

INSTITUTO NACIONAL DE ESTADISTICA



Household Income Distribution Atlas (HIDA)

Methodology

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1 INTRODUCTION

1.1 PROJECT OBJECTIVES

HIDA's aim is to provide information on the level and distribution of income broken down based on basic population demographic variables at a very detailed level by territory, specifically involving all the municipalities, districts and census sections into which the State is territorially organised. Information is also provided on all income and demographic indicators for the islands, provinces and autonomous communities of Spain.

1.2 TYPE OF OPERATION

It is an operation based entirely on the exploitation of administrative records. Aggregate results (different indicators such as mean values or distribution measures) are offered in table form.

1.3 DEMAND SOURCE

The INE Urban Indicators project provides information on the quality of life within large Spanish cities as well as within their areas of influence in terms of demographics, housing, income, the labour market, education, transport and tourism.

In order to compile the income indicators for the project, INE provides the Spanish Tax Administration Agency (or AEAT, per its Spanish initials) and the Regional Tax Authorities with a file on the households and the individuals in them, indicating the census section where they are located, and receives data on income subject to personal income tax for each census section, thus assigning income to the place where the income recipient resides instead of to where they file their tax return.

In order to exploit this highly relevant and abundant information, the INE created the Household Income Distribution Atlas (HIDA), an experimental project with statistical indicators of income level and distribution per person and household at municipal and infra-municipal levels. Said information is supplemented with demographic indicators for the aforementioned territorial levels, allowing for the level classification.

From September 2019 to December 2021, information referring to years 2015-2019 was published and enthusiastically welcomed by citizens, companies, public administrations and the academic world, which, together with the quality and stability of the data sources, motivated the addition of the operation as statistics for state purposes in Royal Decree 97/2022 approving the 2022 Annual Programme of the 2021-2024 National Statistical Plan.

2 CONTENT

2.1 POPULATION UNDER STUDY

The population scope is made up of the population residing in family dwellings within the national territory according to the Precensal Population File (FPC) as of January 1 of the year following the reference period for the income data. This file is a statistical population register prepared based on the census and its cross-referencing with other administrative registers and constitutes the population base on which the population censuses are constructed each year. Population residing in group housing is therefore excluded.

The population at January 1 of each year is linked to the income received during the previous year. Therefore, residents are excluded from the study, as well as the income they generate, which is not included in the FPC at that date (deaths, emigrations). This limitation also applies to the European EU-SILC survey and thus to the Living Conditions Survey.

2.2 GEOGRAPHICAL OR TERRITORIAL SCOPE

The geographical scope is made up of the national territory as a whole.

2.3 REFERENCE PERIOD OF THE DATA

The HIDA is a structural operation for which the income information is derived from the personal income tax returns of a calendar year, and the population stocks are those registered in the FPC on 1 January of the year following the income data reference.

2.4 STUDY AND CLASSIFICATION VARIABLES

The files sent by the AEAT and the Regional Tax Authorities are used to calculate a series of indicators on the income level and distribution, broken down territorially into census sections, districts, municipalities, islands, provinces and Autonomous Communities based on certain classification variables.

The set of tax models used and the definitions of the different types of income used in the HIDA are included in the annex to this document, as well as an aggregate definition comparison with other statistical sources.

It should be noted that the models used in the calculation of income correspond to those of residents for tax purposes, which means that not all income that could be found in personal income tax sources is being incorporated, but only those that are compatible with having been received by residing population.

The income distribution indicators included in the HIDA are measures taken on the variable income per consumption unit in the population, which is an income concept that is used internationally to ensure a better comparison of individual incomes for different types of household.

The income per unit of consumption of a household—which is then allocated to each and every component of the household to construct the variable income per unit of consumption in the population—is calculated as the net income generated by all household contributors divided by the total consumption units of the household. In order to determine the number of consumption units equivalent to a household, the modified OECD scale is used in all countries within the European Union. This scale assigns a weight of 1 to an adult in the household, 0.5 to the individuals over 13 years old and a weight of 0.3 to the persons under 14 years of age.

The study variables included in the HIDA are:

– INCOME INDICATORS

- Average net income per person and per household.
- Average gross income per person and per household.
- Average and mean income per consumption unit.
- Components of gross income. Five exhaustive categories are considered: salaries, pensions, unemployment benefits, other benefits, other income.
- Percentage of the population per consumption unit income below/above, certain income thresholds. More specifically:
 - Percentage of the population per consumption unit income below certain fixed thresholds, in particular, 5,000, 7,500 and 10,000 euros.
 - Percentage of population with income per consumption unit below certain relative thresholds, which are expressed as a percentage of the median income per consumption unit. This is calculated on the basis of the income distribution provided by the AEAT whose area of competence is the Common Tax Territory. The relative thresholds considered are 40%, 50% and 60% of the median income distribution per consumption unit.
 - Percentage of population with income per consumption unit above certain relative thresholds, which are expressed as a percentage of the median income per consumption unit. This is calculated on the basis of the income distribution provided by the AEAT whose area of competence is the Common Tax Territory. The relative thresholds considered are 140%, 160% and 200% of the median income distribution per consumption unit.
- Gini Index.
- P80/P20 income distribution, which is defined as the ratio between the 80th percentile and the 20th percentile of the distribution of income per unit of consumption.

Distribution indicators relating to the population below/above certain income levels are provided disaggregated according to the following classification variables:

- Sex
- Age groups (under 18, 18 to 64, 65 and over)
- Nationality (Spanish, foreign)

Likewise, in these income distribution indicators, the 'sex' variable is cross-referenced with 'age brackets' and 'nationality'.

– DEMOGRAPHIC INDICATORS

Based on each year's FPC, some demographic indicators are elaborated referring to the different geographical levels that allow for classifying the territorial units and which therefore enrich the income information analysis. The following indicators are published:

- Total population.
- Mean age of the population.
- Percentage of population under 18 years of age.
- Percentage of population over 65 years old.
- Median size of the home.
- Percentage of single-person households.
- Percentage of Spanish population.

3 CHARACTERISTICS OF THE PROJECT

3.1 OBSERVATION UNITS TO WHICH THE PRIMARY DATA REFER

The observation unit is the persons residing in family dwellings registered in the FPC on 1 January of the year following the reference year of the income data.

3.2 DATA COLLECTION METHODOLOGY

The collection of income data is carried out on the basis of standardised annual requests to the different collaborating organisations. The FPC in particular is compiled annually in the Sub-directorate General of Demographic Statistics of the INE.

3.3 MEANS OF DATA COLLECTION AND PROCESSING

In order to achieve the purposes legally attributed to them, the different Tax Agencies have extensive resources and experience by means of which they efficiently collect and store the information on the economic income subject to personal income tax for each resident within the national territory.

After the standardised annual requests by the INE to the organisations collaborating in the compilation of the HIDA—which are given a file generated from the FPC that incorporates all the persons residing in households, specifying the census section in which the household is located—they put the information together and get the results of the personal income tax returns.

The files processed collect information only on those residents, which we will call 'found population', who belong to households in which some type of income has been found in any of the tax models, and not those who originally appear in the file sent by the INE.

This procedure has hardly any impact in most of the territories, given that the percentage of the residing population in households with some type of income is very high, over 98.6% in the common tax territory in 2016.

However, there always is a small group of census tracts, generally where the community's foreign population resides, where these percentages decrease significantly. Thus, in extreme cases, there might be a section where no income is obtained for groups that make up 36% of the population (taking into consideration only those census sections with over 100 residents). In these cases, considering the income that appears in the tax models in relation to the total residing population would give rise to very significant downward biases, and therefore it is decided to refer the income to the 'population found', which also implies biases, but to a lesser extent.

Prior to the territorial aggregation of data, and in order to preserve both statistical and tax secrecy, individual incomes are limited, so that the gross income of any taxpayer whose tax return result exceeds 3 million euros or is less than minus 3 million euros is set at these same ceilings. In these cases, the different components which result from breaking down gross income and net income in this publication will be modified proportionally to the ratio between the new gross income level and the original one for the sake of consistency between the different income components.

In addition, income information from census tracts with negative gross or net aggregate income will not be used in the indicator compilation process, nor will information from negative income brackets.

Finally, in order to make the indicators more robust, the following data processing is carried out:

- In the calculation of the Gini index, a prior reallocation of the data of the original distribution of income per unit of consumption is carried out. In this manner, the 1.5% of the lowest income values and the 1.5% of the highest values are replaced by the value of the distribution closest to those of the extreme ends.
- Fixing a minimum population size of the different territorial units for which information is provided. These minimum sizes will depend on both the variable under study and the classification variables.

The minimum population sizes for the publication in the HIDA of the different indicators are detailed below.

As far as the indicators on average income and sources of income, the Gini index, the P80/P20 income distribution and the demographic indicators are concerned, they are published for census sections, districts and municipalities with at least 100 residents.

From the publication of data referring to the year 2020 onwards, a value for the variables net and gross income per person and household is published for all geographical entities regardless of their population size. In the case of census sections or districts with a population size under 100 inhabitants where the smallest relevant geographical entity, district or municipality encompassing it exceeds this population threshold, the value of the net and gross income variables per person and household of that district or municipality will be assigned. In the case that the sections and districts belong to a municipality with a population of under 100 inhabitants, these three geographical entities will be assigned the values of the variables net and gross income per person and household as follows:

- For the HIDA 2020 and HIDA 2021 editions, the averaged values of these variables will be allocated taking into account the municipalities with less than 100 inhabitants in the province they are part of.
- As of the HIDA 2022 edition, these values will be calculated by averaging the municipalities with less than 100 inhabitants belonging to the same agricultural regions (working document [Model for assigning average income values in the Household Income Distribution Atlas](#)).

Indicators relating to the population with income per consumption unit below/above certain fixed and relative thresholds by sex are only published for territorial units with at least 500 residents.

When the distribution indicators mentioned in the previous paragraph appear broken down by sex and age bracket, the minimum population residing in the territory must be 2,500 in order to be published. As far as breaking down the different sex and nationality combinations, the minimum is 10,000 residents.

In addition, when a municipality or district has several territorial sub-units, districts or census tracts respectively, and one and only one of said territorial sub-units has fewer residents than those set out above for the different indicators, the indicators will not be published in any of the territorial sub-units that make up that municipality or district. As of the publication of the data referring to the year 2020, the net and gross income per person and household variable is published for the territories, sections or districts in which the latter circumstance occurs.

- Dimensioning the extreme values of the income indicators. Upper and lower limits are calculated in such a way that when the indicator takes on a value below the lower limit or above the upper limit, said value is substituted by the limit.

For the calculation of said quotas, the census sections are sorted according to the corresponding indicator, and the values of each census section are weighted by their population—with the exception of the gross income per household and net income per household indicators, which are weighted by the number of households. Subsequently, the 0.1 percentile (lower limit) and the 99.5 percentile (upper limit) are determined by considering the census section as the territorial unit. These same limits will be used in the dimensioning of the indicators by districts and municipalities.

4 DISSEMINATION PLAN AND FREQUENCY

4.1 DISSEMINATION PLAN

The dissemination of the information obtained is configured into 10 statistical tables and 9 maps. The relation of the tables disseminated is:

- Mean and median income indicators.
- Distribution by income source.
- Percentage of the population per consumption unit income below certain fixed thresholds by sex.

- Percentage of the population per consumption unit income below certain fixed thresholds by sex and age groups.
- Percentage of the population per consumption unit income below certain fixed thresholds by sex and nationality.
- Percentage of the population per consumption unit income below/above certain relative thresholds by sex.
- Percentage of the population per consumption unit income below/above certain relative thresholds by sex and age groups.
- Percentage of the population per consumption unit income below/above certain relative thresholds by sex and nationality.
- Gini Index and Income Distribution P80/P20.
- Demographic indicators.

The choropleth maps present the information interactively, so that as the user can scroll down the territorial scope, the information automatically switches from relating to municipalities to being presented by districts or census sections depending on the user's preference.

The indicators that result in maps are:

- Average net income per person.
- Average net income per household.
- Population with income per consumption unit under 7,500 euros.
- Percentage of the population per consumption unit income below 60% of the median value.
- Percentage of the population per consumption unit income above 200% of the median value.
- Percentage of population under 18 years old with income per consumption unit below 60% of the median value.
- Percentage of population under 18 years of age.
- Percentage of population over 65 years old.
- Gini Index.

The name of the publication shall include the income data reference year.

4.2 DISSEMINATION FREQUENCY

The results shall be disseminated annually in October.

5 ANNEXES

ANNEX I. MODELS USED AND INCOME TABLE

Models used and income declared, year 2016 (*)			
Model	Key	Subkey	Income / Declared withholdings
100			All income taxed (annual statement)
140			Deduction due to maternity leave
143			Deduction due to large families and disability
180			Urban rental of real estate subject to taxing
184			Return on entities on income allocation
	A		Return on movable capital
	C		Return on rented real estate
	K	01 to 05	Withholdings
187			Capital gains and losses on investment funds (withholding taxes)
188			Income from capitalisation transactions and life insurance policies
190			Income from work and business activities, prizes and certain capital gains and income allocations
	A		Salaries
	B	01 to 03	Pensions
	C		Unemployment benefits or allowances
	E		Directors and Managers
	F	01 and 02	Courses, conferences, literary work productions, etc.
	G	01 to 03	Return on professional activities
	H	01 to 04	Return on agricultural, stockbreeding and forestry activities and business activities in objective estimation
	I	01 and 02	Return on intellectual and industrial property, technical assistance, renting of real estate property, businesses or mines that involve economic activities
	J		Income imputed from the assignment of image rights
	K	01 and 02	Neighbours' capital gains and awards derived from forestry exploitation within national forests
	L	01	Per diems and travel allowances
		02	Extraordinary public benefits due to acts of terrorism and pensions derived from medals and honours awarded in relation to acts of terrorism
		03	Aid received by persons affected by human immunodeficiency virus (HIV/AIDS)
		04	Pensions for injuries or mutilations suffered during or as a result of the Civil War
		05	Severance payments or termination of employment allowances
		06	Benefits due to absolute permanent disability or severe infirmity
		07	Pensions due to disability or permanent incapacity under the special civil service regime
		08	Family benefits and pensions and pension assets for orphans, grandchildren and siblings under 22 years of age or incapacitated for work, received from the public social security and pensioners' schemes
		09	Financial benefits from public institutions for the care of disabled persons aged 65 and over or minors, and financial aid granted by public institutions to disabled persons or persons aged 65 and over to subsidise their stay in residences or day centres
		10	Grants
		11	Relevant literary, artistic or scientific awards
		12	Financial aid for top-level sportsmen and sportswomen
		13	Unemployment benefits paid in the form of lump-sum payments
		14	Extraordinary bonuses paid by the Spanish Government for participation in international peace or humanitarian missions
		15	Job returns on work carried out abroad
		16	Burial or funeral benefits
		17	Benefits for people who have developed hepatitis C as a result of having received treatment in the public health system
		18	Income benefits received by disabled individuals corresponding to contributions to social security schemes set up for the benefit of disabled people
		19	Public economic benefits linked to the service for care in the family environment and personalised assistance deriving from the Law for the Promotion of Personal Autonomy and Care for people in situations of dependency
		20	Public family benefits and aids linked to the birth, adoption, fostering or care of minor children
		21	Income from the work of the holder of a protected estate
		22	Minimum job seeker incomes of the Autonomous Regions and the like
		23	Aid to victims of violent crime
		24	Income from work in kind exempted by article 42.3 sections a) to f).
		25	Other exempt income

192		Income from Treasury Bills
193		Withholdings and on-account payments on certain types of income from movable capital
	A	01 Bonuses for meeting attendance
		02 Dividends and profit participations in any type of entity, except if included in sub-clauses 07 or 08
		03 Income or revenue from any kind of assets, except the delivery of bonus shares, involving remuneration other than from work
		04 Income or revenue deriving from the constitution or transfer of rights or powers of use or enjoyment over the securities or shares representing the participation in the funds of the institution
		05 Any other income from an entity as a partner, shareholder, associate or participant.
		07 Dividends and profits distributed by Collective Investment Funds
		08 Dividends not subject to withholding or on-account payment
	B	01 Interest from debentures, bonds, certificates of deposit or other private securities
		02 Interest on bonds, debentures, notes, public debt or other public securities
		03 Interest on non-bank loans
		04 Income or revenue benefiting from a transitional profit rules on financial transactions
		05 Income or revenue paid by a financial institution as a result of the total or partial transmission, assignment or transfer of a claim
		06 Other income from movable capital or income not included in the previous numbers.
	C	01 Income or revenue from intellectual property where the recipient is not the author
		02 Income or revenue from industrial property which is not linked to economic activities carried out by the recipient
		03 Income or revenue from the provision of technical assistance, unless such assistance is provided in the course of an economic activity
		04 Income or revenue from the letting or subletting of real estate, businesses or mines which are not involved in economic activities
		05 Income, either life-long or temporary, arising from the taxation of capital, provided that it has not been acquired by inheritance, bequest or any other succession document not derived from capitalisation operations and life or disability insurance contracts.
		06 Income deriving from the transfer of the right to the exploitation of the image or from the consent or authorisation to use it
		07 Income from the subletting of urban real estate not constituting an economic activity
		12 Other income from movable capital or income not included in other numbers of this code
	D	Income from the transfer to third parties of own capital from related entities when the recipient is a personal income taxpayer (same subkeys as in A)
194		Interest on securities with implicit yield
196		Income from bank accounts
198		Income on transactions with financial assets and other transferable securities
345		Pension plans, pension funds and alternative systems
	C	01 and 02 Pension scheme promoters: deductible promoter contributions
	G	Mutual benefit societies: amounts paid by the promoter
	J	9 Company pension schemes: contributions paid by policyholders
	L	Collective dependency insurance: premiums paid by policyholders
714		Wealth tax
CON		Contributions to the Household Employees' Scheme
DGA		Direct aid from the State aimed at financial support for the payment of rent for the dwelling that constitutes a habitual and permanent residence.

(*) Only the codes and subkeys that affect the definition of income in terms of Personal Income Tax are detailed.

Table A1.2 Income table

	Respondents	Non-respondents
0.1 GROSS INCOME	1 + 2 + 3 + 4 + 5	
0.2 NET INCOME	0.1 - 6	
1 WORK INCOME	1.1 to 1.5	
1.1 Salaries	100.1+5	190.A+E+F + CON/0.0425
1.2 Pensions		190.B
1.3 Unemployment taxed benefits		190.C
1.4 Employer contributions to pension plans and group insurance	100.6+7+8	345.C+G+J+L
1.5 Exempt income	1.5.1 to 1.5.3	
1.5.1 Severance payments	190.L5	
1.5.2 Exempt unemployment benefits	190.L13	
1.5.3 Jobs abroad	190.L15	
2 MOVABLE CAPITAL INCOME	2.1 to 2.4	
2.1 Interests	100.22	193.B1+B2+B3+B5+B6 +196
2.2 Dividends	100.24	193.A1+A2+A3+A4+A5+A7+A8
2.3 Other not exempt income	100.31+44-22-24	188 + 192 + 193.rest + 194 + 198
2.4 From entities on income allocation	100.222+223+224	184.A1+A2
3 INCOME FROM REAL ESTATE PROPERTY RENTAL	3.1 + 3.2	
3.1 From individuals	100.60	180
3.2 From entities on income allocation	100.225	184.C
4 ECONOMIC ACTIVITIES RETURN	4.1 to 4.4	
4.1 In direct estimation	100.121	
4.2 In objective non-agricultural estimation	100.148	
4.3 In objective agricultural estimation	100.177	
4.4 In entities on income allocation	100.226	
5 OTHER INCOME	5.1 + 5.2	
5.1 Taxed	5.1.1 to 5.1.3	
5.1.1 Emancipation income	100.268	DGA
5.1.2 Imputed real estate income	100.75	
5.1.3 Other Special Regime income	100.240 +244+248+252	
5.2 Exempt	5.2.1 to 5.2.6	
5.2.1 Disability benefits	190.L6+L7	
5.2.2 Employee benefits	190.L19	
5.2.3 Family benefits	190.L8	
5.2.4 Exempt grants	190.L10	
5.2.5 Other exempt benefits	190.L2+L3+L4+L9+L11+L12+L14+L16+L18+L20+L21+L22+L23+L24+L25	
5.2.6 Family deductions	100.551+562+575+589+591	140+143
6 TAXES AND CONTRIBUTIONS	6.1 + 6.2 + 6.3	
6.1 Accrued income tax	100.537	180+184+187+188+190 +193+194+196
6.2 Social security contributions for employed and unemployed individuals	100.11	190.A+C + CON
6.3 Accrued wealth tax	714.055	
9 AGGREGATE CONCEPTS (**)		
9.1 Salaries	1.1 + 1.4 + 1.5.1 + 1.5.3	
9.2 Benefits	9.2.1 + 9.2.2 + 9.2.3	
9.2.1 Pensions	1.2	
9.2.2 Unemployment	1.3 + 1.5.2	
9.2.3 Other benefits	5.1.1 + 5.2	
9.3 Movable capital income	2	
9.4 Income from real estate property rental	3	
9.5 Economic activities return	4	
9.7 Imputed and other income	5.1.2 + 5.1.3	

(*) The reference of each income is expressed with the number of the statement model and, after the dot, the box of the item or the code and subkey.
CON are the contributions of the employees of the household, DGA indicates that the data come from the Governmental Aid database.

ANNEX II. HOME INCOME CONCEPT. COMPARISON WITH OTHER STATISTICAL SOURCES

In this new statistical operation, the 'net household income' corresponds to indicator 0.2 of the previous income table. The primary information comes from the tax authorities providing the amounts collected in different AEAT forms for the population under study.

Below is a brief comparison with other statistical sources that are also used for household income.

– Living Conditions Survey

The theoretical definition of household income fits well between the two operations. However, there are some differences, such as, for example, the inclusion of all compensation in kind and "imputed income" in the HIDA (only the 'company car' is included in the LCS) or the inclusion of monetary transfers between households in the LCS.

In the construction of the variable 'net household income', the most important difference is in the origin of the primary data since the LCS collects information from the survey that is combined with the tax information, giving the opportunity to collect income not captured in the AEAT as those of the informal economy or the pensions of foreigners. On the other hand, in the LCS, as it is a household survey, it has more difficulties to collect information from the households that are in the highest income brackets.

Likewise, differences may appear between the results offered by LCS and HIDA due to the fact that LCS is a sample, with a limited size, especially by AC. The comparison between sources must therefore be done with caution.

– National Accounts

The concept of net income used in this operation is in line with what is defined in Regulation 1980/2003 of the EP and the Council on Community statistics on income and living conditions (EU-SILC). It should not be confused with the concept of disposable income used in national accounting.

Regarding the concepts used in National Accounting, we also find differences in the population sphere as the population residing in institutions is excluded from the HIDA.

As in the LCS, the National Accounts aggregates include income not captured in the AEAT, such as those from the informal economy or the pensions of foreigners.