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# Understanding the Gender Gap in the Colombian Agricultural Sector

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# INTRODUCTION

We live in a complex world facing uncertainties, crises-including conflict and extreme weather- and a global economic slowdown. These challenges highlight the importance of understanding the agricultural sector's contributions to the economy and designing effective policies to support its resilience and growth. Within this context, examining the gender gap in the Colombian agricultural sector takes on even greater relevance.

The sector plays a crucial role in the country's economy, contributing 6.4% of the total value-added in 2019 and providing 82.1% of agricultural employment in rural areas. However, a significant gender gap exists, with women facing disadvantages in terms of participation, wages, and income generation.

Women's participation in the agricultural workforce is significantly lower than men's. In 2019, only 6.1% of employed women worked in agriculture, compared to 21.6% of men, creating a gap of 15.4 percentage points. This disparity is the largest among all the economic sectors analyzed. This lower participation translates into an unequal distribution of labor income. While the agricultural sector accounts for 11.3% of the total labor income for men, it contributes only 2.6% for women.

Women in agriculture also earn considerably less than men. The average salary for women in the sector was USD 117.4, while men earned USD 168.7, a 43.7% difference. These disparities are persistent across different areas and qualification levels.

To promote a more equitable and resilient agricultural sector, it is essential to understand and address the underlying causes of this gender gap. This paper aims to comprehensively analyze the gender gap in Colombian agriculture by examining its various dimensions and identifying potential solutions. By highlighting the disparities in participation, wages, and income generation across different areas and qualification levels, this paper aims to inform the design of policies and interventions that promote gender equality, empower women in agriculture, and enhance the sector's overall contribution to the country's social and economic development.

# ECONOMIC CONTRIBUTIONS OF THE AGRICULTURAL SECTOR

The Colombian agricultural sector plays a significant role in the country's economic and social development due to its capacity to generate added value and its demand for labor, primarily in rural areas. To ensure sustainable agricultural production, Colombia has identified 39.6 million hectares (34.7 % of the continental territory) as the agricultural frontier. This area, suitable for farming activities, promotes efficient land use, improves productivity and competitiveness, and stabilizes and reduces ecosystem loss (UPRA, 2022).

Concerning its contribution to economic development, of the USD 226.9 billion in value-added generated in the country in 2019 (constant 2015 prices), the agricultural sector ranked eighth with USD 14.5 billion (6.4%), surpassed by: i) real estate and professional activities (17.7%), ii) trade (9.1%), iii) manufacturing (9.1%), iv) transportation and public services (8.9%), v) information and communication, and financial activities (8.3%), vi) construction (7.0%), and vii) public administration (6.8%). In the agricultural sector, the largest contributions came from temporary and permanent crop cultivation, plant propagation, and support activities for agriculture and livestock, adding USD 8.9 billion (61.4%), followed by livestock with USD 3.9 billion (26.9%) (DANE, 2024a).

## Table 1: Value-Added and Employment by Economic Sector.

Constant 2015 Prices. 2019

| Sector | Value-Added | | Employment | |
|---|---|---|---|---|
| | Value (Billions) | Share | Number | Share |
| **Agriculture** | $ 14.5 | 6.4% | 3,244,927 | 15.2% |
| **Forestry, fishing, and mining** | $ 13.4 | 5.9% | 351,659 | 1.7% |
| **Agro-industry** | $ 8.8 | 3.9% | 786,076 | 3.7% |
| **Manufacturing** | $ 20.7 | 9.1% | 1,579,964 | 7.4% |
| **Construction** | $ 20.1 | 8.9% | 1,681,151 | 7.9% |
| **Trade** | $ 15.9 | 7.0% | 1,458,365 | 6.8% |
| **Transportation and public services** | $ 20.7 | 9.1% | 4,008,372 | 18.8% |
| **Accommodation** | $ 9.6 | 4.2% | 1,530,543 | 7.2% |
| **Information and communication, and financial activities** | $ 18.8 | 8.3% | 614,783 | 2.9% |
| **Real estate and professional activities** | $ 40.1 | 17.7% | 1,591,465 | 7.5% |
| **Public administration** | $ 15.4 | 6.8% | 657,569 | 3.1% |
| **Education** | $ 12.0 | 5.3% | 948,508 | 4.5% |
| **Human health** | $ 10.1 | 4.5% | 898,350 | 4.2% |
| **Other services activities** | $ 6.7 | 3.0% | 1,955,652 | 9.2% |

**Source:** Own elaboration based on DANE (2024a) and DANE (2020a).

It is noteworthy that, between 2010 and 2021, the agricultural sector achieved higher growth than the Colombian economy, increasing from USD 10.6 billion to USD 15.3 billion (compound annual growth rate of 3.1%); while the Gross Domestic Product (GDP) grew from USD 181.8 billion to USD 257.3 billion (a growth rate of 2.9%). Particularly in 2017 and 2020, the agricultural sector outperformed the national economy, with growth differences exceeding 4 percentage points – p.p. (6.1% vs. 1.4% in 2017; and 1.1% vs. -7.2% in 2020, respectively) (DANE, 2024a) (Table 2).

## Table 2: Value-Added and Growth Index. Base Year 2015.

Constant 2015 Prices. 2010-2021

| Year | Agriculture | | GDP | |
|---|---|---|---|---|
| | Value (Billions) | Index | Billion | Index |
| **2010** | $ 10.6 | 82.8 | $ 181.8 | 79.6 |
| **2011** | $ 10.8 | 84.5 | $ 194.4 | 85.1 |
| **2012** | $ 11.1 | 86.7 | $ 202.0 | 88.4 |
| **2013** | $ 11.9 | 93.1 | $ 212.4 | 92.9 |
| **2014** | $ 12.2 | 95.6 | $ 221.9 | 97.1 |
| **2015** | $ 12.7 | 100.0 | $ 228.5 | 100.0 |
| **2016** | $ 13.1 | 103.0 | $ 233.2 | 102.1 |
| **2017** | $ 13.9 | 109.2 | $ 236.4 | 103.5 |
| **2018** | $ 14.1 | 110.7 | $ 242.5 | 106.1 |
| **2019** | $ 14.5 | 113.7 | $ 250.2 | 109.5 |
| **2020** | $ 14.6 | 114.9 | $ 232.2 | 101.6 |
| **2021** | $ 15.3 | 119.9 | $ 257.3 | 112.6 |

**Source:** Own elaboration based on DANE (2024a).

Due to the importance of the agricultural sector for the Colombian economy and social development, especially in rural areas, where it serves as the foundation of livelihood for millions of families, the role of rural women is essential to ensuring food security, environmental sustainability, and community development.

Historically, women's participation in agricultural activities has been crucial. Their work is particularly notable in family farming, where they lead essential tasks such as planting, crop care, tending animals, and food management for their households (FAO, 2011; Acevedo-Osorio, Garavito, Salgado, & Gallego, 2014). In many homes, food security largely depends on women over the age of ten, who are responsible for ensuring their families' sustenance through sustainable and diversified production practices (Family Farming Bulletin, Ministry of Health, 2015). Various studies highlight the role of women in promoting food security (Quintero, 2024; Ramos, Rodríguez, & Triana, 2023).

Beyond agriculture, rural women lead initiatives that enhance community well-being. For example, women’s farming associations employ agroecological practices to sustainably grow crops, improve access to nutritious food, and empower local communities (Betancourt-Álvarez & Rodríguez-Rodríguez, 2023). These efforts reduce dependency on external products and foster local development.

Despite their importance, women in agriculture face significant barriers, such as limited access to productive resources like land, financing, technical assistance, and markets. These constraints limit their ability to increase productivity and reduce existing gender gaps in the sector (FAO, 2023). Additionally, the agricultural sector faces major challenges, including extreme climatic events such as droughts and heavy rains, affecting sensitive crop yields. It is projected that between 2010 and 2100, the yields of staple crops such as potatoes and maize will decrease significantly by 15% to 22% (Martínez & Morales, 2016). Furthermore, deforestation and the intensive use of natural resources also pose significant challenges to long-term sustainability.

Nevertheless, despite the challenges, the agricultural sector presents multiple opportunities. Four fundamental factors reinforce the potential of this sector. First, the remarkable growth of agricultural exports stands out, establishing itself as a key driver of the national economy. By the end of 2023, agricultural exports are projected to exceed $8 billion, reflecting a significant increase compared to previous years. The main destinations for these exports include the United States, the European Union, and Asia. For instance, in the first quarter of 2019, bilateral trade between Colombia and the European Union grew by 8.1%, while Colombian agricultural exports recorded a 12.8% increase compared to the same period in 2018 (Cano & Gutiérrez, 2020; EEAS, 2019; ILO, 2022).

Secondly, the development of agroindustry in Colombia offers significant opportunities to add value to agricultural products through processing and transformation. This sector not only contributes to job creation in rural areas but also increases income and promotes regional economic development. Agro-industries have the potential to generate employment in activities such as handling, packaging, processing, transportation, and marketing of agricultural products, positively impacting the development of auxiliary and complementary manufacturing activities (Martínez & Morales, 2016).

Thirdly, the remarkable growth of cultivable areas stands out, increasing from 4.7 million to 5.3 million hectares between 2010 and 2019, and a rise in agricultural production from 24.3 million to 33.1 million tons. National production has concentrated on permanent crops[1], covering 65.5% of the sown area and accounting for 63.5% of production. In 2019, the top five permanent crops were coffee (23.6% of the sown area), oil palm (15.4%), plantain (8.6%), sugarcane (8.4%), and panela cane (6.6%); while temporary crops, the main ones were rice (34.8%), maize (32.2%), potato (10.7%), beans (6.8%), and soy (3.9%) (MADR, 2021a). Livestock activity was primarily disaggregated into bovine production on 623.8 thousand farms (27.2 million heads), swine production on 237.4 thousand farms (6.5 million animals), and poultry production on 406.4 thousand farms (187.5 million birds) (ICA, 2020a; ICA, 2020b; ICA, 2020c).

Finally, the contribution to social development was evident through labor demand at the national level. In 2019, out of the 21.3 million employed individuals, 15.2% (3.2 million) were in the agricultural sector, surpassed only by the trade sector with 18.8% (4.0 million). Notably, 82.1% of agricultural employment was in rural areas (DANE, 2020a), highlighting its significance in generating income for rural residents.

Despite the social importance of labor employment, the agricultural sector faces low productivity and competitiveness. It ranks as the second-lowest sector in terms of value-added generation per worker (USD 4.5 thousand per worker), only ahead of the other services activities (USD 3.4 thousand per worker) (DANE, 2024a; DANE, 2020a). Therefore, it is crucial to improve productive conditions to ensure the sector's adequate and sustainable growth.

Opportunities exist to enhance sector performance by addressing: i) the lack of an appropriate environment for developing and sustaining rural businesses[2]; ii) weakness in the provision of support goods and services[3]; iii) low Total Factor Productivity (TFP)[4]; iv) imperfect markets[5] (Conpes 4098, 2022); and, v) the limited design of comprehensive strategies that consider climate change adaptions and mitigation mechanisms[6] (Conpes 4129, 2023).

# CHARACTERISTICS OF THE COLOMBIAN LABOR MARKET

The labor market encompasses the labor supply, represented by individuals willing to be employed, and the demand corresponding to employers. In Colombia, significant gender disparities exist in terms of labor force participation and remuneration. This analysis aims to identify and explain these gaps, focusing on key economic sectors, differences in workers' qualification levels, and urban-rural areas.

Between 2007 and 2019, the Colombian labor market underwent significant changes. Until 2015, there was a performance improvement, reflected in a higher employment rate[7] (61.3%) and a lower unemployment rate[8] (9.2%). However, by 2019, the employment rate had dropped by 3.6 p.p., and unemployment had risen by 1.7 p.p. This situation is exacerbated when analyzed by gender, as women show lower participation in the labor market and less job stability.

In 2019, Colombia had more women than men in the total population (24.8 million vs. 23.6 million) and in the working-age population (19.2 million vs 17.7 million). However, female labor force participation was lower, with an employment rate of 45.7%, compared to 70.7% for men, resulting in a gap of 25 p.p. Additionally, women's unemployment rate was higher (14.0% vs. 8.5%), and there was a significant difference in the number of individuals outside the labor force (9 million women vs 4 million men) (DANE, 2024b). This situation was linked to the fact that women were primarily engaged in household chores (46.0%) and paid work (32.6%), while men focused on paid work (64.1%) and only 4.5% on house chores[9] (DANE, 2022b).

Women also faced a greater workload, dedicating 13:31 hours daily compared to men's 10:41 hours. The main difference lay in the fact that 90.3% of women engaged in unpaid work (7:44 hours), while for men, it was 63.0% (3:06 hours)[10]. Conversely, women's participation in paid activities was lower, at only 29.9%, with 7:37 hours compared to 53.3% for men, who worked remuneratively for 8:57 hours (DANE, 2023). This shows that although women worked 2:50 hours more per day, their additional time was spent on domestic and caregiving activities, limiting their effective participation in the labor market and income generation.

To analyze the structure of the labor market, it is essential to identify how participation and remuneration vary according to gender, qualification level, and workers' residential areas to establish gender gaps in different economic sectors. Appendix 1 presents the aggregation of sector and division[1111] into sectors: agriculture; forestry, fishing, and mining; agro-industry; manufacturing; construction; trade; transport and public services; accommodation; information and communication, financial activities; real estate and professional activities; public administration; education; health; and other services. The total employed population was 21.3 million people, with over 50% concentrated in four economic sectors: trade (18.8%, 4 million employed); agriculture (15.2% 3.2 million); other services activities (9.2%, 2 million); and transport and public services (7.9%, 1.7 million).

## DIFFERENCES IN LABOR ACTIVITIES BY GENDER

It is important to highlight that labor demand varies by gender. Among the 12.5 million employed men, the sectors with the highest participation were agriculture (21.6%), trade (17.1%), and transportation and public services (12.1%). In contrast, among the 8.8 million employed women, the predominant sectors were trade (21.2%), other services activities (15.0%), and accommodation (11.8%). The largest gender gap in sectorial participation was observed in the agricultural sector, with a difference of 15.4 p.p., where only 6.1% of women were employed (Table 3).

## Table 3: Employment, Share, and Salary by Economic Sector and Gender. 2019

| Sector | Men | | | Women | | | Gap | |
|---|---|---|---|---|---|---|---|---|
| | Employed | Share | Salary | Employed | Share | Salary | Share (p.p) | Salary (%) |
| **Agriculture** | 2,706,193 | 21.6% | $ 168.7 | 538,734 | 6.1% | $ 117.4 | 15.4 | 43.7 |
| **Forestry, fishing, and mining** | 305,833 | 2.4% | $ 374.9 | 45,826 | 0.5% | $ 434.8 | 1.9 | -13.8 |
| **Agro-industry** | 425,096 | 3.4% | $ 324.7 | 360,980 | 4.1% | $ 182.1 | -0.7 | 78.3 |
| **Manufacturing** | 919,356 | 7.3% | $ 344.0 | 660,608 | 7.5% | $ 255.2 | -0.2 | 34.8 |
| **Construction** | 1,373,524 | 10.9% | $ 283.1 | 84,842 | 1.0% | $ 444.7 | 10.0 | -36.3 |
| **Trade** | 2,148,371 | 17.1% | $ 307.5 | 1,860,001 | 21.2% | $ 203.6 | -4.1 | 51.0 |
| **Transportation and public services** | 1,511,998 | 12.1% | $ 284.9 | 169,153 | 1.9% | $ 402.3 | 10.1 | -29.2 |
| **Accommodation** | 493,683 | 3.9% | $ 267.1 | 1,036,860 | 11.8% | $ 179.8 | -7.9 | 48.6 |
| **Information and communication, and financial activities** | 312,889 | 2.5% | $ 714.3 | 301,894 | 3.4% | $ 507.3 | -1.0 | 40.8 |
| **Real estate and professional activities** | 769,969 | 6.1% | $ 458.8 | 821,496 | 9.4% | $ 305.9 | -3.2 | 50.0 |
| **Public administration** | 383,557 | 3.1% | $ 711.7 | 274,012 | 3.1% | $ 702.9 | -0.1 | 1.3 |
| **Education** | 355,540 | 2.8% | $ 647.4 | 592,968 | 6.8% | $ 540.0 | -3.9 | 19.9 |
| **Human Health** | 196,778 | 1.6% | $ 682.6 | 701,572 | 8.0% | $ 385.1 | -6.4 | 77.3 |
| **Other services activities** | 641,081 | 5.1% | $ 275.0 | 1,314,571 | 15.0% | $ 187.9 | -9.9 | 46.3 |

**Note:** The Gap Share is calculated as $Share\ Men - Share\ Women$ and the Salary gap is given by $\left(\frac{Salary\ Men}{Salary\ Women} - 1\right) \times 100\%$. **Source:** Own elaboration based on DANE (2024a) and DANE (2020a).

In terms of income generation capacity, employees in the public administration sector received the highest wages, averaging USD 708. They were followed by the information and communication, and financial activities sectors (USD 612.3) and the education sector (USD 580.3). Conversely, the sectors with the lowest incomes were agriculture (USD 161.7), accommodation (USD 207.9), and other services activities (USD 216.1).

Regarding gender differences in remuneration, men earned the highest wages in the information and communication, and financial activities sector (USD 714.3), public administration (USD 711.7), and human health services (USD 682.6). On the other hand, the lowest wages for men were found in the agricultural sector (USD 168.7), accommodation (USD 267.1), and other services activities (USD 275). For women, the highest salaries were observed in public administration (USD 702.9), education (USD 540), information and communication, and financial activities (USD 507.3). The lowest incomes for women were recorded in the agricultural sector (USD 117.4), accommodation (USD 179.8), and agro-industrial (USD 182.1).

Significant income differences between men and women were observed in 11 of the 14 sectors analyzed. The widest gender gaps occurred in the agro-industrial sector (78.3% higher for men), human health (77.3%), and trade (51%). Conversely, the sectors where women earned more than men included forestry, fishing, and mining (13.8% higher), transportation and public services (29.2%), and construction (36.3%).

**Table 4: Total Labor Income and Share by Economic Sector and Gender. 2019 Prices. 2019**

| Sector | Men | | Women | | Gap Share (p.p) |
|---|---|---|---|---|---|
| | Total Labor Income (Millions) | Share | Total Labor Income (Millions) | Share | |
| **Agriculture** | $ 456.6 | 11.3% | $ 63.3 | 2.6% | 8.72 |
| **Forestry, fishing, and mining** | $ 114.7 | 2.8% | $ 19.9 | 0.8% | 2.02 |
| **Agro-industry** | $ 138.0 | 3.4% | $ 65.7 | 2.7% | 0.71 |
| **Manufacturing** | $ 316.2 | 7.9% | $ 168.6 | 7.0% | 0.89 |
| **Construction** | $ 388.9 | 9.7% | $ 37.7 | 1.6% | 8.10 |
| **Trade** | $ 660.6 | 16.4% | $ 378.7 | 15.6% | 0.77 |
| **Transportation and public services** | $ 430.8 | 10.7% | $ 68.1 | 2.8% | 7.89 |
| **Accommodation** | $ 131.9 | 3.3% | $ 186.4 | 7.7% | -4.42 |
| **Information and communication, and financial activities** | $ 223.5 | 5.5% | $ 153.1 | 6.3% | -0.77 |
| **Real estate and professional activities** | $ 353.3 | 8.8% | $ 251.3 | 10.4% | -1.60 |
| **Public administration** | $ 273.0 | 6.8% | $ 192.6 | 7.9% | -1.17 |
| **Education** | $ 230.2 | 5.7% | $ 320.2 | 13.2% | -7.50 |
| **Human Health** | $ 134.3 | 3.3% | $ 270.2 | 11.2% | -7.82 |
| **Other services activities** | $ 176.3 | 4.4% | $ 247.0 | 10.2% | -5.82 |

**Note:** The Gap is calculated as $Share\ Men - Share\ Women$ . **Source:** Own elaboration based on DANE (2024a) and DANE (2020a).

Finally, when analyzing the contribution of the economic sector to total worker income, the agricultural sector stands out of men, accounting for 11.3% of the total labor income. In contrast, for women, this sector contributed only 2.6% of income, highlighting a considerable disparity. This gender gap in agricultural activities was the most pronounced, with an 8.72 p.p. difference in sectorial participation and remuneration (Table 4).

## Differences by Level of Qualification

The level of qualification reflects the capacity available for the development of productive activities. For this analysis, qualification levels are estimated based on years of education completed. A worker is classified as qualified if they have an education beyond the primary level; otherwise, they are considered unqualified. With this distinction, it was found that 73.5% of the workers were qualified, with a remuneration of USD 354. In comparison, 26.5% of workers were unqualified, receiving an average salary of USD 167.6. It is important to highlight that conditions vary by gender, as 79.2% of female workers have a higher education level than primary school, compared to 69.5% of male workers, reflecting a gender gap of 9.7 p.p. in favor of women.

## Table 5: Number of Employed, Share, and Salary by Economic Sector and Qualification Level. 2019

| Sector | Qualified | | | Unqualified | | | Gap | |
|---|---|---|---|---|---|---|---|---|
| | Employed | Share | Salary | Employed | Share | Salary | Share (p.p) | Salary (%) |
| **Agriculture** | 1,201,480 | 7.7% | $ 184.5 | 2,043,447 | 36.1% | $ 149.1 | -28.5 | 23.7 |
| **Forestry, fishing, and mining** | 180,374 | 1.2% | $ 601.6 | 171,285 | 3.0% | $ 155.5 | -1.9 | 286.8 |
| **Agro-industry** | 585,951 | 3.7% | $ 300.0 | 200,124 | 3.5% | $ 147.4 | 0.2 | 103.6 |
| **Manufacturing** | 1,305,647 | 8.3% | $ 333.7 | 274,317 | 4.9% | $ 179.1 | 3.5 | 86.3 |
| **Construction** | 1,017,606 | 6.5% | $ 320.4 | 440,760 | 7.8% | $ 227.8 | -1.3 | 40.7 |
| **Trade** | 3,122,852 | 20.0% | $ 285.1 | 885,521 | 15.7% | $ 171.4 | 4.3 | 66.4 |
| **Transportation and public services** | 1,281,043 | 8.2% | $ 322.6 | 400,109 | 7.1% | $ 213.1 | 1.1 | 51.4 |
| **Accommodation** | 1,142,474 | 7.3% | $ 224.0 | 388,069 | 6.9% | $ 160.1 | 0.4 | 40.0 |
| **Information and communication, and financial activities** | 597,205 | 3.8% | $ 626.3 | 17,578 | 0.3% | $ 138.1 | 3.5 | 353.6 |
| **Real estate and professional activities** | 1,364,472 | 8.7% | $ 417.2 | 226,993 | 4.0% | $ 159.2 | 4.7 | 162.1 |
| **Public administration** | 639,211 | 4.1% | $ 719.1 | 18,358 | 0.3% | $ 335.9 | 3.8 | 114.1 |
| **Education** | 917,952 | 5.9% | $ 593.2 | 30,556 | 0.5% | $ 202.4 | 5.3 | 193.1 |
| **Human Health** | 850,896 | 5.4% | $ 466.0 | 47,454 | 0.8% | $ 145.4 | 4.6 | 220.4 |
| **Other services activities** | 1,445,193 | 9.2% | $ 237.9 | 510,459 | 9.0% | $ 155.5 | 0.2 | 53.0 |
| **Total** | **15,652,355** | | **$ 354.0** | **5,655,030** | | **$ 167.6** | | |

**Note:** The Gap Share is calculated as $Share\ Qualified - Share\ Unqualified$ and the Salary gap is given by $\left(\frac{Salary\ Qualified}{Salary\ Unqualified} - 1\right) \times 100\%$.
**Source:** Own elaboration based on DANE (2024a) and DANE (2020a).

On the other hand, certain economic sectors were identified where the demand for qualified workers prevailed, with more than 80% of the workforce being qualified, such as public administration (97.2%), information and communications, and financial activities (97.1%), education (96.8%), human health (94.7%), real estate and professional activities (85.7%), and manufacturing (82.6%). In contrast, the primary goods production sectors showed the lowest levels of qualification, evidenced by the fact that only 51.3% of workers in forestry, fishing, and mining, and 37.0% of workers in agriculture, completed primary school (Table 5).

Regarding labor income, it is observed that higher qualifications lead to higher wages for workers. This was reflected in the information and communications sectors, and financial activities, where qualified workers received a remuneration 353.6% higher (USD 626.3 compared to USD 138.1); forestry, fishing, and mining with a 286.8% increase; human health with an additional 220.4%; and education with a 193.1% increase. On the other hand, the agricultural sector showed the smallest growth in remuneration, with only a 23.7% difference, as qualified agricultural workers earned an income of USD 184.5, compared to USD 149.1 for unqualified workers.

### Table 6: Total Labor Income and Share by Economic Sector and Qualification Level. 2019 Prices. 2019

| Sector | Qualified | | Unqualified | | Gap Share (p.p) |
|---|---|---|---|---|---|
| | Total Labor Income (Millions) | Share | Total Labor Income (Millions) | Share | |
| **Agriculture** | $ 221.7 | 4.0% | $ 304.8 | 32.2% | -28.2 |
| **Forestry, fishing, and mining** | $ 108.5 | 2.0% | $ 26.6 | 2.8% | -0.8 |
| **Agro-industry** | $ 175.8 | 3.2% | $ 29.5 | 3.1% | 0.1 |
| **Manufacturing** | $ 435.7 | 7.9% | $ 49.1 | 5.2% | 2.7 |
| **Construction** | $ 326.0 | 5.9% | $ 100.4 | 10.6% | -4.7 |
| **Trade** | $ 890.5 | 16.1% | $ 151.8 | 16.0% | 0.1 |
| **Transportation and public services** | $ 413.2 | 7.5% | $ 85.3 | 9.0% | -1.5 |
| **Accommodation** | $ 256.0 | 4.6% | $ 62.1 | 6.6% | -1.9 |
| **Information and communication, and financial activities** | $ 374.0 | 6.8% | $ 2.4 | 0.3% | 6.5 |
| **Real estate and professional activities** | $ 569.2 | 10.3% | $ 36.1 | 3.8% | 6.5 |
| **Public administration** | $ 459.6 | 8.3% | $ 6.2 | 0.7% | 7.7 |
| **Education** | $ 544.5 | 9.9% | $ 6.2 | 0.7% | 9.2 |
| **Human Health** | $ 396.5 | 7.2% | $ 6.9 | 0.7% | 6.5 |
| **Other services activities** | $ 343.8 | 6.2% | $ 79.4 | 8.4% | -2.1 |

**Note:** The Gap Share is calculated as $Share\ Qualified - Share\ Unqualified$. **Source:** Own elaboration based on DANE (2024a) and DANE (2020a).

Considering the above, it was identified that the total labor income received by qualified individuals reached USD 5.5 billion, representing 85.3% of the total income generated by the occupied people. In comparison, unqualified workers received USD 946.7 million (equivalent to 14.6%). In particular, the sectors that generated the highest income for qualified workers were trade with USD 890.5 million, real estate and professional activities with USD 569.2 million, and education with USD 544.5 million. Conversely, unqualified workers received the highest total incomes in the agricultural sector (USD 304.8 million), trade (USD 151.8 million), and construction (USD 100.4 million) (Table 6).

## Differences by Area of Residence

Similarly, the labor market exhibited notable differences between urban and rural areas[12]. In urban areas, labor demand reached 77.9%, with an average wage of USD 342. In contrast, rural areas accounted for 22.1% of the employed population, with an average earning of USD 168.4. These disparities are explained by the high concentration of tertiary activities in urban areas (75.4%), while rural areas are characterized by a predominance of primary activities (60.8%).

Specifically, in urban areas, the economic sectors with the highest labor demand were traded (21.6%), followed by other services activities (10.3%) and real estate and professional activities (9.1%). In contrast,

in rural areas, 56.6% of workers (2.7 million) were engaged in agricultural activities, 9.0% in trade, and 5.2% in other services activities (Table 7).

### Table 7: Number of Employed, Participation, and Salary by Economic Sector and Area. 2019

| Sector | Urban | | | Rural | | |
|---|---|---|---|---|---|---|
| | Employed | Share | Salary | Employed | Share | Salary |
| **Agriculture** | 579,929 | 3.5% | $ 205.7 | 2,664,998 | 56.6% | $ 151.6 |
| **Forestry, fishing, and mining** | 156,164 | 0.9% | $ 660.4 | 195,495 | 4.2% | $ 161.7 |
| **Agro-industry** | 640,354 | 3.9% | $ 287.6 | 145,722 | 3.1% | $ 141.2 |
| **Manufacturing** | 1,422,961 | 8.6% | $ 323.0 | 157,003 | 3.3% | $ 160.4 |
| **Construction** | 1,276,869 | 7.7% | $ 302.8 | 181,496 | 3.9% | $ 220.3 |
| **Trade** | 3,585,272 | 21.6% | $ 272.4 | 423,100 | 9.0% | $ 155.6 |
| **Transportation and public services** | 1,491,350 | 9.0% | $ 305.8 | 189,801 | 4.0% | $ 224.8 |
| **Accommodation** | 1,319,229 | 7.9% | $ 218.9 | 211,314 | 4.5% | $ 135.7 |
| **Information and communication, and financial activities** | 590,951 | 3.6% | $ 626.1 | 23,832 | 0.5% | $ 257.9 |
| **Real estate and professional activities** | 1,504,514 | 9.1% | $ 390.7 | 86,951 | 1.8% | $ 180.9 |
| **Public administration** | 624,134 | 3.8% | $ 724.0 | 33,435 | 0.7% | $ 416.9 |
| **Education** | 863,108 | 5.2% | $ 592.9 | 85,400 | 1.8% | $ 455.6 |
| **Human Health** | 836,439 | 5.0% | $ 463.6 | 61,912 | 1.3% | $ 253.5 |
| **Other services activities** | 1,710,394 | 10.3% | $ 224.7 | 245,258 | 5.2% | $ 157.1 |
| **Total** | 16.602.438 | | $ 342.0 | 4.705.717 | | $ 168.4 |

**Source:** Own elaborate on based on DANE (2020a).

In urban areas, the sectors with the highest wages were public administration (with an average of USD 724), followed by forestry, fishing, and mining (USD 660.4), and information and communications, and financial activities (USD 626.1). Conversely, the sectors with the lowest wages were agriculture (USD 205.7), accommodation (USD 218.9), and other services activities (USD 224.7).

In rural areas, the highest labor incomes were recorded in the education sector (USD 455.6), public administration (USD 416.9), information and communications, and financial activities (USD 257.9). On the other hand, the lowest incomes were found in accommodation (USD 135.7), agro-industrial (USD 141.2), and agriculture (USD 151.6).

Considering participation and wages, it was observed that the most relevant sectors for generating total labor income in urban areas were trade (USD 976.5 million), real estate and professional activities (USD 587.8 million), and education (USD 511.8 million). In rural areas, the agricultural sector led income generation with USD 404 million, followed by trade with USD 65.8 million, and transportation and public services with USD 42.7 million. This underscores the importance of the agricultural sector for social development in rural areas (Table 8).

**Table 8: Total Labor Income and Share by Economic Sector and Area. 2019 Prices. 2019**

| Sector | Urban | | Rural | |
|---|---|---|---|---|
| | Total Labor Income (Millions) | Share | Total Labor Income (Millions) | Share |
| **Agriculture** | $ 119.3 | 2.1% | $ 404.0 | 51.3% |
| **Forestry, fishing, and mining** | $ 103.1 | 1.8% | $ 31.6 | 4.0% |
| **Agro-industry** | $ 184.2 | 3.2% | $ 20.6 | 2.6% |
| **Manufacturing** | $ 459.7 | 8.1% | $ 25.2 | 3.2% |
| **Construction** | $ 386.6 | 6.8% | $ 40.0 | 5.1% |
| **Trade** | $ 976.5 | 17.2% | $ 65.8 | 8.4% |
| **Transportation and public services** | $ 456.1 | 8.0% | $ 42.7 | 5.4% |
| **Accommodation** | $ 288.7 | 5.1% | $ 28.7 | 3.6% |
| **Information and communication, and financial activities** | $ 370.0 | 6.5% | $ 6.1 | 0.8% |
| **Real estate and professional activities** | $ 587.8 | 10.4% | $ 15.7 | 2.0% |
| **Public administration** | $ 451.9 | 8.0% | $ 13.9 | 1.8% |
| **Education** | $ 511.8 | 9.0% | $ 38.9 | 4.9% |
| **Human Health** | $ 387.8 | 6.8% | $ 15.7 | 2.0% |
| **Other services activities** | $ 384.3 | 6.8% | $ 38.5 | 4.9% |

**Source:** Own elaboration based on DANE (2020a).

## Gender Gaps in the Agricultural Sector

Given that the agricultural sector played a significant role in the rural economy, contributed USD 14,5 billion in added value, generated USD 404 million in labor income, and employed 2.7 million workers in rural areas, it is of particular interest to examine gender gaps within the sector. Evaluating gender differences by area and qualify level helps to better understand existing inequalities and identify potential impacts on sectorial initiatives.

Firstly, in urban areas, a relatively similar distribution of skill levels among rural agricultural workers is observed. Of these, 51.8% (300.3 thousand) were qualified, and 48.2% (279.7 thousand) were unqualified, reflecting a slight difference in the distribution of skills. However, this trend varies by gender. Among men, 49.1% (239.1 thousand employed) were qualified, while 65.5% of women (61.2 thousand) were qualified.

In terms of wages, significant differences were observed. Qualified men earned 55.5% more than unqualified, with incomes of USD 246.6 compared to USD 158.6, respectively. For women, the difference was even greater, reaching 85.6%, with skilled women earning USD 271.4 compared to USD 146.2 for unskilled women. Regarding gender gaps, it was found that skilled women received higher wages than skilled men (9.1% higher), while in the case of unskilled agricultural workers, men earned 8.4% more than women.

Secondly, in rural areas, unqualified agricultural workers predominated. Of the 2.6 million workers, 66.2% (1.7 million) were unqualified, and 33.8% (901.2 thousand) were qualified. This distribution was relatively similar for both genders: 67.1% of men were unskilled, compared to 61.6% of women. However, among

the gender differences, it is worth noting that women were more qualified, with a 5.5 p.p. higher participation rate than men.

Similarly, qualified rural agricultural workers earned an average of USD 170.3 compared to USD 157.4 for unskilled workers, representing a wage gap of 8.2%. for women, skilled workers earned 27.8% more than unskilled workers (USD 100.6 compared to USD 78.7, respectively). This suggests that the return on education was higher for women than men. Additionally, when analyzing gender gaps by qualification level, it was found that skilled women earned 69.4% more than men, while unskilled men earned double the wages of unqualified women.

### Table 9: Number of Employed, Share, and Salary by Area, Gender, and Qualification Level. Agricultural workers. 2019

| Area | Gender | Qualified | | | Unqualified | | | Salary Gap |
|---|---|---|---|---|---|---|---|---|
| | | Employed | Share | Salary | Employed | Share | Salary | |
| Urban | Men | 239,071 | 49.1% | $ 246.6 | 247,575 | 50.9% | $ 158.6 | 55.5% |
| | Women | 61,192 | 65.6% | $ 271.4 | 32,091 | 34.4% | $ 146.2 | 85.6% |
| | Gender Gap | | | -9.1% | | | 8.4% | |
| Rural | Men | 730,131 | 32.9% | $ 170.3 | 1,489,416 | 67.1% | $ 157.4 | 8.2% |
| | Women | 171,087 | 38.4% | $ 100.6 | 274,365 | 61.6% | $ 78.7 | 27.8% |
| | Gender Gap | | | 69.4% | | | 100.0% | |

**Source:** Own elaboration based on DANE (2020a).

To determine whether differences depend on the activities carried out by agricultural workers, activities were classified into traditional and export agriculture. Based on information on agricultural products, food, and beverages, export products were identified as coffee, plantains and bananas, tobacco, flowers, palm oil, and other oilseeds,

For urban agricultural workers, 31% were engaged in export crops, while 69% (400.6 thousand) were involved in traditional crops. It is important to highlight those women had a higher participation in export products than men, with 45.4% compared to 28.2%. Regarding wages, salaries in export crops exceeded those in traditional crops, especially for women, with a difference of 52.2%. For men, the difference was 7.6%. Gender gaps revealed that women in export crops earned higher wages (USD 247.1), 14.2% more than men, who earned USD 212; and women earned 14.6% more in traditional crops, reaching USD 215.7.

In the case of rural agricultural workers, traditional crop work predominated, with more than 70% participation for both men and women. Men's wages were similar regardless of the production system, with USD 158.8 for export crops compared to USD 162.3 for traditional crops. For women, wages in export crops were 51.5% higher than in traditional crops, corresponding to USD 119.6 compared to USD 79.1. It is worth noting that gender gaps in export crops were smaller than in traditional crops, with differences of 32.6% and 105.3%, respectively, suggesting that hiring conditions in export crops are more standardized.

**Table 10: Number of Employed, Share, and Salary by Area, Gender, and Production System. 2019**

| Area | Gender | Export | | | Traditional | | | Production System Gap |
|---|---|---|---|---|---|---|---|---|
| | | Employed | Share | Salary | Employed | Share | Salary | |
| Urban | Men | 137,352 | 28.2% | $ 212.0 | 349,676 | 71.8% | $ 196.9 | 7.6% |
| | Women | 42,311 | 45.4% | $ 247.1 | 50,972 | 54.6% | $ 215.7 | 14.6% |
| | Gender Gap | | | -14.2% | | | -8.7% | |
| Rural | Men | 572,942 | 25.8% | $ 158.8 | 1,646,606 | 74.2% | $ 162.3 | -2.2% |
| | Women | 97,501 | 21.9% | $ 119.6 | 347,950 | 78.1% | $ 79.1 | 51.5% |
| | Gender Gap | | | 32.6% | | | 105.3% | |

**Source:** Own elaboration based on DANE (2020a).

# FINAL COMMENTS

Disruptors-conflict and weather- affect differently women. There is a need to design and think of policies specially aimed at them to make sure they can become more resilient at the same time improve in their livelihoods and quality of living.

The Colombian agricultural sector is vital to the country's economy, contributing 6.4% of the total value added in 2019. It's particularly crucial for rural areas, providing 82.1% of agricultural jobs. However, the sector faces challenges such as low productivity and competitiveness. The sector presents opportunities for growth and development, especially for women who experience significant gender gaps in participation and pay.

Women's participation in the agricultural labor force is considerably lower than men's. In 2019, only 6.1% of women worked in agriculture, compared to 21.6% of men, creating a 15.4 percentage point gap. This disparity is the most significant among all economic sectors examined. This gap translates into an uneven income distribution. While the agricultural sector constitutes 11.3% of the total labor income for men, it only contributes 2.6% for women. This difference highlights the need for policies that promote equal opportunities and access to resources for women in agriculture.

Women in agriculture also earn considerably less than men. The average salary for women in the sector was USD 117.4, whereas men earned USD 168.7, a 43.7% difference. A deeper look reveals that this gap persists across different skill levels and production systems. In urban areas, qualified women in agriculture earned 9.1% less than their male counterparts, while unskilled women earned 8.4% less. In rural areas, the gap widens dramatically, with skilled women earning 69.4% less than skilled men, and unskilled men earning double the wages of unskilled women. These figures underscore the urgent need for interventions to address pay disparities and ensure fair compensation for women's work in agriculture.

There is potential for skilled women to contribute to the sector's modernization and growth as they demonstrate higher education levels compared to men. 79.2% of female agricultural workers had an education level higher than primary school, compared to 69.5% of male workers in 2019. However, realizing this potential requires addressing existing inequalities in access to land, credit, technology, and training.

Export agriculture could offer better opportunities for women. Analysis shows that women have a higher participation rate in export-oriented crops than traditional crops. In urban areas, 45.4% of women in agriculture worked in export crops, while only 28.2% of men were in this segment. Wages in export crops

tend to be higher, particularly for women. This suggests that export agriculture could provide better opportunities for women, although it's important to ensure fair labor practices and equitable distribution of benefits.

Policies should focus on empowering women by ensuring equal access to land, credit, technology, and training to address the gender gap in the Colombian agricultural sector. Initiatives are needed to support women's participation in both traditional and export agriculture, particularly in rural areas where agriculture is a primary source of livelihood. By closing the gender gap, Colombia can unlock the full potential of its agricultural workforce and foster a more equitable and prosperous rural economy.

# APPENDIX

## Appendix 1. Methodological Appendix: Estimating Labor Income and Gender Gaps

The analysis of the labor income of men and women in Colombia, utilizing data from the Gran Encuesta Integrada de Hogares (GEIH). The GEIH provides nationally representative data and encompasses information across all economic sectors to elucidate the national labor structure and gender disparities.

To ensure the robustness of the results, three elements are presented: I) a description of the GEIH, detailing the sample design, the representativeness of the data, and the selected variables for the analysis; ii) the procedure for calculating the average labor income; and iii) the process to calculating the labor income gap between men and women, including confidence intervals.

### *Gran Encuesta Integrada de Hogares*

The GEIH collects data and generates information on the size and structure of the labor force (employment, unemployment, and inactive individuals) in the country and the sociodemographic characteristics of the Colombian population. It collects information from housing, households, and individuals. Specifically, at the individual level the survey captures data about the general characteristics, health social security, education, labor force (main employment – wage earners and self-employed, secondary work), unemployment, other activities, and other incomes, among others (DANE, 2016).

The GEIH employs a probabilistic, stratified, cluster and multi-stage sample design, where the universe of the statistical is the non-institutional civil population residing in the territory: in municipal capitals (traditionally classified as urban areas), and in populated centers and dispersed rural areas (categorized as rural areas), where populates centers are defined as territories with a concentration of more than 20 contiguous houses in rural land that exhibit urban characteristics such as defined vehicular or pedestrian pathways, and the dispersed rural areas are characterized by a scattered distribution of housing and development agricultural exploitations, without defined layout or nomenclature of vehicular pathways.

It should be mentioned that the information on labor market participation is collected for the week immediately preceding the survey, and the labor income is received in the month before the survey. For calculating the number of employed individuals and the average labor income, the standard error and the coefficient of variations are considered to establish the quality of the estimation procedure.

### *Disaggregation in Estimating Participation and Average Labor Income by Economic Sector*

To analyze the labor income difference between men and women, this study is conducted based on the economic sector in which the employed individual works, the qualification level, and the area.

### Economic Sector

The economic sector to which the company or business where the person is contributing labor belongs is identified by the National Administrative Department of Statistics (DANE) through the question *"What activity is the company or business primarily engaged in where … works?"* based on the main products, good and services produced or provided by the company or business (DANE, 2019).

The classification is based on the International Standard Industrial Classification Revision 4 adapted to Colombia (ISIC Rev.4 A.C.), which corresponds to the adaptation of the version presented by the United Nations Statistics Commission related to the Spanish translation, the development of round of content consultations with internal and external users, technical consultation with governing bodies, regional entities, guild and sector entities, and refinement (DANE, 2020b).

| Sector | Description |
|---|---|
| **Agriculture** | Division 01 |
| **Forestry, Fishing and Mining** | Division 02, Division 03, Section B |
| **Agri-Food Industry** | Division 10, Division 11, Division 12, Division 15 |
| **Manufacturing Industry** | Division 13, Division 14, Division 16, Division 17, Division 18, Division 19, Division 20, Division 21, Division 22, Division 23, Division 24, Division 25, Division 26, Division 27, Division 28, Division 29, Division 30, Division 31, Division 32, Division 33 |
| **Construction** | Section F |
| **Trade** | Section G |
| **Transportation and Public Services** | Section D, Section E, Section H |
| **Accommodation** | Section I |
| **Information and Communication, and Financial Activities** | Section J, Section K |
| **Real Estate and Professional Activities** | Section L, Section M, Section N |
| **Public Administration** | Section O |
| **Education** | Section P |
| **Human Health** | Section Q |
| **Other Activities Services** | Section R, Section S, Section T, Section U |

**Source:** Own elaboration based on (DANE, 2020b).

## Qualification Level

The qualification level of the employed person is identified by the highest level of education attained, for which the survey inquires, *"What is the highest educational level reached by … and the last year or grade approved at this level?"*. Qualification levels are classified as none (if the person did not pass any level of formal education), preschool (the level that promotes and stimulates physical, emotional, and spiritual development, and social integration), primary education (the first five grades of formal education), secondary education /the subsequent four grades after primary education), middle education (the two-grade following basic education), and higher or university education (studies conducted by higher education

institutions culminating in obtaining a university degree at the professional, technical or technological level, or postgraduate) (DANE, 2019).

In this case, individuals who achieved a qualification higher than primary education are classified as qualified.

$$\boldsymbol{Qualified} = \begin{cases} \mathbf{1}\ \boldsymbol{if\ highest\ grade = secondary, middle\ or\ higher} \\ \mathbf{0}\ \boldsymbol{if\ highest\ grade = none, preschool, or\ primary} \end{cases} \quad (1)$$

**Procedure for Calculating the Number of Employed Individuals and Average Labor Income**

The number of employed individuals by gender, economic sector, qualification level, and area is calculated based on the weighted sum of individuals with the same characteristics.

It should be noted that $g$ represents the gender of the person, $g \in G$ with $G = \{men, women\}$, $s$ is the economic sector of the company or business, $s \in S$ with $S = \{Agriculture, AgriFood, \dots, Other\ services\}$, $q$ is the qualification level, $q \in Q$ with $Q = \{Qualified, Unquialified\}$, y $a$ represents the area of residence, $a \in A$ con $A = \{Urban, Rural\}$, y $\omega$ is the expansion factor for each individual.

The number of employed individuals is estimated using the equation (2).

$$\boldsymbol{N}^{g}_{(s,q,a)} = \sum_{i=1}^{N} \boldsymbol{\omega}^{g}_{(i,s,q,a)} \times \boldsymbol{I}(g_i = \bar{g}, s_i = \bar{s}, q_i = \bar{q}, a_i = \bar{a}) \quad (2)$$

The indicator function is defined by:

$$\boldsymbol{I}(g_i = \bar{g}, s_i = \bar{s}, q_i = \bar{q}, a_i = \bar{a}) = \begin{cases} 1\ if\ g_i = \bar{g}, s_i = \bar{s}, q_i = \bar{q}, a_i = \bar{a} \\ 0\ otherwise. \end{cases} \quad (3)$$

The total number of employed individuals $(N)$ in Colombia is given by:

$$\boldsymbol{N} = \sum_{g=1}^{G} \sum_{s=1}^{S} \sum_{q=1}^{Q} \sum_{a=1}^{A} \boldsymbol{N}^{g}_{s,q,a} \quad (4)$$

Once the number of employed individuals is defined according to their characteristics, the average labor income $\left(\bar{\boldsymbol{x}}^{g}_{(s,q,a)}\right)$ is obtained using equation (5).

$$\bar{\boldsymbol{x}}^{g}_{(s,q,a)} = \frac{\sum_{i=1}^{N} \boldsymbol{\omega}^{g}_{(i,s,q,a)} \times \boldsymbol{x}^{g}_{(i,s,q,a)} \times \boldsymbol{I}(g_i = \bar{g}, s_i = \bar{s}, q_i = \bar{q}, a_i = \bar{a})}{\sum_{i=1}^{N} \boldsymbol{\omega}^{g}_{(i,s,q,a)} \times \boldsymbol{I}(g_i = \bar{g}, s_i = \bar{s}, q_i = \bar{q}, a_i = \bar{a})} \quad (5)$$

Additionally, to establish the variability of the results, the standard error and the coefficient of variation are calculated to determine the quality of the estimation.

The standard error of the average labor income, $s.e.\left(\bar{x}^{g}_{s,q,a}\right)$, is obtained using equation (6).

$$s.e.\left(\bar{x}^{g}_{s,q,a}\right) = \frac{\sqrt{\frac{\sum_{i=1}^{N} \boldsymbol{\omega}^{g}_{(i,s,q,a)}{}^{2} \times \left(\boldsymbol{x}^{g}_{(i,s,q,a)} - \overline{\boldsymbol{x}}^{g}_{(s,q,a)}\right)^{2} \times \boldsymbol{I}(g_i = \bar{g}, s_i = \bar{s}, q_i = \bar{q}, a_i = \bar{a})}{\sum_{i=1}^{N} \boldsymbol{\omega}^{g}_{(i,s,q,a)} \times \boldsymbol{I}(g_i = \bar{g}, s_i = \bar{s}, q_i = \bar{q}, a_i = \bar{a})}}}{\sqrt{\boldsymbol{N}^{g}_{(s,q,a)}}} \quad (6)$$

Finally, the coefficient of variation is estimated by equation (7).

$$C.V.\left(\overline{\boldsymbol{x}}^{g}_{(s,q,a)}\right) = \frac{s.e.\left(\overline{\boldsymbol{x}}^{g}_{(s,q,a)}\right)}{\overline{\boldsymbol{x}}^{g}_{(s,q,a)}} \quad (7)$$

**Procedure for Calculating the Gender Gap in Labor Income**

The gender gap in labor income, $Gap\left(\overline{\boldsymbol{x}}^{g}_{(s,q,a)}\right)$, corresponds to the average difference in salary between men and women, which depends on the economic sector, qualification level, and area of residence of the employed individual.

$$Gap\left(\overline{\boldsymbol{x}}^{g}_{(s,q,a)}\right) = \left(\frac{\overline{\boldsymbol{x}}^{men}_{(s,q,a)} - \overline{\boldsymbol{x}}^{women}_{(s,q,a)}}{\overline{\boldsymbol{x}}^{women}_{(s,q,a)}}\right) \times 100\% \quad (8)$$

The standard error of the gap $\left(s.e.\left(Gap\left(\overline{\boldsymbol{x}}^{g}_{(s,q,a)}\right)\right)\right)$ is calculated from equation (9)

$$s.e.\left(Gap\left(\overline{\boldsymbol{x}}^{g}_{(s,q,a)}\right)\right) = \sqrt{\left(\frac{s.e.\left(\overline{\boldsymbol{x}}^{men}_{(s,q,a)}\right)}{\overline{\boldsymbol{x}}^{men}_{(s,q,a)}}\right)^{2} + \left(\frac{s.e.\left(\overline{\boldsymbol{x}}^{women}_{(s,q,a)}\right)}{\overline{\boldsymbol{x}}^{women}_{(s,q,a)}}\right)^{2}} \quad (9)$$

Finally, the confidence Interval of the gap $\left(C.I.\left(Gap\left(\overline{\boldsymbol{x}}^{g}_{(s,q,a)}\right)\right)\right)$ is estimated by considering the critical value of the *t-Student*, which depends on the significance level $(\alpha)$ and the degree of freedom.

$$C.I.\left(Gap\left(\overline{\boldsymbol{x}}^{g}_{(s,q,a)}\right)\right) = Gap\left(\overline{\boldsymbol{x}}^{g}_{(s,q,a)}\right) \pm t_{\frac{\alpha}{2}, N^{men}_{(s,q,a)} + N^{women}_{(s,q,a)} - 2} \times s.e.\left(Gap\left(\overline{\boldsymbol{x}}^{g}_{(s,q,a)}\right)\right) \quad (10)$$

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## ENDNOTES

[1] According to DANE (2015), permanent crops are those that 'after being planted, take a relatively long time to reach productive age, produce many harvests, and once the harvest is completed, do not need to be replanted.' Meanwhile, temporary crops are those 'whose growth cycle is generally less than a year, and their fundamental characteristic is that after the harvest, they must be replanted to continue producing.

[2] Associated with insecurity and poor public order control, inefficient planning and harmonization of land-use instruments, failures in productive organization, and the precariousness of the rural labor market.

[3] Related to insufficient capacities and competencies in human capital and the difficulty in providing sector-specific public goods.

[4] Associated with low levels of appropriation, adoption, and use of science, technology, and innovation, limited access to financial products and credit, inadequate logistical infrastructure, limited access to productive inclusion for small producers, and vulnerability to the impacts of climate change.

[5] Related to high input costs, significant intermediation in marketing, low adoption of short supply chain mechanisms, and limited use of information for decision-making by producers.

[6] Associated with specific actions such as agricultural technical assistance that incorporates environmental sustainability criteria, which is reflected in the fact that 59% of greenhouse gases are generated by the agriculture, forestry, and other land use (AFOLU) sector (IDEAM, Fundación Natura, PNUD, MADS, CANCILLERÍA, 2021).

[7] The employed population refers to "people aged 15 and over who […] worked at least one paid hour during the reference week; did not work during the reference week but had a job or business and worked at least one hour without pay during the reference week." (DANE, 2024b).

[8] The unemployed population consists of “individuals aged 15 years and older […] who were simultaneously: unemployed, meaning they did not have a salaried job or an independent job and were not engaged in unpaid family work; actively seeking employment, meaning they had taken concrete steps to find a salaried or independent job in the past four weeks; and currently available to work, meaning they were available to take up a salaried or independent job at that time […].”(DANE, 2024b).

[9] Due to the structure of labor market data collection corresponding to the Gran Encuesta Integrada de Hogares (GEIH), individuals who do not report that their primary activity was "working" do not have their secondary activities investigated. Therefore, there may be an underestimation of women's participation in the labor market.

[10] Unpaid activities are concentrated in domestic and caregiving work for household members. For example, 90.1% of women engage in this activity with an average dedication of 7 hours and 40 minutes; whereas only 1.2% of women perform domestic and caregiving work for other households (3 hours and 49 minutes) and 0.3% engage in community and voluntary work (2 hours and 37 minutes) (DANE, 2022b).

[11] The sectoral classification used is based on the International Standard Industrial Classification of All Economic Activities, Revision 4, adapted to Colombia (ISIC Rev.4 A.C.).

[12] Urban areas are defined as the population residing in municipal capitals, while rural areas include populated centers and dispersed rural areas.

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