

**Academic Senate**  
Agenda for the Meeting of  
Jan. 10, 2017  
**UCB 202A**  
**10:00 - 11:50 am Session**

1. Call to Order and Roll Call
2. Approval of Minutes
  - A. Nov. 28, 2016 and Dec. 6, 2016 minutes
3. Open Forum
4. Reports
  - A. Senate President – Khagendra Thapa
  - B. Senate Vice President – Charles Bacon
  - C. Senate Secretary – Melinda Isler
5. Committee Reports
  - A. University Curriculum Committee – Dr. Fadayomi
  - B. Student Government – Josh Olszewski
6. New Business
  - A. Gen. Ed Presentation – Dr. Cliff Franklund
8. Announcements
  - A. FSU President - David Eisler
  - B. Provost – Paul Blake
  - C. Senate President – Khagendra Thapa
9. Open Forum

**Minutes  
Ferris State University  
Academic Senate Meeting**

**November 28, 2016- 6:00 p.m.**

Members in Attendance: Alspach, Bacon, C., Bacon, M., Bajor, Balanda, Baran, Berhoef, Briggs, Conley, Cronk, Drake, Fadayomi, Faulk, Gray, Hancock, Ing, Iler, Maie, Marion, Mattis, Piercey, Rumpf, Shimko, Stone, Thapa, Todd, VanLent, Wancour, Zimmer

Members absent with cause: A. Dinardo, A. Jenerou, R. Lewis

Members absent: D. Bright, A. Epps, D. Hanna, E. Zyla

Ex Officio and Guests: P. Blake, K. Sun, M. Yang, J. Woolen, D. Courtright-Nash, S. Balkema, G. Okonoski, G. Emerick, A. Johnson, C. Seel, D. Ameel, A. Kavanaugh, C. Conley-Sowels, D. McCall, M. Frees, B. Potter, T. Powers, P. Bishop, J. Ek, B. Upham, D. Wanink, A. Manga, R. Teahen, D. Dawson, M. Guske, D. Stakley, T. Williams, J. Lipar, J. Peacock, D. deRegnier, G. Zimmerman, V. Hines, V. Nazar, R. Goosen, C. Hardman

1.	President Thapa called the meeting to order at 6:01 p.m.
2.	<b>Opening Remarks.</b> Academic Program Review Chair Matt Wagenheim thanked the Senate and the committee members and programs that he has worked with during his two terms as the APRC chair, and as a member. He noted that this process could not be accomplished without their assistance and asked any council members present to please stand.
3.	<b>General Recommendations/Process Improvements</b> Chair Wagenheim noted that this year the committee has no recommendations either for specific process changes or general recommendations.
4.	<b>APR Program Recommendations.</b>  Senator Todd moved to approve the recommendation to continue the Art History minor program. Senator Mary Bacon seconded. Senator Foulk (and program coordinator) noted that she is currently in her second year as coordinator and that this year they have made great progress in getting faculty access to TracDat so that the assessment data has been entered. Senator Alspach made a motion to postpone review of minors until alternate criteria have been established. Seconded by Cronk. Senator Alspach went on to explain that several minor programs were criticized for not having adequate data when they are understaffed and unable to provide it. Senator Hancock asked how long that postponement was in terms of months and why make this motion for a program that was being recommended for continuation? Senator Alspach said it was up to the academic program review council to come back with the timeframe. Senator Zimmer and APR council member noted that the guidelines are guidelines and not an exhaustive list which has provided information for a variety of programs. Chair Wagenheim added that they are aware that standards are not firm and that flexibility has been allowed for minors which may be done by a single faculty member. Senator Berghoef noted the International Studies minor was also listed as not having sufficient data and had things in the report which were not noted at his meeting. Senator Bajor asked why all programs should not have clearer instructions. Senator Alspach said the purpose of the motion was to clarify the process. Senator Fadayomi asked why this motion related to art history? Senator Alspach said the point of the motion was to establish a clearer standard. Senator Zimmer pointed out that this is impossible to do given differences in program. Senator Marion agreed with the complexity of creating single standard for programs ranging from minors to graduate degrees. Senator Conley said that she also thought the current standards were not clear. Chair Wagenheim noted that generally they look at enrollments, the quality of the program and the strategic plan. Senator Berghoef expressed concern that there were no process improvements as part of the report this year. Chair Wagenheim said all concerns have been raised in recent issues and the council did not see the point of raising them again. The motion to postpone failed. Motion carried.

Senator Todd moved to approve the recommendation to continue the program in Biotechnology (B.S.) . Senator Mary Bacon seconded. Chair Wagenheim noted it was the first Biotechnology bachelors program in Michigan. Motion passed.

Senator Todd moved to approve the recommendation to discontinue the program in Film Studies (Minor). Senator Mary Bacon seconded. Senator Gray asked a question about the recommendations and why they are not listed as requirements if they could lead to program closure. Chair Wagenheim noted the council is advisory and not allowed by the Senate to use the words required. Senator Ing asked about the context for limited administrative oversight. The motion to discontinue the program failed. Senator Gray made a motion to continue with reporting in one year. Seconded by Alspach. Chair Wagenheim and Senator Marion asked what were the specific requirements they committee is to be looking at. Senator Gray said in one year they can focus the assessment and outcome levels in TracDat and make progress on a strategic plan.

Senator Todd moved to approve the recommendation to discontinue the program in International Studies (Minor) . Senator Mary Bacon seconded. Chair Wagenheim noted the program had no evidence of a strategic plan, curriculum mapping or analysis of collected data. Senator Berghoef noted that he has in the past been a strong supporter of the APR system and always the past supported the recommendation but he did not feel in this case the process was fair. Questions were not asked as there are curriculum maps and quality assurances being put in place. Senator Fadayomi noted that at the November UCC meeting a major curriculum revision had been approved. Senator Marion said this was not raised as part of the written report. Senator Berghoef also noted that items could not have been asked for again, when there was only one report. Chair Wagenheim noted this was in response to discussions had last spring. Senator Percy noted his support of the process despite the issues which arose with this one program. Senator Balanda agreed. The motion failed. Senator Gray brought forward a motion to continue program with reporting in one year on issues listed in report. Motion passed.

Senator Todd moved to approve the recommendation to continue the program in Journalism and Technical Communication Biotechnology (B.S.; Minor; Certificates) . Senator Mary Bacon seconded. Motion carried.

Senator Todd moved to approve the recommendation to continue the program with reporting in Mathematics (B.S.; Associates; Minor) . Senator Mary Bacon seconded. Senator Brecken asked why the programs are several different levels. Chair Wagenheim said the bundling tends to reduce the stress of apr program coordinators to provide information. Senator Peircey noted that some of the outcomes issues have been worked on within the department since the meeting with the APR

Senator Todd moved to approve the recommendation to continue the program with reporting in Philosophy (Minor.). Senator Mary Bacon seconded. Senator Gray thanked the APR for the feedback and expressed their confidence in being able to meet the requirements set out by the group. Motion passed.

Senator Todd moved to approve the recommendation to continue the program with reporting in Accountancy (B.S.; CPA/MBA; MS). Senator Mary Bacon seconded. Senator Bajor commented that some of the programs listed (Accountancy 5 year MB/CPA and the ISI) were programs that he was either not aware of or in the planning stages. He also noted that some of these questions were not raised to him in the in-person meeting held with the council. Senator Zimmer noted questions were posed back to the program before the in-person meeting. Senator Bajor said that data was available in TracDat but was not requested. Senator Bajor moved to amend the motion. Amendment failed. Motion passed.

Senator Todd moved to approve the recommendation to continue the program with reporting in Business Administration (M.B.A.). Senator Mary Bacon seconded. Chair Wagenheim noted this program recently underwent a major revision. Motion passed.

Senator Todd moved to approve the recommendation to continue the program Finance (B.S.; Minor; Certificate). Senator Mary Bacon seconded. The recommended was edited to reflect the fact that assessment data was available in TracDat. Motion passed.

Senator Todd moved to approve the recommendation to continue the program Graphic Design (B.S; A.A.S.). Senator Mary Bacon seconded. Motion passed.

Senator Todd moved to approve the recommendation to continue the program with reporting in Curriculum and Instruction (M.E.). Senator Mary Bacon seconded. The motion was amended to list the program with the correct degree title of an M.Ed. It was also noted that this was not an program in educational leadership by Senator Liza Ing. Motion passed.

Senator Todd moved to approve the recommendation to continue the program with reporting in Educational Leadership (M.E.). Senator Mary Bacon seconded. The motion was amended to reflect the correct degree title of M.S. Program faculty Virginia Hines noted that this program has tripled enrollment this year in this year because of new teacher requirements. The word stagnant was removed from the first paragraph. Motion passed.

Senator Todd moved to approve the recommendation to continue the program with enhancement in Television and Digital Media Production (B.S.). Senator Mary Bacon seconded. It was noted this program saves the university approximately \$136,000 in media cost s and perhaps a 10% giveback would help to fund equipment. Motion passed.

Senator Todd moved to approve the recommendation to continue the program with reporting in Industrial Technology and Management (.B.A. S.). Senator Mary Bacon seconded. Motion passed.

Senator Todd moved to approve the recommendation to continue the program in Manufacturing Engineering Technology (B.S.). Senator Mary Bacon seconded. Motion passed.

Senator Todd moved to approve the recommendation to continue the program in Manufacturing/ CNC Programming (A.A.S.; Certificate). Senator Mary Bacon seconded. Senator Alspach asked what “at capacity” meant for enrollment. Senator Todd noted this was what the labs could handle. Motion passed.

Senator Todd moved to approve the recommendation to continue the program Molecular Diagnostics (B.S.). Senator Mary Bacon seconded. Chair Wagenheim noted a recommendation to continue lab and work space with other Grand Rapids programs. Program Coordinator Jackie Peacock noted the the classroom space is part of GRCC and the labs are currently in use 35 hours per week or more. Motion passed.

Senator Todd moved to approve the recommendation to continue the program with reporting in General Studies (A.A.). Senator Mary Bacon seconded. The enrollment was corrected from 105 to 600 students. Motion passed.

Senator Todd moved to approve the recommendation to continue the program (as an accredited program in good standing) in Social Work (.B.S..W). Senator Mary Bacon seconded. Motion passed.

Senator Todd moved to approve the recommendation to continue the program (as an accredited program in good standing) in Graphic Media Management (B.S.; A.A.S). Senator Mary Bacon seconded. Motion passed.

Senator Todd moved to approve the recommendation to continue the program (as an accredited program in good standing) in Information Security and Intelligence (M.S.; B.S.; Minor). Senator Mary Bacon seconded. Motion passed.

Senator Todd moved to approve the recommendation to continue the program (as an accredited program in good standing) in Professional Tennis Management (.B.S.; A.A.S). Senator Mary Bacon seconded. Motion passed.

Senator Todd moved to approve the recommendation to continue the program (as an accredited program in good standing) in Public Relations. (B.S.; Minor; Certificates). Senator Mary Bacon seconded. Motion passed.

Senator Todd moved to approve the recommendation to continue the program (as an accredited program in good standing) in Diagnostic Medical Sonography (A.A.S). Senator Mary Bacon seconded. Motion passed.

Senator Todd moved to approve the recommendation to continue the program (as an accredited program in good standing) in Clinical Lab Sciences.(B.S.; A.A.S). Senator Mary Bacon seconded. Motion passed.

	<p>Senator Todd moved to approve the recommendation to continue the program (and accept the updates) in French (Minor). Senator Mary Bacon seconded. Motion passed.</p> <p>Senator Todd moved to approve the recommendation to continue the program (and accept the updates) in Business Data Analytics (B.S; Minor). Senator Mary Bacon seconded. Motion passed.</p> <p>Senator Todd moved to approve the recommendation to continue the program with reporting (and accept the updates) in Computer Information Technology (B.S.; Minor). Senator Mary Bacon seconded. Motion passed.</p> <p>Senator Todd moved to approve the recommendation to continue the program (and accept the updates) in Fleet Management (Minor; Certificatee). Senator Mary Bacon seconded. Motion passed.</p> <p>Senator Todd moved to approve the recommendation to continue the program with reporting (and accept the updates) in Career and Technical Education (M.S). Senator Mary Bacon seconded. Motion passed.</p> <p>Senator Todd moved to approve the recommendation to continue the program with reporting (and accept the updates) in Secondary Education (B.S. ). Senator Mary Bacon seconded. Motion passed.</p> <p>Senator Todd moved to approve the recommendation to continue the program with reporting (and accept the updates) in Automotive Engineering Technology (B.S.; A.A.S). Senator Mary Bacon seconded. Motion passed.</p> <p>Senator Todd moved to approve the recommendation to continue the program with reporting (and accept the updates) in CAD Drafting and Tool Design (A.A.S). Senator Mary Bacon seconded. Motion passed.</p> <p>Senator Todd moved to approve the recommendation to continue the program with reporting (and accept the updates) in Rubber Engineering Technology (B.S.). Senator Mary Bacon seconded. Motion passed.</p> <p>Chair Wagensheim also provided a list of programs which did not submit reports. They included the pre-pharmacy and pre-science programs (extension granted by Senate Executive Committee); pre-law and religious studies (College of Arts and Sciences indicated programs in process of closing) and Business Core (College of Business Dean indicates not a stand alone program and should not need to go through review).</p>
5	The meeting was adjourned at 7:48 p..m.

**Minutes  
 Ferris State University  
 Academic Senate Meeting  
 December 6, 2016- 10:00 a.m.**

Members in Attendance: Alspach, Bacon, C., Bacon, M., Bajor, Balanda, Baran, Berghoef, Briggs, Conley, Cronk, Drake, Fadayomi, Faulk, Gray, Ing, Isler, Maike, Marion, Mattis, Piercey, Rumpf, Shimko, Stone, Thapa, Todd, VanLent, Wancour, Zimmer, A. Dinardo, R. Lewis, D. Bright, A. Epps, D. Hanna, E. Zyla

Members absent with cause: A. Jenerou, K. Hancock

Members absent:

Ex Officio and Guests: Schmidt, Teahen, Biller, Dawson, Hawkins, Owens, Adeyanju, Haik, Martin, Olszewski

1.	President Thapa called the meeting to order at 10:00 a.m.
2.	<b>Approval of Minutes.</b> Senator Conley moved to approve the minutes. Senator Ing seconded. The motion passed.
3.	<b>Open Forum.</b> Senator Berghoef made a statement concerning some issues with this year's APR process. The fact that there were no process recommendations or general recommendations given the many issues that were raised both in the minor programs and some of the major program. The outgoing chair did not include ongoing concerns because they were ongoing or just perennial issues which did not warrant inclusion. He suggested the new council review the November meeting and those issues and begin their year with a critical review of the way that it was handled this year. Senators and panelists are also encouraged to articulate concerns and send them to the APRC. One example was the lack of meaningful conversation during the program meetings.
4.	<b>Officer Reports</b> President Thapa said that the approved Charter amendments would be forwarded to the Board of Trustees at their December meeting.  Vice-President Bacon had no report.  Secretary Isler had no report.
5.	<b>Committee Reports</b> UCC Chair Kemi Fadayomi noted that they continue to move curriculum proposals through the process. Six of them have been in a holding pattern for months because of lack of response from the programs. They have also discussed the certificate issue and the minimum requirement of 6 credits. There are also changes to the UCC manual which will be coming up later in the meeting.  General Education coordinator Cliff Franklund was not present to give a report.  Student Government representative presented the Student Government report. He reported on the Corn Hole Tournament with GVSU, the Leadership dinner and the Sweet Cases projects. He said that the organization is still recruiting new members but has added some in the past month.
6a	<b>Graduate Scholarship Policy</b> Senator Balanda moved to remove this from the table. Senator Berghoef seconded. Senator Balanda said they met with the Graduate and Professional Council and feels this policy in current form does not bind those whose programs use another policies. Changes include the heading and removal of the requirement of Digital Measures for assessment. Senator Todd asked if this meant Digital Measures was no longer on campus. Senator Balanda said there have been some union challenges to requiring this as a sole measure, so they took that on. Senator Alspach expressed support saying this supports scholarship in different forms. Senator Hanna asked how this would be used to push back against faculty not doing scholarship. Senator Alspach commented that this model includes professional development and service. Senator Gray suggested this be

	used and connected in some way with promotion/merit policies. Senator Ing commented that this is a policy really aimed only at graduate faculty. Motion passed 81%-19%.
6b	<p><b>Academic Affairs Transfer Policy</b></p> <p>Senator Balanda moved to remove this from the table. Senator Mary Bacon seconded. Senator Balanda said they had reviewed the credit / no-credit issue and feels that the language is clear as long as the programs are clear on their own policies for accepting that. Senator Alspach asked if a specific program can have a different program-specific policy for their own requirements. Senator Balanda said yes. Motion passed 93% -7%.</p>
7a	<p><b>RN to BSN Curriculum (New Program)</b></p> <p>Chair Fadayomi moved to support the RN to BSN curriculum. Senator Brecken seconded. Senator Briggs expressed concern that this is an existing program in a different location, and she felt this set a precedent that would create a lot of exte programs which suddenly would need to go through the curriculum process. Senator Zyla said this program had to do with the associates level degree changes and admissions. Chair Fadayomi said it was sent to the UCC as a new program. Senator Hanna asked how the courses had changed? Coordinator Sue Owens said that it was not specifically all new course but the configuration in the way that they had to be taken. Motion passed 92%-8%,</p>
7b	<p><b>Associates Degree in Information Security and Intelligence (New Program)</b></p> <p>Chair Fadayomi moved to support the Associates in Information Security and Intelligence. Senator Mary Bacon seconded. Senator Briggs raised questions about this approved checksheet including General Education courses when at a program meeting in her college, General Education Coordinator Cliff Franklund said that the specific courses had not been finalized. Chair Fadayomi said that the Senate had approved the broad outlines so they could approve this checksheet. Senator Briggs said mixed messages were being sent,. Senator Todd noted this was the third associates degree the Senate has seen this year (in response to allowing TIP students to use it) and questioned whether or not this was a valuable degree which made a graduate employable). Senator Foulk questioned whether or not 400 level courses could be allowed in an associates degree. Senator Alspach noted the proposal had been approved by Financial Aid to do so. Senator Berghoef also expressed concerns that this was a viable degree. Motion passed 76% to 12% to 12%.</p>
7c	<p><b>University Curriculum Manual Updates</b></p> <p>Chair Fadayomi moved to approve the changes to the University Curriculum Manual as presented. Senator Mary Bacon seconded. Senator Alspach asked if Fadayomi truly meant it was a blanket approval . Senator Lewis said he trusted the expertise of the committee and had no issues with this. Senator Briggs asked what would be a different way. Senator Alspach said review just the policies section and do so section by section. Senator Gray said that this might lead to a lot of unnecessary nitpicking while the group most likely agrees with 90% of it. Chair Fadayomi said that would not be necessary because the process had already investigated the history of what was reviewed and asked about. There was a motion to call the question. Motion passed 57% to 39%-4%. The main motion to approve the manual failed 41%-59%.</p> <p>Senator made a motion to approve policies, section by section. Seconded by Vice-President Charles Bacon. Motion passed. 84%-16%.</p> <p>Senator Ing moved to approve Section 1. Seconded by Senator Mary Bacon. Motion passed 92%-4%-4%. Senator Ing moved to approve Section 2.1. Motion approved 96% to 4%. Senator Ing moved to approve Section 2.2. Seconded by Senator Mary Bacon. Motion passed 79%-11%. Senator Alspach moved to approve Section 3.0. Seconded by Senator Mary Bacon. Senator Todd noted that these links do change and that the manual should be able to be updated without Senate vote. Motion passed 88%-12%. Senator Ing moved to approve Section 3.1. Seconded by Senator Mary Bacon. Discussion was had about 3.1.1 associates degrees. Senator Briggs pointed out that the A.A.S. degree follows a different standard. Senator Hanna noted the language was unclear. President Eisler suggested removing the specific language and putting in a link to the actual policies referred to. Emeriti President Doug Haneline noted that policy does not really reflect all degrees. Motion passed 89%-11%. The senate then realized they had only completed the edits for section 3.1. 1 so Senator Alspach made a motion to reconsider section 3.1seconded by Senator Ing. Motion passed 89%-19%. Senator Briggs questioned whether the transfer credits were 45 or 90. Senator Lewis pointed out to</p>

	<p>Provost Blake that if it is the higher number, that renders many of the 3+1 programs invalid. The decision was made to remove the sentence reading “It is expected that a maximum of one-half of the total hours required for completion of the degree at Ferris may be transferred from non-bachelor degree institutions which have articulated agreements with Ferris, in such case, additional lower division courses required for a Ferris bachelor’s degree may be transferred.” In section 3.14 the degree “Doctorate of Nursing practice was also added. Motion passed 79%-21%. Senator Ing moved to approve Section 3.2. Seconded by Senator Mary Bacon. Gray asked why the dropping of the minimum of 7 credits and why was that done. Senator Ing asked for the history of this number. Senator said this was to accommodate the larger minors which have 21 credits and offered it in 4 credit hour blocks instead of three. The recommendation was to restore that language back to 7 hours. Motion passed 89%-4%-7%. Senator Ing moved to approve Section 3.3. Seconded by Senator Mary Bacon. Motion passed 89%-4%-7%. Senator Ing moved to approve Section 3.4. Seconded by Senator Mary Bacon. Motion passed 97%-3%. Senator Ing moved to approve Section 3.5. Seconded by Senator Mary Bacon. Chair Fadayomi noted most of the changes are just to reflect the changes to the forms. Senator Hanna noted that “without approval of the instructor” would be preferable to “without consultation of the instructor and asked when that section had been altered. Senator Alspach said the language was done in 2012 when the last revisions occurred and it was a fight to get that language in. Motion passed 72%-21%-7%. Senator Lewis moved to approve all of the procedures in the manual Seconded by Senator Epps. Motion passed 84%-14%.</p>
8.	<p><b>Announcements</b></p> <p>President Eisler noted the death of alumni Rose (Criminal Justice) and said it would be noted at Police Memorial in May 2017. Campus Safety continues to work on projects on campus, including training for CPR. The state budget has finalized and has not included a provision that would not allow higher education money to be taken from the school aid fund. He also congratulated both the volleyball and football teams on a successful season and invited senators to attend the holiday reception.</p> <p>Provost Blake said that the first meeting of the graduate committee will occur this week, and thanked faculty for attending commencement, and the student government for all of their good work. Senator Alspach suggested the Provost consider adding a fall break to the calendar.</p>
9.	<p><b>Open Forum.</b></p> <p>Senator Zimmer noted that concerning issues raised with the APR process, that they cannot make recommendations when they do not have full information. Much of the work occurs prior to the Senate meeting. The guide is not perfect but covers many programs.</p> <p>Senator and incoming APR chair Gary Todd noted the group will discuss the lack of general recommendations.</p> <p>Senator Berghoef asked the Executive Committee to explain why the chair’s release time was reduced. President Thapa said this was in part to add release time for UCC without adding to the budget.</p> <p>Senator Todd asked about the construction project in Swan Building. He noted as part of the construction project, the bridge entryway to one side of the building was scheduled to be torn down the following day. He noted that this was a safety hazard as there would only be one egress for the building in the event of an emergency.</p>
10.	<p>The meeting was adjourned at 11:46 a.m.</p>






Using NSSE Results to  
Evaluate Student Satisfaction  
and Retention

Dr. Clifton Franklund,  
General Education Coordinator

12/15/2016



## Limitations of our dataset

### National Survey of Student Engagement

- NSSE is an **indirect** measure (attitude survey)
- NSSE is only given to **bachelor's** degree students
- NSSE is given using a **sample of convenience**
- NSSE instrument was **modified** in 2013

*Given biannually at FSU, we now have NSSE data from thousands of students to evaluate.*

## Possible uses of NSSE data

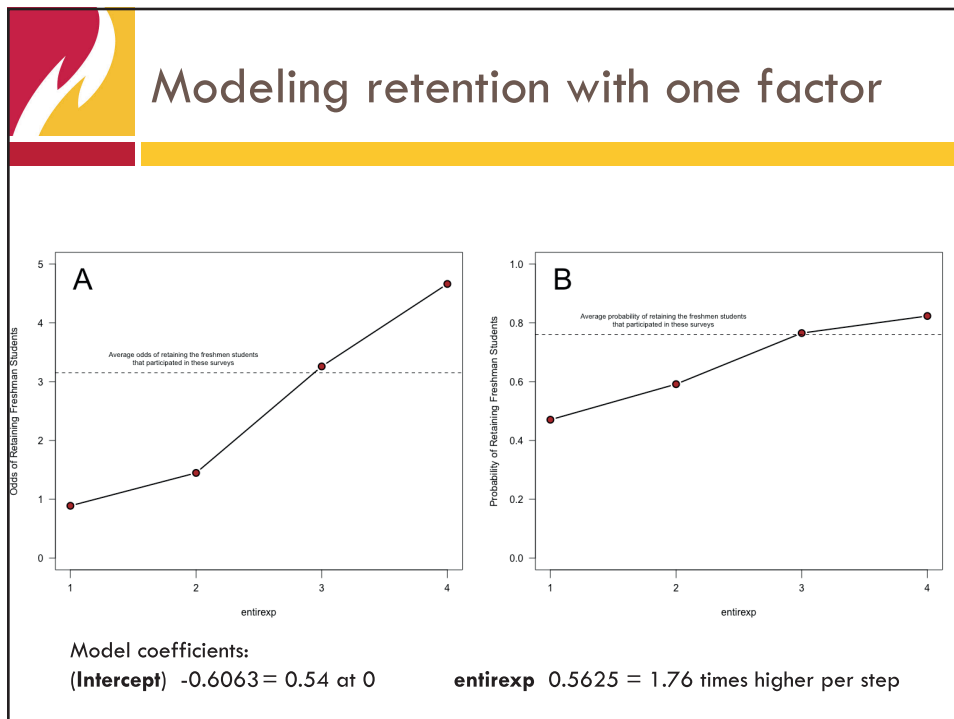
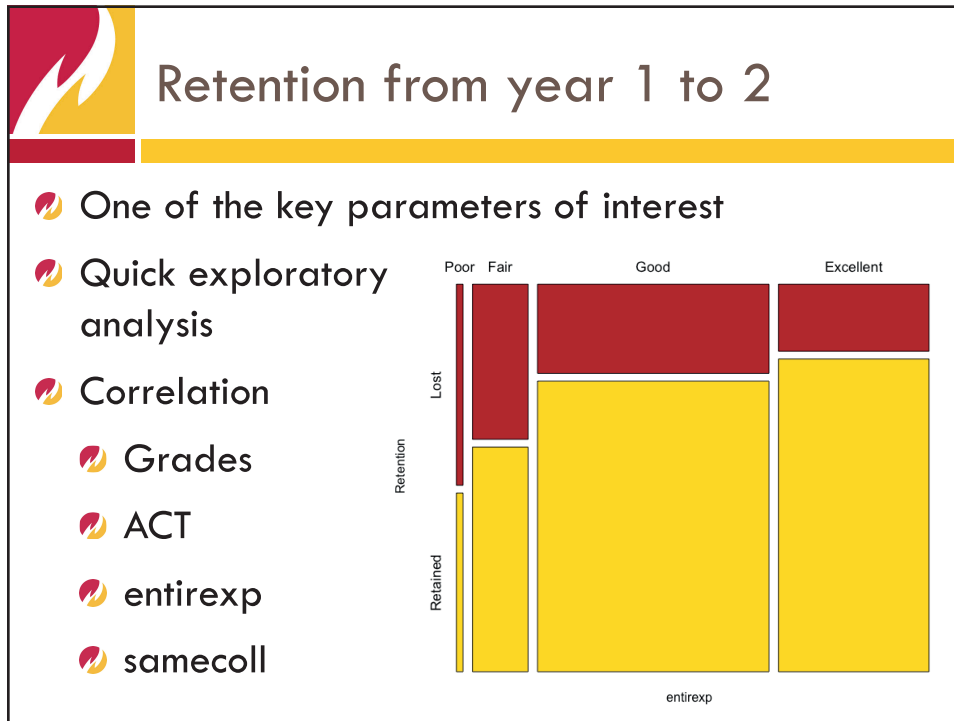
- Examining mean scores directly
- Comparing freshmen to seniors
- Tracking scores longitudinally
- Comparing Ferris scores to "peer" group scores
- Using responses to model or predict important outcomes


## Multiple logistic regression

- Binary outcome
- One or multiple predictors
- Logit (log odds)
- Calculate coefficients for each factor

Comparing the LP and Logit Models

$$\ln \left[ \frac{P_i}{1 - P_i} \right] = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_n X_n$$






## Attempting to predict retention

	Observed Attrition	Observed Retention
Predicted Attrition	6	19
Predicted Retention	80	258


- Accuracy: 0.727
- Sensitivity: 0.931
- Specificity: 0.070
- Positive Predictive Value: 0.763
- Negative Predictive Value: 0.240

TN	FN
FP	TP




## Finding a proxy for retention

- Desire correlation with retention
- Should be retained in all NSSE instruments
- Should reflect FSU broadly
- Two candidate items:
  - Entire educational experience (**entirexp**)
  - Same college (samecoll)








## Modeling student satisfaction


	OR	2.5 %	97.5 %
(Intercept)	0.000	0.000	0.000
advise	5.508	4.426	6.939
envfac	1.580	1.369	1.831
envstu	1.527	1.346	1.737
envsuprt	1.965	1.567	2.473
facfeed	1.424	1.156	1.757
gngenled	1.623	1.306	2.021
gningq	1.620	1.334	1.972
gnwork	1.786	1.473	2.171



## Predicting satisfaction

	Observed "Poor"	Observed "Excellent"
Predicted "Poor"	214	48
Predicted "Excellent"	32	372


-  Accuracy: 0.880
-  Sensitivity: 0.886
-  Specificity: 0.870
-  Positive Predictive Value: 0.921
-  Negative Predictive Value: 0.817



## Second model for satisfaction

🔗 The five conserved factors used

	OR	2.5 %	97.5 %
(Intercept)	0.000	0.000	0.000
envfac	2.001	1.777	2.261
envstu	1.470	1.322	1.638
envsuprt	2.913	2.427	3.514
facfeed	1.591	1.335	1.899
gnwork	2.382	2.039	2.792








## Predicting satisfaction (model 2)

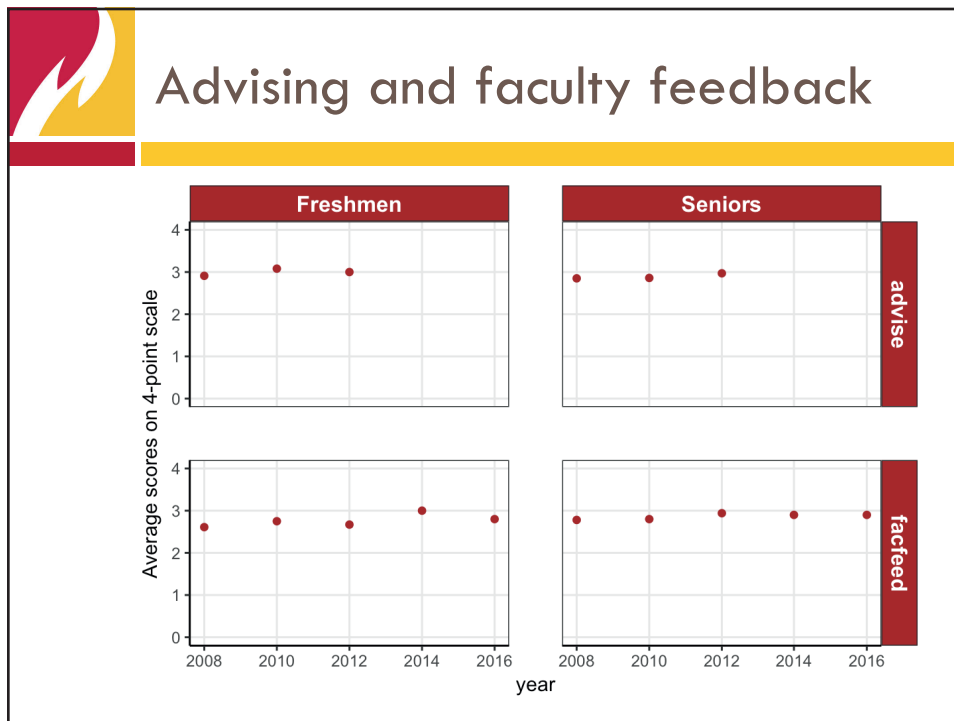
	Observed "Poor"	Observed "Excellent"
Predicted "Poor"	190	48
Predicted "Excellent"	56	372

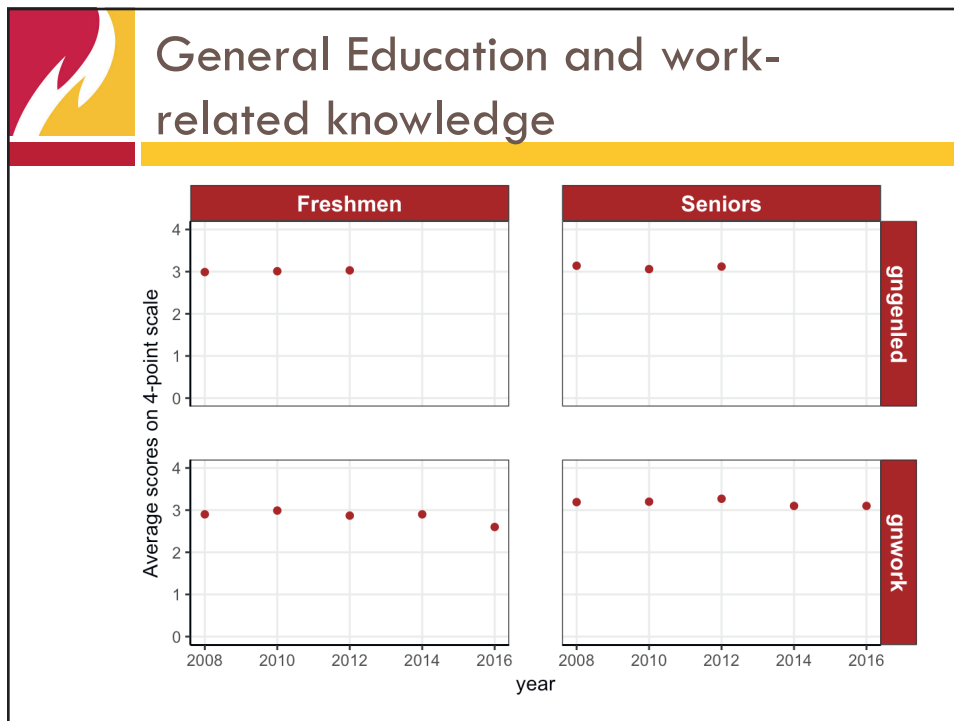
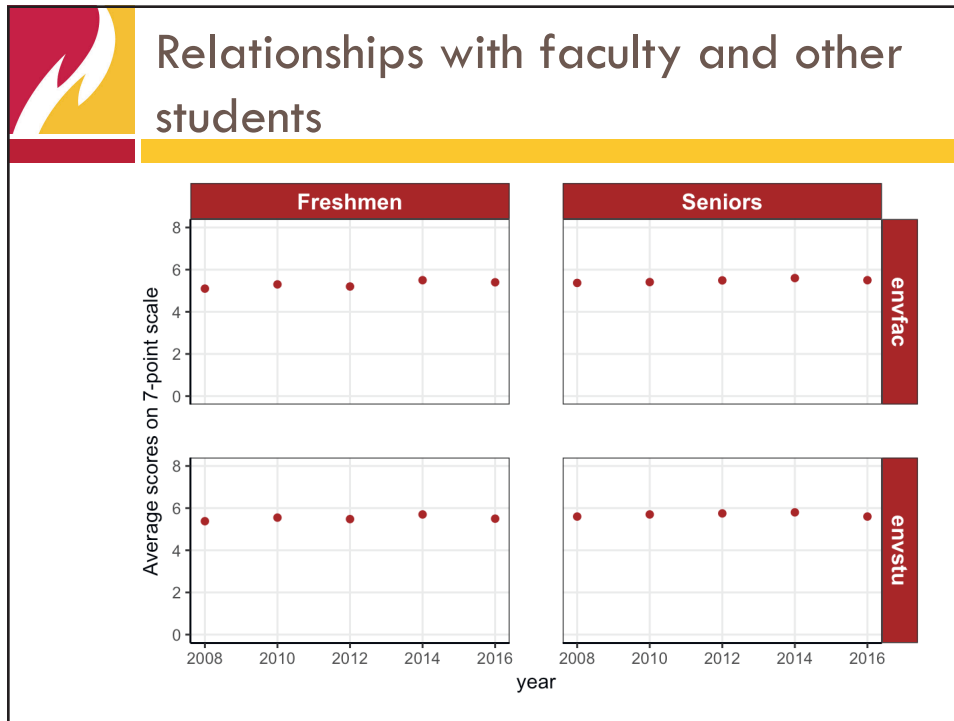
- 🔗 Accuracy: 0.844
- 🔗 Sensitivity: 0.886
- 🔗 Specificity: 0.772
- 🔗 Positive Predictive Value: 0.869
- 🔗 Negative Predictive Value: 0.798

## Predicting 2014/2016 using the 2008-2012 data

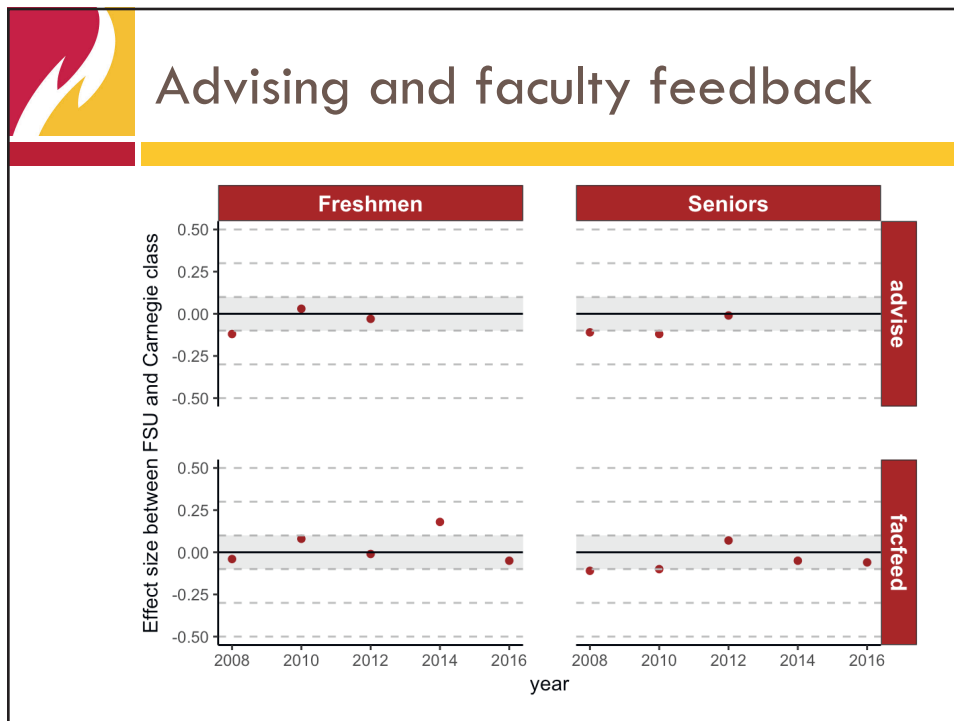
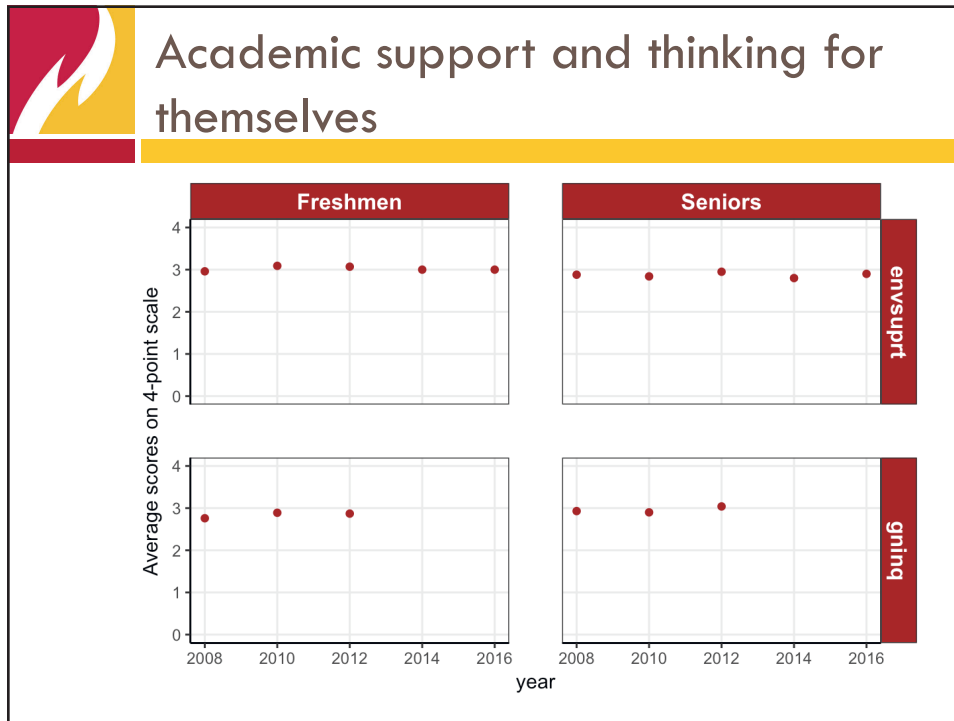
	Observed "Poor"	Observed "Excellent"
Predicted "Poor"	181	372
Predicted "Excellent"	53	912

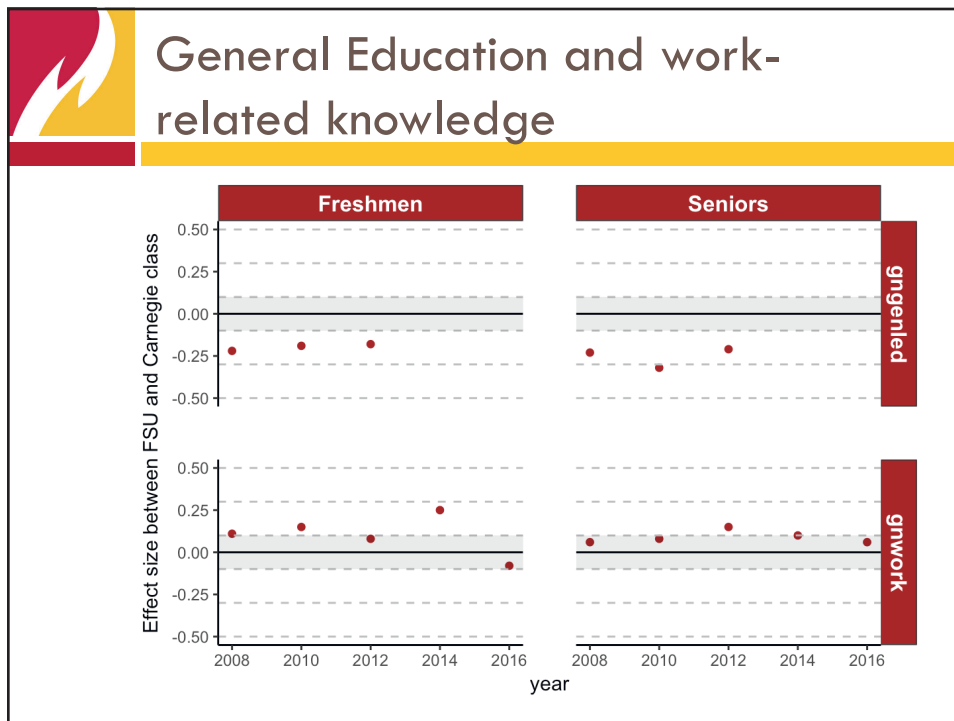
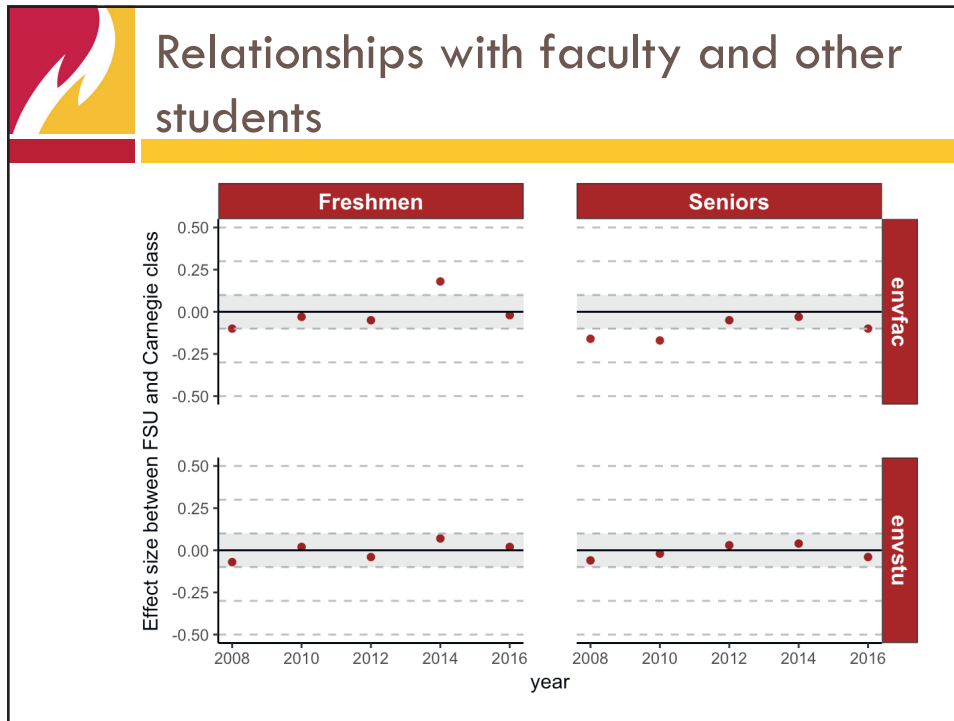
-  Accuracy: 0.720
-  Sensitivity: 0.710
-  Specificity: 0.774
-  Positive Predictive Value: 0.945
-  Negative Predictive Value: 0.327

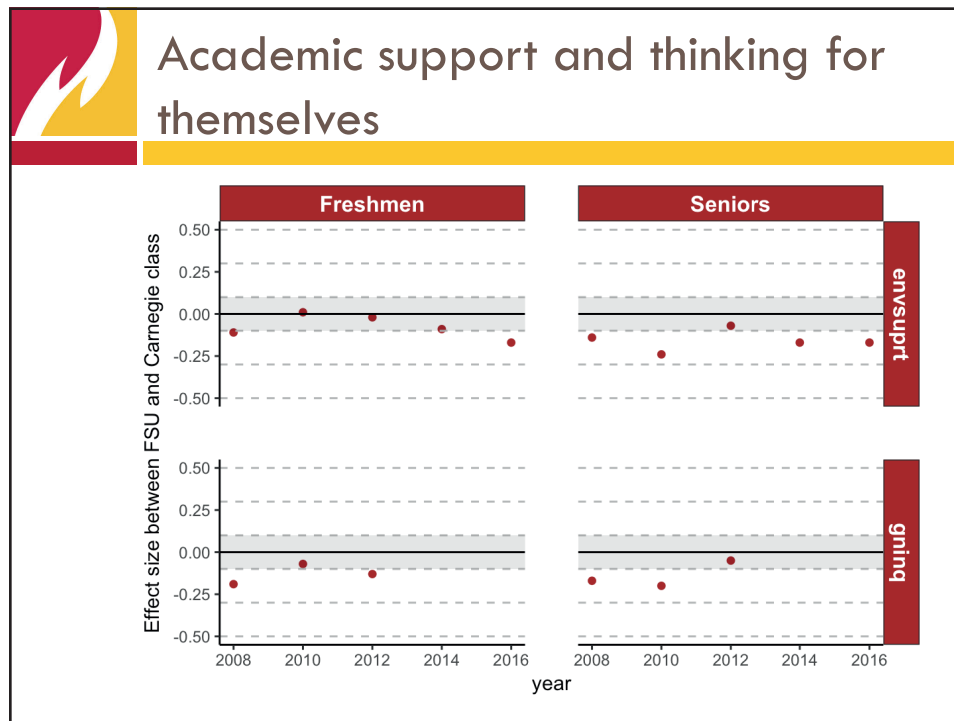












## Conclusions

- 🌀 Student satisfaction correlates with retention
- 🌀 Student satisfaction can be modeled with relatively few factors
- 🌀 Reasonable predictions can be made for student satisfaction
- 🌀 We have room to improve in the key factors
- 🌀 Need more information about the structure of the factors that have been identified