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Data-Informed Decision-Making with Student Activity Hub: Use Cases from Academic Programs

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UC San Diego

Student Activity Hub Overview

MISSION

Advance the state of student data management and student analytics in order to achieve our institutional goals, as diverse as they may be, while protecting institutional autonomy and control over all data.

PROBLEM

The SAH tackles the student data management and analysis problems, giving control to the institution. Student data is typically sprawled throughout multiple systems making deep analysis on the fly difficult.

SOLUTION

Aggregated data from multiple systems is curated in views that make sense to an analyst. With its security, scalability and sophistication, we can integrate any and all student data.

OUTCOME

The goal is modest. We want to help institutions leverage a common, but easily tailored or customized solution. Our goal is not to "sell" large numbers of SAH. We just want to make a difference where we can and collaborate with peers.

SAH Publishing Model

UC San Diego

Goal

Demonstrate how Student Activity Hub (SAH) can advance student retention and success, raise graduation rates, and has helped UC San Diego achieve critical organizational goals.

Agenda

1. Ad hoc Reporting
2. Core Reporting
3. Lessons Learned
4. Discussion + Q & A

AD HOC REPORTS

- Reports created for a specific use or to answer a precise question on an “as needed” basis.
  - Gather information, test theories, probe solutions
  - Changing circumstances
  - Grant Proposals
  - Continuous improvement
- One-time need, or evolution into a core report

AD HOC REPORTING

PRE & POST SAH

DATA WAREHOUSE

- Pull data from pre-built reports OR with SQL
- Users without SQL knowledge or access would need to partner with IR to obtain data
- Time-sensitive questions could go unanswered

STUDENT ACTIVITY HUB

- Developers access SAH fields through BI tools
- Requires less technical training (SQL) to begin
- Since requests can be satisfied locally, user needs can be prioritized efficiently

AD HOC REPORTING

Graduate Cohort Sizing

- New graduate funding policy governing years and value of guaranteed support
- How many 6th year grads have we had for two given years?
  - With SAH - simple table in <10 min
  - Department can plan to place students, and work towards timelier progress to degree

Most Y Dept. PhD Students (FA15 and FA16 Cohorts) Persist into Year 6; Most Complete before Year 7

	Term Code										
Graduate Cohort Term	FA15	FA16	FA20	WI21	SP21	FA21	WI22	SP22	FA22	WI23	SP23
Fall Qtr 2015	21	21	14	13	12	2	2	2			
Fall Qtr 2016		21	20	20	20	16	17	15	4	4	4

AD HOC REPORTING

Graduate Cohort Sizing

- Considerations when setting Incoming graduate student target
  - Funding obligations to continuing students
  - Students may receive funding from outside a department
  - A department may fund outside students
  - Funded students may be past their guaranteed support time
- No existing report brought together all of these pieces
- SAH helped to connect payroll expense distribution by Employee ID to the student's home academic department and year in program
- Understanding how many existing resources could be redeployed and how many students were typically supported outside of the department allowed for more robust cohort sizes

AD HOC REPORTING

Missing Grades

- Dynamic tracking of outstanding grades
- Provide resources to instructors to complete grading
- Confirmation of when grading is complete
- Bonus: Grade distributions
- With two additional filters, this can become an ongoing report

School of Social Sciences Grades
SP23

(excludes Instruction Types: Independent Study, Labs, Tutorials)

Course Department	Course Subj..	Course Nu..	Primary Instructor Full Name	Grand Total		No Grade		A		B		C		D		F		I		NP		P		S		U		W	
				Class Se..	% of Tot..	Class Se..	% of Tot..	Class Se..	% of Tot..	Class Se..	% of Tot..	Class Se..	% of Tot..	Class Se..	% of Tot..	Class Se..	% of Tot..	Class Se..	% of Tot..	Class Se..	% of Tot..	Class Se..	% of Tot..	Class Se..	% of Tot..	Class Se..	% of Tot..	Class Se..	% of Tot..	Class Se..	% of Tot..
				9	100%	0	0%	3	33%	4	44%					1	11%					1	11%						
				18	100%	0	0%	4	[illegible]	3	17%					1	6%												
				23	100%	0	0%	[illegible]				1	4%																
				52	100%	[illegible]																							
				66	100%																							0	0%
				224	100%	0	0%	56	[illegible]	24	11%	12	5%			11	5%			1	0%	10	4%					0	0%
				110	100%	9	8%	77	[illegible]	5	5%	8	7%	1	1%	3	3%			2	2%	5	5%					0	0%
				41	100%			[illegible]		3	7%	1	2%																
				52	100%	[illegible]																							
				37	100%	0	0%	24	[illegible]	5	14%	5	14%			1	3%	1	3%			1	3%						
				29	100%	0	0%	[illegible]		3	10%											1	3%						
				30	100%	[illegible]																							
				29	100%	0	0%													1	3%	[illegible]							
				36	100%	0	0%																						
				52	100%	1	2%															[illegible]		9	17%				
				41	100%																								
				37	100%	0	0%											1	3%										

AD HOC REPORTS

- Reports created for a specific use or to answer a precise question on an “as needed” basis.
- **Benefits**:
  - Tailored reporting
  - Identifies reporting gaps
  - Can result in a core report

CORE REPORTS

- Pre-defined reports that provide information targeting specific business operations across all units.
- **Benefits**:
  - Thoroughly validated
  - Foundation for other reports
  - “True” source
  - Fact checking/validation

CORE REPORTING

PRE & POST SAH

DATA WAREHOUSE

- Manual data pulls every term
- Data was downloaded from data warehouse to local machines
- Summary tables created in spreadsheets and shared via email
- Reports are easy to change
- Lack of version control and sharing permissions

STUDENT ACTIVITY HUB

- Fully automated after initial build
- Data can only be accessed with individual login to SAH
- Version control
- Automatic data refreshes until census date
- Can be accessed at any time by authorized users

CORE REPORTING

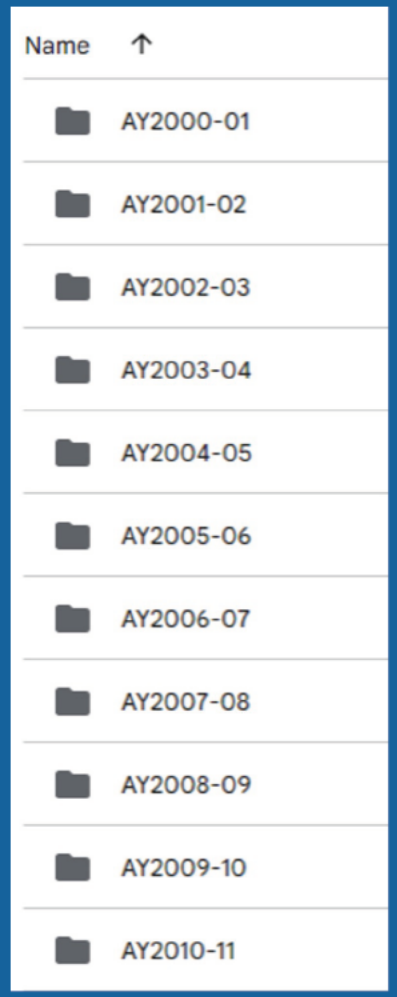
Enrollment Census

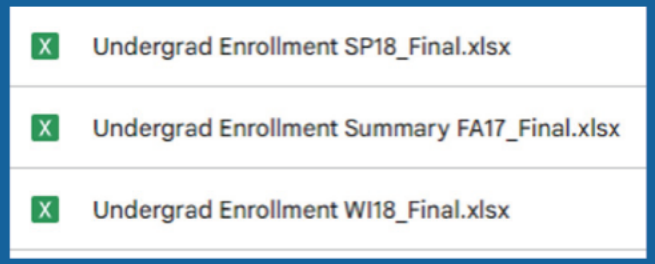
- Integral part of School reporting and operational needs including, but not limited to, the following:
  - Course scheduling
  - Resource management
  - External reporting

- Depending on access clearance provides student counts by:
  - Major
  - Demographics (gender, ethnicity, first-generation)
  - Degree Type (BS/MS/PhD)
  - Class Level
  - Applicant Type
  - Registration Status
  - Military Status
  - Citizenship Status (Resident/Non-Resident/International)

CORE REPORTING

Enrollment Census





January 12, 2022

Jacobs School of Engineering
FA21 Undergraduate Student 3rd Week Enrollment Summary

Department

Department Code	*Applicant Type_Transfer*	Total	% of Total
BENG	New Freshman/High School	453	7.21%
	Readmit	13	0.21%
	Transfer and Intercampus Transfer	91	1.45%
BENG Total		557	8.86%
CENG	New Freshman/High School	369	5.87%
	Readmit	6	0.10%
	Transfer and Intercampus Transfer	71	1.13%
CENG Total		446	7.10%
CSE	New Freshman/High School	1,375	21.88%
	Readmit	34	0.54%
	Transfer and Intercampus Transfer	464	7.38%
CSE Total		1,873	29.81%
ECE	New Freshman/High School	1,048	16.68%

CORE REPORTING

Enrollment Census

Jacobs School 3rd Week Enrollment

Final Registration Census Report: None*

Program Support Type	Department	Program Code and Description	New	Continuing	Returning	Grand Total
Grand Total			1,431	4,493	53	5,977
State-Supported	Total		1,431	4,493	53	5,977
	Bioengineering	BE25: Bioengineering	24	128		152
		BE27: Bioengineering (Biotechnology)	26	179	1	206
		BE28: Bioengineering: Bioinformatics	23	75		98
		BE29: Bioengineering: BioSystems	13	66		79
	Chemical Engineering Program	CE25: Chemical Engineering	130	285	3	418
	Computer Science & Engineering	CS25: Computer Engineering	50	65	1	116
		CS26: Computer Science	402	1,181	13	1,596
		CS27: Comp Sci w/Spec Bioinformatics	10	26		36
	Electrical & Computer Engineering	EC26: Computer Engineering	138	467	8	613
		EC27: Electrical Engineering	182	499	15	696
		EC28: Engineering Physics	3	10	1	14
		EC37: Electrical Engin & Society	2			2
	Mechanical & Aerospace Engineering	MC25: Aerospace Engineering	100	314	2	416
		MC27: Mechanical Engineering	83	372	5	460
		MC29: Environmental Engineering		9		9
		MC30: MechEngW/SpecRnEnergy&EnvFlo..	10	95		105
		MC31: MechEngW/SpecMechanics of Mat	1	13		14
		MC32: MechEngW/Spec Material Sci&Eng	2	24		26
		MC33: MechEngW/SpecFluidMech&Thrml..		10		10
		MC34: MechEngW/Spec Cntrl & Robotics	24	170		194
	NanoEngineering	NA25: NanoEngineering	46	108	2	156

Term Year
2022-2023

Quarter
Fall Qtr

Department
(All)

Degree Type
(All)

Major
(All)

Ethnicity
(All)

Gender
(All)

Applicant Type
(All)

Citizenship
(All)

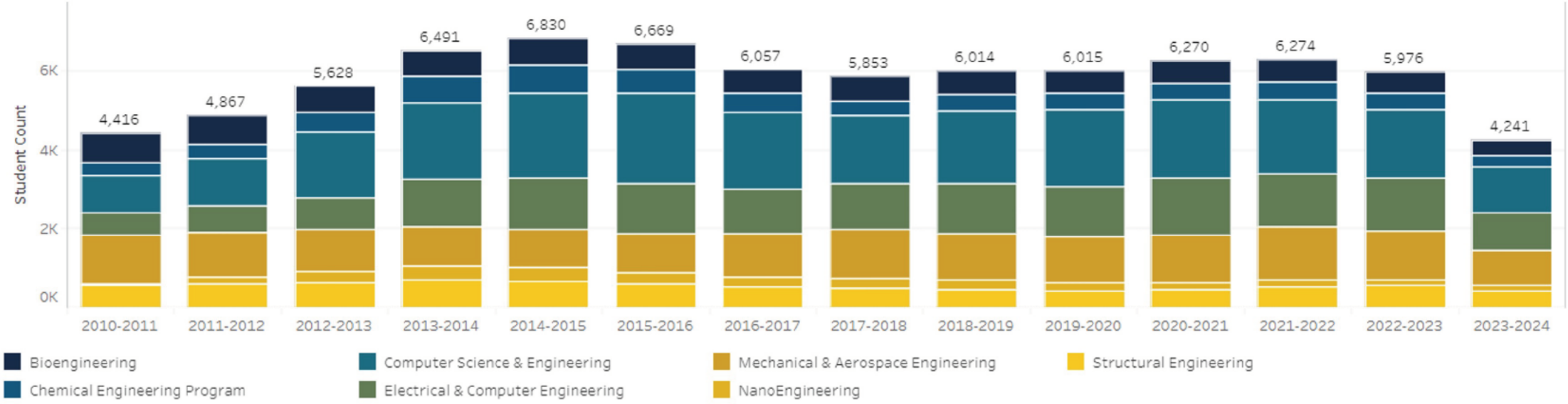
Perm Resident
(All)

CORE REPORTING

Enrollment Census

Jacobs School 3rd Week Enrollment Trends

Final Registration Census Report: None*



Department	Program Code and Description	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023	2023-2024
Grand Total		6,830	6,669	6,057	5,853	6,014	6,015	6,270	6,274	5,976	4,241
Bioengineering	BE02: Pre-Bioengineering:Pre-Medical										
	BE25: Bioengineering	202	189	174	169	173	186	176	164	152	118
	BE26: Bioengineering: Pre-Medical	2									
	BE27: Bioengineering (Biotechnology)	235	203	208	205	220	202	216	196	206	141
	BE28: Bioengineering: Bioinformatics	155	138	132	121	101	91	103	106	98	72

Quarter: Fall Qtr

Department: (All)

Degree Type: (All)

Program: (All)

Ethnicity: (All)

Gender: (All)

Applicant Type: (All)

Military Status: (All)

Citizenship: (All)

Perm Resident

CORE REPORTING

Degrees Conferred

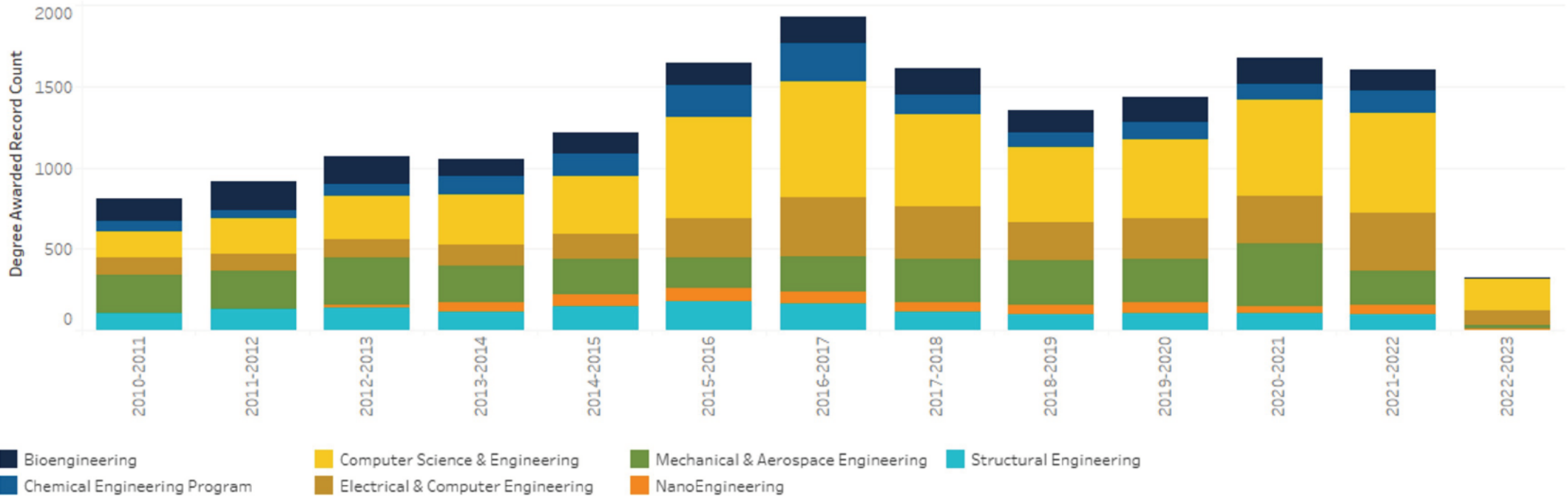
- Track number of degrees conferred by:
  - Academic Year
  - Department
  - Major
  - Demographics (gender, ethnicity, first-generation)
  - Degree Type (BS/MS/PhD)
  - Applicant Type
  - Military Status
  - Citizenship Status (Resident/Non-Resident/International)

- Access to updated conferral counts before data is finalized

CORE REPORTING

Degrees Conferred

Jacobs School Degrees Awarded



Awarded Term Year (YYYY)
(Multiple values)

Degree Group
Bachelor's

Primary Major Department
(All)

Primary Major
(All)

First Generation Current Flag
(All)

Gender Derived
(All)

Ethnicity EDI Broad Current
(All)

Military Status Current
(All)

Primary Major Department	Primary Major	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020	2020-2
Bioengineering	Bioengineering	43	50	43	32	47	61	40	42	38	47	
	Bioengineering (Biotechnology)	31	73	81	54	61	48	54	57	65	54	
	Bioengineering: Bioinformatics	4	9	7	10	18	28	29	24	20	19	

CORE REPORTING

DFW Rates

- Outcome of a Time-to-Degree Task Force
- Question: Why are undergraduate students taking longer than expected to graduate?
- Displays D, F, and W grades as a percentage of total enrollment by course

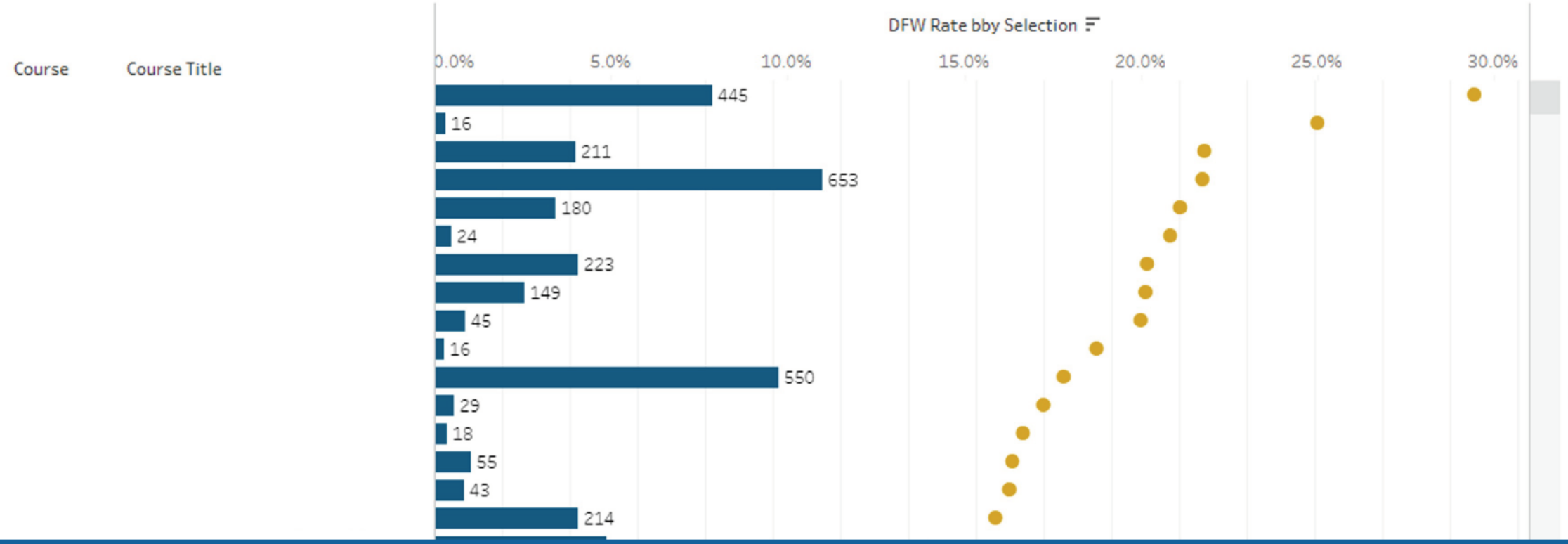
- Results:
  - Identifies bottleneck courses with high fail rates
  - Data-driven decision to increase specific course offerings
  - Early Student Affairs intervention to ensure timely graduation
  - Shared with and used by other Schools

CORE REPORTING

DFW Rates

Jacobs School Course Enrollment & DFW Rates

Course enrollment and DFW counts and rates. Available filters include academic year and course department. Minimum course size is set to 15. Use the slider to increase minimum size requirement. Select any course number or title to get more information about multiple instructors and sections (if applicable).



LESSONS LEARNED

Validation

Need for granular validation to ensure accuracy at the lowest level of detail.

Non-technical users struggle to validate against source systems.

Resolution time impacts delivery timeline.

Enhancements & Fixes

Identified issues join a development pathway

- timeline
- detailed definitions
- user acceptance testing

Training

Developers: in BI tool & SAH

Consumers: how to interact with the report and data literacy

All users: data privacy and equity-informed data use

DISCUSSION + Q&A

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