

Determinants of Youth Unemployment in Ecuador in 2019

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Abstract: This work studies the social and demographic factors that influenced youth unemployment in the age group from 18 to 29 years old in Ecuador in 2019. The study includes logistic regression models with marginal effects to evaluate the probability of being unemployed. The results reveal that being a woman and afro, living in an urban area, and increasing the years of education raise the probability of being unemployed in the age group from 18 to 29 years old, while the probability is reduced by being a head of household or son-in-law/sister-in-law and not being single. The study shows that the Ecuadorian population faces vulnerability in the labor market, where differences in gender, ethnicity, and social factors determine the unemployment level. In particular, being “Afro-Ecuadorian, mulatto, or Black” highly increases the probability of being unemployed in Ecuador.

Keywords: youth unemployment; labor; social exclusion; Ecuador

1. Introduction

The absence of employment opportunities and conditions for the entire population—but, specifically, for young people—is one of the great problems facing modern societies. More precisely, the magnitude and complexity of youth employment have been studied by public policies using a multidisciplinary approach (De la Hoz et al. 2012). International organizations such as the World Bank and the International Labor Organization (ILO) have allocated multiple resources to the diagnosis of this phenomenon. According to the ILO (Organización Internacional del Trabajo 2020), in Latin America and the Caribbean, there are approximately: (a) 9.4 million youth who are unemployed or without work, (b) 23 million young people neither studying nor working, and (c) more than 30 million young people with informal employment. Therefore, the employment situation of young people is becoming more complicated because the rate of youth unemployment is three times higher than the employment rate of the adult population (Organización Internacional del Trabajo 2019).

The ILO (Organización Internacional del Trabajo 2019) mentioned that there is no direct relationship between the educational level and the rate of unemployment. The young adult population (24–35 years old) with a higher level of education shows a higher probability of unemployment, given that the majority only have previous work experience as internships or they can access the labor market only in precarious conditions. Therefore, the main reasons for the increasing rate of youth unemployment are the following: (a) difficulty accessing the labor market, considered as a structural problem; (b) inflexibility of the labor market; (c) deficient adaptation to economic and social conditions in each country; and (d) high opportunity cost between entering in the labor market and remaining in the educational system to improve their academic level (De Domingo et al. 2020). Moreover, gender is another determinant in youth unemployment, since the probability of youth unemployment for women is higher than the probability for men. The effects of the economic slowdown in the countries of Latin America and the Caribbean influence youth employment through the increase in migration to developed countries.



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Specifically, the unemployment rate in Ecuador was 9.5 in 2018, which increased to 10.4 in 2019 ([Organización Internacional del Trabajo 2019](#)). This phenomenon is linked to the low growth projections of the Ecuadorian economy during 2019. The International Monetary Fund (IMF) mentioned that the economies of the region slowed down by -0.2% during 2019; however, in the Ecuadorian case, the variation rate of the gross domestic product (GDP) decreased by 0.5% , caused by the strong economic dependence on oil and its price variation ([Sumba-Bustamante et al. 2020](#)). According to the Instituto Nacional de Estadística y Censos (INEC), the national unemployment rate was 3.8% in 2019 (311,133 Ecuadorian people), which was divided into 4.9% (266,409 people) for the urban level and 1.6% for the rural level (44,724 people). The unemployment rate among young people between 15 and 24 years old was 9.3% , and between 25 and 34 years old was 5.1% . Moreover, the unemployment rate for men was 3.3% compared to 4.6% for women ([Instituto Nacional de Estadística y Censos 2019](#)). These findings are recurrent in Latin America and the Caribbean, given the idiosyncrasies of society regarding the role of women ([De Domingo et al. 2020](#)).

The two main problems addressed in this study are: (1) the slowdown in the Ecuadorian economy given the decrease in international oil prices and difficulty accessing financial markets, which also deteriorates labor market conditions, and (2) the inflexible conditions of the labor market, which decreases the probability of insertion of young professionals into the Ecuadorian labor market. Therefore, our research analyzes the determinants of unemployment in young people between 18 and 29 years old in Ecuador to recommend different Ecuadorian public policy actions to improve the quality and quantity of youth employment. This study shows the importance of the age group from 18 to 29 years old as key participants in the Ecuadorian economy because of their high level of participation in the labor market (more than 40%).

The principal challenge of public policy has been the creation of job offers for young people in order to introduce this group to, and include them in, the economic labor force; however, public policies have not made a real modification to the structural problem of unemployment, and thus, unemployment indicators have been maintained and show a growing trend. Moreover, the inclusion of job opportunities allows the development of a competitive market where the capabilities of individuals grow directly in relation to the number of years that they are employed in a specific market.

This research covers several descriptive studies to determine the social demographic characteristics of the age group from 18 to 29 years old in the Ecuadorian economy. A logit econometric model was designed to identify the factors that contribute to youth unemployment. The results revealed that gender is an important factor in the increase in youth unemployment because of the positive and significant relationship between women and the probability of being unemployed between 18 to 29 years old. Moreover, the determinants that increase the probability of being unemployed were being “afro”, living in an “urban area”, and a study level of “high school, technology education, university education, postgraduate” with marginal effects of 4.88% , 2.55% , and 0.87% , respectively. Contrarily, this probability decreased when the Ecuadorian is “married, separated, divorced, widowed, or free union”, “head of household”, or “son-in-law/daughter-in-law” with marginal effects of 0.30% , 1.93% , and 2.17% , respectively. These findings are aligned with previous studies ([Organización Internacional del Trabajo 2019, 2020](#)) showing the vulnerability of and structural barriers for young adults entering the labor market, which demonstrates inefficiencies in this market.

The contribution of this study includes the identification of the youth unemployment conditions in Ecuador during 2019. The study contains a descriptive statistical analysis and econometric models with the significant variables that influence the youth unemployment situation. This manuscript determines the social and demographic factors that increase the youth unemployment rate according to Ecuadorian conditions. Finally, the study analyzes and suggests public policies focused on youth employment for the age group between 18 and 29 years old.

The remainder of the article is organized as follows. Section 2 presents the literature review regarding youth unemployment using experiences from Europe and Latin America. Section 3 presents the research methodology. Section 4 reveals the empirical findings. Section 5 presents a discussion. Section 6 highlights the conclusions and offers recommendations and research directions for future researchers.

2. Literature Review

2.1. Labor Market and Unemployment

It has been mentioned in the literature (Fields 2010) that the labor market is the space where labor services are bought and sold. In several situations, only salaried people participate in the labor market and offer their services in exchange for remuneration, wage, or payment. The aforementioned authors have also stated that there are self-employed workers, known as freelancers, who offer their services by themselves, and their salary depends on the products or services that they sell to third parties. Therefore, the labor market is integrated by (1) people with a salary granted by a dependent relationship and (2) self-employed workers with a salary according to the production or services that they carry out.

The ILO defines employment as the work performed for remuneration, while work is described as the set of activities (paid or unpaid) performed to produce goods or services in an economy (Organización Internacional del Trabajo 2019). On the other hand, in the labor market, there are some adverse phenomena such as underemployment and unemployment. From Keynesian theory, unemployment has its origin in (1) the insufficient aggregate demand in the domestic market, which reduces labor demand from employers (Salazar 2009), and (2) the unreal and insufficient adjustment of real wages, which reveals the purchasing power of workers using a basic basket of goods and services in relation with the nominal salary (Albarrán and Raya 2015). Both circumstances provoke a disbalance in the labor market (Proaño 2015).

Moreover, underemployment and unemployment are juxtaposed phenomena, which reveal the increase in informal employment in emerging economies. Informality is a quick response to inadequate or excessive regulation of labor markets and to the low quality of public insurance systems in a given country. Informality is chosen as the best available alternative, given the young adults' skills, information, and expectations (Slonimczyk 2014). Informal employment is countercyclical and negatively correlated to formal employment, which might affect business cycles and give rise to productivity shocks (Fernández and Meza 2015; Sánchez 2022). On the other hand, some researchers (Sultana et al. 2022) have demonstrated that informal employment has a positive effect on the economic growth of selected developing countries, and this relationship showed a bidirectional causal association between both variables. Moreover, employment opportunities reflect a framework of economic development and growth. For instance, the tourism sector generates new opportunities in local communities in emerging countries, spreading economic and employment benefits to rural areas. This sector is unique because it provides opportunities for young adults with a high school level of education as well as for career development opportunities in top-level roles (Sánchez 2022; World Travel & Tourism Council 2019).

In Ecuador, INEC mentioned that there is a specific population that participates in the labor market producing goods and services, which is called the "economically active population (PEA)¹". PEA is divided into the employed and unemployed population. The employed population is composed of the set of people who have a job, while the unemployed population present certain characteristics: (1) they do not have a job, they were not employed the last week, and are available to work, and (2) they looked for work or made specific actions to acquire a job or to set up a business in the previous four weeks (Instituto Nacional de Estadística y Censos 2021). The unemployed population is categorized into open and hidden branches (Instituto Nacional de Estadística y Censos 2021). The open unemployed are people without work, who were not employed in the past week, and who looked for work or made some concrete effort to find a job or to establish

a business in the four weeks prior to the interview, whereas hidden employment occurs when people are neither employed nor occupied in recent weeks, they are available for work, but they are not looking for a job.

Generally, unemployment levels depend on the age of people. The authors of ref. (De la Hoz et al. 2012) proposed the definition of youth employment as the rate of insertion of young people in the labor market. The authors affirmed that young people tend to be more easily and quickly inserted than the market can support, showing an oversupply of labor. Ref. (National Statistics Bureau 2020) showed that youth unemployment status significantly varies with the age of the youth. For instance, the likelihood of being unemployed among the youth declines by 21% with a one-unit increase in age in Bhutan. Ref. (Sornoza et al. 2018) established that unemployment is a key problem in developing countries, such as Ecuador, where young graduates with high levels of education fail to find adequate employment. Moreover, women and young people are more likely to be affected by the unemployment phenomenon. For instance, in Ecuador, between 2014 and 2018, women maintained an unemployment rate of 30%, while the unemployment rate of young people was 20% higher than that of the adult population. Therefore, for young people and women, the unemployment gaps are significant due to weak labor conditions and deficient social and economic policies (Castañeda and García 2019).

Youth unemployment has a structural origin (Ramírez 2002). Youth employment responds to fundamental changes in the labor markets of all countries, given globalization, and it illustrates the youth disadvantage of low job training, which causes the social exclusion of young people in the labor market. Moreover, changes in the labor markets reflect the economic situation of a country.

Ref. (Ramírez and Nuñez 2000) mentioned that the deficient skills of young people provoke an increase in youth unemployment. Furthermore, the gap between the expectation and reality of job skills tends to grow; however, it does not reflect the cyclical changes in all markets. The skills gap is not exclusive to poor or rich people, but it affects vulnerable people given their low level of education. Therefore, the most important causes of unemployment are: (a) the dropout rates of the educational system, (b) the different behaviors of the economic cycles in a country, (c) poverty, and (d) gender asymmetry in the labor market (women show higher unemployment rates than men) (Ramírez 2002; Tulcanaza-Prieto and Morocho-Cayamcela 2021).

2.2. Empirical Studies of Youth Employment

The unemployment phenomenon is grounded in different theories. The first theory is the human capital model. This theory suggests that individuals receive payment for the provision of their products or services in the labor market. Moreover, they can improve their knowledge and skills over time, which makes them more competitive and productive; therefore, there is a proportional relationship between the job and the schedule of the job, known as work experience. In the medium- and long-term, the income will increase due to the accumulation of work experience. However, people without previous education and experience in the labor market will have a lower probability of receiving high income compared to people who have dedicated time to academic and labor preparation. Moreover, ref. (Borjas 2015) differentiated the degree of work experience with and without academic preparation, given that the speed of learning is higher when the employee has previous education and knowledge, improving his/her productivity.

The authors of ref. (Pieters 2013) mentioned that there are economic, social, educational, demographic (sex and race), familial (educational level of the parents), and labor conditions that directly and indirectly affect the employment of future generations. Moreover, the authors of ref. (Helbling and Sacchi 2014) concluded that a lack of work experience in the first year negatively affects the probability of being employed shortly. All these human capital theories focused on the debate between productivity and individual work experience (Tulcanaza-Prieto et al. 2021).

On the other hand, there are theories grounded in factors such as investment, education, labor reforms, and social factors that affect unemployment. The authors of ref. (Fawcett 2002) established that the level of schooling is the main determinant to access to the labor market in Latin America, because the transition from the educational system to the labor system is slow, given the inflexible labor market conditions and the weakness of academic methods to adapt to job demands. This theory is supported by the authors of (García 2011), who pointed out that youth unemployment is related to supply and demand according to the educational level. Furthermore, other authors analyzed the labor market conditions using a legislative perspective. Ref. (Ramírez and Nuñez 2000) showed that the deterioration of labor conditions is a growing phenomenon given the changes in labor reforms. Ref. (Barbero and Molina 2011) determined that public authorities and governments should focus the debate on labor reforms that allow reducing unemployment rates, especially for the new generations.

On the other hand, recent studies such as the one by (Egessa et al. 2021) determined that young people with a superior education level are more likely to be unemployed compared with those who do not have an education. This same study identifies that, while an increase in age seems to increase youth unemployment for women, married youth are less likely to be unemployed than single youth. Similarly, young men are more likely to be unemployed than their female counterparts. Likewise (Mukhanova 2014)'s study affirms that urban youth have more unemployment possibilities than rural youth. Additionally, race and marital status affect unemployment (Mncayi and Meyer 2022). Therefore, the increasing instability of the labor market has forced the exploration of alternative measures of labor underutilization in addition to the standard measures of unemployment (Shakur et al. 2020).

Specifically, the determinants of youth unemployment differ from the literature on overall unemployment because it depends on the cyclical economic conditions of young adults. Youth unemployment is linked to the educational background and qualification of young people (Alawad et al. 2020; International Labor Organization 2020); however, there is a mismatch between the labor market requirements (demand) and the specialization of job offers. Moreover, (Andrews and Bradley 1997; Feldstein and Ellwood 1979) mentioned that the characteristics of youth unemployment are low levels of education, early school-leaving age, no formal qualifications, business cycles, parental unemployment, rented accommodation, and low family income. Ref. (Msigwa and Kipesha 2013) mentioned that Tanzanian youth unemployment is influenced by gender, geographical location, education, skills, and marital status. Finally, financial crises or economic crises (including the COVID-19 crisis) evidence that their negative effects are relatively rough on youth unemployment compared to the overall unemployment rate (Rahman et al. 2020).

Another important determinant of youth unemployment is gender. The authors of (Cáceres 2021) showed that job instability of young women is caused by the increase in adolescent fertility rate in Latin America, informality in accommodating, and the susceptibility to the economic cycles compared to males. The authors of (Ibrahima and Akrassi 2020; International Labor Organization 2020) mentioned that the high representation of women in the unemployment rate remains attributable to their low level of education and the weight of the traditional role of women in society, as houseworkers. The authors of (Mina 2022) proposed introducing labor market flexibility and the improvement of the social contract to solve women's labor discrimination and to improve the female youth unemployment rate.

On the other hand, active labor market policies also reduce the mismatch between jobs' offers and demands. For instance, active labor market programs are tools to prevent and reduce youth employment in the United Kingdom and Germany. The principal objective of these programs is the rapid integration of young people into the labor market. However, the labor market instruments depend on the country's educational and vocational system, the constitution of the employment system, the national labor market situation, and the welfare system (Dietrich 2018).

2.3. Youth Employment in Ecuador

There are studies regarding youth unemployment in Ecuador. Ref. (De Domingo et al. 2020) mentioned that for the development of competitive jobs, it is essential to study at university, while (Sumba-Bustamante et al. 2020) stated that the problem of unemployment increases poverty levels. Ref. (Castillo and Salas 2018) mentioned that the phenomenon of discrimination and gender inequality in the Ecuadorian labor market persists over time. Their results showed that women with low qualifications are less likely to acquire a job, and are more likely to receive less wages and fewer working hours compared to their male peers. This gap is accentuated by the presence of children and spouses.

Moreover, 18.5% of young Ecuadorians do not work or study (Instituto Nacional de Estadística y Censos 2019). This segment of the population is referred to as “*ninis*” in Spanish (young adults that do not study or work). Furthermore, 30% of *ninis* do not study due to the absence of economic resources, and the highest rate of *nini* unemployment is for women with 26.5% compared to males with 11.2%. This rate is explained by the fact that women must dedicate a large part of their time to taking care of their children at home. The cultural assignment of these roles reduces opportunities for personal and professional growth for women. Another problem is early or adolescent pregnancy, which cause dropout from the educational system. Analyzing macroeconomic figures, the Ecuadorian economy showed growth and slowdown scenarios during 2019. The economic growth rate was -0.6% , 0.2% , 0.4% , and -1.4% during each quarter of 2019, caused by the slowdown in all the components of aggregate demand, low investment, and the reduction in household consumption. Moreover, government spending was significantly reduced and the fiscal deficit increased by the drop in oil revenues and lower tax collection. Therefore, the government raises the external public debt to cover financial needs. Specifically, all of these macroeconomic indicators deteriorated the labor market conditions, provoking an increase in the underemployment rate and the continuous growth of the number of employees in the informal sector, which also translated to an increase in unemployment. Table 1 shows the composition of the Ecuadorian labor market during 2019. Adequate employment was 3.09 million people during the first quarter of 2019, which also is concentrated with an average of 81% in the urban sector. Adequate employment increased by 104,289 people during the second and third quarters, while it declined to 3.14 million people in the last quarter of 2019. According to INEC, 15,000 people lost their jobs in 2019.

Table 1. Composition of the labor market in Ecuador, 2019.

Date	Total Population	PEA	Adequate Employment	Underemployment	Unemployment
March 2019	17,272,020	8,162,787	3,094,795	1,524,118	376,255
June 2019	17,332,994	8,231,949	3,123,743	1,667,278	366,163
September 2019	17,393,811	8,379,355	3,228,032	1,649,346	406,871
December 2019	17,454,560	8,099,030	3,146,297	1,440,983	311,134

Source: (Instituto Nacional de Estadística y Censos 2019).

Unemployment by gender in Ecuador during 2019 showed similar levels for women (51%) and men (49%) in the urban area, while the figures were modified into 55% for women and 45% for men in the rural area. Therefore, unemployment is a phenomenon with a higher prevalence in the female gender compared to males.

Moreover, analyzing the unemployment by age in the urban area, the age group of 15 to 24 years old showed 35% of representativeness, followed by the age group of 25 to 34 years old with 31%, showing that young adults constituted at least 66% of the Ecuadorian unemployment in the urban area caused by the inflexible labor market conditions and the slow rotation of generational groups in a job. In the rural area, the difference increased between the two groups mentioned above. The age groups of 15 to 24 years old and 25 to 34 years old raised to 49% and 25%, respectively. The rural population showed high levels of informal labor, which added to the difficulty of quantifying the real number of people both employed and unemployed. Finally, the composition of unemployment by ethnic

group showed the prevalence (more than 60%) of the “mestizo” category in the urban and rural areas, while in the second position was “Afro-Ecuadorian” and “Indigenous” for the urban and rural areas, respectively.

On the other hand, a public program called “Youth Employment” was created in Ecuador in 2007. The mission of this program was to find a first job opportunity for university students (for the last years of their educational programs); thus, young adults obtained an economic benefit from public institutions and a labor certificate as professional recognition. The project had a financial execution of 6.05 million and 7.53 million dollars from the periods of 2007–2010 and 2011–2017, respectively.

The “Youth Employment” project had two main objectives for young students from technical and technological institutes and universities: (1) to include them in internships of academic excellence in public institutions, and (2) to give them practical and psychological support to strengthen their skills during their internships. From 2007 to 2017, there were 163,418 young applicants registered in the project platform. Therefore, 15,884 university students (9.72% of the total registered in the project platform) obtained benefits through internships in the public sector, divided into 15,440 and 444 in the general and excellence academic modalities, respectively.

Moreover, the vulnerable groups (children, pregnant, women, elderly, and minority ethnic groups) are protected by the Ecuadorian constitution and specific laws for each group ([Constitución de la República del Ecuador 2008](#)). However, women, Afro-Ecuadorians, and Indigenous people are more discriminated against and face difficulties in accessing the justice system, security, land, pure water, education, the health system, housing, and economic opportunities. The United Nations (UN) has highlighted the fact that the Ecuadorian constitution is progressive and recognizes the collective rights of vulnerable groups. The UN recommended (1) intensifying the awareness campaigns to combat racial and gender discrimination, stereotypes, and all forms of discrimination, (2) ensuring the quality and access of education, specifically improving the quality of public education, (3) including ethno-education in the national school curriculum, (4) providing basic services, and (5) increasing economic and social investment to achieve equal access to opportunities and meet the needs of vulnerable people ([Naciones Unidad Ecuador 2020](#)).

3. Methodology

This study determines the main socio-demographic factors that influence Ecuadorian youth unemployment for the age group from 18 to 29 years old in 2019. The cross-sectional database is the National Survey of Employment, Unemployment, and Underemployment (ENEMDU) collected by INEC for 2019. The study is transversal because most of the variables are categorical. The manuscript evaluates the behavior of different individuals at the “t” moment; thus, it is possible to investigate the differences between groups’ characteristics. The Stata econometric program is the software used for the analysis and modeling. The methodological stages for this study are: (1) global verification tests of the model to prove the non-existence of multicollinearity and autocorrelation between variables; (2) significance, parameters, and predictive power analyses; and (3) marginal effects analysis to determine the effect on the probability of being unemployed.

Table 2 shows the research variables of the study. All variables are transformed into a dummy to build the logit model. The “gender” variable is focused on women because the probability of unemployment for this gender is higher than for men figures. Moreover, “single” was identified as a category in the “marital status” variable, while the rest of the options (married, separated, divorced, widower, and free union) were grouped because previous studies showed discrimination due to a person’s marital status. More than 80% of the Ecuadorian population identified as mestizos for “ethnic self-identification” ([Instituto Nacional de Estadística y Censos 2021](#)). Therefore, the analysis aims to observe the probability of unemployment in other ethnic groups. The “kinship relationship” variable is divided into heads of households, husband/spouse, son-in-law/daughter-in-law, grandson/granddaughter, and others to identify the household composition. The “resi-

dence area” is classified into urban and rural areas to analyze the probability of unemployment depending on the growth of cities. Finally, the “educational level” is classified into higher and lower than elementary school education.

Table 2. Variables.

Variable	Type of Variable and Abbreviation	Categories
Dependent variable		
Probability of youth unemployment between 18 to 29 years old	Dummy (D1)	0 = without unemployment 1 = unemployed
Independent variables		
Gender	Dummy (D2)	0 = man 1 = woman
Marital status	Dummy (D3)	0 = single 1 = married, separated, divorced, widowed, or free union
Ethnic self-identification	Dummy (D4)	0 = mestizo 1 = Afro (Afro-Ecuadorian, mulatto, or Black)
	Dummy (D5)	0 = mestizo 1 = Montubio
	Dummy (D6)	0 = mestizo 1 = indigenous
	Dummy (D7)	0 = mestizo 1 = white
Kinship relationship	Dummy (D8)	0 = son/daughter/child 1 = head of household
	Dummy (D9)	0 = son/daughter/child 1 = husband/spouse
	Dummy (D10)	0 = son/daughter/child 1 = son-in-law/daughter-in-law
	Dummy (D11)	0 = son/daughter/child 1 = grandson/granddaughter
Residence area	Dummy (D12)	0 = rural area 1 = urban area
Educational level	Dummy (D13)	0 = other educational levels 1 = high school, technology education, university education, postgraduate
Control variable		
Age	Age	Age of the individual

Source: (Instituto Nacional de Estadística y Censos 2021).

Equation (1) shows the logit model to calculate the probability of belonging to the youth unemployment (from 18 to 29 years old) category.

$$D_1 = \beta_0 + \beta_1 D_2 + \beta_2 D_3 + \beta_3 D_4 + \beta_4 D_5 + \beta_5 D_6 + \beta_6 D_7 + \beta_7 D_8 + \beta_8 D_9 + \beta_9 D_{10} + \beta_{10} D_{11} + \beta_{11} D_{12} + \beta_{12} D_{13} + \beta_{13} Age_i + \mu_i \quad (1)$$

where:

Age: represents a discrete variable for the age for the individual *i* during 2019;
 μ_i : is the error term.

The study will carry out two logit models. In the first one, all the variables are introduced to determine the significant variables to at least a 10% significance level. The

authors of ref. (Gujarati 1988) mentioned that the order of elimination for insignificant variables is to drop them one by one (step-by-step), starting with the one that reflects the greatest probability ($P > |z|$), until reaching the adjusted model with a level of significance of 10%. Therefore, an adjusted model is when all variables are significant and influence the probability of being unemployed within the age group of 18 to 29 years old.

4. Results

Table 3 shows the logistic regression with marginal effects to determine the factors that influence youth unemployment in Ecuador during 2019. The following four variables are significant in the model: “Afro”, “head of household”, “son-in-law/daughter-in-law”, and “urban area”. The coefficient signs and the marginal effects show a relationship with the dependent variable. For instance, the category of “Afros” shows a positive relationship with the probability of being unemployed; thus, a person who has an ethnic-self-identification as “Afro” (Afro-Ecuadorian, mulatto, or Black) has a 4.77% greater probability of being unemployed compared to a person who perceives himself/herself as “mestizo”. Moreover, the marginal effect coefficient shows that if “Afro” increases in one unit, the probability of being unemployed rises by 4.77% compared to other ethnic groups.

Table 3. Logistic regression model with marginal effects (all variables).

Variables	dy/dx	Std. Err.	z	P > z	\bar{X}
D2	0.0048	0.0040	1.19	0.234	0.4891
D3	−0.0088	0.0058	−1.50	0.132	0.3269
D4	0.0477 ***	0.0135	3.52	0.000	0.0406
D5	−0.0000	0.0086	−0.01	0.996	0.0731
D6	−0.0088	0.0080	−1.10	0.272	0.0776
D7	−0.0070	0.0175	−0.40	0.687	0.0100
D8	−0.0213 ***	0.0061	−3.50	0.000	0.0950
D9	−0.0107	0.0078	−1.37	0.271	0.0978
D10	−0.0245 ***	0.0074	−3.28	0.001	0.0532
D11	−0.0027	0.0068	−0.40	0.688	0.0706
D12	0.0248 ***	0.0043	5.65	0.000	0.6397
D13	0.0078	0.0048	1.60	0.109	0.7242

Note: number of observations = 10 943, LR $\chi^2(15) = 107.06$, Prob > $\chi^2 = 0.000$, Log likelihood = −2151.9667, Pseudo $R^2 = 0.0250$. *** indicates statistical significance at the 1% level. The independent dummy variables are: gender (D2 = 1 for woman), marital status (D3 = 1 for married, separated, divorced, widowed, or free union), ethnic self-identification classified into (D4 = 1 for Afro-Ecuadorian, mulatto, or Black), (D5 = 1 for Montubio), (D6 = 1 for Indigenous), (D7 = 1 for white), kinship relationship divided into (D8 = 1 for head of household), (D9 = 1 for husband/spouse), (D10 = 1 for son-in-law/daughter-in-law), (D11 = 1 grandson/granddaughter), residence area (D12 = 1 for urban area), and educational level (D13 = 1 for high school, technology education, university education, postgraduate).

Another important variable is marital status. However, it is not a significant variable for the model; nevertheless, the category of “married, separated, divorced, widowed, or free union” decreases the probability of unemployment compared to a “single” person. Moreover, the categories “head of household” and “son-in-law/daughter-in-law” show a decrease of 2.13% and 2.45% in the probability of being unemployed between 18 to 29 years old. Therefore, the marginal effect coefficients show that if the “head of household” and “son-in-law/daughter-in-law” increase by one unit, the probability of being unemployed decreases by 2.13% and 2.45%, respectively. On the other hand, the “urban sector” shows a positive coefficient, meaning that a person who lives in an urban area has a 2.48% greater probability of being unemployed than a person who lives in a rural area.

Our findings are aligned with (Egessa et al. 2021; Msigwa and Kipasha 2013; Mukhanova 2014)’s results. They showed that living in urban areas made youth more likely to be unemployed compared to those living in rural areas. This indicated that it is easy for youth people to be employed in rural areas than in urban areas of Tanzania, especially in the agriculture sector because of the informal nature of employment conditions.

In urban areas, youth are more constrained to formal employment requirements such as education, skills, and experience (Mpanju 2012). Regarding ethnic self-identification, there is much evidence of ethno-racial gaps in unemployment rates, especially between Blacks and whites (Mncayi and Meyer 2022; Cherry and Rodgers 2000; Yu and Sun 2019). Black youth were more likely to participate in the labor force but less successful at findings jobs, showing higher rates of unemployment (Fernandes-Alcantara 2018).

Tables 3 and 4 present the same signs of coefficients, showing statistical coherence in both regression models. Table 4 shows the logistic regression with marginal effects to determine the factors that influence youth unemployment in Ecuador during 2019 using significant variables. The insignificant variables were dropped one-by-one to obtain the adjusted regression model (Gujarati 1988). Therefore, the insignificant variables dropped were: (1) D5, (2) D11, (3) D7, (4) D6, and (5) D9. The adjusted regression model (at least 10% level) is formed by “woman” (D2), “married, separated, divorced, widowed, or free union” (D3), “Afro” (D4), “head of household” (D8), “son-in-law / daughter-in-law” (D10), “urban area” (D12), and “high school, technology education, university education, postgraduate” (D13).

Table 4. Logistic regression model with marginal effects (significant variables).

Variables	dy/dx	Std. Err.	z	P > z	\bar{X}
D2	0.0038 **	0.00402	1.97	0.049	0.4891
D3	−0.0130 ***	0.00478	−2.73	0.006	0.3269
D4	0.0488 ***	0.01363	3.58	0.000	0.0406
D8	−0.0193 ***	0.00613	−3.16	0.002	0.0950
D10	−0.0217 ***	0.00788	−2.76	0.006	0.0532
D12	0.0255 ***	0.00406	6.29	0.000	0.6397
D13	0.0087 *	0.00481	1.81	0.070	0.7242

Note: Number of observations = 10 943, LR $\chi^2(15) = 103.41$, Prob > $\chi^2 = 0.000$, Log likelihood = −2153.4587, Pseudo $R^2 = 0.0243$. ***, **, and * indicates statistical significance at the 1%, 5% and 10% level, respectively. The independent dummy variables are: gender (D2 = 1 for woman), marital status (D3 = 1 for married, separated, divorced, widowed, or free union), ethnic self-identification classified into (D4 = 1 for Afro-Ecuadorian, mulatto, or Black), kinship relationship divided into (D8 = 1 for head of household), (D10 = 1 for son-in-law / daughter-in-law), residence area (D12 = 1 for urban area), and educational level (D13 = 1 for high school, technology education, university education, postgraduate). Using 0.5 as the cut-off point, the projected values of the logit model reflect: sensitivity of 86.80%, specificity of 47.29%, and precision of 80.80%.

Our findings are aligned with those of (National Statistics Bureau 2020), because their results showed that the odds of being unemployed in Bhutan for female youth are 1.7 times greater than male youth, showing gender prevalence as a characteristic. Moreover, the study indicated that educational status is a crucial variable in the logistic regression model because when the educational level is higher than a bachelor’s degree, there are 3.85 times greater odds of being unemployed compared to those whose educational level is higher than secondary.

The findings reveal that the female variable reaches the 5% significant level, showing a positive relationship between women and the probability of being unemployed between 18 to 29 years old. On the other hand, being “married, separated, divorced, widowed, or free union”, “head of household”, and “son-in-law / daughter-in-law” decrease the probability of being unemployed by 1.30%, 1.93%, and 2.17%, respectively, while being “Afro”, living in “urban area”, and studying “high school, technology education, university education, or postgraduate” increase the probability of unemployment by 4.88%, 2.55%, and 0.87%, respectively. The findings regarding educational level (years of schooling) are contradictory to most of the previous literature review, although the population with higher approved educational level presents greater problems to entering the labor market according to the latest studies carried out by OIT (Organización Internacional del Trabajo 2020).

According to INEC, Ecuadorians achieve an average schooling of 10.3 years; however, to obtain a bachelor’s degree in Ecuador requires 12 years (six years in school and six years in college) (Instituto Nacional de Estadística y Censos 2021). The years of schooling

in Ecuador are similar to those in Chile and Argentina, with indicators of 10.6 and 10.9, respectively. Another problem is the large gaps in terms of the quality of education. Students who attend public and private urban schools have better academic tools than those who study in rural areas, where the average level of schooling also falls. Therefore, schooling in rural areas is only 7.7 years, while in urban areas, 11.5 years. Finally, the school dropout rate increases as the years of study progress. In 2021, for instance, primary educational attendance was 94.6%, while secondary education participation was 87% and high school attendance was 69.9%. Another determinant is ethnic self-identification, because the indigenous community and Montubio have fewer years of schooling. These segments of the population spend 7.2 and 7.3 years studying primary and secondary education, respectively, while mestizos and white people dedicate 10.8 years and 11.5 years to their basic education.

Another important aspect is the brain drain or highly skilled migration phenomenon, which has been increasing in Ecuador in recent years because young Ecuadorians with high professional levels prefer to migrate to developed countries. Brain drain is caused by youth unemployment, professional development opportunities, and policy and economic stability of a nation. Specifically, the following factors are conducive to brain drain in Ecuador (Cevallos 2021): (1) the difficult macroeconomic situation and the perceptions of economic and political situation as perceived by the potential migrant, (2) the socio-economic conditions according to income and professional level, as well as the ease of opportunities to receive a better income, (3) professional attraction from the developed country, including the probability of continuing studying and the willingness to study abroad, and (4) educational system and state collaboration, which depends on the perception of the local educational system compared to the foreign system.

Our findings are consistent with (Egessa et al. 2021; Tenzin 2015)'s results, since male youth face a greater advantage to being employed while female youth are greatly affected in the labor market. Females leave the labor force earlier than males after marriage, and they prefer to remain homemakers or help out in their households' business in Bhutan. Moreover, the higher-unemployment problems are skewed towards a more-educated youth population, showing a mismatch between educational level, skills, and requirement changes in the labor market (Ebaidalla 2016). The authors of (Ordine and Rose 2015) mentioned that "overeducated" youths often suffer from unemployment compared to the cohort of youths whose education is lower or well-matched with potential employment.

Table 5 shows the odds ratios for the logistic regression model. The odds ratios show the probability that an event occurs or not. This research represents the probability that the independent variables increase or decrease the youth unemployment rate. The results greater than one are those that increase the probability and are interpreted directly according to the result, while with values less than one the probability decreases; to estimate the reduced value, it is necessary to calculate its inverse value.

Table 5. Odds ratios.

Variables	Odds Ratio	P > t
D2	1.979	0.004
D3	0.848	0.000
D4	3.275	0.000
D8	0.901	0.000
D10	0.799	0.000
D12	1.422	0.000
D13	1.112	0.005

Note: The independent dummy variables are: gender (D2 = 1 for woman), marital status (D3 = 1 for married, separated, divorced, widowed, or free union), ethnic self-identification classified into (D4 = 1 for Afro-Ecuadorian, mulatto, or Black), kinship relationship divided into (D8 = 1 for head of household), (D10 = 1 for son-in-law/daughter-in-law), residence area (D12 = 1 for urban area), and educational level (D13 = 1 for high school, technology education, university education, or postgraduate).

Being Afro triples the probability of being unemployed for the age group from 18 to 29 years old in 2019. Moreover, being a woman doubles the probability of being unemployed, while a person living in an urban area has a 1.4 times greater probability of being unemployed than someone in the same age group. Finally, increasing the educational level rises by 1.1 times the probability of being unemployed. On the other hand, having a marital status different from being single, being the head of household, and being a son- or daughter-in-law reduces by 1.2, 1.1, and 1.3 times the probability of being unemployed for the age group from 19 to 29 years old in 2019 in Ecuador, respectively. Our findings reinforce the results from Tables 3 and 4.

5. Discussion

Unemployment is a phenomenon that intensified in Ecuador in 2019. The levels of unemployment have affected the vulnerable sectors, caused—on one hand—by macroeconomic factors, which reflected a slowdown of the economy with a rate of -1.39% at the end of 2019. Likewise, PEA has been affected by this slowdown, and its magnitude was reduced to 250,000 people.

The Ecuadorian adequate employment rate showed a reduction of 2.53% (81,735 people) from the third to the fourth quarter of 2019. Despite this, unemployment and underemployment fell according to the figures presented by ([Instituto Nacional de Estadística y Censos 2019](#)). This phenomenon might be explained by different factors such as the growth of informality in the labor market, which was not included in their study due to the difficulty of verifying whether a person belongs to a specific labor sector. However, using descriptive statistics, the number of unemployed increased by 11.12% (40,707 people) during the second and third quarters of 2019.

Similarly, the structure of Ecuadorian unemployment affected the female gender in greater proportion than males in 2019. The representativeness of unemployment by gender was 53% for women and 47% for men. Moreover, age groups also evidenced large differences by categories. For instance, unemployment reached 35% in the age group between 15 and 24 years old in the urban area, while unemployment in the rural area was 48.70%, showing that young people experience higher rates of unemployment, followed by the category of 25 to 34 years old with 14%.

On the other hand, minority groups in Ecuadorian society, such as Afro-Ecuadorians, Indigenous, Black, and mulatto communities, experience higher levels of unemployment according to their representativeness. Around 80% of the Ecuadorian population is perceived as mestizo. Their unemployment levels are higher than the rest of the ethnic groups. However, Afro-Ecuadorians, Black, or mulatto communities showed high levels of unemployment in the rural areas, where informality work predominates, especially in the agriculture sector.

Public policies to reduce youth unemployment have been promoted since 2007 with the first social and employment project called “my first job”, whose objectives were to include young students (at the last levels of their degree) in public and private entities. Moreover, it monitored and supported those students with internships in the public sector to strengthen their skills. In 2017, this benefit was granted to 163,418 young people. Although the program started in 2007, there is still a large gap faced to reduce unemployment levels, the growth rate of which increased during 2018 and 2019.

The fact that young people do not find job opportunities has a serious impact on society. The lack of youth employment generates migration. Leaving the country is the only option for young unemployed adults. In addition, it is a breeding ground for illegal activities, such as drug trafficking. In the Ecuadorian case, dealing with the problems experienced by young people must not only be routed through structural labor reform, but also demand educational changes, which provide more opportunities for the training of young people.

6. Conclusions

The study analyzed the determinants of youth unemployment for the age group from 18 to 29 years old in Ecuador in 2019. The cross-sectional database used for this study was ENEMDU and it was collected by INEC. The study included logistic regression models with (1) global verification tests to validate the inexistence of multicollinearity and autocorrelation between variables, (2) power analysis of the model (the sign of parameters, significance levels, and predictive power), and (3) marginal effects analysis related to the probability of being unemployed.

The two logistic regression models evaluate the probability of being unemployed in Ecuador for the age group from 18 to 29 years old. The models yielded significant results for the analysis of unemployment from a structural perspective. In both models, Afro-Ecuadorian, head of household, son-in-law/daughter-in-law, and urban sector variables reached high levels of significance and showed a relationship with the probability of being unemployed in Ecuador. However, in the second model, the variables “woman”, “married, separated, divorced, widowed, or free union”, and studying “high school, technology education, university education, or postgraduate” influenced the probability of being unemployed.

In the second model, the marginal effects showed a positive influence on being unemployed when a person is a “woman” and “Afro”, lives in the “urban area”, and studies “high school, technology education, university education, or postgraduate”, with coefficients of 0.38%, 4.88%, 2.55%, and 0.87%, respectively. Moreover, there is a negative relationship between being unemployed and “married, separated, divorced, widowed, or free union”, “head of household”, and “son-in-law/daughter-in-law”, showing that an additional change in the variables decreases the probability of unemployment by 1.30%, 1.93%, and 2.17%, respectively. The authors of (Barbero and Molina 2011; Castañeda and García 2019; Dahse 1981; Proaño 2015) mentioned that the young sEcuadorian population faces vulnerability in the labor market, where differences in gender, ethnicity, and social factors play a transcendental role in establishing unemployment levels.

The second logistic regression model from the age group of 18 to 29 years old, showed that “Afro-Ecuadorian, mulatto, and Black” is the most significant variable that increases the probability of being unemployed compared to the category “mestizo”, which is the predominant self-identification of Ecuadorians. The variable with the greatest negative influence on the probability of being unemployed is “son-in-law/daughter-in-law”, given their educational level.

Despite the great advances in the analysis of Ecuadorian youth unemployment, it is necessary to focus on the debate of public policy for the formal inclusion of young people in the labor market. For instance, the promotion of labor laws and a flexible regulatory framework allows not only the development of citizens’ skills but also encourages economic compensation as an incentive for future professionals in the labor market. Moreover, for future studies, it is necessary to include in all models a variable to capture the social structure of the population, given the discrimination against minority groups.

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Note

¹ Abbreviation corresponds to name in Spanish for *población económicamente activa* (PEA).

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