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Improving the Evaluation of Higher Education: Understanding the Myths, Methods and Metrics

Sean W. Mulvenon, University of Arkansas

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ABSTRACT

A growing need in higher education is the more effective use of analytics when evaluating the success of a postsecondary institution. The metrics currently used are simplistic measures of graduation rates, publications, and external funding. These measures offer a limited view of the effectiveness of postsecondary institutions. This paper provides a global perspective of the academic progress of students and the business of higher education. It presents innovative metrics using SAS and data architecture modeling that may be more effective in evaluating postsecondary-institutional effectiveness.

INTRODUCTION

The University of Arkansas published a 6-year graduation rate of 59.2% for the freshman class of 2010. What does this metric represent? The College of Education and Health Professions reported 100% of teacher education graduates passed the Praxis II exam, which is a measure of content knowledge for their specific area of licensure (i.e, you have to pass exam to graduate, so always 100% pass rate for graduates). The average ACT composite exam score for freshman was 25.6. What do these metrics provide as a measure of effectiveness of the University of Arkansas? All three metrics represent an effort to provide analytics about the university. Are they effective? What is their intent? In order to answer these questions it is paramount to understand the goal of analytics.

What are analytics? According to Dictionary.com (2017):

> "Analytics (n)
>
> 1. (used with a singular verb) Logic. The science of logical analysis
> 2. (used with a singular verb) the analysis of data, typically large sets of business data, by the use of mathematics, statistics, and computer software: digital marketers with a strong knowledge of Web analytics; selecting the best analytics tools.
> 3. (used with a plural verb) the patterns and other meaningful information gathered from the analysis of data."

The three elements of this definition may be abbreviated to "logical", "process" and "meaningful" and when integrated may be restated as a "logical process to obtain meaningful information." However, what constitutes meaningful information to evaluate postsecondary institutions? Is a graduation rate a meaningful metric?

IDENTIFYING MEANINGFUL METRICS IN HIGHER EDUCATION

The fundamental computation of graduation rates in higher education institutions may be completed using this simple formula: (Note: many variations and disaggregation methods may also be employed).

$$\text{Graduate Rates (GR1)} = \frac{A\ subset\ of\ those\ new\ students\ who\ graduate}{A\ Set\ of\ New\ Student}$$

The GR1 is by design an overly simplistic metric to represent the percentage of students who graduate from a postsecondary institution. Any effective university data system would provide the flexibility to compute variations of this metric, including graduation rates by college, transfer students, gender, etc. Figure 1 provides SAS code developed as part of federal research grant proposal.

Figure 1. ***Sample SAS Code for Compute Graduate Rates***

```
data nn1;
 set pade.nsf_pilot;

   if ua_student_status= "CN";
   if ua_primary_school in ("GRAD" "LAWW") then delete;

    if term_grad in ("Sp 2011" "Fa 2010" "Su 2011") then grad_stat1= 1;
      if term_grad in ("Fa 2011" "Sp 2012" "Su 2012" "Fa 2012" "Sp 2013"
         "Su 2013") then grad_stat1= 2;
    else if grad_stat1 ne 1 and grad_stat1 ne 2 then grad_stat1= 0;
   if grad_stat1 in (1 2) then grad_stat2= 1; else if grad_stat2 ne 1 then
    grad_stat2= 0;

   cgpa1= cg1; cgpa2= cg2; cgpa3= cg4; cgpa4= cg5; cgpa5= cg7; cgpa6= cg8;
   cgpa7= cg10; cgpa8= cg11; cgpa9= cg13; cgpa10= cg14; cgpa11= cg16;
   cgpa12= cg17;

   array ww{*} cgpa1-cgpa12;
   array xx{*} xx1-xx12;
   array yy{*} yy1-yy12;

    do i= 1 to 12;
      if ww{i} ne . then xx{i}= 0;
       if ww{i} = . then xx{i}= 1;
      if ww{i} ne . then yy{i}= 1;
       if ww{i} = . then yy{i}= 0;
   end;

   if descr= " " then degree1= 0; else if degree1 ne 0 then degree1= 1;
     zz1= sum(of yy1-yy12);
run;
```

This simple code provides the flexibility to create any number of GR1 computations. A key element of this code is the ability to generate “unique” metrics for specific analytical purposes. The grad_stat1 and grad_stat2 variables provide simple variables to identify and compute any number of measures of the rate of attainment of a postsecondary degree. If demographic variables associated with Gender, Degree, Ethnicity, etc. are available this simple code may be used to generate any number of variations of GR1. Finally, I refer to this code as “proactive” versus “reactive.” I actively identify and select those subsets of data that are required and omit elements that are incongruent. For example, if you select “New Freshman” you also have several students identified as “GRAD” and “LAW” which represent data coding errors in the system and should be removed (i.e., as demonstrated in Figure 1).

ADDITIONAL DEFINITIONS OF GRADUATION AND ATTAINMENT

The American Council on Education (ACE) center for policy analysis differentiates between graduation and attainment rates using the following:

Graduation Rates (GR) – a measure of the share of students who enter college and graduate within a certain number of years.

Educational attainment (EA) – a measure of the share of the population that has earned a postsecondary degree.

GR is a measure applied to a postsecondary institution and employed as a *de facto* measure of institutional effectiveness. EA is a global measure of the incidence rate of postsecondary degrees within society. Two very different metrics, but is either effective?

GR and EA are easy metrics to compute, but are there differences in how the numerator value for these metrics is completed (i.e., the number of students who graduate)? What is the effect of completing a degree in 4-years versus 6-years? Similar to most metrics to evaluate school effectiveness in the K-12 system as part of Every Student Succeeds Act (ESSA), parsimony of the metrics in higher education is designed to increase interpretability, but may actually limit the effectiveness of the metric. GR and EA are easy metrics, but how do they reflect the cost, economic value, or likelihood of attaining a degree?

OTHER DUBIOUS METRICS IN POSTSECONDARY EDUCATIONAL SYSTEMS

Cumulative GPA for Retention of Scholarships. Dubious metrics extend to use of cumulative GPA (CGPA) for maintaining scholarships. Are all colleges and their academic expectations equal? A challenge in Arkansas is the use of CGPA by the Lottery Scholarship Fund. This amazing largesse of scholarship resources provides an incremental increase of $1000, $2,000, $3,000 and $4,000 in funding for students in their freshman, sophomore, junior and senior years, respectively. The receipt of funding requires a cumulative GPA of 3.25, 3.0 and 2.75 after your freshman, sophomore and junior years in college. The CGPA for an engineering major is 2.77 whereas in education it is 3.51. Is this equitable?

Establishing a "Fixed" CGPA without relevance to more traditional college performance expectations is suspect. For example, if I am an engineer earns a 3.0 their freshman year, they will receive a letter stating they are making "adequate academic progress" from the College of Engineering. However, this same engineering student may receive a letter indicating they are deficient in their CGPA and will not receive their Lottery Scholarship Funding.

The context of this CGPA may seem dubious, but context may be added by reviewing Table 1 of the ACT Math, English and Composite values for engineering and education majors.

Table 1. ***ACT Mean Scores for Engineering, Education and Campus***

Major	English	Math	Composite
Engineering	26.8	27.5	26.7
Education	24.4	22.7	23.3
U of A	26.5	25.3	25.6

The purpose of Table 1 is to demonstrate a lack of congruency in the cumulative GPA versus the entry scores of students to the U of A. Is an engineering major with a GPA of 3.0 underperforming? All states need educators with outstanding undergraduate professional training, but what is this metric of CGPA presenting to students who aspire to be engineers?

Expected Income and Student Loans. A challenge in higher education is to limit the cost, but an additional concern is the debt a student may incur while obtaining a postsecondary degree. What is a metric to mitigate and control the expected cost of an undergraduate degree? The banking industry provides a natural model for evaluating the appropriateness of a loan, which is the ability to repay the loan. Bankrate.com (2017) identifies a key element in obtaining a personal loan is the "Ability to repay." The issue of student college loans has become a significant topic, including in the most recent U.S.

Presidential elections (Josuweit, 2016). The goal of this paper is not to debate the merits of the proposed models for attenuating student debt associated with college education, but to demonstrate the metrics associated with student loans may be ineffective.

COST OF HIGHER EDUCATION

The University of Arkansas represents the cost of tuition, books, room/board, and fees for an instate student who completes 30 credit hours as $24,302 (U of A, 2017), with $14,436 or 59% of those costs associated room and board. If a student graduates in 4-years this represents a total cost of $97,208.

However, a student in most postsecondary systems is considered “on-track” to graduate if they complete 9-credit hours per semester or 18 credits during two semesters. The irony of this metric for “on-track” becomes more evident if you apply this to the standard of 120 credit hours to obtain a 4-year degree. This metrics is further complicated if you conflate this issue with the cost of a 4-year degree. Table 2 provides a comparison of several students and the confusion created by “on-track”, cost of a 4-yr education, and the misleading representation of cost and timeline for completion of a degree.

Table 2. ***Variations in Tuition Cost and Progress toward a Degree at the University of Arkansas.***

Student	Hours Completed Per Semester	Semesters	Total Hours	Cost Per Hour	Total Cost	Degree
A (education)	9	12	108	$297	$32,076	NO
B (education)	15	8	120	$297	$35,696	YES
C (engineering)	9	12	108	$315	$33,972	NO
D (engineering)	15	8	120	$315	$37,747	YES

Students A & C are considered “full-time” and “on-track” for graduation, but after six-years and 12 semesters are still 12 credit hours short of completing a degree. Many state legislators are complaining regarding the rising cost of tuition in postsecondary education. However, Table 2 only shares the metric of the cost of tuition. What is the “real cost” of attending the U of A?

The estimated annual cost for books, room, board, transportation is $15,482 at the U of A. Table 3 has $35,696 and $37,747 for tuition and fees to complete a 120-hour degree in education and engineering, respectively. Is this an effective metric? Table 3 provides information on the total costs to attend the U of A.

Table 3. ***Variations in Total Cost of Degree at the University of Arkansas.***

Student	Tuition & Fees	Room & Board	Annual	Total	Degree
A	$5,346	$15,482	$20,828	$124,968	NO
B	$8,820	$15,482	$24,302	$ 97,208	YES

Note: Student A and B are used from Table 3.

Student B earned a degree and would have an estimated cost of $97,208. In contrast, Student A has completed 9-hours per semester and attended the institution for six years, but has no degree, but is considered "on-track" academically? If Student A completed the 12 remaining hours in one semester, the estimated cost would be an additional $11,305 (12-credit hours and ½ Room & Board) to complete a degree.

The key elements of Table 2 and 3 are to represent a student may be "on-track" to complete a degree, but the cost may be substantially more for their respective degree. Why is the metric of 9-hours considered "full-time" or "on-track?" The actual cost for Student A to complete their degree will be closer to $136,373. Does the use of this student in the numerator for computing GR and EA seem analytically sound?

FUNDING OF HIGHER EDUCATION

The funding of higher education and postsecondary institutions has become a contentious topic and metrics such as GR and EA are central to these discussions. Again, legislators and postsecondary institutions desire the use of simplistic metrics.

The National Conference of State Legislators have advocated for the use of Performance-Based Funding for higher education (2015). An issue brief titled "Federal and State Funding of Higher Education: A changing landscape" by the Pew Charitable Trusts in 2015 also detailed the numerous challenges associated with funding higher education. Legislators do not publically state it, but K-12 is the 800-lb gorilla in state funding. Once legislators pay for K-12, the Department of Corrections, Transportation and Medicaid/Medicare there is limited funding for higher education.

Assuming enrollment is maximized, a postsecondary institution has three methods to increase funding: (1) raise tuition, (2) external grant funding, and (3) private donations. To address (3) most postsecondary institutions have created an Office of Foundations responsible for soliciting private donations to the institution. Elements (1) and (2) are more difficult to address, aside from the obvious to increase both. However, it is more complex with the discussions on the value of a college degree and eclectic roles of faculty members in postsecondary institutions. The rest of this paper represents my initial attempts or first iterations in developing and identifying meaningful metrics to employ within higher education.

DEVELOPING A "EDUCATIONAL PATH" INDEX FOR POSTSECONDARY EDUCATION

The various metrics discussed represent a greater challenge exists in attempting to simplify evaluating the value of a postsecondary degree, the cost, funding, student loans, scholarships, and institutional effectiveness. The next few pages are the initial attempts to integrate many of these elements into a composite measure.

KEY FUNDING ELEMENTS IN A COMPOSITE METRIC

What are the key elements required to develop a composite metric? The development of a metric is an iterative process and this "Educational Path" Index is the first iteration. A goal of this metric is to be "global" but also provide value to students and parents in evaluating a postsecondary institution and the economic benefits/costs of various paths to attain a degree. The variables included are:

1) Semesters to complete a degree
2) Estimated costs to complete the degree
3) Expected Income with degree
4) Percent of total costs paid with loans
5) Rate of repayment
6) Institutional degree history for graduation rates

An unpopular element of this list is the expected income associated with a postsecondary degree. Table 4 provides a listing of expected annual income by several degrees. The ability to borrow and repay loans depends on an individual's income. As such, it is paramount this variable is included in the development of a "Educational Path" Index. It should be clearly stated, the author takes no political position associated with the amounts reported in Table 4, but is including this information develop a metric that will be valuable to students and parents.

Table 4. ***Expected Income by Degree.***

Broad Category	2017 Average Salary	Monthly Rate of Pay
Engineering	$66,097	$5,508
Computer Science	$65,540	$5,461
Math & Science	$59,368	$4,947
Business	$54,803	$4,567
Humanities	$48,733	$4,061
Education*	$35,686	$3,965

Source: Winter 2017 *Salary Survey*. National Association of Colleges and Employers.

*Source: Exploring Gender Bias in Starting Salary Offers Among STEM Majors" NACA Journal, February 2017.

DEVELOPING THE ELEMENTS OF THE COMPOSITE INDEX MODEL

The "Educational Path" Index has several computed metrics used to develop the composite index. Each of these elements is an Index and include:

Index I:	Time to Degree (Number of Years)
Index II:	Relative Economic Value of Degree (Expected Income ÷ $66,097)
Index III:	Percentage of Degree Borrowed (1 – percent of degree a student loan)
Index IV:	Repayment Quotient

$$\text{Index IV} = \frac{1}{\left(\frac{\frac{cost\ per\ semeser * semesters * debt\_pct}{\frac{\exp\_income}{12} x .25}}{12}\right)}$$

Index V:	Institutional Graduation Rate by Degree
Composite:	Sum of Index I – Index V

The iterative process requires a start point to generate the first iteration of the "Educational Path" Index. Tables 2 – 3 outline the cost of a degree and the impact of time in the overall cost and economic value of a postsecondary degree. Table 4 presents the expected annual income based on academic field and creates an awareness of the ability to repay student loans. The amount a student may intend to borrow places further value on the degree and time to complete.

Interpretation of Index. Each index has a maximum value of 1.0 and the Composite has a total possible score of 5.0. Thus, the closer a composite value is to 5.0, the efficiency and economic benefit of the path selected by a student to complete a postsecondary degree. It is paramount the Index be interpreted as a dynamic metric with numerous possibilities and values generated based on the personal choices and decisions of students and parents. An academic institution may increase the value of their institution by lowering costs, increasing scholarship funding (e.g., lowering the amounts students may need to borrow), and increasing the overall graduation rates by degrees at their institutions.

SAS CODING FOR "EDUCATIONAL VALUE" METRIC

Each of the metrics recommend in this paper may be generated with use of relatively simple SAS code. Additionally, much of this type of code may be generated with SAS Enterprise Guide. The use of SAS code to generate the metrics requires basic programming skills as the metrics are not part of existing SAS functions. Figure 2 provides the SAS code developed for the "Educational Path" Index.

Figure 2. ***SAS Code for Compute the "Educational Value" Metric.***

```
data zz1;
   input degree $12. exp_income semesters debt_pct inst_grad_rate @@;

   scale1= 66097;                /* Engineering Expected Average Income */
   scale2= 24302/2;              /* Estimated Semester Cost at U of A   */
   scale3= (exp_income/12)*.25; /* A Rate of Repayment based on income */

   Index_I= 8/semesters;         /* A Rate of Degree Completion         */
   Index_II= exp_income/scale1; /* Index of Economic Return of Degree  */
   Index_III= 1-debt_pct;        /* Anticipated PCT of Degree Financed  */
   Index_IV= 1/(((scale2*years*debt_pct)/scale3)/12);
     if index_IV= . then index_IV= 1.0; /* Repayment Rate and Timeline */

   Index_V= Inst_grad_rate;      /* Rate Institution Graduates Students */
   Composite= sum(of Index_I Index_II Index_III Index_IV Index_V);

   cards;
   Education    35686  8    0  Education    35686  8  .25
   Education    35686  8  .50  Education    35686  8  .75
   Education    35686  8 1.00  Education    35686 10    0
   Education    35686 10  .25  Education    35686 10  .50
   Education    35686 10  .75  Education    35686 10 1.00
   Education    35686 12    0  Education    35686 12  .25
   Education    35686 12  .50  Education    35686 12  .75
   Education    35686 12 1.00  Engineering  66097  8    0
   Engineering  66097  8  .25  Engineering  66097  8  .50
   Engineering  66097  8  .75  Engineering  66097  8 1.00
   Engineering  66097 10    0  Engineering  66097 10  .25
   Engineering  66097 10  .50  Engineering  66097 10  .75
   Engineering  66097 10 1.00  Engineering  66097 12    0
   Engineering  66097 12  .25  Engineering  66097 12  .50
   Engineering  66097 12  .75  Engineering  66097 12 1.00
   ;
   run;
```

```
proc print; var degree exp_income semesters debt_pct inst_grad_rate
        index_i index_ii index_iii index_iv index_V composite;
run;
```

A benefit of the SAS code for the “Educational Path” Index is the nominal amount of data that are required to compute this index. All postsecondary institutions would be able to generate the necessary elements of this SAS code. Future iterations of this metric will have greater specificity for expected income by degree from an individual academic institution. One facet of this index is the linear nature and default weighting of indices on a 1- point scale. The ability to weight each is readily possible as more studies are completed on the validity of this composite index.

Figure 3 provides sample “Educational Path” Index scores for several paths associated with Education and Engineering Degrees. For example, if a student completes an Education degree in 4 years, does not borrow any money to complete their education, the Composite or Educational Path Index is 4.26. A similar student with an Engineering Degree would have an “Educational Path” Index of 4.6. The key to remember is there are plethora paths for students to complete a postsecondary degree. The “Educational Path” Index represents an effort to consolidate many factors that may impact individual students and parents in their post-secondary choices. More importantly, this index allows students and parents to understand the significant long-term impact of many of these choices academically and economically.

Figure 3. ***The Composite “Educational Value” Index for Education and Engineering***

		Index					
Degree	Years	I	II	III[1]	IV	V	Composite
Education	4	1.00	.54	a) 1.00	1.00	0.72	4.26
				b) 0.75	0.37	0.72	3.38
				c) 0.50	0.18	0.72	2.94
				d) 0.25	0.12	0.72	2.63
				e) 0.00	0.09	0.72	2.35
	5	0.80	.54	a) 1.00	1.00	0.72	4.06
				b) 0.75	0.37	0.72	3.10
				c) 0.50	0.18	0.72	2.71
				d) 0.25	0.12	0.72	2.41
				e) 0.00	0.09	0.72	2.13
	6	0.60	.54	a) 1.00	1.00	0.72	3.93
				b) 0.75	0.37	0.72	2.92
				c) 0.50	0.18	0.72	2.55
				d) 0.25	0.12	0.72	2.26
				e) 0.00	0.09	0.72	1.99
Engineering	4	1.00	1.00	a) 1.00	1.00	0.60	4.60

			b) 0.75	0.68	0.60	4.03
			c) 0.50	0.34	0.60	3.44
			d) 0.25	0.23	0.60	3.08
			e) 0.00	0.17	0.60	2.77
5	0.80	1.00	a) 1.00	1.00	0.60	4.40
			b) 0.75	0.54	0.60	3.69
			c) 0.50	0.27	0.60	3.17
			d) 0.25	0.18	0.60	2.83
			e) 0.00	0.14	0.60	2.54
6	0.60	1.00	a) 1.00	1.00	0.60	4.27
			b) 0.75	0.45	0.60	3.47
			c) 0.50	0.23	0.60	2.99
			d) 0.25	0.15	0.60	2.67
			e) 0.00	0.11	0.60	2.38

DEVELOPING A HIGHER EDUCATION METRIC OF FUNDING RESOURCES

A Method for Adding Value to the Contributions of Faculty

The defunding of higher education has placed tremendous pressure on postsecondary institutions to increase revenue flow with (1) tuition, (2) external research grants, and (3) private donations. As previously shared, element (3) has been addressed with creation of Foundation Offices on campuses with the specific purpose to solicit funding for the institutions. Elements (1) and (2) have become polarizing issues on most postsecondary campuses. A faculty member should be active with either (1), (2) or a combination of (1) and (2).

Most universities assign faculty members a workload, which includes three elements: (1) Teaching, (2) Research and (3) Service. A faculty member as a percentage of each assigned with 100% of their time allocated to one of these three elements. Table 5 provides several examples of faculty workload models.

Table 5. *Examples of Faculty Workload Assignments.*

Faculty Member	Teaching[1]	Research	Service
A	80%	10%	10%
B	40%	40%	20%
C	20%	70%	10%

[1] Note. A common metric is to use each class as 10% of teaching load.

Does Table 5 represent an effective measure of performance for a faculty member? If Faculty Member B publishes two articles, edits a journal, and teaches two classes does this represent effective performance by a faculty member. If a Faculty Member A teaches eight sections with 25 students in each section, does not publish an article and only serves on one department committee is this effective performance? As an academic I recognize there are a plethora of methods and roles where a faculty member may demonstrate exemplar performance.

Evaluating a faculty member's productivity is a complex multivariate task with immense measurement error associated with any model employed. A more effective approach may be to reduce the model to two elements: (1) Subjective, and (2) Objective. A "Subjective" model involves evaluation of instruction, peer review of research and active contributions in service that requires active involvement by faculty and administrators. An "Objective" method may be to evaluate the relative contribution of faculty members to elements (1) and (2) of higher education funding (e.g., tuition and external funding).

A weighted model of faculty economic value to the institution, which examines the amount of students in classes and the role of external grant funding is provided in Figure 4.

Figure 4. ***Faculty Contributions to Higher Education Funding Formula.***

Example 1: Faculty Member A

Students	Total[1] 3-hrs		Tuition[2]						
Teaching:	200	*	$1,100			Total Tuition Revenue[3]		=	$220,000
	Indirect[4] Funding		Tuition[5]		Equipment[6]		Salary and Benefits Paid[7]		
External Funding:	$ 0	+	$ 0	+	$ 0	+	$ 0	=	$ 0
							Total Revenue[8]		**$220,000**

	Total Revenue		Salary and Benefits[9]		Institutional Costs[10]		**Faculty[11]** **<u>Economic Benefit</u>**
FROI:	$220,000	-	$129,000	-	$60,000	=	**$ 31,000**

Example 2: Faculty Member B

	Total[1] Students		Tuition[2] 3-hrs						
Teaching:	40	*	$1,100			Total Tuition Revenue[3]		=	$ 44,000
	Indirect[4] Funding		Tuition[5]		Equipment[6]		Salary and Benefits Paid[7]		
External Funding:	$121,000	+	$ 22,000	+	$100,000	+	$ 27,000	=	$270,000
							Total Revenue[8]		**$314,000**

	Total Revenue		Salary and Benefits[9]		Institutional Costs[10]		**Faculty[11]** **<u>Economic Benefit</u>**
FROI:	$314,000	-	$129,000	-	$60,000	=	**$125,000**

Example 3: Faculty Member C

Total[1] Tuition[2]

	Students		3-hrs				
Teaching:	0	*	$1,100		Total Tuition Revenue(3)	=	$ 0

	Indirect(4) Funding		Tuition(5)		Equipment(6)		Salary and Benefits Paid(7)		
External Funding:	$340,000	+	$ 44,000	+	$200,000	+	$ 27,000	=	$611,000
							Total Revenue(8)		**$611,000**

	Total Revenue		Salary and Benefits(9)		Institutional Costs(10)		**Faculty(11) Economic Benefit**
FROI:	$611,000	-	$129,000	-	$60,000	=	**$422,000**

Note: (1) Total Students: Number of students in courses as primary instructor

(2) Tuition 3-hrs: Tuition cost to complete a 3-credit course

(3) Total Tuition Revenue: (total students) x (Tuition 3-hrs)

(4) Indirect funding: The amount of grants provided as an indirect cost to institution

(5) Tuition: Amount paid to institution for graduate student tuition

(6) Equipment: The total cost of equipment purchased from grant

(7) Salary and Benefits Paid: Amount of 9-month and summer salary paid for faculty salary

(8) Total Revenue: The total sum of (4), (5), (6) and (7) by external funding

(9) Salary and Benefits: Cost of faculty 9-month salary and benefits by institution

(10) Institutional Costs: Distributed maintenance cost by faculty member for university facilities

(11) Faculty Economic Benefit: Total economic +/- value of the role of the faculty member

Interpretation of Figure 4. Faculty Members A – C make important contributions to the institution, but do so in very different roles. Faculty Member A is someone who makes an important contribution within the classroom. If this faculty member is an excellent instructor and valued by the students, the contribution of $31,000 to the funding should be highly valued by the institution. Faculty Member B is more balanced and in their contributions between teaching and external funding and adds $125,000 to funding to the institution. Faculty Member C is the rare individual who is primarily research and does have a different ability to add significant revenue to the institution. The roles and contributions of Faculty Members A – C are all equally important and make significant contributions to the institution.

A common criticism of higher education is faculty members receive tenure and then attenuate their productivity. Another criticism is greater value placed on Faculty Member C because of an ability to generate significant revenue for the institution. The seminal goal in sharing this possible model is to demonstrate value of faculty manifests in many possible forms, including “Subjective” and “Objective.” The “Subjective” review, in conjunction with contributions with funding elements (1) and (2) are important. An effective administrator should balance the “Subjective” and “Objective” contributions and all faculty members should be active in (1) or (2).

Finally, it is an economic reality postsecondary administrators must evaluate institutional effectiveness in terms of maximizing revenue for the institution. Faculty should not be only consumers of funding, but proactive in their ability to contribute with either element (1) or (2). In my experience, the most significant facet of Figure 4 is the number of faculty members who are unaware of the reality of the impact of Faculty Members A – C and the need for institutions to evaluate faculty contributions within elements (1) and (2).

CONCLUSION

The evaluation of the performance postsecondary institutions is a complex process that requires the use of meaningful analytics. Unfortunately, the "low hanging fruit" methods currently employed are superfluous and insufficient to evaluate institutional effectiveness. The two methods introduced in this paper are pilot or first iterations. It is my hope, they will continue to evolve with future iterations, but the goal was to move forward from ineffective methods and introduce possible alternative. It is also my hope that each of the proposed metrics is "logical", follows a "process", is "meaningful" and provides a "logical process to obtain meaningful information."

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CONTACT INFORMATION

Your comments and questions are valued and encouraged. Contact the author at:

Sean W. Mulvenon, Ph.D.
University of Arkansas
479-575-8727
seanm@uark.edu