



# GRAYASSOCIATES

Data • Insights • Strategy

## Program Economics and Curricular Efficiency

*Overview of Gray's Process and Tools*

# Overview

Higher education is facing significant headwinds, including a declining number of new high school graduates, increasing pressure on tuition, rising costs, and a changing employment market. As a result, many colleges and universities are looking for ways to reduce cost and increase efficiency while sustaining their mission, academic standards, and financial vitality.

## Gray's Approach

Our approach to program evaluation and curricular efficiency considers four attributes: **Mission** fit, **Academic Standards**, **Money**, and **Markets**. It also includes the **People** and **Processes** that allow for collaborative decision-making and for on-going program and curricular management.



- **Mission:** Higher education institutions serve their students, communities, employers, and society. As a result, fit with the institutional mission is essential.
- **Academic Standards:** Programs and courses must meet the academic standards of the institution, regulators, and institutional and programmatic accreditors.
- **Markets:** Ultimately, students and tuition come from the markets you serve. Program and curricular reviews should incorporate market data to ensure the institution's offerings align with what students and employers want.
- **Money:** Most schools are not in the business of making money; however, understanding the economics of academic programs and curricula allows institutions to know which courses and programs produce margin that can be used to cover shared costs and subsidize important but lower-margin offerings.
- **People and Process:** While data is a critical component of curricular and program reviews, institutions also need to incorporate the judgment of their people in a data-informed and collaborative decision-making process that builds consensus around these decisions and speeds time to market.

## About Gray Associates

Founded in 2002, Gray Associates, Inc. is a data analytics, software, and strategy consulting firm focused on higher education. We help colleges and universities develop data-informed academic program plans and institutional strategies that maximize outcomes for students, the institution, and its constituencies. Over the past five years, Gray has served over 200 institutions across all sectors of higher education, including public and private schools, graduate and four-year colleges and universities, and two-year community colleges and trade schools. We currently have 130 active subscriptions to our higher education database and software services that form the backbone of our Integrated Program Assessment and Management framework.

# Objectives and Approach

Increasing budget pressures may require deep cost cuts at colleges and universities. Cost-cutting is unpleasant, even disturbing work. But like all work, it can be done well or badly, quickly or slowly. Bad cuts unnecessarily damage the mission and can undermine morale and confidence in leadership. They often are the result of poor data and top-down decision-making processes. Good cuts use sound data and robust, fast processes to create a leaner, financially sustainable, mission-centered institution.

Gray has developed an approach to program economics and curricular efficiency that combines the right data with a transparent and collaborative process to help institutions achieve the following objectives:

- **Identify areas (departments, programs, etc.) where cost-cutting would do the least harm to the institution's mission and community**
- **Build the institution's internal capability to manage its curriculum in ways that reflect relevant financial data as well as mission- and discipline-related priorities**
- **Enable the college to act and communicate its actions regarding financial sustainability in ways that earn faculty and stakeholder acceptance and support**

To accomplish these objectives, Gray Associates' approach includes two main elements:



**Program Economics Platform:** Gray's software tool provides the data needed to support informed decision-making at the program and course level. The Program Economics Platform calculates instructional costs, revenue, and margins by course and program. Universities can drill down to the course and instructor level to see credit hour productivity, student revenue, instructional costs, and margins. This analysis reveals programs and classes to improve and high-margin programs to grow.

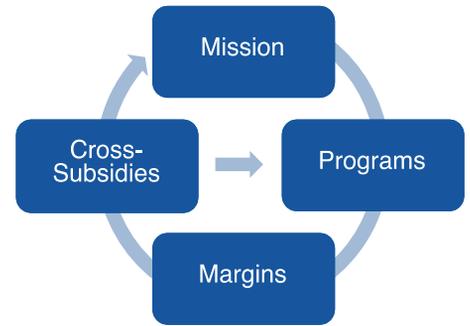


**Curricular Efficiency Workshop:** This work is often triggered by a serious financial shortfall that forces an institution to reduce cost. It focuses on finding and phasing-out high cost, low margin, and redundant courses that consume faculty time and expense. The work generates funds needed to invest in growth programs and reduce budget shortfall. Like the program workshop, this is a data-informed, inclusive decision-making process that can strengthen relationships among faculty and administrators.

# Program Economics Platform: Overview

While most colleges and universities are not in the business of making money, understanding which programs produce margin, and how much, is vital to ensuring that the institution generates enough funds to sustain its mission.

Most non-profit higher education institutions do not know the costs, revenues, or margins of their academic programs.<sup>1</sup> As a result, institutional leaders must make programmatic decisions without a clear understanding of the likely effects on their college's financials. Potential misunderstandings can hurt financial performance by closing programs only to find that the lost revenue exceeds the cost savings, or by growing programs that have high incremental costs but average tuition. In addition, actions that could improve program and course economics may be overlooked.



Gray has addressed this issue by developing a system to calculate profitability by program and course. The system provides a much clearer understanding of the web of cross-subsidies that exist in most universities. Large programs are often profit centers that pay for smaller, more specialized programs. “Chalk and Talk” courses and programs often subsidize lab sciences. And the much-maligned Liberal Arts programs may generate profits that are consumed by Engineering and Health Care programs, which require more expensive professors and equipment.

Gray’s program economics methodology calculates margin data at the course level. This data enables colleges to find opportunities to improve curricular efficiency – and financial performance – independent of changes to programs.

With a clear understanding of the economics of individual programs and courses, institutions will be better able to evaluate its program portfolio and realize the following objectives:

## 1. Establish metrics and standards for program contribution

- Revenue by course and program
- Direct instructional costs by course and program
- Contribution margin percentages and dollars by program

## 2. Make better-informed decisions on programs to grow, fix, or stop

## 3. Identify critical levers to improve program contribution (e.g., course scheduling)

## 4. Enable better-informed decisions about course offerings, schedules, and staffing

## 5. Identify opportunities to reduce cost by department, program, and course, while minimizing disruption of the institution and its mission

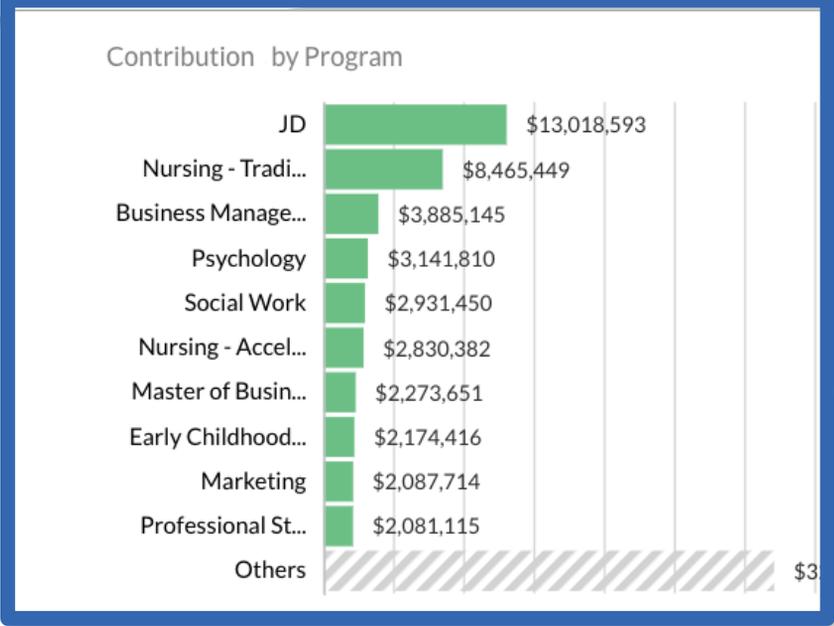
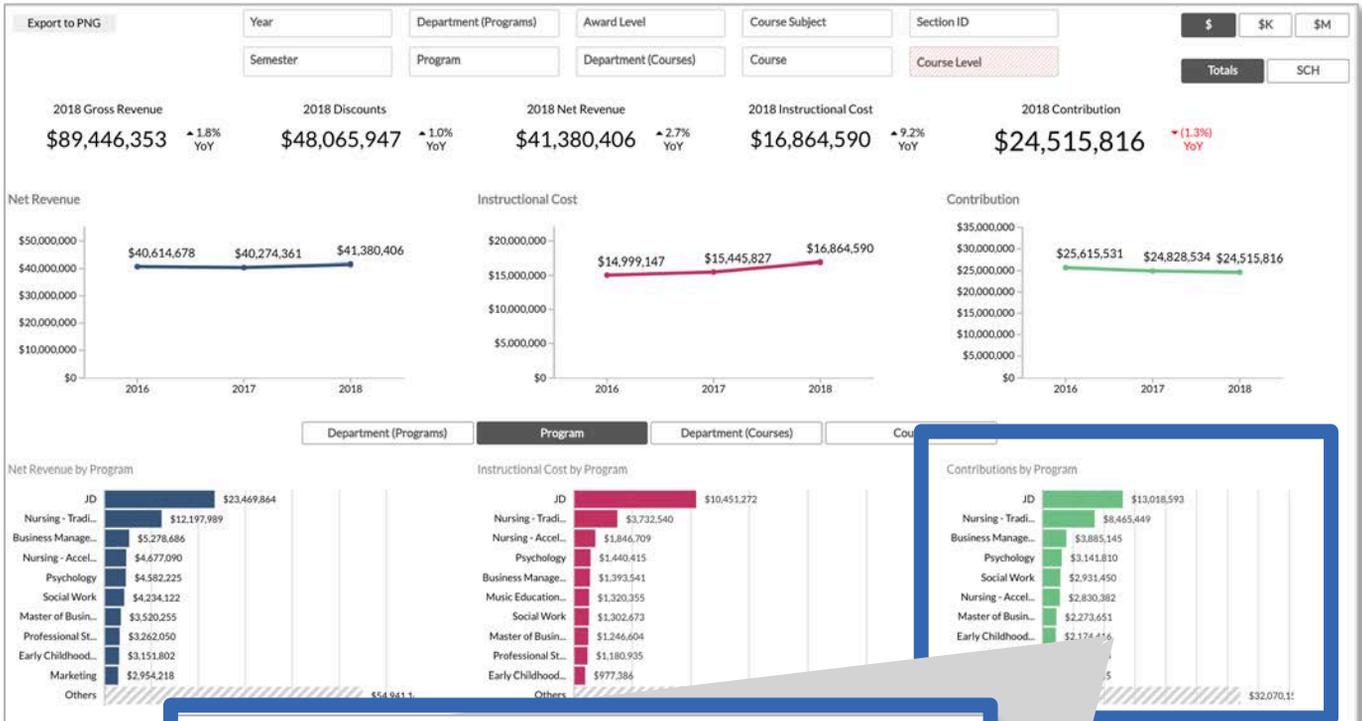
<sup>1</sup>. Source: Informal poll of NACUBO participants.

# Program Economics Platform: Economic Summary

Gray's Program Economics Platform (PEP) provides summary financials for all programs, which can be used to establish target contribution levels and to identify over- and under-performing programs.

Summary data includes:

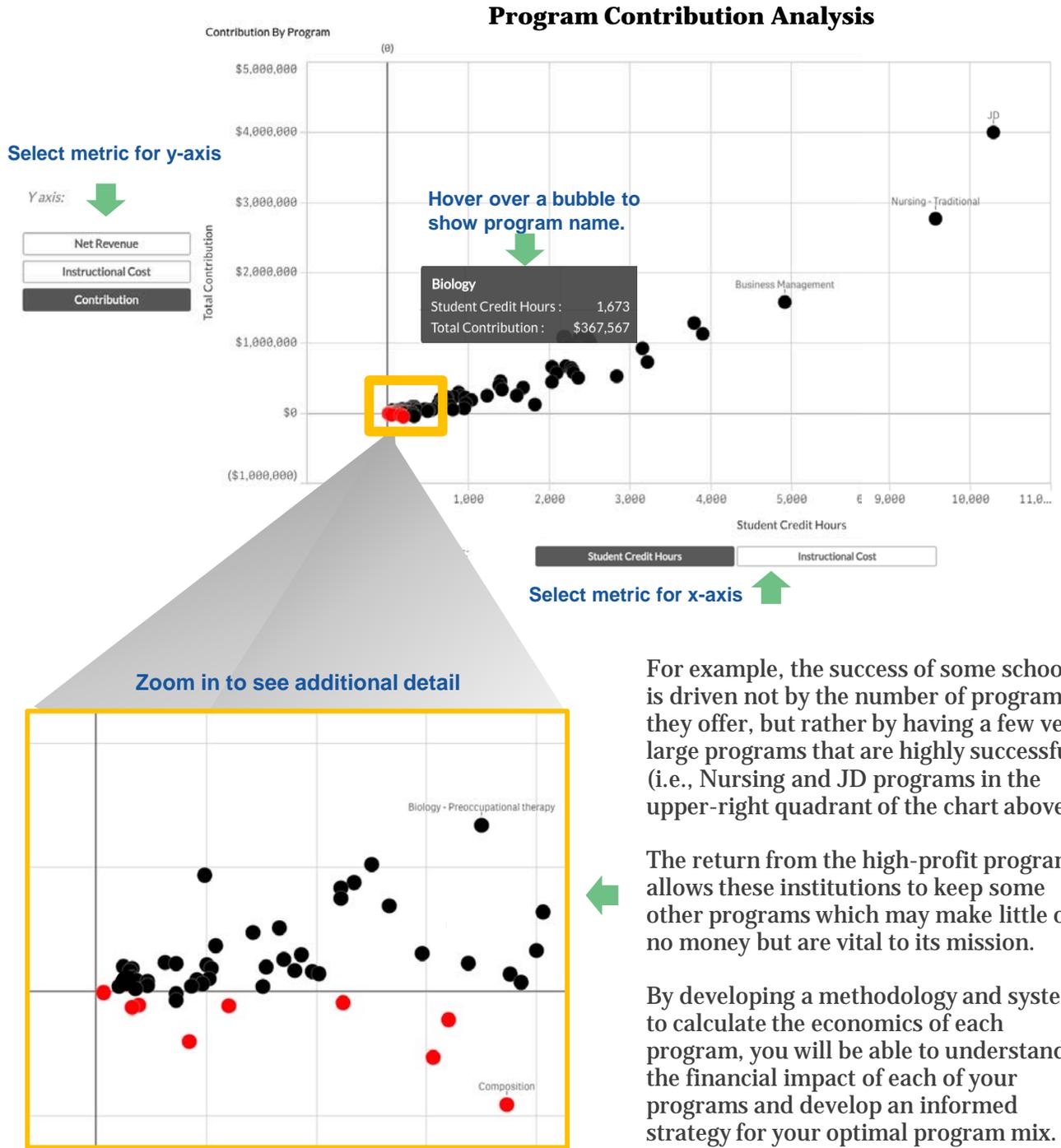
- Three-year financial performance
- Department, program, and course totals
- Totals by student credit hour (SCH)



# Program Economics Platform: Contribution Analysis

Gray's robust BI platform allows users to create custom data views in seconds to analyze program portfolio economics. The example below maps program contribution against program size (student credit hours).

This portfolio-wide view provides insights into the drivers of an institution's financial performance.



For example, the success of some schools is driven not by the number of programs they offer, but rather by having a few very large programs that are highly successful (i.e., Nursing and JD programs in the upper-right quadrant of the chart above).

The return from the high-profit programs allows these institutions to keep some other programs which may make little or no money but are vital to its mission.

By developing a methodology and system to calculate the economics of each program, you will be able to understand the financial impact of each of your programs and develop an informed strategy for your optimal program mix.

# Program Economics Platform: Program and Course Ranking

Ranking reports let users quickly compare programs and courses, to see which generate the most revenue, which are the most expensive to teach, and which produce the greatest margins.

## Program Ranking Reports

Department (Programs)
Program
Department (Courses)
Course

Net Revenue
Instructional Cost
Contribution

Totals
SCH

**Net Revenue by Program**

| Program                                  | Net Revenue |
|--|-------------|
| JD                                       | \$7,500,225 |
| Nursing - Traditional                    | \$4,185,434 |
| Business Management                      | \$2,178,382 |
| Nursing - Accelerated                    | \$2,126,281 |
| Psychology                               | \$1,641,949 |
| Social Work                              | \$1,337,612 |
| Professional Studies in Music Technology | \$1,143,489 |
| Master of Business Administration        | \$1,067,904 |
| Early Childhood Education                | \$961,611   |
| Marketing                                | \$956,063   |
| Criminology                              | \$946,401   |
| Education Licensure Initial              | \$923,288   |
| Biology - Premedicine                    | \$870,742   |
| Undeclared                               | \$810,049   |
| Political Science                        | \$775,971   |
| Accounting                               | \$703,672   |
| Exercise Science                         | \$614,726   |
| Biology                                  | \$588,975   |
| Financial Economics                      | \$584,297   |
| Computer Science                         | \$548,763   |

Net Revenue
Instructional Cost
Contribution
Department

**Instructional Cost by Program**

| Program                                  | Instructional Cost |
|--|--------------------|
| JD                                       | \$3,491,207        |
| Nursing - Traditional                    | \$1,406,530        |
| Nursing - Accelerated                    | \$836,629          |
| Business Management                      | \$590,222          |
| Psychology                               | \$507,515          |
| Music Education - Instrumental Emphasis  | \$420,590          |
| Professional Studies in Music Technology | \$411,273          |
| Social Work                              | \$408,909          |
| Master of Business Administration        | \$404,892          |
| Early Childhood Education                | \$345,357          |
| Education Licensure Initial              | \$341,700          |
| Biology - Premedicine                    | \$341,063          |
| Marketing                                |                    |
| Computer Science                         |                    |
| Criminology                              |                    |
| Political Science                        |                    |
| Accounting                               |                    |
| Undeclared                               | \$                 |
| Biology                                  | \$                 |
| Music Technology                         | \$1                |

Net Revenue
Instructional Cost
Contribution
Department

**Contribution by Program**

| Program                                  | Contribution |
|--|--------------|
| JD                                       | \$4,009,017  |
| Nursing - Traditional                    | \$2,778,904  |
| Business Management                      | \$1,588,160  |
| Nursing - Accelerated                    | \$1,289,652  |
| Psychology                               | \$1,134,433  |
| Social Work                              | \$928,703    |
| Professional Studies in Music Technology | \$732,216    |
| Criminology                              | \$672,242    |
| Master of Business Administration        | \$663,011    |
| Marketing                                | \$650,841    |
| Early Childhood Education                | \$616,254    |
| Education Licensure Initial              | \$581,588    |
| Undeclared                               | \$575,856    |
| Biology - Premedicine                    | \$529,680    |
| Political Science                        | \$506,071    |
| Exercise Science                         | \$457,254    |
| Accounting                               | \$446,766    |
| Financial Economics                      | \$399,273    |
| Biology                                  | \$367,567    |
| Art Therapy                              | \$339,788    |

View rankings by:

- Program
- Course

View data by  
Total or SCH

# Program Economics Platform: Program and Course Scorecard

In addition to summary views, PEP provides detailed financial data for each program. The data include program totals and per Student Credit Hour (SCH) metrics. Each metric is coded to reflect its percentile rank among all programs offered at the school.

In the example below, the program's net revenue per SCH is \$421, slightly above average (in the 64<sup>th</sup> percentile). On the other hand, its cost per SCH (\$130) is among the 26% of programs with the lowest cost. As a result, contribution per credit hour (\$291) is on the higher end of programs at this school, ranking in the 77<sup>th</sup> percentile.

Filtering to display program totals (instead of the SCH metrics shown below), would show that because the program is very large, the program's overall contribution (\$1.13 million) ranks in the top 3% of all programs at this institution.

### Filters create custom views:

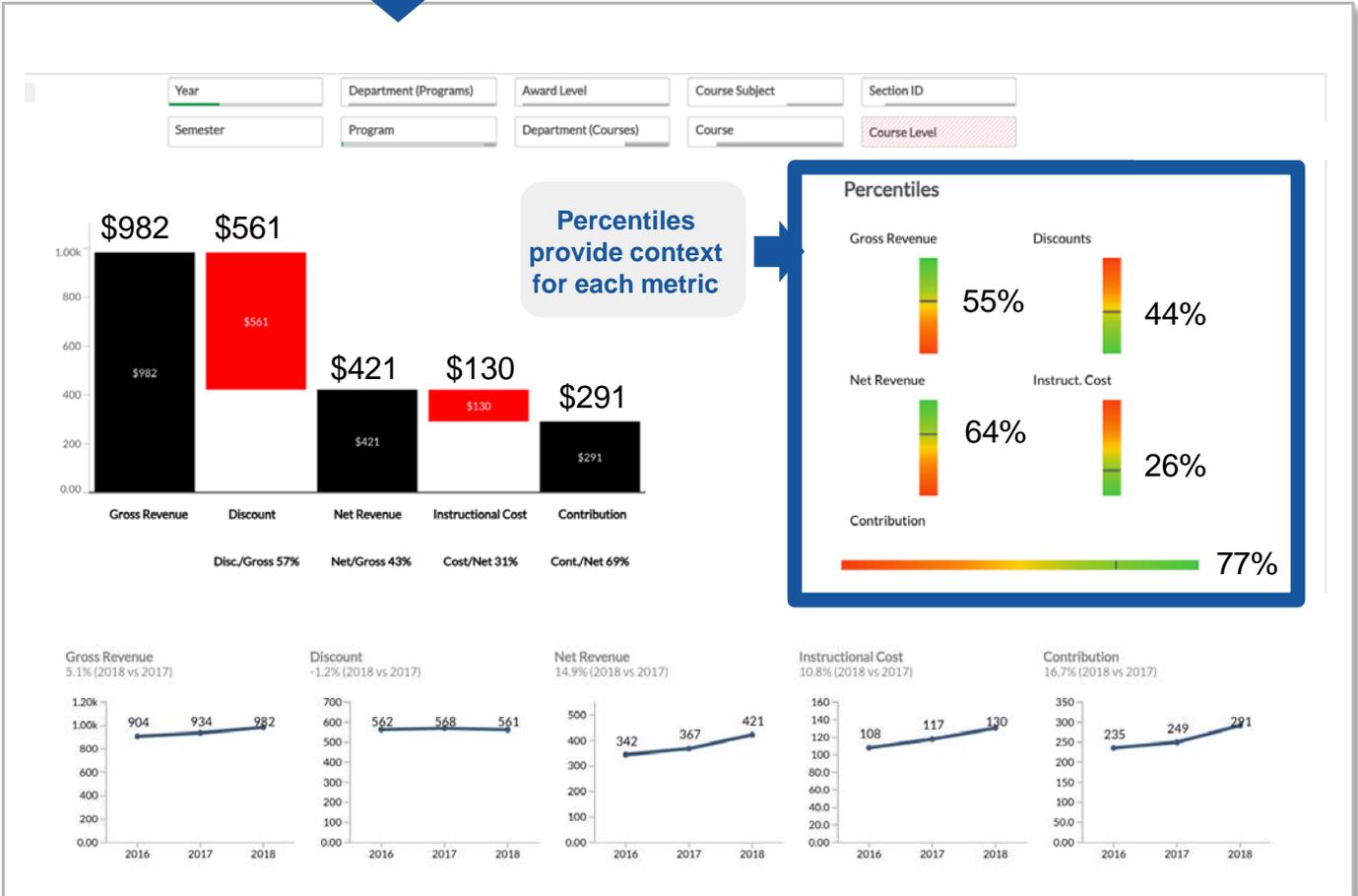
- Year
- Semester
- Award Level
- Program
- Department
- Course

View data by  
Total or SCH



Totals SCH

## Program Scorecard: Psychology



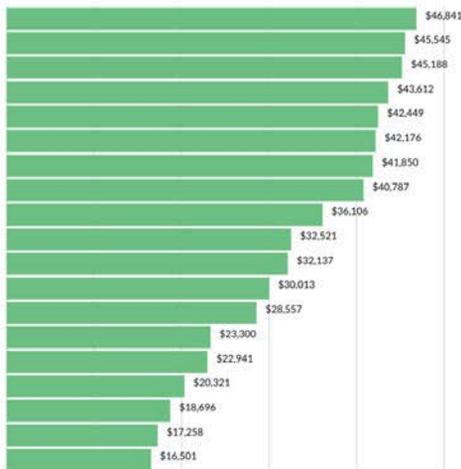
Historic data shows trends over time

# Program Economics Platform: Course Ranking

The overall results for the program are the sum of the revenue, costs, and contribution for each course taken by students in this major. In effect, this means that program economics are the result of course-level economics. Many of the insights and opportunities for improvement in program economics will start at the course level. To enable this detailed understanding, PEP also displays revenues, costs, and contribution for each of the courses taken by students in the major. As an example, contribution for the courses associated with the Psychology program are shown in green below. The charts in blue and red on the bottom show net revenues and instructional cost by course.

2018 Gross Revenue **\$3,828,931** ▲ 3.4% YoY      2018 Discounts **\$2,186,983** ▼ (2.8%) YoY      2018 Net Revenue **\$1,641,949** ▲ 13.0% YoY      2018 Instructional Cost **\$507,515** ▲ 9.1% YoY      2018 Contribution **\$1,134,433** ▲ 14.9% YoY

Course



Contribution By Course

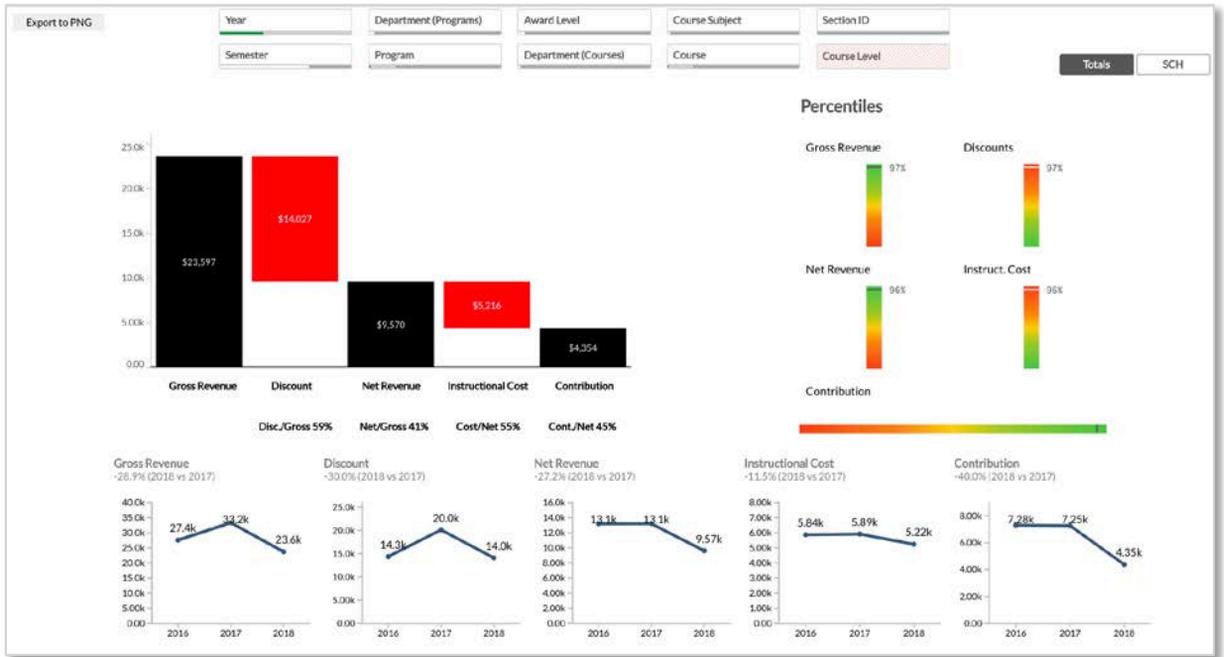
|                      |                      |                      |                      |                     |                   |                     |  |
|----------------------|----------------------|----------------------|----------------------|---------------------|-------------------|---------------------|--|
| PSYCH370<br>\$50,233 | UC410<br>\$41,449    | PSYCH310<br>\$42,176 | PSYCH150<br>\$41,850 | UC150<br>\$40,787   |                   |                     |  |
|                      | PSYCH130<br>\$36,106 | UC200<br>\$23,300    | SOSCI220<br>\$22,941 | ASL111<br>\$20,321  | UC310<br>\$18,696 | ENGL111<br>\$17,258 |  |
|                      |                      |                      |                      | Others<br>\$473,801 |                   |                     |  |
|                      | SOSCI220<br>\$45,545 |                      |                      |                     |                   |                     |  |
|                      |                      | UC298<br>\$32,137    |                      |                     |                   |                     |  |
|                      | PSYCH120<br>\$45,188 |                      |                      |                     |                   |                     |  |
|                      |                      | PSYCH120<br>\$30,013 |                      |                     |                   |                     |  |
| ASL110<br>\$43,612   |                      | UC120<br>\$28,557    |                      |                     |                   |                     |  |

# Program Economics Platform: Course Scorecard and Detail

The course scorecard, similar to the program scorecard, provides revenue, instructional cost, and contribution for each course taken by students in a program.

In addition to the scorecard visualization, detailed data can be viewed as a table (and downloaded to Excel). In the example below, most courses have similar revenue per SCH. Constant pricing across courses is fairly common, especially in public institutions, where laws may require it. On the other hand, cost per SCH shows greater variation.

## Course Scorecard: PSYCH 201



## Course Detail: Psychology Program

Excel  
Download  
(extract)

| Course Code | Students | Student Credit Hours | Revenue SCH | Cost SCH | Contribution SCH |
|-------------|----------|----------------------|-------------|----------|------------------|
| SOSCI220    | 47       | 188                  | \$444       | \$321    | \$122            |
| PSYCH370    | 42       | 168                  | \$441       | \$141    | \$300            |
| PSYCH410    | 39       | 156                  | \$427       | \$127    | \$300            |
| UC410       | 37       | 111                  | \$440       | \$57     | \$382            |
| UC150       | 37       | 111                  | \$410       | \$42     | \$367            |
| PSYCH200    | 34       | 34                   | \$425       | \$32     | \$394            |
| PSYCH320    | 34       | 136                  | \$367       | \$35     | \$332            |
| SOSCI210    | 32       | 128                  | \$426       | \$70     | \$356            |
| PSYCH350    | 32       | 128                  | \$446       | \$119    | \$327            |
| PSYCH330    | 31       | 124                  | \$391       | \$99     | \$291            |
| PSYCH300    | 29       | 29                   | \$447       | \$170    | \$278            |
| ASL110      | 27       | 108                  | \$476       | \$72     | \$404            |
| PSYCH310    | 27       | 108                  | \$422       | \$31     | \$391            |
| UC120       | 26       | 81                   | \$432       | \$80     | \$353            |
| UC200       | 24       | 75                   | \$471       | \$43     | \$428            |
| UC220       | 24       | 72                   | \$407       | \$83     | \$324            |
| PSYCH340    | 22       | 88                   | \$407       | \$37     | \$370            |
| UC310       | 21       | 63                   | \$453       | \$156    | \$297            |
| PSYCH120    | 20       | 80                   | \$449       | \$74     | \$375            |
| ASL111      | 19       | 76                   | \$384       | \$116    | \$267            |

# Curricular Efficiency Workshop

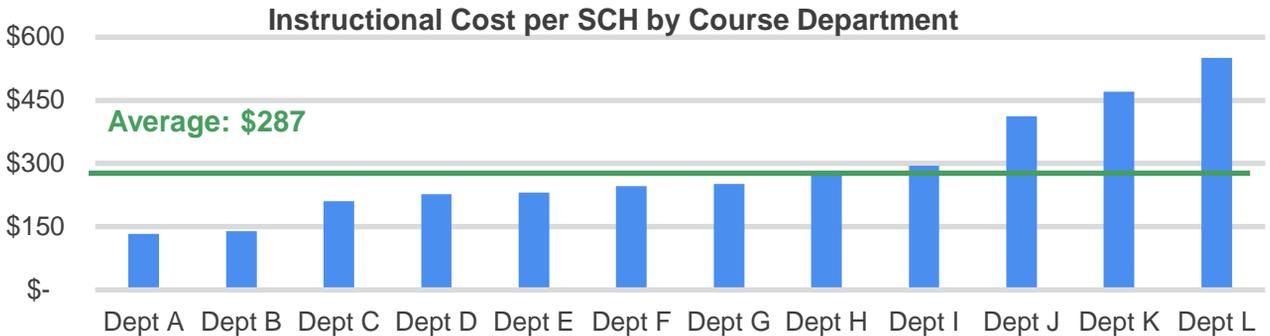


**Curricular Efficiency Workshop:** These workshops use data on course-level revenue, cost, and instructional workloads collected in the **Program Economics Platform (PEP)** to identify high cost, low margin, or redundant courses. In a facilitated workshop, faculty and administrators review the course data and use their judgement to identify opportunities to reduce cost or redeploy instructional staff. The data may be used on an ongoing basis to inform budgets and course schedules.

- **Enables data-informed decision-making**
- **Avoids cuts that reduce margins**
- **Reduces cost**
- **Builds consensus**
- **Accelerates implementation by months—or years**
- **Educates decision-makers for improved budgeting in future years**

| Margin          | Low                        | Medium               | High |
|-----------------|----------------------------|----------------------|------|
| High            |                            |                      | Keep |
| Medium          |                            | Difficult Tradeoffs? |      |
| Low or negative | Eliminate?<br>Consolidate? |                      |      |

**Importance to Discipline**



## Illustrative Workshop Agenda

### Full-Day Workshop

- Present workshop objectives
- Share program economics approach and findings
- Identify and agree on practical opportunities to increase curricular efficiency and reduce cost.
- Wrap-up: Agree on next steps to achieve efficiencies



### Courses to:

- **Cut**
- **Consolidate**

“You hit this baby out of the ballpark...I was very pleased that we made as much progress as we did.”  
 – CFO of a Private Non-Profit Institution, immediately after a curricular efficiency workshop