

GRAYTM
DECISION INTELLIGENCE

Program Economics and Curricular Efficiency: How to Avoid Dumb Cuts

March 12th, 2024

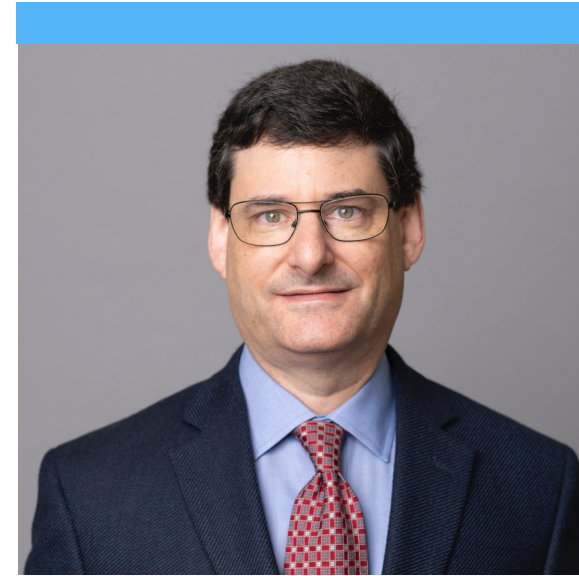
Today's Speakers



Peter Starrett

Executive Vice President
Chief Financial Officer

Gray Decision Intelligence



Steve Probst

Senior Vice President
Customer Success and Data Integrity

Gray Decision Intelligence



Agenda

- **Program Economics**
 - Methodology
 - Program Economics
- **Curricular Efficiency**
 - The Essential Metric: Cost per Student Credit Hour
 - Figuring Out Where You Stand
 - Policy Decisions that Drive Curricular Efficiency
 - Recurring Decisions that Drive Curricular Efficiency
 - Management and Implementation

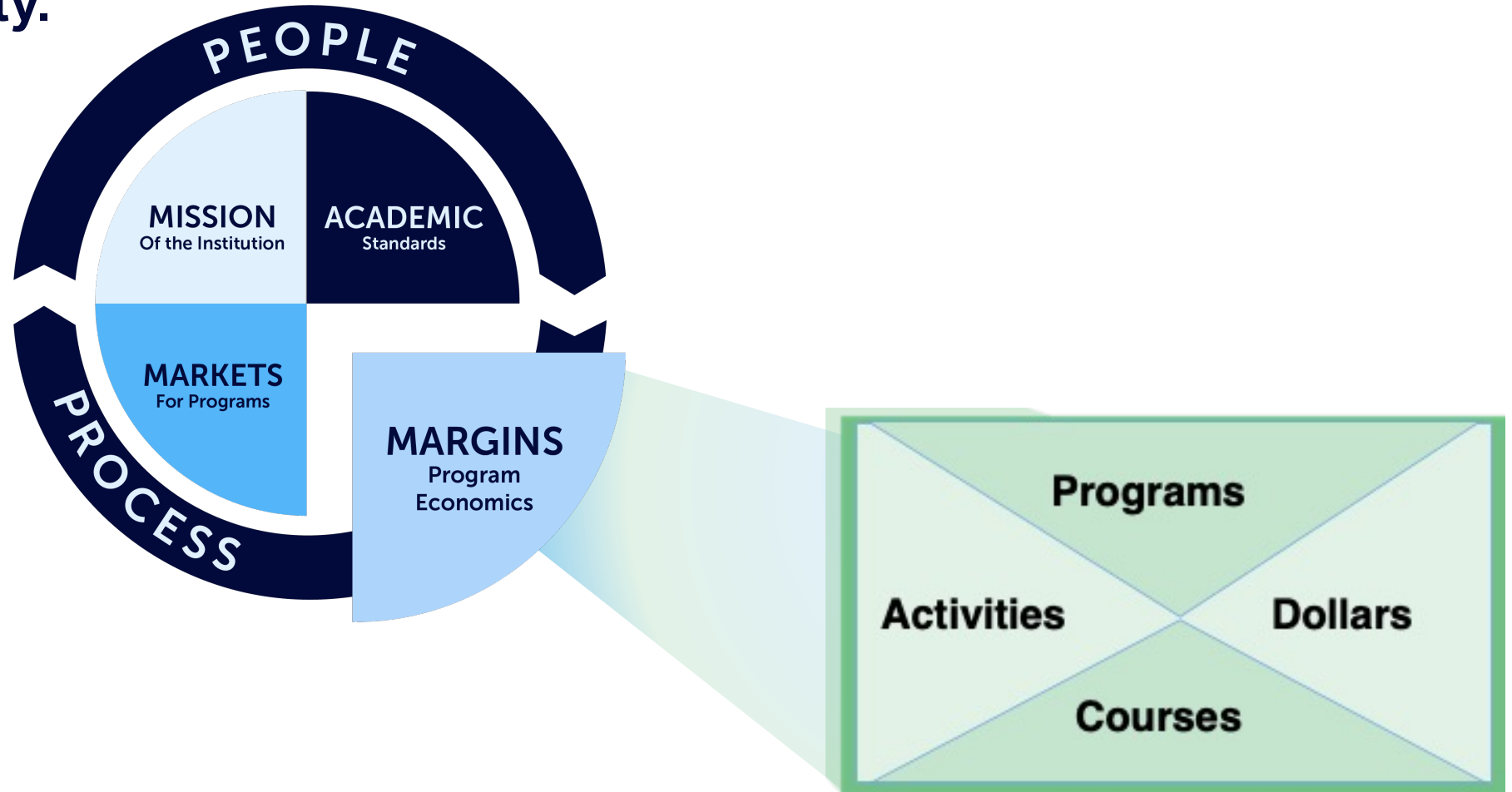


Program Evaluation System





A healthy program portfolio delivers positive contribution margins to ensure financial vitality.

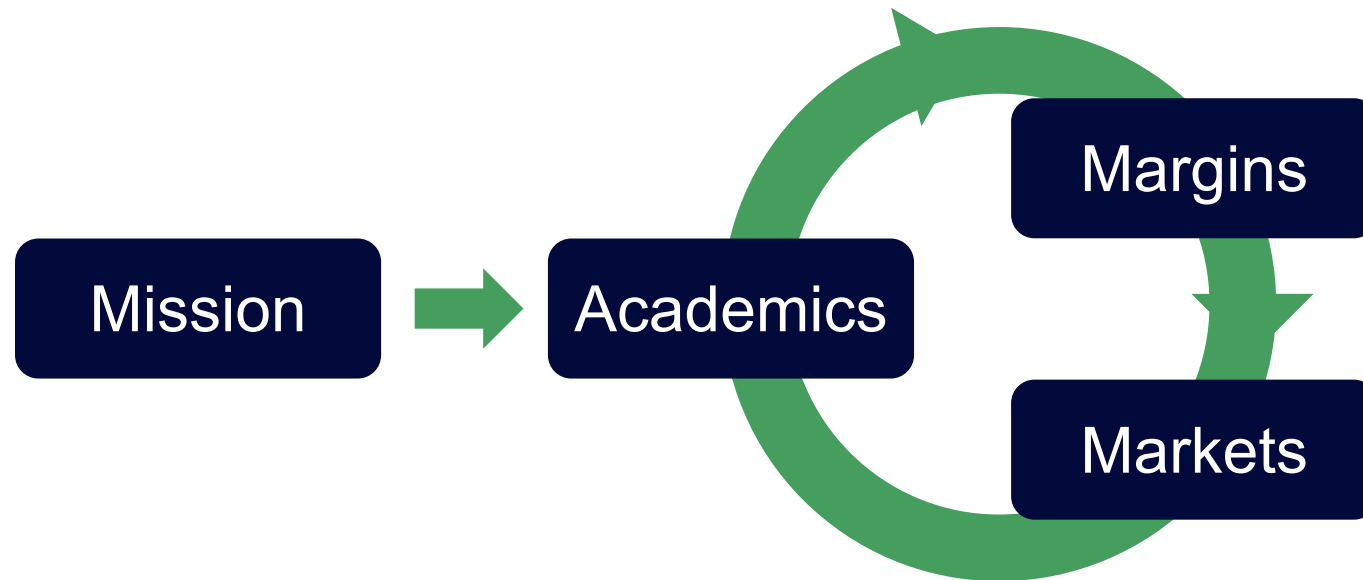




Why are margins important?

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

- High-margin programs produce more money than they cost.
- Institutions use the funds to subsidize other mission-critical programs and activities.





Avoid Common Mistakes

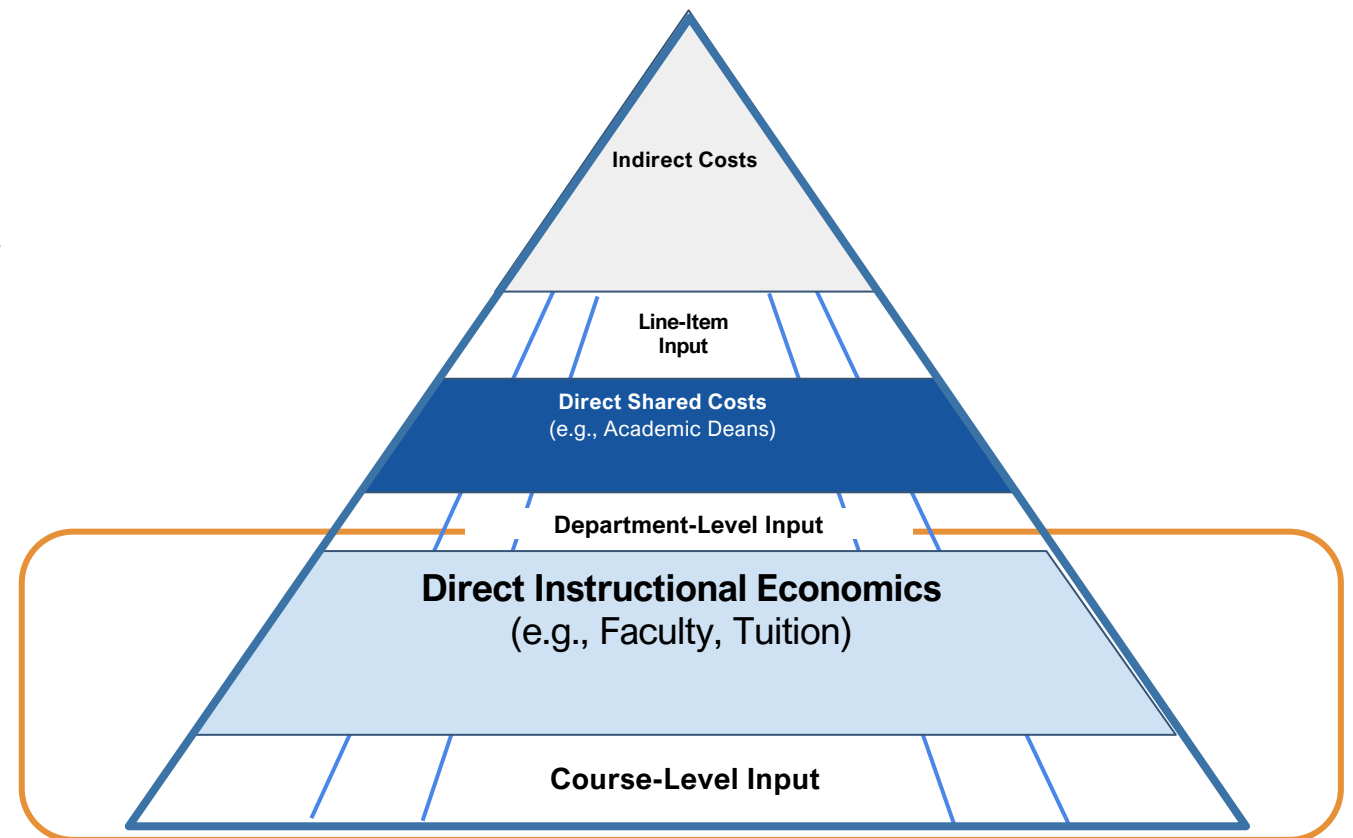
- Focusing on program cuts
- Using rules of thumb, such as cutting small programs or courses
- Cutting programs that are in good markets but not performing well
- Running a confidential, top-down process

What Are Program Economics?

Program economics captures all the revenues, costs, and margins that are likely to change if you decide to grow or stop a program.

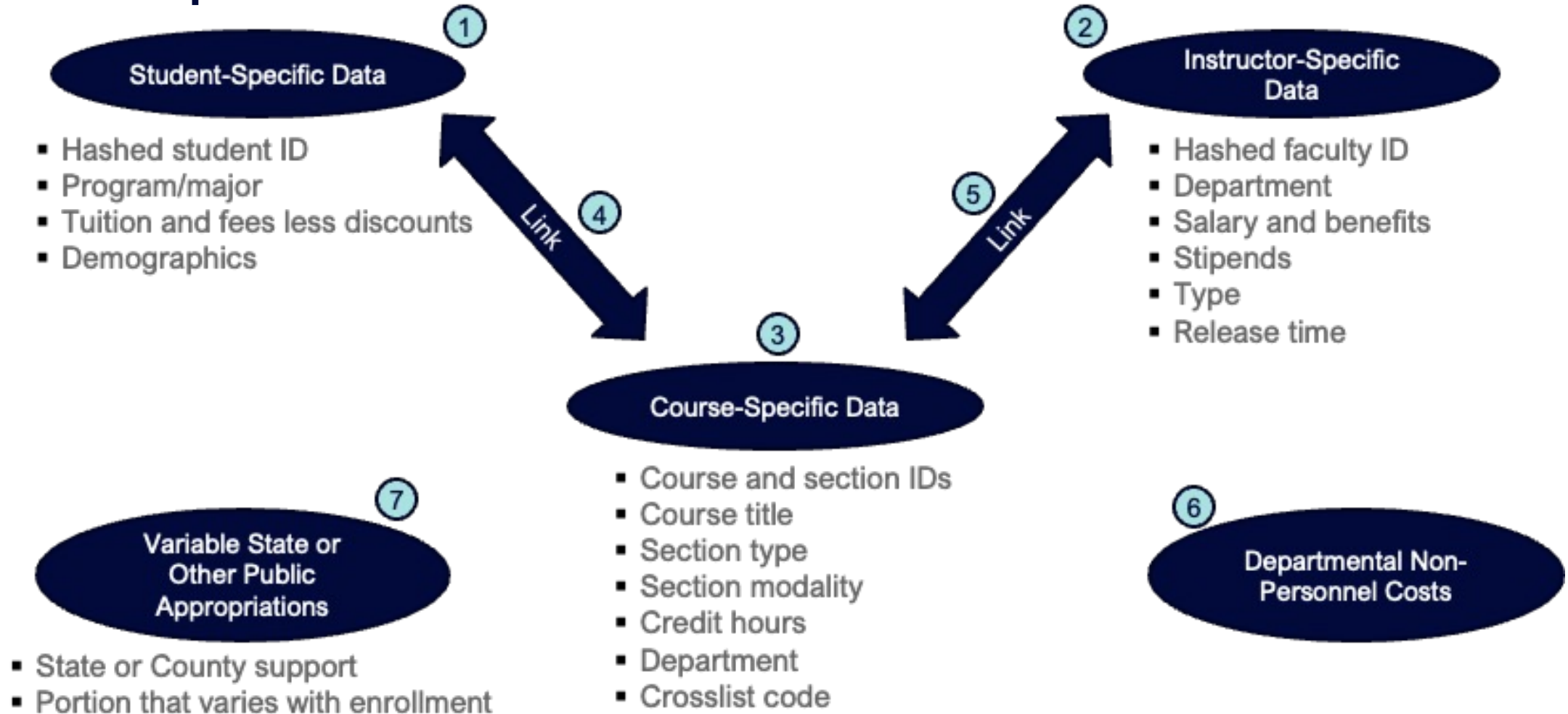
What are academic program economics?

- Revenue minus direct instructional costs
- For all courses taken by students in the major
- Including courses outside the department





You need up to seven main data sources.





Program Economics: Methodology

Revenue follows the individual student.

Program
(Major)



Student
Revenue

- Tuition and fees
- Less discounts (grants and scholarships)
- Plus fair share of any public funding that varies with enrollment
- By term



Course 1



Course 2



Course 3



Course 4

\$20,000 to student's program



\$20,000

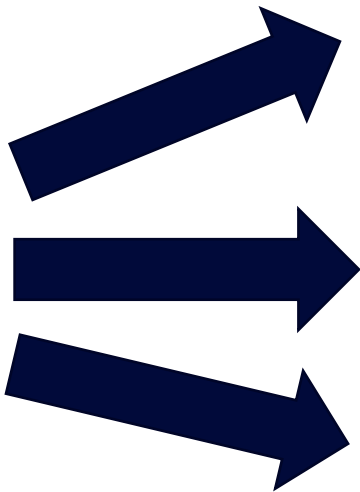


\$5,000 to each course

Program Economics: Methodology

Expenses are assigned from instructors to classes, and then to students in each class.

**Instructor's
Pay and
Benefits**



```
graph LR; A[Instructor's Pay and Benefits] --> B[Instructional Cost]; A --> C[Release Cost]; A --> D[Unassigned Cost];
```

Instructional Cost:

Assigned to individual classes based on class credit hours

Release Cost:

Assigned based on releases

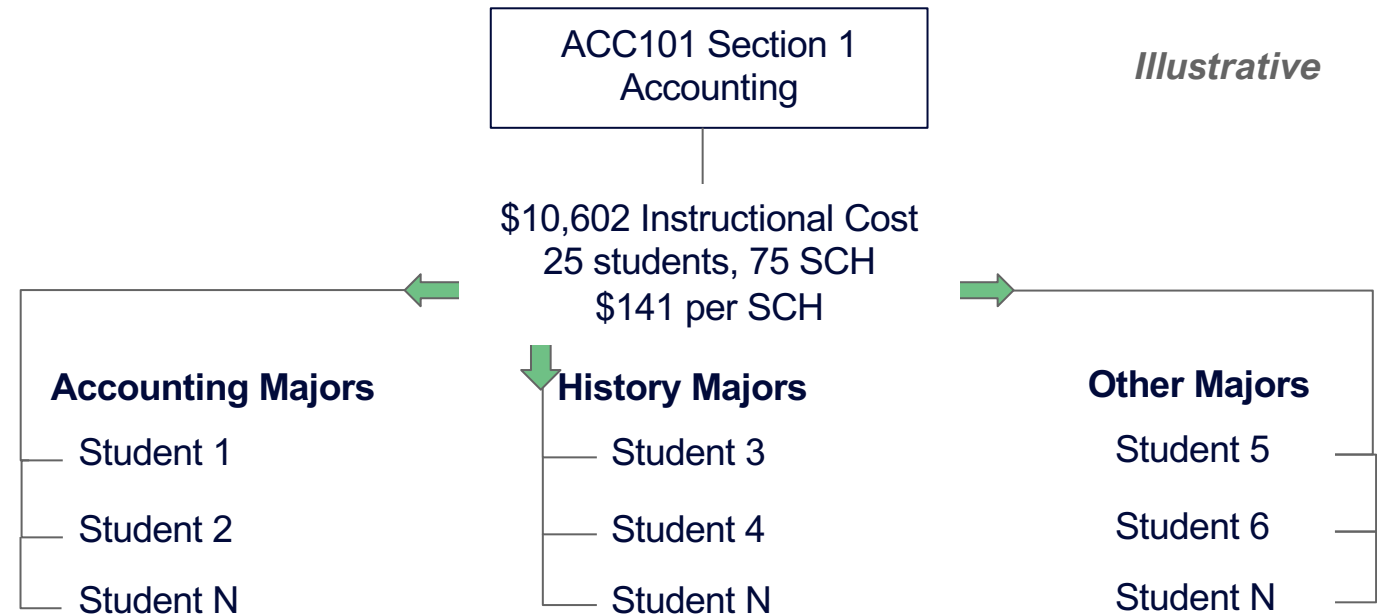
Unassigned Cost:

Remaining cost for full-time faculty whose teaching plus release loads are less than standard load

Program Economics: Methodology

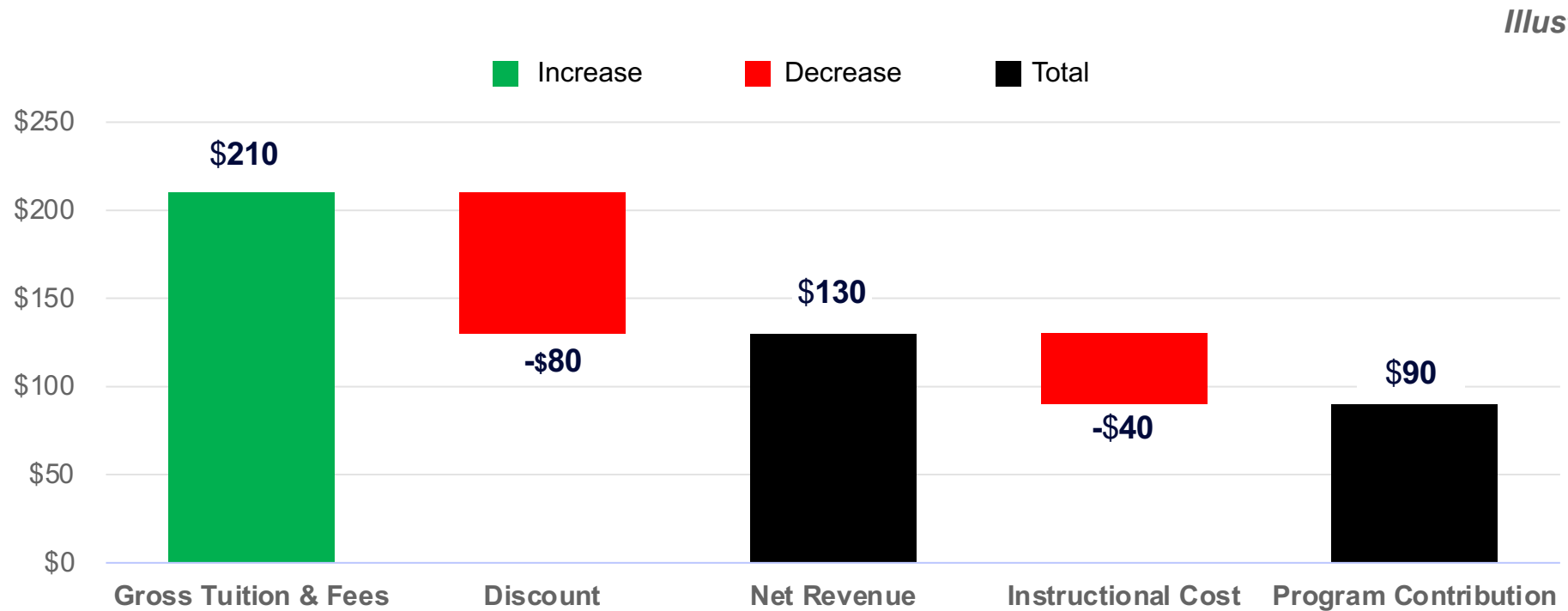
Assign cost to students

- 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: Methodology

Build your Program Economics Scorecard with clear visual math.

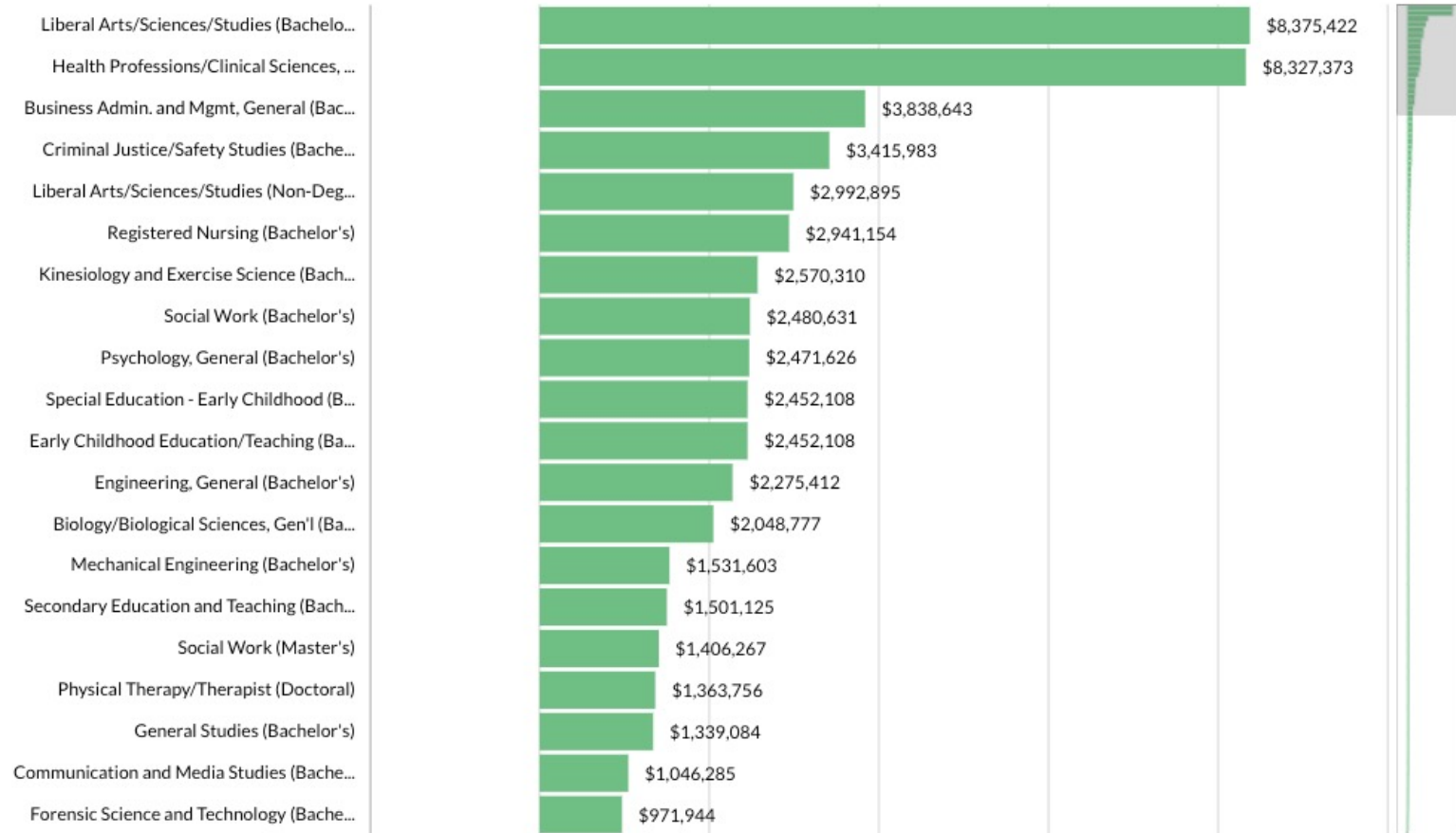


Program Economics Scorecard



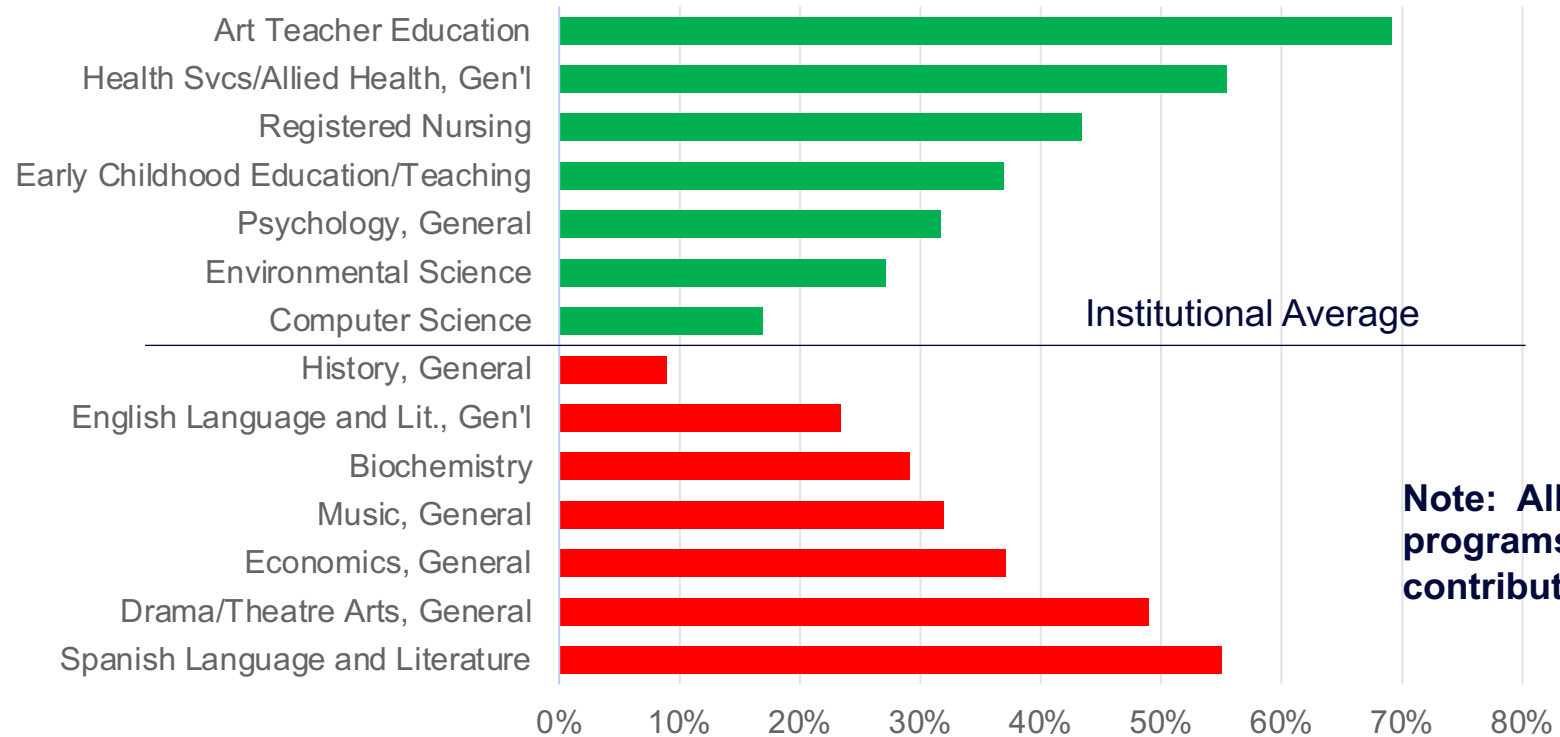
Program Ranking by Contribution

Contribution by Program



Benchmark: Margins by Program

Difference from Average Bachelor's Contribution Margin per SCH*
 (Selected programs offered by four or more institutions)



Note: All of these programs have positive contribution margin.



Cost Benchmarks in PES Markets

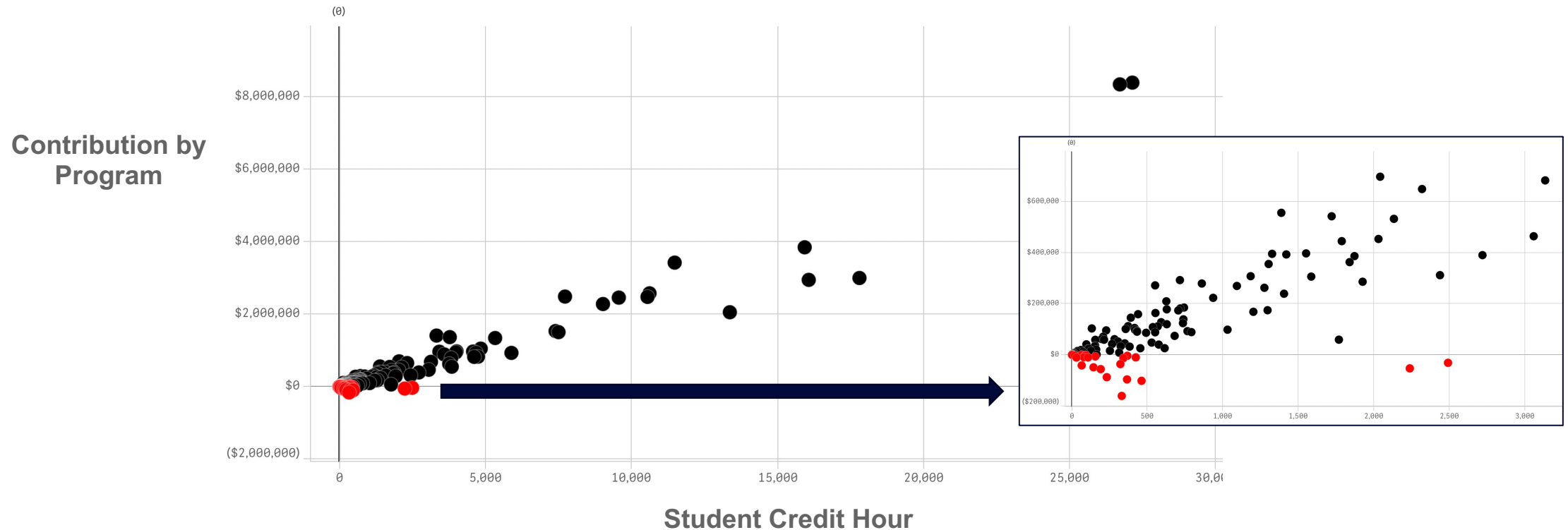
Degree Fit
Score: 0 Percentile: 50

Category	Pctl	Criterion	Value	Score
Cost Benchmarking**	27	Average Cost per SCH Index**	0.45	NS
	27	Median Cost per SCH Index**	0.81	NS

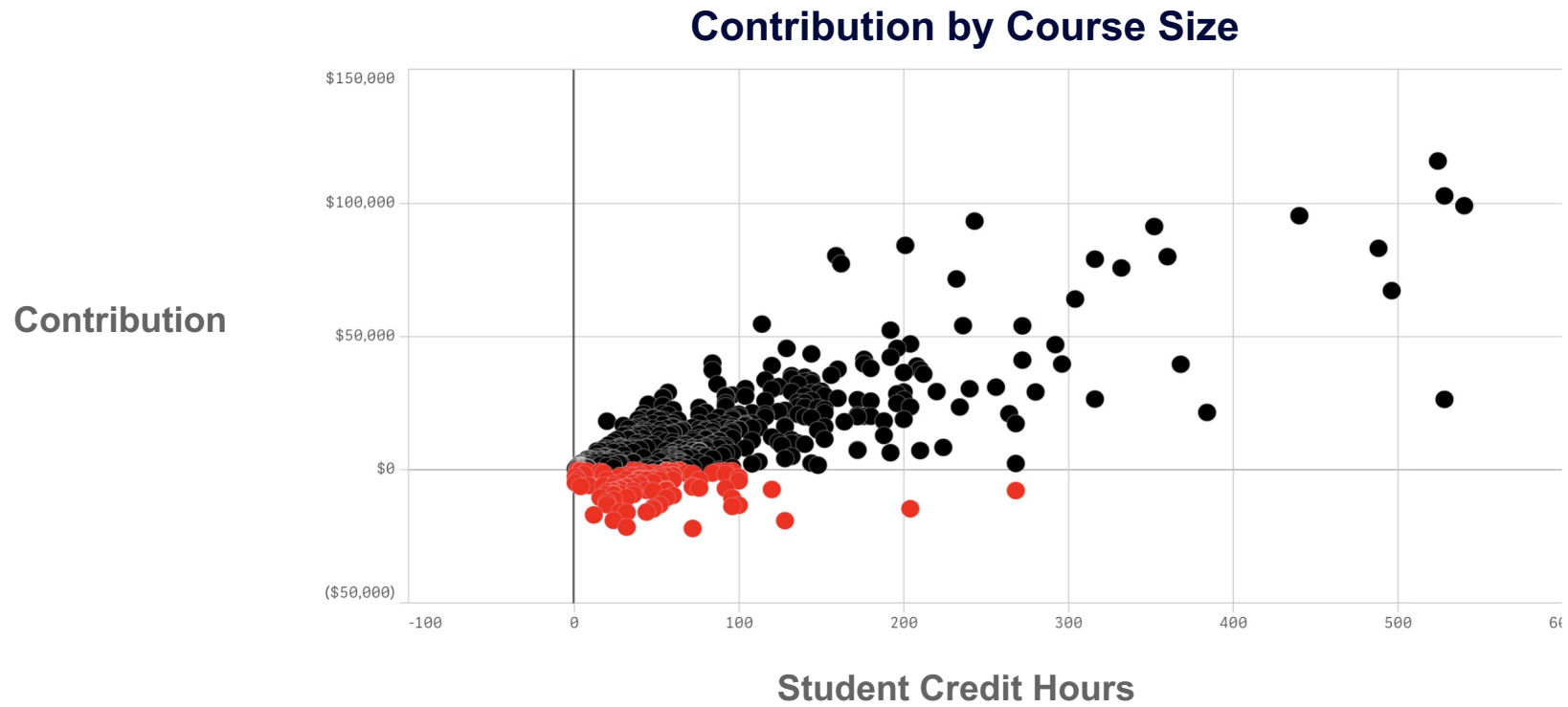
Program Economics

Most programs make money – even small ones.

Contribution by Student Credit Hour



Courses Cost Money



Program Economics

How does each academic program affect the financial health of the university?



Curricular Efficiency

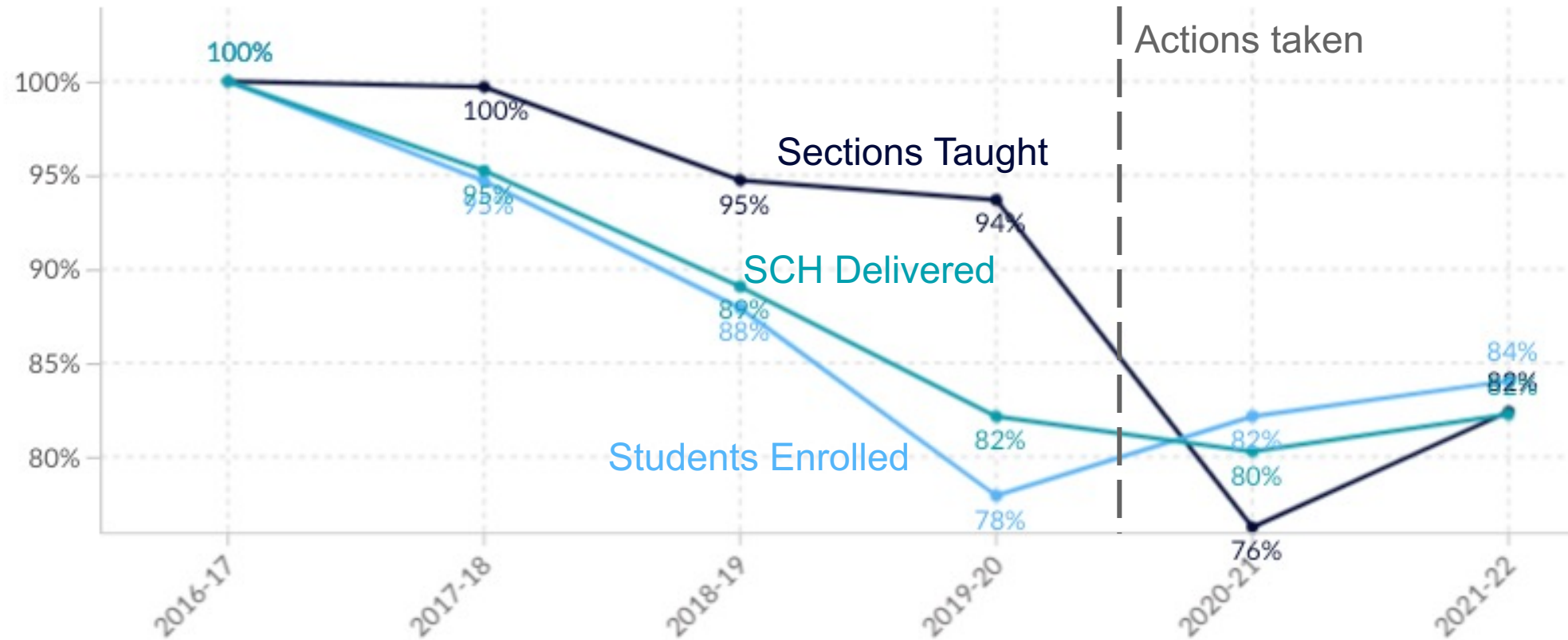
Where can we reduce teaching workload to free up resources for university priorities, growth, and/or cost reduction?



Actual Results for a Private Comprehensive College

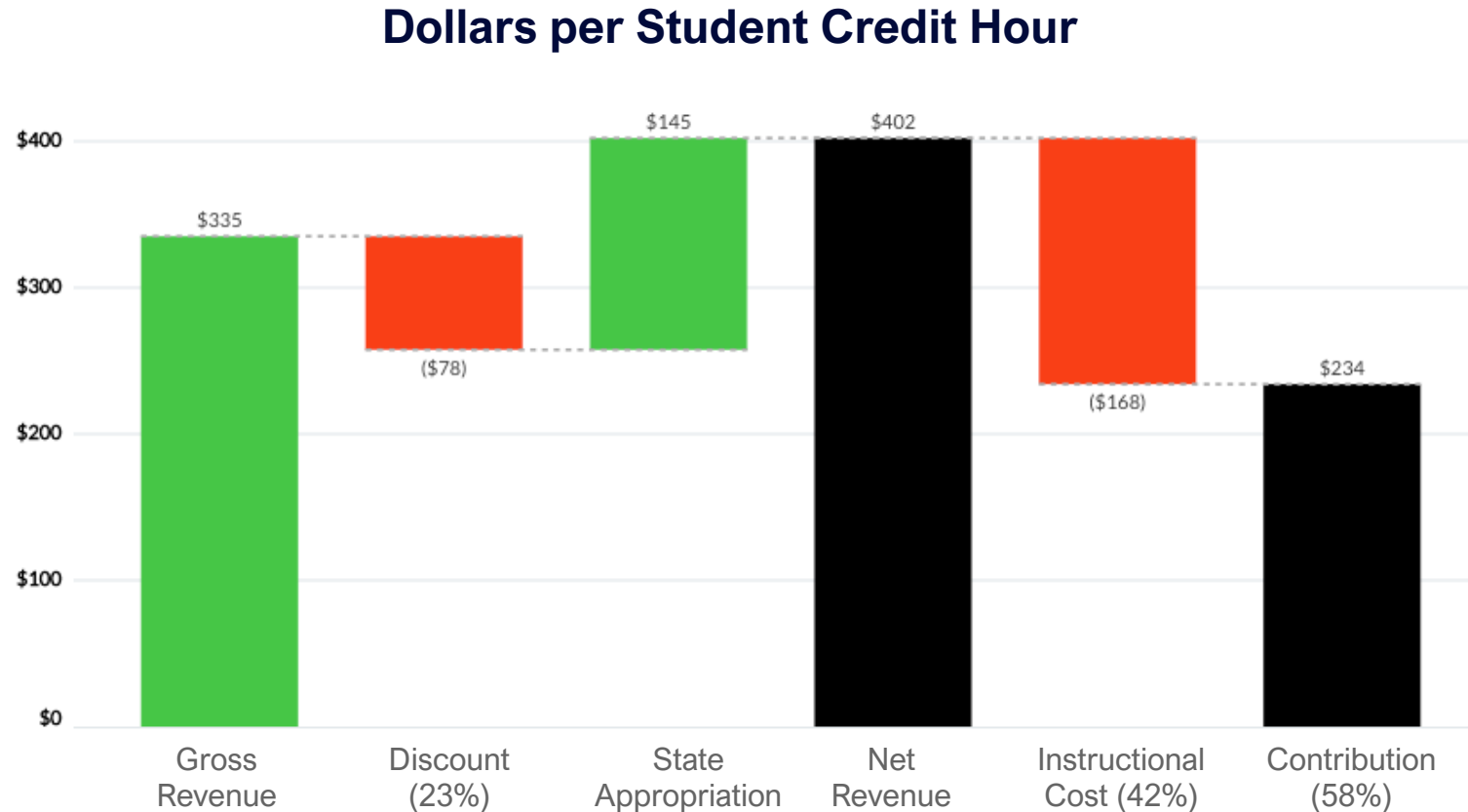
This institution brought its instructional costs into alignment with its tuition revenue.

- Substantial cost reduction
- Data-informed decisions
- No “Financial Exigency”
- No headlines in local press
- No vote of no confidence
- Moved onto a sustainable path



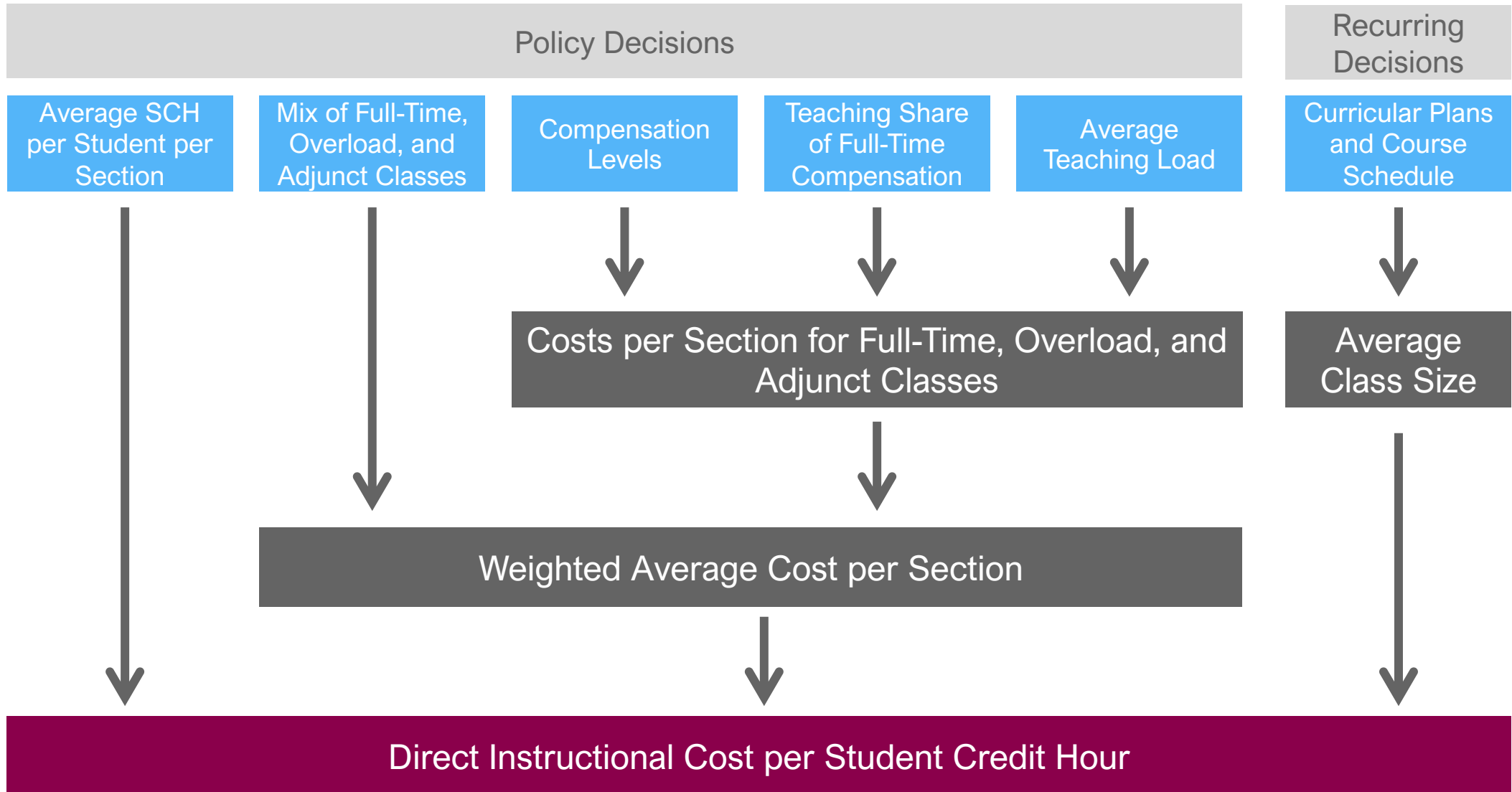
The Essential Metric: Cost per Student Credit Hour (\$/SCH)

- Enables comparisons across big and small courses, programs, departments, and institutions
- Translates easily across institutions, even ones that do not use credit hours
 - 1/120 of a Bachelor's degree
 - 1/30 of a full-time load for one year
- Does not implicitly assume that students take courses only in their home departments
- \$/SCH relevant for revenue and contribution as well as for costs



Economics by Course Level

Course Level	Q	Students	Student Credit Hours	Count of Sections	Instructional Cost per SCH	Instructional Cost per Section	FT Faculty % of Sections	SCH per Section	Students per Section	SCH per Student
1000	R	9,233	126,959	1,573	\$75	\$6,090	29%	80.7	25	3
2000		7,884	68,013	1,052	\$124	\$8,002	51%	64.7	20	3
3000		6,800	76,761	1,346	\$173	\$9,855	67%	57.0	19	3
4000		3,522	30,035	900	\$252	\$8,406	75%	33.4	11	3
5000		1,503	8,399	188	\$232	\$10,379	76%	44.7	14	3
6000		1,074	12,158	629	\$390	\$7,539	81%	19.3	7	3
7000		372	4,780	125	\$348	\$13,307	65%	38.2	11	3
8000		182	3,521	52	\$345	\$23,357	96%	67.7	20	3



Curricular Efficiency Metrics: Cost Over Threshold

Cost Over Threshold:
Potential savings if each section with higher-than-threshold Cost per SCH instead had the threshold Cost per SCH.

Course Code	Course Level	Section	Course Subject	Course Title	Seme...	C	Students	Student Credit Hours	Cost SCH	Total Cost	Cost Over Threshold
ENGL 1550	1000	40707	ENGLISH	Writing 1	Fall		25	99	\$218	\$21,626	\$7,568
ENGL 1549	1000	45174	ENGLISH	Writing 1 with Support	Fall		22	152	\$37	\$5,667	\$0
ENGL 1549	1000	45220	ENGLISH	Writing 1 with Support	Fall		20	152	\$41	\$6,233	\$0
ENGL 1549	1000	45221	ENGLISH	Writing 1 with Support	Fall		20	148	\$41	\$6,069	\$0
ENGL 1549	1000	45171	ENGLISH	Writing 1 with Support	Fall		20	140	\$97	\$13,589	\$0
ENGL 1549	1000	45169	ENGLISH	Writing 1 with Support	Fall		20	140	\$48	\$6,741	\$0
ENGL 1549	1000	45162	ENGLISH	Writing 1 with Support	Fall		19	140	\$35	\$4,962	\$0
ENGL 1549	1000	45172	ENGLISH	Writing 1 with Support	Fall		20	136	\$48	\$6,548	\$0
ENGL 1549	1000	45168	ENGLISH	Writing 1 with Support	Fall		18	136	\$46	\$6,197	\$0
ENGL 1549	1000	45219	ENGLISH	Writing 1 with Support	Fall		20	132	\$34	\$4,445	\$0
ENGL 1549	1000	45160	ENGLISH	Writing 1 with Support	Fall		21	128	\$92	\$11,832	\$0
ENGL 1549	1000	45165	ENGLISH	Writing 1 with Support	Fall		20	128	\$41	\$5,249	\$0
ENGL 1549	1000	45166	ENGLISH	Writing 1 with Support	Fall		20	128	\$41	\$5,249	\$0
ENGL 1549	1000	45175	ENGLISH	Writing 1 with Support	Fall		20	128	\$41	\$5,249	\$0
ENGL 1549	1000	45170	ENGLISH	Writing 1 with Support	Fall		19	124	\$51	\$6,285	\$0
ENGL 1549	1000	45163	ENGLISH	Writing 1 with Support	Fall		18	124	\$37	\$4,639	\$0

Costs by Department

 Avg. Cost per SCH for
 Selections
\$129

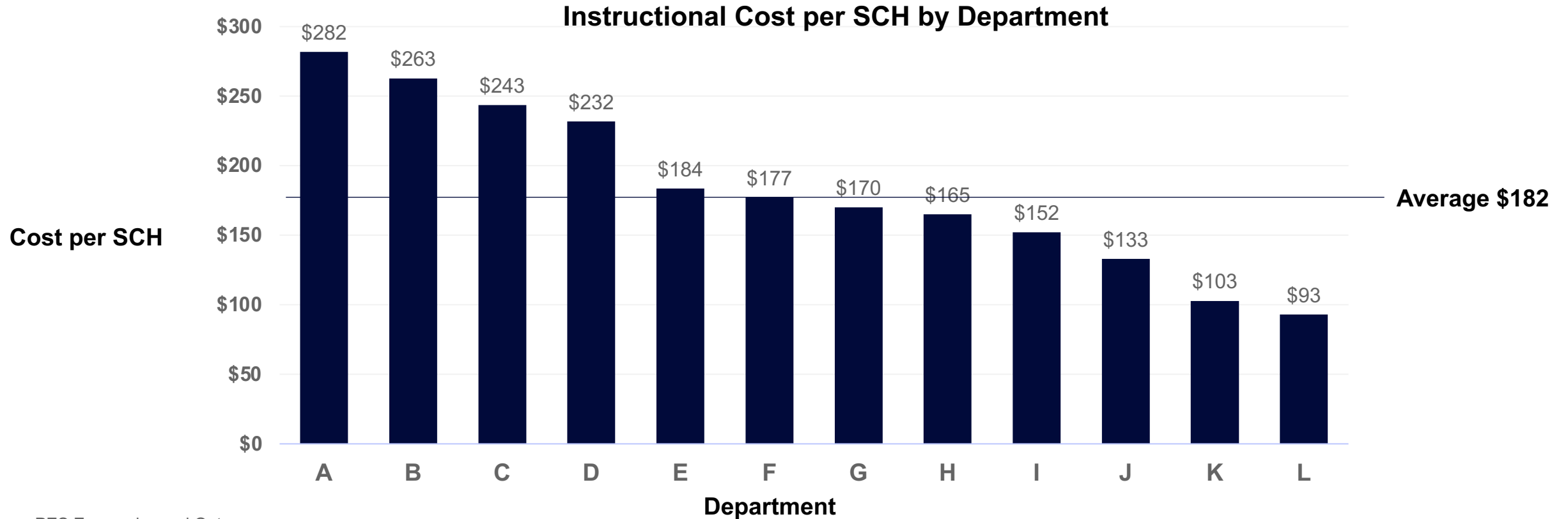
 Set Threshold:

Reset

Course Department	Students	Student Credit Hours	Count of Sections	Avg Sections per Course	Intructional Cost per SCH	Cost over Threshold	Instructional Cost per Section	FT Faculty % of Sections	SCH per Section	Students per Section	SCH per Student
Visual & Dramatic Arts	2,007	12,780	469	1	\$232	\$2,033,339	\$6,316	69%	27.2	8	3
Health Professions	4,298	26,600	577	2	\$132	\$1,640,444	\$6,092	41%	46.1	17	3
Business	2,381	29,192	351	3	\$146	\$1,568,572	\$12,103	79%	83.2	27	3
Humanities	5,202	31,995	396	2	\$106	\$1,121,541	\$8,551	53%	80.8	24	3
Engineering	841	10,666	190	2	\$217	\$1,111,150	\$12,185	90%	56.1	23	2
Computer Science	945	9,785	199	2	\$193	\$902,371	\$9,493	60%	49.2	16	3
Communication	2,847	14,969	252	3	\$139	\$877,935	\$8,260	60%	59.4	18	3
English and World Languages	5,189	33,526	434	4	\$90	\$786,534	\$6,952	33%	77.2	20	4
Chemical and Biological Sciences	2,672	22,601	438	4	\$134	\$744,592	\$6,903	38%	51.6	24	2
Art	529	5,089	119	1	\$244	\$699,161	\$10,419	61%	42.8	13	3
Mathematics	4,206	28,188	314	5	\$86	\$620,868	\$7,735	39%	89.8	23	4

Internal Performance Benchmarks

Comparing course-level costs across departments is a start.



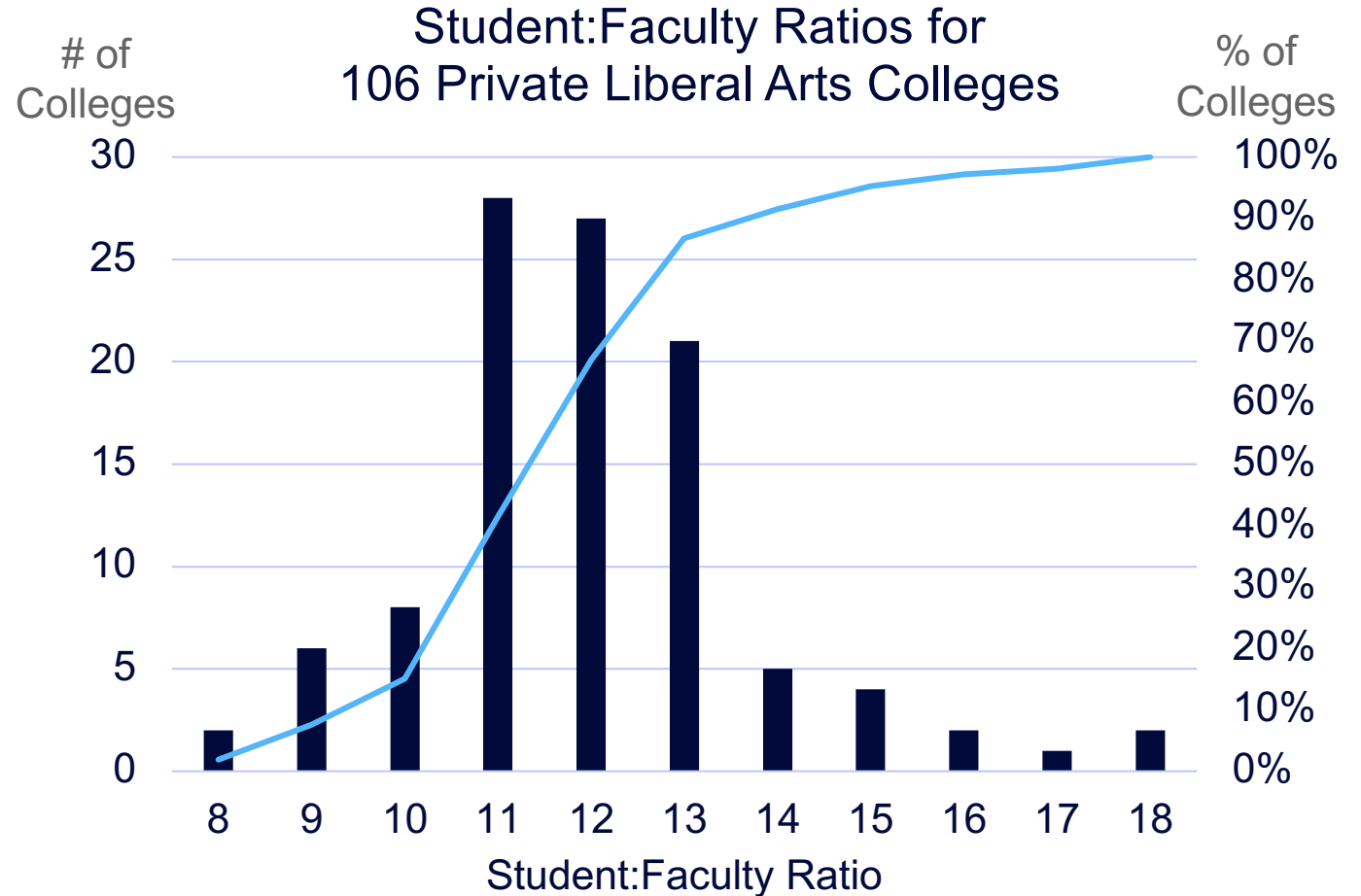
Source: PES Economics and Outcomes



Benchmarking with Student:Faculty Ratios

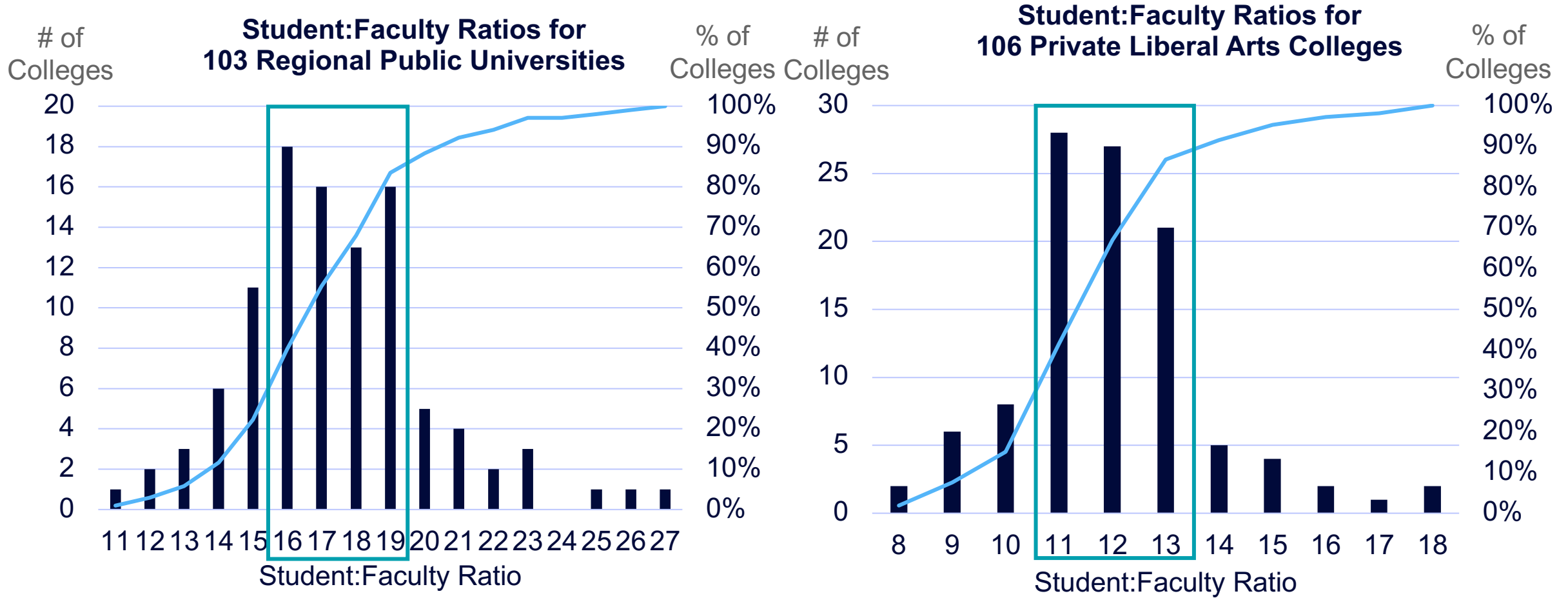
IPEDS provides student:faculty ratios.

- Use these with caution.
- Compare to appropriate institutions:
 - Size
 - Undergrad/graduate mix
 - Modality mix
 - Mission
 - Selectivity
 - Student population attributes
 - Full-time/part-time student mix
 - Full-time/part-time faculty mix
- Limitations
 - Crude measure of relative efficiency
 - See whether there are “good” peers with higher efficiency





Think hard about the right peer group when benchmarking.



External Benchmarks on Costs by Course Level

This institutional has a \$7 million savings opportunity.

Avg. Cost/SCH, Client

\$154

Avg. Cost/SCH, Sample

\$182

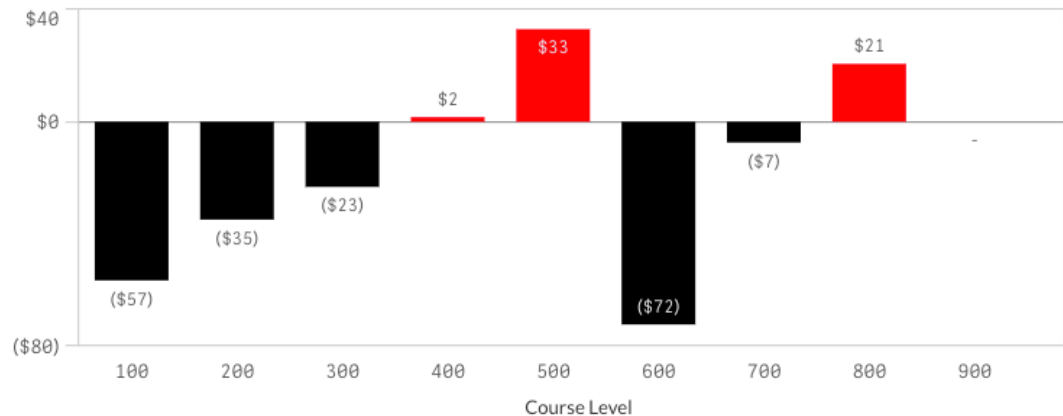
Percent Difference

-15%

Total Cost Difference

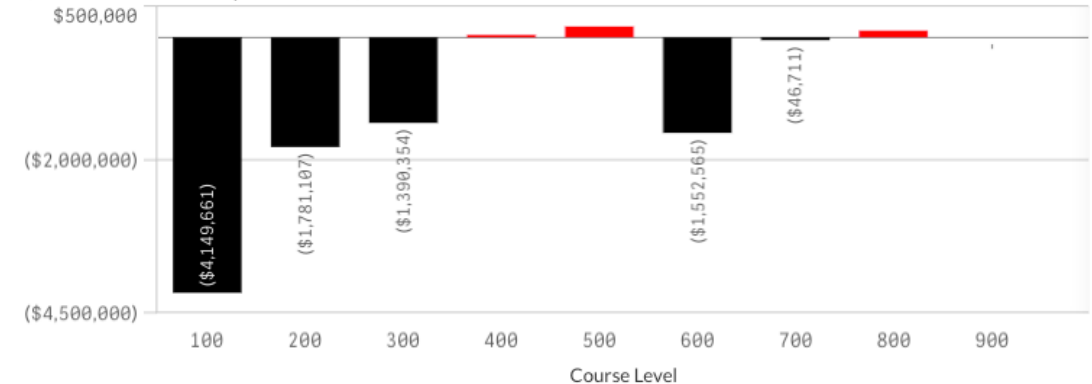
-6.87M

Difference In Average Cost/SCH, Client Vs. Sample



Total Cost Impact, Client Vs. Sample

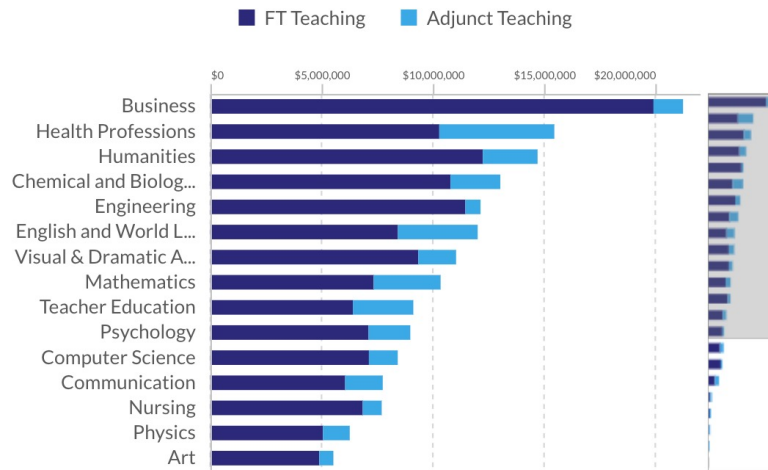
(Client Cost/SCH - Sample Cost/SCH) * Client SCH



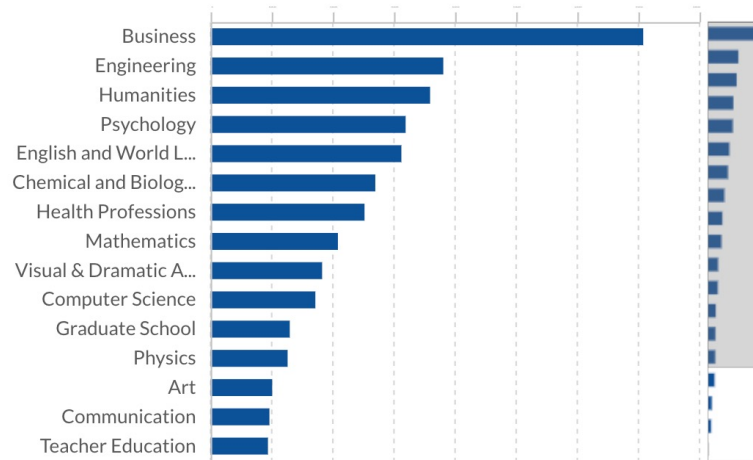
Faculty Analysis and Policy Decisions

Faculty costs can be assigned to teaching, releases, and unallocated time.

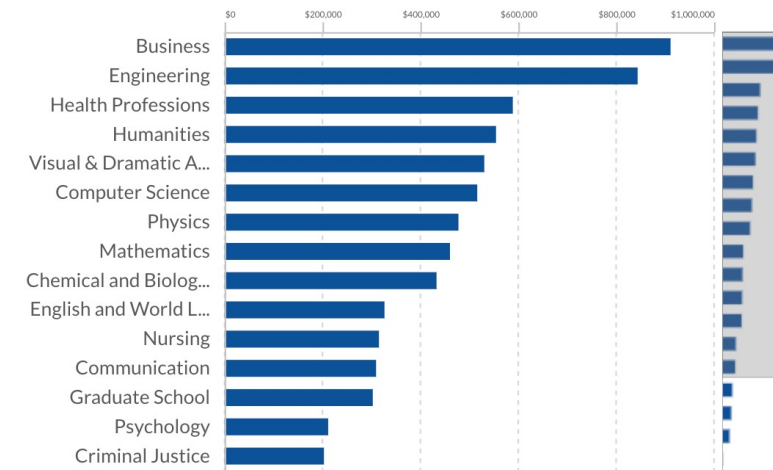
Teaching Cost



Release Cost

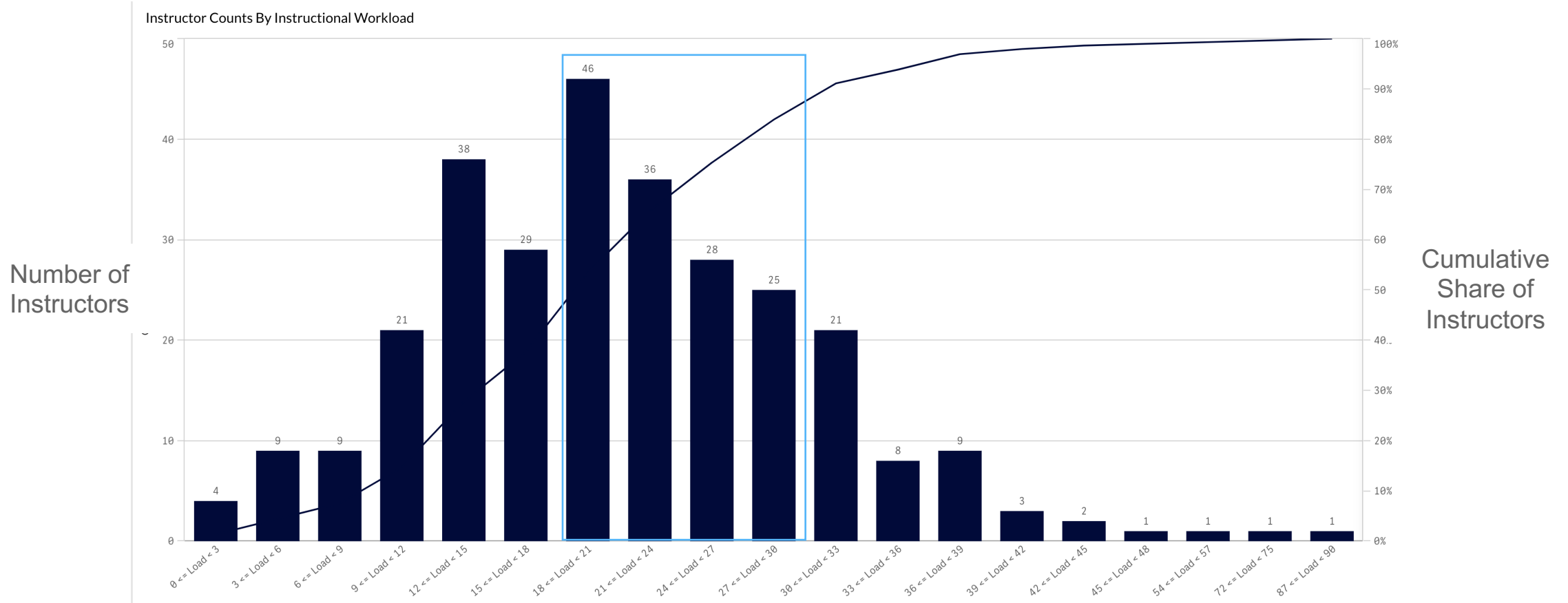


Unallocated Faculty Cost



Actual Teaching Loads for Full-Time Faculty

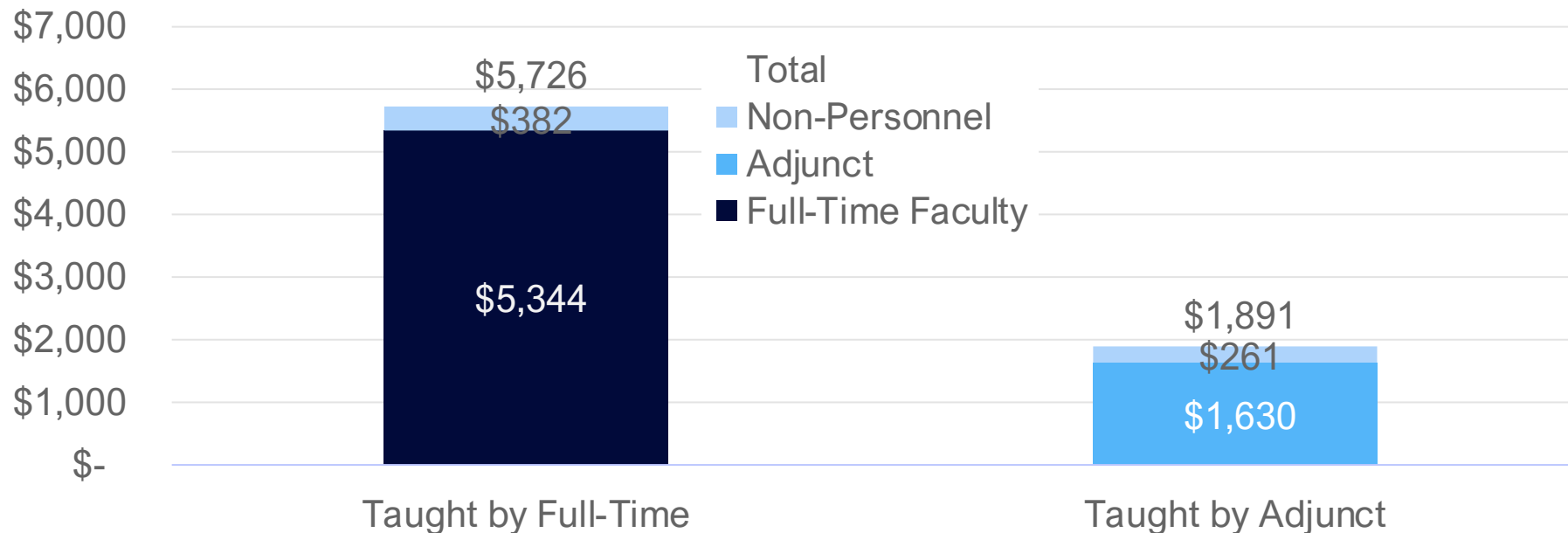
At this institution, the most common load is three 3-credit courses per term.



Teaching Mix: Full-Time (normal load), Adjunct, Staff, Overload, etc.

- Costs are assigned to classes based on class credit hours.
- Common exceptions with special rules include adjunct per-course pay, special pay for winter and summer terms, and teaching responsibilities distinct from a normal load (like independent studies).

Cost to Teach One Section (Spring and Fall Terms)



Economics and efficiency data should be considered in faculty hiring decisions.

Trend in Instructional Work

- What has been the trend in enrollment in this department's courses?
- Has the university made an explicit decision to invest in growth in this department or its programs?

Unique Skills or Capabilities to Replace

- Did the person who left have unique skills or capabilities that the university must replace?

Should we hire a replacement when someone retires or leaves the university?

Relative Efficiency/ Productivity

- How does this department compare to others in cost per SCH?
- How much release and unallocated time does this department have?
- Do courses in other departments serve similar educational needs?

Economics-Informed Considerations

What If

- If no replacement is hired, how will the department adjust its offerings to reflect the reduced teaching capacity?

Modality Deep Dive: Selected Freshman Courses

Course Title	Modality	Students	Student Credit Hours	Instructional Cost per SCH	Count of Sections	FT Faculty % of Sections	Instructional Cost per Section	SCH per Section	Students per Section	SCH per Student	DFW Rate
College Composition I	On-Campus	623	2,001	\$138	34	100.0%	\$8,106	58.9	20	3.0	24.7%
College Composition I	Online	190	582	\$151	10	90.0%	\$8,796	58.2	19	3.0	32.5%
Elementary Statistics	On-Campus	426	1,299	\$176	19	63.2%	\$12,042	68.4	23	3.0	22.9%
Elementary Statistics	Online	244	732	\$138	7	100.0%	\$14,393	104.6	35	3.0	13.5%



Recurring Decisions that Drive Curricular Efficiency

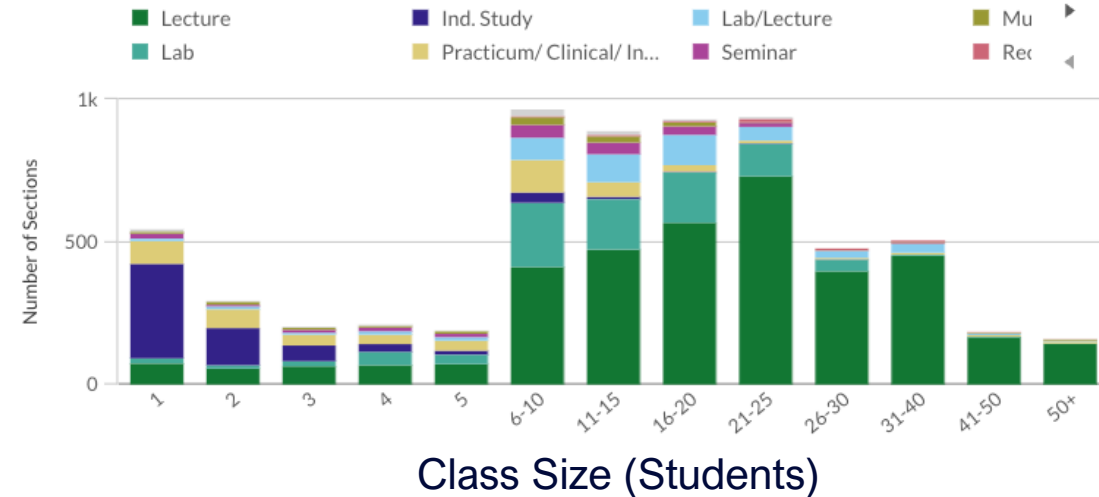
The goal of curricular efficiency analysis is to identify ways to reduce the total teaching workload, to:

- Reduce the need to hire more faculty
- Make college more affordable
- Minimize the extent to which budget cuts translate into higher workloads or inferior education
- Free up resources to enable growth in existing and new programs

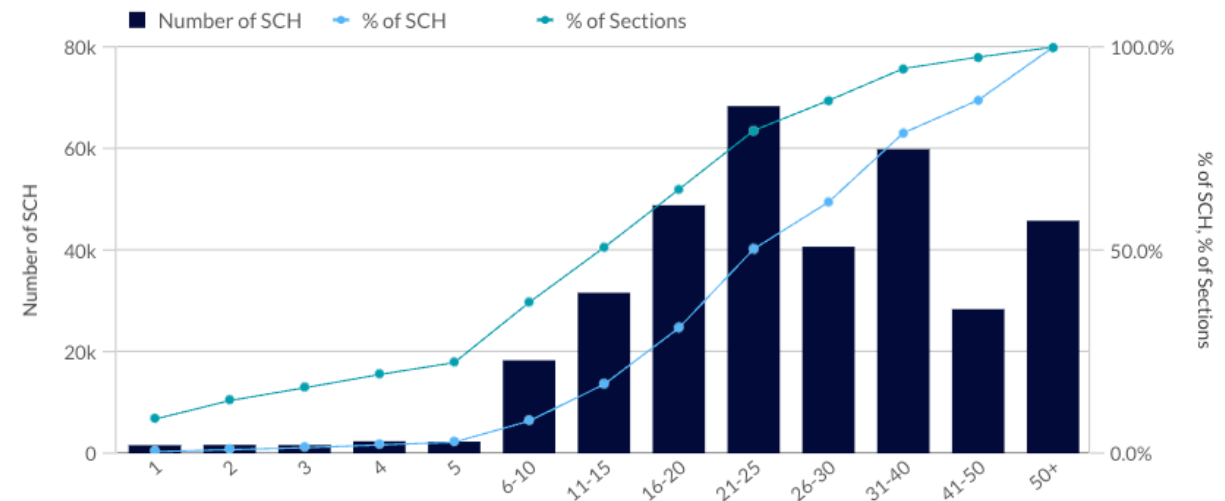
Curricular Efficiency Metrics: Class Size

- Faculty generally see smaller classes than students do.
- Single-student classes tend to account for a lot of sections but few credit hours.
 - Independent studies, music lessons, internships, etc.
 - Are these good or bad academically?
 - Are these unpaid commitments or desirable sinecures for faculty?

Count of Sections by Class Size and Type



Student Credit Hours Delivered by Class Size



Checklist for Class Size Opportunities

Some of the critical levers and helpful questions for improving curricular efficiency:

- Course frequency and modality
- Course proliferation
 - Gen Eds
 - Higher-level courses and electives
 - Courses with duplicative content (e.g., “Introductory Statistics” in different departments)
 - Courses with nominally different content but duplicative purposes
- Class size caps and targets, and number of sections
- Independent studies, other special projects, study abroad, etc.
- Clinicals, internships, and student teaching
- Other unusually-small classes
- Cross-modality, cross-location, or cross-institution opportunities

How can you manage your class size mix?

- **Scheduling:** Which courses and how many sections should we offer each term – by location and modality?
- **Assessing hiring needs:** Which retiring staff should be replaced by new faculty with similar skills, and which staffing resources should be redeployed?
- **Budgeting:** What are the best ways to meet budget targets?
- **Program and curriculum planning:** What effects are required prerequisites and courses having on our ability to schedule efficiently? Where can we enable better class sizes by adjusting course sequencing requirements? Where are there opportunities to consolidate courses with other departments where there is substantial content overlap?
- **New course development:** If we are going to develop and offer a new course, is that going to attract additional students, will it fully replace a course that will be discontinued, or will it simply spread our existing student body more thinly across a broader range of courses?
- **Reviewing requests for independent studies and other customized offerings:** Why do we need to offer this as an independent study? Does it reflect a gap in our scheduling or advising practices? Is the number of independent studies offered consistent with desired academic outcomes and faculty workloads?



Big Lessons Learned in Helping Colleges Improve Curricular Efficiency

- Small programs rarely indicate large cost-cutting opportunities.
- Look at margins, not just costs.
- For savings, start by looking at courses and departments, not programs.
- If you don't know whose paychecks your savings are coming out of, you have not identified real savings.
- The least painful savings come from not hiring people in the first place.
- The easiest savings (adjuncts, overload) raise the average cost per SCH.
- Savings can be used to “prime the pump” for growth initiatives.

Up Next!



2024 Master Class on Academic Program Evaluation

I. Market Demand for Academic Program Growth	March 5 th , 2 PM ET
II. Program Economics and Curricular Efficiency	March 12 th , 2 PM ET
III. Program Management: Data, Process, and Key Decisions	March 19 th , 2 PM ET
IV. Advanced Analytics and AI	March 26 th , 2 PM ET

Other Great Resources

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Earn Your APEM Certificate

Academic Program Evaluation and Management Course

Understand the data, systems, processes, and people needed to make well-informed and fully supported program decisions



Presented by Gray DI and Bay Path University