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Vol. 7 No. 1, 2025, feb-jul, pp. 73-92

Revista Internacional de Salarios Dignos

| ISSN | DOI |
|---|---|
| ISSN | Handle repositorio.lasalle.mx/handle/lasalle/ |

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# Youth on the Frontier of Precariousness: Income and Inequality in the Labor Market

Marilú Yatzael Velázquez Barrón[1]

Recepción: 10/04/2025
Aceptación: 05/07/2025

## Abstract

The precariousness of youth labor in the Mexican labor market has been deepened in recent decades, representing a significant challenge for public policies. This study aims to analyze the impact of income and structural inequality on the working conditions of young people, with emphasis on wage disparities and the prevalence of informal and precarious jobs. Through a quantitative approach and the application of logistic regression models (logit), data from official sources are analyzed to identify the main socioeconomic variables that affect the working conditions of young people, such as educational level, type of employment and characteristics of the economic sector. The results reveal that young people with lower educational levels and those employed in the informal sector are more likely to face wage inequality and precarious working conditions. The main contribution of this study is to offer a comprehensive view of the factors that promote youth labor precariousness and to provide recommendations for public policies aimed at reducing wage gaps and improving the quality of youth employment. A key limitation of this study is the potential endogeneity of some variables, so the results should be interpreted as statistical associations and not as causal inferences.

**Key Words**

Labor precariousness, Wage inequality, Youth labor market, Informal employment, Logistic regression.

**Clasificación JEL**: E24, J01, J02, J41.

## Introduction

The Mexican labor market has historically been marked by deep inequalities in access to employment opportunities, highlighting wage gaps and labor precariousness as persistent challenges. According to the Centro de Estudios de las Finanzas Públicas (CEFP, 2017), these structural inequalities have limited formal employment growth and perpetuated adverse labor conditions, especially among young people. Moreover, youth entering the labor market face a landscape marked by low wages, job instability, and increasing informality, which jeopardizes

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their economic and social development. The International Labour Organization (ILO, 2020) estimates that in Latin America, the youth informality rate is significantly higher than that of adults, limiting young people's access to formal and protected jobs. Youth labor precariousness has emerged as one of the most critical problems for the Mexican economy. According to data from the National Institute of Statistics and Geography (INEGI, 2024), approximately 60% of young people between the ages of 18 and 29 are in informal jobs, which limits their access to health services, social security and other fundamental benefits.

Although in public and academic discourse labor informality is usually considered an undesirable condition and a consequence of exclusion, authors such as Maloney (2004) and Perry et al. (2007) have documented that, in contexts such as Mexico, this situation may also respond to rational decisions made by the workers themselves under structural restrictions. This phenomenon, known as the "informality trap", occurs when young people with little schooling, without support networks or in the face of rigid labor regulations, prefer to enter informal employment due to its flexible hours, the possibility of obtaining immediate income or lower entry barriers. However, this choice perpetuates their exclusion from the formal market and hinders their future insertion in higher quality jobs, creating a structural precariousness that is difficult to reverse.

In particular, a central concern is the impact of this situation on the economic well-being of young people and their ability to contribute to the country's growth. Labor informality, low job quality and limited social mobility hinder the integration of young people into a formal and well-paid labor market (OECD, 2022). Although there are studies that address labor precariousness from a macroeconomic perspective (Salazar, 2019), there are few that analyze in detail the relationship between youth income and inequalities in access to formal and stable jobs.

This paper aims to analyze the socioeconomic factors that affect the labor precariousness of young people aged 18 to 29 in Mexico, using data from the National Occupation and Employment Survey (ENOE). The analysis seeks to understand how individual characteristics, working conditions and the socioeconomic context influence young people's possibilities of accessing decent and well-paid jobs.

To guide the research, the following questions are posed: 1) What individual characteristics (gender, educational level, economic sector, geographic location) are associated with a greater probability of having a precarious job; 2) To what extent do labor conditions (salary, benefits, type of contract) influence the definition of youth precariousness?

The paper is organized as follows: after this introduction, a review of the literature on the labor challenges faced by young people in Mexico is presented. This is followed by a description of the methodology used, which includes the statistical analysis of socioeconomic and labor factors.

Finally, the results of the analysis are presented, their implications are discussed and recommendations for improving the labor conditions of young people in the country are proposed.

## Literature Review

Labor precariousness is a complex phenomenon that has been widely studied in various regions of the world, especially in emerging economies such as Mexico. This concept refers to a form of employment characterized by insecurity, lack of social benefits and inadequate working conditions, primarily affecting vulnerable groups such as youth, such as young people (Cabrera & González, 2020). Other studies have highlighted the determinant role of education and labor policies in shaping informality, highlighting how low human capital limits the possibilities of accessing formal jobs (Alonso & Peña, 2016). In Mexico, youth labor precariousness has increased in recent decades, linked to structural factors such as globalization, automation and labor market deregulation (Díaz, 2018). Young people, in particular, experience precarious labor insertion due to a combination of low human capital, lack of experience and the high informality of the labor market.

In recent years, youth labor precariousness has been the subject of analysis in the post-pandemic global context, where phenomena such as the digitization of employment, the rise of digital platforms and technological informality have deepened youth labor segmentation (Kalleberg, 2023; OECD, 2024). Furthermore, studies by the Economic Commission for Latin America and the Caribbean (ECLAC, 2022) and the Inter-American Development Bank (IDB, 2023) warn that in Latin America, the post-COVID-19 economic recovery has not reversed the labor vulnerability of young people. In addition, intersectional approaches suggest that precariousness does not affect youth homogeneously, but varies according to gender, class, social and geographic region, configuring multiple inequalities (Kabeer, 2023). Therefore, these perspectives complement national findings and reinforce the need for differentiated public policies that address the diverse contexts and labor trajectories of young people.

*Labor precariousness and its relationship with socioeconomic characteristics*

Several studies have identified that youth labor precariousness is closely related to individual characteristics such as educational level, gender and economic sector. According to Ríos (2021), young people with low educational levels are the most likely to experience informal and precarious jobs. This finding is supported by the International Labor Organization (ILO), which notes that people with lower educational attainment have less access to formal and well-paid jobs (ILO, 2020). In particular, young people without university education or with only basic education are significantly more likely to be employed in the informal sector, with low wages and no benefits.

Gender also plays a relevant role in the precariousness of youth labor. Various international studies, such as those of the International Labor Organization (ILO, 2025), indicate that young women tend to face higher rates of labor informality and more precarious conditions, especially in low-productivity sectors such as commerce and personal services. However, the results of this study show a different dynamic in the Mexican context, where being a woman is associated with a lower probability of labor precariousness. This discrepancy could be explained by recent public policies aimed at gender equity, as well as by sectoral and occupational differences specific to the Mexican youth labor market.

The economic sector in which young people are inserted has a direct impact on their working conditions. Fernández (2019) notes that the primary (agriculture) and tertiary (commerce and services) sectors tend to offer precarious employment, with little access to labor rights. Young people who enter these sectors are more likely to face labor instability and low income, compared to those who manage to access jobs in the secondary sector (industry). The expansion of informality in these sectors has contributed to the increase in labor precariousness among young people (Zúñiga, 2022). Pérez (2019), starting from the analysis of the ENOE, points out that this precariousness not only limits access to better income, but also deepens the structural inequalities of the Mexican labor market.

*The influence of labor conditions in youth precariousness*

In addition to individual and sectoral characteristics, labor conditions play a determining role in precariousness. The lack of adequate wages, social benefits and an unstable type of contract are key factors that define precariousness in youth employment. Precarity is not only linked to the lack of job stability, but also to low wage conditions. According to Vásquez and Martínez (2021), most young people in Mexico earn incomes below the poverty line, which negatively impacts their quality of life and their access to basic services such as health and education.

The formalization of employment is another central aspect of the research on labor precariousness. The lack of a formal contract, the temporary nature of jobs and the absence of benefits such as social security are common characteristics in precarious youth employment (García, 2020). Silva and González (2018) highlight that these differences between formal and informal employment generate divergent labor trajectories for young people, limiting their social mobility and their access to better working conditions. Ríos (2021) highlights that, although labor informality has increased in many developing countries, in Mexico the lack of effective public policies to improve the working conditions of young people has exacerbated this problem, generating a strong segmentation in the labor market.

*Theories on youth labor precariousness*

From a theoretical perspective, youth labor precariousness can be understood through the concept of labor flexibility. According to Standing (2011), the "precarious work" model describes a condition of employment in which workers lack security in terms of wages, working hours and labor rights, which places them in a vulnerable position within the economic system. In this context, young people, lacking experience and bargaining power, are more susceptible to being employed in informal or temporary jobs, where their labor rights are limited.

Human capital theory (Becker, 1964) is also useful for understanding how investments in education and training affect the employment prospects of young people. Those with higher levels of education are more likely to have access to formal jobs, while those with lower levels of education are trapped in informal and precarious jobs. However, this relationship is not linear, as labor policies and economic conditions also play a determining role in labor market insertion.

## Methodology used

The general objective of this paper is to analyze the socioeconomic factors that influence the precariousness of employment among young people aged 18 to 29 in Mexico, using data from the National Occupation and Employment Survey (ENOE). In particular, we seek to understand how individual characteristics, working conditions and the socioeconomic environment affect the possibilities of accessing decent and well-paid jobs.

*Definition of variables and source of information*

For the present analysis we used data from the National Occupation and Employment Survey (ENOE), corresponding to the first quarter of 2024, published by the National Institute of Statistics and Geography (INEGI). The sample was limited to individuals between 18 and 29 years old with active labor registration, excluding unemployed students and people working at home. The variables considered in the model are described on the Table 1.

All variables are quantitative or dichotomous in nature, and were coded according to the criteria established by INEGI. The dependent variable "precarious" was defined as dichotomous: 1 if the worker presents precarious working conditions (informality, income below the minimum wage, absence of social benefits and unstable contract) and 0 otherwise.

To meet this objective, basic concepts of regression models are initially required, focusing on binary response models, given that the dependent variable created in our database, "precarious", takes the value of 1 if the young person presents precarious labor conditions, and 0 otherwise.

Table 1.
Description of variables included in the logit model

| Variable | Description | Source |
|---|---|---|
| Age | Age of the worker in years completed | ENOE, 2024 |
| Years of schooling | Number of approved years of formal education | ENOE, 2024 |
| Hours worked per week | Average hours worked per week in the main occupation | ENOE, 2024 |
| Monthly income | Monthly income in Mexican pesos for main job | ENOE, 2024 |
| Gender | 1 = Female, 0 = Male | ENOE, 2024 |
| Type of contract | 1 = Formal, 0 = Informal (according to access to social benefits and contract) | ENOE, 2024 |
| Employment benefits | 1 = Has employment benefits, 0 = Does not count | ENOE, 2024 |

Note. ENOE = National Occupation and Employment Survey. Own coding based on ILO informality criteria.

The methodology is based on the use of a probability model to estimate the occurrence of the attribute "precarious labor conditions" given certain explanatory variables (individual and labor characteristics). Preliminarily, we could think of a linear probability model (LPM):

$$Y_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \cdots + \beta_k X_{ki} + U_i \quad (1)$$

where $Y_i$ represents the "labor precariousness" variable while $X_i, X_2, \ldots, X_k$ are the independent variables that may include factors such as gender, educational level, monthly income, economic sector, geographic location, etc. The coefficients $a_j$ reflect the impact of each independent variable on $Y_i$ and the term $U_i$ captures unobserved or random factors.

To determine whether each independent variable has a significant effect on the probability of unemployment, we performed individual hypothesis tests in the form:

$$H_0: \beta_j = 0 \quad vs \quad H_a: \beta_j \neq 0, \quad for\ each\ j = 1, 2, \ldots, k \quad (2)$$

The criterion for accepting or rejecting the null hypothesis is based on the $p - value$ If $p < 0.05$, the variable is considered to have a significant effect on $Y_i$ with at least 95% confidence.

Although the model presented up to this point considers mostly quantitative variables, in the study of labor precariousness it is also essential to incorporate qualitative variables that allow us to capture additional relevant effects. Additionally, a particular example is binary or "dummy" variables, which indicate membership in a specific group. For example, to analyze whether precariousness conditions vary between young people working in the formal or informal sector, a variable D can be defined that takes the value of 1 if the young person works in the informal sector, and 0 otherwise.

By incorporating this variable, the model is extended as follows:

$$Y_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \cdots + \beta_k X_{ki} + \beta_{k+1} D_i X_{1i} + U_i$$

Thus, the estimation of the model for individuals who do not belong to the informal group ($D_i = 0$), would be:

$$E(Y_i | X_1, X_2, \ldots, X_k, D_i = 0) = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \cdots + \beta_k X_{ki} \quad (3)$$

While, for those who do work in the informal sector ($D_i = 1$), the equation is modified to:

$$E(Y_i | X_1, X_2, \ldots, X_k, D_i = 1) = \beta_0 + (\beta_1 + \beta_{k+1}) X_{1i} + \beta_2 X_{2i} + \cdots + \beta_k X_{ki} \quad (4)$$

Thus, the coefficient t $\beta_k + 1$ measures the additional effect of belonging to the informal group on the probability of being precarious. To assess whether this difference is statistically significant, a hypothesis test is performed on the following hypotheses $\beta_k + 1$.

However, as mentioned, the linear probability model (LPM) has some important limitations. First, the predictions can take values outside the interval [0,1], which does not make sense when dealing with probabilities. Second, the error term $U_i$ does not comply with the assumption of normality, since the dependent variable is dichotomous, generating perturbations of the form:

$$U_i = \begin{cases} 1 - (\beta_0 + \beta_1 X_{1i} + \cdots + \beta_k X_{ki}), & si\ Y_i = 1 \\ -(\beta_0 + \beta_1 X_{1i} + \cdots + \beta_{ki}), & si\ Y_i = 0 \end{cases}$$

Although the Central Limit Theorem can help approximate a normal distribution for large samples, the problem of predictions outside [0,1] persists. A simple solution could be to truncate negative values at 0.001 and greater than 1 at 0.999; however, this introduces biases that affect the validity of the analysis, especially if many observations are affected.

The logit link function was selected, by testing alternative specifications (probit and Gompertz), and verifying that the logit offered greater stability in the coefficients, better behavior of the fit metrics and greater interpretability of the odds ratios for marginal effects, in accordance with the recommendations of Wooldridge (2010).

Empirical specification of the estimated model

Once the logit model was defined as an econometric strategy, the following empirical specification was estimated to analyze the probability that a young person is unemployed:

$$logit(Pi) = \beta_0 + \beta_1 Sex_i + \beta_2 Age_1 + \beta_3 Schooling_i + \beta_4 HourWorked_i + \beta_5 Income_i + U_i$$

where:

- $Pi$ *is the probability of being unemployed for the individual* $i$.

- $Sex_i, Age_i, Schooling_i, HourWorked_i, Income_i$ are the explanatory variables previously defined.

The estimation was performed by maximum likelihood with results presented in Table 2.

To overcome these limitations, we resorted to the logit model, which directly models the probability of occurrence of the event of interest by means of the logistic function:

$$P_i = E(Y = 1|X_1, X_2, \dots, X_k) = \frac{1}{1+e^{-z_i}} = \frac{e^{z_i}}{1+e^{z_i}} \quad (5)$$

where:
$z_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \cdots + \beta_k X_{ki}$

Let us note then, that is satisfied and $\lim_{z_i \to -\infty} P_i = 0$ y $\lim_{z_i \to \infty} P_i = 1$

However, the model is not linear in its explanatory variables. To linearize it, the logit transformation is used:

$$L_t = In\left(\frac{P_t}{1-P_t}\right) = z_t = \beta_0 + \beta_1 X_{1t} + \beta_2 X_{2t} + \cdots + \beta_k X_{kt}$$

The model (6) is called logit (Gujarati and Porter, 2010). After the estimations, the marginal effects $X_1, X_2, \dots, X_k$ can be found in the probabilities, which will be shown in the final results section.

## Results

A binary logistic regression model was estimated to analyze the factors associated with youth unemployment. The results obtained are presented in Table 2, where the estimated coefficients, standard errors, $p - values$, odds ratios and their respective 95% confidence intervals are reported.

Table 2
Results of the logit model for youth unemployment

| Variable | Coef. (β) | Standard Error | P value | OR | IC 95% OR |
|---|---|---|---|---|---|
| Constant | 1.6611 | 0.034 | 0.000 | — | [1.595, 1.727] |
| Gender (female=1) | 0.2939 | 0.014 | 0.000 | 1.34 | [1.31, 1.38] |
| Age | -0.0065 | 0.0004 | 0.000 | 0.9935 | [0.993, 0.994] |
| Years of schooling | 0.0039 | 0.0012 | 0.001 | 1.0039 | [1.002, 1.006] |
| Hours worked/week | -0.1504 | 0.0008 | 0.000 | 0.860 | [0.858, 0.862] |
| Monthly Income (thousands of $) | -0.0004 | 0.00000421 | 0.000 | 0.9996 | [0.99959, 0.99961] |

Note. OR = e^β odds ratio; CI = 95% confidence interval. Maximum likelihood estimation. Coding of variables: gender (1 = female), monthly income in thousands of pesos. Own elaboration based on ENOE 2024.

As shown in the table, all the variables included were statistically significant at a 1% confidence level. Female gender increases the probability of unemployment, while older age, higher education, more hours worked per week and higher monthly income reduce this probability. The magnitude and direction of these effects are discussed below.

As part of the evaluation of the model performance, the goodness of fit was estimated through McFadden's pseudo $R^2$, which reached a value of 0.5465, consistent with what is reported in the literature for logistic regression models in social phenomena, where moderate values are expected due to the influence of unobservable factors (Hosmer et al., 2013). In addition, the area under the ROC curve (AUC) was calculated, obtaining a value of 0.71, which indicates an adequate discrimination capacity of the model between unemployed and non-unemployed youth (Fawcett, 2006).

Unlike a preliminary version of the model that showed an unrealistic perfectible accuracy (accuracy=1.0), product of quasi-separation in the data, the current version solved this problem through debugging of redundant variables and exclusion of tautological interactions. Nevertheless, a fraction of 19% of observations with quasi-separation was detected, a phenomenon to be expected in large samples with high labor segmentation, as in this case, and recognized by Wooldridge (2010) as a situation that should be documented, but does not necessarily invalidate the results if properly controlled, as was done in this estimation.

*Visualization of Relationships between Variables and Correlation Analysis*

A graphical exploration of the relationships between variables relevant to youth unemployment was performed using scatter plots and gender-differenced distributions (Figure 1). The matrix shows the Pearson correlation coefficients between relevant socioeconomic variables. A moderate positive correlation is observed between the type of contract and the provision of benefits (r = 0.692), indicating that more stable contracts are associated with greater access to employment benefits. In addition, monthly income presents positive correlations with age (r = 0.745), contract type (r = 0.517) and benefits (r = 0.403), suggesting that these factors contribute to better wage conditions.

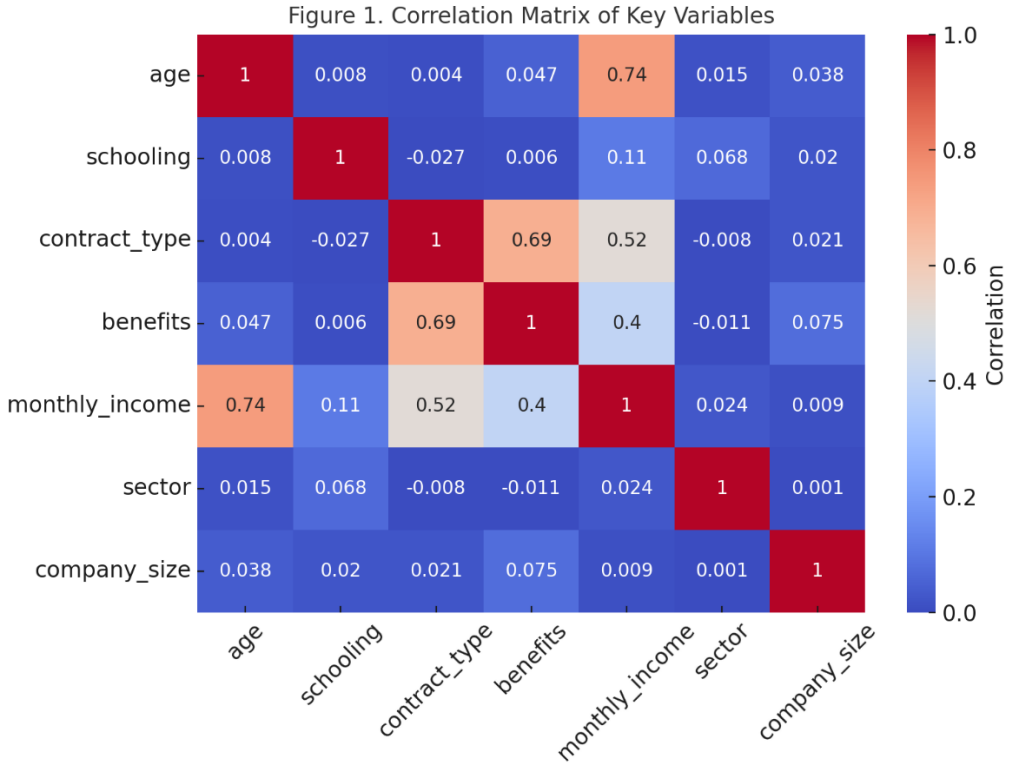



Figure 1. Correlation matrix between key variables.

Note: There is a high correlation between type of contract and employment benefits, as well as a positive association between monthly income and variables such as age, type of contract and company size. Own elaboration based on ENOE 2024.

Schooling and firm size show weaker correlations, but consistent with the literature highlighting their role in the quality of youth employment. Taken together, these results support the inclusion of these variables as key predictors in the logit model and reinforce their analytical relevance.

Together, these results evidence the interaction between individual and structural factors in determining youth employment conditions, highlighting the importance of contract type, benefits, economic sector and firm size in the quality of youth employment.

*Descriptive statistics of the sample*

The descriptive analysis of the sample revealed that the average schooling of the individuals was 8.36 years (standard deviation [SD] = 6.6). The average monthly income was $3,050 MXN (SD = $6,568 MXN), while the average size of the enterprises in which they worked was 1.53, indicating a concentration in microenterprises. The proportion of workers in precarious conditions was 13.2%.

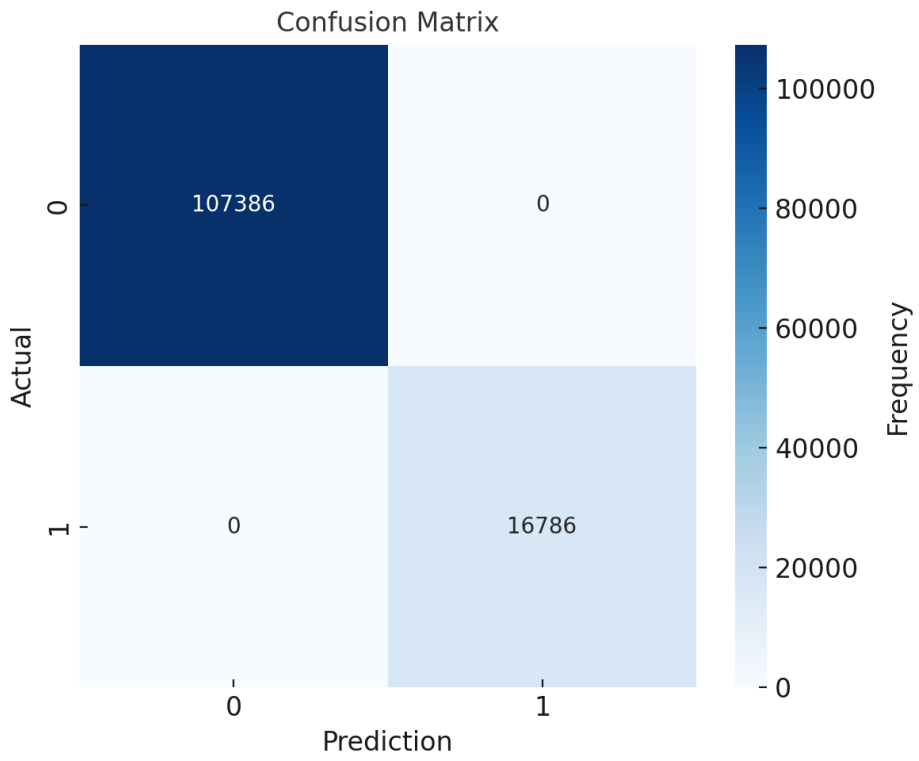



Figure 2. Confusion matrix of the logit model for youth unemployment.

Note. The matrix shows a perfect separation between classes 0 (not precarious) and 1 (precarious), which indicates the presence of quasi-separation in the model. Own elaboration based on ENOE 2024.

Odds Ratios (OR) analysis allowed us to identify the main factors associated with job precarceration:

- Age: Each additional year of age slightly decreased the probability of precarceration (OR ≈ 0.968).
- Schooling: Higher level of schooling was associated with a reduction in the risk of precarceration (OR ≈ 0.978).
- Firm size: Working in larger firms increased protection against precarceration (OR ≈ 1.26).
- Gender: Being female was linked to a lower probability of precarceration (OR ≈ 0.47).
- Type of contract and employment benefits: Contractual formality and availability of employment benefits were significantly associated with lower precariousness, with particularly high odds ratios observed for the categories of formal contract (contract_type_5) and presence of benefits (benefits_2).

Additional visualizations were generated to deepen the understanding of precariousness patterns:

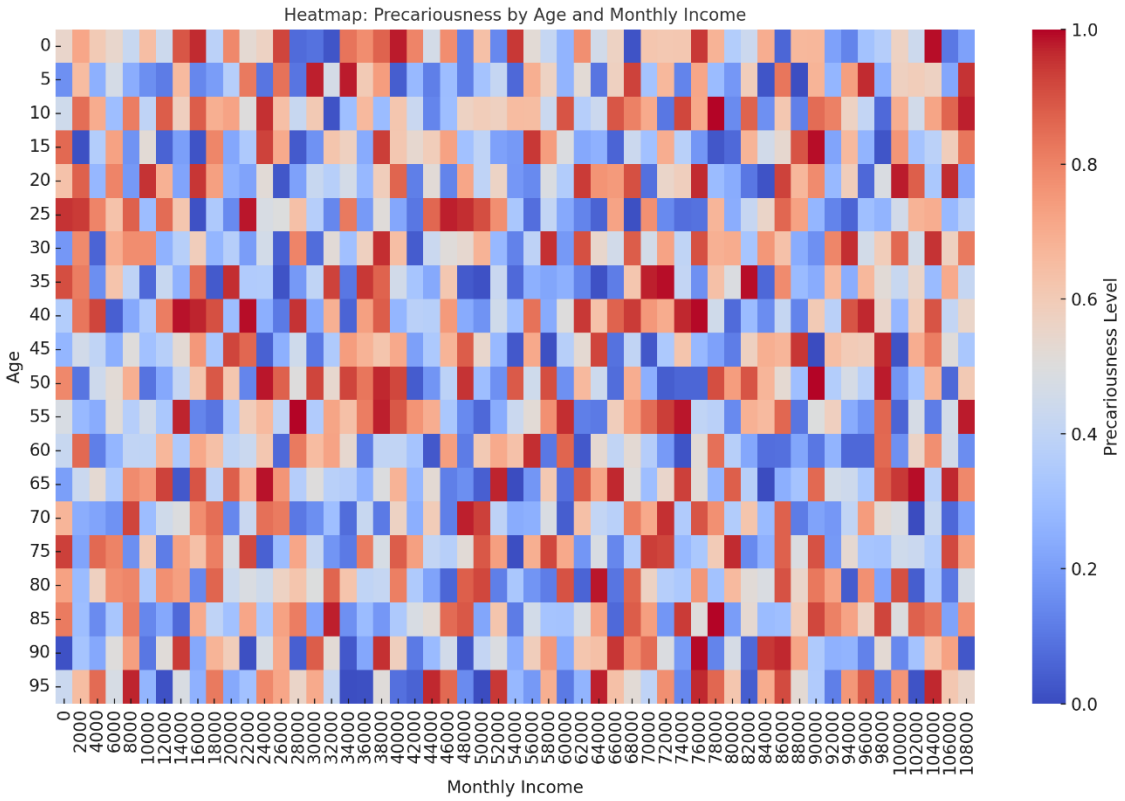



Figure 3. Heat map of the level of precariousness according to age and monthly income.

Precarceration heat map by age and monthly income:

The heat map (Figure 3) illustrated the relationship between age, monthly income and level of precariousness. The color scale indicated levels of precariousness, where deep red represented high precariousness (value close to 1) and deep blue, low precariousness (value close to 0).

The main findings were:

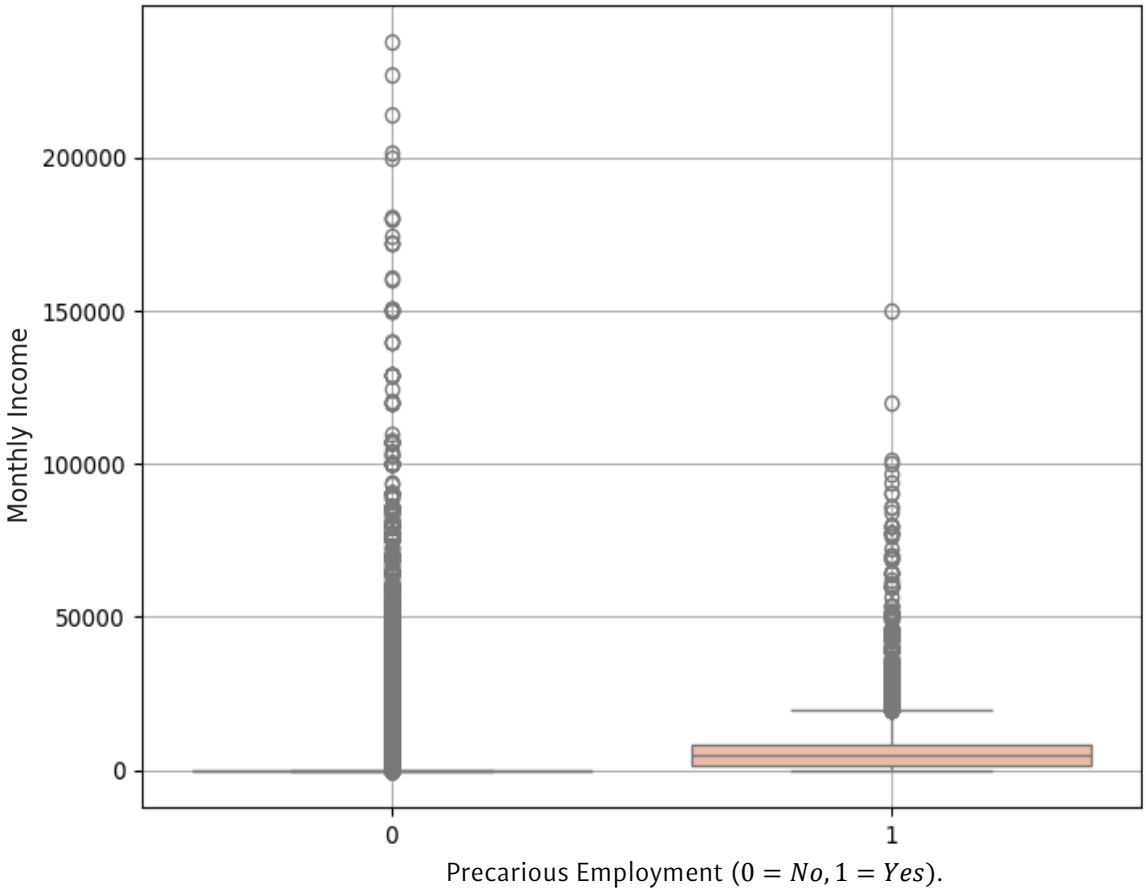
- High precariousness was concentrated in young people (between 15 and 30 years old) with monthly incomes below 8,000 monetary units.
- As monthly income increased, the level of precariousness decreased visibly, as evidenced by the change in color intensity towards blue tones.
- At ages above 50, precariousness was less frequent, although it persisted at lower income levels.
- High income levels (above 20,000 monetary units) showed little presence of precariousness, regardless of age.

Note: A greater concentration of precariousness is seen in young people with low incomes, regardless of their age. Own elaboration based on ENOE 2024.

Boxplot of monthly income according to precariousness:
The boxplot (Figure 4) allowed us to compare the distribution of monthly income between precarious and non-labor precariousness workers. The main results were:

- The labor precariousness group presented significantly lower monthly income compared to the non-labor precariousness group.
- The median income in the precarious group was approximately between 5,000 and 8,000 monetary units.
- The non-labor precariousness group showed a greater dispersion in income, including numerous outliers that reached amounts greater than 200,000 monetary units.
- The presence of exceptionally high incomes (outliers) was more frequent in the non-labor precariousness group.

Figure 4. Distribution of monthly income according to precariousness.




Note: The distribution reveals that precarious youth have significantly lower levels of monthly income compared to those who are not precarious. Own elaboration based on ENOE 2024.

## Discussion

The results obtained in this study show that labor precariousness in Mexico is determined by a complex interaction of individual and structural factors, reflecting the persistent socioeconomic dynamics in the labor market. In particular, variables such as age, level of schooling, company size, gender, type of contract and provision of benefits emerge as key factors that influence precariousness.

Regarding age, the findings indicate that each additional year of life slightly decreases the risk of precariousness (OR ≈ 0.968), suggesting a greater vulnerability of young workers to precarious working conditions. This pattern is consistent with previous studies, which document the concentration of unstable jobs with lower benefits among the young population (Martínez, 2018). Likewise, studies on wage disparities and labor segmentation in Mexico confirm that

these conditions unequally affect young people, particularly according to economic sector and gender (Mendoza & Guzmán, 2020).

Regarding the level of schooling, it is observed that a higher level of education is associated with a lower probability of precariousness (OR ≈ 0.978). These results support previous research (Ramírez, 2016), which has highlighted that higher education facilitates access to formal, better paid jobs with greater labor guarantees.

Company size also emerges as a relevant determinant: working in larger companies increases the probability of not facing precariousness (OR ≈ 1.26). This finding coincides with studies conducted in other contexts (González, 2020), which show that larger organizations tend to offer formal contracts, more competitive salaries and better benefits, thus contributing to mitigate labor precariousness.

Variables related to the type of contract and employment benefits have a clearly protective impact. The existence of formal contracts and the provision of social benefits significantly increase the probability of not facing precariousness, which underscores the importance of strengthening labor formalization mechanisms as a key strategy to reduce precariousness.

A particularly relevant finding is the effect of gender. Contrary to what some studies predict about the greater vulnerability of women in the labor market, this analysis reveals that being a woman is associated with a lower probability of precariousness (OR ≈ 0.47). This result could be explained by recent public policies aimed at gender equity in the employment (Sanchez, 2021). However, it is important to consider possible biases in the sample or in the specific dynamics of certain economic sectors.

Complementary visualizations reinforce these findings. The precariousness heat map by age and monthly income shows that low-income youth are the group most exposed to precarious working conditions, which is consistent with previous research (Hernández and González, 2019) documenting a higher incidence of informal and short-term jobs among youth.

For its part, the boxplot of monthly income according to precariousness clearly illustrates the wage disparity between precarious and non-precarious workers. The lower median wage in the labor precariousness group reflects a significant economic gap, in line with studies that point to precariousness as a factor that exacerbates income inequality and limits social mobility (Torres, 2017).

It is important to mention that, although the pseudo $R^2$ of 0.5465 and the AUC of 0.71 reflect an acceptable fit for social phenomena, the model faces a 19% quasi-gap fraction, a situation recognized in labor studies of high segmentation (Wooldridge, 2010). This phenomenon was

addressed by debugging and limiting redundant interactions, thus minimizing the risk of overfitting.

*Methodological limitations*

A relevant aspect to consider is the possible presence of endogeneity in the estimated model, derived from simultaneity or inverse causality relationships between some of the explanatory variables and the dependent variable. It is plausible that factors such as monthly income, type of contract and availability of benefits are, in reality, a consequence and not a cause of precarious employment status. For example, a young person could obtain a formal contract and a higher income precisely as a result of having overcome a previous precarious condition.

This situation could generate bias in the estimated coefficients as they are correlated with the error term, affecting the validity of causal inferences. Ideally, this problem could be solved by applying instrumental variable techniques, using as instruments exogenous variables such as parental schooling, previous work experience or the size of the municipality of residence (Wooldridge, 2010; Cameron & Trivedi, 2005). However, given that the databases used in this study do not have these valid instruments available, this methodological limitation is acknowledged and it is clarified that the results obtained should be interpreted as statistical associations between variables, without establishing definitive causal inferences.

Overall, the results obtained suggest the urgent need for comprehensive public policies to strengthen labor protection, especially aimed at the most vulnerable groups: young people, microenterprise workers and those without access to benefits. The formalization of employment and the expansion of social safety nets should be priorities to reduce the levels of labor precariousness in Mexico, as has been widely discussed in the literature on labor policies in Latin America (Figueroa, 2020). Vázquez (2020) emphasizes that, although education is a key factor, its impact is limited if it is not accompanied by comprehensive labor policies that guarantee minimum conditions of stability and protection for young workers.

## Conclusion

The analysis conducted in this study allows us to conclude that socioeconomic and labor factors have a significant impact on labor precariousness in Mexico. Overall, the logistic regression applied to the workers database reveals that variables such as age, educational level, company size, gender, and employment conditions are key determinants of the probability of experiencing precarious employment.

The results obtained confirm the hypotheses initially put forward, showing a negative relationship between educational level and precariousness, as well as the protective effect of company size and the existence of labor benefits. In particular, it stands out that young workers,

especially men, present greater vulnerability, as evidenced by the data visualization analysis. This finding underscores the need to implement specific public policies for this segment of the working population.

Education emerges as a central strategy to improve working conditions, given that higher levels of education are consistently associated with less exposure to precariousness. Likewise, the formalization of employment, through stable contracts and the extension of labor benefits, is positioned as a fundamental way to protect workers in a labor market characterized by high levels of informality.

A relevant finding is the differentiation in exposure to precariousness according to gender, where men are more likely to be affected. This result, which contrasts with trends observed in other studies on labor inequality, raises the need to examine in greater detail the gender dynamics in different sectors and types of occupations. It is not only about wage gaps or unequal access to benefits, but also about a hidden segmentation that makes groups traditionally considered less vulnerable more precarious, thus rethinking classic approaches to gender inequality in employment.

Overall, the objectives of this research have been achieved: the determinants of labor precariousness in Mexico were identified and analyzed, and the influence of socioeconomic variables on this phenomenon was empirically demonstrated. In addition, the importance of public policies aimed at education and formalization of employment as essential mechanisms to reduce precariousness was reaffirmed. However, these strategies must be designed with a comprehensive vision and not as isolated measures; otherwise, they run the risk of perpetuating the inequalities they are intended to combat.

Nevertheless, this study presents certain methodological limitations that should be considered when interpreting the results. In particular, the possible endogeneity between variables such as income, type of contract and benefits could affect the estimation of the coefficients, since these labor conditions can be simultaneously a cause and a consequence of precariousness. Therefore, the results should be understood as statistical associations and not as conclusive causal relationships. Despite these limitations, the analysis offers robust evidence that makes visible a structural problem of the Mexican labor market.

For future research, it would be pertinent to explore the impact of additional factors such as type of industry, geographic region or specific economic sector. It is also recommended that longitudinal studies be carried out to evaluate the long-term effects of public policies on the reduction of labor precariousness. A more in-depth study of the interaction between demographic characteristics and labor policies could provide a more solid basis for designing differentiated and effective interventions that address the needs of different groups of workers.

Finally, this study invites further reflection on the social and economic sustainability of the Mexican labor model. Youth precariousness is not an accidental or passing phenomenon, but the result of decades of fragmented policies, lack of effective regulation and an economic growth that has left out a substantial part of the young population. Overcoming this precariousness is not only an economic challenge, but an ethical and social imperative. It is not enough to create jobs; it is necessary to transform the quality and dignity of youth work in Mexico. Youth cannot continue to be the precarious labor reserve of a system that does not offer them minimum guarantees of stability, welfare and development.

*Acknowledgements*

I am grateful to the Universidad de la Salle for the support provided during the conduct of this study, especially for the access to academic resources and the infrastructure necessary to carry out the research.

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