

DATA VISUALIZATION

Hal Jankowski, CPA

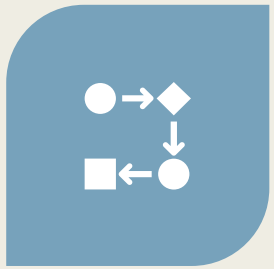
For Kentucky Society of CPAs

May 15, 2025

Data Visualization



UNDERSTAND LANGUAGE OF VISUALIZATION



UNDERSTAND GENERAL PROCESS FOR CREATING AND USING VISUALIZATION



IDENTIFY OPTIONS FOR SELF-SERVICE ANALYSIS

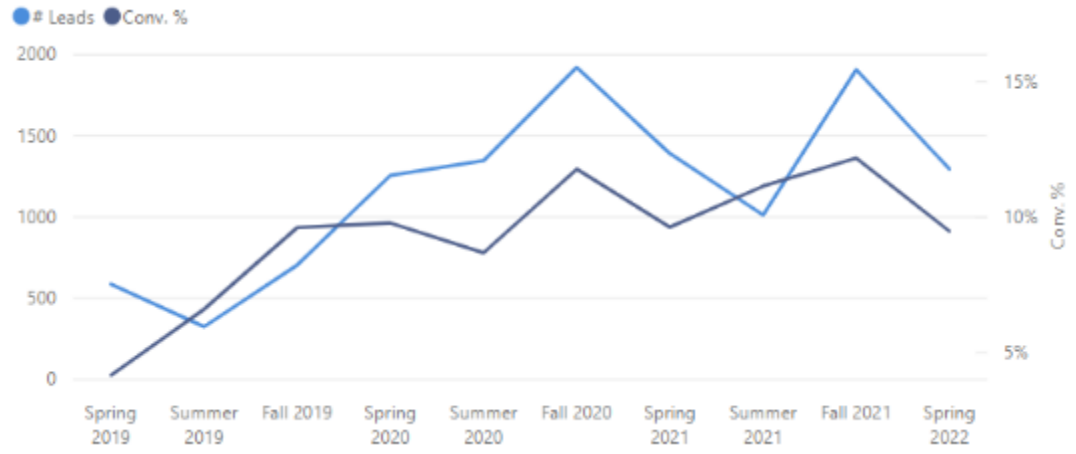


DESCRIBE PRACTICAL EXAMPLES OF HOW THESE TOOLS ARE USED

Remaining Budget	% Consumed
$127,015	65.72%
$98,033	71.70%
$54,189	57.36%
$279,236	**66.91%**

POST DATE	FI DOC NO	FUND	COST CENTER
7/2/2021	5106352678	A100001	7711100000
7/29/2021	104286112	D100103	7710000000
7/29/2021	104286112	D100103	7710000000
7/31/2021	104291786	A100001	7711100000
7/31/2021	104291801	D100103	7711100000
8/5/2021	5106357411	A100001	7711100000
8/31/2021	104321552	A100001	7711100000
8/31/2021	104321569	D100103	7711100000

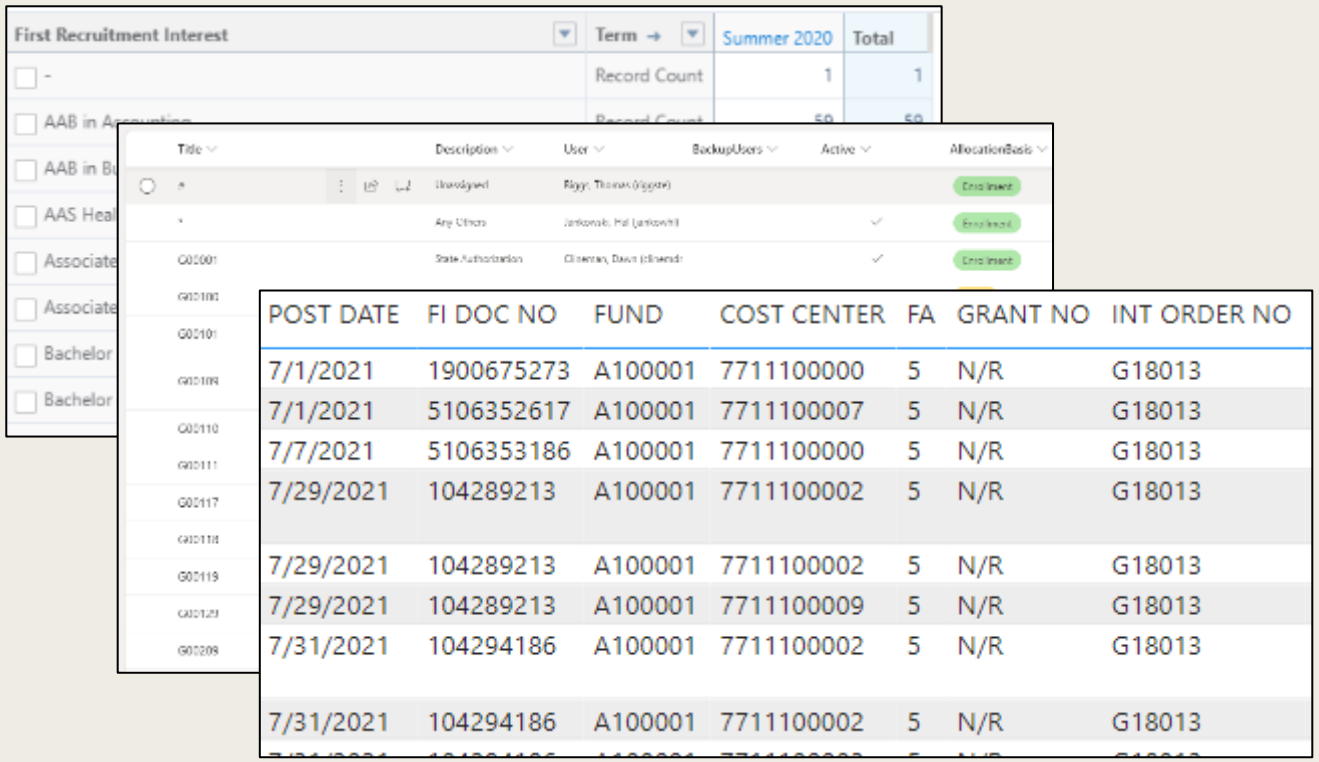
DATA VERSUS INFORMATION

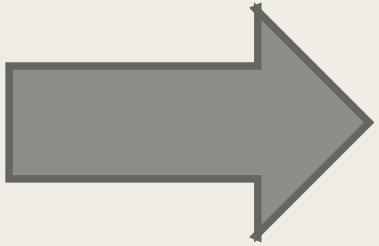


% Consumed	Projected Surplus or Shortfall	Average Spend Per Month	Monthly Spend Required to Consume Remaining Budget
65.72%	$86,858	$23,714	$127,015
71.70%	$56,972	$24,191	$98,033
57.36%	$42,646	$7,100	$54,189
66.91%	**$186,476**	**$55,005**	**$279,236**

ANALYTICS VERSUS VISUALIZATION

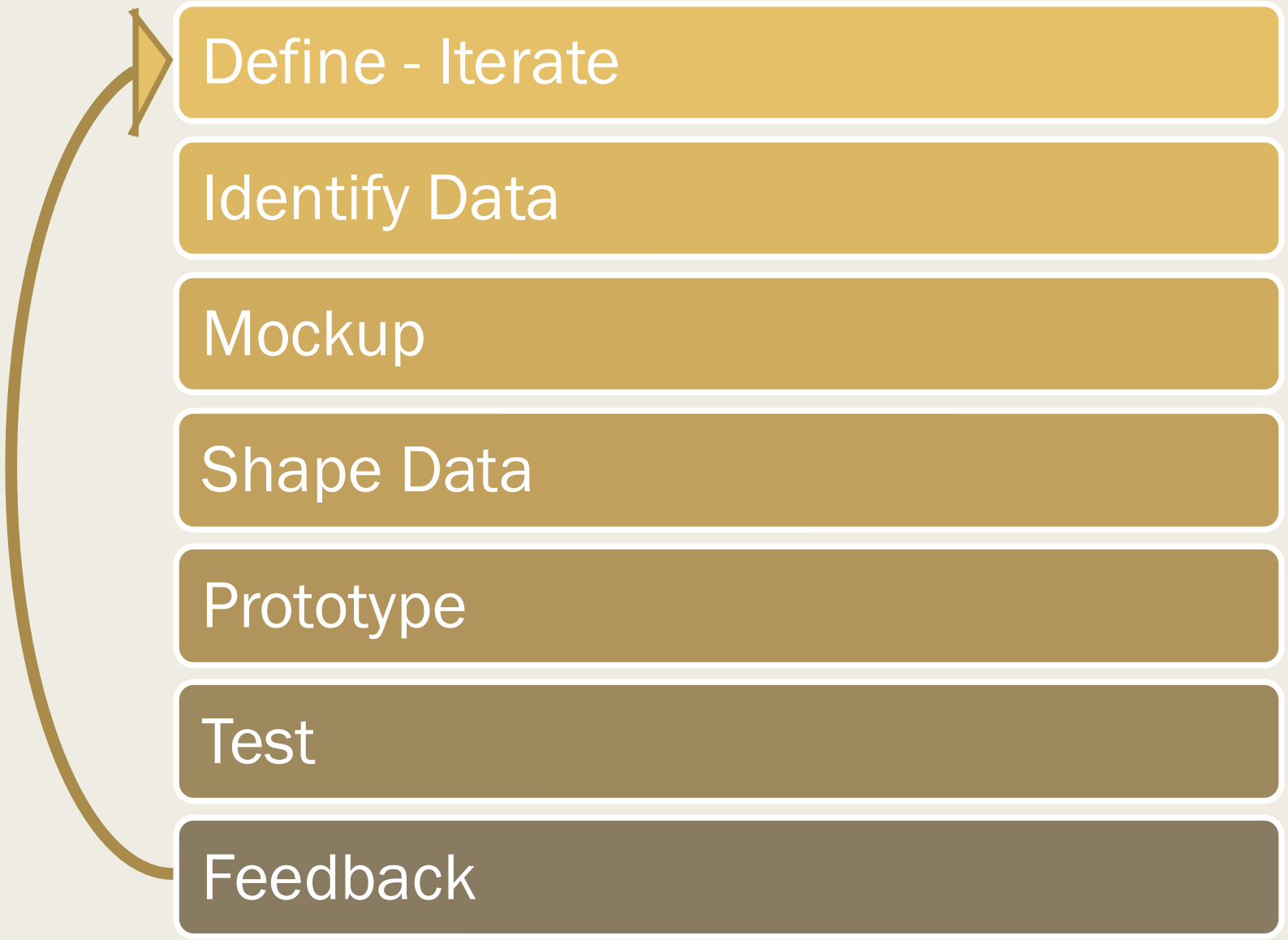
Data Shaping





me	# Leads	# New	Conv. %	Direct $	Direct $/Lead
tes	2,150	212	9.86%	$918,195	$427.07
	199	7	3.52%	$73,844	$371.07
	522	34	6.51%	$235,459	$451.07
				($9,645)	$0.00
	580	47	8.10%	$173,832	$299.71
	250	12	4.80%	$57,468	$229.87
	1,792	147	8.20%	$210,399	$117.41
	860	104	12.09%	$125,909	$146.41

Visualization Process



Future Term

Month XX, 20XX
Month XX, 20XW

Leads

Projected New Enrollments

Projected Continuing Enrollments

Projected Total Enrollment

Program Staff Directory
Name – Program Director
Name – Marketing
Name – Recruiting
Name – Retention
Name – Instructional Design

Applicants

Conv Rate

Loss Reasons
Reason…
Reason…
Reason…

Competitors Lost To
Competitor
Competitor
Competitor

Add usability notes (i.e. hover to see detail)

University of Cincinnati | Online

Program Status Report – Fall 2025 - Master of Subject Studies

April 27, 2024
April 28, 2025

Who supports my program?



TOTAL LEADS

6,323
▼704 vs. LY



APPLICATION (NEW)

2,525
▲326 vs. LY



APPLICATION (COMPLETE)

926
▲156 vs. LY



OFFERED

608
▲55 vs. LY



CONFIRMED

392
▲12 vs. LY



ENROLLED

37
▲26 vs. LY

Program Director - Lucy Bearcat
Marketing – Bobby Binturong
Recruiting – Billie Jean Binturong
Retention – Jenna Bearcat
Instructional Design – Lucille Bearcat

Loss

CY Leads: 6,323
PY Leads: 7,027
Change: ▼704
% Change: ▼10%



PROJECTED NEW ENROLLMENT

423
▲20 vs. LY



PROJECTED CONTINUING ENROLLMENT

2,618
▼17 vs. LY



PROJECTED TOTAL ENROLLMENT

3,041
▲3 vs. LY

Options for Self Service

Data Prep/Shaping

- Excel – Power Query
- SAS
- Alteryx
- Knime
- Pentaho

Data Visualization

- Excel Power Pivot
- Power BI
- Tableau
- Google/Looker Data Studio

Why should you learn data analysis and visualization?

- Speed up analysis
- Automate recurring reporting
- Analyze complex and/or large data
- Ease of sharing reports and information
- Build it once, build it with access control, share the same visualization with custom views

Practical Examples

- Enrollment & Revenue Projections
- Budget vs. Actual with Projected Budget Balance
- Cost Per Lead, Cost Per New
- Persistence & Retention
- Turnover
- Finance/Admin Volume Report
- Transaction Pattern Analysis
- Weekly HR Report
- Conference Room Utilization

Enrollment & Revenue Projections

The problem: Project enrollment and revenue for next fiscal year—by semester (3), by program (100+)

Solution: Excel workbook using PowerQuery and PowerPivot to automate calculations and facilitate analysis

The data:

- New student projections (marketing & recruiting)
- Returning student projections (student information system and retention team)
- Rates (bursar and/or budget assumptions)
- Student composition i.e. in-state/out-of-state and full-time/part-time (student information system)
- Credit hour production (student information system)

UC Online					
Revenue Projections Example					
		Summer	Fall	Spring	Source
Prior Term Enrollment	A	114	111	125	Prior Term Enrolment
Graduates	B	-17	-41	-20	Retention Team
Potential Continuing	C = A-B	97	70	105	
Persistence	D	90%	90%	90%	Student Information System
Continuing	E = C * D	87	63	95	
Returning	F	8	2	2	Student Information System
New	G	16	60	27	Marketing & Recruiting Team
Current Term Enrollment	H = E + F + G	111	125	124	
Percent Full Time	J	12%	42%	44%	Student Information System
Percent Non-Resident	K	52%	55%	55%	Student Information System
PT Per SCH Rate	L	662	662	662	Bursar and/or Budget Assumption
Fulltime Rate	M	6620	6620	6620	Bursar and/or Budget Assumption
NRS Per SCH Rate	N	15	15	15	Bursar and/or Budget Assumption
NRS Fulltime Rate	P	150	150	150	Bursar and/or Budget Assumption
PT Program Fee Per SCH Rate	Q	30	30	30	Bursar and/or Budget Assumption
FT Program Fee Rate	R	300	300	300	Bursar and/or Budget Assumption
PT SCH/Student	S	6.07	6	6.07	Student Information System
Total SCH/Student	T	6.82	8.5	8.73	Student Information System
Full Time Students	U = H * J	13	53	55	
FT Non-Resident	W = U * K	7	29	30	
Part Time Students	X = H - U	104	96	94	
PT Non-Resident	Y = X * K	55	53	52	
Part Time SCH	Z = X * S	631.28	576	570.58	

					Total
Part Time Tuition	AA = Z * L	417,907	381,312	377,724	1,176,943
Part Time NRS	AB = Y * N * S	5,008	4,770	4,735	14,512
Part Time Program Fee	AC = X * Q * S	18,938	17,280	17,117	53,336
					-
Full Time Tuition	AD = U * M	86,060	350,860	364,100	801,020
Full Time NRS	AE = W * P	1,050	4,350	4,500	9,900
Full Time Program Fee	AF = U * R	3,900	15,900	16,500	36,300
					-
Total Attributable Tuition	AG = AA + AB + AC + AD + AE + AF	532,864	774,472	784,676	2,092,011

ENROLLMENT & REVENUE PROJECTIONS MOCKUP

ENROLLMENT & REVENUE PROJECTIONS DATA SHAPING

	SCH/HC	SCH/HC-FT	SCH/HC-PT	IFee/HC-FT	IFee/SCH-PT
	10.58	**14.13**	**6.87**	**4,769.17**	**376.22**
	10.58	14.13	6.87	4,769.17	376.22
	6.66	**13.08**	**5.75**	**5,418.67**	**588.47**
Childhood Care and Education	5.91	13.10	5.46	4,855.02	405.75
e	10.33	13.84	6.28	4,845.72	370.96
rly Childhood Education	7.23	13.42	5.97	4,725.81	400.10
gal Studies	13.43	14.26	7.50	5,004.68	332.10
se Counseling	10.25	13.27	7.00	4,815.26	408.51
s Graduate	4.68	16.00	4.52	6,395.00	662.00

Total Student Enrollment Forecast

n Updates	Marketing Updates				
Name	Prior Enrolled	Spring 22 Graduates	Summer Retention Goal	Summer 22 New Students	Sum
ommunication			85%		
rganizational Leadership			85%		
eographic Information Systems			85%		
Early Childhood	185	11	77%	21	
riminal Justice	181	27	59%	15	
Early Childhood	126	15	73%	10	
w and Paralegal Studies	31	5	70%	5	
bstance Abuse Counseling	97	10	46%	11	
cate Autism Spectrum Disorders	4		100%		

	Program Name	Season
1	15-BA Communication	Prior
2	15-BA Communication	Prior
3	15-BA Communication	Summer
4	15-BA Communication	Summer
5	15-BA Communication	Summer
6	15-BA Communication	Fall
7	15-BA Communication	Fall
8	15-BA Communication	Fall
9	15-BA Communication	Spring
10	15-BA Communication	Spring
11	15-BA Communication	Summer
12	15-BA Communication	Summer
13	15-BA Communication	Summer
14	15-BA Communication	Fall
15	15-BA Communication	Fall

Advanced Editor

factFY22EnrollmentProjections

```
let
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    #"Promoted Headers1" = Table.PromoteHeaders(#"FY23 Enrollment projectio
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2235	2238	2241	Total
141,845.40	189,536.32	194,768.93	**526,150.65**
322,583.92	650,804.40	782,422.20	**1,755,810.51**
5,141,970.45	7,240,887.52	7,655,244.13	**20,038,102.10**
200,152.26	298,350.34	318,383.05	**816,885.65**

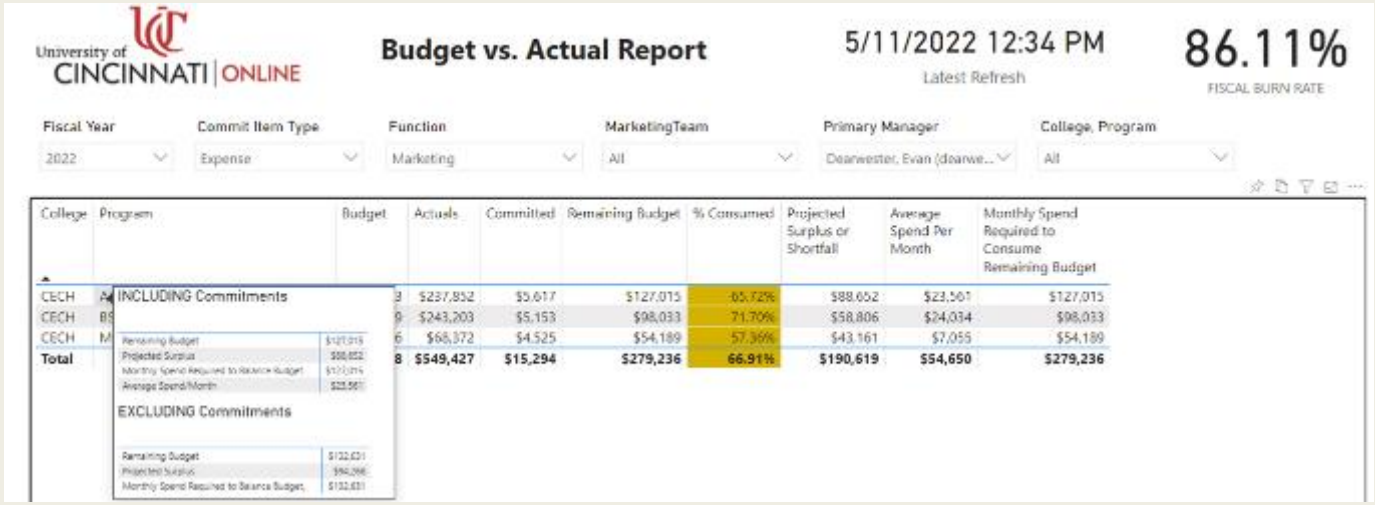
Budget vs Actual with Projected Budget Balance

The problem: 100+ cross functional program budgets, with different functional managers for each

Solution: PowerBI Dashboard with security, predictive analytics, and detail drill through

The data:

- Budget, Actual, and Commitment data from financial system
- Program manager assignments



Cost Per Lead & Cost Per New





The problem: What is the efficacy of marketing spend to generate leads who convert to new students?

Solution: Power BI report and dashboard summarizing

The data:

- Marketing costs from financial system
- Program revenue from student information system
- Leads by program from CRM
- New student enrollments from student information system
- Program manager assignments

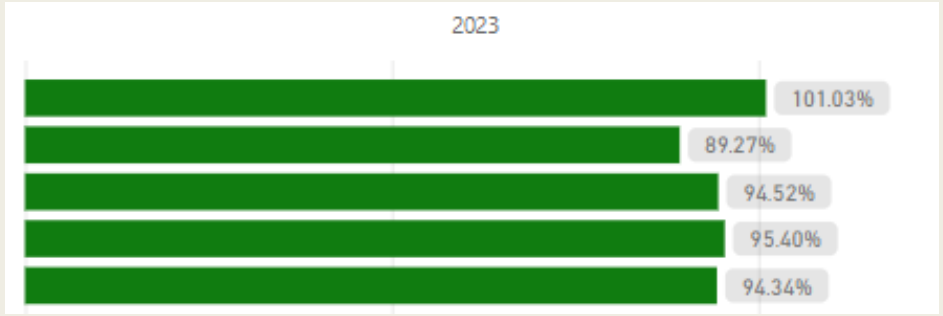
Persistence and Retention

The problem: How many students enrolled today were ever enrolled in the same degree in the past? How many students enrolled last term continued to this term?

Solution: Excel workbook using Power Query and Power Pivot to shape and summarize data by major, college

The data:

- Term enrollments with major from the student information system



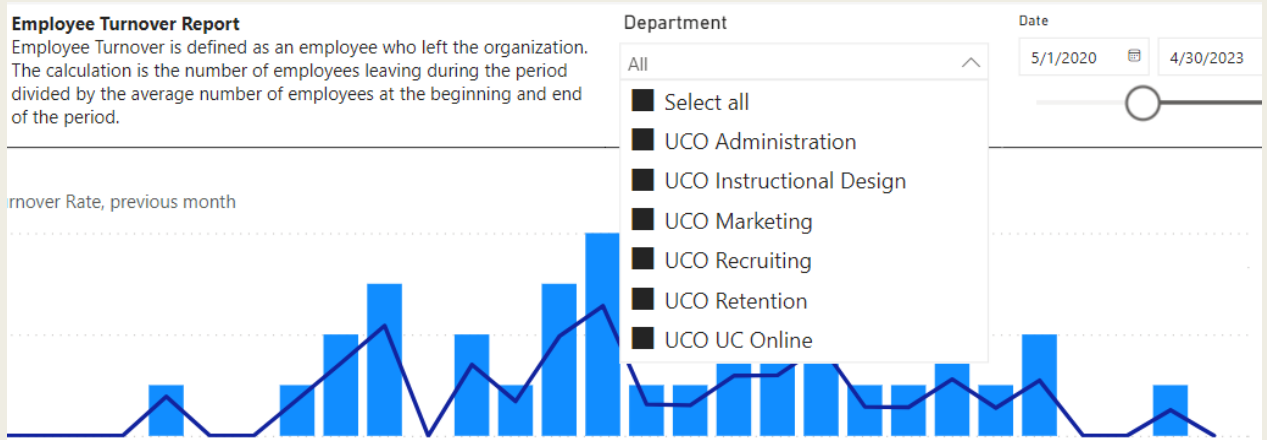
Turnover

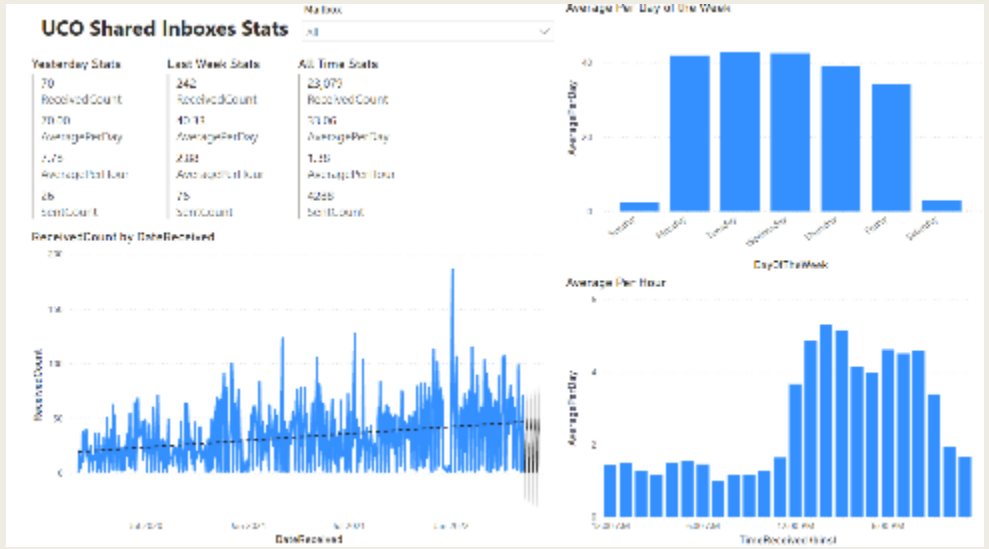
The problem: What is the turnover rate, over time (same position and/or same employee)

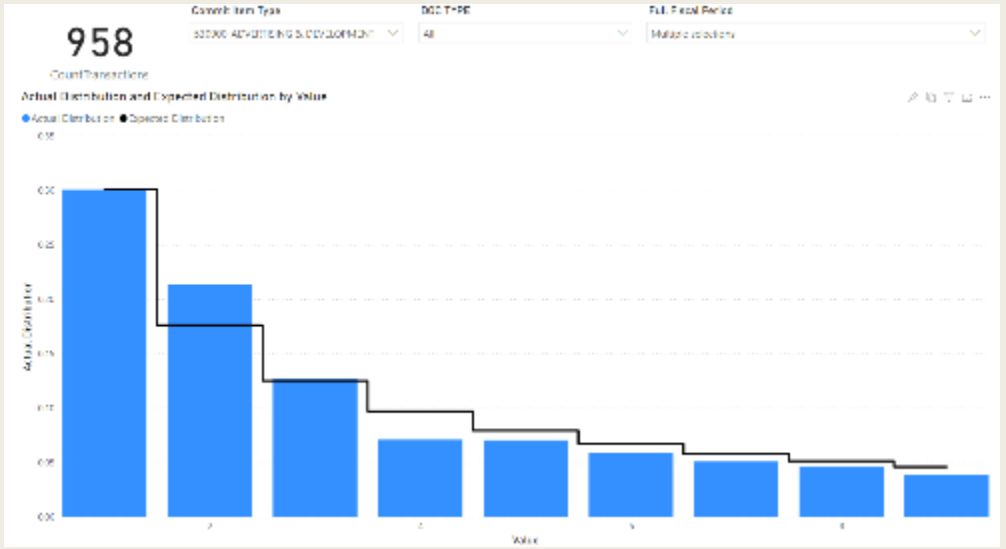
Solution: Excel workbook using Power Query and Power Pivot to shape and summarize data by function

The data:

- Position actions from the HR information system







FINANCE/ADMIN VOLUME REPORT
TRANSACTION PATTERN ANALYSIS
WEEKLY HR REPORT

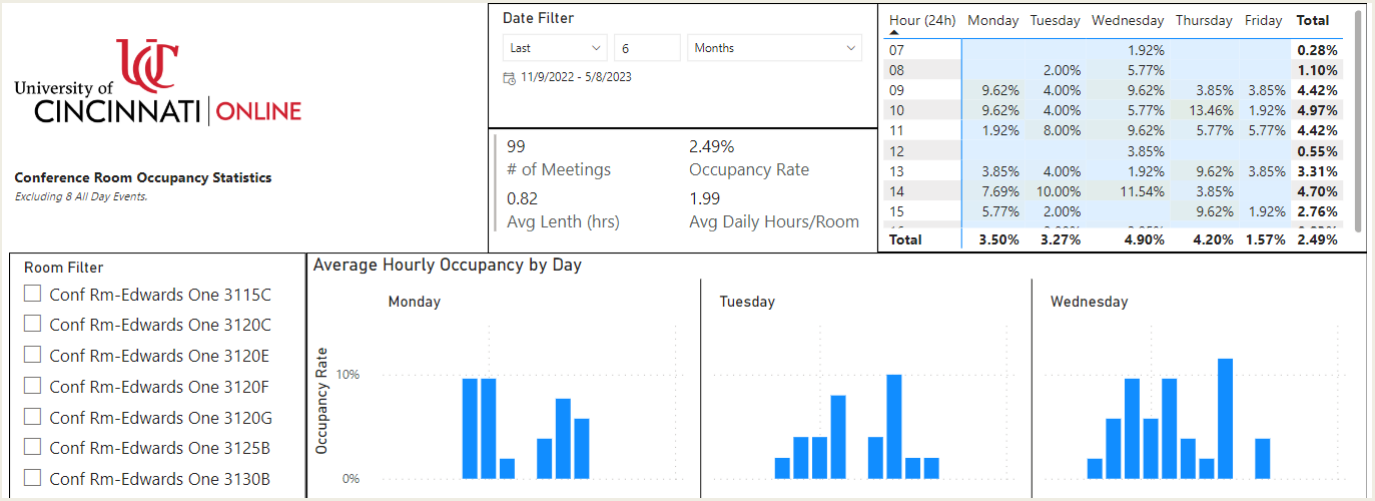
Conference Room Utilization

The problem: What is the utilization of conference rooms, that could be converted to shared work spaces or offices?

Solution: Power BI report and dashboard summarizing

The data:

- Appointment data from Exchange



Contact Me

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