Cost Structure of Post-Secondary Education

UNIVERSITY OF CALIFORNIA
UCRIVERSIDE

Agenda

I	Status Quo & Why Cost Information Matters
II	Cost Structure Framework
III	Benefits of Methodology
IV	Performance Metrics/Benchmarking
V	Next Steps
	Appendix
	Segmentation of HE Institutions

STATUS QUO & WHY COST INFORMATION MATTERS

National Context: Survey of chief business officers show a challenging national climate for higher education finance

Only ~13% of CFO's expressed strong confidence about the sustainability of their institution's business model over the next 10yrs

- Majority of CFO's said business analytics technology is a very important strategy for reducing operating expenses at their institution but **fewer than half said their institution has the data and information needed to make informed decisions**.

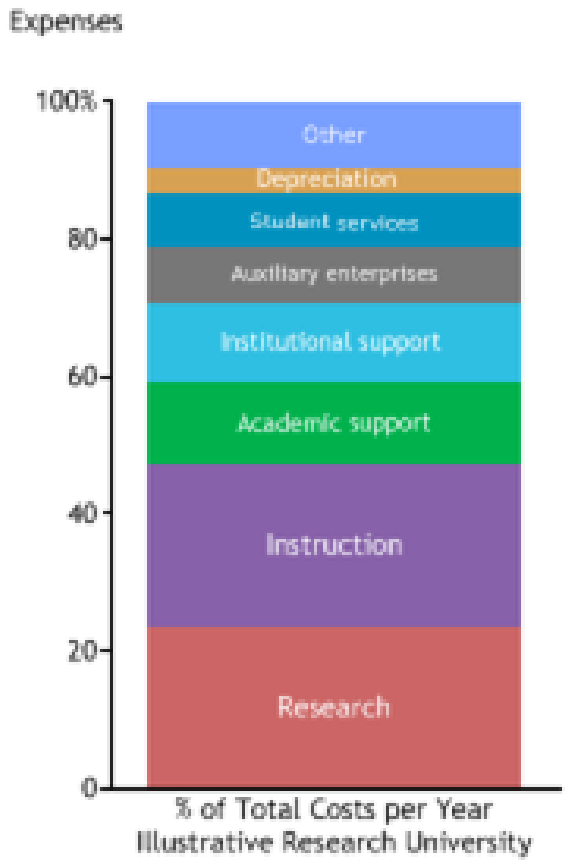
- CFO's know they should be focused on performance and metrics but the **infrastructure** needed to do so is really not there.

Source: 2013 Inside Higher Ed Survey of College and University Business Officers

Why is Status Quo Not Sufficient?

Current functional expense data *does not* answer *key management questions*

Current IPEDs Data



What does it cost to educate a biology major?

What does it cost to run English 101?

What does it cost to grow a Chemistry department?

Are there any cross-subsidies occurring?

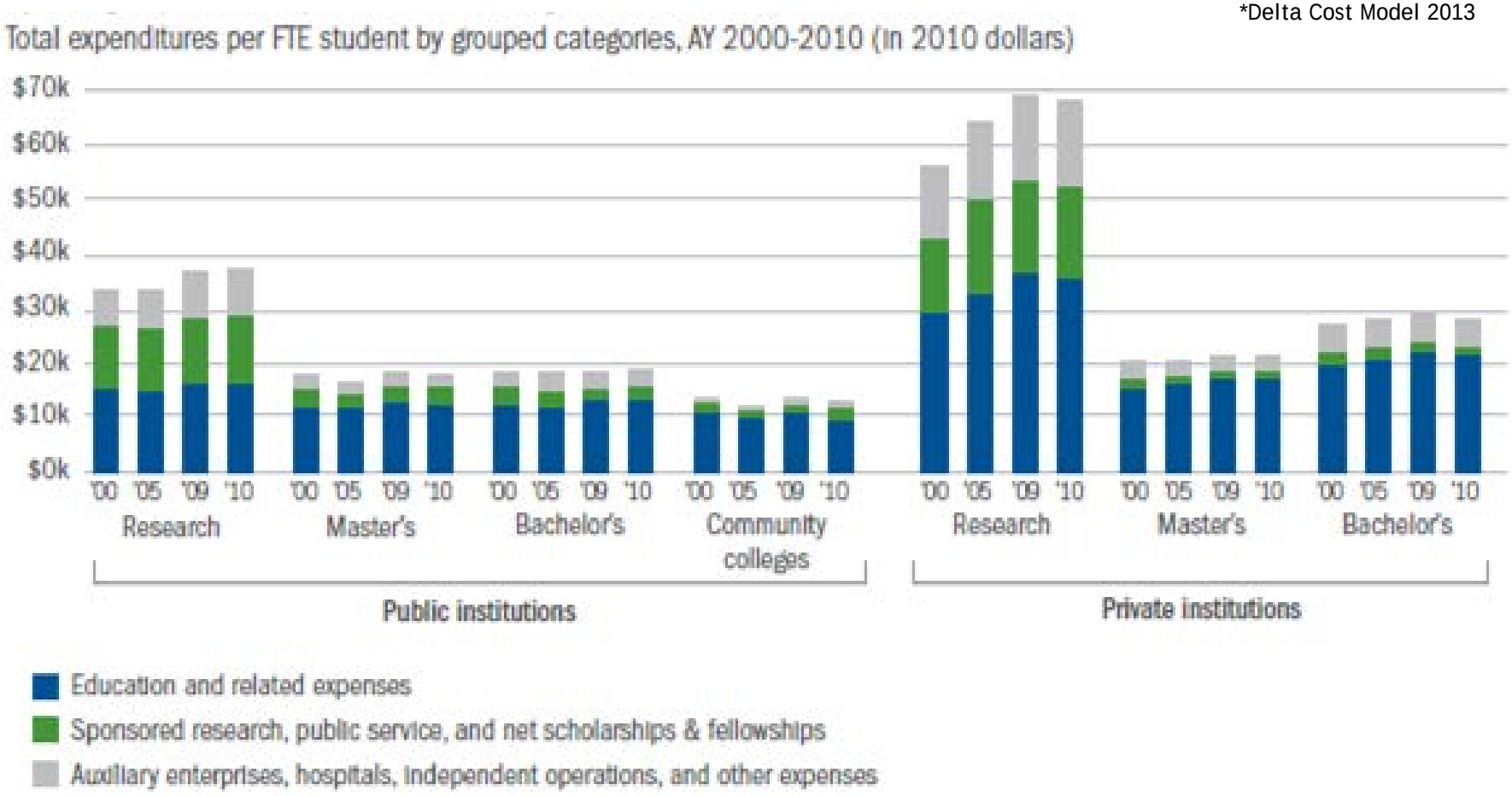
Are there differences in cost of varying instructional models?

What about Delta Cost Model?

High level Cost Data

Spending at Non-Profit Institutions*

*Delta Cost Model 2013



Information good for national segment analysis but not useful for day-to-day management of an institution's resources

Why does cost matter to administrators?

1

Reporting and Operational Reform

- Enhances transparency and provides academic and university administrators with a tool to evaluate financial trends and help inform resource allocations

- Quantifies the level of cross-subsidization throughout the institution allowing explicit evaluation of these decisions

- Common methodology to support benchmarking and program reviews

2

Planning & Forecasting

- Data enables institutions to do predictive analytics and run various "what if" scenarios based on different strategic choices

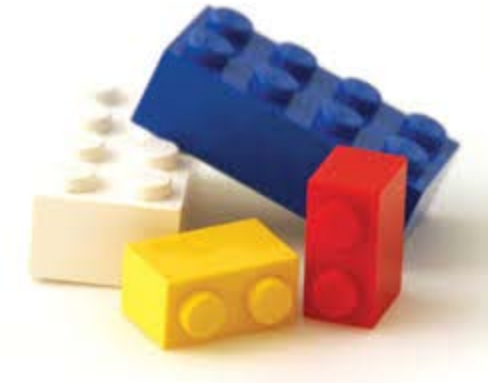
- Estimate fiscal effect of changes in student enrollment and/or curriculum changes (program additions/reductions) and delivery methodologies

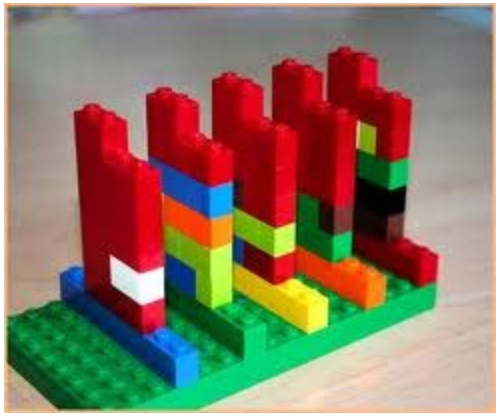
- Estimate fiscal effect of any changes in operating expense assumptions

Why does cost matter to education innovators?

• New learning methodologies are many times treated as one-off initiative costs by institutions, not as part of a change in the operating model, making it difficult to effectively scale innovation.

Status Quo → Figure out component costs → Redesign and Improve





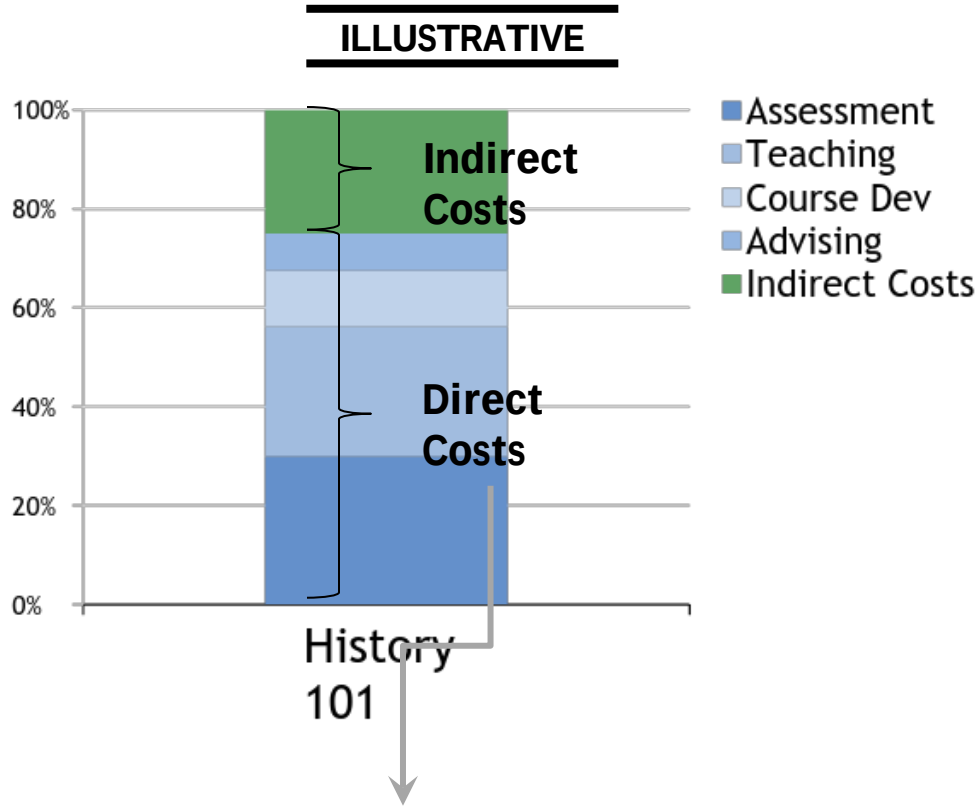
• Without knowing the cost of educational activities, there is no way to improve productivity in a **systematic and sustainable manner**.

COST STRUCTURE FRAMEWORK

Proposed methodology combines cost allocation with activity-based costing

Captures <u>both</u> the fully loaded class cost and the cost of discrete educational activities

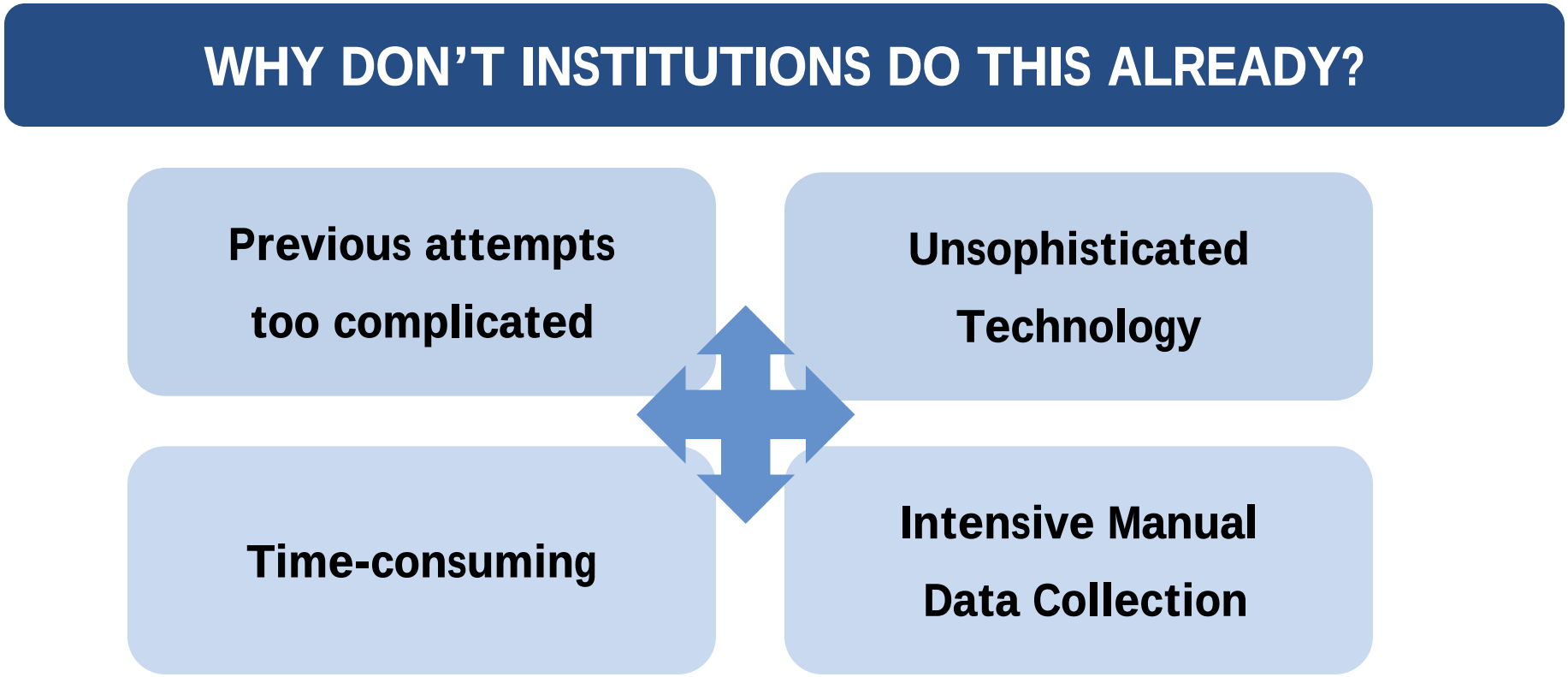
Sample Course Expense Report



"Fully-loaded" cost data provides a tool for academic and planning administrators to *<u>evaluate departmental and program costs and inform decision-making</u>*

Activity-Based Costing:
Course level activity data allows for innovation and improvement of the educational delivery function

While some institutions distribute costs to departments, few do ongoing activity-based costing of educational activities



- Institutions have not found a way to do this calculation in a way that's replicable across the institution and is an ongoing part of institutional management reporting

Cost Structure: What does it mean?

*Cost structure deconstructs an institution's total cost of doing business; it is a comprehensive analysis of all the cost elements it takes to **exist**.*

ILLUSTRATIVE

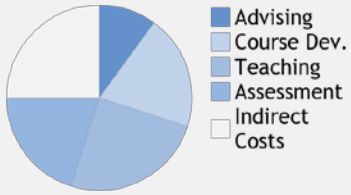
Step 1

Separate out non-educational service lines where applicable

Remaining: Total Ed. Spend

Step 2

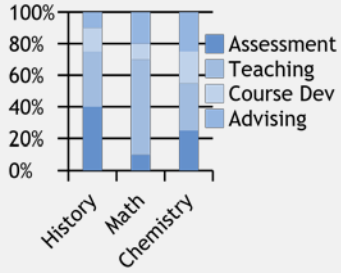
Create Direct Cost Categories



•Categorize all direct costs into relevant activities

Step 3

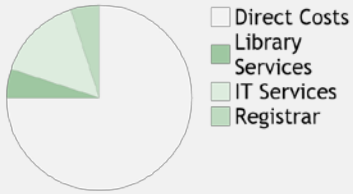
Allocate Direct Costs



•Allocate direct costs to programs using cost driver based allocation

Step 4

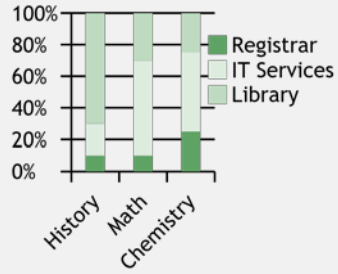
Create Indirect Cost Categories



•Categorize all indirect costs into relevant activities

Step 5

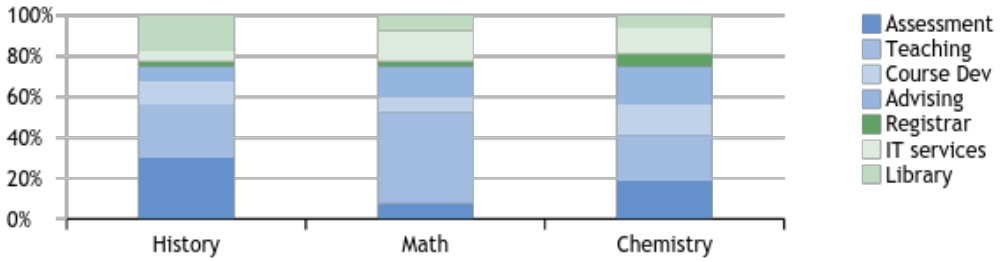
Allocate Indirect Costs



•Allocate indirect costs to programs using cost driver based allocation

Total Spend

New Total Spend



Cost Structure: Step 1

Separate out non-educational service lines where applicable

Step 1

Separate out non-educational service lines where applicable

Remaining: Total Ed. Spend

- Many types of higher education institutions can be considered multi-product firms because they produce a variety of things, not just education
- Educational enterprise must be separated from the business-like, self-supporting set of service lines, where costs should be covered by revenues and thus should be irrelevant to the cost per course
- Examples include, auxiliaries, clinics, technology transfer, and externally funded research

Institutional Types & Service Lines								
Service Lines	**Comm. Colleges**	**Public Bach.**	**Private Bach.**	**Public Research**	**Public/Private Masters**	**BDMs**	**Private Research**	**For Profits**
Education	X	X	X	X	X	X	X	X
Auxiliaries		X		X	X		X	
Research				X			X	
Public Service	X	X		X	X			

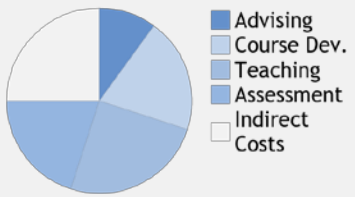
Note: Not all institutions have auxiliaries, research, public service or independent operations. This table merely illustrates the variety of activities that can be provided at different institutional types.

Cost Structure: Step 2

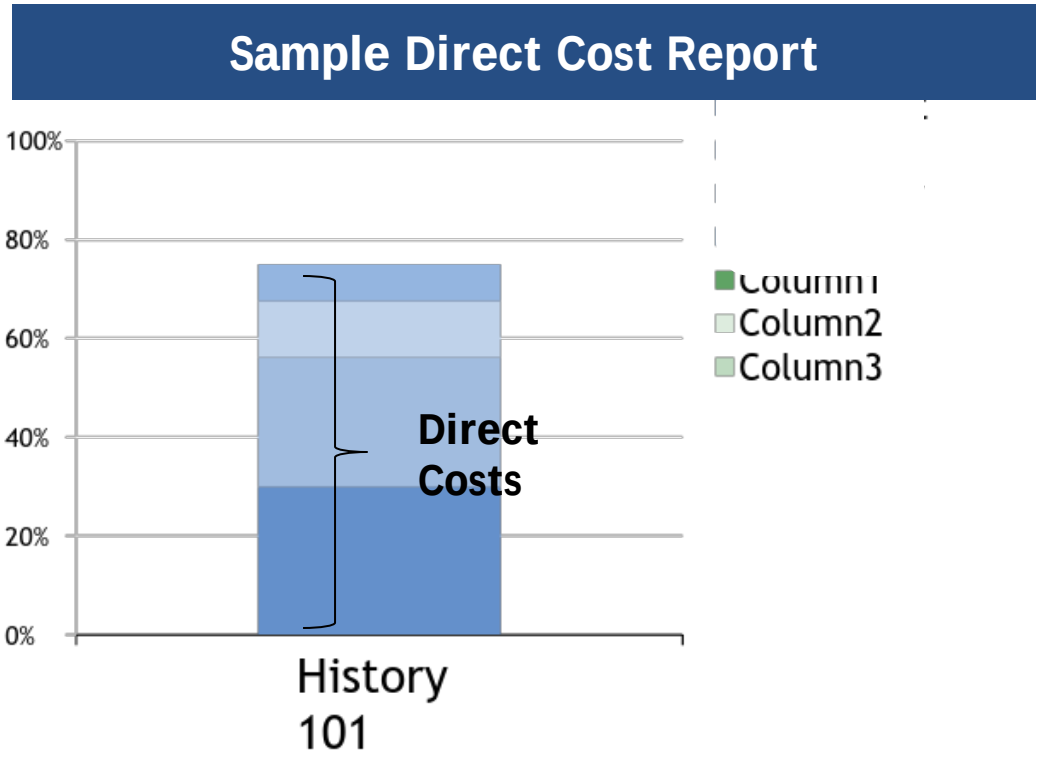
Create Direct Cost Categories

Step 2

Create Direct Cost Categories



•Categorize all direct costs into relevant activities

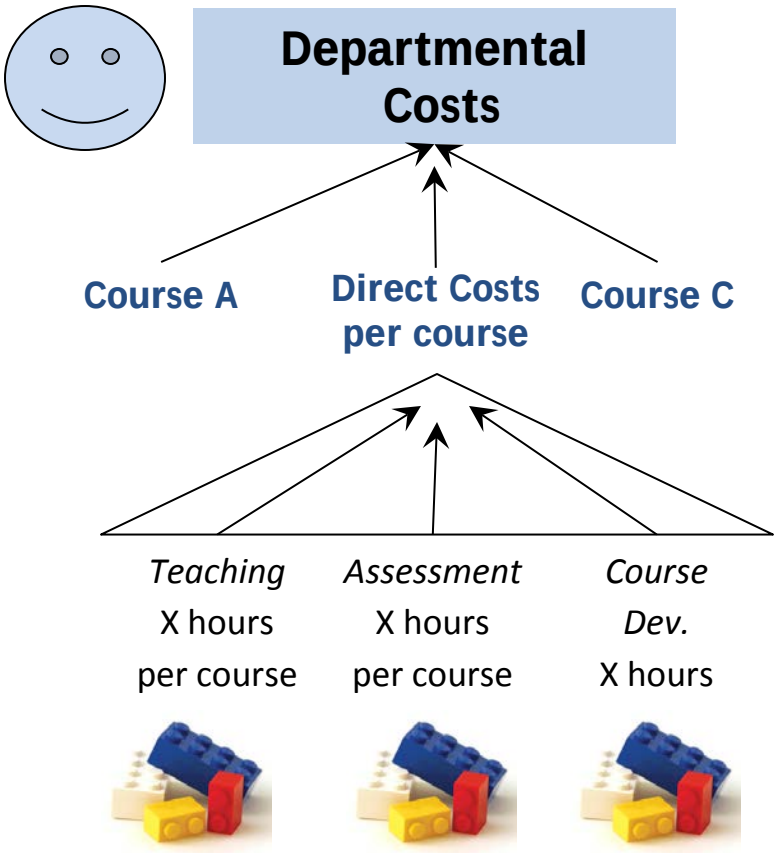


• Institutions have to break down courses by meaningful educational activity categories

•Institutions should use the same educational activities for all course types. Other information can be added in as an attribute using cost allocation software: Type of course, type of instruction (remedial or credit courses), etc.

Direct Costs: Must roll-up not allocate down

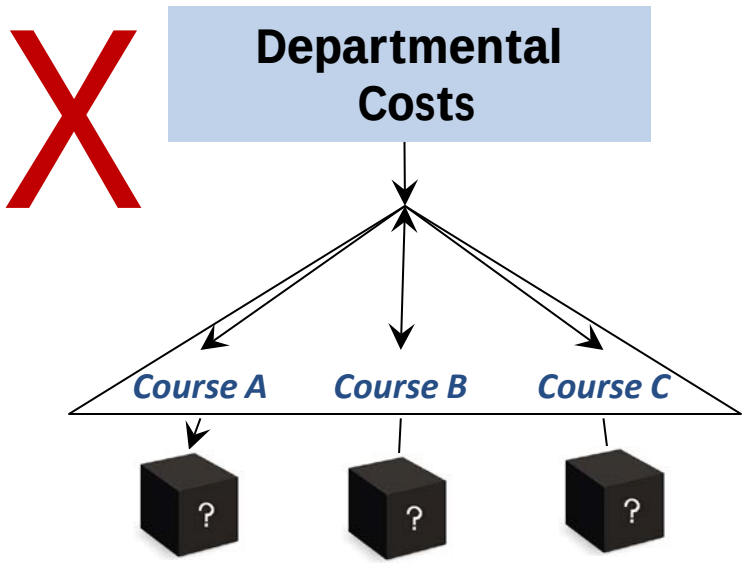
Activity-Based Course Costing



•Capturing costs from the grassroot activities and rolling them up is the only way for institutions to compare the cost of different course delivery design methodologies

"With cost preceding rather than following activity, departmental production function becomes fixed rather than variable and the activity itself is assumed to be beyond analysis" – Massy, 2003.

Allocate Total Costs to Courses



Direct Costs Activities: In order to create more standardization across the industry, recommendation is for institutions to use buckets created by NHEBI

	Direct Activities*	Description*
1	Course Development	Creating and planning curriculum, pedagogy, instruction, and delivery methods to guide student learning.
2	Course Management	Planning learning activities, selecting and creating course content and materials, engaging in course organization.
3	Teaching	Delivering course content, managing and monitoring student assignments and classroom (physical or virtual) activities.
4	Tutoring	Formally providing supplemental academic assistance in support of regular coursework.
5	Advising	Assisting students with activities related to their educational experience including scheduling, academic support, planning and selecting curricular pathways and career development.
6	Assessment and Grading	Assessing prior and current learning; developing and selecting assessment methodologies; evaluating student assignments and performance to award course credit, and contributing to broader assessment of student learning outcomes.

- Institutions should use the same educational activities for all course types. Other information can be added in as an attribute using the cost allocation software (type of course, type of instruction (remedial or credit courses) or even student type.

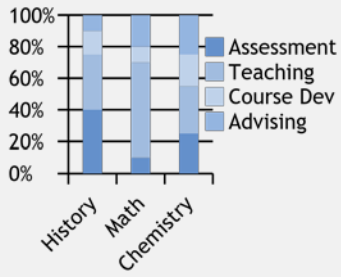
*Direct course activities and their descriptions from National Higher Education Benchmarking Institute (NHEBI)

Cost Structure: Step 3

Allocate Direct Costs

Step 3

Allocate Direct Costs



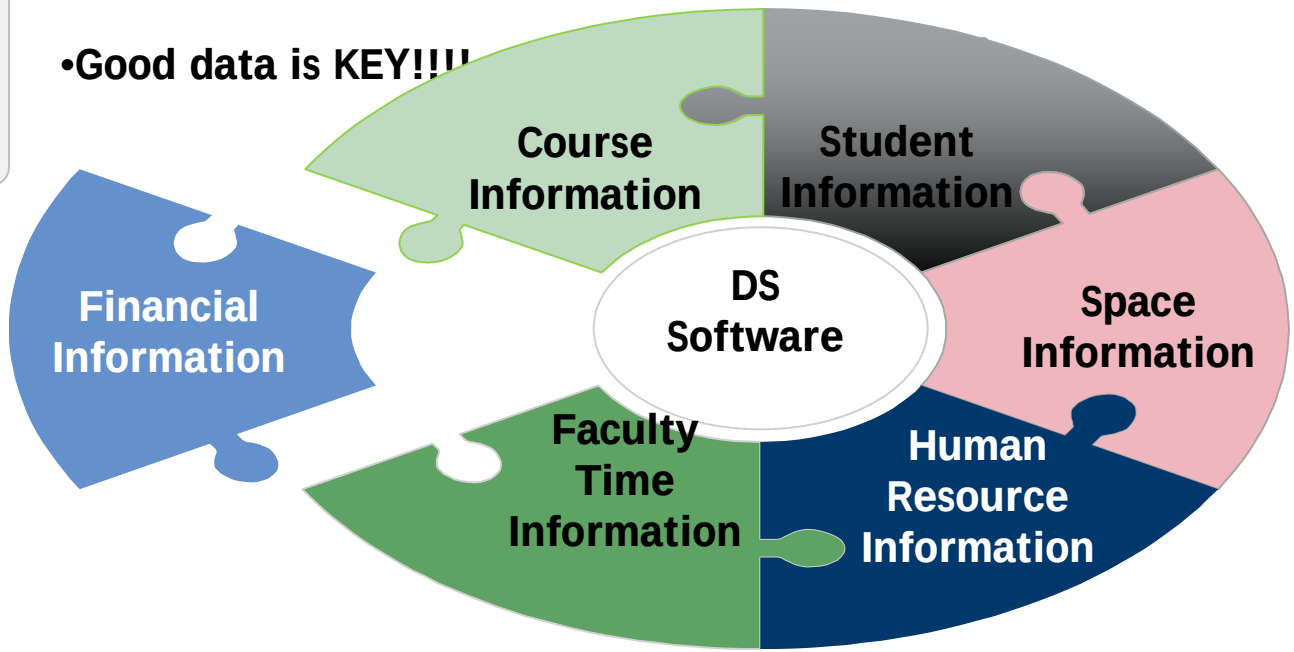
•Allocate direct costs to programs using cost driver based allocation

• The task required is NOT the allocation of total departmental costs to each activity, but rather to start with estimates on the time it takes to complete any given activity

• Cost allocation calculation requires a wide variety of information, ***financial information is just one piece of the puzzle***

• Complex task, but decision support software and use of a variety of non-financial data from institution allows cost allocation to be more practical than in the past and for it to be fairly automated.

•Good data is KEY!!!!



Understanding the Information Puzzle

Financial

- Account Info. (Revenue & Expense)
- Dept./Cost Center
- Fund info.

Course

- Course name & #
- School/Dept.
- Room (Location)
- # students enrolled

Space & Location

- Building or #
- # of rooms per bldg
- Room type (e.g. lab)
- Square footage
- Capacity

Payroll/HR

- Employee Type
- Function
- Salary & Fringe
- Home Dept.

Student Records

- Student Type
- Student number
- Major
- Course enrollment

Faculty Workload

- Type
- Time Estimates
- Salary & Fringe
- Department

First Step in Direct Cost Allocation: Course Profiles

• In order to allocate costs to the educational activities, institutions could create course profiles to allocate activity hours and attributes to its courses

Sample Course Profile

Educational Activities	Course Development	Hours
	Course Management	Hours
	Teaching	Hours
	Tutoring	Hours
	Advising	Hours
	Assessment & Grading	Hours
Course Attributes	Class Type	Lecture/Lab/etc
	Credit Hours	
	Delivery Mode	On-campus Online/ Hybrid
	Semester	Fall/Summer
	# of Students	

• Effort on course activities can be captured in "course profiles" – minimizes interviews & effort

• Can be set to differ by school/department, by level/type of course or individual

• Can refine as appropriate over time

• Attributes can be added to course profiles to give more information

•Note that in Excel these would create unmanageable data sets, but DS software can handle this complexity

Second Step – Combine with Financial Data

• Once educational activities & hours for each are identified: Costs per hour can be allocated. Can calculate by course and roll up by school/department

Sample Course Cost with Instructional Breakdown

School of Business

Course 1	Hours	% Total	Expense	Faculty FTE	FT Students
Course Development	Hours	10%	$$$	XX	XX
Course Management	Hours	20%	$$$	XX	XX
Teaching	Hours	40%	$$$	XX	XX
Tutoring	Hours	20%	$$$	XX	XX
Advising	Hours	10%	$$$	XX	XX
Assessment & Grading	Hours	10%	$$$	XX	XX
Total			$$		

Course 2 - 100

School of Liberal Arts

School of Medicine

School of Engineering

Activity hours are combined with HR/financial data to calculate per course expenses

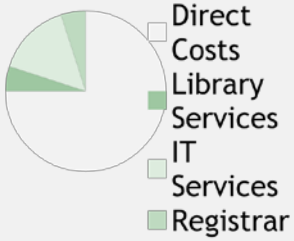
Non-financial information can be included to create specific metrics

Cost Structure: Step 4

Create Indirect Cost Categories

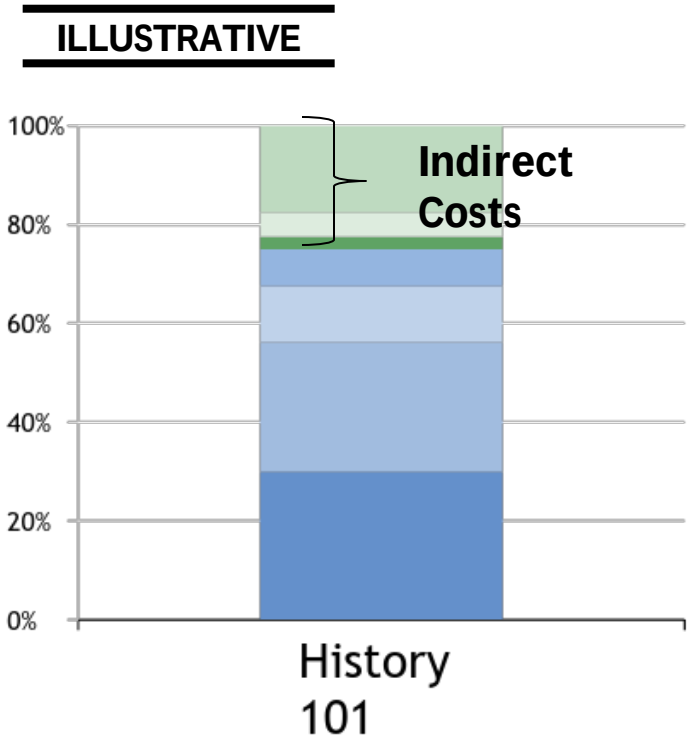
Step 4

Create Indirect Cost Categories



•Categorize all indirect costs into relevant activities

Sample Course Expense Report



• Only direct costs are needed for course redesign work

• However, from an institution-wide perspective, all costs should be allocated to calculate the ***fully loaded cost*** of providing students with instruction

• Indirect costs should not be spread among courses like peanut butter, assuming they are evenly distributed among all courses

•Different costs have different cost drivers and any cost allocation methodology must acknowledge these differences.

Indirect Cost Categories & Activities

These categories allow the institution to group high level categories of expenses as well as the flexibility to analyze the specific activities within each category type

Type of Expense	Activity	Type of Expense	Activity
College or Departmental Overhead	Academic Administration	**Student Services***	Admissions (includes marketing/recruiting)
	Other Administration		Advising
	Facilities & Space		Tutoring
	Other Expenses		Counseling
Academic Overhead/Academic Support	Academic Administration		Career Services
	Faculty Development		Student Assessment/Testing
	Information Technology		Financial Aid Admin.
	Library Services		Student Support IT
	Facilities & Space		Other Student Activities
	Other Academic Support		
	Executive Management		
Institutional Overhead	Administration (HR/IT/Finance/Legal)		
	Alumni/Development		
	Facilities & Space		
	Other Institutional Overhead		

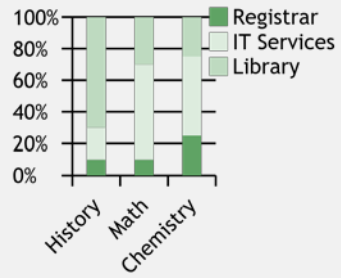
*All Student Service category definitions are attributable to IHEP (Institute for Higher Education Policy) recent activity based costing project sponsored by the Bill and Melinda Gates Foundation

Cost Structure: Step 5

Allocate Indirect Costs

Step 5

Allocate Indirect Costs

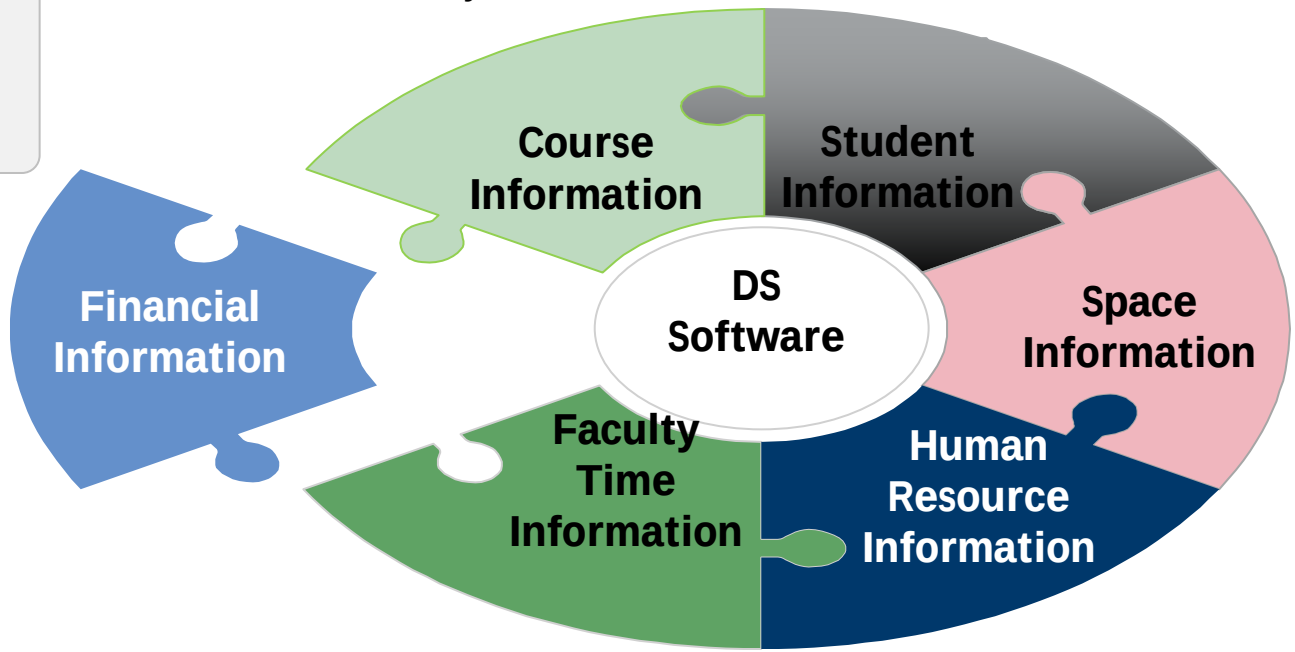


•Allocate indirect costs to programs using cost driver based allocation

• Indirect cost allocation calculation also requires a wide variety of non-financial information

• Each category and activity should be analyzed separately and assigned appropriate cost drivers

•Like direct costs, cost allocation can be a complex task, but decision support software and use of a variety of non financial data from institution allows cost allocation to be done fairly easily and automatically



Key is identifying appropriate cost drivers

• Indirect cost categories are further broken down into relevant activities and cost drivers are assigned to each

Sample Indirect Cost Categories

Type of Expense	Activity	Cost Driver/Allocation Methodology
College or Departmental Overhead	Facilities & Space	Square Footage Utilized
Academic Overhead/ Academic Support	Library Services	# of Faculty + # of students
Institutional Overhead	Administration (HR/IT/Finance)	# of FT Employees
Student Services	Admissions (eg. mrktg./recruiting)	# of FT Students
	Advising	# of FT Students
	Counseling	# of FT Students
	Career Services	# of FT Students

• Cost allocation for indirect costs will be based on relevant cost drivers

• Cost drivers will be defined in cost allocation software and will pull from both financial and non-financial databases

Final Product: Fully Loaded Cost per Course Information

Sample Course Cost

School of Business

Course 1	Hours	% Total	Expense
Direct Costs			
Course Development	Hours	10%	$$$
Course Management	Hours	20%	$$$
Teaching	Hours	40%	$$$
Tutoring	Hours	20%	$$$
Advising	Hours	10%	$$$
Assessment & Grading	Hours	10%	$$$
Total			$$
Indirect Costs			
Departmental Overhead			$$
Academic Support			$$
Institutional Overhead			$$
Student Services			
Total			$$

- **Steps 2 & 3** calculate direct cost of instruction

- **Steps 4 & 5** allocate indirect costs to courses for a fully loaded cost

BENEFITS OF METHODOLOGY

Benefits of Methodology

1

Enhances Transparency and Reporting

- Institutions will have an ongoing tool to detail the cost of operations and identify areas for improvement
- Quantifies the level of cross-subsidization throughout the institution allowing explicit evaluation of these decisions

2

Improves Ability to do Planning & Forecasting

- Enables institutions to run planning scenarios based on different strategic choices
- Informs student enrollment management and programmatic changes

3

Allows Analysis and Improvement of Instructional Model

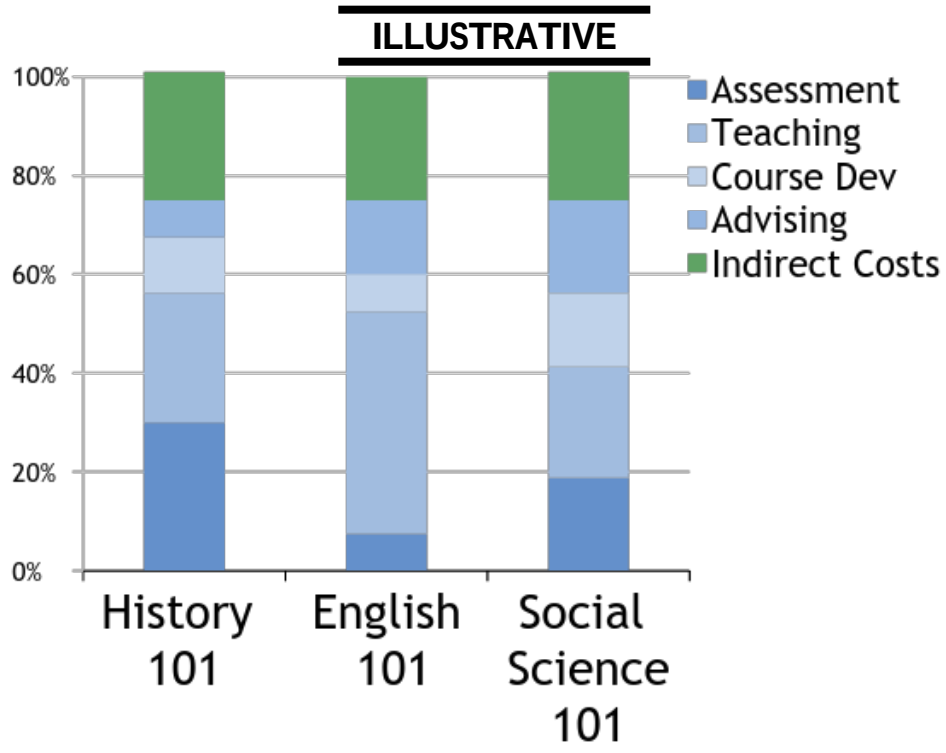
- Enables institutions to open the black box of instructional cost
- Allows faculty to analyze the cost of course educational activities, creating the ability to make changes to achieve efficiencies and improve outcomes

1

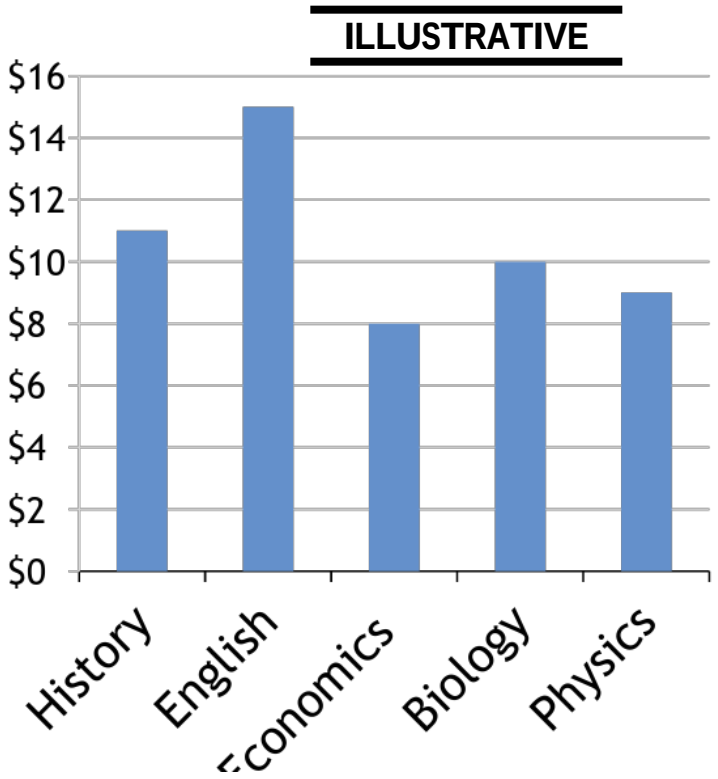
Enhances transparency and reporting

Methodology calculates costs at the course levels but rolls-up easily to total departmental costs and majors

Course: Sample Expense Report



Expenses by Major ($k)



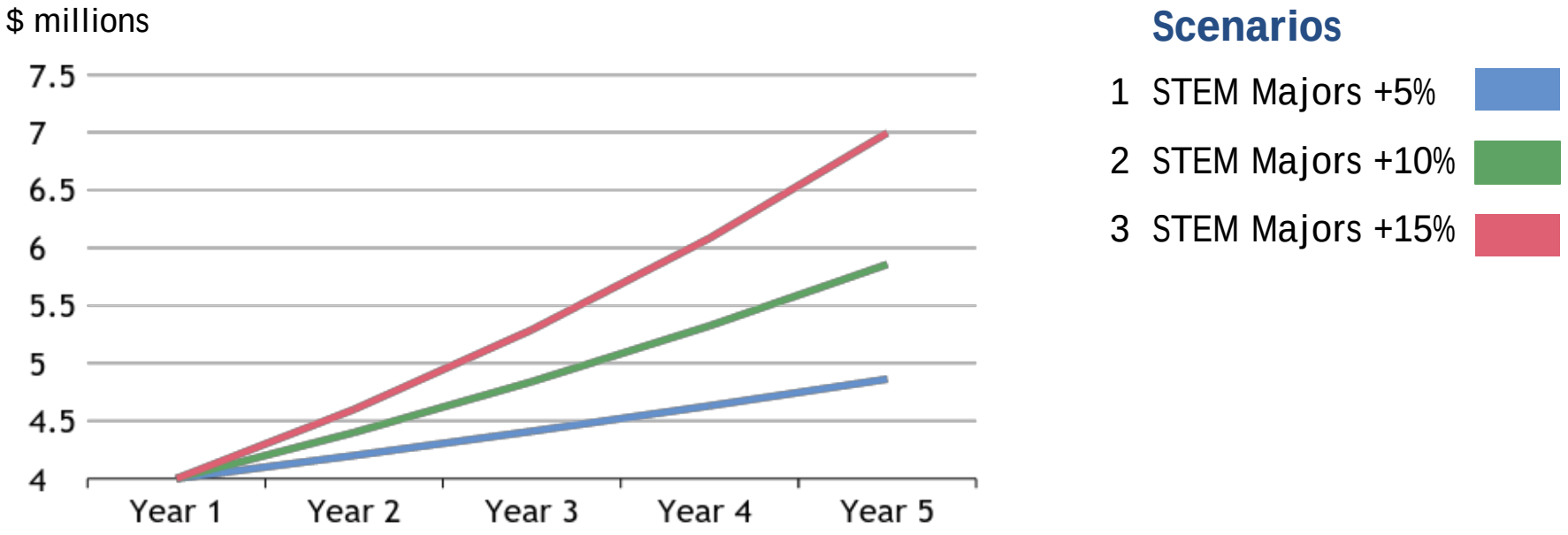
This view of expenses allows the benchmarking of departments and majors.

2 Improves Ability to do Planning & Forecasting

• Enables calculation of planning scenarios based on various strategic choices

•While some institutions already have long-term forecasting models, this methodology will allow a more granular ***analysis of the effects of operational changes***. ***Particularly in programmatic changes***, such as the addition or removal of new courses and or units.

Sample Expense Forecasting Ability



3 Allows analysis and improvement of instructional model

School of Business

Course 1	Hours
Course Development	Hours
Course Management	Hours
Teaching	Hours
Tutoring	Hours
Advising	Hours
Assessment & Grading	Hours
Total	

Course 2 - 100

School of Liberal Arts

School of Medicine

School of Engineering

The fact that activity information is broken out first, then allocated is what allows an analysis of the delivery of instruction