Predicting Student Retention Based on NSSE Results*

Presented at

Southern Association of Institutional Research, Norfolk VA

October 2018

Literature Review and Need/Significance for the Study (1):

Numerous studies have been conducted to find that:

Gender,

Ethnicity,

Socio-economic status like family income, parental education,

Academic preparations as indicated by test scores, high school gpa, class rank,

College academic performance such as grades or gpa,

all correlate with retention in college. However, these research findings can not serve to direct the efforts on "What could we do to improve student success/retention on campus because:

Literature Review and Need/Significance for the Study (2):

A) Many of the prior research findings are "unactionable" such as gender, ethnicity, socio economic status, or even high school rank and gpa.

B) These findings focused on cognitive skills, as indicated by gpa or DFW rates, but not on non-cognitive factors that also bear on college success and retention.

C) These findings failed to establish a relationship between campus activities such as how students study, e.g.. Did they study by themselves vs. in groups? How did they interact with peers, faculty, advisors, student service personnel?

The research design of this current "Predicting Retention Based on NSSE Results":

1) Recode NSSE results into binary independent variables.

2) Merge in the enrollment data of one year later to create 1-year retention after taking the NSSE survey (dependent variable).

3) Test correlations between each of the independent variables with the dependent variable.

An Introduction of NSSE Results:

A) The scale (Example 1):

CL = Collaborative Learning:

During the current school year, about how often have your done the following?

CLaskhelp) Asked another student to help you understand course material

CLexplain) Explained course material to one or more students

CLstudy) Prepared for exams by discussing or working through course material with other students

CLproject) Worked with other students on course projects or assignments

An Introduction of NSSE Results:

NSSE had altogether 10 scales *:
      1) HO (Higher Order Learning)

      2) RI (Reflective Learning)

      3) LS (Learning Strategies)

      4) QR (Quantitative Reasoning)

      5) CL (Collaborative Learning)

      6) DD (Discussion with diverse others)

      7) SF (Student faculty interaction)

      8) ET (Effective Teaching)

      9) QI (Quality of Interactions)

      10) SE (supportive Environment)

Each scale comprises a number of questions.

An Introduction of NSSE Results:

For this current study, the scales or Engagement Indicators were recoded into binary variables of "if SF>=**40** then SFbin=**1**; Else SFbin=**0**;"

This way, SF becomes 1= Yes, Have student faculty interaction

                           0= No, Have no student faculty interaction

Now let's see the impact of the Engagement Indicators on 1-year retention at the university:

Scale Score and Ret/Grad:

UNCG Fall 2016 NSSE (National Survey of Student Engagement) Scale Scores Broken Into Binary Variables Correlated to 1-Year Retention/Graduation at the University

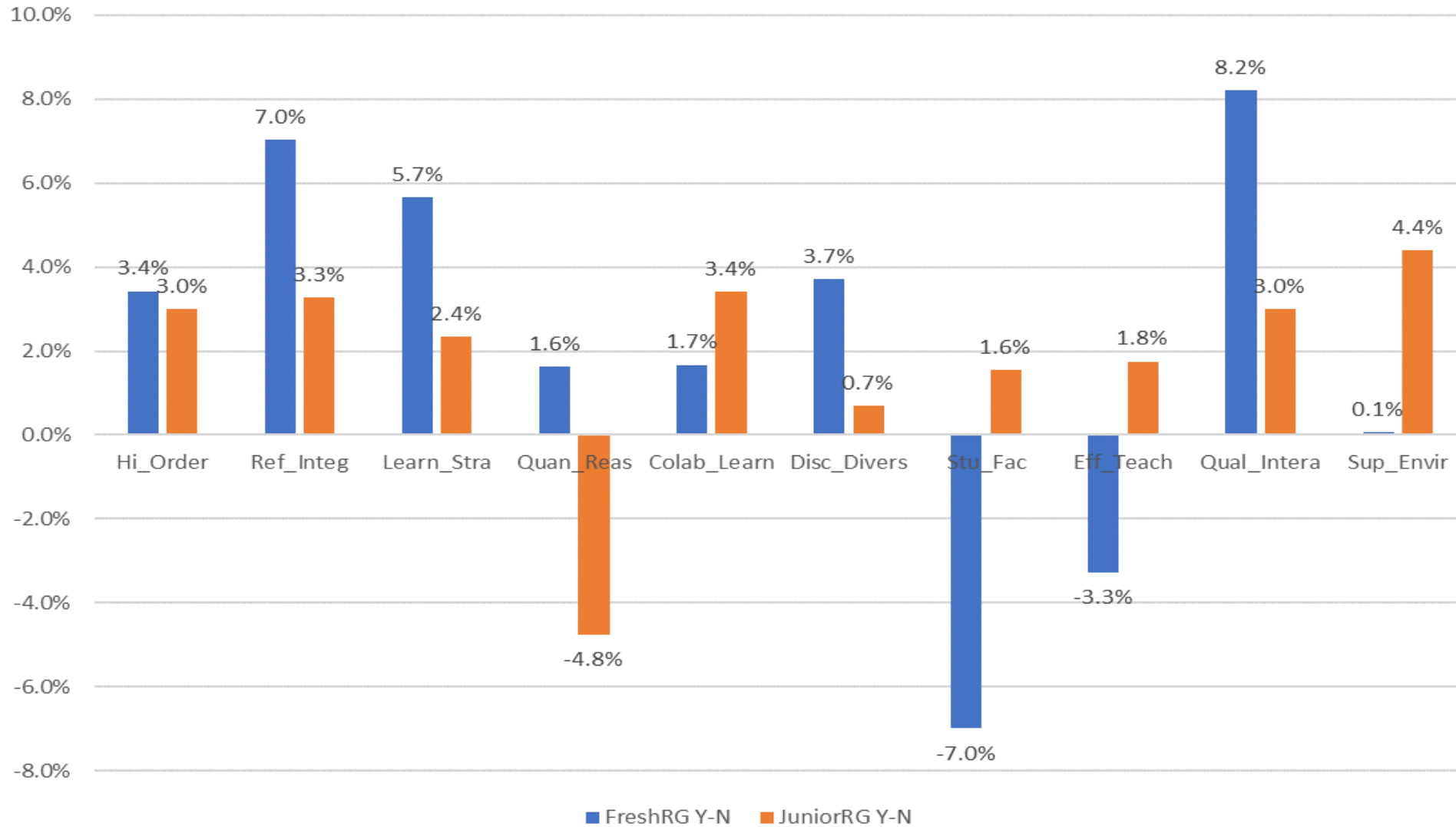|			Freshmen		Junior	
			RetGrad		RetGrad	
The raw scores (0=Never, 20=Sometimes, 40=Often, 60=Very Often) were averaged on the component questions. **An averaged 40 or better was recoded into "Yes…" , below 40 was recoded "No…"**			NotRet Grad1Yr	RetGra dIn1Yr	NotRet Grad1Yr	RetGra dIn1Yr
HO=Higher Order Learning: During the current school year, how much has your course work exphasized the following?	HObin					
HOapply) Applying facts, theories or methods to practical problems or new situations	No Higher Order Learning	Number of Responses	42	158	81	222
HOanalyze) Analyzing an idea, experience, or line of reasoning in depth by examining its parts		% of row	21	79	26.73	73.27
HOevaluate) Evaluating a point of view, decision, or information source	Yes Higher Order Learning	Number of Responses	32	150	84	270
HOform) Forming a new idea or understanding from various pieces of information		% of row	17.58	82.42	23.73	76.27
RI=Reflective and Integrative Learning: During the current school year, about how ften have your done the following?	RIbin					
RIintegrate)Combined ideas from different courses when completing assignments; RIsocietal)Connected your learning to societal problems or issues⬛	No Reflective Learning	Number of Responses	49	170	95	262
RIdiverse)Included diverse perspectives (political, religious, racial/ethnic, gender, etc.) in course discussions or assignments		% of row	22.37	77.63	26.61	73.39
RIownview)Examined the strengths and weaknesses of your own views on a topic or issue; RIperspective)Tried to better understa	Yes Reflective Learning	Number of Responses	25	138	70	230
RInewview)Learned something that changed the way you understand an issue or concept; RIconnect)Connected ideas from your courses to your prior experiences an		% of row	15.34	84.66	23.33	76.67
LS=Learning Strategies: During the current school year, about how often have you done the following?	LSbin					
LSreading) Identified key informaiton from reading assignments	No Learning Strategies	Number of Responses	49	177	87	244
LSnotes) Reviewed your notes after class		% of row	21.68	78.32	26.28	73.72
LSsummary) Summarized what you learned in class or from course materials	Yes Learning Strategies	Number of Responses	25	131	78	248
		% of row	16.03	83.97	23.93	76.07
QR=Quantitative Reasoning: During the current school year, about how often have you done the following?	QRbin					
QRconclude) Reached conclusions based on your own analysis of numerical information (numbers, graphs, statistics, etc.)	No Quantitative Reasoning	Number of Responses	61	249	121	383
QRproblem) Used numerical information to examine a real-world problem or issue (unemployment, climate change, public health, etc.)		% of row	19.68	80.32	24.01	75.99
QRevaluate) Evaluated what others have concluded from numerical information	Yes Quantitative Reasoning	Number of Responses	13	59	44	109
		% of row	18.06	81.94	28.76	71.24
CL=Colaborative Learning: During the current school year, about how ften have your done the following?	CLbin					
CLaskhelp) Asked another student to help you understand course material	No Colaborative Learning	Number of Responses	54	218	124	352
CLexplain) Explained course material to one or more students		% of row	19.85	80.15	26.05	73.95
CLstudy) Prepared for exams by discussing or working through course material with other students	Yes Colaborative Learning	Number of Responses	20	90	41	140
CLproject) Worked with other students on course projects or assignments		% of row	18.18	81.82	22.65	77.35

Scale Score and Ret/Grad:

UNCG Fall 2016 NSSE (National Survey of Student Engagement) Scale Scores Broken Into Binary Variables Correlated to 1-Year Retention/Graduation at the University			Freshmen		Junior	
			RetGrad		RetGrad	
The raw scores (0=Never, 20=Sometimes, 40=Often, 60=Very Often) were averaged on the component questions. An averaged 40 or better was recoded into "Yes…" , below 40 was recoded "No…"			NotRetGrad1Yr	RetGradIn1Yr	NotRetGrad1Yr	RetGradIn1Yr
DD=Discussion with Diverse Others: During the current school year, about how often have you had discussions with people from th	DDbin					
DDrace) People of a race or ethnicity other than your own	No Discuss w/ Diverse Others	Number of Responses	44	165	81	237
DDrace) People from an economic background other than your own		% of row	21.05	78.95	25.47	74.53
DDrace) People with religious beliefs other than your own	Yes Discuss w/ Diverse Other	Number of Responses	30	143	84	255
DDrace) People with political views other than your own		% of row	17.34	82.66	24.78	75.22
SF=Student-Faculty Interaction: During the current school year, about how ften have your done the following?	SFbin					
SFcareer)Talked about career plans with a faculty member	No Stu/Fac Interaction	Number of Responses	65	282	146	431
SFotherwork)Worked with a faculty member on activities other than coursework (committees, student groups, etc.)		% of row	18.73	81.27	25.3	74.7
SFdiscuss)Discussed course topics, ideas, or concepts with a faculty member outside of class	Yes Stu/Fac Interaction	Number of Responses	9	26	19	61
SFperform)Discussed your academic performance with a faculty member		% of row	25.71	74.29	23.75	76.25
ET=Effective Teaching Practices: During the current school year, to what extent have your instructors done the following?	ETbin					
ETgoals) Clearly explained course goals and requirements; ETorganize) Taught course sessions in an organized way	No Effective Teaching	Number of Responses	37	170	89	254
ETexample) Used examples or illustrations to explain difficult points		% of row	17.87	82.13	25.95	74.05
ETdraftfb) Provided feedback on a draft or work in progress	Yes Effective Teaching	Number of Responses	37	138	76	238
ETfeedback) Provided prompt and detailed feedback on tests or completed assignments		% of row	21.14	78.86	24.2	75.8
QI=Quality of Interactions: Indicate the quality of your interactions with the following people at your institution	QIbin					
QIstuentsR) Students; QIadvisorR) Academic advisors;	No Quality of Interactions	Number of Responses	51	173	99	276
QIfacultyR) Faculty;		% of row	22.77	77.23	26.4	73.6
QIstaffR) Student services staff	Yes Quality of Interactions	Number of Responses	23	135	66	216
QIadminR) Administrative staff and offices (registra, financial aid, etc		% of row	14.56	85.44	23.4	76.6
SE=Supportive Environment: How much does your institution emphasize the following?	SEbin					
SEacademic) Providing support to help students succeed academically; SEsocial) Providing opportunities to be involved socially	No Supportive Environment	Number of Responses	51	212	129	363
SElearnsup) Using learning support services; SEdiverse) Encouraging contact among students from different backgrounds		% of row	19.39	80.61	26.22	73.78
SEwellness) Providing support for your overall well-being (recreation, health care, counseling, etc.); SEnonacad) Helping you mana	Yes Supportive Environment	Number of Responses	23	96	36	129
SEactivities) Attending campus activities and events; SEevents) Attending events that address important social, economic, or political issues		% of row	19.33	80.67	21.82	78.18

Scale Score and Ret/Grad:

Difference (Yes-No) in Retention/G Between Freshmen and Juniors

Categories: Hi_Order, Ref_Integ, Learn_Stra, Quan_Reas, Colab_Learn, Disc_Divers, Stu_Fac, Eff_Teach, Qual_Intera, Sup_Envir

FreshRG Y-N (blue): 3.4%, 7.0%, 5.7%, 1.6%, 1.7%, 3.7%, -7.0%, -3.3%, 8.2%, 0.1%

JuniorRG Y-N (orange): 3.0%, 3.3%, 2.4%, -4.8%, 3.4%, 0.7%, 1.6%, 1.8%, 3.0%, 4.4%

Next step of analysis: How do the individual questions, not the scales, correlate with Ret/Grad?

As we examined the correlations between the scales and Ret/Grad, we found the analysis of the scales provided some useful information. However, the scales left some stones unturned:

1) Some significant scales hide the effect of the individual questions!

2) The not significant scales may have some individual questions that correlate significantly with Ret/Grad

In either case, there is a need to scrutinize the correlations between the individual questions with Ret/Grad. As the Fall 2016 data (UNCG) had two groups of students responding to NSSE: the freshmen and the juniors. Let's look at the results from the freshmen first:

Individual Questions and Ret/Grad:

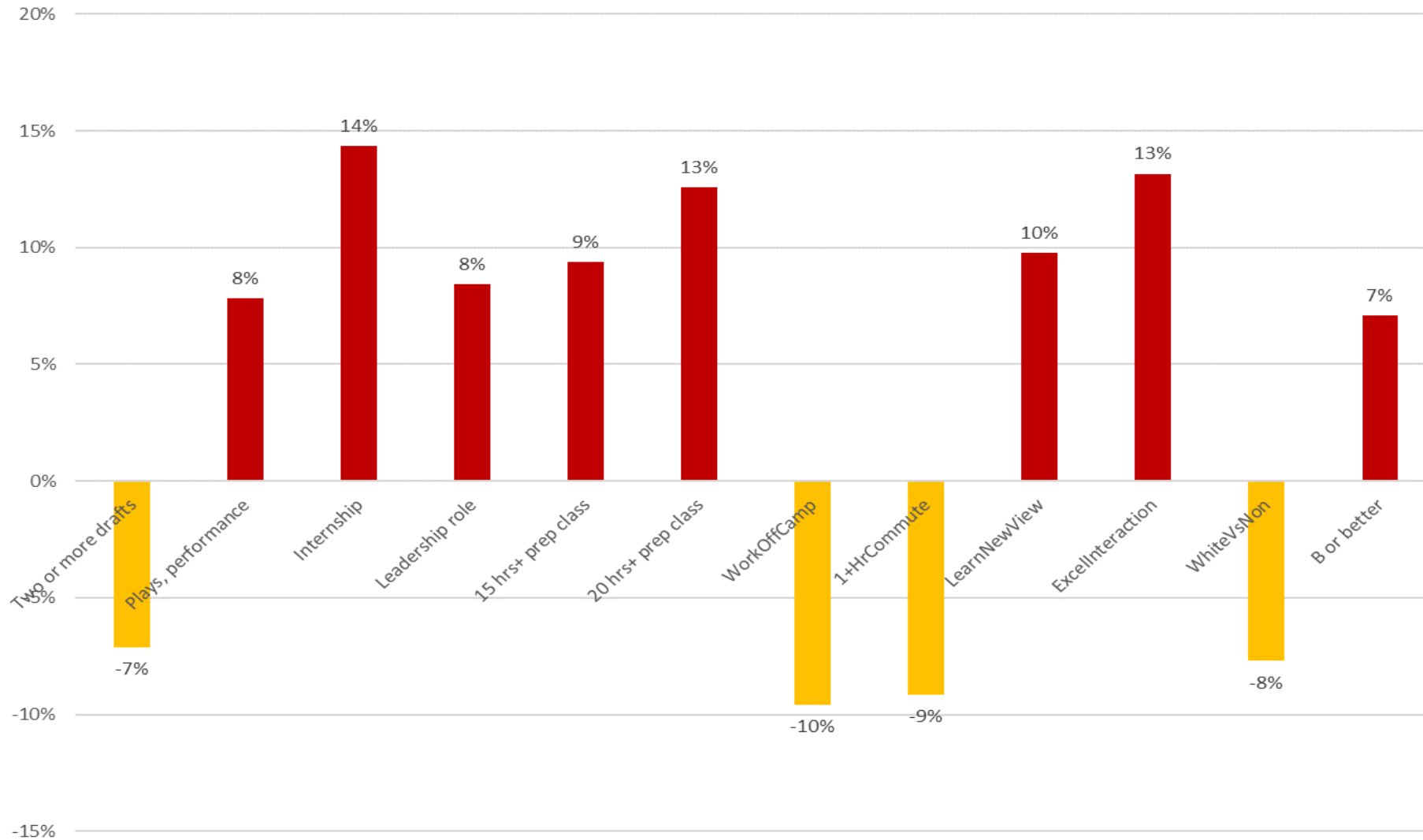| Scale and Question Stem (Not every question is used to form a scale)	Questions	Response	Freshmen						
			N_NotR/G1Yr	%_NotR/G1Yr	N_R/G1Yr	%_R/G1Yr	All	Dif_Yes/No%R/G	x^2P_Value
(Colaborative Learn) How often have your done the following?	Asked another student to help you understand course material	No_askhelp	35	19%	151	81%	186		
(Colaborative Learn) How often have your done the following?	Asked another student to help you understand course material	Yes_askhelp	36	19%	155	81%	191	0%	0.99
(Colaborative Learn) How often have your done the following?	Explained course material to one or more students	No_explain	36	21%	138	79%	174		
(Colaborative Learn) How often have your done the following?	Explained course material to one or more students	Yes_explain	35	17%	166	83%	201	3%	0.42
(Colaborative Learn) How often have your done the following?	Prepared for exams by working through course material with other students	No_studygroup	39	18%	172	82%	211		
(Colaborative Learn) How often have your done the following?	Prepared for exams by working through course material with other students	Yes_studygroup	31	19%	129	81%	160	-1%	0.82
(Colaborative Learn) How often have your done the following?	Worked with other students on course projects or assignments	No_project	39	20%	160	80%	199		
(Colaborative Learn) How often have your done the following?	Worked with other students on course projects or assignments	Yes_project	32	19%	138	81%	170	1%	0.85

As we do not have the time to look at each and every individual question to determine if the Yes and No make a significant difference in retention, let's look at only the most noticeable ones/biggest differences:

Scales (Some questions are not in Scale)	Questions	Response	NotR/G1	NotR/G1	N_R/G1	%_R/G1		Dif_%_R	²P_Val
How often have your done the following?	Prepared two or more drafts of a paper or assignment before turning it in	No_drafts	30	16%	163	84%	193		
How often have your done the following?	Prepared two or more drafts of a paper or assignment before turning it in	Yes_drafts	41	23%	140	77%	181	-7%	0.07
How often have your done the following?	Attended an art exhibit, play, or other arts performance (dance, music, etc.)	No_attendart	57	21%	210	79%	267		
How often have your done the following?	Attended an art exhibit, play, or other arts performance (dance, music, etc.)	Yes_attendart	15	14%	96	86%	111	8%	0.08
Which of the following have you done and plan to do before you graduate?	Participate in an internship, co-op, field experience, student teaching, or clinical placement	No_intern	18	30%	43	70%	61		
Which of the following have you done and plan to do before you graduate?	Participate in an internship, co-op, field experience, student teaching, or clinical placement	Yes_intern	30	15%	168	85%	198	14%	0.01
Which of the following have you done and plan to do before you graduate?	Hold a formal leadership role in a student organization or group	No_leader	31	22%	107	78%	138		
Which of the following have you done and plan to do before you graduate?	Hold a formal leadership role in a student organization or group	Yes_leader	17	14%	104	86%	121	8%	0.08
How many hours in a week do you spend doing the following?	Number of Hours preparing for class	LessThan15hrs	28	23%	95	77%	123		
How many hours in a week do you spend doing the following?	Number of Hours preparing for class	15hrsOrMore	15	13%	97	87%	112	9%	0.06
How many hours in a week do you spend doing the following?	Number of Hours preparing for class	LessThan20hrs	38	21%	140	79%	178		
How many hours in a week do you spend doing the following?	Number of Hours preparing for class	20hrsOrMore	5	9%	52	91%	57	13%	0.03
How many hours in a week do you spend doing the following?	Number of hours working off campus	NoHrWorkOffCamp	24	15%	135	85%	159		
How many hours in a week do you spend doing the following?	Number of hours working off campus	1+HrWorkOffcamp	19	25%	58	75%	77	-10%	0.07
How many hours in a week do you spend doing the following?	Number of hours commuting	NoHrCommute	14	13%	93	87%	107		
How many hours in a week do you spend doing the following?	Number of hours commuting	1+HrCommute	28	22%	98	78%	126	-9%	0.07
How often have you done the following?	Learned something that changed the way you understand an issue or concept	No_newview	27	25%	81	75%	108		
How often have you done the following?	Learned something that changed the way you understand an issue or concept	Yes_newview	35	15%	195	85%	230	10%	0.03
Indicate the quality of interactions with the following group:	Quality of Interaction with faculty	Poor_interaction	9	29%	22	71%	31		
Indicate the quality of interactions with the following group:	Quality of Interaction with faculty	Excellent_interact	30	16%	159	84%	189	13%	0.08
Demographics	Ethnicity (2)	Non-White	33	16%	175	84%	208		
Demographics	Ethnicity (2)	White	41	24%	133	76%	174	-8%	0.06
Academic records	Grades (self reported in the survey)	Below B	43	23%	144	77%	187		
Academic records	Grades (self reported in the survey)	B or better	31	16%	164	84%	195	7%	0.08

Largest % Differences Yes/No Made in 1-Yr Retention of Freshmen

Category	%
Two or more drafts	-7%
Plays, performance	8%
Internship	14%
Leadership role	8%
15 hrs+ prep class	9%
20 hrs+ prep class	13%
WorkOffCamp	-10%
1+HrCommute	-9%
LearnNewView	10%
ExcelInteraction	13%
WhiteVsNon	-8%
B or better	7%

Remember we had Freshmen and Juniors in the sample. Previously we examined the biggest differences that Yes or No responses made in retention for Freshmen. Now let's turn to the Juniors results:

# Juniors' results, sorted by X2P_Value small to large :

| Question_Part A	Question_Part B	Response	N_NotR/G1Yr	%_NotR/G1Yr	N_R/G1Yr	%_R/G1Yr	All	Dif_Yes/No%R/G	x^2P_Value
								Juniors	
How much has your coursework emphasized the following?	Evaluating a point of view, decision, or information source	No_evaluate	50	31%	113	69%	163		
How much has your coursework emphasized the following?	Evaluating a point of view, decision, or information source	Yes_evaluate	95	23%	323	77%	418	8%	0.0467
To what extent have your instructors done the following?	Clearly explained course goals and requirements	No_goals	42	35%	77	65%	119		
To what extent have your instructors done the following?	Clearly explained course goals and requirements	Yes_goals	103	23%	354	77%	457	13%	0.0043
To what extent have your instructors done the following?	Used examples or illustrations to explain difficult points	No_example	45	36%	81	64%	126		
To what extent have your instructors done the following?	Used examples or illustrations to explain difficult points	Yes_example	101	23%	347	77%	448	13%	0.0027
To what extent have your instructors done the following?	Provided prompt and detailed feedback on tests or completed assignments	No_feedback	62	29%	150	71%	212		
To what extent have your instructors done the following?	Provided prompt and detailed feedback on tests or completed assignments	Yes_feedback	82	23%	278	77%	360	6%	0.0852
Which of the following have you done and plan to do before you graduate?	Complete a culminating senior experience (capstone course, senior project or thesis, etc.)	No_capstone	71	29%	173	71%	244		
Which of the following have you done and plan to do before you graduate?	Complete a culminating senior experience (capstone course, senior project or thesis, etc.)	Yes_capstone	48	20%	193	80%	241	9%	0.0188
How much does your institution emphasize the following?	Providing support to help students succeed academically	No_academic	48	35%	91	65%	139		
How much does your institution emphasize the following?	Providing support to help students succeed academically	Yes_academic	64	20%	255	80%	319	14%	0.0009
How much does your institution emphasize the following?	Using learning support services (tutoring services, writing center, etc.)	No_learnsupt	42	33%	87	67%	129		
How much does your institution emphasize the following?	Using learning support services (tutoring services, writing center, etc.)	Yes_learnsupt	71	22%	257	78%	328	11%	0.0149
How much does your institution emphasize the following?	Encouraging contact among students from different backgrounds (social, ethnic, religious, etc.)	No_diverse	56	29%	134	71%	190		
How much does your institution emphasize the following?	Encouraging contact among students from different backgrounds (social, ethnic, religious, etc.)	Yes_diverse	55	21%	211	79%	266	9%	0.0309
How many hours in a week do you spend doing the following?	Number of hours for co_curricular activities	5hr-_cocurr	86	23%	294	77%	380		
How many hours in a week do you spend doing the following?	Number of hours for co_curricular activities	6+_cocurr	24	34%	46	66%	70	12%	0.0371
How would you evaluate your entire edu experience at this U?	Evaluate your entire experience at this insitution	PoorExperience	23	35%	43	65%	66		
How would you evaluate your entire edu experience at this U?	Evaluate your entire experience at this insitution	GoodExperience	88	23%	295	77%	383	12%	0.0389
If you could start over again, would you go to the same insti?	If start over, go to the same institution?	No_notsameinst	28	36%	50	64%	78		
If you could start over again, would you go to the same insti?	If start over, go to the same institution?	Yes_sameinst	83	22%	290	78%	373	14%	0.0109
How often have you done the following?	Combined ideas from different courses when completing assignments	No_integrate	69	31%	155	69%	224		
How often have you done the following?	Combined ideas from different courses when completing assignments	Yes_integate	85	22%	307	78%	392	9%	0.0119
How often have you done the following?	Identified key information from reading assignments	No_keyreading	24	32%	51	68%	75		
How often have you done the following?	Identified key information from reading assignments	Yes_keyreading	96	23%	325	77%	421	9%	0.0866
Indicate the quality of interactions with the following group:	Quality of Interaction with students	Poor_interaction	20	35%	37	65%	57		
Indicate the quality of interactions with the following group:	Quality of Interaction with students	Excellent_interact	83	24%	269	76%	352	12%	0.0633
Indicate the quality of interactions with the following group:	Quality of Interaction with faculty	Poor_interaction	22	42%	30	58%	52		
Indicate the quality of interactions with the following group:	Quality of Interaction with faculty	Excellent_interact	80	22%	287	78%	367	21%	0.0013
Academic records	Grades (self reported in the survey)	Below B	89	31%	200	69%	289		
Academic records	Grades (self reported in the survey)	B or better	76	21%	292	79%	368	10%	0.0029

Largest Differences Yes/No Made in 1-Yr Retention/Grad of Juniors
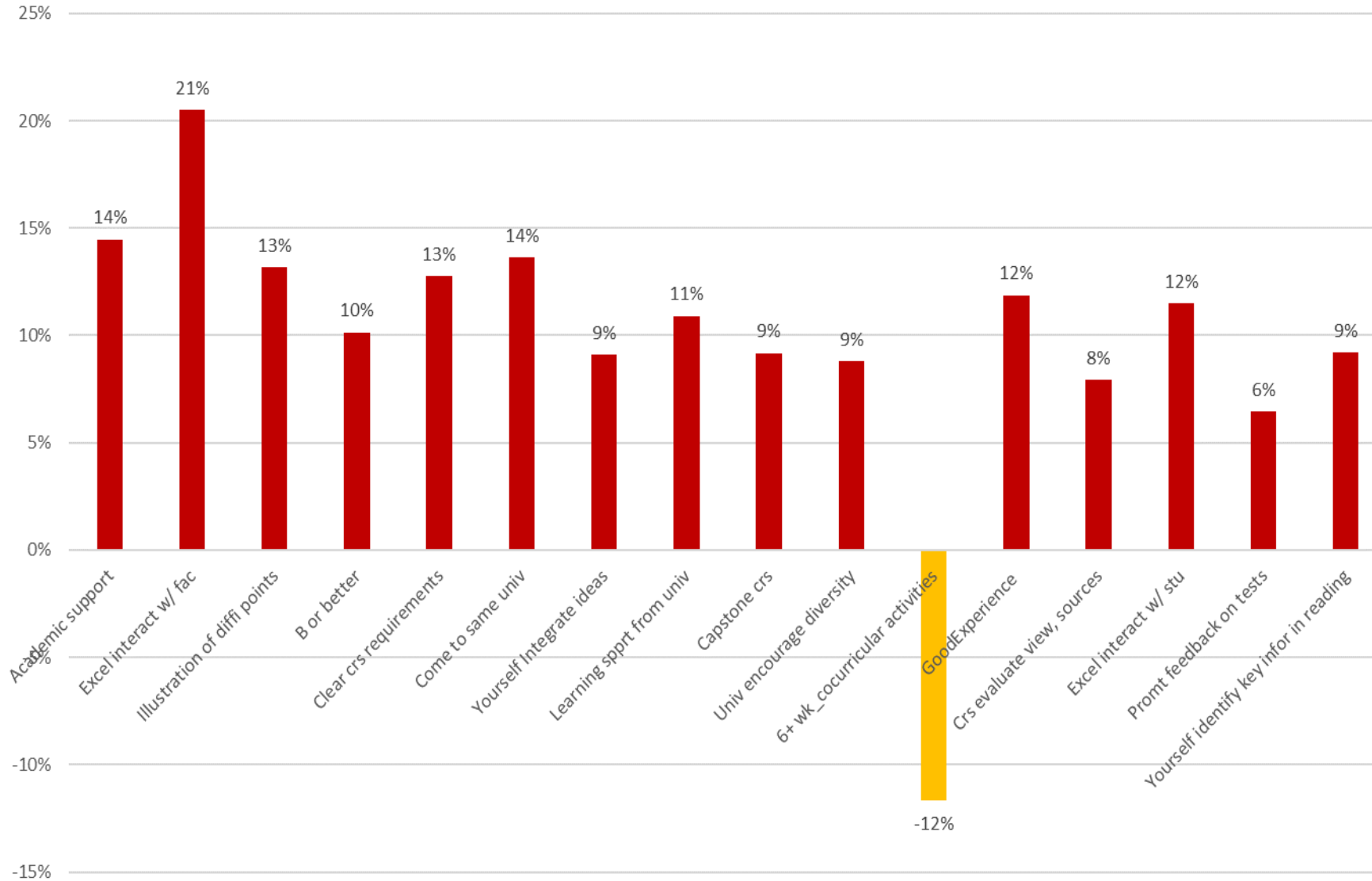
Compare What Matters to Freshmen and What Matters to Juniors

Legend: Fresh, Junior
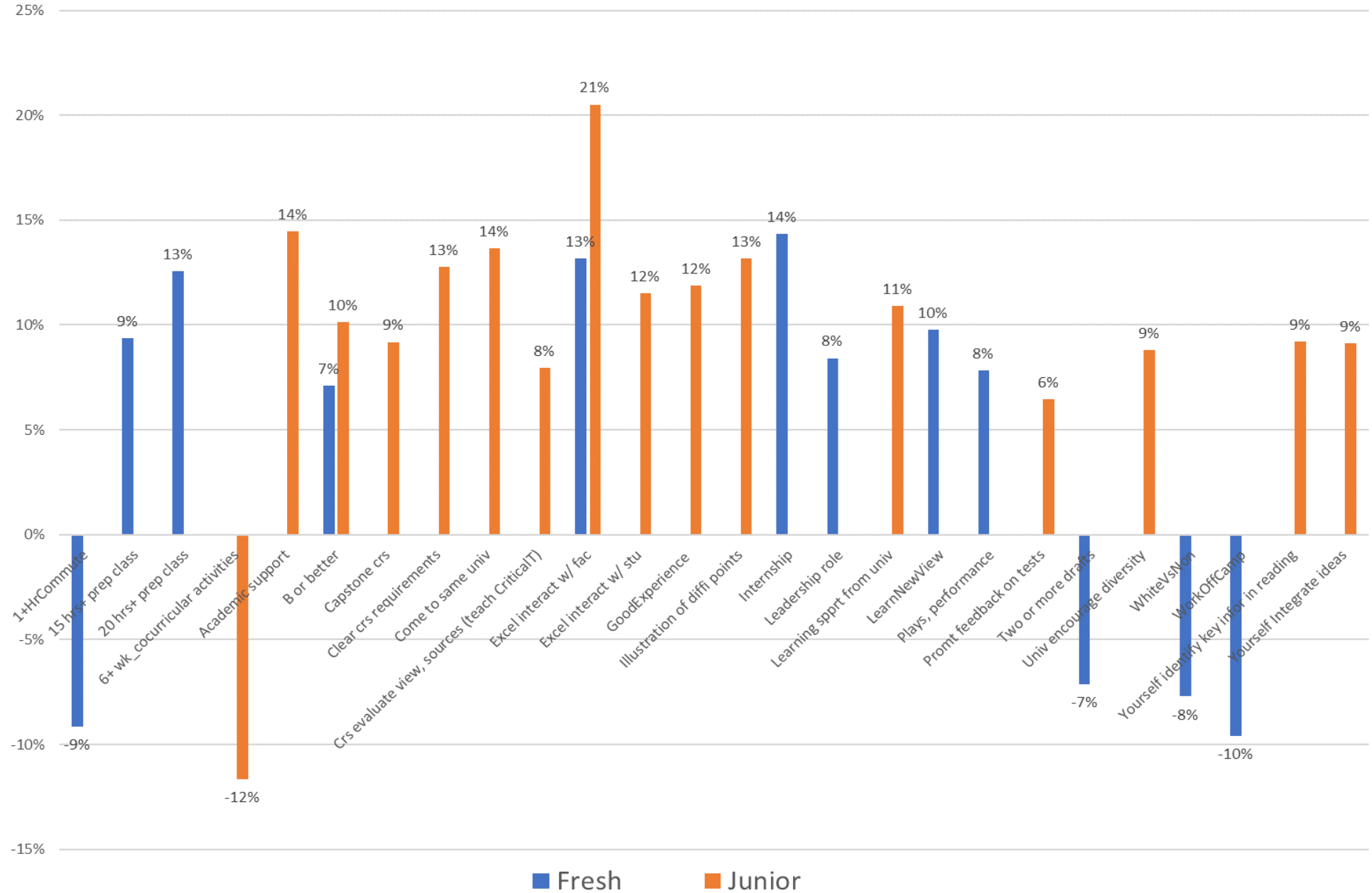
Freshmen Logistic Regression Results and Final Comments:

Odds Ratio Estimates and Wald Confidence Intervals				
Effect	Abs Value	Estimate	95% Confidence Limits	
TwoDrafts 0 vs 1	0.589	0.411	0.172	0.982
PlayPerform 0 vs 1	0.414	0.586	0.23	1.496
Internship 0 vs 1	0.632	1.632	0.672	3.967
LeaderRole 0 vs 1	0.27	1.27	0.531	3.037
PrepC15Hr 0 vs 1	0.405	1.405	0.595	3.318
WorkOffCamp 0 vs 1	0.479	0.521	0.224	1.214
CommuteHr 0 vs 1	0.456	0.544	0.233	1.272
ExcelInteractFac 0 vs 1	0.553	1.553	0.528	4.571
BlackVsNon 0 vs 1	0.413	0.587	0.19	1.816
WhiteVsNon 0 vs 1	0.411	0.589	0.221	1.569
B_Better 0 vs 1	0.591	1.591	0.549	4.609
LearnNewView 0 vs 1	1.431	2.431	1.006	5.877
WomanVsMan 0 vs 1	0.117	0.883	0.31	2.519

Odds Ratios with 95% Wald Confidence Limits
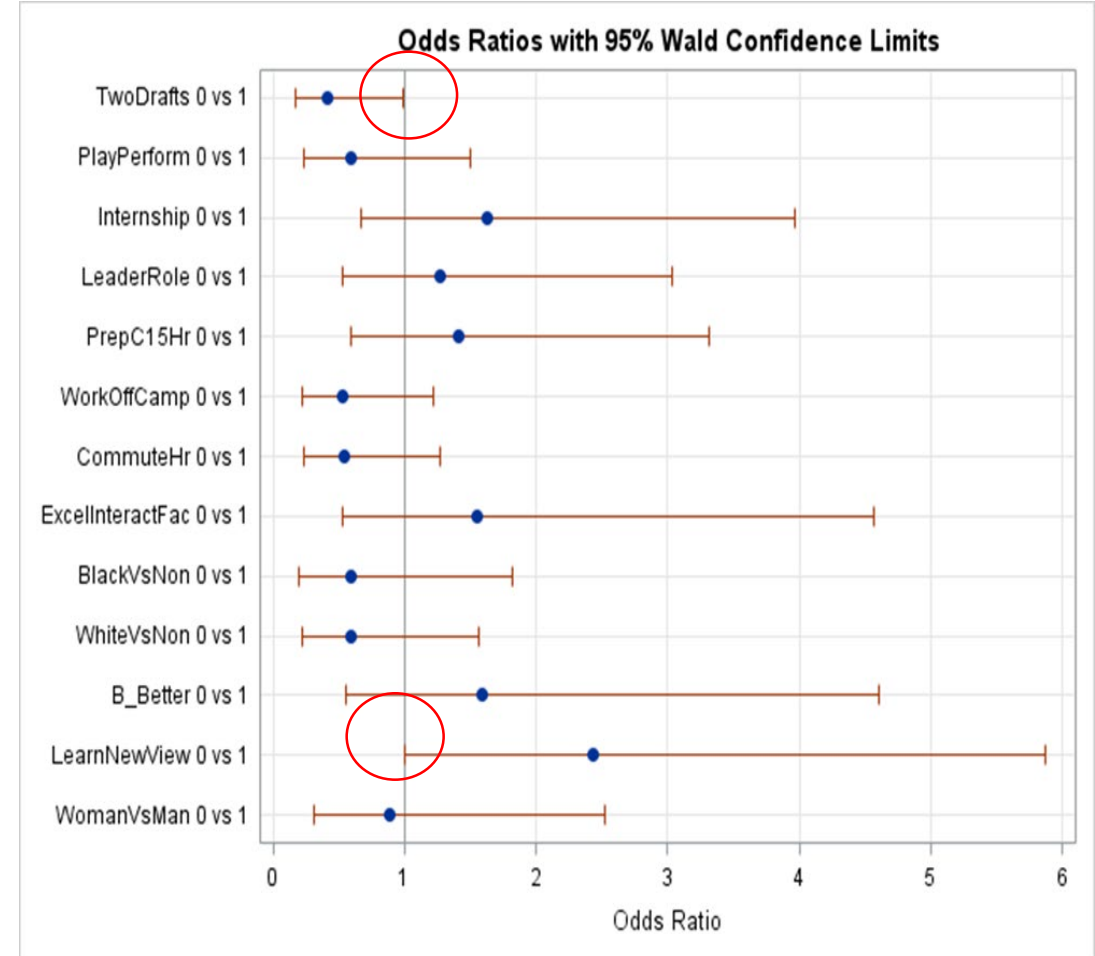
Junior Logistic Regression Results and Final Comments:

Odds Ratio Estimates and Wald Confidence Intervals				
Effect	**Abs Value**	**Estimate**	**95% Confidence Limits**	
CrsEvalViewSrc 0 vs 1	0.521	1.521	0.782	2.959
ClearCrsRequire 0 vs 1	0.062	0.938	0.383	2.295
IllusDifPoint 0 vs 1	1.366	2.366	1.037	5.4
PromtFeedback 0 vs 1	0.178	0.822	0.416	1.625
CapstoneCrs 0 vs 1	0.886	1.886	1.051	3.385
AcadSupt 0 vs 1	0.14	1.14	0.471	2.758
LearningSupt 0 vs 1	0.076	0.924	0.424	2.015
EncourageDivers 0 vs 1	0.199	0.801	0.422	1.521
Wk6HrCoCurri 0 vs 1	0.61	0.39	0.189	0.806
GoodExperience 0 vs 1	0.335	1.335	0.388	4.588
SameUniv 0 vs 1	0.545	0.455	0.151	1.374
YouIntegrIdeas 0 vs 1	0.709	1.709	0.905	3.226
YouIdKeyInfor 0 vs 1	0.029	0.971	0.427	2.209
ExcelInterStu 0 vs 1	0.271	0.729	0.265	2.005
ExcelInterFac 0 vs 1	1.084	2.084	0.723	6.005
BOrBetter 0 vs 1	1.025	2.025	1.012	4.053

Odds Ratios with 95% Wald Confidence Limits
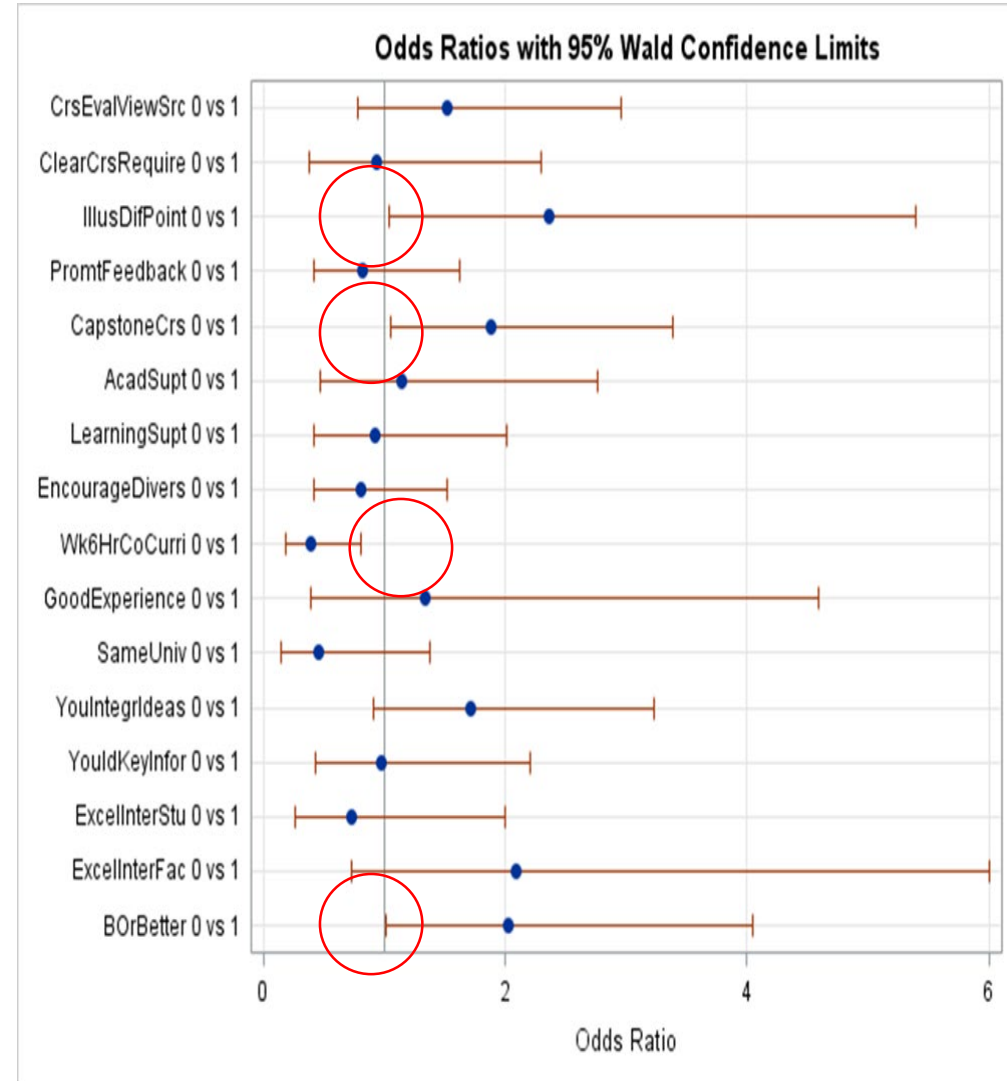
Summary / Discussion:

Previous studies of student retention may have focused on cognitive aspects of student success, which is right, but not complete, as non-cognitive factors such as:

How did the students study?

How did the students interact with their peers, faculty student service personnel?

How did they evaluate the courses that they took?

How did they allocate their time?

All these factors must have some impact on student success as measured by 1-year retention/graduation.

This study used the UNCG responses to the Fall 2016 NSSE survey, recoded the findings into binary independent variables and analyzed their correlations with the Freshmen retention and the Juniors retention/graduation separately to find:

The scales predicted the retention of the Freshmen more effectively than they did of the Juniors, as the difference between the "Yes" and "No" groups of the Juniors were never more than five percentage points on the 10 scales, while larger differences were found of the Freshmen sample on:

those Freshmen having <u>Reflective and Integrated Learning</u> were more likely than those who did not have <u>Reflective and Integrated Learning</u> to be retained to the next year: 85% of the former group compared to 78% of the latter group.

those Freshmen having <u>Learning Strategies</u> were more likely than those without <u>Learning Strategies</u> to be retained in one year's time: 84% vs. 78%.

those Freshmen having no <u>Student-Faculty Interactions</u> were more likely than those who had <u>Student-Faculty Interactions</u> to be retained: 81% compared to 74%. (Don't be surprised as component questions of the scale include "Discuss acad performance with fac" "Discuss ideas and concepts with fac outside class")

those Freshmen with <u>Quality of Interaction</u> (fac, staff, advisors, etc.) were more likely to be retained than those without: 85% vs. 77%.

The scales, put together, seemed to tell that <u>Reflective and Integrated Learning</u>

Learning Strategies, Student-Faculty Interaction Quality of Interactions were more important to Freshmen than to Juniors.

The findings of the scales also revealed that the scales are a bit hard to follow up with actions, as, each scale was made up of a number of questions whose individual effect was difficult to pin down.

So we need to drill down through the scale to the individual questions.

At the question level, for the **Freshmen sample**,
"Prepare 2 or more drafts (negative)",
"Attending plays, performance…",
"Internship",
"Have leadership role",
"Spend 15 hrs preparing for class",
"Spend 20 hrs preparing for class",
"Work off campus(negative)",
"Commuting(negative)",
"Learn sth new that changes the way you understand an issue",
"Excellent interaction with faculty",
"B or better grade",
"White (negative)"
all made a notable difference in 1-year retention of the freshmen.

At the question level, for the **Junior sample**,

"Academic support"
"Excellent interaction with fac"
"Illustration of difficulty points in class"
"B or better grade"
"Clear course requirement"
"(if start over), come to the same university"
"Integrate ideas from different sources"
"Learning support from the univ"
"Capstone courses"
"Univ encourage diversity"
"6 hrs week cocurricular act"
"Good experience"
"Course evaluate view, infor source"
"Excel interaction with students"
"Prompt feedback on tests"
"Yourself identify key infor in reading"

all made a notable difference in 1-year retention/graduation of the juniors.

If you compare the list of the factors that matter to Freshmen with the list for Juniors, you will quickly see that:

1) Only "Grades" and "Interaction w Fac" mattered to both Freshmen and Juniors,

2) More factors mattered to Juniors than to Freshmen,

3) Factors that matter to Freshmen are those that are closely related to "study" such as "two or more drafts" "number of hours studying" "off campus work" etc., while Juniors were more concerned about the environment that includes "academic support" "learning support" "course requirement" "prompt feed back".

Then, which independent variables, of those variables on the impacting list, have more impact on retention, the Logistic Regression tells that for the **Freshmen**, when compared with other IV's, "Preparing two or more drafts before turning it in" and "Learned something that changed the way you understand an issue" had significant impact on retention. And the latter exerted over twice as much impact (1.4/0.6) as the former. So, it looks, to let the freshmen feel that they learn something new or different may be a good strategy to improve retention. How to achieve that may pose a good topic for discussion among student service personnel.

What about the **Juniors**? The Logistic Regression tells that, "Instructor uses examples or illustrations to explain difficult points" "B or better" "Capstone course or project" "6 hrs or more per week on co-curricular activities (negative)" all had a significant impact on 1-year retention/graduation. Comparing the strengths of the four, "Illustrations" "B or better" are more powerful predictors, which indicates that for Juniors how to overcome difficulties in the learning process and how to keep up their grades are key issues to their success at the university.

Limitation of the study: **sample size.** To use multiple years' responses will increase the sample size and may help in a further study of the this type.

Bill Zhang, Ph.D.

Associate Director

Institutional Research

wbzhang@uncg.edu