

## Financial Inputs and Graduation Rates: A Preliminary Look at Possible Cause and Effect

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**Research Brief #18**

**Spring 2008**

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### **Brief Overview**

Over the recent past the emphasis upon measurement of higher education has both increased and changed. Public bodies setting policy for higher education and the public in general now demand more information about the effectiveness of higher education in general and at the individual institution in particular.

Presently, measurement is focused on institutional effectiveness or student learning in relationship to the stated outcomes of the institution. In the past, measurement focused almost exclusively upon educational inputs such as revenue, quality of faculty and staff, number of library volumes, etc. Input analysis has all but been abandoned in favor of the current emphasis upon outcomes. This brief shall attempt to determine if a statistically significant relationship exists between selected institutional inputs and a major measure of institutional effectiveness, the undergraduate graduation rate.

### **Methodology**

Fifty-five Four-year 3 institutions in the SREB region were included in this analysis. A linear regression model was used to explore relationships between the selected institutional inputs and the educational output. Data for this study was taken from The National Center for Educational Statistics' Integrated Postsecondary Educational Data System (IPEDS).

The output for this model, or the dependent variable, will be undergraduate graduation rate which will be defined as the percentage of first-time, full-time, bachelor's or equivalent degree-seeking freshmen who earn a bachelor's or equivalent degree from the institution where they originally enrolled within 150% of degree time.

The inputs or independent variables selected for this brief were: tuition and fees per FTE; state appropriations per FTE; local appropriations per FTE ; government grants and contracts per FTE; other core revenues per FTE; instruction expenses per FTE; research expenses per FTE; public service expenses per FTE; academic support expenses per FTE; institutional support expenses per FTE; student services expenses per FTE; other core expenses per FTE.

## Results

A Stepwise Regression was used to look at the relationship between several independent or predictor variables and a dependent or criterion variable. The significant model ( $F(4) = 10.7080$ ,  $P < .05$ ) used to predict graduation rates included: governmental grants and contract per FTE, tuition and fees per FTE, instructional expenses per FTE, and student services expenses per FTE. These variables account for 42.8% of the variation in graduation rates.

The regression equation is as follows:

$$\text{Graduation Rates} = 19.45 + -0.00309(\text{GGC}) + 0.00485(\text{TF}) + 0.00318(\text{IE}) + -0.00848(\text{SSE})$$

Model	Unstandardized Coefficients B	Standardized Coefficients Beta	T	Sig.
(Constant)	19.44948		2.743	<b>.009</b>
Governmental Grants and Contracts per FTE (GGC)	<b>-.00309</b>	<b>-.4376</b>	-3.292	<b>.002</b>
Tuition and Fee per FTE (TF)	<b>.00485</b>	<b>.4765</b>	4.313	<b>.000</b>
Instructional Expenses per FTE (IE)	<b>.00318</b>	<b>.3429</b>	2.919	<b>.005</b>
Student Services Expenses per FTE (SSE)	<b>-.00848</b>	<b>-.2823</b>	-2.176	<b>.035</b>

### Statistics

	GGC	TF	IE	SSE	GR
Mean	\$3,122.07	\$4,566.09	\$5,285.69	\$876.22	41.33%
Std. Deviation	\$1,745.70	\$1,199.77	\$133.22	\$407.60	12.24%

## Conclusions

There is a statistically significant relationship between several of the input variables and graduation rates. Almost 43% of the change in an institutions graduation rate can be explained in this model. Specifically, using this model's regression equation, we can predict the change in the graduation rate bases on a specific change in one or more of the input variables.

Using the standardized beta coefficients for the tuition and fees (TF), if the TF per FTE student increased by one standard deviation (\$1,200), the graduation rate would increase by .477 standard deviations or by 5.8%. Also, if you increase the governmental grants and contracts per FTE (GGC) by one standard deviation (\$1,746), this would decrease the graduation rate by .438 standard deviations or by -5.36%. If you increase the instructional expenditures by FTE (IE) by one standard deviation (\$133), this would increase the graduation rate by .343 standard deviation or by 4.2%. However, the model suggests that an increase in one standard deviation in student services expenditures by FTE (SSE) by (\$408) would decrease the graduation rate by .282 standard deviation or by 3.5%.

According to the results, tuition and fees per FTE has the largest effect on graduation rates followed governmental grants and contracts per FTE.

The negative relationship between an increase in student services expenditures by FTE and graduation rates is interesting and warrants further investigation. What dynamics would have to be in place so that this negative relationship between student services and graduation rates would exist? Not knowing what items make up student service expenditures for each institution will make answering that question difficult.

The relationship between tuition and fees with the graduation rate is an interesting one. In most public higher education institutions the tuition and fees are regulated by legislation. It would not be easy for an institution to increase tuition and fees solely for the purpose of increasing graduation rates. However, the model used in this brief does show that institutions that have a higher tuition and fees base do have a higher graduation rate. The underlying dynamics between tuition and fees and graduation rates needs to be further investigated.

This regression analysis has shown a significant relationship exists between the independent variable and graduation rates among Four-year 3 institutions in the SREB region. Further research is needed to investigate if the same hold true for institutions in Louisiana.