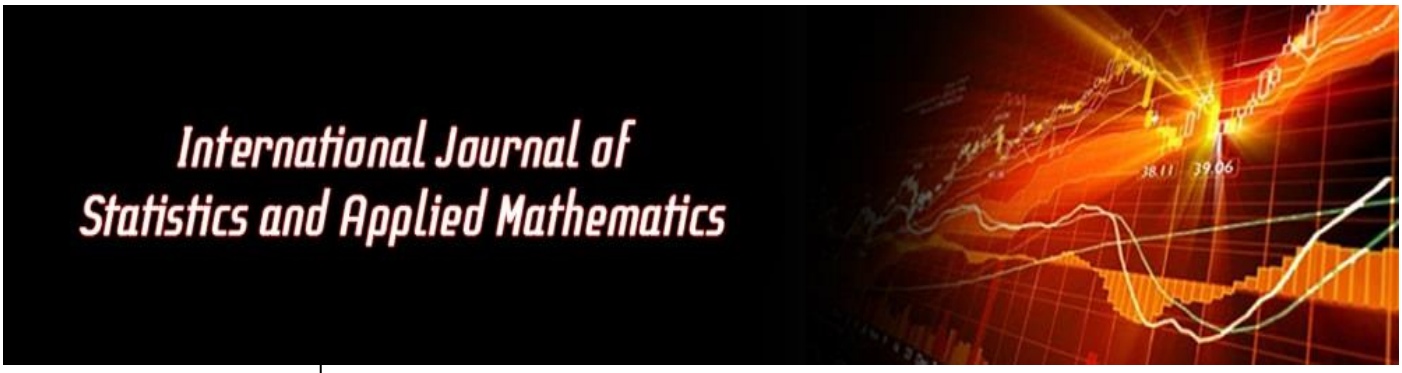


ISSN: 2456-1452
Maths 2025; 10(5): 44-52

www.mathsjournal.com
Received: 05-03-2025
Accepted: 08-04-2025

Juliana Iworikumo Consul
Niger Delta University,
Wilberforce Island, Amassoma,
Bayelsa State, Nigeria

Corresponding Author:
Juliana Iworikumo Consul
Niger Delta University,
Wilberforce Island, Amassoma,
Bayelsa State, Nigeria

Determinants of graduate unemployment: A survival analysis approach

Juliana Iworikumo Consul

DOI: https://www.doi.org/10.22271/maths.2025.v10.i5a.2034

Abstract
Unemployment is the state of being unemployed. People who are actively seeking employment and currently available to start work are the unemployed. Since the rate of unemployment is on the rise, this research aims to predict or identify potential determinants affecting unemployment in Nigeria using survival analysis. A total of 260 questionnaires were administered to unemployed indigenes of Bayelsa State. Out of which 253 were filled and returned and considered for analysis. The gender, marital status, educational level, age, grade level or Cumulation Grade Point Average (CGPA), field of study, place of residence, received training on job searching method, marital status, received training in the field of study and Local Government Area (LGA) were identified as potential determinants. The AIC (Akaike Information Criterion) were used to compare the efficiency of models between Weibull and Cox Proportional Hazard model. The Weibull model with the variables CGPA, received training on job search and received training on field of study as highly significant variables had the best fit with respect to the lower AIC value.

Keywords: Unemployment, summary, hazard, determinants, cox proportional hazard model

1. Introduction
Unemployment among graduates has become one of the fundamental challenges facing Nigeria at the moment. There are clear indications that in recent decades there was no time that in the history of Nigeria where unemployment is as serious as now. The total population in Nigeria can be divided into labour force (currently active) and non-labour force (not currently active). The labour force population covers all persons aged 15 to 64 years who are willing and able to work regardless of whether they have a job or not [1]. People who are actively seeking employment and currently available to start work are the unemployed while the unemployment rate refers to unemployed persons as a percentage of the civil labour force [2]. Unemployment is among the biggest threats to social stability in many countries and [1] also indicates that approximately over six million people are unemployed.
Employment is crucial for both individuals and society as it provides income, fosters skills and development, improves social well-being and contributes to the economic growth and stability of a country. For Individuals, employment brings financial stability where the basic needs like housing, food and healthcare are being met. These jobs offer opportunities to learn new skills, gain experiences and advancement in careers. Employment can boost the self-esteem and provide a sense of purpose and accomplishment and thereby providing a structured working environment for social interaction which will foster relationships and a sense of community for the employee. Some studies like [3] have shown that employment can reduce stress and improve the mental health and hence, promoting the physical activity and a healthier lifestyle. For the society, employment powers the economic growth by driving the demand for goods and services, stimulating investment, contributing to the tax revenue and increasing productivity. Employment also reduces income inequality by providing job opportunities for people to earn a living and reduces crime and poverty in the society.

This persistent problem of unemployment over the last decade in Nigeria has become great concern for policymakers and academicians as unemployment is often used as a measure of the health and wealth of the economy. Unemployment which could also be seen as underutilization of human capital is a very important issue that negatively affects the development of a country. Energetic, courageous and qualified graduates can make changes to the economic development if they are well utilized and managed and as such bring about prosperity to the nation [4, 5]. Unemployment in Nigeria is a multifaceted problem which stem from factors like corruption, economic fluctuations, structural issues, a mismatch between skills and job requirements. In Nigeria, a heavy reliance on oil has led to a lack of diversification and job opportunities. Some social and political factors that affect unemployment in Nigeria include the rapid population growth, lack of quality education etc. Unemployment is not only a statistical concept, but also a multidimensional social and economic phenomenon. This may result in psychological, social and economic crises such as depression loss of confidence, poor mental health, low self-esteem, poor social adaptation, increased crime rates and violence, increase in corruption, drug addiction, dependence on family and suicide [6].

A major benefit of education is that it lowers the risk of unemployment at higher education levels. It is expected that educated people enjoy benefits such as higher wages, greater upward mobility in income and occupation and greater employment stability over less educated workers. In general, people with higher levels of education should have better job prospects [2]. This might not be in some cases in Nigeria in the recent times as there is a marked negative difference in particular between people who have attained upper secondary education and those who have not. [7] Reviewed literatures on the issue of education and unemployment in Nigeria.

The issue of graduate unemployment is becoming a very fundamental issue and critical attention should be drawn to the underlying factors that influence undergraduate students' successful transition into the labour market. A large number of secondary and university graduates stay unemployed for a longer period and there has been an increase in the rate of unemployment over the years as the population of the country expands as students join both secondary schools and universities. Unemployment therefore, poses challenges to countries as the labour market can only accommodate limited number of people and more-fresh secondary and university graduates still remain unemployed.

There are many studies regarding unemployment in literature that have been conducted in different parts of the world by various scholars. [8] Carried out a study to predict the time spell to first employment and to determine the effects of related factors on the timing of first employment on new graduates from Debre Markos University using survival models. [9] Also used survival analysis as an approach to estimating the duration of unemployment and finding some factors influencing the probability of leaving unemployment in some countries. [10] Modelled the duration of unemployment among staff in the National Bureau of Statistics using the Kaplan Meier survival model as a means of comparing unemployment between males and females. [2] Also showed that there is a higher employment rate in men than in women and this is large among people with low levels of education.

[4] identified the determinants of youth unemployment in urban areas of Ethiopia and [11] focused on the determinants of employment in Nigeria based on four theoretical explanatory variables in order to evaluate their impact on the trend of unemployment rate. The research by [12] assessed the effectiveness of the banking system credit in eliminating the high rate of unemployment by making a comparative analysis of Nigeria and South Africa by employing some test to determine the relationship between the variables.

[13] Proposed a mathematical modelling of unemployment dynamics using a deep artificial neural network (ANN) as a non-linear hazard function. [14] Examined the determinants of the rate of unemployment in Nigeria by employing the Ordinary Least Squares (OLS) method using unemployment rate as the dependent variable and five explanatory variables including Government Expenditure, Inflation Rate, First Lag of Unemployment, Population and Real Gross Domestic Product. [15] Also examined the determinants of unemployment using the Ordinary Least Squares (OLS) method for robustness check and error correction model (ECM) and [16] also used the ECM and time series to analyze the macroeconomic determinants of unemployment in Nigeria.

Survival analysis is used to examine the effects or relationship of the covariates on survival and the probability of occurrence of the event [17, 18] and examples of such events are duration of marriage [19] and unemployment duration [14]. [20] Examined the factors responsible for high unemployment in Nigeria and its social, economic and political implications. Unemployment is usually attributed to having poor entrepreneur skills, the lack of skills from employee or lack of money to create one's own job [4]. Some factors that might directly affect the unemployment among graduates might be the discipline or course of study, attained grade, gender, residence, marital status, cumulative grade point average (CGPA) earned from the university, education level, residence, etc. Having established that unemployment is an evil in Nigeria which must be taken care of for the national economic growth to take place, it is important to identify the potential determinants or factors affecting unemployment in Nigeria and the necessary policies are implemented to influence these factors in the right direction so as to reduce unemployment. Thus, the aim of this research is to identify the determinants of unemployment in Nigeria using the survival analysis approach.

2. Materials and Methods

2.1 Study population and data collection

The study population is the unemployed people from different local government areas from Bayelsa State. A total of 260 questionnaires were administered to unemployed indigenes of Bayelsa State. Out of which 253 were filled and returned and considered for analysis. The event of interest which is the unemployment duration is the time till first employment after graduation from either polytechnics or universities.

The respondents were required to fill their information such as their gender, marital status, educational level, age, grade level or cumulation grade point average (CGPA), field of study, place of residence, received training on job searching method, marital status, received training on the field of study and local government area (LGA). The questionnaires were used to collect the data and the information obtained were entered into spreadsheet and subsequently transferred into R software for analysis.

2.2 Variables

The outcome variable which is the survival time was the time spent (approximately in months) from the date of passing out

from National Youths Service Corps (NYSC) of graduates below 30 years or NYSC exemption of the graduates 30 years and above or date of receipt of OND certificate to the first day of employment. Other variables are the gender (male or female), age at graduation in years (grouped as less than or equal to 20 years, 20-25 years, 26-30 years, 31-35 years, 36 and above), marital status (single, married, divorced, widow or widower), education level (Ordinary National Diploma (OND), Higher National Diploma (HND) or Bachelors of Science (BSc.), Post Graduate Diploma (PGD) or Masters of Science (MSc.) and Doctors of Philosophy (PhD)), Cumulative Grade Point Average (CGPA) (3.5 and above, 3.0-3.49, 2.50-2.99, less than 2.50), field or Faculty of study (Education, Medical Science, Management Science, Arts, Sciences, Social Sciences, Environment Sciences and Others, residence lived by graduates (urban or rural), received training on job searching method (yes or no), Local Government Area (Brass, Ekeremor, Kolokuma, Nembe, Ogbia, Sagbama, Southern Ijaw, Yenagoa) and received training on field of study (yes or no).

Method of data analysis

Survival analysis is a class of statistical methodology for studying a set of data with the occurrence and timing of events. In the case of this research, the variable of interest is the time-to-first employment of graduates with Ordinary National Diploma (OND) or after National Youth Service Corps (NYSC) for graduates with Bachelors of Science or Higher National Diploma or Post graduate certificates. Survival data usually contain a universal feature known as censoring [21] in which the researcher provides the data for subjects for a period of time prior to the occurrence of the event of interest. Censoring in data occurs when the exact survival time is unknown. The data used for this research is right censored [22] where the subjects have not had the event of interest before the study has come to an end maybe due to lose of follow up. [21] Explained the concept of censoring by bridging the gap between the known and unknown issues about censoring by using statistical methods to investigate the effects of different censoring assumptions.

The highly recommended Kaplan Meier estimator will be used to check the shape of the survival function for all categorical variables. The survival function gives idea on whether or not the groups are proportional. In order to see whether two or more survival curves are identical we will use the log rank test. The log-rank test is the most commonly used statistical test for comparing the survival distributions of two or more groups. It is appropriate to use the log-rank test when the data are right-skewed and censored. The log-rank test compares the whole survival experience between groups and may be viewed as a test of whether the survival distributions or curves are similar or not. In the log-rank test tests, we test the null hypothesis (H_0) that the event time distribution among groups is equal. The null hypothesis is

H_0: There is no significant difference in survival probabilities between the groups.

Against the alternative hypothesis H_1

H_1: There is a significant difference in survival probabilities between the groups

The log-rank test is designed to detect the difference between two or more survival distributions or functions or curves especially when the event rate in one group is consistently higher than the other group and whether the variables should be included in the Cox proportional hazard model [23]. The survival data can be analyzed by regression models, known as Cox proportional hazards models and it is used in order to examine the relationship of the survival distribution to covariates. The proportional hazard model $h_i(t)$ can be written as: $h_i(t) = \lambda_i \times h_0(t)$

Where λ_i is the hazard multiplier which is related to the covariates of the i^{th} individual and $h_0(t)$ is the baseline hazard function (unspecified) which is a function of the time t. We note that $\lambda_i > 0$.

A linear model for the log-hazard or a logarithmic link function to a linear predictor $\eta_i$which may be used as a prognostic index may be written as:

$$\eta_i = \log \lambda_i = \beta_0 + \sum_{r=1}^{R} \beta_r x_{i,r}$$

Where β_0 is the baseline parameter, β_r is the r^{th} covariate parameter and $x_{i,r}$ is the value of the covariate r for the i^{th} individual.

A standard parametric form such a Weibull distribution can be used to specify the baseline hazard [24]. The probability density function, $f(t)$ of the Weibull distribution is given by

$$f(t) = \lambda \alpha t^{\alpha-1} \exp(-\lambda t^{\alpha})$$

Where α is the shape parameter of the Weibull distribution and λ is the scale parameter which can be used to incorporate the covariates. Again, the hazard function of the Weibull distribution can be further simplified as

$$h_i(t) = \lambda_i \times h_0(t).$$

The Akaike Information Criterion (AIC) which is a method for evaluating the fit of a statistical model to data is used for the selection of the model [25] where the model with the lowest AIC is considered the one that best fits the data.

3. Results and Discussion

The data was collected from all local government areas in Bayelsa State of Nigeria. A total of 253 unemployed graduates were considered for analysis. According to Table 1, the censored data are defined as "0" where the survival time is from the month the graduate ended the NYSC until the month of filling the questionnaire where he or she is still unemployed. The uncensored data are defined as status "1" indicating the survival time from the month the subject ended NYSC until the month they started working. For instance, 13+ means that the graduate did not get a job within 13 months and is still unemployed till the end of the study while 13 means that the graduate was only unemployed for 13 months. From Table 1, only 3 graduates did not get job within 13 months and are still unemployed till the end of the study while 4 graduates were unemployed for 13 months. On average, the survival time of unemployment was 12.38 months. The minimum survival time was 1 month which means the graduate gained employment within a month of graduation from the NYSC and the maximum survival time was 34 months. The standard deviation is 8.66 months, indicating that the survival time varied a bit from one another.

Table 1: Table of survival time with censoring data

Survival Time (months)	Censor (0=Unemployed, 1=Employed)	Frequency (No of Graduates)	Survival Time (months)	Censor	Frequency
1	1	15	18	0	2
2	1	15	18+	1	5
3+	0	1	19	1	6
3	1	19	20+	0	3
4+	0	2	20	1	21
4	1	8	21	1	6
5	1	24	22	1	6
6	1	1	23+	0	3
7	1	1	23	1	1
8	1	5	24+	0	1
9	1	8	24	1	2
10+	0	5	25+	0	1
10	1	32	25	1	3
11	1	2	28+	0	1
12	1	2	29	1	1
13+	0	3	30+	0	5
13	1	4	30	1	9
14	1	9	31	1	1
15	1	15	33	1	1
16	1	2	34	1	2

Table 2 showed that among the graduates 80 (31.60%) of them were female and the remaining 173 (69.40%) were male. Among the female graduates, 71 (88.8%) were employed, whereas from.

Table 2: Graduates employment status by their variables, the p-values for the log-rank test of equality of the survival function and Chi-squared test value

Variable	Category	Number of Graduates	Log-rank Test, P-Value	Chi-Squared Value
Age	Below 20 years	4		
	20-25 years	29		
	26-30 years	123		
	31-35 years	75	0.70	2.2
	36 and above	22		
Gender	Male	173	0.60	0.2
	Female	80		
Educational Level Attained	OND	108		
	HND or BSc.	137		
	Post Graduate	8	0.80	0.5
CGPA	≥3.50	5		
	3.00-3.49	60		
	2.50-2.99	116		
	≤2.49	72	0.00	86.2
Field of Study	Education	41		
	Medical Sciences	16		
	Management	64		
	Arts	45		
	Sciences	20		
	Social Sciences	21		
	Environmental Sciences	17		
	Others	29	0.00	53.1
Residence	Urban	174	0.30	1.0
	Rural	79		
Received Job Search Training	Yes	89	0.00	144.0
	No	164		
Local Government Area	Brass	72		
	Ekeremor	39		
	Kolokuma	27		
	Nembe	25		
	Ogbia	25		
	Sagbama	15		
	Southern Ijaw	35		
	Yenagoa	15	0.02	17.1
Marital Status	Single	170		
	Married	75		
	Divorced	8	0.20	3.5
Field-Related Training	Yes	77	0.00	114.0
	No	176		

The male graduates, 155 (89.6%) were employed revealing that the percentage of employed female graduates was higher than that of male graduates.

As for the graduate's distribution by age, majority of the them were between 26 and 30 years (48.61%) whereas 29.64% of the graduates were between 31 and 35 years. Majority of the graduates had either HND or BSc. (54.2%) certificates whereas 84 (42.7%) had OND certificates. The remaining graduates also had a Post graduate certificate.

Among of the graduates, only 5 (2%) had a CGPA of above 3.50. Most of the graduates had CGPA of either between 2.50 and 2.99 (45.8%) and between 3.00 and 3.49 (23.7%). The remaining graduates had CGPA of less than 2.49. Most of the graduates studied Management (25.3%), 45 (17.8%) of the graduates studied Arts and 41 (16.2%) of the graduates studied Education. The remaining graduates studied Medical Sciences, Sciences, Social Sciences, Environmental Sciences and others. Most of the graduates were from Brass (28.5%), Ekeremor (15.4%) and Southern Ijaw (13.8%) local government area. The remaining graduates were from Kolokuma (10.7%), Nembe (9.9%), Ogbia (9.9%), Sagbama (5.9%) and Yenagoa (5.9%) local government areas of the state. Majority of the graduates reside in urban (68.8%). Also, most of the graduates (64.8%) didn't receive training on job search.

Among the graduates, 170 (67.1%) were single, 75 (29.6%) were married and 8 (3.2%) were divorced. Among the graduates, 77 (30.4%) had training on their field of study while 176 (69.6%) did not have training on their field of study.

Figure 1 shows the Kaplan-Meier (KM) plot of the survival times for unemployed graduates with the vertical dashes representing the censored items. The curve shows a highest survival rate of unemployment of within 1 month which gradually steps down to 8 months. The curve decreases as it reaches the survival time of 34 months.

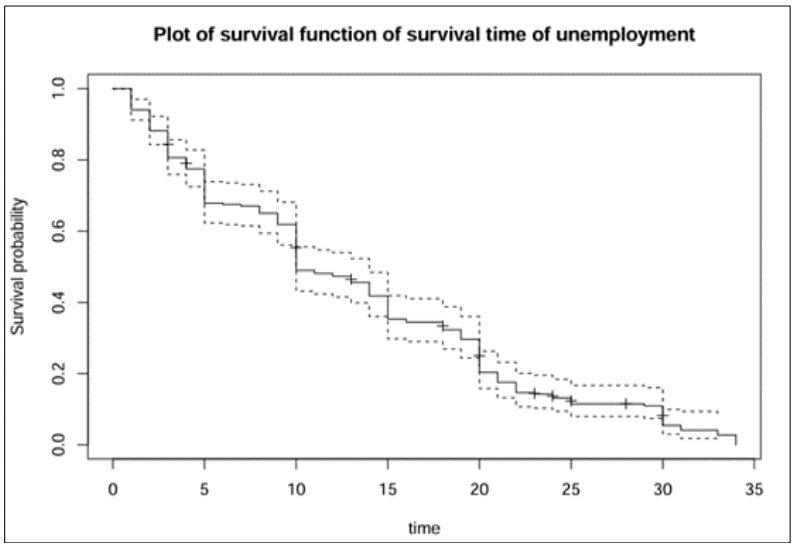
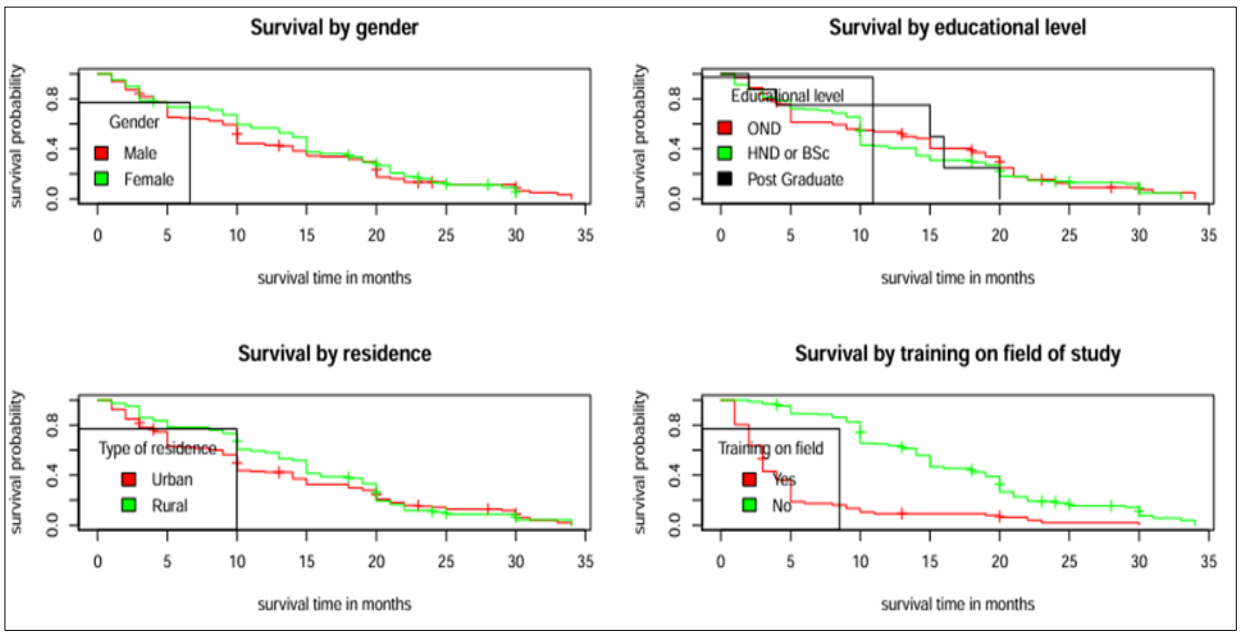


Fig 1: Kaplan-Meier (KM) plot of the survival times

Figure 2 show that the large diverge in the Kaplan Meier curves only occur in the CGPA, field of study, received training on job search, LGA and received training on field of study and hence, these five variables give large impact to the survival time of unemployment of the graduate. The graph also shows that the approximate median unemployment survival time for male graduates was 10 months whereas female graduates was 14 months which is a bit longer. From Figure 2. The approximate median unemployment survival time for graduates who did not have training for job.



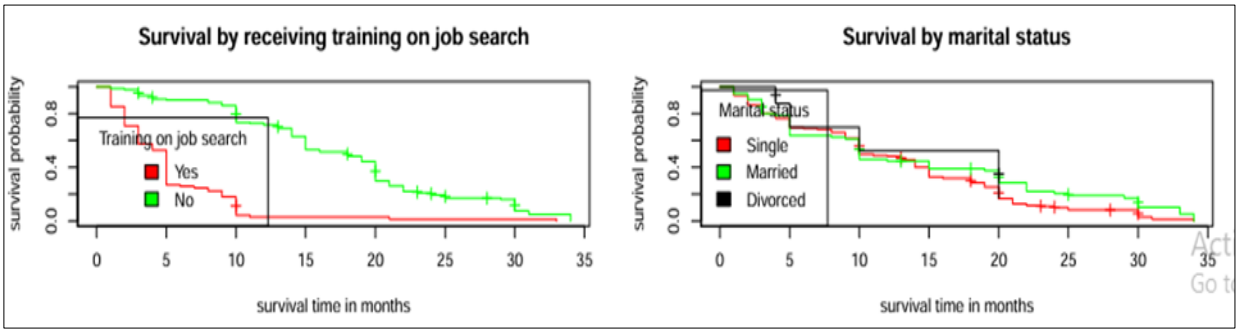


Fig 2: Kaplan Meier curves of the variables search was 18 months whereas those who had training for job search was 5 months which is shorter

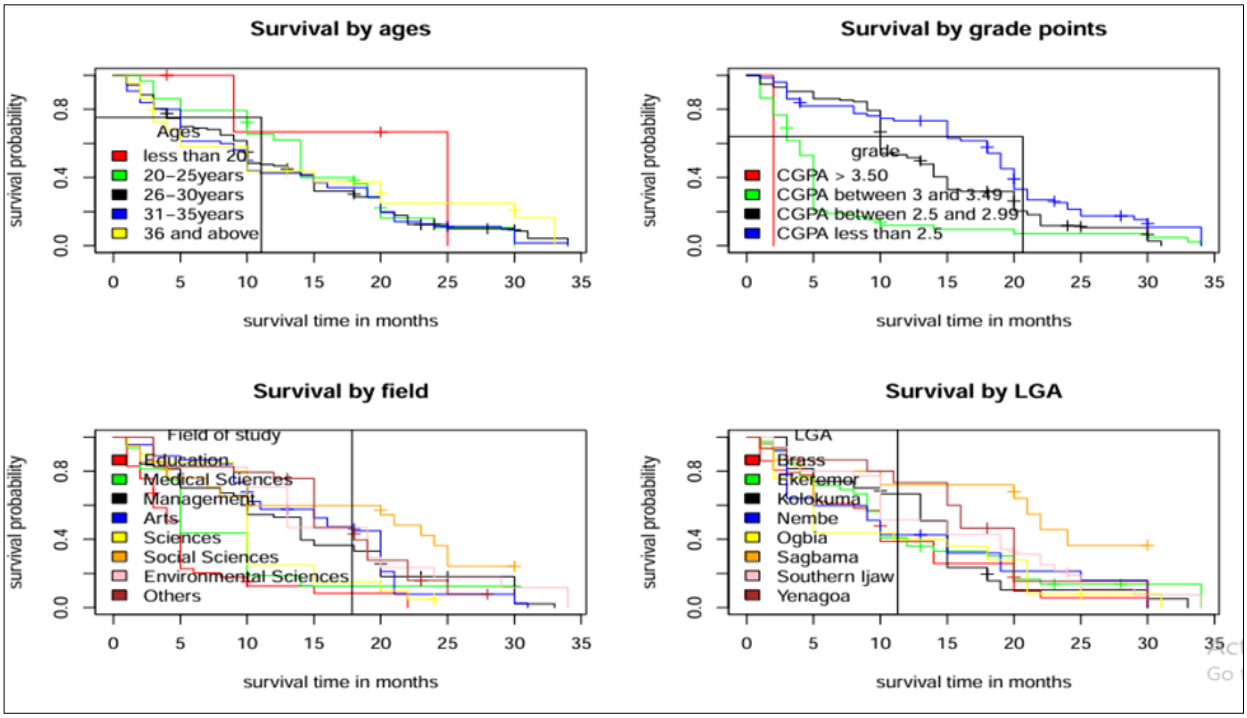


Fig 3: Survival analysis plots depicting the probability of unemployment duration across different factors

Figure 2 also shows that the approximate median unemployment survival time for graduates who did not have training in their field of study was 15 months whereas those who had training for job search was 3 months which is shorter. The graph also shows that the approximate median unemployment survival time for graduates who lived in urban was 10 months whereas it was 15 months for graduates who lived in rural places. From Figure 2, the approximate median survival time for unemployment for graduates who had BSC or HND certificates was 10 months and graduates with post-graduate certificate was 15.5 months whereas graduates with OND certificates was 13 months.

Figure 2 shows that the approximate median unemployment survival time for graduates between 26 and 30 years and between 30 and 35 years and 36 and above was 10 months which was shorter than the others. From Figure 2, the approximate median unemployment survival time for graduates who had CGPA more than 3.50 was 2 months, between 3.00 and 3.49 was 5 months, between 2.50 and 2.99 and less than 2.49 was 13 months and 19 months respectively. We observe that the approximate median survival time for unemployment for graduates who come from Ogbia was 5 months which was the shortest. Brass, Ekeremor and Nembe LGA was 10 months whereas the others were a bit higher. Also, the figure shows that the approximate median survival time for unemployment for graduates who studied courses in Education and Medical Sciences were 5 months which were the shortest. However, the decision on the potential determinants of unemployment would also depend on the results of the log-rank test, which is tabulated in Table 2. The factors are included in the study if the p-value from the log-rank test is less than 0.05 (which implies 5 percent significant levels). From the Table 2, five factors (CGPA, field of study, receiving training on job search training, LGA and received training on field of study) are significant with the p-values 0.00, 0.00, 0.00, 0.02 and 0.00 respectively, which are less than 0.05 at 5 percent significant level. Again, these values indicate that these five variables are the significant factors in giving more impact to the overall survival. This also means that the survival times are significantly different between groups for the CGPA, field of study, training on job search, LGA and received training on field of study and thus should be included in the Cox proportional hazard model. The Schoenfeld residuals test was further used to check for trend of the underlying assumption of the proportional hazard and the results of the Schoenfeld test for the potential determinants and results are given in Table 3 while the plots are shown in Figure 4. Figure 4 shows the Schoenfeld residuals test has a non-linear pattern which indicates that the covariate effect on the hazard is changing over time. A p-value less than the significance level of 0.05 in Table 3 suggests a statistically significant violation of the proportional hazard assumption.

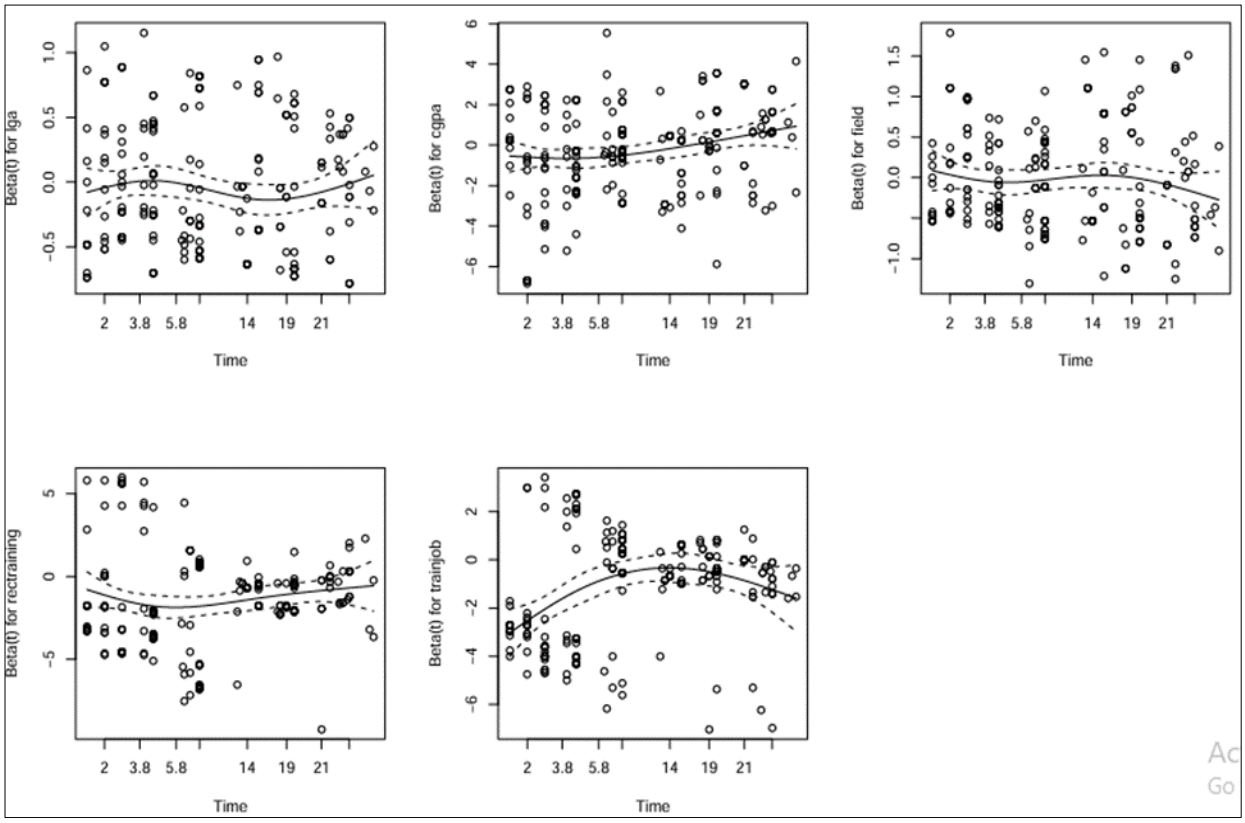


Fig 4: Schoenfeld residuals test

Table 3: Results from Schoenfeld residuals test for the potential determinants from log-rank test

Variables	Chisq value	P-Value
CGPA	15.47	0.00
Field	4.72	0.03
Training on job search	11.05	0.001
Received training on field of study	18.80	0.00
LGA	0.129	0.72
Global	35.32	0.00

The Cox proportional hazard was used to assess the relationship of the predictor variables. The Weibull model will also be used because constant hazard cannot be assumed. Table 4 shows the results of AIC values and significant factors for the Cox proportional hazard and Weibull Model for all potential variables. The result shows that both the Cox proportional hazard and Weibull model are significant as a whole since their p-values are less than 0.05 at 5 percent significant levels and hence does not support the proportional hazard model. The results in Table 4 display that the Weibull model has a lower AIC value (AIC=1444.29) compared to the Cox Proportional Hazard model (AIC=1934.003). Therefore, this indicates that the Weibull model produced better estimates compared to the Cox Proportional Hazard model. There are also highly significant effects of at least some covariates. Inspection shows that CGPA, LGA, residence, receiving training on job search and received training on field of study are highly significant in the Cox proportional hazard model while CGPA, residence, receiving training on job search and received training on field of study are highly significant in the Weibull model.

Table 4: AIC values and significant variables of the cox proportional hazards and Weibull model using all potential determinants

	Hazard Ratio	
Variables	**Cox (AIC=1934.003) (Likelihood ratio test=181.5), (P-Value=0.00)**	**Weibull (AIC=1444.29) (Chi square test=198.79), (P-Value=0.00)**
Age	0.1225	0.107
CGPA	0.03*	0.003*
Gender	0.83	0.972
Education level	0.75	0.29
Field	0.48	0.60
LGA	0.03*	0.087
Residence	0.03*	0.05*
Received training on job	0.00*	0.00*
Marital	0.08	0.13
Received training on job field	0.00*	0.00*

Table 5: AIC values and significant variables for cox proportional hazards and Weibull model of 5 potential determinants (CGPA, LGA, field, received training on job search and received training on field of study)

	Hazard Ratio	
Variables	**Cox (AIC=1935.17) (Likelihood ratio test=170.4), (P-Value=0.00)**	**Weibull (AIC=1445.02) (Chi square test=188.06), (P-Value=0.00)**
CGPA	0.000*	0.03*
LGA	0.18	0.13
Field	0.047*	0.64
Received training on job search	0.000*	0.00*
Received training on field of study	0.004*	0.00*

Table 5 shows the results of AIC values and significant variables for Cox proportional hazards and Weibull Model of 5 potential determinants (CGPA, LGA, field, received training on job search and received training on field of study. The results from Table 5 showed that LGA was not statistically significant in the Cox proportional hazard whereas LGA and field were not statistically significant in the Weibull model. The results in Table 5 displays that the Weibull model has a lower AIC value (AIC=1445.02) compared to the Cox Proportional Hazard model (AIC=1935.17).

Table 6: AIC values and significant variables for Cox proportional hazards and Weibull Model of 3 potential determinants (CGPA, received training on job search and received training) on field of study

	Hazard Ratio				
Variables	**Cox (AIC=1934.57) (Likelihood ratio test=167), (P-Value=0.00)**		**Weibull (AIC=1443.40) (Chi square test=185.68), (P-Value=0.00)**		
	$\boldsymbol{\beta}$	**P value**	$\boldsymbol{\beta}$	$\boldsymbol{\beta}$**exp (**$\boldsymbol{\beta}$**)**	**P-Value**
Intercept			-0.4737	2.24	0.02
CGPA	-0.34	0.00	0.2123	1.24	0.00
Received training on job search	-1.33	0.00	0.7467	2.11	0.00
Received training on field of study	-1.11	0.00	-0.5674	1.76	0.00

Table 6 shows the results of AIC values and significant variables for Cox proportional hazards and Weibull Model of 3 potential determinants (CGPA, received training on job search and received training on field of study). The results from Table 6 shows that all the 3 variables are statistically significant in both the Cox proportional hazard and Weibull model. The results also displayed that the Weibull model has a lower AIC value (AIC=1443.40) compared to the Cox Proportional Hazard model (AIC=1934.57) and all other models discussed in Table 4 and Table 5. Furthermore, Since the Weibull model has the lowest AIC value and all variables its model is significant, it is therefore chosen as the final and best model with the variables CGPA, received training on job search and received training on field of study as highly significant variables.

The hazard of Weibull model is computed as follows:

$$h_i(t) = h_0(t)\exp(-0.4737 + 0.2123 * CGPA + 0.7467 * \text{received training on job search} - 0.5674 * \text{received training on field of study})$$

Where the baseline hazard function is a Weibull distribution.

From Table 6, decreasing the CGPA of the graduate by one step leads to increased risk of unemployment at a rate of about 24% a month. Not receiving training on job search doubles the risk of being unemployed. Not receiving training on the field of job increases the risk of being unemployed by 76% a month.

4. Conclusion

Education is supposed to be seen as an investment that pays off any time anywhere. Regrettably, illiteracy has come to stay in most developing countries of the world, including Nigeria. In most countries worldwide, primary and secondary education is compulsory because of its significant impact on the individual's life. That is not the case with tertiary schooling in Nigeria. For instance, in Nigeria, the future of people who are not opportune to further their education after leaving primary and secondary school has posed more threat to the country. Pursing a university degree is the choice of an individual as it is based on the person's needs, career preferences and abilities. The benefits of education on the impact of life which are creating more employment opportunities, leading to career advancements, securing a better income etc. are not always being met. Hence, this research is aimed at estimating unemployment duration of graduates in Bayelsa State of Nigeria by identifying the potential factors responsible for graduate unemployment in Nigeria using survival analysis. This research will give a reliable estimate of information of time-to-employment for both people seeking for job and the counsellors of the public employment service. The research will help in predicting the probability of a job seeker in finding a job.

The study therefore, recommends urgent intervention in the sensitive sectors of the economy such as power, industry and agricultural sectors in order to create employment opportunities. Also, the fight against corruption should be intensified. This research recommends that the graduates should be the finance and work place to create their own job which be the graduate's dream.

In conclusion, this research recommends that the government and others stakeholders considered the above determinants and challenges for future intervention. Areas of further research should be identifying some unknown factors such as the mismatch of skills between graduates, the reputation of institutions attended by graduate and the employers' demands which may affect graduate employment. Others include family background, graduate's achievement and graduates' job-hunting skills influence graduate employment.

5. References

1. National Bureau of Statistics. Unemployment and Underemployment Report, 2020.

2. OECD. How does education affect employment rates? In: Education at a Glance 2011: Highlights. Paris: OECD Publishing; 2011. DOI: https://doi.org/10.1787/eag_highlights-2011-16-en
3. Mahindru A, Patil P, Agrawal V. Role of physical activity on mental health and well-being: A review. Cureus, 2023;7(15):e33475. DOI: 10.7759/cureus.33475. PMID: 36756008; PMCID: PMC9902068.
4. Batu MM. Determinants of youth unemployment in urban areas of Ethiopia. Int J Sci Res Publ. 2016;6(5).
5. Msigwa R, Kipesha EF. Determinants of youth unemployment in developing countries: Evidences from Tanzania. J Econ Sustain Dev. 2013;4(14). ISSN: 2222-1700 (Paper), 2222-2855.
6. Kabaklarli E, Er H P, Bulus A. Economic determinants of Turkish youth unemployment problem: Co-integration analysis. Int Conf Appl Econ, 2011, p. 267.
7. Odia AA, Iyamu OS. Education and unemployment in Nigeria: A critical analysis. Benin J Educ Stud. 2016;24(1 & 2).
8. Ayaneh MG, Dessie AA, Ayele AWAW. Survival models for the analysis of waiting time to first employment of new graduates: A case of 2018 Debre Markos University graduates, Northwest Ethiopia. Hindawi Educ Res Int. 2020;2020:8877504. https://doi.org/10.1155/2020/8877504
9. Vasilica C, Matei. Survival analysis for the unemployment duration. Proceedings of the 5th WSEAS Int Conf on Economy and Management Transformation, 2010;1:354-359.
10. Odeleye RF, Bolarinwa BT, Bolarinwa IA. Survival modelling of unemployment duration experience of staff of National Bureau of Statistics, Ibadan, Nigeria. Int Res Innov Dev, 2019;8(8):29-32.
11. Alozie ST, Nwaiwu BN, Iwueke OC. Determinants of unemployment in Nigeria. Int. J Innov Res Soc. Sci. & Strat Manag Tech, 2016;4(1).
12. Azolibe CB, Dimnwobi S K, Obi UCP. The determinants of unemployment rate in developing economies: Does banking system credit matter? AGDI Working Paper, 2022, WP/22/044. https://hdl.handle.net/10419/269051
13. Boškoski P, Perne M, Rameša M, Boshkoska B. Variational Bayes survival analysis for unemployment modelling. Knowl Based Syst, 2021;229:107335. https://doi.org/10.1016/j.knosys.2021.107335
14. O'Nwachukwu CI. Determinants of the rate of unemployment in Nigeria. Int. J Inf. Res Rev, 2017;4(1):3593-3595.
15. Ogbeide F I, Kanwanye H, Kadiri S. Revisiting the determinants of unemployment in Nigeria: Do resource dependence and financial development matter? Afr Dev Rev, 2016. https://doi.org/10.1111/1467-8268.12222
16. Oniore J O, Bernard O A, Gyang E J. Macroeconomic determinants of unemployment in Nigeria. Int J Econ Commer Manag, 2015;3(10). https://ijecm.co.uk/wp-content/uploads/2015/10/31014.pdf
17. Allison P D. Event history analysis. Beverly Hills, CA: Sage Publications; 1984.
18. Consul JI, Osaisai EF, Japheth BR, Erho JA. Parametric modelling using Bayesian approach. Unilag J Math Appl, 2022;2(1):23-36.
19. Sanizah A, Norin Rahayu S, Hasfarizah F. Determinants of marital dissolution: A survival analysis approach. Int J Econ Stat, 2014;2:348-354.
20. Kayode A, Anyio SF. The rising rate of unemployment in Nigeria: The socio-economic and political implications. Glob Bus Econ Res J, 2016;3(1):68-89.
21. Turkson AJ, Mensah AF, Nimoh V. Handling censoring and censored data in survival analysis: A systematic literature review. Int J Math Stat, 2021, ID 9307475. https://doi.org/10.1155/2021/9307475
22. Allison PD. Survival analysis using the SAS system: A practical guide. Cary, NC: SAS Institute, 2015.
23. Cox DR. Regression models and life-tables. J R Stat Soc Ser. B. 1972;34(2):187-202. http://dx.doi.org/10.1111/j.2517-6161.1972.tb00899.x
24. Weibull W. A statistical distribution function of wide applicability. J Appl Mech. 1951;18:293-297.
25. Akaike H. A new look at the statistical model identification. IEEE Trans Autom Control. 1974;19(6):716-723. http://dx.doi.org/10.1109/TAC.1974.1100705