
Analysis of Millennial Unemployment Among Higher Education Graduates in West Java in 2022

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Abstract

In August 2022, Indonesia had an open unemployment rate (TPT) of 5,86 percent, with the highest province, West Java, at 8,31 percent, which is still quite far from the target of the 2020–2024 National Medium-Term Development Plan (RPJMN) of 3,6–4,3 percent. This situation is exacerbated by the highly educated labor force (diplomas and bachelor's), which is only absorbed by 11,81 percent, and the percentage of highly educated millennial unemployment covered by the age of 25–44 years is 46,1 percent. Using the first logit method, this study analyzed the general picture and variables that affect millennial unemployment of university graduates in West Java in 2022. The raw data from the August 2022 National Labor Force Survey (Sakernas) in West Java is used. The results of this study are 3,61 percent who have the status of unemployed millennial college graduates, then there are variables of marital status, ownership of training certificates, and work experience have a significant effect on the unemployment status of millennial college graduates in West Java in 2022.

Keywords: *firth* logit, higher education, millennial, unemployed

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1. Introduction

The Central Bureau of Statistics (BPS) (2022a) in the publication "Profile Analysis of the Indonesian Population" stated that currently Indonesia has entered the demographic bonus period and peaks in 2020–2030. Demographic bonus is a condition that shows that the proportion of the population of productive age (15–64 years) is more than the proportion of the population of child age (0–14 years) and old age (64+ years) (Central Bureau of Statistics, 2022a). The composition of the productive age population consists of the millennial generation, which is 25,87

percent, this figure occupies the second highest position after generation Z which has a composition of 27,94 percent. The millennial generation is considered to have characteristics that are able to encourage development, namely modern, innovative, competitive, and flexible (Ambarwati & Raharjo, 2018). Even Viranto (2020) stated that the millennial generation is a generation that has advantages in terms of technology utilization which when optimized can have a positive impact on the economy. The millennial generation is one of the capitals in achieving economic growth and welfare. However, before going for the welfare of a nation, the individual or community must fulfill of the rights and obligations of the population to enjoy good health, adequate education, and a decent income (United Nations Population Fund, 2016).

In terms of living income, the International Labor Organization (ILO) (2011), in its publication "Profile of Decent Work: Indonesia" and Sustainable Development Goals (SDGs) Goal 8 agreed that decent income is essential to ensure the welfare of the population, where decent income can be obtained through decent work. However, this is still an unresolved issue because from the publication of BPS (2022b) in August 2022 Indonesia has an open unemployment rate (TPT) of 5,86 percent with the highest province, West Java at 8,31 percent, which is still quite far from the target of the 2020–2024 National Medium-Term Development Plan (RPJMN) of 3,6–4,3 percent (Ministry of National Development Planning/Bappenas, 2020). Looking at the existing problems, one solution that can be given is to make human resources knowledgeable and competent in their fields through better and quality education. These efforts are in line with Law Number 12 of 2012 Article 5 concerning higher education which states that higher education aims to (a) develop the potential of students to become human beings who believe and fear God Almighty and have noble character, healthy, knowledgeable, capable, creative, independent, skilled, competent, and cultured for the benefit of the nation; (b) the production of graduates who master the branches of Science and/or Technology to meet national interests and increase the nation's competitiveness. The higher education in question includes diploma (D-I/II/III) and undergraduate (S-1/2/3) programs.

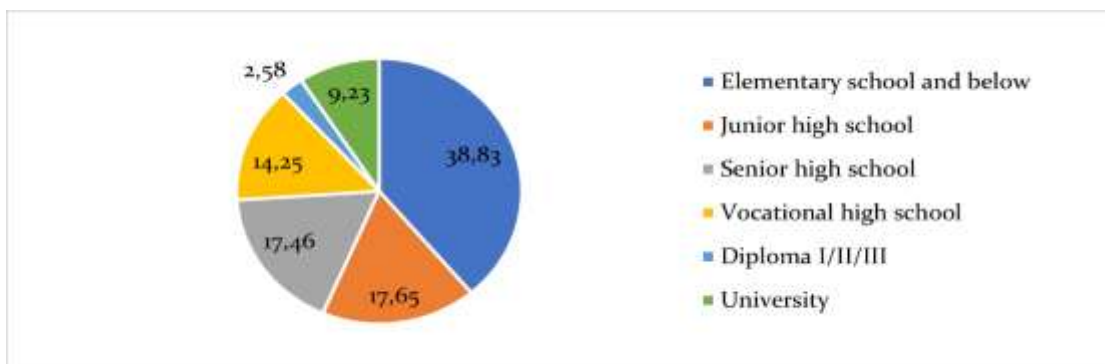


Figure 1. Percentage of working population by education in West Java Province August 2022
 Source: Central Bureau of Statistics of West Java Province (2022)

In fact, not all college graduates who will be called highly educated from now on can be absorbed by the job market because it takes a long time from the education period to the job

market (Pratomo, 2017). Figure 1 shows that workers in West Java Province in August 2022 are dominated by the population of elementary school education graduates, which is 38,83 percent or as many as 9.11 million people. Meanwhile, the working population of college graduates (Diploma I/II/III and University) is only slightly absorbed into the job market, amounting to 11,81 percent or 2,77 million in the population. The low absorption of college graduates into the workforce causes more significant losses when compared to non-college graduates. The loss in question is the failure of state investment in the education sector, which causes waste and has been unable to produce superior human resources and fill the job market according to their expertise (Pratomo, 2017). This problem is exacerbated by the contribution of the millennial generation to the unemployment rate of college graduates. In fact, it is hoped that there will be cooperation between the government, companies, and academics to make it easier for job seekers to enter the world of work (Nuraeni et al., 2022).

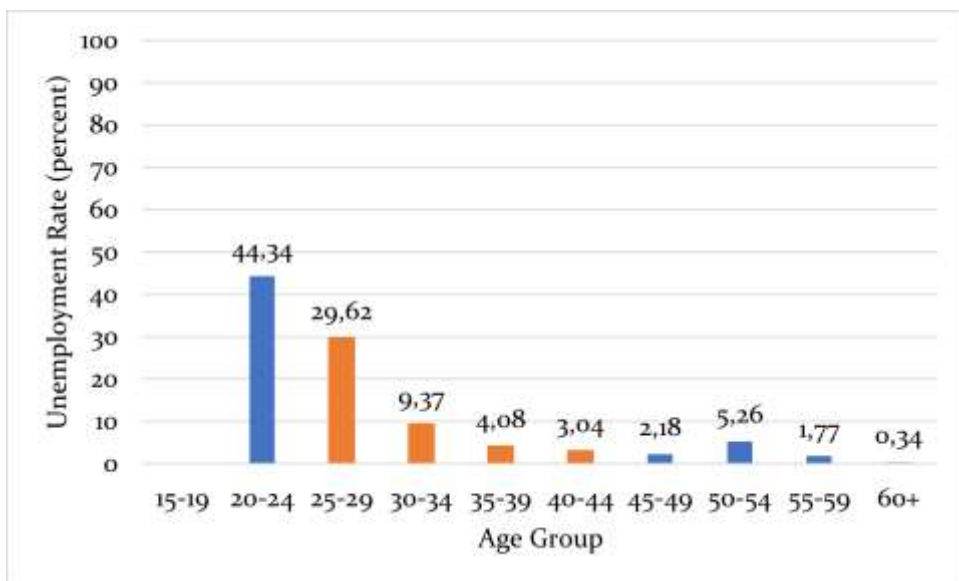


Figure 2. Unemployment percentage of university graduates by age group in West Java in 2022
 Source: Central Bureau of Statistics West Java (2022)

Figure 2 shows that the highest percentage of unemployed university graduates in West Java in 2022 is in the age group of 20–24 years, which is 44,3 percent. However, when looking at the unemployment percentage of the age group of 25–44 years, it can be seen that the percentage of unemployment of college graduates is 46,1 percent. In the age group of 25–44 years, there is a millennial generation aged 26–41 years. This means that the high percentage of unemployment of university graduates in West Java in 2022 is one of the contributions of the millennial generation.

The urgency of millennial unemployment of college graduates can be attributed to the theory of Human Capital. Becker (1993) states that education as an investment of a person who can improve the abilities and skills of individuals. This is reinforced when young individuals have access to quality education, so they are expected to be able to face challenges and provide

solutions to the problems faced. However, suppose someone who is young and has a quality education cannot maximize existing abilities. In that case, the phenomenon will have an impact such as an imbalance in the job market, reduced investment in skills development, hindered socioeconomic development, and mental health problems.

Various studies analyze the status of educated unemployed for young people and college graduates, including Alharris and Yuniasih (2022), Br. Saragih and Usman (2022), Anjarwati and Juliprijanto (2021), and Pratomo (2017). However, there has been no research that focuses on unemployment of college graduates from the millennial generation. Therefore, further analysis is needed related to millennial unemployment of high employment graduates, one method that can be used is binary logistic regression.

In terms of estimating, binary logistic regression uses maximum likelihood estimation (MLE). Binary logistic regression analysis allows several independent variables to be analyzed simultaneously (Sperandei, 2014). Stoltzfus (2011) also states that logistic regression is a versatile regression technique because it can measure associations, predict outcomes, and control for confounding variable effects. In addition, logistic regression is an efficient and powerful way to analyze the effect of a group of independent variables on binary outcomes by measuring the unique contribution of each variable. However, binary logistic regression has a drawback: it can produce biased estimations when data inequality occurs (Wistara et al., 2015).

Hosmer et al. (2013), in their book, state that there are several ways to overcome unequal data conditions, namely by using the conditional maximum likelihood estimation (CMLE) method and fourth logit regression using penalized maximum likelihood estimation (PMLE). CMLE can produce a wider confidence interval (CI) compared to conventional binary logistic regression with MLE. CMLE is, therefore, less suitable for use as an alternative to binary logistic regression. On the other hand, there is an alternative, namely, first logit with PMLE. Firth (1993) proposed an estimation method, namely penalized maximum likelihood estimation (PMLE) to reduce bias that occurs when the data used is unequal. In addition, CIs generated using Firth logits are narrower compared to conventional binary logistic regression. So, the fourth logit can be used as an alternative to unequal data.

Given the urgency that has been conveyed in the previous discussion regarding millennial unemployment of university graduates, therefore researchers are interested in conducting a study entitled "Analysis of Millennial Unemployment of Higher Education Graduates in West Java in 2022 Using Firth Logit." This study aims to analyze the general picture of millennial unemployment of university graduates in West Java in 2022. Then proceed to analyze the variables that affect the unemployment status of millennial university graduates in West Java in 2022.

2. Research Methods

The analysis carried out in this study consists of descriptive analysis and inferential analysis. Descriptive analysis was conducted to describe an overview of the characteristics of millennial unemployment of university graduates in West Java in 2022. Then, inferential analysis was carried out to model and analyze variables that affect millennial unemployment of university graduates in West Java in 2022 using the fourth logit. This logit is used when there is an imbalance of data to reduce bias and the standard error of each independent variable in the previous method, binary logistic regression. The stages of analysis carried out are as follows (Hosmer et al., 2013):

2.1 Perform Parameter Estimation

The model formed by the *frith* logit method in this study is as follows:

$$g(\mathbf{D}) = \beta_0 + \beta_1 D_1 + \beta_2 D_2 + \beta_3 D_3 + \beta_4 D_4 + \beta_5 D_5 \quad (1)$$

Keterangan:

$g(\mathbf{D})$: Model estimation

β_0 : Estimated intercept *value*

β_1 : Marital status variable parameters

β_2 : Migration status variable parameters

β_3 : Parameters of region classification variables

β_4 : Training certificate ownership variable parameters

β_5 : Work experience variable parameters

D_1 : Marital *status* dummy variables

D_2 : Migration status *dummy* variables

D_3 : Region classification *dummy* variables

D_4 : Variable *dummy* ownership of training certificate

D_5 : Work experience *dummy* variables

2.2 Test the significance of model parameters simultaneously

The simultaneous test was used to see the significance of the influence of independent variables in the model on the unemployment status of millennial university graduates in West Java in 2022.

Hypothesis:

$$H_0 : \beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = 0 \quad (2)$$

(There is no simultaneous significant effect of the independent variable on the unemployment status of millennial university graduates in West Java in 2022)

$$H_1 : \text{There is at least one } \beta_j \neq 0, \text{ dengan } j = 1, 2, \dots, 5$$

(There is at least one independent variable affecting the unemployment status of millennial university graduates in West Java in 2022)

Test statistics:

$$G = -2\ln\left(\frac{L_0}{L_1}\right) \sim \chi_p^2 \quad (3)$$

Decision: When value $G > \chi_{5(0,05)}^2 = 11,07$ or $p\text{-value} < 0,05$, Then at the level of significance of 5 percent, it was decided to reject H_0 .

Conclusion: At least one independent variable affects the unemployment status of millennial university graduates in West Java in 2022.

2.3 Partial Significance Test of Model Parameters (*Wald Test*)

The partial test was used to see the significance of the effect of partial independent variables in the model on the unemployment status of millennial university graduates in West Java in 2022.

Hypothesis:

$$H_0 : \beta_j = 0, j = 1, 2, \dots, 5 \quad (4)$$

(There is no influence of the j -th independent variable on the unemployment status of millennial university graduates in West Java in 2022)

$$H_1 : \beta_j \neq 0, j = 1, 2, \dots, 5$$

(There is an influence of the j -th independent variable on the unemployment status of millennial university graduates in West Java in 2022)

Test statistics:

$$W_j = \frac{\hat{\beta}_j}{SE(\hat{\beta}_j)} \sim Z_{\infty} \quad (5)$$

Decision: When value is obtained $|W_j| > Z_{0,025}$ or $p\text{-value} < 0,05$, Then at the level of significance of 5 percent it was decided to reject H_0 .

Conclusion: The j -th explanatory variable influences the unemployment status of millennial university graduates in West Java in 2022.

2.4 *Goodness of Fit Test*

After estimating parameters and forming a model, it is necessary to test to see how effective the model used to explain the millennial unemployment status of university graduates in West Java Province in 2022. Test the suitability of the model in this study using the *Hosmer-Lemeshow test*.

Hypothesis:

$$H_0 : \text{The resulting model is appropriate/fit to explain the variable unemployment status of millennial university graduates in West Java in 2022.} \quad (6)$$

$$H_1 : \text{The resulting model is not appropriate/not fit to explain the variable unemployment status of millennial university graduates in West Java in 2022.}$$

Hosmer-Lemeshow test statistics :

$$\hat{C} = \sum_{k=1}^g \left[\frac{(O_k - n_k \bar{\pi}_k)^2}{n_k \bar{\pi}_k (1 - \bar{\pi}_k)} \right] \sim \chi_{(g-2)}^2 \quad (7)$$

Description:

- \hat{C} : Hosmer-Lemeshow test (goodness of fit)
- O_k : Number of values of dependent variables in the k -th group
- n'_k : Number of observations in the k -th group
- $\bar{\pi}_k$: Average estimated odds in the k -th group
- g : The multiplicity of groups, $g = 1, 2, \dots, k$

Decision: When value is obtained $\hat{C} < \chi^2_{8(0,05)} = 15,507$ or $p\text{-value} > 0,05$, So at the level of significance of 5 percent it was decided that it failed to reject H_0 .

Conclusion: The model formed is appropriate to explain the variable unemployment status of millennial university graduates in West Java in 2022.

2.5 Odds Ratio

The *odds ratio* value is used to measure the tendency of each independent variable to affect the unemployment status of millennial university graduates in West Java in 2022.

$$OR = e^{\hat{\beta}_j} \quad (8)$$

3. Results and Discussion

3.1 Descriptive Analysis

Based on data from Sakernas West Java Province in 2022, an overview of the millennial unemployment status of university graduates in West Java Province in 2022 can be seen in the picture below.

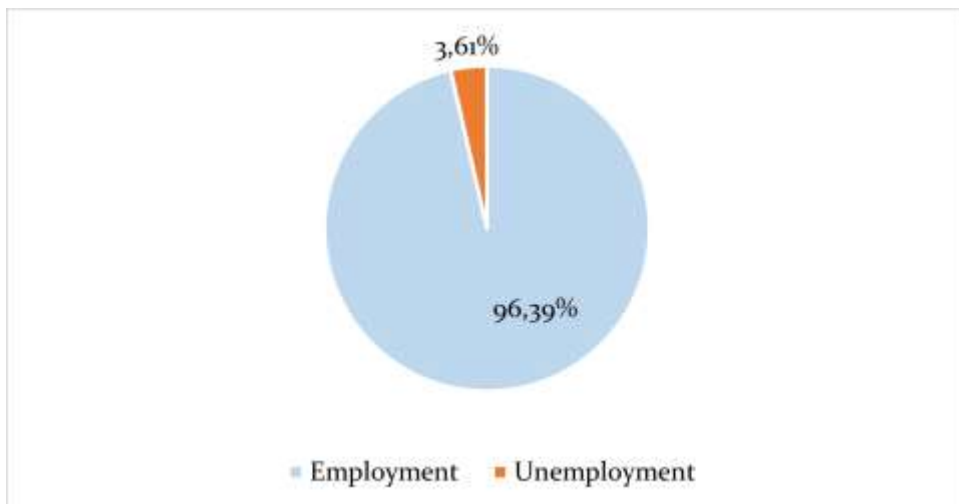


Figure 3. Percentage of unemployment status of West Java Province university graduates in 2022

Source: Sakernas August West Java Province in 2022

Based on Figure 3, it can be seen that 3,61 percent of the millennial workforce of university graduates in West Java in 2022 are unemployed and 96,39 percent are non-unemployed. Although the percentage of millennial unemployment of university graduates in West Java is still lower than the unemployment of elementary school graduates and below which has an unemployment percentage of 4,69 percent (Central Bureau of Statistics West Java, 2022). These data indicate that the millennial workforce of higher education graduates may only sometimes be able to produce superior human resources and fill the job market according to their expertise (Pratomo, 2017).

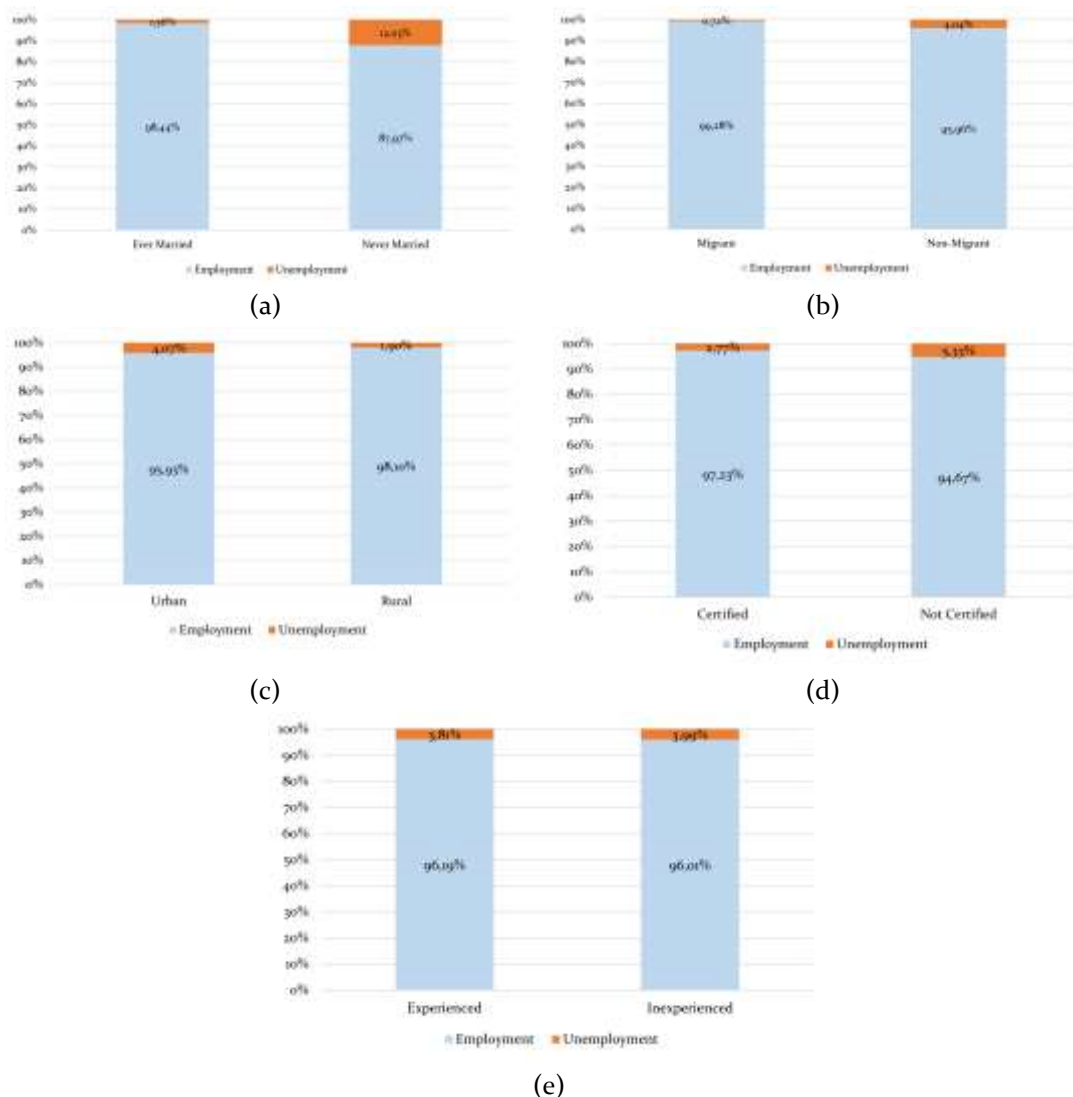


Figure 4. The millennial unemployment status of university graduates in West Java in 2022 is based on: (a) Marital status; (b) Migration status; (c) Classification of territories; (d) Possession of a training certificate; and (e) Work experience
Source: Sakernas August West Java Province in 2022

In Figure 4(a), based on marital status, there is 1.56 percent of the labor force who have been married are unemployed, and 12.03 percent of the unmarried labor force are unemployed. The risk of the unmarried highly educated millennial workforce being unemployed is 7,71 compared to those who have been married. The high risk of the unmarried, highly educated millennial workforce being jobless because they do not have dependents or household burdens. This is reinforced by Nurviana and Hendriani (2021) who stated that the unmarried millennial generation still has an unstable economy because they are still looking for an established job. Unlike the case with those who have married, where they work because they have the responsibility to support their families.

Figure 4(b) shows that as many as 0,72 percent of the highly educated millennial workforce who are migrants are unemployed. Then, there are 4,04 percent who are non-migrants who are unemployed. The risk of the non-migrant highly educated millennial workforce to be unemployed is 5,61 compared to the migrant. Chotib (2016) revealed that migration usually occurs in individuals who come from areas with low GRDP to areas with high GRDP. Where regions that have high GRDP have begun to switch to the industrialization sector. This is pertinent if they do not migrate and remain in their home region, resulting in a lack of necessary employment opportunities. In addition, when the highly educated millennial workforce is unemployed in their home region, it can be caused by a mismatch between the skills they have or educational background and the work sector in the region they occupy.

Furthermore, it can be seen in the regional classification chart Figure 4(c) that the highly educated millennial labor force in urban areas contributes to an unemployment rate of 4,07 percent. In contrast, it has an unemployment rate of 1,90 percent in rural areas. Thus, the risk of the highly educated millennial workforce living in urban areas to be unemployed is 2,14 compared to those living in rural areas. Cities do have strong economic attractiveness, so they become destination areas for economic activities (Central Bureau of Statistics West Java, 2023b). However, this also has an impact on the large number of people in urban areas which causes high competition in finding work and businesses that are less able to absorb labour.

In addition, there is ownership of a training certificate in Figure 4(d). There are 2,77 percent of the highly educated millennial workforce who have training certificates with unemployment status. On the other hand, 5,33 percent of the highly educated millennial workforce still need to get training certificates with unemployment status. Therefore, the risk of the highly educated millennial workforce who do not have a training certificate for unemployment status is 1,92 compared to those who have a training certificate. Possession of a training certificate or competency certificate has a significant impact, especially on job seekers, because the training certificate will increase the opportunity to enter the industry and sector (National Professional Certification Agency, 2014). However, a highly educated millennial workforce still needs training certificates or competencies. This can be due to difficulties in accessing training, both in terms of transportation, learning facilities, costs and information related to training that is still not intensively spread in various regions. In addition, there still needs to be a match between what is

learned in training and what the job market wants, thus making reluctance to attend existing training (Wibowo et al., 2023).

Then in Figure 4 (e) regarding work experience, there are 3,81 percent of the workforce who have work experience as unemployed, while those who do not have work experience and have unemployment status are 3,99 percent. The risk of a highly educated millennial workforce with no work experience to be unemployed is 1,05 compared to those with work experience. It is known that there is no significant difference between the percentage of unemployed who have work experience and no work experience. This phenomenon can occur because the condition of the job market or industry has experienced an economic decline, thus impacting the decrease in the number of workers and contributing to the existence of unemployment who have work experience. This is related to the effects of Covid-19, where there are various changes that occur in carrying out economic activities and mobility, thus making companies unable to run their economic wheels and impacting the workforce (Abubakar, 2021).

3.2 Inference Analysis

3.2.1. Uji Simultaneously

The results of simultaneous tests using formulas in equation (3) with test hypotheses in equation (2) are presented in table 2 as follows:

Table 1. Simultaneous Test Results of the *Firth* Logit Method Equation

Model	Likelihood	Degree of Freedom	G	p-value
Null model	-309,78			
Fitted model	-272,02	5	75,505	0,000

Source: Processed

When a value is obtained $G = 75,505 > \chi^2_{5(0,05)} = 11,07$ or $p\text{-value} = 0,000 < 0,05$, then at the level of significance 5 percent it was decided to reject H_0 , which means that there is at least one independent variable that affects the unemployment status of millennial university graduates in West Java in 2022.

3.2.2. Partial Test

The partial test hypothesis used is the one contained in equation (4). The partial test results are presented in the table below H_0 .

Table 2. Partial Test Results

Variable Dummy Code	Variable Name	$\hat{\beta}$	$se(\hat{\beta})$	p-value	$exp(\hat{\beta})$
Intercept		-4,495	0,877	0,000	0,011
D_1	Marital Status	1,990	0,253	0,000*	7,312
D_2	Migration Status	0,366	0,861	0,671	1,442
D_3	Region Classification	-0,112	0,459	0,808	0,894
D_4	Possession of Training Certificate	0,586	0,247	0,018*	1,797

D_5	Work Experience	-0,554	0,255	0,030*	0,574
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Source: Processed

Information: *) significant at a significance level of 5 percent

Based on Table 2, it is obtained that the variables marital status, ownership of training certificates, and work experience have $p\text{-value} < 0,05$, so the decision was rejected H_0 . That is, variations in marital status, ownership of training certificates, and work experience have a significant effect on the millennial unemployment status of college graduates. However, the migration status and region classification variables have $p\text{-value} \geq 0,05$, So that the variables of migration status and regional classification do not have a significant effect on the unemployment status of millennial college graduates.

Therefore, the equation obtained by the fifth logistic regression method using the PMLE parameter refers to the model equation in equation (1) as follows:

$$g(\widehat{D}) = -4,495 + 1,990D_1^* + 0,366D_2 - 0,112D_3 + 0,586D_4^* - 0,554D_5^* \quad (9)$$

Information: *) significant at a significance level of 5 percent

3.2.3. Goodness of Fit Test

Results of the conformity test of the model using *Hosmer-Lemeshow Test* (\hat{C}) using the formula in equation (7), with the hypothesis being tested, namely H_0 The equation (6) is shown in the table as follows:

Table 3: Model Conformity Test Results (\hat{C})

<i>Hosmer-Lemeshow Test</i> (\hat{C})	Degree of Freedom	<i>p-value</i>
6,697	8	0,569

Source: Processed

From the results of the *Hosmer-Lemeshow test* it was found that $\hat{C} = 6,697 < \chi_{8(0,05)}^2 = 15,507$ or $p\text{-value} = 0,569 > \alpha = 0,05$, So with a significance level of 5 percent it was decided that he failed to reject H_0 . It can be concluded that the model equation formed in equation (9) is *fit* or can explain the millennial unemployment status of university graduates in West Java in 2022.

3.2.4. Odds Ratio

Table 2 shows that significant variables affect the unemployment status of millennial university graduates in West Java in 2022 at a significance level of 5 percent, including marital status, ownership of training certificates, and work experience. Meanwhile, the significance level of 5 percent for the variables of migration status and regional classification does not have a significant effect on the millennial unemployment status of university graduates in West Java in 2022.

The marital status variable significantly positively affects the millennial unemployment status of college graduates, with an odds ratio of 7,312. That is, the millennial labour force of

college graduates who have unmarried status has a tendency to be unemployed 7,312 times compared to those who have been married assuming other independent variables are constant. This finding is in accordance with research from Alharis and Yuniasih (2022), Br. Saragih and Usman (2022), and Hidayah and Triyanto (2020) which states that those who are not married tend not to be the main responsible for supporting their families. Unlike those who have been married, they have a greater responsibility to support their families so that it encourages them to work. This result is also the same as the results of the descriptive analysis in Figure 4(a) which shows that the millennial labour force of unmarried college graduates has a higher tendency to become unemployed.

The migration status variable did not have a significant effect at the 5 percent rate on the unemployment status of millennial college graduates, but it had a positive direction. This means that the labour force that has the status of migrants or non-migrants does not affect the unemployment status of millennial college graduates. BPS (2023b) in its publication, "Profile of Labor Mobility in West Java Province (Results of the 2022 National Labor Force Survey)" said that permanent migration in an area is currently starting to be less desirable because the cost of living in migrant destinations is higher than the area of origin. In addition, when the wage level in migrant destinations is higher and the area of residence has a relatively cheap standard of living, workers can benefit more than having to migrate permanently. In addition, Chotib (2016) said that migration usually occurs in individuals who come from areas with low GRDP to areas with high GRDP. Therefore, individuals who migrate not only prepare capital for migration, but also capabilities that can be used and fit the job market from the destination of migration.

The regional classification variable had no significant effect at the 5 percent rate on the unemployment status of millennial college graduates and had a negative direction. This means that the labour force living in urban or rural areas does not affect the unemployment status of millennial college graduates. Based on the publication of "West Java Provincial Labor Mobility Profile (Results of the 2022 National Labor Force Survey)" by the Central Statistics Agency (2023b), they stated that informal work is currently more in demand due to more flexible time arrangements. This is then supported by Kamelia and Nugraha (2021) who said that informal jobs are more in demand by residents living in rural areas. However, college graduates tend to want formal employment (Silvida et al., 2022). On the other hand, urban areas have their charm, namely the agricultural sector, which is increasingly turning into an industrial sector, making some people interested in working in urban areas (Br. Saragih & Usman, 2022). The large number of people who are interested in working in urban areas causes intense competition for jobs (Putra, 2018).

The variable ownership of training certificates has a significant positive relationship with the unemployment status of millennial college graduates with an odds ratio of 1,797. That is, the millennial workforce of college graduates who do not participate in the possession of training certificates have a tendency to be unemployed 1,797 times compared to those who do not participate in the possession of training certificates assuming other independent variables are

constant. This finding is by research conducted by Alharis and Yuniasih (2022) and Denu et al. (2005), which states that the education system is lacking the required skills, causing low absorption of educated workers into the world of work. This is also consistent with the results of the descriptive analysis in Figure 4(d), which shows that those who do not have training certificates have a more significant proportion in the unemployment category. Having a training certificate has a significant impact, especially on job seekers, because the training certificate will increase the opportunity to enter the industry and sector (National Professional Certification Agency, 2014). A skilled and educated workforce is the main driver of a country's economic and social growth (Modjo & Muhyiddin, 2023).

he work experience variable has a significant negative relationship with the unemployment status of millennial college graduates with an odds ratio of 1,742. That is, the millennial workforce of college graduates who have work experience has a tendency to be unemployed 1,742 times compared to those without work experience assuming other independent variables are constant. This finding is contrary to Cappelli (2012), who states that the more experienced a person is, the more chances there are of fulfilling a position/job in a company. However, this finding is in line with research conducted by Alharis and Yuniasih (2022) and Br. Saragih and Usman (2022), namely, the millennial workforce of college graduates with work experience will be more selective in choosing the desired job. Layoffs by related companies can cause this phenomenon. Gunawan and Sugiyanto (2017) in research stated that companies must be wise in making layoff decisions, because this can have an impact on increasing the number of evictions and reducing community welfare. This is also in accordance with data from the Ministry of Manpower (2022), which states that the most significant contributor to layoffs in Indonesia in 2022 is West Java, which has 4.639 workers.

3.2.5. Comparison of Standard Error Binary Logistic Regression and Firth Logistic Regression

A comparison of *the standard error* of each variable used in the binary logistic regression method and firth logistic regression can be seen in Table 4 as follows:

Table 4. Standard Error Comparison

Variable	Standard Error	
	Binary Logistic Regression	Firth Logistic Regression
<i>Intercept</i>	1,047	0,877
Marital Status	0,258	0,253
Migration Status	1,032	0,861
Region Classification	0,482	0,460
Possession of Training Certificate	0,251	0,247
Work Experience	0,260	0,255

Source: Processed

It can be seen that the *standard error* results of all variables show a smaller number when using the firth logistic regression method. Therefore, the use of the firth logistic regression method can reduce the standard error for imbalanced data compared to binary logistic regression.

4. Conclusion and Recommendations

From the results of the processing, it was found that 3,61 percent of the millennial workforce of university graduates in West Java in 2022 had the status of unemployment and 96,39 percent of the status of non-unemployed. With unequal data conditions, the *firth* logit method is used. Based on this method, with a significance level of 5 percent, it can be concluded that the characteristics of millennial unemployment of university graduates in West Java in 2022 are unmarried, do not have a training certificate, and have work experience.

Then, from the results of the research, the following suggestions were given:

- a) The government needs to maximize certified job training based on competence, technology, and in accordance with the needs of the current job market. A job training certificate is an added value for a job seeker who wants to occupy a certain position. The training provided is also in accordance with the needs of the job market. So, those with competency training certificates are absorbed into the job market, also by their skills.
- b) There needs to be creative and innovative career development activities for workers or job seekers to open their own job opportunities. This is done to reduce the high unemployment rate due to layoffs.
- c) Further researchers can develop this study by considering variables that are significant but have different directions and considering other factors that have yet to be covered in this study.

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