

## Enhancing First Year Retention:

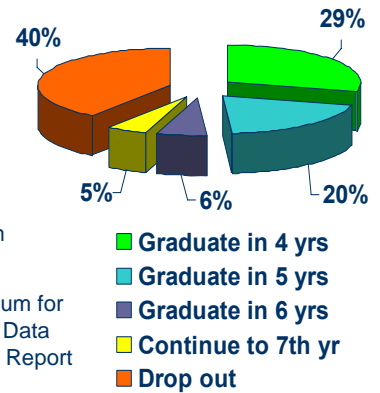
Focus on What the Office of Institutional Research Can Do to Connect the Student Success and Campus Strategic Retention Initiatives

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Office of Institutional Research  
March 1, 2006

## What are the national data indicating about student success?

◆ **Retention** – Students continue enrollment at the institution

◆ **Attrition** – Students dropped out of the institution



2002-2003 Consortium for Student Retention Data Exchange (CSRDE) Report

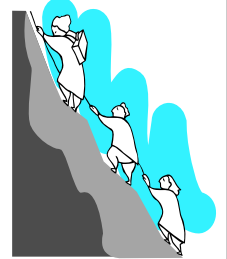
## Noel-Levitz College Student Inventory (CSI) The Early-Intervention Strategy

- ◆ As part of the State Board of Higher Education's accountability measure, all 11 State institutions in North Dakota are administering incoming first-time full-time students with CSI during the summer orientation.
- ◆ The CSI is a **100-item** instrument using a Likert response scale designed to identify the needs of students in a) Academic Motivation, b) General Coping Skills, and c) Receptivity to Support Services.
- ◆ Noel Levitz provides 3 separate reports (Student Report, Advisor Report, and Overall Institutional Report).
- ◆ Connect student with advisor, refer student to appropriate resources, and follow up.
- ◆ OIR disseminates the research findings to the college representatives at the **annual CSI strategy meeting**.

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## Definitions of the Subgroup Variables

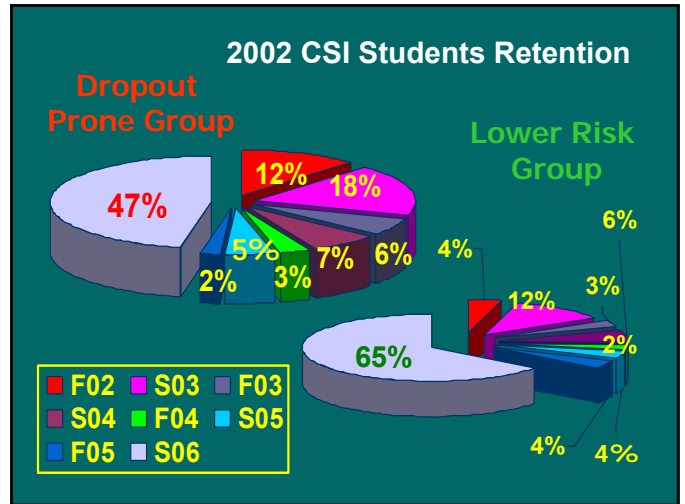
- ◆ Noel Levitz constructs a **Dropout Proneness** scale which is designed to measure a student's overall inclination to drop out of college before completing a degree.
- ◆ **First-generation** college students are whose parents had not earned a bachelor's degree.



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### Our Beginning Freshmen were ....

Background of Freshmen	2001 Fall	2002 Fall	2003 Fall	2004 Fall	2005 Fall
Number	1,947	1,987	2,194	2,169	1,884
ACT	23.1	22.9	22.9	22.7	23.4
HS GPA	3.34	3.38	3.36	3.36	3.41
First-To-Second Year Retention Rate	76%	75%	75%	75%	NA
College Student Inventory		2002 CSI	2003 CSI	2004 CSI	2005 CSI
Number of CSI participants		1,722 (51% M)	1,998 (51% M)	1,687 (54% M)	1,481 (55% M)
First-Generation participants		667 (39%)	787 (39%)	670 (40%)	571 (39%)
Number of Dropout Prone participants		288 (17%)	394 (20%)	421 (25%)	278 (19%)



2002 CSI Cohort	All	Gender		Dropout Prone		First Generation	
		Male	Female	Yes	No	Yes	No
F 2002	1,676	844	832	280	1,396	650	1,026
S 2003	1,590	799	791	247	1,343	614	976
F 2003 <i>(1<sup>st</sup> yr retention)</i>	1,370 <i>(82%)</i>	684 <i>(81%)</i>	686 <i>(82%)</i>	197 <i>(70%)</i>	1,173 <i>(84%)</i>	529 <i>(81%)</i>	841 <i>(82%)</i>
S 2004	1,311	658	653	179	1,132	504	807
F 2004 <i>(2<sup>nd</sup> yr retention)</i>	1,208 <i>(72%)</i>	614 <i>(73%)</i>	594 <i>(71%)</i>	160 <i>(57%)</i>	1,048 <i>(75%)</i>	455 <i>(70%)</i>	753 <i>(73%)</i>
S 2005	1,171	596	575	150	1,021	435	736
F 2005 <i>(3<sup>rd</sup> yr retention)</i>	1,100 <i>(66%)</i>	566 <i>(67%)</i>	534 <i>(64%)</i>	137 <i>(49%)</i>	963 <i>(69%)</i>	395 <i>(61%)</i>	705 <i>(69%)</i>
S 2006	1,043	540	503	132	911	377	666

2002 CSI Cohort (F2002)	All		Male		Female	
	Male	Female	Dropout prone	Low Risk	Dropout prone	Low Risk
	N=844	N=832	N=170	N=674	N=110	N=722
A & S	22%	33%	19%	81%	9%	91%
BPA	22%	15%	19%	81%	12%	88%
JDOSAS	27%	4%	11%	89%	19%	81%
EHD	5%	16%	38%	62%	17%	83%
ENGR	10%	2%	13%	87%	13%	87%
MED	3%	7%	27%	73%	3%	97%
NURS	1%	13%	0%	100%	5%	95%
SAS	10%	10%	50%	50%	23%	77%

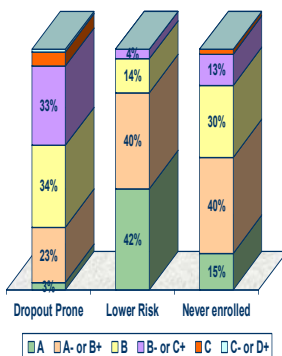
2002 CSI Cohort	F2002	1st yr GPA	F2003	F2004	F2005	S2006
A & S	461	2.98	391	352	320	328
BPA	306	2.94	254	228	214	205
JDOSAS	261	3.03	219	204	189	183
EHD	169	2.91	155	141	125	124
ENGR	101	3.11	80	72	65	58
MED	85	2.97	68	62	56	53
NURS	122	3.27	102	89	79	72
SAS	171	2.56	101	60	52	20
Total	1,676		1,370	1,208	1,100	1043



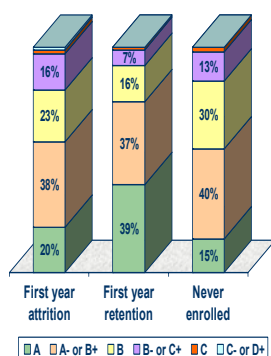
### Self-reported High School Senior Year Grade

Senior Grade	2005 CSI	2004 CSI	2003 CSI	2002 CSI
A	34%	31%	32%	35%
B+	38%	37%	37%	37%
B	17%	19%	17%	18%
C+	9%	11%	11%	9%
C	2%	1%	2%	1%
D+ or D	0%	1%	0%	0%

### Senior Year Grade and College Dropout Proneness

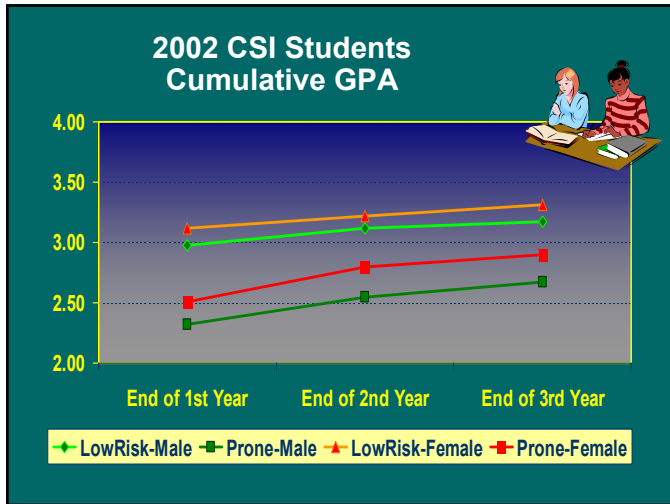


### Senior Year Grade and College First Year Retention



### First-Year Retention of 2002 CSI students

Persistence at UND (1,722 students participated at 2002 CSI)	Students with High Dropout Proneness (N = 288)			Students with Lower Dropout Proneness (N = 1,434)		
	M	F	All	M	F	All
Fall 2002 (N=1,676)	170	110	280	674	722	1396
Persisted to 2 <sup>nd</sup> year (%)	69%	72%	70%	84%	84%	84%
Not returning 2 <sup>nd</sup> year (%)	31%	28%	30%	16%	16%	16%
Left with a Cum GPA < 2.00	53%	55%	53%	31%	27%	29%
Left with a Cum GPA 2.00-2.99	38%	27%	34%	33%	37%	35%
Left with a Cum GPA 3.00-3.99	9%	18%	13%	32%	33%	33%
Left UND with a GPA = 4.00	0%	0%	0%	4%	2%	3%



### Factor Analysis

- ◆ Factor analysis is a statistical tool that can be used to identify a small number of factors that represent relationships among many interrelated questions in a survey.
- ◆ In this study, using SPSS, data reduction was performed with a factor analysis to find inter-relationships among the 85 questions.
- ◆ A varimax rotation was conducted and a principal components analysis showed 16 factors with eigenvalues greater than one.
- ◆ These 16 factors accounted for 62.5% of the variance.

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### Factors and Reliability (Cronbach's Alpha=0.806)

Study habits <sup>1</sup> (6 items)	0.8411	Opinion tolerance <sup>2</sup> (6)	0.8110
Intellectual interests <sup>1</sup> (4)	0.8700	Career closure <sup>2</sup> (4)	0.8953
Verbal Confidence <sup>1</sup> (6)	0.8303	Sense of financial security <sup>2</sup> (4)	0.8299
Math/Science confidence <sup>1</sup> (6)	0.8588	Academic assistance <sup>3</sup> (6)	0.7551
Desire to finish college <sup>1</sup> (8)	0.8506	Personal counseling <sup>3</sup> (6)	0.7710
Attitude toward educators <sup>1</sup> (6)	0.8563	Career counseling <sup>3</sup> (5)	0.7704
Sociability <sup>2</sup> (4)	0.7618	Social enrichment <sup>3</sup> (4)	0.7000
Family emotional support <sup>2</sup> (4)	0.8218	Financial guidance <sup>3</sup> (4)	0.5439

<sup>1</sup>Academic Motivation (6 factors), <sup>2</sup>General Coping Ability (5 factors), <sup>3</sup>Receptivity to Support Services (5 factors)

### Noel-Levitz Persistence Model

Entering student variables + Student Motivation Variables + Student Integration Variables = Student's Likelihood To Persist

A six-year longitudinal study composed of three phases, with a particular focus on the pre-college characteristics of students, gender, & the level of parental education, has been implemented to measure the effects of freshman academic persistence over time and their subsequent success.

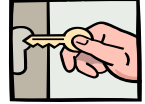
## Research Questions



1. Is there a significant difference between male and female students on all 16 CSI scales?
2. Is there a significant difference between first-generation and not first-generation students on all 16 CSI scales?
3. Is there a significant difference in students who were identified as Dropout Prone and those who were in the Not-DP Group on all 16 CSI scales?
4. Is there a significant difference between academically successful students and academically unsuccessfully students on all 16 CSI scales?
5. Is there a relationship between student performance and student retention?

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## Analysis of Variance (ANOVA)



- ♦ Factor analysis identifies factors based on the responses, but does not attempt to determine differences in responses in any known subgroups with the data.
- ♦ Analysis of Variance was completed with an ANOVA Table for these 16 factors to determine if there were significant differences between male and female, first-generation and non first-generation, with a dropout proneness and with a low risk, successful and non-successful students.

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## Findings



Subgroups (Sig. *p<.05, **p<.01, ***p<.001)	Male vs. Female	First-generation vs. Other	Dropout Prone vs. Lower risk	Success (≥2.00) vs. Not success (<2.00) (S2003 CumGPA)
R-Academic assistance	***		***	
Attitude toward educators	***		***	
R-Career counseling	***		***	
Career closure	***	*	***	***
R-Financial guidance	***		***	
Desire to finish college	***	**	***	
Family emotional support	***	***	***	
Study habits	***		***	*

R=Receptivity


Subgroups (Sig. *p<.05, **p<.01, ***p<.001)	Male vs. Female	First-generation vs. Other	Dropout Prone vs. Lower risk	Success (≥2.00) vs. Not success (<2.00) (S2003 CumGPA)
R-Personal counseling	*			
R-Social enhancement	**		***	
Intellectual interests	***			
Sense of financial security	***			*
Verbal confidence	***			
Sociability			**	
Math & science confidence			**	
Opinion tolerance				**

Success on F2002 (Based on F2002 Term GPA: 87% were 2.00 or higher and 13% were below 2.00)		Success on F2002
First-year Retention	Pearson Correlation	.272**
	Sig. (2-tailed)	.000
	N	1666
** Correlation is significant at the .01 level (2-tailed)		
Success on S2003 (based on S2003 Cum GPA: 91% were 2.00 or higher and 9% were below 2.00)		Success on S2003
First-year Retention	Pearson Correlation	.298**
	Sig. (2-tailed)	.000
	N	1570
** Correlation is significant at the .01 level (2-tailed)		

There is a positive relationship between student performance and student retention

## Next Steps...

- ◆ Compare variables between the CSI group & non-CSI group over time
- ◆ Correlate CSI questions with college GPA
- ◆ Construct Factor Analysis, Criterion Validity, and Internal Consistency
- ◆ Examine the predictors
- ◆ Implement focus groups and qualitative study
- ◆ Follow-up and calculate graduation rate



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## Welcome to the Office of Institutional Research

The role of the Office of Institutional Research is to support planning and management by providing high quality information about the University.

The Office serves as a centralized reliable source for comprehensive information about the institution.

- Assessment Activities
- Departmental Annual Report Website
- Core Data
- Strategic Reports for Departments
- Forms
- Newsletters
- Peer Institutions
- Reports
- Annual Reports
- Common Data Set
- Demographic Maps
- End of Term Reports
- Fact Book
- Graduates/Degrees Awarded
- Presentations
- Progress Report
- Strategic Reports for Departments
- Student Profiles
- Third Week Enrollment Reports
- UND Serves North Dakota
- Resources
- Staff
- Surveys

**Assessment Activities**  
Assessment Committee website, University Student Assessment and of Teaching (USAT).

**Departmental Annual Reports**  
Core Data, General Report Content Guidelines, Strategic Reports and Template for Annual Report submittal

**Forms**  
Forms to request computer output and secure pages authorization.


**Newsletters**  
Institutional Research Brief publications.

**Reports**  
Detailed tables, graphs and information on the University of North Dakota students and faculty reports. See bookmark on left to select links.

**Resources**  
Useful links to IR external resources.

**Staff**  
OIR staff and contact information.

**Surveys**  
A variety of different surveys and tests designed to provide assessment for different subgroups within the university learning environment and community.



Fall First-time Full-Time Freshmen	Continuation Rates		Cumulative Graduation & Continuation Rates				
	Continued to 2 <sup>nd</sup> year	Continued to 3 <sup>rd</sup> year	4 Years Graduated within 4 yrs	5 Years Continued to 5 <sup>th</sup> year	5 Years Graduated within 5 yrs	6 Years Continued to 6 <sup>th</sup> year	6 Years Graduated within 6 yrs
1994*	78%	66%	17%	38%	37%	14%	47%
1995*	75%	58%	14%	35%	36%	12%	44%
1996*	75%	65%	16%	40%	41%	14%	49%
1997*	76%	65%	17%	38%	41%	14%	50%
1998	79%	66%	19%	40%	43%	15%	54%
1999	80%	71%	23%	43%	49%	14%	
2000	78%	68%	22%	40%			
2001	78%	67%					
2002	78%	67%					
2003	75%						

**UND Retention and  
Graduation Matrix**

**Thank You!**

Please contact Jean Chen at 701-777-2265  
or email [jeanchen@mail.und.nodak.edu](mailto:jeanchen@mail.und.nodak.edu) for  
more information

## **Enhancing First Year Retention: Focus on What the Office of Institutional Research Can Do to Connect the Student Success and Campus Strategic Retention Initiatives**

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Proposal Abstract: The College Student Inventory (CSI) has been used at the University of North Dakota since 2002 to identify student pre-college characteristics and behaviors that will interfere with student success. Many researches have narrowly focused upon the retention of new students, but have overlooked the true reflection of success. Office of Institutional Research has found that student success involves a significant number of faculty, staff, and students from across the university community. As a result, student strengths and areas of improvement were identified, academic advising in study planning and personnel management became more effective, and current and longitudinal trends to particular cohorts have shown improvement. The presentation includes the use of prediction modeling to measure the effects of freshmen academic attrition and academic success.

The College Student Inventory (CSI) of the Noel-Levitz Retention Management System is a nationally distributed self-reported survey instrument. The University of North Dakota has selected it as a reliable longitudinal research and measurement tool to gather information that reflects each student's orientation to college, motivation, and receptivity to assistance. CSI was administered to first-time full-time freshmen at this university in 2002, 2003, 2004, and 2005 during summer orientation. The instrument contains 100 Likert-type items. Each item uses scale of 1 to 7 with 1 equaling "Not at all true" and with 7 meaning "Completely true".

Three CSI reports are prepared by Noel-Levitz. The first report is for each individual student, second for each student's academic advisor, and, the third is an overall institutional report. Noel-Levitz also constructs a Dropout Proneness scale which is designed to measure a student's overall inclination to drop out of college before completing a degree. The percentage of freshman identified with high dropout proneness has been increasing every year - 17% in 2002, 20% in 2003, and 25% in 2004. However, the percentage of 2005 freshman identified with high dropout proneness dropped to 19% in fall 2005 when new freshmen were admitted using raised admission standards.

The Office of Institutional Research received all of the CSI reports. CSI survey data was then matched with student record data to assess the usefulness of the high dropout indicator as a preventive tool to enhance enrollment status and academic success in freshmen attending this university. Since 2002, academic advisors provided CSI students advising, necessary referrals, and sometimes follow-up sessions in one-on-one and focus group formats.

This study compares the mean Grade Point Averages (GPA) by each academic semester and cumulative GPA's earned at UND of CSI students and by college where the CSI students enrolled. Among the 1,722 students who participated in the 2002 CSI, 288 classified in the Dropout Group (DP Group) and 1,434 classified in the Not Dropout Group (Not-DP Group) registered for the Fall semester of 2002. After one-year of studying at this university, the DP Group retained 239 students with an average cumulative GPA of 2.39 while the Not-DP Group retained 1,327 students with an average cumulative GPA of 3.06. Furthermore, differences in the first-year cumulative GPA between CSI students enrolled at 7 different academic colleges also exist. CSI students enrolled in the College of Nursing achieved a GPA

of 3.17, followed by the School of Engineering and Mines (3.11), School of Aerospace Sciences (3.03), College of Arts and Sciences (2.98), School of Medicine and Health Sciences (2.97), College of Business and Public Administration (2.94), College of Education (2.91), and major undecided (2.56).

A relatively higher retention rate was consistently observed in the Not-DP Group than its counterpart, the DP Group, throughout all points in time and is also reflected in all four surveys. The retention rates of the CSI students after completion of one year are 83% for the Not-DP Group compared to 69% for the DP Group. After completion of two years, the retention rates are reduced to 77% for the Not-DP Group compared to 55% for the DP Group. After completion of three years, the retention rates are further reduced to 66% for the Not-DP Group compared to 44% for the DP Group.

Principal component factor extraction with Varimax rotations was used to simplify the resulting factor structures along with maximizing the loadings. The process yielded 16 orthogonal factors and Cronbach's alpha was also calculated. The data analysis conducted for the five research questions involved an analysis cycle to determine which, if any, of the 16 scales of the CSI distinguish enrollment status and academic success in freshmen attending this university in fall 2002. Five specific research questions generated for this study were as follows:

1. Is there a significant difference in students who were identified as Dropout Prone and those who were in the Not-DP Group on all 16 CSI scales?
2. Is there a significant difference between academically successful students and academically unsuccessfully students on all 16 CSI scales?
3. Is there a significant difference between male and female students on all 16 CSI scales?
4. Is there a significant difference between first-generation and not first-generation students on all 16 CSI scales?
5. Is there a relationship between student performance and student retention?

The data analysis for all research questions included multivariate analysis, analysis of variance (ANOVA), and t-testing. If significant differences in any of the 16 scales existed as a result of the multivariate analysis, ANOVA was then performed to test for significant differences in the mean responses of each item that comprise the scale. The remaining test in the analysis involved a t-test to indicate which group responded lower or higher than the other to the particular item or factor. Other predictors of college success such as self-reported high school GPA were controlled when comparing students' first-semester GPA. The findings of the study, however, were limited to information included in the enrollment data and student response to the CSI.

Intervention can be extended to all freshmen who may drop out during their first year at college with or without displaying visible warning signs. The Office of Institutional Research has routinely presented tracking information and findings on relevant retention benefits in identifying the high risk students to the associate vice presidents for enrollment management and college representatives. The academic advisors are more motivated in providing essential early preventive assistance. The presentation will focus on how the institutional research data was analyzed to have the maximum impact on planning, facilitation, and administration. The validity of the identification of dropout proneness, the projective modeling gathered from the study, and the effectiveness of intervention from CSI will also be discussed. Finally the presentation will demonstrate how institutional researchers can become significant contributors to the accountability of retention management, strategic planning, assessment, or accreditation process at their institutions.