

# Developing Key Performance Indicators for Graduate Student Degree Progress

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**Abstract:** Few retention studies focus on graduate student success, resulting in a lack of common success metrics to evaluate graduate student programs. To develop good graduate student success metrics, one must define what success means for graduate students. A focus solely on retention rates, degrees awarded, and enrollment counts is insufficient to assess graduate program performance. The concept of degree progress augments the use of these traditional measures. Moreover, graduate programs differ in terms of credit hour requirements and time to degree, resulting in a no one size fits all approach to compare performance. The goal of this tutorial is to describe a practical approach to develop key performance indicators (KPIs) for degree progress. Participants will learn how to develop KPIs using business operations metrics for measuring productivity and efficiency. The presenter will highlight how these KPIs are useable to improve graduate student retention at their own institution.

*keywords: graduate student success, degree progress, time to degree, key performance indicator, student involvement*

## Introduction

Few studies have focused on graduate student success, resulting in a lack of common success metrics to evaluate graduate student programs. To develop good indicators for graduate success, one must define what success means for graduate students. Many studies focus on retention rather than degree completion and use continued enrollment as a key measure. The concept of degree progress replaces the idea of retention and better represents success (Girves & Wemmerus, 1988). Degree progress measures performance by tracking the courses taken and degree earned.

Factors influencing degree progress may include graduate degree policies and requirements unique to each institution and degree program. For example, each program has different credits taken per semester and various program lengths to complete degree requirements. Graduate student credit load, defined as credit hours taken per semester by graduate students, serves as a good indicator of student involvement, because full time students would be more likely to have success toward degree completion due to a lack of external distraction. Grades also serve as a major factor for degree progress in master's programs, where higher grades are correlated with higher retention. Grades are less of a predictor for doctoral progress (Girves & Wemmerus, 1988).

A good way to develop metrics for degree progress involves using measurement practices from business operations. For example, a key performance indicator (KPI) is a metric measuring how well an organization performs an activity that is critical to the success of the organization (Kerzner, 2013). To define success, graduate programs must have students complete the course of instruction. So the output measure would be degrees awarded, but the KPI would be a measure of degree progress. From business operations, two KPIs would be work in progress and cycle time (Leachman, 2015). Work in progress (WIP) refers to manufacturing lots in the factory not yet completed. Transposed to the graduate program process, WIP would be the enrollment in the graduate program, whereby each student represents one lot. Cycle time refers to the elapsed time it takes for each lot to be completed. Transposed, cycle time would be the amount of time elapsed from matriculation to graduation for each student.

## Methodology

The purpose of this tutorial is to present key performance indicators to be used for assessment of graduate student programs at any institution. This tutorial provides definitions of KPIs and explains how to calculate the KPIs for any graduate program. In addition, it includes a conceptual model that depicts the relationship among relevant KPIs. Using notional data, example calculations of KPIs are presented as well as how those metrics can help make decisions to improve program effectiveness.

### Target Measures for Graduate Student Success

Each graduate program contains unique characteristics in terms of content delivery, but also in terms of the number of credit hours required and the length of program. The first step in developing useful KPIs for a graduate program involves identifying the target measures, explained as follows:

#### *Degree Requirements (DR)*

The number of credit hours required to earn a degree in selected program.

#### *Target enrollment (TENR)*

This desired number of students to be enrolled in a semester. Often this number is notional, whereby department chairs and program directors would have better visibility on the actual enrollment targets.

#### *Target credit hour load (TCH)*

This measure represents the approximate number of credit hours a student would take per semester based on program design. Some programs merely state that normal degree completion might occur within a certain time frame (years or semesters). For those programs, the target credit hour load per semester can be calculated. Also, some programs may utilize summer semesters to augment the total credit hours taken per year in order to attain targeted time to degree measures.

#### *Target time to degree (TTTD)*

Years it should take to complete the program. This measure is based on the program's website, when listed, or estimated by dividing the degree requirements by the annual target credit hour load.

#### *Target degrees awarded (TDEG)*

The annual number of degrees awarded in each program is calculated by dividing the target enrollment by the target time to degree. The number of degrees awarded annually by program is function of enrollment and time to degree.

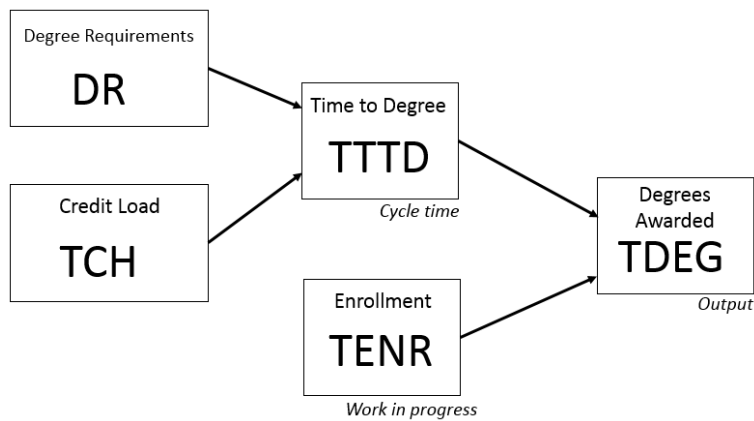


Figure 1. Conceptual model of key performance indicators for graduate student success.

Figure 1 depicts the relationships among key variables and shows that the time to degree (cycle time) is a function of the credit load and degree requirements. Also, degrees awarded (output) is a function of time to degree and enrollment (WIP).

Table 1 depicts a notional set of target metrics based on the degree requirements for a sample of graduate programs. According to Table 1, a Master's in Applied Sociology has a target of 9 credit hours taken per semester to complete a degree requirement of 36 credit hours with a time to degree of 2.0 years.

Table 1: Target metrics based on graduate program degree requirements (notional)

Program	Degree	DR	TENR	TCH	TTTD	TDEG
Applied Sociology	MA	36	14	9	2.0	7
Business Administration	MBA	48	300	8	3.0	100
Rehabilitation Counseling	MS	60	30	9	3.3	9
Applied Physics	PhD	48	8	9	2.7	3
Public Policy	PhD	67	52	9	3.7	14
Education	EdD	65	30	9	3.6	8

Figure 1 shows that the target number of degrees awarded in a program is a function of the target time to degree and the target enrollment. For example, a Master's in Business Administration program has a target enrollment of 300 divided by the target time to degree of 3.0 years, resulting in an average of 100 degrees awarded each year (Table 1).

### Actual Measures for Graduate Student Success

Table 2 depicts a notional set of actual measures based on degrees awarded in the previous academic year for a sample of graduate programs. Variables are explained as follows:

*Actual degrees awarded per year (ADEG)*

The number of degrees awarded in program during the previous academic year.

*Actual time to degree (ATTD)*

Average number of years between the admit term and the completion term.

*Actual credit hours earned upon degree completion (ACH)*

Average final credit hours accumulated upon degree completion.

*Actual credit hour load (ALOAD)*

Calculated by dividing one-half of the actual credit hours earned by the actual time to degree. This measure represents the approximate mean number of credit hours a graduate student had taken per semester to complete degree requirements in the previous academic year.

*Mean (GPA) and standard deviation (SD GPA) for grade point average*

The final GPA with standard deviation for students that completed during the previous academic year.

According to Table 2, a Doctor of Education (EdD) program had an average time to degree of 7.4 years suggesting the average credit hour load for each student as 4.5 credit hours per semester. It took EdD students about twice as long as the target time to degree, because they were taking half the target credit load. These KPIs might explain why the actual degrees awarded were half the target degree award measure, despite maintaining the target enrollment for the program.

Table 2: Actual measures based on degrees awarded in previous academic year (notional)

Program	Degree	ADEG	ATTD	ACH	ALOAD	GPA	SD GPA
Applied Sociology	MA	11	1.8	38.3	10.6	3.53	0.28
Business Administration	MBA	145	2.2	41.8	9.5	3.71	0.17
Rehabilitation Counseling	MS	11	2.5	60.4	12.1	3.78	0.25
Applied Physics	PhD	5	5.1	55.6	5.5	3.78	0.18
Public Policy	PhD	7	4.4	71.0	8.1	3.67	0.17
Education	EdD	4	7.4	66.6	4.5	3.73	0.17

While the use of degree progress as a measure of graduate student success is helpful in comparing programs, an initial use of degree progress has proven helpful as an alternate method for reporting graduate program outcomes as part of accreditation requirements. For example, at the University of Massachusetts Boston, the College of Education and Human Development needed to publish graduation rates on their website as part of their accreditation process, as required by the Council for the Accreditation of Educator Preparation (CAEP). However, faculty were reluctant to publish graduation rates, because they felt there are too many “other factors” that account for slow pace toward graduation and that graduation rates were not a good indication of program quality, where slow pace could be perceived as attrition. Instead, the time to degree measure has served as a better measure of program outcomes since it only considers those students that successfully earned their degree.

### Projection Measures for Graduate Student Success

Table 3 depicts a notional set of projection measures based on actual enrollment totals for respective graduate programs during the current fall semester. Variables are explained as follows:

#### *Actual enrollment (ENR)*

The number of students enrolled in graduate program during the current semester.

#### *Credit hour load (CH)*

The mean of credit hours taken by graduate students for a respective program during the current semester.

#### *Projected time to degree (PTTD)*

Calculated as the actual credit hours (ACH) accumulated by previous academic year graduates divided by the credit hour load (CH) during the current semester.

#### *Projected annual degrees awarded (PDEG)*

Calculated by divided the actual enrollment by projected time to degree.

According to Table 3, a Master’s in Rehabilitation Counseling program has an average projected 9.4 degrees awarded annually based on the current enrollment (34) divided by the projected time to degree (3.6). The projected time to degree of 3.6 years is calculated by taking the actual average credit hours accumulated (60.4) for recent graduates divided by the average credit load for currently enrolled students (8.4 credit hours per semester or 16.8 credit hours per year).

Table 3: *Key performance indicators based on current enrollment data (notional)*

Program	Degree	ENR	CH	PTTD	PDEG
Applied Sociology	MA	15	8.8	2.2	6.8
Business Administration	MBA	273	6.9	3.0	91.0
Rehabilitation Counseling	MS	34	8.4	3.6	9.4
Applied Physics	PhD	6	7.0	4.0	1.5
Public Policy	PhD	47	5.0	7.1	6.6
Education	EdD	29	3.1	11.1	2.6

Overall, these metrics serve as good benchmark indicators to augment assessment efforts for graduate programs, allowing for internal comparison of subgroups of students. For example, the academic performance of international graduate students can be compared to these benchmark indicators for tracking student success within a specific graduate program. Without understanding the gaps between student groups, institutional leaders would find it difficult to identify and implement intervention initiatives to improve graduate student success.

## Conclusion

Time to degree is a KPI for graduate student success. Another KPI for tracking graduate student degree progress involves the credit hours taken per semester. This credit hour load for a student can project the time to degree as well as provide an indication of student involvement in their degree program, assuming that student involvement is a predictor of student success, especially for doctoral programs. As a secondary indicator, grades can be used as a predictor of student success for master's programs.

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