

**THE IMPACT ON GRADUATION RATES
OF SERVING PELL GRANT RECIPIENTS**

**ADVISORY COMMITTEE ON
STUDENT FINANCIAL ASSISTANCE**

**SFARN CONFERENCE
JUNE 20-21, 2013
PORTLAND, OR**

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WHO IS THE ADVISORY COMMITTEE?

- The Advisory Committee was created by Congress in the Higher Education Amendments of 1986.
- The Committee had its first members appointed in 1988 and is in its 25th year.
- The Committee is an independent and nonpartisan source of advice and counsel on student financial aid policy to Congress and the Secretary of Education.
 - Advice is purely technical in nature, not political – no advocacy or lobbying.
- To fulfill its charge, the Committee makes recommendations to maintain and increase access and persistence in higher education for low- and moderate-income students.
- In the *Higher Education Opportunity Act* of 2008, Congress charged the Advisory Committee with providing an annual report to:
 - Congressional authorizing committees, and the
 - Secretary of Education
- The annual reports are to address issues related to:
 - adequacy of need-based grant aid for low- and moderate-income students, and
 - postsecondary enrollment and graduation rates of low- and moderate-income students.

FOREWORD

“Encouraging greater post-secondary achievement for all Americans is certainly a worthy public policy goal. Holding academic institutions to high standards and expecting accountability for learning outcomes is reasonable and responsible. But obtusely continuing to use a flawed yardstick to measure results that it is not designed to measure undermines the accountability system, builds resentment and resistance, and, ultimately, does not serve the public policy purpose of promoting greater degree attainment for more Americans.”

**Patricia McGuire, President
Trinity Washington University
Washington DC**

Source: College Grad Rates are Bad ‘Data,’ *The Washington Post*, By Daniel de Vise, January 26, 2012

LIMITATIONS OF GRADUATION RATE DATA

- A college's graduation rate is not the best measure of its educational effectiveness.
 - “The rate is about brand loyalty—the percentage of students who stay at the same college and finish degrees in six years.”
 - “The graduation rate is very old news by the time IPEDS data becomes public seven or eight years after the cohort's initial enrollment, lagging well behind more current institutional data on retention and persistence strategies.”
- Graduation rate data does not specify how many students earn degrees.
 - “Graduation rate data is not the same as degree attainment, which is the real measure of how many students actually earn degrees...graduation rate does not include transfer students...or part-time students...or students who have elongated their degree timetable by stopping out for work and family obligations.”
- “Universities do not choose graduation rates, but they choose students whose characteristics (family wealth, high school preparation, parental education) effectively determine the graduation rate.”
 - “If elite institutions were to enroll at-risk students in the same proportion as broad-access universities do, their graduation rates would look more like the broad-access institutional graduation rates.”
- “Colleges with lower graduation rates are the very institutions that have taken the risk of extending broad access to a much wider spectrum of students than the elite universities will consider.”
 - “A graduation rate below 50% does not necessarily mean that most students are not successful at a particular university, but rather, that the majority of students attend in non-traditional ways, probably earning credit in multiple schools and graduating in eight, ten, or more years.”

BACKGROUND

- There is much discussion about using graduation rates to measure institutional performance.
 - For example: States using performance-based funding measures and budget formulas.
- Graduation rates are known to be imperfect measures of institutional performance in that they:
 - do not necessarily measure quality, content, and student employability
 - fail to take student transfer into adequate account.
- However, in spite of such weaknesses, such measures might be used as one metric of institutional performance in distributing federal need-based aid.
 - For example, some are interested in distributing Pell Grants and/or campus-based funds, in part, on the basis of institutional performance.
- This analysis briefly explores:
 - the determinants of graduation rates – in this case six-year rates – from available data,
 - the impact of serving the Pell Grant recipient population on these graduation rates,
 - the extent to which existing data and methods can be used to form accurate and appropriate peer groups in order to measure institutional performance.

SCOPE OF THE PRESENTATION

- The presentation is a preliminary exploration of:
 - the extent to which using raw output measures, such as graduation or academic progress, to condition the award or allocation of federal student aid funds may harm low-income students and undermine intent of need-based aid,
 - why it is necessary to adjust six-year graduation rates – or measures of academic progress – based on the inputs of student body characteristics, institutional mission, and constraints, in order to assess institutional performance.
- The presentation is not a definitive assessment of:
 - how to best measure institutional performance or value added, i.e., which models and statistical techniques are appropriate,
 - whether existing data are adequate to the task and/or what additional data must be collected to do so,
 - whether it is necessary to encourage or coerce institutions to improve performance or the best way to do that.
- The primary interest is the extent to which the models and data that exist can be used to condition federal need-based aid without unduly harming low-income students and the institutions that serve them.

**TO WHAT EXTENT DOES AN INSTITUTION'S
GRADUATION RATE DEPEND UPON HOW MANY
AND WHAT TYPE OF PELL RECIPIENTS IT SERVES?**

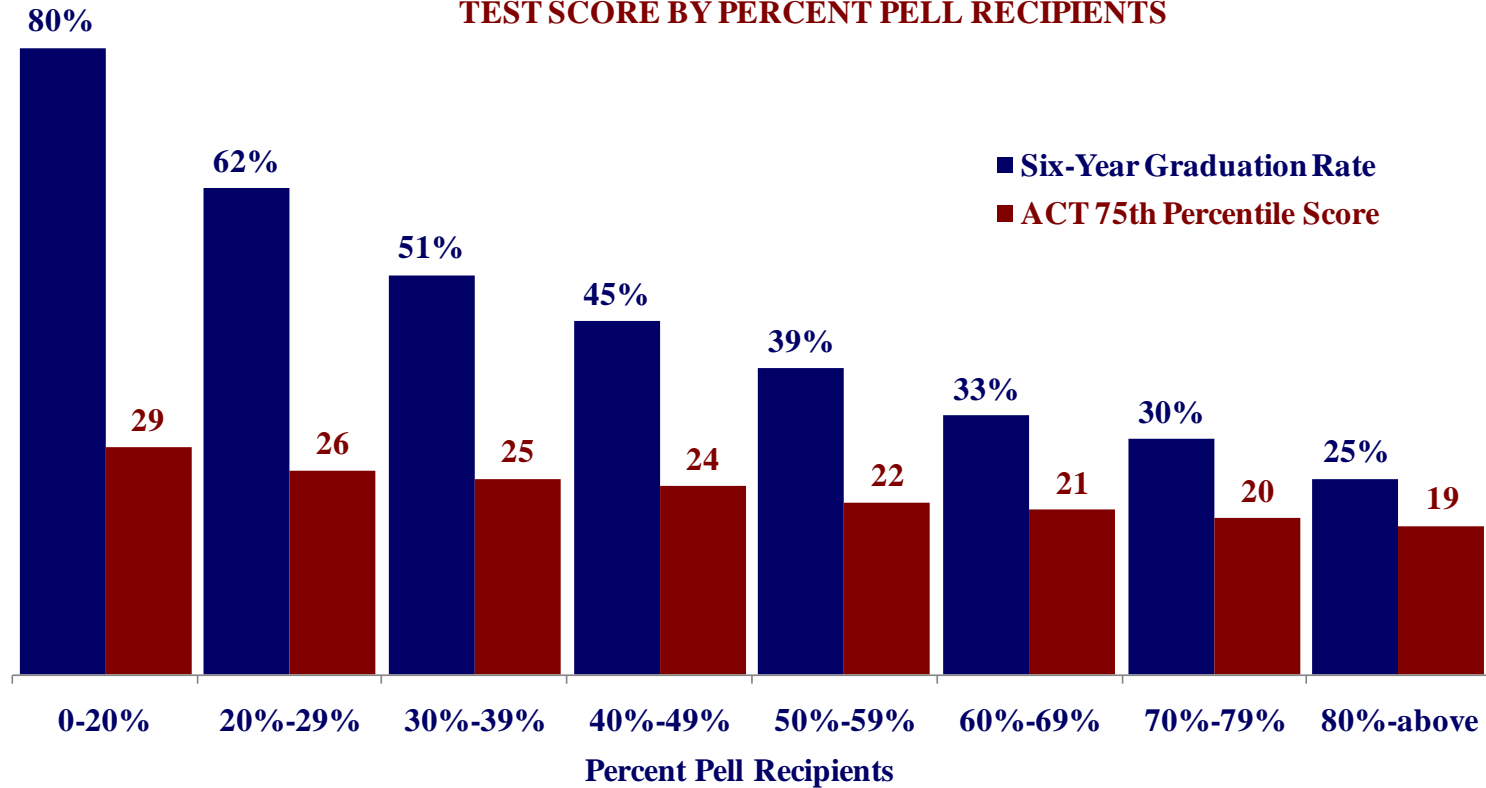
**TO WHAT EXTENT DOES THE PERCENT OF FIRST-TIME
STUDENTS WHO ARE PELL RECIPIENTS DETERMINE**

- **ACT 75TH PERCENTILE COMPOSITE SCORE**

AND

- **SIX-YEAR GRADUATION RATE?**

FIGURE 1: SIX-YEAR GRADUATION RATE AND TEST SCORE BY PERCENT PELL RECIPIENTS



- Using IPEDS data, **Figure 1** shows the inverse relationship between average institutional six-year graduation rate and ACT test score by the percentage of first-time students who are Pell recipients.
 - On the far left, institutions with **up to 20%** Pell recipients have an average six-year graduation rate of **80%** and an average ACT score of **29**.
 - On the far right, institutions with **80% or more** Pell recipients have an average six-year graduation rate of only **25%** and an average ACT score of only **19**.
- This suggests that the more an institution defines its mission as serving the Pell recipient population, the more difficult it will be to maintain and increase its 6-year graduation rate.

**WHICH FACTORS (INPUTS) APPEAR TO EXPLAIN
AN INSTITUTION'S SIX-YEAR GRADUATION RATE?**

- **WHICH FACTORS APPEAR TO BE MOST IMPORTANT?**
- **HOW MUCH VARIATION DO THEY APPEAR TO EXPLAIN?**
- **WHICH FACTORS APPEAR NOT TO BE IMPORTANT?**

TABLE 1: EXPLORING THE DETERMINANTS OF 6-YEAR GRADUATION RATES

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Percent Pell Recipients	-0.774***	0.145***	-0.162***	-0.178***	-0.205***	-0.203***	-0.227***	-0.225***
ACT 75 th Percentile Composite		4.171***	3.682***	3.097***	2.900***	2.927***	2.751***	2.745***
Percent Part-Time			-0.263***	-0.249***	-0.231***	-0.230***	-0.240***	-0.241***
Institutional Endowment (ln)				1.507***	1.586***	1.223***	1.330***	1.336***
Institutional Control					3.003***	4.472***	5.294***	5.289***
Full-Time Enrollment						0.021***	0.021***	0.023***
Expenditures Per Student							.003	.003
Percent Minority								-0.003
R ²	0.551	0.761	0.791	0.798	0.804	0.806	0.808	0.808
Adjusted R ²	0.551	0.761	0.790	0.797	0.803	0.805	0.807	0.807
Observations	1,334	1,334	1,331	1,277	1,277	1,277	1,231	1,231

Source: Integrated Postsecondary Education Data System (IPEDS) 2011-2012.

* $p < 0:05$. ** $p < 0:01$. *** $p < 0:001$

- **Table 1** shows the results of a step-up regression of six-year graduation rate on various factors.
- “Percent Pell Recipients” explains over half of the variance in graduation rate: ($R^2 = 0.551$).
- When combined with “ACT Composite (75th Percentile),” over $\frac{3}{4}$ of the variation is explained: ($R^2 = 0.761$).
- Adding “Percent Part-Time” and “Endowment (ln)” increases R^2 to **0.798**.
- Adding “Institutional Control” and Full-Time Enrollment increases R^2 : by only .008 (.806 minus .798).
- “Expenditures Per Student” and “Percent Minorities” are not statistically significant.

**USING THE PRECEDING LINEAR REGRESSION MODEL
TO GENERATE PREDICTED SIX-YEAR GRADUATION RATES,**

- **HOW MUCH COULD THOSE RATES DEVIATE FROM ACTUAL RATES?**
- **HOW MUCH COULD PERCEPTIONS OF PERFORMANCE CHANGE?**
 - **HOW MUCH MIGHT “VALUE ADDED” CHANGE RANKINGS?**

TABLE 2: IMPACT OF ADJUSTING 6-YEAR GRADUATION RATES FOR INPUTS

Selected Colleges

College	Actual 6-Year Graduation Rate	Inputs: Student Characteristics and Institutional Constraints						Predicted 6-Year Graduation Rate	Value Added (Actual Minus Predicted Rate)
		Percent Pell Recipients	ACT Composite 75 th Percentile	Percent Part-Time	Institutional		Percent Minority		
					Control	Endowment (ln)			
A	87	6	35	0	Private	21	8	99	-12
B	70	11	31	23	Private	21	9	81	-11
C	68	20	29	6	Public	21	7	75	-7
D	61	23	26	10	Public	20	19	63	-2
E	60	34	27	15	Private	17	5	61	-1
F	58	39	25	12	Public	17	30	52	+6
G	56	41	24	12	Public	15	23	45	+11
H	49	47	20	21	Private	13	16	32	+17
I	42	72	20	37	Public	17	95	23	+19
J	41	76	19	13	Public	14	94	21	+20

Source: Calculated from data in the Integrated Postsecondary Education Data System (IPEDS) 2011-2012.

- **Table 2** employs IPEDS data on 10 selected colleges to show the impact of using the regression equation and factors illustrated in **Table 1** to adjust actual 6-year graduation rate and derive a predicted rate.
- When the predicted six-year graduation rate (second-last column) is subtracted from the actual rate (second column), the difference can be referred to as “value added” (last column).
- The table shows that ordering these 10 institutions by “value added” completely reverses their ranking.
- These examples are merely illustrative; 6-year graduation rate does not decrease monotonically as percent Pell recipients decreases.
- For any given level of percent Pell recipients, 6-year graduation rate varies, depending on other factors.

**IF INSTITUTIONS ARE GROUPED BY
CONTROL AND ENDOWMENT PER STUDENT,**

**WHAT IS THE RELATIONSHIP BETWEEN THE PERCENT
OF FIRST-TIME STUDENTS WHO ARE PELL RECIPIENTS**

AND

- **ACT 75TH PERCENTILE COMPOSITE SCORE**
 - **SIX-YEAR GRADUATION RATE?**

**TABLE 3-A: IMPACT OF SERVING THE PELL POPULATION
ON SIX-YEAR GRADUATION RATE AND TEST SCORE
By Institutional Endowment Per Student
Private Institutions**

Percent of First-Time Freshmen Who Are Pell Recipients	Endowment Per Student (FTE)							
	Highest Quartile (M = \$269,000)		Third Quartile (M = \$35,000)		Second Quartile (M = \$16,000)		Lowest Quartile (M = \$5,000)	
	Average 6-Year Graduation Rate	Average ACT Composite 75 th Percentile	Average 6-Year Graduation Rate	Average ACT Composite 75 th Percentile	Average 6-Year Graduation Rate	Average ACT Composite 75 th Percentile	Average 6-Year Graduation Rate	Average ACT Composite 75 th Percentile
Under 20%	85%	31	77%	28	68%	27	58%	26
20% to 34%	70%	28	64%	27	58%	26	52%	25
35% to 49%	58%	26	51%	25	50%	24	48%	23
50% and over	44%	23	41%	22	38%	21	33%	20

Source: Calculated from data in the Integrated Postsecondary Education Data System (IPEDS).

- **Table 3-A** shows the impact of serving Pell recipients on average 6-year graduation rate and average ACT Composite 75th percentile score at 4-year private colleges, by endowment per student in quartiles.
- As percent Pell recipients rises and endowment per student falls, average 6-year graduation rate falls from **85%** to **33%** and average ACT Composite 75th percentile score falls from **31** to **20**.
 - For colleges in the highest quartile of endowment per student, as percent Pell recipients rises, average 6-year graduation rate falls from **85%** to **44%** and average ACT Composite 75th percentile score falls from **31** to **23**;
 - for those in the lowest quartile, 6-year graduation rate falls from **58%** to **33%** and average ACT Composite 75th percentile score falls from **26** to **20**.

**TABLE 3-B: IMPACT OF SERVING THE PELL POPULATION
ON SIX-YEAR GRADUATION RATE AND TEST SCORE
By Institutional Endowment Per Student
Public Institutions**

Percent of First-Time Freshmen Who Are Pell Recipients	Endowment Per Student (FTE)							
	Highest Quartile (M = \$34,000)		Third Quartile (M = \$6,000)		Second Quartile (M = \$3,000)		Lowest Quartile (M = \$1,000)	
	Average 6-Year Graduation Rate	Average ACT Composite 75 th Percentile	Average 6-Year Graduation Rate	Average ACT Composite 75 th Percentile	Average 6-Year Graduation Rate	Average ACT Composite 75 th Percentile	Average 6-Year Graduation Rate	Average ACT Composite 75 th Percentile
Under 30%	67%	28	61%	26	60%	26	54%	24
30% to 39%	51%	26	49%	25	44%	24	43%	23
40% to 49%	47%	24	37%	23	36%	22	41%	21
50% and over	31%	21	30%	20	29%	20	28%	20

Source: Calculated from data in the Integrated Postsecondary Education Data System (IPEDS).

- **Table 3-B** shows the impact of serving Pell recipients on average 6-year graduation rate and average ACT Composite 75th percentile score at 4-year public colleges, by endowment per student in quartiles.
- As percent Pell recipients rises and endowment per student falls, average 6-year graduation rate falls from **67%** to **28%** and average ACT Composite 75th percentile score falls from **28** to **20**.
 - For colleges in the highest quartile of endowment per student, as percent Pell recipients rises, average 6-year graduation rate falls from **67%** to **31%** and average ACT Composite 75th percentile score falls from **28** to **21**;
 - For those in the lowest quartile, 6-year graduation rate falls from **54%** to **28%** and average ACT Composite 75th percentile score falls from **24** to **20**.

**AMONG THOSE INSTITUTIONS WITH THE
LEAST RESOURCES AND MOST PELL RECIPIENTS,**

WHAT IS THE RELATIONSHIP BETWEEN

- **ACT 75TH PERCENTILE COMPOSITE SCORE**

AND

- **SIX-YEAR GRADUATION RATE?**

TABLE 3-C: IMPACT OF TEST SCORE ON SIX-YEAR GRADUATION RATE OF INSTITUTIONS WITH LOWEST ENDOWMENT AND HIGHEST PERCENTAGE OF PELL RECIPIENTS

Institutional Control	Average 6-Year Graduation Rate if ACT Composite 75 th Percentile Is:			
	23 and above	21-22	19-20	18 and below
Public	34%	32%	27%	23%
Private	44%	39%	30%	19%

Source: Calculated from data in the Integrated Postsecondary Education Data System (IPEDS).

- **Table 3-C** shows the impact on average 6-year graduation rate of ACT Composite 75th percentile score at 4-year public and private colleges with the *lowest* endowment per student and *highest* percent Pell recipients. (Colleges in the lower right hand corner of **Table 3-A and 3-B**.)
 - At 4-year public colleges with the *lowest* endowment per student and *highest* percent Pell recipients, as ACT Composite 75th percentile score decreases from 23 and above to 18 and below, average 6-year graduation rate falls from **34%** to **23%**.
 - At 4-year private colleges with the *lowest* endowment per student and *highest* percent Pell recipients, as ACT Composite 75th percentile score decreases from 23 and above to 18 and below, average 6-year graduation rate falls from **44%** to **19%**.
- The more an institution defines its mission as serving the Pell recipient population, given its endowment per student, the more difficult it will be to maintain and increase its 6-year graduation rate.

CONCLUSIONS

- Using raw graduation rates to condition the award or allocation of federal student aid funds may harm low-income students and undermine intent of need-based aid.
 - The same would be true of raw measures of progress.
- It is necessary to adjust six-year graduation rates based on the inputs of student body characteristics, institutional mission, and constraints, in order to:
 - produce a predicted graduation rate (or measure of academic progress), and
 - calculate “value added.”
- Adjusting actual graduation rate to yield predicted graduation rates and calculating “value-added” dramatically alters perceptions of institutional effectiveness.
- However, even input-adjusted/predicted rates and measures of “value added” may not explain enough of the variation in actual rates because:
 - the models are not very good, and/or
 - the data available do not capture all relevant institutional and student characteristics.
- Selection of institutional peer groups must take into consideration, at a minimum, the factors shown to be significant in explaining variation in six-year graduation rates.

DISCUSSION QUESTIONS

- Are current data and methods adequate to accurately adjust raw measures of institutional performance for inputs?
- Given limitations in modeling student characteristics, institutional mission, and factors beyond institutional control, should such measures be used to support high stakes decisions in the delivery of need-based student aid?
 - In particular, should they be used for zero-sum redistribution of existing Pell or campus-based program funds?
- In competitive grant-awarding competitions, which compare and reward “similar” or “peer” institutions on the basis of differences in graduation rates, should the definition of peer group include factors shown to be significantly related to graduation rate?
 - For example, should colleges with significantly different proportions of Pell recipients, distribution of ACT scores, and endowment per student be included in the same peer group?
- Should colleges serving a large number of Pell recipients be required to implement best practices shown to be effective in improving graduation rates at institutions similar to their own?
- Can such practices be identified and imposed centrally by statistical analysis and formula?
- To what extent are case studies necessary to identify, test, and implement successful approaches?

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