

SOUTHMOD

Country report

Colombia

COLMOD v2.4

2019–2023

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About the project

[SOUTHMOD – simulating tax and benefit policies for development](#)

SOUTHMOD is a joint project between the United Nations University World Institute for Development Economics Research ([UNU-WIDER](#)), Southern African Social Policy Research Insights ([SASPRI](#)), and the International Inequalities Institute at the London School of Economics and Political Science ([LSE](#)) in which tax-benefit microsimulation models for selected developing countries are being built. These models enable researchers and policy analysts to calculate, in a comparable manner, the effects of taxes and benefits on household incomes and work incentives for the population of each country.

SOUTHMOD models are currently available for Bolivia (BOLMOD), Colombia (COLMOD), Ecuador (ECUAMOD), Ethiopia (ETMOD), Ghana (GHAMOD), Mozambique (MOZMOD), Peru (PERUMOD), Rwanda (RWAMOD), Mainland Tanzania (TAZMOD), Uganda (UGAMOD), Viet Nam (VNMOD), Zambia (MicroZAMOD), and Zanzibar (ZANMOD). SOUTHMOD models are updated to recent policy systems using national household survey data. This report documents COLMOD, the SOUTHMOD model developed for Colombia. This work was carried out by the Observatorio de Desarrollo y Política Social (ODEPS) at Facultad de Economía, Universidad Externado de Colombia.

The results presented in this report are derived using COLMOD version 2.4, which is part of the SOUTHMOD bundle (SOUTHMOD_A2.0) and runs on EUROMOD software. The report describes the different tax-benefit policies in place, how the microsimulation model picks up these different provisions, and the database on which the model runs. It concludes with a validation of results against external data sources. For further information on access to COLMOD and other SOUTHMOD models, see the [SOUTHMOD page](#), [SOUTHMOD Modelling Conventions](#), and [SOUTHMOD User Manual](#) (UNU-WIDER 2024a; 2024b).

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Contents

- SOUTHMOD Country report i
- Acknowledgements i
- Please cite as i
- About the project i
- Contents ii
- Tables iii
- Acronyms iv
- 1 Basic information..... 1**
 - 1.1 Basic information about the tax–benefit system 1
 - 1.2 Social benefits 2
 - 1.3 Social contributions 4
 - 1.4 Taxes 6
- 2 Simulation of taxes and benefits in COLMOD 7**
 - 2.1 Scope of simulation 7
 - 2.2 Order of simulation and interdependencies 8
 - 2.3 Policy switches 10
 - 2.4 Social benefits 10
 - 2.5 Social contributions 14
 - 2.6 Personal income tax (*tin_s*) 19
 - 2.7 Indirect taxes 23
- 3 Data 24**
 - 3.1 General description 24
 - 3.2 Data adjustment 24
 - 3.3 Imputations and assumptions 25
 - 3.4 Updating 26
 - 3.5 Consumption levels 26
- 4 Validation 26**
 - 4.1 Aggregate validation 26
 - 4.2 Income distribution 27
 - 4.3 Statistics Presenter 27
 - 4.4 Summary of ‘health warnings’ 28
- References 29
- Annex 31

Tables

Table 1.1: Colombian government tax revenue sources, 2019–21.....	6
Table 2.1: Simulation of taxes and social contributions in COLMOD.....	7
Table 2.2: Simulation of benefits in COLMOD.....	8
Table 2.3: COLMOD spine: order of simulation	9
Table 2.4: Health and education component, <i>Familias en Acción</i> (2019).....	11
Table 2.5: Health and education component, <i>Familias en Acción</i> (2020).....	11
Table 2.6: Health and education component, <i>Familias en Acción</i> (2021).....	11
Table 2.7: Health and education component, <i>Familias en Acción</i> (2022).....	11
Table 2.8: Health and education component, <i>Familias en Acción</i> (2023).....	11
Table 2.9: <i>Colombia Mayor</i> transfers (2019).....	12
Table 2.10: Health contribution.....	15
Table 2.11: Pensioners' health contribution for the years 2020–21.....	15
Table 2.12: Pensioners' health contribution starting from 2022.....	15
Table 2.13: Pension contribution.....	16
Table 2.14: FSP contribution for employees and self-employed.....	16
Table 2.15: FSP contribution for pensioners.....	17
Table 2.16: ARL contribution for employer.....	17
Table 2.17: CCF contribution for employers.....	17
Table 2.18: Severance contribution for employers.....	18
Table 2.19: SENA contribution for employers.....	18
Table 2.20: ICBF contribution for employers.....	18
Table 2.21: Taxable income, exemptions, and deductions.....	19
Table 2.22: Personal income tax, schedular system, 2019–23, in UVT.....	20
Table 2.23: Taxable income, exemptions, and deductions.....	21
Table 2.24: Tax schedule for dividends and participations.....	23
Table 3.1: COLMOD database description.....	24
Table A1: Number of employed and unemployed (thousands).....	31
Table A2: Market income in COLMOD: number of recipients (thousands).....	32
Table A3: Market income in COLMOD: annual amounts (thousand million).....	33
Table A4: Tax–benefit instruments included but not simulated in COLMOD: number of recipients/payers (thousands).....	34
Table A5: Tax–benefit instruments included but not simulated in COLMOD: annual amounts (thousand million).....	35
Table A6: Tax–benefit instruments simulated in COLMOD: number of recipients/payers (in thousands).....	36
Table A7: Tax–benefit instruments simulated in COLMOD: annual amounts (thousand million).....	38
Table A8: Absolute poverty rates and income inequality.....	40

Acronyms

ARL	Labour Insurance Administrator
CAN	Andean Community of Nations (<i>Comunidad Andina</i>)
CCF	Private social development funds (<i>Cajas de compensación familiar</i> , Family Compensation Fund)
CCT	Conditional cash transfer (<i>Transferencia monetaria condicional</i>)
CREE	Income tax for equality (<i>Impuesto sobre la renta para la Equidad</i>)
DANE	National Administrative Department of Statistics (<i>Departamento Administrativo Nacional de Estadística</i>)
DIAN	Department for National Taxes and Customs (<i>Dirección de Impuestos y Aduanas Nacionales</i>)
DPS	<i>Departamento de Prosperidad Social</i>
ENCV	Living Conditions National Survey (<i>Encuesta Nacional de Calidad de Vida</i>)
EPS	Health-promoting entity (<i>Entidad Promotora de Salud</i>)
FSP	Pension Solidarity Fund (<i>Fondo de Solidaridad Pensional</i>)
GEIH	Great Integrated Household Survey (<i>Gran Encuesta Integrada de Hogares</i>)
HDI	Household disposable income
IBC	Base income for contributions (<i>Ingreso base de cotización</i>)
ICA	Commerce and industry tax (<i>Impuesto de Industria y Comercio</i>)
ICBF	Colombian Family Welfare Institute (<i>Instituto Colombiano de Bienestar Familiar</i>)
IES	Tertiary education institution (<i>Institución de educación superior</i>)
IPM	Multidimensional poverty index
IPS	Health-providing institutions (<i>Instituciones Prestadoras de Servicios de Salud</i>)
POS	Mandatory health plan (<i>Plan Obligatorio de Salud</i>)
RAIS	Fully funded pension system (<i>Régimen de Ahorro Individual con Solidaridad</i>)
RPM	Pay-as-you-go pension system (<i>Régimen de Prima Media con Prestación Definida</i>)
SENA	National Learning Service (<i>Servicio Nacional de Aprendizaje</i>)
SIC	Social insurance contributions (<i>Cotizaciones a la seguridad social</i>)
SISBEN	<i>Sistema de Identificación de Potenciales Beneficiarios de Programas Sociales</i>
SMMLV	Statutory monthly minimum wage (<i>Salario Mínimo Mensual Legal Vigente</i>)
UVT	Tax units (<i>Unidad de valor tributario</i>)

1 Basic information

1.1 Basic information about the tax–benefit system

The Colombian peso (COP) is the national currency; US\$1= COP 4,410.49 on 01 June 2023.

The social security system recognizes three kinds of pensions: old-age, disability, and survivors' pensions. In no cases will the monthly pension amount be less than the current value of the monthly minimum wage.

The contributory health system in Colombia is administered by both public and private health-promoting entities (*Entidades Promotoras de Salud*, EPS). Services are provided by health-providing institutions (*Instituciones Prestadoras de Servicios de Salud*, IPS). The system is administered and regulated by the Ministry of Health.

The old-age pension depends on the number of weeks of contributions to social security and the recipient's age. In 2022 pension age was 57 years for women and 62 years for men. Each worker has the right to choose one of two pension systems: a public pension, also called an *average premium with defined benefits regime* (*Régimen de Prima Media con Prestación Definida*, RPM), or a private pension consisting of individual saving accounts (*Régimen de Ahorro Individual con Solidaridad*, RAIS). This will affect future entitlements.

Private pension funds are part of a fully funded system where contributions are deposited in a personal account administered by a private fund which uses them for financial investments. Future benefits depend on contributions and returns on investments. The public pension fund is part of a pay-as-you-go system, where contributions are mostly deposited in a public fund administered by a government agency (*Colpensiones*).

The fiscal year in Colombia starts on 1 January and ends on 31 December. The authority in charge of national taxes is the Department for National Taxes and Customs (*Dirección de Impuestos y Aduanas Nacionales*, DIAN). Local taxes are collected by each municipality and are levied on properties, vehicles, and industrial and commercial activities (*Impuesto de Industria y Comercio*, ICA).

Income is taxed individually in Colombia (see Article 8 of the tax code, '*Estatuto Tributario*').

From 2017 a schedular declaration system was introduced instead of the IMAN and IMAS systems from Law 1607 of 2012. To determine taxable income in this system incomes are assigned to one of three schedules: (1) labour, capital, and non-labour income, (2) pensions, and (3) dividends. Withholdings are made for tax payments. According to the tax code (*Estatuto Tributario*), if withholdings exceed personal income tax liabilities taxpayers need to complete a tax form but can request reimbursement. If withholdings are lower than tax liabilities, taxpayers need to complete a tax form and pay the difference.

There are no 'authentic' means-tested benefits in Colombia. There are three main safety net instruments: *Familias en Acción*, a conditional cash transfer programme to promote health and education among children; *Colombia Mayor*, a non-contributory pension scheme; and *Jóvenes en Acción*, a conditional cash transfer programme that benefits youth in their tertiary education. They use a system of proxy means-testing based on a composite welfare index known as SISBEN (*Sistema de Identificación de Potenciales Beneficiarios de Programas Sociales*, or in English: Potential Identification System for Beneficiaries of Social Programmes). SISBEN is also understood as the census carried out in the country and the resulting administrative register used to construct the index. The index is based on

a series of variables containing information on household characteristics, such as health, education, dwelling, individual vulnerability, and contextual vulnerability. For SISBEN version IV the index tries to measure households' income-generating capabilities. There are four groups inside the SISBEN classification: A (extreme poor), B (poor but not extreme poor), C (vulnerable but not poor), and D (not vulnerable).

1.2 Social benefits

The social protection and safety net in Colombia is divided into two exclusive systems: contributory and non-contributory. The contributory system is intrinsically connected to the formal labour market.

1.2.1 Contributory social protection

Benefit 1—Old-age pensions (*Pensión ordinaria por vejez*): If a worker pays into a private pension fund, they will receive a pension if there are enough funds to cover the monthly payment of 110 per cent of the minimum wage, regardless of age and number of contributions. If the age criterion is met and a minimum number of contributions has been made (1,150 weeks), the worker could receive a minimum-wage pension even if the funds cannot finance it. This is because a fraction of the monthly contribution is used for insurance for this contingency. If the age criterion is met but not the number of contributions or capital required for the minimum-wage pension, the worker can opt for one of two alternatives: continue contributing until reaching the necessary number of weeks, or ask for the return of the balance in the personal account plus any return on investments.

If a worker is in the public sector fund, future benefits will depend on the number of contributions made (a minimum of 1,300 weeks is required), their monthly amount, and meeting the age-eligibility criteria. Pension amounts depend on IBC (*Ingreso base de cotización*—the labour income base from which contributions were made) in the ten years prior to pension age and also on a replacement rate (i.e. the percentage of income that will be paid). The replacement rate depends on income measured in minimum wages and number of contributions.¹ The more weeks contributed, the higher the replacement rate, but higher income implies a lower replacement rate. If the age criterion is met but not the number of contributions, the worker can opt for one of two alternatives: continue contributing until reaching the necessary weeks, or ask for substitutive compensation, which is proportional to IBC and number of contributions (Ministerio del Trabajo 2014).

Benefit 2—Disability pensions (*Pensión por invalidez*): A worker is considered eligible for a disability pension if during the last three years they contributed for at least 50 weeks and have been declared to have a loss of at least 50 per cent labour capacity due to a non-labour-related accident or illness. The worker is also considered eligible for a disability pension with their insurer if they have been declared to have a loss of at least 50 per cent labour capacity due to a labour-related accident or illness, or to permanent partial disability compensation if they have been declared with a loss of 5–49.9 per cent due to a work-related cause. For the latter, compensation is 2–24 IBCs (Ministerio del Trabajo, 2019a).

Benefit 3—Survivors' pensions (*Pensión de sobrevivientes*): Family relatives (spouse or children under 18 or other economic dependants) of a deceased worker or pensioner, due to a non-labour-related accident or illness, are entitled to a pension only if the worker's contributions during the last three years prior to death cover at least 50 weeks. If the death was a labour-related accident or illness, relatives are entitled to a pension with its ARL. A monetary assistance equivalent to one month of labour income (but 5–ten minimum wages) to cover the funeral expenses of a deceased worker due to a labour-related accident or illness is also provided by the insurer.

¹ As no pension could be less than the minimum wage and contributions have an upper limit of 25 minimum wages, the replacement rate is 55–100 per cent.

Benefit 4—Temporary sickness absence: When a worker is unable to work due to a work-related cause, they are entitled to receive full wages for each day of absence up to 180 days. The maximum period can be extended for another 180 days after evaluation by the insurer.

In the case of a non-labour-related accident or illness, the worker receives paid leave until recovery. The first two days of leave are at 100 per cent of the worker's wage, and paid by the employer. For days 3–90 the payment is made by the EPS at two-thirds of the daily labour income or daily minimum wage, whichever is higher. For days 90–180 it is paid by the EPS at a 50 per cent rate (under the same condition as before). After this period the worker should be considered for a pension unless there exists a possibility for rehabilitation, in which case the period is extended for another 180 days.²

Benefit 5—Maternity leave: This consists of 18 weeks of paid leave for women, starting at least two weeks before expected childbirth. To be eligible the worker must have contributed for the whole pregnancy period. The benefit consists of a payment from the EPS, equivalent to the wage paid in the month prior to the leave.³

Benefit 6—Paternity leave: This consists of eight working days of paid leave for men, starting at childbirth. To be eligible the worker must have contributed for the whole pregnancy period. The benefit consists of a payment from the EPS, equivalent to the daily wage paid in the month prior to the leave.⁴

Benefit 7—Severance insurance: In the event of being made unemployed, a person can withdraw the complete balance of their severance account. Partial withdrawals from the account can also be made to finance a home purchase or for repairs, and also to finance higher education studies for the worker or their family members. In the event of a worker's death, family relatives are entitled to the balance of the severance account.⁵

1.2.2 Non-contributory social protection

Benefit 8—Colombia Mayor: This is a state-subsidised pension programme. It has its origins in 2003 as an in-kind and in-cash transfer programme for the elderly, without much success. However, it was relaunched in 2012 as an in-cash transfer programme supporting close to 1.6 million Colombians in old age in 2020. An extraordinary payment due to the COVID-19 emergency was scheduled from April 2020 to June 2020.⁶ The programme is partially means-tested (the only check is related to not receiving a pension) and beneficiaries must be classified in SISBEN IV groups A and B, and must be at least three years younger than retirement age (57 for women and 62 for men). Despite targeting the poor elderly, the programme is not universal. A person applies to their local authority to receive the subsidy and is kept on a waiting list. Inclusion depends mainly on the availability of resources in the Pension Solidarity Fund.

Benefit 9—Familias en Acción: This is a conditional cash programme (CCT) aimed at promoting human capital accumulation and alleviating and reducing poverty by complementing income. It was launched in 2001 as a response to the economic crisis in the country at the end of the 1990s. All eligible households classified in SISBEN IV groups A or B and with at least one child are eligible to receive the transfer. It consists of two components: nutritional and educational. The nutritional (health) component is given one per family to families with at least one child under the age of 6. It consists of a bimonthly payment conditional on children receiving all relevant medical checks in their respective IPS

² Decree 0780 of 2016.

³ Colombia Labour Code, Art. 236.

⁴ Law 1468 of 2011.

⁵ Law 50 of 1990, Art. 98.

⁶ Discretionary contributions from local governments could increase this amount.

relating to growth and development for their age. The education component is given one per student between the ages of 4 and 18, but only for up to three children in the same family. It consists of a bimonthly stipend for children in primary education, children in secondary education (up to eight years), for children in secondary education, and in the last year of secondary education. It is conditional on two commitments: first, each child should attend at least 80 per cent of classes and not lose two academic years; second, if a participant is 18 or 19 years old they should be in at least tenth grade, and if they are 20 years old they should be in at least 11th grade. During the COVID-19 pandemic beneficiaries received an extraordinary payment.

Benefit 10—Non-contributory health: Eligibility for non-contributory health depends on SISBEN scores. Households need to be classified in SISBEN IV groups A, B, or C, and not be able to pay for the contributory plan. In-kind benefits of subsidised health affiliation are defined in the Plan Obligatorio de Salud (POS, the mandatory health plan). Since 2012 the services plan has been the same for both regimes (contributory and non-contributory). Cash benefits, such as for temporary sickness absence or paternity leave, are not provided in this regime.

Benefit 11—Ingreso Solidario: This is an emergency cash transfer programme created to support households that are vulnerable, or in poverty and extreme poverty, classified as SISBEN IV groups A, B, or C, due to the COVID-19 pandemic. The beneficiaries are households not enrolled in any national cash transfer programme (*Familias en Acción*, *Colombia Mayor*, *Jóvenes en Acción*, and VAT refund).

Benefit 12—VAT refund: This is a conditional cash transfer for those households that are among the poorest in the programme *Familias en Acción* and the elderly who are part of the priority list of *Colombia Mayor*. Households need to be classified in SISBEN IV groups A or B. About one million people are beneficiaries.

Benefit 13—Unemployment subsidy: This is a cash transfer for unemployed people, equivalent to two statutory monthly minimum wages (*Salario Mínimo Mensual Legal Vigente*, SMLLV), distributed over a period of three months. It is for those formal workers who, during the time they have been affiliated with the Family Compensation Fund (CCF) have made their payments to the CCF for at least one continuous or discontinuous year in the course of the last five years (2015–20).

1.3 Social contributions

Social insurance contribution 1: Social insurance contributions (SICs) finance pensions and other contributory benefits (e.g. severance pay). Previous contributions determine eligibility and the amount of contributory benefits. There are eight SICs: pension contribution, health contribution, severance payment, private social development funds, Pension Solidarity Fund contributions, occupational risk insurance, the National Learning Service (*Servicio Nacional de Aprendizaje*, SENA), and the Colombian Family Welfare Institute (*Instituto Colombiano de Bienestar Familiar*, ICBF). Contributions are based on payments made by employees and employers. Contributions are not based on IBC lower than the minimum wage, and an upper limit is set for the base at 25 minimum wages. For independent workers, IBC is based on 40 per cent of monthly income but within the upper and lower limits mentioned. In Colombia minimum wage and contributions to the social security system do not differ across regions. Since Law 100 of 1993 the system has been managed by both private and public enterprises, with government supervision.

Social insurance contribution 2—Pension contribution: Mandatory for salaried and independent workers. It consists of a payment of 16 per cent of IBC.⁷ For wage earners contributions are divided

⁷ In the RAIS the 16 per cent contribution is divided as follows: 11.5 per cent to the personal account, 3 per cent for administration and premiums for disability and surviving dependants, and 1.5 per cent to the guaranteed minimum pension

between employee (4 per cent) and employer (12 per cent). For independent workers the contribution is entirely assumed by the worker, and the IBC is 40 per cent of their income.

Social insurance contribution 3—Pension contribution reduction: Due to the COVID-19 pandemic the mandatory pension payments in April and May 2020 were smaller. The temporary rate established for these two months was 3 per cent of the IBC, where 75 per cent of this was paid by the employer and the other 25 per cent by the employee. Independent employees assumed the whole 3 per cent payment. However, this measure was declared unenforceable by sentence C-258 of 2020, and a system was ordered by the constitutional court to provide the missing amounts for the periods mentioned.

Social insurance contribution 4—Pension Solidarity Fund (Fondo de Solidaridad Pensional, FSP): FSP is a public fund established to subsidise pension contributions of vulnerable workers or to provide non-contributory pensions to the poor elderly. It is funded through an additional contribution, an employee payroll tax of 1–2 per cent of the IBC for IBCs above four minimum wages.

Social insurance contribution 5—Health contributions: Mandatory for salaried and independent workers. These consist of a payment of 12.5 per cent of the IBC. For wage earners, contributions are divided between the employee (4 per cent) and employer (8.5 per cent). However, the 2012 tax reform eliminated the employer contribution for most businesses and replaced it with the CREE tax.⁸ For independent workers the contribution is entirely assumed by the worker.

Social insurance contribution 6—Severance payment: Mandatory for salaried workers. The contribution is exclusively paid by the employer and is equivalent to one month of wages for each year of work. As the contribution is a lump-sum payment once per year (usually at the start of the calendar year), a yearly interest of 12 per cent is recognized on the contribution. If the labour contract is for a fixed term the contribution and its interest are paid directly to the employee at the end of their contract. On the other hand, if the contract is of indefinite duration the yearly payments plus interest are deposited to the worker's severance account, which is administered by a financial company (public or private).

Social insurance contribution 7—Private social development funds (Cajas de Compensación Familiar, CCF): Mandatory for salaried workers. It consists of a payment of 4 per cent of the IBC, and is exclusively paid by employers (Ministerio de Trabajo, 2014).

Social insurance contribution 8—Occupational risk insurance: Mandatory for wage earners and paid fully by the employer. In the case of independent workers, it is voluntary unless required by specific contract clauses. The contribution is proportional to labour income. The rate varies between 0.5 and 6 per cent of the IBC, depending on the class of activity carried out by the worker, with higher rates for more risky activities.⁹

Social insurance contribution 9—SENA and ICBF: Mandatory for salaried and formal workers. Since the 2012 tax reform, workers must be in non-profit enterprises or earning more than ten minimum wages. It is paid fully by the employer. For SENA the contribution is 2 per cent of the IBC, and 3 per cent for ICBF.

Social insurance contribution 10—Weekly contributions: Decree 2616 of 2013 proposes weekly contributions with the objective that dependent workers with a part-time employment contract of

fund (FGPM in Spanish). In the RPM the 16 per cent contribution is divided as follows: 13 per cent finances the old-age pension, the remaining 3 per cent finances administrative costs and disability and survivor pensions.

⁸ The 8.5 per cent contribution is still mandatory for incomes above ten minimum wages and for employers not liable to pay income tax (i.e. government, education institutions, NGO, etc.)

⁹ Law 100 of 1993, Book 3, Chapter 1.

fewer than 30 days and whose remuneration is less than one SMMLV are affiliated to pension, labour risks, family subsidy, health, and mechanisms for the protection of the unemployed. Employers must carry out the worker's affiliation process to the Labour Risk Administrator (ARL) and the Family Compensation Fund; in addition, employers must make contributions through the PILA (*Plantilla Integrada de Liquidación de Aportes*), where the employer contributes 12 per cent and the worker 4 per cent for a total contribution of 16 per cent of labour income. Resolution 5094 of 2013 establishes that the minimum weekly contribution is based on one-quarter of one SMMLV, and if an employee works 1–7 days they must contribute one week; if an employee works 8–14 days they must contribute two weeks; if an employee works 15–21 days they must contribute three weeks; and if an employee works 22–30 days they must contribute four weeks. In Colombia a large proportion of workers are full-time; part-time workers are more likely to be employed in the informal sector. In 2019, 60,000 part-time workers in 10,000 companies made weekly contributions representing 0.4 per cent of total formal employment (Otero-Cortés et al. 2021). Given the very low number of workers in this scheme, we omit its simulation.

1.4 Taxes

Overview: Colombian national government income comes mainly from two sources: taxes and oil and minerals (i.e. taxes and profits). Table 1.1 presents tax revenue sources for the years 2019–21. It is clear that most of the revenue is coming from income tax (49.84, 52.18, and 48.89 per cent, respectively, for each year); personal income tax has a reduced share in total revenue, about 1.2 per cent of GDP, with the biggest burden being on income tax for businesses at 5 per cent of GDP (OECD 2021). Businesses also pay the income tax for equality (*Impuesto sobre la renta para la Equidad*, CREE) tax (0.04 per cent for 2020), part of the wealth tax and several municipal taxes. However, the CREE is being eliminated with the 2016 tax reform (Law 1819 of 2016), effective since 2017.

Table 1.1: Colombian government tax revenue sources, 2019–21

Tax	Share (% 2019)	Share (% 2020)	Share (% 2021)
Income tax	49.84	52.18	48.89
VAT	23.34	22.19	23.31
Financial transactions tax	5.51	5.62	5.53
Wealth tax	0.59	0.67	0.62
Consumption tax	1.53	1.01	0.94
Petrol and diesel tax	1.03	0.90	1.03
Income tax for equality (CREE)	0.07	0.04	0.02
External sector (taxes and tariffs)	16.71	16.23	18.68
Other	1.38	1.16	0.99
Total	100.00	100.00	100.00

Notes: results sometimes different to 100% due to rounding errors.

Source: annual revenue from DIAN (2019–21).

Tax 1—Personal income tax (Impuesto a la renta de personas naturales): In Colombia income is taxed individually. Incomes are converted to tax units (*Unidades de valor tributario*, UVT) as the amount payable relative to income for each band is established in these units. For 2022 1 UVT = COP38.004. The tax is levied on labour, pension, property, and dividend income, with tax on income from dividends introduced in 2017. The current system uses a schedular procedure in which different income concepts are taxed at different marginal rates.

Tax 2—Property tax (Impuesto predial): This is a yearly tax levied on property that owners (natural and legal) pay to their municipality. Rates range between 0.2 and 3.3 per cent of property value, which is self-declared but must be at least equal to cadastral records.

Tax 3—Motor vehicle tax (Impuesto a los vehículos): This is a yearly tax levied on motor vehicles that owners (natural and legal) pay to their municipality. Rates range between 0.5 and 3.5 per cent of vehicle value, which is determined by the Ministry of Transport.

Tax 4—VAT (Impuesto a las ventas): An indirect tax on the purchase of all goods and services, with three rates: 0 (exempt), 5 (reduced rate), and 19 per cent (general rate) as of 2016. The tax excludes some goods and services.

Tax 5—Consumption tax (Impuesto al Consumo): An indirect tax on the purchase of the following goods and services: restaurants, mobile services, cars, and motorbikes.

2 Simulation of taxes and benefits in COLMOD

2.1 Scope of simulation

Tables 2.1 and 2.2 present, respectively, the tax and benefit components included in the model. The table differentiates between those components that are included in the model but not simulated and those that are simulated in COLMOD, and provides the reasons why simulation was not feasible. The model also includes policy systems for 2014–18, but the country report focuses only on 2019–23.

Table 2.1: Simulation of taxes and social contributions in COLMOD

	Variable name(s)	Treatment in COLMOD 2019–23	Why not fully simulated?
Personal income tax	<i>tin_s</i>	S	
Employee health contribution	<i>tsceehL_s</i>	S	
Employee pension contribution	<i>tsceepi_s</i>	S	
Employee FSP contribution	<i>tscee00_s</i>	S	
Self-employment health contribution	<i>tscsehL_s</i>	S	
Self-employment pension contribution	<i>tscsepi_s</i>	S	
Self-employment FSP contribution	<i>tscse00_s</i>	S	
Employer pension contribution	<i>tscerpi_s</i>	S	
Employer severance (cesantias) contribution	<i>tscersv_s</i>	S	
Employer ARL contribution	<i>tscerac_s</i>	S	
Employer health contribution	<i>tscerhL_s</i>	S	
Employer CCF contribution	<i>tscer01_s</i>	S	
Employer SENA contribution	<i>tscer02_s</i>	S	
Employer ICBF contribution	<i>tscer03_s</i>	S	
VAT	<i>tva_s</i>	S	
Consumption tax	<i>tco_s</i>	S	

Notes: ‘-’ policy did not exist in that year; ‘E’ policy is excluded from the model as it is neither included in the microdata nor simulated; ‘I’ policy is included in the microdata but not simulated; ‘PS’ policy is partially simulated as some of its relevant rules are not simulated; ‘S’ policy is simulated although some minor or very specific rules may not be simulated.

Source: authors’ compilation.

Table 2.2: Simulation of benefits in COLMOD

	Variable name(s)	Treatment in COLMOD 2019–23	Why not fully simulated?
Old-age pension	<i>poa</i>	I	No data on contribution records
Disability pension	<i>pdi</i>	I	No data on contribution records
Survivors' pension	<i>psu</i>	I	No data on contribution records
Social assistance child CCT (<i>Familias en Acción</i>)	<i>bsach_s</i>	S	
Social assistance subsidised pension (<i>Colombia Mayor</i>)	<i>bsaoa_s</i>	S	
COVID-19 social assistance (<i>Ingreso Solidario</i>)	<i>bsa01_s</i>	S	
VAT return (<i>Devolución del IVA a hogares pobres</i>)	<i>bsa00_s</i>	S	
Social assistance tertiary education (<i>Jóvenes en Acción</i>)	<i>bsaet_s</i>	S	
Simulated unemployment benefit (<i>Subsidio de Desempleo</i>)	<i>bun_s</i>	S	

Notes: '–' policy did not exist in that year; 'E' policy is excluded from the model as it is neither included in the microdata nor simulated; 'I' policy is included in the microdata but not simulated; 'PS' policy is partially simulated as some of its relevant rules are not simulated; 'S' policy is simulated although some minor or very specific rules may not be simulated.

Source: authors' compilation.

2.1.1 Structural changes

In social contributions, starting from 2020, there has been a modification in the health contribution for pensioners, reducing the contribution rate for pensions up to 2 SMMLV.

In benefits, changes were made in the *Familias en Acción*, *Colombia Mayor*, *Jóvenes en Acción*, unemployment subsidy, and *Ingreso Solidario* programmes. Starting from 2023, the amount of the unemployment subsidy decreased. From 2020, in the *Colombia Mayor* programme, the amount was unified for all departments except Bogotá. In March 2023, the eligibility conditions and amounts for the *Familias en Acción* programme were changed, introducing a new classification of departments for the allocation of amounts. Starting from 2023, the *Jóvenes en Acción* programme changed its age eligibility criterion. Additionally, the *Ingreso Solidario* programme was finished in 2023.

In December 2022, with the tax reform, there were changes in the income tax. In this tax, the limit for the 25 per cent exemption of labour income was modified to 790 UVT per year. Additionally, the established limit for exemptions and deductions was modified.

2.2 Order of simulation and interdependencies

Table 2.3 shows the order in which the policies in COLMOD are simulated. After default definitional policies, SICs are simulated first as they are deducted from taxable income in the simulation of personal income tax. Benefits are then calculated and then income taxes.

Table 2.3: COLMOD spine: order of simulation

Policy	CO_2019	CO_2020	CO_2021	CO_2022	CO_2023	Description of the instrument and main output
<i>uprate_co</i>	On	On	On	On	On	DEF: UPRATING FACTORS
<i>constdef_co</i>	On	On	On	On	On	DEF: CONSTANTS
<i>ilsdef_co</i>	On	On	On	On	On	DEF: STANDARD INCOME LISTS
<i>ildef_co</i>	On	On	On	On	On	DEF: MODEL-SPECIFIC INCOME LISTS
<i>ildef_stats_co</i>	On	On	On	On	On	DEF: STATS PRESENTER INCOME LISTS
<i>ildef_exp_co</i>	On	On	On	On	On	DEF: EXPENDITURE INCOME LISTS (COICOP)
<i>tundef_co</i>	On	On	On	On	On	DEF: ASSESSMENT UNITS
<i>yem_co</i>	Off	Off	Off	Off	Off	DEF: Minimum wage (Salario minimo mensual)
<i>neg_co</i>	Off	Off	Off	Off	Off	DEF: RECODE NEGATIVE INCOMES TO ZERO
<i>ses_co</i>	On	On	On	On	On	DEF: Equivalence scales
<i>spl_co</i>	On	On	On	On	On	DEF: Poverty lines
<i>tscee_co</i>	On	On	On	On	On	SIC: Simulated SIC employee (contribuciones a SS de empleados)
<i>tscese_co</i>	On	On	On	On	On	SIC: Simulated SIC self-employed (contribuciones a SS de cuenta-propias)
<i>tscp_e_co</i>	On	On	On	On	On	SIC: Simulated SIC pensioner (contribuciones a SS de pensionados)
<i>tscot_co</i>	On	On	On	On	On	SIC: Simulated SIC others (contribuciones a SS de no trabajadores ni pensionados)
<i>tscer_co</i>	On	On	On	On	On	SIC: Simulated SIC employers (contribuciones a SS del empleador)
<i>bun_co</i>	N/A	On	On	On	On	BEN: Simulated unemployment benefit (Subsidio de Desempleo)
<i>bsaoa_co</i>	On	On	On	On	On	BEN: Social assistance subsidised pension (Colombia Mayor)
<i>bsach_co</i>	On	On	On	On	On	BEN: Social assistance child CCT (Familias en Acción)
<i>bsaet_co</i>	On	On	On	On	On	BEN: Social assistance tertiary education (Jóvenes en Acción)
<i>bsavat_co</i>	N/A	On	On	On	On	BEN: VAT return (Devolución del IVA a hogares pobres)
<i>bsais_co</i>	N/A	On	On	On	Off	BEN: COVID-19 social assistance (Ingreso Solidario)
<i>tinord_co</i>	Off	Off	Off	Off	Off	TAX: Income tax-ordinary declaration (Impuesto a la renta de personas naturales-sistema ordinario) (2014–16)
<i>tiniman_co</i>	Off	Off	Off	Off	Off	TAX: Income tax-IMAN for EE declaration (Impuesto a la renta de personas naturales declaracion via IMAN para empleados) (2014–16)
<i>tinimasee_co</i>	Off	Off	Off	Off	Off	TAX: Income Tax-IMAS for EE declaration (Impuesto a la renta de personas naturales declaracion via IMAS para empleados) (2014–16)
<i>tinimasse_co</i>	Off	Off	Off	Off	Off	TAX: Income Tax-IMAS for SE declaration (Impuesto a la renta de personas naturales declaracion via IMAS para cuenta propia) (2014–16)
<i>tinschedular_co</i>	On	On	On	On	On	TAX: Income tax schedular system (Impuesto a la renta-declaración cedular) (2017–)
<i>tin_co</i>	On	On	On	On	On	TAX: Income tax (Impuesto a la renta de personas naturales)
<i>tincovid_co</i>	N/A	On	N/A	N/A	N/A	TAX: COVID income tax for public workers or pensioners
<i>tva_co</i>	On	On	On	On	On	TAX: Value added tax (IVA, impuesto a las ventas)
<i>tco_co</i>	On	On	On	On	On	TAX: Consumption tax (Impuesto al Consumo)
<i>xhhadj_co</i>	On	On	On	On	On	DEF: Adjust consumption to new disposable income
<i>output_std_co</i>	On	On	On	On	On	DEF: STANDARD OUTPUT INDIVIDUAL LEVEL
<i>output_std_hh_co</i>	Off	Off	Off	Off	Off	DEF: STANDARD OUTPUT HOUSEHOLD LEVEL

Notes: DEF, definitional policy; SIC, social insurance contribution policy; BEN, benefit policy; TAX, tax policy.

Source: authors' compilation.

2.3 Policy switches

By default, COLMOD uses the national poverty line to calculate headcount poverty rates. The model also contains an extension switch ('POV'), which allows the user to employ the extreme poverty line instead of the standard line for model simulations.

2.4 Social benefits

2.4.1 Social assistance for children: Familias en Acción (bsach_s)

Definitions: *Familias en Acción* is a conditional cash transfer programme designed to alleviate poverty in the short run through monetary incentives and in the long run through better health and increased human capital for the targeted child. This conditional transfer has two components: health and education.

Eligibility conditions:

- Health: for families with at least one child no older than seven years old. This component complements the income of the families to increase spending on food for children that live in extreme poverty to improve their health. From March 2023, for families with children under 6 years old.
- Education: for families with a child of 7–17 years. This component tries to reduce absence and drop-out for children in primary and secondary education. From March 2023, for families with a child of 5–20 years who is currently enrolled in an educational institution from grades 0 to 11.

Income test: *Familias en Acción* is a proxy means-test benefit—that is, it is based on SISBEN. In order to be eligible for this benefit families must be in SISBEN group A or B. In 2023, families in the SISBEN groups A, B, or C are eligible.

Conditionality: The health component is conditional on children complying with all relevant medical checks of growth and development for their age, and they cannot be beneficiaries of other programmes of ICBF. The education component is conditional on each child attending at least 80 per cent of classes in a cycle of two months and not losing two academic years or more. The children must attend primary or secondary school.

Benefit amount: The amount paid depends on each municipality category (Tables 2.4–2.7).¹⁰ There must be at least one child of seven years or younger per household who undergoes periodical medical checks. The model assigns the payment to the head of the household. The amount increases yearly with the CPI for low-income households. From March 2023, a new classification of departments into very high priority, high priority, and others is introduced.¹¹ The limits of the amounts were established according to the criteria of the SISBEN group and the department, as shown in Table 2.8. These are amounts received bimonthly, and the sum of the health and education components must not exceed COP1,000,000.¹²

¹⁰ In the first group are families in Bogotá City. In the second group are families in any other department's (state's) capital city. The third group is composed of families in towns with a multidimensional poverty index (IPM) less than or equal to 70 per cent. The fourth group is composed of families in towns with an IPM higher than 70%.

¹¹ The departments of very high priority have a prevalence of child malnutrition and high incidence of multidimensional poverty (highest quintile). The high-priority departments have a prevalence of child malnutrition and municipalities with Programs for Development with a Territorial Approach (PDET).

¹² Resolution 542 of March 16, 2023.

Table 2.4: Health and education component, Familias en Acción (2019)

Group	Health	Education				
		Pre-primary school	1-5 primary	6-8 secondary	9-10 post-secondary	11 post-secondary
1	77,007	–	–	32,091	38,555	57,768
2	77,007	25,678	12,878	32,091	38,555	57,768
3	77,007	25,678	19,316	38,555	44,917	64,156
4	89,808	25,678	19,316	44,917	51,330	70,594

Source: updated from the Department of Social Prosperity Table for 2018 with CPI for low-income households.

Table 2.5: Health and education component, Familias en Acción (2020)

Group	Health	Education				
		Pre-primary school	1-5 primary	6-8 secondary	9-10 post-secondary	11 post-secondary
1	80,030	–	–	33,350	40,069	60,036
2	80,030	26,686	13,383	33,350	40,069	60,036
3	80,030	26,686	20,074	40,069	46,680	66,674
4	93,333	26,686	20,074	46,680	53,344	73,365

Source: updated from the Department of Social Prosperity Table for 2018 with CPI for low-income households.

Table 2.6: Health and education component, Familias en Acción (2021)

Group	Health	Education				
		Pre-primary school	1-5 primary	6-8 secondary	9-10 post-secondary	11 post-secondary
1	81,771	–	–	34,076	40,940	61,342
2	81,771	27,266	13,674	34,076	40,940	61,342
3	81,771	27,266	20,511	40,940	47,695	68,124
4	95,363	27,266	20,511	47,695	54,505	74,961

Source: updated from the Department of Social Prosperity Table for 2018 with CPI for low-income households.

Table 2.7: Health and education component, Familias en Acción (2022)

Group	Health	Education				
		Pre-primary school	1-5 primary	6-8 secondary	9-10 post-secondary	11 post-secondary
1	87,372	–	–	36,410	43,744	65,544
2	87,372	29,134	14,611	36,410	43,744	65,544
3	87,372	29,134	21,916	43,744	50,962	72,790
4	101,895	29,134	21,916	50,962	58,238	80,096

Source: updated from the Department of Social Prosperity Table for 2018 with CPI for low-income households.

Table 2.8: Health and education component, Familias en Acción (2023)

Group	Health			Education		
	Very high priority	High priority	Other departments	Very high priority	High priority	Other departments
SISBEN Group IV A	1000,000	720,000	320,000	320,000	240,000	120,000
SISBEN Group IV B1 – B4	720,000	320,000	240,000	240,000	120,000	80,000
SISBEN Group IV B5 – C18	320,000	240,000	160,000	120,000	80,000	60,000

Source: Department of Social Prosperity, resolution 542 of March 16, 2023.

COLMOD notes

As it is impossible to distinguish most towns for each family in the Great Integrated Household Survey (GEIH); we impute the two last groups of municipal categories.

2.4.2 Social assistance for the elderly: Colombia Mayor (bsaoa_s)

Definitions: Colombia Mayor is a subsidised pension programme. It has its origins in 2003 as an in-kind and in-cash transfer programme for the elderly, without much success. However, it was relaunched in 2012 as an in-cash transfer. It supports more than 1.6 million Colombians in old age as of 2020.

Despite targeting the poor elderly, the programme is not universal for this population. A person applies to its local authority to receive the subsidy and is kept on a waiting list. Inclusion depends mainly on the availability of resources in the Pension Solidarity Fund.

Eligibility conditions: Beneficiaries must be at least three years younger than retirement age (57 for women and 62 for men), that is 54 and 59 respectively.

Income test: Beneficiaries must be classified in SISBEN IV group A or B, must not receive any pension, and family income must be below one monthly minimum wage.

Benefit amount: It consists of a monthly assignment of COP45,000–110,000, payable to low-income elderly. The amount depends on the municipality. An extraordinary payment of COP80,000 due to the COVID-19 emergency was scheduled from April 2020 to June 2020.¹³ In December 2019, the *Colombia Mayor* benefit became COP80,000 for all departments except for Bogotá, where the amount is COP125,000.¹⁴

COLMOD notes

As it is impossible to distinguish the town for each family in GEIH, Table 2.9 presents the monthly values obtained, calculating the mode of payment by department (state) reported by the Labour Ministry (in charge of the programme) and *Colombia Mayor*.

Table 2.9: Colombia Mayor transfers (2019)

Department	Amount (COP)	Department	Amount (COP)	Department	Amount (COP)	Department	Amount (COP)
Antioquia	75,000	Cesar	75,000	Nariño	55,000	Arauca	60,000
Atlántico	75,000	Cordoba	60,000	Norte de Santander	75,000	Casanare	40,000
Bogotá	110,000	Cundinamarca	75,000	Quindío	75,000	Putumayo	75,000
Bolívar	75,000	Choco	40,000	Risaralda	75,000	San Andrés	75,000
Boyacá	40,000	Huila	40,000	Santander	40,000	Amazonas	40,000
Caldas	75,000	Guajira	40,000	Sucre	40,000	Guainía	75,000
Caquetá	75,000	Magdalena	75,000	Tolima	75,000	Guaviare	45,000
Cauca	55,000	Meta	75,000	Valle	75,000	Vaupés	75,000
						Vichada	75,000

Source: Labour Ministry and *Colombia Mayor*.

¹³ Discretionary contributions from local governments could increase this amount.

¹⁴ Resolution 5244 of 2019.

2.4.3 Social assistance for the COVID-19 pandemic: Ingreso Solidario

Definitions: The Solidarity Income Programme is an economic support for households in poverty, extreme poverty, and conditions of economic vulnerability, whose purpose is to mitigate the impacts derived from the emergency caused by COVID-19.

Eligibility conditions: Vulnerable (SISBEN C1), poor (SISBEN B), or extreme poor (SISBEN A) households, according to SISBEN IV. The beneficiaries are households who are not enrolled in any national social programme such as *Jóvenes en Acción*, *Colombia Mayor*, *Familias en Acción*, and *Devolución del IVA*.

Benefit amount: COP160,000 per month. The amount is fixed and not updated.

COLMOD notes

This benefit finished at the end of 2022.

2.4.4 VAT return (Devolución del IVA a hogares pobres)

Definitions: An additional economic support for vulnerable households that are in a situation of poverty and in the *Familias en Acción* or *Colombia Mayor* programmes.

Eligibility conditions: Extreme poor (SISBEN A) or poor (SISBEN B) households already receiving *Familias en Acción* or *Colombia Mayor*.

Benefit amount: COP75,000 every two months for households; that is, COP37,500 per month for the year 2020. It increases with UVT.

2.4.5 Social assistance for tertiary education (Jóvenes en Acción)

Definition: *Jóvenes en Acción* is a social prosperity programme that supports young people in conditions of poverty and vulnerability, with the delivery of conditional cash transfers (CCTs) so that they can continue their technical, technological, and professional studies.

Eligibility conditions: People between 14 and 28 years old. Young high school graduates who do not have a professional university degree. They must be registered in at least one of the following population lists: administrative registration of the Families in Action Programme for Social Prosperity, high school graduates. Network to Overcome Extreme Poverty, SISBEN, Single Registry of Victims (RUV), indigenous census lists, and ICBF census lists. Starting in 2023, the eligibility by age changes, including post-secondary and tertiary education students between the ages of 14 and 28.

Benefit amount: For a student of an IES agreement (which is one in a professional technical institution, technological institution, technological school university institution, or university), delivery is made four times per year for an amount of COP400,000 per payment. Another, COP400,000 is also delivered two times per year if the student completes the academic period and remains in its formation process. If the student has remarkable grades¹⁵ the programme grants an amount of COP200,000. If the training is at SENA, COP400,000 will be paid bimonthly – that is, COP200,000 per month. For 2020, within this programme, an incentive has been included due to the COVID-19 pandemic. Participants of the *Jóvenes en Acción* programme registered before 6 May 2020 will receive an additional extraordinary

¹⁵ A student with remarkable grades is one who has a cumulative average equal to or greater than 4 (over 5).

monetary transfer for COP356,000 without prior verification of compliance with SENA and IES commitments.

2.4.6 Unemployment benefit (Subsidio de Desempleo)

Definitions: With this measure, the national government seeks to alleviate the decrease in income that Colombian households experience when household members lose a job. It changed from an in-kind voucher programme to a monetary payment due to the COVID-19 pandemic.

Eligibility conditions: For the monetary version: unemployed (no monthly income). Beneficiaries must have made continuous or discontinuous contributions to any CCF during the last three years as follows: Dependent workers: 12 continuous or discontinuous months. Independent workers: 24 continuous or discontinuous months.

Income test: This support applies to dependent workers classified in CCF category A (those whose wage does not exceed two SMMLV) and B (wage is 2–4 SMMLV) who have been laid off and who have contributed to the CCF for at least six continuous or discontinuous months in the last five years; likewise to those who have not been beneficiaries of the protection mechanism for the unemployed in the last three years.

Benefit amount: (1) An economic aid of COP160,000 will be received for three months by people who lose their jobs. (2) Payment of social security (health and pension) based on the contribution of one SMMLV for three months. In July 2022, the amount was reduced to 1.5 SMMLV, assigned for a period of four months.

2.5 Social contributions

Social insurance contributions in Colombia depend mostly on worker status: employed or self-employed. However, pensioners must contribute to health and to FSP, and it is also possible to contribute without working in order to receive the package of services of contributory health and to increase the number of weeks and contributions required for the pension.

Liability to contributions: All workers are liable to pay SICs based on their labour income. However, in practice, a large share of workers does not pay SIC at all (informal workers: defined as those not contributing to pensions). In the model, employee income (yem) and self-employment income (yse) are divided into these two categories to account for SIC evasion. For formal incomes the ending *re* (registered) is used ($yemre$ and $ysere$), while for informal incomes the ending *nr* (not registered) is used ($yemn$ and yse). Employers are liable to pay SIC for their employees. Pensioners are liable to health and FSP contributions. Lastly there are voluntary contributions of people not working, which we define as others in the model.

2.5.1 Health contribution

Contributions bands are directly related to income in minimum wages, with the rules as given in Table 2.10.

Table 2.10: Health contribution

	Employees	Employer	Self-employed	Pensioner
Base	Employee wage	Employee wage	40% labour income	Pension income
Base in minimum wages	Health contribution			
<1	0.04 × (minwage)	0.085 × (minwage)	0.125 × (minwage)	0.12 × (minwage)
≥1 and <25	0.04 × (base)	0.085 × (base)	0.125 × (base)	0.12 × (base)
≥25	0.04 × (25 minwages)	0.085 × (25 minwages)	0.125 × (25 minwages)	0.12 × (25 minwages)
Output	<i>tsceehL_s</i>	<i>tscerhL_s</i>	<i>tscsehL_s</i>	<i>tscpehL_s</i>

Notes: a minimum pension exists in Colombia equivalent to one minimum wage; however, reported pension income may be lower – for example, for survivors' pension.

Source: authors' compilation.

Table 2.11: Pensioners' health contribution for the years 2020–21

	Pensioners
Base	Pension
Base in minimum wages	
1	0.08 × (base)
≥1 and <2	0.10 × (base)
≥2	0.12 × (base)
Output	<i>tscpehL_s</i>

Source: authors' compilation.

Table 2.12: Pensioners' health contribution starting from 2022

	Pensioners
Base	Pension
Base in minimum wages	
1	0.04 × (minwage)
≥1 and <2	0.10 × (minwage)
≥2	0.12 × (minwages)
Output	<i>tscpehL_s</i>

Source: authors' compilation.

Employers: Employers must pay 8.5 per cent of each employee monthly wage (IBC) for concept of health. This contribution only applies in the case that their business is not liable to income tax (i.e. non-profit enterprises, government). Additionally, they are liable to health contributions for each employee earning more than ten minimum wages per month. The same limits in the case of wages below a minimum wage and above 25 minimum wages apply.

Others: People in this category are reported as not working or as pensioners. They report paying health and pension contributions in the survey. Contributions are equal to 12.5 per cent of a minimum wage unless a payment exceeding this amount is reported. The output variable is *tscothL_s*.

Starting from 2020, health contributions for pensioners have decreased for pensions below 1 and 2 minimum wages. The contribution rate for pensions of one SMMLV is 8 per cent for the years 2020 and 2021, and 4 per cent starting from 2022. For pensions up to two SMMLV, the contribution rate has

been adjusted to 10 per cent. For pensions over two SMMLV, the contribution rate is 12 per cent (Tables 2.11 and 2.12).¹⁶

2.5.2 Pension contribution

Contributions bands are directly related to income in minimum wages, with the rules as given in Table 2.13).

Table 2.13: Pension contribution

	Employees	Employer	Self-employed
Base	Wage	Employee wage	40% labour income
Income in minimum wages	Pension contribution		
<1	0.04 × (minwage)	0.12 × (minwage)	0.16 × (minwage)
≥1 and <25	0.04 × (base)	0.12 × (minwage)	0.16 × (base)
≥25	0.04 × (25 minwages)	0.12 × (25 minwages)	0.16 × (25 minwages)
Output	<i>tsceepi_s</i>	<i>tscerpi_s</i>	<i>tscsepi_s</i>

Source: authors' compilation.

Employers: Employers must pay 12 per cent of each employee wage for concept of pension. The same limits in the case of wages below a minimum wage and above 25 minimum wages apply.

Others: Contributions for people not working or pensioners are equal to 16 per cent of the minimum wage unless a payment exceeding this amount is available. This amount is simulated by scaling up the reported contribution to health by 1.28 ($16/12.5 = 1.28$). The output variable is *tscotpi_s*.

2.5.3 Fondo de Solidaridad Pensional (FSP)

Contributions to this fund are mandatory for workers and pensioners with incomes above certain thresholds. These resources are used to finance the non-contributory pension system.

The contribution rate is increasing in income, following the rules in Tables 2.14 and 2.15. For self-employment the base is 40 per cent of labour income.

Table 2.14: FSP contribution for employees and self-employed

	Employees	Self-employed
Base	Wage	40% labour income
Income in minimum wages	FSP contribution	
<4	0 × (base)	0 × (base)
≥4 and <16	0.010 × (base)	0.010 × (base)
≥16 and <17	0.012 × (base)	0.012 × (base)
≥17 and <18	0.014 × (base)	0.014 × (base)
≥18 and <19	0.016 × (base)	0.016 × (base)
≥19 and <20	0.018 × (base)	0.018 × (base)
≥20	0.020 × (base)	0.020 × (base)
Output	<i>tscee00_s</i>	<i>tscse00_s</i>

Source: authors' compilation.

¹⁶ Law 2225 of June 30, 2022.

Table 2.15: FSP contribution for pensioners

	Pensioner
Base	Pension income
Income in minimum wages	FSP contribution
<10	0 × (base)
≥10 and <20	0.01 × (base)
≥20	0.02 × (base)
Output	<i>tscpe00_s</i>

Source: authors' compilation.

2.5.4 Labour risk insurance contribution

Employers are liable to labour risk insurance contributions. The rate depends on the level of risk, with an increasing rate as risk increases (Table 2.16).

- Risk 1: rate of 0.522 per cent for activities financier, office work, administrative, education centres, and restaurants.
- Risk 2: rate of 1.044 per cent for some manufacturing processes such as rug fabrication, weaving, clothing, artificial flowers, and some agricultural work.
- Risk 3: rate of 2.436 per cent for some manufacturing processes such as needle fabrication, alcohol, and leather articles.
- Risk 4: rate of 4.350 per cent for some manufacturing processes such as oils fabrication, beers, and glasses, galvanizing processes, transports, and private surveillance services.
- Risk 5: rate of 6.960 per cent for minerals extractions, asbestos management, firefighting, explosives management, construction and oil exploitation.

Table 2.16: ARL contribution for employer

	Employer
Base	Wage
Base in minimum wages	ARL contribution
Contribution <1	rate%(minwage)
≥1 and <25	rate%(base)
≥25	rate%(25 min wages)
Output	<i>tscerac_s</i>

Source: authors' compilation.

2.5.5 Private social development funds contribution (Caja de Compensación Familiar CCF)

Employers are liable to CCF contribution for each employee as given in Table 2.17.

Table 2.17: CCF contribution for employers

	Employer
Base	Wage
Income in minimum wages	CCF contribution
<1	0.04 × (minwage)
≥1 and <25	0.04 × base
≥25	0.04 × (25 minwages)
Output	<i>tscer01_s</i>

Source: authors' compilation.

2.5.6 Severance contribution (Cesantias)

Employers are liable to severance contributions, paying one month of wages per year plus 12 per cent interest. Employers are liable to severance contributions for each employee as given in Table 2.18.

Table 2.18: Severance contribution for employers

	Employer
Base	Wage
Income in minimum wages	Severance contribution
<1	$1.12 \times (\text{minwage})/12$
≥ 1 and <25	$1.12 \times (\text{base})/12$
≥ 25	$1.12 \times (25 \text{ minimum wages})/12$
Output	<i>tscersv_s</i>

Source: authors' compilation.

2.5.7 Vocational training contribution (SENA)

Employers must pay 2 per cent of each employee wage for concept of SENA. This contribution only applies if their business is not liable to income tax (i.e. non-profit enterprises, government) or for each employee earning more than ten minimum wages per month. The same limits apply for wages below a minimum wage and above 25 minimum wages (Table 2.19).

Table 2.19: SENA contribution for employers

	Employer
Base	Wage
Income in minimum wages	SENA contribution
<1	$0.02 \times (\text{minwage})$
≥ 1 and <25	$0.02 \times (\text{base})$
≥ 25	$0.02 \times (25 \text{ minwages})$
Output	<i>tscer02_s</i>

Source: authors' compilation.

2.5.8 Child care institution contribution (ICBF)

Employers must pay 3 per cent of each employee wage for concept of ICBF. This contribution only applies if their business is not liable to income tax (i.e. non-profit enterprises, government) or for each employee earning more than ten minimum wages per month. The same limits apply in the case of wages below a minimum wage and above 25 minimum wages (Table 2.20).

Table 2.20: ICBF contribution for employers

	Employer
Base	Wage
Income in minimum wages	ICBF contribution
<1	$0.03 \times (\text{minwage})$
≥ 1 and <25	$0.03 \times (\text{base})$
≥ 25	$0.03 \times (25 \text{ minwages})$
Output	<i>tscer03_s</i>

Source: authors' compilation.

2.6 Personal income tax (tin_s)

Personal income tax is regulated by the tax code (*Estatuto Tributario*). Major reforms to income tax captured by the model were introduced by Act 1819 of 2016, which entered into force in 2017, and by Act 2010 of 2019, which entered into force in 2020. The reform of 2017 implemented the system of 'cédulas' (schedular tax system) to differentiate the types of natural persons' income. With this reform incomes were divided into three categories: (1) labour, capital, and non-labour income; (2) pensions; and (3) dividends and shares. The tax declaration system introduced in 2017 replaced the previous tax system, consisting of the ordinary system and the alternative IMAN and IMAS declaration systems. These three systems are modelled for the years 2014–16 but are not discussed here.

2.6.1 Tax unit

Personal income tax in Colombia is assessed at the individual level.

2.6.2 Taxable income, exemptions, and deductions

Table 2.21 presents the structure for the schedular tax system in place in 2019–23.

Table 2.21: Taxable income, exemptions, and deductions

Category	Element	Description	Variables
Total income	Labour income		<i>ils_earns</i>
	+ Income from previous jobs		<i>yot</i>
	+ Pension income		<i>ils_pen</i>
	+ Property income		<i>ypr</i>
	= Taxable income		<i>i_IT_taxableY</i>
Deductions	- Annual mortgage interest	Up to 1,200 UVT per year	<i>i_IT_Ded1</i>
	- Annual expenditure, child care	Up to 32 UVT per month (384 UVT per year) or 10% of gross income	<i>i_IT_Ded2</i>
	- Annual health payments	Yearly payments to contrib. health up to 16 UVT per month (192 UVT per year) plus complementary health for the household (full)	<i>i_IT_Ded3</i>
	= Preliminary tax base		<i>i_IT_baseY1</i>
	Exempt income	- Vital minimum	25% income exempt
- Pension income		Annual pension income up to 1,000 UVT per month (12,000 UVT)	<i>i_IT_Exe_2</i>
- SIC pension exempt		SIC pension exempt	<i>i_IT_Exe_3</i>
- Voluntary pension contribution and AFC		Annual voluntary pension contribution and AFC	<i>i_IT_Exe_4</i>
= Tax base			<i>i_IT_baseY</i>

Source: authors' compilation.

Definition of income: Total income is composed of labour earnings (including bonuses), pension income, and incomes from property (except dividends).

Deductions and exemptions: It is possible to deduct mortgage interest payments up to 1,200 UVT per year, annual expenditure on dependants up to 192 UVT per year or 10 per cent of gross income (whichever is lower), health payments to contributory health up to 192 UVT per year, and any contribution to complementary health. From the resulting taxable income, it is possible to deduct as exemptions 25 per cent of wage income considered as vital income, pension income up to 12,000 UVT per year, and pension contributions.

2.6.3 Tax base

The tax base for income tax calculations is defined as total income minus exemptions, minus deductions (Table 2.22). The tax base must be transformed to UVT for the purpose of calculating tax liabilities.

2.6.4 Tax schedule

Table 2.22: Personal income tax, schedular system, 2019–23, in UVT

Bracket	Over	But below	Rate (%)
1	0	1,090	0
2	1,090	1,700	19
3	1,700	4,100	28
4	4,100	8,670	33
5	8,670	18,970	35
6	18,970	31,000	37
7	31,000	More	39

Source: Estatuto Tributario (Art. 241).

COLMOD notes

Personal income tax is simulated under the assumption of full compliance only for formal individuals' income.

2.6.5 Schedular system (2017–23)

The 2016 tax reform changed the way income tax of households is determined as of 2017 (Table 2.23). The taxpayer has taxable income determined for each of the schedules independently. The result will constitute the taxable base. The concepts of income, costs, expenses, deductions, exempt income, tax benefits, and other items that can be subtracted for the purpose of obtaining the taxable income of the schedule may not be subject to simultaneous recognition in different schedules or generate double benefit. The following are the schedules:

- labour, capital and non-labour income
- pensions
- dividends and shares.

In December 2022, with the tax reform, changes were made to the income tax. In this tax, 25 per cent of exempt labour income shifted from a limit of 240 UVT per month to a limit of 790 UVT per year. Additionally, the limit set for the sum of all exemptions and deductions changed from 5040 UVT to 1340 UVT per year.¹⁷

¹⁷ Law 2277 of December 13, 2022

Table 2.23: Taxable income, exemptions, and deductions

Category	Element		Description	Variables
Labour income schedular system tax	Total income	+ Labour income		<i>i_IT_taxableY1</i>
	Exemption 1 (exe1)	– All SIC are exempt	All SIC (ingresos no constitutivos de rentas pagos a seguridad social)	<i>i_IT_Exe_1</i>
	Exemption 2 (exe2)	– Voluntary contributions to pensions and AFC payments	Reported pension and AFC payment, or up to 3,800 UVT per year or 30 per cent of labour income	<i>i_IT_Exe_2</i>
	Deduction 1 (ded1)	– Expenditure on health	Yearly payments to contrib. health up to 16 UVT per month (192 UVT) plus complementary health for the household (full)	<i>i_IT_Ded1</i>
	Deduction 2 (ded2)	– Expenditure on dependent relatives	Up to 32 UVT per month (384 UVT per year) or 10% of gross income	<i>i_IT_Ded2</i>
	Deduction 3 (ded3)	– Annual mortgage interest	Up to 1,200 UVT per year	<i>i_IT_Ded3</i>
	Tax base (preliminary)	= Tax base labour (ingreso laboral)	Labour income – exe1 – exe2 – ded1 – ded2 – ded3	<i>i_IT_baseY1_0</i>
	Exemption 3 (exe3)	-Vital minimum (tax base labour = 0 required)	25% of preliminary tax base exempt up to 240 UVT per month until 2022, from 2023 up to 790 UVT per year.	<i>i_IT_Exe_3</i>
	Limits on exemptions and deductions (lime&d)		The minimum of all exemptions and deductions (not including SIC) or 40% of base min as SIC. With an upper limit of 5,040 UVT per year until 2022, starting from 2023 with a limit of 1,340 UVT per year.	<i>i_IT_Lim_Ded_Exe</i>
	Tax base	= Tax base labour (labour income)	Labour income – exe1 – lime&d	<i>i_IT_baseY1</i>
Pension income schedular system tax	Total income	+ Pension income		<i>i_IT_taxableY2</i>
	Exemption 4 (exe4)	– All SIC conditional	All SIC if not used in labour income	<i>i_IT_Exe_4</i>
	Exemption 5 (exe5)	– Pension income	Annual pension income up to 1,000 UVT per month (12,000 UVT)	<i>i_IT_Exe_5</i>
	Tax base	Tax base pension Income (Rentas de pensiones)	Pension income – exe4 – exe5	<i>i_IT_baseY2</i>
Capital income schedular system tax	Total income	+ Capital income		<i>i_IT_taxableY3</i>
	Exemption 6 (exe6)	– All SIC conditional	All SIC if not used in labour income or pension income	<i>i_IT_Exe_4</i>
	Tax base	= Tax base capital (Rentas de capital)	Capital income – exe6	<i>i_IT_baseY3</i>

Source: authors' compilation.

Labour income

Definition: Income from this schedule is the exclusive income from labour, those obtained by natural persons for wages, commissions, social benefits, per diem, representation expenses, fees, ecclesiastical emoluments, and compensation for personal services.

Deductions and exemptions: The exceptions and deductions that can be made in this schedule are: mandatory payments to SIC are exempt income. Voluntary contributions to pensions and AFC (*Ahorro y Fomento a la Construcción*: 'Savings and Construction Promotion') payments. Twenty-five per cent of labour income is exempt. Expenditure on health (i.e. prepaid medicine) is deductible. Expenditure on dependent relatives and mortgage interest is also deductible.

Taxable base for labour income: To establish the tax base for this schedule, from the total income of this schedule obtained in the taxable period, the abovementioned deductions and exemptions are subtracted provided they do not exceed 40 per cent of income or do not exceed 5,040 UVT per year.

Pension income

Definition: Retirement, disability, old-age, survivors', and occupational risk pensions are income in this schedule, as well as those coming from compensations replacing pensions or refunds of pension savings balances.

Deductions and exemptions: The exceptions and deductions that can be made in this schedule are mandatory payments to SIC if not used in previous schedules. For exempt income, pension income must be taxed only in the part of the monthly payment that exceeds 1,000 UVT.

Taxable base for pension income: Of the total income no constituent income attributable to this schedule is subtracted and exempt income.

Capital income

Definition: Income from this schedule is obtained from interest, financial performances, leases, royalties, and exploitation of intellectual property.

Deductions and exemptions: The exceptions and deductions that can be made in this schedule are mandatory payments to SIC if not used in previous schedules, and the costs and expenses frequently are borne by the taxpayer. All exempt income and deductions attributable to this schedule may be subtracted, provided they do not exceed 10 per cent of the previous result, which in any case cannot exceed 1,000 UVT. In the case of the model, we are only able to include SIC payments.

Non-labour income (not simulated)

Definition: No-labour income is considered to be all income not expressly classified in any of the other schedules. The fees received by natural persons who provide services and who hire or link for at least 90 continuous or discontinuous days two or more workers or contractors associated with the activity will be income from the no-labour income schedule.

Deductions and exemptions: The exceptions and deductions that can be made in this schedule are mandatory payments to SIC, and the costs and expenses are frequently borne by the taxpayer. All exempt income and deductions attributable to this schedule may be subtracted, provided they do not exceed 10 per cent of the previous result, which in any case may not exceed 1,000 UVT.

Income from dividends and participations (not simulated)

Definition: Incomes from this schedule are those received by way of dividends and shares, and constitute taxable income as partners, shareholders, community members, associates, subscribers and the like, who are resident natural persons, received from national companies and entities, and from foreign companies and entities.

Deductions and exemptions: The exceptions and deductions that can be made in this schedule are income received in the member countries of the Andean Community of Nations (CAN) by natural persons resident in Colombia and companies whose shares are publicly traded (Table 2.24).

Table 2.24: Tax schedule for dividends and participations

Bracket	Over (UVT)	But below (UVT)	Marginal rate (%)
1	0	600	0
2	300	More	10

Source: Estatuto Tributario (Art. 242).

It is important to point out that the simulation will not take into account the schedules of non-labour income and dividends and shares because of limited information available in the survey.

2.7 Indirect taxes

2.7.1 VAT (tva_s)

VAT is an indirect tax on sales of all goods and services of the economy and is applied to national operations as well as imported ones. Currently, there are three types of goods: taxed, exempt, and excluded. Since 2016 there have been three different rates: 0 per cent (exempt rate), 5 per cent (reduced rate), and 19 per cent (general rate). There are also some goods and services excluded from the tax.¹⁸ Additionally, the departments of San Andrés and Amazonas are excluded from the tax.

Excluded items mainly consist of non-processed food and essential services such as health and education.

The differential VAT rate is 5 per cent for certain products of the family basket, specifically:

- corn flour and other flours
- pasta
- other cereals
- cold meats and sausages
- sugar
- coffee
- chocolate
- private insurance
- protection services inside and outside the home
- complementary health payments.

The remaining items attract the 19 per cent general rate for the period 2019–22.

2.7.2 Consumption tax (tco_s)

The tax reform of 2012 created the consumption tax. Art. 512-1 Estatuto Tributario specifies that the tax is generated by the sale to the final consumer or the import by the final consumer of the following services and goods:

- mobile telephony, internet and mobile navigation
- cars, ships and aeroplanes
- prepared food and drink (service in bars, restaurants, cafeterias, etc.).

The current national consumption tax has the following rates:

- 4 per cent rate: mobile phone service;

¹⁸ See Arts 423–427 Estatuto Tributario for excluded goods, and Arts 476–486 Estatuto Tributario for excluded services.

- 8 per cent rate: restaurant and bar service; family-type motor vehicles whose FOB value is less than US\$30,000; motorcycles with a piston greater than 200 c.c.; yachts and other boats and pleasure or sport boats;
- 16 per cent rate: family-type motor vehicles whose FOB value is equal to or greater than US\$30,000; pick-up whose FOB value, or the equivalent of the FOB value, is equal to or greater than US\$30,000; aircraft (helicopters, aeroplanes, balloons, and airships).

Additionally, the departments of San Andrés and Amazonas are excluded from the tax.

3 Data

3.1 General description

The GEIH survey is used for COLMOD, in particular due to the sample size and the battery of income questions. Expenditures are imputed following SOUTHMOD guidelines and using the ENCV survey (Encuesta Nacional de Calidad de Vida, or the Living Conditions National Survey). Both surveys provide cross-sectional data.

GEIH and ENCV are national household surveys carried out each year by the National Administrative Department of Statistics (Departamento Nacional de Estadística, DANE). The first one focuses on measuring the labour market and is carried out monthly. The second focuses on measuring people's well-being, it has detailed information in the health and education modules and a workforce module with information on earnings. For the 2019 GEIH, 231,831 urban and rural households and 756,063 individuals were interviewed. For 2020 (Q4) the numbers are 57,265 and 184,790, respectively (Table 3.1). The 2020 ENCV interviewed 88,310 urban and rural households, and 267,085 individuals. The target population is restricted to the non-institutional resident civilian population throughout the country, excluding the rural area of San Andrés and the Orinoco-Amazon (DANE, 2015).

Features for the model: Due to the COVID-19 pandemic we focus on data for the last quarter of 2020, given the difficulties collecting information in the previous months of this year (several income questions were not asked given the change to a telephone-based survey).

Table 3.1: COLMOD database description

COLMOD database	CO_2019_a3	CO_2020_a3
Original name	GEIH 2019	GEIH 2020
Provider	National Administrative Department of Statistics (DANE)	National Administrative Department of Statistics (DANE)
Year of collection	2019	2020
Period of collection	January 2020 to December 2020	October 2020 to December 2020
Income reference period	2019	2020
Sample size	231,831 households / 753,503 individuals	57,265 households / 184,310 individuals

Source: authors' compilation based on GEIH (2019–20).

3.2 Data adjustment

Adjustments to the data and variables are kept to a minimum. Individuals recorded as domestic employees in a household have been dropped, as information about their own household (e.g. number of children, expenditures, etc.) is not available. No households were dropped. No adjustments to the weights were done as a result of these drops.

Some data cleaning has been done to ensure that the relationship between household members is consistent. In particular, partner's identifiers had to be generated based on information about identifiers of mothers and fathers, relationship to the head of the household, and gender and age of individuals. Such adjustments concern mostly households where multiple couples are observed.

3.3 Imputations and assumptions

For most income, cases with non-response, extreme values and false-zeros of a monetary value were imputed using hot-deck methodology following MESEP-DANE-DNP (2010) documentation for the imputation of incomes for poverty and inequality measures.

3.3.1 Time period

Information about demographic variables in GEIH refers to the time of the data collection. Information on employee earnings refers to the last month. Similarly, information about pensions and benefits refers to receipts in the most recent relevant period (e.g. month or last 12 months, etc.) before the interview. Self-employment income is based on the last 12 months in rural areas and last month in urban areas. Investment income is based on the last 12 months. For expenditures, information is collected differentiating between daily, monthly, three-monthly, six-monthly, and yearly expenditures.

Most monetary amounts in the GEIH are expressed in monthly terms, as required for the COLMOD database; those at other frequencies are converted to monthly terms. In COLMOD calculations it is implicitly assumed that income is received at the same rate throughout the year. However, it should be remembered that this may not be the case and, in particular, that income tax (based on annual income) simulations do not take account of changes that may happen during the year.

3.3.2 Gross incomes

Labour income

Labour income depends on the employment condition: employed or self-employed. For the microsimulation model this income is also divided into formal and informal using the social security definition. This distinction is made in order to simulate SICs correctly. All formal workers pay SICs and informal workers do not.

Employee

For employees labour income is the result of wages and other labour compensations. For the Colombian case those compensations are:

- **Employment bonuses:** Primas mensuales, de servicios, de navidad, de vacaciones y bonificaciones anuales.
- **Employment benefits:** Subsidios de alimentación, vivienda y familiar.

Self-employed

For self-employed workers labour income is defined as the net profit received. For urban workers the survey asks for monthly profits received. For rural workers it is the net profit from the harvest or business for the last 12 months. Self-employed net incomes are transformed to gross income (before taxes) by adding SIC and income tax as reported in the survey.

Additional jobs and labour income from past jobs

Income from a second job: It is not possible to determine if working as an employee or in self-employment; it is not possible to distinguish if paying SIC for this job or not. This includes labour income received the month before from past jobs if not currently working.

Non-labour income

Non-labour income comprises income from:

- **Investment:** Layoffs, interest layoffs, interest on loans or CDT (Certificado de Depósito a Término, or term deposit certificate) and raffles.
- **Private transfers:** Money aid from other homes or institutions and alimentary pension.
- **Property:** Rents of houses, apartments, recreational farms, allotments, vehicles, machines and equipment.

3.4 Updating

COLMOD is available for the years 2019–23.

3.5 Consumption levels

Consumption levels are updated from the base year to the policy year and adjusted by absolute changes in disposable income from the base year to the policy year. The change in disposable income takes into account changes in market incomes and changes in benefits and SICs. The underlying assumption is that changes in disposable incomes lead to the same changes in consumption levels.

4 Validation

4.1 Aggregate validation

COLMOD results have been validated against external benchmarks. Detailed comparisons of the number of people receiving a given income component and total yearly amounts are shown in Annex. Both market incomes and non-simulated taxes and benefits in the input dataset, as well as simulated taxes and benefits, are validated against external official data. The main discrepancies between COLMOD results and external benchmarks are discussed in the following subsections. Factors that may explain the observed differences are also discussed.

4.1.1 Validation of incomes inputted into the simulation

Table A1 in Annex shows the number of employed and unemployed individuals in the dataset used for COLMOD simulations against GEIH, the main labour survey. The database only slightly underrepresents the number of people in work. The working-age population is almost identical in the datasets. Discrepancies could be a result of dropping some observations for COLMOD as discussed above, but also because DANE considers family workers and private workers without pay in its results, whereas COLMOD does not.

Table A2 and A3 in Annex presents the aggregate amount of employment and self-employment income obtained with COLMOD and with the external data of GEIH. Results are very similar, and differences arise because of changes from net to gross for self-employed, the definition of labour income for employees, and imputation.

4.1.2 Validation of outputted (simulated) incomes

Tables A6 and A7 compare simulated benefits and beneficiaries in COLMOD with external statistics from DPS (2019), which administers *Familias en Acción*, *Jóvenes en Acción*, *Ingreso Solidario*, and VAT devolution, and the Ministerio del Trabajo (2019b), which administers *Colombia Mayor*, UGPP, which administers SIC payments, and DIAN, which collects taxes. For the cash transfer programmes COLMOD

almost replicates the number of beneficiaries because we are fully simulating the programmes and adjusting the eligibility to match the aggregates. However, results for the programmes' costs vary, possibly as a result of data limitations in GEIH – for instance, we are unable to identify the town for each observation. This is a likely driver of the discrepancies as both cash transfer amounts depend on location.

In the tables we also compare monthly payments of SICs and income taxes in COLMOD and external data from UGPP and DANE. The number of payers is different in both cases: COLMOD underestimates payers in SIC and income tax, probably as a result of the method UGPP uses for collecting information and the difficulties obtaining data in the upper part of the income distribution in the survey. In the case of payments, results are more accurate for income tax, but COLMOD overestimates SIC collection.

4.2 Income distribution

The results presented in this section focus on income inequality and poverty. They are computed for individuals according to their household disposable income (HDI), without in-kind benefits and not accounting for indirect taxes, using an equivalence scale = 1, which is the approach used to calculate poverty in Colombia. In COLMOD HDI is calculated as the sum of all income sources (including simulated benefits) of all household members net of simulated income tax and SICs. For GEIH-MESEP data, HDI does not deduct SIC and tax payments as they are not recorded for the survey. Additionally, for both datasets, incomes were imputed by DANE following MESEP-DANE-DNP (2010) procedures to estimate poverty.

4.2.1 Poverty rates

Table A8 in Annex presents statistics on poverty in Colombia for different age groups using a weighted national poverty line. In practice, lines are different for capital cities, other urban areas, and rural areas. They are also updated at a monthly frequency using CPI. Therefore, our results will overestimate poverty because we are applying a higher poverty line to most observations outside the capital, which are poorer areas. Total poverty is around 38 per cent for the external data, and around 46 per cent for COLMOD.

4.2.2 Income inequality

Table A8 also compares income inequality results from COLMOD with those of GEIH-MESEP, the external database. Gini coefficients are almost identical in the datasets

4.3 Statistics Presenter

A series of variables and income lists were created in COLMOD for the use of the Statistics Presenter tool in the EUROMOD platform. This section describes the elements implemented in the model for the use of the tool.

Two constants were created in the model to define the values of the poverty line ($\$Povline$) and extreme poverty line ($\$ExtPovline$) in Colombia.

A variable defining the size of the household ($ses01$) was created in the model to be used as an equivalence scale for the household in line with the methodology used by DANE, where poverty and inequality are calculated based on disposable income per capita. The variable is attributed to the head of the household as defined in the survey (dhh), whereas for all other household members the value zero is attributed.

The following variables lists were created in the model for the use of the Statistics Presenter tool:

- ils_taxind : indirect taxes, containing VAT and consumption tax;

- *ils_sic*: social security contributions by employees, self-employed, and employers;
- *ils_bsa*: social-assistance-related benefits, containing the *Familias en Acción*, *Colombia Mayor*, *Jóvenes en Acción*, VAT devolution, *Ingreso Solidario benefits*, COVID emergency transfer, and scholarships;
- *ils_bun*: unemployment-related benefits, containing unemployment subsidy;
- *ils_dispyx*: this income list is identical to *ils_dispy*, which already contains original income (*ils_origy*), all direct taxes (*ils_tax*), all benefits (*ils_ben*), simulated SIC contribution for employees (*ils_sicee*), simulated SIC contribution for self-employed (*ils_sicse*), and other social insurance contributions (*ils_sicot*);
- *ils_dispyx_pf*: post-fiscal income taking account of own produce, defined as disposable income accounting for own produce (*ils_dispyx*) minus indirect taxes (*ils_taxind*);
- *ils_con*: simulated consumption (*xhh_s*), defined as household expenditure as recorded in the data (*xhh*), uprated from the base year to the policy year and adjusted by absolute changes in disposable income from the base year to the policy year; and
- *ils_con_pf*: post-fiscal simulated consumption, defined as simulated consumption (*ils_con*) minus simulated indirect taxes (*ils_taxind*).

4.4 Summary of 'health warnings'

- Pension payments in GEIH are recorded in a single variable. In order to provide specific information on different types of pension incomes (e.g. old-age pensions, disability pensions, survivors' pensions, etc.), the information from GEIH was disaggregated based on personal characteristics of the recipients of pension payments. There will inevitably be some bias due to benefit splitting.
- There is underrepresentation of people with higher incomes in the GEIH survey, which is likely to result in an underestimation of personal income tax.
- The household income concept used for calculations of official poverty statistics differs from the concept of HDI used in COLMOD. The comparison of poverty and inequality results should therefore be considered with care.

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Annex

Table A1: Number of employed and unemployed (thousands)

	COLMOD					External					Ratio				
	2014	2015	2016	2017	2018	2014	2015	2016	2017	2018	2014	2015	2016	2017	2018
Number of employed	22,606.99	22,606.99	22,606.99	22,606.99	22,606.99	20,479.39	20,859.98	20,930.86	21,127.95	21,271.71	0.91	0.92	0.93	0.93	0.94
Number of unemployed	2,574.70	2,574.70	2,574.70	2,574.70	2,574.70	2,124.03	2,111.04	2,207.04	2,261.52	2,353.30	0.82	0.82	0.86	0.88	0.91

	COLMOD					External					Ratio				
	2019	2020	2021	2022	2023	2019	2020	2021	2022	2023	2019	2020	2021	2022	2023
Number of employed	22,606.99	21,976.98	21,976.98	21,976.98	21,976.98	21,309.81	20,409.63	20,391.74	22,032.18	9,318.95	0.94	0.93	0.93	1.00	0.42
Number of unemployed	2,574.70	3,373.31	3,373.31	3,373.31	3,373.31	2,602.13	3,426.10	3,262.89	2,781.34	1,181.23	1.01	1.02	0.97	0.82	0.35

Note: this includes family workers and workers in firms but without remuneration.

Source: external data from DANE-GEIH (2019–23).

Table A2: Market income in COLMOD: number of recipients (thousands)

	COLMOD					External					Ratio				
	2014	2015	2016	2017	2018	2014	2015	2016	2017	2018	2014	2015	2016	2017	2018
Employment income	9,884.92	9,884.92	9,884.92	9,884.92	9,884.92	9,880.64	10,128.09	10,173.47	10,220.62	10,223.67	1.00	1.02	1.03	1.03	1.03
Self-employment income	8,299.68	8,299.68	8,299.68	8,299.68	8,299.68	9,745.45	9,903.17	10,011.37	10,160.54	10,341.56	1.17	1.19	1.21	1.22	1.25

	COLMOD					External					Ratio				
	2019	2020	2021	2022	2023	2019	2020	2021	2022	2023	2019	2020	2021	2022	2023
Employment income	9,884.92	8,873.90	8,873.90	8,873.90	8,873.90	10,657.39	9,740.36	9,778.64	10,974.80	4,691.15	1.08	1.10	1.10	1.24	0.53
Self-employment income	8,299.68	8,372.66	8,372.66	8,372.66	8,372.66	9,975.57	10,051.77	9,452.06	9,931.97	4,155.91	1.20	1.20	1.13	1.19	0.50

Source: external data from DANE-GEIH (2019–23).

Table A3: Market income in COLMOD: annual amounts (thousand million)

	COLMOD					External					Ratio				
	2014	2015	2016	2017	2018	2014	2015	2016	2017	2018	2014	2015	2016	2017	2018
Employment income	146,400	146,800	157,600	167,100	176,900	118,448	122,476	131,025	137,115	144,157	0.81	0.83	0.83	0.82	0.81
Self-employment income	82,347	83,125	87,367	90,929	95,424	73,838	76,053	79,429	81,799	88,038	0.90	0.91	0.91	0.90	0.92

	COLMOD					External					Ratio				
	2019	2020	2021	2022	2023	2019	2020	2021	2022	2023	2019	2020	2021	2022	2023
Employment income	185,800	173,300	178,800	227,400	173,300	164,989	155,115	172,382	226,883	107,160	0.89	0.90	0.96	1.00	0.62
Self-employment income	98,807	91,281	94,149	119,700	91,281	91,875	82,374	89,608	122,427	533,593	0.93	0.90	0.95	1.02	5.85

Source: external data from DANE-GEIH (2019–23)

Table A4: Tax–benefit instruments included but not simulated in COLMOD: number of recipients/payers (thousands)

	COLMOD					External (Superfinanciera + FOPEP)					Ratio				
	2014	2015	2016	2017	2018	2014	2015	2016	2017	2018	2014	2015	2016	2017	2018
Old-age pensions	1,671.25	1,671.25	1,671.25	1,671.25	1,671.25	1,193.18	1,230.46	1,261.82	1,295.65	1,343.30	0.71	0.74	0.76	0.78	0.80
Disability pensions	8.11	8.11	8.11	8.11	8.11	73.00	82.00	93.00	103.00	107.00	9.00	10.11	11.46	12.70	13.19
Survivors' pensions	70.48	270.48	270.48	270.48	270.48	286.00	307.00	329.00	345.00	357.00	4.06	1.14	1.22	1.28	1.32

	COLMOD					External (Superfinanciera + FOPEP)					Ratio				
	2019	2020	2021	2022	2023	2019	2020	2021	2022	2023	2019	2020	2021	2022	2023
Old-age pensions	1,671.25	1,688.70	1,688.70	1,688.70	1,688.70	1,295.88	1,332.61	1,353.49	1,421.88	N/A	0.78	0.79	0.80	0.84	N/A
Disability pensions	8.11	16.28	16.28	16.28	16.28	71.43	73.48	75.75	77.00	N/A	8.80	4.51	4.65	4.73	N/A
Survivors' pensions	270.48	245.91	245.91	245.91	245.91	309.30	321.14	339.67	360.00	N/A	1.14	1.31	1.38	1.46	N/A

Source: external data from SuperFinanciera (2022).

Table A5: Tax–benefit instruments included but not simulated in COLMOD: annual amounts (thousand million)

	COLMOD					External					Ratio				
	2014	2015	2016	2017	2018	2014	2015	2016	2017	2018	2014	2015	2016	2017	2018
Old-age pensions	26,249.77	26,328.55	28,259.38	29,970.25	31,711.98	21,465.50	22,847.41	24,910.19	27,382.29	29,345.21	0.82	0.87	0.88	0.91	0.93
Disability pensions	75.31	75.54	81.08	85.99	90.99	436.40	503.28	593.85	700.71	766.22	5.79	6.66	7.32	8.15	8.42
Survivors' pensions	3,480.49	3,490.93	3,746.94	3,973.79	4,204.73	2,576.49	2,858.01	3,285.48	3,697.11	4,092.50	0.74	0.82	0.88	0.93	0.97

	COLMOD					External					Ratio				
	2019	2020	2021	2022	2023	2019	2020	2021	2022	2023	2019	2020	2021	2022	2023
Old-age pensions	33,316.02	34,807.99	35,901.64	45,655.78	34,807.99	29,533.64	31,176.47	20,368.67	N/A	N/A	0.89	0.90	0.57	N/A	N/A
Disability pensions	95.59	202.05	208.40	265.02	202.05	766.22	760.30	820.82	N/A	N/A	8.02	3.76	3.94	N/A	N/A
Survivors' pensions	4,417.41	4,412.38	4,551.02	5,787.49	4,412.38	4,146.09	4,595.04	4,823.22	N/A	N/A	0.94	1.04	1.06	N/A	N/A

Source: external data from SuperFinanciera (2022).

Table A6: Tax–benefit instruments simulated in COLMOD: number of recipients/payers (in thousands)

	COLMOD					External					Ratio				
	2014	2015	2016	2017	2018	2014	2015	2016	2017	2018	2014	2015	2016	2017	2018
Benefits															
<i>Colombia Mayor</i>	1,396.79	1,396.79	1,469.67	1,469.67	1,469.67	1,468.95	1,473.69	1,499.97	1,503.94	1,528.46	1.05	1.06	1.02	1.02	1.04
<i>Familias en Acción</i>	2,393.04	2,393.04	2,393.04	2,393.04	2,393.04	2,676.39	2,552.75	2,507.71	2,491.68	2,398.91	1.12	1.07	1.05	1.04	1.00
<i>Jóvenes en Acción</i>	N/A	258.02	203.56	162.92	178.72	152.37	250.93	194.40	157.50	172.39	N/A	0.97	0.95	0.97	0.96
<i>Subsidio de Desempleo</i>	N/A	N/A	N/A	N/A	N/A	0.5	4.9	21.8	21.5	23.1	N/A	N/A	N/A	N/A	N/A
<i>Devolución del IVA</i>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<i>Ingreso Solidario</i>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Taxes and social contributions (SICs)															
Income tax	687.46	664.66	676.99	629.22	643.68	1,627.08	1,860.87	2,025.47	3,059.14	3,289.97	2.37	2.80	2.99	4.86	5.11
Employee SIC	7,497.99	7,497.99	7,497.99	7,497.99	7,497.99	N/A	N/A	N/A	N/A	9,693.06	N/A	N/A	N/A	N/A	1.29
Self-employed SIC	2,045.62	2,045.62	2,045.62	2,045.62	2,045.62	N/A	N/A	N/A	N/A	2,109.54	N/A	N/A	N/A	N/A	1.03
Employers SIC	7,497.99	7,497.99	7,497.99	7,497.99	7,497.99	N/A	N/A	N/A	N/A	9,693.06	N/A	N/A	N/A	N/A	1.29
VAT	13,594.60	13,594.60	13,594.61	13,594.61	13,594.61	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Consumption tax	10,542.47	10,542.47	10,542.47	4,168.23	4,140.40	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

	COLMOD					External					Ratio				
	2019	2020	2021	2022	2023	2019	2020	2021	2022	2023	2019	2020	2021	2022	2023
Benefits															
<i>Colombia Mayor</i>	1,642.87	1,676.10	1,676.10	1,676.10	1,676.10	1,676.51	1,724.03	1,726.01	1,727.33	N/A	1.02	1.03	1.03	1.03	N/A
<i>Familias en Acción</i>	2,393.04	2,143.15	2,143.15	1,967.29	2,856.93	2,301.94	2,244.35	2,128.96	1,956.78	N/A	0.96	1.05	0.99	0.99	N/A
<i>Jóvenes en Acción</i>	258.02	386.12	386.12	386.12	436.64	268.57	428.78	518.46	525.25	N/A	1.04	1.11	1.34	1.36	N/A
<i>Subsidio de Desempleo</i>	N/A	18.97	18.97	18.97	18.97	12.5	26.5	16.57	N/A	N/A	N/A	1.40	0.87	N/A	N/A
<i>Devolución del IVA</i>	N/A	1,023.66	2,039.60	1,944.25	2,169.97	N/A	1,000.0	2,000.00	2,000.00	N/A	N/A	0.98	0.98	1.03	N/A
<i>Ingreso Solidario</i>	N/A	3,148.32	3,148.32	3,824.58	N/A	N/A	3,085.0	3,039.85	3,897.77	N/A	N/A	0.98	0.97	1.02	N/A
Taxes and social contributions (SICs)															
Income tax	660.19	653.96	637.52	977.59	403.43	3,617.41	3,967.45	4,426.86	N/A	N/A	5.48	6.07	6.94	N/A	N/A
Employee SIC	7,497.99	6,859.76	6,859.76	6,859.76	6,859.76	9,971.16	9,530.02	9,999.61	10,906.90	10,940.20	1.33	1.39	1.46	1.59	1.59
Self-employed SIC	2,045.62	2,029.48	2,029.48	2,029.48	2,029.48	2,174.18	2,122.01	2,179.98	2,285.49	2,238.41	1.06	1.05	1.07	1.13	1.10
Employers SIC	7,497.99	6,859.76	6,859.76	6,859.76	6,859.76	9,971.16	9,530.02	9,999.61	10,906.90	10,940.20	1.33	1.39	1.46	1.59	1.59
VAT	13,594.61	13,870.57	13,870.57	13,870.57	13,870.57	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Consumption tax	4,142.22	4,014.79	4,074.14	4,266.69	4,283.22	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Source: external data from the Departamento de Prosperidad Social (DPS) and Ministerio del Trabajo.

Table A7: Tax–benefit instruments simulated in COLMOD: annual amounts (thousand million)

	COLMOD					External					Ratio				
	2014	2015	2016	2017	2018	2014	2015	2016	2017	2018	2014	2015	2016	2017	2018
Benefits															
<i>Colombia Mayor</i>	1,130.22	1,130.22	1,189.40	1,189.40	1,189.40	1,039.38	1,224.73	1,228.08	1,232.72	1,248.74	0.92	1.08	1.03	1.04	1.05
<i>Familias en Acción</i>	2,159.14	2,238.55	2,323.16	2,447.58	2,634.88	2,267.08	1,976.54	1,997.61	1,897.52	1,806.17	1.05	0.88	0.86	0.78	0.69
<i>Jóvenes en Acción</i>	N/A	599.94	474.02	378.84	415.78	67.76	223.12	344.67	362.03	191.98	N/A	0.37	0.73	0.96	0.46
<i>Subsidio de Desempleo</i>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<i>Devolución del IVA</i>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<i>Ingreso Solidario</i>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Taxes and social contributions (SICs)															
Income tax	3,654.97	3,886.16	4,193.65	4,359.33	4,689.60	5,057.67	6,185.29	6,696.96	9,413.74	10,207.56	1.38	1.59	1.60	2.16	2.18
Employee SIC	9,135.49	9,164.66	9,835.58	10,434.68	11,041.53	N/A	N/A	N/A	N/A	8,477.60	N/A	N/A	N/A	N/A	0.77
Self-employed SIC	5,644.08	5,794.59	6,140.87	6,475.72	6,826.31	N/A	N/A	N/A	N/A	8,796.22	N/A	N/A	N/A	N/A	1.29
Employers SIC	34,495.14	34,550.80	37,080.62	39,325.20	41,611.82	N/A	N/A	N/A	N/A	58,912.83	N/A	N/A	N/A	N/A	1.42
VAT	3,465.13	3,618.71	3,931.56	4,738.11	4,888.81	25,776	23,224	26,939	34,479	36,775	7.44	6.42	6.85	7.28	7.52
Consumption tax	517.08	540.33	587.32	539.58	557.23	1,857	1,819	1,951	2,543	2,390	3.59	3.37	3.32	4.71	4.29

	COLMOD					External					Ratio				
	2019	2020	2021	2022	2023	2019	2020	2021	2022	2023	2019	2020	2021	2022	2023
Benefits															
<i>Colombia Mayor</i>	1,331.02	1,692.01	1,692.01	1,692.01	1,692.01	1,257.94	1,596.03	1,769.37	1,753.12	N/A	0.95	0.94	1.05	1.04	N/A
Familias en acción	2,710.14	2,465.39	2,519.02	2,468.14	5,859.13	1,826.22	1,814.57	1,766.64	1,789.84	N/A	0.67	0.74	0.70	0.73	N/A
Jóvenes en acción	599.94	1,168.50	893.59	893.59	1,004.33	248.04	559.94	714.26	722.65	N/A	0.41	0.48	0.80	0.81	N/A
Subsidio de desempleo	N/A	133.24	137.90	151.78	99.04	N/A	562.2	343.2	N/A	N/A	N/A	4.22	2.49	N/A	N/A
Devolución del IVA	N/A	460.65	934.95	933.24	1,171.78	N/A	366.9	912.0	1,076.48	N/A	N/A	0.80	0.98	1.15	N/A
Ingreso Solidario	N/A	6,044.77	6,044.77	7,343.20	N/A	N/A	4,203.3	7,328.95	8,034.23	N/A	N/A	0.70	1.21	1.09	N/A
Taxes and social contributions (SICs)															
Income tax	5,018.33	4,254.63	4,151.07	6,980.94	3,468.74	11,512.76	11,402.90	13,563.02	N/A	N/A	2.29	2.68	3.27	N/A	N/A
Employee SIC	11,598.18	6,776.41	11,401.64	14,513.30	11,840.82	8,875.71	8,452.84	9,394.43	9,992.72	10,379.29	0.77	1.25	0.82	0.69	0.88
Self-employed SIC	7,151.47	4,129.35	7,489.04	8,816.54	8,674.59	9,559.96	9,278.40	10,341.11	10,781.61	10,569.02	1.34	2.25	1.38	1.22	1.22
Employers SIC	43,728.53	28,597.03	43,056.01	54,866.06	43,668.21	61,313.07	59,438.99	64,599.94	68,413.34	70,544.35	1.40	2.08	1.50	1.25	1.62
VAT	5,056.19	5,053.18	5,237.45	5,747.91	6,446.63	39,430	39,848	40,863	N/A	N/A	7.80	7.89	7.80	N/A	N/A
Consumption tax	576.36	582.57	605.46	670.57	752.48	2,412	1,469	1,531	N/A	N/A	4.19	2.52	2.53	N/A	N/A

Source: external data from the DPS, DIAN, and UGPP.

Table A8: Absolute poverty rates and income inequality

	COLMOD					External					Ratio				
	2014	2015	2016	2017	2018	2014	2015	2016	2017	2018	2014	2015	2016	2017	2018
Poverty															
Total	43%	45%	46%	45%	44%	29%	28%	28%	27%	27%	0.67	0.62	0.61	0.60	0.62
Urban	34%	36%	37%	36%	35%	25%	24%	25%	24%	24%	0.72	0.66	0.66	0.67	0.70
Rural	73%	75%	76%	75%	74%	41%	40%	39%	36%	36%	0.57	0.54	0.51	0.48	0.49
0-18 years	56%	59%	60%	59%	57%	40%	39%	40%	39%	39%	0.71	0.67	0.66	0.66	0.68
19-64 years	36%	39%	40%	39%	37%	22%	22%	22%	21%	22%	0.62	0.57	0.57	0.56	0.59
65+ years	37%	39%	40%	39%	38%	21%	20%	20%	19%	19%	0.58	0.53	0.51	0.49	0.50
Extreme Poverty															
Total	13%	14%	15%	14%	13%	8%	8%	8%	7%	7%	0.64	0.58	0.57	0.53	0.55
Urban	7%	8%	9%	9%	8%	5%	5%	6%	5%	5%	0.68	0.60	0.61	0.59	0.62
Rural	30%	32%	35%	33%	31%	18%	18%	18%	15%	15%	0.60	0.56	0.52	0.47	0.49
0-18 years	18%	20%	21%	20%	19%	12%	12%	13%	12%	11%	0.68	0.62	0.61	0.57	0.60
19-64 years	10%	10%	12%	11%	10%	6%	6%	6%	5%	5%	0.60	0.55	0.53	0.50	0.53
65+ years	12%	13%	14%	13%	13%	6%	6%	6%	5%	5%	0.51	0.44	0.44	0.40	0.40
Gini	0.51	0.51	0.51	0.51	0.51	0.54	0.52	0.52	0.51	0.52	1.05	1.03	1.01	0.99	1.01

	COLMOD					External					Ratio				
	2019	2020	2021	2022	2023	2019	2020	2021	2022	2023	2019	2020	2021	2022	2023
Poverty															
Total	43%	46%	49%	44%	61%	36%	38%	39%	37%	N/A	0.83	0.84	0.80	0.83	N/A
Urban	34%	39%	42%	37%	54%	32%	37%	38%	34%	N/A	0.94	0.97	0.90	0.92	N/A
Rural	73%	70%	74%	69%	84%	47%	41%	45%	46%	N/A	0.65	0.59	0.60	0.67	N/A
0-18 years	57%	60%	63%	58%	73%	49%	52%	54%	52%	N/A	0.87	0.87	0.85	0.90	N/A
19-64 years	37%	40%	43%	38%	55%	30%	33%	34%	31%	N/A	0.82	0.84	0.78	0.82	N/A
65+ years	37%	37%	41%	37%	53%	24%	23%	24%	26%	N/A	0.66	0.63	0.60	0.70	N/A
Extreme Poverty															
Total	13%	15%	19%	19%	34%	10%	10%	12%	14%	N/A	0.73	0.71	0.65	0.74	N/A
Urban	8%	10%	13%	13%	27%	7%	9%	10%	11%	N/A	0.86	0.89	0.77	0.81	N/A
Rural	31%	30%	37%	37%	57%	19%	15%	19%	23%	N/A	0.61	0.50	0.51	0.63	N/A
0-18 years	19%	21%	26%	26%	45%	15%	16%	19%	22%	N/A	0.78	0.74	0.72	0.83	N/A
19-64 years	10%	12%	15%	15%	28%	7%	9%	10%	11%	N/A	0.72	0.72	0.65	0.72	N/A
65+ years	12%	11%	17%	18%	27%	6%	5%	6%	10%	N/A	0.50	0.45	0.35	0.55	N/A
Gini	0.51	0.51	0.52	0.52	0.53	0.53	0.53	0.52	0.56	N/A	1.03	1.03	1.00	1.06	N/A

Source: external data from GEIH-MESEF (2019–22)