

Local Flavor, Regional Impact: The Participation of Women in the Rural Tourism Restaurant Industry



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ABSTRACT: The objective of this work is to analyze the characteristics of women participating in the tourism restaurant activities in the rural areas of Durango, Mexico. Restaurant workers were analyzed for the year 2022. This is a quantitative, non-experimental, and cross-sectional study. The main findings show that 67% of the surveyed workers are women, with an average age of 30 years, incomplete high school education, and an average human capital index (HCI) of 10.27. In terms of gender distribution across municipalities, it was observed that 78% of workers in Pueblo Nuevo are women; 63.3% in Nombre de Dios; 57.1% in Peñón Blanco; and 60.6% in Mapimí. This research reflects that the gender gap related to the Human Capital Index (HCI) increases by 18% in rural areas, while in urban areas the gap is minimal.

KEYWORDS: women, restaurant industry, human capital, rural areas, tourism.

I. INTRODUCTION

Various international initiatives have discussed the importance of gender equality and the role of women in the economy. The International Labour Organization (ILO) states that gender equality is a driver of economic growth and development, and is crucial for achieving sustainability. Additionally, the United Nations (UN), through the 2030 Agenda for Sustainable Development, focuses on promoting and achieving gender equality and the empowerment of women and girls in Sustainable Development Goal number five (UN, 2015).

The participation of women in the labor market has been on the agenda of governments. In Latin America (LA), the Regional Conference on Women in Latin America and the Caribbean in 2004 established commitments to ensure the equitable participation of women in economic activities. Additionally, laws were enacted for each country, alongside the creation of institutions dedicated to the development and promotion of gender equity (Avolio and Di Laura, 2017). Tourism activities have been viewed as a sector with growing opportunities for women due to the high demand for human resources (ILO, 2024). Within the tourism sector, ecotourism is considered a catalyst for economic diversification in rural areas and protected natural zones. Nature tourism activities present an opportunity for marginalized areas to integrate into formal economic activities and diversify their economies. This creates alternatives for women to engage in economic activities within their communities.

In the culinary sector, the presence of women has been increasing. In Ortuño's (2019) study on women's participation in culinary activities, deep-rooted prejudices with a sexist undertone were identified. For example, it is observed that the decoration of dishes is often associated with femininity, suggesting that if a dish has flowers, it is likely to have been prepared by a woman. Additionally, there is a tendency to doubt women's ability to lead a kitchen in a restaurant, with the belief that the role of "chef" is reserved exclusively for men. Even in the production of edible oils or the manufacturing of culinary items, it is mistakenly assumed that women are unqualified to operate heavy machinery in the industry. Some data from European countries, such as Spain, shows that only 19 out of the 195 Michelin-starred restaurants are led by women (Ortuño, 2019).

In Durango, ecotourism activities have served as a pathway for the development of highly marginalized rural areas, enabling residents of these communities to integrate and diversify their economic activities. The importance of this study lies in understanding the role of women in the emergence of these types of activities in the Sierra of Durango. The objective of the study is to analyze the characteristics of women participating in food services related to ecotourism activities in the rural areas of Durango, Mexico.

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Women in Economic Activities

According to Espino (2011), women's participation in the workforce is often found in informal activities, due to the roles they must fulfill in their lives, such as caring for others or performing domestic tasks. Regarding formal employment, according to the International Bank for Reconstruction and Development (2020), women's participation in the labor market is lower compared to that of men. This institution argues that if women participated in the labor force at the same level as men, per capita income would be 22% higher, contributing to an increase in the Gross Domestic Product of countries.

Female labor participation in Latin America grew to 65% by 2019, compared to the 20% recorded in the 1960s (Marchionni et al., 2019). In comparison to men's participation, the gap remains wide, as men's participation stands at 94%. In Mexico, women's participation in the labor market averages 58.5%, which is below the Latin American average of 66%. This positions Mexico as a lagging country in terms of female labor participation (Marchionni et al., 2019).

Marchionni et al. (2019) analyzes the gap between rural and urban areas, noting that this gap continues to widen. In Mexico, the participation rate in rural areas is 48.8%, in contrast to 61% in urban areas. In rural areas, women are engaged in more precarious jobs than in urban settings. In Mexico, over 50% of rural women work in the informal sector, which is generally associated with low-skilled and unstable employment.

The increasing participation of women in the labor market has resulted in significant structural transformations, including changes in labor legislation, improved working conditions, greater access to professional education, decreased fertility rates, and shifts in family roles, among other factors (ECLAC, 2004).

According to the International Labour Organization (ILO) (2023), women continue to occupy positions with a strong feminine tradition, such as in the health, education, culinary, and cleaning sectors. For example, in the health sector, 90% of women's jobs are related to nursing and the care of children and the elderly. Similarly, in the education sector, women predominantly work at the primary level, as well as in infant and maternal care. Women make up 67% of the workforce dedicated to caregiving (ILO, 2024). The professions where women are the majority include those related to social services, healthcare, and the manufacturing industry, primarily in garment production.

The professions with no recorded participation of women are those classified as high-risk, such as operating heavy machinery, work on ships, quarrying, mining, and construction. Professions with a gender balance include those related to sales, commerce, and administration (ILO, 2023).

In the fields of science, technology, engineering, and mathematics—areas with a strong tradition of male occupation—international changes have been observed. Currently, two out of every five workers in these fields are women (ILO, 2024).

In Mexico, 73% of caregiving jobs, including domestic work, are held by women. In contrast, in the fields of science, technology, engineering, and mathematics, only 36% of the workforce is comprised of women (ILO, 2024).

In the case of the restaurant industry, according to the International Standard Classification of Occupations (ISCO) for 57 countries, which represents 24% of global employment, 58% of the workforce in the fast-food preparation industry consists of women, while in food service, 61% of the personnel are female (ILO, 2024).

According to data from the ILO, 7.2% of the global workforce is employed in the tourism industry (ILO, 2023b). In 2019, it was estimated that 1 in 10 jobs were related to tourism. In Mexico, the restaurant and food and beverage services sector demands the most labor, accounting for 12% of the total workforce employed in the tourism industry. For women, the largest proportion of jobs within the tourism sector is found in food preparation, beverage service, and accommodations.

Despite the increasing participation of women in the tourism and restaurant sectors, it is evident that women struggle to advance to higher-ranking positions, which are predominantly held by men. This phenomenon is referred to in the literature as the "glass ceiling." This invisible barrier limits women's promotion or advancement to higher-responsibility positions, such as leadership or management roles, which are predominantly held by men. It refers to the systemic obstacles women face in the workplace, social, and domestic contexts, where it is often assumed that men possess greater competencies than women (Espino, 2011; Government of Mexico).

Throughout history, women have been the cornerstone of family nourishment. However, their contributions to the food service industry often go underappreciated in the professional sphere, where men's roles tend to receive greater recognition. Women are frequently associated with lower-wage positions in traditional, domestic capacities, which are sometimes perceived as simple. Studies such as Mañón's (2022) indicate that women who enter the culinary field face a lower likelihood of achieving recognized positions or participating in awards compared to men. For those who do succeed, the effort and time required are substantially greater. In Vera's (2023) study of restaurants in Tuxtla Gutiérrez, Chiapas, Mexico, gender inequalities among workers were observed, with a prevailing belief that women lack the authority to lead in the kitchen. This trend becomes more pronounced in larger or more prestigious restaurants, where higher-ranking positions are predominantly occupied by men.

Human Capital

Businesses, as economic units established and operated by people (human capital), are built upon the knowledge that these individuals possess. Human capital is an intangible asset comprised of the organization's personnel who create the environment, qualities, and relationships in which they operate, grounded in their experience and education. Knowledge is an element that must

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originate from within the organization (Ibarra-Cisneros et al., 2020). Human capital refers to the individuals who make up the organization and who, in turn, collectively create the environment for survival and growth, both individually and collectively. Human capital consists of the intellectual competencies and skills that individuals possess, which are coordinated to carry out integrated activities aimed at generating wealth and value (Delgado Cruz et al., 2018).

Intellectual capital consists of the knowledge possessed by individuals within the organization (human capital), along with the workplace relationships and external connections that are maintained (Ibarra-Cisneros et al., 2020).

The elements that make up human capital include: knowledge, regarded as the strategic value of any organization from which sustainable competitive advantage emerges; shared values (organizational culture), which shape the current dynamics of members within the organization, establishing its image and being essential for long-term success; labor competencies, defined as the skills, attitudes, behaviors, knowledge, values, and experiences that frame organizational performance; and the profile, typology, or demographic characteristics of the personnel, such as age, which is linked to experience, learning, and the knowledge they possess (Gallego-Giraldo and Naranjo-Herrera, 2020).

Various authors suggest that intellectual capital encompasses the knowledge and skills developed within the organization through its members and is classified into three categories: human capital, social capital, and structural capital. The first includes knowledge and skills, the second encompasses the relationships the organization must maintain both internally and externally, and the third consists of the order and structure that define the organization.

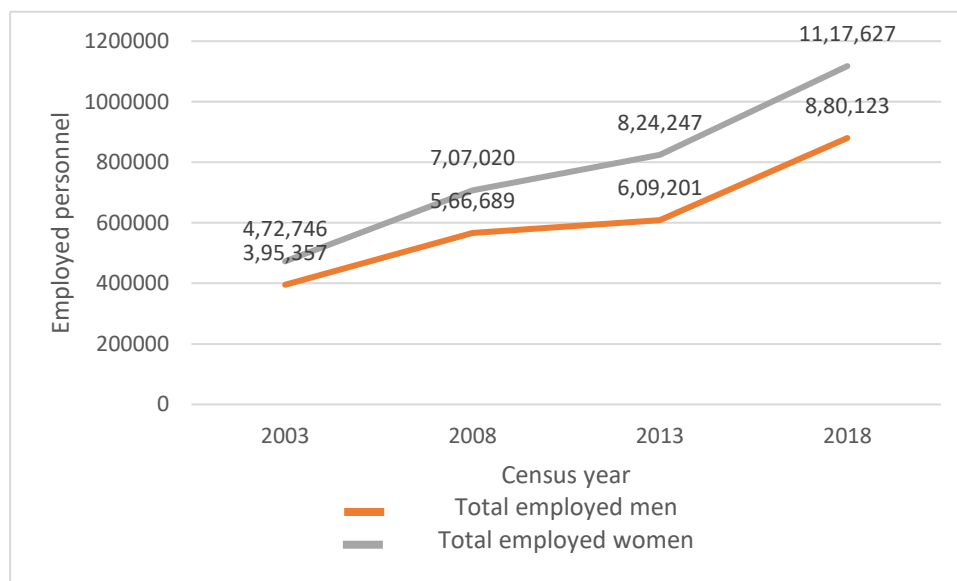
This suggests that to effectively evaluate human capital in organizations, it is essential to consider various internal and external elements that contribute to it, akin to conducting an internal audit within the company.

The Portela model (multidimensional human capital index) considers the relationship between educational attainment and work experience through a multiplicative relationship, aiming to equate the experience gained over the years with the educational level that individuals possess (Portela, 2001). Portela refers to his model as human capital, even though it only incorporates aspects related to intellectual capital. However, this choice is made due to the ease of obtaining information for recognition studies.

Context of the Restaurant Sector

The sector of businesses engaged in the preparation of food and beverages, both alcoholic and non-alcoholic, accounts for 12.11% of the total number of companies in Mexico, according to the latest economic census in 2018. Within this sector, 96.436% are micro enterprises, 3.235% are small, 0.326% are medium, and 0.003% are large. The total workforce in this sector represents 7.363% of the overall number of employed individuals in the country. It is considered a female-dominated activity, as the number of women working in this sector has increased over the years, accounting for 55.94% of the total workforce in 2018, while men represented 44.06%. In 2003, the representation of women in this sector was 54.457%, increasing to 55.509% in 2008 and 57.501% in 2014. Figure 1 illustrates the comparison of the workforce between men and women in the food preparation services sector (INEGI, 2024).

Figure 1. Total Workforce: Men and Women in the Economic Censuses of 2003, 2008, 2013, and 2018.



Source: Created from data from the Census Automated Information System, INEGI, 2024.

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As of November 2023, the Statistical Directory of Economic Units from INEGI reports a total of 642,553 economic units in Mexico.

In the state of Durango, this sector accounts for 14.02% of the total number of businesses, with micro enterprises making up the majority at 97.50%, small enterprises at 2.42%, and medium enterprises at 0.08%. Regarding the workforce in these businesses, the majority are women, comprising 66.26% (INEGI, 2024).

II. METHODOLOGY

a) Location of the Study

Durango is composed of four geographic regions: the quebradas and sierra region, the valleys region, the plains region, and the semi-desert region; The study was conducted in municipalities with localities that have been identified as tourist destinations, Figure 2 shows the geographical location of the municipalities where the data was collected. These municipalities cover the four geographical regions: Pueblo Nuevo in the quebradas and sierra region, Nombre de Dios in the valleys region, Peñón Blanco in the plains region, and Mapimí in the semi-desert region. The state of Durango is characterized by a highly dispersed population across a large number of rural communities with fewer than 100 inhabitants, making it challenging for this population to access both public and private services..

Figure 2. Geographic location of the municipalities where the study was conducted.



Source: Created using Mexico Digital Map for Desktop V6.3.0 (INEGI, 2017).

According to the latest Population Census (INEGI, National Institute of Statistics, Geography, and Informatics, 2021), the municipality of Pueblo Nuevo has a total population of 51,262 inhabitants, primarily concentrated in two urban localities (with more than 2,500 inhabitants): 52% in Salto, the municipal seat, and 5.2% in the city where the municipality's most important tourist development is located. The remaining population is scattered across 313 rural localities, with two localities having over 1,000 inhabitants and 258 rural localities with fewer than 100 inhabitants (INEGI, 2020). The tourist centers are located around the municipal seat and the urban locality of La Ciudad, which is situated 140 km from the state capital of Durango (INEGI, 2023). However, due to the mountainous geographic features, travel time ranges between two and three hours.

Nombre de Dios is one of the two places in the state that hold the "Pueblo Mágico" (Magic Town) designation, a program for towns with symbolic attributes, rich histories, legends, significant events, everyday life, and a unique charm (SECTUR, 2014, p.5). The Pueblo Mágico of Nombre de Dios is the closest to the state capital, located just 55 km away, a distance that can be covered in less than an hour. Nombre de Dios is the only urban locality, with a population of 5,953, representing 31% of the municipality's total population (INEGI, 2021). The remaining population is spread across 53 rural localities, 27 of which have fewer than 100 inhabitants.

The municipality of Peñón Blanco is located in the Llanos region, with its main tourist attraction situated in the rural locality of La Concha, which has a population of 152 inhabitants (INEGI, 2020). La Concha is 157 km away from the state capital, with a travel time of approximately two and a half hours (INEGI, 2023). The municipality has only one urban locality, which is the municipal seat with a population of 5,911, representing 53% of the total, and the rest is distributed across 47 rural localities, of which 37 have fewer than 50 inhabitants.

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Mapimí, another designated Magical Town in Durango (SECTUR, 2014), is situated in the semi-desert region. It serves as the municipal seat and boasts several nearby tourist attractions, including the Hojuela Hanging Bridge, the Santa Rita Mine, and the Rosario Caves. Located approximately 300 km from the state capital, it takes around three hours to reach, but it is conveniently only an hour's drive from the Laguna metropolitan area, which consists of the cities of Lerdo and Gómez Palacio in Durango, along with the city of Torreón in Coahuila (INEGI, 2023). The municipality of Mapimí has 85 rural localities, accounting for 23% of the population, of which 71 have fewer than 100 inhabitants. Additionally, there are three urban localities that make up 77% of the total population of the municipality (INEGI, 2020).

b) Who is being studied

This study focused on the workers of companies engaged in food preparation located near the tourist centers in the four aforementioned municipalities. The primary objective was to analyze the characteristics of women participating in food services related to ecotourism activities in the rural areas of Durango, Mexico. A convenience sample, given the geographical location of the tourist areas, was carried out in the year 2022.

c) Research Tools

The methodology of this study involved administering a questionnaire to the workers in businesses dedicated to the preparation of food and beverages near the tourist areas of the previously mentioned municipalities. This questionnaire collected demographic information (gender and municipality). This questionnaire was part of a broader study analyzing the impact of tourism activity on regional development. Structured with multiple-choice questions, it was essential for examining women's participation in the restaurant industry within ecotourism activities.

The development of the study followed these steps:

1. Identification of the analysis variables.
2. Development of instruments for data collection.
3. Identification of tourist areas located in the rural zones of the municipalities of Pueblo Nuevo, Nombre de Dios, Peñón Blanco, and Mapimí.
4. Selection of a convenience sample to administer the questionnaire to employees.
5. Administration of questionnaires to collect data.
6. Validation of the data collection instrument through expert judgment.
7. Creation of a database in Excel for data entry, utilizing SPSS V. 25 and Minitab V. 19 software for conducting descriptive and inferential statistical analyses.
8. Application of the Kruskal-Wallis test (see formula (1)) and the Mann-Whitney test (see formula (2)) to determine the differences between variables (Lesik, 2019).
9. Calculation of Portela's multidimensional index (see formula (3)) (Portela, 2001).

To deduce the behavior of the analyzed population based on the obtained samples, inferential analysis was conducted. The data were grouped by gender and municipality samples, with the analyzed variables including Age, Educational Background, Experience, and Human Capital Index (HCI). The groups were categorized as follows:

Municipalities: Pueblo Nuevo, Nombre de Dios, Peñón Blanco, and Mapimí

• Gender: Female, Male.

The analysis involved the application of non-parametric statistical hypothesis tests using the Kruskal-Wallis test for k independent samples (see formula (1)) (Lesik, 2019), considering the previously specified variables.

$$K = \frac{12}{n(n+1)} \sum \frac{R_j^2}{n_j} - 3(n+1) \quad (1)$$

- K for Kruskal- Wallis.
- n_j = number of elements in sample j.
- R_j = sum of ranks of all elements in the sample j.
- K= number of samples.
- n= total number of observations across all samples.

In the event of statistically significant differences in the Kruskal-Wallis test among the analyzed groups for the resulting variable, the Mann-Whitney test (see formula (2)) was conducted to determine the differences and their direction across the various resulting groups.

$$U = n_1 n_2 + \frac{n_1(n_1+1)}{2} - R_1 \quad (2)$$

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U for Mann Whitney

n1 = number of elements in sample one

n2 = number of elements in sample two

R1 = sum of the ranks of the elements in sample one

For the calculation of the multidimensional Portela index (CHP), the equation (3) was used.

$$CHPi = MEDU \times \left(0.5 + \frac{e^{\frac{(EDUi - MEDU)}{(DTEdu)}}}{1 + e^{\frac{(EDUi - MEDU)}{(DTEdu)}}} \right) \times \left(0.5 + \frac{e^{\frac{(EXPEi - MEXPE)}{(DTEXPE)}}}{1 + e^{\frac{(EXPEi - MEXPE)}{(DTEXPE)}}} \right) \quad (3)$$

Where:

MEDU = Educational background of workers in the restaurant and tourism industry

EDUi = Educational background of the i-th individual

DTEdu = Standard deviation of that educational level

EXPEi = Work experience of the i-th individual

MEXPE = Average experience of workers in the restaurant and tourism industry

DTEXPE = Standard deviation of that work experience

Table 1 displays the significances obtained through the non-parametric Kruskal-Wallis tests for the samples by gender and municipality, with respect to the variables Age, Educational Attainment, Experience, and Human Capital Index (HCI).

Table 1. Descriptive Statistics in the Analyzed Municipalities.

Kruskal-Wallis hypothesis test for k independent samples	Samples	
	Gender	Municipalities
Null Hypothesis H0	Sig	Sig
The age distribution is the same across the samples	0.02*	0.144
The distribution of educational attainment is the same across the samples	0.005*	0.005*
The distribution of experience is the same across the samples	0.919	0.080
The distribution of the Human Capital Index (HCI) is the same across the samples	0.052	0.060

*p<0.05.

Source: Own elaboration.

II. RESULTS AND DISCUSSION

Descriptive Analysis

The results indicate that among the surveyed sample participating in the restaurant industry in the analyzed municipalities, 32% are men. As expected, given the higher participation of women in this economic activity, 67% of the participants are female. The average age of participants is 30 years, with nearly 11 years of education, equivalent to incomplete high school. On average, they have 6 years of work experience. Specifically, 22% have up to one year of experience, 52.7% have up to four years, and 45.6% possess as much as 30 years of experience. The average Human Capital Index (HCI) is 10.27. The average age of male staff is 25, with a standard deviation of nearly 10 years. A quarter of them are 18 or younger, 37.5% are under 22, 12.5% are under 30, and only 9.3% fall within the 50 to 54 age range. Their average level of education is close to 12 years, with a standard deviation of 2 years, which corresponds to having completed high school and some incomplete university studies. Regarding years of work experience, the average is six years, with a standard deviation of nearly eight, indicating the presence of workers with very little experience. Of the total, 52.8% have up to three years of experience, 27.8% have between four and seven years, 11.2% have between eight and twelve years, and 8.2% have between 20 and 35 years of experience. Additionally, the Human Capital Index (HCI) was calculated, yielding an average score of 11. The age ranges for men are as follows: 43.8% fall between 17 and 21 years old, 40.6% are between 21 and 30 years old, and 15.6% are aged over 30 up to 54 years.

The female workforce shows a higher average age compared to men, with an average of nearly 33 years and a standard deviation of 12. The educational level of the female workers is lower than that of the male workers, with an average of 10 years and a standard deviation of two, which is equivalent to incomplete high school. The average work experience for women is the same as for men, at six years, with a standard deviation of seven. This highlights a similar pattern of low experience among workers. When analyzing the data by ranges, 46.7% have between one and three years of experience, 29.3% have between four and seven years, 11.9% have between eight and twelve years, 6.6% have between twelve and sixteen years, and 5.5% have between twenty and forty-five years of experience. The average Human Capital Index (HCI) is 9. A detailed review of the data reveals that 25.8% of the surveyed women

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fall within the age range of 16 to 21 years, while 25.6% are between 21 and 30 years old. Additionally, 28.6% of women are aged between 30 and 41 years, and 20.0% fall within the age range of 42 to 68 years, with the latter being the maximum age reported.

The findings reveal that, on average, women in this sector are older than their male counterparts. Women's educational attainment is lower, typically reaching only incomplete high school. While both genders have similar average work experience, women demonstrate a lower Human Capital Index (HCI) than men. Additionally, women exhibit greater age variability, although the frequency percentages across the various age ranges remain quite similar for both genders.

Descriptive Analysis by Regions

The analysis of the information by municipality (see Table 2) reveals that the average age of workers in the municipality of Pueblo Nuevo is 32.29 years, with a standard deviation of 12.26. The average educational level is 9.88 years, corresponding to the completion of secondary school, with a standard deviation of 2.04. The average work experience is 5.51 years, with a standard deviation of 6.77, indicating the presence of employees with limited experience. The average Human Capital Index (HCI) is 9.54, with a standard deviation of 2.11. In the case of Nombre de Dios, the average age is 28.37 years, with a standard deviation of 12.27. The average educational level is 10.77 years, with a standard deviation of 0.49. The average work experience in this municipality is 5.47 years, with a standard deviation of 6.64, and the Human Capital Index (HCI) is 10.19, with a standard deviation of 2.91. In the municipality of Peñón Blanco, the average age could not be determined due to respondents' reluctance to answer this question. However, the average educational attainment is 13.50 years, equivalent to some university education without a degree, with a standard deviation of 2.39. The average work experience is 6.00 years, with a standard deviation of 2.33, and the Human Capital Index (HCI) is 12.75, with a standard deviation of 1.87.

It is noteworthy that the municipality of Peñón Blanco has the highest average educational attainment (some university education without a degree) compared to the other municipalities, as well as a higher Human Capital Index (HCI). In terms of work experience, the municipality of Mapimí shows a higher average than the other analyzed municipalities.

Table 2. Descriptive Statistics in the Analyzed Municipalities

	Age		Educational Background		Work Experience		HCI	
	\bar{X}	σ	\bar{X}	σ	\bar{X}	σ	\bar{X}	σ
Pueblo Nuevo	32.29	12.26	9.88	2.04	5.51	6.77	9.54	2.11
Nombre de Dios	28.37	12.27	10.77	0.49	5.47	6.64	10.19	2.91
Peñón Blanco	ND	ND	13.50	2.39	6.00	2.33	12.75	1.87
Mapimí	29.92	10.80	10.61	0.50	7.70	9.39	10.67	2.60

Source: Own elaboration

The frequency of work experience shown in ranges is presented in Table 3, which indicates that in Peñón Blanco, respondents had a maximum of 10 years of work experience. In the municipalities of Nombre de Dios and Pueblo Nuevo, the maximum experience reached was 30 years, while in Mapimí, the maximum experience was 45 years. The majority of respondents in all municipalities have less than one year of experience and up to five years of experience.

Table 3. Work Experience in the Analyzed Municipalities

Range of Work Experience in Years	Pueblo Nuevo	Nombre de Dios	Peñón Blanco	Mapimí
	Percentage of Frequency Achieved			
-1 a 5	68.4	70	62.5	54.5
+ 5 a 10	19.5	13.3	37.5	33.5
+10 a 20	7.3	13.3		6
+20 a 30	4.8	3.4		3
+30 a 45				3

Source: Own elaboration

This highlights that this activity requires essential skills that can be acquired through practice in the business or through short kitchen management courses, allowing individuals to enter the field without the need for extensive formal training.

Descriptive Analysis of Women by Regions

When analyzing the surveyed gender in each municipality, it is found that in Pueblo Nuevo, 78% are women; in Nombre de Dios, 63.3%; in Peñón Blanco, 57.1%; and in Mapimí, 60.6%. A comparative analysis of the results obtained for women by region reveals

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that the average age in the municipality of Mapimí is 33.29 years, with a standard deviation of 10.40. Regarding their educational background, they average 10.05 years of schooling, with a standard deviation of 2.01, equivalent to incomplete high school. The average work experience is 8.10 years, and the Human Capital Index (HCI) is 10.29, with a standard deviation of 2.53. In Pueblo Nuevo, the results show a similar pattern, with an average age of 33.06 years and a standard deviation of 12.32 years. The average level of education is equivalent to completed secondary school, at 9.69 years, with a standard deviation of 2.12. Work experience is lower than in Mapimí, averaging only 5.37 years, and the Human Capital Index (HCI) stands at 9.36. In the case of Peñón Blanco, as previously mentioned, the average age is undetermined (ND). However, the average level of education is 13.25 years, higher than in the other municipalities, and is equivalent to incomplete university studies, with a standard deviation of 1.5. For Nombre de Dios, the average age is 32.37 years with a standard deviation of 13.46. Regarding education, the average is 10.21 years, equivalent to incomplete high school, with a standard deviation of 3.68. The average work experience is similar to the other municipalities, at 5.74 years, with an HCI of 9.76 and a standard deviation of 2.63. Table 4 presents the average age, educational attainment, work experience, and HCI, along with their respective standard deviations, for each municipality's workers involved in food preparation activities.

Table 4. Descriptive Statistics of Women in the Analyzed Municipalities

	Age		Educational Background		Work Experience		HCI	
	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ
Pueblo Nuevo	33.06	12.32	9.69	2.12	5.37	5.97	9.36	1.95
Nombre de Dios	32.37	13.46	10.21	3.68	5.74	7.18	9.76	2.63
Peñón Blanco	ND	ND	13.25	1.50	5.25	1.89	12.47	1.01
Mapimí	33.29	10.40	10.05	2.01	8.10	9.95	10.29	2.53

Source: Own elaboration

Inferential Analysis

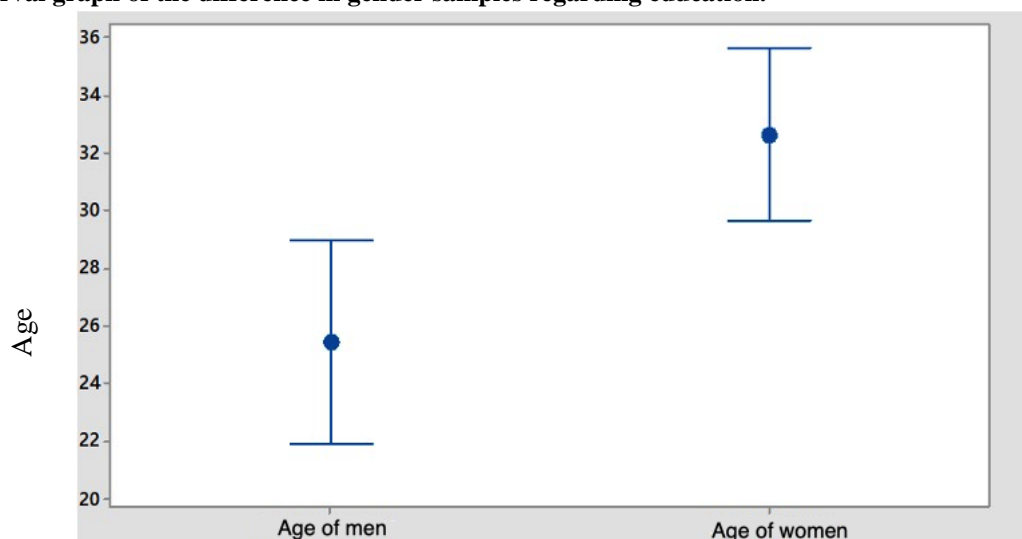
In order to determine the properties of the analyzed samples and infer conclusions about the population from the sample, statistical analysis is conducted by grouping the data by gender and municipality of residence.

Inferential analysis by gender

To achieve this, the Kruskal-Wallis test for k independent samples was applied, revealing statistically significant differences when comparing gender in relation to age, academic preparation, work experience, and HCI. Notably, significant differences were found for the age variable, with a significance level of 0.002, and for the academic preparation variable, with a significance level of 0.005. There is also an inferred trend in the distribution of HCI, as the significance level is 0.052.

To statistically demonstrate the difference in ages between men and women, the Mann-Whitney test is applied, revealing that the age of men is lower than that of women, with a significance level of 0.0042. Figure 3 shows the interval graph of ages between men and women.

Figure 3. Interval graph of the difference in gender samples regarding education.

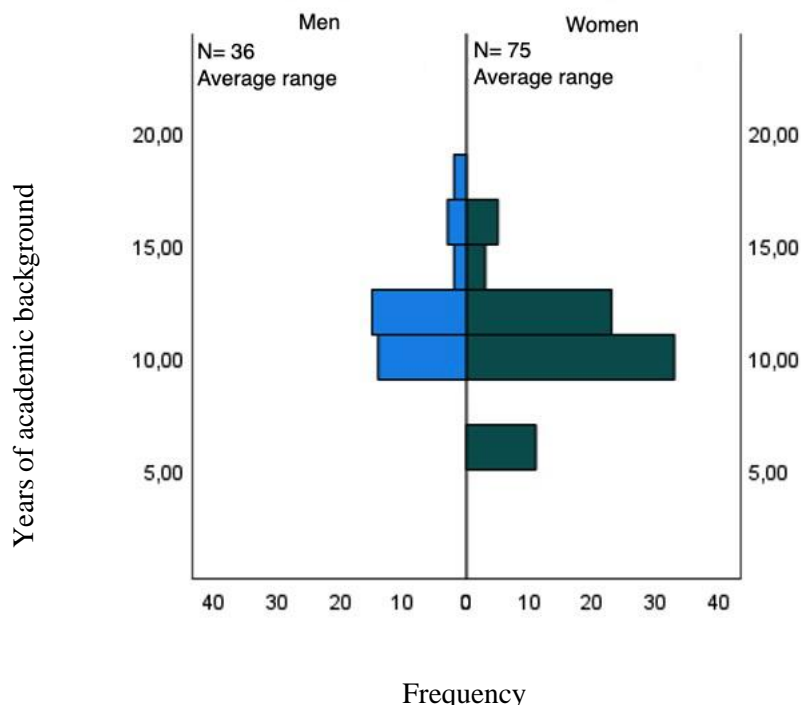


Source: Own elaboration

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By performing the Mann-Whitney analysis to assess the differences in academic preparation between genders, a significance level of 0.0042 was obtained, indicating that men's educational attainment is higher than that of women. Figure 4 displays the frequency of academic preparation obtained for both men and women.

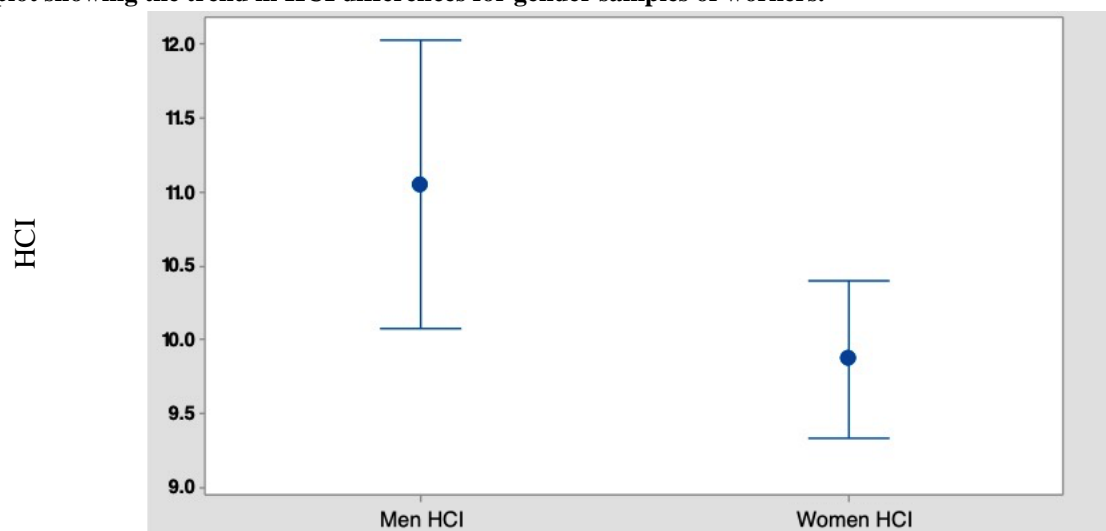
Figure 4. Frequency of academic background using the Mann-Whitney test between men and women.



Source: Own elaboration

In the case of gender analysis in relation to the Human Capital Index (HCI), applying the Mann-Whitney test confirms the previously mentioned trend, revealing differences with a significance level of 0.0524. The interval plot illustrates this (Figure 5).

Figure 5. Interval plot showing the trend in HCI differences for gender samples of workers.



Source: Own elaboration

Inferential analysis by municipality

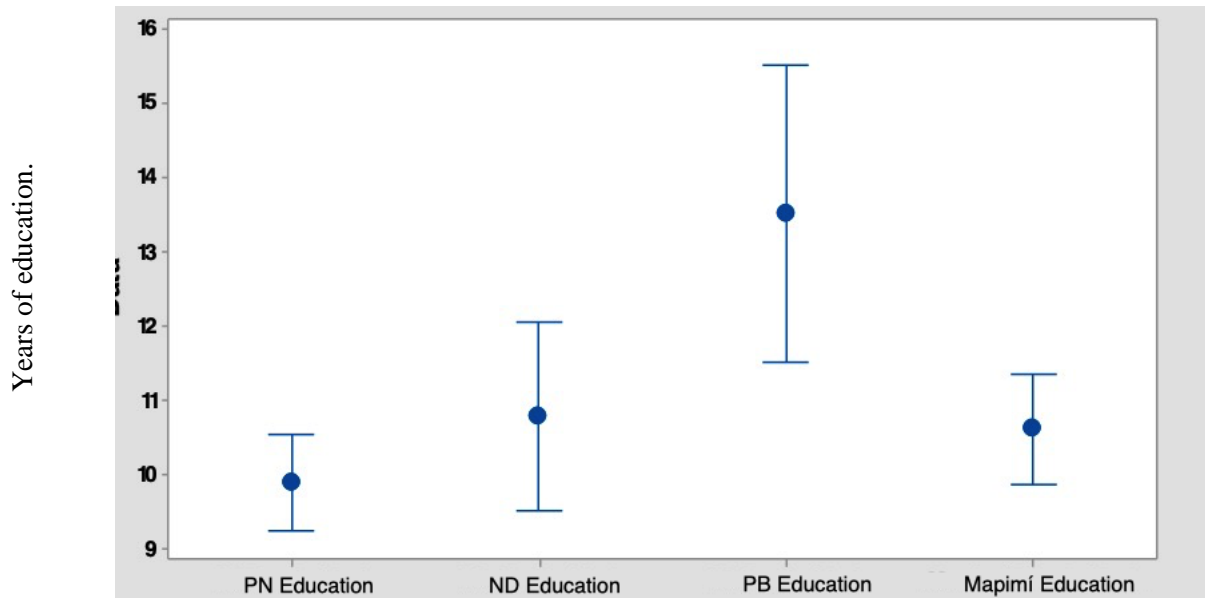
Similarly, the Kruskal-Wallis test is applied for independent samples among the categories of municipalities to determine the differences in age, academic preparation, experience, and HCI. This test shows that there are statistically significant differences in academic preparation among the categories of municipalities, with a significance level of 0.005. In the categories of municipalities,

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there are also statistically significant differences, with a significance level of 0.006 in the distribution of the Human Capital Index (HCI).

The Mann-Whitney test is then applied, revealing that the level of education in Peñón Blanco (PB) is higher compared to the other analyzed municipalities. The significance level against Pueblo Nuevo (PN) is 0.0003, against Nombre de Dios (ND) it is 0.0215, and for Mapimí, the significance level is 0.0077. Figure 6 shows the interval graph of the samples from municipalities concerning education.

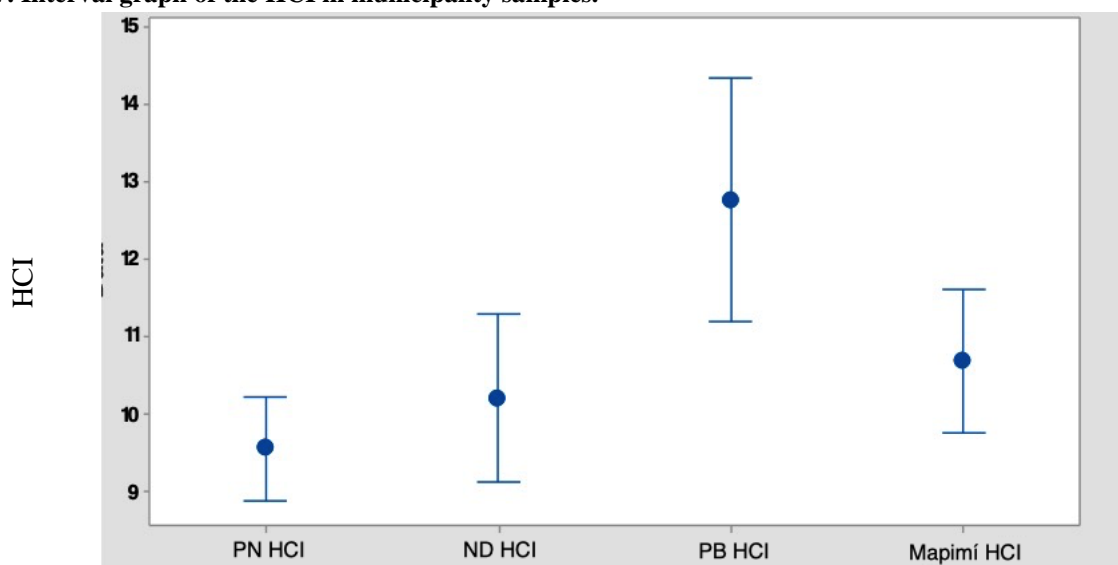
Figure 6. Interval graph of the samples from municipalities concerning education.



Source: Own elaboration

The same Mann-Whitney test is applied to the HCI, finding that Pueblo Nuevo (PN) has a higher HCI compared to Peñón Blanco (PB) with a significance of 0.0006. In the comparison between Pueblo Nuevo and Mapimí, the HCI is higher for Mapimí with a significance of 0.0203. Between Nombre de Dios (ND) and Pueblo Nuevo, a higher HCI is determined for Pueblo Nuevo with a significance of 0.01. Similarly, in the comparison between Mapimí and Pueblo Nuevo, the HCI is higher for the latter with a significance of 0.0068. Figure 7 displays the interval graph of the HCI among the municipality samples.

Figure 7. Interval graph of the HCI in municipality samples.



Source: Own elaboration

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CONCLUSIONS

The tourism activity is closely linked to food preparation due to various factors related to the overall experience of the tourist, the local economy, and culture. Tourist activities carried out in rural communities provide an opportunity to showcase the identity of the destination by offering traditional dishes, making restaurants key points in the overall experience. Eating is a fundamental necessity for tourists. Restaurants provide an essential service for people who are away from home, offering food without the need to cook. Additionally, this service enhances the overall experience of visitors. Restaurants play a crucial role in the tourist infrastructure of a region, contributing to local economic development and serving as a source of employment.

The food preparation industry is one of the few sectors where the participation of women is greater than that of men. This represents an opportunity for women residing in rural areas of Durango, where access to development and participation in paid economic activities is limited.

Comparing the participation of women globally in the food preparation industry, 61% are female (ILO, 2024). In this study, female participation was higher, reaching 67%.

The combination of age and years of experience is crucial for understanding the staff's ability to provide quality service in companies dedicated to food preparation. The results indicate that the analyzed businesses have staff with limited experience, averaging six years, which restricts interaction with tourists and may consequently fail to ensure a satisfying experience for them. Regarding the level of education, it influences workers' ability to adapt to demanding tourism environments and to provide professional and efficient service. The study revealed that workers with an incomplete high school education are limited in their ability to provide competitive service. This is reflected in the HCI, which averages 11 for men and 9 for women, contrasting significantly with the values reported for the restaurant industry located in the urban area of Durango, where men have an HCI of 14.37 and women have an HCI of 14.32 (Galván, 2021). The above highlights the backwardness evident in the rural areas of the state, which can be explained by the marginalization of businesses and their personnel. In these regions, the gender gap in the HCI is 18%, whereas it is minimal in businesses within urban areas of the industry.

This study suggests the need for the development of public policies that, through targeted programs, enhance education via job training initiatives. These programs should focus on customer service, proper food handling, valuing regional gastronomic culture, and improving and preserving infrastructure to achieve comprehensive business development and increase the economic and social impact in the influencing rural areas.

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