MULTIDIMENSIONAL DIAGNOSTIC OF INEQUALITIES IN COLOMBIA

Statistical Analysis at the service of public policies.

October 2022



Funded by the European Union

AFD AGENCE FRANÇAISE DE DÉVELOPPEMENT

FEDESARROLLO Centro de Investigación Económica y Social

DANE INFORMACIÓN PARA TODOS

This project is carried out within the framework of the Extension of the Research Facility on Inequalities. Coordinated by AFD and funded by the European Union, the extension will contribute to the development of public policies focused on reducing inequalities in four countries: South Africa, Mexico, Colombia and Indonesia during the period 2021-2025.

Multidimensional Diagnostic of inequalities in Colombia

Working paper

Extension of the UE – AFD Research Facility on Inequalities

Coordinator French Development Agency (AFD):

Felipe Korreales

Coordinator Fedesarrollo:

Jairo Nuñez Mendez

Prepared by:

Juan Manuel Monroy

Jairo Nuñez Mendez

Juan David Ramirez

David Nicolas Lasso

Bogotá D.C.

October 2022

General Index

i. List of tables 7

ii. List of Graphs 9

iii. Background and Acknowledgements 12

iv. Executive Summary 13

Chapter One 15

1. Introduction and context 16

1.1 Introduction 16
1.2 Related literature 17
1.3 Profile of the Colombian economy 18
1.4 Demographic context 22
1.5 Structure of the report 28
Chapter Two 30

2. Policy instruments for the reduction of inequalities: National Development Plans and Social Programs 31

2.1 Social protection networks: Conditional monetary transfers 33
2.1.1 Families in Action (FiA) Program 34
2.1.2 Youth in Action (YiA) 34
2.1.3 Colombia Elderly 36
2.1.4 Solidarity Income 36
2.1.5 VAT refund 37

Chapter Three 39

3. Sources of information 40

3.1 Sources of income and assets in the household: LIHS 40
3.2 Sources of consumption: NHBS 40
3.3 Social domain sources: QLS 40
3.4 Other sources 41
Chapter Four 45

4. Profile of inequalities in Colombia 46

4.1 Income inequality 46
4.1.1 Media and median real per capita income 46
4.1.2 Participation and concentration of income by subgroups 48
4.1.3 Inequality Indices 53
4.1.4 Dynamics and determinants of inequality 59

4.1.5 Intragroup inequality 61
4.1.6 Inequality by sources of income 62
4.2 Inequality in the labor market 64
4.2.1 Participation, employment and unemployment 64
4.2.2 Labor income 71
4.2.3 Underemployment, informality and labor relations 77
4.2.4 Informality 78
4.3 Inequality in consumption 82
4.3.1 Average and median consumption 82
4.3.2 Concentration of consumption by subgroups 83
4.3.3 Inequality Indicators in Consumption 86
4.3.4 Breakdown of inequality in consumption 90
4.4 Inequality in household goods, assets and services 91
4.4.1 Lorenz curve 93
4.4.2 Measures of inequality 93
4.5 Wealth inequality 95
4.5.1 Distribution of land and ownership 96
4.5.2 Distribution of financial wealth 100
4.5.3 Net worth of natural persons 101
4.5.4 What happens with the richest 1% in Colombia? 103
4.5.5 Distribution of household wealth 104
4.6 Spatial inequality 104
4.7 Inequality in social domains 108
4.7.1 Introduction 108
4.7.2 Education 109
4.7.3 Health 123
4.7.4. Internet 129
4.7.5 Water 135
4.7.6 Housing 142
4.7.7 Electric power 147
4.7.8 Sanitation 151
4.8 Gender inequality 157
Chapter Five 163
5. Conclusions and discussion of the main results 164
Chapter Six 173

6. References 174

Chapter Seven 178

7. Annexes 179

Annex 1 : .....

Annex 1.1: Departmental Series 179

Annex 1.2: Regional Series 180

Annex 1.3: Major Cities Series 181

Annex 1.4: Rural urban dependency 182

Annex 2: Families in Action Program Assessments 183

Annex 3: Kernel Distribution geographic areas-income 184

Annex 4: UCPCA Coefficients 185

Annex 5: PCA and MCA estimation approaches 186

i. List of tables

Table 1: Share of each sector as a percentage of GDP 20
Table 2: Labor share by each economic sector 22
Table 3: Sources of Income and Household Assets-LIHS 42
Table 4: Sources of consumption-NHBS 42
Table 5: Sources of quality of life -QLS 43
Table 6: Media and median monthly real per capita income (2002, 2012, 2017, 2020) 47
Table 7: Mean and Median real monthly per capita income ethnic groups (2019/2020) 51
Table 8: Inequality by geographic areas 56
Table 9: Inequality at the national level and by household gender 57
Table 10: Inequality by educational level 58
Table 11: Inequality by poverty level 59
Table 12: Inequality by ethnic group. 59
Table 13: Determinants of inequality 62
Table 14: Overall rate of share, employment, unemployment and inactivity 71
Table 15: Inequality Indicators of labor income by geographic areas 74
Table 16: Indicators of labor income inequality. Gender 75
Table 17: Indicator of labor inequality by educational level 76
Table 18: Gini breakdown by labor income 77
Table 19: Employment relationship by educational level 81
Table 20: Media and Median per capita consumption 83
Table 21: Indicators geographic zones 87
Table 22: Inequality Indicators Leadership 88
Table 23: Inequality Indicators Educational Level 88
Table 24: Inequality Indicators Geographic regions 89
Table 25: Inequality Indicators Ethnic group 89
Table 26: Inequality Indicators by Expense structure 90
Table 27: Breakdown of consumption between and within groups 91
Table 28: Items used for the calculation of the asset index (2010/2019) 92
Table 29: Multidimensional Gini by subgroups 94
Table 30: Information Sources 95
Table 31: Gini coefficient of appraisals by Departments in urban areas 97
Table 32: 10% richest deciles share for Departments and capital cities 98
Table 33: Gini Coefficient by Department and richest decile 10% in rural areas 99
Table 34: Gini coefficient deposit securities 100
Table 35: Gini coefficient portfolio balance in shares 101
Table 36: Distribution of household wealth 104
Table 37: Access to health according to educational level 124
Table 38: Reason not to seek or receive medical care by educational level 128
Table 39: Internet Use Percentage by Income Level 130
Table 40: Type of Internet use (Activities), by educational level 134
Table 41: Water 24 hours x 7 days per week, by educational level 138

Table 42: Origin of safe drinking water by educational level 141
Table 43: Electric power service at households by educational level 149
Table 44: Household waste disposal by educational level 153
Table 45: Household toilet type by income level 156
Table 46: Employment rates by degree obtained and gender 158
Table 47: Departmental population growth (1985–2050) 179
Table 48: Departments ranking in population growth (1985–2000–2020) 180
Table 49: Regional growth (1986–2050) 180
Table 50: Regional ranking (1985–2000– 2020) 181
Table 51: Growth of major cities (1985–2035) 181
Table 52: Ranking of major cities (1985–2000-2020) 182
Table 53: UC PCA index coefficients 185

ii. List of Graphs

Graph 1: GDP per capita vs. GDP growth 18
Graph 2: GDP per capita and growth, LAC countries 19
Graph 3: Share of employees' remuneration and capital income in GDP 21
Graph 4: Population Series of Colombia (1950 – 2070) 23
Graph 5: Population pyramids by area 24
Graph 6: Population pyramids by gender 25
Graph 7: Colombia's birth mortality and migration rates (1985-2070) 26
Graph 8: Colombia's fertility rate (1985 – 2070) 27
Graph 9: Life expectancy at birth and infant mortality 27
Graph 10: National dependency ratio and old age index 28
Graph 11: Timeline of the National Development Plans 31
Graph 12: Errors of inclusion and exclusion of the social stratum 37
Graph 13: Participation in Income by Sub-groups 49
Graph 14: Income share per decile of per capita household income 50
Graph 15: Accumulation of per capita household income for geographic areas 50
Graph 16: Kernel distribution by population subgroups 52
Graph 17: Lorenz curve – geographic areas 53
Graph 18: Distribution of real income over time 60
Graph 19: Evolution of income inequality 61
Graph 20: Drivers of change in national inequality by income sources as a proportion of the total change 63
Graph 21: Breakdown of changes in inequality as a ratio of Gini urban vs. rural 64
Graph 22: Overall share rate, Employment rate and Unemployment rate 65
Graph 23: Quarterly rural / urban employment rates 66
Graph 24: Annual men/women employment rates 67
Graph 25: Overall share rate, Employment rate, Youth unemployment rate 68
Graph 26: Ninis' Evolution in Colombia 69
Graph 27: Overall share rate, Employment and Unemployment rate by educational level 70
Graph 28: Kernel distributions by groups 72
Graph 29: Evolution of the ratio of real income by subgroup 73
Graph 30: Evolution of the relationship of real labor income by educational levels 73
Graph 31: Gini vs. Palma 76
Graph 32: National total subjective unemployment rates 78
Graph 33: Informality rate 13 cities and M.A. 78
Graph 34: Informality rate for 23 cities and A.M (July/Sept) 79
Graph 35: Quarterly informality rate by gender 80
Graph 36: Informality rate by educational levels 80
Graph 37: Proportion of workers by occupational level and quintile 82
Graph 38: Participation of population groups 84
Graph 39: Share per decile of consumption 85
Graph 40: Structure of expenditure per decile of per capita household income 86

Graph 41: Lorenz curve of consumption....86
Graph 42: Lorenz curve....93
Graph 43: Gini Coefficient wealth reported....102
Graph 44: Dynamics of equity and wealth....102
Graph 45: Participation of the liquid assets of the richest....103
Graph 46: Participation of centile 10 of net worth by category....103
Graph 47: Gini coefficient by Departments: Per capita household and labor income....105
Graph 48: Gini coefficient by Departments: Multidimensional and of wealth....106
Graph 49: Two-dimensional inequality maps....107
Graph 50: Gross national coverage rate....110
Graph 51: Gross urban and rural coverage rate (%)....111
Graph 52: Gross school coverage rates (%)....112
Graph 53: National net coverage rate....112
Graph 54: Net school coverage rates, urban and rural (%)....113
Graph 55: Net coverage rates by gender, 2005-2019 (%)....114
Graph 56: Differences in coverage between geographic areas and between genders, 2019 .115
Graph 57: Coverage rate in Higher Education....115
Graph 58: Percentage of people by level of performance in mathematics – Saber 11....116
Graph 59: Proportion of students in performance levels by zones and gender. First Semester 117
Graph 60: Proportion of students according to sector and according to SEL. First Semester. 118
Graph 61: Percentage de of people by performance level in critical reading – Saber 11....119
Graph 62: Proportion of students by areas and gender....119
Graph 63: Percentage of people by performance level in critical Reading– Saber 11 Second Semester (2016 – 2020)....120
Graph 64: Percentage of people by performance level in critical reading....121
Graph 65: Percentage of people by performance level in critical reading -Saber PRO....122
Graph 66: Participation of students by institution origin and by SEL, Saber-PRO Tests....122
Graph 67: Affiliation to social security in health....123
Graph 68: Access to health by area and gender....124
Graph 69: Access to health by educational level and income level....125
Graph 70: Type of affiliation to social security in health....126
Graph 71: Proportion of health affiliates by income level....126
Graph 72: Reason not to seek or receive medical attention....127
Graph 73: Reason not to seek or receive medical attention....128
Graph 74: Frequency of Internet use....129
Graph 75: Internet Use Frequency by Zone....130
Graph 76: Internet Use (%) by Income Level....131
Graph 77: Internet Frequency Use by Gender....132
Graph 78: Place of access to the Internet....133
Graph 79: Internet type of use (Activities), by income level....134
Graph 80: Safe drinking water....135

Graph 81 : Access to safe drinking water by income level 136
Graph 82: Water 24 hours x 7 days per week 136
Graph 83: Water 24 hours x 7 days per week 137
Graph 84: Water 24 hours x 7 days per week, by income level 138
Graph 85: Origin of safe drinking water 139
Graph 86: Origin of safe drinking water 140
Graph 87: Origin of safe drinking water, by income level 141
Graph 88: Housing ownership 142
Graph 89: Housing ownership by geographic area and gender 144
Graph 90: Housing ownership by income quintiles 145
Graph 91: Floor quality 145
Graph 92: Floor condition by areas 146
Graph 93: Floor quality by income level 147
Graph 94: Electric power service at households 147
Graph 95: Electric power service at households by geographic area 148
Graph 96: Electric power service at households by income level 149
Graph 97: Proportion of irregularities in the electric service by areas 150
Graph 98: Household electric power service by income quintile 150
Graph 99: Household waste disposal 151
Graph 100: Household waste disposal by area and gender 152
Graph 101: Household waste disposal 154
Graph 102: Household toilet type 154
Graph 103: Household toilet type 155
Graph 104: Household toilet type by income level 157
Graph 105: Gap in average labor income 159
Graph 106: Main activity of inactive people 160
Graph 107: Participation and paid and unpaid work activities 162
Graph 108: Gender perceptions and roles 162
Graph 109: Gini of inequalities in Colombia (circa 2017) 164
Graph 110: Gini of inequalities in Colombia by groups (circa 2017) 165
Graph 111: Income concentration and consumption by groups, 2017 166
Graph 112: Gross coverage in education, total 169
Graph 113: Social domains by income quintiles, 2020 171

iii. Background and Acknowledgements

This Multidimensional Diagnostic of Inequalities in Colombia, was carried out within the framework of the Extension of the AFD-UE Facility on Inequalities, program financed by the European Union, and implemented by the French Development Agency (AFD) in order to accompany the governments of Indonesia, Colombia, Mexico and South Africa in the construction of public policies seeking to reduce inequalities through research and based on evidence.

The AFD along with the African Centre of Excellence for Inequality Research (ACEIR) created the Manual for measuring inequality for studies of countries in order to provide researchers with a reference tool with which to carry out an analysis at the country level on a multidimensional and complex issue to analyze, such as inequalities.

The tool has been used to study inequalities in the Republic of Ghana, Kenya, South Africa, and now Colombia. Soon one diagnostic will be made in Indonesia and another in Mozambique. However, the idea is to continue implementing the Diagnostic and have more information to make better decisions on inequalities.

In Colombia, AFD through its agency in Bogotá worked hand in hand with the Delegation of the European Union in Colombia and in close collaboration with Fedesarrollo. To whom we thank for their immense collaboration and help to carry out this study and the organization of the presentation seminar.

However, in order to carry out this type of diagnostic, it is essential to have the support of national statistical centres.

That is why the accompaniment provided by the National Statistical Office of Colombia (DANE) in the process of preparing the herein diagnostic is especially appreciated, recognizing the contribution of the institution to the production of official statistics, and its involvement in this diagnostic where the value of official statistics as a source of information for decision-making is exalted. Likewise we highlight the contributions of the advisors of such institution who actively participated in the process, Juan Sebastian Ordoñez, Jhon Quinchua Ceballos, Carlos Jose Gimenez and Camilo Mendez.

Finally, I would also like to thank the technical teams of both the National Planning Department (especially the Directorate of Economic Studies and the Directorate of Social Development) as well as those of the Ministry of Finance and Public Credit who were part of the project monitoring committee and who provided valuable comments and suggestions for being able today to have this document..

iv. Executive Summary

According to ECLAC (2021), in 2020 Colombia has the worst income inequality in Latin America, with a Gini coefficient of 0.552, followed by Brazil with an index of 0.519.

During the first decade of this century, inequality in Colombia was stable, but between 2010 and 2017 there was a sharp reduction explained by GDP growth. As of 2017, as a result of a deterioration in labor market performance in the first instance and the pandemic in 2020, conditions reversed losing the progress of a decade. According to income sources and labor status, transfers to households were the main variable that influenced the reduction of the Gini, while pensions was one of the factors that most helped to increase the same.

On the other hand, when consumption inequality, typically lower than income inequality, is observed, Colombia's is high (with a Gini index of 0.48), and if the measure of inequality in the distribution of assets, goods and access to basic services in the household is observed, an index of 0.7 is reached. However, examining land distribution in the country, inequality reaches even more important levels, and within the holders of financial assets, with levels of 0.8 and 0.7 respectively.

The gaps in terms of demographics, education and home ownership are very wide and present immense challenges. Schooling among the population in extreme poverty (15%) and decile ten differs in nearly 6 years of education. This difference is critical, even more so when it is known that increasing one year of education of the Colombian population requires ten years of investment (Nuñez and Sanchez 2000). Regarding education quality, the SABER 11 test indicates that only 2% of young people of the lowest socioeconomic level (according to ICFES) achieved the highest performance, while in the highest socioeconomic level the percentage was 33%. These differences subsequently explain the gaps that exist in terms of access to the labor market and income generation.

In 2020, it was observed that although the richest 10% have employment rates of 64% and unemployment rates of 7%, for the 15% with the lowest income (population in extreme poverty) these rates are 29% and 38%, respectively. In terms of labor income, the 10% with the highest income had 36 times the labor income of those with the lowest 15% (this proportion worsened considerably as a result of the pandemic). On the side of job quality, only 12% of workers in the 15% of the population with the lowest income had access to formal employment, a figure that reaches 86% of workers in the last income decile.

In territorial terms, Colombia is not the only country with large socioeconomic differences between regions. For instance, Bogotá has a median income above the 76-90th percentile (being 183% higher than the national average) and Choco is below the 46-60th percentile (being 47% lower than the national average). The differences are also very marked by ethnic groups and especially by the indigenous population. The latter has an average schooling below the population in extreme poverty (percentile 1-15) and, although its labor indicators are not so low in connection to the average, employment quality in terms of formality and income corresponds to one of the largest imbalances between population groups.

Although the gaps have been narrowed during the last two decades, access to education for the first percentiles, indigenous groups, rural areas and departments such as Choco, La

Guajira and the former national territories still have significant lags for all educational levels, from preschool (where it is very high) to higher education (where the greatest distances are found). This is explained by lack of supply, higher dropout rates and very low graduation rates of ninth and eleventh grades in connection with the rest of the country and the average population.

Gender gaps are another inequalities the country faces: employment rates are lower for women than for men at all levels of education. For example, in 2020, while the employment rate of women without any level of education reached 31%, for men it was 65%; Unemployment reaches 13% for the most qualified women and 9% for men of the same educational level, and even the inactivity rates in qualified women exceed that of men by 10pp. The average income gap was 12% for 2019, but is highest among the self-employed (28.6%) and up to 40% in the first quartile (25%) of people with lower income. Likewise, half of women are excluded from the labor force; an important factor for economic autonomy is the ability to have own resources, which is related to unequal burdens on unpaid domestic and care work. Women in households without dependents invest about an hour less in paid work activities than men, but in households with dependents the difference reaches almost 1 hour and 30 minutes. On the side of unpaid work, while women spend 7 hours and 46 minutes, men only spend 3 hours a day.

With regard to wealth, based on information declared to the DIAN, the richest 1% according to their liquid wealth in 2005 accumulated a net wealth equivalent to 7% of the gross national income of that year and 17% of the total declared liquid assets. As a percentage of gross national income, the declared net wealth of this segment of the population nearly doubled in 2013 from 7% to 13%.

The report illustrates the magnitude of inequality in Colombia in various aspects. Multiple dimensions are addressed, over time and on various population groups, largely thanks to the availability of official data that Colombia has. While in some dimensions, such as income, there were periods of reduction in inequality, in others such as in the distribution of assets and services within households and even in the distribution of wealth in land, inequality is highly persistent. The main contribution of this multidimensional perspective is precisely to highlight different aspects that feed the vicious circle of poverty and inequalities reproduction. This diagnostic view highlights the importance of a set of policies that, coordinated, strengthen equity in Colombian society essential for sustainable growth.



Chapter One

1. Introduction and context

1.1 Introduction

Latin America has been the most unequal region in the world. Likewise, Colombia has exhibited remarkably high inequality magnitudes, to the point of being one of the countries in the region with the highest inequality rates. When comparing the situation of Colombia in 2019 against that of 14 countries in the region, the Gini index (0.50) turns out to be the second most unequal after that of Brazil (0.54), values very distant from countries such as Uruguay (0.39) or Argentina (0.40) (ECLAC, 2019). In general, Colombia's situation within the region and the world is highly complex, to such an extent that the extreme inequality levels in Colombia constitute an obstacle that restricts economic growth and social progress (World Bank, 2011).

Since independence, social and economic inequality has been a constant in the region, and a feature of Colombia in particular. Thus, in Colombia, the class structure inherited at the time of independence and rooted secularly, has been a negative factor in stimulating socioeconomic development. In this way, the rigid and hierarchical class structure has manifested itself in a very restricted access to factors that make it impossible to generate more income and wealth, as well as the generation of opportunities. For example, the strong restriction on access to land, to the factors of production such as working capital, credit and (quality) education represents a very characteristic and eloquent example of what have been the limitations to the generation of greater opportunities and wealth, and in general to greater possibilities for socio-economic development. Such limitations have led to higher rates of inequality and social exclusion, as well as lower possibilities for social mobility (Núñez et al. 2017).

However, income inequality has traditionally been studied in Colombia. However, little has been quantified about the level of other types of inequalities such as consumption, or the holding of assets and services within households. This report brings to the table multiple aspects of inequality with an emphasis on identifying differences across diverse population groups. However, it does not address other dimensions of it that may be relevant to the Colombian context, such as access to financial or other crime-related services, and even the political economy of inequality.

Given the availability of official information in Colombia, mainly from household surveys with sufficient population representativeness, this report addresses inequality from a comprehensive point of view, in which its multiple dimensions are considered such as the distribution of income, consumption, labor income, or household assets and services, but also the level of wealth in lands and financial assets. Also, the inequality in access and quality in education and health, as well as a set of basic services within which are Internet, drinking water, sanitation, electric power and housing. The above, with a group approach where the gaps are noted according to geographic areas, gender, ethnic groups and the educational levels of the population, among others.

1.2 Related literature

High inequality levels can have considerable negative effects on a society and its economy. In fact, inequality correlates with various social problems, such as health failures, high mortality rates or crime, among others. The mechanism may be associated with high psychosocial factors that stimulate a fracture in the social structure, with direct effects on well-being (Wilkinson and Picket, 2009; Stats, 2019). The literature has also aimed to explain how high levels of wealth inequality, for example, cause a broad segment of society to remain excluded from economic opportunities, limiting individual well-being but also the aggregate performance of the economy, highlighting the focus of public policies on inequality (Stiglitz, 2012).

Although inequality in Colombia has been secularly high, its evolution has not been uniform, so in some periods it has been very high while in others it has subsided. Thus, in the first part of the seventies, the Gini coefficient was around 0.53 while in the period 1976-1982 a value equivalent to 0.46 was observed, a reduction that could be due to a positive change in the wages of less qualified workers, induced by sectors that concentrated this type of qualification, in particular construction and agriculture (Nunez, 2021). In the early nineties (Gini of 0.50), a series of structural reforms including economic openness explain a deterioration in the distribution of income, partly because there was a marked increase in the demand for skilled workers and a concomitant wage remuneration. During the economic recession that the country suffered in 1999, unemployment and household incomes in the lower distribution deteriorated more rapidly, all of which was reflected in an increase in the Gini of around 0.60 (Nunez and Sánchez, 1998; Sarmiento, 2014; Velez et al, 2005).

While much of the literature focuses on explaining income inequality, partly stimulated by the availability of official data, some other studies covering other dimensions find that gaps open up very early in the life cycle, where cognitive, language and social-emotional development play a fundamental role in well-being in the future (Almond and Currie, 2011; Heckman et al., 2010). Gaps in the quality of child development, care services, education and health make Colombia a country where inequalities are persistent from generation to generation, widening disparities in human capital and even access to good jobs (World Bank, 2021; Rubio-Codina et al., 2015; Shady et al, 2015). But also, regional differences, persistent over time, which are correlated with institutional differences, make up the panorama of inequalities (Fergusson, et al., 2017).

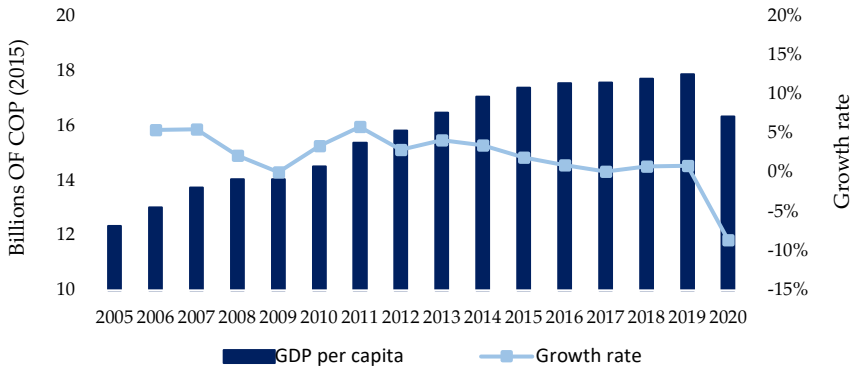
Several studies have aimed to quantify the factors that contribute to changes in income inequality in order to understand the magnitude of sociodemographic factors, occupational structure and labor and non-labor income. Some exercises in Colombia suggest that the structure of labor returns and their relationship with educational levels (among those with secondary and higher education) and non-labor income, negatively affect inequality (Bonilla, 2009). In turn, they point out that although the fall in inequalities is due to very heterogeneous structural factors between regions, and that, although such a reduction has had an impact on the total decrease in inequality in the country, the influence of such factors has not been outstanding. In particular, between 2002 and 2015 (Sánchez and Torres 2015), he finds that the determinants of the fall in income inequality are due to the redistributive effects within each geographic area. In this sense, the 9% reduction in the Gini for this period is the product of important heterogeneities in the change of inequality according to the department.

On the other hand, Inchauste et al. (2014), place Colombia within the Latin American countries that explain the reduction of its inequality thanks to changes in labor income. However, it is emphasized that pension income has been a source of income regression in the country, which differs from the redistributive nature of pensions for the average of the countries of the region. In general terms, in the urban sector the closing of the gaps in the returns of education between unskilled and qualified workers explains the decline in inequality due to the increase in the levels of secondary and higher education, while public and private transfers are only redistributive for the period 2002-2012. In contrast, in rural areas the most relevant redistributive factors were both public and private transfers, as well as the increase in employment levels (Monroy, 2019).

1.3 Profile of the Colombian economy

During the period between 2005 and 2020, Colombia experienced an average GDP per capita growth of close to 1.9%. In turn, within this interval the year with the highest economic growth was 2011, a period in which its economy grew 5.8%. For this purpose, Graph 1 shows the economic growth of the country, in which the period 2010-2014 can be noted as one of sustained growth. In this regard, this growth is mainly explained by the rise in the prices of raw materials and the concomitant economic boom that the country experienced, a period in which GDP per capita grew above 3%. However, with the fall in the prices of these goods verified just from 2016, the growth of Colombian GDP per capita did not exceed 1%, growth that in any case was interrupted in 2020, the year in which the economy contracted by 8.6%, as a result of the economic crisis derived from the COVID-19 pandemic.

Graph 1: GDP per capita vs. GDP growth



Source: Own elaboration based on DANE

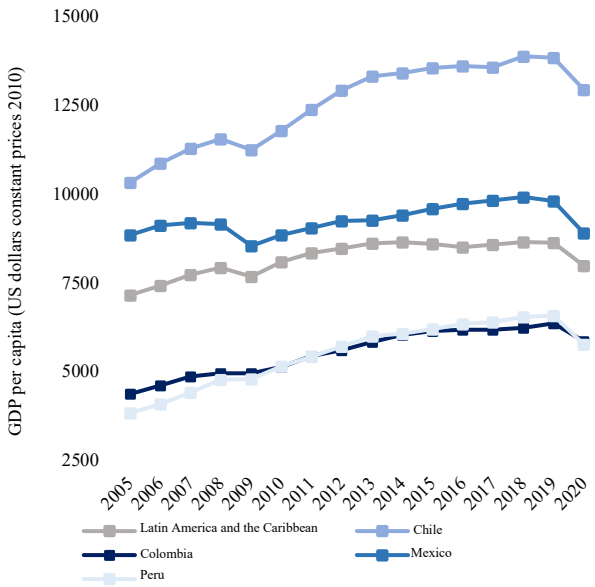
A comparison with the countries of the Latin American and Caribbean (LAC) region shows that Colombia had a GDP per capita lower than that of countries such as Chile or Mexico, and even the average of LAC, a fact that reveals the significant gap that the country exhibits compared to a good part of the countries of the region. For example, for the year 2005 the GDP per capita of Colombia was 4,402 dollars (USD) while the GDP per capita of Chile and Mexico was 10,349 and 8,877 USD respectively. Similarly, for the year 2020 the GDP per capita of

Colombia was 5,889 USD while those of Chile and Mexico were 12,954 and 8,927 USD respectively. Meanwhile, the average GDP per capita for Latin American and Caribbean countries for 2005 was USD 7,185 while for 2020 it was USD 8,013.

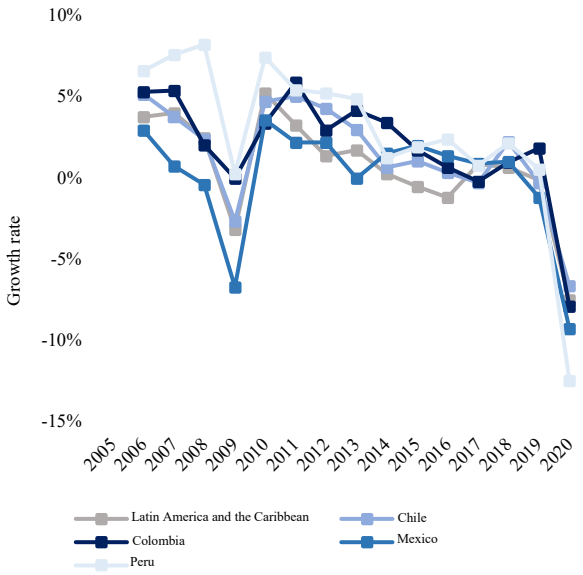
In terms of GDP per capita growth for the period 2005-2020, Latin America and the Caribbean exhibited an average growth of 0.78%, a magnitude barely perceptible. For the particular, it is denoted that some countries such as Peru that observed an average growth of 2.85% and Colombia one of 2.01%, presented slightly better values than other countries such as Chile with an average growth of 1.56% and Mexico with one of 0.10%. In turn, the pandemic had severe effects on growth among others, all of which manifested itself in great damages, which were much more acute in some economies than in others. In this regard, according to the World Bank, some countries such as Peru with a contraction of 12.4% and Mexico with one of 9.2%, experienced greater effects than those evidenced in others such as Colombia with a reduction of 7.8%, values higher than the average contraction of LAC countries with a reduction of 7.5%, also due to the effects of the pandemic.

Graph 2: GDP per capita and growth, LAC countries

Panel A. GDP per capita



Panel B. GDP growth



Source: Own elaboration based on the World Bank

Composition of GDP by economic sector

In general, when disaggregating the data according to the economic sector for the period examined, the services sector presented the largest share within the Colombian economy, in which trade[1] and public administration[2] stood out, lines that by themselves represented about

[1] In reality, the trade sector consists of wholesale and retail trade, repair of motor vehicles and motorcycles, transport and storage and accommodation and food services.

[2] This sectoral category includes governmental activities usually carried out by the public administration. It also includes compulsory social security activities, education, human health care activities and social services.

a third of the total economic activities. Of these two, trade varied 1.8 p.p. between 2015 and 2019, but only 0.1 p.p. between 2005 and 2020 (it went from 17.8% to 17.9%, respectively), while the public administration registered a variation of 2.5 p.p. between 2015 and 2019, but of 3.9 p.p. between 2015 and 2020 (going from 14.1% in 2005 to 18.0% in 2020). Likewise, from 2005 to 2020, the sector of professional, scientific and technical activities, and administrative and support services activities, registered a considerable increase in the share of GDP, from 5.4% in 2005 to 7.7% in 2020, a growth of 42.5%, the largest of all the sectors that make up GDP. By contrast, the mining and quarrying sector experienced a considerable contraction in share, going from 7.2% of GDP in 2005 to 4.5% in 2020, an event that represented the largest decrease (37.3%) exhibited by any sector among all sectors.

In turn, the manufacturing sector experienced a fall of 5.7 percentage points, going from 17.6% in 2005 to 12.1% in 2019, the last value that was maintained in 2020. By contrast, the real estate sector, although it presented a slight decrease during the years 2010 and 2015 of approximately 1 percentage point, recovered only until 2020, despite the fact that, in the year before the pandemic, 2019, it remained at the value of 2015, in such a way that it retained the same share of the year 2005, that is, 10.6%. In general, between 2005 and 2020 there were some changes in the sectoral participatory composition so that some sectors increased their share, others reduced it; however, others such as commerce and artistic activities maintained it.

Table 1: Share of each sector as a percentage of GDP

Economic Sectors	2005	2010	2015	2019	2020
Agriculture, livestock, hunting, forestry and fishing	8.3	6.9	6.6	7.1	8.4
Mining and quarrying	7.2	9.5	6.5	6.1	4.5
Manufacturing	17.6	15.3	13.7	12.1	12.1
Supply of electric power, gas, steam and air conditioning	3.9	3.6	3.4	3.8	4.0
Construction	4.7	6.0	7.9	6.8	5.7
Wholesale and retail trade	17.8	17.1	18.5	19.6	17.9
Information and communications	4.0	3.7	3.3	3.1	3.2
Financial and insurance activities	3.8	4.3	4.7	4.9	5.3
Real estate activities	10.6	10.0	9.6	9.6	10.6
Professional, scientific and technical activities	5.4	6.8	7.9	7.5	7.7
Public administration and defense	14.1	14.0	15.3	16.6	18.0
Artistic, entertainment and recreation activities and other service activities	2.6	2.6	2.6	2.8	2.7

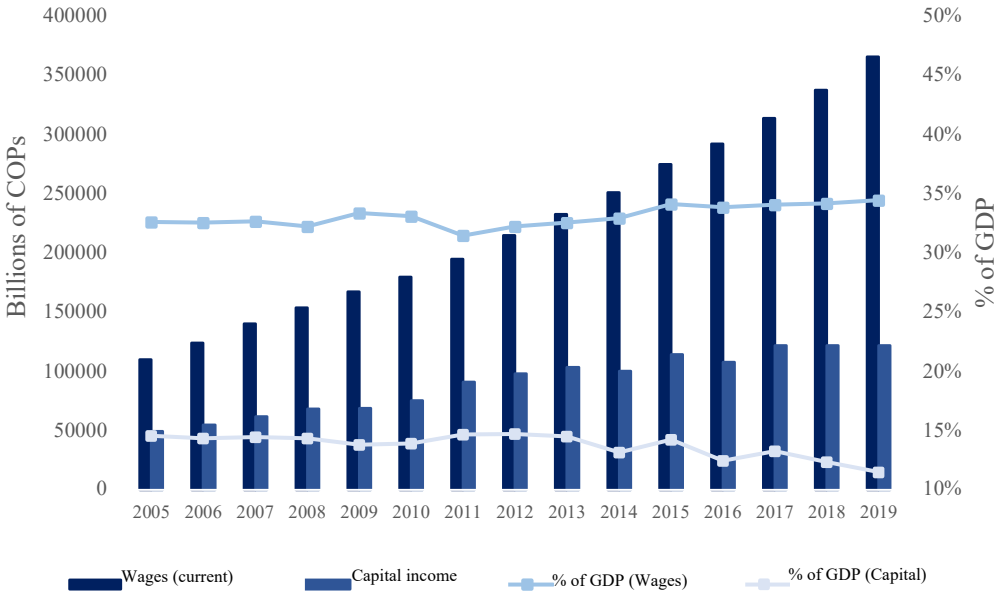
Source: Own elaboration based on DANE

Share of wages and capital income in GDP

In the macroeconomic sphere, a crucial aspect in explaining the dynamics of inequality is to establish the relationship between the share of wages and that corresponding to capital income (i.e., the remunerative share of the labor factor and the capital factor). According to the national accounts, the share of wages in GDP showed a slight increase in the period between 2005 and 2019, of the order of 0.41%. Similarly, the share of capital income in GDP declined to an annual average of 1.52% over the same period. However, it is noteworthy that

the year of lowest share of wages in GDP corresponded to 2011 with 31.5%, while the year of highest wage share in GDP was verified in 2019, with 34.5%.

Graph 3: Share of employees' remuneration and capital income in GDP



Source: Own elaboration based on DANE

A sectoral look at the composition of the occupation between 2010-2019 warns that a considerable part of the employed performed in the trade sector (20%), followed by agriculture (15%) and by the manufacturing sector (11%). However, in the face of the evolution of the sectoral share of employment, the construction sector stood out for its growth rate (prior to the pandemic), which registered the highest growth with 25.1%, represented by the passage from a share of 5.4% in 2010 in the total employed to 6.8% in 2019. In contrast, other sectors with considerable occupational share showed a participatory reduction in the total number of employed.

In particular, the agriculture, livestock, hunting and forestry sector had a fall of 2.5 p.p., considering the increase from 17.9% of labor share in 2010 to 15.4% in 2019. Similarly, the sector with the highest share (wholesale and retail trade), experienced a slight reduction between 2019 and 2010 (0.8 p.p.) represented in the change of share from 20.9% to 20.1%. Similarly, employment in the manufacturing industry registered a decrease in its share within the total employed from 12.8% to 11.8%, a fall of 1 p.p. (Table 2). However, between 2019-2020 there is a recovery in the share of employment in the agriculture sector (0.7 p.p. more), transport, storage and communications (0.7 p.p. more), although a fall in the sectors of manufacturing industries (0.8 p.p. less) and commerce (0.9 p.p. less).

Table 2: Labor share by each economic sector

Economic Sectors (CIIU 3.1 A.C.)	2010	2015	2019	2020
Agriculture, livestock, hunting and forestry	17.9	15.5	15.4	16.1
Fishing	0.7	0.6	0.6	0.7
Mining and quarrying	1.1	0.9	0.9	1.0
Manufacturing	12.8	11.8	11.8	11.0
Electric power, gas and water supply	0.5	0.5	0.6	1.2
Construction	5.4	6.2	6.8	6.8
Wholesale and retail trade, repair of motor vehicles, motorcycles, personal effects and household goods	20.9	20.4	20.1	19.0
Hotels and restaurants	5.3	7.0	7.1	7.0
Transport, storage and communications	8.4	8.2	7.9	8.6
Financial intermediation	1.3	1.4	1.4	1.4
Real estate, rental and business activities	6.3	7.6	7.5	7.5
Public administration and defense, compulsory social security schemes	2.8	2.9	3.1	3.0
Education	4.2	4.0	4.1	4.1
Health and social services	3.9	4.3	4.3	4.0
Other community, social and personal service activities	4.9	5.1	5.3	5.8
Extraterritorial organizations and bodies	3.7	3.3	3.1	2.7

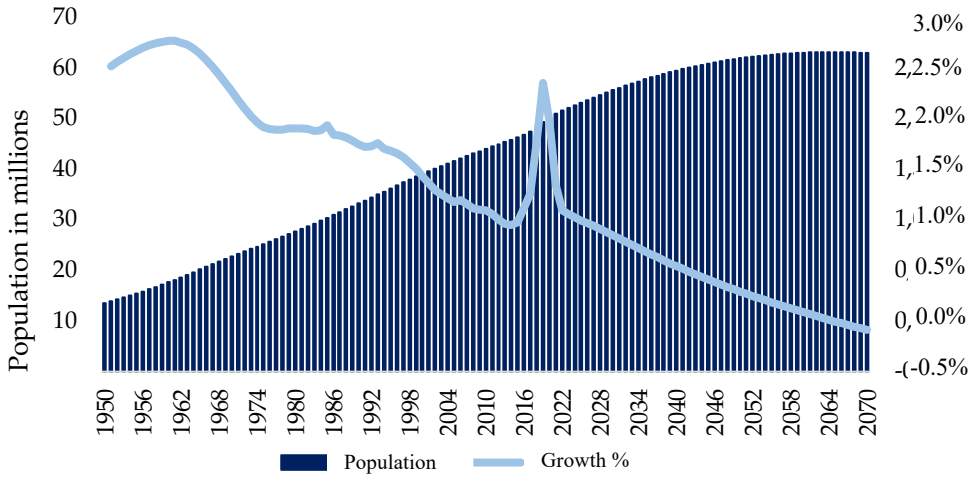
Source: Own elaboration based on DANE

1.4 Demographic context

Clearly, changes in the structure of the population are decisive for the understanding and knowledge of the social characteristics and economic dynamics of a country, among others. In Colombia, elucidating the development of the demographic aspect helps to explain, e.g., the reasons for the evolution of the levels of poverty and economic inequality. A first reference regarding the demographic structure begins with the examination of population growth, against which it is denoted that the population in Colombia grew 1.36% on an annual average, between 1950 and 2014. Obviously, between 1950 and 1960 population growth was on the rise, a fact that, however, from 1961 onwards it underwent a change to the extent that the population growth rate from that date fell at a relatively constant rate until 2014. However, with the methodological population adjustment of the National Population and Housing Census, which contemplates the migratory wave of Venezuelan population, in Colombia there is a spontaneous increase in population growth (for that matter, the population growth rate begins to rebound in 2015 with the arrival of the Venezuelan population). However, in 2020 the annual population growth rate recovered its downward trend. Moreover, it is estimated that by 2065 the population growth rate will be negative [3].

[3] See Annex 1. The regional, departmental and major city growth series

Graph 4: Population Series of Colombia (1950 – 2070)



Source: Own elaboration based on DANE population projections

Demographic transition in Colombia

In order to examine the stages through which the demographic transition has passed, 5 stages are set out below to examine the changes in the population structure according to geographic domain (urban and rural) and according to gender, represented in 5 population pyramids for the years 1960, 1980, 2000, 2020 and for the year 2050, based on a projection of the population structure. Regarding the examination of the population structure according to the geographic domain of settlement, Graph 5 presents the population pyramids in urban and rural areas for the referenced years. In turn, Graph 6 represents the population pyramids according to gender.

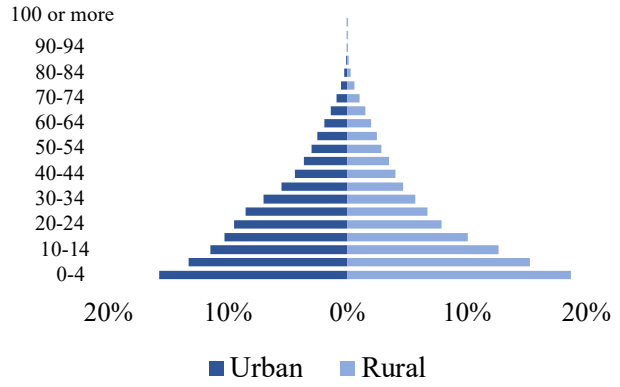
In general, the 1960s and 1980s were characterized by having a very young population, while from the year 2000 the adult population begins to be the majority population. In particular, in 1960 the population under 20 years of age in urban areas was about 50 per cent and that in rural areas about 56 per cent, while in 1980 this population was about 47 per cent (urban areas) and 53 per cent (rural areas).

By contrast, in the year 2000 the population structure began to show signs of demographic transition in the sense that society is mostly constituted by adult population, a phenomenon more visible in urban areas than in rural areas and given to the par between men and women. In fact, the change in the age composition reaches such a point that by 2020 children under 20 years of age no longer constitute the population with the highest share in urban areas (around 30%), a fact that contrasts with the situation of young people between 20 and 30 years old who reach a share greater than 17% (they represent the age group with the highest share compared to any age group of similar magnitude). Obviously, this contrasts with rural domains in which children under 15 years of age represented just under 40% of the total population, also for 2020. Finally, according to demographic projections, the young population settled in urban centers will be a minority, while the population over 40 years of age will be equivalent to just over 55%; in rural areas the population over 40 years of age will make up about 50% (Panel E, Graph 5). In fact, the composition by gender to 2020 (Graph 6), denotes a higher proportion of young men under 24 years of age than of women, with differences of 0.6 p.p., and as the

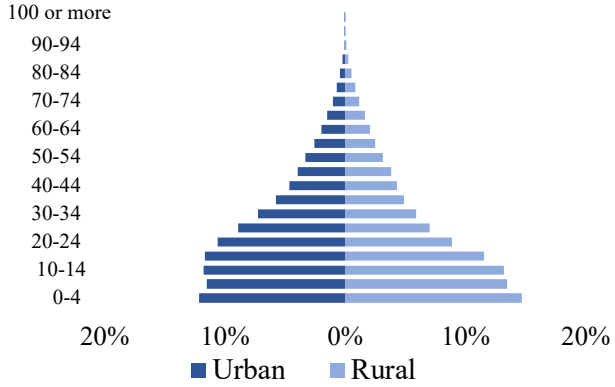
age range increases, the female population accumulates more proportionally in connection with the male population.

Graph 5: Population pyramids by area

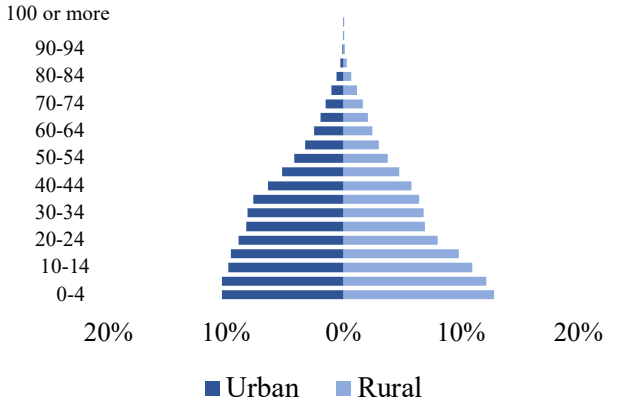
Panel A: 1960



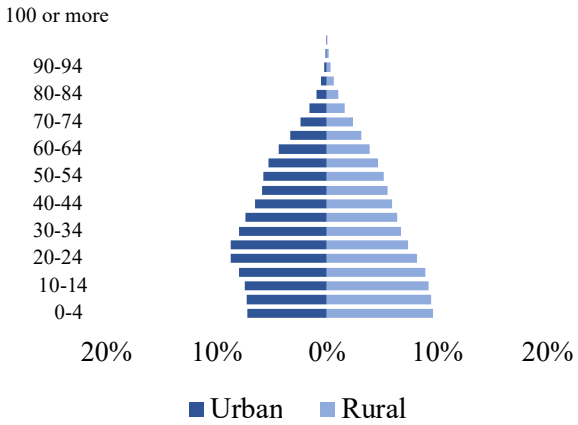
Panel B: 1980



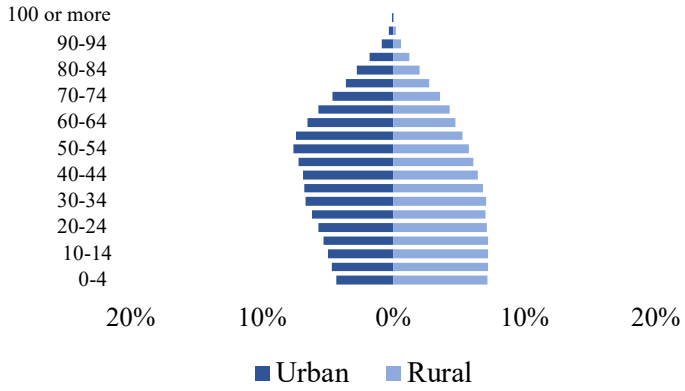
Panel C: 2000



Panel D: 2020



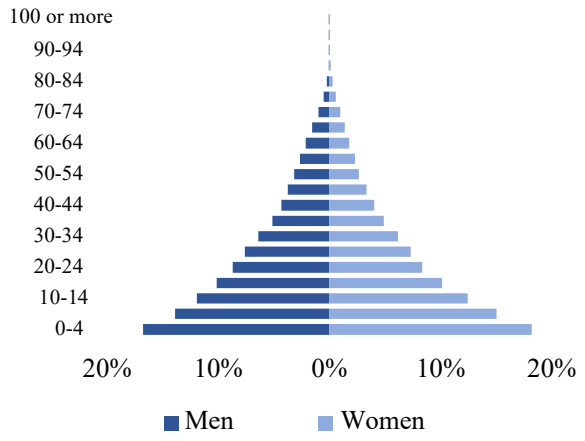
Panel E: 2050



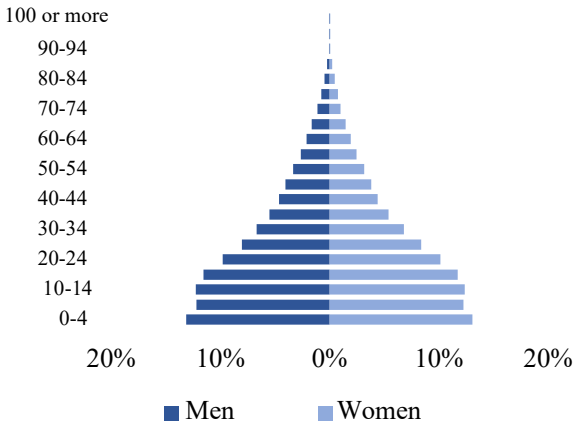
Source: Own elaboration based on DANE population projections

Graph 6: Population pyramids by gender

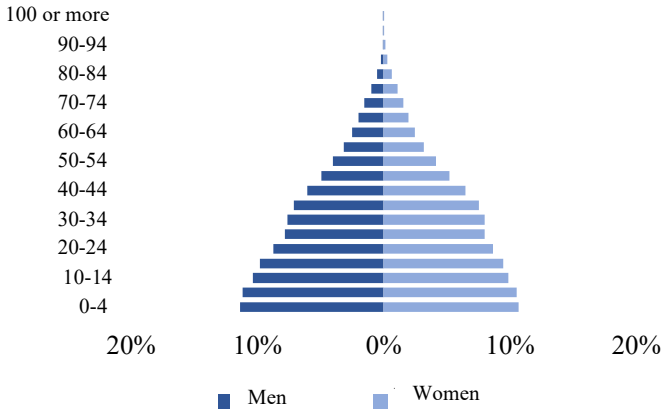
Panel A: 1960



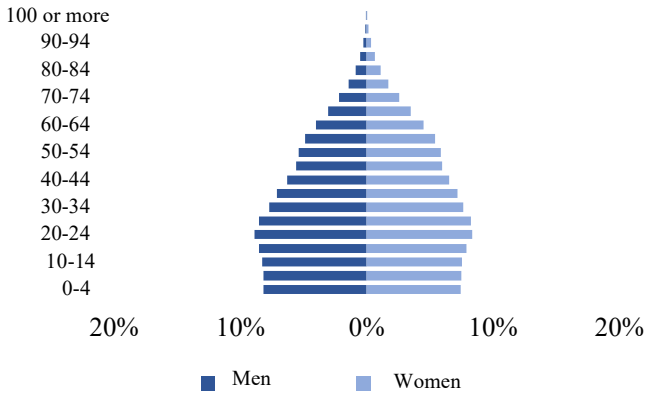
Panel B: 1980



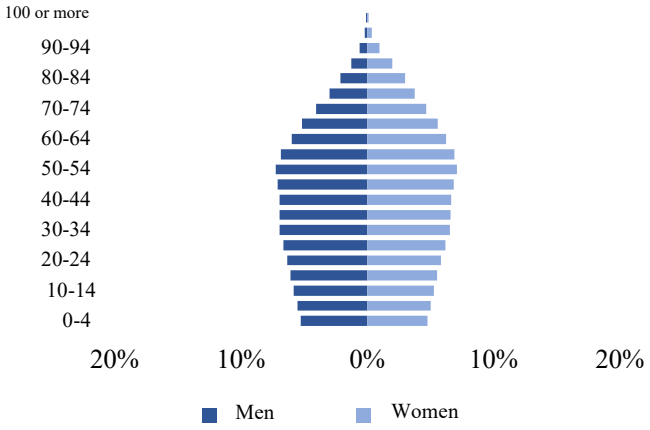
Panel C: 2000



Panel D: 2020



Panel E: 2050

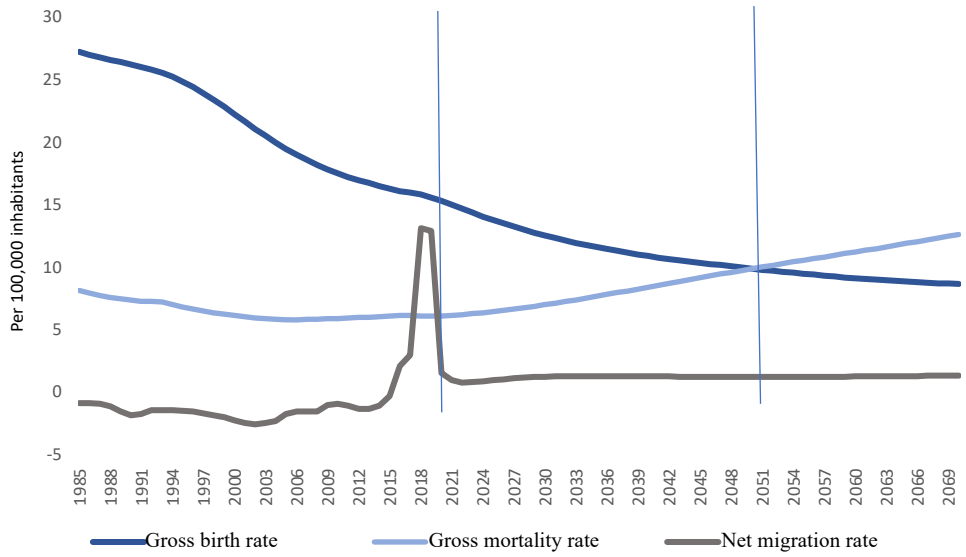


Source: Own elaboration based on DANE

Graph 7 presents the evolution of both birth and mortality rates and migration, in which different stages of the demographic transition process in Colombia are appreciated. The demographic transition, understood as the process of moving from high mortality and birth rates, with sustained population growth, to a fall in birth rates, begins to be noticed in Colombia beginning in the 1990s, when birth rates fell sharply from 25 births per 100,000 inhabitants in 1995, up to 15 born per 100 thousand inhabitants in 2018. Just in this period, scientific advances in terms of health help to fulfill a leveling role that allows women to increase their ability to participate in the labor market.

Thus, the fall in the birth rate accompanied by a constant rate of growth and barely above zero in the mortality rate, marked the beginning of population degrowth, which could have economic consequences in the increase in per capita income within households, in particular, in households with lower incomes, in view of the gradual reduction in household size. After 2018, mortality rates go from having constant growth, not exceeding 1%, to sustained and increasing over time, a fact that explains to a very large extent a more severe stage of deceleration of population growth, a phenomenon associated with population aging, which is illustrated later. Overall, it is estimated that by 2050 the death rate would exceed the birth rate.

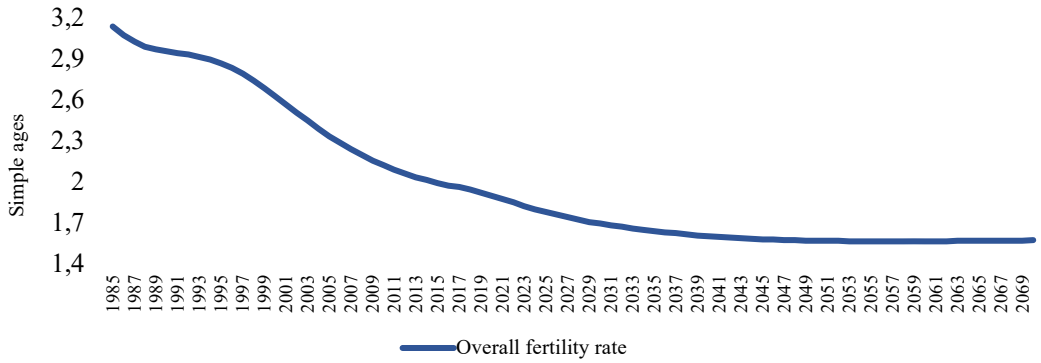
Graph 7: Colombia's birth mortality and migration rates (1985-2070)



Source: Own elaboration based on the estimates of the demographic change of the DANE

In order to examine in more detail, the population evolution in Colombia, the fertility rate is considered, defined as the number of children that a woman will have during her reproductive stage. In this regard, it is noted that this rate decreased at a significant rate in much of the period considered. For example, between 1998 and 2018 it decreased by about 1 p.p., although it was noted that between 2018 and 2020 this rate increased slightly. In turn, it is estimated that, from 2030, when fertility would reach 1.69 children per woman, the rate of decrease will be much lower, of the order of 0.18% per year.

Graph 8: Colombia's fertility rate (1985 – 2070)

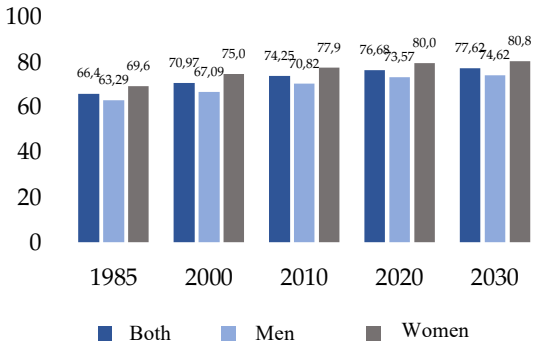


Source: Own elaboration based on the estimates of the demographic change of the DANE

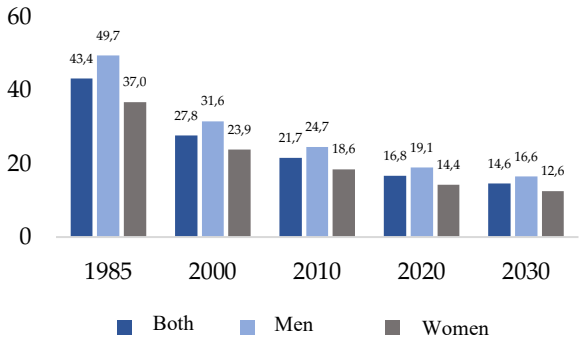
In addition to the above, life expectancy at birth continues to rise while increasingly low infant mortality rates are evident. For this purpose, Graph 8 shows an increasing life expectancy at birth and a decreasing infant mortality over the years. However, the life expectancy of men is lower than that of women, a gap that would remain in the long term. Likewise, infant mortality is higher for men, stressing that in the long term the reduction of the gap between men and women has been considerable, which is why infant mortality tends to converge to values of approximately 15 deaths per thousand births.

Graph 9: Life expectancy at birth and infant mortality

Panel A: Life expectancy (Years)



Panel B: Infant mortality



Source: Own elaboration based on the estimates of the demographic change of the DANE

Dependency ratio

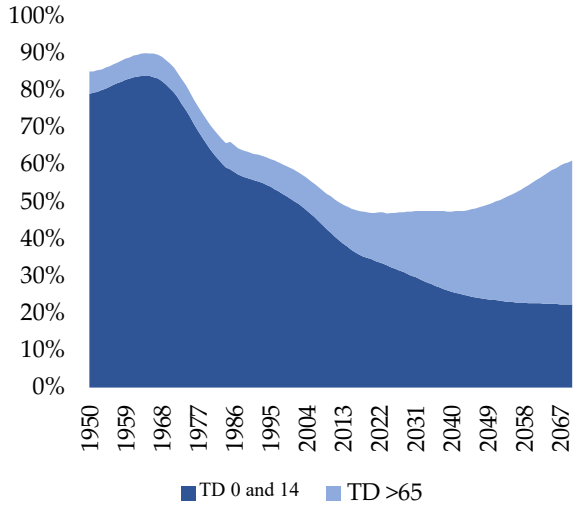
The consequences of demographic change at a stage in which there is a decrease in the very young population and a still very incipient growth of the elderly population, are manifested in various areas such as the fall in dependence (proxy of the economic burden of the economically inactive on the economically active). In this regard, the demographic

dependency ratio is defined as the ratio between the economically inactive population (under 14 years of age and over 65 years of age) and the economically active population (persons between 15 and 64 years of age). For the particular, low dependency rates are associated with higher incomes within households, this by virtue of the fact that the number of people in the productive stage is greater in connection with the number of people who require care (minors and older adults), and therefore the greater possibilities of generating income compared to the disbursements involved in the care of dependent people.

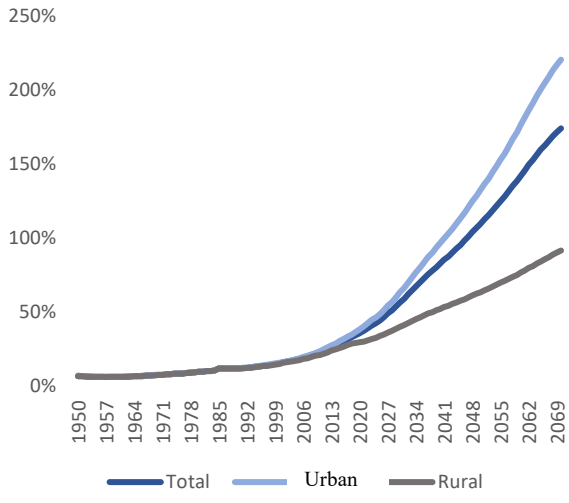
Graph 10 shows the level of the national dependency ratio and the breakdown by age groups. In general, the fall of dependency begins at the end of the seventies of the twentieth century, however, it is at the beginning of the first decade of this century when it slows down most sharply. In particular, given the downward trend of those under 14, the lowest point for the dependency ratio of the population over 65 is in 2020, a rate that, however, is expected to rebound given the aging population from 2050. In addition, the old age index reflects a growth over the years, being higher for the urban area compared to the rural area, an index that will present a higher rate of growth from year 2020.

Graph 10: National dependency ratio and old age index

Panel A: Dependency ratio



Panel B: Old age index



Source: Own elaboration based on the estimates of the demography change of the DANE

1.5 Structure of the report

This report is organized as follows: In the first chapter, in addition to the introduction and literature review, it contains an economic and demographic profile of Colombia. In turn, the second chapter recounts the approaches in terms of poverty and inequality of the most important instrument of policy in Colombia, namely the National Development Plan, to end with a description of the main social programs of the country. The third chapter describes the

main sources of information used in the analysis of inequalities. Meanwhile, the fourth chapter analyzes inequalities that cover the following domains: income, consumption or expenditure, labor income, tenure of assets and services, land and financial wealth, and a set of social domains, within which are access and quality in education, health, Internet, drinking water, housing, electric power and sanitation.



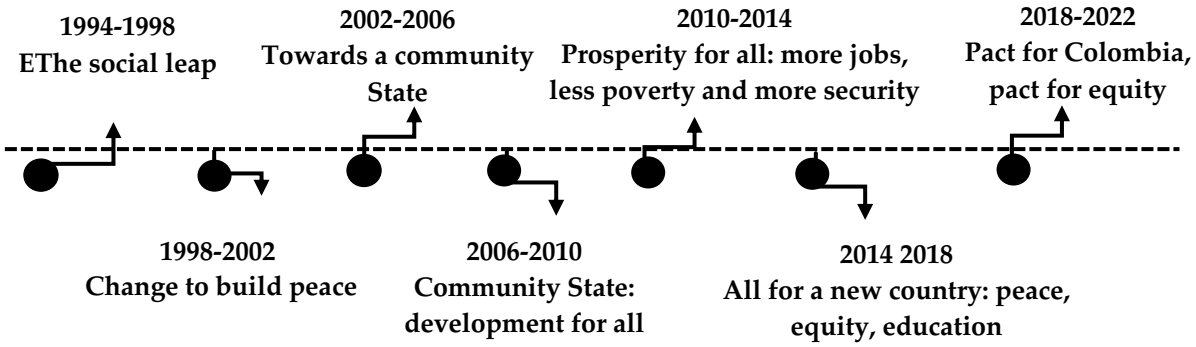
Chapter Two

2. Policy instruments for the reduction of inequalities: National Development Plans and Social Programs

Among the main public policy instruments to address poverty and inequality in Colombia are the development plans, which establish the guidelines and policy guidelines, as well as the concomitant strategies for action in the field of social development. In this regard, since the issuance of the Political Constitution of 1991, seven national development plans (NDP) have been implemented, established for each period of government.

The origin of national development plans dates back to the "General Plan for Economic and Social Development (1961-1970)", which was intended to meet the requirements for obtaining funding from the Alliance for Progress. The point to underline is that this plan laid the foundations and basic elements of the subsequent development plans until 1991, at which time they were based on a solid normative basis and Law 152 of 1994 that framed the content of the NDP[4]. Graph 11 shows the timeline of the periods of government in which the NDPs are framed. Accordingly, a description is given below of the contribution of each of these to policy practices aimed at reducing inequalities in Colombia.

Graph 11: Timeline of the National Development Plans



Source: Own elaboration

In the NDP "El Salto Social" (1994-1998), macroeconomic stability was established as a strategy, which aimed to control the exchange rate and inflation. This plan had among its social strategies the generation of "more and better jobs" in order to close social gaps in income and poverty. During this period, policies and programs were created aimed at modernizing industry, specifically for the productive branches that would generate competitiveness in the international market. Likewise, part of the social policy focused on the creation of more than 200,000 jobs during the validity of the NDP, and in this way ensure the reduction of income gaps and the reduction of poverty. To achieve these social policy objectives, among others, the "Agricultural Modernization Plan" was implemented in order to overcome the crisis in

4 In this way it is established that the plans will have two components: (i) General Part and (ii) Investment Plan. The former stipulates national and sectoral medium and long-term objectives and targets, together with the mechanisms to achieve this. The economic, environmental and social strategies and policies, together with the instruments to achieve their correct targeting and implementation.

this sector and develop its export vocation, as well as the "Strategic Export Plan" whose focus was based on policies to increase social capital and production in international markets.

In turn, the NDP "Change to build peace" (1998-2002), focused on strengthening the social fabric through the reduction of inequality gaps in education, health, the emphasis on the family, children and nutrition, in order to generate greater equity, reduce poverty and generate greater human and social capital. This plan sought to contribute with the proportion of tools to correct the changes generated in labor demand and the regression of public social spending for sectors of the economy. Additionally, the "Change to build peace" plan sought to correct inequalities among children by adjusting the inequality that is generated by the lower human and social capital of the poorest families. In general, with the correction of such inequalities, the purpose was to generate better development for the new generations, and in this way reduce in the long term poverty, inequities and inequalities existing in different population groups.

In the period 2002-2006, the NDP "Towards a Community State" sought to build social equity from the closing of gaps in monetary inequality through social targeting programs. In this regard, a targeting strategy for investments was proposed in accordance with the reduction of monetary inequality based on: (i) Access to basic infrastructure and housing; (ii) Food security; (iii) Productive schemes for rural development and (iv) Access to productive and financial factors.

With these measures, among others, it was expected to reduce the levels of concentration of wealth and income (which cause much of the monetary inequality), while achieving a distribution of resources focused on the population and vulnerable regions. Additionally, it was proposed (i) To increase the efficiency of social spending to obtain better results with resources; (ii) Improve the targeting of social spending and (iii) Consolidate social protection based on affiliation to the health and pension system.

With the establishment of the NDP "Community State: Development for All" (2006-2010), a State at the service of citizens was proposed through sustained growth, the promotion of poverty reduction, increased employment and increased equity. In this regard, the Government established goals focused on generating employment and improving its quality, as well as increasing access to education through conditional transfer programs. In general, to achieve the goals of reducing inequality, it was proposed: (i) Articulate the social protection system to ensure the poorest families; (ii) Strengthen social promotion in order to reduce socioeconomic inequalities through the rationalization of services and (iii) Improve the targeting of conditional transfer programs.

The NDP "Prosperity for all: more jobs, less poverty and more security" (2010-2014), was essentially oriented towards sustained economic growth and equal opportunities. To this end, it was considered that the reduction of poverty and inequality levels was to guarantee the proper functioning of the Comprehensive Social Protection System. In turn, social promotion and policies in transfer programs for the improvement of human capital. In order to achieve social promotion, the Network for the Overcoming of Extreme Poverty was created to strengthen the generation of autonomous income by the most vulnerable.

The NDP "All for a new country: peace, equity, education" (2014-2018), proposed within its objectives the closing of gaps in inequality, specifically in factors that would result or help social mobility such as improvements in access to health, education and high-quality

employment, through the strategies of good governance and the transformation of the countryside, among others. Specifically, among these policies, the design and implementation of social inclusion policies through conditional transfer programs (expansion of coverage of some of the existing ones) was determined, as well as the execution and articulation of plans, projects and programs aimed particularly at overcoming poverty.

Finally, the NDP "Pact for Colombia, pact for equity" (2018-2022), seeks to reduce social gaps through the construction of a modern social policy focused on the most vulnerable. However, one of the differences compared to previous development plans is that the current NDP is partly framed within the Sustainable Development Goals (SDGs).[5]. This plan identifies coordinated actions for the reduction of poverty and inequality[6] through a modern social policy focused on the family, as well as on a greater connection of people with markets. In particular, it is committed to the inclusion of the population in a situation of poverty and vulnerable to the formal labor market, access to productive assets, as well as to sources of sustainable income generation. Part of the above, it was determined to do so through direct redistributive channels such as conditional cash transfer programs and greater access to the social security system. Likewise, the NDP proposes several types of strategies to reduce inequality, including economic growth, direct measures that have an impact on poverty reduction, as well as measures aimed at increasing employment; agro-industrial change and the connectivity of territories are also counted in order to boost regional productivity, in addition to the inclusion of the inhabitants of these territories.

2.1 Social protection networks: Conditional monetary transfers

Public intervention measures aimed at supporting vulnerable people in conditions of extreme poverty, are called social safety nets, are materialized through tools such as conditional transfer programs (PTC), which usually consist of the delivery of monetary and non-monetary resources to families in situations of poverty or extreme poverty (Cecchini et al, p. 13). Conditional cash transfer (CCP) programs are implemented in a variety of countries characterized by low and medium per capita incomes. Moreover, they are usually accompanied by social programs of varying magnitude, which are implemented in different territorial areas (i.e. local, regional and national level).

The implementation of PTCs in Colombia, like Latin America, began in the early twenty-first century. Although there are important differences between countries and regions that use PTCs, they all have a common denominator: they transfer money and require beneficiaries to make specific investments associated with health and education (World Bank, 2009). In general, according to various assessments, PTCs have had positive effects on variables such as health, education, nutrition, food, poverty reduction and closing gaps among vulnerable

[5] This NDP not only contemplates the reduction of monetary inequality, but also that related to other SDGs such as the quality of education (SDG 4), affordable and non-polluting energy (SDG 7), cities and sustainable communities (SDG 11), responsible production and consumption (SDG 12), peace, justice and strong institutions (SDG 16).

[6] The look at the reduction of multidimensional inequality, where the health sector has the task of effective monitoring and quality of care with gender focus; the education sector aims to reduce educational gaps between children and adolescents, in order to reduce intergenerational inequality. The policies are articulated with existing conditional transfer programs such as "Youth in Action" or "Families in Action".

groups (Fiszbein, et. al, 2009; Attanasio, T., 2008). Accordingly, some social programs in Colombia are described below.

2.1.1 Families in Action (FiA) Program

Colombia experienced a severe economic crisis in the late 1990s, which severely affected the well-being of the population. In broad terms, this crisis manifested itself in an abrupt increase in unemployment, an event that in turn triggered a series of negative effects such as the fall in household income and the concomitant reduction in consumption, in addition to negatively impacting school attendance (in the form of school dropout and greater labor share of children and young people of the poorest, among others). Another negative effect was represented by the deterioration of the conditions of children, particularly the most vulnerable. In this regard, the national government promoted a social policy to protect the generation of human capital of the most vulnerable population segments through a conditional transfer program, called Families in FiA Action, which has been one of the most assessed social programs in the country. According to Muñoz (2006), since its creation the program has proven to have an important positive impact on three fundamental dimensions: health, nutrition and education.

The common denominator of the studies that evaluate the impacts of Families in Action, focuses on health and education; these variables are complemented by other socioeconomic variables such as poverty, social capital, consumption and household income, among others.7. In general, the program has favored the growth and nutritional development of children under five years of age, in addition to helping to increase the school attendance of young people between 12 and 17 years old, which makes it an important instrument for social protection (Urrutia and Baez, 2018). Currently, the program benefits 2,244,348,000 low-income families, with a budget of $1.8 billion for the 2020 term (Social Prosperity, 2020). In addition to the impacts of the program, its ability to adapt to economic and social crises is also noted, as was verified, for example, during the COVID-19 pandemic, where extraordinary aid was allocated to the beneficiaries of the program.

2.1.2 Youth in Action (YiA)

The Youth in Action (YiA) program begins its operation under Resolution 1970 of November 21, 2012 from the redesign of the Families in Action program. The main objective of the YiA program is to respond to the scenarios faced by young high school graduates in situations of poverty and vulnerability. According to the DPS, the YiA program seeks to encourage and strengthen the formation of human capital in the young population in situations of poverty or vulnerability through Conditional Cash Transfers (CCT), so as to allow access and permanence in higher education, as well as the strengthening of transversal competences. In the first place, the delivery of TMC is made as an incentive to access and permanence in higher education, in the same way that it rewards the academic excellence of students. Secondly, the program encourages the development of complementary soft competences and skills through the training component called "Life Skills and Opportunity Management".

[7] See annex 1.

The YiA program is implemented in young people between 16 and 24 years old who are carrying out their training process in one of the municipalities focused by the program, whose allocation is established according to the classification obtained by the household in Sisben[8]. By 2020, the coverage of the program amounted to 426,594 young people enrolled, with a budget of $5.5 billion (National Planning Department).

Chart 1: Sisben as instrument to focus social programs

In 1994, Sisben was introduced as a targeting tool to select potential beneficiaries of social programs, through which socioeconomic information on housing and households was collected in order to assign a score that determines their socioeconomic status. The CONPES (National Council for Social Policy) Social 020 establishes that municipalities and districts must focus all the resources of education, health, housing and drinking water in geographic areas with a concentration of poor and vulnerable population (Social, 2003). CONPES Social 040 of 1997 defined Sisben as an instrument of individual targeting, stipulating its general use for all social expenditure programs that involve subsidy to demand (Social, 2003).

The CONPES Social 055 of 2001 carries out the improvement of the design and implementation of the Sisben, which gives rise to the second version of the Sisben in 2005. A periodicity of three years is defined for the updating of the Sisben. Accompanied by the above, the CONPES Social 100 of 2006 defines targeting as an instrument that maximizes social impact and emphasizes the need to improve equity in the allocation and effectiveness of social spending. It also raises the need to consider the conditions of vulnerability of the population in conceptual and technical design of Sisben. In 2007, the DNP was designated as the entity responsible for defining conditions for the entry, suspension and exclusion of persons from databases, in addition to the crossing of information and consolidating information at the national level (Social, 2003).

The most recent version of the Sisben (IV), classifies households according to the condition of poverty (extreme poor, poor, vulnerable and non-poor) based not only on socioeconomic characteristics of the household and housing, but also taking into account the presumptive income of the household. Currently, Sisben focuses a large part of the conditional and non-conditional transfer programs in the country.

Source: Own elaboration

[8] The student who wants to participate in the program must meet minimum criteria required by the program, such as: (1) Being in the Sisben with a score lower than the cut by geographic disaggregation, that is, the young people are divided according to their place of residence; (2) If not in Sisben III, the young person must be registered in one of the following lists: The United Network, the Single Registry of Victims, the census lists of indigenous youth, the census lists for young people with a measure of adaptability or criminal responsibility of the ICBF and finally (3) Advance training studies in higher education with an enrollment cut that denotes that the young person is in the initial stage of his studies.

2.1.3 Colombia Elderly

The Pension Solidarity Fund is an account of the Nation, whose objective is to subsidize the pension contributions of the population groups that due to their condition and classification do not have access to the Social Security Systems. Likewise, with these resources economic subsidies are provided for the protection of older adults in a state of extreme poverty.

In turn, the Solidarity Fund finances the Social Protection Program for the Elderly (Colombia Mayor). This program seeks to increase the protection of older adults from the delivery of an economic subsidy. Specifically, it is aimed at homeless older adults without a pension or in conditions of extreme poverty (National Planning Department, 2021).

The access requirements to be a beneficiary of the program are the following: (i) Be Colombian; (ii) Have resided the last ten years in Colombia; (iii) Be at least three years old age of retirement; (iv) Minimum survival income or income; (v) For persons classified in Sisben IV, groups A and B and C are taken up to subgroup C1 (Ibid., 2021).

The amount of the benefit currently amounts to eighty thousand pesos ($80,000) for beneficiaries at the national level (amount recently unified at the national level). However, in Bogota D.C. (the largest city nationwide), the beneficiaries of the program receive an additional amount from the district agencies, an amount paid monthly on the penultimate day of each month (Ibid., 2021).

Last but not least, it is noted that by 2020 the investment of the program reached $ 2.8 billion pesos that allowed the care of 1,698,573 older adults, which meant a coverage of 100% of the municipalities that make up the national territory. In turn, of the total number of older adults, the Program benefited 348,390 victims of the armed conflict during 2020.

2.1.4 Solidarity Income

The Solidarity Income program was established by the Central National Government to assist households in extreme poverty. It was established in order to mitigate the negative impacts generated by the health emergency caused by COVID-19. As such, this program aims to support households in poverty or in conditions of vulnerability to it (i.e., households with a high probability of falling into poverty). For the rest, it is noted that people who request such support should not be beneficiaries of other targeting programs, such as Families in Action, Youth in Action, Compensation of Tax in Sales and Elder Colombia (National Planning Department, 2021).

The identification of the beneficiaries was made from the formation of the Master Base of Potential Beneficiaries of the Solidarity Income Program defined by the National Planning Department, based on the updated information of households in the Sisben data, and the exclusion of beneficiaries from other cash transfer programs. Likewise, with the crossing of databases such as PILA and pension contributions, the families with the highest state of vulnerability are identified (Ibid., 2021).

For 2020, the Program executed 9 deliveries, which it did with an investment of $4.2 billion in effective payments for the population in conditions of poverty, extreme poverty and people

in vulnerable conditions who did not have monetary aid from programs of the national order. The program benefits 3,084,987 households.

2.1.5 VAT refund

On the other hand, the VAT refund program is a measure of economic support for the poorest households, which consists of lower-income families being part of resources that will alleviate the impact of the tax levied on the consumption of products and services for the most vulnerable people. By 2020, one million households benefited from the VAT refund that was $75,000 over five cycles (National Planning Department, 2021).

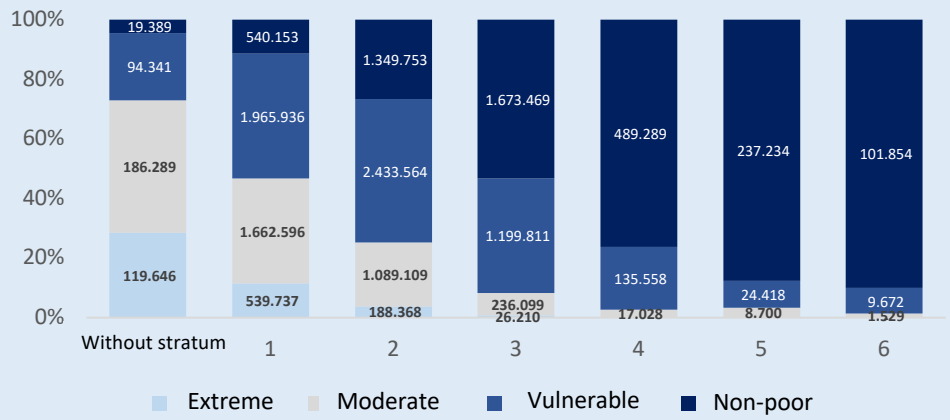
Chart 2: *Stratification system in Colombia*

The targeting of the resources derived for spending on social policies has been made from two main instruments: the Sisben and stratification. Both have had a normative development in Colombia as a result of the challenges that have arisen in their implementation and design.

According to Law 142 of 1994, housing stratification is the main targeting mechanism for subsidies for household public services. In 1994, CONPES 2904 of 1997 was published, which determined the methodology for the definition of stratification in the country, and established the allocation of housing strata based on the averages of the results obtained from the housing variables per block. The methodology includes between 8 and 11 variables that sought to identify the exterior of the houses.

One of the main problems of using this methodology for the allocation of resources is based on the errors of inclusion and exclusion, that is, that people of low purchasing power in high strata, and of high purchasing power in low strata are included. Urban Economy (2019) estimated that while in the highest strata about 10% are in a condition of vulnerability or poverty, in the lower strata there are people who are considered as not poor, a figure that is close to 10% for stratum 1 and up to 50% for stratum 3, which is also a recipient of subsidies, but to a lesser extent.

Graph 12: Errors of inclusion and exclusion of the social stratum



Source: Economía Urbana (2019)

Source: Own elaboration

Finally, it is denoted that this program benefited 700,000 poorest households from the Families in Action program and 100,000 from the list of prioritized adults of the "Colombia Mayor" program. Moreover, it is denoted that the Program aims to double coverage to 2 million beneficiaries; that is, an additional 1 million vulnerable households, in order to be able to guarantee access to transfers in a timely manner. According to the national government, it was established that the return per household was $ 76,000 for six cycles. In any case, it is established that the return benefits the poorest households of the Families in Action and Colombia Mayor programs, all in order to achieve the inclusion of households that have not been part of the Monetary Transfers of Social Prosperity (Ibid., 2021).



Chapter Three

3. Sources of information

3.1 Sources of income and assets in the household: LIHS

For the use of sources of income and assets within the household, records of official surveys collected by the National Administrative Department of Statistics are taken. In particular, the Continuous Household Survey (CHS) (2002-2005) and the Large Integrated Household Survey (LIHS) (2008-2020) are used.

The CHS has a methodology for collecting information from surveys carried out weekly and monthly. It is carried out for the 13 major cities and their metropolitan areas, with coverage for urban areas, the capitals and the rest (rural). This survey has aimed to emphasize the modules of labor force, employed, unemployed and inactive, of which the unit of analysis are households and population. In any case, it is noted that the analysis variables for this survey focus on the labor market based on the rates of occupation, share and unemployment; labor income from sources of labor, capital, imputed income, pensions and transfers; and monetary and extreme poverty.

On the other hand, the Large Integrated Household Survey (LIHS) unlike its predecessor, has a methodology for collecting information from electronic surveys on a monthly basis; it has a representativeness for 24 cities and their metropolitan areas, maintaining a coverage of urban areas, headwaters and the rest (rural). Its modules are: general characteristics, unemployed, workforce, inactive, employed, other activities, other income, housing and households. The units of analysis are dwellings, households and population. This survey is also representative by month, and the main variables of analysis are the labor market, household income by source, and poverty.

3.2 Sources of consumption: NHBS

For the use of sources of inequality in consumption, the National Household Budget Survey (NHBS) is used. The survey was conducted between July 2016 and July 2017 and is the most recent survey that probes household consumption patterns in Colombia. The surveys were conducted through electronic questionnaires three times per week. This survey has a representativeness for 24 cities and their metropolitan areas, 8 capitals of departments of the Amazon and Orinoquia and 32 departments. The zones are also organized by means of regions between which define the Atlantic, Eastern, Central, Pacific and new departments, all of them, except for new departments, group headwaters, populated centers and dispersed rural. Its coverage also extends to rural areas, headwaters and rest (rural), contains a number of periods of 12 months and modules of weekly, daily and personal expenses, and main characteristics of households, people and homes. The main variables of analysis are consumption and household characteristics.

3.3 Social domain sources: QLS

The source for the modules of social domains goes in general to the Quality of Life Survey, a methodology whose collection is annual. The years examined here correspond to the reference years 2003, 2008, 2010, 2014, 2019 and 2020; representativeness that covers the national total,

regions, departments, headwaters and population centers. Among the regions examined are the Caribbean, Eastern, Norte de Santander, Santander, Bogota, Central, Pacific, Orinoquia and Amazonia. The areas examined in the surveys correspond to urban areas, headwaters and the rest (urban); of course, along with the modules of household formation, household services, possession of goods and services, perception of poverty, health, education, the elderly, information and communication technologies. The units of analysis of the survey are homes, households and people, whose main variables of interest are multidimensional poverty, access to quality and health, education, ICT (information and communication technologies), as well as subjective perceptions about the quality of life of households.

3.4 Other sources

In section 1.4. the main source is the demographic information published by DANE, which contains population projections at the national, departmental and municipal levels. In particular, the national series covers the time interval 1950 to 2070; the departmental series 1985 to 2050 and finally, the municipal series covers the years between 1985 and 2035. Therefore, it is possible to estimate the regional series and the series of the 13 major cities with their respective metropolitan areas, if applicable. The projections are corrected with the national population censuses. In addition, it is possible to disaggregate by area, gender and age, which allows estimating the national dependency ratio, the old age index and population pyramids. There are also estimates of demographic change in the demographic and population section, in which life expectancy at birth, infant mortality and the overall fertility rate from 1985 to 2070 are obtained, which are based on the national population and housing census of 2018.

Table 3: Sources of Income and Household Assets-LIHS

Distinctive features	Joint LIHS 2002 -2005	LIHS 2008- 2020		
Reference year	2002	2010	2017	2020
Sample size	535366	822087	767867	747822
Methodology	Weekly, monthly	Monthly*		
Representativeness	13 major cities and M.A. Bogota, Cali Medellin, Barranquilla, Bucaramanga, Manizales, Pasto, Pereira, Cucuta, Villavicencio, Ibague, Monteria, and Cartagena.	24 cities and M.A. Bogota, Medellin (Valle de Aburra), Cali (Yumbo), Barranquilla (Soledad), Bucaramanga (Floridablanca, Giron, Piedecuesta), Manizales (Villamaria), Pasto, Pereira (Dosquebradas, La Virginia), Ibague, Cucuta (Villa del Rosario, Los Patios, El Zulia), Villavicencio, Monteria, Cartagena, Tunja, Florencia, Popayan, Valledupar, Quibdo, Neiva, Riohacha, Santa Marta, Armenia, Sincelejo, San Andres.		
Coverage	Areas Main towns Remainder			
Modules	General Characteristics, Workforce, Employed Employment. Main, Employed Underemployment, Employed Secondary employment, Unemployed, Inactive.	General Characteristics, Unemployed, Labor Force, Inactive, Employed, Other Activities, Other Income, Housing and Households.		
Number of survey periods	12			
Unit of analysis	Households, Population	Housing, Households, Population		
Main analysis variables	Labor market: employment rates, share, unemployment. Household income by source: labor, capital, imputed income, pensions, transfers* (households and institutions). Poverty: total monetary, extreme.			

Source: Own elaboration based on DANE and LIHS

Table 4: Sources of consumption-NHBS

Distinctive features	NHBS 2016-2017
Reference year	2016-2017
Methodology	Weekly
Sample size	93161
Visits	3 times per week
Data collection	July 2016 / July 2017
Representativeness	24 cities and M.A., 8 capitals of departments of Amazonia and Orinoquia, headwaters, populated centers and dispersed rural. 32 department cities, 6 additional main town (Rionegro, Soledad, San Andres de Tumaco, Barrancabermeja, Buenaventura, Yumbo). -Atlantic (main towns, populated and rural centers). -Eastern (main towns, populated and rural centers). -Central (main towns, populated and rural centers). -Pacific (main towns, populated and rural centers). -New Departments (only main towns).
Coverage	Areas Main towns

	Reminder
Modules	Weekly expenses, Daily expenses, Personal expenses, Main characteristics of people, dwellings and households
Number of survey periods	12 months
Unit of analysis	Housing, Households, Population
Main analysis variables	Consumption and characteristics of households.

Source: National Household Budget Survey

Table 5: Sources of quality of life -QLS

Distinctive features	**QLS 2003, 2008, 2010, 2015, 2019, 2020**
Reference year	2010-2020
Methodology	Annual
Sample size (2019)	93993
Representativeness	National total, regions, departments, main towns and population centers - rural dispersed. Nine regions represented: Antioquia, Bogota (main city); San Andres (main city); Valle del Cauca; Caribe (Atlantico, Bolivar, Cesar, Cordoba, La Guajira, Magdalena and Sucre); Eastern (Boyaca, Cundinamarca, Meta, Norte de Santander, Santander and Bogota (populated centers - rural dispersed)); Central (Caldas, Caqueta, Huila, Quindio, Risaralda y Tolima); Pacific (Cauca, Choco and Nariño) and Orinoquia-Amazonia (Amazonas, Arauca, Casanare, Guainia, Guaviare, Putumayo, Vaupes and Vichada).
Coverage	Areas Main towns Remainder
Modules	Household formation, household services, trends in goods and services, perception of poverty, health, education, the elderly, information and communication technologies.
Number of survey periods	1
Unit of analysis	Housing, households, people.
Main analysis variables 8	Multidimensional poverty, access and quality in health, education, ICTs, subjective perceptions about household quality of life.

Source: Quality of Life Survey

Section 1.4 also uses official DANE data; on the page of the entity are the cyclical national accounts. In this sense, GDP, GDP per capita, the remuneration of employees and capital income from 2005 to 2020 are obtained, meaning by which the share of wages, capital income in GDP, as well as their respective growth is obtained. Likewise, the composition of GDP by economic sectors is obtained. In section 4.5 data from the IGAC and other sources are used and explained in detail in that section. In section 4.6. Inequality in social domains, there are different sources of information. Specifically, a first corresponds to the one provided by the Ministry of Education through the SEMS (Integrated Enrollment System of Preschool, Basic

and Secondary Education), in which the gross and net coverage rates by area and by gender are obtained from 2005 to 2019. The other source corresponds to the ICFES (Colombian Institute for the Assessment of Education), in which the results of the Saber 11 and Saber Pro exams for the years 2016, 2019 and 2020 are obtained. In depth, in the source Saber 11 the score of the mathematics and critical reading module is obtained disaggregated by zones, gender, by origin of institution and level of socioeconomic development, and in the Saber Pro the scores of the critical reading module are analyzed[9] disaggregating by areas, gender, by origin of institution and level of socioeconomic development. Finally, data from the National Survey of the Use of Time (ENUT) of DANE are used, in order to identify share and time spent in paid and unpaid work activities, this to elucidate inequalities in gender.

[9] Although the *Saber Pro* Test (exam) also evaluates areas such as quantitative reasoning, specific areas of knowledge, English and citizen skills, it is decided to report critical reading given its high ability to predict the quality of education.



Chapter Four

4. Profile of inequalities in Colombia

4.1 Income inequality

This section analyzes inequality in income distribution. The analysis is made by population groups, namely, a distinction is made between inequality by geographic area (urban, major cities and rural), gender (households headed by women and men), educational levels (none, primary or less, secondary, middle and upper basic), monetary poverty status and ethnic group[10]. This analysis also considers the evolution of inequality over time, so key critical periods[11] are determined to explain the dynamics of inequality. In particular 2002, 2010, 2017 and 2020 as explained below.

4.1.1 Media and median real per capita income

The measure of analysis is the real monthly per capita income of the unit of expenditure estimated by DANE. The mean and median monthly per capita income, in real terms[12] by population groups, is shown in Table 6. For the National Total, it is observed that the average and median tended to increase year after year, the average being higher than the median real per capita income. The average annual real income per unit of expenditure for 2002 corresponded to $445,660, a variable that presented modifications until 2020 with a value of $591,471, which represented a growth rate of 33%. In turn, the median for 2002 corresponded to $242,722, which presented adjustments until 2020 in which the value was $347,211, which was equivalent to a growth of 43%. This behavior of the mean and median is also evident for urban and rural areas.

In any case, it is emphasized that households headed by a man had higher average and median per capita income per unit of expenditure compared to households headed by women. For example, for 2002 the value was $575,782 for male chiefdoms and $403,534 for female chiefdoms, which represented a difference of 30%, a trend that was verified for all years of study. In turn, the median for 2002 was $290,753 for males while for females it was $229,997, which represented a difference of 21%.

By educational level of the household members, it was evident that as the educational level increased, so did the real per capita income. Consequently, those without any educational level, in 2010 presented the lowest value equivalent to $ 276,051, in which increases are observed for the following years until reaching a maximum value in the higher educational level of $ 1,495,473, an amount that became 5 times higher. For the average, the lowest values were evidenced in 2010, which presented variations until 2020 of the order of 16.2% for no educational level, 5.0% for primary or less, -9.4% for basic secondary, -15.0% for average and

[10] It is considered for some years analyzed, given that since 2014 this variable is counted within the household survey (LIHS).

[11] Previously, peak points have been observed in the evolution of inequality measured by the GINI index, where 2002 is the initial year, which evolved until 2010 when inequality falls at a moderate pace, and from this year it falls rapidly until 2017 (lowest point of inequality until then), to rise again in 2020. This trend, as well as its reasons, are discussed in detail throughout the paper.

[12] The monthly CPI of the geographical domains reported in the GHG is used as a deflator year after year, the basis of the CPI is January 2018. The main source is DANE.

-17.0% for higher. To the extent that the level of education increased, both the average and the median also increased; thus, for the higher educational level, the highest values were evidenced. Specifically, according to educational level, the variations were 21.6% for none, 13% for primary or less, of -3.9% for secondary, -10.1% for average and -17.7% for higher.

Table 6: Media and median monthly real per capita income (2002, 2012, 2017, 2020)

	Media				Median			
Sub-Group	**2002**	**2010[13]***	**2017**	**2020**	**2002**	**2010***	**2017**	**2020**
Total National	$ 445,660	$ 596,037	$ 656,057	$ 591,471	$ 242,722	$ 326,592	$ 408,673	$ 347,211
Urban	$ 529,864	$ 707,990	$ 756,457	$ 671,860	$ 301,109	$ 407,670	$ 489,410	$ 404,264
Rural	$ 210,864	$ 239,203	$ 315,155	$ 315,347	$ 131,298	$ 164,724	$ 218,761	$ 222,346
13 cities and[14] M.A.	$ 658,623	$874,443	$751,606	$ 658,948	$369,327	$508,364	$513,306	$ 485,695
Remainder urban	$349,981	$465,432	$758,054	$ 570,356	$225,997	$286,140	$478,587	$ 315,895
Head of household								
Male head	$ 575,782	$ 754,780	$ 818,094	$ 745,586	$ 290,753	$ 397,207	$ 408,673	$ 417,808
Female Head	$ 403,534	$ 749,361	$ 813,127	$ 522,591	$ 229,997	$ 303,299	$ 392,730	$ 322,786
Educational levels								
None	-	$ 276,051	$ 336,809	$ 320,887	-	$ 193,015	$ 252,639	$ 234,858
Primary or less	-	$387,245	$455,795	$411,125	-	$274,059	$321,970	$283,613
Basic secondary school	-	$ 471,746	$ 500,478	$ 426,997	-	$ 302,000	$ 355,242	$ 290,033
High school	-	$ 619,536	$ 628,462	$ 526,236	-	$ 418,280	$ 468,144	$ 375,695
Higher	-	$ 1,495,473	$ 1,355,723	$ 1,240,946	-	$ 904,540	$ 863,189	$ 744,018
Poverty								
Poor[15]	-	-	$ 147,509	$ 162,352	-	-	$ 142,082	$ 170,954
Non -poor	-	-	$ 864,966	$ 902,763	-	-	$ 556,626	$ 583,903

Source: Own elaboration based on LIHS

Media for the poor category in 2017 was $147,509, which presented increases until 2020, a period in which the amount amounted to $162,396, and a fact that represented a growth rate of 10%. In turn, the average for the non-poor was $864,966 for the year 2017, with increases until the year 2020 in which the value amounted to $902,763, which represented a growth rate of 47%. For the poor category, the median value was 154,020 in 2017, which showed increases to reach $278,915 in 2020, all of which represented a growth rate of 4.4%. Correlatively, for the

[13] In 2002, no values were reported by educational level, because in this period the household survey does not report the educational levels equivalent to the other periods of analysis. In the case of the reports of the real per capita income of the household by condition of poverty, the years 2002 and 2010 are not shown since they are not covered by the official methodology of the poverty line. Only as of 2012 are comparisons by poverty condition consistent.

[14] The 13 cities and metropolitan areas correspond to Bogota, Bucaramanga, Barranquilla, Cali, Manizales, Pereira, Santa Marta, Monteria, Sincelejo, Cucuta, Pasto, Medellin and Popayan. The 13 cities and M.A. plus urban rest, are equivalent to the urban total.

[15] The values for 2017 and 2020 in poor and non-poor people are reported taking into account the methodological change of the poverty lines established by DANE, which is harmonious as of 2012.

non-poor category the median in 2017 was $556,626, which with increases until 2020 came to represent $583,903, which was equivalent to a growth rate of 4.9%.

4.1.2 Participation and concentration of income by subgroups

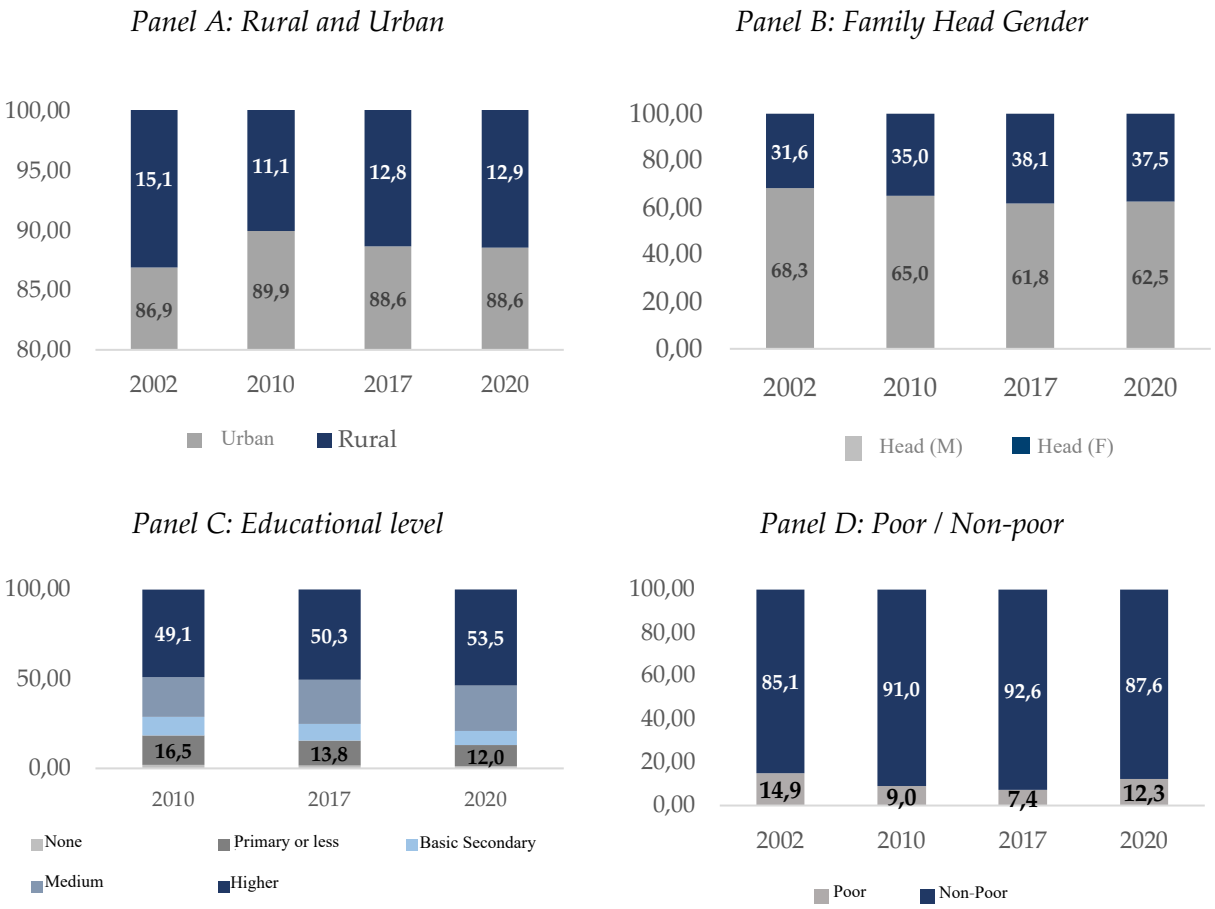
However, in Graph 13 the share of income by subgroups for critical years is shown. Panel A identifies the trend between urban and rural areas; according to this, there is a greater share of households in urban areas compared to rural areas in all years. Thus, for the year 2002 the share was 86.9% in urban areas, while in rural areas it barely reached 13.1%. For 2010, the share of income was 89.9% for urban areas and 11.1% for rural areas. Moreover, it is denoted that for the following years the share stood at values close to 88.0% for rural areas and 12.0% for urban areas.

Panel B of the graph in question shows the share of income by gender of the head of household; in this it can be seen that households that have a male head, have a greater share in income for all years of study, than households with female head. For example, in 2002 the share of chiefs was 68.3 per cent and that of female chiefs 31.6 per cent, in 2010 65.0 per cent for chiefs and 35.0 per cent for female chiefs; in 2017, the share of heads of household in income was 61.8% and of female heads 38.1%; finally, in 2020 the share was 62.5% and 37.5% respectively.

Panel C shows the share of income by educational level. In it, it can be seen that as the educational level increases, so does the share in income. In general, it is observed that the most educated have been increasing their share of income with greater impetus between 2017 and 2020; that is, about 3.2 p.p. In this way, the share of people with primary basic education or less, on average was 14.1%, in basic secondary 9.8%, in secondary education 24.1%, and for the higher education level 50.9%. The income share of individuals with "no educational level" was less than 2%.

Panel D shows the income share of individuals considered as poor and not poor. Overall, it is observed that, as household income conditions worsened as a result of the pandemic, the income share of the poor increased sharply. For the year 2017 it becomes 7.4% and for the last year of analysis it increases to 12.3%. In turn, in 2017 for the non-poor the share of income was 92.6%, while for the year 2020 it decreased to 87.7%.

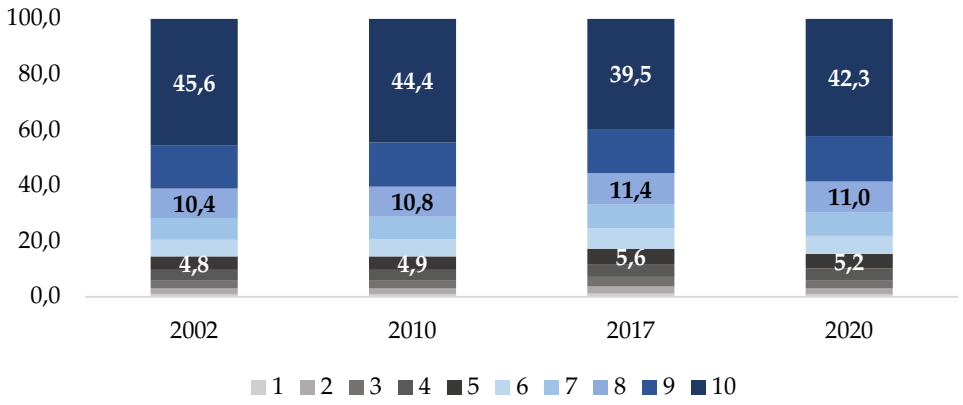
Graph 13: Participation in Income by Sub-groups



Source: Own elaboration based on LIHS

Regarding the share of income according to each decile of the population, Graph 14 shows the share of spending in each decile from the poorest 10% to the richest 10%. The richest 10% had 45.6% of the share of income per unit of expenditure for 2002, which decreased for 2010 to 44.4% (1.2 p.p. less than in 2002), for 2017 falls to 39.51% (6.1 p.p. less) and finally increases in 2020, standing at 42.3% (3.3 p.p. less than in 2002). Meanwhile, the proportion of the poorest 10% of the population was equivalent to 0.95% for 2002, 0.99% for 2010 and 1.28% and 0.86% for 2017 and 2020. By 2017 there appears to be a redistribution of real income share from the richest 10% to the lowest percentile, revealing a relative decline in inequality.

Graph 14: Income share per decile of per capita household income

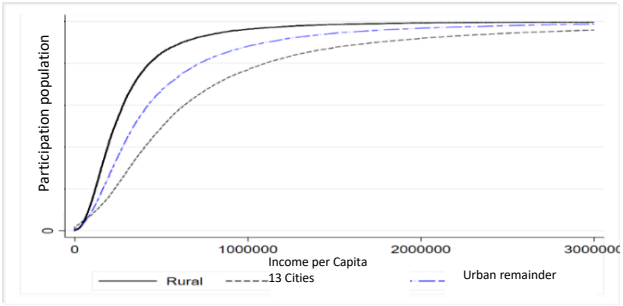


Source: Own elaboration based on LIHS

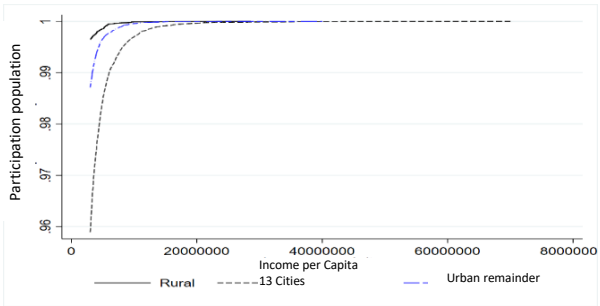
Graph 15 shows the accumulated income functions. In particular, Panel A shows the share of population subgroups across the distribution in rural areas, 13 major cities and the rest of the urban areas in 2020. In the case of rural areas, the concentration began to rise from lower incomes, this compared to the major cities, where the income was considerably higher. However, the concentration was high in higher incomes without relevant variations, contrary to what happens in the major cities, where even in the upper part of the distribution there is disparity in the concentration by income levels.

Graph 15: Accumulation of per capita household income for geographic areas

Panel A: Rural Accumulation, 13 major cities & urban remainder 2020. Low part



Panel B: Rural Accumulation, 13 major cities & urban remainder 2020. High part



Source: Own elaboration based on LIHS

Chart 3: Measures of inequality by ethnic groups

The monthly real per capita income for ethnic groups during the last 5 months of the years 2019 and 2020 (August-December), is shown Table 7. In it can be seen that for both periods the values of the mean were higher than those of the median; the minimum values were presented for the indigenous population subgroup and the maximum values for the *raizal*. For the mean, all population subgroups presented negative variations, an event that is explained by the strong effect of the pandemic on vulnerable ethnic groups. For the indigenous people the fall was 4.3%, for the gypsies 0.4%, for the *raizal* 14.5%, for the *palenqueros* 12.1%, for the Afro-descendants 5.4% and for those who do not identify with any ethnic group 7.3%, who tend to concentrate in urban areas. Regarding the average, the indigenous presented a decrease of 3%, the gypsies an increase of 35%, the *raizales* a decrease of 37%, the *palenqueros* a decrease of 48%, the Afro-descendants a decrease of 7% and those who do not have ethnic identification of 11%.

Table 7: Mean and Median real monthly per capita income ethnic groups (2019/2020)

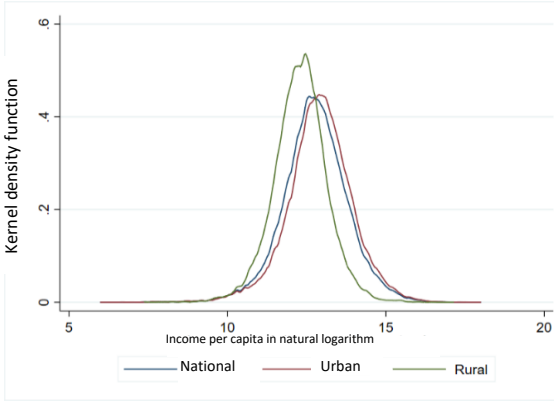
	Media		Median	
Ethnic group	2019	2020	2019	2020
Indigenous	$ 310,278	$ 297,021	$ 190,399	$ 184,600
Gypsy or Rom	$ 842,624	$ 839,596	$ 515,019	$ 696,717
Raizal	$ 1,759,392	$ 1,503,786	$ 786,072	$ 497,530
Palenquero	$ 601,583	$ 529,038	$ 711,897	$ 372,706
Afro-descendant	$ 480,467	$ 454,593	$ 312,985	$ 291,847
None	$ 696,742	$ 646,104	$ 431,615	$ 386,138

Source: Own elaboration based on LIHS

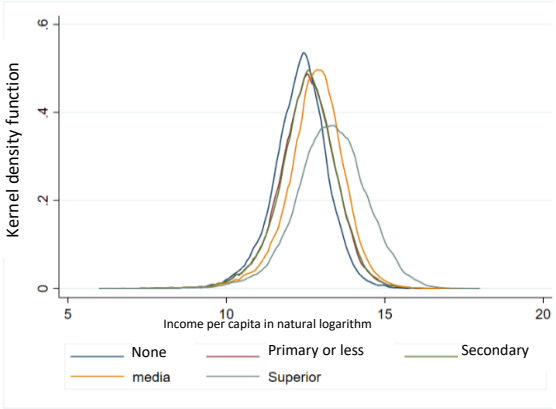
In Panel A of Graph 16, you can see the distribution of Kernel for the National Total and the Urban and Rural subgroups, as well as confirming the difference between urban and rural areas in terms of income. It is observed that, in the distribution in rural areas, incomes are grouped more around the average, which sheds light on the low concentration of income, as opposed to urban areas, where a greater dispersion is observed. On the side of educational levels, there is a greater concentration around the average for the lowest levels of education, while, for those with higher education, income is more concentrated both at the bottom of the distribution (lower income), and at the top of the distribution (higher income).

Graph 16: Kernel distribution by population subgroups

Panel A: Kernel, National, Urban, Rural



Panel B: Kernel educational levels



Source: Own elaboration based on LIHS

Lorenz curve

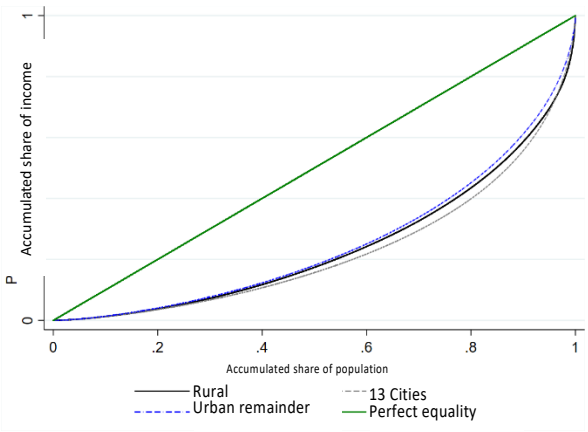
The Lorenz curve relates the cumulative share of income versus the cumulative population of the population; there it is denoted that the closer you are to the perfect equality curve (45-degree line), the inequality for a given subgroup tends to be smaller; otherwise, inequality will tend to increase.

In Graph 17 it is observed that the Lorenz curve in the 13 major cities for the year 2002 was very far from the curve of perfect equality, which is reflected in a high Gini coefficient of that year. However, the Lorenz curve in rural areas was closer to the perfect equality curve; very close to this were found the rest of the urban, so both have values that converge, which indicates that they have less inequality. Meanwhile, by 2020, and compared to 2002, all curves moved away from the line of perfect equality, indicating that there are changes in the distribution in the sense of an increase in the concentration of income. As in 2002, the 13 major cities presented the Lorenz curve furthest from perfect equality.[16].

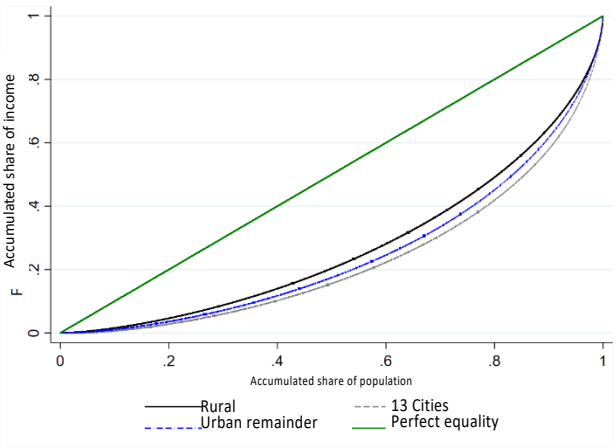
[16] These two periods (2002 and 2020) are reported as they are the beginning and end of analysis, on the other hand, the order of the Lorenz curves between zones is invariant for 2010 and 2017.

Graph 17: Lorenz curve – geographic areas

Panel A: Lorenz Curve geographic zones 2002



Panel B: Lorenz Curve geographic zones 2020



Source: Own elaboration based on CHS-LIHS

4.1.3 Inequality Indices

As presented below, Table 8 presents several measures of inequality for Colombia, among which are the Gini coefficient, the Theil index, the Atkinson indices, the 90/10 deciles ratio and the Palma ratio. Such measures of inequality, combined, offer a detailed understanding of how income is distributed in Colombia. Consistently, these indices were calculated from information provided by the Large Integrated Household Survey; for illustration purposes, they are then defined.

Gini coefficient

As the literature points out, the Gini coefficient is one of the most commonly used measures of inequality in Colombia, which is characterized by its variation in a range ranging from 0 to 1, where 0 indicates perfect equality (all individuals have the same income), and 1 indicates perfect inequality, a scenario in which a single person owns all income while the rest of the population does not have nothing. Therefore, the closer such an indicator is to 1, the more unequal the population; correlatively, the closer to zero, the more egalitarian the population.

Obviously, the Gini coefficient can be calculated from the Lorenz curve. In technical terms, this is the reason for the area between the Lorenz curve and the equality line; its technical formula is set out as follows:

$$(1) \quad G = \sum_{i=1}^{N} \sum_{j=1}^{N} \frac{|y_i - y_j|}{2N^2\mu}$$

Where y indicates the income level of individual i and individual j respectively, μ indicates the mean income and N is the size of the population

Generalized measures of entropy, Theil index

To have a measure of inequality that can be additively decomposed and satisfies the properties of consistency by subgroups, the entropy measures of inequality measures can be considered. These measures of inequality are guided by the following formula:

$$(2)\quad GE\,(\alpha) = \frac{1}{\alpha(\alpha-1)}\left[\frac{1}{N}\sum_{i=1}^{N}\left(\frac{y_i}{\mu}\right) - 1\right]$$

Here, y indicates individual income, μ is the median income, and N indicates population size. The parameter α indicates the weight given to the differences between income in different parts of the distribution of the same, and can take a real value. With a α Positive and large, the GE index will tend to be more sensitive to changes at the top of the income distribution. The GE index is more sensitive to changes at the bottom of income for α close to zero. Of course, GE measures have a range between zero and infinity, where zero represents a distribution in which society's income is distributed equally among people (or units of analysis): if there are higher values it means greater inequality.

The GE index (1) is called the Theil T index and the GE (0) is labeled Theil's L index. In the herein study, GE values are taken when it is equal to 1; the formula for this index is given by:

$$(3)\quad T_T = \frac{1}{N}\sum_{i=1}^{N}\left(\frac{y_i}{\mu}\right)\ln\left(\frac{y_i}{\mu}\right)$$

Atkinson Index

On the other hand, the Atkinson index measure (measure of inequality), presents the percentage of total income that hypothetically a population or population subgroup should give up to have a more equitable share of income among its inhabitants. In this way, Atkinson (1970) approaches inequality from a normative perspective; proposed that inequality be based on well-being, called Atkinson's class of measures of inequality, this formula is given by:

$$(4)\quad I = 1 - \left[\frac{1}{N}\sum_{i=1}^{N}\left(\frac{y_i}{\mu}\right)^{(1-\varepsilon)}\right]^{\frac{1}{(1-\varepsilon)}}$$

In this expression, the parameter ε represents the "aversion to inequality" which can take values between zero and infinity. The higher this parameter, the stronger the aversion to inequality in society, which means that this index pays (weights) greater attention to the lower part of income. Therefore, a higher value in ε means that social welfare is more sensitive to a change in the income of the poorest individual versus the same change that affects a richer individual.

Deciles ratio (90/10)

The 90/10 decile ratio is defined as the income/expenditure sharing ratio of the top 10 per cent of the population relative to the bottom 90 per cent; the higher the proportion, the greater the inequality. A decrease in this proportion indicates a decrease in inequality.

Palma Coefficient

In turn, the Palma coefficient is defined as the income/expenditure sharing coefficient of the top 10% of the population compared to the bottom 40%. The higher the proportion, the greater the inequality. A decrease in proportion denotes a decrease in inequality.

In this subsection, inequality is explored from several key markers, including the gender of the head of household, level of education, poverty status, geographic domains, and ethnicity. These descriptions are commonly referred to as horizontal inequalities, as they reflect the different burden of inequality on important groups of society in Colombia.

Inequality by geographic area

Table 8 shows that inequality decreased over time until 2017, the year from which it begins to rise. In turn, it is higher among people living in urban areas versus those living in rural areas. Specifically, the Gini coefficient for urban dwellers went from 0.55 in 2002 to 0.53 in 2010 and then to 0.49 in 2017. Meanwhile, inequality for rural dwellers decreased from 0.51 in 2002 to 0.47 in 2010 and then to 0.46 in 2017. Moreover, this behavior can also be seen in the Theil index for both population subgroups and at the national level.

In turn, the Atkinson index (1) behaves differently between population subgroups; for the National Total the highest value is 0.45 in 2002 and the lowest is 0.37 for 2017. For urban areas, the highest value is 0.41 for 2002 and the lowest for 0.34 for 2017. On the other hand, the ratio of deciles decreased for the year 2017, then an increase for 2020 was evidenced; the Palma ratio shows the same performance with a maximum value in 2002 of 4.7 and a minimum of 3.3 in 2017 for the national total. It is important to note that lower inequality in rural areas, in addition to the way in which income is distributed within their labor market -as explored below-, may also be related to the more equitable allocation in other sources of income (income, capital, pensions or non-labor income), but it can hide precarious conditions of access to the different sources of income, this in connection with urban areas.

Table 8: Inequality by geographic areas

Population Sub-group	Year	Gini	Theil's index	Atkinson Indexes		Percentiles ratio (90/10)	Palma ratio
				A (1)	A (2)		
Total urban	2002	0.55	0.61	0.41	0.65	10.8	4.2
	2010	0.53	0.57	0.40	0.64	10.6	4.0
	2017	0.49	0.46	0.34	0.58	8.4	3.3
	2020	0.53	0.55	0.41	0.69	11.6	4.0
Total rural	2002	0.51	0.58	0.38	0.61	9.5	3.5
	2010	0.47	0.43	0.33	0.56	8.6	2.7
	2017	0.46	0.41	0.31	0.53	7.3	2.5
	2020	0.46	0.41	0.31	0.53	7.6	2.5
13 Cities and M.A.	2002	0.54	0.59	0.40	0.64	10.5	4.1
	2010	0.52	0.56	0.39	0.63	9.9	3.7
	2017	0.48	0.38	0.29	0.52	6.7	2.8
	2020	0.54	0.55	0.41	0.72	11.7	4.1
Total National	2002	0.57	0.67	0.45	0.69	12.9	4.9
	2010	0.56	0.63	0.44	0.68	12.7	4.6
	2017	0.50	0.50	0.37	0.61	9.7	3.4
	2020	0.54	0.57	0.41	0.68	11.9	4.2

Source: Own elaboration based on base LIHS

Inequality at the national level and by household gender

Table 9 also presents the set of inequality measures calculated for the reference years by gender of the head of household. There it can be seen that, for all the population subgroups mentioned above, the Gini coefficient and the Theil index presented the highest values for the year 2002 and a minimum value for the year 2017. On the other hand, the ratio of deciles (90/10) presents different behaviors between the subgroups; for the bosses, the highest value was presented in 2002, which amounted to 12.9, while the smallest one showed a fall in 2017 with 9.7. For women it has a higher value in 2020 of 14.9 and minimum for 2017 of 11.5. Like the ratio of deciles, the Palma ratio relates population subgroups, in which case the 40th percentile (interval in which the middle class is located compared to the 10th percentile, in which is the population subgroup with the lowest income level). This ratio presented different behaviors for the population subgroups, as presented in Table 9.

Table 9: Inequality at the national level and by household gender

Population subgroup	Year	Gini	Theil Index	Atkinson Indexes		Percentile ratio (90/10)	Palma ratio
				A (1)	A (2)		
Male head of household	2002	0.56	0.65	0.44	0.69	12.9	5.6
	2010	0.56	0.62	0.44	0.69	12.8	4.2
	2017	0.51	0.51	0.37	0.61	9.7	3.7
	2020	0.56	0.60	0.43	0.70	12.7	4.6
Female head of household	2002	0.57	0.68	0.44	0.68	12.9	5.2
	2010	0.56	0.63	0.44	0.68	12.6	5.0
	2017	0.53	0.54	0.40	0.66	11.5	3.8
	2020	0.57	0.62	0.45	0.73	14.9	5.0

Source: Own elaboration based on LIHS

Inequality by educational level

On the other hand, in Table 10 you can see the different Inequality Indicators according to educational level. In general terms, at lower levels of education, inequality is lower, both for the Gini coefficient and for the Theil Index, which is related to the lower heterogeneity in the distribution of income, in particular of labor income.[17]. For higher education it can be noted that in 2010 the Gini was 0.49, then decreased to 0.44 for 2017, while it increased for 2020 to 0.53. The Theil index went from 0.49 in 2010 to 0.44 in 2017, then increased to 0.51.

For Atkinson (1), it can be seen that for the educational level none in 2010, this magnitude was 0.32, while for 2020 it increased by presenting a value of 0.41, an event that represented a difference in 9 p.p. For the higher education level in 2010 this magnitude was equivalent to 0.37, which increased until 2020 evidencing a value of 0.40, a fact that represented a variation of 9%. On the other hand, the ratio of deciles presented a decrease for the year 2017, which was followed by an increase for 2020 in all population subgroups.

[17] See section 4.2.2. of labor income.

Table 10: Inequality by educational level

Population subgroup	Year	Gini	Theil Index	Atkinson Indexes		Percentile ratio (90/10)	Palma ratio
				A (1)	A (2)		
None	2010	0.46	0.39	0.32	0.58	12.5	2.6
	2017	0.42	0.50	0.37	0.61	9.8	2.1
	2020	0.45	0.57	0.41	0.68	12.0	2.5
Primary or less	2010	0.49	0.46	0.36	0.61	10.2	3.1
	2017	0.44	0.38	0.38	0.55	8.1	2.4
	2020	0.47	0.42	0.34	0.61	9.4	2.9
Basic secondary	2010*	0.49	0.48	0.35	0.61	9.5	3.1
	2017	0.44	0.37	0.29	0.53	7.7	2.4
	2020	0.48	0.43	0.34	0.61	9.6	3.0
High school	2010*	0.46	0.43	0.33	0.57	8.4	2.8
	2017	0.41	0.33	0.27	0.50	6.7	2.1
	2020	0.46	0.39	0.32	0.62	9.0	2.7
Higher	2010*	0.56	0.49	0.37	0.61	10.7	3.4
	2017	0.52	0.44	0.34	0.58	9.5	3.0
	2020	0.53	0.51	0.40	0.70	12.8	4.0

Source: Own elaboration based on LIHS

Inequality due to poverty

However, Table 11 presents inequality by poverty level; in it can be seen that both for the Gini coefficient and for the Theil index they presented lower values for individuals considered as poor or in extreme poverty. For the first indicator, there was an increase for those considered as poor, going from 0.26 to 0.32 in the reference years (2017/2020), this behavior is repeated for those who are extreme poor because there is an increase of 0.8 Gini points when going from 0.25 to 0.33. For the Theil index there are also increases from one year to the next, for the poor it goes from 0.10 to 0.14, for the extreme poor from 0.08 to 0.11.

In turn, for the non-poor and non-poor in extreme condition, these values were the greatest. It can be referenced that for the former, the Gini coefficient stood at 0.44, and that for the latter in 2017, the value was 0.48 and 0.49 in 2020. The behavior of the Theil index for the non-poor showed an increase for the years of study from 0.38 to 0.40, and for the extreme non-poor it went from 0.48 to 0.49.

Table 11: Inequality by poverty level

Population subgroup	Year	Gini	Theil Index	Atkinson Indexes		Percentile ratio (90/10)	Palma ratio
				A (1)	A (2)		
Poor	2017	0.26	0.10	0.12	0.32	3.8	0.8
	2020	0.32	0.14	0.17	0.43	5.3	1.1
No poor	2017	0.44	0.38	0.26	0.40	5.5	2.3
	2020	0.44	0.40	0.27	0.41	5.8	2.3
Extreme poor	2017	0.25	0.08	0.10	0.30	3.3	0.7
	2020	0.33	0.11	0.14	0.38	4.3	1.2
No extreme poor	2017	0.48	0.46	0.322	0.48	7.8	2.9
	2020	0.49	0.49	0.333	0.49	7.7	3

Source: Own elaboration based on LIHS

Inequality by ethnic group

On the other hand, Table 12 shows the inequality by ethnic groups for the year 2017. There, it can be seen that the highest Gini coefficient was presented for the indigenous population subgroup which had a value of 0.52, followed by no population subgroup with a value of 0.50, Afro-descendant with a value of 0.49, raizal with a value of 0.45, gypsy or Rom with a value of 0.44 and palenquero with a value of 0.43. The Theil index shows a similar trend among these ethnic groups. On the other hand, the Atkinson index (1), presented the highest value for the indigenous people which amounted to 0.40 and the lowest for the Gypsies or Rom which was equivalent to 0.29. On the other hand, the percentile ratio denotes a greater measure for the indigenous population subgroup and the lowest value for the palenqueros. Last but not least, it is denoted that the highest value for Palma was 3.9 and corresponded to the indigenous subgroup; the lowest value was 2.2 and corresponded to the palenquero ethnic group.

Table 12: Inequality by ethnic group. 2017

Population subgroup	Gini	Theil Index	Atkinson Indexes		Percentile ratio (90/10)	Palma ratio
			A (1)	A (2)		
Indigenous	0.52	0.54	0.40	0.67	13.2	3.9
Gypsy or Rom	0.44	0.37	0.29	0.50	7.6	2.4
Raizal from San Andres Archipelago	0.45	0.35	0.33	0.57	12.6	2.5
Palenquero	0.43	0.40	0.28	0.45	5.5	2.2
Black, Mulatto, Afro-descendant	0.49	0.47	0.35	0.61	9.7	3.1
None of the above	0.50	0.49	0.36	0.59	9.4	3.3

Source: Own elaboration based on LIHS

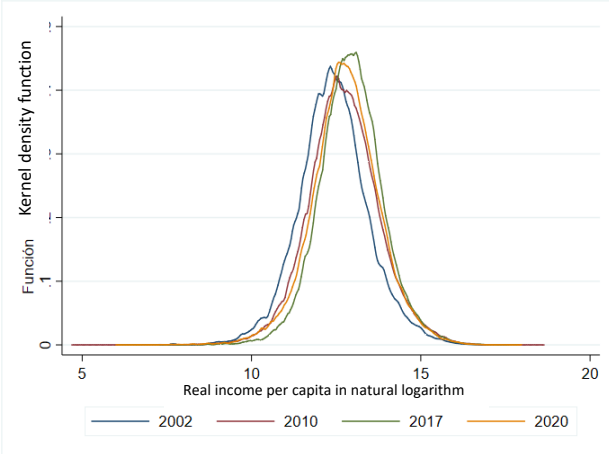
4.1.4 Dynamics and determinants of inequality

To analyze the income dynamics, the years 2002, 2010, 2017 and 2020 were taken as a reference point, this by virtue of the fact that these are periods of time in which significant changes in inequality were observed. In Panel A of Graph 18 it is observed how real income grew year by year, improving the purchasing power of households. However, the distribution for 2020, which is contracting in its entirety, presented greater accumulation in the lower part of the

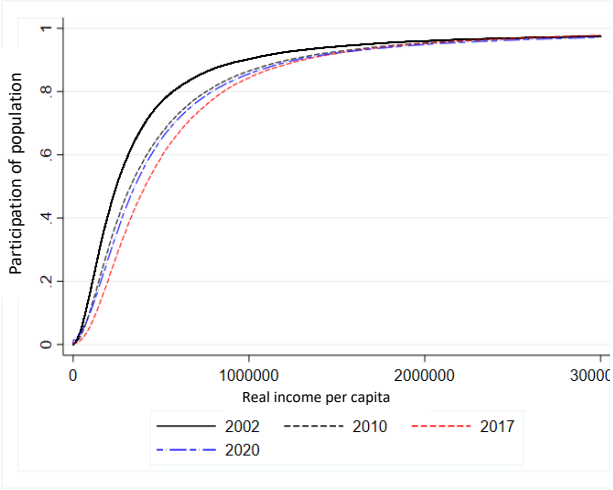
distribution compared to 2017. In this last year, in contrast, the distribution tends to accumulate above the average, which is associated with the consolidation of the median income.

Graph 18: Distribution of real income over time

Panel A: Kernel for critical years



Panel B: Cumulative, for critical years

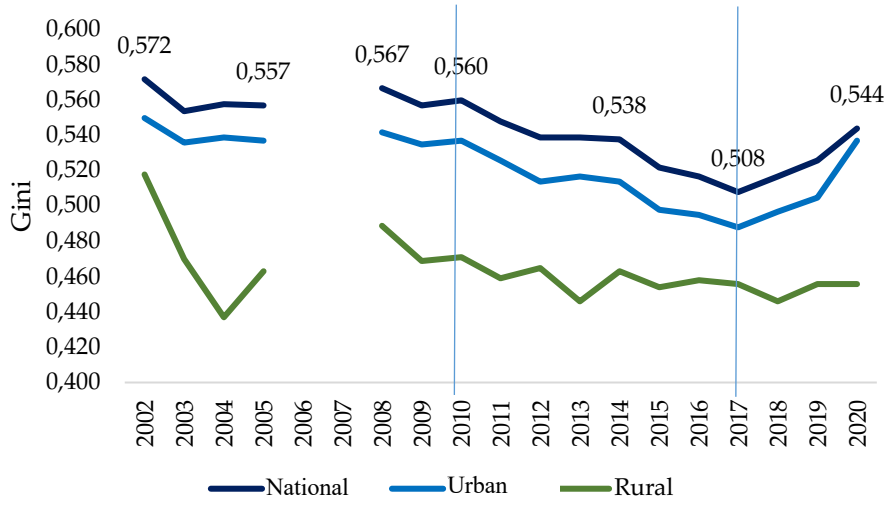


Source: Own elaboration based on LIHS

Although inequality in Colombia has been high, its evolution has not been uniform, a fact that means that for some sections inequality has been reduced more than in others; moreover, even in the last 3 years observed this has increased[18]. In general, between 2002 and 2017, the progress made by the country in reducing poverty and inequality stands out. Following the official figures on which this manual is based, in the section between 2002 and 2017, inequality decreased by around 0.064 Gini points, which represented an 11% drop from 0.57 to 0.50, a decrease for the total period that occurred at the same level in both urban and rural areas. However, the pace of the fall in inequality was marked by three periods.

[18] In a long-term perspective, in the first part of the seventies the Gini coefficient was around 0.53 while in the period 1976-1982 a value equivalent to 0.46 was observed, a reduction that could be due to a positive change in the wages of the least qualified workers, induced by sectors that concentrated this type of qualification (construction and agriculture, (Nuñez, 2021)). Among the changes of the Gini, the rebound noticed in the early nineties (location around 0.5) was the result of a series of structural reforms including the "economic opening", which was associated with a marked increase in the demand for skilled workers and the concomitant wage remuneration, all of which was expressed in a deterioration in the distribution of income. During the economic recession that the country suffered in 1999, unemployment and household incomes at the bottom of the distribution deteriorated more rapidly, all of which was reflected in an increase in the Gini of around 0.6.

Graph 19: Evolution of income inequality



Source: Own elaboration based on DANE and LIHS

The variations in inequality were not as noticeable between 2002 and 2010 because economic growth was more evenly distributed among the different population segments, which represented a 2% decrease in the Gini for the national total and urban areas. In turn, between 2010 and 2014 inequality in the distribution of income fell more than in the previous period, as it went from 0.56 to 0.538 (4%), while precisely between 2014 and 2017 was when such magnitude reached the highest rate of decrease (6%), reaching the lowest levels of income inequality --measured by the Gini-- observed in Colombia during the XXI century; that is, 0.508, however, the index obtained a new rebound in the period 2017-2020, a situation explained in large part by the general crisis of 2020 that, as usual, hit the poorest and most vulnerable households in the country hardest. As a result, the progress made is diluted and the country returns, as warned the previous year, to the situation observed in 2011.

4.1.5 Intragroup inequality

In Table 13 the breakdown of inequality can be observed for urban-rural population subgroups, household gender, educational level, poverty and extreme poverty. In it you can see the component of inequality that is explained within the population subgroups or between them. For the urban-rural population subgroup, much of the inequality is explained by differences between these geographic areas and not so much by what happens within each of these; this is how the inequality explained between urban and rural is 0.38 p.p. and within these subgroups is 0.14 Gini points, which is due to 65.6% of the total explained and 24.7% within each group; over time these proportions are maintained.

Regarding the gender of the head of the household, it is observed that the inequality explained by the income differences between households headed by men and women decreased as the years increased, thus, for the year 2002 the explained value of the Gini between the subgroups was 0.36 (61.6% of the total explained), while for 2020 of 0.30 (52.8%), which represented a decrease of 0.06 points of the Gini. The inequality explained within these groups did not change between 2002 and 2020. Meanwhile, the residue was increasingly explaining the

difference, a fact that may be related to the closing of gaps between these groups, which has intensified since 2010.

For educational levels, it can be seen that inequality between population subgroups was low and did not tend to have significant changes. Within the population subgroups, inequality changed from 2002 to 2010 by 0.11 Gini points and then showed little significant changes. However, what could be noticed were the participations of these groups, did not vary significantly between 2002 and 2020 (Table 13). In this sense, the inequality between educational levels has remained relatively stable in the period analyzed.

Likewise, for poverty and extreme poverty it can be seen that the values of inequality between groups did not experience a significant change. For poverty, a jump of 0.10 Gini points from 2017 to 2020 was observed within the population groups. On the other hand, the values of the shares between the groups changed from 59.7 in 2010 to 44.1 in 2020, which meant a difference of 15 points. Likewise, within this subgroup the share went from 40.2 to 55.6, which denotes an increase of 15.4 points. For extreme poverty, the values go from 87.1 to 75.6 between the groups, which denotes a difference of 11.5 points. Within this subgroup, the observed change in share is from 12.9 points to 24.4 points.

Table 13: Determinants of inequality

		2002		2010		2017		2020	
		Gini	Participation	Gini	Participation	Gini	Participation	Gini	Participation
Urban-rural	Among groups	0.38	65.6	0.38	68.0	0.35	68.2	0.38	69.9
	Within a group	0.14	24.7	0.14	25.4	0.12	23.2	0.11	19.8
	Remainder	0.06	9.8	0.03	6.6	0.04	8.6	0.06	10.4
Gender of the head of household	Among groups	0.35	61.6	0.33	56.9	0.28	54.1	0.30	52.8
	Within a group	0.01	1.9	0.00	0.24	0.00	0.3	0.01	1.6
	Remainder	0.21	36.5	0.25	42.9	0.24	45.6	0.26	45.6
Educational level	Among groups	0.13	22.1	0.12	20.9	0.11	21.7	0.12	22.3
	Within a group	0.23	41.7	0.25	45.2	0.22	43.3	0.22	40.0
	Remainder	0.20	36.1	0.19	33.8	0.18	35.0	0.21	37.8
Poverty	Among groups	-	-	-	-	0.30	59.7	0.24	44.1
	Within a group	-	-	-	-	0.20	40.2	0.30	55.6
	Remainder	-	-	-	-	0.00	55.6	0.00	0.3
Extreme poverty	Among groups	-	-	-	-	0.44	87.1	0.41	75.6
	Within a group	-	-	-	-	0.07	12.9	0.13	24.4
	Remainder	-	-	-	-	0.00	0.0	0.00	0.0

Source: Own elaboration based on LIHS

4.1.6 Inequality by sources of income

On the other hand, in order to determine from the point of view of the sources of income what are the determinants of this evolution, in this section the changes in the Gini index are decomposed using the breakdown proposed by Barros (2011).

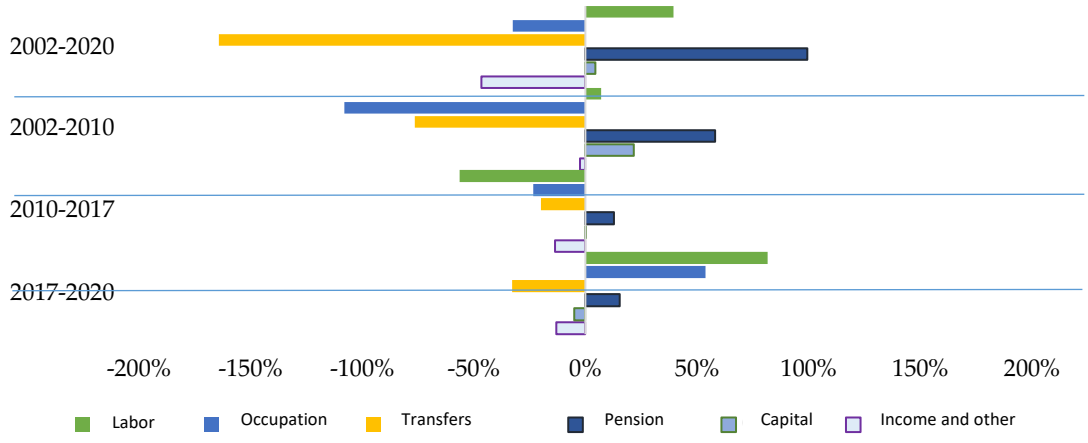
For the full period of analysis (2002-2020), the decrease in the Gini, which went from 0.572 to 0.544, is mainly explained by the increase in transfers, both from households and those that come from institutional aid, which essentially reached the bottom of the distribution. However, the labor market, composed of changes in employment and labor income levels, had little to do with the fall in inequality, partly due to job losses and the fall in labor income as a result of the economic and health crisis due to the COVID-19 pandemic. Moreover, other

sources such as income explain to a lesser extent the fall in inequality, a type of income that strongly affected the upper part of the distribution.

Just between 2002 and 2010, when inequality fell slightly, changes in employment levels were more important for the lower part of the distribution in connection with the highest, which largely explains the fall in inequality along with the redistributive role of public and private transfers. However, the higher concentration of pension, capital and even labor income prevented inequality from falling further.

However, for the following 8 years (that is, between 2010 and 2017, inclusive), when the determining factor in the fall in inequality was labor income, about 56% of the change is explained, followed by the change in employment levels and monetary transfers with 23% and 20%, respectively. The breakdowns also allow us to understand that the changes in the labor market (occupation and income) between 2017 and 2020 explain mostly the increases in inequality by more than 82%, while people in the lower income deciles lost their jobs, as well as the concomitant labor income, which is why the poor and the most vulnerable segments were the most affected by the COVID-19 pandemic.

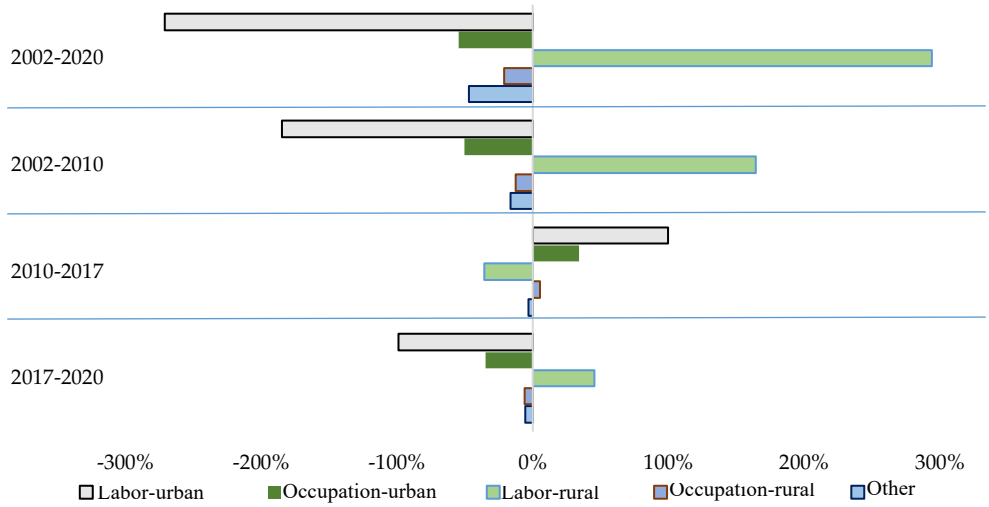
Graph 20: Drivers of change in national inequality by income sources as a proportion of the total change



Source: Own elaboration based on LIHS

On the other hand, the configuration of the profile of national inequality is influenced by the income relations in urban areas rather than in rural areas, in which inequality reaches much higher levels in the former than in the latter. A breakdown of national income between urban and rural areas with a focus on the labor market (Graph 21), confirms that for the full period of analysis (2002-2020) and for the first stage of this (2002-2010), the slight fall in inequality is mainly explained by changes in labor income accompanied by employment levels in urban areas.

Graph 21: Breakdown of changes in inequality as a ratio of Gini urban vs. rural



Source: Own elaboration based on LIHS

4.2 Inequality in the labor market

The generation of income within the labor market is a determining factor when it comes to explaining the distributional differences within the total income of households. The benefits of a labor market that serves different population groups equally, can be transmitted in substantial improvements not only in the generation of income, but in the quality of life of households as a whole. Thus, the gaps between groups are reflected both in labor remuneration and in access to the labor market, where the characteristics of labor supply and demand play a fundamental role, and even in the quality of jobs, which makes the working conditions of some vulnerable groups below desirable levels.

This section is divided as follows. In section 4.2.1 the evolution over time of the main indicators of the labor market is contemplated, such as the labor share rate, the employment rate, as well as the level of unemployment of the population groups according to their location in geographic areas, their gender, educational levels, age and classification by income quintiles. Next, in section 4.2.2 the gaps in labor income between the different groups analyzed are studied, where inequality indicators are also calculated. This section shows the differences in income with respect to the type of work (e.g. informality), and composition by type of employment relationship, which sheds light on the characteristics of employment in Colombia.

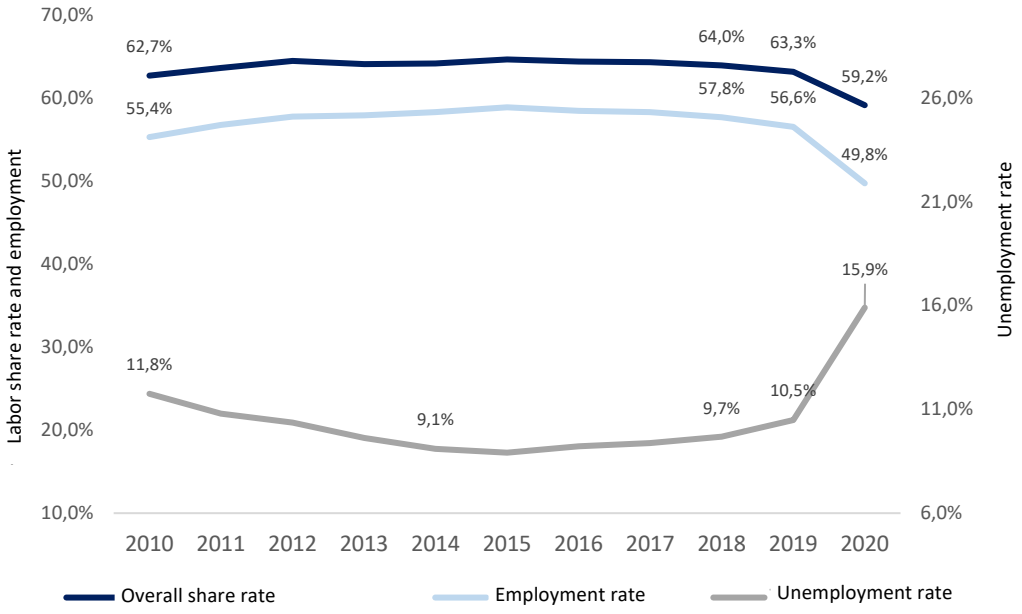
4.2.1 Participation, employment and unemployment

Labor supply, measured through the overall labor share rate [19], grew between 2010 and 2019, going from 62.7% to 63.3.6%, while demand, or employment rate [20], although it grew 3.6 percentage points between 2010 and 2016, (going from 55.4% to 59%), between 2016 and 2019

[19] The relationship between the economically active population and the working-age population.
[20] The relationship between the number of employed and the working-age population.

it decreased by about 2.4 p.p. In addition, between 2019 and 2020 as a result of the pandemic, it contracted by 6.8 p.p. This dynamic in employment can be reflected in the level of unemployment (the higher the work occupation, the lower the unemployment rate and vice versa): specifically, between 2010 and 2015 there was a decrease in the unemployment rate, reaching a minimum of 8.9%, while, between 2017-2020 there was an upward trend in this rate, reaching a value of 15.9%.

Graph 22: Overall share rate, Employment rate and Unemployment rate



Source: Own elaboration based on DANE

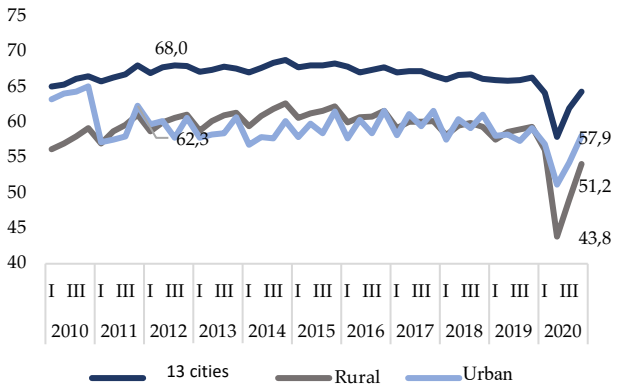
Access to the labor market between urban and rural areas is due to different dynamics. To illustrate this, Graph 23 presents the quarter-by-quarter share, employment and unemployment rates for rural, urban areas and the set of the 13 major cities and metropolitan areas, in the period between 2010-2020. The overall share rate is higher for the 13 cities and metropolitan areas, with an average value of 66.6%, presenting a behavior without many fluctuations between 2010 and 2019. However, for the second quarter of 2020, this rate presented a historical minimum of 55.9%, a value that had not been seen after the first quarter of 2010. Urban areas, whose behavior in general reflects what happens in the major cities, until before the pandemic reached the lowest value in the first quarter of 2010 (58.3%). For the second quarter of 2020, it presented a historical minimum of 55.9%. On the other hand, in rural areas these present the lowest values in labor share that on average are 59.2%, with a historical maximum for the first quarter of 2011 of 62.3%, and a minimum for the first quarter of 2020 of 51.2%.

Panel B of Graph 23 presents the employment rates for the groups described above. In general, urban areas and major cities are sticking to the national trend, where employment reaches maximum levels for 2015, year from which it begins to slow down, while urban areas maintained their constant fluctuation. While the values for the three population subgroups are close, the thirteen major cities have the highest average value (59%), while rural areas have

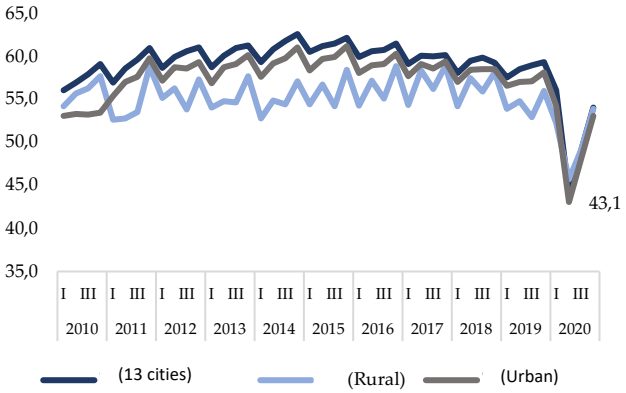
the lowest average value (55.2%). In 2020, due to the COVID-19 pandemic, the rate of each of the groups presented a sharp fall. In particular, the unemployment rate of the 13 cities had the largest decrease (15.2 p.p.), while the unemployment rate that decreased the least was that of rural areas (9.5 p.p.). In addition, it is observed that for this last year the employment rate in rural areas is higher than in urban areas and the 13 major cities.

Graph 23: Quarterly rural / urban employment rates

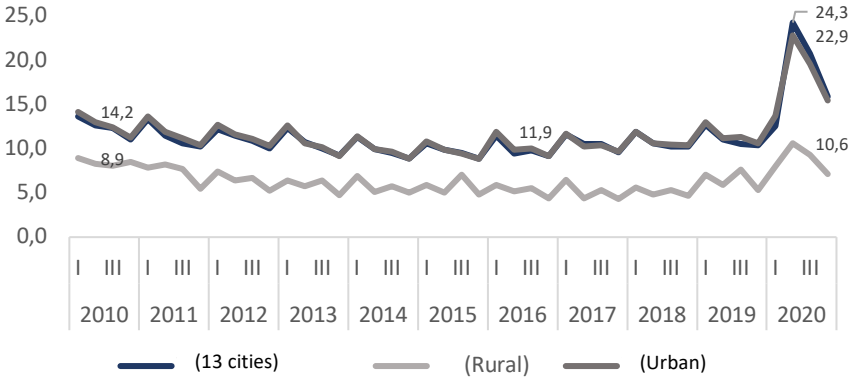
Panel A: Overall share rate rural/urban, 13 cities



Panel B: Employment rate rural/urban



Panel C: Unemployment rate



Source: Own elaboration based on DANE

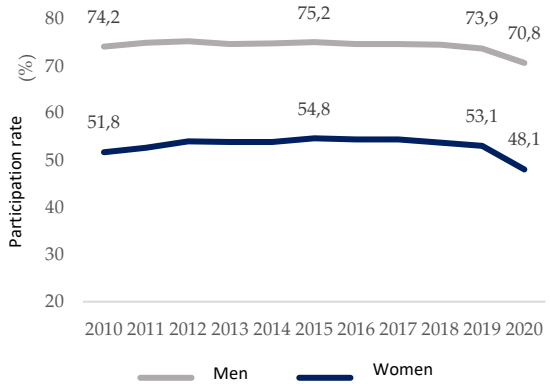
Regarding gender differences, in Graph 24 share, employment and unemployment rates for both men and women are presented. Panel A presents the overall share rate, which is higher for men compared to women. For example, by 2010 this difference was around 22.4 p.p., but by 2020 this reached 22.7 p.p. Panel B of the graph illustrates that the employment rate for men is higher compared to the rate for women at 22.2 p.p. on average. However, in 2019 this difference is smaller by 1.8 p.p. compared to the difference in the 2010 employment rate, which was equal to 23.8 p.p.

Panel C presents the unemployment rate, where an even larger gap is evident. For example, in 2010 the female unemployment rate was 15.6%, this is 6.7 p.p. higher than that of men.

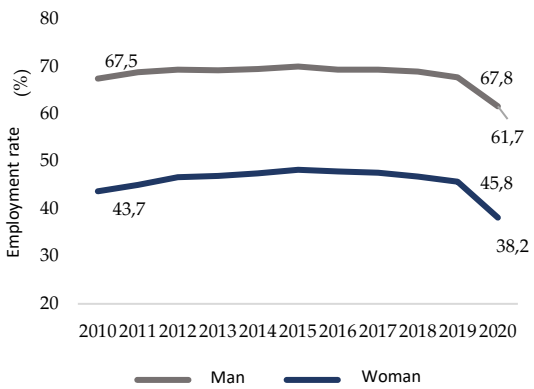
However, for 2019 unemployment among women fell to 13.6%, reducing the difference with respect to men and reaching 5.5 p.p. However, in 2020 this difference rises to 7.7 p.p., when the unemployment rate for women exceeded 20.4%.

Graph 24: Annual men/women employment rates

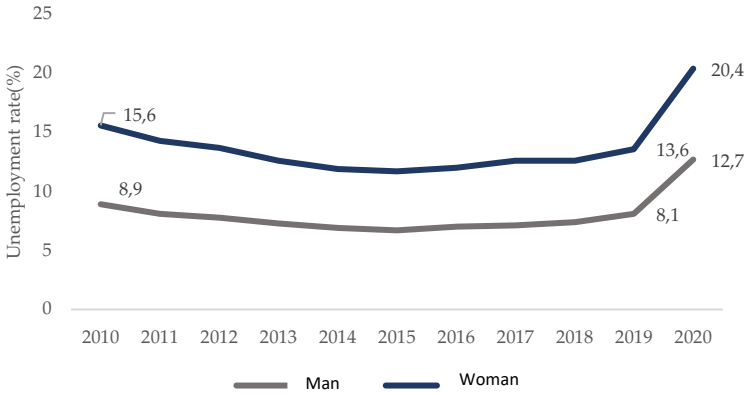
Panel A: Overall share rate



Panel B: Employment rate



Panel C: Unemployment rate

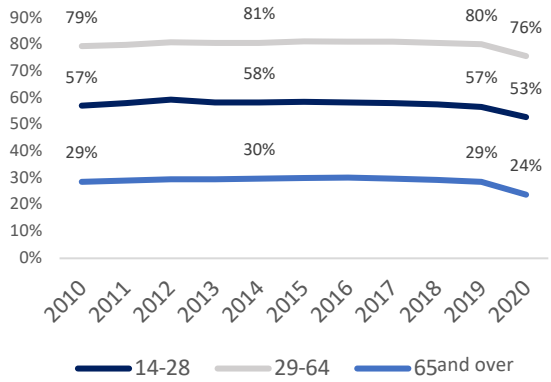


Source: Own elaboration based on DANE and LIHS

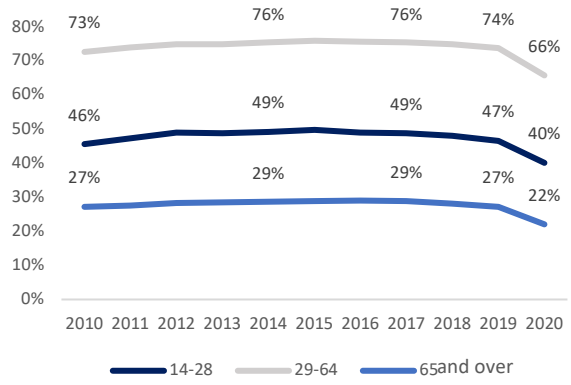
Young people are another group that faces barriers to access to the labor market. Graph 25 represents the different rates for young people between 14 and 28 years old. The average global share rate in 2010 was 57%, almost 21 p.p. below adults between 29 and 64 years old, a difference that grows 1 p.p. in 2019 and that is aggravated another 1 p.p. in 2020 when the share rate of young people reaches 53%. In turn, the employment rate in 2010 reached 46% (27 p.p. below adults between 29 and 64 years), reaches 47% in 2019 but falls to 40% in 2020, 28 p.p. below that of adults aged 29 to 64 years. Meanwhile, unemployment improves for the period 2010-2015, going from 20% to 15%, which is 10 p.p. higher than that of people between 29 and 64 years old, but which gradually grows to reach 24% in 2020.

Graph 25: Overall share rate, Employment rate, Youth unemployment rate

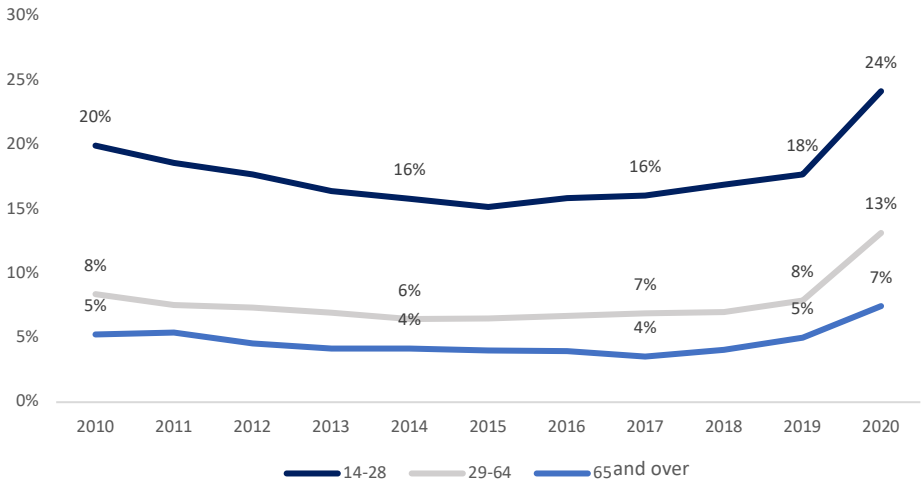
Panel A: Overall share rate



Panel B: Employment rate



Panel C: Unemployment rate



Source: Own elaboration based on DANE and LIHS

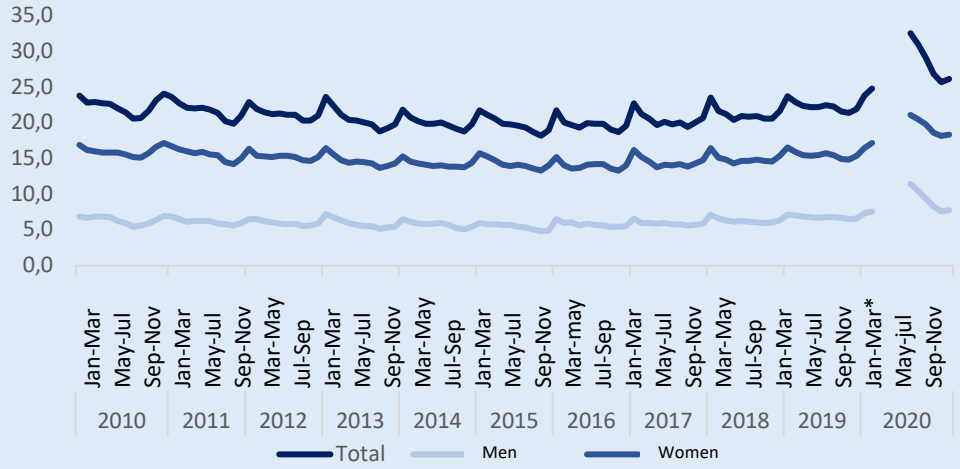
Graph 27 presents annualized labor market indicators by educational level [21]. For the overall share rate, it is observed that the lowest values are found in the low levels of education, this is how the average values for primary or less, and secondary are 54.3% and 49.2% respectively, for the educational levels in medium and higher the values are 74.5% and 88.7% respectively. It can be observed that the gap between those with secondary and primary education or less has grown, going from 38.5 p.p. of difference in 2015 to 38.7 p.p. of difference in 2019.

[21] These are categorized as follows: primary or less, secondary, middle and higher education (technical, technologist or university level).

Chart 4: Ninis' Evolution in Colombia

Associated with the lack of access to the labor market, young people also face barriers to access to education. This is how the proportion of young people between 14 and 28 years old who neither study nor work (Nini) by 2020 reached levels of 31.2%, this in the most difficult quarter in the framework of the Covid-19 pandemic (May-July). However, historically and prior to the pandemic, the levels of Ninis exceeded 20% to such an extent that in 2019 the number of Ninis was on the rise. It is women who mainly account for the largest proportion of Ninis. Taking as an example the months of May-July 2019, 7 out of 10 Ninis were women, a fact that worsened slightly in periods of pandemic to such an extent that while the proportion of Ninis in men rose 1.1 p.p., that of women did so by 2.9 p.p.

Graph 26: Ninis' Evolution in Colombia

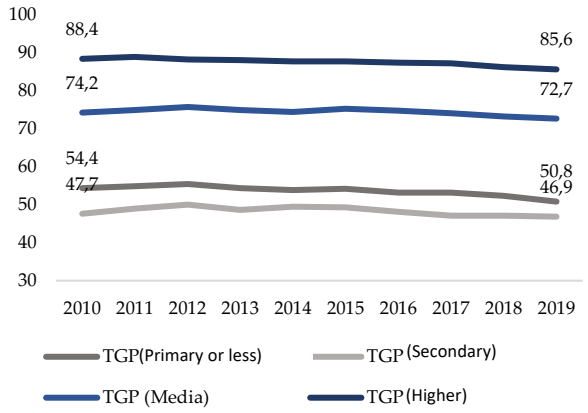


Source: *Own elaboration based on DANE*

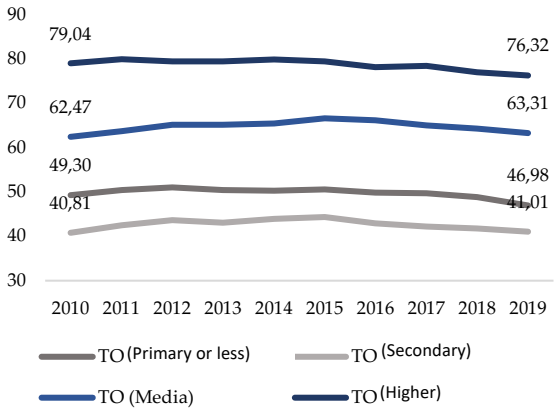
For the employment rate, the same behavior described above can be observed, since it is lower for secondary and primary with average values of 41.8% and 51.2% respectively, while for the middle and upper levels the values are 64.3% and 79.8%. Thus, the difference in the employment rate between primary and higher education levels is 28.6 p.p. As for the unemployment rate, high levels are observed in those skilled workers (with higher education), (9.3%) in 2019, followed by people with secondary education (9.2%), secondary (5.8%) and with primary or less (3.9%). In fact, the difference in unemployment between qualified people and those with primary or less went from 6.6 p.p. in 2010 to 5.4 p.p. in 2019.

Graph 27: Overall share rate, Employment and Unemployment rate by educational level

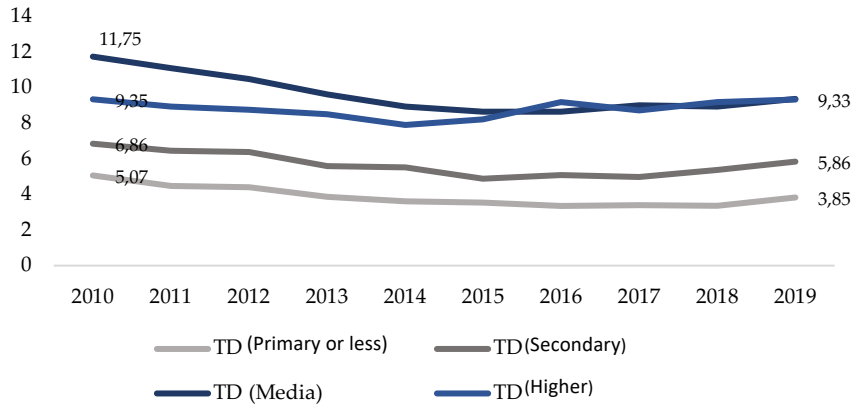
Panel A: Overall share rate



Panel B: Employment rate



Panel C: Unemployment rate



Source: Own elaboration based on DANE and LIHS

Table 14 shows the indicators described above are presented, but by quintiles of per capita household income for the period prior to the pandemic. As for the overall share rate in 2010, for the first quintile there are 69.2% and for the last 88.7%, with a difference of 19.5 p.p., while for the year 2019 the first quintile participated in the labor market in 72.0%, being that the 20% of higher income did so in 91.5% (18.0 p.p. of difference).

On the side of employment rates, the gap remains at 25 p.p. between the top and bottom quintile for both years. In 2019 the employment rate for the first quintile was 42.1% and for the last quintile 67.1%.

An outstanding gradient is observed in the unemployment rate per income quintile. For the year 2010 the unemployment of the first quintile was 19.4% and of the last of 6.2% (13.2 p.p. of difference). For the year 2019 the first quintile presents unemployment rates of 17.7%, the last one reaches 5.3% (12.4 p.p. difference). When comparing the gaps in unemployment rates between the first and last quintile, it is observed that they decreased between 2010 and 2019.

On the side of the inactivity rate, these are maintained over time. A considerable gap is observed for the first year of study between the first quintile and the fifth of 19.8 p.p. and for 2019 the value of the first quintile was 48.9% and the last of 29.2%, with a gap of 19.3 p.p.

Table 14: Overall rate of share, employment, unemployment and inactivity

	2010					2019				
Rates	Q1	Q2	Q3	Q4	Q5	Q1	Q2	Q3	Q4	Q5
Overall share rate	69.2	73.5	78.1	82.9	88.7	71.6	75.0	80.0	85.2	90.5
Employment rate	41.4	49.4	55.5	61.3	65.6	42.1	50.4	56.8	63.3	67.1
Unemployment rate	19.4	14.8	12.9	9.8	6.2	17.7	13.9	11.3	8.5	5.3
Inactivity rate	48.6	42.1	36.3	32.0	30.1	48.9	41.5	36.0	30.8	29.2

Source: Own elaboration based on DANE and LIHS

4.2.2 Labor income

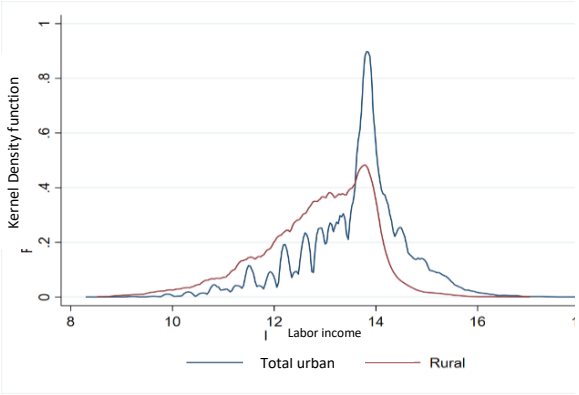
This section analyzes the gaps in labor income for the different population groups, as well as their evolution between 2010 and 2020. To this end, the behavior of the different distributions of labor income is shown, as well as the Inequality Indicators for the population groups of interest described above. This section ends with a breakdown between the intragroup of the Gini.

4.2.2.1 Distribution of Labor Income

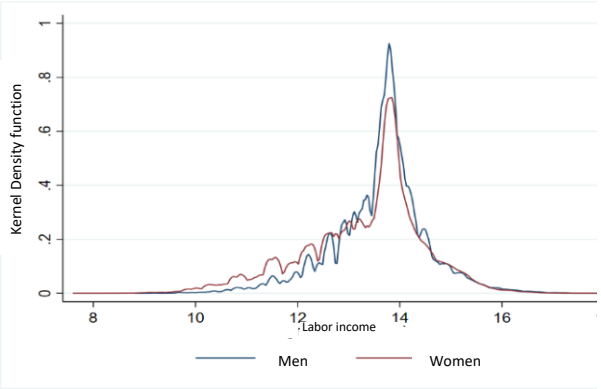
In order to see the dispersion along the distribution of labor income, Graph 28 shows the Kernel curves by population subgroups. Panel A shows that the distribution of labor income is more concentrated around the median for urban areas, and to a lesser extent at higher points of the distribution. On the other hand, for rural areas it can be seen that the form of the distribution is flatter thanks to the fact that labor income, by stacking less in the median, generates a distribution with greater heterogeneity (and be differentially distributed between the upper and lower part of the distribution). A priori, there is a higher inequality with respect to urban areas. Panel B shows that the distribution of men's labor income has a greater accumulation in the middle part of the curve compared to women, and even in the lower part this is less concentrated, so there is a greater inequality in labor income for women.
On the side of educational levels, Panel C presents an outstanding gradient by level, whereas the educational level increases, labor income accumulates more around a central trend, except for those employed with higher education level. Panel D captures kernel's distribution for labor income in the years 2010, 2019, and 2020. It is evident that, although 2020 presented a slight deaccumulation in the median, in order to gain greater weight in the lower part of the distribution, in terms of real per capita income it is still to the right of the distribution of 2010.

Graph 28: Kernel distributions by groups

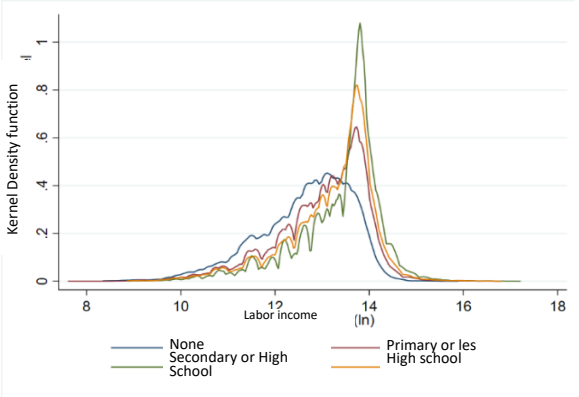
Panel A: Geographic areas (2020)



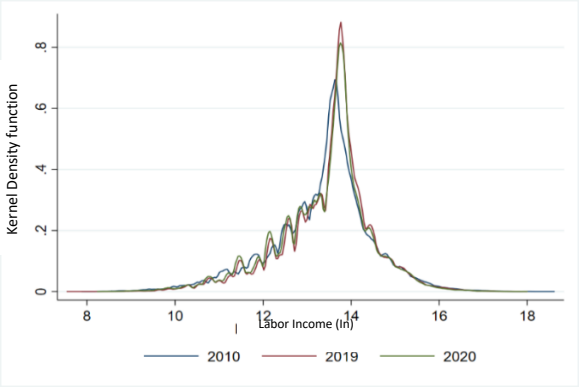
Panel B: Gender (2020)



Panel C: Educational level (2020)



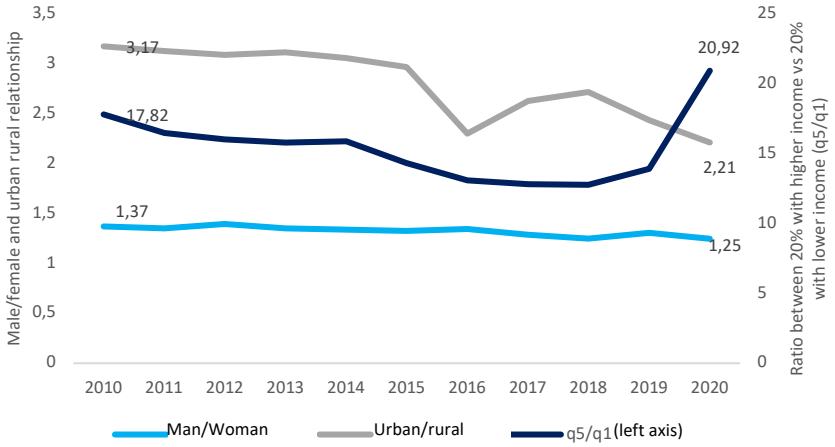
Panel D: By years



Source: Own elaboration based on DANE and LIHS

The ratio in terms of the labor income gap fell for some groups such as men/women, although in urban and rural areas, this drop was pronounced. While in 2010 the real labor income of men was 1.35 times that of women, in 2019 this value was around 1.3 times. For the relationship between geographic areas, in 2010 urban income was 3.17 times that of rural income, but in 2019 it decreased to 2.43 times, so the labor income gap fell in this period by about 70%. The relationship between the top 20% and the bottom 20% represents considerable gaps, persistent over the years. However, between 2014 and 2019 this ratio improved from 15.8 to 13.9. By 2010, the top 20% had 17.82 times the labor income of those with the bottom 20%. In 2020, this proportion worsened considerably as a result of the pandemic, to such an extent that the labor income of people in the last quintile was 20.9 times that of the first quintile.

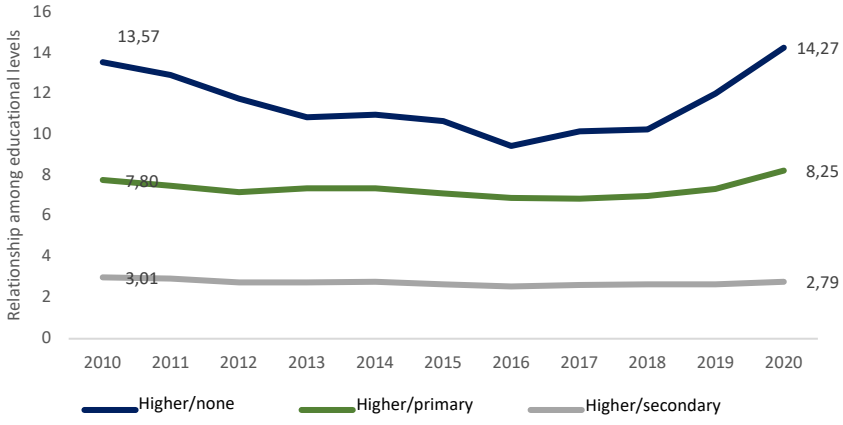
Graph 29: Evolution of the ratio of real income by subgroup



Source: Own elaboration based on DANE and LIHS

The differences in labor income by educational level are considerable, and unlike the higher-no educational level ratio, stable over time. The difference between people with higher education with respect to those with secondary education is the lowest and most stable in the period analyzed (around 2.5 times), it is observed that the upper level is 8 times higher than primary; while for the distance between those with higher education relative to no type of education is 13.5 times. For the latter, between 2010-2016 there is a fall of about 4 points, going from 13.6 in 2010 to 9.5 in 2016, to rise in the period 2016-2020 around 5 points. By 2020, the upper level relative to secondary decreases compared to the first year and reaches a value of 2.7 times; for the primary upper relative level the value increases 8.2 times, and for the higher level relative to no educational level, the value increases to 14.7 times. Therefore, the relationships increase for the higher/no educational level and higher/primary; decreases for the upper level relative to secondary.

Graph 30: Evolution of the relationship of real labor income by educational levels



Source: Own elaboration based on DANE and LIHS

4.2.2.2 Inequality indicators

In order to specify the inequality levels in labor income, this section describes the main inequality indicators calculated for population groups for 3 critical years, namely 2010 as the initial year, 2017 as a reference for changes in the Gini at the national level, 2019 as a final year to identify medium-term changes and 2020 as a reference of what happened during the pandemic.

Geographic areas

Table 15 contains indicators of labor income inequality for urban and rural areas in the years 2010, 2017, 2019 and 2020. In urban areas, the Gini coefficient shows small decreases from 2010 to 2019 from 0.53 to 0.49, representing a decrease of 0.04 Gini points; by 2020 it increases by 0.03 Gini points. For the Theil index, it can be seen that there is an annual decrease from 2010 to 2020, for the first year it was 0.53 and for the second of 0.48, which implies a decrease of 0.05 Gini points[22]. On the other hand, rural areas presented a slight decrease from 2010 to 2020, for the first year the indicator was 0.53 and for the last year 0.52. This behavior was also presented in the Theil index that took a value of 0.42 in 2010 and decreased to 2020 by 0.01 Gini points. Finally, for Atkinson (1), the measure of inequality increased for 2020 compared to 2010 by 0.03 points. Meanwhile, for the period 2017-2020, inequality in terms of the Gini had a significant increase in urban areas of 0.04 Gini points, in contrast to urban areas where it remained invariant for the period, although the same level of inequality between zones was observed.

Table 15: Inequality Indicators of labor income by geographic areas

Population subgroup	Year	Gini	Theil Index	Atkinson Indexes		Percentile Ratio (90/10)	Palma Ratio
Urban	2010	0.53	0.53	0.40	0.69	12.0	4.1
	2017	0.48	0.43	0.34	0.64	9.7	3.0
	2019	0.49	0.46	0.36	0.65	10.4	3.2
	2020	0.52	0.48	0.38	0.68	12.5	4.1
Rural	2010	0.53	0.42	0.37	0.71	14.5	4.7
	2017	0.52	0.40	0.35	0.66	11.1	4.3
	2019	0.51	0.39	0.36	0.68	14.3	4.1
	2020	0.52	0.41	0.38	0.71	14.2	4.3
Total National	2010	0.55	0.56	0.42	0.73	15.2	4.9
	2017	0.50	0.46	0.37	0.67	10.5	3.6
	2019	0.51	0.49	0.38	0.69	11.1	3.9
	2020	0.54	0.50	0.40	0.72	13.7	4.8

Source: Own elaboration based on DANE and LIHS

[22] For Atkinson (1), the measure decreased by 0.02 Atkinson points from 0.40 in 2010 to 0.38 in 2020, for Atkinson (2), the measure decreased from 2010 to 2020 by 0.01 Atkinson points from 0.69 to 0.68.

Gender

Table 16 contains indicators of labor income inequality for men and women in the years 2010, 2017, 2019 and 2020. In general, there is greater inequality for women compared to men. For women, it can be seen that the Gini coefficient decreased from 2010 to 2017 by 0.03 Gini points, from 0.58 to 0.55, experiencing an improvement in inequality. However, for the year 2020 there is an increase of 0.03 Gini points. In the case of men, for 2010 the Gini coefficient presented the value of 0.53, decreasing for 2017 by 0.06 points of the Gini. By 2020 it increased to 0.51.

Table 16: Indicators of labor income inequality. Gender

Population subgroup	Year	Gini	Theil Index	Atkinson Indexes		Percentile ratio (90/10)	Palma ratio
Female	2010	0.58	0.57	0.46	0.78	21.4	6.8
	2017	0.55	0.50	0.42	0.74	20.0	5.4
	2019	0.55	0.52	0.44	0.76	22.0	5.6
	2020	0.58	0.53	0.46	0.79	23.5	7.2
Male	2010	0.53	0.55	0.39	0.68	10.6	4.0
	2017	0.47	0.43	0.32	0.58	8.0	2.8
	2019	0.49	0.46	0.34	0.61	8.7	3.1
	2020	0.51	0.48	0.36	0.65	10.5	3.8

Source: Own elaboration based on DANE and LIHS

Educational level

The inequality indicators in labor income by educational levels are shown in Table 17 highlighting individuals without educational level, or with primary or less, secondary and higher. Generally speaking, inequality, as measured by the Gini, is higher for the more educated. In this way it can be seen that for those who do not have any educational level, the Gini coefficient for 2010 is 0.46, and remains until 2020 where the value is 0.46. However, the Theil index decreases annually by 0.02 Theil points, this indicator being the most sensitive to changes at the top of the distribution. For those with a higher educational level, the value of the Gini coefficient in 2010 was 0.50, which decreased consecutively by 0.01 Gini points for 2019, returning in 2020 to the previous values of 2010. In turn, the Theil index presented a value of 0.46 for the year 2010 decreasing by 0.03 Theil points for 2020.

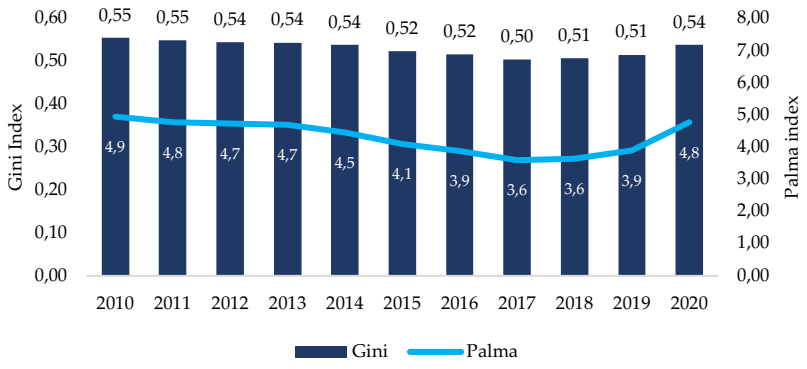
Table 17: Indicator of labor inequality by educational level

Population subgroup	Year	Gini	Theil Index	Atkinson Indexes		Percentile ratio (90/10)	Palma ratio
None	2010	0.46	0.32	0.32	0.64	12.0	2.8
	2017	0.46	0.31	0.32	0.63	11.1	2.7
	2019	0.45	0.29	0.31	0.63	11.9	2.6
	2020	0.46	0.30	0.32	0.64	11.8	2.8
Primary school	2010	0.46	0.35	0.32	0.65	10.0	2.9
	2017	0.43	0.27	0.28	0.60	9.1	2.3
	2019	0.44	0.29	0.30	0.63	11.1	2.5
	2020	0.47	0.31	0.32	0.64	11.4	3.0
Secondary school	2010	0.46	0.34	0.31	0.64	9.9	2.9
	2017	0.40	0.24	0.25	0.57	7.0	1.9
	2019	0.41	0.26	0.27	0.59	7.5	2.1
	2020	0.44	0.27	0.29	0.63	9.5	2.6
Higher	2010	0.50	0.46	0.36	0.66	9.8	3.3
	2017	0.48	0.42	0.34	0.62	8.7	2.8
	2019	0.49	0.43	0.34	0.64	8.8	2.9
	2020	0.50	0.43	0.35	0.66	10.8	3.2

Source: Own elaboration based on DANE and LIHS

A comparison in time (see Graph 31) of the Gini coefficient of labor income and the Palma ratio to the national total, suggests that inequality fell slightly until 2017, at which time it rose, a phenomenon that bends to the dynamics of inequality of total per capita income of households. For the year 2010 there is the highest level of inequality (measured by both indicators), of 0.55 for the Gini and 4.9 for the Palma ratio, presenting an annual decrease until 2017, up to 0.5 in Gini and 3.6 in Palma. It is from this year when inequality rises to 0.54 in 2020 in terms of the Gini, to levels similar to 2011-2012.

Graph 31: Gini vs. Palma



Source: Own elaboration based on DANE and LIHS

4.2.2.3 Breakdown

In order to verify to what extent inequality is explained, whether by the difference between groups or within groups, Table shows the breakdown of the Gini coefficient of labor income for the urban/rural subgroups, head of household gender and educational level is shown. For geographic areas and gender, inequality is explained more between groups than within them. For example, gender inequality in 2019 was explained by 51% by the difference between men and women, while by geographic areas this was higher, in almost 70% between urban and rural areas. However, inequality by educational levels is explained more by the differences within the groups, where in 2019 it managed to explain 59% of inequality.

Table 18: Gini breakdown by labor income

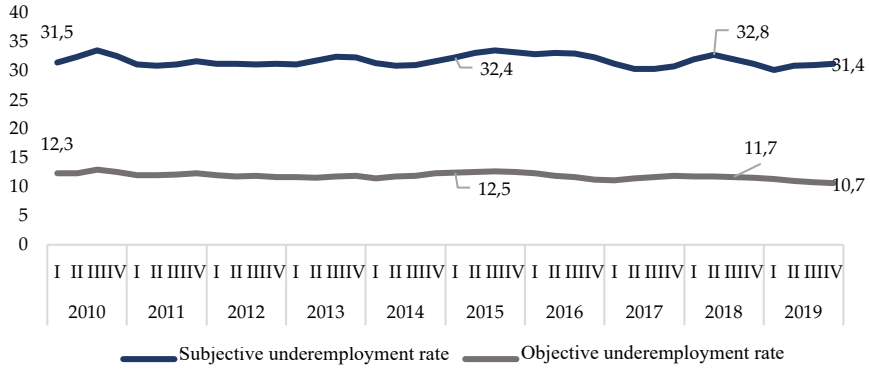
		2010		2019		2020	
		Gini	Participation	Gini	Participation	Gini	Participation
Urban-rural	Among groups	0.38	68.8	0.36	69.7	0.37	69.1
	Within a group	0.12	22.2	0.11	21.1	0.11	19.6
	Remainder	0.05	9.0	0.05	9.1	0.06	11.3
Gender	Among groups	0.29	52.2	0.26	51.4	0.28	52.0
	Within a group	0.06	10.1	0.04	8.0	0.02	4.0
	Remainder	0.21	37.8	0.21	40.6	0.24	44.1
Educational level	Among groups	0.11	20.2	0.12	23.5	0.13	24.3
	Within a group	0.31	56.4	0.28	54.9	0.29	53.7
	Remainder	0.13	23.5	0.11	21.6	0.12	22.0

Source: Own elaboration based on DANE and LIHS

4.2.3 Underemployment, informality and labor relations

Underemployment sheds light on the conditions and skills harnessed in the labor market. Dane defines it as those scenarios where working people disagree with the activities they perform, either because they believe that in another job they would have a better development (subjective), or because their skills and human capital are being underutilized (objective). In Graph 32 it is observed that subjective unemployment has gone from 31.5% in the first quarter of 2010, to 30.2% in the same quarter of 2019, this is 1.30 p.p. less. On the side of target unemployment, this has fallen from 12.2% in the first quarter of 2010 to 11.4% in 2019, which means a difference of 0.8 p.p.

Graph 32: National total subjective unemployment rates

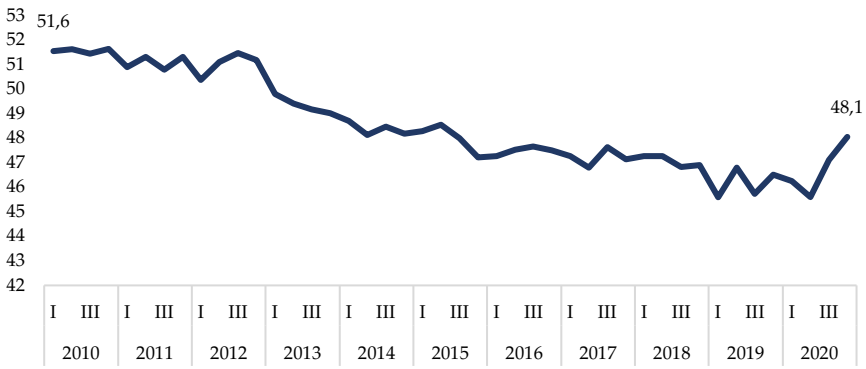


Source: Own elaboration based on DANE

4.2.4 Informality

The informality analyzed in this section refers to that calculated by DANE (2009)[23]. Graph 33 represents the informality rate for the 13 cities and M.A. for the period between 2010 and 2019. Informality peaked in 2010, when it reached 51.6%, since then it decreased by 6.1 p.p. compared to the second quarter of 2020, when it reached 45.6%.

Graph 33: Informality rate 13 cities and M.A.



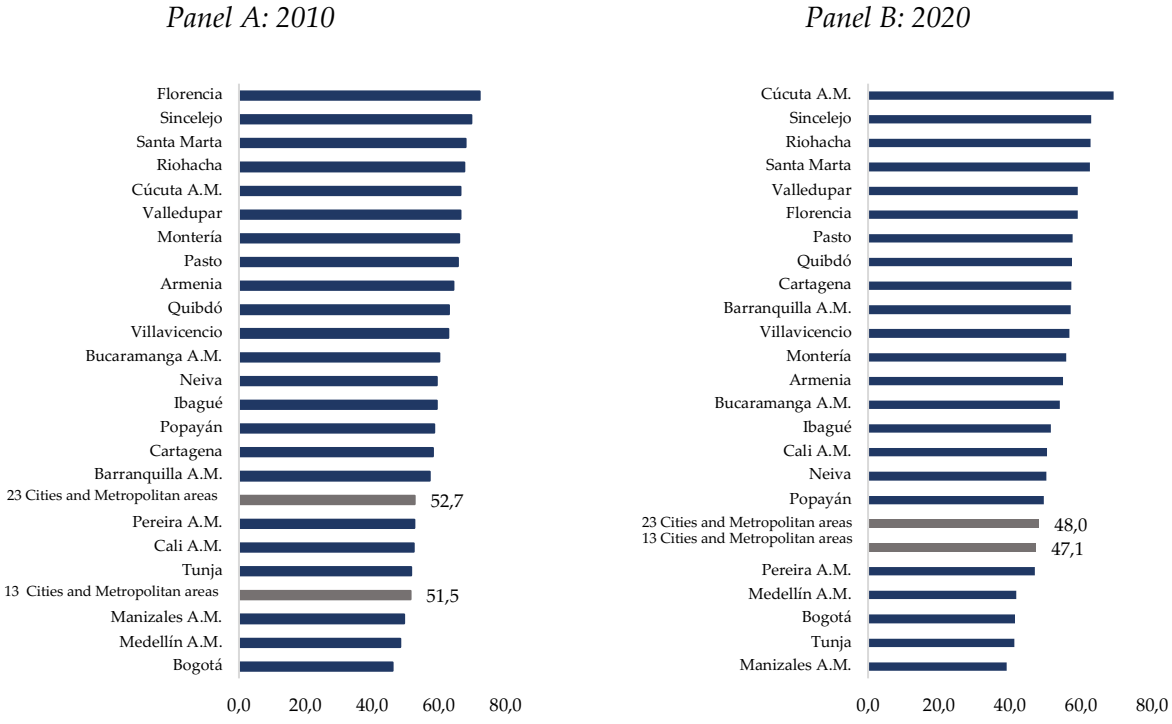
Source: Own elaboration based on DANE and LIHS

Although the persistence of informality in all major cities is considerably high, there are outstanding differences between cities. In the Graph 34 the transition of informality for the 23 cities and M.A. of the year 2010 compared to 2020 is presented. For 2010 the cities that were below the average of 13 cities and A.M, were Manizales, Medellin and Bogota, with values of

[23] It is defined according to: "1. Private employees and workers who work in establishments, businesses or companies that occupy up to five people in all their agencies and branches, including the employer and / or partner; 2. Unpaid family workers; 3. Unpaid workers in enterprises or businesses in other households; 4. Domestic workers; 5. Day laborers or laborers; 6. Self-employed persons working in establishments of up to five persons, except self-employed professionals; 7. Employers or employers in enterprises with five or fewer workers; 8. Workers or government employees are excluded." DANE (2009).

49.5%, 48.3% and 46.1% respectively. In turn, Florence, Sincelejo and Santa Marta were the cities which presented the highest values in the order of 72.1%, 69.7% and 67.9% respectively. In 2020, Cucuta, Sincelejo and Riohacha have the highest rates of informality, with 69.1%, 62.8%, and 62.5%, respectively.

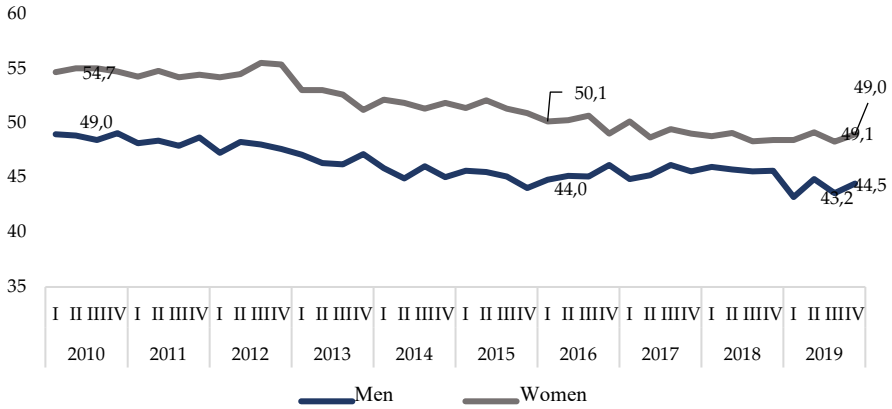
Graph 34: Informality rate for 23 cities and A.M (July/Sept)



Source: Own elaboration based on DANE and LIHS

From the point of view of informality by gender, Graph 35 shows the differences between these groups between 2010 and 2019. There has been a gradual reduction in the gap in informality rates between men and women. Thus, although in the first quarter of 2010 the difference was around 5.7 p.p., in the same period of 2019 this was 5.2. Overall, this measure is higher in women compared to men, the highest rate for women was 55.5% and occurred in the third quarter of 2012 and the lowest was 48.7% for the second quarter of 2017. For men, the highest rate occurred in the third quarter of 2010 and was 49.1%, the lowest value occurred in the first quarter of 2019 and was 43.2%.

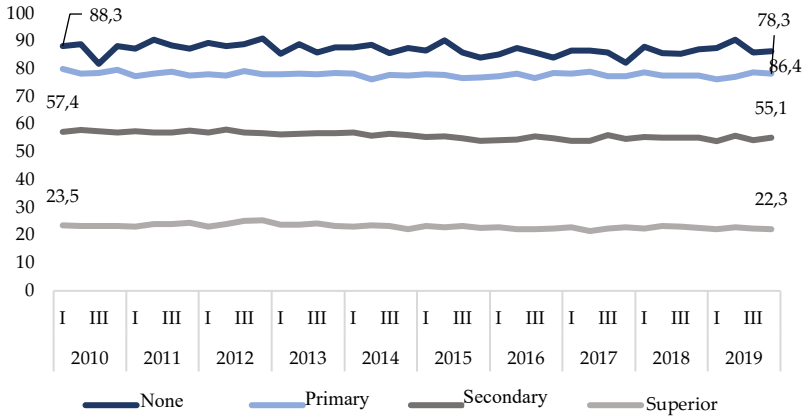
Graph 35: Quarterly informality rate by gender



Source: Own elaboration based on DANE and LIHS

On the side of informality by educational levels, Graph 36 shows that there is a considerable gap between the informality rate of individuals with higher education and those who do not have some degree of education. The average values for no educational level, primary, secondary and higher are 87.13%, 78.0%, 56.0% and 23.2% respectively. The difference between no level of education and higher education is 63.9 p.p. which represents a large gap between the population subgroups, which remains over time without considerable variations.

Graph 36: Informality rate by educational levels



Source: Own elaboration based on DANE y LIHS

Another approach to job quality is to identify occupational positions. Thus, Table 19 shows the employed population according to categories, such as employees, self-employed workers, employers or laborer, and those employed without remuneration. The supplement includes the unemployed and inactive who together form the working-age population. The above, considering their educational level grouped into: none, secondary and higher.

In general, there is a rearrangement of self-employed workers between 2010 and 2019, more pronounced in those without educational level or with secondary. On the other hand, the inactive increased their share more at high educational levels than at low levels. For the categories belonging to the employed, it is evident that in the employees the greatest variations were seen in those who have educational level in secondary and higher. For the first there was an increase of approximately 1 p.p., for the second subgroup there was a decrease of approximately 1 p.p., for self-employment it can be seen that for the educational level none there is an increase represented in 1.96 p.p., meanwhile, for secondary it was 1.22 p.p.

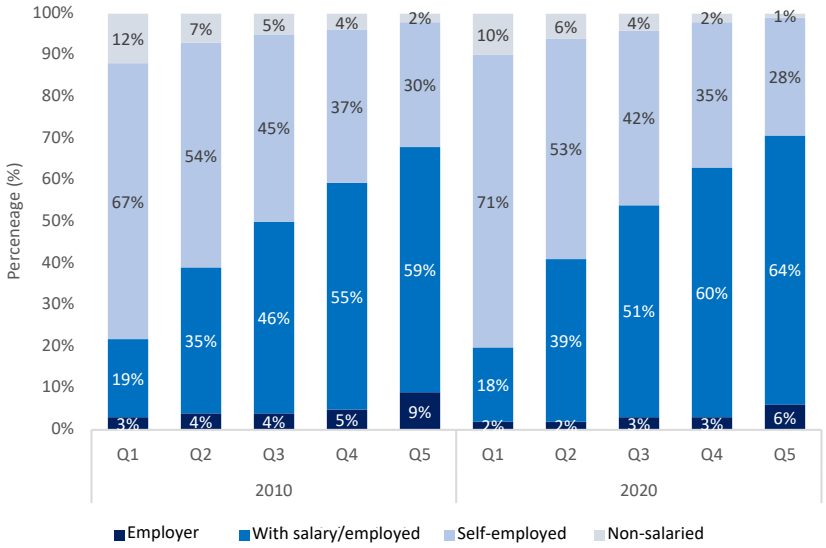
Table 19: Employment relationship by educational level

Category		None		Secondary school		Higher	
		2010	2019	2010	2019	2010	2019
Employed	Employees	26.28	26.96	34.53	35.42	51.44	50,56
	Self-employment	38.06	40.00	22.49	23.71	21.82	21,67
	Chief or workman	3.73	2.69	2.62	2.08	4.94	3,12
	Without compensation	5.17	4.16	2.87	2.10	1.11	0,97
Unemployed		2,31	1.43	11.74	9.37	9.23	9.33
Inactive		24,44	24.76	25.74	27.32	11.46	14.36

Source: Own elaboration based on DANE

Graph 37 presents the proportion of employed workers according to employment relationship by income quintiles, for the years of 2010 and 2019. Obviously, the high quintiles (4 and 5) are composed mostly of salaried workers, with significant increases between 2010 and 2019. This is how in the last quintile it went from 59% of employees to 64% in 2019. This rearrangement goes hand in hand with the increase in proportional terms of the self-employed in the lower income quintiles. While 67% of those employed in the first quintile were self-employed, in 2019 this proportion rose to 71%. On the other hand, for those belonging to the employer category, there is an increase in the proportion as the quintile increases, for the first quintile the value was 3.0% and for the last 9.0%. The unemployed, although more concentrated in the lower quintiles, have decreased their share in all income quintiles.

Graph 37: Proportion of workers by occupational level and quintile



Source: Own elaboration based on DANE and LIHS

4.3 Inequality in consumption

However, it emphasizes that household consumption is not measured periodically in Colombia, hence the aggregates of poverty and inequality are based on income. However, there are official measures on the level of consumption, as described above, which for the case of the 2016-2017 biennium were collected through the NHBS. Below, calculations corresponding to inequality in consumption for the period 2016-2017 will be shown.

4.3.1 Average and median consumption

Table 20 shows the average and median total household consumption expenditure per unit of expenditure for the period 2016-2017 is presented. First, it is observed that for the national total the median is below the average, with a difference of $204,504. In real terms, the distance between the mean and median for the urban population subgroup was $230,975, while for the rural population subgroup it was $65,494. Compared to households headed by men and women, it is observed that consumer expenditure was higher in households headed by women (heads) compared to households headed by men, both in the average and in the median. For the median there is a difference of $18,909, while for the median there was a distance of $78,541.

It was evidenced that for the educational level, as education increases, so does consumer spending. In this regard, we can see that for the educational level none, the median was $ 237,252, the average was $ 298,728; for the upper level, the values were $553,528 for the median and $951,342 for the mean, which means that there is a difference of $316,276 and $652,616 between the means and medians.

On the other hand, for the regions it can be seen that the highest values for the median and the average of consumption were evidenced in Bogota with a value of $ 622,511 and $ 1,061,941 respectively, a fact that represented a difference in real terms of $ 439,430, while the

lowest values for the median are in the Atlantic region with a value of $ 271,477, for the average, the lowest value is in this same region with a value of $364,879, which, compared to Bogota, constituted a difference for the average of $697,062 and for the median of $351,034.

By ethnic groups, it can be seen that for the values corresponding to the median and the mean were the lowest in indigenous, and higher in the gypsy or Rom ethnic group; for the first the values were $191,884 and $271,498 respectively. In turn, for the second population subgroup the values were $477,366 and $622,445.

Table 20: Media and Median per capita consumption

Population subgroup	Median	Media
Total National	$ 375,054	$ 579,858
Urban	$ 436,686	$ 667,661
Rural	$ 228,540	$ 294,034
Head of household		
Male head	$ 464,452	$ 800,488
Female head	$ 445,543	$ 721,947
Educational level		
None	$ 237,252	$ 298,728
Primary or less	$ 302,275	$ 409,081
Basic secondary	$ 339,112	$ 456,820
High school	$ 408,683	$ 545,062
Higher	$ 553,528	$ 951,342
Poverty		
Poor	$ 487,409	$ 740,481
Non poor	$ 175,878	$ 170,129
Region		
Atlantic	$ 271,477	$ 364,879
Bogota	$ 622,511	$ 1,061,941
Central	$ 386,089	$ 548,473
Amazonas and Orinoquia*	$ 352,139	$ 486,582
Eastern	$ 397,538	$ 561,882
Pacific	$ 320,494	$ 461,135
San Andres	$ 517,141	$ 659,715
Ethnic group		
Indigenous	$ 191,884	$ 271,498
Gypsy or Rom	$ 477,336	$ 622,445
Raizal	$ 469,522	$ 633,230
Palenquero	$ 437,988	$ 534,911
Afro-descendant	$ 287,560	$ 386,930
None	$ 390,496	$ 605,088

Source: Own elaboration based on NHBS

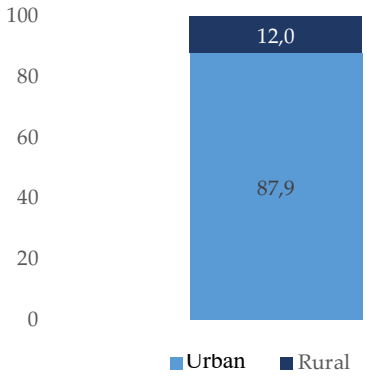
4.3.2 Concentration of consumption by subgroups

Panel A of Graph 38 represents the share of urban and rural areas in the national total; for the first group it was 87.9% and the complement for the second 12%. As for educational levels, there is a concentration in the distribution of consumption close to 31.7% at the highest level, corresponding to those with higher education, while for those with secondary education their

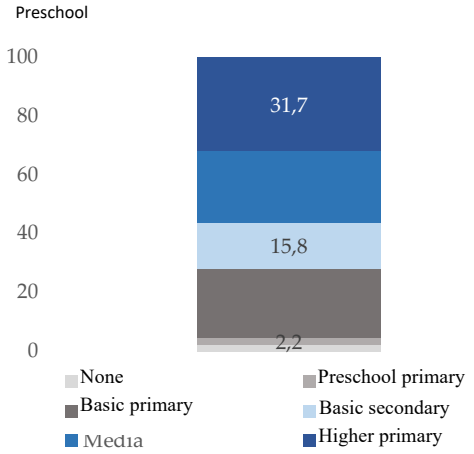
share in consumption was equivalent to 24.1%. For geographic regions, the largest share is in the Central region with a share of 28.8% and the lowest in San Andres with a share of 0.1%. Finally, for the share in the consumption of the heads of household that is presented in Panel D of Graph 38, the highest values are found in male heads with a value of 63.5% and, correlatively, the lowest values for women heads of household with a value of 34.7%.

Graph 38: Participation of population groups

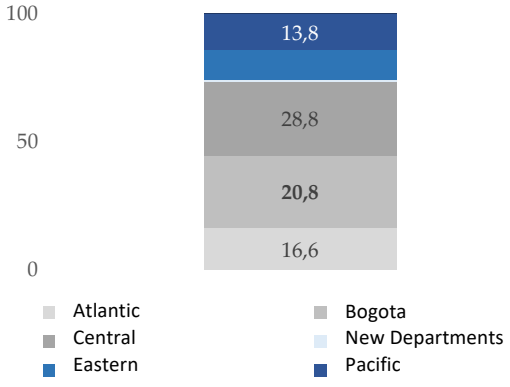
Panel A: share of consumption in geographic areas



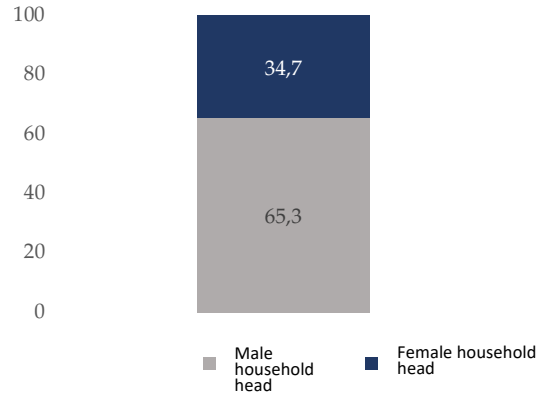
Panel B: share of consumption educational levels



Panel C: Share in consumption areas



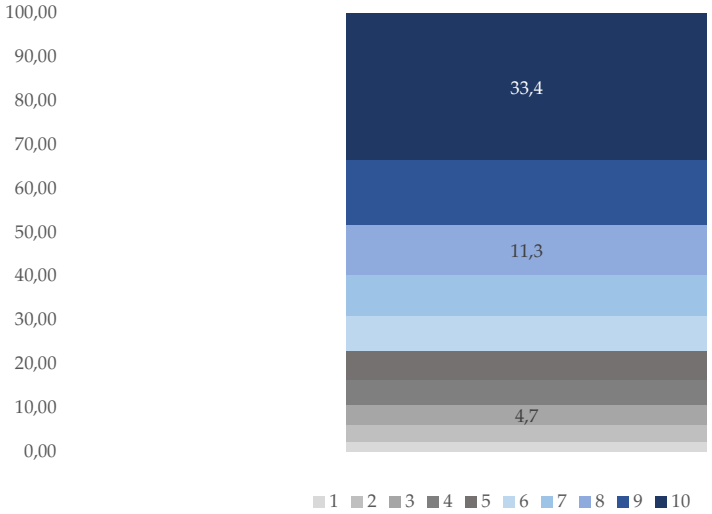
Panel D: Share in consumption leadership



Source: Own elaboration based on NHBS

Graph 39 presents the share by deciles of total household consumption of the expenditure unit. The decile 10 (i.e., the richest 10%)) participates in consumption with 34.4%; the lowest share is in the first decile with 2.3%. Obviously, then it gradually increases decile by decile. For example, for the second decile the value corresponded to 3.7%, while for the third decile it was 4.7%, and for the fourth it is 5.7%. At the upper levels, it is important to note that for the sixth decile the magnitude was 7.8%, for the seventh 9.3%, while for the eighth value it was 11.3%; the ninth the value was 14.8 %. Consequently, the difference between the first and last decile was 32.1 p.p.

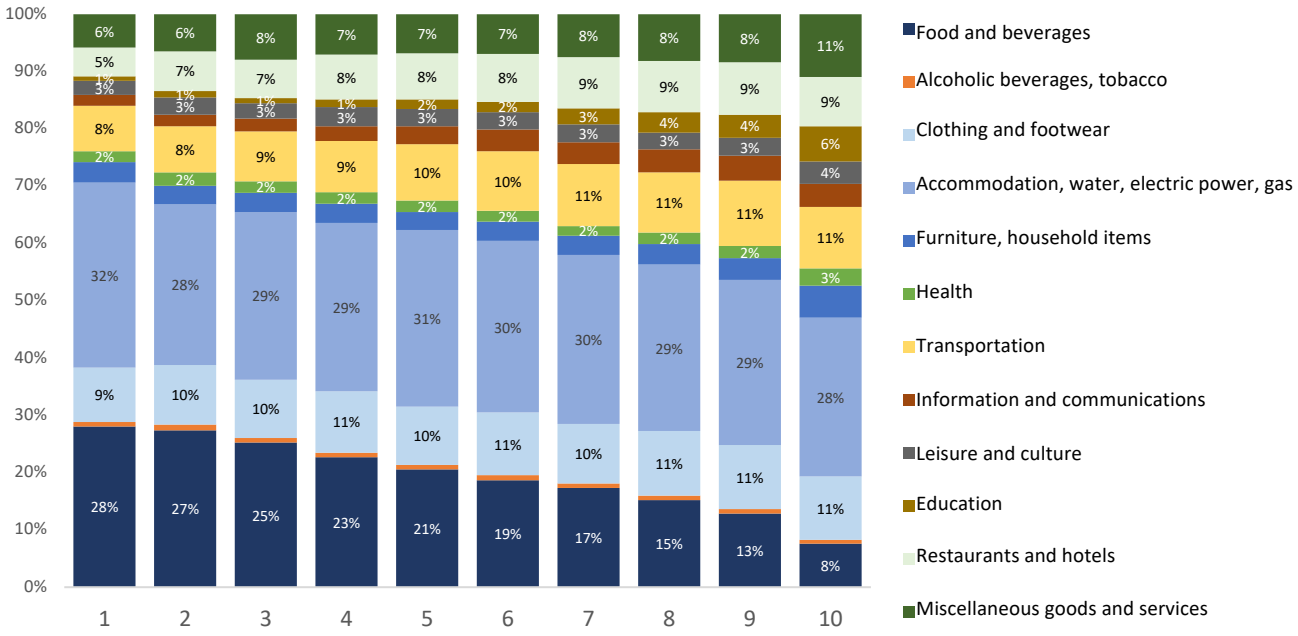
Graph 39: Share per decile of consumption



Source: Own elaboration based on NHBS

From the point of view of the structure of expenditure, it is observed that households of the 10% with the lowest per capita income, allocate about 60% between accommodation, public services and food (32% in accommodation and household public services, while a remaining 28% in food), in contrast to the 10% of higher income whose destination to these goods and services reaches 36% of their total expenditure, this is 24 p.p. less than the bottom decile. Other substantial differences in the structure of expenditure are observed in education, which reaches 0.8% in decile 1 and up to 6.2% in decile 10.

Graph 40: Structure of expenditure per decile of per capita household income

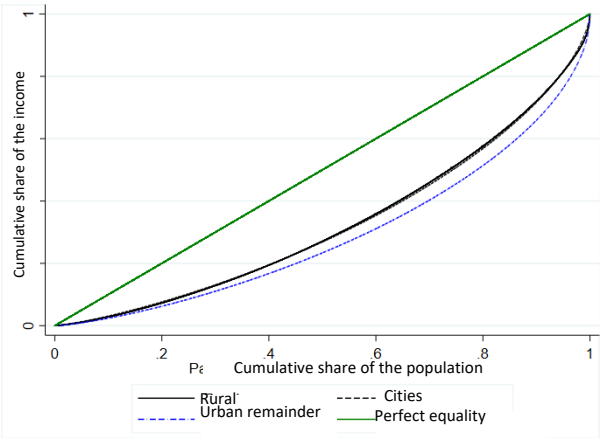


Source: Own elaboration based on NHBS

4.3.3 Inequality Indicators in Consumption

Graph 41 represents the Lorenz curve for population subgroups, i.e. rural, 13 cities and urban rest. According to the results, the highest inequality levels were observed in the rest of the urban areas; of course, because that curve is further away from the curve of perfect equity. On the other hand, the rural curve and 13 cities are closer to the perfect equity curve, which denotes that inequality in consumption was lower for these population subgroups.

Graph 41: Lorenz curve of consumption



Source: Own elaboration based on la NHBS

Inequality in geographic areas

On the other hand, Table 21 shows inequality in consumption according to geographic domains is observed. There it can be seen that for the National Total the Gini coefficient was 0.48, which, exposed in a disaggregated way, shows that for urban and rural areas, such a value was 0.46 and 0.38, the first subgroup being greater than the second, with a difference of 0.06 p.p. The Theil index amounted to 0.52 for the National Total, which, in a disaggregated way, allows us to see that for the urban subgroup it was 0.49 and for rural 0.29. On the other hand, the Atkinson index (1) was higher for the rural than for the urban, with a difference of 0.05. For the 90/10 ratio and the Palma ratio the values were higher for both cases. Additionally, for the 13 cities and metropolitan areas the Gini coefficient was 0.40 and the Theil index was 0.31, compared to the rest whose first measure amounted to 0.48 and the second 0.55, which represented a gap of 0.8 Gini points and 0.24 Theil points, respectively.

Table 21: Indicators geographic zones

	Inequality Indicators					
Population subgroup	**Gini**	**Theil Index**	**Atkinson (1)**	**Atkinson (2)**	**90/10**	**Palma**
Total National	0.48	0.52	0.32	0.50	7.04	2.77
Urban	0.46	0.49	0.30	0.45	6.17	2.50
Rural	0.38	0.29	0.22	0.37	5.07	1.68
13 cities and M.A.	0.40	0.31	0.23	0.37	5.33	1.87
Rest	0.48	0.55	0.32	0.49	6.81	2.80

Source: Own elaboration based on NHBS

Gender inequality of the head of household

Table 22 shows the Inequality Indicators according to gender of the head of household can be appreciated; for the boss, consumption is more concentrated than for households headed by women regardless of the indicator used. In the case of the Gini coefficient, it can be seen that the values for the boss are 0.50 and for the boss 0.53, which implies a difference of 0.03; for the Theil index the values are 0.51 for the boss and 0.55 for the boss, all of which resulted in a gap of 0.05. In turn, Atkinson (1) yielded the values of 0.34 for boss and 0.39 for boss, a difference of 0.05. As for the ratios for 90/10 the value for boss was 8.1 and for boss 7.6, so there is a difference of 0.5 between genders of head of household. For the Palma index, the values were 3.0 in chief and 3.54 in chief; gap of 5.4 points Palma.

Table 22: Inequality Indicators Leadership

	Inequality Indicators					
Population subgroup	**Gini**	**Theil Index**	**Atkinson (1)**	**Atkinson (2)**	**90/10**	**Palma**
Head of household						
Male head	0.50	0.51	0.34	0.53	8.11	3.07
Female head	0.53	0.55	0.39	0.55	7.63	3.54

Source: Own elaboration based on NHBS

Inequality by educational level

Table 23 shows the Inequality Indicators are observed for each of the educational levels, in which as the educational level is higher, the measures of inequality tend to be greater. As an illustration, for those without any educational level, the value was 0.37 and for the higher educational level the value was 0.52, a fact that denotes a difference of 0.15 points of the Gini. The inequality for people with no educational level, measured by the Theil index, corresponded to 0.25, while for the higher education level it was 0.64, which implies a difference of 0.39.

Inequality for those with no educational level measured by Atkinson (1) observed a value of 0.21 and for higher education level 0.38, which implied a difference of 0.17. On the other hand, the ratio of deciles denotes the same trend, where the category for no educational level took the value of 5.4 and above the value of 9.3, a fact that implied a difference of 3.9 between such educational levels. Last but not least, for the Palma ratio the value at no educational level was 1.61 and higher 3.55, which implies a difference of 1.94.

Table 23: Inequality Indicators Educational Level

	Inequality Indicators					
Population subgroup	**Gini**	**Theil Index**	**Atkinson (1)**	**Atkinson (2)**	**90/10**	**Palma**
Educational Level						
None	0.37	0.25	0.21	0.37	5.44	1.61
Primary or less	0.41	0.35	0.25	0.42	5.69	1.93
Basic Secondary	0.40	0.32	0.24	0.40	5.70	1.88
High school	0.39	0.30	0.23	0.38	5.23	1.78
Higher	0.52	0.64	0.38	0.58	9.38	3.55

Source: Own elaboration based on NHBS

Inequality by geographic region

In reference to inequality according to geographic scope, it is denoted that in Table 24 inequality indicators by geographic region can be observed. In general terms, it can be seen that the highest values were verified in Bogota in all inequality indicators (Atkinson, Theil, etc.) and the lowest for San Andres. For the Gini coefficient the value was 0.50 for Bogota and

0.33 for San Andres, which implies a difference of 0.17; the Theil index presented the values 0.65 and 0.21 respectively, with a difference of 0.44. For the ratio of deciles, the value of Bogota was 6.67 and San Andres 3.88 (a difference of 2.79). For Palma the values were 3.11 and 1.33, respectively (a difference of 1.78).

Table 24: Inequality Indicators Geographic regions

	Inequality Indicators					
Population subgroup	**Gini**	**Theil Index**	**Atkinson (1)**	**Atkinson (2)**	**90/10**	**Palma**
Region						
Atlantic	0.41	0.32	0.25	0.42	6.10	1.97
Bogota	0.50	0.65	0.35	0.50	6.67	3.11
Central	0.43	0.39	0.27	0.42	5.76	2.20
New Departments	0.41	0.31	0.25	0.42	6.11	1.98
Eastern	0.43	0.35	0.26	0.43	6.00	2.13
Pacific	0.44	0.37	0.28	0.46	6.64	2.26
San Andres	0.33	0.21	0.17	0.28	3.88	1.33

Source: Own elaboration based on NHBS

Inequality by ethnic group

In connection with inequality by ethnic group, it is denoted that for individuals who do not belong to an ethnic group, the highest values of inequality were observed. It can be seen that in Atkinson (1) and Atkinson (2) the values for those who do not identify with any ethnic group were 0.32 and 0.49, respectively. According to Table 25, the lowest values are given for the Afro-descendant ethnic subgroup; for the Gini coefficient and the Theil index the values were 0.39 and 0.29 respectively. For the rest, the indigenous people have a concentration in consumption of 0.43 of the Gini, while the gypsies and the raizales are in the order of 0.42.

Table 25: Inequality Indicators Ethnic group

	Inequality Indicators					
Population subgroup	**Gini**	**Theil Index**	**Atkinson (1)**	**Atkinson (2)**	**90/10**	**Palma**
Ethnicity						
Indigenous	0.43	0.35	0.27	0.45	7.41	2.20
Gypsy or Rom	0.42	0.30	0.28	0.49	10.11	1.90
Raizal	0.42	0.35	0.26	0.42	6.58	2.18
Palenquero	0.39	0.25	0.26	0.48	7.04	1.71
Afro-descendant	0.39	0.29	0.23	0.38	5.45	1.78
None	0.48	0.52	0.32	0.49	7.00	2.77

Source: Own elaboration based on NHBS

Inequality by expenditure category

In order to explain the inequality within the expenditure structure of households, Table 26 shows different Inequality Indicators for each category of expenditure are presented. To this end, the expenses reported by households monthly in the NHBS are grouped into the 12 expenditure divisions used by DANE based on the classification of individual consumption by purpose (COICOP). Spending on food and beverages has the lowest inequality levels (0.37 in the Gini); in turn, spending on accommodation and household public services presents a distribution close to the Gini of total expenditure, this in the order of 0.42. Meanwhile, they stand out for their high inequality, spending on recreation and culture (0.69), education (0.71) and health (0.77), which means that there is a high concentration in households with greater purchasing power in these services, which stimulate the accumulation of human capital, compared to households that have less consumption capacity.

Table 26: Inequality Indicators by Expense structure

	Inequality Indicators				
Expense category	**Gini**	**Theil Index**	**Atkinson (1)**	**Atkinson (2)**	**Palma**
Foods and non-alcoholic beverages	0.37	0.23	0.26	0.67	1.6
Alcoholic beverages, tobacco, and narcotic drugs	0.58	0.63	0.49	0.79	5.7
Clothing and footwear	0.65	0.78	0.62	0.89	11.0
Accommodation, water, electric power, gas, and other fuels	0.42	0.33	0.271	0.49	2.1
Furniture, household items and articles for the ordinary conservation of home	0.65	0.99	0.56	0.77	8.0
Health	0.77	0.99	0.75	0.92	27.1
Transportation	0.65	0.65	0.51	0.82	12.4
Information and communications	0.64	0.75	0.79	0.98	23.7
Leisure and culture	0.69	0.99	0.72	0.99	14.5
Education	0.71	0.98	0.76	0.97	26.3
Restaurants and hotels	0.65	0.61	0.53	0.87	15.1
Miscellaneous goods and services	0.66	0.98	0.57	0.81	8.7

Source: Own elaboration based on NHBS

4.3.4 Breakdown of inequality in consumption

In order to determine to what extent inequality in consumption is explained by the difference between groups or within them, Table 27 shows a breakdown of inequality as measured by the Gini index is observed for urban-rural population subgroups, gender of the head of household, educational level, poverty and extreme poverty. In the case of the urban-rural difference, inequality is explained more between groups than within them. Between the groups the inequality is explained by 0.32 points of the Gini and within these of 0.12, which implies a gap of 0.20 Gini points. The share of inequality between the groups was 63% of the Gini while the inequality within them was 25.7%, so there is a difference of 37.3%, sense by

which the inequality in this population subgroup was explained to a greater extent by the determinant between the groups.

For the second subgroup gender of the household head, the Gini coefficient among these groups was 0.26 points with a share of 54.2 Gini points; within them it was 0.02 Gini points with a share of 4.9, so there was a noticeable gap in both the Gini coefficient and share. In any case, the composition of consumption denotes that inequality was explained to a greater extent by behaviors between groups. For the educational level, the inequality between the population subgroups was 0.11 Gini points between the subgroups and 0.17 Gini points within them, which denotes a gap of 0.06 Gini points. The share between the subgroups was 23.2 and within them corresponded to 35.9, (difference of 12.7%), which indicates that the inequality was mostly explained within the population subgroups.

Finally, for poverty it can be seen that the value of the Gini coefficient was explained to a greater extent by the values between the groups; share that represented 98.4, while the value of the Gini coefficient amounted to 0.47. For extreme poverty these values were also explained to a greater extent by inequality between groups, with a value of 99.8% and a Gini coefficient of 0.48.

Table 27: Breakdown of consumption between and within groups

		2016-2017	
		Gini	Participation
Urban-rural	Among groups	0.32	66.3
	Within a group	0.12	25.7
	Remainder	0.04	8.1
Gender of household head	Among groups	0.26	54.2
	Within a group	0.02	4.9
	Remainder	0.20	40.9
Educational level	Among groups	0.11	23.2
	Within a group	0.17	35.9
	Remainder	0.20	40.9
Poverty	Among groups	0.47	98.4
	Within a group	0.01	1.59
	Remainder	0.00	0.00
Extreme poverty	Among groups	0.48	99.8
	Within a group	0.0	0.014
	Remainder	0.0	0.00

Source: Own elaboration based on NHBS

4.4 Inequality in household goods, assets and services

The analysis described so far has focused on measuring economic inequality using as a fundamental measure the per capita income of households, labor income and their per capita consumption. It is important to note that inequality can have more than one dimension, among which are education, goods and assets, health, among others, so adding different indicators can enrich the measurement of individual well-being. Reinforcing the above idea and according to Sen, A. (1999), income inequality approximates economic inequality, therefore, the living conditions that the inhabitants of a population have to be assessed in terms of real welfare achievements and the ability to achieve them.

This section determines the level of inequality at the level of assets and assets owned by households. Studies of inequality in more than one dimension have used indicators based on asset-based standard of living to estimate multidimensional inequality. In order to use

multidimensional inequality indices, all property and capability indicators must be combined into a single index. For the herein study, principal component analysis was used to create an asset index and then calculate a multidimensional Gini or household assets, goods and services. Thus, the properties of household goods (television, refrigerator among others) and access to basic services (water, sanitation, electric power), have been used to measure inequality in a multidimensional sense. It is important to mention that in the section 4.7 Inequalities in Social Domains, gaps in access to some services are addressed in detail.

From the methodological point of view (see Annex 4), the principal competence approach (UCPCA) is used, which defines a linear combination that represents the greatest variation in the distribution of goods, assets and services, correcting the negative weights associated with some factor, as well as the mean values in dichotomous variables that include zeros. The asset index calculation uses the following variables to generate the index from the UCPCA approach. The variables are taken from the Large Integrated Household Survey (LIHS) and each individual is assigned the constructed value for the home. Other methodological aspects, as well as the parameters of the main components can be consulted in Annex 4.1.

The variables used to calculate the asset index are presented in Table 28, where the average in the holding of assets is observed, this at the household level for the years 2010 and 2019. For example, while in 2019 about 98% of households had electric power and another 95% reported having a cell phone, 30% had a computer and another 42.7 had Internet access.

Table 28: Items used for the calculation of the asset index (2010/2019)

Items	Media (%)	
	2010	2019
Telephone service	37.3	25.8
Parabolic	51.5	62.0
Internet	19.5	42.7
Washing machine	42.5	63.0
Fridge	74.7	84.3
Stove	82.1	90.6
Oven	20.6	20.5
Water heater	17.1	18.8
Color TV	90.2	92.4
DVD	48.4	21.4
Sound equipment	46.6	40.1
Computer	26.3	30.4
Air conditioning	2.6	4.0
Fan	32.7	38.3
Bicycle	33.1	29.8
Motorbike	16.7	30.1
Cellular	88.1	95.8
Electric power	96.5	98.7
Sewer system	50.5	66.5
Gas	71.0	75.0
Aqueduct	85.8	88.0
Blender	77.8	84.7
Vacuum cleaner	5.4	3.4
Microwave	14.7	15.1

Source: Own elaboration based on LIHS

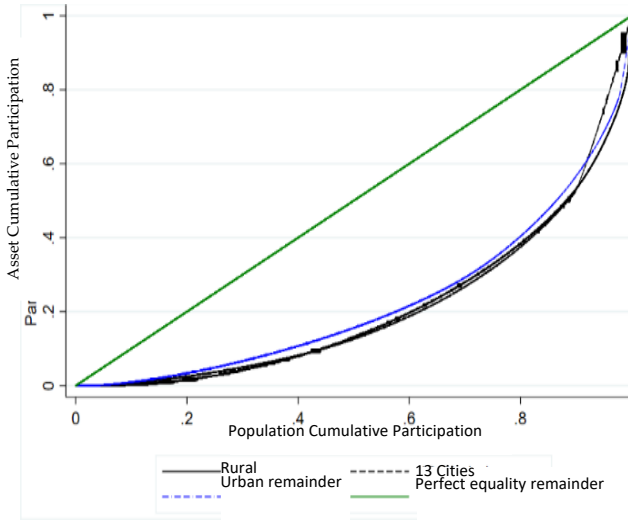
4.4.1 Lorenz curve

Lorenz curves are calculated with the first major component, a product of the UCPCA approach. Graph 42 shows the curves for rural population subgroups, 13 cities and the rest of the urban, this for 2010 and 2019. These years are taken to identify medium-term transitions, as household assets do not change considerably in the short term.[24].

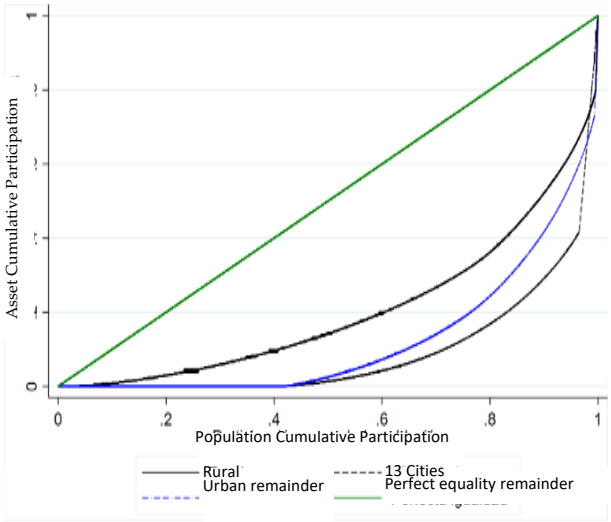
In the year 2010, the Lorenz curves allow us to notice that there is a relative closeness to the curve of perfect equality, although it is considerably distant, which denotes that for this year, inequality is lower compared to the other year of study, namely 2019. For 2019, it can be seen that the Lorenz curves are further away from that of perfect equality. Which warns of increases in the Gini index. For all years, the trend denotes that rural areas are the closest to the curve of perfect equality, on the other hand, the rest of urban and the 13 major cities, are the population subgroups that are furthest from the curve of perfect equality, that is, the most unequal.

Graph 42: Lorenz curve

Panel A: Lorenz 2010



Panel B: Lorenz 2019



Source: Own elaboration based on LIHS

4.4.2 Measures of inequality

With the asset index as an input, the multidimensional Gini is calculated for the population subgroups studied, as well as for the years of study. The results are presented in Table 29. For the national total, headwaters and population centers, the values of the Gini coefficient of assets is above 0.50 for both 2010 and 2019. Inequality for urban areas was the highest for these population subgroups, with 2019 being the year where the value was highest (0.70), and 2010 where it was lower (0.64), implying a difference in 6 Gini points. For populated and dispersed rural centers, the highest value was 0.60 for the year 2010, and the lowest value of 0.57 for the year 2019, so there is a difference of 3 Gini points.

[24] Year 2020 is not included in the analysis due to the collection challenges presented by the LIHS as a result of the health emergency due to COVID-19, where for some months of the year not all the questions that are useful to identify the items that feed the index were collected.

Multidimensional inequality for men and women had its lowest value for 2010 in both cases. While for the former it was 0.64, for the latter it was 0.65. For both groups, inequality increased to 0.69 and 0.70 respectively in 2019. In terms of the gender of heads of household, the Gini for female-headed households was 0.64 in 2010 and 0.7 in 2019. Meanwhile, male-headed households experienced indicators of 0.66 for 2010 and 0.72 for 2019, which gives a difference of 8 Gini points.

In the case of educational levels, groups with lower educational level tend to have a high measure of inequality compared to other population subgroups, in this way, for those with no educational level the Gini was between 0.63 and 0.60 while for primary or less, the values ranged between 0.64 and 0.64 between 2010 and 2019 respectively. When taking into account the working condition, it is observed that the employed or inactive present greater inequality than the unemployed. For example, the measures of inequality for the unemployed presented a minimum value of 0.61 for 2010 and 0.66 for 2019, while that of the inactive stood at 0.65 for 2010 and 0.70 for 2020. On the side of inequality by age range groups, it is evident that this increases as age does. Thus, people over 65 years of age reach levels of 0.67 in 2010 and up to and 0.73 in 2019.

Table 29: Multidimensional Gini by subgroups

Subgroup	2010	2019
Total National	0.64	0.70
Urban	0.60	0.68
Rural	0.60	0.57
13 cities and M.A.	0.59	0.68
Remainder	0.56	0.59
Population groups		
Men	0.64	0.69
Women	0.65	0.70
Female head of household	0.64	0.70
Male head of household	0.66	0.72
Education		
None	0.63	0.60
Primary or less	0.63	0.64
Basic Secondary	0.61	0.64
High school	0.58	0.63
Higher	0.53	0.68
Employment		
Employed	0.64	0.70
Unemployed	0.61	0.66
Inactive	0.65	0.70
Poor		
Poor	0.54	0.53
Non-poor	0.60	0.69
Age groups		
16-25	0.64	0.67
26-40	0.63	0.68
41-65	0.64	0.71
>65	0.67	0.73

Source: Own elaboration based on LIHS data

4.5 Wealth inequality

New knowledge about the distribution of wealth is key to a thorough understanding of structural inequality and its persistence at the scale. Wealth can be understood from the possession of the real estate, financial assets, net of debt. Several studies have used novel tools and data to elucidate its magnitude and persistence. For example, Piketty and Zucman (2014) and Murtin and Mira (2015), study financial wealth, finding that it is more concentrated than non-financial wealth in countries such as the United States and Australia.

People's wealth is more concentrated in income and depends on factors such as economic performance, family savings, inheritances, land ownership, pension arrangements, and taxes. In recent decades, wealth inequality has been increasing thanks to the increase in the prices of financial and non-financial assets, which are the ones that have the greatest contributions to inequality (Murtin and Mira, 2015; Piketty and Zacman, 2014).

In Colombia, some studies have quantified the magnitude of wealth, including those of Alvaredo, F. and Londoño, J. (2013) and Ibáñez, A. and Muñoz, J. (2011). This section exploits information collected by Nunez, J., Parra, J., Piraquive, G. (2017) in order to make an approach to wealth inequality in Colombia. Wealth is then analyzed by concentrating the holding of property, wealth, and financial assets. The sources of information are due to the value of all rural and urban properties registered in the IGAC and the appraisal of the cadasters for some available cities, the assets of the income declarants reported by the DIAN, in addition to the information of deposits and financial assets of natural persons reported by DECEVAL. Other sources of additional information for measurement come from household surveys.

Table 30: Information Sources

Information Source	Use	Year (s)	Items	Type of wealth
Cadaster	Census character, covers the registration of all properties in the country	2000, 2015	Number of properties, number of owners, area of land, total appraisal per department in rural and urban areas	Lands and properties
IGAC	Cadastral creation, updating and conservation			
Bogota, Cali, Medellin, Antioquia Cadaster	Fulfills the role of the IGAC in a decentralized way			
DECEVAL	To obtain information about the financial wealth that natural persons possess	2000, 2014	Financial assets reported by natural persons	Financial
				Equity
DIAN	To obtain information on the wealth in real estate of natural persons	2000, 2013	Declaration of tangible immovable property	

Source: Nuñez, J., Parra, J., Piraquive, G (2017)

4.5.1 Distribution of land and ownership

People's wealth is more concentrated in income and depends on factors such as economic performance, family savings, inheritances, land ownership, pension arrangements, and taxes. In recent decades, wealth inequality has been increasing thanks to the increase in the prices of financial and non-financial assets, which are the ones that have the greatest contributions to inequality (Murtin and Mira, 2015; Piketty and Zacman, 2014).

Since the time of independence and creation of the Republic of Colombia, there has been a pattern of high concentration of rural property that could not be corrected by the agrarian reforms carried out during the last century, being intensified by the era of violence and drug trafficking (Nuñez, J., Parra, J., Piraquive, G, 2017). On the other hand, studies of the distribution of urban property are more than limited. This is of the utmost importance thanks to the fact that both urban and rural property are important assets in the accumulation of people's wealth, regardless of the use that is given to it. To quantify the magnitude of wealth in urban and rural property in the last fifteen years, information is used from property appraisals and inequality indicators are calculated.

It is important to highlight that the information on the value of the land reported corresponds to the cadastral appraisal, which is the value used as a basis for the payment of property tax. This may differ from the commercial value of the property, which is the value for which it is traded. With this information, the Gini coefficients for the appraisals of urban and rural properties at the national and departmental level are calculated, as well as their respective deciles.

Urban areas

According to IGAC information, urban properties went from 4.7 million to 6.8 million between 2000 and 2015, which represented an increase of 43.5% over 15 years. In this same period of time, the number of owners went from 6 million to about 8.7 million, (annual variation of 43.9%). Thus, the number of owners and properties have increased by a very similar magnitude, however, the average size of each property was reduced from 655 mt^2 to 430 mt^2 between 2000 and 2015. The Gini coefficient of urban property appraisals was 0.741 in 2000 and 0.724 in 2015. By departments, on average it was higher for Nariño with a Gini for 2015 of 0.812, followed by San Andres (0.823) and Boyaca (0.809). The Departments that on average presented lower values during the years of study, were Quindio and Meta whose inequality levels in 2015 were 0.649 and 0.633, respectively.

Table 31: Gini coefficient of appraisals by Departments in urban areas

Department	2000	2015
Nariño	0.819	0.812
Boyaca	0.817	0.809
Bolivar	0.801	0.775
San Andres	0.798	0.823
Huila	0.791	0.735
Choco	0.788	0.793
Putumayo	0.786	0.743
Cauca	0.786	0.789
Guaviare	0.782	0.732
Amazonas	0.776	0.756
Magdalena	0.769	0.766
Guainia	0.763	0.725
Arauca	0.754	0.745
Tolima	0.740	0.725
Caldas	0.739	0.716
N. Santander	0.739	0.726
Santander	0.728	0.701
La Guajira	0.726	0.713
Caqueta	0.722	0.718
Atlantico	0.722	0.730
Vaupes	0.720	0.714
Cordoba	0.719	0.703
Vichada	0.718	0.598
Casanare	0.717	0.693
Cundinamarca	0.712	0.696
Risaralda	0.711	0.674
Valle	0.700	0.676
Cesar	0.691	0.715
Sucre	0.685	0.718
Meta	0.663	0.649
Quindio	0.647	0.633

Source: Nuñez, J., Parra, J., Piraquive, G (2017)

The departments with the greatest inequality in the distribution of appraisals in terms of the tenure of the richest 10% are San Andres (80.46%), Choco (76.65%), Boyaca (72.79%), Nariño (72.60) and Bolivar (71.59). In 2015 San Andres became one of the departments with the greatest inequality, as the share of decile 10 increased by 4.6 p.p. In Atlantico and Caqueta the share of decile 10 also increased, in both cases the percentage had a considerable increase between 2000 and 2015, but it was at a higher-level last year.

For the share by decile of the distribution of appraisals in the capital cities, Quibdo is presented as one of the ones with the highest concentration of the properties with the highest appraisal, in 2015 10% of the expensive properties represented 73.63% of the total appraisals of the urban area of this city. This percentage is only surpassed by that of San Andres, where the 10th decile of the appraisals concentrates 78.68% of the total. On the other hand, it is noteworthy that in Puerto Carreño the share of appraisals of the highest decile in the total, went from 69.6% in 2000 to 60.43% and to 52.11% in 2015, being the city that improved the most in the distribution of urban property, as well as Vichada in the aggregate. It should be noted that Bucaramanga, which had the lowest concentration of appraisals in decile 10 in 2000, showed an increase of 4.4 p.p. in 2015, hand in hand with San Andres with 4.4 p.p. more.

Table 32: 10% richest deciles share for Departments and capital cities

Department	2000	2015	Difference (p.p.) 2000-2015	Capital	2000	2015	Difference (p.p.) 2000-2015
Amazonas	71.17%	68.46%	-2.7	Leticia	70.22%	67.98%	-2.2
Arauca	66.72%	65.42%	-1.3	Arauca	60.93%	58.31%	-2.6
Atlantico	64.84%	67.42%	2.6	Barranquilla	59.57%	62.20%	2.6
Bolivar	77.22%	71.59%	-5.6	Cartagena	71.12%	64.85%	-6.3
Boyaca	76.98%	72.79%	-4.2	Tunja	54.90%	54.04%	-0.9
Caldas	64.54%	59.95%	-4.6	Manizales	56.73%	54.38%	-2.3
Caqueta	62.33%	62.62%	0.3	Florencia	65.38%	61.23%	-4.2
Casanare	60.29%	56.41%	-3.9	Yopal	59.97%	56.33%	-3.6
Cauca	70.79%	69.06%	-1.7	Popayan	59.56%	54.12%	-5.4
Cesar	58.09%	61.82%	3.7	Valledupar	58.69%	57.73%	-1.0
Choco	77.75%	76.65%	-1.1	Quibdo	77.67%	73.63%	-4.0
Cordoba	63.80%	61.15%	-2.7	Monteria	68.07%	61.06%	-7.0
Guainia	72.97%	64.90%	-8.1	Puerto Inirida	72.12%	64.94%	-7.2
Guaviare	74.53%	62.33%	-12.2	San José del Guaviare	73.38%	59.02%	-14.4
Huila	76.92%	62.11%	-14.8	Neiva	54.43%	51.90%	-2.5
La Guajira	64.14%	61.97%	-2.2	Riohacha	61.07%	63.54%	2.5
Magdalena	73.26%	69.94%	-3.3	Santa Marta	68.23%	63.25%	-5.0
Meta	52.16%	48.77%	-3.4	Villavicencio	52.21%	48.85%	-3.4
N. Santander	63.70%	62.02%	-1.7	Cucuta	58.93%	55.16%	-3.8
Nariño	78.19%	72.60%	-5.6	Pasto	60.51%	48.46%	-12.0
Putumayo	71.42%	65.28%	-6.1	Mocoa	75.27%	63.00%	-12.3
Quindio	53.51%	51.60%	-1.9	Armenia	54.61%	53.68%	-0.9
Risaralda	61.24%	55.75%	-5.5	Pereira	57.62%	53.69%	-3.9
San Andres	75.86%	80.46%	4.6	San Andres	74.01%	78.68%	4.7
Santander	59.84%	57.66%	-2.2	Bucaramanga	46.52%	50.90%	4.4
Sucre	58.37%	63.48%	5.1	Sincelejo	66.84%	61.77%	-5.1
Tolima	65.61%	59.39%	-6.2	Ibague	57.72%	48.40%	-9.3
Vaupes	66.97%	66.55%	-0.4	Mitu	64.02%	64.61%	0.6
Vichada	66.50%	37.07%	-29.4	Puerto Carreño	69.58%	52.11%	-17.5

Source: Nuñez, J., Parra, J., Piraquive, G (2017)

Rural Areas

According to information from the IGAC, the registered rural properties went from 2.7 million in 2000 to 3.5 million in 2015, which represents a percentage variation of 30.86% and which is mainly due to the cadastral updating processes carried out by the entity. On the other hand, the owners went from being 3.7 million in 2000 to 5.0 million in 2015, which represents an increase of 34.4%. Additionally, the average size of the property went from 276.83 mt^2 to 266.9 mt^2 during the years of study.

Table 33: Gini Coefficient by Department and richest decile 10% in rural areas

Department	2000	2015	Department (Deciles)	2000	2015
Choco	0.880	0.894	Choco	94.59%	98.61%
La Guajira	0.845	0.864	La Guajira	86.47%	91.88%
Sucre	0.823	0.782	Valle	84.89%	83.80%
Valle	0.819	0.797	Meta	81.99%	83.85%
Cesar	0.818	0.818	Sucre	80.70%	74.47%
Meta	0.811	0.807	Cesar	80.53%	82.36%
Vichada	0.809	0.851	Atlantico	78.07%	77.67%
Atlantico	0.805	0.767	Casanare	74.94%	78.72%
Casanare	0.782	0.792	Caqueta	72.63%	71.97%
Cordoba	0.779	0.795	Cordoba	72.39%	77.36%
Caqueta	0.775	0.774	Cundinamarca	71.66%	81.26%
Quindio	0.767	0.794	Quindio	71.41%	76.75%
Magdalena	0.765	0.760	Vichada	70.98%	83.19%
Cauca	0.738	0.750	Cauca	70.91%	73.67%
Cundinamarca	0.735	0.785	Risaralda	65.70%	72.61%
Amazonas	0.700	0.897	Magdalena	65.10%	66.79%
Risaralda	0.691	0.717	Caldas	59.66%	63.65%
Bolivar	0.675	0.809	Tolima	59.05%	66.21%
Guaviare	0.661	0.772	Huila	55.71%	48.51%
Tolima	0.660	0.684	Bolivar	55.41%	82.02%
Caldas	0.648	0.657	Putumayo	53.61%	75.33%
Huila	0.637	0.565	Nariño	52.55%	67.29%
Nariño	0.629	0.718	Guaviare	50.91%	82.70%
Putumayo	0.613	0.767	Amazonas	50.54%	99.34%
Boyaca	0.596	0.611	Boyaca	45.51%	48.10%
N. Santander	0.570	0.541	N. Santander	45.07%	49.57%
San Andres	0.494	0.589	Santander	42.91%	60.37%
Santander	0.484	0.610	San Andres	36.02%	47.13%
Arauca	0.438	0.522	Arauca	30.28%	37.74%

Source: Nuñez, J., Parra, J., Piraquive, G (2017)

The Gini coefficient of appraisals is proof of high inequality and its increase. The indicator for 2015 stood at 0.762 in 2015, which is evidence that for few owners in the highest part of the distribution, the cadastral value of rural properties has increased, resulting in an increase in inequality. By the year 2000 the appraisal of the properties with the highest cadastral value exceeded 441 times the value of the lowest decile, just as the properties grouped in decile 10 had a valuation 6.51 times above the properties of decile 9. In 2015, the properties of decile 10 have a cadastral value 510 times more than the owners of decile 1. Meanwhile, 8% of the owners had a concentration of 76.5% of the total value of the appraisals.

The departments with the highest values with inequality in the distribution of rural appraisals are Choco and La Guajira, with coefficients above 0.86. Generally speaking, for most departments the Gini coefficient was increased. When analyzing the share of the highest decile

of appraisals in the total, very high concentration percentages are found in some departments, as well as the increase in most of these between 2000 and 2015.

4.5.2 Distribution of financial wealth

People's wealth is made up of property (land and real estate) and financial assets. Previously it was presented how the value of the real estate is distributed, and then the concentration of financial wealth between people is presented. In general, the accumulated values in securities and shares are very high and exceed several times the GDP, which is added to the high concentration of these assets in the highest decile of the distribution. The worrying thing is that, since inequality is so high, the endless reproduction of this is most likely.

Securities

The concentration of wealth accumulated in the capital market is presented. The Central Securities Depository (DECEVAL) is the entity that receives and guards securities, so it has the registry of investors and balances, both in the case of natural and legal persons. From this entity we received the information of the stock portfolio balance, the average, minimum and maximum value per decile, also for the securities on deposit, all for the years 2005 and 2014.

Deposit securities

The information of accumulated balances in securities by natural persons (workers, pensioners, certificate holders/capital rentiers, among others) is available for 2005 and 2014. It is relevant to mention that few people access the stock market, which is reflected in the magnitude of inequality itself. The total accumulated value in deposits by natural persons has decreased as a percentage of GDP between 2002 and 2014, from 225% to 104%. The Gini coefficient for 2014 was 0.8974, which denotes a very high magnitude in concentration.

Table 34: Gini coefficient deposit securities

Variable		2005	2014
Total value of securities certificates	Million	$ 767,431,666	$ 792,572,915
	% PIB	225.61%	104.63%
Decile 10 of natural persons	Total value (Million)	$ 759,620,557	$ 785,816,397
	% PIB	223.32%	103.74%
	Participation in the total	98.98%	99.15%
	Average value (Million)	$535.81	$420.22
	Minimum value (Million)	$864	$5.17
	Maximum value (Million)	$ 22,430,720	$ 396,075,101
	Maximum/Minimum	25,972	76,644
Gini coefficient		0.8968	0.8974

Source: Nuñez, J., Parra, J., Piraquive, G (2017)

Portfolio balance valued in shares

Information on stock balances for 2005 and 2014 was provided by DECEVAL. The number of balance owners went from 391,000 people in 2005 to 661,000 in 2014, which meant an increase of 69%. On average, each shareholder concentrated securities that went from $2 million in 2005 to $423 million in 2014. Portfolio balances are highly concentrated in the 10% of shareholders with the highest financial wealth, the highest decile of shareholders concentrated almost 99% of the balance valued in shares.

Compared to other deciles, the total wealth in shares accumulated per decile 10 was 7,943 times that owned by decile 1 in 2005, by 2014 the figure was consolidated at 11,523. Gini's coefficient for shareholder value is quite high (0.892 in 2005), although this increased slightly in 2014 (to 0.896).

Table 35: Gini coefficient portfolio balance in shares

Variable		2005	2014
Portfolio balance valued in shares	Million	$ 1,036,078	$ 279,861,417
	% PIB	0.30%	36.95%
Decile 10 of natural persons	Total value (Million)	$ 1,022,801	$ 277,504,287
	% PIB	0.30%	36.63%
	Participation in the total	98.72%	99.16%
	Average value	$ 26,148,627	$ 4,198,122,402
	Minimum value (Million)	$7	$21
	Maximum value (Million)	$41.24	$ 21,393,483
	Maximum/Minimum	5,708	1,004,768
Gini Coefficient		0.892	0.896

Source: Nuñez, J., Parra, J., Piraquive, G (2017)

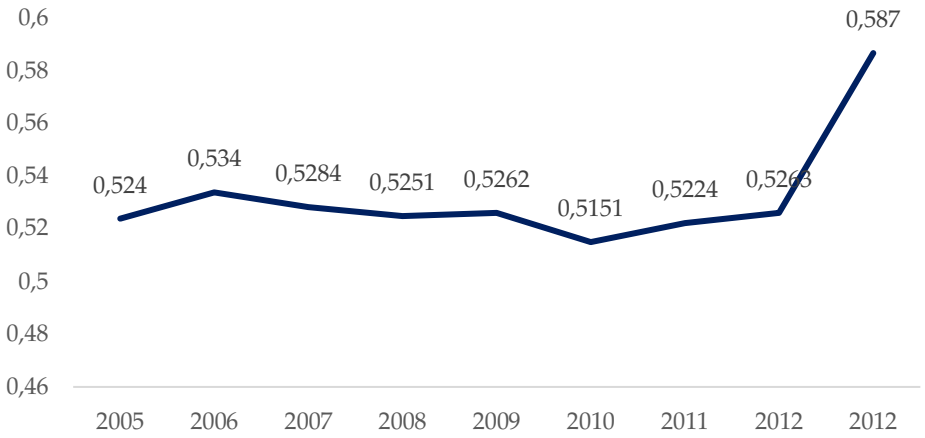
4.5.3 Net worth of natural persons

Based on the information processed by the DIAN of natural persons who reported income between 2005 and 2013, measures of inequality in the assets of natural persons can be calculated. The number of filers has grown gradually between 2005 and 2013 from 689,934 to 1,528,016 people, doubling 2.1 times. It is important to note that by only taking into account a low percentage of the population, there are high levels of avoidance and evasion, in addition this information does not take into account the income from the illegal economy or tax havens.

Wealth reported

Net worth is a good indicator of wealth, as it includes all assets and investments net of debt. These figures were contrasted with the Gross National Income (GNI) of the national accounts, because it accounts for household income and consumption capacity. The Gini coefficient for equity in 2005 was 0.52, this indicator increased between 2005 and 2013 to reach 0.59 in the last year. By 2013, the 10% of natural persons with the highest net worth accumulated 48.9% of the total, which implies that a person in decile 10 has an average net worth 4.9 times higher than the average of declarants, or 225 times the average value corresponding to decile 1.

Graph 43: Gini Coefficient wealth reported

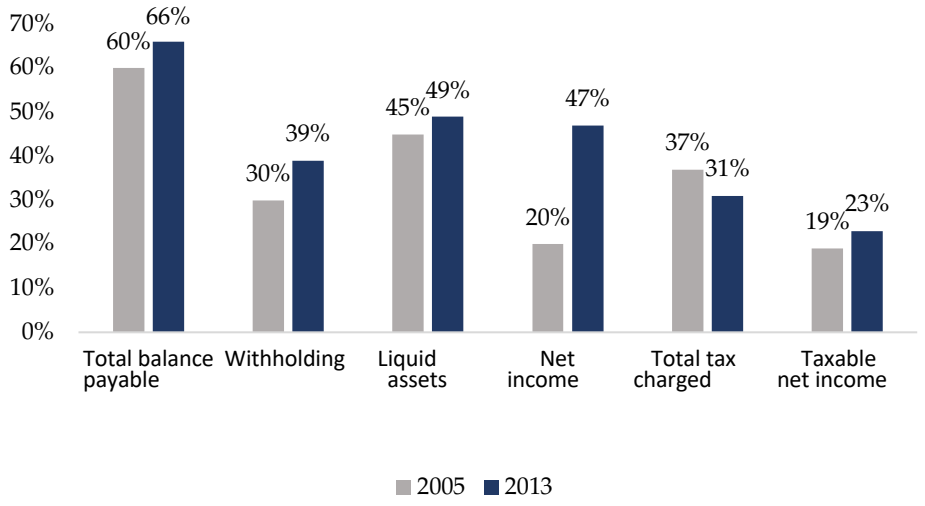


Source: Nuñez, J., Parra, J., Piraquive, G (2017)

The richest 10% of people according to their net worth, have concentrated between 44% and 49% of the total reported net wealth; this percentage remained very stable until the last year. The decrease in the ceilings of income, equity and other variables caused the total number of filers to increase by about 19%.

In general, the people with the highest net wealth in the country do not concentrate as much net income as if they do with liquid assets, which may be evidencing that they are mostly capital rentiers / securities holders and not so much workers or people who depend on their income. In fact, these people accumulate between 60% and 74% of the voluntary pensions reported to the DIAN; between 40% and 54% of the balances and investments made in CDT; between 29% and 42% of bank loans and a fluctuating proportion of investments in funds (25%-61%).

Graph 44: Dynamics of equity and wealth

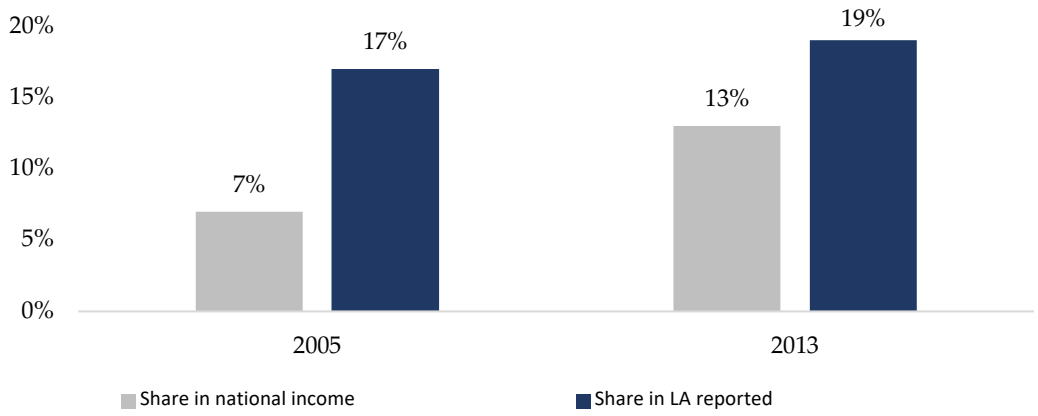


Source: Nuñez, J., Parra, J., Piraquive, G. (2017)

4.5.4 What happens with the richest 1% in Colombia?

Wealth of the richest 1% of Colombians is based on information reported to the DIAN. The results denote that the richest 1% according to their Liquid Assets (LA) in 2005, only 6,899 people, accumulated a net wealth equivalent to 7% of the gross national income of that year and 17% of the total reported LA. As a percentage of the GNI, the reported net wealth of this segment of the population almost doubled from 7% to 13%; as a percentage of the LA, the increase was smaller, but for 2013 there was a significant jump. Hence, for 2013, 15,280 people accumulated a total LA of $ 88 billion pesos corresponding to 13% of the income of all households in the country in the same year.

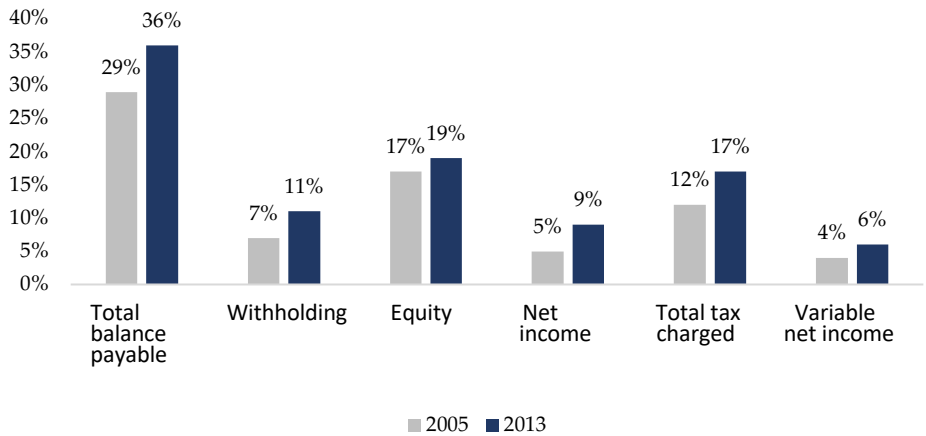
Graph 45: Participation of the liquid assets of the richest



Source: Nuñez, J., Parra, J., Piraquive, G (2017)

The richest 1% end up paying on average 17 times more than the average taxpayer, if the data for 2013 is taken into account; while owning a net wealth which is on average, 19 times above the reported average.

Graph 46: Participation of centile 10 of net worth by category



Source: Nuñez, J., Parra, J., Piraquive, G (2017)

4.5.5 Distribution of household wealth

Table 36 synthesizes the Gini coefficients for each type of wealth. The accumulated wealth in appraisal lands reached 0.812 between 2015. Meanwhile, the Gini for financial wealth in 2014 was 0.718. By adding financial and cadastral wealth, the Gini goes to 0.752, driven in large part by the high concentration of cadastral wealth. On the side of pension wealth, which is distributed better than the others, its Gini index is around 0.567. When both cadastral and pension wealth are added, the final Gini is 0.742, a value that denotes a very high concentration of wealth in Colombia.

Table 36: Distribution of household wealth

Summary	Circa 2014
Cadastral wealth	0.812
Financial wealth	0.718
Financial cadastral wealth	0.752
Pension wealth	0.567
Cadastral + Financial + Pension	0.742

Source: Nuñez, J., Parra, J., Piraquive, G (2017)

4.6 Spatial inequality

Long-term institutional gaps are a determining factor in explaining regional inequalities in Colombia. In this sense, performance measures of different departments are a consequence of regional inequalities but not a cause (Cortés and Vargas, 2012). The authors find that good institutions generally have lower levels of political concentration, lower corruption, lower levels of poverty, and higher well-being. Likewise, a greater share of own resources in the revenues of territorial governments and a lower share of royalties and transfers per capita are associated with better institutional development.[25]. Thus, and understanding the relevance of identifying the institutional features associated with regional gaps, this section focuses on identifying inequalities between departments in terms of per capita household income, labor income, multidimensional inequality and land tenure, in order to compare the different inequalities between departments, identifying its magnitude.

The gap between the main departments concentrating a good part of the economic activity and the rest of the departments is considerably high (Sánchez-Torres, 2017). For instance, Bogota's GDP per capita is 1.6 times that of the national average, but slightly over 4 times that of departments such as Choco, Guainia, Vaupes and Vichada[26]. While the GDP per capita of Bogota and Cundinamarca exceed the country's average (Bogota was first and Cundinamarca

[25] The political and administrative organization of Colombia today is the result of two periods of decentralizing reforms that took place in the 80s and 90s. Although, in the first instance, there was a guarantee in the provision of infrastructure for the supply of public goods, this was not always accompanied by an administrative decentralization that, in order to increase the presence of the State in the territories, did not observe the wide territorial economic and institutional gaps (CESTT, 2020). Thanks to a second wave of decentralizing reforms, the literature has identified benefits in coverage in education, health and even regional economic growth (Faguet & Sánchez, 2008, 2014; Lozano & Martinez, 2013; Lozano & Julio-Román, 2015; CESTT, 2020).

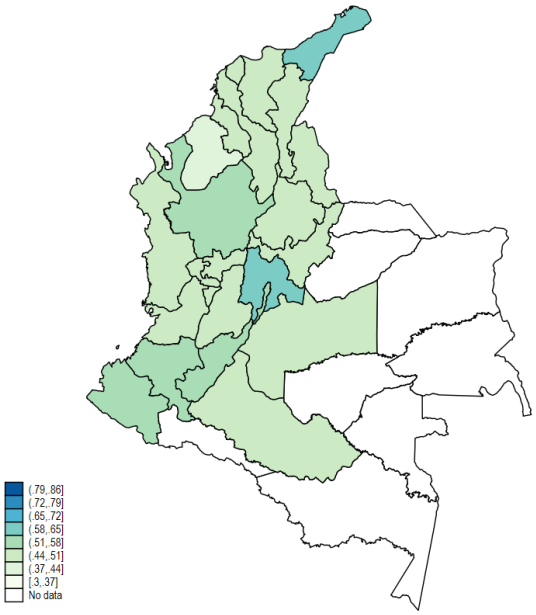
[26] The income aggregates for departments belonging to the Orinoquia-Amazonia, and San Andres and Providencia in the LIHS are not yet reported, hence their indicators are not reported.

held the ninth position in 2017), and they present a high share in the national product (26% and 6% respectively), their Gini coefficients are the highest, with 0.51 and 0.59 respectively. However, other highly unequal departments with very low share in aggregate production are considerably poor, as is the case of La Guajira, Cauca or Nariño. In another dimension such as labor income, La Guajira, Cauca and Nariño, departments with high rates of poverty and labor informality, have a high concentration in labor income, with Gini coefficients of the order of 0.63 and 0.58, but other departments of the Coffee Axis such as Risaralda or Caldas have Gini coefficients lower than 0.42.

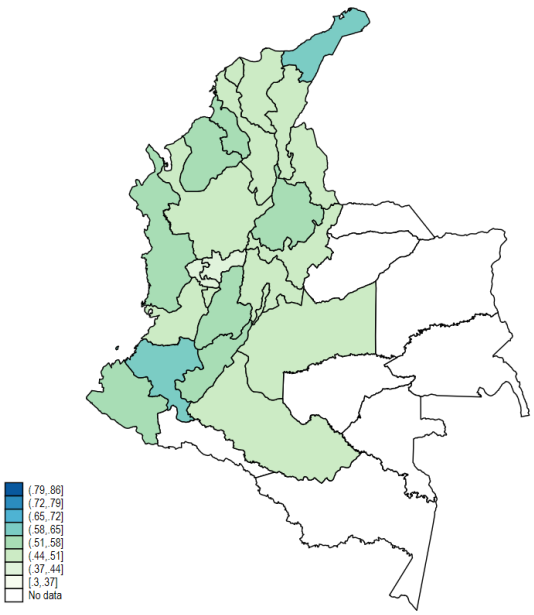
In general, Cundinamarca or Antioquia have a high level of inequality in per capita household income, but a slightly lower level of inequality in labor inequality. Meanwhile, La Guajira and Cauca have a high level of inequality in both per capita household and labor income. Among the departments that have a low level of inequality in per capita household income and persist in low level of labor inequality, are Risaralda and Quindío, but Cordoba, Choco and Santander go from having inequality levels in family income medium to high in labor inequality.

Graph 47: Gini coefficient by Departments: Per capita household and labor income

Panel A: Per capita household income



Panel B: Labor income



Source: Own elaboration based on LIHS-2017

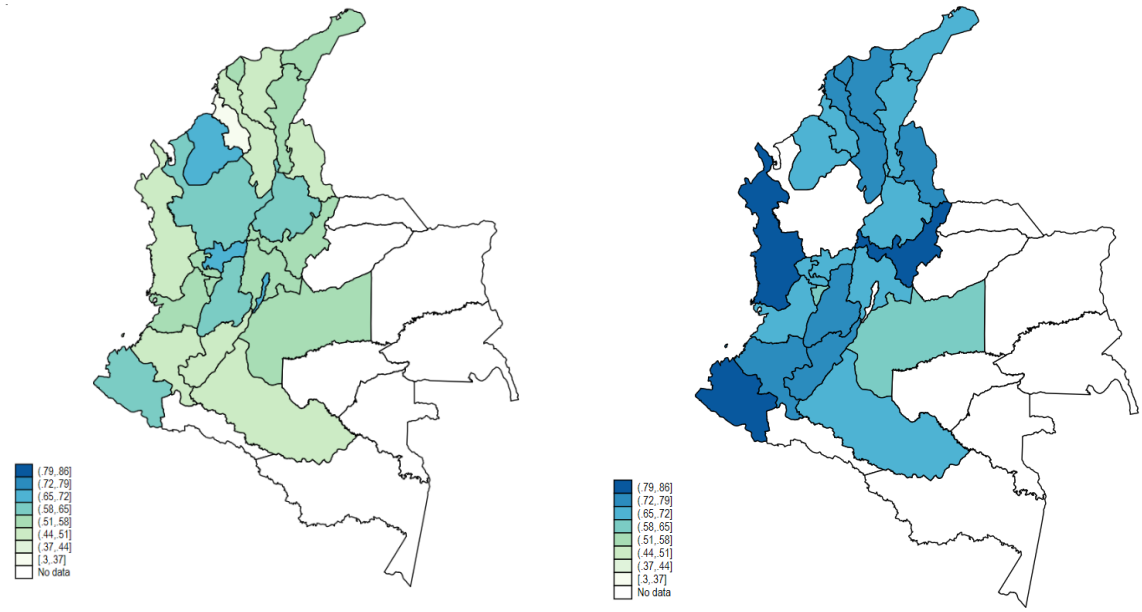
In non-monetary terms, inequality is persistently high throughout Colombia, although not always the most economically unequal departments are the most multidimensionally unequal. However, what is certain is that the distance in the multidimensional Gini index (assets and services in the home) among departments is high. Although Cordoba reaches 0.68 and Caldas 0.67, other departments such as Caquetá or Sucre reach 0.44 and 0.36 respectively, which accounts for the unequal relations within the departments. By contrast, despite the high volume of inequality in land (wealth), within the departments with the worst distribution are Nariño, Choco and Cauca with Gini indices that exceed 0.79, geographic areas historically marked by armed conflict, social exclusion and the existence of illicit crops.

A comparison between the levels of multidimensional inequality and in the distribution of land suggests that in Tolima and Nariño the inequality in both dimensions is high, while in the Meta, although it is high, it is less pronounced compared to other departments. In turn, Choco and Santander, although they do not appear within the departments with the greatest multidimensional inequality, they do so in terms of land inequality.

Graph 48: Gini coefficient by Departments: Multidimensional and of wealth

Panel A: Assets and services (multidimensional)

Panel B: Wealth on land



Source: Own elaboration based on LIHS and IGAC

In order to identify the magnitude in which the different typologies of inequality interact, two-dimensional maps were constructed. In this way, the departments are classified by tertiles of the Gini index in each dimension, establishing groupings as follows: inequality in per capita income of the household vs. labor; of home vs. lands, and multidimensional vs. lands. Thus, the first tertile (gray color) includes the departments whose Gini index is the lowest in both inequalities analyzed, while the last group (violet color) include the departments with the highest Gini index in both dimensions of inequality. This information is presented in Graph 49.

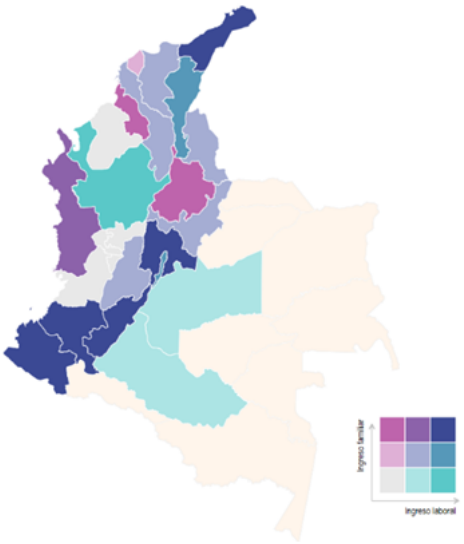
It is observed that the departments that present higher levels of vulnerability and poverty face high inequality levels. Thus, La Guajira stands out as a department with high inequality in the per capita income of the household (or family)[27] and labor, but also in the multidimensional dimensions and land, while boasting high levels of poverty and economic

[27]Family income is equivalent to household income analyzed above, which in addition to labor income includes other sources of income such as capital income, pensions, non-labor income and imputed rental value. To facilitate the differentiation of this income from labor income, family income is spoken of in the two-dimensional map.

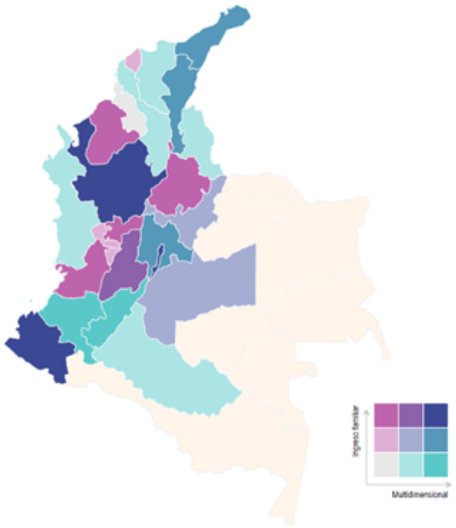
vulnerability. In Nariño and Cauca, on the other hand, higher inequality levels relative to other departments in family and labor income are evident, and even in both inequalities: multidimensional and land, only that Nariño also remains one of the departments with the greatest inequality in family and multidimensional income. Cordoba stands out for being in the lower tertiles of family and labor income, but superior in multidimensional and lands. On the Choco side, inequalities in family and work income are the most prevalent in connection with the rest of the departments.

Graph 49: Two-dimensional inequality maps

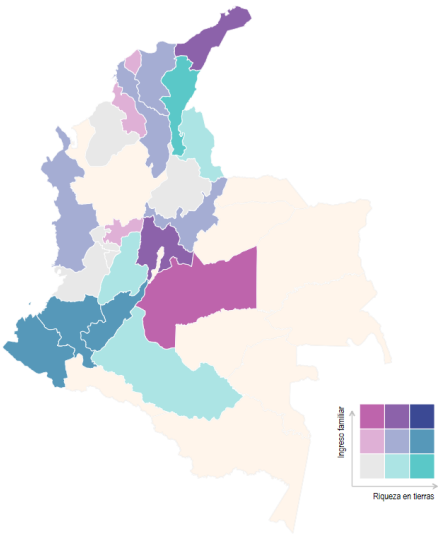
Panel A: Family income vs. Labor income



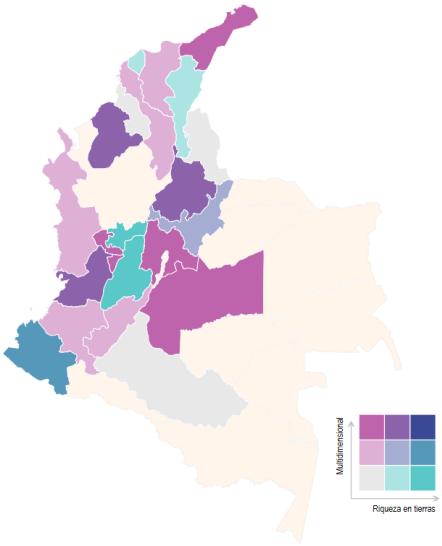
Panel B: Family income vs. multidimensional income



Panel C: Family income vs. Wealth on land



Panel D: Multidimensional income vs. Wealth on land



Source: Own elaboration based on LIHS and IGAC

4.7 Inequality in social domains

4.7.1 Introduction

Income inequality has been a chronic problem of great magnitude in Colombia, a phenomenon that has been expressed, for example, in GINI values above 0.5 for many years (0.544 in 2020). However, income inequality has been accompanied by various forms of inequality that are intertwined. In the country, inequality of access to education (especially quality education) and health care, among others, has been verified in the country.

Clearly, the inequality problem is aggravated by the incidence rates of poverty, in particular extreme poverty, phenomena that are exacerbated by events such as economic crises, or even by events such as economic growth that entail the destruction or loss of unskilled employment, for example. Poverty not only has a negative impact on the well-being of individuals and households, but also contributes to inequality. For example, a person in extreme poverty has many difficulties to cover their diet adequately, which exposes them to diseases, and in that way not only suffering from undernourishment but also this can have an impact on low productivity, and therefore cannot generate income properly or in sufficient quantity. In this sense, the person is at a disadvantage compared to people who eat properly; that is, it experiences adverse inequality due to poor nutrition, disease, low productivity and low-income generation.

In Colombia, the inequality levels are not homogeneous between the different population groups or at the geographic level. In particular, inequality affects the Afro-descendant and indigenous population with a marked impact, as well as substantially affecting women. Moreover, it is pointed out that inequality also affects the population with disabilities (a population that is effectively overrepresented among the population in poverty).

Colombia has suffered the problems of poverty and inequality given the high levels in connection with, for example, the countries of Latin America. However, the Colombian State has established public policies to address vulnerable populations such as conditional transfer programs such as Families in Action (FiA), the School Feeding Program (SFP) or the increase in subsidized health coverage, this in order to help face the problem of poverty, measures that can also be considered for mitigating inequality.

Income inequality is not an isolated phenomenon, it is a phenomenon that is related or appears together with inequality in other areas such as inequality in access to education (especially quality), health services, and even socioeconomic inequality between territories within the same country. Therefore, inequalities in access to education and health restrict the use of opportunities (in the case of education), or have a negative impact on the ability to generate income on account of not being able to meet negative health contingencies. Similarly, income inequality is related to unequal treatment of women in the home (e.g., as caregivers of the home), or at work (inequality of labor income for the same work performed by men).

Other forms of inequality manifest themselves in inequality in access to safe drinking water and sanitation (predominantly in rural areas), access to the Internet, access to land (on account of clear delimitation of property rights) and access to credit, among others. As a consequence of all the above, the most vulnerable people can have negative consequences on health and income (in the case of access to health), low productivity and learning capacity (in the case of access to education), problems of labor insertion in the formal sector, low income generation capacity, problems of access to food and adequate nutrition, among others.

In order to continue with the multidimensional perspective in the herein diagnostic on inequalities in Colombia, this chapter examines the results on access and quality in education, health, drinking water, housing, internet, electric power and basic sanitation. This taking into account information from administrative data (Ministry of National Education in the case of coverage in education or results of the Saber Tests administered by the ICFES in the case of quality of education), and household surveys, in particular, the Quality of Life Survey (QLS). The chapter establishes comparisons in terms of gaps with unit of analysis at the individual level, in administrative reports or household surveys, classified into population groups according to gender, geographic area or income quintile.

The presentation is developed in seven additional sections to the herein introduction. To this end, the order of thematic presentation of the dissertation, develops the theme of education in the second section, in the third health, in the fourth what concerns the Internet service, in the fifth part what concerns safe drinking water, in the sixth what is related to housing, the seventh what refers to the service of electrical energies and finally the eighth section, concerning health.

4.7.2 Education

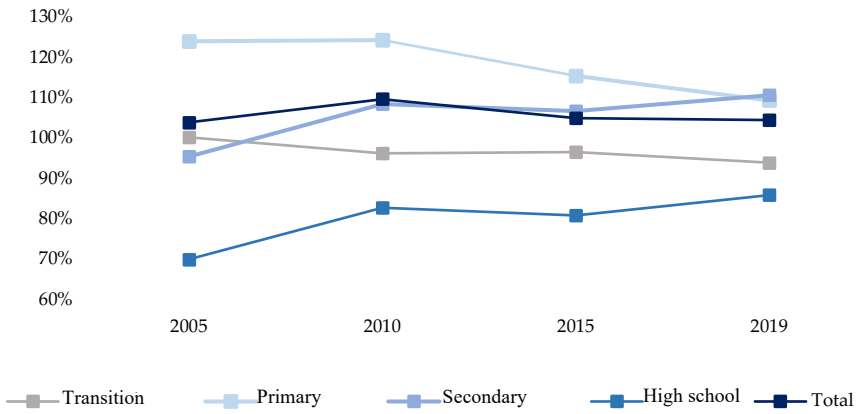
Access

Education is an essential means for the development of people's capacities in terms of personal development and professional development, among others. Likewise, education is a means of promoting social mobility. Access to education can be established through the gross school coverage rate[28]. As noted below, the gross coverage rates of the transition and primary levels showed perceptible reductions between 2005 and 2029, while those of the secondary and middle levels observed very significant increases (around 15 p.p. more than in 2005), all of which was reflected in a smaller increase in the total coverage rate given its step from 103.9% in 2005 to 104.5% in 2019.

In this regard, it is denoted that the gross coverage rates of the different levels of education observed a heterogeneous behavior. For the particular, the behavior of the coverage rate of the transition level showed a perceptible decline to the extent that it fell steadily between 2005 and 2019, going from 100.3% to 93.9%, with a fall of 6.4 p.p. In turn, the coverage rate at the primary level saw a significant reduction, from 124% in 2005 to 109.4% in 2019. On the other hand, although the coverage rates of the secondary and medium level verified important advances in the period 2005-2019, between 2010 and 2019 they showed very limited progress. However, the coverage rates of the medium level still show very important margins of improvement to the extent that they barely reached 85.9% in 2019, a rate that contrasts with that of the secondary level that reached 110.7% (the highest among all the levels considered).

[28] Number or percentage of all students enrolled in the education system.

Graph 50: Gross national coverage rate



Source: Own elaboration based on SEMS (Student Enrollment Management System)

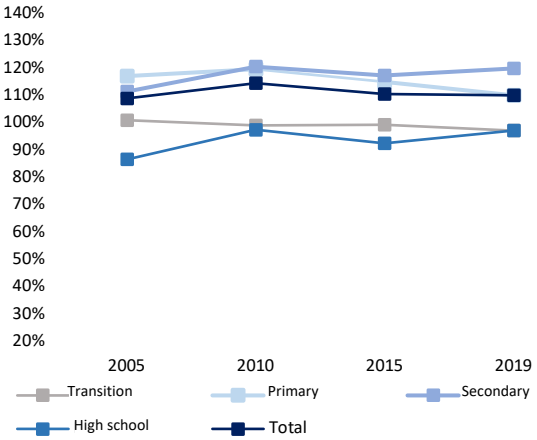
According to the records of the rates of education coverage of the urban and rural areas, very prominent differences were observed between the two domains. To begin with, total urban coverage rates were higher (between 109% and 114%, approximately) than rural coverage rates (between 90 and 97%). Likewise, the fact that the coverage rates of the different levels (with the exception of primary) were lower in the rural domain compared to those corresponding to the urban ones stood out. In addition, he noted the sustained growth of coverage rates at the middle and secondary levels in rural areas, while in urban areas the behavior of all rates was irregular.

During the years examined in the period 2005-2019, the coverage rate of the secondary education level in the urban and rural domain was lower than those of the remaining levels, although they grew significantly in both domains: in the urban domain they went from 86.7% in 2005 to 97.2% in 2019, while in the rural domain they grew even more from 24.7% in 2005 to 54.7% in 2019. With the exception of what was verified in 2005, the coverage rate of secondary school in the urban domain exceeded those of the remaining levels, while in rural areas this rate was exceeded by that of primary and transition, although its notable increase is underlined given the step from 53.8% in 2005 to 86.6% in 2019.

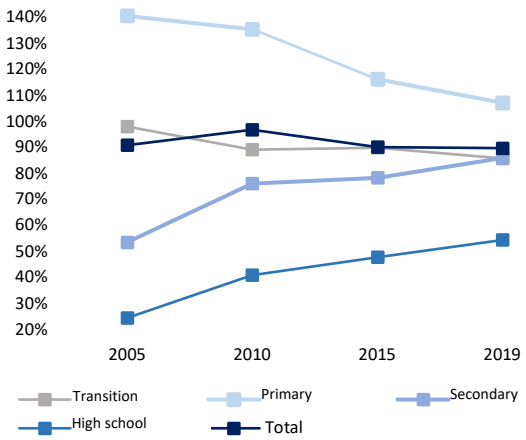
For transition, coverage rates in both geographic domains declined as the value of any of the years examined was lower than in 2005. It is also noteworthy that the coverage rate at the primary level observed a significant reduction in urban and rural areas; in the urban case, this decreased for the years 2015 and 2019, to the point of reaching 110.1% in the last year, having registered a 117.2 in 2005, while in the rural case, this rate decreased sharply given its passage 140.8% in 2005 to 107.4% in 2019 (see Graph 51, Panels A and B).

Graph 51: Gross urban and rural coverage rate (%)

Panel A: Urban gross coverage rate



Panel B: Rural gross coverage rate



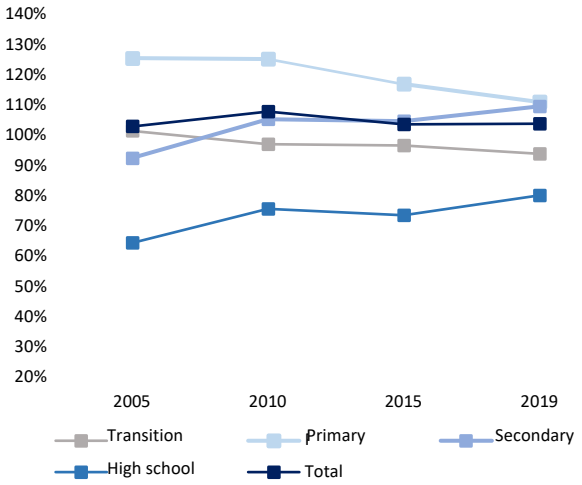
Source: Own elaboration based on Student Enrollment Management System (SEMS)

In connection with the behavior of gross rates of educational coverage by gender, it is denoted that the levels with the highest rates corresponded to primary and secondary. In the case of the primary level, for both genders there was a fall in the gross coverage rate, although it is denoted that this value in 2019 was around 110% (higher in men and lower in women). Overall, gross coverage levels of middle and transition education exhibited the lowest rates.

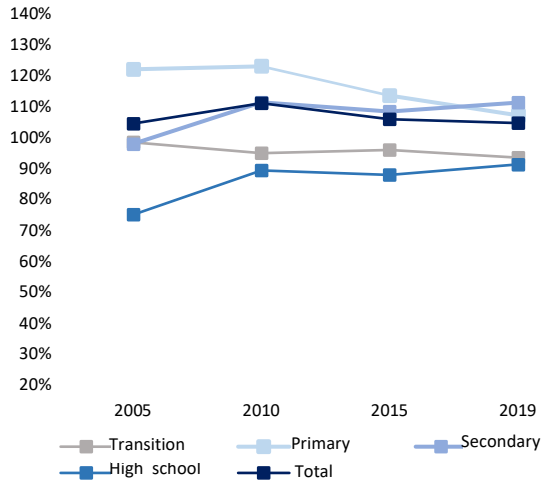
For the case of the male average level rates, it is observed that they were lower than the female ones, while the distance between both sexes was maintained given the male rate of 80.3% in 2019, while the female rate reached 91.6% for the same period. Similarly, in the case of secondary education, female rates were higher than male rates, although these differences showed a reduction given the greater increase in the coverage rate of men (17.08 p.p.) compared to that of the female rate (13.38 p.p.), an increase that in any case represented a gross coverage rate higher than that of primary, historically greater magnitude.

Graph 52: Gross school coverage rates (%)

Panel A: Male gross coverage rate



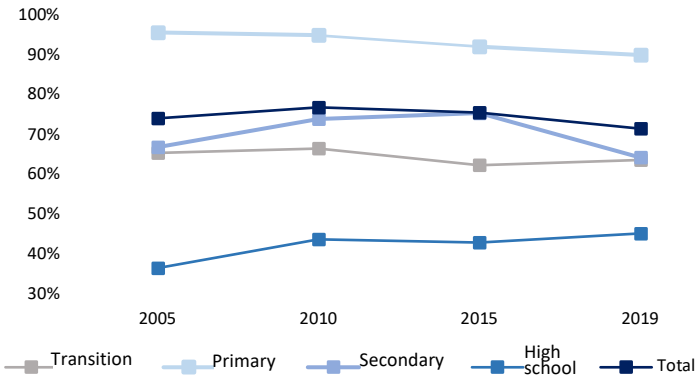
Panel B: Female gross coverage rate



Source: Own elaboration based on SEMS

Regarding the behavior of net coverage rates of education by level, it is denoted that the total coverage rate at the national level observed a perceptible decline between 2005 and 2019, going from 74.20% in 2005 to 71.57% in 2019. When considering the behavior of net coverage rates according to level of education, the secondary education rate exhibited the best performance to the extent that a (relatively stable) increase was observed, going from 36.61% in 2005 to 45.30% in 2019. By contrast, the remaining rates showed setbacks: that of the primary level showed a gradual reduction in time between 2005, going from 95.70% in 2005 to 90.04% in 2019; the secondary rate observed a decline represented by a decrease of 9.73 p.p. compared to the initial value, in addition to being the rate with the highest irregularity; on the other hand, the transition rate also showed a slight decline at the end of the period considered, as compared to the initial value (66.58%) a slight reduction was evidenced (66.71% of final value), as observed in Graph 52.

Graph 53: National net coverage rate



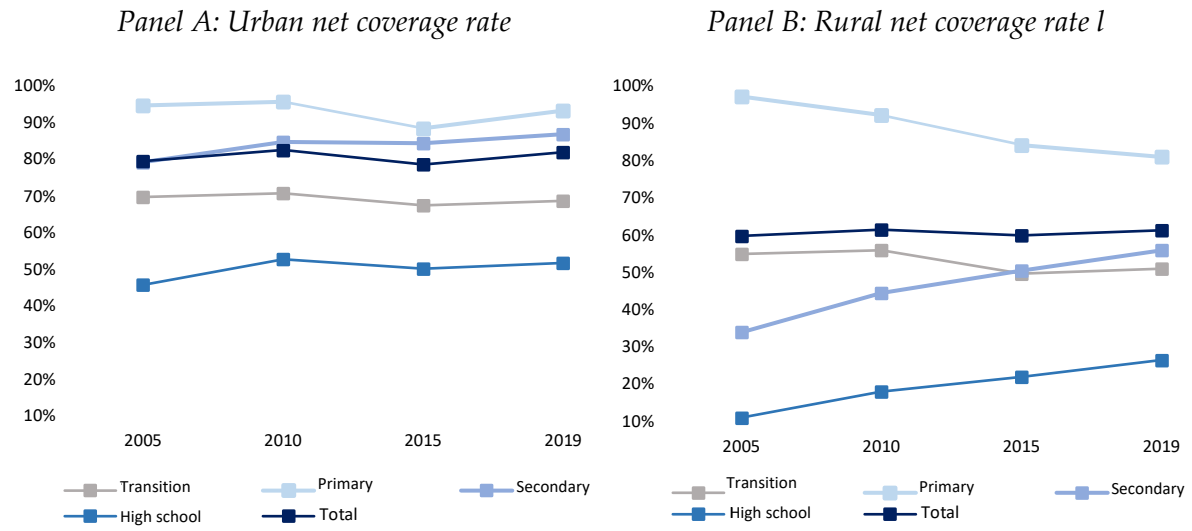
Source: Own elaboration based on el SEMS

When considering the figures according to geographic domains, there are very protruding differences, since they are greater between urban and rural areas. For this individual, the total coverage rates of urban areas (around 80 per cent) were considerably higher than those of the rural counterpart (around 61 per cent). With the exception of the 2005 value (for primary education), coverage rates at all levels in urban areas far exceeded those at rural levels.

However, the coverage rates of the secondary and middle levels of rural areas observed sustained and considerable increases: the rate of the secondary level of the rural domain went from 34.16% in 2005 to 56.15% in 2019, while that of the average level went from 11.29% in 2005 to 26.74% in 2019, figures that in any case account for the current state and lag of education in the Colombian countryside. However, secondary education coverage rates are also very low in urban areas (although they are almost double in 2019).

However, although the rates of the primary and transition levels showed a decline in both geographic domains, in the rural area this regression was very pronounced in the primary as it went from 97.40% in 2005 to 81.20% in 2019, while for transition it was lower, although considerable since it went from 55.24% in 2005 to 51.21% in 2019. On the other hand, the primary and transition levels of the urban environment also experienced a reduction, although of much smaller magnitude compared to what was verified for rural areas. However, the very low coverage in transition in rural areas (51.21% in 2019) stands out, and still much lower in secondary education (26.74%), also in rural areas, as observed in Graph 54.

Graph 54: Net school coverage rates, urban and rural (%)



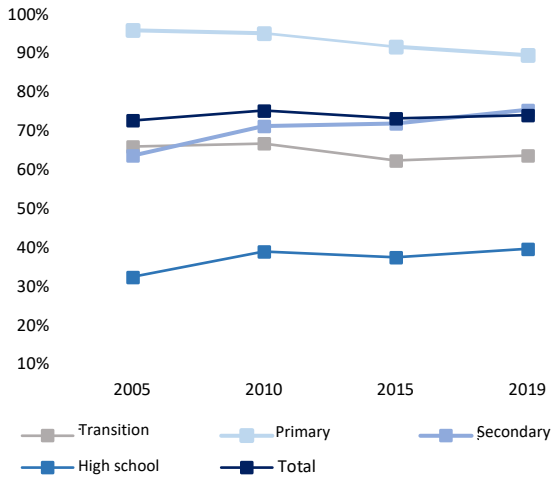
Source: Own elaboration based on SEMS

Overall, total female net coverage rates were higher than male rates in each of the years examined in the period 2005-2019. With the exception of the 2005 and 2010 values for primary education, and transition rates, female net coverage rates of the remaining levels of education were consistently higher than male rates. In particular, male rates of secondary education levels ranged from 32.75% in 2005 to 39.97% in 2019, while females showed a range between 40.52% in 2005 and 50.83% in 2019, being 10.8 p.p. of difference for this last year. Similarly, higher female rates were observed in secondary education (63.91% in 2005 to 75.72% in 2019),

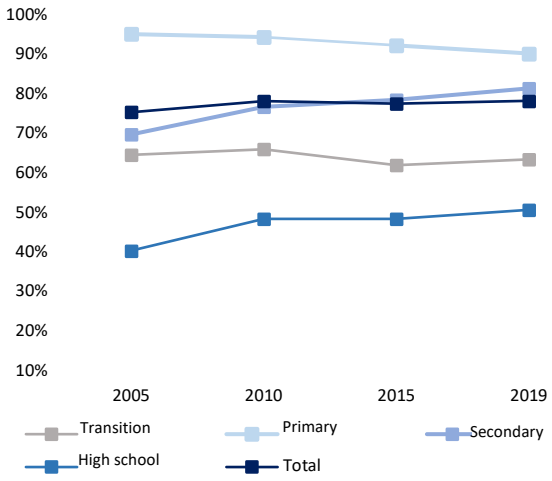
compared to men (69.89% in 2005 to 81.54% in 2019). In the case of transition rates, those of both sexes were relatively similar (about 66%) (See Graph 55).

Graph 55: Net coverage rates by gender, 2005-2019 (%)

Panel C: Male net coverage rate



Panel D: Female net coverage rate

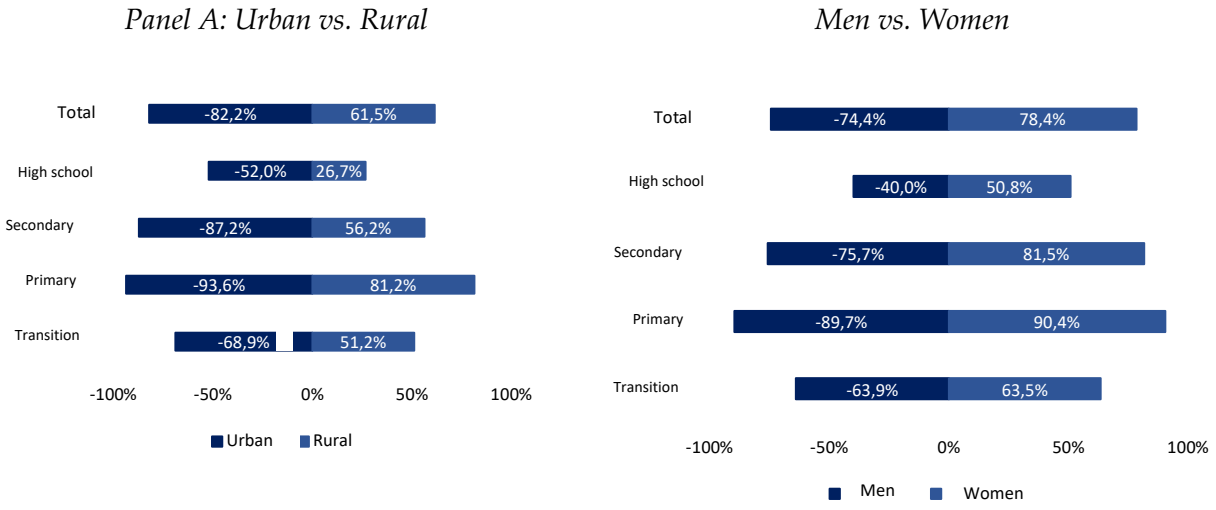


Source: Own elaboration based on SEMS

Considering the comparative results between rural and urban areas, and those of gender, it is denoted that the net rate of the urban total was higher (82.2%) than that of the rural total (61.5%), this means 20.7 p.p. of difference. While urban coverage in primary school was above 90%, in rural areas it was 81.2%. In the case of the secondary level, the largest gaps against rural dominance were noted, which reached 56.2% compared to 87.2% of urban areas.

At the average level, large differences were also observed since urban coverage rates reached 52.0% (already insufficient), compared to 26.7% in the rural domain. Finally, transition rates in the rural domain showed lower results, 51.2% compared to 68.9% in the urban domain (17.1 p.p.). Finally, regarding the differences in coverage between the sexes, it is denoted that the largest gaps were evident in secondary education. Moreover, the differences in rates were against the male rates at each of the educational levels, as well as at the total level.

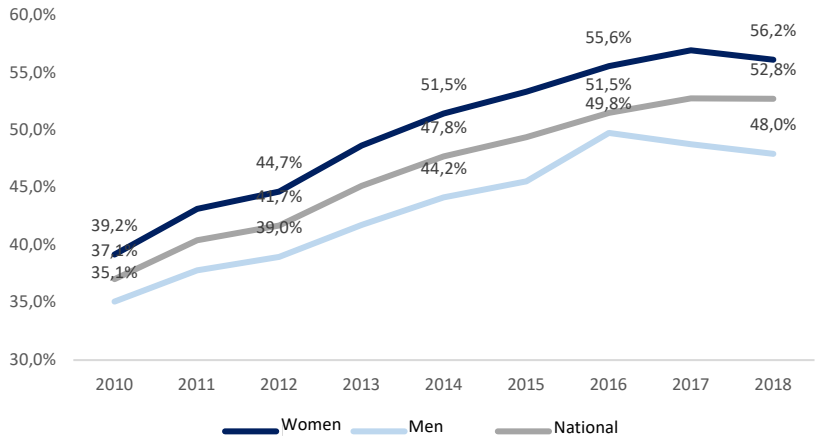
Graph 56: Differences in coverage between geographic areas and between genders, 2019



Source: Own elaboration based on SEMS

A look at higher education accounts for the low levels of coverage[29], which for 2018 stood at 52.8%. However, growth between 2010 and 2018 meant an increase of 15.7 p.p. This represents 2.7 million students in undergraduate careers in higher education. Historically, women have had a higher coverage rate than men. The distance between women and men in 2010 was 4.1 p.p., but in 2018 it reached 8.2 p.p. Another relevant indicator calculated by the MNE is the rate of immediate transition. This estimates the proportion of recent graduates of secondary education who manage to access higher education, which in 2018 stood at 38.7%.

Graph 57: Coverage rate in Higher Education



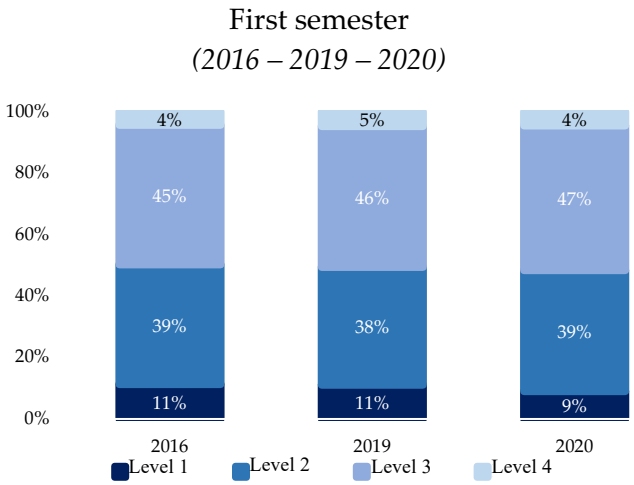
Source: Higher Education National Information System (HENIS) HENIS-Ministry of National Education

[29] In order to analyze the long term 2010-2018, the coverage rates in higher education defined by the National Ministry of Education (NME) are taken as the proportion between the undergraduate enrolled population with respect to the population aged 17 to 21 years old.

Quality

According to the results of the *Saber 11* tests[30] at the national level (performance level in mathematics) for the years 2016, 2019 and 2020 (see Graph 58), most of the students who took the test were placed at the performance levels level 4 (just over 45%) and level 3 (just over 38%). However, the proportion of students with the lowest performance level (level 1) decreased in the last two years, especially in 2020 when this proportion reached 9.1% (2 p.p. less than in previous years). Moreover, it is denoted that the proportion of learners with level 4 performance is the lowest in each of the years of the reference, much lower than the proportion of students whose performance was the lowest, being a difference of 5 p.p.

Graph 58: Percentage of people by level of performance in mathematics – Saber 11



Source: Own elaboration based on ICFES

However, if the results have been itemized according to geographic area, the differences in education quality between urban and rural areas stand out forthwith. In particular, in rural areas the results for level 2 (around 32%), and level 1 (just over 46%) prevailed, all of which reveals the great magnitude of the quality problem in Colombian rural areas. Likewise, in such areas, the proportion of students who reached level 4 was around 2% (constant over time), a magnitude much lower than that reached for level 1, which was around 17%, with a 15 p.p. difference. Correspondingly, in the urban area, the proportion of students who reached level 3 prevailed (around 49%), followed by the proportion of level 2 (around 37%). As in rural areas, the proportion of learners who reached the highest level (around 5 per cent) was lower than the proportion with the lowest level of achievement (just over 9 per cent). See Graph 59, Panel A.

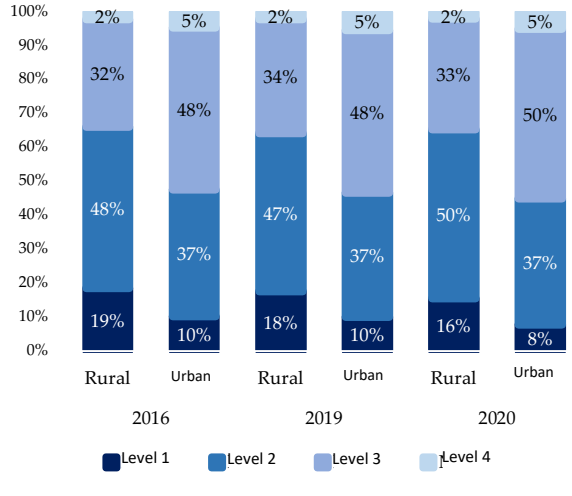
Moreover, the results show gaps in the quality of education with respect to the gender of the learners, specifically against female students. Specifically, women presented lower performance results in the Saber 11 tests compared to men to the extent that the proportion of

[30] *Saber 11* are standardized tests administered by the Colombian Institute of Higher Education (*ICFES, for its Spanish acronym*) and presented by students in grade 11 (last year of secondary education) and inquiries about the competencies of students in various areas, within which are language and mathematics.

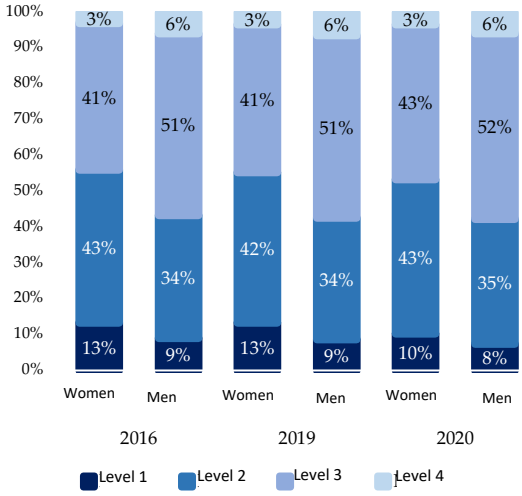
female students observed in each of the years examined, was lower for levels 3 and 4 (46% women and 58% men, with 12 p.p. of difference in 2020), while in level 1 and level 2 they accused lower proportions than men (43% men and 53% women, with 10 p.p. difference). Moreover, both the proportion of students at level 4 showed the lowest proportion, a magnitude that in any case was comfortably lower than the proportion of students (men and women) with level 1. In addition, it is denoted that the proportion of students with very low achievements decreased in the last year, especially the proportion of female students, going from 13% in 2019 at the lowest level, to 10% in 2020, a reduction of 3 p.p., while for men this was 1 p.p. See Graph 59, Panel B.

Graph 59: Proportion of students in performance levels by zones and gender. First Semester

Panel A: Proportion by areas.



Panel B: Proportion by gender.



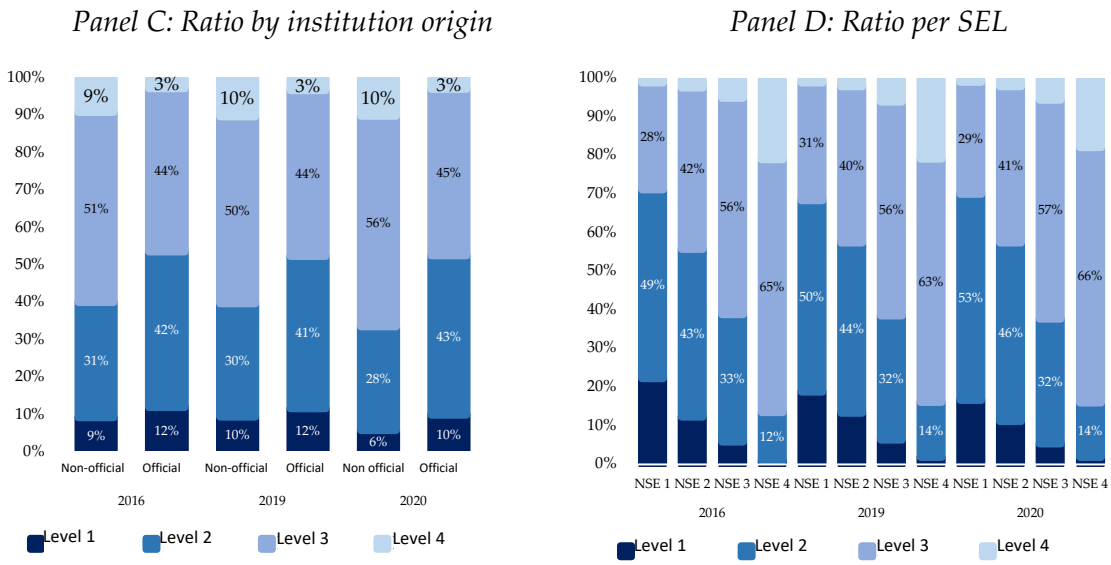
Source: Own elaboration based on ICFES

Compared to the results of educational entities by sector (official versus unofficial), it is noted that students from non-official educational entities obtained better performance results (in the area of mathematics) compared to their counterparts in the official sector. Indeed, for level 3 and level 4 the proportion of students in non-official schools was higher than that of officials. Correspondingly, the proportion of learners in educational institutions with lower results, namely, at level 1 and level 2, was higher in the official sector than in the unofficial sector. Likewise, an outstanding fact is represented in the proportion of students in the unofficial sector who reached level 4, which was higher not only than the corresponding one in the official sector (as already noted), but was higher than the proportion of students from non-official schools who barely obtained level 1 of achievement in these tests (in the official sector the proportion of students in level 1 far exceeds level 4). However, the fact that the proportion of students who reached level 1 fell for both sectors, especially in the unofficial sector, to such an extent that between 2019 and 2020 the proportion of students in levels 1 and 2 of the unofficial sector fell 6 p.p., while in the official sector this was 4 p.p.

Regarding the results by socioeconomic level of the student (SEL), the results of the Saber 11 tests (area of mathematics) for the years examined, show a positive correlation between the socioeconomic stratum and the performance level, which leads to consider that the

socioeconomic stratum is a central factor in educational achievement, that is, in the quality of teaching. In particular, in the lowest socioeconomic levels, the proportion of students who prevailed corresponded to level 2, followed by level 3. Correspondingly, in the SEL 3 and 4 the proportion of students with level 3 prevailed. However, in face of this fact, it stands out from the results for SEL students at level 4, that the second highest proportion of students was level 4 and not level 2 of achievement, as happened with the rest of SEL, all of which offers a clue about the educational lag of SEL minors, wherein the proportion of students with the lowest level of achievement is very considerable (about 18% for the years examined), although it is denoted that this was gradually reduced. Similarly, while by 2020 70.2% of students in SEL 1 and 2 were placed in one of the first two levels of performance, 83.9% of students in SEL 3 and 4 were placed in one of the levels 3 and 4 of performance (see Graph 60).

Graph 60: Proportion of students according to sector and according to SEL. First Semester.

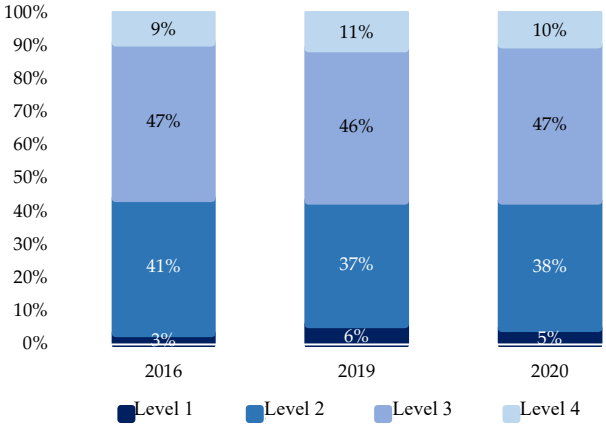


Source: Own elaboration based on ICFES

In accordance with the performance results in the critical reading area Saber 11, the data for the national level revealed that the proportion of students with level 3 performance prevailed (between 45.9% and 47.2%), followed by the proportion of students with level 2 performance (between 37.3% and 40.8%). Of the results also stands out the fact that the proportion of level 1 was significant (just under 5% on average), although it is denoted that this proportion was comfortably higher than the magnitude exhibited by level 4 (somewhat less than 10% on average). In any case, it is denoted that, during the 3 years examined, the proportion of each of the levels remained relatively stable, where at level 4 and 3 and the variation is less than 1 p.p., in particular between 2019 and 2020. See Graph 61).

Graph 61: Percentage de of people by performance level in critical reading – Saber 11

Second Semester (2016 – 2019 – 2020)

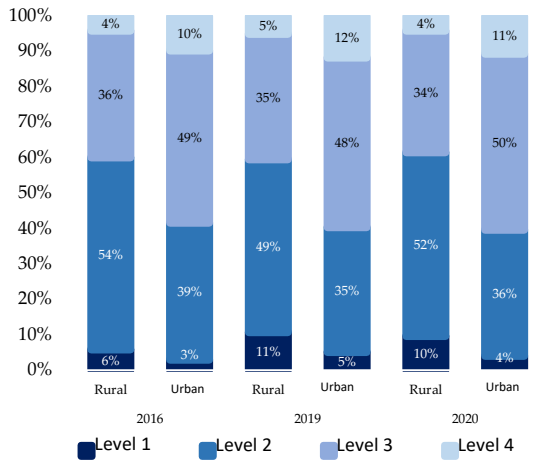


Source: Own elaboration based on ICFES

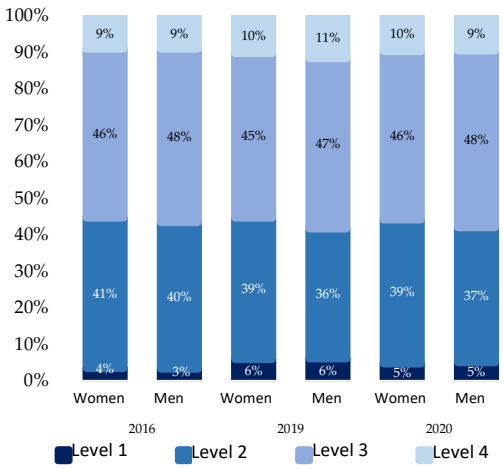
On the other hand, according to the results of the critical reading area of the Saber 11 tests, the performance of rural areas was significantly lower than that of urban areas. In this regard, in urban areas level 3 prevailed as the share of students who obtained this level reached a share of more than 47%, while in rural areas this value varied around 35%. Likewise, level 2 obtained a share between 35% and 39.5% in urban areas, while in rural areas it ranged between 48.8% and 54.1%. Moreover, the proportion of pupils who barely obtained a grade level 1 ranged from 5.9 per cent to 10.8 per cent in rural areas, while in urban areas it did not exceed 5.2 per cent, while the proportion of pupils who achieved the highest grade in urban areas ranged from 9.72 per cent to 10.6 per cent while in rural areas the corresponding value fluctuated between 4.1% and 5.1%. In 2020 while in rural areas 62% presented results at level 1 or 2, in urban areas this proportion was 40%, with a difference of 22 p.p. Regarding the results of performance in the area of critical reading according to the student's gender, it is denoted that the proportions were relatively stable for the 3 years examined.

Graph 62: Proportion of students by areas and gender

Panel A: Proportion by areas.



Panel B: Proportion by gender.

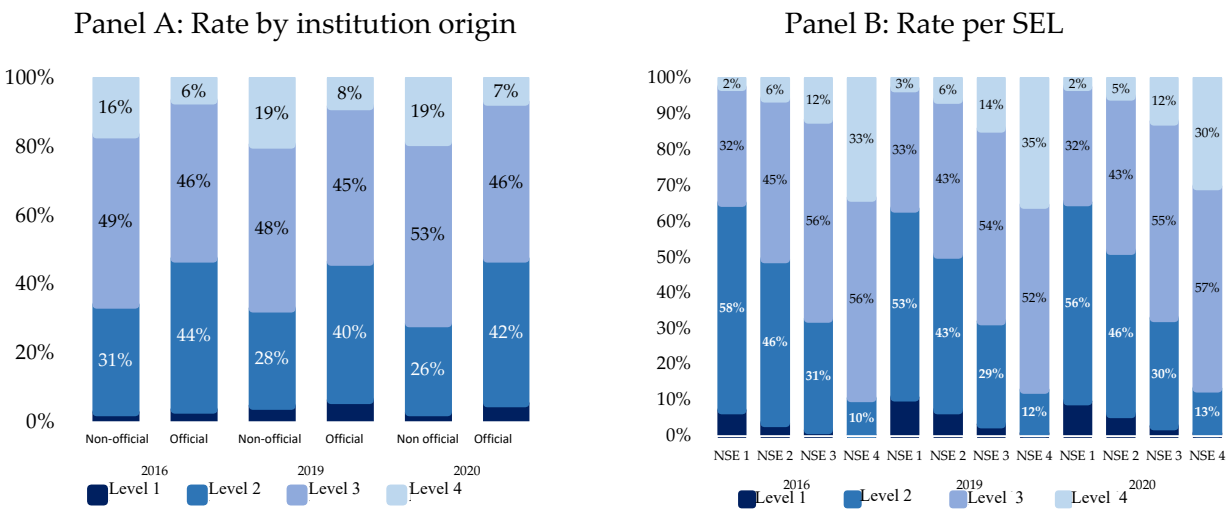


Source: Own elaboration based on ICFES

However, in terms of the share of official institutions compared to non-official ones, it is denoted that the former increased their share from 3.6% in 2016 to 5.5% in 2010 at level 1, while non-official institutions remained stable at 2.9%. Regarding level 2, official higher education institutions far exceeded their share compared to unofficial ones with differences of 13 p.p. in 2016, 12 p.p. in 2019 and 16 p.p. in 2020. By contrast, at level 3 the proportion of non-official institutions exceeded the official institutions by a perceptible amount (just over 2 p.p.). However, at level 4, non-officials comfortably outnumbered officials, with a share of 18.6% in 2020 compared to 6.9% for official institutions.

In connection with the results obtained according to socioeconomic level, it is denoted that in the area of critical reading in the Saber 11 tests, the best performance was obtained in the highest socioeconomic levels (SEL). By contrast, the worst results were obtained in the lower SEL. For the particular, the share of level 1 in the SEL 1 has increased from 7.2% in 2016 to 9.7% in 2020, while in level 2 it has decreased from 57.9% in 2016 to 55.7% in 2020. On the other hand, the second worst achievement was obtained by the SEL 2 (in the 3 years considered). Correspondingly, the best achievements were made in SEL 4, followed by SEL 3. Similarly, the largest proportions of level 3 were obtained by SEL 4 and 3 (in their order, see Graph 63). Thus, in 2020 while in the lowest socioeconomic level 66% of students were in academic performance levels 1 and 2, in the highest socioeconomic level only 13% of students reached those levels of performance, presenting a difference of about 53 p.p. Meanwhile, while only 2% of students of the lowest socioeconomic status achieve high performance (level 4), 30% of students of high socioeconomic levels reach such level.

Graph 63: Percentage of people by performance level in critical Reading– Saber 11 Second Semester (2016 – 2020)

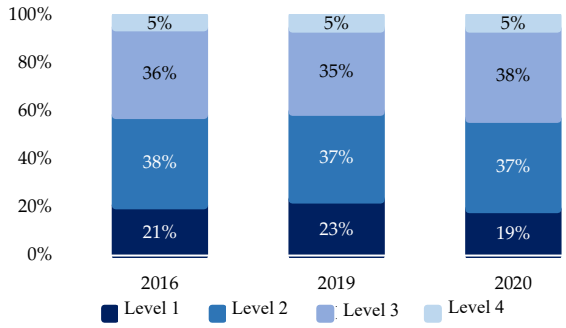


Source: Own elaboration based on ICFES

In connection with the results of the Saber PRO[31] tests that evaluate the performance of higher education at the national level, in the area of reading it is denoted that the proportion of students who obtained level 2 of achievement was slightly higher (on average) than the proportion of learners who reached level 3. According to records, share in tier 1 declined from 20.9% in 2016 to 19.4% in 2020, while share in tier 2 remained stable at around 37%. On the other hand, share in level 3 increased by 1.4 p.p. while share in level 4 showed a practically imperceptible increase (0.4 p.p.). See Graph 64.

Graph 64: Percentage of people by performance level in critical reading

Saber Pro (2016–2019–2020)



Source: Own elaboration based on ICFES

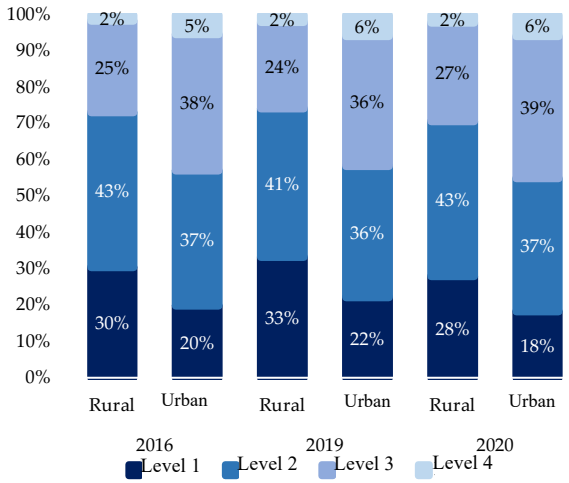
In connection with the previous results discriminated according to geographic domain, in general it is denoted that the rural area presented lower levels of performance compared to the urban area for the three years. According to the data, level 1 share in rural areas decreased from 30.5% in 2016 to 27.9% in 2020; at level 2 it has remained stable around 42%. At level 3 it increased 2 p.p., and at level 4 it increased 0.5 p.p. On the other hand, the share of level 1 in the urban area went from 19.8% in 2016 to 18.2% in 2020; at level 2 it was reduced by 0.5 p.p. Likewise, in level 3 it increased 1.6 p.p. (between 2016 and 2020) while in level 4 it increased 0.5 p.p. (for the same period).

Generally, women's share was higher at low levels of performance compared to men. Likewise, women's share was lower at high levels of performance compared to men. Regarding the results of performance by gender, it was noted that female share in level 1 decreased from 22.5% in 2016 to 20.3% in 2020. In contrast, female share at level 2 increased by 0.3 p.p.; in level 3 it did the same by increasing 1.5 p.p., while also in level 4 it increased its share by 0.5% p.p. Regarding male performance, it is noted that male share in level 1 decreased by 0.4 p.p. while also decreasing in level 2 by 1.2 p.p. By contrast, male share at level 3 increased by 1.3 p.p. while male share at level 4 increased by 0.3 p.p.

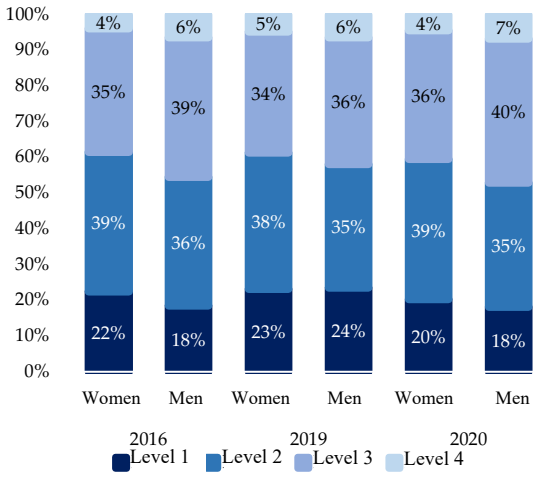
[31] Saber PRO is a standardized test taken by students enrolled in higher education and who are about to obtain a degree. This exam is a requirement to apply to an academic degree. Given the similarity between the results for quantitative reasoning and language, the results in language are analyzed in the document.

Graph 65: Percentage of people by performance level in critical reading -Saber PRO

Palatino A: Rate by areas



Palatino B: Rate by gender

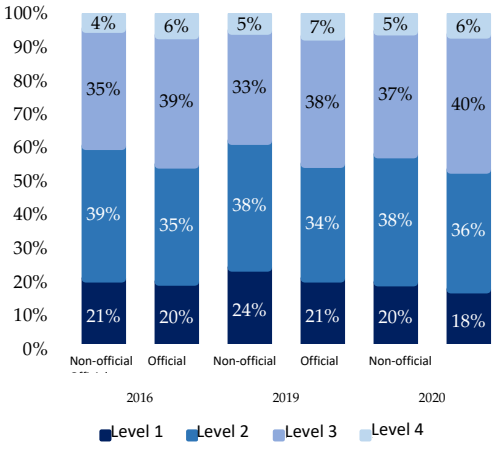


Source: Own elaboration based on ICFES

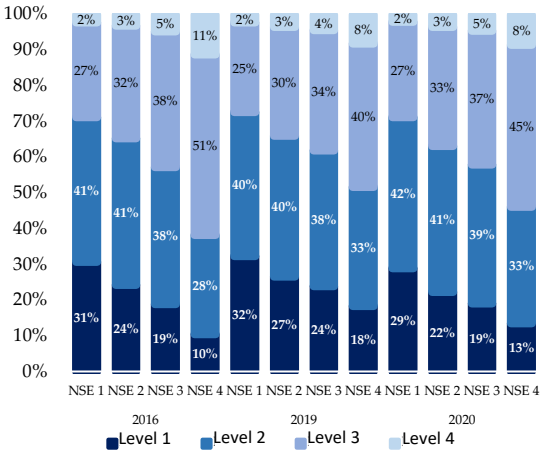
Regarding the performance results in the area of critical reading Saber PRO tests, it is noted that the share of official schools at level 1 decreased by 2.3 p.p., while the share of official schools at level 2 increased by 0.8 p.p. Likewise, the share of official schools in level 3 increased by 1.6 p.p. while the share of this type of schools in level 4 decreased by 0.1 p.p. Correspondingly, the share of unofficial schools in level 1 decreased by 1.2 p.p., while its decrease in level 2 was 0.8 p.p. In contrast, the share of unofficial schools at level 3 increased by 1.6 p.p., while at level 4 it grew by 0.8 p.p.

Graph 66: Participation of students by institution origin and by SEL, Saber-PRO Tests

Panel A: Rate by institution origin



Panel B: Rate per SEL



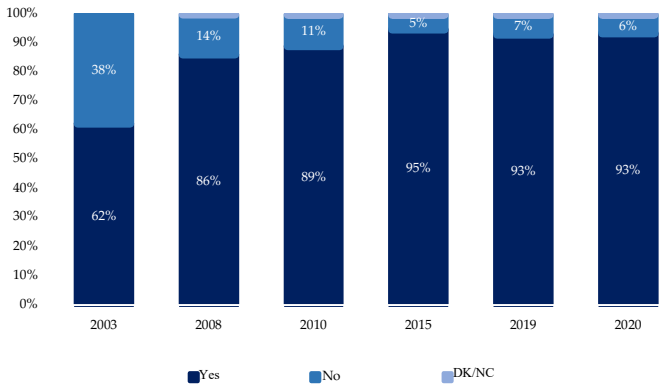
Source: Own elaboration based on ICFES

4.7.3 Health

Access

According to the records, although the proportion of affiliation to the Social Security General System in Health for the total country, evidenced a prominent growth in the period 2003-2020, represented in the passage from a coverage of 62.3% to 93.3%, with a difference of 31 p.p., a proportion that, although it is high, is still far from total coverage (100%). Moreover, it is denoted that this growth was not sustained as, for example, in 2020 the proportion of affiliates was slightly lower than that exhibited in previous years.

Graph 67: Affiliation to social security in health



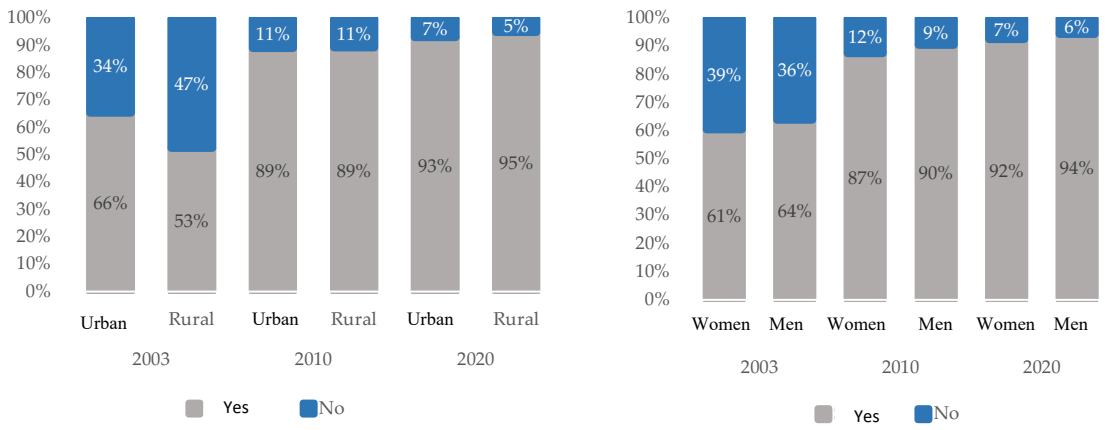
Source: Own elaboration based on DANE-QLS

Regarding access to social security in health according to geographic domain, it is denoted that the coverage of affiliates in urban and rural areas grew between 2003 and 2020. In this regard, it also highlights the fact that the difference between the proportion of affiliates from urban and rural areas was reduced to the point that, in 2020, urban coverage (92.92%) was lower than rural coverage (94.62%). Important aspects to highlight are the great advance in coverage in affiliation between 2003 and 2020, since in 2003 the coverage of the urban sector was 65.5% and the rural sector of 52.7%, reaching up to 95 and 93% respectively in 2020. Despite the above, the behavior of affiliation above 90% was not uniform and there are gaps between groups.

In connection with the behavior of affiliation according to gender, it is noted that the proportion of female affiliation was higher than that of men in each and every one of the years considered. Although recently the proportion of social security members in health, both men and women, exceeded 90%, there is still an irregular margin of non-members in both sexes; that is, it is not possible to consolidate a sustained growth in membership. While in 2010 the difference in affiliation was around 3 p.p., in 2020 this was 2 p.p. (See Graph 68).

Graph 68: Access to health by area and gender

Panel A: Rate by areas. *Panel B: Rate by gender.*



Source: Own elaboration based on DANE-QLS

With the exception of what was verified for members (people who access the system) with higher education, the records reveal that in 2003 there were differences in affiliation to social security in health according to the educational level of the members, so that the higher the education, the higher the affiliation rate; for example, while in 2003 the number of members without any level was 50.33%, those in primary education amounted to 58.07% and those in secondary to 61.89%. However, as evidenced by the 2010 data, these gaps are beginning to narrow (in 2010 4.8 p.p. separated those with more education from people without any educational level, but 1.5 p.p. in 2020) and although it can be considered that as warned for 2010 and for 2020, the affiliation rate is not necessarily related to the educational level of the affiliate (e.g., in 2020 the proportion of affiliates with primary level, 93.59%, exceeded that of affiliates with secondary, 89.99%), the truth is that affiliates with higher education level observed the highest affiliation rate compared to affiliates of other educational levels in 2010 and 2020.

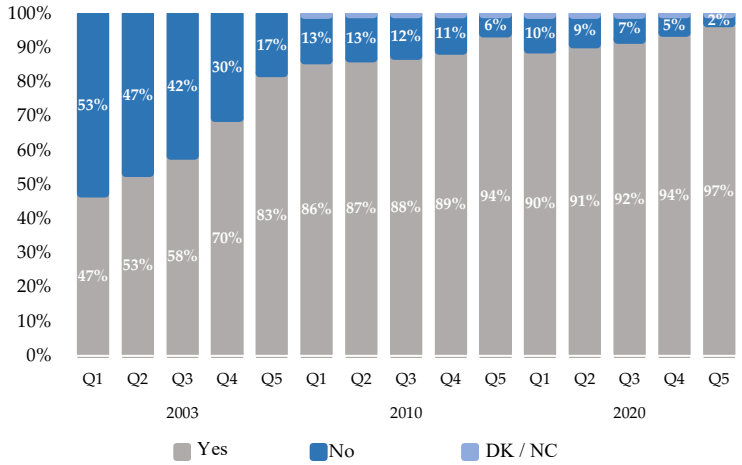
Table 37: Access to health according to educational level

Educational levels	None	Preschool and Primary	Secondary	High school	Higher
		2003			
Yes	50,3	58,1	61,9	78,4	66,7
No	49,7	41,9	38,1	21,6	33,3
		2010			
Yes	85,9	89,8	86,2	86,4	90,7
No	13,7	10,1	13,7	13,5	9,1
DK / NC	0,4	0,1	0,1	0,1	0,1
		2020			
Yes	93,3	93,6	90,0	90,9	94,8
No	6,0	6,0	9,6	8,8	5,0
DK / NC	0,7	0,4	0,4	0,3	0,2

Source: Own elaboration based on QLS

In turn, the behavior of the affiliation rate according to income level shows a positive relationship, that is, the higher the level of income, the higher the affiliation rate. Evidently, the records for each of the years examined support the above assertion. As a sample, the first quintile observed the lowest value compared to other quintiles in each of the years considered; correspondingly, the last quintile exhibited the highest rates within each of the periods considered. In 2003, 47% of the lower quintile accessed the system, while 83% of the upper quintile did so, yielding a gap of 36 p.p., which was reduced in 2010 to 8 p.p. and in 2020 to 7 p.p. In general, this fact highlights the existence of barriers to access to social security in health for people with lower incomes.

Graph 69: Access to health by educational level and income level

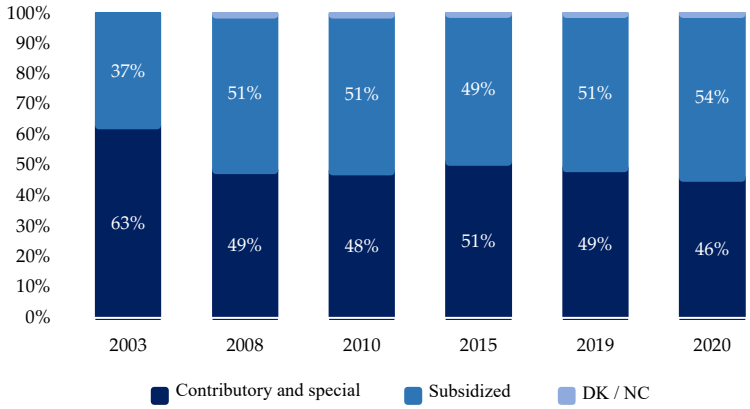


Source: Own elaboration based on QLS

With the exception of what was verified for the year 2003 in which the rate of affiliation of the contributory regime [32] far exceeded that of subsidized, the proportion of affiliates to the contributory regime was relatively similar to that of the subsidized regime for the rest of the years examined, although it could be considered that the subsidized regime prevailed (e.g., in 2020 the rate of contributory affiliates reached 46.0% while that of affiliates to the subsidized was equivalent to 53.7%).

[32] Contributory affiliation regime to which the affiliate makes periodic contributions. In the subsidized regime, people in vulnerable conditions and without formal employment, access the system without the need to make periodic contributions.

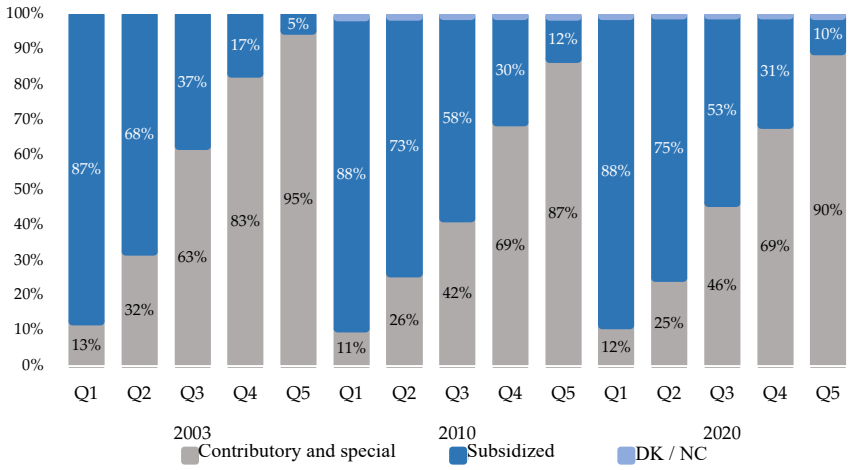
Graph 70: Type of affiliation to social security in health



Source: Own elaboration based on QLS

Likewise, the records of the years considered revealed that within the social security affiliates in health, the lowest income levels showed high rates of affiliation in the subsidized regime, while those with the highest income (quintiles four and five), exhibited rates predominantly alluding to social security in contributory health. The 20% of lower income participates in 88% as affiliated to the contributory regime, a value that has been maintained from 2003 to 2020. Meanwhile, while in 2003 quintile 5 observed a 95.44% affiliation in the contributory regime, this magnitude reached 87.46%, that is, 7.98 p.p. less in 2010, although in 2020 it stood at 90%, increasing 3 p.p.

Graph 71: Proportion of health affiliates by income level



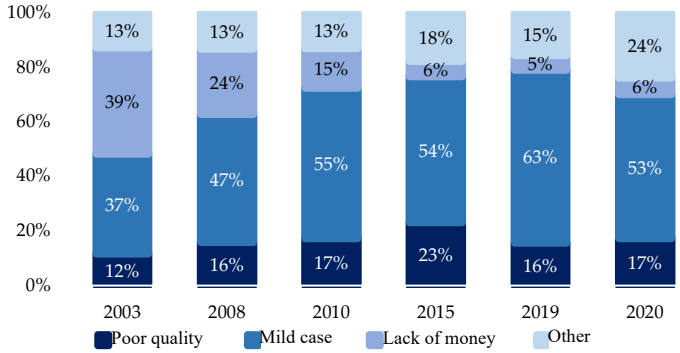
Source: Own elaboration based on QLS

Quality

The QLS probes difficulties for the effective reception of the health care service, which highlights the reasons why people could not access medical care. This variable is analyzed as a proxy for the quality of the health service. Several reasons were refers to the reason for which

the service was not used by affiliates. In general, at the national level, it is noted that among the members who decided not to use the service, a very considerable part denoted that they did not do so because their health problem was considered a mild case (between 36% and 66%), while another very significant proportion of the members denoted as a cause the poor quality of service (between 11.8% and 23.1%) and the lack of money as another cause, although it is pointed out that from 2010 such a reason ceases to be an obstacle of considerable weight (for example, by 2020 such a cause represented only 6.1% compared to 39.0% in 2003, the year in which it constituted the prevailing cause for not using the service). Other reasons for non-use (other than poor quality, lack of money, or considering that the case is mild) presented a considerable share (between 12.6% and 23.6%). See Graph 72.

Graph 72: Reason not to seek or receive medical attention



Source: Own elaboration based on QLS

In connection with the educational level for those with no level of education or primary, it is observed that in 2003 the lack of money was one of the main obstacles to access the system with 54.5%, a reason that was considerably reduced in 2010, accounting for 18.5% of cases and 16.6% in 2020. The non-request for appointments due to poor quality increased 3 p.p. between 2003 and 2020 for those without education, 12.2 p.p. for people with preschool and primary, 2.5 p.p. those who reach secondary, while it falls only 0.3 p.p. for those in secondary education, but for those with higher education the difference rises 4.4 p.p.

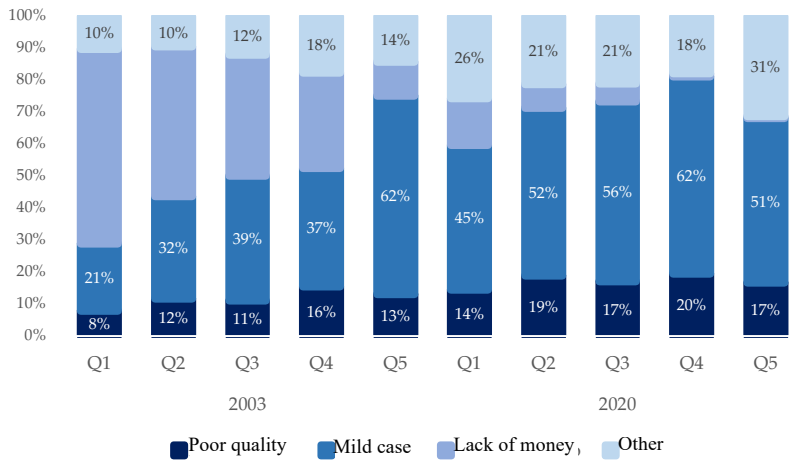
Table 38: Reason not to seek or receive medical care by educational level

Educational Levels	None	Preschool and Primary	Secondary	High school	Higher
			2003		
Poor quality	9,5	12,5	14,6	19,4	9,3
Mild case	18,3	15,6	37,3	40,9	50,0
Lack of money	54,5	53,8	35,9	32,3	29,5
Other	17,7	18,1	12,1	7,3	11,2
			2010		
Poor quality	22,2	17,9	17,0	19,1	13,9
Mild case	41,2	45,2	48,1	57,8	64,9
Lack of money	18,5	15,0	20,4	7,8	12,5
Other	18,0	21,8	14,5	15,4	8,8
			2020		
Poor quality	12,5	24,7	17,1	17,1	15,9
Mild case	42,4	36,1	56,8	50,5	58,3
Lack of money	16,6	6,4	9,8	6,4	2,8
Other	28,5	32,8	16,3	26,1	23,0

Source: Own elaboration based on DANE-QLS

Regarding the causes of not seeking medical attention according to income level, it is shown that (with the exception of what was verified for the first two quintiles of admission in 2003), the predominant cause was the mild case in all quintiles. The lack of money as a reason for not receiving or requesting medical care, was considerably reduced for quintiles, going from 61% in quintile 1 in 2003 to 14.6% in 2020, with a reduction of 46.4 p.p.; the equivalent of 36.4 p.p. for quintile 2 and 32.3 p.p. for quintile 3. Poor quality as a reason grew in all income quintiles, although with a greater effect on lower quintiles. Thus, the difference in percentage points (p.p.) between 2003 and 2020 for the poorest 20% was 6 p.p., for the second quintile of 7 p.p., for the third quintile 6 p.p., for the fourth quintile 4 p.p. and the 20% highest income of 4 p.p.

Graph 73: Reason not to seek or receive medical attention



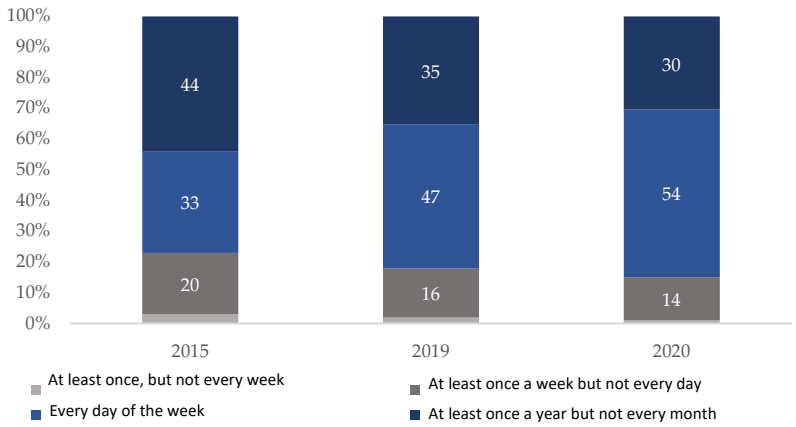
Source: Own elaboration based on DANE-QLS

4.7.4. Internet

Access

The QLS also probes the frequency of Internet use according to weekly, monthly or annual frequency, for the years 2015, 2019 and 2020. A considerable proportion of people who do not use it are observed for each of the years; e.g., 30.2% by 2020[33]. By contrast, the proportion that uses this service every day of the week has gradually grown to the point that in 2020 this proportion exceeded 50%, with a growth of 21 p.p. The proportion of people who use it at least once per week, not daily, progressively decreased for each of the years considered, going from 20.2% in 2015 to 13.9% in 2020, this is 6.3 p.p. Similarly, the proportion of people who said they did not use this service already in 2015 represented a barely perceptible proportion (2.7%), also gradually decreased to the point of 1.4%. Otherwise, it is denoted that the proportions of "at least once a month, but not every week" and "at least once a year, but not every month" were negligible. See Graph 74.

Graph 74: Frequency of Internet use

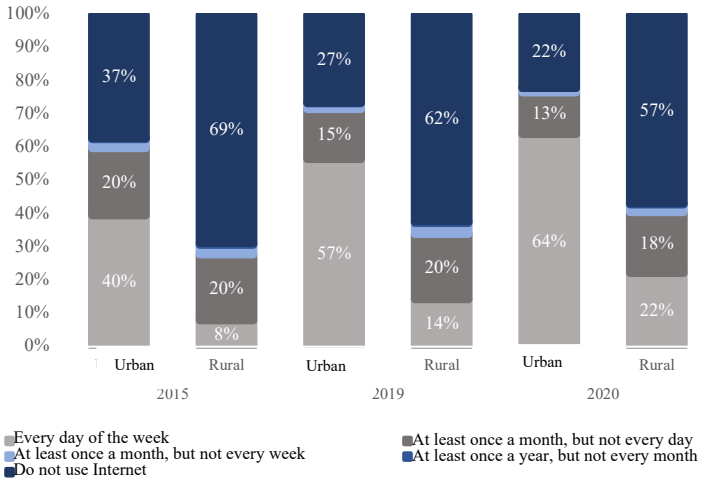


Source: Own elaboration based on DANE-QLS

When disaggregating the aforementioned figures according to geographic domain, it is shown that its use has been greater in urban areas than in rural areas. Likewise, it is shown that in urban areas its use has grown gradually and considerably, i.e., from 39.5% in 2015 to 64.1% in 2020, this is 24.6 p.p. more. Similarly, in rural areas its use has also grown steadily from 7.9% to 22.2%, this is 14.3 p.p. more. Correspondingly, the proportion of people who do not use it has decreased steadily in both geographic domains given the step from 37.1% in 2015 to 22.0% in the urban domain (15.1 p.p. less) and from 68.8% in 2015 to 56.9% in 2020 (9.6 p.p. less). In the same sense, the proportion of people who use it weekly but not daily in rural areas has decreased, given its passage from 19.9% in 2015 to 18.4% in 2020. However, in urban areas its use has varied around 18%. See Graph 75.

[33] This indicator is related to that reported by ITU (International Communications Union) wherein the percentage of individuals using the Internet is described. For Colombia, in 2020 it was 69.8% (inverse of that reported in this diagnosis), for other countries in the region such as Chile, Mexico or Peru, this indicator was 88.3%, 71.9%, and 65.3%, respectively.

Graph 75: Internet Use Frequency by Zone



Source: Own elaboration based on DANE-QLS

Unsurprisingly, the proportion of people who use the Internet on a daily basis is directly related to educational level. In this sense, the proportion of people with the highest level exceeds that of the lowest educational levels; for example, in 2020 the proportion of people who use it daily was equivalent to 71.7% compared to 61.2% at the middle level and 42% at the secondary level. Correspondingly, the proportion of people who do not use it has also gradually decreased at each of the educational levels (that is, from preschool and primary to higher). Over the years, it is observed that daily use for those with higher education increased 20.5 p.p. between 2015 and 2020, for people with an average of 24 p.p., secondary 26.7 p.p. and preschool and primary 14.2 p.p.

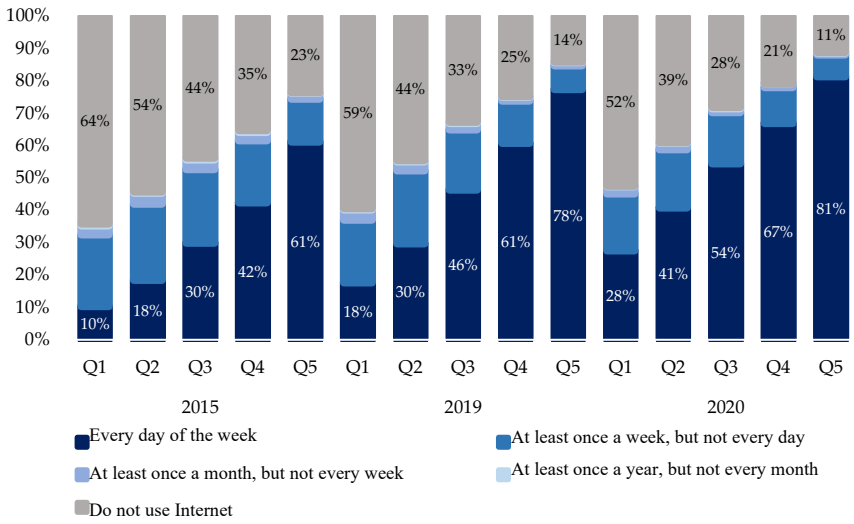
Table 39: Internet Use Percentage by Income Level

Educational Levels	None	Preschool and Primary	Secondary	Intermediate	Higher
			2015		
Every day of the week	0,3	2,3	15,3	34,3	51,2
At least once per week, but not every day	0,6	3,4	16,9	23,8	27,9
At least once per month, but not every week	0,1	1,0	4,7	4,7	2,3
At least once per year but not every month	0,0	0,2	0,9	0,9	0,3
Does not use the Internet	99,0	93,0	62,2	36,2	18,3
			2019		
Every day of the week	3,1	10,9	36,0	57,3	61,0
At least once per week, but not every day	2,1	7,2	16,9	17,1	19,5
At least once per month, but not every week	0,5	1,4	2,9	2,6	2,0
At least once per year but not every month	0,0	0,3	0,6	0,4	0,2
Does not use the Internet	94,2	80,3	43,6	22,6	17,2
			2020		
Every day of the week	5,1	16,5	42,0	61,3	71,7
At least once per week, but not every day	3,1	9,0	17,1	16,9	13,8
At least once per month, but not every week	0,4	1,0	2,2	1,8	1,2
At least once per year but not every month	0,0	0,2	0,4	0,3	0,2
Does not use the Internet	91,4	73,3	38,3	19,8	13,0

Source: Own elaboration based on DANE-QLS

As in the previous case, the proportion of people with access to the Internet is directly related to the level of income, meaning by which the proportion of people with higher income levels, according to quintile, observed the highest values, while those with lower income, exhibited the lowest rates. While in 2015 the 10% of the 20% of the population with the lowest income used the Internet daily, this proportion for the top 20% was 61%, this ratio grew 18 p.p. for the bottom quintile and 20 p.p. for the top in 2020. Of the records, the sustained growth of these proportions in each of the income quintiles stands out. Correlatively, the proportion of people who do not use the Internet has gradually decreased in each of the income quintiles. See Graph 76.

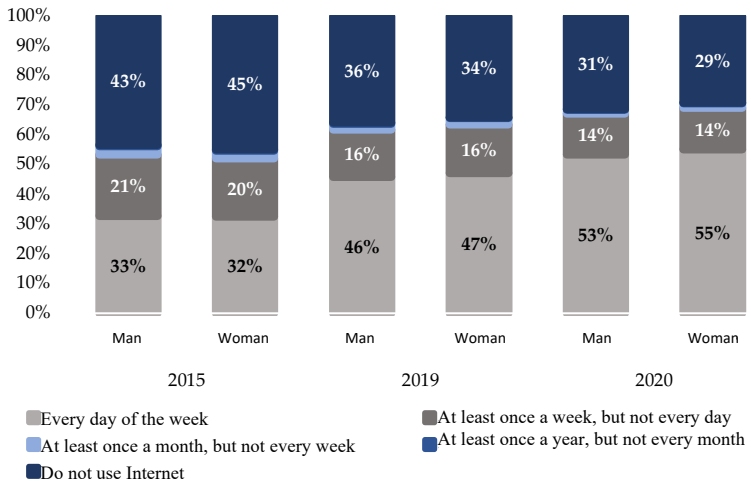
Graph 76: Internet Use (%) by Income Level



Source: Own elaboration based on DANE-QLS

With regard to the behavior of the proportion of people who use the Internet every day of the week according to gender, it is denoted that the proportion of men and women was relatively similar. For example, in 2020 the daily use of the internet in men was 2 p.p. lower than that of women, but the use at least once per week did not show differences (14% each), and the difference between men and women who do not use the internet was 2 p.p. higher for men. The ratio between the two genders was similar for weekly but not daily use.

Graph 77: Internet Frequency Use by Gender

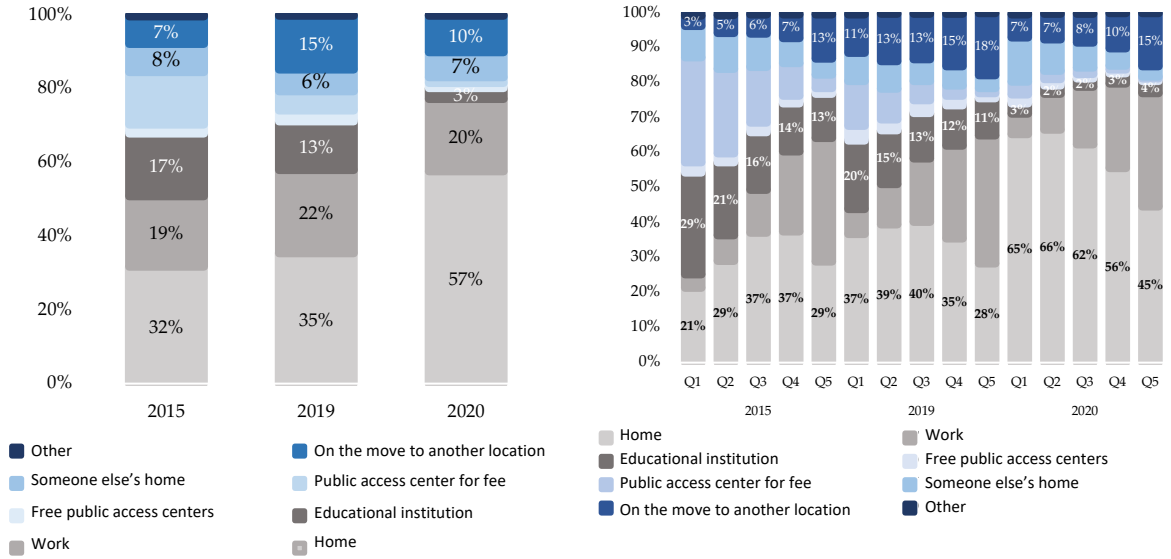


Source: Own elaboration based on QLS

According to records on Internet access at the national level by place of access, it is indicated that the proportion of people who access this service at home increased from 31.6% in 2015 to 57.4% in 2020. Likewise, the proportion of people who access the Internet at work increased slightly from 19.2% to 19.7% in the years just referenced. All in all, it continued to be the second most common access site among users. Regarding access through the educational institution, it is noted that, although this site had a very significant proportion even in 2019, in 2020 this share plummeted from 13.3% in 2019 to 2.85% in 2020, due to the difficulties caused by the COVID-19 pandemic mainly. However, the noticeable reduction in access from public access centers with cost stands out, which went from representing 14.2% to 1.7%, with a difference of 12.5 p.p. Moreover, it is noteworthy that places of displacement to another place (whose proportion has revolved around 10.2%) and that of housing of another person, have had a significant share (between 5.9% and 7.4%).

Likewise, access to the Internet by place shows that the proportion of people who access the same from home has grown in all quintiles between 2015 and 2020. Visibly, the proportion of people in the first quintile who accessed the Internet from home grew from 21.4% in 2015 to 65.2% in 2020, this is 44 p.p., being that for the top quintile it grew 8 p.p. While quintile 5 exhibited the workplace as a prevailing point of access in 2015 and 2019, in 2020 access from home became prevailing, probably due to the fact that the pandemic reduced its share to practically insignificant levels. Another aspect to highlight is the fact that access via public access centers with cost was reduced in each of the quintiles, especially during 2020. While access to someone else's housing is used by lower-income quintiles, its use grew from 9% in 2015 to 12.6% in 2020 (3.6 p.p. more), possibly due to the pandemic and home access restrictions. Finally, the place moved to another place was used more widely by people in the upper quintiles.

Graph 78: Place of access to the Internet



Source: Own elaboration based on DANE-QLS

However, with regard to the use of the Internet according to purpose for each of the population groups by educational level, it is denoted that the highest proportion of users used it for entertainment purposes for each and every one of the different educational levels. However, this proportion decreases as the educational level increases (except for the preschool and primary level in 2020). Similarly, the proportion of people using it for this purpose decreased significantly (and steadily) in the years examined, e.g., at the level none went from 96.2% in 2015 to 83.4% in 2020 (and at the upper level it went from 66.3% in 2015 to 41.0% in 2020). The proportion of people who used it for education and work purposes observed significant magnitudes especially in the higher levels of education, especially in the year 2020 there was a growth for the population with a very important higher education level compared to 2019 (11.6 p.p.). In general, it is indicated that the use of the Internet for study and work grew while its use for entertainment decreased. In particular, the use for education and work for people with secondary education grows in 4.6 p.p. and above in 6.3 p.p. between 2015 and 2020, while the use in entertainment falls in 6.2 p.p. and 15 p.p., respectively. To a lesser extent, but also of considerable share, the use for service purposes presented a perceptible share in each of the population groups according to educational level.

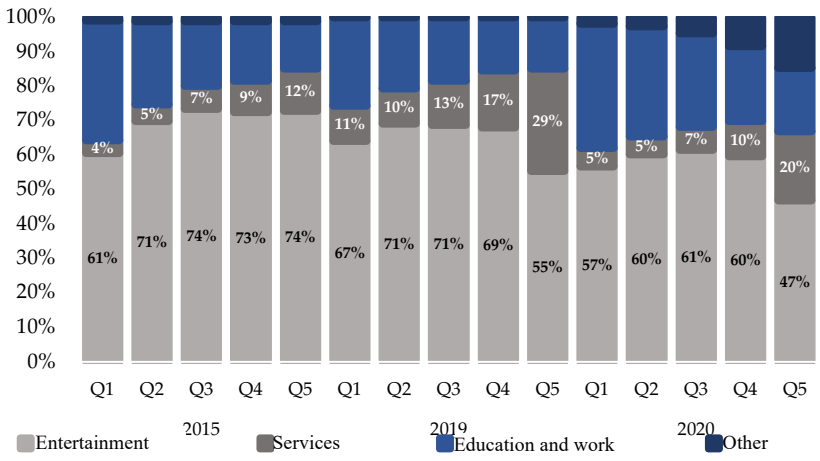
Table 40: Type of Internet use (Activities), by educational level

Educational Levels	None	Preschool and Primary	Secondary	Medium	Higher
			2015		
Entertainment	96,1	88,0	86,12	81,2	66,3
Entertainment	3,8	3,7	7,5	10,1	7,6
Education & work	0,0	8,2	6,3	8,7	26,1
Other	0,47	0,12	0,45	1,0	1,2
			2019		
Entertainment	92,7	90,4	84,9	76,6	54,9
Entertainment	3,62	5,7	9,2	14,6	21,7
Education & work	1,9	4,4	7,3	12,3	24,6
Other	0,29	0,0	0,04	0,11	0,03
			2020		
Entertainment	83,4	88,3	79,9	71,6	41,0
Entertainment	3,4	2,14	4,9	7,3	13,9
Education & work	6,5	6,9	10,5	14,7	36,2
Other	6,75	2,7	4,55	6,3	8,9

Source: Own elaboration based on DANE-QLS

However, the data showed that the use for entertainment prevailed in each and every one of the income levels; except for quintile 5 in 2020, the proportion of people who used it for that purpose was above 50% in all quintiles in each of the years examined. Likewise, a direct relationship between the income and use of the Internet for service purposes was also noted, for example, in the year 2020 in the last quintile 20.2% of people use it for this purpose, while only 5.5% of the first quintile did the same. Another aspect to highlight is that in 2020 the proportion of people who used the Internet for education and work purposes grew considerably, presumably due to the effects of the pandemic. In particular, people in the lower quintile use more internet for study or work than those in the upper quintile. In 2020 this proportion was 36% for the lower quintile and 18% for the upper quintile, with a difference of 18pp. Finally, the proportion of people who used the Internet for uses other than those already mentioned observed a significant share in each of the quintiles greatly in the last quintile of income.

Graph 79: Internet type of use (Activities), by income level



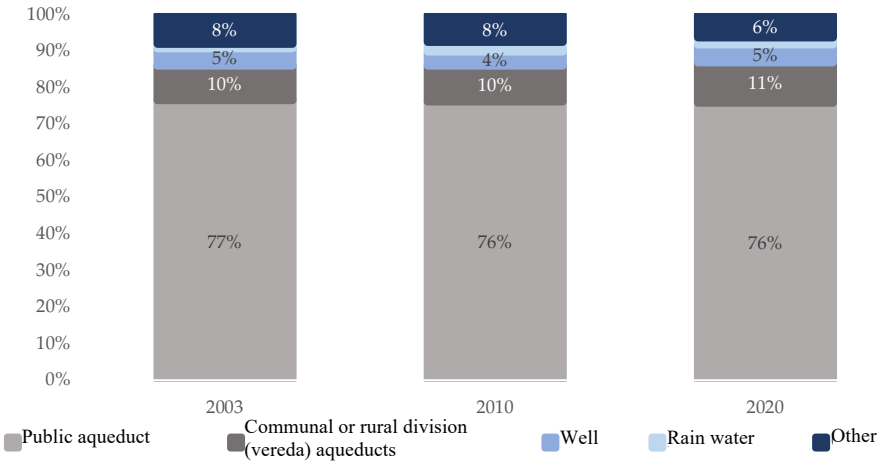
Source: Own elaboration based on DANE-QLS

4.7.5 Water

Access

In Colombia, 76% of people have access to safe drinking water[34] through a public aqueduct and 11% through a communal aqueduct. Overall, the coverage of public aqueducts has remained invariant between 2003 and 2020. There were marked differences between what was verified in urban and rural areas. To begin with, access to drinking water through the public aqueduct has been predominant in urban areas with more than 90 per cent of access.

Graph 80: Safe drinking water



Source: Own elaboration based on DANE-QLS

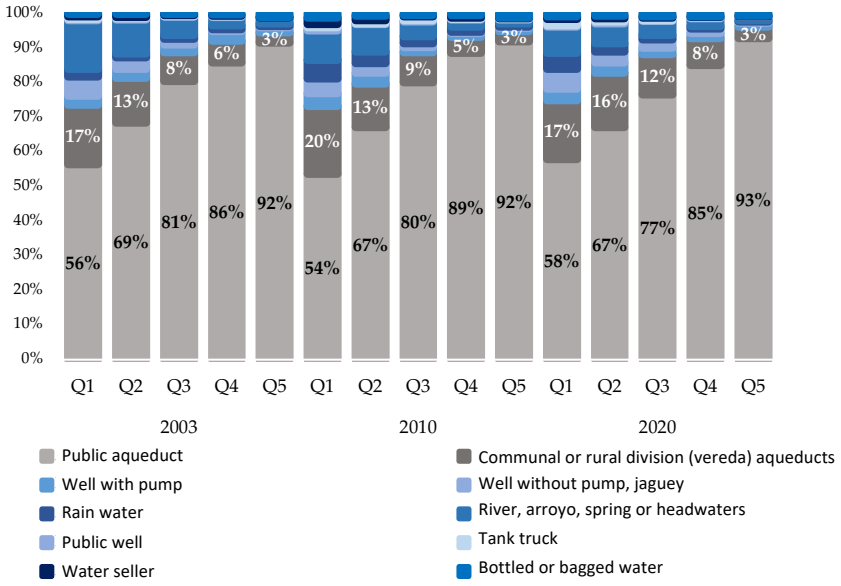
Access to safe drinking water in the rural domain is explained by several sources within which the communal or rural settlement aqueducts stand out (between 30.2% and 40.5% of the proportion), followed in importance by the source "river, stream, creek, or spring" (between 16.8% and 27.3%). In turn, the public aqueduct was the third most important source (15.2% and 19.4%). Other sources of drinking water supply of considerable weight were the wells without pump, ponds (5.3% and 10.0%), well with pump (6.2% and 8.5%) and to a lesser extent rainwater (3.4% and 8.2%). However, it is stressed that the behavior of the share of each of these sources in rural areas was significantly irregular for each of the years examined.

Regarding access to safe drinking water by income level, the records revealed the direct relationship between income levels and access in the sense that the higher the income level, the greater the proportion of people with access to the public aqueduct (just over 53% for the first quintile and just over 90% for the last quintile). Conversely, quintiles with lower income levels exhibited higher proportions of access via the communal or rural division (*vereda*) aqueduct (e.g., between 17.1% and 19.6% in the first quintile), followed by the proportion of people who use as a source "river, stream, creek or spring " (14.0% and 7.5% for the first quintile), and to a lesser extent people who have as their source the well without a pump, pond (4.1% and 5.7% for the first quintile); see Graph 81. It is important to highlight the low evolution over time of access by public aqueduct, since between 2003 and 2020 the lower

[34] For the analysis, the question in the household survey is used, regarding access to water for food preparation.

quintile increased access to public aqueducts by only 2 p.p., while the upper quintile did so by 1%.

Graph 81 : Access to safe drinking water by income level

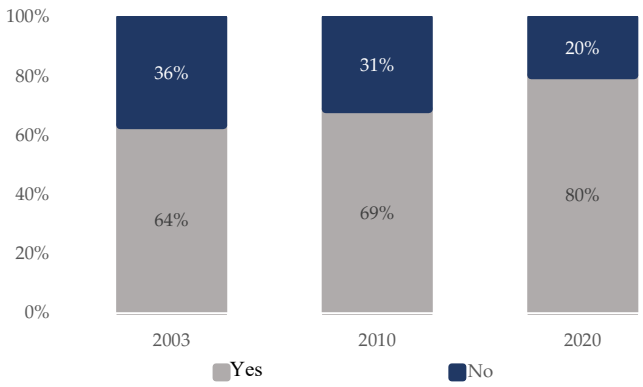


Source: Own elaboration based on DANE-QLS

Quality

In order to establish the quality of safe drinking water service, the proportion of households nationwide that obtain water continuously 24 hours per day, 7 days per week, was determined. According to the records, the proportion of households that obtained water 24 hours per day, seven days per week increased from 63.6% in 2003 to 80.3% in 2020, which represented an increase of 16.7 p.p. correspondingly. The proportion of households that did not get water 24 hours per day, seven days per week decreased from 36.4% in 2003 to 19.7% in 2020, this is 16.7 p.p.

Graph 82: Water 24 hours x 7 days per week

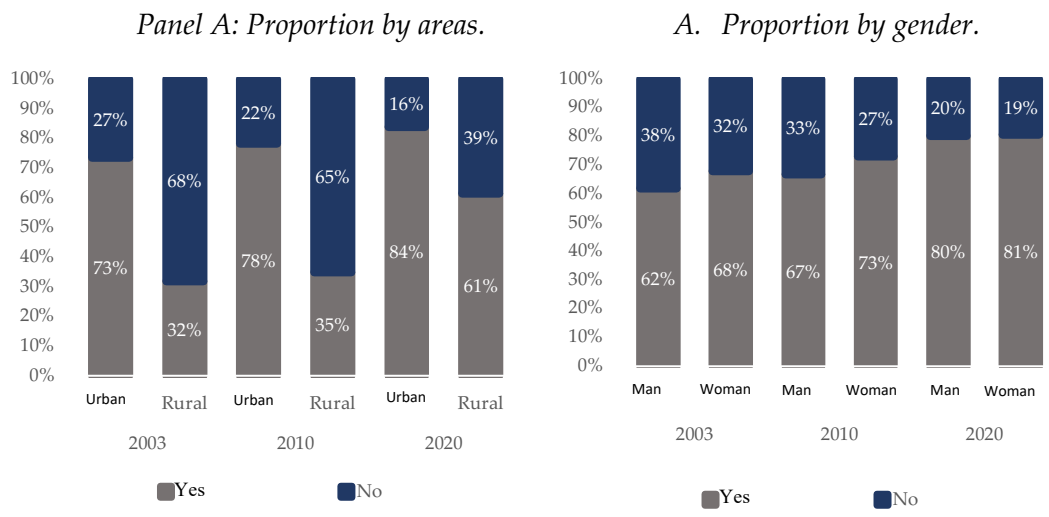


Source: Own elaboration based on DANE-QLS

On the other hand, by breaking down the previous data according to geographic domain, it is denoted that the proportion of households that obtained water 24 hours per day, seven days per week was higher in urban areas than in rural areas, as might be expected. In turn, the proportion of urban households that obtained water 24 hours per day, seven days per week increased from 73.4% in 2003 to 83.9% in 2020, which represented an increase of 10.5 p.p. Correspondingly, the proportion of urban households that did not obtain drinking water 24 hours per day, seven days per week decreased from 26.6% in 2003 to 16.1% in 2020. Meanwhile, the proportion of rural households that obtained water 24 hours per day, seven days per week increased from 31.8% to 61.3%, which represented an increase of 29.5 p.p. In turn, the proportion of rural households that did not obtain water 24 hours per day, seven days per week decreased from 68.2% in 2003 to 38.7% in 2020.

Regarding the results of quality of water service by gender, it is noted that the proportion of households whose head of household is male and obtained water 24 hours per day and seven days per week was slightly lower than the proportion of households headed by women. Likewise, the proportion of households headed by men and obtained water 24 hours per day and seven days increased from 61.9% in 2003 to 80.2% in 2020, which represented an increase of 18.3 p.p. Similarly, the proportion of households headed by women and obtained water 24 hours per day and seven days increased from 67.8 per cent in 2003 to 80.6 per cent in 2020, an increase of 12.8 p.p. In short, the difference went from being 6 p.p. in 2003 to 1 p.p. in 2020. See Graph 83.

Graph 83: Water 24 hours x 7 days per week



Source: Own elaboration based on QLS

In the case of the results of quality of water service according to educational level, the records revealed the existence of a direct relationship between the educational level and the quality of the water in the sense that the higher the educational level, the greater the proportion of heads of household with quality of service. However, the quality of service increased at all levels of education (with the exception of what was verified for the average level in 2003). For example, the proportion of households whose head of household has no educational level and

obtained 24-hour and seven-day water increased from 37.6 per cent in 2003 to 60.3 per cent in 2020, or in the case of heads of households with pre-school or primary education who obtained 24-hour and seven-day water increased from 54.3 per cent in 2003 to 72.2 per cent in 2020. However, in the case of heads of household with medium educational level, it is denoted that the proportion of households whose head of household has an average educational level and obtained water 24 hours per day and seven days, remained stable around 80%. See Table 42.

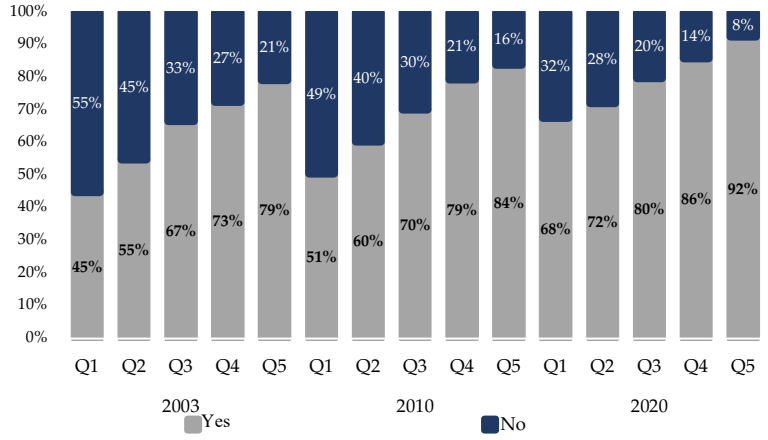
Table 41: Water 24 hours x 7 days per week, by educational level

Educational Levels	None	Preschool and Primary	Secondary	High School	Higher
			2003		
Yes	37,6	54,3	71,2	80,1	77,7
No	62,4	45,7	28,8	19,9	22,2
			2010		
Yes	39,7	58,4	73,9	75,4	83,7
No	60,3	41,5	26,1	24,6	16,3
			2020		
Yes	60,3	72,2	79,4	80,8	87,9
No	39,7	27,8	20,6	19,2	12,0

Source: Own elaboration based on DANE-QLS

Regarding the quality of water service by income level, it is noted that the proportion of households with quality drinking water service (in the sense of having water 24 hours per day, seven days per week), was positively related to the level of income, which is why the proportion of households in the upper quintiles was higher than those in the lower quintiles. As an illustration, the proportion of households in income quintile 1 that obtained water 24 hours per day, seven days per week increased from 44.8% in 2003 to 67.7% in 2020, this is 20.3 p.p., while the proportion of households in income quintile 5 increased from 79.3% in 2003 to 92.5% in 2020, being the difference of 13.2 p.p. See Graph 84.

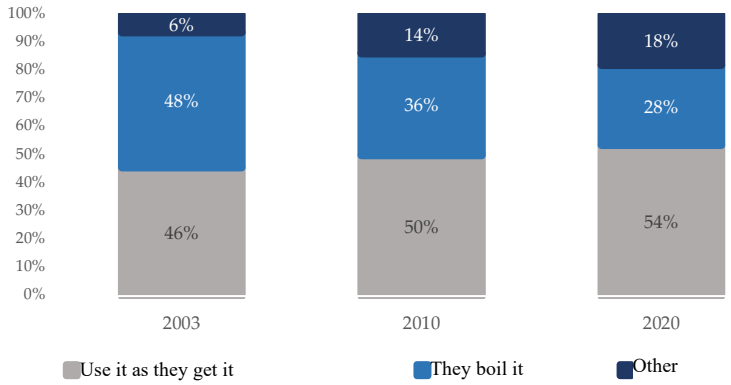
Graph 84: Water 24 hours x 7 days per week, by income level



Source: Own elaboration based on DANE-QLS

In connection with the treatment given to water for consumption, national records revealed that the vast majority of households use the same to drink as it was obtained, a proportion that has varied from 45.6% to 54.9% for the whole of the years examined. The proportion of people who boil water for consumption decreased by 20 p.p. between 2003 and 2020, while the use as obtained grew by 8 p.p. In turn, another treatment of great importance corresponded to boiling the water to be able to ingest it, with an oscillation between 27.0% and 48.0%. In turn, other treatments such as using bottled water, using a filter, adding chlorine and decanting, had a significant share, although it should be noted that the share of bottled or bagged water has increased, as well as the use of filters.

Graph 85: Origin of safe drinking water



Source: Own elaboration based on QLS

Regarding the treatment given to safe drinking water, it is denoted that in urban areas the use of water for this reason prevailed as obtained, a proportion that was significantly higher than that exhibited by the same item in rural areas (above 50% except for the year 2003). Similarly, the second most used treatment in urban areas was to boil water, although it should be noted that the proportion of urban households that boil water decreased from 46.2% in 2003 to 24.3% in 2020, while the proportion of urban households filtering water increased from 5.1% in 2003 to 9% in 2020.

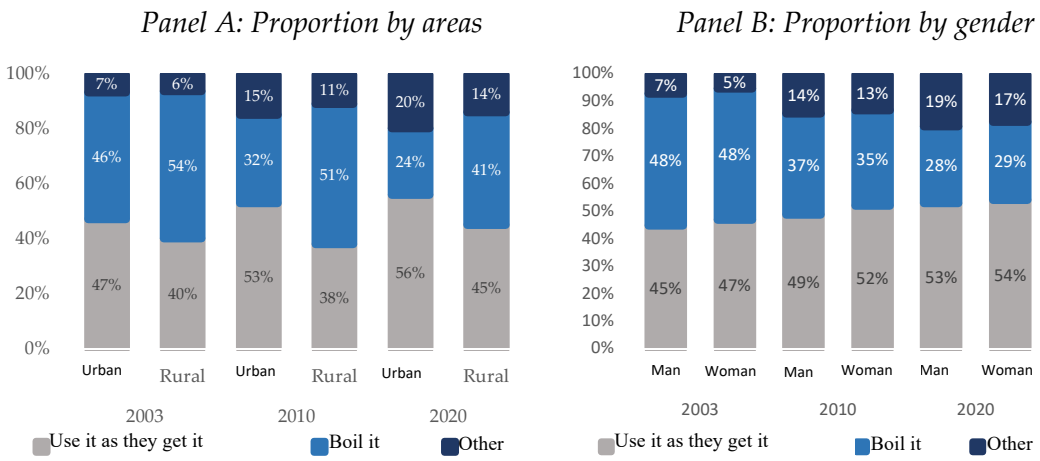
Correspondingly, in rural areas, the treatment of boiling drinking water prevailed in most of the years examined except for 2019 and 2020, years in which the use of drinking water as obtained prevailed. In this regard, the proportion of rural households that use water as they obtain it increased from 40.3% in 2003 to 45.3% in 2020. Correspondingly, the proportion of rural households boiling drinking water decreased from 53.6% in 2003 to 41% in 2020. In addition, the proportion of rural households buying bottled or bagged water increased from 0.1% in 2003 to 5.6% in 2020. While in urban areas the direct use of water for consumption increased 9 p.p. between 2003 and 2020, in rural areas it did 5 p.p.

In connection with the records on the treatment of drinking water by gender, it is noted that the proportion of households whose head of household is male and use drinking water as obtained was slightly lower than the proportion of households whose head of household is female and used water to drink as they obtain it. Likewise, the proportion of households headed by men and used water to drink as obtained increased from 45% in 2003 to 53.1% in 2020. Correspondingly, the proportion of households headed by male households and water

boiled decreased from 48.1% in 2003 to 28.1% in 2020. In turn, the proportion of households whose head of household is male and used filters in the water to drink increased from 4.4% in 2003 to 8.1% in 2020. Visibly, the proportion of households headed by men and buying bottled or drinking bag water increased from 0.1% in 2003 to 9.3% in 2020.

In turn, the proportion of households headed by women and who used drinking water as obtained increased from 47.1% in 2003 to 54.2% in 2020, while the proportion of such households that boiled water decreased from 47.7% in 2003 to 28.6% in 2020. Similarly, the proportion of households headed by women and using water filters for drinking increased from 3.4 per cent in 2003 to 7.5 per cent in 2020. Finally, the proportion of such households (female chief) who bought bottled or drinking bag water increased from 0.1% in 2003 to 8.4% in 2020. This is how the use of water to drink directly grew 8pp in men and 7pp in women between 2003 and 2020.

Graph 86: Origin of safe drinking water



Source: Own elaboration based on QLS

Regarding the records on drinking water treatment according to the educational level of the head of household, it is noted that the proportion of households whose head of household has no educational level and used water to drink as obtained, increased from 51.5% in 2003 to 62.4% in 2020, which means an increase of 10.9 p.p. Similarly, the proportion of households whose head of household has pre-school or primary education and use water to drink as they obtained it increased from 43% in 2003 to 51.7% in 2020 (8.3 p.p.), as was the case with the proportion of households whose head of household has secondary education and used water to drink as they obtained the same, proportion that went from 46.8% in 2003 to 56.6% in 2020 (9.8 p.p.). For other educational levels, there was also an increase in the extent that the proportion of households whose head of household has an average educational level and used water to drink as he obtained it, increased from 47.6% in 2003 to 55.7% in 2020 (8.1 p.p.), while the proportion of households whose head of household has a higher education level, increased from 46.1% in 2003 to 50.1% in 2020 (4 p.p.). See Table 42.

Regarding the form of treatment represented in boiling water for drinking, it is denoted that in each and every one of the educational levels, said treatment to drink the water decreased. For this, the proportion of households whose head of household has no educational level and

also boil water for drinking, decreased from 40.9% in 2003 to 26.9% in 2020, while the proportion of households whose head of household has higher education and boil water for drinking, went from 42.3% in 2003 to 20.9% in 2020.

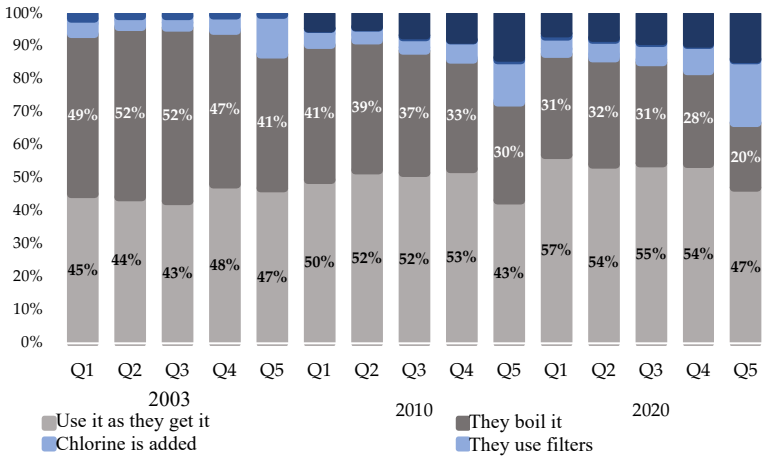
Table 42: Origin of safe drinking water by educational level

Educational Levels	None	Preschool and Primary	Secondary	Medium	Higher
			2003		
Used as obtained	51,5	43,0	46,8	47,6	46,1
Boiled	40,9	52,6	47,2	40,1	42,3
Other	7,6	4,4	6,1	12,3	11,5
			2010		
Used as obtained	53,3	47,5	55,5	53,3	46,1
Boiled	36,7	43,3	31,0	34,4	29,4
Other	10,0	9,2	13,5	12,3	24,5
			2020		
Used as obtained	62,4	51,7	56,6	55,7	50,1
Boiled	26,9	36,7	28,7	27,2	20,9
Other	10,7	11,7	14,8	17,0	29,0

Source: Own elaboration based on QLS

With regard to records relating to the treatment of safe drinking water by income level, it is noted that the proportion of households in income quintile 1 that use water to drink as they obtain it increased from 45.3 per cent in 2003 to 57.2 per cent in 2020, while the proportion of households in income quintile 5 that use drinking water as they obtain it, remained stable, about 47%. Correspondingly, the proportion of households in income quintile 1 that boil water for drinking, decreased from 49.6% in 2003 to 30.6% in 2020 (fall of 19 p.p.), while the proportion of households in quintile 5 that boil water for drinking, fell from 40.6% in 2003 to 19.5% in 2020 (fall of 21.1 p.p.). In turn, the proportion of households that bought bottled or bagged water, or that filter was used to consume it, increased more in the last quintile than in the first. In the case of the first quintile, the proportion of households in income quintile 1 that bought bottled or bagged water went from 0.1% in 2003 to 6% in 2020 (5.9 p.p. more), while the proportion of households in income quintile 5 that used filters in water to drink, increased from 11.8% in 2003 to 18.8% in 2020 (7 p.p. more).

Graph 87: Origin of safe drinking water, by income level



Source: Own elaboration based on QLS

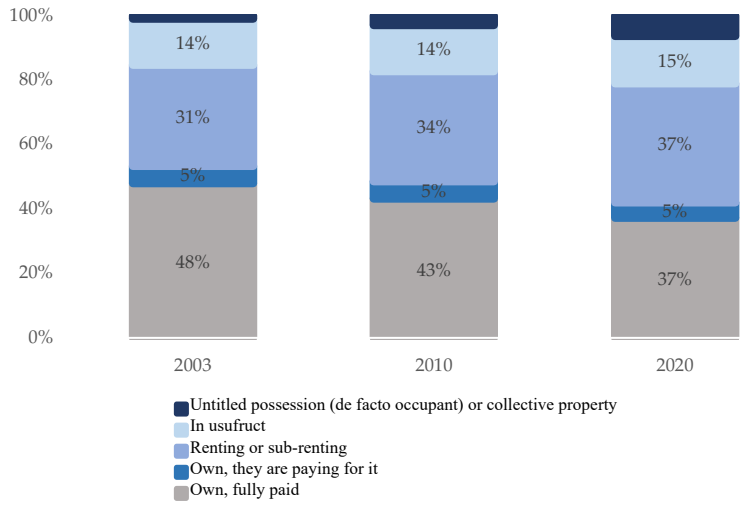
4.7.6 Housing

Access

In Colombia, the proportion of households with fully paid housing of their own constituted the higher proportion compared to other forms of tenure, despite the fact that it is denoted that this proportion decreased from 48% in 2003 to 37.3% in 2020, this is 10.7 p.p. less. On the other hand, the second most important form of tenure corresponded to housing for rent or sublet, in which case the proportion of households of this type of tenure increased from 31.4% in 2003 to 36.9% in 2020, increasing 5.4 p.p.

Likewise, the third most important form of housing tenure corresponded to usufruct, in which case the proportion of households with this type of tenure remained relatively stable, around 14%, from 2003 to 2020. In turn, the fourth most popular form of tenure corresponded to own housing in the process of payment, a form of tenure that nevertheless decreased from 5.3% in 2003 to 4.8% in 2020, 0.5 p.p. less. Finally, the proportion of households that occupy a home without having the title or collectively, increased 5.3 p.p. between 2003 and 2020.

Graph 88: Housing ownership



Source: Own elaboration based on DANE-QLS.

Considered the data according to geographic scope (see Graph 89), in general, it was noted that the rural area tended more to the possession of own housing, while the urban area to the tenure in rent. Then, in the urban area, the proportion of households with their own housing decreased from 44.5% in 2003 to 35.9% in 2020 (9.1 p.p. less). The proportion of households with rental housing in urban areas went from 38.2% in 2003 to 43.9% in 2020 (5.8 p.p. more). Likewise, the proportion of households with usufruct housing tenure in the urban domain remained stable, around 10%. In addition, the proportion of households with housing without having the title or occupation collectively in urban areas, went from 0.8% in 2003 to 4.3% in 2020 (3.5 p.p. more).

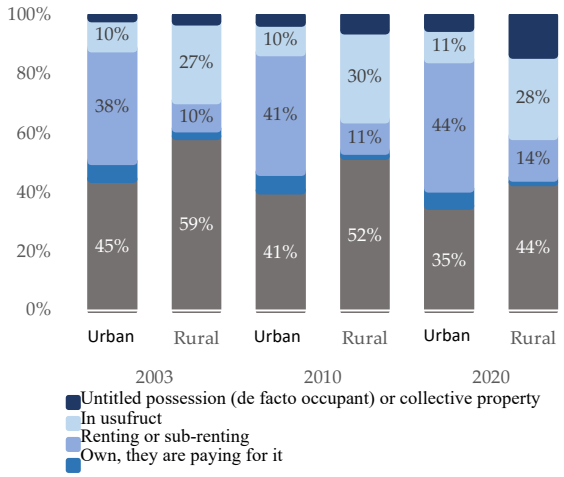
In turn, in the rural area, the proportion of households with their own housing observed a decrease from 59.2% in 2003 to 43.6% in 2020 (15.6 p.p. less). By contrast, the proportion of households with rental housing increased from 9.7% in 2003 to 14.2% in 2020 (4.5 p.p. more). Likewise, the proportion of households with usufruct housing tenure in the rural domain remained stable at around 27%. Finally, the proportion of households occupying a dwelling without title or occupied collectively in rural areas went from 1.9% in 2003 to 13.3% in 2020 (11.4 p.p. more). In sum, in rural areas households with their own housing fell more than in urban areas (6.5 p.p. more), while the proportion in rent increased more in urban areas, this is 1.2 p.p. more, since possession without title replaced the fall of property in rural areas.

Regarding the records referring to the type of housing tenure according to gender, it is denoted that the proportion of households with a male head of household with their own housing decreased from 45.9% in 2003 to 36.8% in 2020 (9.1 p.p. less). By contrast, the proportion of households with a male head of household and occupation of rental housing increased from 31.9% in 2003 to 36.6% in 2020 (4.6 p.p. more). In addition, the proportion of households whose head of household is male and occupy a dwelling in usufruct, remained stable, about 15%. In addition, the proportion of households whose head of household is male and occupy a dwelling without having the title or collectively, increased from 1% to 6.4% (5.4 p.p. more).

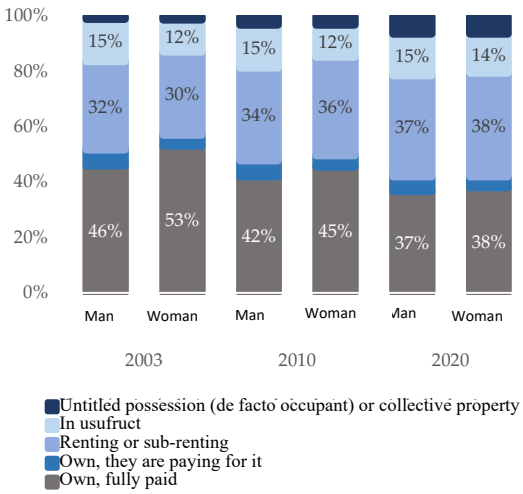
In connection with the same results, but referring to the female gender, it is noted that the proportion of households with heads of household and own housing decreased from 53.2% in 2003 to 38% in 2020 (15.1 p.p. less). By contrast, the proportion of female-headed households and rental housing increased from 30% in 2003 to 37.5% in 2020 (7.5 p.p. more). In turn, the proportion of households whose head of household is a woman and occupy a dwelling in usufruct, remained stable, around 15%. Finally, the proportion of households headed by women and occupied by housing without having the title or collectively, increased from 1.2% in 2003 to 6.3% in 2020 (5.1 p.p. more). Generally, possession decreased more for female-headed households than male households by 6 p.p. more, while leasing increased by 2.9 p.p. more.

Graph 89: Housing ownership by geographic area and gender

Panel A: Proportion by geographic area.



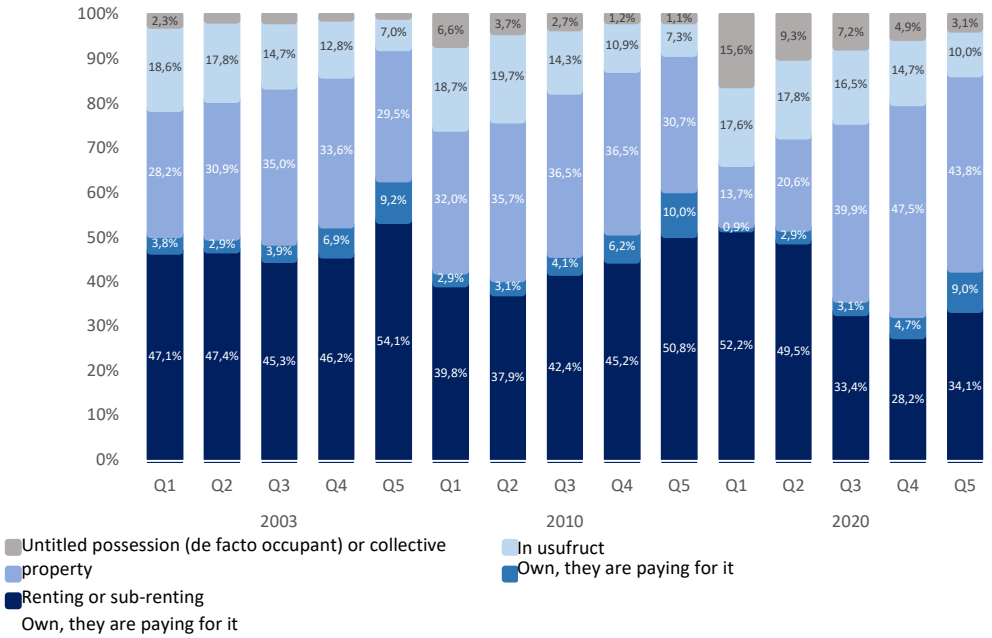
Panel B: Proportion by gender.



Source: Own elaboration based on DANE-QLS

In turn, the proportion of households with their own housing revealed an inverse relationship between the level of income and the proportion of households with such tenure, all of which manifested itself in smaller proportions in the lower quintiles in connection with that noticed in the upper quintiles. For example, in the first quintile the proportion of households went from 47.1% in 2003 to 52.2% in 2020 (5.1 p.p. more), while the proportion of households in quintile 5 with their own housing went from 54.1% to 34.1% (20 p.p. less), which denotes an improvement in access to own housing by the 20% with the lowest income. Moreover, it is denoted that the proportion of households in the lower quintiles fell in the lower quintiles and increased in the upper quintiles. For example, the proportion of quintile 1 occupying a rental dwelling fell from 28.7% in 2003 to 13.7% in 2020 (15 p.p. less), while the proportion of households in quintile 5 with this type of tenure increased from 29.5% in 2003 to 43.8% in 2020 (14.3 p.p. more). See Graph 90.

Graph 90: Housing ownership by income quintiles

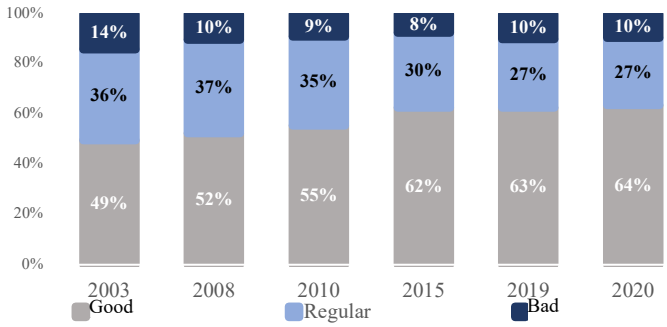


Source: Own elaboration based on DANE-QLS

Quality

The variable quality of the floors is analyzed, which probes the predominant material of the floors[35]. It is denoted that the proportion of households with good quality flats grew steadily in each of the years examined. In fact, at the national level the proportion of households with good quality of flats went from 49.4% in 2003 to 63.6% in 2020, an increase of 13.9 p.p. Correspondingly, at the national level the proportion of households with regular quality flats fell from 36% in 2003 to 27% in 2020, 9 p.p. less. See Graph 91.

Graph 91: Floor quality



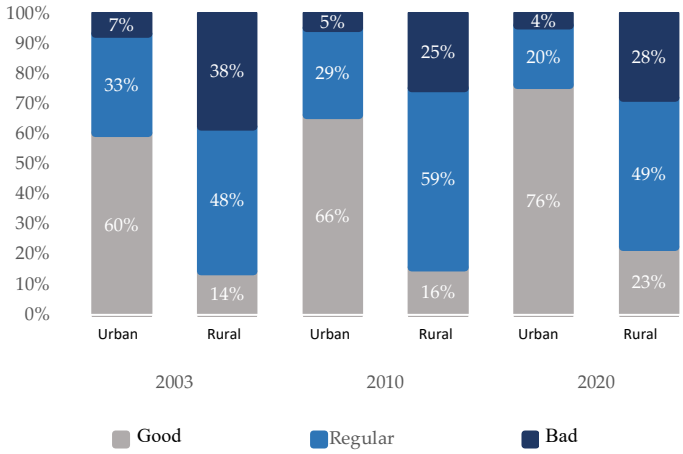
Source: Own elaboration based on QLS

Regarding the information above, but considered according to geographic scope, it is denoted that in urban areas the proportion of families with good flats prevailed; in fact, it grew between 2003 from 60.3% to 76.3% in 2020 (13 p.p.). In rural areas this variation was manifested in the passage between 14.3% in 2003 and 22.5% in 2020, with 5.2 p.p., which

[35] Those floors of carpet or carpet mat from wall to wall, polished wood, lacquered, marble, tile, vinyl, Tablet, brick or laminate are considered of good quality; cement or sheaf floors are considered to be of regular quality and of poor quality those of rough wood, board, plank, other plants, earth, sand or mud.

means that the quality of the flats was more evident in urban areas than rural areas. Similarly, with respect to regular quality flats, in rural areas the proportion of families with flats of such quality prevailed given the fluctuation between 48.0% and 59.3%. By contrast, in urban areas the proportion of households with regular quality flats fell steadily, taking into account the increase from 32.8% in 2003 to 19.7% in 2020. However, the significant proportion of households with poor quality flats in urban areas is underlined, since this magnitude ranged between 4.1% and 6.9%, while in rural areas this proportion was much higher given its variation between 21.8% and 37.6%.

Graph 92: Floor condition by areas

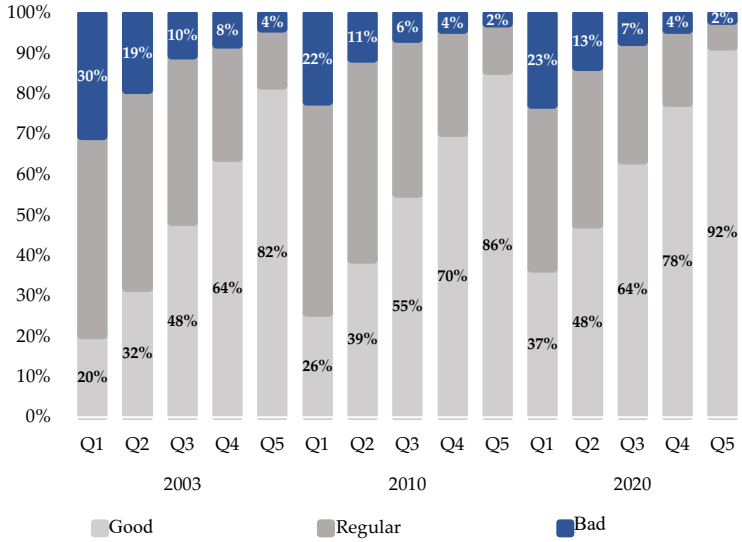


Source: Own elaboration based on DANE-QLS

Regarding the proportion of households according to floor quality and income level, it is noted that the proportion of households with good materials observed a direct relationship with the level of income (as expected). Overall, the gap between the bottom and upper quintile narrowed, since in 2003 this was 62 p.p., but in 2020 it went to 55 p.p.

Namely, the higher the income, the greater the proportion of households with good quality flats. According to the records, the proportion of households with good floors of the quintile 1 of income that have good quality of the floors of the house, increased from 20.3% in 2003 to 36.8% in 2020, this is 16.5 p.p. more. Likewise, the proportion of households in quintile 1 of income that have regular quality of the flats decreased from 49.4% in 2003 to 40.7% in 2020, as verified for households in this same quintile with poor quality flats, given that this proportion went from 30.3% in 2003 to 22.5% in 2020, with 7.8 p.p. less. Correspondingly, the proportion of households in the quintile 5 of income with good quality of housing floors, increased from 82.2% in 2003 to 91.9% in 2020, which is equivalent to 9.7 p.p. more. By contrast, the proportion of households in the quintile 5 of income with regular quality of the housing floors, was reduced given the step from 14.1% in 2003 to 6.4% in 2020, a reduction that was also verified in households of this quintile with poor quality flats, given the step from 3.6% in 2003 to 1.7% in 2020, 1.9 p.p. less.

Graph 93: Floor quality by income level



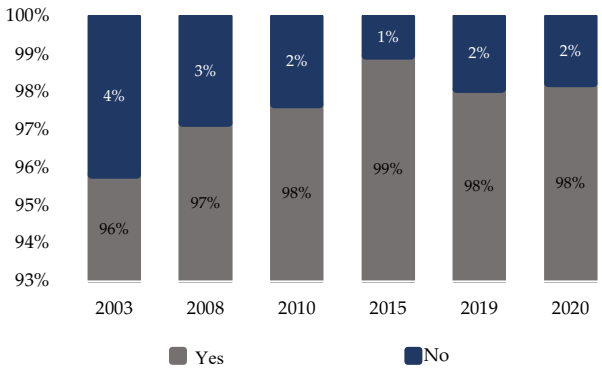
Source: Own elaboration based on QLS

4.7.7 Electric power

Access

Regarding access to electric power service, it is denoted that at the national level the majority of the population presented access to electric power service at home, a proportion that ranged for the years examined between 95.8% and 99.0%. Although variations are noted annually, it is underlined that there was an increase between 2003 and 2020 of 2 p.p., to stand at 98% in 2020; likewise, it is noted that the percentage of the population without access tended to be around 2% for the whole of the years examined.

Graph 94: Electric power service at households

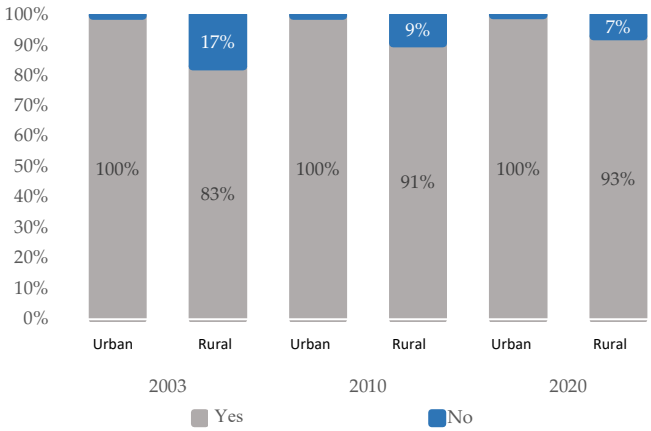


Source: Own elaboration based on DANE-QLS

Considering the aforementioned figures according to geographic scope, it was noted that rural areas presented advances in coverage, going from 83% in 2003 to 93% in 2020, this increase of

10 p.p. although it is important, highlights the distance that still occurs compared to urban areas, which since 2003 reached a total coverage and almost 100%. See Graph 95.

Graph 95: Electric power service at households by geographic area



Source: Own elaboration based on DANE- QLS

While there is progress in the least educated people in terms of coverage, they are still about 8 p.p. short of the most educated in terms of coverage. In Table 43, it is denoted that the higher the educational level, the greater the probability of having access to electric power (except as evidenced in 2003 for the higher level, which observed a coverage minimally lower than that of the population with a secondary level). For the particular, according to the data, the coverage of the electric power service at home for the year 2003 of people without any school level, was equivalent to a total of 84.0%, while for the year 2020 the coverage for the population with this school level corresponded to a total of 91.2%, growing 7.2 p.p. In turn, the coverage of the electric power service at home for the year 2003 of people with preschool level, was equivalent to a total of 95.9%, while for the year 2020 the increase of people with preschool level corresponded to a total of 97.0%, increasing 1.1 p.p.

For the population with secondary education, the coverage of the electric power service at home for 2003 reached 98.9%, while for 2010 the percentage of people with secondary level corresponded to a total of 98.5% and for the year 2020 this proportion was equivalent to 98.2%. Likewise, the coverage of the electric power service at home for the year 2003 of people with a high level of education reached a total of 99.7%, while for the year 2010 it was 99.2% and for the year 2020 it was equivalent to 99.2%. In turn, access for people with a higher level of education reached a total of 99.3% in 2003, while for 2010 this was equivalent to 99.9%, and for 2020 it covered 99.8%. See Table 43.

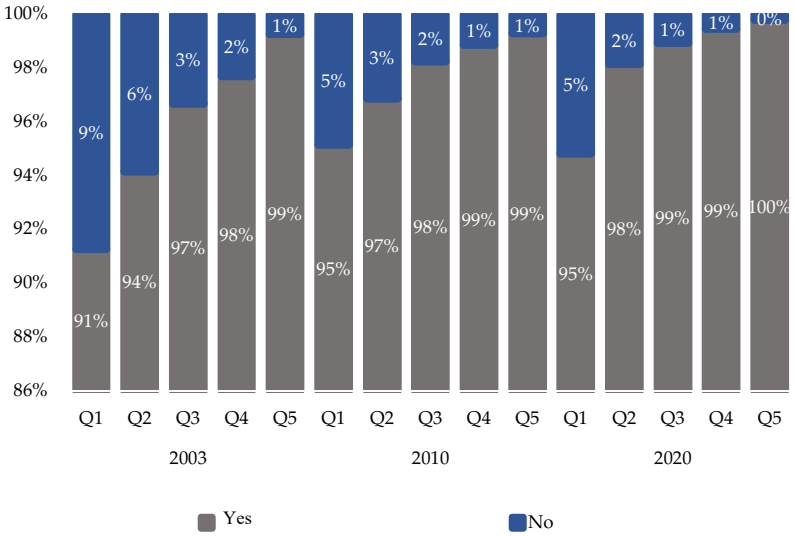
Table 43: Electric power service at households by educational level

Educational Levels	None	Preschool and Primary	Secondary	Medium	Higher
			2003		
Yes	83,9	95,9	98,8	99,7	99,3
No	16,0	4,1	1,1	0,27	0,73
			2010		
Yes	91,4	95,6	98,5	99,2	99,9
No	8,6	4,4	1,5	0,82	0,13
			2020		
Yes	91,2	96,9	98,2	99,2	99,7
No	8,8	3,01	1,7	0,84	0,24

Source: Own elaboration based on DANE-QLS

In connection with access to electric power according to income level, two facts stood out: First, that access is a direct and positive function with the level of income, and second, that the proportion of people in the lower quintiles presented significant access difficulties, especially the first quintile that, as an example, for the year 2020 presented a total of 5.2% of lack of access to the service. See Graph 96.

Graph 96: Electric power service at households by income level



Source: Own elaboration based on DANE-QLS

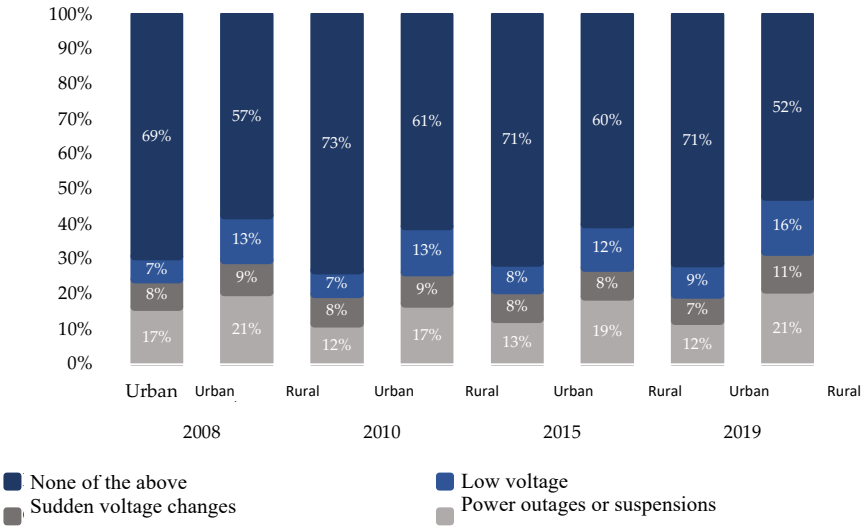
Quality

The quality of service is analyzed in the light of a question from the QLS that inquires for the reasons that caused drops or irregularities in the electric power service[36]. It is denoted that a very significant proportion of the population presented quality problems (just over 29%). Specifically, for 2008 this proportion reached 33.2%, while in 2010 it represented 29.4% and for 2019 it was equivalent to 30.0%. However, when disaggregating the data aforementioned according to geographic area, it is noted that the quality of service in rural areas is worse than in urban areas, since a greater proportion of the population experienced service failures. For

[36] The years for which this question exists and has national representativeness are analyzed.

example, while in 2003 in rural areas 43% had some problem with the service, in rural areas this was 31%, which for 2019 was reduced to 2 p.p. for urban areas, but 5 p.p. in rural areas. In rural areas in 2019, the main reasons for lack of quality were service cuts or suspensions (21%), followed by low voltage (16%) and sudden changes in voltage (11%).

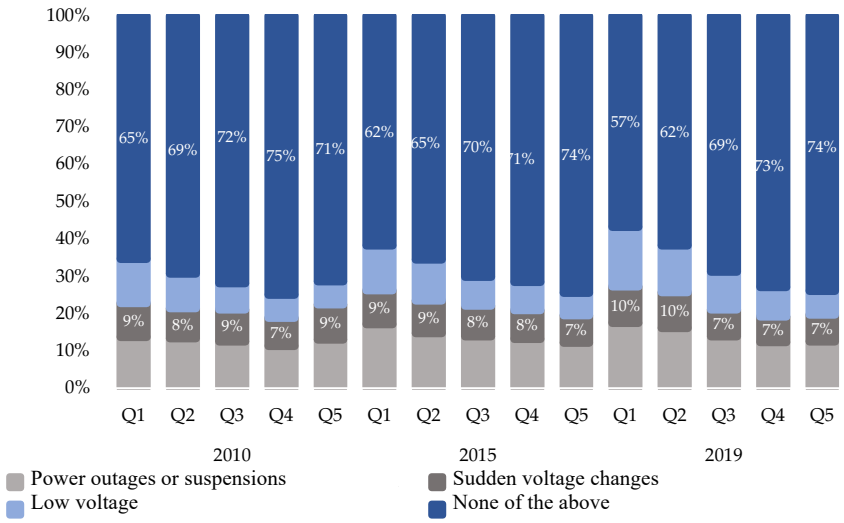
Graph 97: Proportion of irregularities in the electric service by areas



Source: Own elaboration based on QLS

Likewise, in the same way that happened with the population according to educational level, the proportion of the population that experiences quality problems in the electric power service was inversely related to the level of income, that is, the higher the income level, the lower the population proportion with quality problems. By way of example, in 2020 the proportion of the population that experienced quality problems in the first quintile amounted to 43.3%, while that corresponding to quintile 5 reached 29.0%.

Graph 98: Household electric power service by income quintile



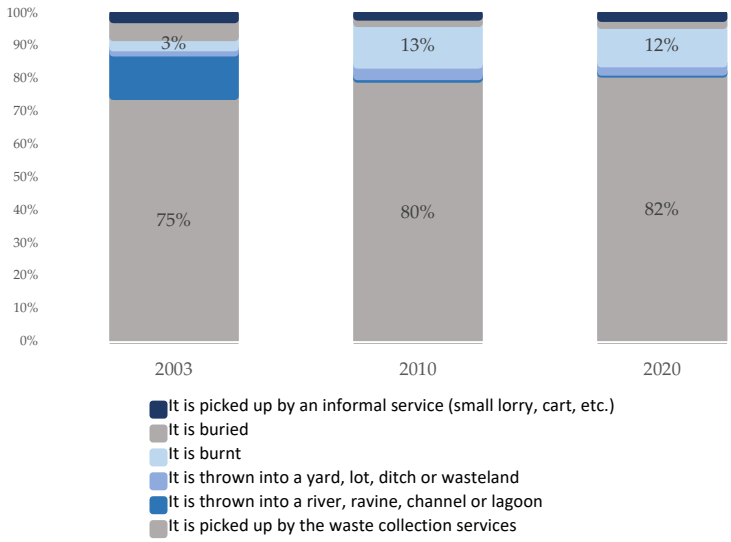
Source: Own elaboration based on DANE-QLS

4.7.8 Sanitation

Form of garbage disposal

In connection with the form of household waste disposal at the national level, it is denoted that the garbage collection service is the predominant form in the country. For that matter, in 2020 this proportion of households was equivalent to 81.8%. On the other hand, it is important to highlight two facts: Firstly, that the way of throwing garbage into a river, stream, channel or lagoon, was practically useless to the extent that from a population equivalent to 13.2% in 2003 that used the same as a form of disposal, it changed to a proportion equivalent to 0.5%. Secondly, that the proportion of households burning garbage increased from 3% in 2003 to 11.8% in 2020. See Graph 99.

Graph 99: Household waste disposal



Source: Own elaboration based on QLS

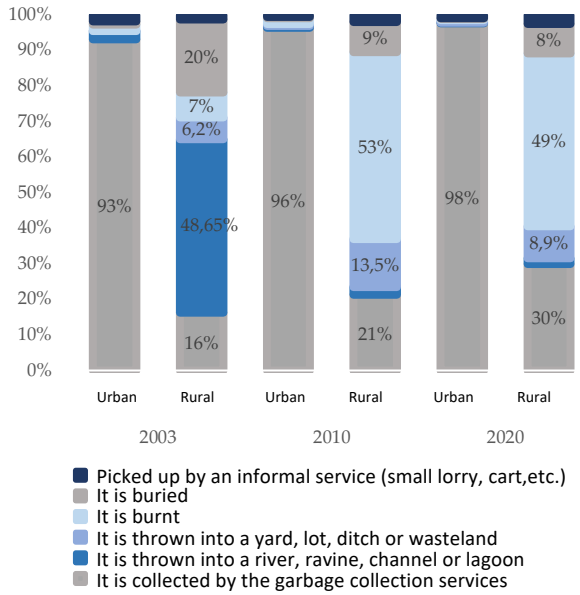
The form of garbage disposal was different in each geographic area. While in the urban area the disposal of garbage through collection prevails, in the rural areas the burning of garbage prevailed. In particular, the proportion of urban households that dispose of garbage through the collection service changed from representing 93.2% in 2003 to 97.7% in 2020, this is 4.5 p.p. more. In turn, the proportion of rural households that dispose of garbage through the collection service increased from 16.3% in 2003 to 30% in 2020, this is 23.7 p.p. more. However, the proportion of rural households burning garbage has increased compared to 2003, from 7% to 48.8% in 2020, increasing 41.8 p.p. In addition, the proportion of rural households that throw garbage into a river, stream, channel or lagoon was 48.6% in 2003; however, for subsequent years this proportion does not exceed 2.5% share. Likewise, the proportion of rural households that throw garbage into a lot, yard, ditch or wasteland increased compared to 2003, from 6.2% to 8.9% in 2020, 2.7 p.p.

In connection with the results of form of garbage disposal and gender, it is noted that the behavior between male and female heads of household was similar. However, a slight majority of the proportion of households headed by women who used the collection service as a form of litter disposal was noted for the years examined. According to the data, the

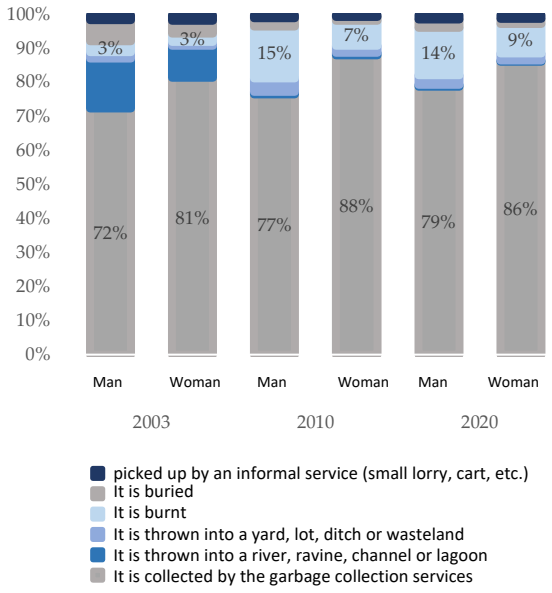
proportion of households whose head of household is male and dispose of garbage through the collection service, increased from 72.4% in 2003 to 78.9% in 2020, this is 6.5 p.p. more. In addition, the proportion of households whose head of household is a woman and dispose of garbage through the collection service went from 81.4% in 2003 to 86.2% in 2020, with the difference of 4.8 p.p., lower by 1.7 p.p. to the change of men household heads.

Graph 100: Household waste disposal by area and gender

Panel A: Proportion by areas



Panel B: Proportion by gender



Source: Own elaboration based on DANE-QLS

According to the records of forms of garbage disposal and educational level of the population (see Table 44), the higher the educational level, the greater the use of the collection service. Despite the above, there was a heterogeneous variation in the use of the collection service according to educational level. For the individual, the proportion of households whose head of household has no educational level and dispose of garbage through cleaning services, increased from 41.9% in 2003 to 52.3% in 2020. However, the proportion of households whose head of household has pre-school or primary school education and dispose of garbage through collections has remained stable at around 63%. Conversely, the proportion of households whose head of household is secondary school-educated and disposes of garbage through collections decreased from 88.1% in 2003 to 80.3% in 2020. In turn, the proportion of households whose head of household has an average educational level and dispose of garbage through collection services decreased from 94.2% in 2003 to 88.5% in 2020. In the case of households with a higher educational head of household that dispose of garbage through collection services, it increased from 91.8% in 2003 to 96.3% in 2020. Although between 2003 and 2020 the garbage collection service increased for those chiefs without any educational level 10.4 p.p., for those with higher education this increase was lower, of 4.5 p.p.

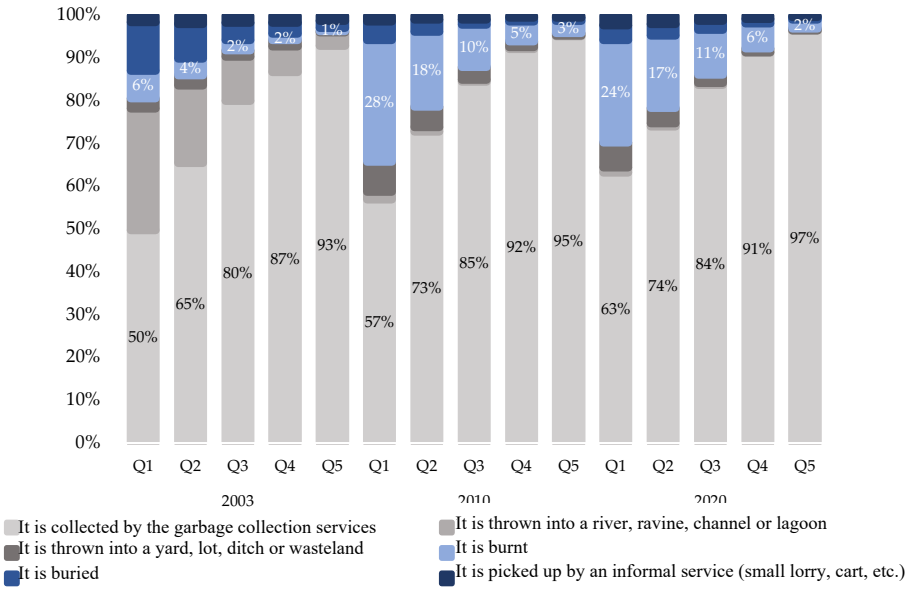
Table 44: Household waste disposal by educational level

Educational Levels	None	Preschool and Primary	Secondary	High School	Higher
			2003		
Collected by the garbage collection service	41,9	63,7	88,1	94,2	91,8
Thrown to a river, stream, creek or lake	31,6	17,9	5,5	2,7	3,5
Thrown to a patio, lot, ditch or barren land	2,8	2,9	0,8	0,6	0,8
Burnt	7,7	4,4	1,9	0,6	1,2
Buried	15	10,3	1,6	0,3	1,1
Informal collection service (horse-drawn carriage, wagon, etc.)	1,0%	0,8	2,2	1,7%	1,6
			2010		
Collected by the garbage collection service	48,4	64,9	87,5	92,1	96,8
Thrown to a river, stream, creek or lake	2,2	1,4	0,5	0,5	0,2
Thrown to a patio, lot, ditch or barren land	9,7	5,6	2,2	1,3	0,5
Burnt	32,9	22,9	7,8	4,7	1,7
Buried	5,0	4,1	1,2	0,8	0,4
Informal collection service (horse-drawn carriage, wagon, etc.)	1,8	1,1	0,8	0,6	0,5
			2020		
Collected by the garbage collection service	52,3	63,2	80,3	88,5	96,3
Thrown to a river, stream, creek or lake	2,0	0,9	0,8	0,4	0,1
Thrown to a patio, lot, ditch or barren land	7,8	4,8	2,7	1,8	0,6
Burnt	30,3	24,8	12,4	7,1	2,0
Buried	4,7	4,1	2,0	1,2	0,5
Informal collection service (horse-drawn carriage, wagon, etc.)	2,9	2,2	1,9	1,1	0,6

Source: Own elaboration based on DANE-QLS

Finally, regarding the forms of garbage disposal according to income level, it is noted that the higher the income level, the greater the use of the garbage collection service. According to the data, the proportion of households in the income quintile 1 that dispose of garbage through cleaning services increased from 49.8% in 2003 to 63.3% in 2020, this is 13.5 p.p. Similarly, the proportion of households in quintile 5 that dispose of garbage through collections also increased from 92.9% in 2003 to 96.5% in 2020, representing 3.6 p.p. On the other hand, the proportion of households in income quintile 1 that burn garbage increased from 6.5% in 2003 to 23.9% in 2020, with 17.4 p.p. However, the proportion of households in the income quintile 5 that burn garbage remained below 0.6% from 2003 to 2020.

Graph 101: Household waste disposal

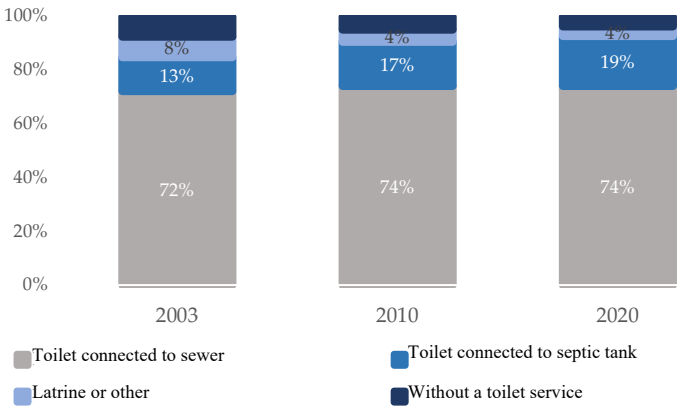


Source: Own elaboration based on DANE-QLS

Type of connection for removal of excreta

Regarding the form of connection for the elimination of excreta, it is denoted that at the national level having a toilet connected to the sewer system is the predominant way; in fact, it was 72% in 2003 and reached 74% in 2020, growing 2 p.p. In turn, another form of connection for the elimination of excreta corresponded to toilet connected to septic tank, proportion of households that went from 12.7% in 2003 to 18.6% in 2020, this is 5.9 p.p. more. Correspondingly, the proportion of households that do not have toilets decreased from 7.6% in 2003 to 3.6% in 2020, falling 4 p.p. See Graph 102.

Graph 102: Household toilet type



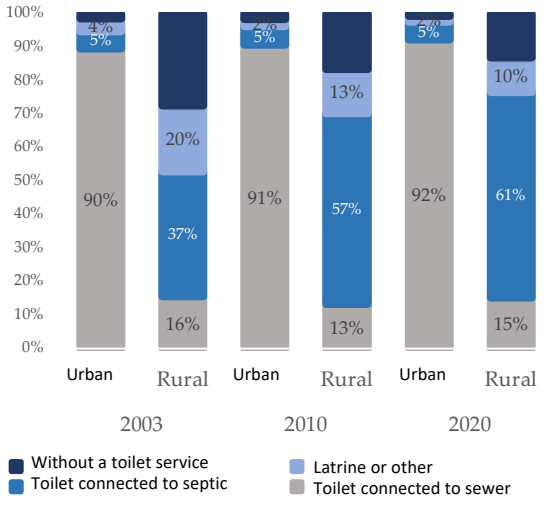
Source: Own elaboration based on DANE-QLS

Breaking down the aforesaid records according to geographic scope, it is noted that the form of connection to the sewer prevailed in urban areas (about 90% of the population), while the form of toilet connection connected to septic tank prevailed in rural areas. In fact, in rural areas this type of connection grew steadily in the years examined, going from 37.3% in 2003 to 61.4% in 2020, increasing 24.1 p.p. Likewise, the proportion of rural households connected to sewerage remained stable, at around 15 per cent. Correspondingly, the proportion of urban households that had toilets connected to septic tanks remained stable, around 5%. In turn, the proportion of rural households with an offline toilet decreased from 13.7% in 2003 to 3.2% in 2020, this is 3.5 p.p. less, as well as the proportion of rural households with a latrine fell from 5.5% in 2003 to 1.7% in 2020, falling 3.8 p.p. Finally, the proportion of rural households without health service decreased from 27.4% in 2003 to 13% in 2020, this is 14.4 p.p. less.

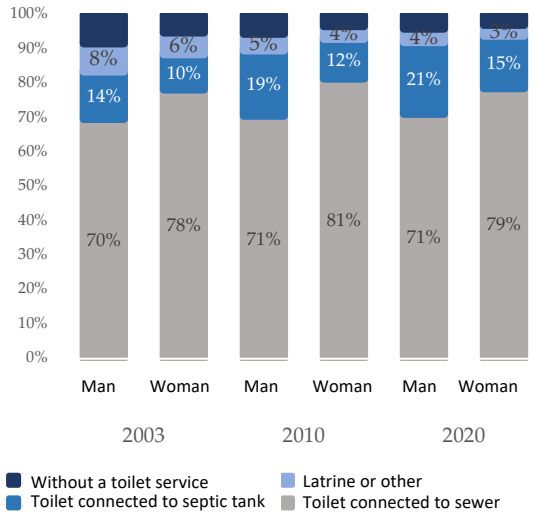
According to the records on forms of excreta disposal and gender, it was revealed that the proportion of households whose head of household is a man and have a toilet connected to the sewer, was slightly lower than the proportion of households with head of household and toilet connected to the sewer, since by 2020 the difference was 8 p.p. For the individual, the proportion of households whose head of household is a man and have a toilet connected to the sewer increased from 69.7% in 2003 to 71.2% in 2020, that is, 1.5 p.p. In turn, the proportion of households whose head of household is a woman and have a toilet connected to the sewer system, remained stable around 78%. In addition, the proportion of households whose head of household is a man and have a toilet connected to a septic tank increased from 13.8% in 2003 to 20.7% in 2020, with 6.9 p.p. more. Correspondingly, the proportion of households whose head of household is a woman and have a toilet connected to a septic tank grew from 10.1% in 2003 to 15.3% in 2020, being 5.2 p.p. more. See Graph 103.

Graph 103: Household toilet type

Panel A: Proportion by areas



Panel B: Proportion by gender



Source: Own elaboration based on DANE-QLS

In connection with the form of connection for the elimination of excreta and educational level, from what was verified it was noted that the proportion of households whose head of household does not have some educational level and who have a toilet connected to the sewer,

increased from 38.4% in 2003 to 41.3% in 2020 (2.9 p.p.). In contrast, the proportion of households whose head of household has pre-school or primary school education and who have a toilet connected to the sewer system decreased from 58.8% in 2003 to 53.7% in 2020 (5.1 p.p. less). Similarly, the proportion of households whose head of household has a secondary education level and with a toilet connected to the sewer system, contracted from 85.1% in 2003 to 71.2% in 2020 (13.9 p.p. less). Similarly, the proportion of households whose head of household has an average educational level with a toilet connected to the sewer system decreased from 93.6% in 2003 to 80.7% in 2020 (12.9 p.p. less). In contrast, the proportion of households whose head of household has a higher education level and who have a toilet connected to the sewer system increased from 90% in 2003 to 92.1% in 2020 (2.1 p.p. more). In the end, the gap in 2020 between the highest and lowest educational level is 50.8 p.p.

In turn, the proportion of households whose heads of household have no educational level and who have a toilet connected to a septic tank, increased from 21.3% in 2003 to 33.7% in 2020, increasing 12.4 p.p. The proportion of households whose head of household has a preschool or primary education level and who have a toilet connected to a septic tank, also grew from 19.3% in 2003 to 32.9% in 2020, increasing 13.6 p.p. However, the proportion of households whose head of household has a higher education level and who has a toilet connected to a septic tank has remained stable at around 6%.

Table 45: Household toilet type by income level

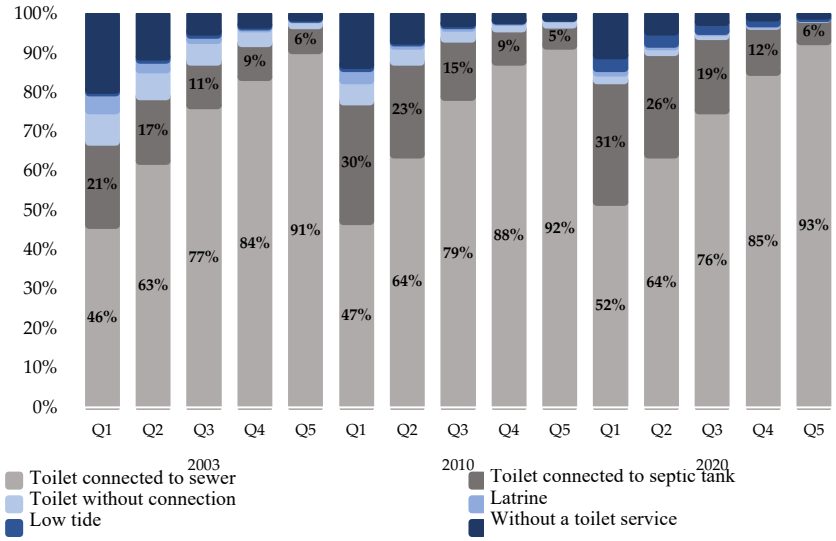
Educational Levels	None	Preschool and Primary	Secondary	Medium	Higher
		2003			
Toilet connected to the sewer system	38,4	58,8	85,1	93,6	89,9
Toilet connected to a septic tank	21,3	19,3	8,2	5,9	6,5
Latrine or other	13,5	11,5	4,5	0,42	2,9
Without toilet service	26,7	10,4	2,2	0,13	0,61
		2010			
Toilet connected to the sewer system	40,2	57,5	80,7	87,1	93,2
Toilet connected to a septic tank	31,7	27,0	13,8	8,7	4,9
Latrine or other	10,1	7,8	3,2	2,4	1,5
Without toilet service	17,8	7,7	2,4	1,8	0,3
		2020			
Toilet connected to the sewer system	41,3	53,7	71,2	80,7	92,1
Toilet connected to a septic tank	33,7	32,9	20,5	14,7	6,2
Latrine or other	8,9	6,9	4,2	2,5	1,14
Without toilet service	16,1	6,4	4,2	2,1	0,56

Source: Own elaboration based on DANE-QLS

Finally, in connection with the forms of connection for the elimination of excreta, it is noted that the proportion of households in the income quintile 1 that have a toilet connected to the sewer has increased from 46.4% to 52.3%, which implies a growth of 5.9 p.p. The proportion of households in quintile 5 that have a toilet connected to the sewer has increased from 90.8% to 93.2%, representing an increase of 2.4 p.p. This means that the closing of the gap has accelerated, which in 2020 is in an order of 39 p.p. In turn, the proportion of households in the income quintile 1 that have a toilet connected to a septic tank increased from 21.2% to 30.8%.

By contrast, the proportion of households in the income quintile 5 that have a toilet connected to a septic tank decreased from 6.3% in 2003 to 5.6% in 2020.

Graph 104: Household toilet type by income level



Source: Own elaboration based on DANE-QLS

4.8 Gender inequality

Gender inequalities are present in all dimensions of sustainable development (UN Women, 2018b). Women are the most affected by food shortages. Even when they are more educated than men, substantial labor market gaps persist. Despite advances in political share, the proportion of women in various spaces of representation is still low, without having a high vulnerability in terms of physical and sexual violence. There are various efforts in public policy in Colombia that promote the gender equity agenda, which hand in hand with demographic changes and in social structures, have given a favorable connotation to women in society. However, progress is considered to have been slow, insufficient and uneven (UN Women, 2018a). Gender gaps must be seen along various dimensions, including dynamics in the labor market, the organization of care, decision-making in spaces of power and the effective enjoyment of rights, among others.

In order to complement the diagnostic on gender inequalities addressed throughout the document, this section will emphasize in general terms some dimensions of gender inequality such as differentials in the labor market, economic inactivity, the role of women in rural areas, unequal changes towards women as a result of the pandemic, and burdens on household chores, as well as perceptions about gender roles.

The labor market

In the labor market, inequitable gender relations are manifested, given the lowest share and employment rates, lower wages and higher unemployment faced by women. The largest gaps are experienced by women under 25 years of age, heads of household, with complete

secondary education, married or in free union, or with the presence of children in the home (Arango et. al., 2016). A cross examination between educational levels and gender composition suggests that gaps in share and employment rates are larger as educational levels for women increase, this in connection with men. Table 46 presents share, employment, unemployment and inactivity rates for men and women according to educational level, which are classified into primary, secondary, middle and higher for the period between 2010-2019.

For men, rates decrease from 2010 to 2019; thus, for the overall share rate in 2010, the values for primary or less are 66% and 93% higher, presenting a gap of 27 p.p., while for 2019 62% and 91% were observed, respectively, resulting in a difference of 29 p.p. On the side of employment rates in 2010, people with primary or less reached levels of 61%, while those with higher education 85%, presenting a gap of 24 p.p., a gap that reaches 25 p.p. in 2019. The rate of inactivity decreases as the educational level increases, for 2010 the value was 34% for those who have a primary education level or less, for those who have higher education the value was 7%, representing a gap of 27 p.p.; for 2019 a similar behavior is presented. For the unemployment rate, the highest values are in the secondary and middle educational levels, for 2010 these values were 12%, and for 2019 10%.

For women, the overall share rate for 2010 was 40% for those in the primary category or less and 85% for those in the higher category; for 2019 these values were 36% and 81% respectively, with differences of 40 p.p. and 45 p.p. respectively. On the other hand, the employment rate increased as the educational level did, for those belonging to primary or less it was 34% and for those with higher education it was 74%; in 2019 these values were 33% and 71% with differences of 40 p.p. and 38 p.p., respectively.

As for the unemployment and inactivity rate, for those people belonging to the primary education level or less the rate was 14% and while in higher this was 12% in 2010. Meanwhile, for 2019 these were 10% and 13% for educational levels (primary or less, higher). For the first case, the gap was 2 p.p. and for the second 3 p.p. For the inactivity rate, the values decrease as the educational level increases; for 2010 the value for those with primary level or less was 60% and for those with higher education was 15%; for 2019 the values were 64% and 19% respectively, presenting differences of 45 p.p. in both cases.

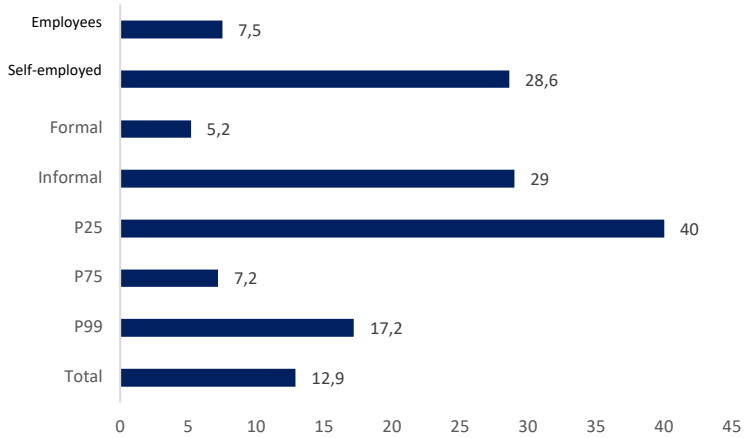
Table 46: Employment rates by degree obtained and gender

	Overall share rate		Employment rate		Unemployment rate		Inactivity rate	
	Panel A: Men							
	2010	**2019**	**2010**	**2019**	**2010**	**2019**	**2010**	**2019**
None	73%	68%	69%	65%	5%	5%	27%	32%
Primary or less	66%	62%	61%	58%	8%	7%	34%	38%
Medium	77%	78%	68%	70%	12%	10%	23%	22%
Higher	93%	91%	85%	83%	9%	9%	7%	9%
	Panel B: Women							
	2010	**2019**	**2010**	**2019**	**2010**	**2019**	**2010**	**2019**
None	38%	34%	33%	31%	12%	7%	62%	66%
Primary or less	65%	67%	35%	33%	9%	7%	59%	62%
Medium	58%	57%	47%	48%	19%	16%	42%	43%
Higher	85%	81%	74%	71%	12%	13%	15%	19%

Source: Own elaboration based on DANE y la LIHS

From the viewpoint of wage gaps, the DANE (2020b) estimates that the overall wage gap was 12% for 2019, and on average per hour of -2.3%, which is related to the greater time that men invest at work, 8 hours more per week in connection with women. The gender gap widens among the self-employed, up to 28.6%, this is 16.6 p.p. more than the national average, but up to 29% among formal workers, indicating that a low quality of employment further increases inequalities. Wage gaps also increase as the labor income percentile does. Thus, while the gender pay gap reaches up to 40% in the 25% with the lowest income, for the 75th percentile it falls to 7.2%.

Graph 105: Gap in average labor income



Source: DANE-LIHS-2019

Economic inactivity

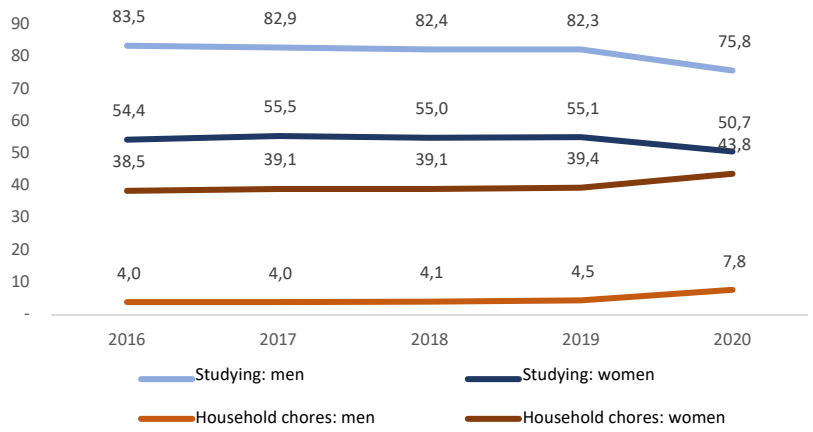
Half of women are excluded from the workforce. An important factor for economic autonomy is the ability to have own resources, however, 34% of women in secondary school are excluded, while the proportion for men outside the labor force is 12% at the same level of education. This is linked to unequal burdens in domestic and unpaid care work, where women spend 30%, compared to 14% for men, which implies that about 6 hours per day are subtracted from women to work, study or play, while men have an additional 10 hours to devote to these activities (DANE, 2020a).

According to DANE (2021c), in addition to gender segregation within the labor market, there are differential gender roles within the inactive population, or that does not participate in the labor market. There is an over-representation of women as domestic workers (94% in 2019) and unpaid family workers (63%). Although women represent 51% of the working-age population, they are less than half of the employed population, a fact that was aggravated as a result of the pandemic. Therefore, women of working age who are not employed or looking and who are inactive, was equivalent to 51.9% in 2020, far surpassing this indicator in men, 29.2%, which means a difference of 22.7 p.p.

When comparing two periods, the first from 2009 to 2010, for each man who entered from inactivity, 12.6 women did so in the 23 major cities, while from 2019 to 2020, for every man

who entered inactivity, 1.5 women did so (DANE, 2021c). The dedication to household trades by inactive women exceeds by 49.7 p.p. that of men, where their dedication to the home is only 13.5% in connection with 62.9% of women. The prevalence is even higher in women between 29 and 45 years old, with 92.9%. By 2020, in the age group of 14 to 28 years, 50.7% of women in inactivity study, but men of the same age do so by 75.8%, with a difference of 25.1 p.p. (See Graph 106).

Graph 106: Main activity of inactive people



Source: DANE-LIHS

Women in rural areas

Rural areas are marked by considerable gender gaps, with an unfavorable labor market for women. Although in rural areas most of the workforce is made up of men, there is a significant concentration of young people in the population, and the highest proportion of women with ethnic self-recognition (49.6%). The overall share rate of women, in addition to being below that of men, is lower than that of women in urban areas; have low employment rates and high unemployment rates, with unemployment among women being 7.4 p.p. higher than that of men, standing at 11.6% in 2019 (DANE, 2020c).

According to DANE (2020c), a considerable portion of inactive women in the labor market perform unpaid work activities, with a greater number of hours on average daily work, namely 1 hour and 11 minutes more than men. Moreover, female-headed households in rural areas tend to have a greater housing deficit[37]; and not least important, perceptions of gender stereotypes are more marked than in urban areas, where the majority of the population, for example, strongly agrees or agrees with the role of man as the ideal head of the household.

Women in times of COVID-19 pandemic

The pandemic did not affect everyone equally. Evidently, women were strongly affected, mainly through the intensive decline in female employment, such as trade, tourism and manufacturing. A good part of the women in 2020 left the labor force to meet the demands of

[37] Lack of housing, both quantitatively and qualitatively.

care in their homes, without being able to return to the search for employment (ECLAC, 2021). But this was not the only mechanism that differentially affected women.

Several studies highlight the psychosocial and psychological effects on the population in the midst of an epidemic (UN, 2020), where if certain symptoms persist, they could evolve into more complex mental health problems, with long-term consequences in the most vulnerable communities, families and people (DANE, 2021a). Given the higher prevalence of mental health problems in women and their vulnerability to different forms of violence, it is estimated that 59.9% of women heads of household or spouses have experienced some situation of psychosocial risk[38], compared to 52.2% of men, with higher prevalence in households with more members or in those who express overload in work tasks (DANE, 2021a). This, without a doubt, is an aspect worth further exploring given the direct consequences in terms of welfare and social inequality.

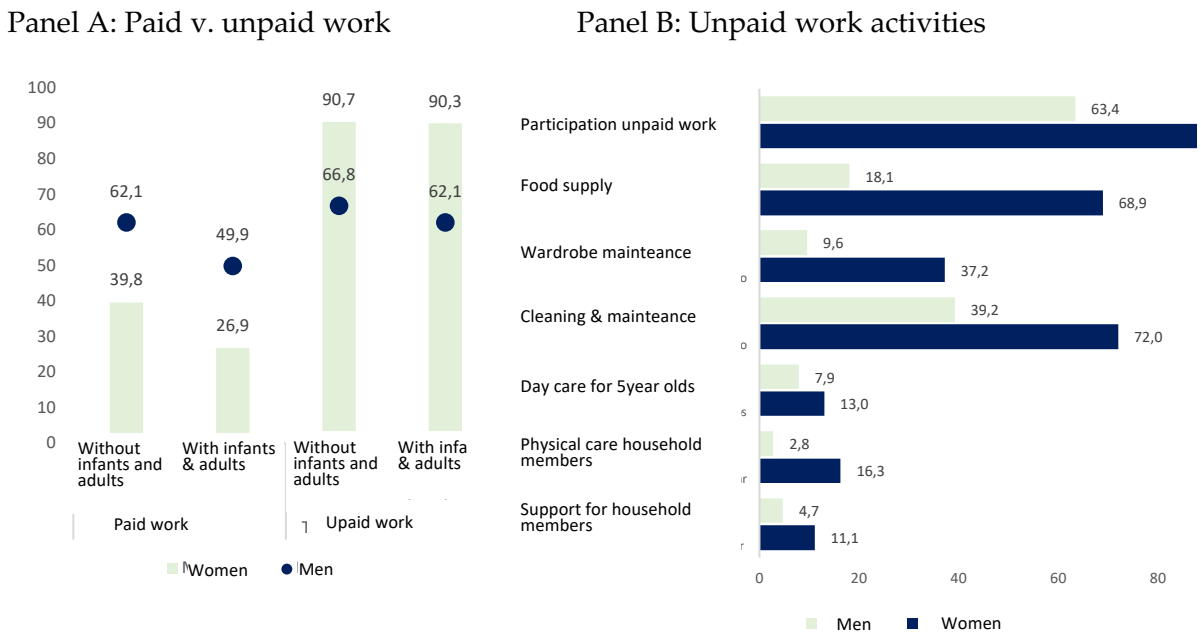
Unpaid work and gender roles

It is known that men participate more in paid work activities than women, however, this difference is amplified if there are infants (children under 5 years of age) and/or people over 65 years of age inside the home. In such case, between 2020 and 2021, women in households without child or elderly dependents participated in 39.8%, compared to 62.1% of men; but in households with infants the gap increases, to the point that women participate in 26.9% and men 49.9%, this is 23 p.p. more. Women in households with dependents invest about an hour less in paid work activities than men, but in households with dependents the difference to almost 1 hour and 30 minutes.

On the side of unpaid work activities, although the share of women, high and above 90%, does not change substantially between households with or without economically dependents (infants or adults over 65 years of age); the share between these two types of households does change for men, so the gaps are wide, in almost 4 additional p.p. in those households with infants and the elderly; see Graph 107. On average, the percentage difference between men and women reaches 27 p.p., which in terms of time spent on household chores, means that while women spend 7 hours and 46 minutes, men only spend 3 hours per day. Among the activities where there is a greater difference in terms of share between men and women, are food supply (50.8 p.p. difference), cleaning and maintenance activities at home (32.8 p.p. difference), and maintenance of clothing (27.6 p.p. difference).

[38] The Social Pulse of the DANE carried out research on a series of indicators, such as worry or nervousness, tiredness, irritability, loneliness, sadness, headaches or stomachaches, sleep difficulties, heartbeat despite not having made any physical effort and inability to feel positive feelings.

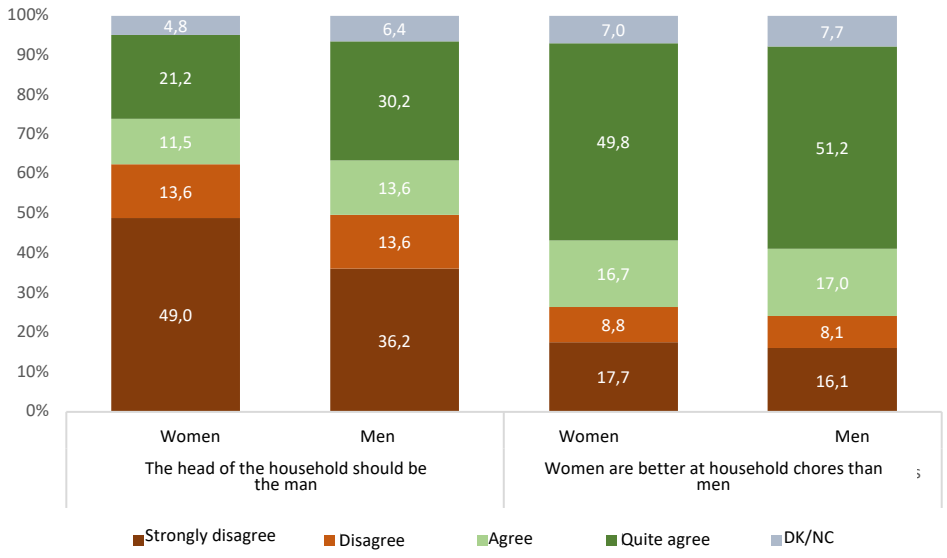
Graph 107: Participation and paid and unpaid work activities



Source: DANE-ENUT-2020-2021

However, perceptions of gender roles largely denote the potential for improvement in terms of women's empowerment in pursuit of a more equitable society. DANE's National Time Use Survey (ENUT, for its Spanish acronym) investigated the level of agreement or disagreement on a number of perceptions of gender roles. To highlight two, on whether the head of the household should be the man, almost 43.8% of men agree, in contrast to 32.7% of women. Meanwhile, given the perception that women are better at household chores than men, it is found that only 26.5% of women strongly disagree or disagree, with 24.2% being the proportion for men.

Graph 108: Gender perceptions and roles



Source: DANE-ENUT-2020-2021



Chapter Five

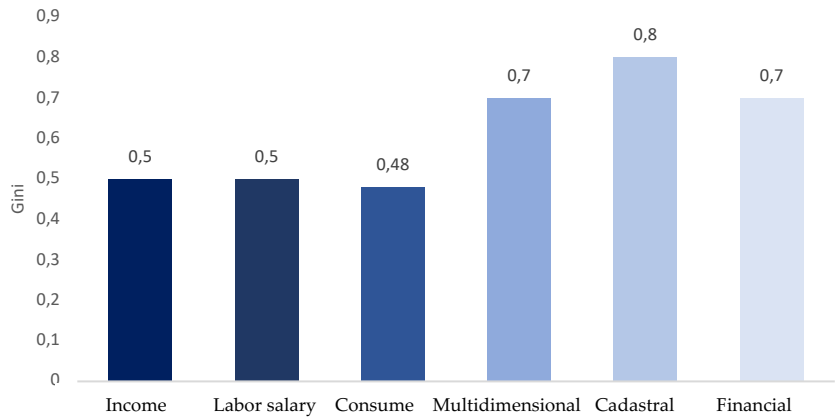
5. Conclusions and discussion of the main results

The magnitude of inequality in Colombia in various aspects has been illustrated throughout this report. It has been possible to address multiple dimensions, over time and upon various population groups, largely thanks to the abundance of official data available in Colombia. Although in some dimensions, such as income, there were periods of reduction in inequality, in others such as in the distribution of assets and services within households and even in the distribution of wealth on land, inequality is highly persistent. The main contribution of this multidimensional perspective is precisely to highlight different aspects that feed the vicious reproductive circle of poverty and inequalities. The herein diagnostic view highlights the importance of a set of policies that, coordinated, strengthen equity in Colombian society. The main findings of the study are explained below.

Viewing all dimensions

The high and persistent inequality in Colombia is not only income; other dimensions reach very high levels. It is known that Colombia is a highly unequal country. The common measure to denote this, derives from the distribution of household per capita income. However, other types of inequalities show levels even higher than those of income inequality. Although inequality in consumption, typically lower than that of income, is high (0.48); the measure of inequality (Gini) in the distribution of assets, goods and access to basic services in the household, is 0.14 points above the inequality of total household income and labor income, which denotes a strong concentration that goes beyond the commonly referenced social welfare measures. But inequality reaches much larger levels when it comes to the distribution in land inequality, and even within the holders of financial assets, with levels of 0.8 and 0.7, respectively.

Graph 109: Gini of inequalities in Colombia (circa 2017)



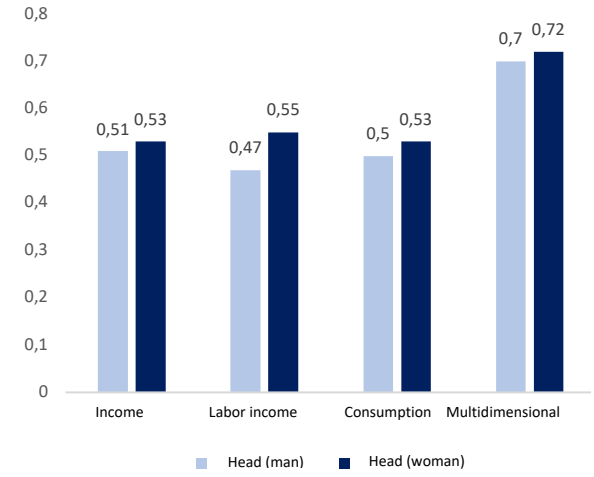
Source: Own elaboration based on: DANE-LIHS, NHBS, IGAC, DECEVAL

Inequality is also higher in some groups than in others. For example, female-headed households show a higher concentration of income or consumption, with Ginis 0.03 higher and up to 0.08 for women's labor income compared to men. Meanwhile, people who recognize themselves as indigenous have the highest income inequality (0.52), while in terms of

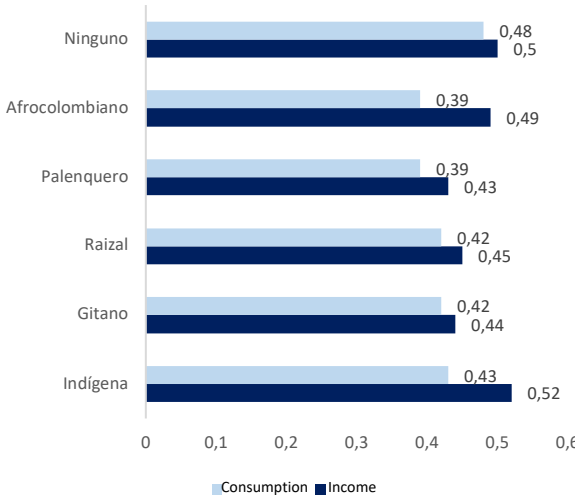
consumption it is those without any ethnic recognition who distribute the worst expenditure (0.48).

Graph 110: Gini of inequalities in Colombia by groups (circa 2017)

Panel A: Gender



Panel B: Ethnic acknowledgement



Source: Own elaboration based on DANE-LIHS, NHBS

Economic inequality

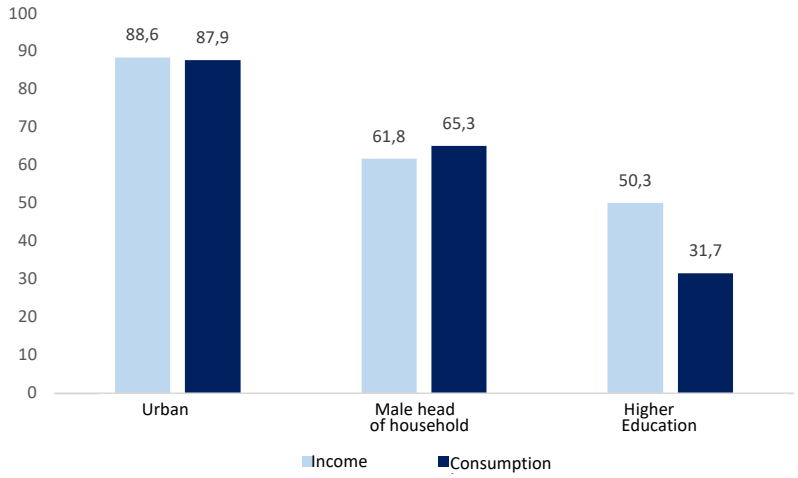
In terms of economic inequality, the inequality in the distribution of per capita household income was studied, since, thanks to the abundance of data, it was possible to identify its temporary dynamics (2002-2020) with the official data of the Large Integrated Household Survey. The inequality in per capita expenditure or consumption of households was also analyzed, this for the period between July 2016 and June 2017, using the National Household Budget Survey. The measures used to identify the magnitude of inequality were the Gini, Theil, Atkinson and Palma coefficients.

The median and average expenditure are consistently high in urban areas, doubling that of rural areas; high for male-headed households (although slightly relative to female-headed households); high for the more educated; and high for people without any ethnic identity (the latter with respect to the indigenous and Afro-Colombian population). Even territorially the differences are considerable, where in Bogota the expenditure is almost double that of the Atlantic, Amazon and Orinoquia region, or the Pacific region.

Consequently, the gaps between groups are evident, as well as the income distribution and consumption within the same. Although the concentration of both indicators is absolutely higher in urban areas (where the majority of the population is concentrated), consumption is more concentrated in households with male headship. While in urban areas, households headed by even the most educated men concentrate the total income at 88.6%, 62.5% and 53.5%, the respective proportions for consumption were 87.9%, 65.3% and 31.7%. The breakdowns of the Gini index highlight that inequality is predominantly explained by the

differences between urban-rural groups, head of household or poverty condition, although to a lesser extent for groups by educational levels, where the difference within these explains the Gini better.

Graph 111: Income concentration and consumption by groups, 2017



Source: Own elaboration based on DANE-LIHS, NHBS

In Colombia, while the top 10% with higher income in 2002 had the 45.6% of total income, the bottom 10% with lower income barely reached 1 per cent. Until 2017 such proportion improved substantially, to the extent that the last decile held 39.5%, and the lower decile 1.3%. The Covid-19 pandemic worsened this relationship again, when levels of 42.3% and 0.9% respectively were reached. This is intimately linked to the dynamics of inequality described in the report. Just between 2002 and 2010, inequality fell slightly, from 0.57 to 0.56, partly thanks to changes in employment levels that were more important for the lower part of the distribution in connection with the highest, and decidedly the redistributive role of public and private transfers. However, the higher concentration of pension, capital and even labor income prevented inequality from falling further.

However, in the following 8 years (2010-2017), when income inequality falls at a rate never seen before, rising to 0.508 in 2017, the determining factor was labor income, which accounts for about 56% of the change, followed by the change in employment levels and monetary transfers with 23% and 20%, respectively. The downturn in inequality between 2017 and 2020, on the other hand, is mostly explained by job losses, as well as the concomitant labor income which affected the most vulnerable.

Inequality in the labor market

In terms of inequality in the labor market, the indicators of labor supply and demand, as well as unemployment for population groups, were analyzed, identifying differences by geographic areas, gender, youth, educational levels and quintiles of per capita household

income. It also analyzes gaps, as well as inequalities in terms of labor income, but also identifies inequalities in terms of the quality of jobs.

Between 2010 and 2015 Colombia experienced an increase in employment rates, largely supported by economic performance and the mining-energy bonanza, which translated to unemployment levels lower than those observed in past years (8.9% in 2015), when the employment rate exceeded 11.8% in 2010. This phenomenon was predominantly urban, experienced especially in the 13 major cities of the country, considerably benefiting the share of women in the labor market, although with wide gaps with respect to men, and even other groups such as young people and also the most educated. However, this trend is reversed from 2016, at which time pre-pandemic unemployment returns to double digits, with 10.5% in 2019 and up to 15.9% in 2020.

Income inequality is transmitted to the labor market, accentuating differential access to the labor market that lacerates the most vulnerable. Among quintiles of per capita household income, it is observed that although the richest 20% have employment rates of 67% and unemployment of 5.3%, for the lowest 20% these rates are 42% and 17.7%, respectively.

Gaps in share and employment rates are larger for women than for men between each of the educational levels. For example, in 2019 while the employment rate of women without any educational level reached 31%, for men it was 65%; meanwhile, for women with higher education, the employment rate stood at 71 per cent, that of men at 83 per cent. In terms of unemployment rates, which is high for the most educated, it reaches 13% for the most qualified women and 9% for men of the same educational level, even when the rates of female inactivity in higher education exceed by 10 p.p. that of men.

Regarding labor income, it was observed that it has fallen slightly for some groups such as men/women, or urban/rural in more pronounced manner. On the side of the differences by quintile, while in 2010 the 20% with the highest income had 17.82 times the labor income of those with the 20% of lower income, in 2020 this proportion worsened considerably as a result of the pandemic, to such an extent that the labor income of people in the last quintile had 20.9 times that of the first quintile. In turn, it is found that the gaps in labor income by educational level are considerable, only for 2019 people with higher education relative to those with secondary education, were around 2.5 times, but the relationship in real labor income between those with higher education and no educational level was 12 times.

A comparison over time denotes that the Gini coefficient of labor income and the Palma ratio for the national total fell slightly until 2017, at which point it rose, a phenomenon that bends to the dynamics of inequality of total per capita income of households and supports the explanation of its U-shaped trend. For the year 2010 there was the highest level of labor inequality, measured by both indicators, presenting an annual decrease until 2017. It is from this year when inequality rises to 0.54 in 2020 in terms of the Gini, to levels similar to 2011-2012.

On the side of employment quality, it is found that, although informality fell between 2010 and 2018, the levels remain high, exceeding 45%, which highlights the disparities between major cities between men and women, and predominantly between skilled and unskilled workers. This is linked to the way in which labor relations are distributed, with greater share for self-employed workers at low educational levels, and salaried employees in high educational levels, where gaps are exacerbated over time. By income quintiles, a gradient is

observed that denotes that as the quintile increases, people are more salaried and employers, while much less self-employed and non-salaried, to such an extent that in 2020 71% of workers in the 20% with lower incomes, were self-employed, while in the top 20%, this proportion was 28%.

Inequality of assets, services and wealth

Bearing in mind that there are several dimensions of well-being in addition to the monetary ones, previously analyzed, it is understood that to the extent that income or consumption is concentrated, the assets or goods that a household owns will also be, affecting households and the capacity of their assets as collateral against financial shocks (Stats sa, 2019). Additionally, the living conditions of the inhabitants of a population can also be assessed in terms of the real achievements of well-being and the ability to achieve them. In this sense, the concentration of both the possession of assets, goods and services (multidimensional) within households is assessed, for example: computer, cell phone, Internet, sewerage, among others, as well as the distribution of land, net worth or financial assets, in particular.

In order to determine the indicators in multidimensional inequality, we proceeded to calculate an index of wealth or assets using the adjusted principal components method (UCPCA) with official GHG data, on which the Gini index was measured. In general, household assets and services have a very high concentration, of the order of 0.7 in the national total for 2019, although with a greater concentration in urban areas than in rural areas, especially in the major cities of the country. Concentration is also more present in people with high levels of education and in male-headed households. A comparison with 2010 denotes that the Gini has increased by about 0.06 points, from 0.64 in 2010.

On the side of wealth, the information collected by Nuñez, J.; Parra, J.; Piraquive, G. (2017), understanding inequality in the distribution of wealth in land, wealth and deposits and financial assets. The main sources of information are the values of all rural and urban properties registered in the IGAC and the appraisal of the cadasters for some cities available to the assets of income filers reported by the DIAN, in addition to the information on deposits and financial assets of natural persons reported by DECEVAL between 2000 and 2015.

According to information from the IGAC, urban properties changed from 4.7 million to 6.8 million between 2000 and 2015, which represented an increase of 43.53% over 15 years. In this same period of time, the number of owners went from 6 million to about 8.7 million, (annual variation of 43.91%). Thus, the number of owners and properties have increased by a very similar magnitude, however, the average size of each property was reduced from 655 m^2 to 430 m^2 between 2000 and 2015. The Gini coefficient of appraisals by departments on average was higher for Nariño with an average value of 0.76, followed by Bolivar with a value of 0.76 and Boyaca with a value of 0.75. The Departments that on average presented lower values during the years of study were Sucre, Quindio and Meta with values of 0.73, 0.653 and 0.656, respectively.

As for deposit securities, it is found that given the small number of people who access the stock market and the magnitude of inequalities between them, the total value accumulated in deposits by natural persons has decreased as a percentage of GDP between 2002 and 2014, while remaining excessively high, presenting a Gini of 0.897, higher than that of the deposits

of legal persons. Meanwhile, the portfolio balance valued in shares, the 10% of shareholders with the greatest financial wealth accumulates about 99% of the balance valued in shares, with a Gini of 0.89 in 2014. With regard to wealth, of the richest 1% of Colombians, based on information reported to the DIAN, the richest 1% according to their net worth in 2005, accumulated a net wealth equivalent to 7% of the gross national income of that year and 17% of the total reported liquid assets. As a percentage of gross national income, the reported net wealth of this segment of the population almost doubled from 7% to 13% in 2013.

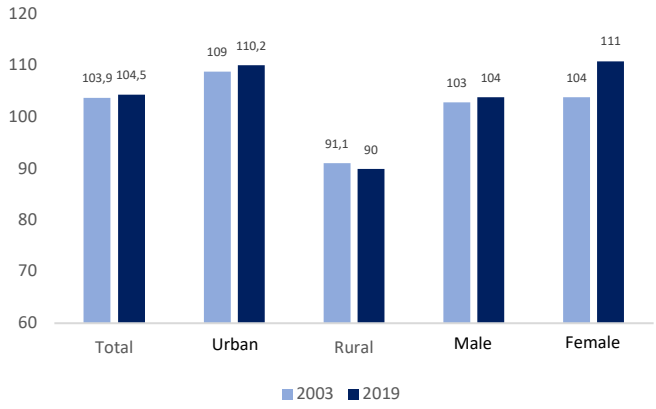
Inequality in social domains

Economic inequality is reflected in the inequality of multiple areas such as access to and quality of education, health services and even the way in which these and other basic services are accessed. Inequalities of access in education and health decisively restrict access to and use of opportunities, negatively impacting on income-generating capacity. Other forms of inequality manifest themselves in inequality in access to drinking water and sanitation (predominantly in rural areas), access to the Internet, affecting those with less income capacity, among others.

Hence, the most vulnerable people can have negative consequences on health and income (in the case of access to health, drinking water, basic sanitation), low productivity and learning capacity (in the case of access to education, the Internet), problems of labor insertion in the formal sector, low income-generating capacity, problems of access to food and adequate nutrition, among others. In order to have an updated diagnostic of inequality in Colombia, aspects related to access to basic services such as education, health, Internet services, drinking water, housing, electric power and basic sanitation were presented.

In terms of education, gross coverage rates at the secondary and medium levels showed very significant increases, all of which were reflected in a barely perceptible increase in the total coverage rate. However, differences in urban and rural areas were prominent. In terms of quality, this is mediated by the socioeconomic levels of the students, where at a higher level, better academic performance, but there are also gaps between students by type of school, where students in official educational establishments are overrepresented at lower levels of academic performance.

Graph 112: Gross coverage in education, total



Source: MNE -SEMS

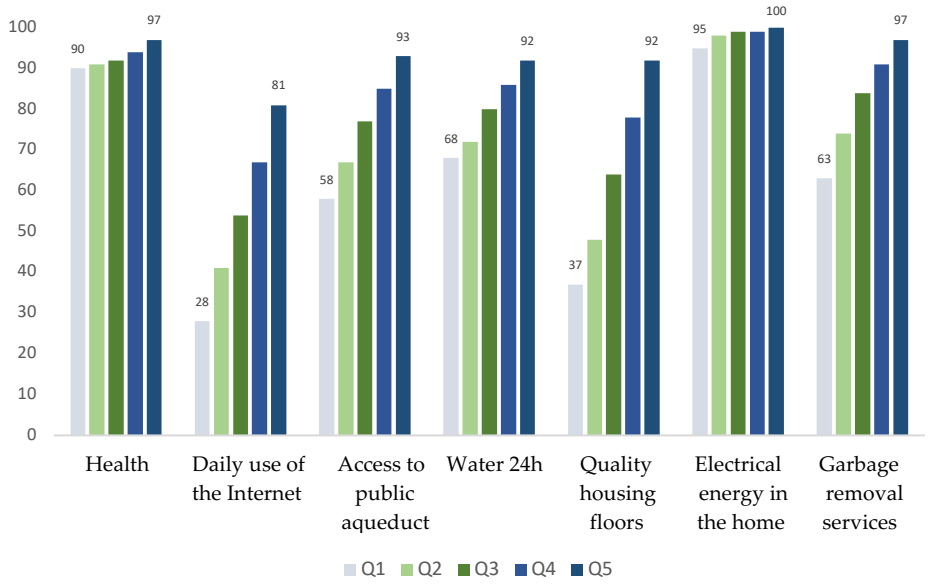
The proportion of affiliation to the Social Security General System in Health for the total country, evidenced a prominent growth in the period 2003-2020, representing a change in coverage from 62.3% to 93.3%. On the other hand, the behavior of the affiliation rate according to income level, evidences a positive relationship, that is, the higher the level of income, the higher the affiliation rate. In general, this fact highlights the existence of barriers to access to social security in health for people with lower incomes, although the vast majority are covered, largely to the rearrangement in the affiliation regime, where those affiliated to social security in health of lower income levels, showed high rates of affiliation in the subsidized regime, while those with higher incomes (quintiles four and five), exhibited rates predominantly alluding to social security in contributory health.

Regarding the use of the Internet, of the people at the national level who use it according to per weekly, monthly or an annual frequency, a very considerable proportion of people who do not use it was found (30.2% by 2020). In contrast, the proportion that uses this service every day of the week has gradually grown to the point that in 2020 it exceeded 50%. When disaggregating the above figures by geographic domain, the finding is that its use has been higher in urban areas than in rural areas, gradually and considerably growing more in urban than rural areas (64.1% in 2020). As in the previous case, the proportion of people with access to the Internet is directly related to income level of, sense by which the proportion of people with higher income levels, according to quintile, presented the highest values, while those with lower income exhibited the lowest rates, for example, in 2020 27.7% of the first quintile, reported using the service daily, while 81.4% of the last quintile.

In connection with access to safe drinking water, protruding differences were found comparing urban and rural areas. Access to drinking water through the public aqueduct has been predominant in urban areas, with more than 90% of access, but in rural areas the communal or rural aqueduct stands out, followed in importance by the source, river stream, creek or spring. Regarding access to safe drinking water according to income level, the direct relationship between income level and access was confirmed, in the sense that the higher the income level, the greater the proportion of people with access to the public aqueduct (just over 53% for the first quintile and just over 90% for the last quintile).

In order to establish the quality of drinking water service, the proportion of households nationwide that obtain water continuously 24 hours per day, 7 days per week, was determined. According to records, the proportion of households that obtained water 24 hours per day, seven days per week increased from 63.6% in 2003 to 80.3% in 2020. The proportion of households in income quintile 1 that obtained water 24 hours per day, seven days per week increased from 44.8% in 2003 to 67.7% in 2020, while the proportion of households in income quintile 5 that obtained water 24 hours per day, seven days per week, increased from 79.3% in 2003 to 92.5% in 2020.

Graph 113: Social domains by income quintiles, 2020



Source: DANE-QLS

The proportion of households with housing for rent or fully subletting in Colombia, comprised the highest proportion compared to other forms of tenure, followed by own or fully paid housing in 2020. On the other hand, regarding the proportion of households according to floor quality and income level, it is found that the proportion of households with good floors have a direct relationship with the level of income, the proportion of households with good floors of quintile 1 of income increased from 20.3% in 2003 to 36.8% in 2020. Correspondingly, the proportion of households in the income quintile 5 with good quality of housing floors increased from 82.2% in 2003 to 91.9% in 2020.

Regarding access to electric power service at the national level, the largest proportion of the population exhibited access to electric power service at home, a proportion that ranged for the years examined between 95.8% and 99.0%. In connection with access to electric power according to income level, two facts stood out: first, that access is in direct and positive function with the level of income, and second, that the proportion of people in the lower quintiles presented significant difficulties of access, especially the first quintile that, as an example, for the year 2020 presented a total of 5.2% of lack of access to the service, added to the quality of services.

In connection with the way of disposal of household waste at the national level, the garbage collection service is the predominant form in the country. For that matter, in 2020 this proportion of households was equivalent to 81.8%. However, another form of important weight as a form of disposal was the burning of garbage, a proportion that in 2020 reached 11.8%. While in the urban area the disposal of garbage through the collection service prevails, in the rural areas the burning of garbage prevailed. However, the proportion of households in income quintile 1 that dispose of garbage through collection increased, from 49.8 per cent in 2003 to 63.3 per cent in 2020. Similarly, the proportion of households in quintile 5 that dispose of garbage through toilets also increased from 92.9% in 2003 to 96.5% in 2020.

Gender inequality

Gender inequalities, present in all dimensions of sustainable development (UN Women, 2018b), undermine women's vulnerabilities. Gender gaps must be addressed in several dimensions, including dynamics in the labor market, the organization of care, decision-making in spaces of power and the effective enjoyment of rights, among others. However, the section addressed gender inequality in terms of differentials in the labor market, economic inactivity, the role of women in rural areas, unequal changes towards women as a result of the pandemic, and burdens on household chores, as well as perceptions about gender roles.

The gaps in share and employment rates are larger as the level of education increases, this in connection with men. As for wage gaps, according to official data from DANE, it has to be generally 12% for 2019, a gap that is amplified among independent workers, up to 28.6%, 29% among formal workers, and up to 40% in 25% of people with lower incomes.

Half of women are excluded from the labor force, an important factor for economic autonomy is the ability to have own resources, which is related to unequal burdens in unpaid domestic and care work. While there is an overrepresentation of women as domestic workers (94% in 2019) and unpaid family workers (63%), inactive women of working age were equivalent to 51.9% in 2020, far surpassing this indicator in men, 29.2%.

In addition to the pandemic pushing more women into economic inactivity, it is found that younger women in inactivity study less than men of the same age. The data also suggest that the pandemic did not affect everyone equally, and it was women who were hit hard, mainly through the intensive decline in female employment, such as trade, tourism and manufacturing. A good part of the women in 2020 left the labor force to meet the demands of care in their homes, without being able to return to the search for employment. This is also noted in connection with the psychosocial and psychological risks to the most vulnerable families and individuals.

With regard to paid work and gender roles, the difference between men and women in the share of paid work is especially present within the home with children and/or the elderly. In turn, women in households with dependents, invest about an hour less in paid work activities than men, but in households with dependents, the difference is almost 1 hour and 30 minutes. On the side of unpaid work, although women's share is high and over 90%, the gaps widen in households with infants and the elderly, mainly because men spend less time on these activities: while women spend 7 hours and 46 minutes, men only spend 3 hours per day. Among the activities where there is a greater difference in terms of share between men and women, are food supply, cleaning and maintenance activities at home and maintenance of clothing. This is complemented by perceptions in gender roles.



Chapter Six

6. References

Acción Social (2010). El camino recorrido: diez años familias en acción. Bogota: acción social.

Almond, D. and J . Currie (2011). Killing me softly: The fetal origins hypothesis. *Journal of Economic Perspectives 25* (3), 153–72.

Atkinson, A. B. (1970). On the measurement of inequality. Journal of economic theory, 2(3), 244-263.

Arango, L., Lora, E., y Castellani, F. (2016) Desempleo femenino en Colombia. Banco de la República. Bogota D.C.

Arango, L. E., & Ríos, A. M. (2016). Duración del desempleo en Colombia: género, intensidad de búsqueda y anuncios de vacantes. En L. E. Arango, F. Castellani, & E. Lora (Eds.), *Desempleo Femenino en Colombia*. (pp. 135-170), Bogota, Colombia: Banco de la República.

Banco Mundial (2021). Hacia la construcción de una sociedad equitativa en Colombia, Washington D.C

Barrero, A., Vélez, C., López, I., Rosales, R., y Mogollón, D. (2004). Evaluación económica del componente educativo del programa familias en acción del plan Colombia. Documento CEDE 2004, 39.

Banco Interamericano de Desarrollo. (2015). Programas de Transferencias Monetarias Condicionadas en Tres Países de Ingreso. *OVE*, *1*, 77.

Bonet, J. (2004). Descentralización fiscal y disparidades en el ingreso regional: la experiencia colombiana. Documentos de Trabajo Sobre Economía Regional y Urbana

Bonet, J. (2006). Desequilibrios regionales en la política de descentralización en Colombia. Documentos de Trabajo Sobre Economía Regional y Urbana; No. 77.

Cardona-Sosa, L. & Morales, L. F. (2016). Efectos laborales de los servicios de cuidado infantil: evidencia del programa Buen Comienzo. En L. E. Arango, F. Castellani, & E. Lora (Eds.), *Desempleo Femenino en Colombia*. (pp. 207-230). Bogota, Colombia: Banco de la República.

Cecchini, S., & Madariaga, A. (2011). *Programas de transferencias condicionadas: Balance de la experiencia reciente en américa latina y el caribe* (1st ed.). Santiago de Chile: CEPAL.

Celis, M., Castañeda, A., Cortes, D., y Castro, F. (2017). Impactos de las familias en acción sobre el capital social. Bogota, Departamento Nacional de Planeación, Dirección de Seguimiento y Evaluación de Políticas Públicas.

CEPAL (2019). Panorama Social de América Latina. LC/PUB.2019/22-P/Re v.1, Santiago.

CEPAL (Comisión Económica para América Latina y el Caribe). (2021a). Balance Preliminar de las Economías de América Latina y el Caribe

CNC Y DNP, (2008). Evaluación del programa familias en acción para la población desplazada. Bogota, Departamento Nacional de Planeación, Dirección de Seguimiento y Evaluación de Políticas Públicas.

Chacón, M. (2017). In the Line of Fire : Political Violence and Decentralization in Colombia.

Cortés, D., & Vargas, J. F. (2012). Inequidad Regional en Colombia. Universidad del Rosario, Documento de trabajo No. 34.

Comisión de Estudios del Sistema Tributario Territorial (2020). Informe Final. Julio.

DANE (2009). Metodología informalidad - LIHS. Recuperado de https://www.dane.gov.co/index.php/estadisticas-por-tema/mercado-laboral/empleo-informal-y-seguridad-social
DANE (2020a) Mujeres y hombres: brechas de género en Colombia. Bogota D.C.
DANE (2020b) Brecha salarial de género en Colombia. Bogota D.C.
DANE (2020c) Mujeres rurales en Colombia. Bogota D.C.
DANE (2021a) Posibles afectaciones en la salud mental de mujeres en Colombia durante la pandemia por Covid-19. Serie mujeres en tiempos de Covid-19. No 16. Bogota D.C.
DANE (2021b) Recuperación económica: empleo de mujeres. Serie mujeres en tiempos de Covid-19. No 16. Bogota D.C.
DANE (2021c) Población fuera de la fuerza laboral (inactiva) en Colombia Un análisis con perspectiva de género. Grupo de Enfoque Diferencial e Interseccional Dirección General. Bogota D.C.
DNP. (2003). ¿Quién se beneficia del Sisben?: evaluación integral. Departamento Nacional de Planeación.
Departamento Nacional de Planeación, (2020). Rendición de Cuentas, Institucional – prosperidad Social. Bogota D.C, Departamento de Prosperidad Social.
Departamento Nacional de Planeación, (1990). Plan Nacional de Desarrollo La revolución pacífica (1990-1994). Bogota D.C. Recuperado de: https://www.dnp.gov.co/Plan-Nacional-de-Desarrollo/Paginas/Planes-de-Desarrollo-anteriores.aspx
Departamento Nacional de Planeación, (1994). Plan Nacional de Desarrollo El salto social (1994-1998). Bogota D.C. Recuperado de: https://www.dnp.gov.co/Plan-Nacional-de-Desarrollo/Paginas/Planes-de-Desarrollo-anteriores.aspx
Departamento Nacional de Planeación, (1998). Plan Nacional de Desarrollo Cambio para Construir la Paz (1998-2002). Bogota D.C. Recuperado de: https://www.dnp.gov.co/Plan-Nacional-de-Desarrollo/Paginas/Planes-de-Desarrollo-anteriores.aspx
Departamento Nacional de Planeación, (2002). Plan Nacional de Desarrollo Hacia un Estado Comunitario (2002-2006). Bogota D.C. Recuperado de: https://www.dnp.gov.co/Plan-Nacional-de-Desarrollo/Paginas/Planes-de-Desarrollo-anteriores.aspx
Departamento Nacional de Planeación, (2010). Plan Nacional de Desarrollo Prosperidad para Todos (2010-2014). Bogota D.C. Recuperado de: https://www.dnp.gov.co/Plan-Nacional-de-Desarrollo/Paginas/Planes-de-Desarrollo-anteriores.aspx
Departamento Nacional de Planeación, (2014). Plan Nacional de Desarrollo Todos por un Nuevo País (2014-2018). Bogota D.C. Recuperado de: https://www.dnp.gov.co/Plan-Nacional-de-Desarrollo/Paginas/Planes-de-Desarrollo-anteriores.aspx
Departamento Nacional de Planeación, (2018). Plan Nacional de Desarrollo Paco por Colombia pacto por la equidad (2018-2022). Bogota D.C. Recuperado de: https://www.dnp.gov.co/Plan-Nacional-de-Desarrollo/Paginas/Planes-de-Desarrollo-anteriores.aspx
Faguet, J. P., & Sánchez, F. (2008). Decentralization's Effects on Educational Outcomes in Bolivia and Colombia. World Development, 1294–1316.
Faguet, J. P., & Sánchez, F. (2014). Decentralization and access to social services in Colombia. Public choice, 227-249.

Fergusson Talero, L, Molina Guerra, C, Robinson, J y Vargas, J. (2017). The long shadow of the past: political economy of regional inequality in Colombia. Universidad de los Andes, Facultad de Economía, CEDE.

Fiszbein, A., & Schady, N. (2009). *Transferencias monetarias condicionadas* (1st ed.). Washington DC: Banco Mundial.

Flórez, C., Espinosa, F., y Lina, S. (2008). Diseño del índice sisben en su tercera versión. Technical report, Departamento Nacional Planeación. Dirección de Seguimiento y Evaluación de Políticas Públicas.

Garay L. J. y Espitia J. (2019). Dinámica de las desigualdades en Colombia: En torno a la economía política en los ámbitos socioeconómico, tributario y territorial. Editorial Desde Abajo. Bogota.

Garzón, J. S. (2018). Revisión bibliográfica sobre las Transferencias Monetarias Condicionadas en Colombia. *Universidad Católica de Colombia*, 1–54.

Giovanni, M., Amaya, V., Gabriel, J., & López, V. (2013). Pobreza y transferencias condicionadas: una perspectiva de valoración desde el *Poverty and Conditional Transfers: a Valuation Perspective from Medellin Solidari's Program* Pobreza e transferencia condicional: una perspectiva de valorada de programa. *Universidad de Antioquia*, *1*, 182.

Gómez, M. U., & Vásquez, C. M. (2019). Los estudios sobre los programas de transferencias monetarias condicionadas en América Latina: trayectorias, enfoques y perspectivas sobre la pobreza. *CEPAL*, 213–232.

Heckman, J. J., S.H. Moon, R. Pinto, P. A. Savelyev, and A. Yavitz (2010).The rate of return to the High Scope Perry Preschool Program. *Journal of Public Economics 94* (1-2), 114–128

Lozano, I., & Julio-Román, J. M. (2015). Descentralización Fiscal y Crecimiento Económico: Evidencia regional en panel de datos para Colombia.

Lozano, I., & Martínez, M. A. (2013). Enrollment and quality levels of Colombia's public basic education: Has fiscal decentralization improved them?

Santa. M., Marulanda, J. F., Bedoya M. Valencia J. Vanegas, G. (2013). Pobreza y transferencias condicionadas: una perspectiva de valoración desde el programa Medellín Solidaria. Sociedad y Economía; Cali Iss. 25, (2013): 159-182.

Monroy, J. (2018). La dinámica de la desigualdad en Colombia en el siglo XXI. Tesis de grado, Universidad Nacional, Bogota.

Muñoz, L. (2006). Implementación del programa familias en acción atención a población desplazada. Bogota, Departamento Nacional de Planeación, Dirección de Seguimiento y Evaluación de Políticas Públicas.

Nuñez J., Oliveri S., Parra J., Pico J. (2020). The Distributive Impact of Taxes and Expenditures in Colombia. Policy Research Working Paper 9171. World Bank: Washington, D.C.

Nuñez, 2020a. Impacto de la pandemia y los aislamientos obligatorios por covid-19 sobre la pobreza total y extrema en Colombia. Fedesarrollo.

Nuñez J., Oliveri S., Parra J., Pico J., (2019) El impacto distributivo de impuestos y gastos en Colombia. World Bank.

Nuñez, J., Piraquive, G., Parra, J. (2017). Desigualdad de la riqueza y el ingreso en Colombia. 1-49. DNP, mimeo.

Nuñez, J. y Sánchez, F. (1998) Descomposición de la desigualdad del ingreso laboral urbano en Colombia 1976-1997. Archivos de Macroeconomía. DNP. 086

ONU Mujeres (2018a). El Progreso de las mujeres en Colombia 2018. Consultado en mayo de 2020
ONU Mujeres (2018b). Hacer las promesas realidad: la igualdad de género en la Agenda 2030 para el desarrollo sostenible
ONU Mujeres (2019d). El Progreso de las Mujeres en el Mundo 2019-2020
ONU (2020) Resumen. Informe de políticas: La COVID-19 y la necesidad de actuar en relación con la salud mental
Pérez Murcia, L. (2007). Estabilización social y económica de la población desplazada: ¿bajo qué condiciones se entiende estabilizando social y económicamente un hogar desplazado. Informe preparado para USAID, FUPAD, OIM y DNP.
Rojas, A y Aguilar, W. (2008). Programas familias en acción: impactos en capital humano y evaluación beneficio-costo del programa. Bogota, Departamento Nacional de Planeación, Dirección de Evaluación de Políticas Públicas.
Rubio-Codina, O Attanasio, C Meghir, N Varela, S Grantham-McGregor The socioeconomic gradient of child development: cross-sectional evidence from children 6–42 panel in Bogota J Hum Resour, 50 (2015), pp. 464-483
Sarmiento, E. (2014) Distribución del ingreso con crecimiento es posible. Escuela Colombiana de Ingeniería. Bogota D.C.
Sánchez-Torres, R. M. (2017). Desigualdad del ingreso en Colombia: un estudio por departamentos. Cuadernos de Economía, 36(72), 139-178.
Schady, J. Behrman, M.C. Araujo, R. Azuero, D. Bravo, F. Lopez-Boo, K. Macours, D. Marshall, C. Paxson, and R. Vakis (2015) "Wealth gradients in early childhood cognitive development in five Latin American countries". With N.. Journal of Human Resources Spring; 50(2): 446–463.
Sen, A. (1973). "On Economic Inequality". New York: Norton.
Stiglitz, J. E. (2012). The Price of Inequality: How Today's Divided Society Endangers our Future. New York: W. W. Norton & Company, Inc.
Stats SA (2019) Inequality Trends in South Africa. A multidimensional diagnostic of inequality. Report No. 03-10-19
Piketty, T. (2014). Capital in the Twenty-First Century. Cambridge, Massachusetts: The Belknap
Urrutia, M y Báez, C.R. (2018). Las transferencias condicionadas en Colombia: una historia del programa familias en acción (2001-2018). Technical report, Universidad de los Andes – CEDE.



Chapter Seven

7. Annexes

Annex 1

Annex 1.1: Departmental Series

Table 47 presents the average departmental population growth and by ranges of years. In the first range (1986-2000), the department that grew the most was Guaviare while Cundinamarca showed a decrease. In the second range (2001-2010), the department that grew the most was Vaupes while Caldas had a decrease. In the third rank (2011-2020), the department that grew the most was Cundinamarca while Tolima had the lowest growth. In the fourth range (2021-2030), the department that will grow the most is Vaupes while the one that will grow the least is Nariño.

Table 47: Departmental population growth (1985–2050)

Department	Average	86-00	01-10	11-20	21-30
Antioquia	1.22%	1.68%	1.24%	1.42%	1.35%
Atlantico	1.41%	2.57%	1.50%	1.88%	1.06%
Bogota	1.37%	3.29%	1.39%	0.88%	0.86%
Bolivar	1.20%	2.12%	1.33%	1.35%	0.96%
Boyaca	0.54%	0.44%	0.40%	0.65%	0.69%
Caldas	0.37%	0.33%	-0.24%	0.34%	0.87%
Caqueta	1.08%	2.15%	0.76%	0.50%	1.05%
Cauca	0.91%	1.41%	1.19%	0.98%	0.76%
Cesar	1.63%	2.62%	1.64%	2.35%	1.29%
Cordoba	0.97%	1.60%	1.31%	1.11%	0.66%
Cundinamarca	1.38%	-1.03%	1.68%	4.27%	2.44%
Choco	1.69%	2.83%	2.81%	1.72%	0.83%
Huila	0.99%	1.74%	1.29%	1.15%	0.72%
La Guajira	1.86%	2.50%	2.36%	2.94%	1.36%
Magdalena	1.22%	1.56%	1.61%	1.85%	0.95%
Meta	1.69%	3.60%	2.67%	1.73%	0.69%
Nariño	0.56%	1.27%	0.89%	0.36%	0.19%
Norte de Santander	1.10%	1.89%	1.12%	1.75%	0.60%
Quindio	0.71%	0.75%	0.27%	0.71%	1.18%
Risaralda	0.79%	1.47%	0.63%	0.63%	0.89%
Santander	0.94%	1.61%	1.23%	1.34%	0.68%
Sucre	1.04%	1.50%	1.14%	1.40%	0.94%
Tolima	0.22%	0.55%	0.19%	0.21%	0.24%
Valle del Cauca	0.73%	1.21%	0.63%	0.47%	0.74%
Arauca	1.26%	1.61%	0.66%	2.58%	1.15%
Casanare	1.47%	2.79%	2.29%	1.86%	0.60%
Putumayo	2.03%	3.68%	2.46%	1.90%	1.33%
San Andres	0.59%	2.66%	0.11%	0.31%	0.39%
Amazonas	2.31%	3.40%	2.08%	1.82%	2.12%
Guainia	2.37%	3.33%	3.80%	3.25%	1.29%
Guaviare	2.15%	4.94%	0.24%	1.71%	1.94%
Vaupes	3.56%	3.45%	4.77%	3.51%	4.10%
Vichada	2.10%	3.22%	3.02%	2.38%	1.19%

Source: Own elaboration based on DANE population forecasts

The top 3 of departments during the three years is comprised by Antioquia, Bogota and Valle del Cauca, while the bottom 3 includes Amazonas, Guainia and Vaupes, although by 2020 San Andres enters displacing the department of Amazonas.

Table 48: Departments ranking in population growth (1985–2000–2020)

TOP	Ranking 1985	Ranking 2000	Ranking 2020
1	Antioquia	Bogota	Bogota
2	Bogota	Antioquia	Antioquia
3	Valle del Cauca	Valle del Cauca	Valle del Cauca
4	Cundinamarca	Atlantico	Cundinamarca
5	Santander	Cundinamarca	Atlantico
		…	
28	Vichada	Vichada	Guaviare
29	Guaviare	San Andres	Amazonas
30	Amazonas	Amazonas	San Andres
31	Guainia	Guainia	Guainia
32	Vaupes	Vaupes	Vaupes

Source: Own elaboration based on DANE population forecasts

Annex 1.2: Regional Series

Table 49 presents regional growth by ranges of years. In the first range, the region that grew the most was the Amazon, while the one that grew the least was the Pacific. In the second range, the region that grew the most was the Orinoquia, while the regions of the Coffee and Central Axis were the ones that grew the least. In the third rank, the region that grew the most was the Orinoquia, while the one that grew the least was the Pacific. In the fourth range, the region that will grow the most is the Amazon, while the one that will grow the least is the Pacific.

Table 49: Regional growth (1986–2050)

Region	Total	86-00	01-10	11-20	21-30
Caribbean	1.29%	2.11%	1.52%	1.60%	1.19%
Coffee growing region	1.03%	1.41%	0.94%	1.09%	1.32%
Pacific	0.78%	1.34%	0.94%	0.64%	0.63%
Central	0.96%	0.62%	1.02%	1.78%	1.36%
Orinoquia	1.58%	3.04%	2.35%	1.94%	0.89%
Amazonia	1.72%	3.03%	1.65%	1.40%	1.49%
Bogota	1.37%	3.38%	1.51%	0.77%	0.98%

Source: Own elaboration based on DANE population forecasts

The top 2 of the regions is between the Caribbean region and the Central region in the 3 years, while the bottom 2 is between the Orinoquia region and the Amazon region.

Table 50: Regional ranking (1985–2000– 2020)

TOP	Ranking 1985	Ranking 2000	Ranking 2020
1	Central	Caribe	Caribe
2	Caribe	Central	Central
3	Coffee-growing region	Coffee-growing region	Coffee-growing region
4	Pacific	Pacific	Pacific
5	Bogota	Bogota	Bogota
6	Orinoquia	Orinoquia	Orinoquia
7	Amazonia	Amazonia	Amazonia

Source: Own elaboration based on DANE population forecasts

Annex 1.3: Major Cities Series

The projections of the cities (municipalities) are until the year 2035, therefore, in the first period (1986-2000), the city of Villavicencio grew the most while Manizales M.A. was the city that grew the least. For the second period (2001-2010), the city of Villavicencio maintains the number one position in growth as well as the city of Manizales M.A. maintains the position of lowest growth. In the third period (2011-2020), the cities near the border with Venezuela obtained the highest growth, specifically Bucaramanga M.A. and Cucuta M.A., while the city with the lowest growth was Pasto. Finally, the last period (2021-2035), considers that Medellin M.A. will be the city with the highest growth, while Pasto and Ibague will have the lowest growth.

Table 51: Growth of major cities (1985–2035)

Ciudad	Total	86-00	01-10	11-20	21-35
Bogota	1.68%	3.29%	1.39%	0.88%	0.80%
Medellin M.A.	1.73%	2.28%	1.64%	1.70%	1.26%
Cali M.A.	1.02%	1.65%	0.83%	0.62%	0.78%
Barranquilla M.A.	1.74%	2.61%	1.53%	1.88%	0.92%
Bucaramanga M.A.	1.89%	2.96%	2.05%	1.91%	0.68%
Manizales M.A.	0.71%	0.75%	0.33%	0.81%	0.87%
Pereira M.A.	1.22%	2.06%	0.97%	0.86%	0.78%
Cucuta M.A.	1.77%	3.17%	1.43%	1.91%	0.49%
Pasto	0.65%	1.05%	0.93%	0.38%	0.25%
Ibague	1.12%	2.14%	1.12%	0.87%	0.27%
Monteria	1.32%	2.06%	1.49%	1.25%	0.53%
Cartagena	1.69%	2.94%	1.45%	1.42%	0.78%
Villavicencio	2.50%	4.41%	3.20%	1.85%	0.58%

Source: Own elaboration based on DANE population forecasts

The top 3 largest cities in the three years of reference are: Bogota, Medellin M.A. and Cali M.A. respectively.

Table 52: Ranking of major cities (1985–2000-2020)

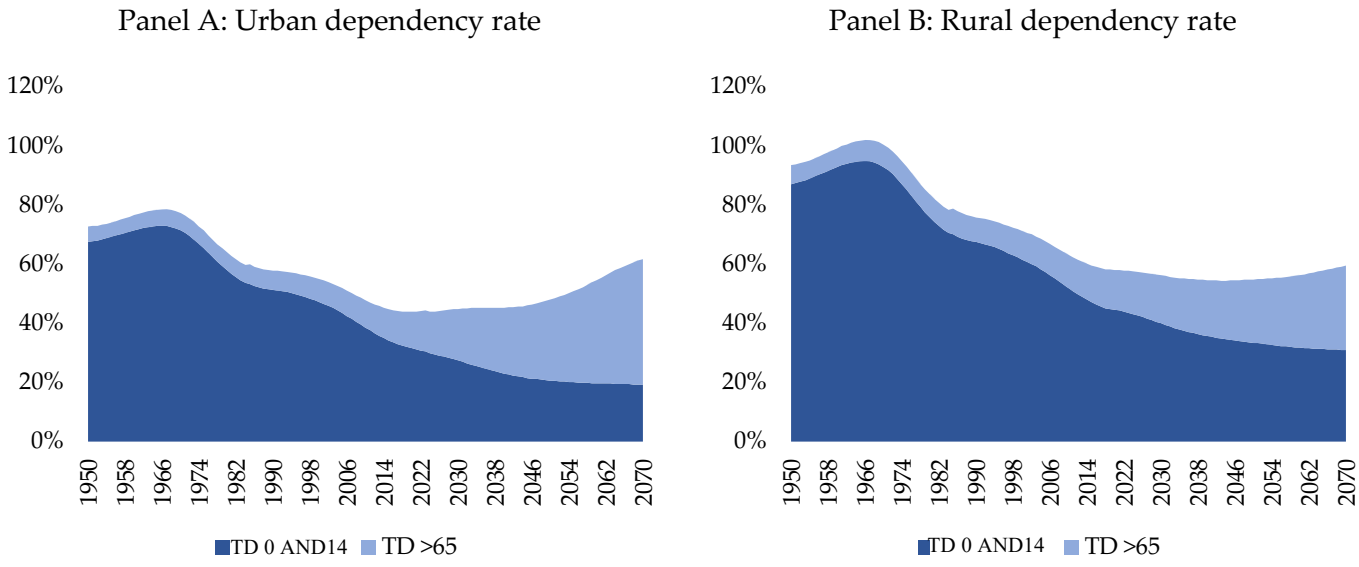
Top	Ranking 1985	Ranking 2000	Ranking 2020
1	Bogota	Bogota	Bogota
2	Medellin M.A.	Medellin M.A.	Medellin M.A.
3	Cali M.A.	Cali M.A.	Cali AM
4	Barranquilla M.A.	Barranquilla M.A.	Barranquilla M.A.
5	Bucaramanga M.A.	Bucaramanga M.A.	Bucaramanga M.A.
6	Cartagena	Cartagena	Cucuta M.A.
7	Manizales M.A.	Cucuta M.A.	Cartagena
8	Cucuta M.A.	Pereira M.A.	Pereira M.A.
9	Pereira M.A.	Manizales M.A.	Manizales M.A.
10	Ibague	Ibague	Villavicencio
11	Pasto	Monteria	Ibague
12	Monteria	Pasto	Monteria
13	Villavicencio	Villavicencio	Pasto

Source: Own elaboration based on DANE population forecasts

Annex 1.4: Rural urban dependency

A breakdown by geographic areas denotes that the rural area has a higher dependency rate for people over 65 compared to the urban area, and this as time progresses. Additionally, the dependency ratio of men is higher than women until 1979, subsequently, the dependency rate for women is higher until 2025, finally, the relationship changes again being higher the dependency rate for men until 20.

Graph 114: Urban and rural dependency rates



Source: Own elaboration based on DANE estimates of the demographic change

Annex 2: Families in Action Program Assessments

The DNP, through the National System of Assessment and Results (SINERGIA, for its Spanish acronym), has constantly monitored the social protection instrument to evaluate the efficiency of the program. In 2004, in collaboration with the Universidad de los Andes, the *Economic Assessment of the Educational Component of the Families in Action Program of Plan Colombia.* The finding is that the return rate of the group belonging to the program was 12.71% higher than the group that, although with similar characteristics, did not access the program. In 2007, the Directorate for the Assessment of Public Policies (DAPP) of the DNP assessed the human capital and benefit-cost impacts of the Families in Action program for 122 municipalities, where 57 were treatment and the remaining 65 were control, estimating the impact of the program on school attendance, health and nutrition of children, labor supply, the labor income of families, household consumption, poverty, social capital and the benefit-cost of this program with positive effects on the variables assessed. Other assessments such as CNC and SINERGIA, 2008, assessed the socio-economic stabilization of displaced beneficiaries and their households, and the effective enjoyment of their rights.

To highlight some assessments of the program, the CNC (2011) carried out the *Impact Assessment of the Families in Action Program in Large Urban Centers,* with a sample collected in the form of a panel[39]. The effects of the program on the quality of education were also assessed, using the ICFES test of the years 2008, 2009 and 2010 and the administrative records of the program (Nuñez et al., 2011).

In 2012, the Temporary Econometrics Union – with the advice of the International Featured Standards (IFS), developed the *Impact Assessment of the Long Families in Action Overall Program in Municipalities of at Least One Hundred Thousand (100,000) Inhabitants in the Key Aspects of Human Capital Development.*

The most recent impact assessment was carried out by the Universidad del Rosario jointly with the Directorate for the Assessment of Public Policies (DAPP) conducted the Assessment of Families in Action on Social Capital in 2017[40]. It is concluded that the program contributes to the construction of social capital in the short term, the non-deaccumulation of social capital among households that end the intervention of the program is proven, and some differential effects are attributed between Afro-descendant populations and households that were affected by negative events (Celis et al., 2017).

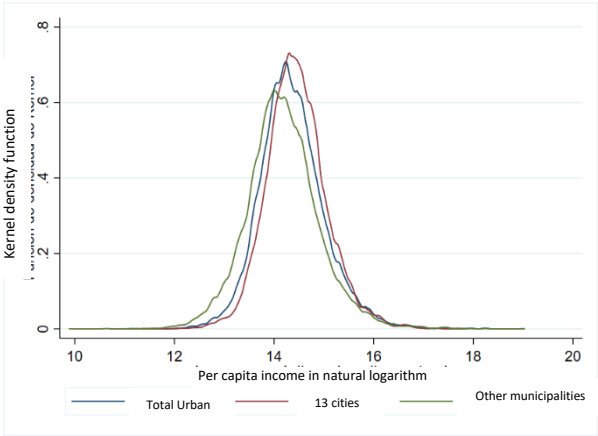
[39] There was a group of 6,151 households as a treatment group and 5,123 households as a control group; based on these samples, the CNN made impact estimates, based on the method of differences in differences with pairing. The work also carries out a census impact assessment based on Sisben II in 2006 and Sisben III in 2010, with which baseline and monitoring scenarios were built.

40 The study uses the first and second measurements of the "Longitudinal Survey of the University of Los Andrés (ELCA, for its Spanish acronym)", and is estimated from models of difference in differences and heterogeneous effects.

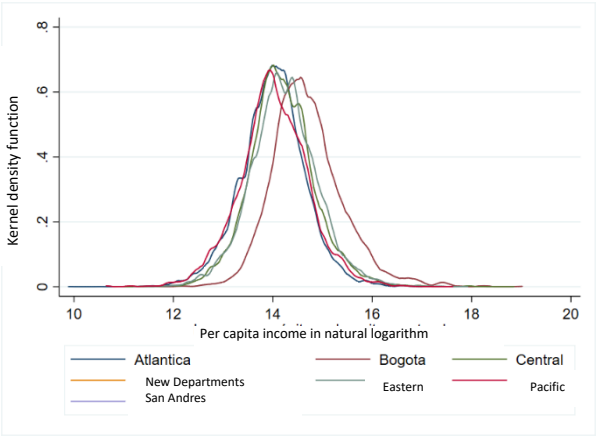
Annex 3: Kernel Distribution geographic areas-income

Graph 115 Kernel distribution

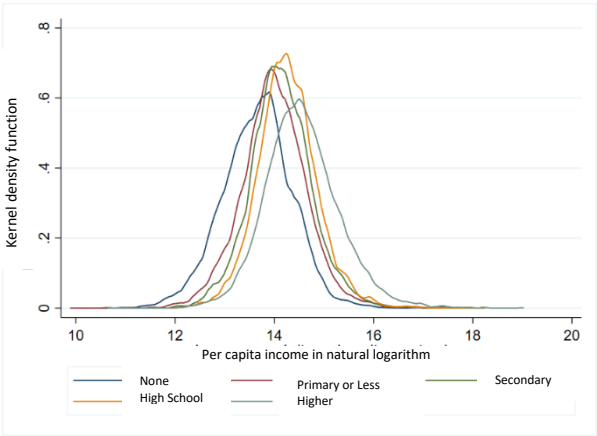
Panel A: Kernel distribution geographic areas



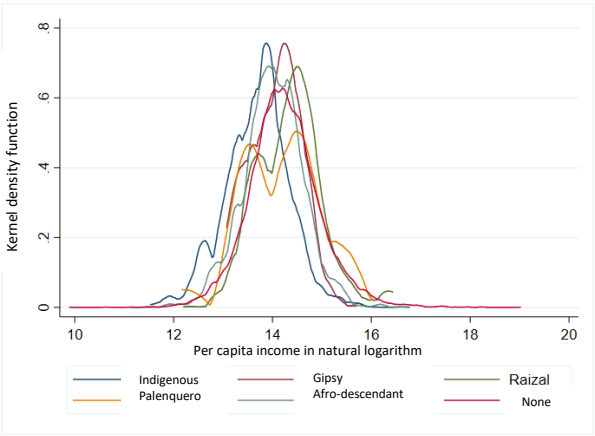
Panel B: Kernel distribution geographic regimes



Panel C: Kernel distribution educational levels



Panel D: Kernel distribution by ethnic group



Annex 4: UCPCA Coefficients

.

Table 53: UC PCA index coefficients

Items	Coefficient	
	2010	2019
Telephone service	.1332101	.0895439
Parabolic	.0991917	.0541993
Internet	.176203	.0692978
washing machine	.1194361	.0549248
Stove	.0754344	.0438268
Oven	.1529579	.1057186
Water heater	.2993801	.1870243
Color TV	.0742749	.0439178
DVF	.1073185	.1069996
Sound equipment	.1100389	.0653551
Computer	.159591	.0877923
Air conditioning	.122226	.0477728
Fan	.0450625	.0227167
Bicycle	.1016037	.0754872
Motorbike	.0670771	.0357682
Cart	.2254105	.1351293
Cellular	.0747659	.0431459
Gas	.0856777	.0473804
Sewer system	.081154	.046063
Vacuum cleaner	.761178	.9178002
Microwave	.2455309	.1651563
Fridge	.0830375	.0459463
Electric power	.0713111	.0422442

Source: Own elaboration based on LIHS data

Annex 5: PCA and MCA estimation approaches

Statistical approaches such as factor analysis (FA), principal component analysis (PCA), and multiple correspondence analysis (MCA) are the common approaches used to calculate asset indexes proposed in the literature (Filmer and Pritchett, 2001; Wittenberg and Leibrant, 2017). If you have k indicators of living standards ($a_1, a_2, \dots, a_k$), you can combine the indicators in the following way:

$$index = w_1 a_1 + w_2 a_2 + \cdots + w_k a_k$$

Where w_1 indicates the weights associated with each indicator. By using the PCA approach, weights are obtained from the first major component, which is defined as a linear combination that represents the greatest variation in the distribution of assets. Each indicator a_i, can be written as a linear combination of k factors or components as follows:

$$a_k = v_{k1} A_1 + v_{k2} A_2 + \cdots + v_{kk} A_k$$

Where A_k are the unobserved components having no correlation with themselves. These can be represented as follows:

$$A_1 = v_{11} \tilde{a}_1 + v_{12} \tilde{a}_2 + \cdots v_{1k} \tilde{a}_k$$

Where the variable $\tilde{a}_{1i}$ indicates a standardized asset variable, $\tilde{a}_{1i} = \frac{a_{1i} - \bar{a}_1}{s_1}$

The first major component, A_1, is the component that explains most of the common covariance of asset variables. We can consider "wealth" as the unobserved underlying variable that is the common factor. (A_1). Therefore, a higher asset ratio implies higher "wealth".

One of the problems with the use of PCA and other similar approaches is that some assets, such as livestock (mainly owned by rural households), could be assigned negative weights. That is why it could end up classifying rural households with livestock below households that do not have assets (Wittenberg and Leibbrandt, 2017). In addition, the asset indexes built using these approaches have zero average values per construction, which is why the calculation of these indices is addressed through the UC PCA approach where these problems are corrected and positive values are presented.

All project framework information of the herein Diagnostic is found on the following QR and link.



https://www.afd.fr/en/carte-des-projets/research-project-inequalities-colombia

Contact :
Felipe Korreales ; korrealesf@afd.fr

#ResearchInequalities

Photo credits: Cover photo: @AdobeStock; Photo chapter 1: @AdobeStock; Photo chapter 2: @Benjamin Petit; Photo chapter 3: @AdobeStock; Photo chapter 4: @ Milo Miloezger; Photo chapter 5:@Carlos Tobón; Photo chapter 6: @Carlos Tobón; Photo chapter 7: @Thibault Hatton



Funded by
the European Union

AFD
AGENCE FRANÇAISE
DE DÉVELOPPEMENT

FEDESARROLLO
Centro de Investigación Económica y Social

DANE
INFORMACIÓN PARA TODOS