Academic Metrics Data

Robert Todd Bruce (Summer 2019)

sites.jcu.edu/institutionaleffectiveness

Background

First, let's get a basic sense of what's part of this project.

Site: Academic Analytics

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Project: Academic Metrics (Chairs/Administrators)

• Workbooks:

	Metrics	Graphics	Data Tables
Courses	1 Key Academic Metrics	3 Key Academic Metrics Graphics	6 Key Academic Metrics Data Tables
Faculty	2 Faculty Lines	2 Faculty Lines**	2 Faculty Lines
Graduating Majors and Minors		4 Majors at Graduation Graphics	7 Majors at Graduation Data Tables
Current Majors		5 Majors at End of Spring Term Graphics	8 Majors at End of Spring Term Data Tables

**2 Faculty Lines includes graphics comparing faculty numbers to credit hours from 1/3/6 and majors from 4/7 and 5/8

"We still need stable, pre-selected dashboards for people, where the most pertinent data is located in one place and which should not require clicking on and off various settings for each screen."

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• Site: Academic Analytics

Project: Academic Metrics (Chairs/Administrators)

To start, let's dive all the way down into the weeds to the heart of it all: the courses data table!

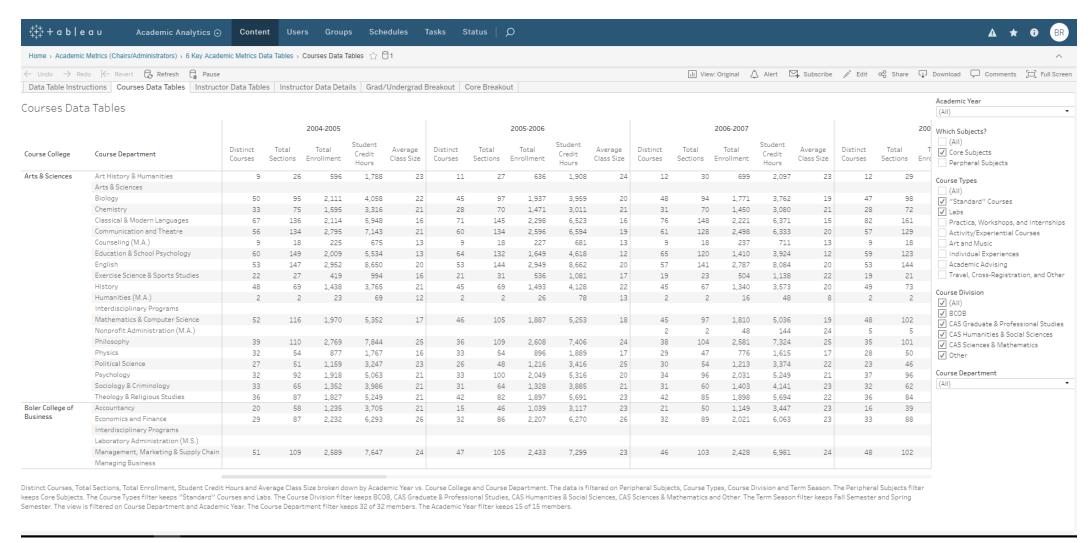
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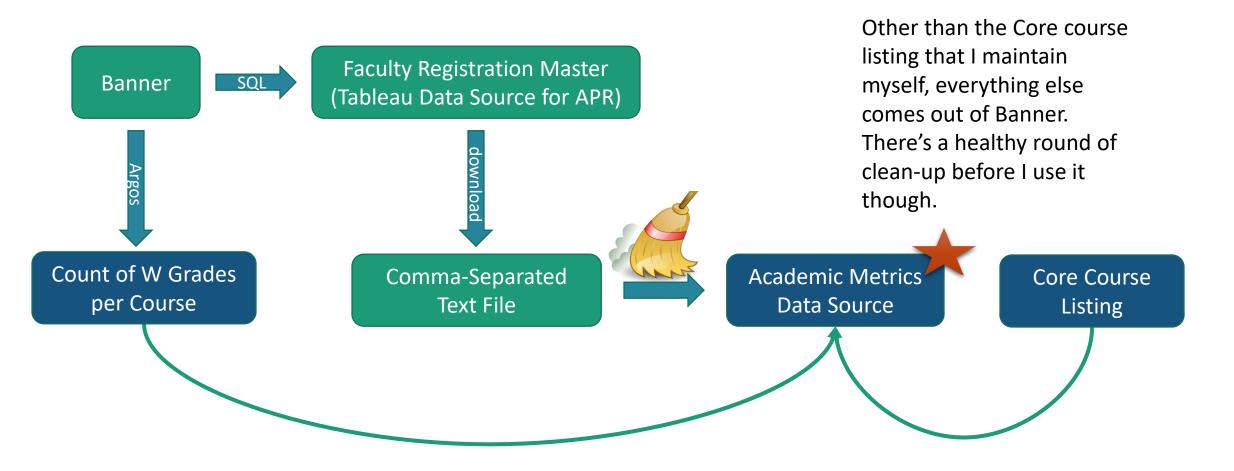
2 Faculty Lines includes graphics comparing faculty numbers to credit hours from 1/3/6 and majors from 4/7 and 5/8

• View: Courses Data Table

The Data Table



Underlying Data: Where Do They Come From?



Underlying Data: How Are They Structured?

Count of W Grades per Course

Number of Students
Receiving a Grade of
W for Each Course
from Fall 2004
through Spring 2019

EN-125-52-201830 = 3

Academic Metrics
Data Source

One row per instructor per course since Fall 2004 (summer courses excluded)

Instructor: ID, Name, Ethnicity, Gender, Department, College, Type/Status Course: ID, Title, Subject, Number, Section, Department, College, Level, Credit Hours, Course Type, Old Core Codes, Campus, Cross-List/Team-Taught Coding

Enrollment: Actual (UG/PB/GR), Maximum, Projected, Student Credit Hours Academic Year, Term, Part of Term, Start Date, Days, Times, Rooms

The data will be updated each fall and spring after the third-week census freeze of the student file. Core Course Listing

Full Course Codes matched to Core Categories:

EN-125-52-201830 = Foundational Writing

The SQL does not pull students who received a W for the main data source. They have been added back in with a special report.

Columns and Calculations

Distinct Courses

Total Sections

Total Enrollments

Student Credit Hours

Average Class Size

count of distinct subject/number combinations

count of distinct modified CRNs

(cross-lists have same modified CRN)

headcount in each course at census (plus Ws)

headcount at census x credit hours per course

total enrollment ÷ total sections

Course Credit Hours

Clock Hours

from Banner

number of hours spent in class

(based on meeting times)

Courses

College > Department > Level > Course > Section

When you first open the table it shows rows based on departments. Department is part of a greater hierarchy that can be expanded or collapses by clicking on the + and – squares. This is the hierarchy completely expanded.

Course College	Course Department	Course Level	Course	Course Section
Arts & Sciences	Psychology	100 Level	PS100	1
				51
				52
				53
				54
				55
			PS101	1
				2
				51
				52
				53
				54
				55
				56
				57
				58
				59
				60
				61
				62
				63
			PS150	1
				51
				52
			PS190	1
			PS199	1
				51
		200 Level	PS226	51

(L/Pa	namig and	COnd		118/	I				
•			-				Fall 2016		
	Course Department	Course Level	Course	Course Section	Distinct Courses	Total Sections	Total Enrollment	Student Credit Hours	Average Class Size
	Philosophy	100 Level	PL101	51	1.00	1.00	24.00	72.00	24.00
				52	1.00	1.00	16.00	48.00	16.00
		200 Level	PL205	51	1.00	1.00	25.00	75.00	25.00
			PL208	51	1.00	1.00	28.00	84.00	28.00
			PL209	51	1.00	1.00	29.00	87.00	29.00
				52	1.00	1.00	29.00	87.00	29.00
			PL210	41	1.00	1.00	19.00	57.00	19.00
				51	1.00	1.00	28.00	84.00	28.00
				52	1.00	1.00	29.00	87.00	29.00
			PL230	21	1.00	1.00	4.00	12.00	4.00
			PL240	41	1.00	1.00	14.00	42.00	14.00
				51	1.00	1.00	27.00	81.00	27.00
The next severa	I slides show the		PL260	51	1.00	1.00	27.00	81.00	27.00
				52	1.00	1.00	27.00	81.00	27.00
effects on the m	netrics of collapsing		PL265	51	1.00	1.00	28.00	84.00	28.00
the hierarchy.				52	1.00	1.00	28.00	84.00	28.00
ene merareny.			PL270	51	1.00	1.00	28.00	84.00	28.00
				52	1.00	1.00	28.00	84.00	28.00
			PL275	51	1.00	1.00	26.00	78.00	26.00
			PL280	51	1.00	1.00	28.00	84.00	28.00
				52	1.00	1.00	28.00	84.00	28.00
			PL285	21	1.00	1.00	6.00	18.00	6.00

51

PL299

1.00

1.00

1.00

1.00

28.00

13.00

84.00

39.00

28.00

13.00

_		•				Fall 2016		
Course Department	Course Level	Course	Course Section	Distinct Courses	Total Sections	Total Enrollment	Student Credit Hours	Average Class Size
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		PL260	51	1.00	1.00	27.00	81.00	27.00
			52	1.00	1.00	27.00	81.00	27.00
		PL265	51	1.00	1.00	28.00	84.00	28.00
			52	1.00	1.00	28.00	84.00	28.00
		PL270	51	1.00	1.00	28.00	84.00	28.00
			52	1.00	1.00	28.00	84.00	28.00
		PL275	51	1.00	1.00	26.00	78.00	26.00
		PL280	51	1.00	1.00	28.00	84.00	28.00
			52	1.00	1.00	28.00	84.00	28.00
		PL285	21	1.00	1.00	6.00	18.00	6.00
		PL286	51	1.00	1.00	28.00	84.00	28.00
		PL299	51	1.00	1.00	13.00	39.00	13.00

				Fall 2016				
Course Department	Course Level	Course	Distinct Courses	Total Sections	Total Enrollment	Student Credit Hours	Average Class Size	
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		PL208	1.0	1.0	28.0	84.0	28.0	
		PL209	1.0	2.0	58.0	174.0	29.0	
		PL210	1.0	3.0	76.0	228.0	25.3	
		PL230	1.0	1.0	4.0	12.0	4.0	
		PL240	1.0	2.0	41.0	123.0	20.5	
		PL260	1.0	2.0	54.0	162.0	27.0	
		PL265	1.0	2.0	56.0	168.0	28.0	
		PL270	1.0	2.0	56.0	168.0	28.0	
		PL275	1.0	1.0	26.0	78.0	26.0	
		PL280	1.0	2.0	56.0	168.0	28.0	
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		PL260	1.0	2.0	54.0	162.0	27.0
		PL265	1.0	2.0	56.0	168.0	28.0
		PL270	1.0	2.0	56.0	168.0	28.0
		PL275	1.0	1.0	26.0	78.0	26.0
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				Fall 2016		
Course Department	Course Level	Distinct Courses	Total Sections	Total Enrollment	Student Credit Hours	Average Class Size
Philosophy	100 Level	1	2	40	120	20
	200 Level	14	22	527	1,581	24
	300 Level	14	22	447	1,341	20
	400 Level	1	1	16	48	16

				Fall 2016		
Course Department	Course Level	Distinct Courses	Total Sections	Total Enrollment	Student Credit Hours	Average Class Size
Philosophy	100 Level	1	2	40	120	20
	200 Level	14	22	527	1,581	24
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	400 Level	1	1	16	48	16

			Fall 2016		
Course Department	Distinct Courses	Total Sections	Total Enrollment	Student Credit Hours	Average Class Size
Philosophy	30	47	1,030	3,090	22

These are the hierarchies that appear in this workbook.

Courses

College > Department > Level > Course > Section

Subjects

Subject > Level > Course > Section

Instructors

College > Department > Instructor (> Course ID)

Time

Academic Year > Semester

Duta Tables

6 Key Academic Metrics
Data Tables

2 Faculty Lines

7 Majors at Graduation Data Tables

8 Majors at End of Spring Term Data Tables **Courses**: basis for others

Courses by Subject: Subject Hierarchy

Interdisciplinary Courses: Subject Hierarchy for Programs grouped into Interdisciplinary Programs "department"

Instructor Data Table: *Instructor Hierarchy*

Grad/Undergrad Breakout: Breaks down graduate, postbac, and undergraduate enrollment

Core Breakout: categorizes courses as Old Core, New Core, Both Cores, or Neither Core

Here's a quick rundown on the different views available in this workbook.

Notes on Filters

Which Subject?

Peripheral Subjects = AR, BI, BPD, CE, FA, FYS, HP, LP, MS, SI Core Subjects = everything else

Course Types

"Standard;" Labs; Practica, Workshops, and Internships; Activity/Experiential Courses; Art and Music; Individual Experiences; Academic Advising; Travel, Cross-Registration, and Other)

Course/Instructor Division and Course/Instructor Department Instructor type

Administrator represents those with faculty status only; University Employee represents all others teaching who have staff positions at the University Site: Academic Analytics

Project: Academic Metrics (Chairs/Administrators)

• Workbook:

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If you are interested in numbers of majors rather than students in particular courses, you'll want to take a look at these two.

Why "End of Spring Term"?

- While <u>number of graduates</u> is important, we need a better way to capture a sense of total number of majors.
- A small senior class might mask a department drowning because of a gigantic sophomore class.
- Total number of majors impacts chair workload, advising in the department, and class sizes for upper level and graduate courses.
- We could have sampled third week of fall, end of fall, third week of spring, or end of spring.
- End of spring seemed likely to capture the maximum number (as many declarations as possible and prior to graduation).

Majors: Underlying Data

At Graduation

taken from Argos report of all graduates since January 2005

ID, name, graduation date and term, degree awarded, majors, minors, and concentrations

At End of Spring Term

excerpted from end of spring term freeze of student data (2005 to present)

ID, term, level, program, degree, majors, minors

Two Versions of Each

one row per student: can show connections between multiple majors or major and minors

one row per student per major or minor: allows accurate count of all majors/minors regardless of status as major 3, minor 2, etc.

Majors: Views

- Number of Majors
- Number of Minors
- Number of Old-Style Concentrations (mini-minors)*
- Paired Majors by Major 1 and by Major 2
- Major-Minor Pairs by Major 1/Major 2/Minor 1/Minor 2
- First Concentration Within Majors
- Second Concentration Within Majors

Majors: Filters

- Level: Graduate/Undergraduate
- Intended/Declared*
- Division and Department
- For Paired Charts, Filter by Key Field (Major1/Major2/Minor1/etc.)

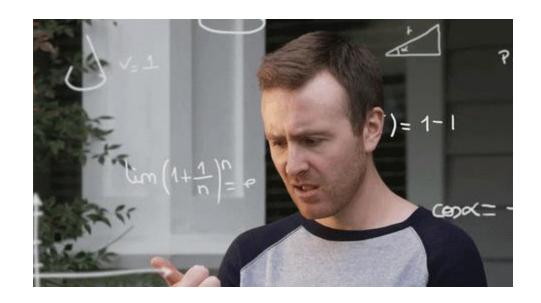
Majors



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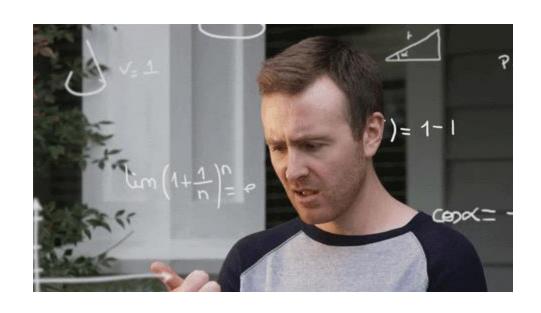
What's going on?

There are a number of reasons this might be happening.



- Graduation Dates: not all of your seniors graduate at the same time, right?
- Declaration Rules: you know which first-year students are probably your majors but they aren't allowed to declare
- Student Behavior: students may "change their major" without doing so officially; they also chase after majors they can't enter

Majors



- Graduation Dates
- Declaration Rules
- Declaration and Change Procedures
- Student Behavior
 - Declaration
 - Changing
 - Futile Pursuits

We can only present the data we have

• Site: Academic Analytics

Project: Academic Metrics (Chairs/Administrators)

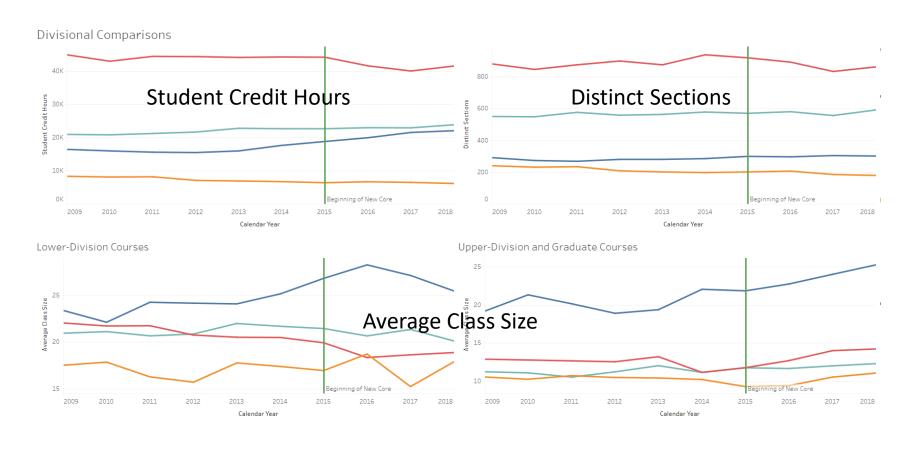
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There are several workbooks that let you see some graphic visualizations of the data, particularly trends!

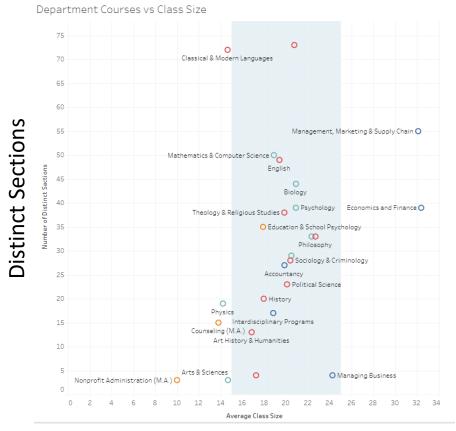
Graphics: Key Academic Metrics

Divisional/Departmental/Subject Comparisons



Graphics: Key Academic Metrics

Departmental and Instructor

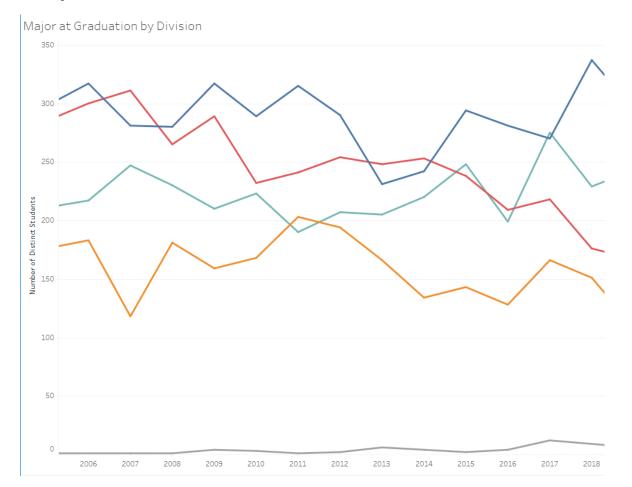


Average Class Size



Graphics: Majors

Trends over time by Division and within Divisions



- Site: Academic Analytics
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2 Faculty Lines includes graphics comparing faculty numbers to credit hours from 1/3/6 and majors from 4/7 and 5/8

While we were working on this, the President asked for a specific dashboard, comparing faculty lines to the other metrics. That's what this does.

Faculty Lines: Underlying Data

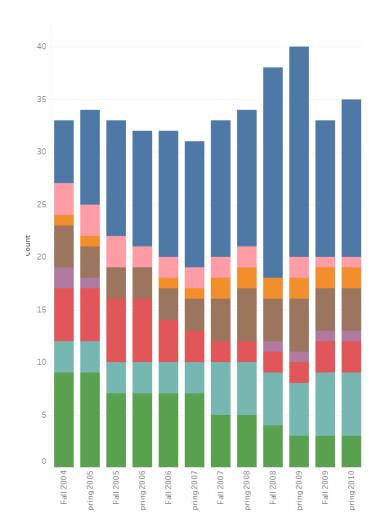
summary of official Provost's Office Faculty Listings since fall 2004 one row per term per department* number of faculty in each category

- Visitors at any rank
- Professor (includes Senior Librarians)
- Associate Professor (includes Associate Librarians)
- Assistant Professor (includes Assistant Librarians)
- Administrators with Faculty Rank
- Graduate Assistants serving as instructors of record
- Part-Time Faculty
- all others included in listing

^{*}part-time faculty hired for interdisciplinary programs or courses in AR, FA, and HP are also listed

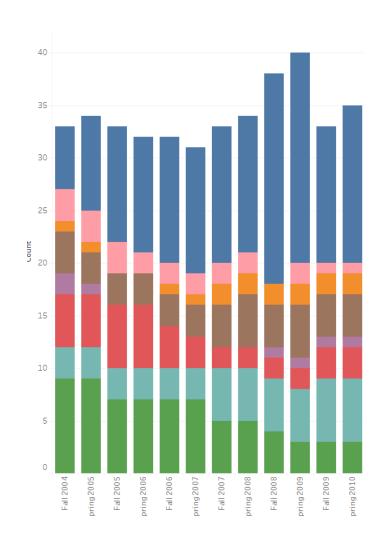
Faculty Lines: Data Table and Basic Graphics

- Data Table
 - Filter by Semester and Faculty Category
- Interactive Faculty Numbers
 - Select a Department and Filter by Category



Faculty Lines: Data Table and Basic Graphics

- Data Table
 - Filter by Semester and Faculty Category
- Interactive Faculty Numbers
 - Select a Department and Filter by Category
- Multiple Departments
 - Choose Departments and Filter by Category

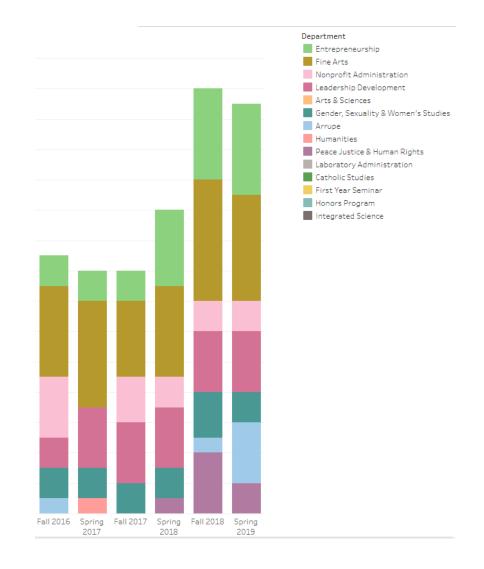


Faculty Lines: Data Table and Basic Graphics

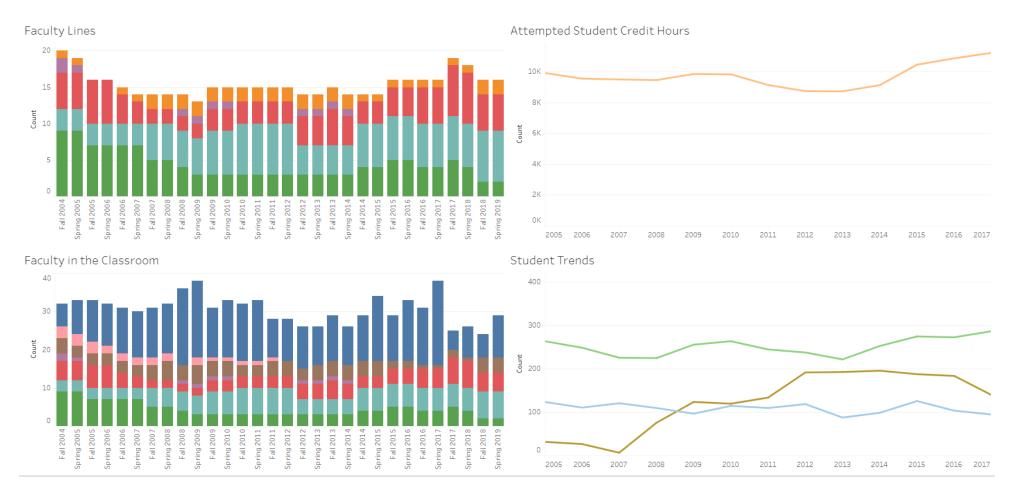
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- Multiple Departments
 - Choose Departments and Filter by Category
- Librarians
- Military Science Faculty

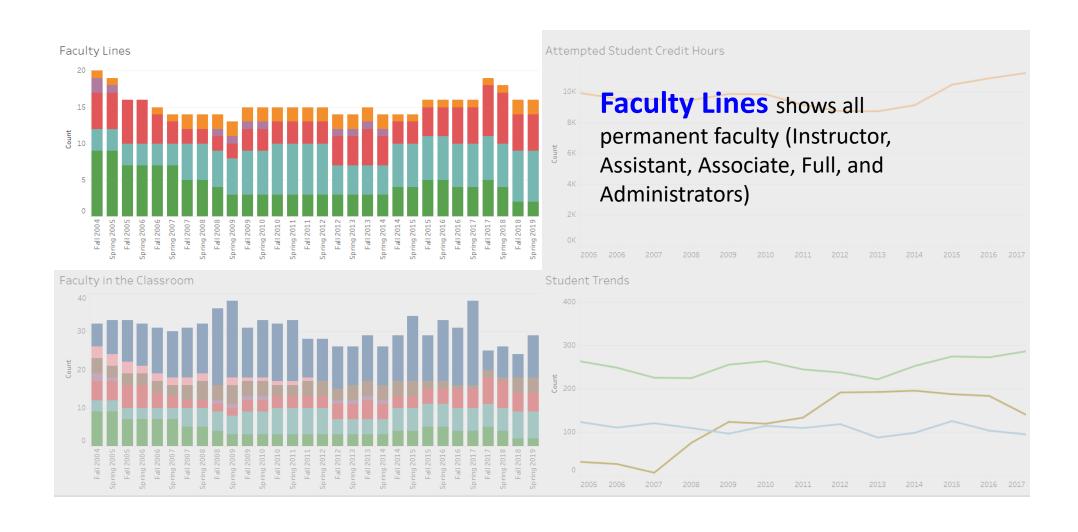
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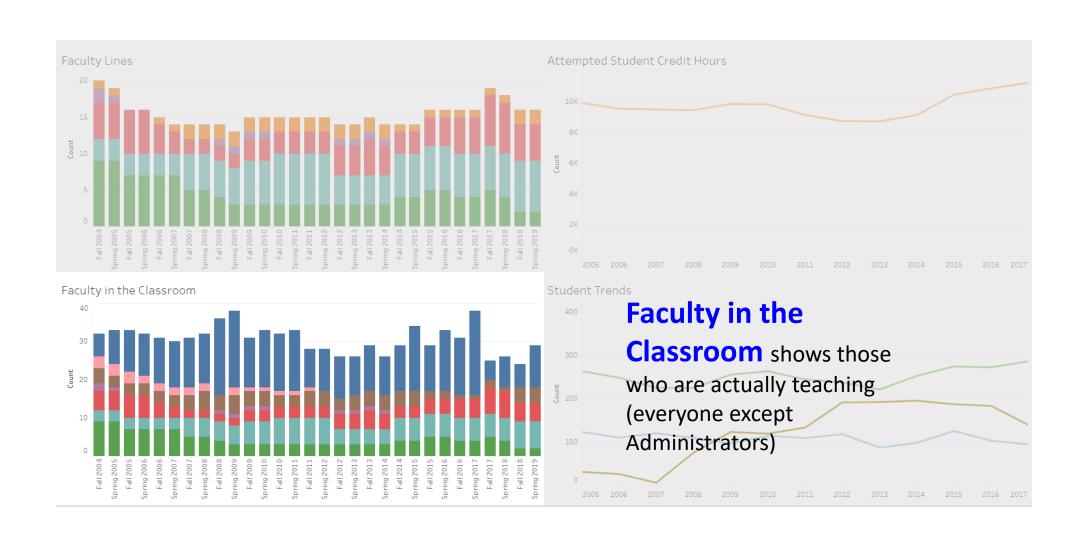
- Data Table
 - Filter by Semester and Faculty Category
- Interactive Faculty Numbers
 - Select a Department and Filter by Category
- Multiple Departments
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- Military Science Faculty
- Interdisciplinary Programs

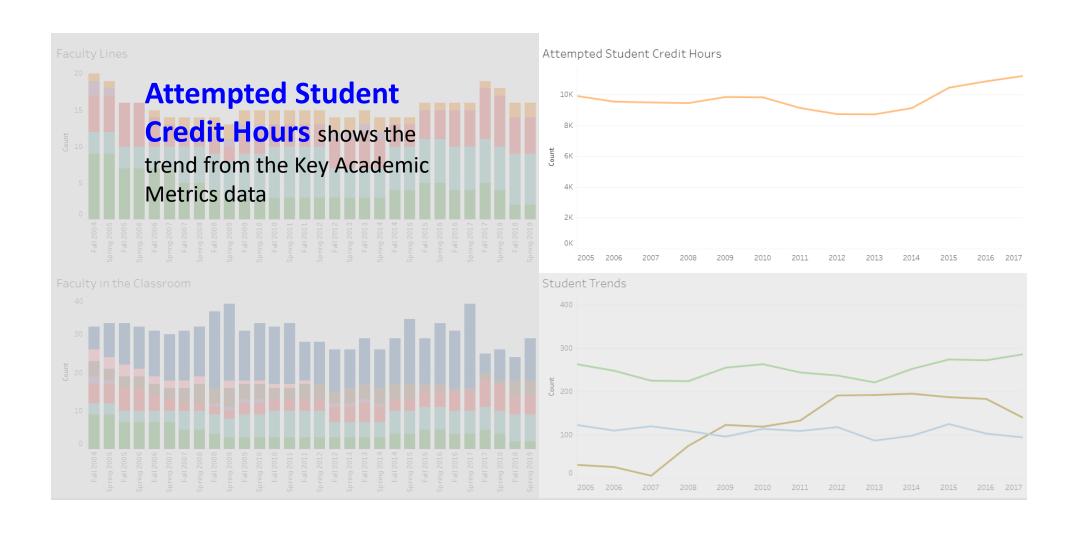


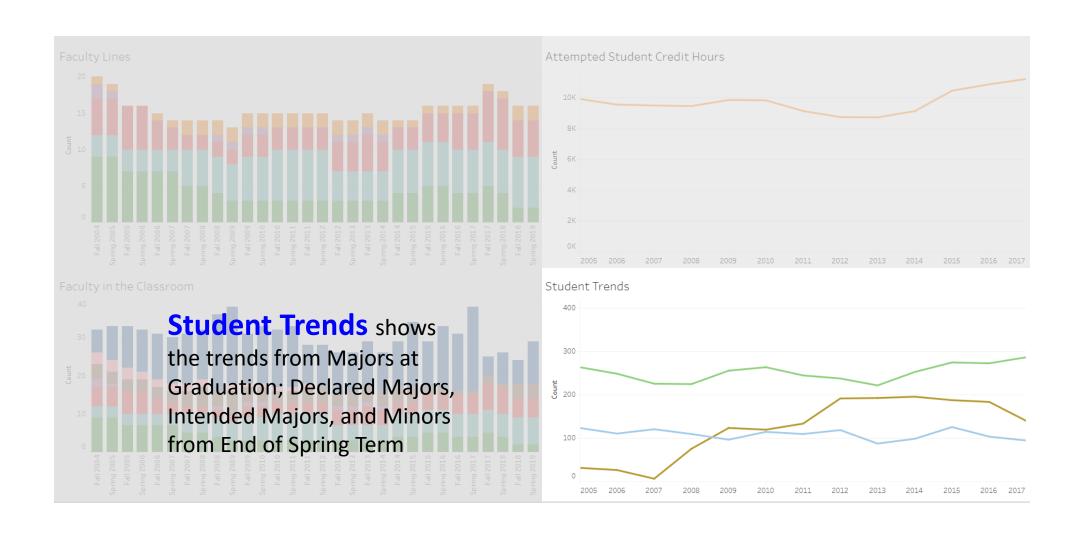
Choose a Department





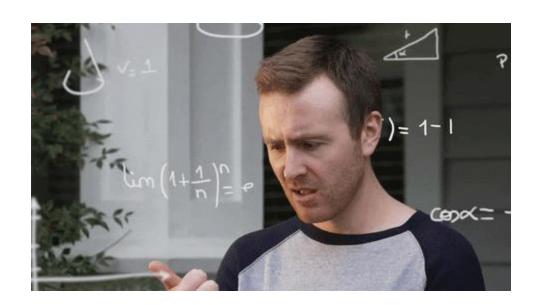






Note about Education, Counseling, and Exercise Science

- There are currently three departments that were once the Department of Education and Allied Studies. For the first couple of years following the split, there are inconsistencies in the various data sources.
- All faculty are included in Education & Allied Studies for Spring 2014 and prior semesters; current department names are used from Fall 2014 to present, regardless of actual configuration during that time.
- Not included in main Faculty Trends & Comparison dashboard; use Education & Allied Studies (through Spring 2014) or Education, Counseling, Exercise Science (since Fall 2014)



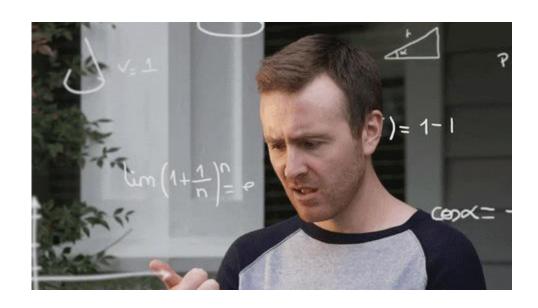
Hey! These numbers don't match what's in my head!

What's going on?



So, faculty data don't currently live in Banner. This is a literal snapshot of the official faculty records on my literal desk: the listing the Provost's office produces (each semester since 1977), the faculty list in the Bulletin, and the Book (which records tenure details). Everytime we need this data in a new way, we have to re-create it!

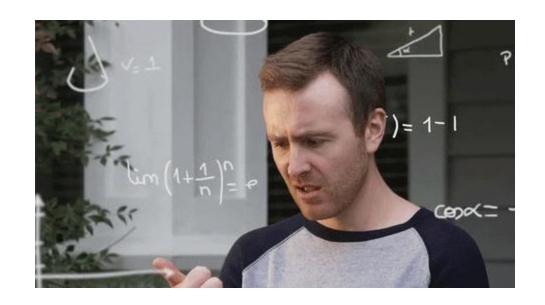




But there's also a decent number of folks generally thought of as faculty who aren't.

- Staff Who Teach
- "In Residence"
- Special Relationships

We can only present the data we have



We can only present the data we have

Faculty Data is currently being migrated to Banner

1 Key Academic Metrics

- A Tableau dashboard that asks you to choose a department/subject and then scroll down through the three key metrics:
 - Student Credit Hours: total number of credit hours paid for by students during the last three academic years
 - Number of Distinct Sections: number of distinct sections offered in each term for the past three academic years
 - Average Class Size: the total enrollment of all sections in the department divided by the number of distinct sections

1 Key Academic Metrics: Why These?

 To improve revenue, we obviously want to maximize Student Credit Hours

 Control of class size is crucial: It is not a good use of faculty resources to offer too many classes that are too small. Class sizes that balloon too large can jeopardize our value proposition to incoming students and negatively affect revenue in terms of retention.

 Including number of sections should help prohibit gaming of the class size metric.

1 Key Academic Metrics: Why These?

- Filters were chosen to be as fair as possible to faculty.
 - For Credit Hours, all courses are included.
 - For Class Size and Number of Sections, course types (like independent study) that are typically uncompensated are excluded.