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THE ROLE OF THE MINIMUM WAGE IN REDUCING INEQUALITY (2018-2024): COUNTERFACTUAL EVALUATION OF WAGE DISTRIBUTION IN MEXICO

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Abstract

This study examines the impact of changes in the wage structure, with a particular focus on the effect of minimum wage increases on the distribution of wages in Mexico. The analysis employs the decomposition method proposed by DiNardo, Fortin, and Lemieux (1996) to construct a counterfactual scenario, simulating the 2024 wage distribution as if the wage structure, including the real minimum wage, had remained at its 2018 levels. Using data from the National Survey of Occupation and Employment (ENOE), we find that the changes in the wage structure from 2018 to 2024 contributed to a significant reduction in wage inequality. The increase in the minimum wage during this period appears to account for a substantial portion of this reduction since it increased from $88.15 pesos per hour to $191.18 at the end of the period. The results indicate that the groups most positively affected by these changes were women, formal workers, and individuals with basic and middle levels of education. These findings suggest that the minimum wage policy, along with other structural changes in the labor market, played a key role in reducing income disparities, particularly for the most vulnerable groups.

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1 Introduction

In recent years, the minimum wage has gained importance as a key policy instrument aimed at improving the economic wellbeing of low-income workers and promoting a more equitable income distribution. Designed as a wage "floor," this policy seeks to raise the earnings of those at the bottom of the wage distribution, without significantly affecting the rest of it. While in theory it is a straightforward mechanism to support vulnerable workers, the broader effects of minimum wage policies—especially on inequality—remain a subject of empirical controversy.

Its effectiveness in achieving these objectives has been the subject of considerable debate in economic literature. To date, there remains uncertainty regarding the true effects of the minimum wage on inequality, as well as the extent and direction of its benefits for low-income workers. Part of the controversy arises from the perception that this policy generates both winners and losers: the former being those workers who receive higher wages, and the latter being the firms that must absorb increased labor costs and the workers that lose their jobs as a consequence of the wage increase.

In the specific case of Mexico, the minimum wage has taken a central role in recent economic discussions. With the election of Andrés Manuel López Obrador in 2018, followed by his successor, current president Claudia Sheinbaum Pardo—both from the National Regeneration Movement (MORENA) party—the minimum wage has gone through unprecedented increases. In real terms, it rose from $88.15 in 2018 to $191.18 in 2024 (a 116.88% increase), after a period of relative stability. These substantial changes have raised interest in understanding and evaluating its effects for income distribution and inequality.

Despite the relevance of minimum wage policies in both developed and developing countries, there is still limited empirical evidence on their distributive effects in contexts with high levels of informality, such as Mexico. The unprecedented increases in the real minimum wage observed between 2018 and 2024 under the current political administration provide a unique opportunity to assess whether this policy has effectively reduced income inequality or if its benefits have been more limited or unevenly distributed.

This thesis aims to contribute to this discussion and to reduce this gap in the literature by evaluating the impact of recent minimum wage increases on the wage distribution in Mexico. To do so, we apply the decomposition methodology proposed by DiNardo, Fortin, and Lemieux (1996), which allows for a counterfactual analysis of how the income distribution would have evolved if the wage structure had remained in its 2018 levels, which includes the minimum wage. This approach provides a flexible framework to quantify the extent to which observed changes in inequality can be attributed to policy-driven shifts in the wage structure.

This paper is organized as follows. Section 2 provides a brief overview of the literature on minimum wage policies and their potential effects. Section 3 describes the data used in the analysis, including relevant descriptive statistics for the years under study and details about the population earning less than or equal to the minimum wage. Section 4 explains the decomposition method applied in this work. Section 5 presents the results of the analysis, disaggregated by gender, formal employment status, and educational level. Finally, Section 6 concludes the paper.

2 Literature Review

The academic literature has long debated the effects of the minimum wage in labor market outcomes and in the income distribution. While policymakers have adopted it as a strategy to improve earnings for low-wage workers, researchers have questioned its actual effectiveness in reducing inequality. This section reviews key empirical and theoretical contributions that assess how minimum wage policies influence income distribution, labor market dynamics, and other measures of economic inequality and well-being.

One of the seminal works in this area is that of Lee (1999)[8], who explores how the decline in the real minimum wage in the United States during the 1980s significantly contributed to rising wage inequality, particularly between the 10th and 50th percentiles. Using data from the Current Population Survey (CPS) and exploiting state-level variation in minimum wage policies, Lee concludes that the decline in the minimum wage accounts for a substantial portion of the increase in wage dispersion. His study highlights the role of the minimum wage as a "floor" that compresses wage dispersion at the lower end of the distribution and therefore, imporving low-income workers' wages.

Building on this perspective, Autor, Manning, and Smith (2016)[1] reassess the impact of the minimum wage on inequality over a longer period (1979–2012). Using instrumental variable techniques to correct for potential measurement bias, they find that increases in the minimum wage reduce inequality at the lower end of the distribution, although to a lesser extent than previously estimated. A notable finding is the identification of spillover effects, where minimum wage hikes benefit not only directly affected workers but also those earning slightly above the legal minimum, thereby expanding the policy's redistributive reach.

From an international perspective, Litwin (2015)[10] examines the relationship between minimum wages and inequality across 17 OECD countries. Using fixed-effects panel data models, the study finds that moderate increases in the minimum wage tend to reduce inequality, while excessively high levels may have adverse effects, particularly through increased unemployment in vulnerable sectors. The author estimates a threshold of effectiveness —around $11.77 per hour in real terms— beyond which the benefits in reducing inequality start to decline or even reverse. This underscores the importance of calibrating minimum wage levels carefully to maximize positive outcomes while avoiding unintended labor market distortions.

One of the most controversial issues in this literature concerns the impact of minimum wages on employment. In their influential book Myth and Measurement, Card and Krueger (1995)[3] challenge the neoclassical prediction that higher minimum wages lead to job losses. Using a difference-in-differences design and data from the fast-food industry in New Jersey and Pennsylvania, they find that increases in the minimum wage had no significant negative effects on employment—and in some cases, even led to employment growth. Their findings suggest that labor markets are not perfectly competitive and that minimum wages can help correct certain market imperfections, such as monopsony power.

Expanding the analysis to a developing country context, Neumark, Cunningham, and Siga (2006)[4] investigate the distributional effects of the minimum wage in Brazil following a period of intensive policy use. Their results show that, in the short term, the minimum wage improved the incomes of households at the lower end of the distribution. However, these gains faded within two to three quarters due to negative effects on employment and working hours. The authors conclude that there is no robust evidence that the minimum wage produced lasting benefits for poor households.

In the case of Mexico, the effects of the minimum wage may differ due to institutional factors such as high informality. Campos Vázquez, Esquivel, and Santillán Hernández (2017)[11] analyze the unification of minimum wage zones A and B, which led to a real increase in zone B. Using data from the National Survey of Occupation and Employment (ENOE) and a difference-in-differences approach, they find no significant negative effects on employment and, importantly, observe gains in formalization. The authors suggest that the narrowing gap between formal and informal wages—triggered by the higher minimum wage—created stronger incentives for workers to enter the formal sector.

Labor institutions also play a significant role in shaping inequality outcomes. DiNardo, Fortin, and Lemieux (1996)[5] argue that the decline in unionization, alongside the falling real minimum wage, explains much of the rise in wage inequality in the U.S. during the 1980s. Using a semiparametric reweighting approach, they show how the weakening of labor institutions widened wage gaps, particularly at the lower end of the distribution. Similarly, Fortin, Lemieux, and Lloyd (2021)[6] emphasize that the erosion of collective bargaining mechanisms contributed to growing inequality, although minimum wages continue to serve as a relevant redistributive policy.

Adopting a comparative perspective, Wu et al. (2006)[12] study how various government policies—including the minimum wage—affect inequality across urban and rural areas in the U.S. Using panel data from 1981 to 1997, they find that government transfers are more effective in rural areas, while progressive taxation has a stronger redistributive impact in urban settings. Regarding the minimum wage, their findings suggest that its effectiveness varies depending on regional labor market structures and demographic composition.

Finally, from a theoretical standpoint, Freeman (1996)[7] argues that the redistributive impact of the minimum wage depends not only on its direct effects on low wages but also on how the costs are distributed across consumers, employers, and workers. In labor markets with imperfections, such as monopsony power, the minimum wage can enhance economic efficiency while also improving income distribution.

Taken together, the literature suggests that the minimum wage can be an effective tool for reducing inequality and improving income distribution, particularly when implemented alongside other labor and social policies. However, its effectiveness depends greatly on the broader economic context, the relative level of the minimum wage, and the presence of complementary institutions such as collective bargaining. This diversity of findings highlights the importance of conducting careful, context-specific evaluations of minimum wage policy impacts.

3 Data

3.1 Database

The data used in this analysis come from the National Survey of Occupation and Employment (ENOE), a nationally representative labor force survey published quarterly by the National Institute of Statistics and Geography (INEGI). For the purposes of this study, the 2018 and 2024 waves were selected to compare wage distributions before and after the recent minimum wage increases. These years were chosen based on the substantial growth in the real minimum wage index, which rose from 102.78 in 2018 to 222.90 in 2024 (according to the National Commission of Minimum Wages), following a period of relative stability.

The ENOE provides detailed information on the Mexican labor market, including employment status, industry, demographic characteristics, and income, making it particularly well-suited for analyzing wage dynamics over time. Furthermore, the ENOE is a rotating panel survey, which means that while it follows the same individuals over several periods, new individuals are also periodically introduced into the sample. This rotating structure is particularly advantageous for studying how the distribution of wages evolves over time, as it enables the tracking of income changes within the same groups of workers across different periods. By combining cross-sectional and longitudinal data, this structure allows for a deeper understanding of how wage distribution shifts, the impact of policies such as minimum wage increases, and the effects on different segments of the workforce over time, without the bias typically associated with purely cross-sectional data.

The analysis focuses on wage-earning workers between the ages of 18 and 65. Both formal and informal workers are included in the sample in order to examine not only the direct effects of minimum wage increases on formal employment, but also potential spillover effects into the informal sector—where wages are not legally bound to minimum wage regulation but may still be indirectly affected.

Hourly wages were calculated by dividing the total reported income by the number of hours worked. However, a significant challenge when using ENOE data is the high proportion of missing or zero-reported income values. According to Campos-Vázquez (2013)[2], the share of respondents who receive income but choose not to report it has been increasing over time, now affecting more than one-third of the sample. If the nonresponse was random, then using the data as without further changes would lead to no bias, however, most of the people that decide not to answer tend to be located at the upper tail of the distribution, this non-random item nonresponse introduces bias. As a result, unadjusted estimates of wage inequality or poverty may be significantly understated.

To address this issue, imputation methods are commonly used to estimate missing income values. Among the most widely used techniques are propensity score matching, hot-deck imputation, and predictive mean matching (PMM). Campos-Vázquez (2013) finds that, for the ENOE between 2005 and 2012, results are generally robust across these methods. In this study, the chosen approach is predictive mean matching, as proposed by Little (1998)[9]. PMM combines features of hot-deck and propensity score methods, matching individuals with missing income to similar individuals with valid income reports, based on observable characteristics.

The variables used for matching include state of residence, gender, access to social security, and whether the individual lives in an urban or rural area. This set of variables captures relevant dimensions of labor market segmentation and socioeconomic status.

Additionally, to mitigate the influence of extreme values—especially those likely driven by reporting errors or outliers—trimming was applied to remove the top and bottom 1% of the hourly wage distribution. Despite this, an analysis for the distribution without trimming is included as a robustness check of the results.

3.2 Descriptive Statistics

In Table 1, descriptive statistics by year are presented. It can be observed that the share of the population earning less than the minimum wage increased substantially between 2018 and 2024, rising from 1.7% to 6.4%. This raises questions about the effectiveness of the minimum wage as a binding mechanism in the labor market, given that a growing proportion of individuals earns below this threshold.

In terms of gender, a relatively balanced distribution is maintained across both years, although a slight underrepresentation of women persists, which marginally decreased by 2024.

Regarding social security access, approximately one-third of the population is employed in the informal sector, although this percentage declined slightly in 2024. This is particularly relevant considering that individuals in the informal sector are not directly protected by the minimum wage, although an indirect effect through opportunity costs may exist. Such a mechanism could incentivize transitions toward formal employment, potentially contributing to the observed reduction in informal employment; however, this cannot be stated conclusively. It is important to mention that, in Mexico a worker is considered as informal if they don't have access to social security and therefore that's the definition followed in the present analysis.

Table 1: Descriptive Statistics by Year

Indicator	**2018**		**2024**	
Population below minimum wage	7,373	1.7%	32,339	6.4%
By Gender				
Men	256,132	59.0%	285,964	56.8%
Women	178,379	41.0%	217,060	43.2%
By Social Security Access				
With access	274,341	63.2%	324,319	64.5%
Without access	158,002	36.4%	175,277	34.8%
Not specified	2,168	0.5%	3,428	0.7%
Total	434,511		503,024	

Source: Own elaboration based on data from the ENOE. Note: The data is based on a representative sample from the National Survey of Occupation and Employment (ENOE), ensuring that the results are generalizable to the broader population of workers in Mexico.

Given the particular relevance of analyzing the population earning less than the minimum wage —due to their heightened economic vulnerability—, Table 2 presents the descriptive statistics for this group.

While women are slightly underrepresented in the overall population, the proportion of women earning below the minimum wage increases slightly in both years, suggesting that women are relatively more likely to fall below this threshold compared to their share in the general population.

Moreover, most individuals earning less than the minimum wage are either self-employed or engaged in independent or family businesses, while only about 30% work in private sector companies. This finding highlights that even within the formal sector, compliance with minimum wage regulations is not fully achieved.

This is further supported by the fact that between one-fifth and one-fourth of those earning less than the minimum wage report having access to social security, indicating potential shortcomings in the effective enforcement of minimum wage policies in Mexico.

Finally, regarding educational attainment, the majority of individuals earning below the minimum wage have basic education (primary and secondary), accounting for approximately 52% of the total, followed by those with middle education (high school or equivalent).

Table 2: Workers Earning Less Than the Minimum Wage

Characteristic	**2018**	**2024**
Population below minimum wage	1.7%	6.42%
By Gender		
Men	52.03%	53.25%
Women	47.97%	46.75%
By Business Type		
Independent or family business	69.25%	69.02%
Private company	30.75%	30.95%
Other	–	0.02%
By Educational Level		
No education	4.92%	3.35%
Basic education	57.94%	50.04%
Middle education	22.46%	28.00%
Higher education	14.68%	18.61%
By Social Security Access		
With access	22.43%	24.90%
Without access	77.38%	74.12%
Not specified	0.19%	0.98%

Source: Own elaboration based on data from the ENOE.
Note: The data is based on a representative sample from the National Survey of Occupation and Employment (ENOE), ensuring that the results are generalizable to the broader population of workers in Mexico.

4 Methodology

To analyze the impact of recent minimum wage increases on wage inequality in Mexico, this study applies the decomposition method proposed by DiNardo, Fortin, and Lemieux (1996). This approach allows for the construction of counterfactual wage distributions in a flexible, semi-parametric framework, making it especially well-suited for analyzing changes across the entire distribution rather than focusing solely on averages.

The key idea behind the DiNardo, Fortin, and Lemieux (DFL) methodology is to simulate what the wage distribution in a given year (2024) would have looked like had the wage structure remained at its baseline level (2018), while holding constant the distribution of worker characteristics and other labor market conditions. This is achieved by reweighting the wage distribution of the baseline year using a set of observable characteristics, such as age, gender, education, and sector of employment. By doing so, the method allows for the estimation of the effect of changes in the wage structure, particularly the increase in the minimum wage during this period, on the distribution of wages. Importantly, this approach not only controls for the changes in the minimum wage but also for other key policy factors that could have influenced the labor market, such as changes in social security coverage, labor market regulations, and sector-specific conditions. In this way, the methodology indirectly accounts for the impact of the minimum wage increase while isolating it from other simultaneous policy changes. In practice, the method consists of two main steps:

1. Estimating the reweighting function: This function adjusts the baseline year (2018) wage distribution so that it reflects the distribution of characteristics observed in the target year (2024). The estimation is typically carried out using a logit model in which the dependent variable indicates the year of observation, and the explanatory variables capture individual-level characteristics. In this study, the selected covariates include age, age squared, gender, years of schooling, geographic location (state), urban or rural status, sector of activity, marital status, and the type of business or employer (family-owned, self-employed, or private company), as well as formality status.

2. Constructing the counterfactual distribution: Once the reweighting function is estimated, it is used to assign new weights to the 2018 wage data, generating a counterfactual distribution that represents what wages would have looked like in 2024 if the wage structure, the minimum wage included, had not changed.

By comparing the actual 2024 distribution with the counterfactual distribution, which assumes that the wage structure of 2018 remained unchanged while holding constant the worker characteristics and other policy conditions of 2024, it is possible to estimate the distributional effect of the changes in the wage structure. In particular, this approach allows for the indirect evaluation of the impact of the substantial minimum wage increase observed during this period. In doing so, it provides insight into how much of the observed change in wage inequality can be attributed to this policy shift, while accounting for other simultaneous policy factors. Inequality is measured using indicators such as the Gini coefficient, the Palma ratio, and percentile ratios (e.g., P90/P10, P50/P10), offering a detailed perspective on the policy's effects across the wage distribution.

The Gini coefficient summarizes overall inequality in the distribution, with values ranging from 0 (perfect equality) to 1 (maximum inequality). The Palma ratio compares the total income of the top 10% to that of the bottom 40%, emphasizing shifts in the tails of the distribution. The P90/P10 and P50/P10 ratios measure income dispersion between higher and lower percentiles, providing additional insight into the shape of the distribution and middle-class compression.

The DFL methodology offers a transparent and intuitive framework for examining counterfactual wage distributions and is particularly relevant in the Mexican context, where minimum wage increases between 2018 and 2024 were both substantial and sustained. By comparing observed and simulated wage distributions, this approach provides insight into whether and to what extent these policy changes contributed to reducing income inequality.

It is important to point out that while the DFL decomposition provides a flexible and intuitive framework for estimating the distributional impact of policy changes, it is subject to several limitations.

First, the method is static and does not account for dynamic labor market adjustments or intertemporal decisions by firms and workers. In particular, it does not incorporate potential disemployment effects or reductions in working hours that could offset some of the positive impacts observed in the distributional analysis. These effects are of particular interest in the economic literature—as highlighted in the literature review—yet there is still no consensus regarding their existence or magnitude.

Second, the approach does not explicitly model spillover effects, meaning it may underestimate the full distributional impact if minimum wage changes also affect workers earning slightly above the threshold.

Finally, results can be sensitive to empirical choices, such as the trimming of outliers, the imputation of missing data, or the selection of covariates in the reweighting function. These limitations highlight the importance of interpreting the results as indicative of broad patterns rather than precise causal effects. To control for this possible limitation, an analysis considering the untrimmed data is included.

5 Results

The following sections presents the results for the population, disaggregated by gender, formal employment status, and educational level.

As a reference, Table 3 presents a comparison of inequality measures for the income distributions of 2018 and 2024. All measures are interpreted such that lower values indicate a more equal distribution. As shown, all inequality indicators exhibit a significant improvement when compared to their baseline levels.

Table 3: Inequality Measures – Total Population (2024 vs 2018)

Measure	**2024**	**2018**
Gini Coefficient	0.2813	0.3077
Palma Ratio	1.0127	1.1282
P50/P10	1.9476	2.1329
P90/P10	3.5769	4.2733

Source: Own elaboration based on data from the ENOE.
Note: The inequality measures were calculated using the real income distribution.

The following section presents the counterfactual analysis.

5.1 Population-level Analysis

Figure 1 shows the kernel density estimates of the actual (2024) and counterfactual wage distributions. The counterfactual curve represents the income distribution that would have prevailed had the wage structure, including the minimum wage policy,remained at its 2018 level, holding constant the distribution of observable characteristics.

As can be observed, the actual distribution is shifted to the right at the lower end, indicating higher earnings among low-income workers. This shift is most pronounced in the bottom deciles and contributes to a more compressed wage distribution—consistent with the reductions in inequality reflected in the summary metrics discussed below.

The graphical evidence reinforces the idea that recent wage struture changes, included among others the minimum wage increases, had a meaningful impact on improving the earnings of the most vulnerable workers, in line with the policy's redistributive objectives. Table 4 shows the change in the counterfactual and observed income deciles.

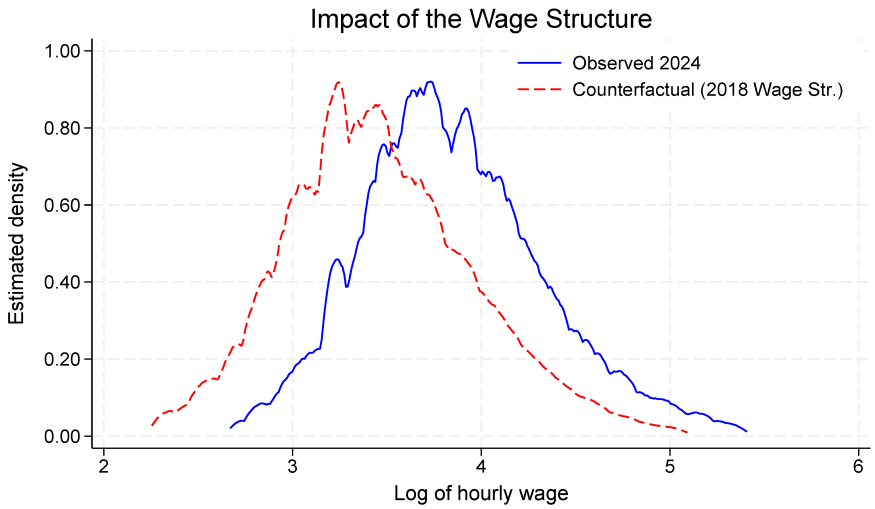

Figure 1: Population-level Decomposition

Source: Own elaboration based on data from the ENOE.
Note: This figure presents the decomposition of the population-level distribution based on the 2018 wage structure, showing the changes in income distribution at various percentiles. The red distribution corresponds to the counterfactual scenario.

It is important to highlight the considerable increase in the top percentile compared to the counterfactual scenario, which can be attributed to several factors. While the main objective of this study is to evaluate the effects of the minimum wage increase, as mentioned earlier, indirect effects may have created upward pressure on the wages of workers beyond those earning exactly the minimum wage, thus leading to increases across other percentiles. Additionally, other economic factors, such as growth in high-wage sectors, post-pandemic economic recovery, and a potential rise in formalization, may have contributed to the improvement in the income of high-wage workers.

Table 4: Mean Hourly Income by Decile (2024)

Decile	**Observed Income**	**Counterfactual Income**
1	21.86	14.41
2	29.01	19.37
3	33.71	22.77
4	38.05	25.68
5	42.57	28.92
6	48.08	32.57
7	54.65	37.37
8	63.62	43.84
9	78.19	54.62
10	124.19	85.60

Source: Own elaboration based on data from the ENOE.

Table 5: Inequality Measures – Total Population (2024)

Measure	**Observed**	**Counterfactual**	**Change**
Gini Coefficient	0.2813	0.2878	-2.25%
Palma Ratio	1.0127	1.0410	-2.72%
P50/P10	1.9476	2.0066	-2.94%
P90/P10	3.5769	3.7894	-5.61%

Source: Own elaboration based on data from the ENOE.

Complementing the visual analysis, Table 5 presents inequality measures calculated for both the actual and counterfactual income distributions. Across all indicators, the results show that the observed (2024) distribution is more equitable than the counterfactual scenario under the 2018 policy.

The Gini coefficient, which captures overall inequality across the entire distribution, shows a modest but consistent decline. The Palma ratio, which compares the income share of the top 10% to that of the bottom 40%, also falls, suggesting that lower-income households improved their relative position with respect to the wealthiest.

Similarly, the decline in the P50/P10 ratio indicates a narrowing gap between the median earner and the bottom decile. Notably, the largest proportional reduction is observed in the P90/P10 ratio, highlighting substantial gains for the bottom 10% relative to the top 10%. This suggests that,among other factors, minimum wage increases could have played a significant role in improving outcomes for those at the lower end of the wage distribution.

Overall, these findings support the hypothesis that recent increases in the minimum wage have contributed to a reduction in income inequality, particularly by raising the earnings of the lowest-paid workers.

It is important to note that, based on the counterfactual results and the comparison presented in Table 3, the 2024 counterfactual scenario remains less unequal than the baseline 2018 income distribution. These differences can be attributed to the changes in the characteristics of workers in 2024.

5.2 Gender analysis

Given that gender is a key factor in analyzing labor market policies, the following section disaggregates the analysis by gender, focusing on both women and men.

5.2.1 Men

Figure 2 shows the kernel density estimates of the actual (2024) and counterfactual wage distributions for men. As in the case of the total population, the actual distribution is shifted to the right at the lower end, indicating higher earnings among low-income male workers. At the top of the distribution, the shift is lower, which is consistent with the expectation that the minimum wage primarily benefits workers at the lower tail.

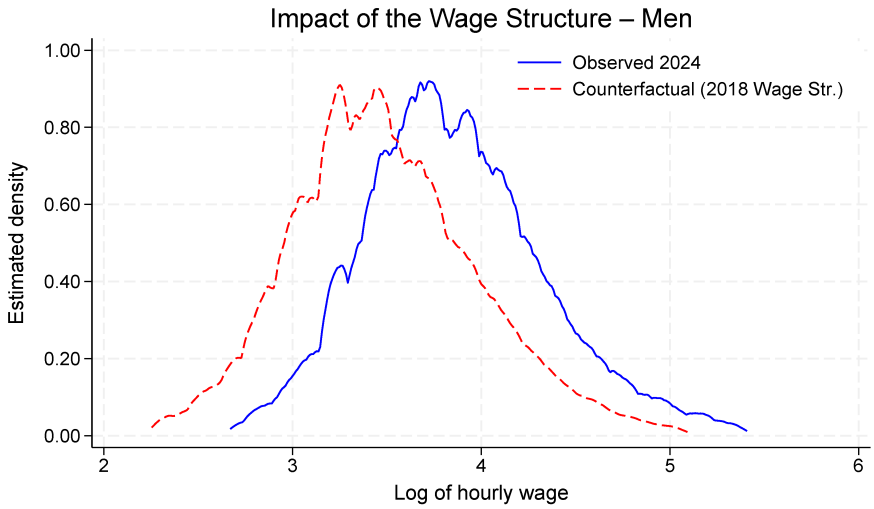

Figure 2: Men Decomposition

Source: Own elaboration based on data from the ENOE.
Note: The red distribution corresponds to the counterfactual scenario.

This pattern is confirmed by the inequality metrics, which all show reductions in comparison to the counterfactual scenario. The largest improvements are found in the P50/P10 and P90/P10 ratios, indicating that the bottom decile experienced significant relative gains both with respect to the median and the top decile.

Moreover, when comparing the absolute levels of inequality, all indicators for men are lower than those for the total population. This suggests that income inequality is relatively lower among men and possibly higher among women, which is examined next.

Table 6: Mean Hourly Income by Decile for Men (2024)

Decile	Observed Income	Counterfactual Income
1	22.18	14.95
2	29.20	19.99
3	33.93	23.82
4	38.43	26.76
5	42.98	29.92
6	48.50	33.46
7	54.88	38.24
8	63.57	44.55
9	77.81	55.17
10	123.36	85.87

Source: Own elaboration based on data from the ENOE.

Table 7: Inequality Measures – Men (2024)

Measure	Observed	Counterfactual	Change
Gini Coefficient	0.2773	0.2821	-1.70%
Palma Ratio	0.9970	1.0040	-0.70%
P50/P10	1.9377	2.0011	-3.17%
P90/P10	3.5082	3.6897	-4.92%

Source: Own elaboration based on data from the ENOE.

5.2.2 Women

Figure 3 shows the kernel density estimates of the actual (2024) and counterfactual wage distributions for women. Once again, the actual distribution shifts to the right at the lower end. However, in this case, the shift appears even more pronounced than in the male and total population cases, suggesting that the minimum wage may have had a stronger impact on female workers.

The inequality metrics support this interpretation: in all cases, inequality is lower under the actual distribution. While the P90/P10 ratio again shows the greatest improvement—suggesting strong gains for the bottom decile relative to the top—there is also a notable reduction in the Gini coefficient, which reflects improvements across the entire distribution. This provides evidence that the redistributive effect of the minimum wage may have been broader for women.

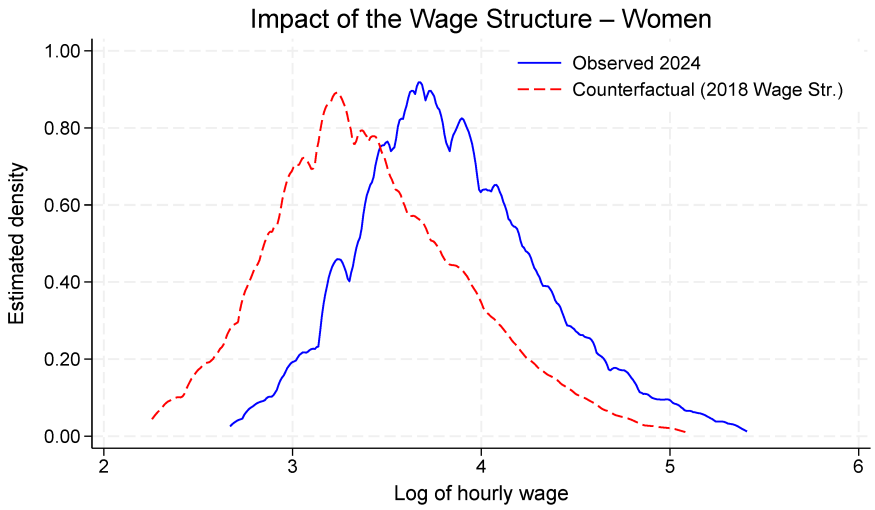

Figure 3: Women Decomposition

Source: Own elaboration based on data from the ENOE.
Note: The red distribution corresponds to the counterfactual scenario.

Table 8: Mean Hourly Income by Decile for Women (2024)

Decile	Observed Income	Counterfactual Income
1	21.60	13.53
2	28.90	17.94
3	33.52	21.07
4	37.55	24.23
5	42.01	27.10
6	47.73	30.63
7	54.34	35.23
8	63.84	42.15
9	80.57	52.98
10	128.34	83.73

Source: Own elaboration based on data from the ENOE.

When comparing the inequality levels between men and women, all indicators show higher values for women, indicating a greater degree of income dispersion among female workers. Based on these findings, it can be suggested that the minimum wage not only serves as a mechanism for promoting income equality, but also as a tool for reducing gender disparities across the wage distribution. Another possible explanation is that recent administrations have implemented policies aimed at addressing gender inequality in addition to the minimum wage increases. What is undeniable is that the 2024 wage structure is less unequal in terms of gender.

Table 9: Inequality Measures – Women (2024)

Measure	Observed	Counterfactual	Change
Gini Coefficient	0.2866	0.2985	-3.99%
Palma Ratio	1.0557	1.0906	-3.20%
P50/P10	1.9450	2.0025	-2.87%
P90/P10	3.7300	3.9151	-4.72%

Source: Own elaboration based on data from the ENOE.

5.3 Employment type analysis

Although the minimum wage is binding only for formal workers, the following section examines the potential spillover effects to the informal sector by analyzing the differentiated impact on both formal and informal workers.

Formal and informal workers were distinguished based on whether the worker had access to social security.

5.3.1 Formal workers

Figure 4 shows the kernel density estimates of the actual (2024) and counterfactual wage distributions for formal workers. The actual distribution exhibits a clear rightward shift at the lower end, although there is also a considerable increase for the upper end. A higher concentration near the center of the distribution is also evident, which could be attributed to a decline in the number of individuals in the lower tail, potentially reflecting upward income mobility.

Table 10: Mean Hourly Income by Decile for Formal Workers (2024)

Decile	Observed Income	Counterfactual Income
1	26.58	16.40
2	34.22	21.70
3	39.44	25.45
4	44.08	28.84
5	48.99	32.38
6	55.03	36.93
7	62.12	42.41
8	71.79	49.79
9	87.97	61.32
10	135.21	92.94

Source: Own elaboration based on data from the ENOE.

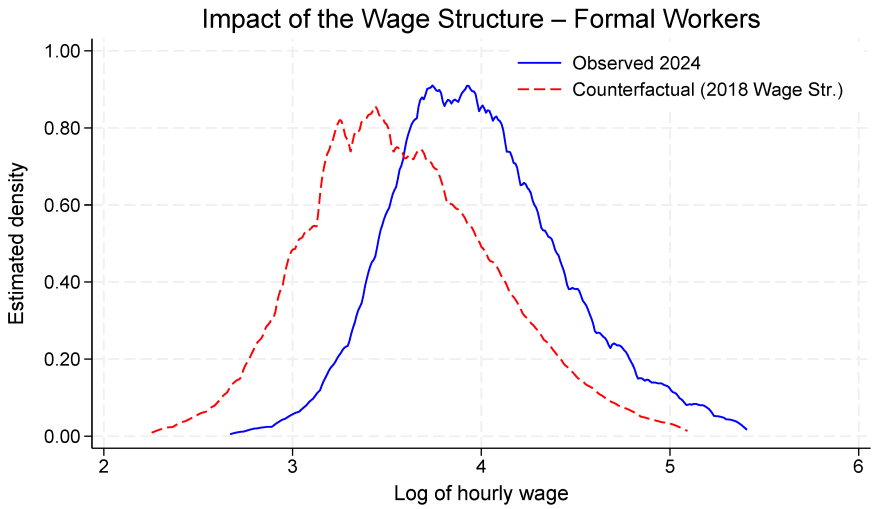

Figure 4: Formal Workers Decomposition

Source: Own elaboration based on data from the ENOE.
Note: The red distribution corresponds to the counterfactual scenario.

Table 11: Inequality Measures – Formal Workers (2024)

Measure	**Observed**	**Counterfactual**	**% Change**
Gini Coefficient	0.2667	0.2832	-5.82%
Palma Ratio	0.9368	1.0059	-6.87%
P50/P10	1.8433	1.9742	-6.63%
P90/P10	3.3099	3.7386	-11.46%

Source: Own elaboration based on data from the ENOE.

This case is particularly relevant, as formal workers are the ones for whom the minimum wage is binding. The inequality indicators show substantial improvements—stronger than those observed in the general population—especially in measures comparing the bottom and top deciles. This aligns with the expectation that the minimum wage directly affects formal sector workers, helping to compress wage differences at the lower end of the distribution. It also suggests that a significant portion of the observed changes can be attributed to the recent increases in the minimum wage.

In terms of absolute levels, inequality among formal workers is lower than in the total population, reinforcing the idea that the minimum wage functions as an effective mechanism to reduce wage dispersion in the formal sector.

5.3.2 Informal workers

Figure 5 shows the kernel density estimates of the actual (2024) and counterfactual wage distributions for informal workers. As in previous cases, the counterfactual distribution shifts to the right. The lower tail exhibits a marked effect, indicating improved earnings among low-income individuals. In contrast, the shift in the upper tail is minimal and less pronounced compared to other groups. As will be seen below, this pattern is consistent with the observed reduction in inequality indicators—specifically leadíng to a lower P90/P10 ratio—suggesting that the minimum wage policy, along with other factors, may have contributed to compressing the income distribution, particularly by lifting incomes at the bottom in comparison to the top.

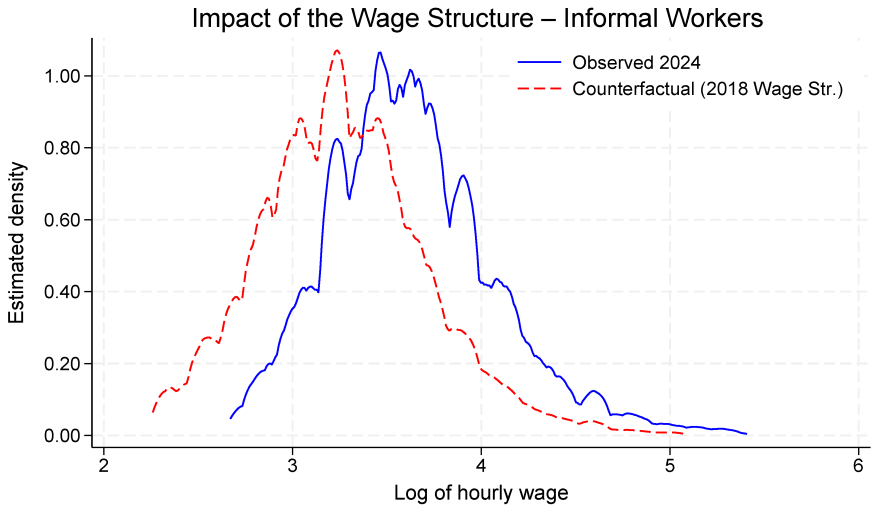

Figure 5: Informal Workers Decomposition

Source: Own elaboration based on data from the ENOE.
Note: The red distribution corresponds to the counterfactual scenario.

Table 12: Mean Hourly Income by Decile for Informal Workers (2024)

Decile	Observed Income	Counterfactual Income
1	19.28	12.87
2	24.44	16.86
3	27.87	19.74
4	31.28	22.17
5	34.51	24.63
6	38.32	27.16
7	42.62	30.57
8	48.92	34.86
9	59.50	41.65
10	97.20	64.49

Source: Own elaboration based on data from the ENOE.

Table 13: Inequality Measures – Informal Workers (2024)

Measure	Observed	Counterfactual	Change
Gini Coefficient	0.2603	0.2578	+0.97%
Palma Ratio	0.9449	0.9002	+4.97%
P50/P10	1.7902	1.9135	-6.45%
P90/P10	3.0868	3.2360	-4.61%

Source: Own elaboration based on data from the ENOE.

Despite this, the P50/P10 and P90/P10 ratios show noticeable improvements for the bottom decile relative to the median and the top decile—particularly with respect to the median. However, both the Palma ratio and the Gini coefficient increased slightly in the actual distribution compared to the counterfactual, with a stronger rise in the Palma ratio. This implies that the richest 10% in the informal sector increased their income share more than the bottom 40%, resulting in greater top-heavy inequality.

These results suggest that, although the lower tail experienced some gains, the middle of the distribution may have been relatively worse off compared to both ends. The combination of declining P50/P10 and rising Palma ratio reflects this uneven shift within the distribution.

5.4 Educational level analysis

Finally, as highlighted in the descriptive analysis, the impact of the minimum wage varies depending on the worker's educational attainment. To gain a clearer understanding of how the minimum wage affects different educational levels, we decompose the analysis by educational background.

5.4.1 No education

Figure 6 presents the graphical results for workers without education. As shown, there is a significant increase in the lower tail of the distribution, indicating higher earnings among lower-income workers. Additionally, a more pronounced concentration can be observed towards the center of the distribution, suggesting a compression of income at the middle range. This shift may reflect the impact of the minimum wage increase, which appears to have benefitted lower-income workers, narrowing the income gap between the lower and middle percentiles.

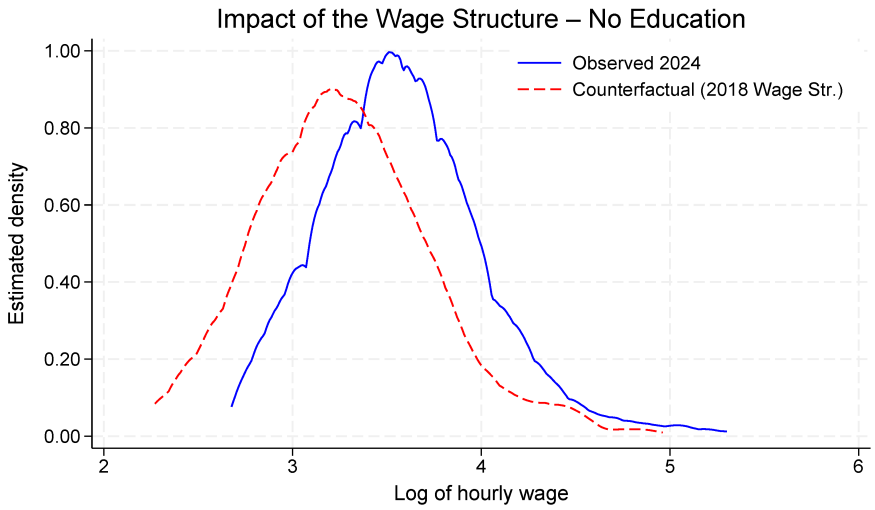

Figure 6: No Education Workers Decomposition

Source: Own elaboration based on data from the ENOE.
Note: The red distribution corresponds to the counterfactual scenario.

The change in mean income by decile tells a similar story, showing a considerable increase across all deciles. While the top decile still experiences the largest increase, the growth is not as pronounced as in the general case. This suggests that, while higher-income workers continue to benefit, the income compression effect is more pronounced in the lower and middle deciles, highlighting the impact of the minimum wage increase on reducing income disparities.

Table 14: Mean Hourly Income by Decile for Workers Without Education (2024)

Decile	**Observed Income**	**Counterfactual Income**
1	18.23	12.56
2	23.70	16.45
3	27.09	19.09
4	30.17	21.82
5	33.24	24.43
6	36.88	27.32
7	41.11	30.80
8	47.50	35.07
9	56.79	41.80
10	90.54	66.43

Source: Own elaboration based on data from the ENOE.

Finally, the inequality measures presented in Table 15 show consistent improvements across all indicators, suggesting a reduction in overall inequality, as indicated by the lower Gini Coefficient and Palma Ratio. However, the most significant reductions are observed in the lower tail of the distribution, as evidenced by the improvements in the P90/P10 and P50/P10 ratios.

These findings highlight the effectiveness of the minimum wage increase in narrowing the income gap at the lower end of the distribution.

Table 15: Inequality Measures – Workers Without Education (2024)

Measure	Observed	Counterfactual	Change
Gini Coefficient	0.2544	0.2664	-4.51%
Palma Ratio	0.9128	0.9503	-3.95%
P50/P10	1.8231	1.9460	-6.34%
P90/P10	3.1141	3.3294	-6.46%

Source: Own elaboration based on data from the ENOE.

5.4.2 Basic education

The results of the counterfactual excercise for workers with basic education (primary and secondary) can be found in figure 7. The graphiucal story is quite similar as the no education case, with a marked improvement in the lower tail of the distribution, and as shown in Table 16 with improvements all along the distributio.

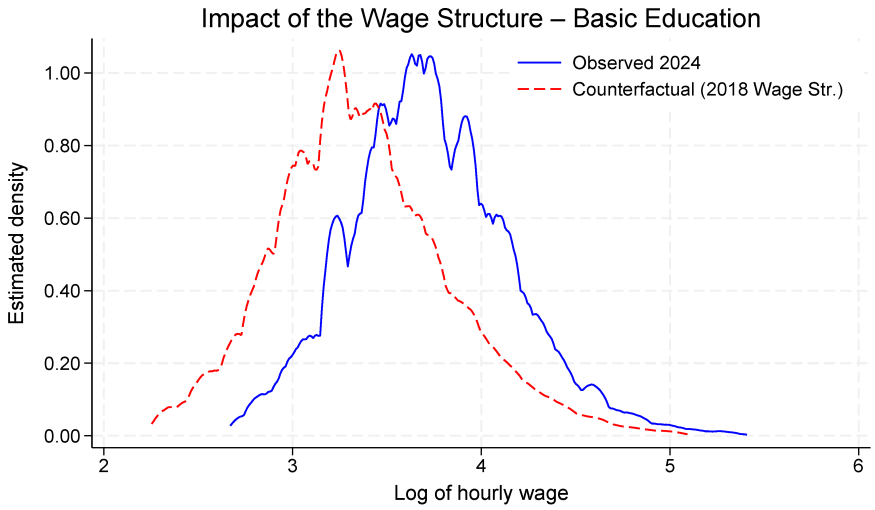

Figure 7: Basic Education Workers Decomposition

Source: Own elaboration based on data from the ENOE.
Note: The red distribution corresponds to the counterfactual scenario.

Inequality measures show a significant decrease, as shown in Table 17. The measures that benefited the most from the wage structure change were the Palma Ratio and the P90/P10, both of which suggest that the group most positively affected by the policy change was the lower tail of the distribution.

Table 16: Mean Hourly Income by Decile for Workers with Basic Education (2024)

Decile	Observed Income	Counterfactual Income
1	21.72	14.27
2	27.50	18.84
3	31.68	21.43
4	35.44	24.25
5	38.67	26.71
6	42.64	29.84
7	47.99	33.38
8	54.41	38.65
9	64.42	47.13
10	96.57	73.37

Source: Own elaboration based on data from the ENOE.

Overall inequality was also notably reduced, as evidenced by the change in the Gini Coefficient, which shows a larger absolute reduction compared to the largest change observed in the no education case. This suggests that the minimum wage increase may be largely responsible for this improvement, as most of the workers earning the minimum wage or less have only basic education, as highlighted by the descriptive statistics.

Table 17: Inequality Measures – Workers with Basic Education (2024)

Measure	Observed	Counterfactual	Change
Gini Coefficient	0.2458	0.2669	-7.93%
Palma Ratio	0.8301	0.9312	-10.89%
P50/P10	1.7807	1.8722	-4.87%
P90/P10	2.9664	3.3032	-10.21%

Source: Own elaboration based on data from the ENOE.

5.4.3 Middle education

Figure 8 presents the graphical results for workers with high school education or equivalent. As in previous scenarios, the results show a general improvement in the wage distribution, with a notable increase in the lower tail. This suggests that the minimum wage increase has had a positive impact on low-income workers, leading to a compression of income at the lower end of the distribution. Additionally, while the overall distribution has improved, the shift is most pronounced for workers at the bottom of the income scale, further emphasizing the effectiveness of the wage structure change in addressing inequality for this group.

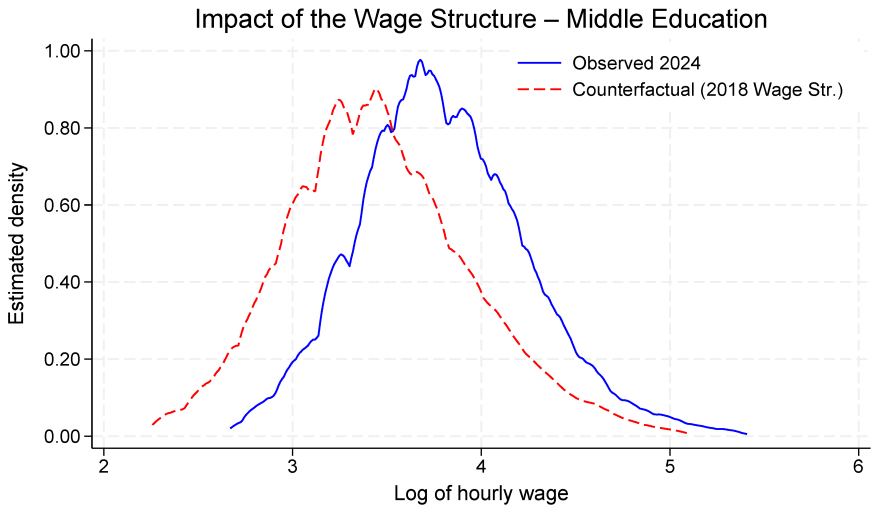

Figure 8: Middle Education Workers Decomposition

Source: Own elaboration based on data from the ENOE.
Note: The red distribution corresponds to the counterfactual scenario.

Table 18: Mean Hourly Income by Decile for Workers with Middle Education (2024)

Decile	Observed Income	Counterfactual Income
1	21.64	14.45
2	28.28	19.38
3	32.77	22.78
4	36.97	25.73
5	41.02	29.12
6	45.82	32.57
7	51.66	37.01
8	59.33	43.13
9	70.96	53.32
10	107.80	82.80

Source: Own elaboration based on data from the ENOE.

The inequality measures in Table 19 suggest that the group of workers with secondary education experienced the greatest improvement in inequality, as reflected by all indicators showing a more significant reduction compared to other education levels. Notably, the P90/P10 and Palma ratios, which show the largest decreases, support the idea that the most substantial improvement occurred in the lower tail of the distribution, where workers at the bottom saw a greater increase in their mean income compared to those at the top. Additionally, overall inequality was significantly reduced, with an 8.12% decrease in the Gini Coefficient, further underscoring the positive impact of the wage structure change, particularly for those with middle-level education.

Table 19: Inequality Measures – Workers with Middle Education (2024)

Measure	Observed	Counterfactual	Change
Gini Coefficient	0.2582	0.2812	-8.18%
Palma Ratio	0.9009	1.0055	-10.64%
P50/P10	1.8959	2.0147	-5.91%
P90/P10	3.2799	3.6889	-11.08%

Source: Own elaboration based on data from the ENOE.

5.4.4 Higher education

Finally, Figure 9 displays the real and counterfactual income distributions. In this case, unlike the previous scenarios, the improvement appears to be more uniform across both the lower and upper tails of the distribution. This suggests that the wage structure change has had a broad, balanced effect across the entire distribution. However, this uniform improvement could potentially lead to little or even adverse effects on inequality measures, as the income gap between the lower and upper tails may not have narrowed as significantly as in previous cases.

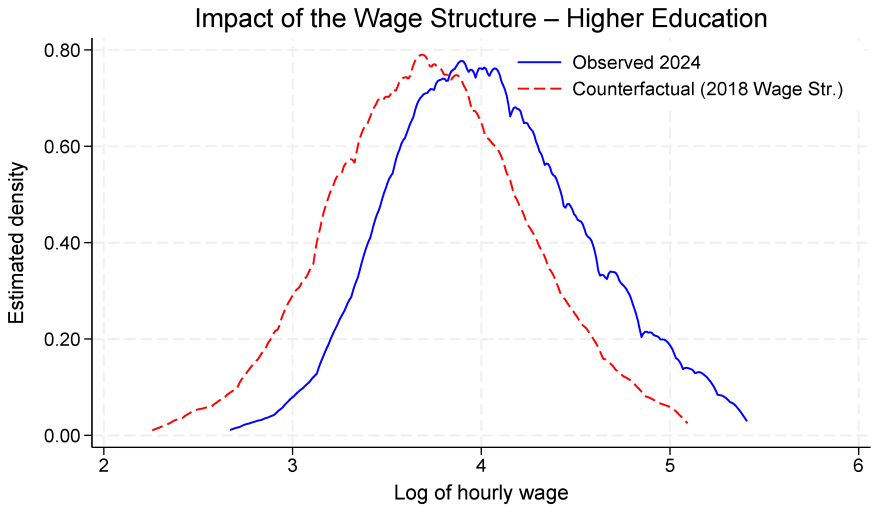

Figure 9: Superior Education Workers Decomposition

Source: Own elaboration based on data from the ENOE.
Note: The red distribution corresponds to the counterfactual scenario.

This observation is further supported by the mean hourly income by decile shown in Table 20. Although all deciles experienced an increase in their mean income, the top deciles saw a more pronounced rise. This suggests that, while the wage structure change benefited workers across the entire income distribution, the largest gains were observed among those in the higher percentiles.

Table 20: Mean Hourly Income by Decile for Workers with Higher Education (2024)

Decile	Observed Income	Counterfactual Income
1	25.23	17.39
2	33.69	24.39
3	39.59	29.22
4	45.47	33.81
5	51.96	38.75
6	59.26	44.02
7	68.24	50.29
8	80.83	58.71
9	102.35	71.66
10	153.32	105.36

Source: Own elaboration based on data from the ENOE.

The results presented in Table 21 confirm our initial expectations, as the findings appear to be mixed. Overall inequality seems to be worse than in the counterfactual scenario, particularly when comparing the income share of the top 10% to that of the bottom 40% (Palma ratio), and also significantly when looking at the Gini Coefficient. On the other hand, the lower tail appears to have benefited, as indicated by its improved income share relative to both the top 10% and, particularly, the 50%.

These ambiguous results may be explained by the composition of the higher education group, which includes not only individuals with professional degrees but also those with post-graduate qualifications, who typically earn higher wages. This greater wage dispersion likely leads to higher inequality, as the wage distribution becomes more spread out, particularly among the higher earners.

Table 21: Inequality Measures – Workers with Higher Education (2024)

Measure	Observed	Counterfactual	Change
Gini Coefficient	0.2923	0.2842	+2.84%
Palma Ratio	1.0648	1.0051	+5.95%
P50/P10	2.0591	2.2282	-7.57%
P90/P10	4.0563	4.1202	-1.55%

Source: Own elaboration based on data from the ENOE.

Overall, it can be concluded that the educational groups that benefited the most from the change in the wage structure—and likely from the increase in the minimum wage—were those with basic and secondary education. These are also the groups most represented among workers earning the minimum wage or less.

On the other hand, the group with higher education experienced the least benefit, which can be explained by the greater wage dispersion within this group. The higher income levels seen among workers with advanced degrees likely contributed to a less pronounced impact of the minimum wage increase, as the wage structure change had a smaller relative effect on higher earners.

5.5 Analysis with complete data

As mentioned earlier, the decomposition method used in this study can be sensitive to empirical choices, such as the trimming of outliers. In this section, we explore how the inequality measures behave when using untrimmed data.

Trimming outliers is commonly employed to eliminate extreme values that may distort our estimations. In surveys like the ENOE, outliers often arise from data entry errors or invalid values. In such cases, trimming can be a valid approach to remove these problematic data points.

However, since we are interested in analyzing inequality, extreme values—particularly those at the top and bottom of the distribution—are crucial for understanding overall inequality. Therefore, as a robustness check, we use the full dataset to examine the inequality measures.

As shown in Table 22, the measures of overall inequality appear higher, especially the Palma ratio. This can be attributed to the presence of outliers or invalid values at both ends of the distribution, which may introduce bias. Nevertheless, the P90/P10 and P50/P10 ratios still show significant improvement, although not as pronounced as in the trimmed case. This suggests that, despite the presence of outliers, the shift in the income distribution still reflects an improvement in the wages of workers at the lower end of the distribution.

Table 22: Inequality Measures – Without Trimming (2024)

Measure	**Observed**	**Counterfactual (2018 Policy)**	**Change**
Gini Coefficient	0.3187	0.3125	+1.97%
Palma Ratio	1.2496	1.1810	+5.81%
P50/P10	2.0807	2.1330	-2.52%
P90/P10	3.9218	4.0663	-3.54%

Source: Own elaboration based on data from the ENOE.

6 Conclusion

This study analyzed the impact of minimum wage increases on income distribution in Mexico, using the methodology proposed by DiNardo, Fortin, and Lemieux (1996) to construct a counterfactual distribution. This simulation of the 2024 scenario, assuming the wage structure had remained at 2018 levels, incorporated the real minimum wage level. The objective was to indirectly assess whether recent minimum wage increases have contributed to compressing the wage distribution, particularly benefiting those at the lower end.

The results suggest that minimum wage increases likely explain much of the observed changes. Specifically, most inequality measures—particularly those comparing the income share of the lower tail with other deciles—showed improvements. In contrast, informal workers, for whom the minimum wage is not binding, presented more ambiguous results. Furthermore, in terms of education, the groups most represented among workers earning the minimum wage or less—those with basic and middle education—experienced the greatest benefits.

Overall, the findings indicate that the changes in the wage structure, driven by the minimum wage increases, had significant positive effects on inequality, both in aggregate terms and when comparing the lower end of the distribution with the median and upper ends.

For men, the relative improvement is observed in the lower and middle segments, reflected in lower P90/P10 and P50/P10 ratios. For women, the effects are even more pronounced, with all inequality metrics showing a systematic reduction. This suggests that the minimum wage, alongside other policies implemented during this period, has been effective in reducing gender wage disparities.

In terms of labor sectors, formal workers saw consistent improvements across all inequality measures, as expected since the minimum wage is binding for this group. In contrast, informal workers showed improvements in relative distribution measures (P50/P10 and P90/P10), but global inequality indicators, such as the Gini and Palma indices, suggest increased dispersion at the tails in the real scenario.

Finally, in terms of education, workers with basic and middle education experienced the greatest benefits from the change in the wage structure, with reductions in all inequality measures, suggesting a decrease in inequality for these groups.

In summary, the analysis demonstrates that the changes in the wage structure—and, by extension, the increases in the minimum wage between 2018 and 2024—helped reduce inequality across most population groups, with particularly positive effects for women, formal workers and workers with basic and middle education. However, the results for the informal sector and for the higher educated workers remain more mixed.

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