



New Program Identification and Development



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Gray Decision Intelligence



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The traditional university business model is complex.

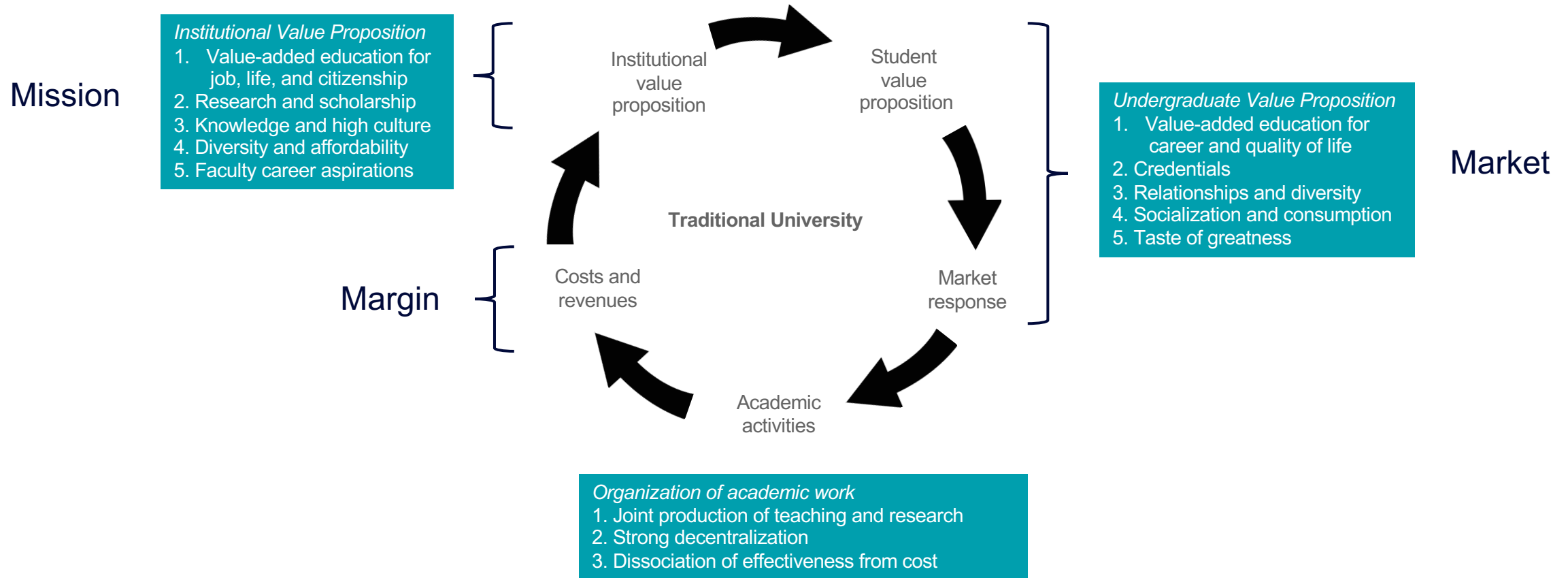


Figure 1.2. The Business Model as applied to undergraduates. *Reengineering the University*, by William F. Massy, John Hopkins University Press, 2016, p. 32.



What challenges do graduate school leaders face?

Recruiting and Retention of Faculty

New Program Identification

Rising Faculty/Graduate Assistant Costs

Curriculum Development and Adaptation

Funding and Budget Constraints

Program Approval Process

Access to Data



Agenda

- **Program Evaluation System**
- **Markets**
- **Economics**
- **Program Management**
- **Case Study: Miami University**
- **Predict Program Size**
- **Activity**



What is a Program Evaluation System?



Program Portfolio Evaluation

Program evaluation starts with mission.

- Is the program central to the mission of the institution?
- What changes are needed to support the mission better?

It evaluates the ongoing health of current and new programs.

- Market demand by students and employers
- Competitive saturation
- Program economics: direct instructional revenue, cost, and margin

It informs decisions to start, stop, sustain, or grow programs.

- It ensures that your academic program portfolio is sustainable.



Data Democratization



*“Data democratization means that **everybody has access to data** and there are no gatekeepers that create a bottleneck at the gateway to the data. It requires that we **accompany the access with an easy way for people to understand the data** so that they can use it to **expedite decision-making** and uncover opportunities for an [institution]. The goal is to have anybody use data at any time to make decisions with no barriers to access or understanding.” -Forbes*

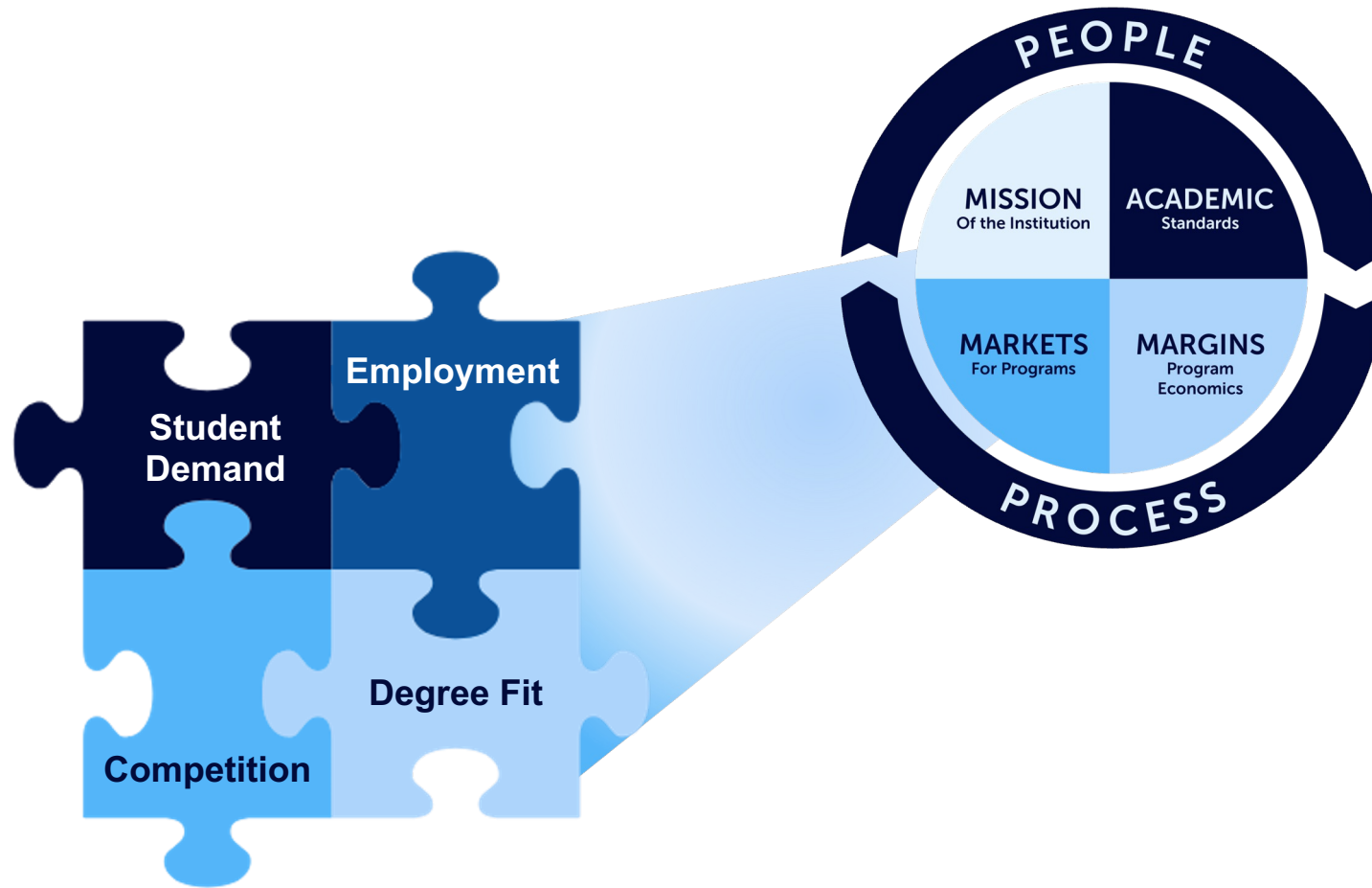


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You need key elements of your market.

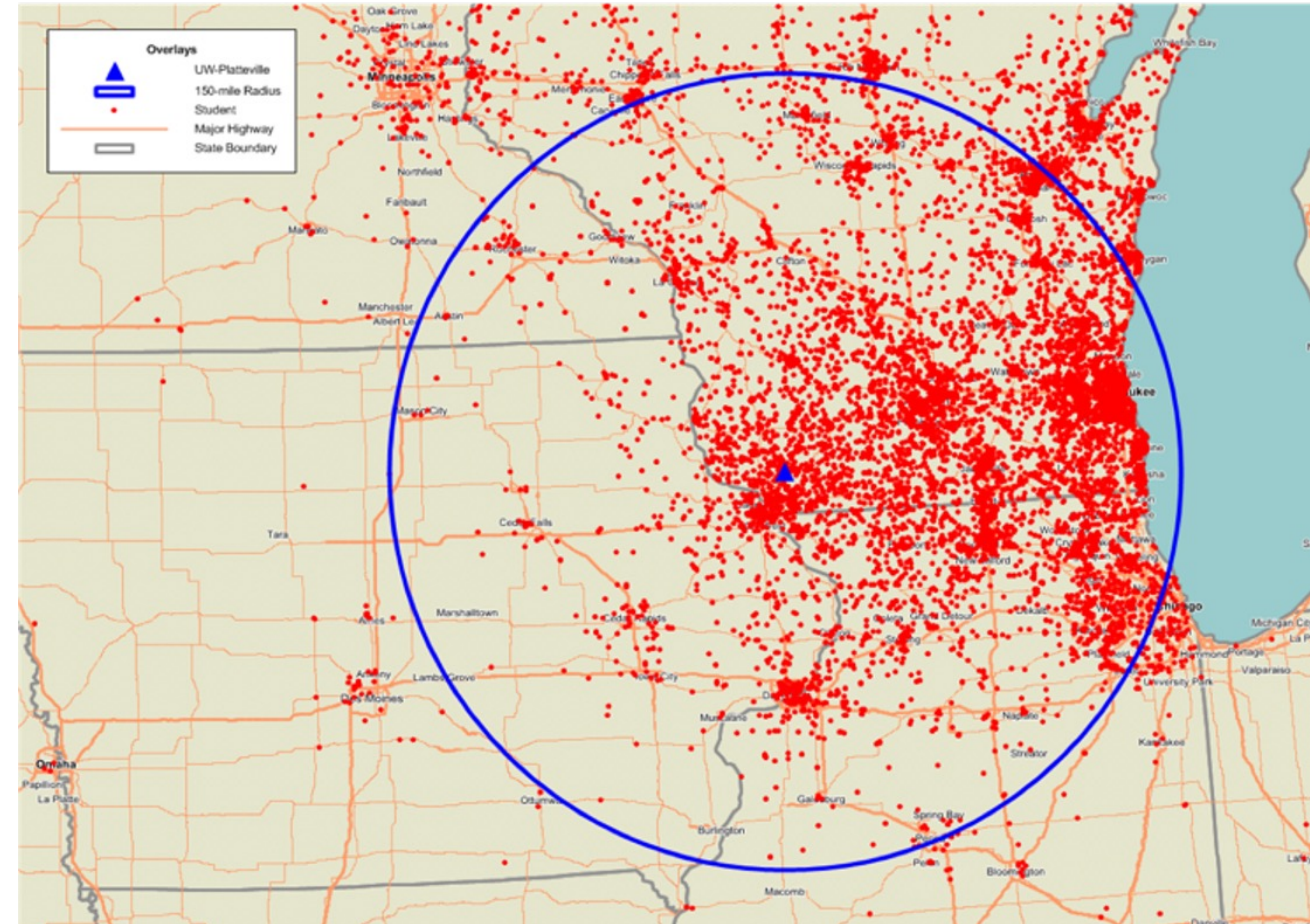




Market Definition

Using Student Data to Define Markets

- Student demand, employment, and competitor information are specific to local markets.
- Using student addresses or zip codes, you can identify the market or markets you serve.
- You will likely want regional and national data for online students and for jobs that can be done remotely.



IPEDES, Enrollment, and Google Search: Past, Present, Future

Insights on Student Demand



IPEDES



Enrollment



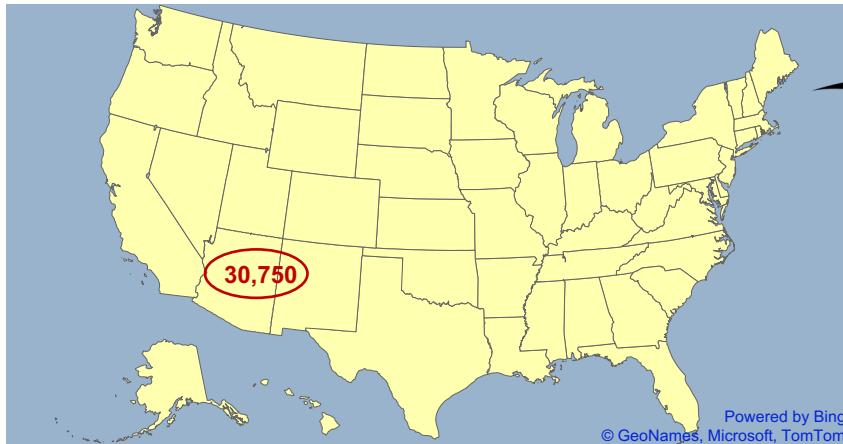
Google

The Past: IPEDS completions reflect the programs students chose at least four years ago.

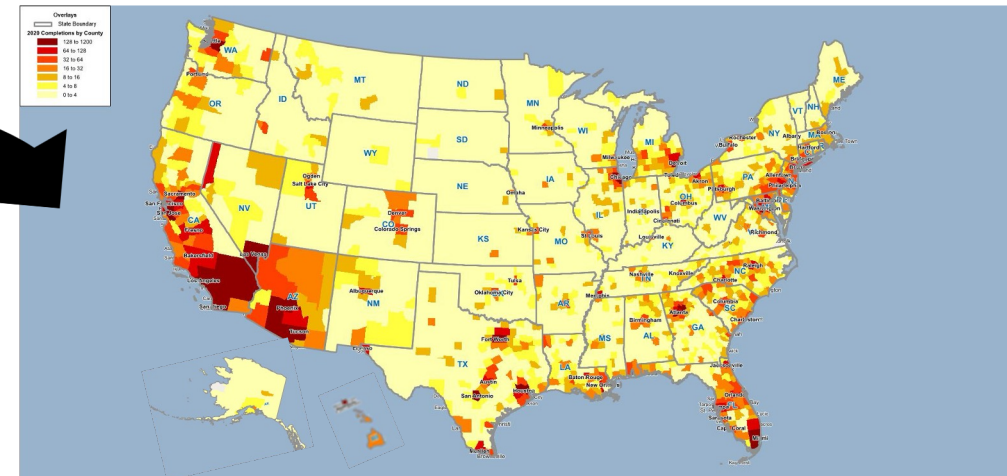
They can also be very misleading.

- In Phoenix, the University of Phoenix's completions are overstated by more than 25,000.
- Of course, this means other markets, e.g., Miami, are significantly underestimated.
- This error confounds competitive analysis and labor market saturation metrics.

University of Phoenix
IPEDS Completions Reported to HQ Market



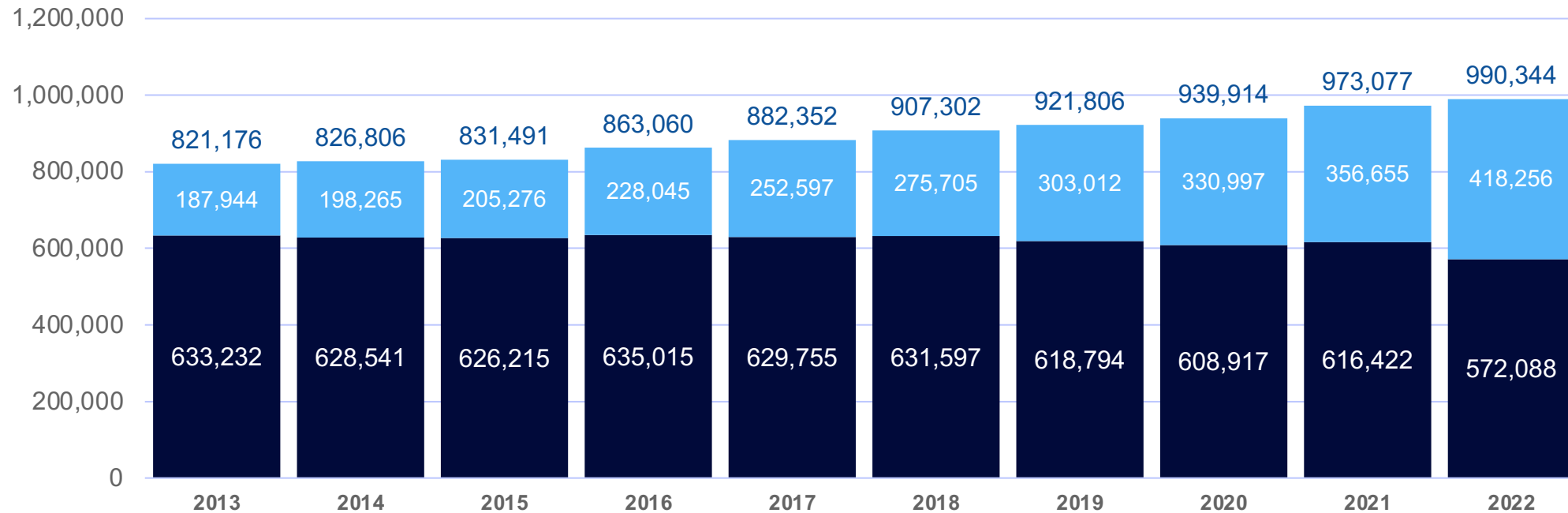
University of Phoenix
PES Enhanced Completions by Local Market



The Past: Total completions are up

Online completions continue to grow faster.

2013-2022 Completions by Modality
Master's and Grad Certificates



Compound
Annual Growth
Rate
2017 – 2022

Total: 1.3%

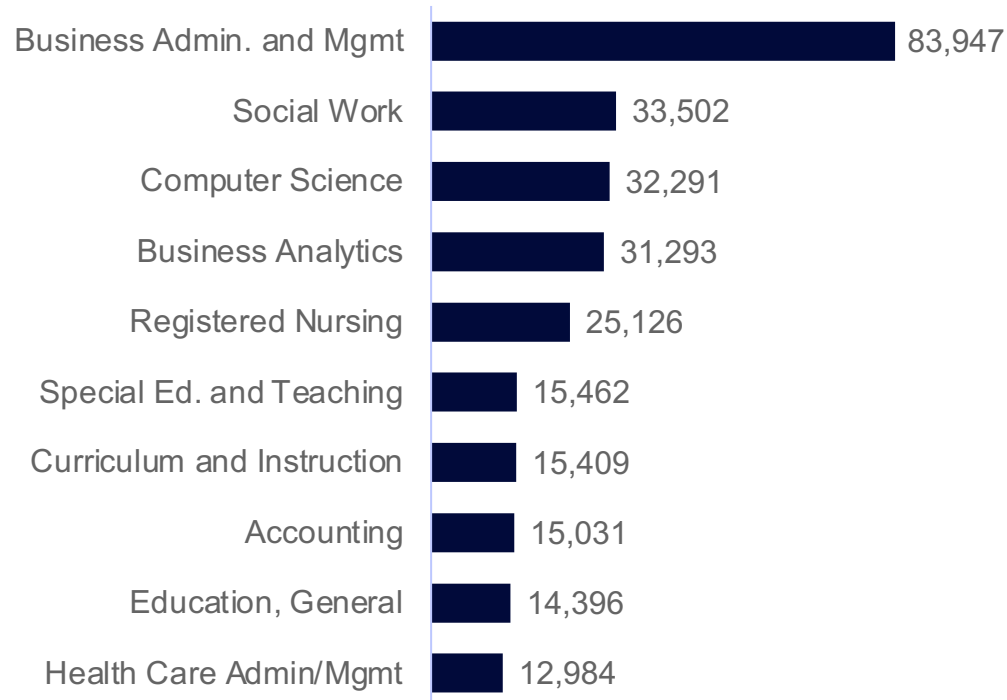
Online:
+ 5.8%

On-Campus:
-1.1%

The Present: Highest new enrollment and growth in graduate programs.

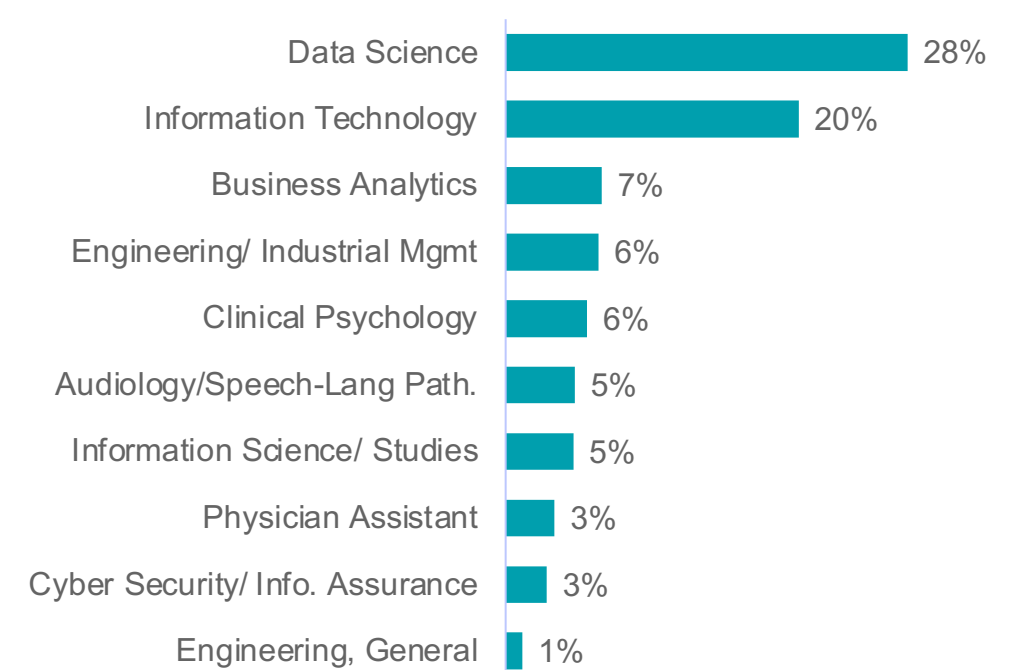
Largest Master's Programs

New Enrollment 2022-23



Fast-Growing Master's Programs

New Enrollment 2022-23

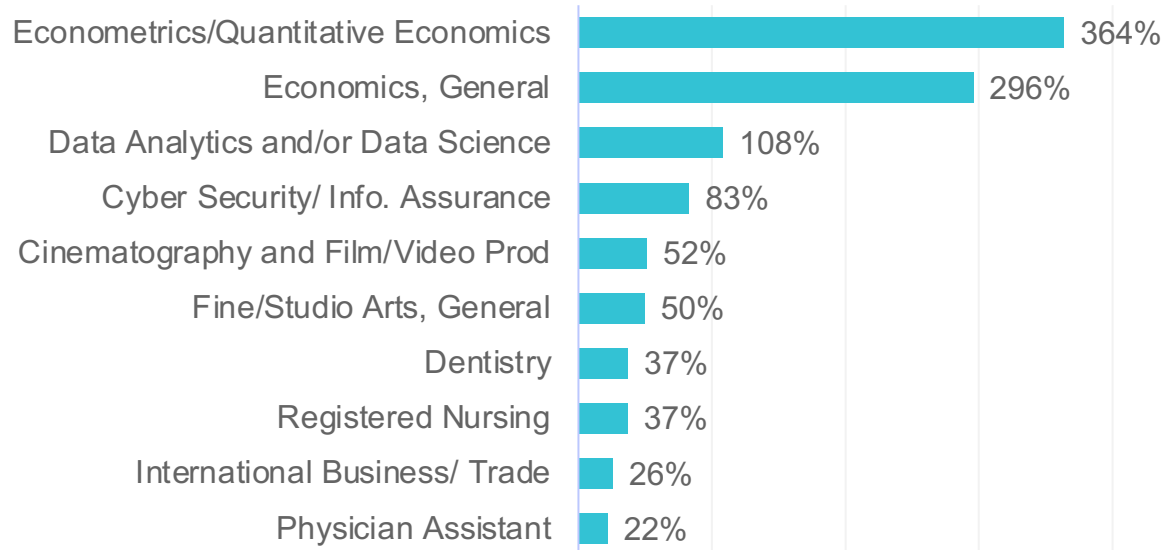


Google: Program searches are volatile

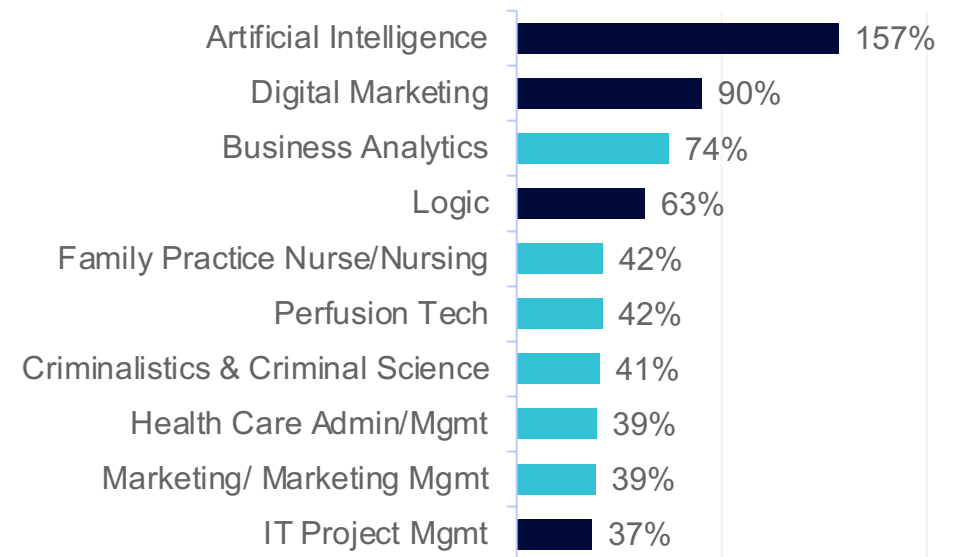


There is no overlap between the 2022 fastest-growing programs and 2023's.

Fastest-Growing Programs*
October 2022 YoY



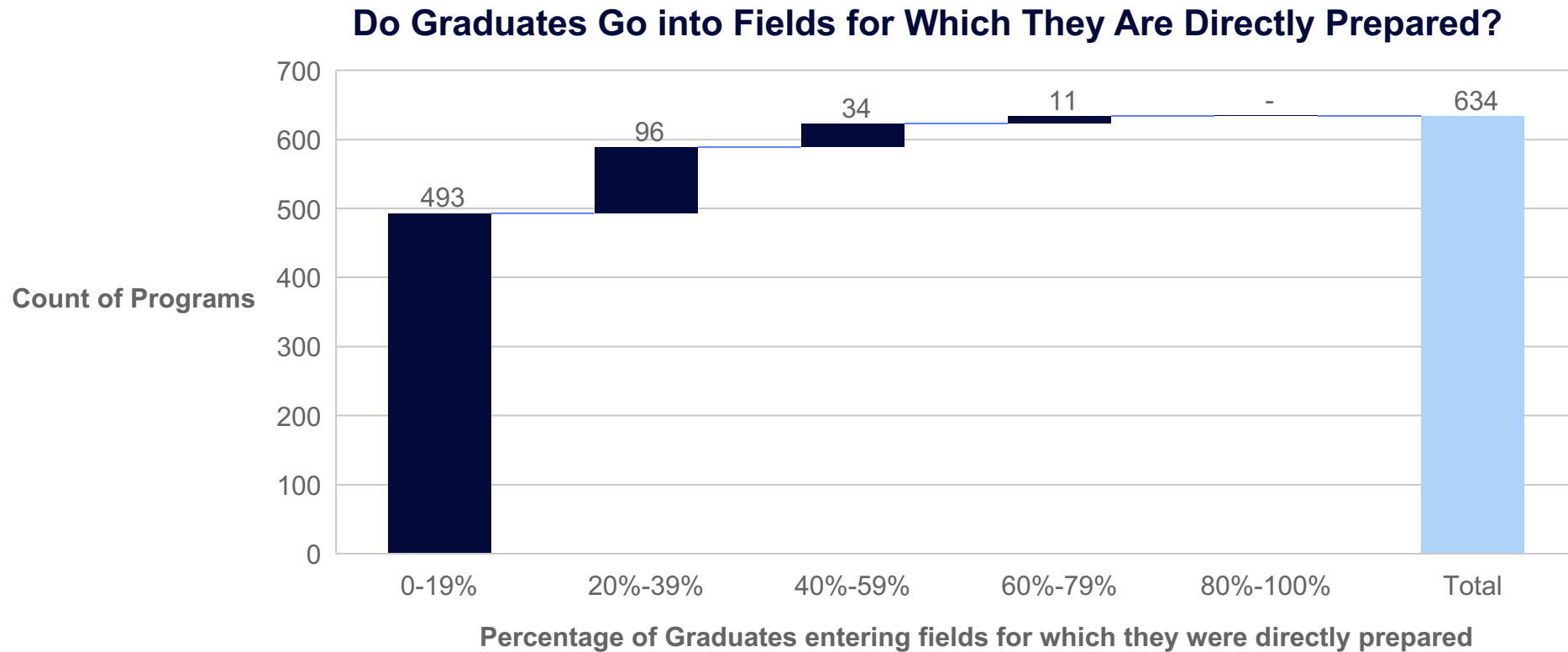
Fastest-Growing Programs*
October 2023 YoY



*Minimum 5,000 prior year and month

NCES: “The CIP SOC Crosswalk is not based on actual empirical data.”¹

78% of programs place less than 20% of graduates in jobs for which they are directly prepared.



Sources: IES NCES: “CIP SOC Crosswalk”, August 2021 <https://nces.ed.gov/ipeds/cipcode/post3.aspx?y=56>, Gray Analysis. Number of Programs: 634
 US Census, American Community Survey, Gray Analysis. Bachelor’s-degree programs with over 100 completions.

Commonly available data sources only count direct prep jobs.

In a traditional construct, International Business/Trade majors enter four occupations.

- Gray DI data on 22,628 graduates of Master's in International Business/Trade/Commerce programs identifies 688 occupations.*

Myth

NCES
Business Operations Specialists, All Other
Business Teachers, Postsecondary
Chief Executives
General and Operations Managers

Reality



Even direct prep program grads don't have clear career paths.
According to NCES, Health Care Admin graduates can go into one occupation.
According to Gray DI's sample of 31,650 profiles, they go into 633 occupations.

Myth

NCES
Health/Health Care Administration/Management

Reality


Use composite scores to help sort through program potential.

Program	Overall Score	Student Demand	Competitive Intensity	Jobs	Degree Fit
11.0701 Computer Science	100	100	57	100	50
52.0201 Business Admin. and Mgmt, General	99	100	95	96	50
51.3801 Registered Nursing	99	100	11	99	50
14.1901 Mechanical Engineering	99	99	33	98	50
52.0301 Accounting	99	99	33	96	50
51.3805 Family Practice Nurse/Nursing	99	99	2	99	50
51.0912 Physician Assistant	99	98	97	98	50
11.0103 Information Technology	99	98	89	99	50
30.7102 Business Analytics	99	98	50	98	50
30.7101 Data Analytics and/or Data Science	99	98	33	98	50
14.1001 Electrical/Electronics Engin'g	99	98	8	99	50
14.0801 Civil Engineering, General	99	97	57	98	50
14.0201 Aero/ Astro/ Space Engineering	99	96	95	99	50
14.3501 Industrial Engineering	99	95	85	99	50
14.0901 Computer Engineering, General	99	95	33	100	50

Total Percentile	0	20+	40+	70+	90+	95+	98+	100
Total Score	-32	-6	-1	3	11	16	24	49

CIP: 30.7102 Business Analytics

Award Level: Masters and Grad Certs

Market: Seattle Tacoma Bellevue MSA

Total Score: 21

Percentile: 97

Student Demand
Score: 22 Percentile: 99

Category	Pctl	Criterion	Value	Score
Size	81	Google Search Volume (3 Months)*	492	2
	99	International Page Views (12 Months)	22,542	NS
	99	New Student Enrollment Volume (12 Mo.)	416	8
	99	On-ground Completions at In-Market Institutions	230	4
	98	Online Completions by In-Market Students	24	4
	99	Sum of On-ground and Online Completions	254	4
Growth	77	Google Search YoY Change (Units)*	10	NS
	0	New Student Enrollment Vol. YoY Change (Units)	-36	NS
	99	Completion Volume YoY Change (Units)	59	NS
	60	Google Search YoY Change (%)*	2%	NS
	58	New Student Enrollment Vol. YoY Change (%)	-8%	NS
	75	Completion Volume YoY Change (%)	31%	NS

Competitive Intensity
Score: -9 Percentile: 5

Category	Pctl	Criterion	Value	Score
Volume of In-Market Competition	99	Campuses with Graduates**	4	-8
	50	Campuses with Grads YoY Change (Units)**	1	NS
	98	Institutions with Online In-Market Students**	7	NS
In-Market Program Sizes	94	Average Program Completions	58	2
	80	Median Program Completions	26	0
	66	YoY Median Prog. Compl. Change (Units)	0	NS
In-Market Saturation	49	YoY Median Prog. Compl. Change (%)	-2%	NS
	90	Google Search * Cost per Click**	\$18	-3
	88	Google Competition Index**	0.91	0
National Online Competition	99	National Online Institutions (Units)**	135	NS
	86	Nat'l Online % of Institutions	41%	NS
	48	Nat'l Online % of Completions	13%	NS

* - Google search, employment data and Jobs Per Grad Ratio do not filter by award level.
 ** - Color scale in reverse.
 NA - No data available/not currently tracked.
 NS - Not Scored in Rubrics (values = 0).
 2-Yr - Associates & certificate programs only.
 PCTL - Percentile

Employment
Score: 8 Percentile: 94

Category	Pctl	Criterion	Value	Score
Size: Entry Jobs	99	Job Postings Total (12 Months)	3,278	NS
	99	BLS Current Employment	5,245	NS
	99	BLS Annual Job Openings	487	NS
Underemployed	32	Underemployed Percent of Graduates**	35%	0
Growth: Entry Jobs	70	BLS 1-Year Historical Growth	2.1%	NS
	78	BLS 3-Year Historic Growth (CAGR)	3.8%	0
	78	BLS 10-Year Future Growth (CAGR)	1.5%	0
Saturation: Entry Jobs	72	Job Postings per Graduate	12.9	2
	71	BLS Job Openings per Graduate	1.9	NS
Weighted Avg BLS Wages	75	Entry 25th Percentile	\$59,646	3
	79	Post Entry Median	\$91,460	3
		Post Entry w/Associates Median	NA	NS
		Post Entry w/Bachelors Median	NA	NS
	83	Post Entry w/Masters Median	\$92,487	NS
National American Community Survey Bachelor's Degree Outcomes*	84	Post Entry w/Doctoral Median	\$109,606	NS
	25	% with Any Graduate Degree*	24%	NS
	35	% with Masters*	22%	NS
	10	% with Doct/Prof Degree*	2%	NS
	65	% Unemp. (Age <30)**	3%	NS
	40	% in Direct Prep Jobs*	4%	NS

-- IPEDS Demographics (Not Scored) -----

Category	Pctl	Criterion	This Program In-Market	All Programs In-Market
IPEDS Gender	23	Female	44%	60%
	76	Male	56%	40%
IPEDS Ethnicity	87	American Indian or Alaska Native	1%	0%
	67	Asian	12%	12%
	62	Black or African American	1%	4%
	47	Hispanic or Latino	4%	7%
	0	Native Hawaiian or Other Pacific Islander	0	0%
	26	White	32%	47%
	86	International	44%	20%
	50	Other/Unknown	7%	10%

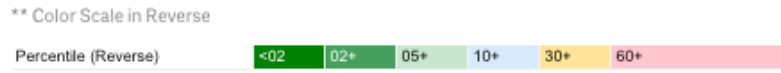
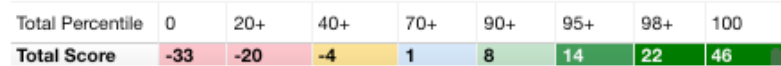
Degree Fit
Score: 0 Percentile: 50

Category	Pctl	Criterion	Value	Score
Cost Benchmarking**		Average Cost per SCH Index**	NA	NS
		Median Cost per SCH Index**	NA	NS

National Completions by Level **National Workforce Ed. Attainment**
Score: 0 Score: 0

Award Level	Completions (National)	Completions (Market)	Enrollment (Market)	BLS Educational Attainment
No College				9%
Some College				15%
Certificate	3%	0%	0%	
Associates	0%	0%	0%	7%
Bachelors	22%	32%	18%	40%
Postbaccalaureate Certificate	5%	3%	0%	
Masters	69%	62%	72%	23%
Post-masters Certificate	1%	0%	5%	
Doctoral	0%	2%	4%	6%

CIP Description:
 A program that prepares individuals to apply data science to solve business challenges. Includes instruction in machine learning, optimization methods, computer algorithms, probability and stochastic models, information economics, logistics, strategy, consumer behavior, marketing, and visual analytics.





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- Markets
- Economics
- Program Management
- Case Study: Miami University
- Predict Program Size
- Activity



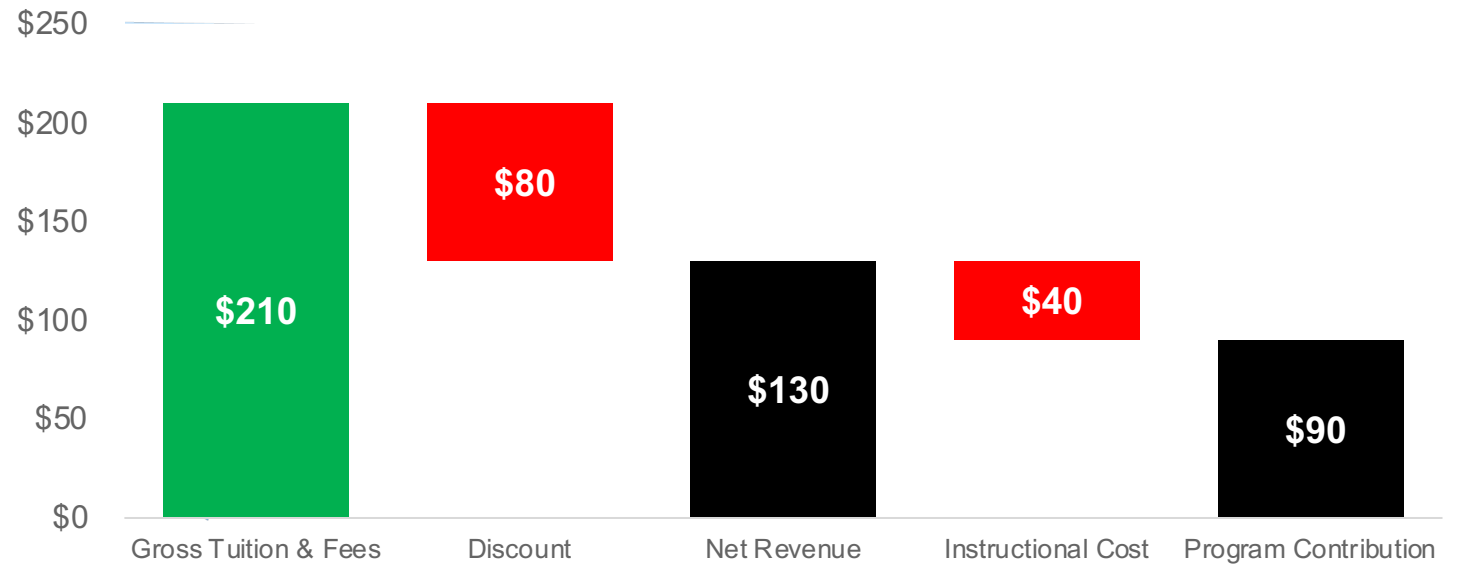
Margins

Why are margins important?

Cross-subsidies fund what markets won't: *investing in your mission.*

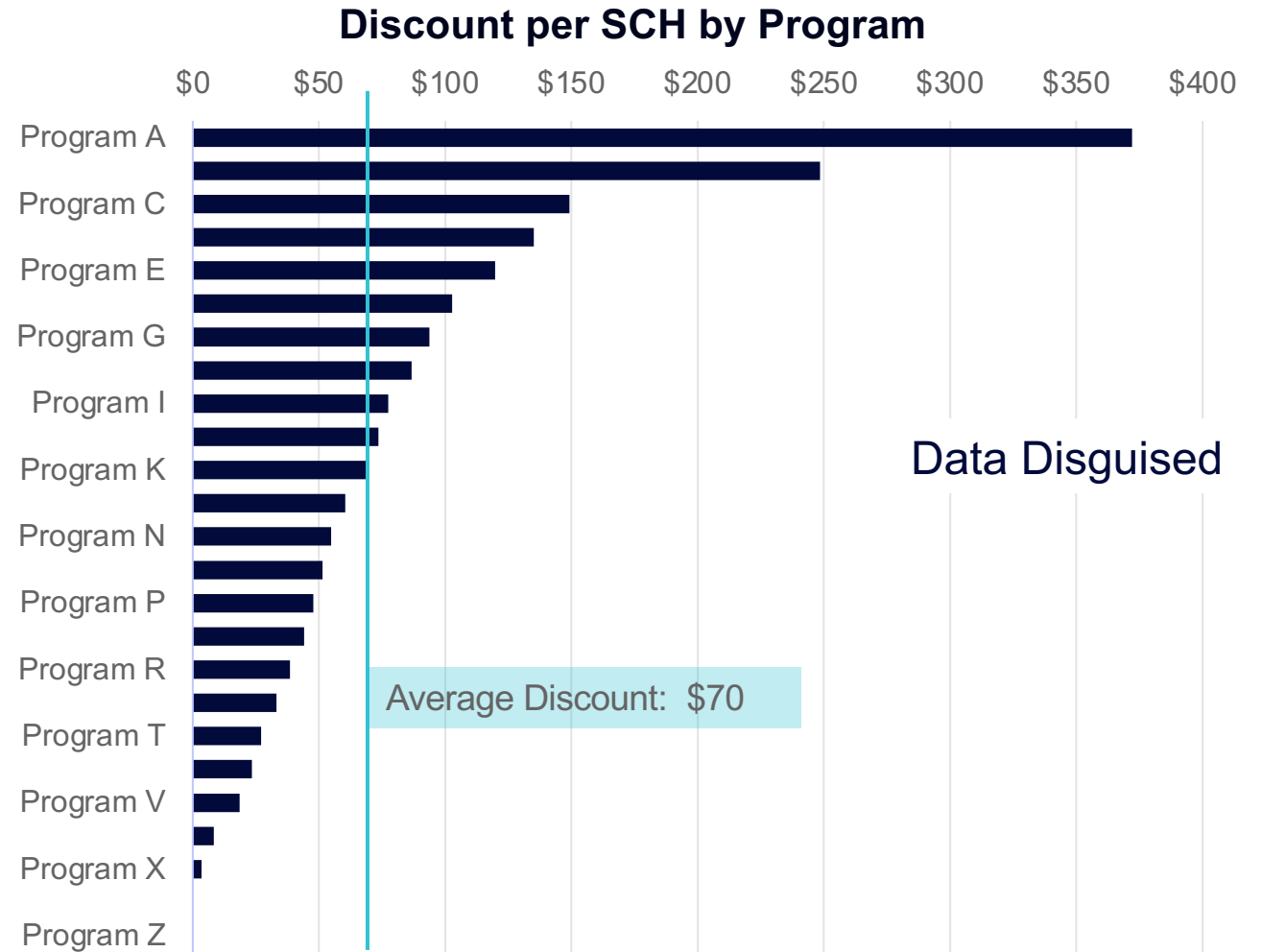


- Build at the student and section level.
- Use actual student billing.
- Use actual compensation for faculty and GAs.



Discounts must be calculated by program.

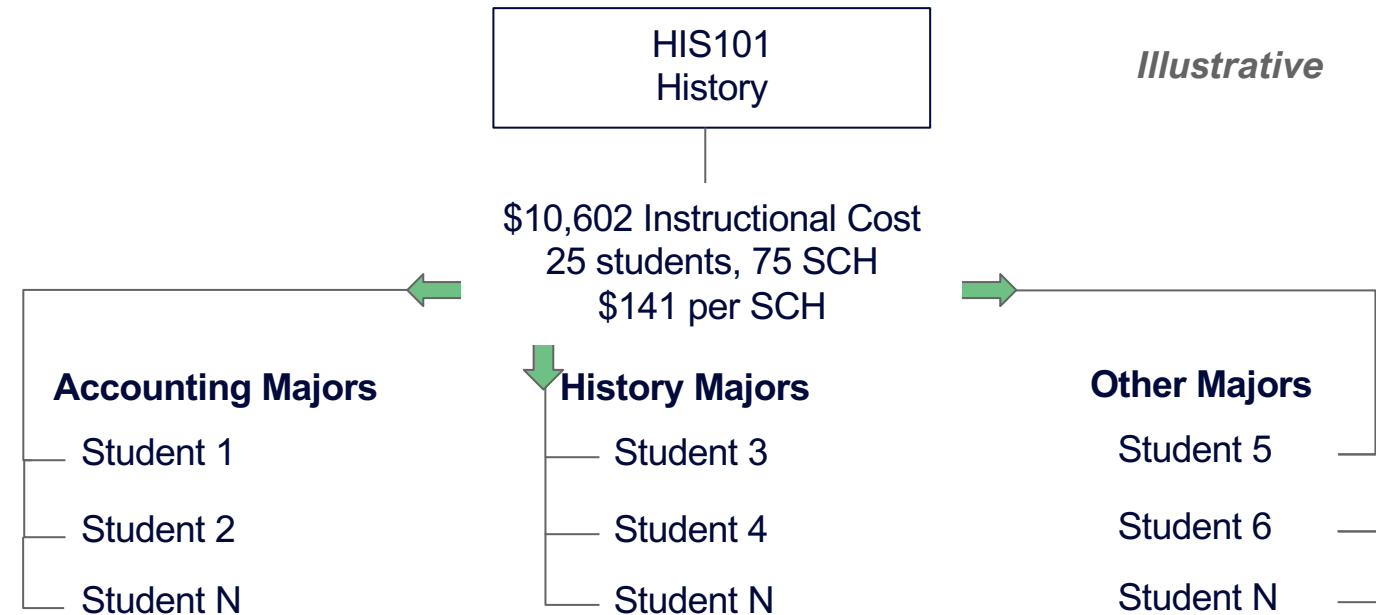
- It would be easier to use an average institutional discount.
- This approach would be valid if discounts were roughly the same across programs.
- In practice, discounts vary widely by program, so it is important to track them.



Program Economics: Methodology

Assign cost to students

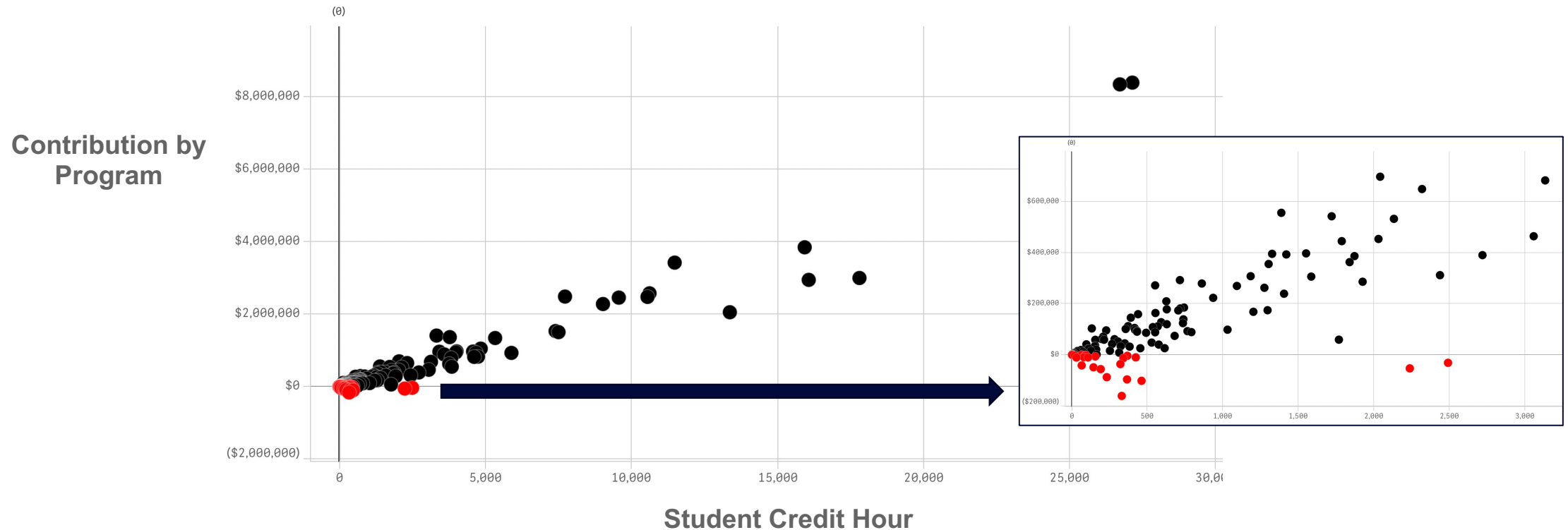
- Divide the section or course cost by the number of student credit hours to calculate cost per student credit hour (SCH)
- Multiply cost per SCH by the number of course credit hours
- Assign this amount to each student, regardless of major
- This course cost will follow each student into their major.



Program Economics

Most programs make money; even small ones.

Contribution by Student Credit Hour



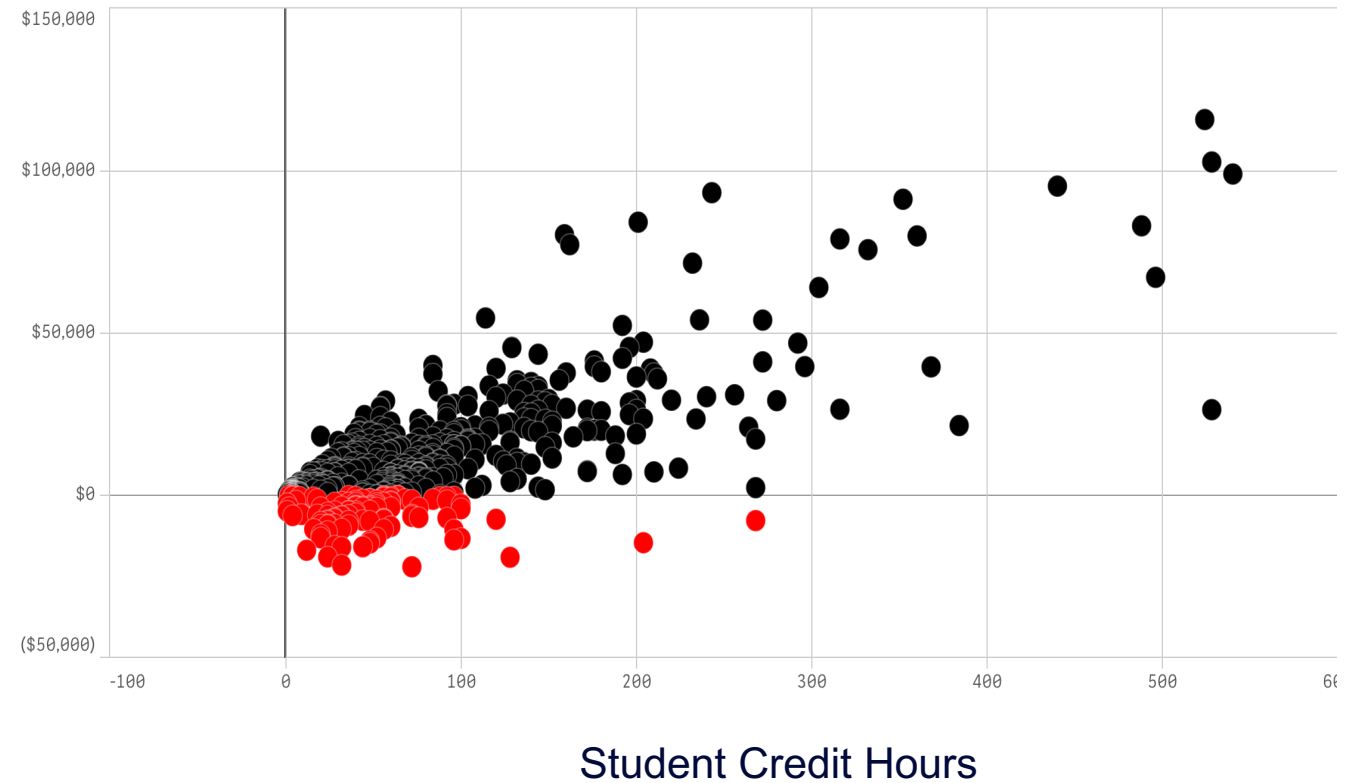


Course Economics

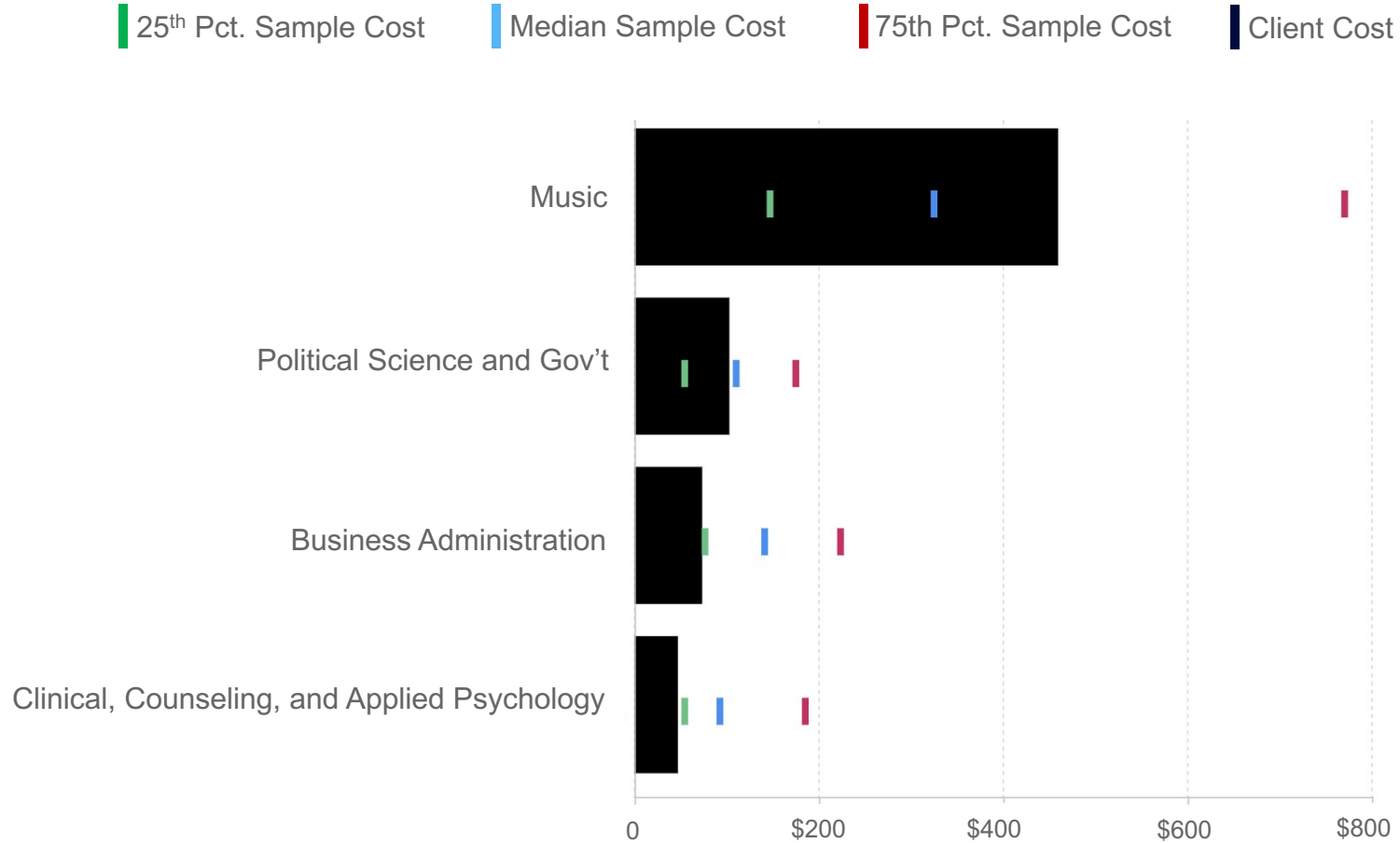
There are substantial opportunities to improve curricular efficiency.

Contribution

Contribution by Course Size



External Benchmarks: Cost per Student Credit Hour



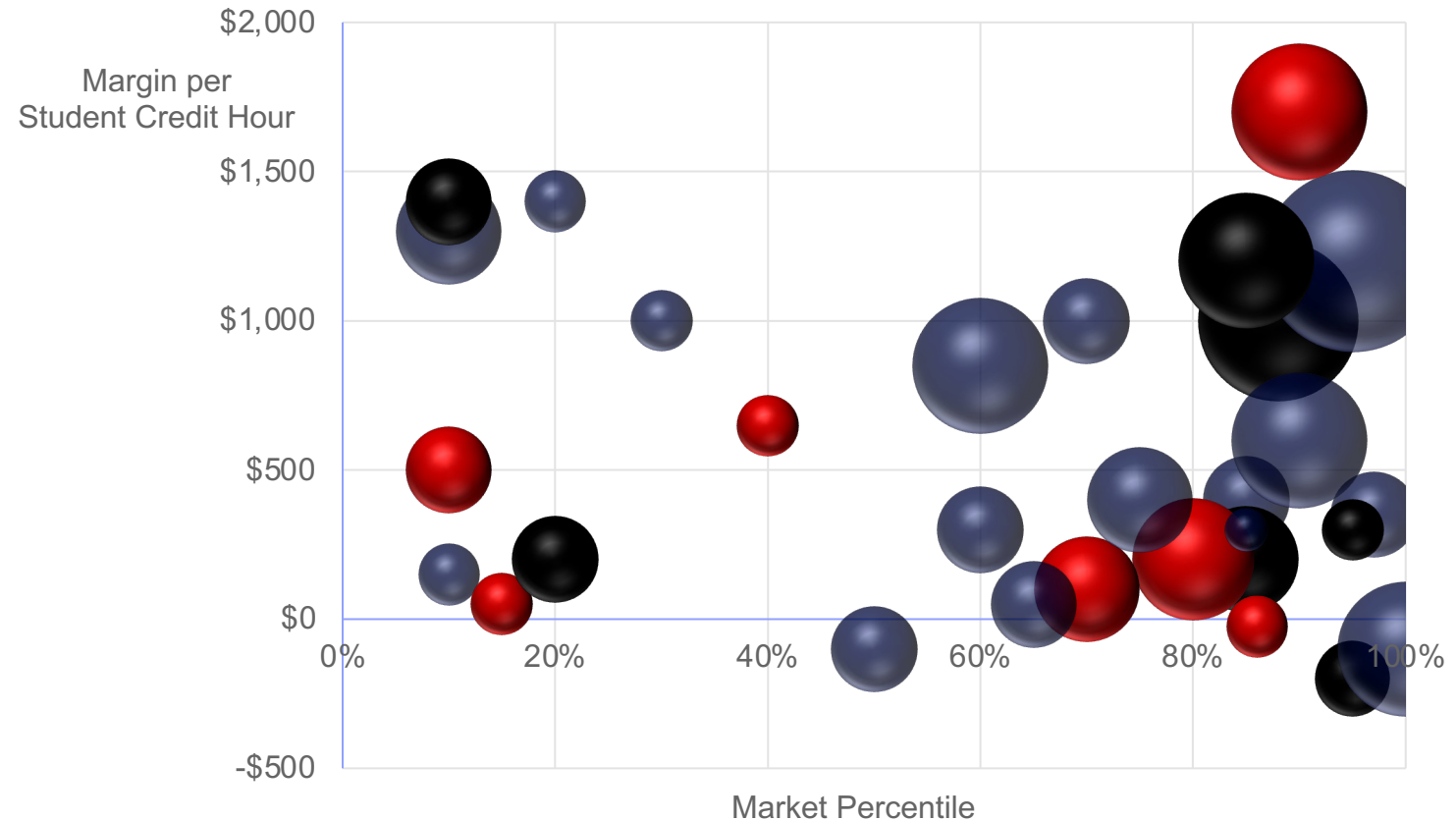
Source: Gray's PES Economics and Outcomes

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Putting it together: Mission, Markets, and Margins

- Mission-critical programs in healthy markets are candidates to grow or sustain.
- Low-margin discretionary programs in weak markets are candidates to stop.
- High-margin discretionary programs in healthy markets are tempting to grow...
 - They help fund the mission.



Key:

Bubble area is proportional to program size.

Fill color indicates importance to mission:

- Mission-Critical
- Mission-Aligned
- Discretionary

Accounting

Sustain

Pick Program:

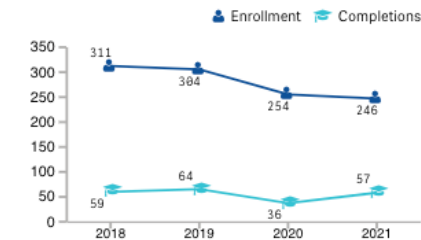
Category Status



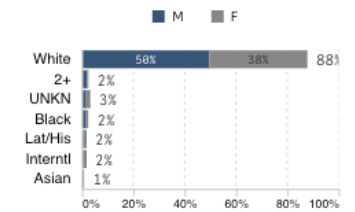
Goals

#	Goal	Status
1	Increase the number of internships	Needs Attention
2	Increase accounting student professional exam performance outcomes	On Track
3	Increase accounting student job placement outcomes	Satisfactory
4	Enhance accounting students' accounting-related software skills in order to meet modern technology needs	Not Started

Size



Demographics



Markets

Rubric: Undergraduate | Select Market

	Student Demand	Employment	Competitive Intensity
Total	99%	100%	11%
Size	100%	100%	11%
Growth	4%	46%	75%

Overall Percentile: 100%

Margins

YR: 2020 | Term: All

	Total \$	SCH
Gross Revenue	\$2,307,543	\$327
State App	\$931,219	\$132
Discounts	\$596,284	\$84
Net Revenue	\$2,642,479	\$374
Costs	\$1,264,867	\$179
Contribution	\$1,377,612	\$195

Mission

Summary | Academic Focus | Students Served | Learning Outc... | Highlight

Category	Program Fit
Academic Focus	The undergraduate program in Accounting blends theory and practice in generating job-ready graduates....
Students Served	Accounting students intern at a wide variety of businesses, often holding multiple internships, leading to full-time placement. Student-practitioner day has been a hallmark for over two decades....
Learning Outcomes	The Accounting program meets regional, state, and national needs through the creation of a diverse talent pipeline for both the profit- and non-profit sectors. Additionally, the faculty, students, and staff of the department help organizations to grow as well as becoming more efficient....
Highlight	High Student Placement rates in internships and full-time employment; Professionally credentialed and award-winning faculty...

Academics

Filter Course Dpt.

Category	Metric	2020	2021	Change
Program Profile	# of Students	203	197	-3% ↓
	# of SCH Taught	5,475	4,730	-14% ↓
	% SCH in Online Courses	7%	9%	23% ↑
	% SCH Taught by FT Faculty	57%	57%	0% ↑
Department Profile	% SCH Taught by Tenure/Track	50%	50%	0% ↑
	# of Full-Time Faculty	14	13	-7% ↓
	# of Part-Time Faculty	0	0	NA =
Student Progress	% SCH Taught In-Dept	23%	24%	2% ↑
	# Students Enrolled 2+ Terms	159	139	-8% ↓
	# Students Return from Prior Yr.	137	131	-3% ↓
	# Students Enrolled 15+ CH	202	188	-7% ↓
Outcomes	% Students Complete 15+ CH	62%	65%	3% ↑
	Withdraw/D/F Rate	27%	24%	-11% ↓
	# of Completions	28	45	38% ↑
	Median Time to Complete (Yrs)	3.10	3.20	3% ↑
	Benchmark Exam/Licensure Pass Rate	82%	85%	0% =
	Avg. End-of-Program Survey Rating	73%	76%	0% =

Pell Status | Age Group | Gender | Race/Ethnicity

Non | Pell | <25 | 25+ | M | F | White | UNKN | 2+ | Black | Lat/His | Interntl | Ntv.Am. | Asian | How/...

Management Dashboard: Which programs need attention?

Market: 100-Mile Radius

PES+ Markets
Illustrative: Academic Year 2020-21

Program	Detail	Sort	Google % Change	Job Posting Volume	Median Program Size % Change	Completions % Change	Enrollment	Enrollment %	Graduates	Graduates %	D/F/W Rate*	Students Return from Prior Year	Discount Rate*	Net Revenue	Rev % Change	Contribution	Cont % Change	Cost per SCH*	Cost % Cha...	Benchmark Cost per SCH	SCH Actual Minus Benchmark
Accounting (Bachelor's)	Go	135	8%	1,422	-16%	-10%	246	-8%	56	21%	24%	45	26%	\$2,642,479	-8%	\$1,377,612	-17%	\$179	17%	\$153	\$26
Athletic Training (Master's)	Go	36	1%	20	0%	-46%	10	-3%	6	-33%	22%	5	18%	\$243,408	-27%	\$36,598	-72%	\$549	39%	\$200	\$349
Biochemistry (Bachelor's)	Go	77	3%	38	0%	5%	40	-5%	5	25%	29%	4	36%	\$437,482	1%	\$173,962	-15%	\$213	25%	\$167	\$46
Biology (Bachelor's)	Go	240	19%	516	-3%	1%	505	11%	82	1%	27%	66	37%	\$5,688,801	8%	\$3,196,005	3%	\$155	12%	\$138	\$18
Business Administration (Associate)	Go	95	6%	21,620	-43%	-1%	22	-1%	9	50%	27%	7	10%	\$195,124	-3%	\$146,008	-1%	\$110	-6%	\$109	\$1
Business Administration (Bachelor's)	Go	249	6%	21,620	-19%	-13%	653	15%	46	18%	27%	37	23%	\$7,384,381	8%	\$5,240,367	6%	\$113	10%	\$129	-\$17
Business Administration (Master's)	Go	151	6%	21,620	-43%	-3%	158	-3%	16	-36%	24%	13	19%	\$949,747	-32%	\$591,860	-17%	\$251	-14%	\$180	\$71
Chemical Engineering (Bachelor's)	Go	230	6%	157	-5%	-11%	141	9%	31	-6%	27%	25	20%	\$2,153,404	11%	\$1,321,033	16%	\$174	-5%	\$181	-\$7
Chemical Engineering (Master's)	Go	44	6%	157	-9%	-3%	4	-1%	0	-100%	20%	0	78%	\$28,238	-48%	-\$38,623	6%	\$844	20%	\$805	\$39
Chemistry (Bachelor's)	Go	70	-8%	142	0%	-2%	99	-34%	12	-48%	29%	10	34%	\$1,055,817	-25%	\$503,106	-29%	\$189	15%	\$191	-\$2
Chemistry (Master's)	Go	80	-8%	142	0%	24%	17	-1%	3	-25%	20%	2	13%	\$325,108	-4%	-\$9,695	-61%	\$866	-10%	\$859	\$7
Computer Science (Bachelor's)	Go	260	18%	3,723	10%	21%	203	17%	20	67%	32%	16	26%	\$2,252,317	10%	\$1,342,614	8%	\$162	7%	\$175	-\$13
Counseling (Master's)	Go	143	-0%	401	-27%	6%	153	-4%	43	2%	22%	34	39%	\$1,639,794	-7%	\$725,365	-18%	\$280	13%	\$255	\$25

Management Dashboard: Which programs need attention?

Market: 100-Mile Radius

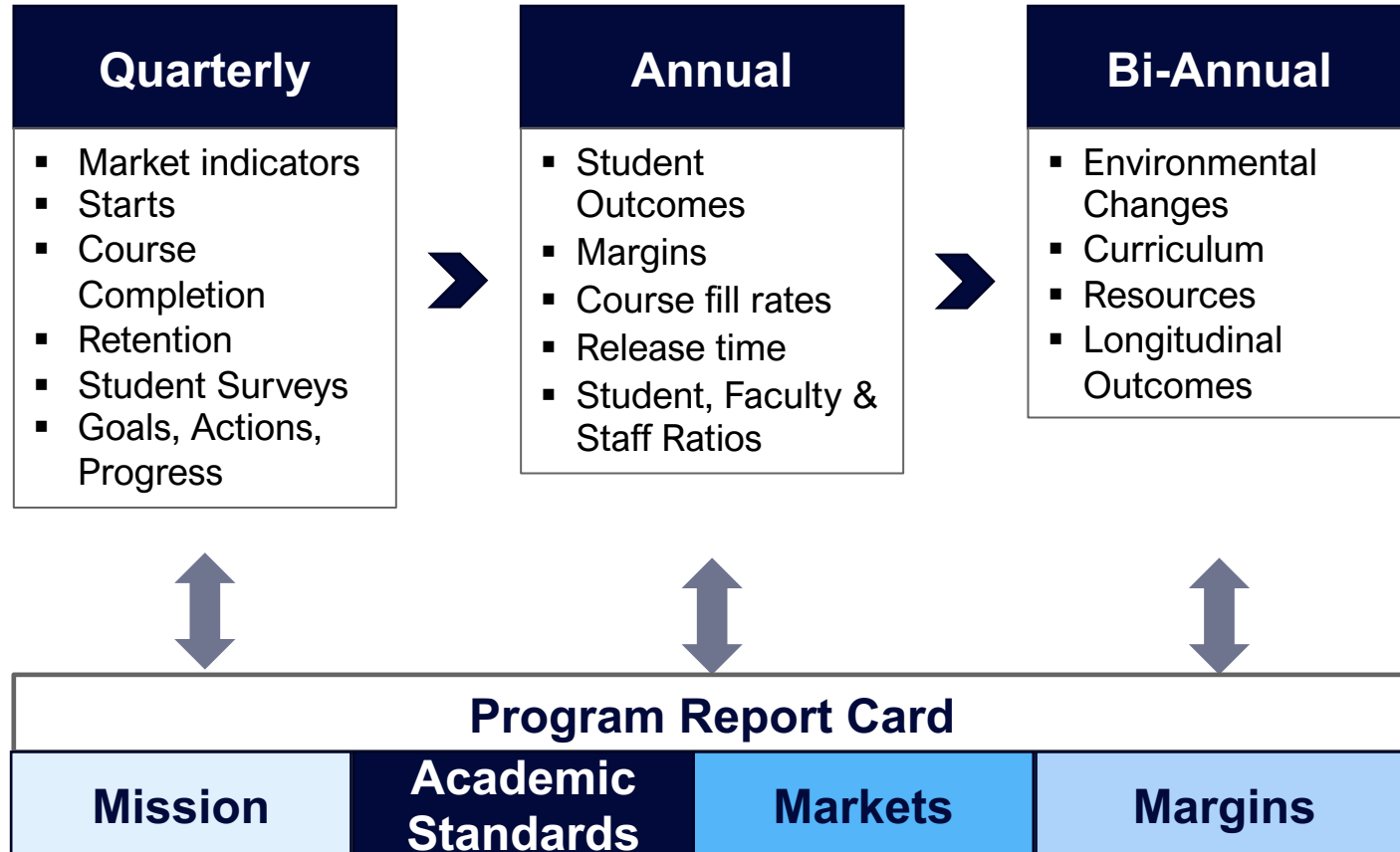
PES+ Markets							Illustrative: Academic Year 2020-21																	
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Athletic Training (Master's)	●	Go	36	1%	20	0%	-46%	10	-3	-23%	6	-3	-33%	22%	5	18%	\$243,408	-27%	\$36,598	-72%	\$549	39%	\$200	\$349
Biochemistry (Bachelor's)		Go	77	3%	38	0%	5%	40	-5	-11%	5	1	25%	29%	4	36%	\$437,482	1%	\$173,962	-15%	\$213	25%	\$167	\$46
Biology (Bachelor's)		Go	240	19%	516	-3%	1%	505	11	2%	82	1	1%	27%	66	37%	\$5,688,801	8%	\$3,196,005	3%	\$155	12%	\$138	\$18
Business Administration (Associate)		Go	95	6%	21,620	-43%	-1%	22	-1	-4%	9	3	50%	27%	7	10%	\$195,124	-3%	\$146,008	-1%	\$110	-6%	\$109	\$1
Business Administration (Bachelor's)	●	Go	249	6%	21,620	-19%	-13%	653	15	2%	46	7	18%	27%	37	23%	\$7,384,381	8%	\$5,240,367	6%	\$113	10%	\$129	-\$17
Business Administration (Master's)		Go	151	6%	21,620	-43%	-3%	158	-3	-2%	16	-9	-36%	24%	13	19%	\$949,747	-32%	\$591,860	-17%	\$251	-14%	\$180	\$71
Chemical Engineering (Bachelor's)		Go	230	6%	157	-5%	-11%	141	9	7%	31	-2	-6%	27%	25	20%	\$2,153,404	11%	\$1,321,033	16%	\$174	-5%	\$181	-\$7
Chemical Engineering (Master's)		Go	44	6%	157	-9%	-3%	4	-1	-20%	0	-2	-100%	20%	0	78%	\$28,238	-48%	-\$38,623	6%	\$844	20%	\$805	\$39
Chemistry (Bachelor's)		Go	70	-8%	142	0%	-2%	99	-34	-26%	12	-11	-48%	29%	10	34%	\$1,055,817	-25%	\$503,106	-29%	\$189	15%	\$191	-\$2
Chemistry (Master's)		Go	80	-8%	142	0%	24%	17	-1	-6%	3	-1	-25%	20%	2	13%	\$325,108	-4%	-\$9,695	-61%	\$866	-10%	\$859	\$7
Computer Science (Bachelor's)		Go	260	18%	3,723	10%	21%	203	17	9%	20	8	67%	32%	16	26%	\$2,252,317	10%	\$1,342,614	8%	\$162	7%	\$175	-\$13
Counseling (Master's)		Go	143	-0%	401	-27%	6%	153	-4	-3%	43	1	2%	22%	34	39%	\$1,639,794	-7%	\$725,365	-18%	\$280	13%	\$255	\$25

Management Dashboard: Which programs need attention?

Market: 100-Mile Radius

PES+ Markets							Illustrative: Academic Year 2020-21																	
Program	Q	Detail	Sort	Google % Change	Job Posting Volume	Median Program Size % Change	Completions % Change	Enrollment	...	%	Graduates	...	%	D/F/W Rate*	Students Return from Prior Year	Discount Rate*	Net Revenue	Rev % Change	Contribution	Cont % Change	Cost per SCH*	Cost % Cha...	Benchmark Cost per SCH	SCH Actual Minus Benchmark
Accounting (Bachelor's)		Go	135	8%	1,422	-16%	-10%	246	-8	-3%	56	21	60%	24%	45	26%	\$2,642,479	-8%	\$1,377,612	-17%	\$179	17%	\$153	\$26
Athletic Training (Master's)		Go	36	1%	20	0%	-46%	10	-3	-23%	6	-3	-33%	22%	5	18%	\$243,408	-27%	\$36,598	-72%	\$549	39%	\$200	\$349
Biochemistry (Bachelor's)		Go	77	3%	38	0%	5%	40	-5	-11%	5	1	25%	29%	4	36%	\$437,482	1%	\$173,962	-15%	\$213	25%	\$167	\$46
Biology (Bachelor's)		Go	240	19%	516	-3%	1%	505	11	2%	82	1	1%	27%	66	37%	\$5,688,801	8%	\$3,196,005	3%	\$155	12%	\$138	\$18
Business Administration (Associate)		Go	95	6%	21,620	-43%	-1%	22	-1	-4%	9	3	50%	27%	7	10%	\$195,124	-3%	\$146,008	-1%	\$110	-6%	\$109	\$1
Business Administration (Bachelor's)		Go	249	6%	21,620	-19%	-13%	653	15	2%	46	7	18%	27%	37	23%	\$7,384,381	8%	\$1,240,367	6%	\$113	10%	\$129	-\$17
Business Administration (Master's)		Go	151	6%	21,620	-43%	-3%	158	-3	-2%	16	-9	-36%	24%	13	19%	\$949,747	-32%	\$591,860	-17%	\$251	-14%	\$180	\$71
Chemical Engineering (Bachelor's)		Go	230	6%	157	-5%	-11%	141	9	7%	31	-2	-6%	27%	25	20%	\$2,153,404	11%	\$1,321,033	16%	\$174	-5%	\$181	-\$7
Chemical Engineering (Master's)		Go	44	6%	157	-9%	-3%	4	-1	-20%	0	-2	-100%	20%	0	78%	\$28,238	-48%	-\$38,623	6%	\$844	20%	\$805	\$39
Chemistry (Bachelor's)		Go	70	-8%	142	0%	-2%	99	-34	-26%	12	-11	-48%	29%	10	34%	\$1,055,817	-25%	\$503,106	-29%	\$189	15%	\$191	-\$2
Chemistry (Master's)		Go	80	-8%	142	0%	24%	17	-1	-6%	3	-1	-25%	20%	2	13%	\$325,108	-4%	-\$9,695	-61%	\$866	-10%	\$859	\$7
Computer Science (Bachelor's)		Go	260	18%	3,723	10%	21%	203	17	9%	20	8	67%	32%	16	26%	\$2,252,317	10%	\$1,342,614	8%	\$162	7%	\$175	-\$13
Counseling (Master's)		Go	143	-0%	401	-27%	6%	153	-4	-3%	43	1	2%	22%	34	39%	\$1,639,794	-7%	\$725,365	-18%	\$280	13%	\$255	\$25

Academic Program Management: More Frequent, Informed, and Automated





Agenda

- Program Evaluation System
- Markets
- Economics
- Program Management
- Case Study: Miami University
- Predict Program Size
- Activity



63rd CGS Annual meeting

Market Analysis/Competition Miami Academic Program Incubator

(MAPI) (<https://miamioh.edu/academic-affairs/admin-affairs/miami-academic-incubator-program/index.html>)



Miami University

Established in 1809 (36 years before FL became a state!)

17K undergraduates, 2.2K graduate students

Oxford, Middletown, Hamilton, VoA, and Luxembourg

Athletics: MAC and NCHC (hockey)

USNWR: #3 publics for UG teaching

Graduate School degrees:
66 master's, 12 doctoral, 1 specialist,
19 grad certificates

R2: \$35 million



Academic Program Evaluation, Improvement, and Prioritization (APEIP)

Process

- Collecting and analyzing extensive data relating to student and employer demand, finances, and staffing for each of Miami's degree programs at both the undergraduate and graduate levels.
- Establishing guidelines for departments and divisions to use in interpreting the data and developing action plans that respond to data findings.
- Creating, vetting, and approving departmental action plans.
- Assessing the overall impact and progress made in implementing the departmental action plans.

Data dashboards

- Courses, Gray Decision Intelligence, Applications, Degrees, headcount, first destinations, section capacity, low enrolled sections, budgets, time to degree, net position, costs

Action plans, program ratings

Over 40 programs were sun-setted; more in progress



Agenda

- Program Evaluation System
- Markets
- Economics
- Program Management
- Case Study: Miami University
- Predict Program Size
- Activity

Predict

Use Machine Learning to predict program size.

School Attributes

- Size
- Type (e.g., public)
- Focus
- Location



Program Attributes

- Size
- Size at similar schools
- Type (e.g., Engineering)
- Award level

Predictive Models

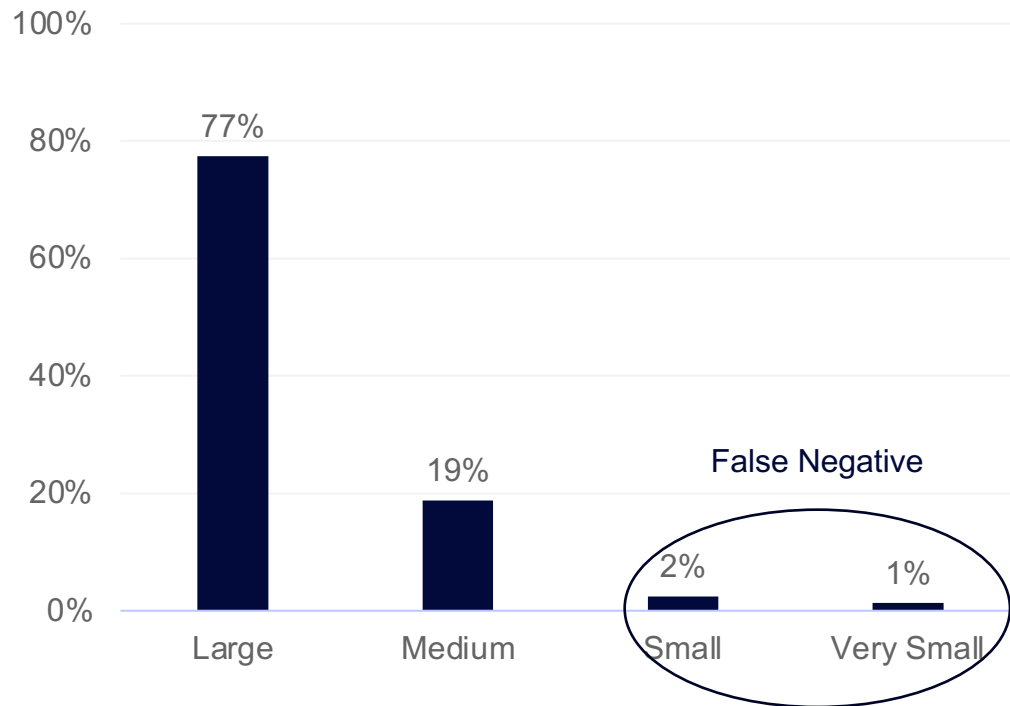


Program Size

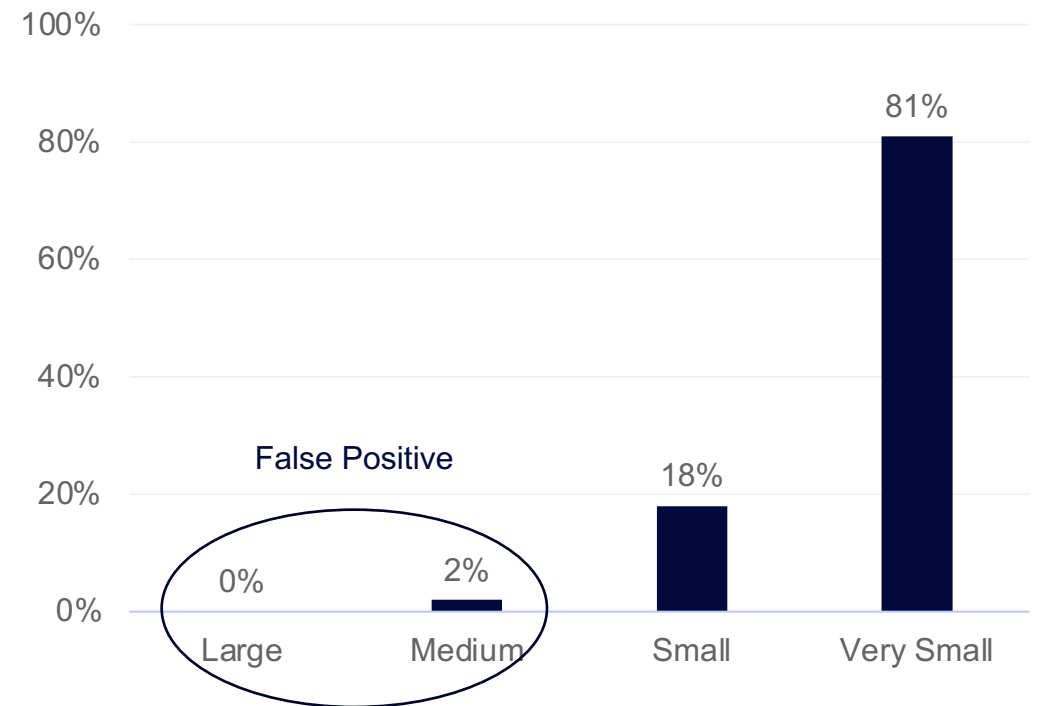
Predict

This model can predict program size with over 90% accuracy.

Predicted vs Actual Program Size
Large Program



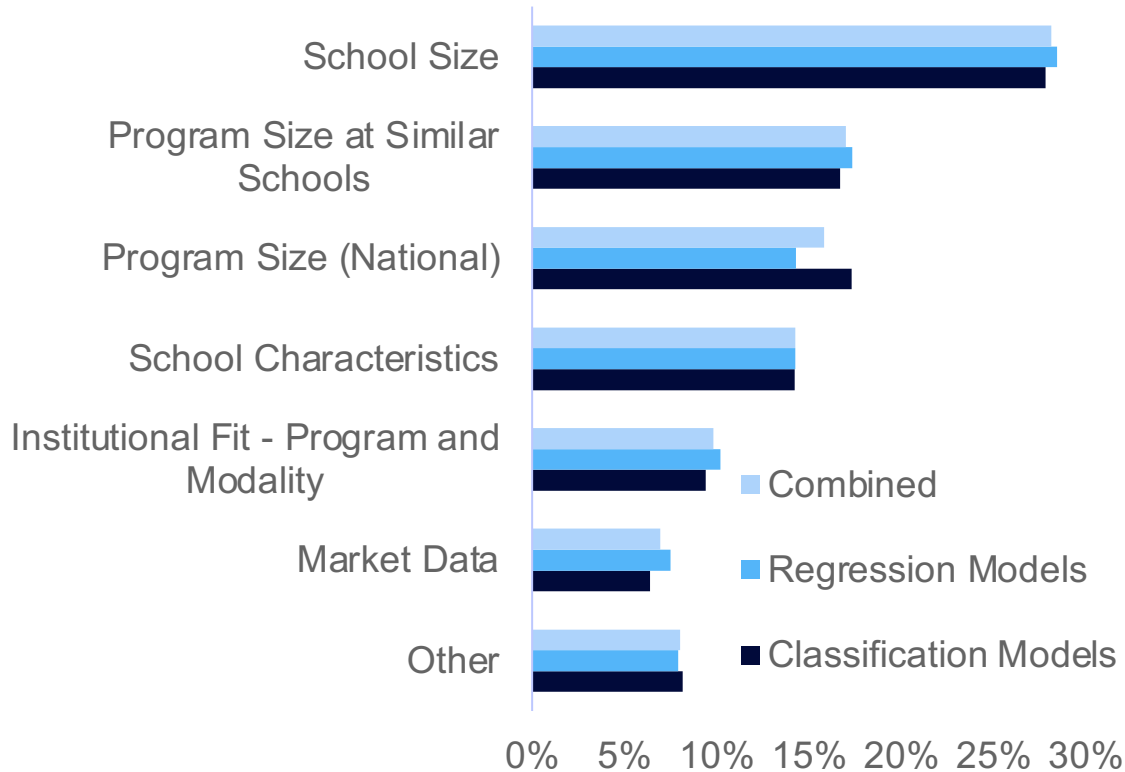
Predicted vs Actual Program Size
Very Small Program



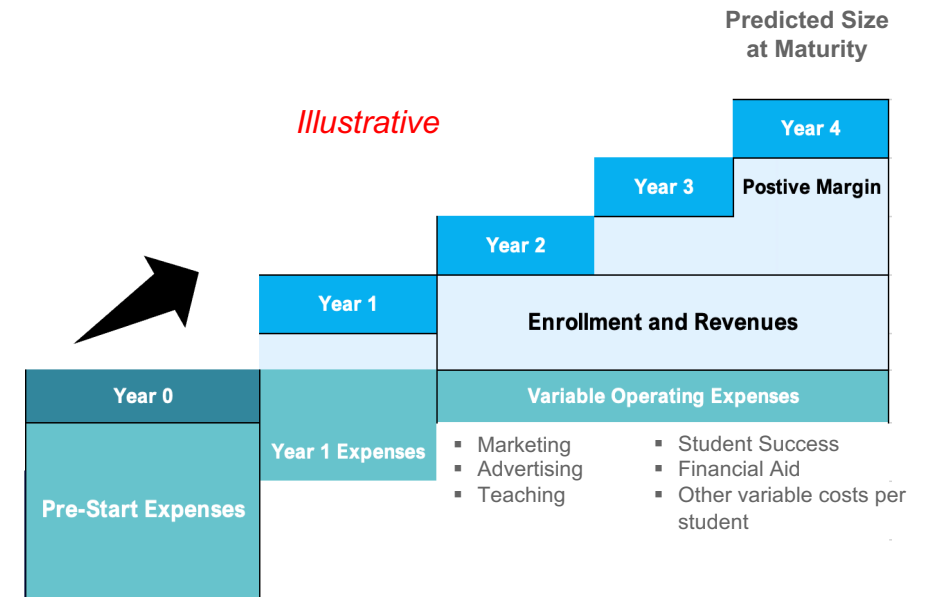
Predict

Predictions and benchmark financials are a foundation for more accurate new program plans.

Relative Importance of Predictors

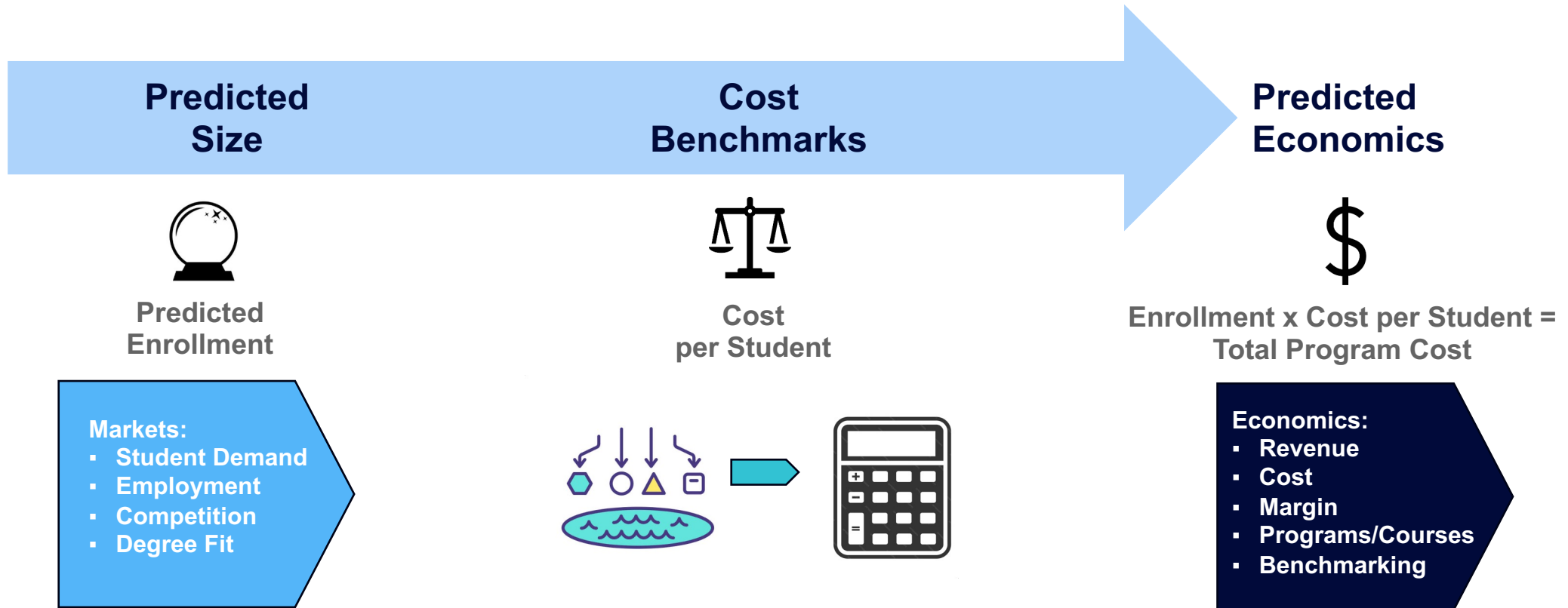


Ramp-Up Model



Predict

Predict revenue, cost, and margin for a program before it is launched.





Agenda

- Program Evaluation System
- Markets
- Economics
- Program Management
- Case Study: Miami University
- Predict Program Size
- Activity



Activity

With a neighbor(s), please do the following:

- Agree on an imaginary institution name.
 - Example: CGS College

- As _____ college, rank the programs in order of market opportunity for your imaginary institution.
 - Assume you have unlimited resources.
 - Discuss what factors on the scorecard are driving your ranking.
 - Pick 2-3 that jump out at you
 - Be prepared to share your ranking with the room.

Program 1

Student Demand

Category	Pctl	Criterion	Value
Size	75	Google Search Volume (3 Months)*	28,870
	91	International Page Views (12 Months)	1,768
	86	New Student Enrollment Volume (12 Mo.)	1,015
	87	On-ground Completions at In-Market Institutions	484
	76	Online Completions by In-Market Students	53
	84	Sum of On-ground and Online Completions	537
Growth	12	Google Search YoY Change (Units)*	-2,352
	99	New Student Enrollment Vol. YoY Change (Units)	443
	96	Completion Volume YoY Change (Units)	222
	33	Google Search YoY Change (%)*	-8%
	92	New Student Enrollment Vol. YoY Change (%)	77%
	91	Completion Volume YoY Change (%)	71%

Employment

Category	Pctl	Criterion	Value
Size: Entry Jobs	85	Job Postings Total (12 Months)	443
	87	BLS Current Employment	4,527
	87	BLS Annual Job Openings	344
Underemployed	6	Underemployed Percent of Graduates**	20%
Growth: Entry Jobs	11	BLS 1-Year Historical Growth	4.1%
	22	BLS 3-Year Historic Growth (CAGR)	1.5%
	82	BLS 10-Year Future Growth (CAGR)	1.0%
Saturation: Entry Jobs	64	Job Postings per Graduate	0.8
	76	BLS Job Openings per Graduate	0.6
BLS Wages	96	Entry 25th Percentile	\$80,760
	97	Post Entry Median	\$117,590
		Post Entry w/Associates Median	NA
		Post Entry w/Bachelors Median	NA
	97	Post Entry w/Masters Median	\$120,060
	98	Post Entry w/Doctoral Median	\$139,194
National American Community Survey Bachelor's Degree Outcomes*	39	% with Any Graduate Degree*	31%
	48	% with Masters*	25%
	41	% with Doct/Prof Degree*	6%
	30	% Unemp. (Age <30)**	2%
	68	% in Direct Prep Jobs*	14%

Category	Pctl	Criterion	Value
Cost Benchmarking**		Average Cost per SCH Index**	NA
		Median Cost per SCH Index**	NA

National Completions by Level
Score: 0

National Workforce Ed. Attainment
Score: 0

Award Level	Completions (National)	Completions (Market)	Enrollment (Market)	BLS Educational Attainment
No College				6%
Some College				8%
Certificate	8%	8%	5%	
Associates	8%	8%	9%	7%
Bachelors	38%	38%	29%	50%
Postbaccalaureate Certificate	5%	5%	0%	
Masters	37%	37%	48%	23%
Post-masters Certificate	0%	0%	3%	
Doctoral	4%	4%	6%	6%

Competitive Intensity

Category	Pctl	Criterion	Value
Volume of In-Market Competition	78	Campuses with Graduates**	23
	97	Campuses with Grads YoY Change (Units)**	8
	65	Institutions with Online In-Market Students**	1
In-Market Program Sizes	89	Average Program Completions	21
	80	Median Program Completions	8
	98	YoY Median Prog. Compl. Change (Units)	6
	90	YoY Median Prog. Compl. Change (%)	55%
In-Market Saturation	75	Google Search * Cost per Click**	\$8
	82	Google Competition Index**	0.53
National Online Competition	68	National Online Institutions (Units)**	2
	44	Nat'l Online % of Institutions	9%
	43	Nat'l Online % of Completions	10%

-- IPEDS Demographics (Not Scored) -----

Category	Pctl	Criterion	This Program In-Market	All Programs In-Market
IPEDS Gender	3	Female	17%	62%
	96	Male	83%	38%
IPEDS Ethnicity	0	American Indian or Alaska Native	0	0%
	70	Asian	7%	6%
	26	Black or African American	2%	10%
	24	Hispanic or Latino	4%	10%
	0	Native Hawaiian or Other Pacific Islander	0	0%
	7	White	19%	49%
	95	International	64%	16%
	38	Other/Unknown	5%	8%

Total Percentile	0	20+	40+	70+	90+	95+	98+	100
Total Score	-38	-20	-4	0	10	16	27	50

** Color Scale in Reverse

Percentile (Reverse)	<02	02+	05+	10+	30+	60+

* - Google search do not filter by award level.
 ** - Color scale in reverse.
 NA - No data available/not currently tracked.
 NS - Not Scored in Rubrics (values = 0).
 PCTL - Percentile

Program 2

Student Demand

Category	Pctl	Criterion	Value
Size	88	Google Search Volume (3 Months)*	64,821
	96	International Page Views (12 Months)	5,467
	96	New Student Enrollment Volume (12 Mo.)	4,485
	97	On-ground Completions at In-Market Institutions	2,885
	88	Online Completions by In-Market Students	238
Growth	95	Sum of On-ground and Online Completions	3,123
	9	Google Search YoY Change (Units)*	-3,650
	99	New Student Enrollment Vol. YoY Change (Units)	532
	86	Completion Volume YoY Change (Units)	35
	41	Google Search YoY Change (%)*	-5%
	75	New Student Enrollment Vol. YoY Change (%)	14%
	48	Completion Volume YoY Change (%)	1%

Employment

Category	Pctl	Criterion	Value
Size: Entry Jobs	96	Job Postings Total (12 Months)	5,473
	96	BLS Current Employment	28,839
	96	BLS Annual Job Openings	2,523
Underemployed	37	Underemployed Percent of Graduates**	37%
Growth: Entry Jobs	64	BLS 1-Year Historical Growth	5.7%
	83	BLS 3-Year Historic Growth (CAGR)	3.8%
	60	BLS 10-Year Future Growth (CAGR)	0.8%
Saturation: Entry Jobs	92	Job Postings per Graduate	1.8
	89	BLS Job Openings per Graduate	0.8
BLS Wages	66	Entry 25th Percentile	\$59,958
	69	Post Entry Median	\$97,866
		Post Entry w/Associates Median	NA
		Post Entry w/Bachelors Median	NA
	71	Post Entry w/Masters Median	\$100,237
	57	Post Entry w/Doctoral Median	\$114,084
National American Community Survey Bachelor's Degree Outcomes*	92	% with Any Graduate Degree*	61%
	93	% with Masters*	40%
	86	% with Doct/Prof Degree*	21%
	65	% Unemp. (Age <30)**	3%
	52	% in Direct Prep Jobs*	7%

Category	Pctl	Criterion	Value
Cost Benchmarking**	42	Average Cost per SCH Index**	1.03
	42	Median Cost per SCH Index**	1.84

National Completions by Level
Score: 0

National Workforce Ed. Attainment
Score: 0

Award Level	Completions (National)	Completions (Market)	Enrollment (Market)	BLS Educational Attainment
No College				6%
Some College				10%
Certificate	2%	2%	0%	
Associates	0%	0%	0%	4%
Bachelors	40%	40%	15%	36%
Postbaccalaureate Certificate	4%	4%	1%	
Masters	50%	50%	63%	30%
Post-masters Certificate	1%	1%	6%	
Doctoral	3%	3%	14%	14%

Competitive Intensity

Category	Pctl	Criterion	Value
Volume of In-Market Competition	93	Campuses with Graduates**	93
	92	Campuses with Grads YoY Change (Units)**	3
	91	Institutions with Online In-Market Students**	13
In-Market Program Sizes	96	Average Program Completions	31
	89	Median Program Completions	11
	85	YoY Median Prog. Compl. Change (Units)	1
In-Market Saturation	72	YoY Median Prog. Compl. Change (%)	4%
	70	Google Search * Cost per Click**	\$7
National Online Competition	27	Google Competition Index**	0.09
	90	National Online Institutions (Units)**	15
	50	Nat'l Online % of Institutions	13%
	41	Nat'l Online % of Completions	8%

-- IPEDS Demographics (Not Scored) -----

Category	Pctl	Criterion	This Program In-Market	All Programs In-Market
IPEDS Gender	42	Female	58%	62%
	57	Male	42%	38%
IPEDS Ethnicity	70	American Indian or Alaska Native	0%	0%
	69	Asian	6%	6%
	60	Black or African American	8%	10%
	71	Hispanic or Latino	11%	10%
	86	Native Hawaiian or Other Pacific Islander	0%	0%
	44	White	49%	49%
	64	International	17%	16%
	62	Other/Unknown	8%	8%

Total Percentile	0	20+	40+	70+	90+	95+	98+	100
Total Score	-38	-20	-4	0	10	16	27	50

** Color Scale in Reverse

Percentile (Reverse)	<02	02+	05+	10+	30+	60+

* - Google search do not filter by award level.
 ** - Color scale in reverse.
 NA - No data available/not currently tracked.
 NS - Not Scored in Rubrics (values = 0).
 PCTL - Percentile



Complete Scorecards

Student Demand
Score: 4 Percentile: 81

Category	Pctl	Criterion	Value	Score
Size	75	Google Search Volume (3 Months)*	28,870	0
	91	International Page Views (12 Months)	1,768	NS
	86	New Student Enrollment Volume (12 Mo.)	1,015	2
	87	On-ground Completions at In-Market Institutions	484	1
	76	Online Completions by In-Market Students	53	0
Growth	84	Sum of On-ground and Online Completions	537	1
	12	Google Search YoY Change (Units)*	-2,352	NS
	99	New Student Enrollment Vol. YoY Change (Units)	443	NS
	96	Completion Volume YoY Change (Units)	222	NS
	33	Google Search YoY Change (%)*	-8%	NS
	92	New Student Enrollment Vol. YoY Change (%)	77%	NS
	91	Completion Volume YoY Change (%)	71%	NS

Competitive Intensity
Score: -3 Percentile: 33

Category	Pctl	Criterion	Value	Score
Volume of In-Market Competition	78	Campuses with Graduates**	23	-2
	97	Campuses with Grads YoY Change (Units)**	8	NS
	65	Institutions with Online In-Market Students**	1	NS
In-Market Program Sizes	89	Average Program Completions	21	0
	80	Median Program Completions	8	0
	98	YoY Median Prog. Compl. Change (Units)	6	NS
In-Market Saturation	90	YoY Median Prog. Compl. Change (%)	55%	NS
	75	Google Search * Cost per Click**	\$8	-1
	82	Google Competition Index**	0.53	0
National Online Competition	68	National Online Institutions (Units)**	2	NS
	44	Nat'l Online % of Institutions	9%	NS
	43	Nat'l Online % of Completions	10%	NS

* - Google search do not filter by award level.
 ** - Color scale in reverse.
 NA - No data available/not currently tracked.
 NS - Not Scored in Rubrics (values = 0).
 PCTL - Percentile

Employment
Score: 19 Percentile: 99

Category	Pctl	Criterion	Value	Score
Size: Entry Jobs	85	Job Postings Total (12 Months)	443	NS
	87	BLS Current Employment	4,527	NS
	87	BLS Annual Job Openings	344	NS
Underemployed	6	Underemployed Percent of Graduates**	20%	0
Growth: Entry Jobs	11	BLS 1-Year Historical Growth	4.1%	NS
	22	BLS 3-Year Historic Growth (CAGR)	1.5%	0
	82	BLS 10-Year Future Growth (CAGR)	1.0%	0
Saturation: Entry Jobs	64	Job Postings per Graduate	0.8	1
	76	BLS Job Openings per Graduate	0.6	NS
BLS Wages	96	Entry 25th Percentile	\$80,760	9
	97	Post Entry Median	\$117,590	9
		Post Entry w/Associates Median	NA	NS
		Post Entry w/Bachelors Median	NA	NS
	97	Post Entry w/Masters Median	\$120,060	NS
National American Community Survey Bachelor's Degree Outcomes*	98	Post Entry w/Doctoral Median	\$139,194	NS
	39	% with Any Graduate Degree*	31%	NS
	48	% with Masters*	25%	NS
	41	% with Doct/Prof Degree*	6%	NS
	30	% Unemp. (Age <30)**	2%	NS
	68	% in Direct Prep Jobs*	14%	NS

-- IPEDS Demographics (Not Scored) -----

Category	Pctl	Criterion	This Program In-Market	All Programs In-Market
IPEDS Gender	3	Female	17%	62%
	96	Male	83%	38%
IPEDS Ethnicity	0	American Indian or Alaska Native	0	0%
	70	Asian	7%	6%
	26	Black or African American	2%	10%
	24	Hispanic or Latino	4%	10%
	0	Native Hawaiian or Other Pacific Islander	0	0%
	7	White	19%	49%
	95	International	64%	16%
	38	Other/Unknown	5%	8%

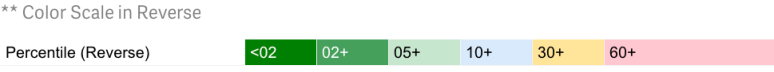
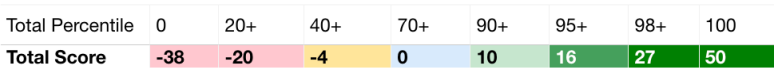
Degree Fit
Score: 0 Percentile: 50

Category	Pctl	Criterion	Value	Score
Cost Benchmarking**		Average Cost per SCH Index**	NA	NS
		Median Cost per SCH Index**	NA	NS

National Completions by Level **National Workforce Ed. Attainment**
Score: 0 Score: 0

Award Level	Completions (National)	Completions (Market)	Enrollment (Market)	BLS Educational Attainment
No College				6%
Some College				8%
Certificate	8%	8%	5%	
Associates	8%	8%	9%	7%
Bachelors	38%	38%	29%	50%
Postbaccalaureate Certificate	5%	5%	0%	
Masters	37%	37%	48%	23%
Post-masters Certificate	0%	0%	3%	
Doctoral	4%	4%	6%	6%

CIP Description:
 A program that prepares individuals to apply mathematical and scientific principles to the design, development and operational evaluation of computer controlled electro-mechanical systems and products with embedded electronics, sensors, and actuators; and which includes, but is not limited to, automata, robots and automation systems. Includes instruction in mechanical engineering, electronic and electrical engineering, computer and software engineering, and control engineering.



Student Demand
Score: 15 Percentile: 96

Category	Pctl	Criterion	Value	Score
Size	88	Google Search Volume (3 Months)*	64,821	2
	96	International Page Views (12 Months)	5,467	NS
	96	New Student Enrollment Volume (12 Mo.)	4,485	6
	97	On-ground Completions at In-Market Institutions	2,885	3
	88	Online Completions by In-Market Students	238	1
Growth	95	Sum of On-ground and Online Completions	3,123	3
	9	Google Search YoY Change (Units)*	-3,650	NS
	99	New Student Enrollment Vol. YoY Change (Units)	532	NS
	86	Completion Volume YoY Change (Units)	35	NS
	41	Google Search YoY Change (%)*	-5%	NS
	75	New Student Enrollment Vol. YoY Change (%)	14%	NS
	48	Completion Volume YoY Change (%)	1%	NS

Competitive Intensity
Score: 0 Percentile: 85

Category	Pctl	Criterion	Value	Score
Volume of In-Market Competition	93	Campuses with Graduates**	93	-4
	92	Campuses with Grads YoY Change (Units)**	3	NS
	91	Institutions with Online In-Market Students**	13	NS
In-Market Program Sizes	96	Average Program Completions	31	4
	89	Median Program Completions	11	0
	85	YoY Median Prog. Compl. Change (Units)	1	NS
In-Market Saturation	72	YoY Median Prog. Compl. Change (%)	4%	NS
	70	Google Search * Cost per Click**	\$7	-1
	27	Google Competition Index**	0.09	1
National Online Competition	90	National Online Institutions (Units)**	15	NS
	50	Nat'l Online % of Institutions	13%	NS
	41	Nat'l Online % of Completions	8%	NS

* - Google search do not filter by award level.
 ** - Color scale in reverse.
 NA - No data available/not currently tracked.
 NS - Not Scored in Rubrics (values = 0).
 PCTL - Percentile

Employment
Score: 10 Percentile: 94

Category	Pctl	Criterion	Value	Score
Size: Entry Jobs	96	Job Postings Total (12 Months)	5,473	NS
	96	BLS Current Employment	28,839	NS
	96	BLS Annual Job Openings	2,523	NS
Underemployed	37	Underemployed Percent of Graduates**	37%	0
Growth: Entry Jobs	64	BLS 1-Year Historical Growth	5.7%	NS
	83	BLS 3-Year Historic Growth (CAGR)	3.8%	0
	60	BLS 10-Year Future Growth (CAGR)	0.8%	0
Saturation: Entry Jobs	92	Job Postings per Graduate	1.8	4
	89	BLS Job Openings per Graduate	0.8	NS
BLS Wages	66	Entry 25th Percentile	\$59,958	3
	69	Post Entry Median	\$97,866	3
		Post Entry w/Associates Median	NA	NS
		Post Entry w/Bachelors Median	NA	NS
	71	Post Entry w/Masters Median	\$100,237	NS
National American Community Survey Bachelor's Degree Outcomes*	57	Post Entry w/Doctoral Median	\$114,084	NS
	92	% with Any Graduate Degree*	61%	NS
	93	% with Masters*	40%	NS
	86	% with Doct/Prof Degree*	21%	NS
	65	% Unemp. (Age <30)**	3%	NS
	52	% in Direct Prep Jobs*	7%	NS

-- IPEDS Demographics (Not Scored) -----

Category	Pctl	Criterion	This Program In-Market	All Programs In-Market
IPEDS Gender	42	Female	58%	62%
	57	Male	42%	38%
IPEDS Ethnicity	70	American Indian or Alaska Native	0%	0%
	69	Asian	6%	6%
	60	Black or African American	8%	10%
	71	Hispanic or Latino	11%	10%
	86	Native Hawaiian or Other Pacific Islander	0%	0%
	44	White	49%	49%
	64	International	17%	16%
	62	Other/Unknown	8%	8%

Degree Fit
Score: 0 Percentile: 50

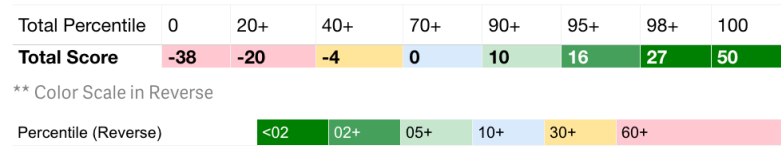
Category	Pctl	Criterion	Value	Score
Cost Benchmarking**	42	Average Cost per SCH Index**	1.03	NS
	42	Median Cost per SCH Index**	1.84	NS

National Completions by Level
Score: 0

National Workforce Ed. Attainment
Score: 0

Award Level	Completions (National)	Completions (Market)	Enrollment (Market)	BLS Educational Attainment
No College				6%
Some College				10%
Certificate	2%	2%	0%	
Associates	0%	0%	0%	4%
Bachelors	40%	40%	15%	36%
Postbaccalaureate Certificate	4%	4%	1%	
Masters	50%	50%	63%	30%
Post-masters Certificate	1%	1%	6%	
Doctoral	3%	3%	14%	14%

CIP Description:
 A program that focuses on the systematic analysis of public policy issues and decision processes. Includes instruction in the role of economic and political factors in public decision-making and policy formulation, microeconomic analysis of policy issues, resource allocation and decision modeling, cost/benefit analysis, statistical methods, and applications to specific public policy topics.



If you would like to learn more about Gray DI, check out the following resources:

The Course on PES

**Academic Program
Evaluation and
Management Certificate**



The Book on Academic Program Management



Podcast

Grow Grow Grow

Listen on
Spotify

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Monthly Webinar

Demand Trends Webinar

