Survival analysis of Bachelor of Secondary Education students of UM Digos College

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ABSTRACT

Survival analysis is a set of statistical methods used for examining data where the time until the occurrence of an event of interest is the outcome variable (Despa, 2012). This quantitative-descriptive correlational study aimed to investigate the survival of the Bachelor of Secondary Education students of UM Digos College for students' batch from 2008 – 2012, 2009 – 2013, 2010 – 2014, 2011 – 2015, and 2012 – present. This study also determined the dropout rate and its relationship to the predictor variables, including the age, sex, and major that causes students to drop out. Kaplan-Meier Analysis and Log Rank Testing were used to analyze the enrolment data acquired from the Office of the Registrar of UM Digos College. Results revealed no significant difference on the dropping out of the students according to profile. Age, sex, and major are not factors that predict the probability of a student dropping out of school. Thus, it cannot be used to formulate a model that would indicate if a student has a greater chance of dropping out or not. It was also found out that students can drop out of school in between the second semester of their first year and the first semester of their second year in school.

Keywords: *survival analysis, quantitative – descriptive correlational, enrollment trend, UM Digos College*

INTRODUCTION

Some of us believe that achieving great things relies upon stepping on the graduation stage (Sportelli, 2014). Some students have not finished the course because those said students have only reached halfway through the course – dropping out in the middle of the school year. Dropouts may not be noticeable, but dropouts are great in number among the poor, directly affecting poverty transmission contrary to the individuals in different generations (Orbeta, 2010). In the educational setting, observable dropouts among students have been increasing. As to define it, the rate of dropout is the percentage of students who depart from school through the year along with those students who don't come back to school on the ensuing year to the entire number of the enrollees in the preceding school year (Montalvo, 2004). Furthermore, among students who finished high school and entered college, there is only a small percentage of surviving on their chosen degrees. Numerous factors can affect a student's chance to survive in their baccalaureate degree.

An abundance of international researches regarding the dropout rates exist. As such, a report from the Organization for Economic Cooperation and Development (OECD) entitled "Education at a Glance 2010" stated statistics about students who accomplished their baccalaureate degree once they had started. Among 18 countries trailed by the OECD, the United States of America had 46% of its tertiary graduates continually. With these numbers, it had placed the said government in the rear of Japan (89%), Slovakia (63%), and Poland (61%).

According to CHED Philippines, the rate of dropout among undergraduate students got 83.7% on the national level, which is alarming. This denotes that 2.13 million undergrad dropouts the Philippines is producing annually and approximately 500,000 graduates on the other hand (Manila Bulletin, 2012). The latest data gathered from CHED shows that the graduation in the school year 2010-2011 is 56.75%, while the survival rate in the same year is 64.79% (Commission on Higher Education, 2014). Statistics also revealed that for every 100 enrollees in Teacher Education, only 16 of them eventually graduate (The Philippine Star, 2014). In this matter, there is a strong need for analyzing the percentage of the student graduates to predict the probability of the next graduates.

Moreover, an observable case in UM Digos College in which students who enrolled in the institution have been increasing, yet, some of those students have not successfully reached throughout the school year or even a semester due to different constraints. Some of the known factors are family issues, increased

tuition fees, poor preparation and motivation, unwanted pregnancy of some female students, and becoming irresponsible (Wisdom, 2012).

METHOD

The researchers adopted the descriptive correlational research method in comparing the different variables affecting student dropout. According to Burns and Grove (2003), descriptive research "is designed to provide a picture of a situation as it naturally happens." Moreover, it was used in acquiring information about the current status of the phenomena to describe "what exists" concerning variables or conditions in a situation (Key, 1997). Meanwhile, correlational research aims to determine/define the relations between two or more variables. It also examines different factors which encompass the behavior of the relationship between two or more variables. Also, a theoretical paradigm may be devised and established to describe the following correlations (Lomax & Li, 2013). In this study, the above research designs were used to describe the dropout rate of the Bachelor of Secondary Education students in UM Digos College and the involvement of different factors that contribute to the dropout of these students. In addition, the students were followed from their first year in the university until they graduate.

The respondents of this study were the students officially enrolled in the following years specified: academic years 2008 – 2009, 2009 – 2010, 2010 – 2011 & 2011 – 2012 for the first batch, academic years 2009 – 2010, 2010 – 2011, 2011 –2012 & 2012 – 2013 for the second batch, academic years 2010 – 2011, 2011 – 2012, 2012 – 2013, 2013 – 2014 for the third batch and lastly, academic years 2011 – 2012, 2012 – 2013, 2013 – 2014, 2014 – 2015 for the fourth batch. These include the official graduates of their respective graduating year. The participants were regular students enrolled in Bachelor of Secondary Education majors in Mathematics, Biological Science, English, Filipino, and MAPe. Transferee students and irregular students are not included in the study. Education students enrolled in elementary education are also not included in the study. Students who shifted to another course besides the majors specified were considered in the dropout list.

Multivariate Analysis of Variance (MANOVA is generally used to determine whether multiple levels of independent variables on their own or in combination with one another have an effect on the dependent variables. MANOVA requires that the dependent variables meet parametric requirements (Anderson, 2003).

Moreover, this study utilized Cox Proportional Hazards Regression Model to approach survival analysis in a multivariate way. It is used to test the effect of a set of covariates on the time-to-event variable. The main assumption of this model is that the hazard ratio between the treatment groups remains constant over time, even if the hazard rate does change over time (Tinazzi et al., 2008).
Furthermore, Kaplan-Meier Method. Survival and hazard are the two probabilities terms in which survival data are prescribed. Survival is the probability for the individual subjects to survive from the time of the start of the study until a specified time t in the future. In order to make an estimation of the proportion of the subjects' surviving at a given point in time, and hence the survival probability to that time for the generic population from which the sample is extracted, the Kaplan-Meier method, also termed as a product-limit estimator, is widely used, which allows dealing with censored information (Tinazzi et al., 2008). Meanwhile, Log Rank Test was used to compare the survival distribution between two or more groups with censored data. This is used to test the null hypothesis of no difference between survival functions of the two groups (Allison, 2003). Then, Chi-Square Test was used as well.

RESULTS AND DISCUSSION

Enrolment trend of the BSED students of UMDC according to the demographic profiles

Table 1.1 shows the frequency distribution of enrollees of the BSED students of the UMDC in the academic years 2008 – 2012, 2009 – 2013, 2010 – 2014, and 2011 – 2015. The basis of this distribution was the data of the enrollees of the first semesters of the students' first years in the institution. Furthermore, table 1 indicates the percentage distribution of the students according to sex, major, and age, as shown below.

Table shows that most of the enrollees are females while the males are the least. Male enrolees in batch 2008 – 2012 reached 28.60% of the enrollees, which has 24 male enrollees, but in batch 2009 – 2013, the male enrollees fall into 21 males, which is 18.90% of the enrollees. Male enrolees in batch 2010 – 2014 increased to 38, which is 25.90% of the enrollees, but it decreased to 20.10% in batch 2011 – 2015, which has only 28 male enrollees. Furthermore, in terms of the enrolees' majors, English got the highest enrolees from batch 2008 – 2012 until batch 2011 – 2015. And as shown in table 1.1, every

Table 1.1. *Demographic Profile of the BSED students of UMDC*

Variables	Batches									
	2008-2012		2009-2013		2010-2014		2011-2015		2012-2015	
	F	%	f	%	F	%	f	%	F	%
Sex										
Male	24	28.60	21	18.90	38	25.90	28	20.10	135	70.30
Female	60	71.40	90	81.10	109	74.10	111	79.90	57	29.70
Major										
BS			5	4.50	8	5.40	10	7.20	16	8.30
ENG	34	40.50	54	48.60	58	39.50	66	47.50	67	34.90
FIL	9	10.70	10	9.00	23	15.60	15	10.80	26	13.50
MAPE	26	31.0	35	31.50	37	25.20	31	22.30	44	22.90
MATH	15	17.9	7	6.30	21	14.30	17	12.20	39	20.30
Age										
15-18	59	70.2	95	85.60	138	93.90	107	77.00	192	100.00
19-22	23	27.4	14	12.60	7	4.80	30	21.60	-	-
23-26	2	2.4	2	1.80	2	1.40	2	1.40	-	-
TOTAL	84	100.00	111	100.00	147	100.00	139	100.00	192	100.00

Academic year, the enrolees increased, but on the other hand, Filipino enrollees decreased from 2010 – 2014 that has 23 enrolees into 15 students in 2011 – 2015 and in the same case in Math which also decreased in 7 in 2009 – 2013 from 2008 – 2012 which has 15 enrolees.

Moreover, according to students' age in range, most of the enrollees came from ages 15 to 18 with 70.2% on batch 2008 – 2012, 85% on batch 2009 – 2013, 93.9% on batch 2010 – 2014, 77% on batch 2011 – 2015 and 100% on batch 2012 – 2015. Ages 23 to 26 got the least with 27.4% on batch 2008 – 2012, 12.6% on batch 2009 – 2013, 4.8% on batch 2010 – 2014, and 21.6% on batch 2011 – 2015, and ages 27 and above have none.

The Kaplan Meier Analysis for Comparison between Age, Sex and Major of BSED Students of UMDC

Batch 2008 – 2012. Table 1.2 presents the Kaplan Meier Analysis for comparison between age, sex, and major of BSED students of UMDC for the year 2008-2012. The estimated survival meantime until the students' dropout is 4.65 for females and 4.00 for males. The median lifetime for females and males is found in the second semester of their second year in school.

Table 1.2. *Kaplan-Meier Analysis for Comparison between Age, Sex and Major of BSED students of UMDC (2008 – 2012)*

Variables	No. of dropouts	No. of graduates	% of graduates	Survival Time	
				Mean	Median
Sex					
Female	33	27	45.00	4.65	4.00
Male	19	5	20.80	4.00	4.00
Major					
BS	-	-	-	-	-
ENG	22	12	35.30	4.56	4.00
FIL	5	4	44.40	5.33	7.00
MAPE	17	9	34.60	4.00	2.00
MATH	8	7	46.70	4.53	4.00
Age					
15-18	33	26	44.10	4.92	5.00
19-22	18	5	21.70	3.26	2.00
23-26	1	1	50.00	5.00	2.00
TOTAL	52	32	38.10	4.46	4.00

Note: Mean survival time is the time where most of the population dropped out. Median survival time is the time after which 50% of the population had already dropped out, and only 50% remained in the study.

In terms of major, the mean survival time for the English majors is at 4.56, Filipino majors with 5.33, MAPe majors with 4.00, and Math majors with 4.53. The median lifetime for those majoring in English is located at the second semester of their second year in school, for the Filipino majors is at their fourth year during the first semester, for the MAPe majors is during their first year in the second semester, and the Math majors are at the second semester in their second year of residency in the institution.

Meanwhile, considering their age range, the mean survival time is 4.92 for those 15 to 18 years old, 3.26 for those 19 to 22 years old, and 5.00 for those 23 to 26 years old. The median lifetime for those 15 to 18 is in the period of the first semester in their third year, and those 19 to 22 and 23 to 26 are both during their second semester in their first year. The total number of students' dropout is 52, with 38.10% of the students graduated at the given time. With 38.10% of the students graduated at the given time.

Batch 2009 – 2013. Table 1.3 presents the Kaplan Meier Analysis for comparison between age, sex, and major of BSED students of UMDC for the year 2009 - 2013. The estimated survival meantime until the students' dropout is 5.23 for females and 5.48 for males. The median lifetime for females was found at the first semester of their fourth year in school.

Table 1.3. *Kaplan Meier Analysis for Comparison between Age, Sex and Major of BSED students of UMDC (2009 – 2013)*

Variables	No. of dropouts	No. of graduates	% of graduates	Survival Time	
				Mean	Median
Sex					
Female	59	31	34.40	5.23	7.00
Male	10	11	52.40	5.48	-
Major					
BS	1	4	80.00	7.80	-
ENG	36	18	33.33	4.80	5.00
FIL	7	3	30.00	5.60	7.00
MAPE	23	12	34.30	5.06	7.00
MATH	2	5	71.40	7.86	-
Age					
15-18	54	41	43.20	5.621	8.00
19-22	13	1	7.10	3.143	2.00
23-26	2	0	0.00	4.000	1.00
TOTAL	69	42	37.80	5.28	7.00

Note: *Mean survival time is the time where most of the population dropped out. Median survival time is the time after which 50% of the population had already dropped out, and only 50% remained in the study.*

In terms of major, the mean survival time for the Biological Science majors is at 7.80, English majors with 4.80, Filipino majors with 5.60, MAPe majors with 5.06, and Math majors with 7.86. The median lifetime for those majoring in English is located at the first semester of their third year in school, and for the Filipino majors and the MAPe majors is during their fourth year in the first semester in the institution. Meanwhile, considering their age range, the mean survival time is 5.621 for those 15 to 18 years old, 3.143 for those 19 to 22 years old, and 4.000 for those 23 to 26 years old. The median lifetime for those 15 to 18 is in the period of the second semester in their fourth year, those 19 to 22 during their second

Batch 2010 – 2014. Table 1.4 presents the Kaplan Meier Analysis for comparison between age, sex, and major of BSED students of UMDC for the year 2010 - 2014. The estimated survival meantime until the students' dropout is 4.53 for females and 3.87 for males. The median lifetime for the female is found at the second semester of their second year and for the male is at the second semester of their first year in school. The total number of students' dropout is104, with 29.25% of the students graduated at the given time.

Table 1.4. *Kaplan Meier Analysis for Comparison between Age, Sex and Major of BSED students of UMDC (2010 – 2014)*

Variables	No. of dropouts	No. of graduates	% of graduates	Survival Time Mean	Survival Time Median
Sex					
Female	75	34	31.20	4.53	4.00
Male	29	9	23.70	3.87	2.00
Major					
BS	4	4	50.00	5.25	7.00
ENG	39	19	32.80	4.86	5.00
FIL	16	7	30.40	4.39	4.00
MAPE	32	5	13.50	3.46	2.00
MATH	13	8	38.10	4.19	2.00
Age					
15-18	97	41	29.70	-	-
19-22	7	0	0.00	-	-
23-26	0	2	100.00	-	-
TOTAL	104	43	29.30	4.36	4.00

Note: *Mean survival time is the time where most of the population dropped out. Median survival time is the time after which 50% of the population had already dropped out, and only 50% remained in the study.*

In terms of major, the mean survival time for the Biological Science majors is at 5.25, English majors with 4.86, Filipino majors with 4.39, MAPe majors with 3.46, and Math majors with 4.19. The median lifetime for those majoring in Biological Science is located at the first semester of their fourth year in school, for the English majors is during the first semester in their third year, for the Filipino majors is at the second semester of their second year in school, and the MAPe and Math majors are during their first year of residency – in their second

semester in the institution. The total number of students' dropout is 104, with 29.25% of the students graduated at the given time.

Batch 2011 - 2015. Table 1.5 presents the Kaplan Meier Analysis for comparison between age, sex, and major of BSED students of UMDC for the year 2011 - 2015. The estimated survival meantime until the students' dropout is 4.63 for females and 5.00 for males. The median lifetime for the female is found at the second semester of their second year in school. The total number of students' dropout is 85, with 38.85% of the students graduated at the given time.

Table 1.5. *Kaplan Meier Analysis for Comparison between Age, Sex and Major of BSED students of UMDC (2011 – 2015)*

Variables	No. of dropouts	No. of graduates	% of graduates	Survival Time Mean	Median
Sex					
Female	72	39	35.10	4.63	4.00
Male	13	15	53.60	5.00	-
Major					
BS	6	4	40.00	4.70	4.00
ENG	45	21	31.80	4.35	3.00
FIL	4	11	73.30	7.06	-
MAPE	22	9	29.00	4.00	3.00
MATH	8	9	52.90	5.29	-
Age					
15-18	61	46	43.00	5.05	6.00
19-22	22	8	26.70	3.73	2.00
23-26	2	0	0.00	1.00	1.00
27 or above					
TOTAL	85	54	38.80	4.70	4.00

Note: *Mean survival time is the time where most of the population dropped out. Median survival time is the time after which 50% of the population had already out, and only 50% remained in the study.*

In terms of major, the mean survival time for the BioScie majors is at 4.70, English majors are at 4.35, Filipino majors with 7.06, MAPe majors with 4.00, and Math majors with 5.29. The median lifetime for those majoring in BioScie is located at the second semester of their second year in school, for the English majors is at the

first semester of their second year, for the MAPe majors is during the first semester of their second year of residency in the institution.

Meanwhile, considering their age range, the mean survival time is 5.05 for those 15 to 18 years old, 3.73 for those 19 to 22 years old, and 1.00 for those 23 to 26 years old. The median lifetime for ages 15 to 18 is in the period of the second semester in their third year, ages 19 to 22 is in the second semester of their first year, and ages 23 to 26 is during their first semester in their first year in the institution. The total number of students' dropout is 85, with 38.85% of the students graduated at the given time.

Batch 2012 – Present. Table 1.6 presents the Kaplan Meier Analysis for comparison between age, sex, and major of BSED students of UMDC for the year 2012 - present. The estimated survival meantime until the students' dropout is 4.50 for females and 5.25 for males. The median lifetime for the female is found at the first semester of their third year in school. In terms of major, the mean survival

Table 1.6. *Kaplan Meier Analysis for Comparison between Age, Sex and Major of BSED students of UMDC (2012 – Present)*

Variables	No. of dropouts	No. of graduates	% of graduates	Survival Time Mean	Median
Sex					
Female	78	57	42.20	4.50	5.00
Male	25	32	56.10	5.25	-
Major					
BS	8	8	50.00	5.56	6.00
ENG	40	27	40.30	4.46	5.00
FIL	13	13	50.00	4.65	5.00
MAPE	22	22	50.00	5.02	6.00
MATH	20	19	48.70	4.54	6.00
Age					
15-18	103	89	46.40	4.72	6.00
TOTAL		89	46.40	4.72	6.00

Note: *Mean survival time is the time where most of the population dropped out. Median survival time is the time after which 50% of the population had already dropped out, and only 50% remained in the study.*

time for the BioScie is at 5.56, for the English majors is at 4.46, Filipino majors are at 4.65, MAPe majors with 5.02, and Math majors with 4.54. The median lifetime for those majoring in BioScie is located at the second semester of their third year, for the English majors is at the first semester of their third year in school, for the Filipino majors is also at the first semester of their third year, for the MAPe majors and Math majors are at the second semester of their third year of residency in the institution. Meanwhile, considering their age range, the mean survival time of ages 15 to 18 years old is 4.72. The median lifetime for those ages 15 to 18 is in the period of the second semester of their third year in the institution. The total number of students' dropout is 103, with 46.35% of the students graduated at the given time. This means that there are more students who dropped out of school than those who graduate.

The hazard rate of BSED students according to its predictor variables

This section presents the result of the period or year levels that students are more likely to drop out of school with the advent of certain predictor variables, which is the students' gender.

The values under the time (t) represent the semesters in one batch of students – from their first year in the institution until they reach the fourth year. Zero (0) stands for the 1st Semester of their first year, one (1) for the 2nd Semester of their first year, two (2) for the 1st Semester of their second year until seven (7), which stands for the 2nd Semester of their fourth year. The result was parallel to the findings of the study of Pierrakeas, C. et al. in 2004 entitled "A Comparative Study of Dropout Rates and Causes for Two Different Distance Education Courses," gender does not appear to have a significant role in compelling students to interrupt/ discontinue the studies of the students.

Batch 2008 – 2012. As shown in Table 2.1.1, the period in which the female and male students likely to leave school and which has the highest hazard rate – 0.35 for the females and 0.40 for the males – is in their second semester on their first year in the institution. Thus, table 2.1.1 presents the life table of the BSED students for the year 2008-2012 when grouped according to sex. The hazard rate of the male students at the end of the second semester in their first year in school is greater than 5% as compared to the female students in the same semester and year. Both sexes show higher dropout rates at the end of the second semester in their first year in school. The hazard rate describes the sudden rate of failure or the students' rate of dropping out of school. Furthermore, table 2.1.1 demonstrates

that the first year especially in the second semester, is the most crucial decision making for them to continue or not.

Table 2.1.1 *Life Table of the BSED Students for the Year 2008-2012 when Grouped According to Sex.*

First-order Controls		t	Number Entering Interval	Number Exposed to Risk	Number of Terminal Events	Proportion Termina-ting	Proportion Surviving	Cumulative Proportion Surviving at the end of Interval	. Hazard Rate
SEX	F	0	60	60	0	0.00	1.00	1.00	0.00
		1	60	60	18	0.30	0.70	0.70	0.35
		2	42	42	7	0.17	0.83	0.58	0.18
		3	35	35	4	0.11	0.89	0.52	0.12
		4	31	31	2	0.06	0.94	0.48	0.07
		5	29	29	1	0.03	0.97	0.47	0.04
		6	28	28	1	0.04	0.96	0.45	0.04
		7	27	14	0	0.00	1.00	0.45	0.00
	M	0	24	24	0	0.00	1.00	1.00	0.00
		1	24	24	8	0.33	0.67	0.67	0.40
		2	16	16	3	0.19	0.81	0.54	0.21
		3	13	13	0	0.00	1.00	0.54	0.00
		4	13	13	4	0.31	0.69	0.38	0.36
		5	9	9	1	0.11	0.89	0.33	0.12
		6	8	8	0	0.00	1.00	0.33	0.00
		7	8	6	3	0.55	0.45	0.15	0.00

Furthermore, when grouped according to major, the period in which all the majors most likely leave school at the second semester of their first year. The values of the hazard rate are as follows: English with 0.27, Filipino with 0.25, MAPe with 0.48, and Math with 0.50.

On the other hand, when grouped according to age which is shown in table 2.1.3, the period in which ages 15-18 with a hazard rate of 0.29 and ages 19-22 with a hazard rate of 0.63 were most likely to leave school at the second semester of their first year. Meanwhile, ages 23-26 most likely leave school in the first semester of their second year with a hazard rate of 0.67.

Table 2.1.3 *Life Table of the BSED Students for the year 2008-2012 when Grouped According to Age*

First-order Controls		t	Number Entering Interval	Number Exposed to Risk	Number of Terminal Events	Proportion Termina-ting	Proportion Surviving	Cumulative Proportion Surviving at the end of Interval	Hazard Rate
AGE	15-18	0	59	59.000	0	0.00	1.00	1.00	0.00
		1	59	59.000	15	.25	.75	.75	.29
		2	44	44.000	6	.14	.86	.64	.15
		3	38	38.000	4	.11	.89	.58	.11
		4	34	34.000	3	.09	.91	.53	.09
		5	31	31.000	2	.06	.94	.49	.07
		6	29	29.000	0	0.00	1.00	.49	0.00
		7	29	16.000	3	.19	.81	.40	0.00
	19-22	0	23	23.000	0	0.00	1.00	1.00	0.00
		1	23	23.000	11	.48	.52	.52	.63
		2	12	12.000	3	.25	.75	.39	.29
		3	9	9.000	0	0.00	1.00	.39	0.00
		4	9	9.000	3	.33	.67	.26	.40
		5	6	6.000	0	0.00	1.00	.26	0.00
		6	6	6.000	1	.17	.83	.22	.18
		7	5	2.500	0	0.00	1.00	.22	0.00
	23-26	0	2	2.000	0	0.00	1.00	1.00	0.00
		1	2	2.000	0	0.00	1.00	1.00	0.00
		2	2	2.000	1	.50	.50	.50	.67
		3	1	1.000	0	0.00	1.00	.50	0.00
		4	1	1.000	0	0.00	1.00	.50	0.00
		5	1	1.000	0	0.00	1.00	.50	0.00
		6	1	1.000	0	0.00	1.00	.50	0.00
		7	1	.500	0	0.00	1.00	.50	0.00

Batch 2009 – 2013. As shown in Table 2.2.1, the period in which the female and male students likely to leave school and which has the highest hazard rate, 0.22 for the females which appear on the second semester of their first year in school and 0.32 for the males, which appears on the first semester of their second year in school. Thus, the hazard rate shown in table 2.2.1 provides a summary of the risk of graduation for the entire sample. The hazard rate describes the sudden rate of failure or the students' rate of dropping out of school.

Furthermore, when grouped according to major, which is shown in table 2.2.2, the period in which the majors English with a hazard rate of 0.25 and Filipino with a hazard rate of 0.22 most likely leave school at the second semester of their first year while the MAPe major with a hazard rate of 0.29 is on the first semester of their second year in school.

Table 2.2.1 *Life Table of the BSED Students for the Year 2009-2013 when Grouped According to Sex.*

First-order Controls		t	Number Entering Interval	Number Exposed to Risk	Number of Terminal Events	Proportion Termina-ting	Proportion Surviving	Cumulative Proportion Surviving at the end of Interval	Hazard Rate
SEX	Female	0	90	90	0	0.00	1.00	1.00	0.00
		1	90	90	18	0.20	0.80	0.80	0.22
		2	72	72	11	0.15	0.85	0.68	0.17
		3	61	61	3	0.05	0.95	0.64	0.05
		4	58	58	3	0.05	0.95	0.61	0.05
		5	55	55	6	0.11	0.89	0.54	0.12
		6	49	49	2	0.04	0.96	0.52	0.04
		7	47	32	16	0.51	0.49	0.26	0.00
	Male	0	21	21	0	0.00	1.00	1.00	0.00
		1	21	21	3	0.14	0.86	0.86	0.15
		2	18	18	5	0.28	0.72	0.62	0.32
		3	13	13	0	0.00	1.00	0.62	0.00
		4	13	13	0	0.00	1.00	0.62	0.00
		5	13	13	0	0.00	1.00	0.62	0.00
		6	13	13	0	0.00	1.00	0.62	0.00
		7	13	8	2	0.27	0.73	0.45	0.00

On the other hand, when grouped according to age which is shown in table 2.2.3, the period in which ages 15-18 with a hazard rate of 0.17 were most likely to leave school in the first semester of their second year. Meanwhile, ages 19-22 with a hazard rate of 0.55 and ages 23-26 with a hazard rate of 0.67 were most likely to leave at the second semester of their first year in school.

Table 2.2.2. *Life Table of BSED Students for the year 2009-2013 when Grouped According to Major*

First-order Controls		t	Number Entering Interval	Number Exposed to Risk	Num-ber of Terminal Events	Proportion Terminating	Proportion Surviving	Cumulative Proportion Surviving at the end of Interval	Hazard Rate
M A J O R	BS	0	5	5.000	0	0.00	1.00	1.00	0.00
		1	5	5.000	0	0.00	1.00	1.00	0.00
		2	5	5.000	0	0.00	1.00	1.00	0.00
		3	5	5.000	0	0.00	1.00	1.00	0.00
		4	5	5.000	0	0.00	1.00	1.00	0.00
		5	5	5.000	0	0.00	1.00	1.00	0.00
		6	5	5.000	0	0.00	1.00	1.00	0.00
		7	5	3.000	1	.33	.67	.67	0.00
	ENG	0	54	54.000	0	0.00	1.00	1.00	0.00
		1	54	54.000	12	.22	.78	.78	.25
		2	42	42.000	9	.21	.79	.61	.24
		3	33	33.000	2	.06	.94	.57	.06
		4	31	31.000	1	.03	.97	.56	.03
		5	30	30.000	4	.13	.87	.48	.14
		6	26	26.000	2	.08	.92	.44	.08
		7	24	15.000	6	.40	.60	.27	0.00
	FIL	0	10	10.000	0	0.00	1.00	1.00	0.00
		1	10	10.000	2	.20	.80	.80	.22
		2	8	8.000	0	0.00	1.00	.80	0.00
		3	8	8.000	1	.13	.88	.70	.13
		4	7	7.000	1	.14	.86	.60	.15
		5	6	6.000	0	0.00	1.00	.60	0.00
		6	6	6.000	0	0.00	1.00	.60	0.00
		7	6	4.500	3	.67	.33	.20	0.00
	MAPE	0	35	35.000	0	0.00	1.00	1.00	0.00
		1	35	35.000	7	.20	.80	.80	.22
		2	28	28.000	7	.25	.75	.60	.29
		3	21	21.000	0	0.00	1.00	.60	0.00
		4	21	21.000	1	.05	.95	.57	.05
		5	20	20.000	2	.10	.90	.51	.11
		6	18	18.000	0	0.00	1.00	.51	0.00
		7	18	12.000	6	.50	.50	.26	0.00

	MATH	0	7	7.000	0	0.00	1.00	1.00	0.00
		1	7	7.000	0	0.00	1.00	1.00	0.00
		2	7	7.000	0	0.00	1.00	1.00	0.00
		3	7	7.000	0	0.00	1.00	1.00	0.00
		4	7	7.000	0	0.00	1.00	1.00	0.00
		5	7	7.000	0	0.00	1.00	1.00	0.00
		6	7	7.000	0	0.00	1.00	1.00	0.00
		7	7	4.500	2	.44	.56	.56	0.00

Table 2.2.3. *Life Table of BSED Students for the year 2009-2013 when Grouped According to Age*

First-order Controls		t	Num-ber Entering Interval	Number Exposed to Risk	Number of Terminal Events	Proportion Terminating	Proportion Surviving	Cumulative Proportion Surviving at the end of	Hazard Rate
AGE	15-18	0	95	95.000	0	0.00	1.00	1.00	0.00
		1	95	95.000	14	.15	.85	.85	.16
		2	81	81.000	13	.16	.84	.72	.17
		3	68	68.000	3	.04	.96	.68	.05
		4	65	65.000	3	.05	.95	.65	.05
		5	62	62.000	4	.06	.94	.61	.07
		6	58	58.000	1	.02	.98	.60	.02
		7	57	36.500	16	.44	.56	.34	0.00
	19-22	0	14	14.000	0	0.00	1.00	1.00	0.00
		1	14	14.000	6	.43	.57	.57	.55
		2	8	8.000	3	.38	.63	.36	.46
		3	5	5.000	0	0.00	1.00	.36	0.00
		4	5	5.000	0	0.00	1.00	.36	0.00
		5	5	5.000	2	.40	.60	.21	.50
		6	3	3.000	1	.33	.67	.14	.40
		7	2	1.500	1	.67	.33	.05	0.00
	23-26	0	2	2.000	0	0.00	1.00	1.00	0.00
		1	2	2.000	1	.50	.50	.50	.67
		2	1	1.000	0	0.00	1.00	.50	0.00
		3	1	1.000	0	0.00	1.00	.50	0.00
		4	1	1.000	0	0.00	1.00	.50	0.00
		5	1	1.000	0	0.00	1.00	.50	0.00
		6	1	1.000	0	0.00	1.00	.50	0.00
		7	1	1.000	1	1.00	0.00	0.00	0.00

Batch 2010 – 2014. As shown in Table 2.3.1, the period in which the female and male students likely to leave school and which has the highest hazard rate, 0.31

for the females which appear on the first semester of their second year in school and 0.45 for the males, which appears on the second semester of their first year in school. Thus, the hazard rate shown in table 2.3.1 provides a summary of the risk of graduation for the entire sample. The hazard rate describes the sudden rate of failure or the students' rate of dropping out of school.

Furthermore, when grouped according to major, which is shown in table 2.3.2, the period in which the majors Biological Science with a hazard rate of 0.46, English with a hazard rate of 0.23, made with a hazard rate of 0.43, and Math with a hazard rate of 0.40 appear on the second semester of their first year in school. While the period in which Filipino most likely to leave school appears on the first semester of their second year in school with a hazard rate of 0.42.

Table 2.3.1. *Life Table of the BSED Students for the Year 2010-2014 when Grouped According to Sex*

First-order Controls		t	Number Entering Interval	Number Exposed to Risk	Number of Terminal Events	Proportion Termina-ting	Proportion Surviving	Cumulative Proportion Surviving at the end of Interval	Hazard Rate
SEX	Female	0	109	109	0	0.00	1.00	1.00	0.00
		1	109	109	24	.22	.78	.78	.25
		2	85	85	23	.27	.73	.57	.31
		3	62	62	4	.06	.94	.53	.07
		4	58	58	6	.10	.90	.48	.11
		5	52	52	2	.04	.96	.46	.04
		6	50	50	6	.12	.88	.40	.13
		7	44	27	10	.37	.63	.25	0.00
	Male	0	38	38	0	0.00	1.00	1.00	0.00
		1	38	38	14	.37	.63	.63	.45
		2	24	24	5	.21	.79	.50	.23
		3	19	19	0	0.00	1.00	.50	0.00
		4	19	19	3	.16	.84	.42	.17
		5	16	16	3	.19	.81	.34	.21
		6	13	13	4	.31	.69	.24	.36
		7	9	5	0	0.00	1.00	.24	0.00

Table 2.3.2. *Life Table of the BSED Students for the year 2010-2014 when Grouped According to Major.*

First-order Controls	t	Number Entering Interval	Number Exposed to Risk	Number of Terminal Events	Proportion Terminating	Proportion Surviving	Cumulative Proportion Surviving at the end of Interval	Hazard Rate
MAJOR								
BS	0	8	8.00	0	0.00	1.00	1.00	0.00
	1	8	8.00	3	.38	.63	.63	.46
	2	5	5.00	0	0.00	1.00	.63	0.00
	3	5	5.00	0	0.00	1.00	.63	0.00
	4	5	5.00	0	0.00	1.00	.63	0.00
	5	5	5.00	0	0.00	1.00	.63	0.00
	6	5	5.00	0	0.00	1.00	.63	0.00
	7	5	3.00	1	.33	.67	.42	0.00
ENG	0	58	58.00	0	0.00	1.00	1.00	0.00
	1	58	58.00	12	.21	.79	.79	.23
	2	46	46.00	9	.20	.80	.64	.22
	3	37	37.00	1	.03	.97	.62	.03
	4	36	36.00	4	.11	.89	.55	.12
	5	32	32.00	3	.09	.91	.50	.10
	6	29	29.00	4	.14	.86	.43	.15
	7	25	15.50	6	.39	.61	.26	0.00
FIL	0	23	23.00	0	0.00	1.00	1.00	0.00
	1	23	23.00	3	.13	.87	.87	.14
	2	20	20.00	7	.35	.65	.57	.42
	3	13	13.00	1	.08	.92	.52	.08
	4	12	12.00	2	.17	.83	.43	.18
	5	10	10.00	1	.10	.90	.39	.11
	6	9	9.00	2	.22	.78	.30	.25
	7	7	3.50	0	0.00	1.00	.30	0.00
MAPE	0	37	37.00	0	0.00	1.00	1.00	0.00
	1	37	37.00	13	.35	.65	.65	.43
	2	24	24.00	8	.33	.67	.43	.40
	3	16	16.00	1	.06	.94	.41	.06
	4	15	15.00	3	.20	.80	.32	.22
	5	12	12.00	1	.08	.92	.30	.09
	6	11	11.00	3	.27	.73	.22	.32
	7	8	5.50	3	.55	.45	.10	0.00

MATH	0	21	21.00	0	0.00	1.00	1.00	0.00
	1	21	21.00	7	.33	.67	.67	.40
	2	14	14.00	4	.29	.71	.48	.33
	3	10	10.00	1	.10	.90	.43	.11
	4	9	9.00	0	0.00	1.00	.43	0.00
	5	9	9.00	0	0.00	1.00	.43	0.00
	6	9	9.00	1	.11	.89	.38	.12
	7	8	4.00	0	0.00	1.00	.38	0.00

On the other hand, when grouped according to age which is shown in table 2.3.3, the period in which ages 15-18 with a hazard rate of 0.30 were most likely to leave school in the first semester of their second year. Meanwhile, ages 19-22 with a hazard rate of 2.00 were most likely to leave at the first semester of their fourth year in school.

Table 2.3.3. *Life Table of the BSED Students for the year 2010-2014 when Grouped According to Age*

First-order Controls t		Number Entering Interval	Number Exposed to Risk	Number of Terminal Events	Proportion Termina-ting	Proportion Surviving	Cumulative Proportion Surviving at the end of Interval	Hazard Rate
AGE	0	138	138.00	0	0.00	1.00	1.00	0.00
	1	138	138.00	35	.25	.75	.75	.29
	2	103	103.00	27	.26	.74	.55	.30
15-18	3	76	76.00	4	.05	.95	.52	.05
	4	72	72.00	8	.11	.89	.46	.12
	5	64	64.00	4	.06	.94	.43	.06
	6	60	60.00	9	.15	.85	.37	.16
	7	51	30.50	10	.33	.67	.25	0.00
	0	7	7.00	0	0.00	1.00	1.00	0.00
	1	7	7.00	3	.43	.57	.57	.55
	2	4	4.00	1	.25	.75	.43	.29
19-22	3	3	3.00	0	0.00	1.00	.43	0.00
	4	3	3.00	1	.33	.67	.29	.40
	5	2	2.00	1	.50	.50	.14	.67
	6	1	1.00	1	1.00	0.00	0.00	2.00

23-26	0	2	2.00	0	0.00	1.00	1.00	0.00
	1	2	2.00	0	0.00	1.00	1.00	0.00
	2	2	2.00	0	0.00	1.00	1.00	0.00
	3	2	2.00	0	0.00	1.00	1.00	0.00
	4	2	2.00	0	0.00	1.00	1.00	0.00
	5	2	2.00	0	0.00	1.00	1.00	0.00
	6	2	2.00	0	0.00	1.00	1.00	0.00
	7	2	1.00	0	0.00	1.00	1.00	0.00

Batch 2011 – 2015. As shown in Table 2.4.1, the period in which the female and male students likely to leave school and which has the highest hazard rate – 0.27 for the females and 0.38for the males – is in their second semester on their first year in the institution. Thus, table 2.4.1 presents the life table of the BSED

Table 2.4.1. *Life Table of the BSED Students for the Year 2011-2015 when Grouped According to Sex.*

First-order Controls		t	Number Entering Interval	Number Exposed to Risk	Number of Terminal Events	Proportion Termina-ting	Proportion Surviving	Cumulative Proportion Surviving at the end of	Hazard Rate
SEX	Female	0	111	111	0	.00	1.00	1.00	.00
		1	111	111	26	.23	.77	.77	.27
		2	85	85	15	.18	.82	.63	.19
		3	70	70	11	.16	.84	.53	.17
		4	59	59	5	.08	.92	.49	.09
		5	54	54	2	.04	.96	.47	.04
		6	52	52	8	.16	.84	.40	.17
		7	43	24	5	.21	.79	.31	.00
	Male	0	28	28	0	.00	1.00	1.00	.00
		1	28	28	9	.32	.68	.68	.38
		2	19	19	2	.11	.89	.61	.11
		3	17	17	1	.06	.94	.57	.06
		4	16	16	1	.06	.94	.54	.06
		5	15	15	0	.00	1.00	.54	.00
		6	15	15	0	.00	1.00	.54	.00
		7	15	8	0	.00	1.00	.54	.00

students for the year 2011 - 2015 when grouped according to sex. The hazard rate of the male students at the end of the second semester in their first year in school is greater than 11% as compared to the female students in the same semester and year. Both sexes show higher dropout rates at the end of the second semester in their first year in school. The hazard rate describes the sudden rate of failure or the students' rate of dropping out of school. Furthermore, table 2.4.1 demonstrates

that the first year especially in the second semester, is the most crucial decision making for them to continue or not.

On the other hand, when grouped according to age which is shown in table 2.4.2, the period in which ages 15-18 with a hazard rate of 0.30 and ages 23-26 with a hazard rate of 2.00 were most likely to leave school at the second semester of their first year. Meanwhile, ages 19-22 were most likely to leave school on the first semester of their second year in school with a hazard rate of 0.40.

Table 2.4.2. *Life Table of the BSED Students for the year 2011-2015 when Grouped According to Age*

First-order Controls	t	Number Entering Interval	Number Exposed to Risk	Number of Terminal Events	Proportion Terminating	Proportion Surviving	Cumulative Proportion Surviving at the end of	Hazard Rate
AGE 15-18	0	107	107.000	0	0.00	1.00	1.00	0.00
	1	107	107.000	24	.22	.78	.78	.25
	2	83	83.000	10	.12	.88	.68	.13
	3	73	73.000	9	.12	.88	.60	.13
	4	64	64.000	5	.08	.92	.55	.08
	5	59	59.000	2	.03	.97	.53	.03
	6	57	56.500	6	.11	.89	.48	.11
	7	50	27.500	5	.18	.82	.39	0.00
19-22	0	30	30.000	0	0.00	1.00	1.00	0.00
	1	30	30.000	9	.30	.70	.70	.35
	2	21	21.000	7	.33	.67	.47	.40
	3	14	14.000	3	.21	.79	.37	.24
	4	11	11.000	1	.09	.91	.33	.10
	5	10	10.000	0	0.00	1.00	.33	0.00
	6	10	10.000	2	.20	.80	.27	.22
	7	8	4.000	0	0.00	1.00	.27	0.00
23-26	0	2	2.000	0	0.00	1.00	1.00	0.00
	1	2	2.000	2	1.00	0.00	0.00	2.00

Furthermore, when grouped according to major, which is shown in table 2.4.3, the period in which the majors Biological Science with a hazard rate of 0.35, English with a hazard rate of 0.32, MAPe with a hazard rate of 0.34, and Math with a

hazard rate of 0.27 appears on the second semester of their first year in school. While the period in which Filipino most likely to leave school appears on the first semester of their fourth year in school with a hazard rate of 0.08.

Table 2.4.3. *Life Table of the BSED Students for the year 2011-2015 when Grouped According to Major.*

	First-order Controls t	Number Entering Interval	Number Exposed to Risk	Number of Terminal Events	Proportion Termina-ting	Proportion Surviving	Cumulative Proportion Surviving at the end of	Hazard Rate
MAJOR	BS 0	10	10.000	0	0.00	1.00	1.00	0.00
	BS 1	10	10.000	3	.30	.70	.70	.35
	BS 2	7	7.000	1	.14	.86	.60	.15
	BS 3	6	6.000	0	0.00	1.00	.60	0.00
	BS 4	6	6.000	1	.17	.83	.50	.18
	BS 5	5	5.000	0	0.00	1.00	.50	0.00
	BS 6	5	5.000	1	.20	.80	.40	.22
	BS 7	4	2.000	0	0.00	1.00	.40	0.00
	ENG 0	66	66.000	0	0.00	1.00	1.00	0.00
	ENG 1	66	66.000	18	.27	.73	.73	.32
	ENG 2	48	48.000	8	.17	.83	.61	.18
	ENG 3	40	40.000	8	.20	.80	.48	.22
	ENG 4	32	32.000	3	.09	.91	.44	.10
	ENG 5	29	29.000	2	.07	.93	.41	.07
	ENG 6	27	27.000	3	.11	.89	.36	.12
	ENG 7	24	13.500	3	.22	.78	.28	0.00
	FIL 0	15	15.000	0	0.00	1.00	1.00	0.00
	FIL 1	15	15.000	1	.07	.93	.93	.07
	FIL 2	14	14.000	0	0.00	1.00	.93	0.00
	FIL 3	14	14.000	0	0.00	1.00	.93	0.00
	FIL 4	14	14.000	1	.07	.93	.87	.07
	FIL 5	13	13.000	0	0.00	1.00	.87	0.00
	FIL 6	13	12.500	1	.08	.92	.80	.08
	FIL 7	11	6.000	1	.17	.83	.66	0.00
	MAPE 0	31	31.000	0	0.00	1.00	1.00	0.00
	MAPE 1	31	31.000	9	.29	.71	.71	.34
	MAPE 2	22	22.000	6	.27	.73	.52	.32
	MAPE 3	16	16.000	3	.19	.81	.42	.21
	MAPE 4	13	13.000	1	.08	.92	.39	.08
	MAPE 5	12	12.000	0	0.00	1.00	.39	0.00
	MAPE 6	12	12.000	3	.25	.75	.29	.29
	MAPE 7	9	4.500	0	0.00	1.00	.29	0.00

MATH	0	17	17.000	0	0.00	1.00	1.00	0.00
	1	17	17.000	4	.24	.76	.76	.27
	2	13	13.000	2	.15	.85	.65	.17
	3	11	11.000	1	.09	.91	.59	.10
	4	10	10.000	0	0.00	1.00	.59	0.00
	5	10	10.000	0	0.00	1.00	.59	0.00
	6	10	10.000	0	0.00	1.00	.59	0.00
	7	10	5.500	1	.18	.82	.48	0.00

Batch 2012 - Present. As shown in Table 2.5.1, the period in which the female and male students likely to leave school and which has the highest hazard rate, 0.20 for the females which appear on the second semester of their first year and second year in school and 0.12 for the males which appear on the first semester of their third year in school. Thus, the hazard rate shown in table 2.5.1 provides a summary of the risk of graduation for the entire sample. The hazard rate describes the sudden rate of failure or the students' rate of dropping out of school.

Table 2.5.1 *Life Table of the BSED Students for the Year 2012 - Present when Grouped According to Sex*

First-order Controls		t	Number Entering Interval	Number Exposed to Risk	Number of Terminal Events	Proportion Termina-ting	Proportion Surviving	Cumulative Proportion Surviving at the end of	Hazard Rate
SEX	Female	0	135	135	0	.00	1.00	1.00	.00
		1	135	135	24	.18	.82	.82	.20
		2	111	111	18	.16	.84	.69	.18
		3	93	93	17	.18	.82	.56	.20
		4	76	76	5	.07	.93	.53	.07
		5	71	71	6	.08	.92	.48	.09
		6	65	37	8	.22	.78	.38	.00
		7	57	57	0	.00	1.00	1.00	.00
	Male	0	57	57	7	.12	.88	.88	.13
		1	50	50	5	.10	.90	.79	.11
		2	45	45	2	.04	.96	.75	.05
		3	43	43	5	.12	.88	.67	.12
		4	38	38	4	.11	.89	.60	.11
		5	34	18	2	.11	.89	.53	.00
		6	135	135	0	.00	1.00	1.00	.00
		7	135	135	24	.18	.82	.82	.20

On the other hand, when grouped according to age which is shown in table 2.5.2, the period in which ages 15-18 with a hazard rate of 0.18 were most likely to leave school in the second semester of their first year.

Furthermore, when grouped according to major, which is shown in table 2.5.3, the period in which the Biological Science with a hazard rate of 0.22 most likely to leave school appeared to be on the first semester of their fourth year in school. The English with a hazard rate of 0.22 most likely to leave school on the first semester of their second year in school. Filipino with a hazard rate of 0.21 and Math with a hazard rate of 0.26 appears in the second semester of their first year in school. While the period in which MAPe most likely to leave school appears on the second semester of their second year in school with a hazard rate of 0.18.

Table 2.5.2 *Life Table of the BSED Students for the year 2012-present when Grouped According to Age*

First-order Controls		t	Number Entering Interval	Number Exposed to Risk	Number of Terminal Events	Proportion Terminating	Proportion Surviving	Cumulative Proportion Surviving at the end of Interval	Hazard Rate
AGE	15-18	0	192	192.000	0	0.00	1.00	1.00	0.00
		1	192	192.000	31	.16	.84	.84	.18
		2	161	161.000	23	.14	.86	.72	.15
		3	138	138.000	19	.14	.86	.62	.15
		4	119	119.000	10	.08	.92	.57	.09
		5	109	109.000	10	.09	.91	.52	.10
		6	99	99.000	10	.10	.90	.46	.11
		7	89	44.500	0	0.00	1.00	.46	0.00

Table 2.5.3. *Life Table of the BSED Students for the year 2012-present when Grouped According to Major*

First-order Controls	t	Number Entering Interval	Number Exposed to Risk	Number of Terminal Events	Proportion Terminating	Proportion Surviving	Cumulative Proportion Surviving at the end of	Hazard Rate
MAJOR	BS 0	16	16.000	0	0.00	1.00	1.00	0.00
	BS 1	16	16.000	0	0.00	1.00	1.00	0.00
	BS 2	16	16.000	1	.06	.94	.94	.06
	BS 3	15	15.000	2	.13	.87	.81	.14
	BS 4	13	13.000	2	.15	.85	.69	.17
	BS 5	11	11.000	1	.09	.91	.63	.10
	BS 6	10	10.000	2	.20	.80	.50	.22
	BS 7	8	4.000	0	0.00	1.00	.50	0.00
	ENG 0	67	67.000	0	0.00	1.00	1.00	0.00
	ENG 1	67	67.000	12	.18	.82	.82	.20
	ENG 2	55	55.000	11	.20	.80	.66	.22
	ENG 3	44	44.000	6	.14	.86	.57	.15
	ENG 4	38	38.000	1	.03	.97	.55	.03
	ENG 5	37	37.000	6	.16	.84	.46	.18
	ENG 6	31	31.000	4	.13	.87	.40	.14
	ENG 7	27	13.500	0	0.00	1.00	.40	0.00
	F 0	26	26.000	0	0.00	1.00	1.00	0.00
	F 1	26	26.000	5	.19	.81	.81	.21
	F 2	21	21.000	3	.14	.86	.69	.15
	F 3	18	18.000	2	.11	.89	.62	.12
	F 4	16	16.000	2	.13	.88	.54	.13
	F 5	14	14.000	1	.07	.93	.50	.07
	F 6	13	13.000	0	0.00	1.00	.50	0.00
	F 7	13	6.500	0	0.00	1.00	.50	0.00
	MAPE 0	44	44.000	0	0.00	1.00	1.00	0.00
	MAPE 1	44	44.000	5	.11	.89	.89	.12
	MAPE 2	39	39.000	3	.08	.92	.82	.08
	MAPE 3	36	36.000	6	.17	.83	.68	.18
	MAPE 4	30	30.000	4	.13	.87	.59	.14
	MAPE 5	26	26.000	2	.08	.92	.55	.08
	MAPE 6	24	24.000	2	.08	.92	.50	.09
	MAPE 7	22	11.000	0	0.00	1.00	.50	0.00

MATH	0	39	39.000	0	0.00	1.00	1.00	0.00
	1	39	39.000	9	.23	.77	.77	.26
	2	30	30.000	5	.17	.83	.64	.18
	3	25	25.000	3	.12	.88	.56	.13
	4	22	22.000	1	.05	.95	.54	.05
	5	21	21.000	0	0.00	1.00	.54	0.00
	6	21	21.000	2	.10	.90	.49	.10
	7	19	9.500	0	0.00	1.00	.49	0.00

Survival Trend of BSED Students of UMDC According to Predictor Variables

This section presents the graphical representation of the survival function of the UMDC's BSED students. This will show what period of the batches has the greatest fall or with the greatest percentage of dropouts with the advent of the predictor variables – sex, age, and major.

The values on the horizontal line (x-axis) represents the periods or the semesters – zero (0) represents the first semester of their first year, one (1) represents the second semester of their first year, two (2) represents the first semester of their second semester until eight (8) represents the period where students graduated. Furthermore, the values on the vertical line (y-axis) represent the rate.

Batch 2008 – 2012. When grouped according to sex, Figure 2.1.1 shows that both male and female BSED students' of the UM Digos College fall greatly on the second semester of their first year in school, which means that there are more dropouts at that stage of the school year.

Moreover, when the students are grouped according to major, Figure 2.1.2 illustrates that all of the majors greatly fall on the second semester of their first year in school, which shows that there were a lot of dropouts at that time of the school year.

Meanwhile, Figure 2.1.3 shows that both ages 15-18 and 19-22 fall greatly on the second semester on the first year in the school of the students while ages 23-26 fall down on the first semester on the second year of the students in school. The downfall of the lines on the graph shows the decreasing rate of students continuing college.

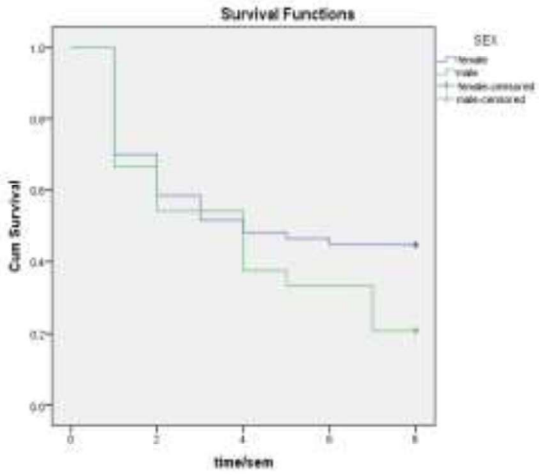

Figure 2.1.1 *Graphical Representation of the Survival Function for Batch 2008-2012 when Grouped According to Sex*

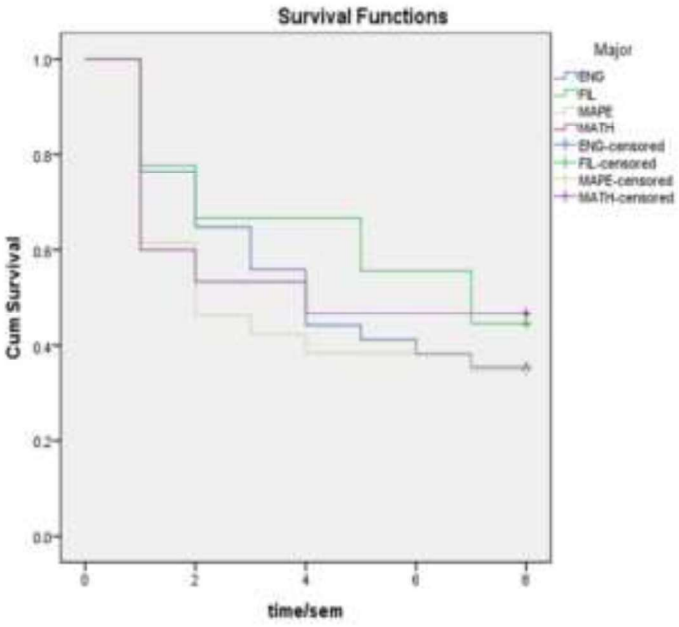

Figure 2.1.2 *Graphical Representation of the Survival Function for Batch 2008-2012 when Grouped According to Major*

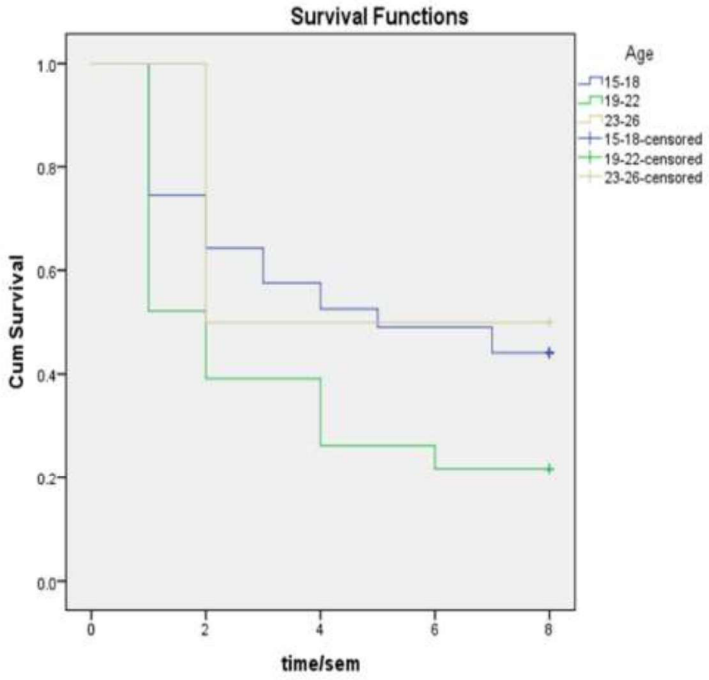

Figure 2.1.3 *Graphical Representation of the Survival Function of Batch 2008-2012 when Grouped According to Age*

Batch 2009 – 2013. When grouped according to sex, Figure 2.2.1 shows that the enrolment for male students falls greatly on the first semester of their second year. Meanwhile, enrolment of female BSED students' of the UM Digos College falls greatly on the second semester of their first year in school. This means that there are more dropouts at that stage of the school year.

Moreover, when the students are grouped according to major, Figure 2.2.2 illustrates that all of the majors, except the math, enrolment greatly falls on the second semester of their first year in school, which shows that there were a lot of dropouts at that time of the school year. Meanwhile, Figure 2.2.3 shows that both ages 15-18, 19-22, and 23 – 26 fall greatly on the second semester of the first year in the school of the students in school. The downfall of the lines on the graph shows the decreasing rate of students continuing college. Moreover, it was found out that in the group of ages 23 – 26, there is no graduate.

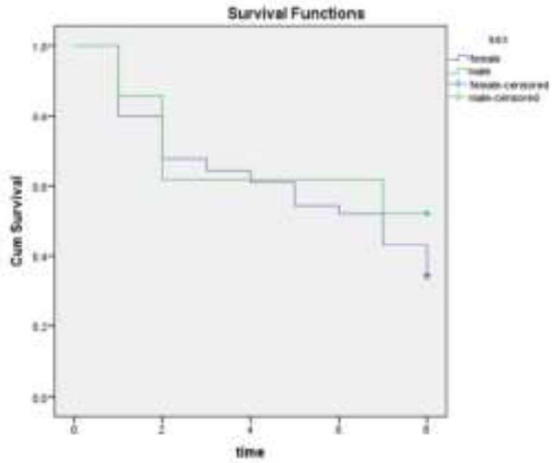

Figure 2.2.1 *Graphical Representation of the Survival Function for Batch 2009 – 2013 when Grouped According to Sex*

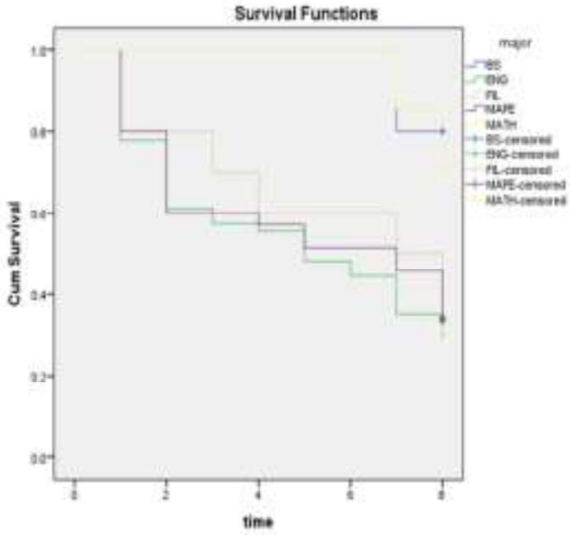

Figure 2.2.2 *Graphical Representation of the Survival Function of Batch 2009-2013 when Grouped According to Major*

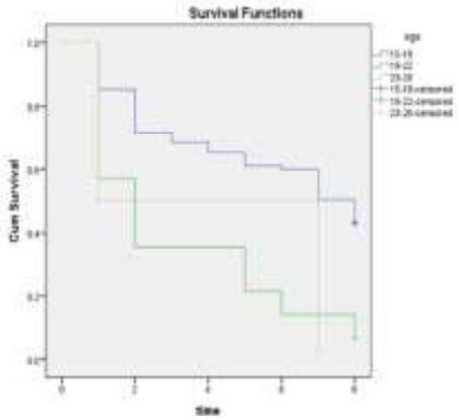

Figure 2.2.3. *Graphical Representation of Survival Function for the Batch 2009-2013 when Grouped According to Age*

Batch 2010 – 2014. When grouped according to sex, Figure 2.3.1 shows that both male and female BSED students' of the UM Digos College fall greatly on the second semester of their first year in school, which means that there are more dropouts at that stage of the school year.

Moreover, when the students are grouped according to major, Figure 2.3.2 illustrates that all of the majors greatly fall on the second semester of their first year in school, which shows that there were a lot of dropouts at that time of the school year.

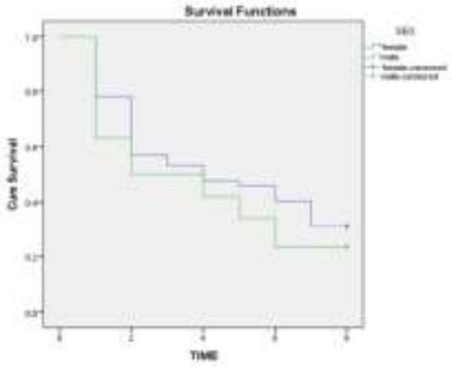

Figure 2.3.1. *Graphical Representation of the Survival Function for Batch 2010 – 2014 when Grouped According to Sex*

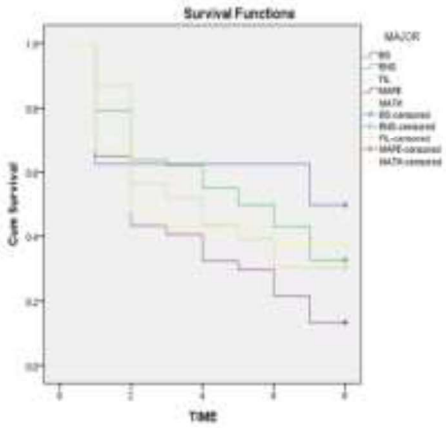

Figure 2.3.2. *Graphical Representation of Survival Function for the Batch 2010-2014 when Grouped According to Major*

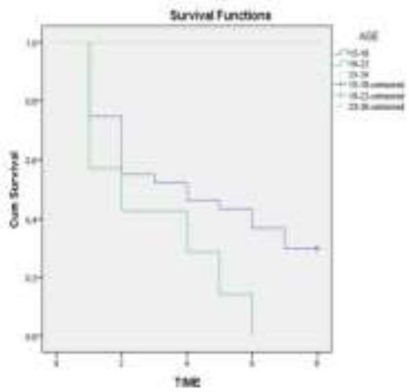

Figure 2.3.3 *Graphical Representation of Survival Function for the Batch 2010-2014 when Grouped According to Age*

Meanwhile, Figure 2.3.3 shows that both ages 15-18 and 19-22 fall greatly on the second semester on the first year in the school of the students while ages 23-26 have no dropouts.

Batch 2011 – 2015. When grouped according to sex, Figure 2.4.1 shows that both male and female BSED students of the UM Digos College fall greatly on the second semester of their first year in school, which means that there are more dropouts at that stage of the school year.

Moreover, when the students are grouped according to major, Figure 2.4.2 illustrates that all of the majors greatly fall on the second semester of their first year in school, which shows that there were a lot of dropouts at that time of the school year.

Meanwhile, Figure 2.4.3 shows that both ages 15-18 and 19-22 fall greatly on the second semester on the first year in the school of the students while ages 23-26, all of them dropped out on the first semester on the second year of the students in school. The downfall of the lines on the graph shows the decreasing rate of students continuing college.

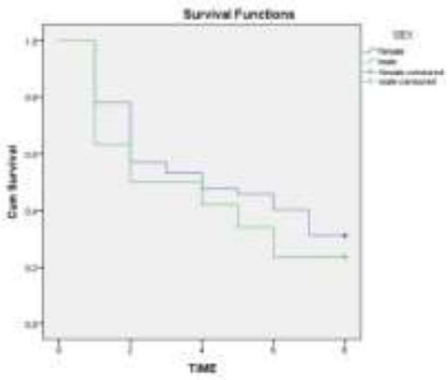

Figure 2.4.1. *Graphical Representation of the Survival Function for Batch 2011 – 2015 when Grouped According to Sex*

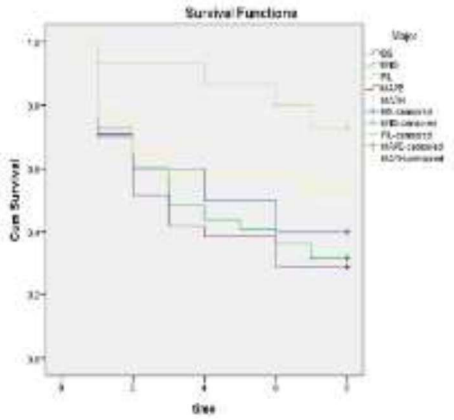

Figure 2.4.2. *Graphical Representation of Survival Function for the Batch 2011-2015 when Grouped According to Major*

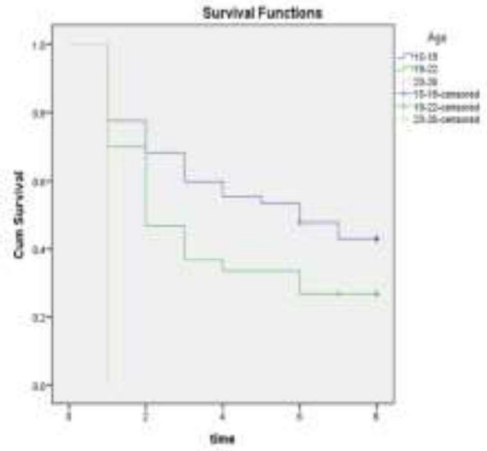

Figure 2.4.3. *Graphical Representation of Survival Function for the Batch 2011-2015 when Grouped According to Age*

Model Summary of the BSED students

Batch 2008 – 2012. Table 3.1 presents the model summary of the BSED students in the year 2008-2012. Based upon the probability value of the different variables, which is greater than 0.05, it shows that sex, major, and age are not the factors that predict the students to drop out. Hence, the variables cannot predict the probability of a student dropping out.

Table 3.1. *Variables in the Equation for Prediction (Batch 2008-2012)*

	B	SE	Wald	Df	Sig.	Exp(B)
SEX	-.433	.301	2.066	1	.151	.648
MAJOR			.317	3	.957	
Major(1)	.180	.415	.189	1	.664	1.198
Major(2)	.001	.574	.000	1	.999	1.001
Major(3)	.184	.435	.179	1	.672	1.202
AGE			3.793	2	.150	
Age(1)	.365	1.028	.126	1	.723	1.440
Age(2)	.921	1.040	.785	1	.376	2.511

*significant at 0.05

Batch 2009 – 2013. Table 3.2 presents the model summary of the BSED students in the year 2009 – 2013. The age has a p-value of 0.007, which is less than 0.05, which means that there is a significant difference with regards t the dropout of the students. Hence, the data revealed that the given variable can predict the probability of a student dropping out. However, sex and major have not been found to be significant.

Table 3.2. *Variables in the Equation for Prediction (Batch 2009-2013)*

	B	SE	Wald	Df	Sig.	Exp(B)
SEX	.194	.357	.296	1	.587	1.214
MAJOR			5.569	4	.234	
Major(1)	-.003	1.241	.000	1	.998	.997
Major(2)	1.375	.731	3.533	1	.060	3.954
Major(3)	1.287	.809	2.532	1	.112	3.623
AGE			9.973	2	.007	
Age(1)	1.433	.745	3.700	1	.054	4.189
Age(2)	-.783	.729	1.154	1	.283	.457

*significant at 0.05

Batch 2010 – 2014. Table 3.3 presents the model summary of the BSED students in the year 2010-2014. Based upon the probability value of the different variables, which is greater than 0.05, it shows that sex, major, and age are not the factors that predict the students to drop out. There are no significant differences in the said variables. Hence, the variables cannot predict the probability of a student dropping out.

Table 3.3. *Variables in the Equation for Prediction (Batch 2010-2014)*

	B	SE	Wald	Df	Sig.	Exp(B)
SEX	-.235	.226	1.081	1	.298	.790
MAJOR			4.570	4	.334	
Major(1)	-.294	.578	.258	1	.612	.746
Major(2)	.023	.328	.005	1	.945	1.023
Major(3)	.083	.376	.049	1	.824	1.087
AGE			1.834	2	.400	
Age(1)	.450	.335	1.802	1	.180	1.568
Age(2)	10.031	102.751	.010	1	.922	22713.198

*significant at 0.05

Batch 2011 – 2015. Table 3.4 presents the model summary of the BSED students in the year 20019-2013.The age has a p-value of .014, which is less than 0.05, which means that there is a significant difference with regards to the dropout of the students. Hence, the data revealed that the given variable can predict the probability of a student dropping out. However, sex and major have not been found to be significant.

Table 3.4. *Variables in the Equation for Prediction (Batch 2011-2015)*

	B	SE	Wald	Df	Sig.	Exp(B)
SEX	.581	.326	3.180	1	.075	1.788
MAJOR			7.104	4	.130	
Major(1)	.405	.542	.559	1	.455	1.499
Major(2)	.410	.386	1.126	1	.289	1.506
Major(3)	-.755	.613	1.516	1	.218	.470
AGE			8.509	2	.014	
Age(1)	.578	.415	1.947	1	.163	1.783
Age(2)	-1.588	.743	4.568	1	.033	.204

*significant at 0.05

Batch 2012 – Present. Table 3.5 presents the model summary of the BSED students in the year 2012-present. Based upon the probability value of the different variables, which is greater than 0.05, it shows that sex, major, and age are not the factors that predict the students to drop out. There are no significant differences in the said variables. Hence, the variables cannot predict the probability of a student dropping out.

Table 3.5. *Variables in the Equation for Prediction (Batch 2012-Present)*

	B	SE	Wald	Df	Sig.	Exp(B)
SEX	.353	.234	2.277	1	.131	1.423
MAJOR			1.026	4	.906	
Major(1)	-.201	.419	.230	1	.632	.818
Major(2)	.089	.276	.104	1	.747	1.093
Major(3)	-.066	.356	.035	1	.852	.936
Major(4)	-.133	.309	.185	1	.667	.875

*significant at 0.05

Log-rank (Mantel-Cox) overall comparison of the survival distribution

Table 4 presents the overall comparisons of the survival distribution for the different levels of the variables using Log Rank (Mantel-Cox). The data in the year 2009-2013 reveal that there is a significant difference in survival times between the age studied at all-time points in the study with a p-value of 0.001 and T-value of 14.151. And the data in the year 2011-2015 reveal that there is a significant difference in survival times between the major and age studied at all-time points in the study. A p-value of 0.035 and a T-value of 10.319 for the major and a p-value of 0.007, and a T-value of 9.806 for the age. Since the result revealed that only on the batches 2009-2013 and 2011-2015 that some of the variables found significant and not in all the batches, it is not considered significant and can be used in predicting the tendency of the students to drop out.

Table 4. *Overall Comparisons of the Survival Distribution for the Different Levels of the Variables Using Log Rank (Mantel-Cox)*

	Chi-Square	Df	Sig
2008 – 2012			
Sex	2.535	1	0.111
Major	0.813	3	0.809
Age	4.915	2	0.086
2009 – 2013			
Sex	1.486	1	0.223
Major	7.475	4	0.113
Age	14.151	2	0.001*
2010 – 2014			
Sex	1.649	1	0.199
Major	7.31	4	0.120
Age	6.74	2	0.34
2011 – 2015			
Sex	1.616	1	0.204
Major	10.319	4	0.035*
Age	9.806	2	0.007*
2012 – Present			
Sex	3.329	1	0.068
Major	1.938	4	0.747
Age	-	-	-

*significant at 0.05

CONCLUSIONS AND RECOMMENDATIONS

As a support of the above statements and results, Dorian C. Vizcain (2005) claims in his study that dropouts, according to their age, tend to be held back in their schooling and to be one or two years older than their peers. His study supports the significance of age in student's tendency to drop out. In addition, according to Selling, J. of 2013, in his book entitled "College (Un)Bound: The Future of Higher Education and What It Means for Students," majors were also seen as fungible – if the students don't like their field of study, they trade it in for another one or add a different major to the one they already have. By the end of their first year, a quarter of all freshmen change their minds about their field of study. Thus, they tend to drop out of school.

Age, sex, and major are not factors of predicting students' tendency to drop out. Students tend to drop out amidst their second semester of their first year and the first semester of their second year in school. Only in the batch of students from 2009 – 2013 and 2011 – 2015, age and major were found out significant in predicting students' tendency to dropout but not all of the batches. Therefore, there is no factor that can predict students' tendency to drop out of school. From the statements above, it can be concluded that there is no model that could be derived in predicting the probability of a student dropping out of school. There is no significant difference in students' dropout rate according to age, sex, major. Therefore, it failed to reject the null hypothesis.

UM Digos College should use the results of this study to conduct further research concerning the factors that contribute to the decision of the students to leave school. Moreover, the institution should regularly use the latest data in assessing students' tendency to drop out and students' trends of dropping out of school. Additioanlly, the administration and the Teacher Education Department of UM Digos College should adopt the findings of the study to improve the curriculum and instruction under the Secondary Education Programs. Further researches must be conducted to further analyze the survival rate and the dropout rate of the students of this institution.

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Projecting college and grade 11 students' population of UMDC for the S.Y. 2016-2017

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ABSTRACT

This study applied a coherent use of time-series analysis and survey to forecast and project trends in the expected population of students in the University of Mindanao Digos College. The study emphasized the movements of enrollment trends of college students and a survey to create a projection of school and field preferences of upcoming Grade 11 students. The basic and logical method of forecasting was used to provide coherent and explainable results for forecasting college students' population. These methods were Average and Ratio Analysis, Regression Analysis, and Naive Method of Forecasting. Survey method and analysis were used to create a projection on Grade 11 students in UMDC for the SY 2016-2017. Combining the results from both projections in forecasted values of college students and the expected number of Grade 11 students would create another projection for the expected total number of UMDC students for the school year 2016-2017.

Keywords: *time – series, ARIMA, enrollment trends, UM Digos College*