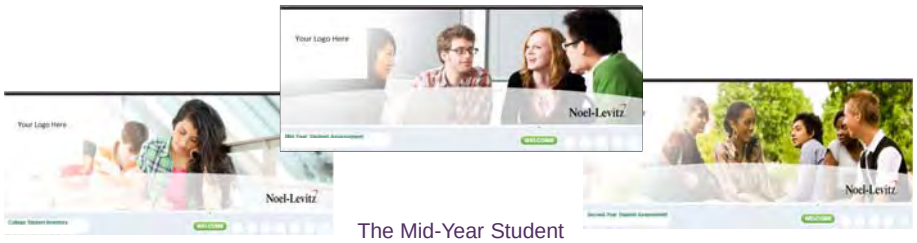
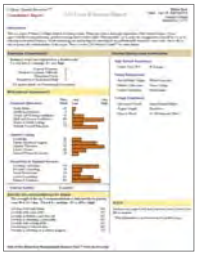
* This is a combined rate for two-year public and private institutions.
** This is the rate for two-year public institutions. The comparable degree completion rate for two-year private institutions is 50 percent.
[1] ACT, Inc., National College Retention and Persistence to Degree Rates (Iowa City: ACT, Inc. 2012), 7.

You're already guiding incoming students through their first- and second-years of college with timely motivational assessments.



The College Student Inventory™

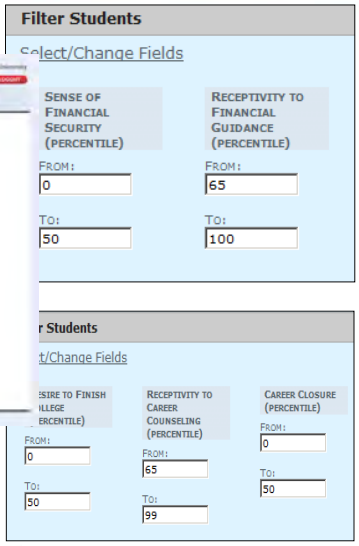


The Mid-Year Student Assessment™

The Second-Year Student Assessment™

www.noellevitz.com/RMSsamples

The Retention Data Center's customization, e-mail, and filtering capabilities add efficiency and effectiveness to your initiatives.



**The state-of-the-art, secure technology platform in which the inventories and reports are managed.*

What additional strategies and services assist students in their path toward college completion…

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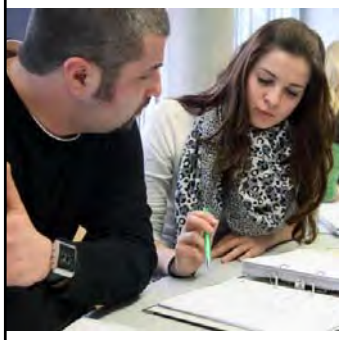

…while doing more with less?

Designed specifically to support increased completion rates, the **Retention Management System *Plus***™ (RMS Plus) provides a combination of:

- ✓ *analytics*
- ✓ *assessment tools*
- ✓ *a data dashboard*

that provide a foundation for **proactive interventions** that offset barriers to student success.

Elements of The Retention Management System *Plus*™

- College Student Inventory™
- **Student Retention Predictor™**
- Retention Data Center™
- Mid-Year Student Assessment™
- Second-Year Student Assessment™
- Retention Consulting/Training

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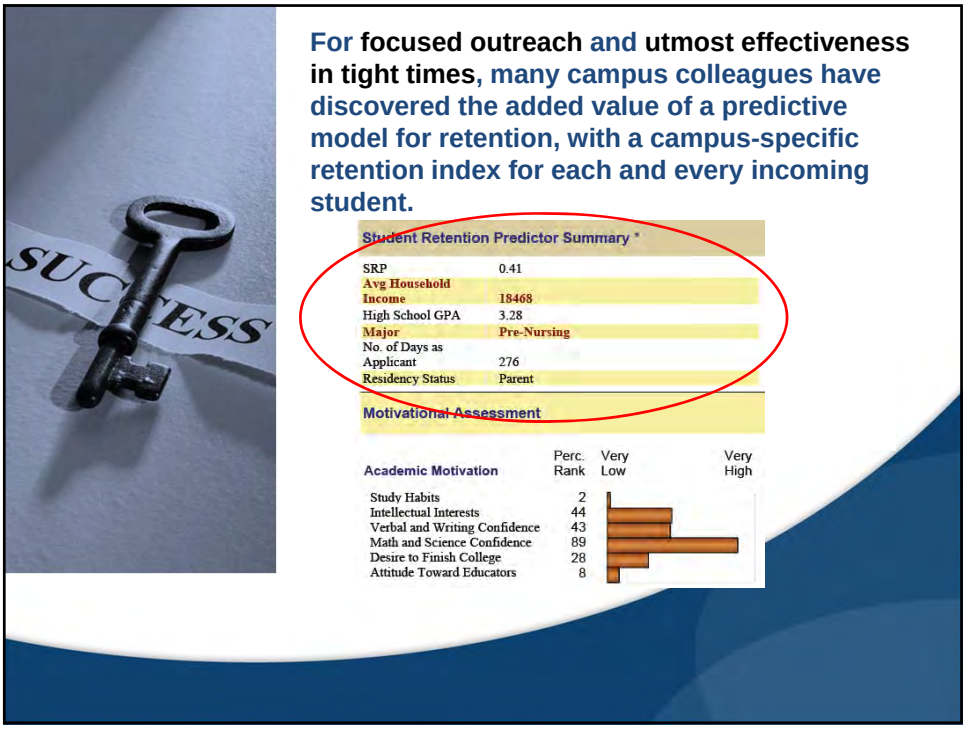

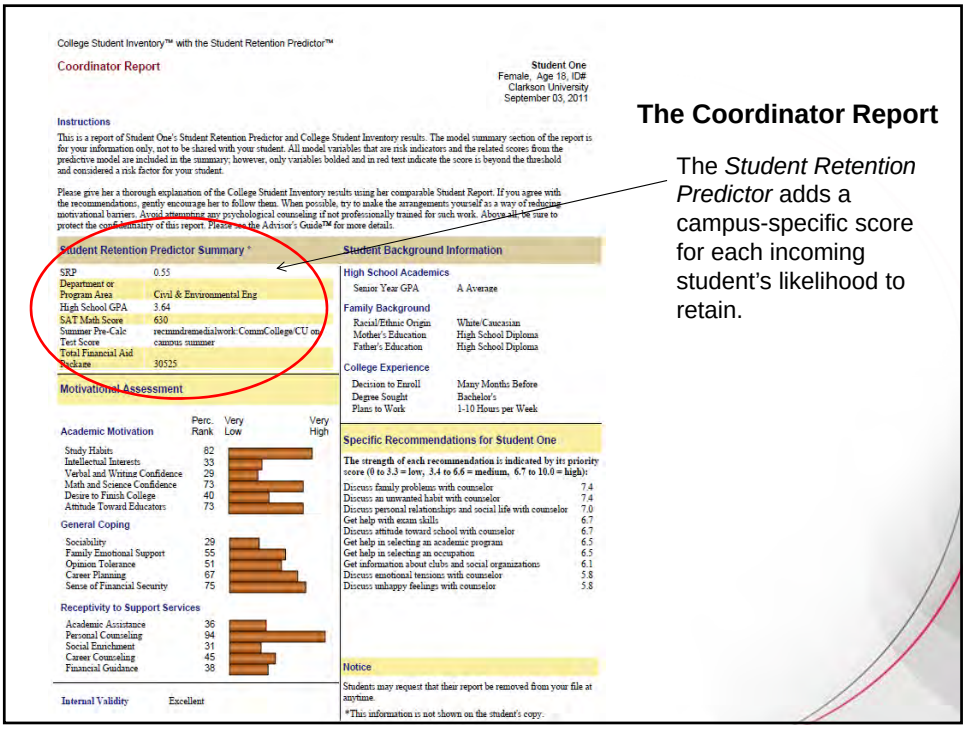

The Coordinator Report

The *Student Retention Predictor* adds a campus-specific score for each incoming student's likelihood to retain.

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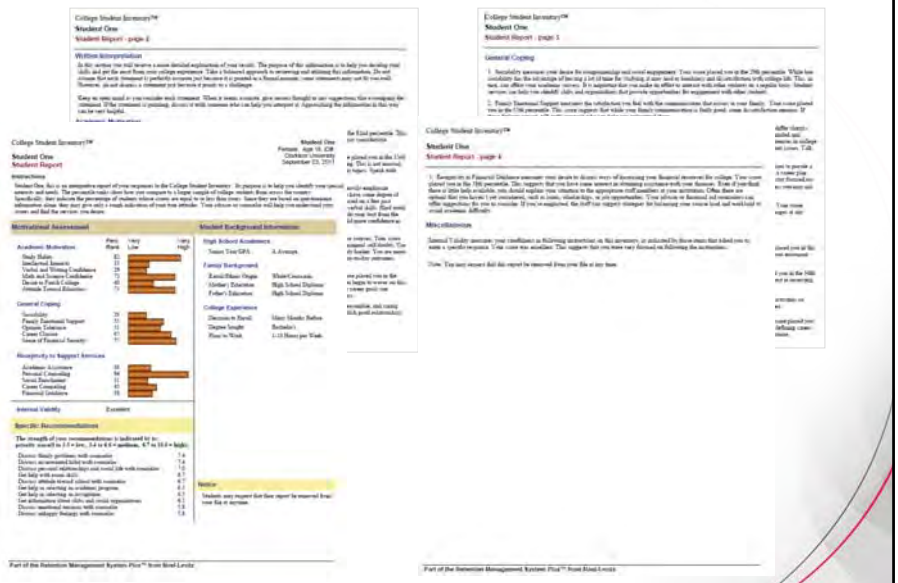
The Student Report



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The Value of Predictive Modeling in Adding Focus and Precision to Interventions

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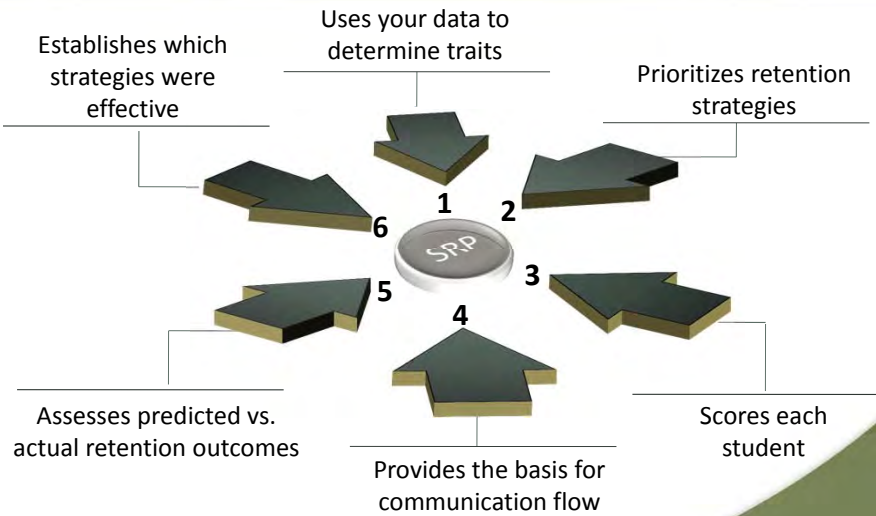
The power of predictive modeling

What Student Retention Predictor does for you



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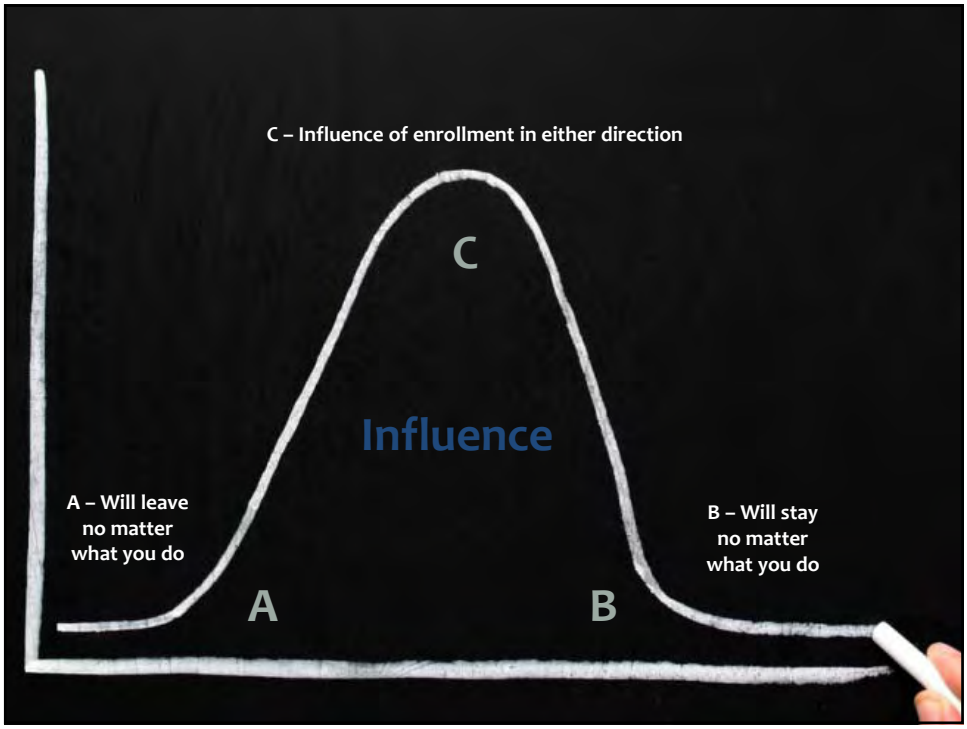

Data readiness and collection

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Data come from your admissions, financial aid, outcomes, and other enrolled student data

Noel-Levitz supplements your data with the most up-to-date, socio-economic variables to increase accuracy of the predictive model.

- 70 Personicx cluster definitions
- 21 Life Stage Cluster Groups
- Household income level
- Ethnic descriptions
- Appended data based on ZIP+4
- Distance from campus

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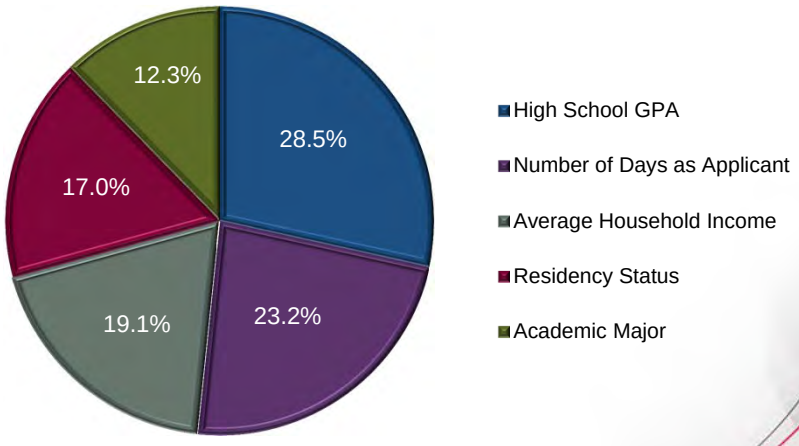
Your statistician will match student characteristics found to be predictive of retention

Sample Student Retention Predictor Model

Relative Strength of Model Variables



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Sample University historical risk thresholds for each variable

Model Variable	Risk Category	Risk Threshold	# of Students at Risk for This Variable	Retention Rate of At-Risk Students
High School GPA	Academic Preparation	Values below 3.08	469	62.9%
No. of Days as Applicant	Educational Aspiration	Values below 214.29 Days	369	61.5%
Avg. Household Income	Institutional	Values below $70,204.06	377	66.0%
Residency Status	Social Integration	Categories with persistence rates below 71.0%	315	64.4%
Academic Major	Educational Aspiration	Categories with persistence rates below 70.3%	569	67.1%

Historical risk factor analysis and relationships to retention

# of Risk Factors	Count	# Retained	Retention Rate	Avg. Model Score
0	333	284	85.3%	0.70
1	479	373	77.9%	0.56
2	373	262	70.2%	0.43
3	197	118	59.9%	0.29
4	57	25	43.9%	0.19
5	11	1	9.1%	0.09

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Variable diagnostic example for retention modeling

High School Rank (Equal Bins)

Rank	Value	Total Number	Number Retained	Retention Rate (%)	Lift
1	81.1 or Greater	603	496	82.26	1.22
2	66.6 to 81.0	661	460	69.59	1.03
3	50.1 to 66.5	631	410	64.98	0.96
4	Missing Variable	99	59	59.60	0.88
5	50.0 or Less	633	345	54.50	0.81
Total		**2627**	**1770**	**67.38**	**1.00**

Your students are then assigned a model score based on how likely they are to retain

Sheila Smith	**1**	**Retained**
Kate Black	**.99**	**Highly Likely**
Mike Miller	**.85**	**Highly Likely**
Dave Hamilton	**.72**	**Likely**
Jerrica Zwick	**.68**	**Likely**
Angie Mabeus	**.46**	**Somewhat Likely**
Audrey Keppler	**.41**	**Somewhat Likely**
Brian Schuler	**.21**	**Less Likely**
Jordan Clouser	**.17**	**Less Likely**
Lew Sanborne	**0**	**Not Likely**

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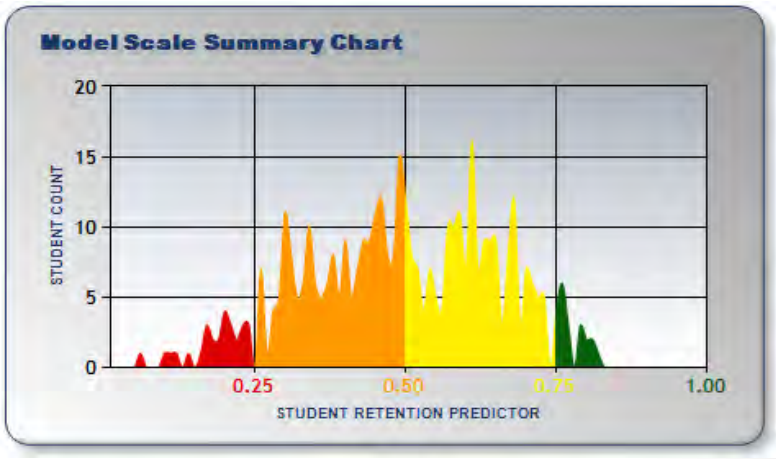
Strategizing from the cohort to the individual...

and the groups in between

- Residence halls
- Majors
- FYE sections
- Advisor groups

Risk distribution fall 2012
Sample University class



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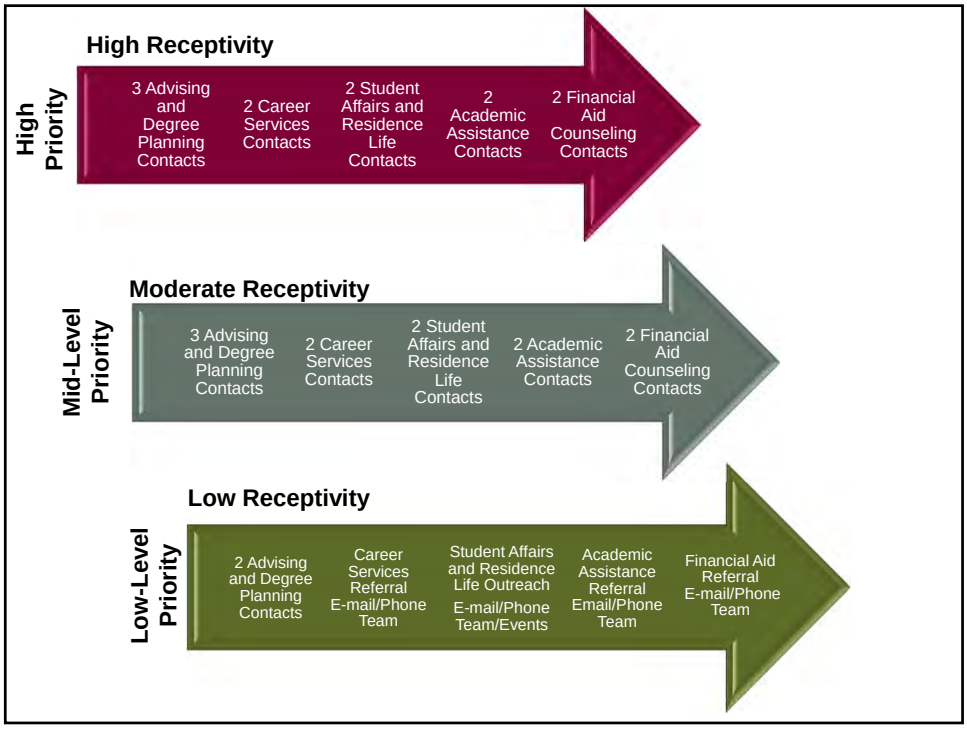
Cohort prioritization based upon risk distribution of 513 students

Retention Score	High Priority	Mid-Level Priority	Low-Level Priority
0-.25			35
.26-.35		61	
.36-.50	134		
.51-.65	140		
.66-.75		96	
.76-1.0	Receptivity to Assistance and Desire to Transfer	Receptivity to Assistance and Desire to Transfer	47



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Prioritization for advisor with 90 advisees

Retention Score	High Priority	Mid-Level Priority	Low-Level Priority
0-.25			5
.26-.35		12	
.36-.50	33		
.51-.65	19		
.66-.75		18	
.76-1.0	Receptivity to Assistance and Desire to Transfer	Receptivity to Assistance and Desire to Transfer	3

FYE prioritization developed for a section of 20

Retention Score	High Priority	Mid-Level Priority	Low-Level Priority
0-.25			2
.26-.35		3	
.36-.50	5		
.51-.65	6		
.66-.75		2	
.76-1.0	Receptivity to Assistance and Desire to Transfer	Receptivity to Assistance and Desire to Transfer	2

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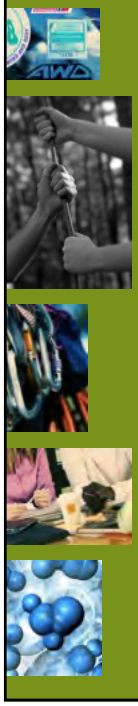
Today's featured case study in student success

Clarkson University

- Kathryn Johnson
  Vice President for University Outreach and Student Affairs
- Catherine Clark
  Associate Vice President Student Success Center

Clarkson UNIVERSITY defy convention



defy convention.

Early Alert and Intervention Initiatives

Clarkson UNIVERSITY defy convention

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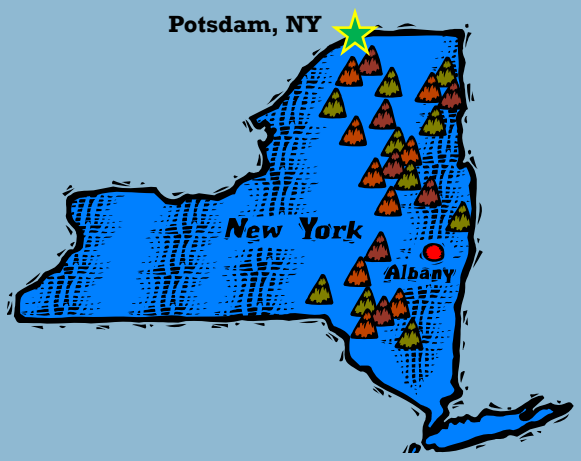
Where is Clarkson?

Clarkson UNIVERSITY defy convention



N=1

Clarkson UNIVERSITY defy convention

- Private, rural residential campus
- Research-driven
- 2800 undergraduates
- 570 graduate students
- 60 percent engineering
- 20 percent business
- 20 percent arts and sciences
- 12 percent minority enrollment

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Our Retention "Problem"

- Development of the retention plan and strategic plan coincided.
  - ❖ Clarkson's retention rate was not where we wanted it to be in contrast to our competing schools.

- We *wanted to rethink what retention meant to us.*
  - ❖ Revisited our retention goals and strategies

Retention Rate:

86% Where we were when we started (2009)

88% Where we were fall 2012

90% or better–Our goal by 2014

Our Retention Planning Retreat

Participants in the retreat:

- The Retention Committee
- Advisors
- Department Chairs
- Deans
- Provost
- Student Affairs Leaders

Retreat included working sessions that led to these conclusions:

- First-year students are not as **engaged** as we thought!
- Students want "**high touch**," as they experience in the School of Business Model.
- We had too many **advising models** on one campus.
- To impact first-year student success, **early intervention** was necessary.

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Priorities from the retreat led to development of action plans:

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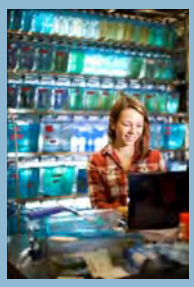
- Advising models that reflect best practice
  Champion for this initiative: Provost
- Curricular design that fosters first-year student success
  Champion for this initiative: Associate Dean of Engineering and Director of Freshman Physics
- Intervention Strategies for at-risk students
  Champion for this initiative: Associate Vice President, Student Success Center
- Data collection and analysis
  Champion for this initiative: Dean of Arts and Sciences



Report from First Year Council on Academic Program Initiatives

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The First Year Council was formed when then Provost Tom Young accepted the recommendation of the action plan for Strategy No. 2 of the University Retention Plan to form a cross-school group to implement the strategy. This group was formed to address *academic issues* that impact retention of our first year students especially in the STEM disciplines, which represent somewhere close to 85% of our incoming class each year.

The roots of this can easily be traced back to various retention and transition studies, by Noel-Levitz and others. Three of the major factors impacting student persistence were identified by the Noel-Levitz study as Clarkson's Mathematics Readiness (Diagnostic) Test, the math SAT scores, and High School GPA. These are highly correlated but all featured in the best five parameter model according to the analysis. Among these indicators, the Mathematics Readiness Test is the strongest single indicator, as is borne out by a number of local studies, and publications in the pedagogical literature, based on mathematics and science preparation[1,2,3].

A further finding of these studies is that corrective actions can be very effective.

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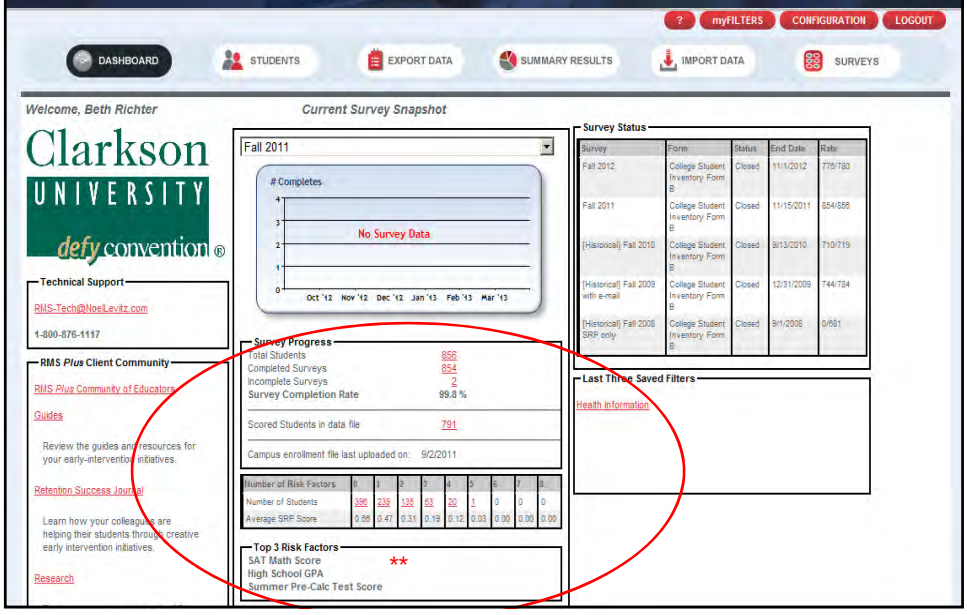
One size didn't fit all

75 percent of our students experienced this rigor during their first semester

- Calculus 1
- Chemistry 1
- Physics 1
- Clarkson Seminar

Under-preparedness with math skills was apparent.

Top risk factors revealed our challenge with math preparedness



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Additional strategies for student success

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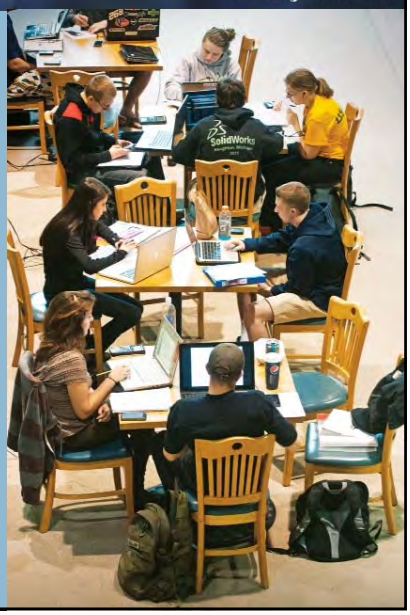
New methods of placement and intervention:

- **Proactively place all incoming students into co-calculus class, avoiding the previous "fail in" method.**
  - Removing the psychological punishment effect
  - Replacing it with a positive message of success
- **Based on FCI (physics) and pre-calculus (math) placement exams**
  - Physics 1 was delayed for students with P- and M- scores.
  - Engineering and Society (ES 110) replaced Physics 1 with a hands-on design project course.



New sequence with delayed science course strengthens chances of success

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"This new structure allowed a full semester for students to strengthen math skills in order to have a good chance at success."

Catherine Clark
Associate Vice President, Student Success Center

Fall 1	Spring 1	Fall 2
MA131 Calculus I (& MA041 Co-Calculus)	MA132 Calculus II	MA231 Calculus III or MA232 Differential Equations
ES110 Intro. Engineering Design	PH131 Physics I	PH132 Physics II
CM131 Chemistry I	CM132 Chemistry II or BY160 Biology	Dependent on major
UNIV190 Clarkson Seminar	Knowledge Area course & ES100 Intro to Eng. Use of Computer	

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Results! Fewer students dismissed at the end of the first semester

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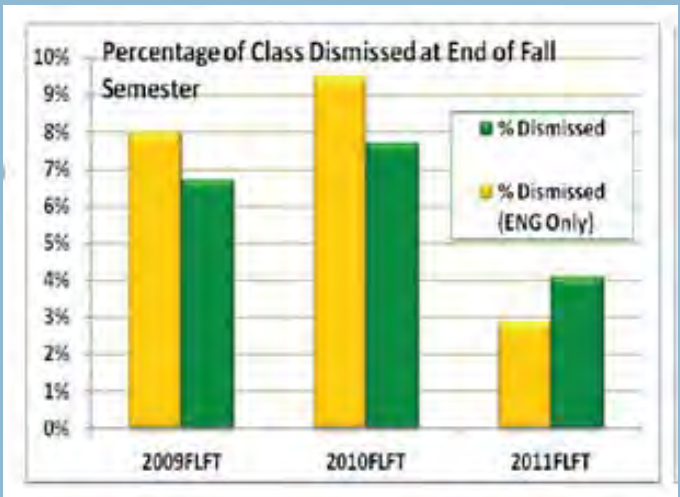

Yellow: Engineering-specific
Green: All students

Incoming Class 2013/14 Retention Strategies Underway

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- **New Student Retention Predictor Model**
  - Running a new model to determine which risk factors surface now that curricular considerations have been addressed.
- **Intervention strategies for at-risk students**
  - Pre-enrollment through the sophomore year
  - Integrate CSI and Student Retention Predictor data across the university to identify all "at-risk" students for proactive connections to resources.
- **"Project Success" for students in academic jeopardy**
  - Continue intervention and academic recovery plan
    - » In past, 25% students in this project graduated;
    - » Now, a 50% success rate for persistence for this cohort.

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CU Connect Mentor Program

Guide, Connect, Support, Network!

Every first-year student:

- Is assigned a staff mentor;
- Completes the CSI as an assignment in First-Year Seminar;
- Is introduced to the CU Connect initiative.

All volunteers are trained on interpreting the CSI and mentoring.

- Each year, the number of colleagues involved in CU Connects grows!
  - Fall 2010 – 67 staff volunteers
  - Fall 2011 – 86 staff/faculty volunteers
  - Fall 2012 – 80 staff/faculty/advisor/ graduate student volunteers

CU CONNECT

Freshman Mentoring Program

Staff Handbook

The goal of CU CONNECT is for every first year student to have an opportunity to connect in a meaningful way with a CU staff member providing them with guidance and support, networking opportunities, and help with the transition to college.

Thank you for volunteering to be a mentor in CU CONNECT.

Clarkson University's first-year to sophomore retention rate is currently 88%. With a goal of 92% established for 2014, the University is embarking on several initiatives, including CU CONNECT, to positively impact first-year success and retention.

CONTACT US

CU Connect: Mentor program to welcome students to the community

Clarkson UNIVERSITY *defy convention*

Meet & Connect ⇨ first two weeks of classes

Support: ⇨ mid-semester

Closure: ⇨ end of semester

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How we used our Student Retention Predictor scores:

- Prioritized Outreach
- Intensified Contacts
- Planning

- ✓ Mentors utilized student-specific retention index score to *prioritize their initial meetings* with students;
- ✓ Mentors increased *number of contacts* with those students who had a low score (0 - .44) on their Clarkson-specific retention index (Student Retention Predictor score).
- ✓ Department Chairs utilized risk scores to ask advisors to meet with students prior to course enrollment for *early intervention contact*.

Next steps…Fall 2014

- Assign the online CSI to be completed in the summer by the incoming class;
- Utilize SRP/CSI data to make strategic mentor assignments;
- Initial welcome and outreach can take place prior to their first day on campus.

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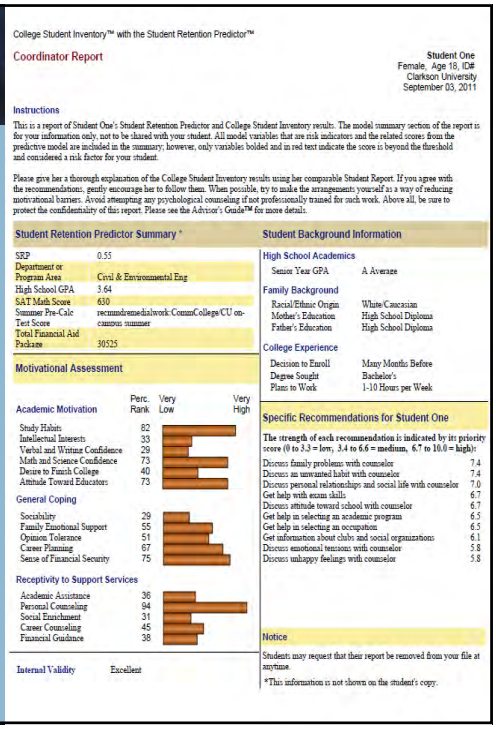
Case Study: Student's Success Story

Retention index score: 0.55

- ✓ Low scores on CSI General Coping scales (confidence, family support);
- ✓ High receptivity to personal counseling.

CU Connects Intervention:

- **Mentor**: Dean of Students
- **First semester**
  - ✓ Student undergoing personal stress
  - ✓ Finished the semester, 2.7 GPA
- **Second semester:**
  - ✓ Student withdrew from university
  - ✓ Student Success Center reached out
  - ✓ Developed plan to return
- **Fall 2012:**
  - ✓ Re-enrolled
  - ✓ Changed major
  - ✓ Finished semester with 3.6 GPA
- **Spring 2013:**
  - ✓ All Satisfactory (S's) at midterm and reports that she is very happy!
  - ✓ Re-enrolling and planning to graduate from Clarkson University.



College Student Inventory™ with the Student Retention Predictor™

Coordinator Report

Student One
Female, Age 18, ID#
Clarkson University
September 03, 2011

Instructions

This is a report of Student One's Student Retention Predictor and College Student Inventory results. The model summary section of the report is for your information only, not to be shared with your student. All model variables that are risk indicators and the related scores from the predictive model are included in the summary; however, only variables bolded and in red text indicate the score is beyond the threshold and considered a risk factor for your student.

Please give her a thorough explanation of the College Student Inventory results using her comparable Student Report. If you agree with the recommendations, gently encourage her to follow them. When possible, try to make the arrangements yourself as a way of reducing motivational barriers. Avoid attempting any psychological counseling if not professionally trained for such work. Above all, be sure to protect the confidentiality of this report. Please see the Advisor's Guide™ for more details.

Student Retention Predictor Summary *

SRP	0.55
Department or Program Area	Civil & Environmental Eng
High School GPA	3.64
SAT Math Score	630
Summer Pre-Calc Test Score	recmndremedialwork:CommCollege/CU on-campus summer
Total Financial Aid Package	30525

Student Background Information

High School Academics
Senior Year GPA: A Average

Family Background
Racial/Ethnic Origin: White/Caucasian
Mother's Education: High School Diploma
Father's Education: High School Diploma

College Experience
Decision to Enroll: Many Months Before
Degree Sought: Bachelor's
Plans to Work: 1-10 Hours per Week

Motivational Assessment

Academic Motivation	Perc. Rank	Very Low — Very High
Study Habits	82	
Intellectual Interests	33	
Verbal and Written Confidence	29	
Math and Science Confidence	75	
Desire to Finish College	40	
Attitude Toward Educators	73	
General Coping		
Sociability	29	
Family Emotional Support	55	
Opinion Tolerance	51	
Career Planning	67	
Sense of Financial Security	75	
Receptivity to Support Services		
Academic Assistance	36	
Personal Counseling	94	
Social Enrichment	31	
Career Counseling	45	
Financial Guidance	38	

Internal Validity: Excellent

Specific Recommendations for Student One

The strength of each recommendation is indicated by its priority score (0 to 3.3 = low; 3.4 to 6.6 = medium; 6.7 to 10.0 = high):

Discuss family problems with counselor	7.4
Discuss an unwanted habit with counselor	7.4
Discuss personal relationships and social life with counselor	7.0
Get help with exam skills	6.7
Discuss attitude toward school with counselor	6.7
Get help in selecting an academic program	6.5
Get help in selecting an occupation	6.5
Get information about clubs and social organizations	6.1
Discuss emotional tensions with counselor	5.8
Discuss unhappy feelings with counselor	5.8

Notice

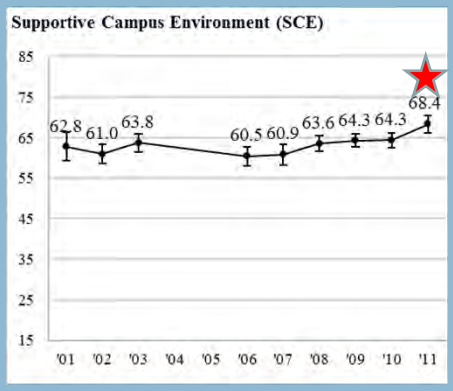
Student may request that their report be removed from your file at anytime.

*This information is not shown on the student's copy.

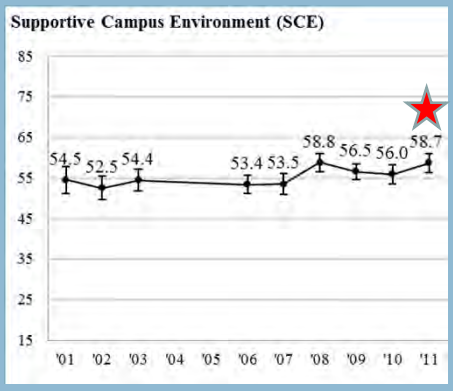
Supportive Campus Environment: Clarkson's multi-year benchmark

Clarkson UNIVERSITY defy convention

First-Year Students: 68.4



Seniors: 58.7



Results!

CU Connect program, with the CSI, demonstrates higher level of student satisfaction with supportive campus environment.

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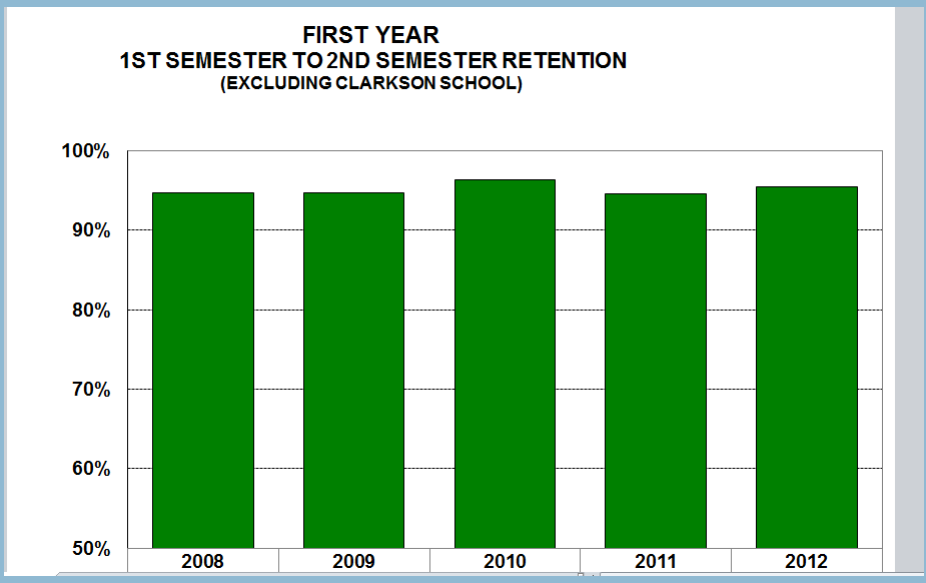
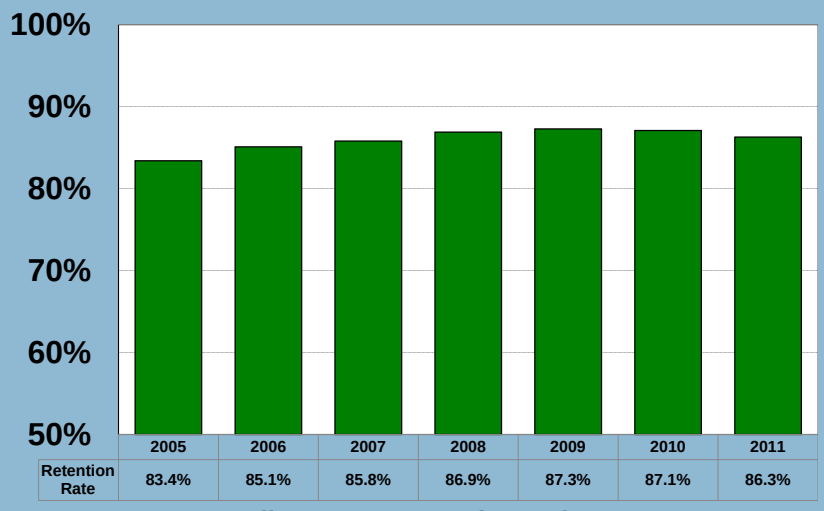
Clarkson's improved retention rates

Clarkson UNIVERSITY defy convention



First-Year to Second-Year Retention Rates

Clarkson UNIVERSITY defy convention



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Additional positive outcomes from use of the Student Retention Predictor and related initiatives:

Clarkson UNIVERSITY *defy* convention

- Delivering our message to students
  - High touch climate
  - In support of student success
- Curricular impact to foster persistence and progression
- Campus-wide approach to retention and graduation

Everyone engaged, even the President!

4 Other Campus' uses of the Student Retention Predictor to Inform Student Success Initiatives

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Four-year public: Date of application

No. of Days as Applicant (Equal Bins)

Rank	Value	Total Number	Number Retained	Retention Rate (%)	Lift
1	ZZ	1	1	100.00	1.48
2	273 or Greater	625	463	74.08	1.10
3	218 to 272	681	481	70.63	1.05
4	175 to 217	664	444	66.87	0.99
5	174 or Less	656	381	58.08	0.86
Total		**2627**	**1770**	**67.38**	**1.00**

Four-year public: Date of application, additional detail

Application Month - 2010

Rank	Value	Total Number	Number Retained	Retention Rate (%)	Lift
1	5/1/2009	1	1	100.0%	1.496
2	8/1/2009	1	1	100.0%	1.496
3	9/1/2009	62	48	77.4%	1.158
4	10/1/2009	112	84	75.0%	1.122
5	11/1/2009	167	119	71.3%	1.066
6	12/1/2009	167	115	68.9%	1.030
7	1/1/2010	263	181	68.8%	1.029
8	2/1/2010	277	190	68.6%	1.026
9	3/1/2010	152	94	61.8%	0.925
10	4/1/2010	93	51	54.8%	0.820
11	5/1/2010	72	38	52.8%	0.789
12	6/1/2010	30	16	53.3%	0.798
13	7/1/2010	27	17	63.0%	0.942
14	8/1/2010	6	1	16.7%	0.249
Total		**1430**	**956**	**66.9%**	**1.000**

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Four-year public: Interventions and outcomes

- Hard July 30 deadline (moving earlier in 2013)
- Improving cohort profile (retention data feeding admissions policy decisions);
- Improved staff morale;
- Improving faculty perception of readiness;
- Anticipated retention increase.

Cohort Year	2005	2006	2007	2008	2009	2010	2011
Retention Rate	61.4%	62.4%	65.2%	66.0%	67.6%	66.3%	67.3%

Two-year public: Learning communities

Part-time Student Flag

Rank	Value	Total Number	Number Retained	Retention Rate (%)	Lift
1	0	1119	554	49.51	1.05
2	1	379	149	39.31	0.84
Total		**1498**	**703**	**46.93**	**1.00**

Student Age (Equal Bins)

Rank	Value	Total Number	Number Retained	Retention Rate (%)	Lift
1	18.0 or Less	476	265	55.67	1.19
2	28.1 or Greater	348	180	51.72	1.10
3	18.1 to 20.0	308	120	38.96	0.83
4	20.1 to 28.0	365	138	37.81	0.81
5	ZZ	1	0	0.00	0.00
Total		**1498**	**703**	**46.93**	**1.00**

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Two-year public: Outcomes

For Learning Community participants

- Improved academic performance as measured by GPA overall, and in LC sections;
- Higher first to second term persistence compared to students identified as at-risk but non-participants;
- Increased buy-in for retention initiatives

Four-year private: Quantitative readiness

ACT Math Score

Rank	Value	Total Number	Number Retained	Retention Rate (%)	Lift
1	25 or Greater	178	147	82.58	1.18
2	21 to 24	194	143	73.71	1.05
3	Missing Values	48	33	68.75	0.98
4	20 or Less	218	124	56.88	0.81
Total		**638**	**447**	**70.06**	**1.00**

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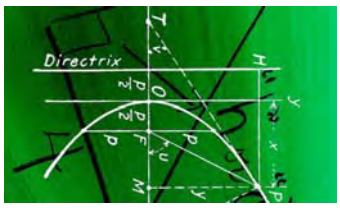
Four-year private, interventions & outcomes

- Redesign entering math sequence
- Introduce math placement test
- Math ACT drops out of the model;
- Overall retention improvements;
- Increased investments in student success and retention.



Four-year private, Outcomes

ACT Math Score

	Rank	Value	Total Number	Number Retained	Retention Rate (%)	Lift
	1	25 or Greater	178	147	82.58	1.18
	2	21 to 24	194	143	73.71	1.05
	3	Missing Values	48	33	68.75	0.98
	4	20 or Less	218	124	56.88	0.81
PRE:	**Total**		**638**	**447**	**70.06**	**1.00**

	Rank	Value	Total Number	Number Retained	Retention Rate (%)	Lift
	1	25.1 or Greater	284	241	84.86	1.17
	2	23.1 to 25.0	239	187	78.24	1.08
	3	19.1 to 23.0	325	225	69.23	0.96
	4	Missing Values	66	43	65.15	0.90
	5	19.0 or Less	344	215	62.50	0.86
POST:	**Total**		**1258**	**911**	**72.42**	**1.00**

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Four-year private: Residence hall outreach

Campus Visit Flag

Rank	Value	Description	Total Number	Number Retained	Retention Rate (%)	Lift
1	1	Visited Campus	1026	847	82.55	1.03
2	0	Did Not Visit Campus	418	313	74.88	0.93
Total			**1444**	**1160**	**80.33**	**1.00**

Gender

Rank	Value	Description	Total Number	Number Retained	Retention Rate (%)	Lift
1	1	Male	579	482	83.25	1.04
2	0	Female	865	678	78.38	0.98
Total			**1444**	**1160**	**80.33**	**1.00**

Four-year private: Interventions

- Peer mentors in some of the first year general education sections,
- New physical space for the Academic Success Center,
- Outreach to female freshmen with multiple risk flags who don't have an obvious connection to campus (athletics, employment, etc.),
- Development of training materials for supervisors of student employees,
- Review of retention warning signs, etc.,
- Partial communications audit complete and have identified at least one new communication for freshmen.

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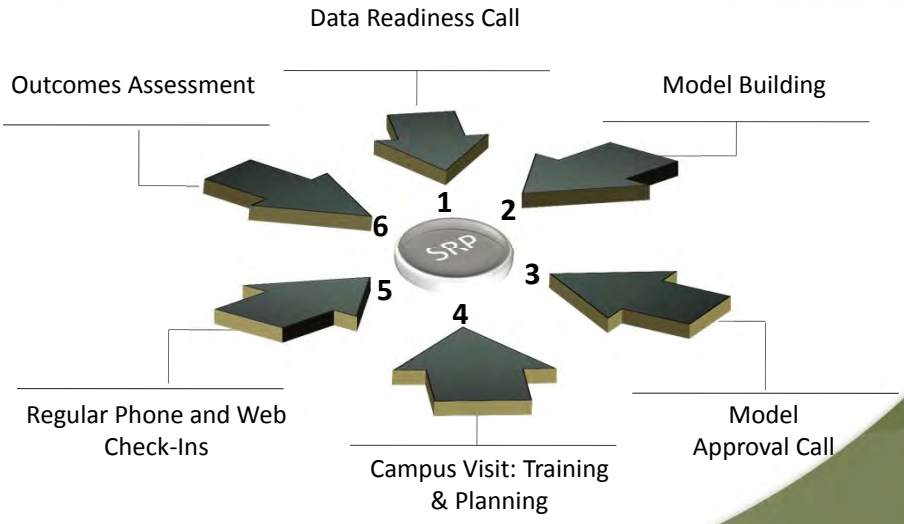
Steps in the Process



Benefitting yet this year: Recommended implementation timeline

- Gather your team for decision making yet this spring.
- Formalize your contract with Noel-Levitz by contacting beth-richter@noellevitz.com.
- Engage in a subsequent data-readiness call with Noel-Levitz.
- Build the model yet this spring to be ready for use in the 2013/14 academic year.
- *Note*: This timeline would allow you to have a *campus-specific retention index* applied to each incoming student's CSI report yet this season.

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A focus on college completion initiatives

- Persistence
- Progression
- Retention
- Completion
- Graduation

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