Using survival analysis to understand the graduation rate in the University of Baguio

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Abstract

This study was undertaken to help address the University of Baguio's concern about graduation rate, which is also a worldwide apprehension: The number of students who enrolled is not the same as the number of students who graduate within the given period of the school. The research used the descriptive correlational research design with the degree and direction of the relationship between graduation time and first-year, first-semester General Weighted Average, and academic program enrolled. The study also utilized the ex-post facto research design. Data were mined from the University of Baguio database through the Registrar's Office with the Vice President of Academic Affairs' authorization. Data gathered include only pupils/students who enrolled as a first-year in the school year 2011-2012 and who

finished at least one year (for elementary and high school students) or one semester (for college and graduate school students). It was found out that students enrolled in different programs, namely elementary, secondary, tertiary, are more likely to graduate from their chosen course. Second, the graduating probability for the tertiary level has its peak at the end of the 12th semester or six years. Third, only the School of Dentistry has a more than fifty percent graduating rate from its first-course enrollees. Fourth, more than fifty percent of tertiary students who graduated from their first-choice program have a General Weighted Average level, which is excellent, very good, or good. Lastly, the earliest year that a student successfully finished the master's and doctorate is in the fifth and seventh semester, respectively.

Keywords: Graduation rate, elementary, high school, tertiary, graduate school, general weighted average, academic program

Introduction

The importance of academic success cannot be overstated as students with higher education degrees are more likely to be employed than those with no academic success (National Center for Educational Statistics, 2018). Furthermore, students who succeed academically become more sustainable in their jobs. They are also more expected to have health insurance, more confident about their income, more active, helpful and healthy, and safer from illegal activities (National Alliance of Business, Inc. cited by Essays UK in 2018).

Several publications were done, and researches were conducted by organizations, individuals, and some schools to support this claim. The United Nations (UN) published in their article on Quality Education: Why it Matters? that education enables socioeconomic mobility upward and is a

key to escaping poverty (UN, 2019). The organization believes that poverty must be ended with strategies that build economic growth and address a range of social needs, including education. Their list of Millennium Development Goals and Beyond 2015 includes the achievement of primary education. Based on its data, the percentage of enrollees increased from 83% in 2000 to 91% in 2015 in primary education in developing regions (UN, 2019).

However, the global concern about the rate of graduation is rising. The number of enrollees is not equal to the number of graduates within the school's given duration. According to the data available from The World Bank for the year 2018, the international primary grade and lower secondary level completion rates are 89.589% and 75.628%, respectively (The World Bank, 2019). Also, Finland, which has the highest rate of high school graduation, has 99% in 2017, as cited by the National Center on Education and the Economy from the record of the Organisation for Economic and Co-Operation and Development or OECD (NCEE, 2019). This non-100% completion rate is also true for tertiary and postgraduate levels. Based on the OECD (2019) record, Russia, which has the highest level of tertiary graduation, has only 96.1% in 2017, followed by Australia with a rate of 78.5%. Furthermore, based on the Education at a Glance 2019 OECD as cited by NCEE (2019), only 39%, on average, graduate within the tertiary level program's theoretical duration.

This concern about the graduation rate is also true for the Philippines. In 2018, it had 91.87% and 80.97% completion rates to the final grade in primary school and lower secondary level, respectively, based on the United Nations Educational, Scientific, and Cultural Education (UNESCO, 2019). Based on the latest data available in the Department of Education-Research and Statistics Division in the school year 2012-2013, the completion rate for the elementary and secondary levels is 73.67% and 74.81%, respectively (TeacherPH, 2019). During the 15th Congress in 2012, the Senate Bill 3369 introduced by Sen. Edgardo J. Angara had an explanatory note that the dropout rate in the Philippines reached an alarming rate of 83.7 % based

on Commission on Higher Education (CHED) data on Higher Education Institutions (HEIs) enrolees from 2001-2012 (Tanhueco-Tumapon, 2017). According to CHED's latest data for SY2015-16, the Cordillera Administrative Region (CAR) has produced 18,811 graduates out of 645,973. Concerning the Millennium Development Goals set by the UN, the region has not attained its primary education goal for 2015. The region was only able to have an 86.4% completion rate (PSA, 2019).

To ensure quality tertiary education in the Philippines, CHED introduced the Institutional Sustainability Assessment Self-Evaluation Document (ISA SED), an internal quality assurance (IQA) tool for Philippine HEIs. Under the ISA essential result assessment 4 - support of students (KRA 4), the first criterion is recruitment, admission, and academic support with possible outcomes measured in completion rate (CHED, 2017).

In Baguio City, the University of Baguio (UB) has committed itself for the 70 years since its foundation to provide balanced quality education in three areas: academic excellence, social skills, and ethical values (University of Baguio, 2019). These core values are observed about student academic success as graduates become eligible professionals.

Theoretical/Conceptual Framework

As the goal of this study, the completion rate is believed necessary for each program, school, and university to develop the appropriate interventions and institutional improvement. Student success can – and should – serve as a core part of the feedback loop for universities and programs. The study focuses on the completion rate since there are no existing data to date.

This research applied survival analysis, also called historical analysis, to analyze the time from the first-time enrolment to the time that a pupil completes his primary education, a high school student completes his secondary education, and a tertiary/graduate student will finish a degree at UB and assess the influence of enrolled programs and first-year first-semester

GPA to time-to-completion. Identifying the occurrence of critical events in education, such as graduation, along with explanatory variables, could help college administrators and faculty implement intervention strategies to ensure student success.

The research's primary purpose is to do a survival analysis of elementary pupils, secondary, college, and graduate school level students enrolled in the University of Baguio in SY2011-2012. Specifically, this study sought to answer the following:

1. When are students more likely to graduate from a program?

2. Are there significant differences in the graduating and non-graduating rates among pupils/students with different characteristics, particularly groups based on enrolled program and first-year first-semester GWA?

Methodology

Research Design

This study used a quantitative method. Specifically, it utilized the descriptive correlational research design. The degree and direction of the relationship between graduation time and contributory factors such as first-year first-semester GWA and program enrolled were determined. A mathematical model for the relationships between the variability of graduation time and the contributory factors was established. It also used the ex-post facto research design.

Population of the study

The study population consisted of all or a total enumeration of the elementary pupils, secondary, college, and graduate school level students who have enrolled in UB who finished at least one semester in their first year of study. A retrospective cohort was obtained from the population. Specifically, it comprised all first-time, first-year elementary pupils, secondary, college, and graduate school students at the University of Baguio who finished at

least one semester during their first year of study in SY2011-2012. All the rest who do not meet the criteria mentioned above were excluded.

Data Gathering Tool

The registration method was used in data collection. Data were mined from the university database through the Office of the Registrar. Only pupils/ students who enrolled as a first-year in the school year 2011-2012 and who finished at least one year (for elementary and high school students) or one semester (for college and graduate school students) were included in the data mining.

Data Gathering Procedure

Permission was sought from the Vice President for Academic Affairs (VPAA) before mining the University Registrar data. The collected data on first-semester GWA and the program of study was summarized first. The enrollment data and students' graduation time from 2011 to 2018 were used to summarize censored and uncensored observations using life-table analysis.

Treatment of Data

This study applied survival analysis on enrolment and graduation data. The tool generated life-tables. The life-table is the most commonly used and most straightforward way of representing estimates of the sample's survival times (Hoffman, 2015). The life-table estimates are computed by observing the numbers of censored and uncensored data that fall into each time interval specified in the analysis. Censoring occurs when an individual does not experience the event of interest (Laake & Fagerland, 2015), in this case, graduation from his/her program at the time of the study. A censored observation is a pupil/student who is either lost from the university, transferred/shifted to another program, graduated from a degree different from his original enrolled degree, or still attending his program at the end of the study. They were categorized under "withdrawn" in this research.

The students in the primary and secondary levels were grouped based on their

GWA. They were grouped according to the scale provided by the Department of Education (DepEd). On the one hand, students in the tertiary level and the graduate school based on their GWA were grouped according to the interpretation relative to other colleges and universities' grading system and other countries (Scholaro, 2020). Students were grouped into five groups: excellent, very good, good, satisfactory, passed, and failed.

The log-rank or Mantel-Haenzel test was supposed to be used to test whether the non-graduation/graduation probability of students in two or more groups is significantly different (Laake & Fagerland, 2015). It is similar to the (chi-squared) test for association. Its null hypothesis states that the different groups' non-graduation probability is the same, or the groups' graduation probability is the same. The log-rank test statistic compares the observed with the expected number of graduates and has an asymptotic -distribution. The degree of freedom is, which is the number of groups minus 1. Students' graduation times differentiated according to first-year first-semester/school year GWA were tested for homogeneity using the log-rank test. However, since all persisting students from several programs graduated from their program at the end of the year 2018, differences in the graduating and non-graduating rates cannot be generated using the log-rank test. This is because the log-rank test requires several students who did not yet graduate by the cut-off of this study, which is 2018. Thus, whether there are significant differences in students' graduating times according to the program and first-year/first semester, GWA cannot be determined.

The Statistical Package for the Social Sciences (SPSS version 12) software was used for all the study analyses.

Ethical Considerations

The data needed were mined from the Office of the Registrar's database after permission from the VPAA was sought. Under the Data Privacy Act of 2012, collected data were used for this study's objectives, and no specific names of students were mentioned. The obtained data were subjected to

the statistical tools appropriate for researches on survival analysis. Since data mining is the appropriate way to investigate using survival analysis, ethical considerations concerning non-coercion, informed consent, voluntary participation, voluntary withdrawal, suffering any harm, conflict of interest, and spending resources are not applicable. This study is not a duplication of a previous study in UB because, as far as the researchers are concerned, there was no research yet of this type done in UB. This study is necessary for UB to answer the Institutional Sustainability Assessment (ISA) of CHED in CMO 46, series of 2012. The results shall be disseminated to the academic community and the various heads concerned for decision-making purposes through publication and research presentation, highlighting this study's key finding.

Results and Discussion

To gain a deeper understanding of the overall picture of the students enrolled in the school year 2011-2012 under the different programs of UB, the collected data of the students were first cross-tabulated by program, first-year first-semester GWA versus graduation status. Pupils/Students who were either lost from the program, shifted to another program, or still attending school after the end date of the study were labeled 'withdrawn.' Those who finished their program were labeled 'graduates".

Graduation Rate for the Elementary Level

The data shows that the school's completion rate for the UB elementary pupils who enrolled and finished their elementary education is 60%, which implies that some parents transfer their children to other schools after enrolling in the UB elementary school. Another implication is that some pupils cannot cope with the school's educational demands because more than 50% of those with GWA of 84% and below did not graduate. The UB completion rate of 60% is lower than the Philippines' completion rate of 91.87% in 2018 (UNESCO, 2019). The survival rate in private elementary

schools in the Philippines is 88.56% (PDP-NEDA, 2017). Moreover, the Cordillera Administrative Region's target completion rate for 2015 was at 86.4% (PSA, 2019), and the Baguio City 2018 completion rate for both public and private elementary schools pegged at 81.57% (Baguio, 2018). The lower completion rate confirms Duze's (2012) study that some of the reasons for attrition in private elementary schools are children's stubbornness.

Graduation Rates for the Junior High School Level

More than 50% of the total first-year junior high school students in 2011 stayed and graduated from the program as of 2018. Comparing the graduated versus the withdrawn, more than 50% of first-year high school enrollees who graduated were from the group of students with "excellent" and "very satisfactory" first-year GWA. This is another evidence that academic achievers were more likely to graduate on time. This finding is corroborated by the study of Reardon, Melvin, McClain, Peterson, and Bowman (2015), where the outcome suggested that the GPA is one of the factors predicting graduation rates.

The 57.5% result of the junior high school students vis-a-vis the 2018 Philippine completion rate of 80.97% (UNESCO, 2019) shows that the completion rate of those enrolled in the UB secondary schooling has a lower completion rate. The lower completion rate for the UB high school can be due to some factors, like students dropping out or transferring to another school, corroborated by Atwell, Balfanz, Bridgeland, and Ingram (2019).

Considering the science junior high school, most of the program's graduates were students with excellent and very satisfactory GWA level (85% and up), while less than 50% comprised of students who had satisfactory GWA level. It is noteworthy that no students in the science junior high school have below satisfactory (below 80%) GWA. The finding is another evidence that students doing very well in school are more likely to graduate on time. This also implies that there are still those who could not graduate because

they either dropped or transferred within the four-year duration. This result confirms what Mourad and Hong (2008) concluded that GPA takes the most prominent effect on educational outcomes, and one of them is graduation.

Comparing the UB junior science high school graduation rate of 82.21% to the 2018 Philippine completion rate of 80.97% (UNESCO, 2019), it shows that the completion rate of those who stayed and finished their secondary schooling in the UB junior science high school is higher than the national rate. However, it is lower than the private junior high schools' survival rate of 97.46 percent in Baguio City (Baguio City, 2018).

Graduation Rates for the Tertiary level

In general, the median number of semesters that students graduate from their enrolled program is 12 semesters or six years; that is, 50% of the students finish their degree within six years, while the remaining percentage is still enrolled in the program. The graduation probability is zero from the first to the fourth semesters when no student can yet graduate. After four semesters, there was a 1% probability that students graduated from their chosen programs. However, these students are those who enrolled in one-year or two-year courses which are offered by some UB schools. The highest probability that a student graduates occurred after 12 semesters; that is, 41%. This probability is followed by 23%, which is after eight semesters. It is observed that after 18 semesters or nine years, there are still students who have not graduated from their enrolled program. This implies that students either shifted to other UB courses, transferred to other universities, or dropped out. These prove that there are school or non-school factors which influence the graduation times of students (Chatterjee, Marachi, Natekar, Rai & Yeung, 2018; Millea, Wills, Elder & Molina, 2018; Perkins-Holtsclaw, 2018; Manyanga, Sithole, & Hanson, 2017; Felder & Hilton, 2016).

More than half of the "excellent," "very good," and "good" students based on their GWA for the first year first semester stayed and graduated from

the program. It is also noticeable that only a small percentage of "Failed" students stay and graduate from their chosen program. This only means that college students who are academically achieving have higher chances of graduating from their chosen course at an earlier time. This finding corroborates what Gershenfeld, Ward Hood, and Zhan (2016) discovered that first-semester GPA is a statistically significant reason tertiary students graduate within a given time frame.

The data for the completion rate of the tertiary level shows that it is only 31.40%. This rate is below the graduation rate for tertiary of 39% given by the Education at a Glance by OECD as cited by NCEE (2019) as the average percentage of those who graduate within the tertiary level program's theoretical duration.

A. School of Business Administration and Accountancy (SBAA). Out of the total enrollees of SBAA for the school year, less than one-third graduated on time. This implies that most SBAA first-year students in 2011 either shifted to other UB courses, transferred to other schools or dropped out as of the 2018 cut-off. The SBAA graduation rate is lower than the UB overall graduation rate, which is 31.40%. The finding is lower than the overall 39%, which OECD (2019) recorded of tertiary graduates. It is also lower by field compared to the OECD (2019) data on Russia (the country with the highest graduation rate in 2017), which is 31.3% for business and Australia (the second-highest in graduation rate in 2017), 33.4% for business, respectively.

According to the GWA level, all of the "excellent" SBAA students, more than half of the "very good" students, and less than one-third of the "good," "satisfactory," "passed," and "Failed" students graduated. Only around 2% of students with "Failed" GWA level graduated. The implication is that excellent and very good students are more than 50% likely to graduate from their chosen courses. The findings corroborate what Yue and Fu (2016) established that the most influential predictor of completion of a college degree was the academic performance in terms of GPA.

The median number of semesters that students graduate from their enrolled program of SBAA is 13 semesters or 6.5 years. According to the collected data, 50% of students enrolled in the BSAC and BSBA programs finish their degrees in 6.5 years. The graduation probability is zero from the first to the seventh semester when no student can yet graduate. The earliest probability of graduation occurs in the 8th semester (21%), followed by the 11th semester (9%), totaling to 30% probability. It can be seen that in the 16th semester onwards, there is zero probability of graduation, and remaining students tend to withdraw from the programs. This implies that students can graduate in four years for the BSBA and five years for BSAC. Another implication is that more than 50% of SBAA students finish their courses longer than the expected years of four (BSBA) or five years (BSA).

B. School of Criminal Justice and Public Safety (SCJPS). The SCJPS has 233 enrolled students, and only around one-third remained and graduated from the program. This implies that SCJPS students either shift to other courses, transfer to other universities, or drop out. The SCJPS rate is higher than the UB overall for tertiary, which is 31.40%. However, this is more than triple if compared to the OECD (2019) record of tertiary graduates by field. Russia has the highest tertiary graduation rate for 2017, which has 11.6% for social sciences. The SCJPS rate is almost five times compared to Australia (which has the second-highest tertiary graduation rate in 2017), 7.0% for social sciences.

Most of the "very good" and "good" students stayed and graduated from the program. There are no "excellent" students who took the program. Furthermore, only around 3% of the "Failed" students could pursue the program despite the absence of excellent students enrolled. More than two-thirds of the students who have 88% and above first-semester GWA graduated. This implies that those who have higher GWA persisted and graduated. This finding agreed with Gershenfeld, Ward Hood, and Zhan (2016) found that first-semester GPA is a statistically significant factor in explaining why college students graduate their chosen course.

Most SCJPS students graduate in the 12th semester with a 40% probability. The median number of semesters students graduate from their enrolled program of SCJPS is 12 semesters or six years. This means that half of the BSCRIM students finish their degree within six years. The earliest probability of graduation occurs in the 7th until the 8th semester, totaling 36%. This implies that one-third of the SCJPS students could graduate on time, which is four years. This finding corroborates the SCJPS data that one-third of their students could finish their course as of 2018.

C. School of Dentistry (SD). Out of 150 enrolees, SD has more than 50% of them stayed and graduated from the program. This implies that SD students persist in their studies to finish their chosen course. The rate is higher than the UB overall for tertiary, which is 31.40%. This graduation rate is eight times higher than the OECD (2019) record of tertiary graduates by field, compared to Russia, which has the highest tertiary graduation rate for 2017. It is noted that Russia has 6.8% only for health; and three times higher than that of Australia, the second-highest holder of tertiary graduation rate in 2017 for its 18.3% for health.

It can be gleaned that more than two-thirds of those with a GPA of 88 and up in their first year's first semester could graduate with their degree. This finding implies that academic achievers have better chances of finishing their chosen course. This confirms what Gershenfeld, Ward Hood, and Zhan (2016) culled from their study that first-semester GPA is a statistically significant factor in explaining college students' graduation rate.

Most students graduated in the 12th semester onwards. Moreover, the median number of semesters for SD students to graduate is 15 or 7.5 years, with a 16% probability. This implies that 50% of the SD students graduate within 7.5 years, while others take longer until nine years. This finding is supported by the more than 50% graduation rate of SD.

D. School of Engineering and Architecture (SEA). From 219 SEA enrolees, less than 20% of them stayed and graduated from the program.

This implies that of the total SEA freshmen in 2011, only 15 out of every 100 graduated in 2018. This rate is lower than the UB overall for tertiary, which is 31.40%. It also shows that less than 50% of the students of each specific program stayed and graduated. It is evident that the highest graduation rate was that of the BSESE and that no BSECE students graduated as of the cut-off of this research, which is 2018. The overall is lower than that of OECD (2019) record of tertiary graduates by the field for Russia, which has the overall highest tertiary graduation rate for 2017, which is 22.6% for engineering; but higher than Australia (which has the second-highest tertiary graduation rate overall), for its 8.3% for engineering.

The "excellent" student is one of those less than 20% of the students who stayed and graduated from their programs. Around 50% of the "very good" and "good" students finished their programs. The implication of this is that those who have 88% and above GWA have higher chances of finishing their chosen course on time than the other students. This confirms what Reardon, Melvin, McClain, Peterson, and Bowman (2015), suggested based on their research results that the GPA is a factor predicting graduation rates.

The median number of semesters for the students of SEA to graduate is 15 semesters or 7.5 years. Most students graduate in the 12th semester until the 16th with a 38% probability of graduation. This means that within 7.5 years, 50% of the SEA students graduate. This implies that those who were able to graduate have high GWA. This corroborates what Gershenfeld, Ward Hood, and Zhan (2016) culled from their study that first-semester GPA is a statistically significant factor in explaining college students' graduation rate.

E. School of Liberal Arts and Human Sciences (SLAHS). The total number of enrollees for SLAHS is 120, and only around 42% stayed and graduated from their chosen programs. This implies that for every ten freshmen in 2011 who enrolled, only four graduated as of 2018. This is higher than the UB overall for tertiary, which is 31.40%. The overall rate is almost four times more than the 11.6% for social sciences recorded by OECD (2019)

for Russia, which has the highest overall tertiary graduation rate for 2017; and almost six times more than the 7.0% for social sciences of Australia, which has the second-highest overall tertiary graduation rate in 2017.

According to GWA, all of the "very good" and most "good" students stayed and graduated from their chosen programs. This implies that those with GWA of at least 88 have more than a 50% chance of finishing their chosen program. These findings agree with Gershenfeld, Ward Hood, and Zhan (2016) found that first-semester GPA is a statistically significant factor in explaining why college students do not graduate within the 6-year time frame.

The median number of semesters that the students graduate is 9 or 4.5 years. Half of the students graduated within 4.5 years. Most students graduate in the 8th semester with a probability of 78%. The other took a long time and may even reach 7 to 8 years. However, by the 15th and 16th semester, the students tend to withdraw from their chosen program. These imply and support the findings in those SLAHS students who have higher first semester the first year GWA has higher chances of graduating earlier their courses.

F. School of Information Technology (SIT). SIT has a total enrollment of 278 in 2011. Out of this, only 14% stayed and graduated from their chosen programs in 2018. More than 80% have withdrawn from the programs. This implies that only a few could finish their chosen course, and the rest of the students shifted, transferred, or dropped.

According to GWA, only around 50% to 75% of the "very good" and "good" students could finish their chosen programs. This means that SIT students who have 88% and up GWA have a higher percentage of finishing their chosen courses. This result confirms the study of Reardon, Melvin, McClain, Peterson, and Bowman (2015), which suggested that the GPA predicts graduation rates.

The median number of semesters for students to graduate from the school's

programs is 13 semesters or 6.5 years. This means that half of the SIT students graduate within 6.5 years. The finding supports this that those who graduate are those who have higher GWA.

G. School of International Hospitality and Tourism Management (SIHTM). The school has more than 800 enrollees, and around 40% of them stayed and graduated from their chosen program. This implies that 4 out of 10 finish their chosen course. This is higher than the UB overall for tertiary, which is 31.40%. This is higher than the 31.3% for business of Russia, the country which has the highest overall tertiary graduation rate for 2017 based on the OECD (2019) record of tertiary graduates; and 33.4% for business of Australia, the country with the second-highest overall tertiary graduation rate in the same OECD (2019) record.

More than 50% of "excellent," "good," and "very good" students were those who pursued and finished their chosen program. This implies more than a 50% chance of finishing for SIHTM students who have 82% and up the first-semester first-year GWA. This corroborates what Reardon, Melvin, McClain, Peterson, and Bowman (2015), found out in their research that the GPA is a factor predicting graduation rates.

The median number of semesters for the students of SIHTM to graduate is 11 semesters or 5.5 years. This means that half of the freshmen who entered in 2011 graduate after 11 semesters or 5.5 years, and the other half take a longer time to graduate until the 18th semester or 9th year.

H. School of Natural Sciences (SNS). Less than 50% of the 149 students of the SNS stayed and graduated from the program. This means that more than 50% of the SNS freshmen in 2011 either shifted, transferred, or dropped out. The exact percentage of 30.2% is slightly lower than the UB overall for tertiary, 31.40%. Notably, none of the original enrollees of the BSMT course graduated because of the change of the course name from BSMT to BMLS. However, the overall rate is higher than the 6.8% for Rus-

sia's health, the country with the highest overall tertiary graduation rate for 2017 (OECD, 2019), and 18.3% for health of Australia, the country with the second-highest overall tertiary graduation rate.

The graduates' two highest percentages are from those students with 88% and above GPA on their first semester in UB. This means that SNS students with higher GWA on the first-semester first-year have two to three-time higher chances of graduating their course than those with lower than 88% GWA. This proves correct what Gershenfeld, Ward Hood, and Zhan (2016) stated in their research that first-semester GPA is a statistically significant factor in explaining why college students do not graduate within the 6-year time frame.

The median number of semesters for the SNS students to graduate is 13 or 6.5 years. This implies that the graduation of 50% of the SNS students occurs within 13 semesters.

I. School of Nursing (SN). It is observed that none of the original enrollees of the BSN program pursued the degree, and only 1 of the Midwifery program stayed and graduated. This implies that most of the SN freshmen who entered in 2011 shifted, transferred, or dropped out. This is very low compared to the UB overall for tertiary, which is 31.40%. This is lower than the 6.8% for health of Russia, the country having the highest overall tertiary graduation rate for 2017 (OECD, 2019), and 18.3% for health of Australia, the second-highest country as to the overall tertiary graduation rate.

None of the "excellent," "very good," "good," "passed," and "Failed" students graduated from their chosen program. The only student who pursued his chosen program has a "satisfactory" GWA level. This means that there can be other factors for not finishing a program, such as the industry's demand for the course. This finding on GPA partly confirms the study of Reardon, Melvin, McClain, Peterson, and Bowman (2015), where the results indicated that the GPA is one of the factors predicting graduation rates. The lone SN student graduated in the 14th semester or seven years.

Most of the students' withdrawal occurred within the program's first three years. After the student's graduation in the 14th semester, his schoolmates continued in their program but ended up withdrawing. This means that many students except one shifted, transferred, or dropped out.

J. School of Teacher Education (STE). Only one-third of the STE's 127 enrolees and each program stayed and graduated from the program. This implies that two-thirds of the students had either shifted, transferred, or dropped from their programs. However, the overall is still higher than the UB overall for tertiary, which is 31.40%. It is also higher than the graduation rates (based on the OECD 2019 record of tertiary graduates by field) of Russia, which has the highest overall tertiary graduation rate for 2017 and has 5.6% graduates for Education. It is also higher than that of Australia, the second-highest country for overall tertiary graduation rate, which has 10.0% for Education.

Around 60% of the "very good" and "good" students continued their chosen program and graduated. This means that the students who are doing better academically have higher chances of finishing their chosen degree. This further confirms what Gershenfeld, Ward Hood, and Zhan (2016) found that first-semester GPA is a statistically significant factor in explaining why college students do not graduate within the 6-year time frame. Furthermore, the median number of semesters for the STE students to graduate is 12 (6 years).

This means that half of the STE students graduate within six years. Another implication was that other STE students persisted and graduated after six years, and the rest shifted, transferred, or dropped out.

In summary, the schools with the highest completion rate are the SD, followed by SLAHS and SIHTM with 56%, 41.7%, and 37.9%. The schools with the least completion rates are the SEA, SIT, and the SN, with 15.1%, 14%, and 2.7%. This implies that there are differences in the graduation rates, considering the various academic programs in UB. The result varies

from the results given by the OECD's (2019) record of tertiary graduates by field. For Russia and Australia, the two countries with the highest tertiary graduation, their highest rate is around 30% for the business field, and their least less than 10% for education and social science. Most of the forty-four countries listed by OECD have a business-related degree as the highest except for Columbia, Finland, Belgium, Norway, Sweden, Indonesia, and India. Columbia and Indonesia have the education field as their highest; Finland, Belgium, Norway, and Sweden have health as their highest; and India has social science as its highest tertiary graduation rate. Rooney (2015) conducted the study at the University of Cape Town's Commerce, Engineering and Built Environment, and Science faculties agree with the OECD's record. It was found out that the Commerce faculty has a lesser exclusion of students than the Engineering and Built Environment and Science faculties. These studies show that graduation rates differ from one college degree to another. The study of Reardon, Melvin, McClain, Peterson, and Bowman (2015) had results suggesting that degree was one of four factors predicting graduation rates, including grade point average, changes in major, and withdrawals.

Graduation Rates for the Masters and Doctorate Levels

Considering the total number of master's graduates, only 12 out of 40 graduated. There were 18 who enrolled in the Ph.D. and only four graduated. It implies that around one-fourth graduated as of the 2018 cut-off, and the others shifted, transferred, or dropped out. This is lower than the UB overall, which is 31.40%. MPA students had the highest rate of graduation while the lowest is MAEngl. For the doctorate, the PHDCrim is higher than the PHDDevEd. This confirms the study of Reardon, Melvin, McClain, Peterson, and Bowman (2015), with results suggesting that degree was one of four factors predicting graduation rates, including grade point average.

It was found that "excellent" masters and doctorate students have the highest graduation rate. This implies that the higher the GWA, the higher the chances of finishing their programs than the rest. This is another piece

of evidence confirming what Yue and Fu (2016) concluded that the most powerful predictor of graduation was the academic performance, measured in terms of GPA and cumulative GPA.

The earliest graduation for the master's program occurred in the 5th semester with a probability of 4%. In comparison, the last graduation occurred in the 16th semester with a probability of 33%. Moreover, the median is the 13th semester, where at least 50% of those who enrolled were able to graduate. This means that master's students who entered UB as first-year students in 2011 graduate as early as 2.5 years, and half of them graduate after 6.5 years.

Within the first semester, there were already two students who had withdrawn from their program. It is seen that out of these 18 students, only four students were able to pursue and finish their chosen degree. The earliest graduation occurred in the 7th semester and the last graduation in the 16th semester with a probability of 11% and 1%. The median is the 14th semester. The highest probability of graduation for doctorate students occurred in the 12th and 16th semesters. These imply that some transfer or drop out as early as the first year. The earliest graduate was after 3.5 years, and the last of the four who entered in 2011 graduated in the 8th year.

Conclusions

Survival analysis was used to analyze the rate at which students were enrolling in the different programs of the University of Baguio graduate. Based on the findings, the following are concluded:

1. Students enrolled in the elementary and secondary programs more likely to graduate on time.

2. The graduating probability for the tertiary level has its peak at the end of the 12th semester (or six years).

3. Only the School of Dentistry has a more than 50% graduating rate from

its first-course enrollees.

4. More than 50% of tertiary students who graduated from their first-choice program have a GWA level of 88 and above.

5. The earliest semester that a student graduated with a master's degree was in the 5th semester and for the doctorate, in the 7th semester, respectively.

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