

Passenger Transport Statistics



INSTITUTO NACIONAL DE ESTADÍSTICA

Methodological note

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1. Objectives

The aim of the statistics is to provide information on the number of passengers carried in each of the means of transport during the reference period. By type of transport, a distinction is made between urban transport (bus and subway), interurban transport (bus, rail, plane and ship) and special and unscheduled transport by bus.

To obtain the data for these statistics, the INE uses surveys and administrative sources depending on the type of transport:

- Bus transport, the information is obtained from a survey to urban and interurban transport companies. The characteristics of this survey are specified from the sixth section of this document.
- Rail transport, the data are provided by the railway operators (RENFE and other regional companies).
- Air transport, the information comes from the Civil Aviation.
- Sea transport, the data are provided by State Ports.

2. Scopes

2.1 Population scope

The population scope is made up of all the companies that are involved in passenger transport by air, sea, rail, bus and subway, and in particular, by the companies whose main activity is within SECTION H TRANSPORT AND STORAGE and belongs to classes 51.10, 50.10, 49.10, 49.31 and 49.39 of the CNAE-2009, respectively:

51.10 Passenger air transport

Includes both scheduled and non-scheduled passenger air transport.

50.10 Sea and coastal passenger water transport

Includes sea passenger transport (including coastal transport), scheduled and non-scheduled.

49.10 Interurban passenger rail transport

Includes passenger transport by interurban rail.

49.31 Urban and suburban passenger land transport

This includes passenger land transport services, urban and suburban, on regular itineraries, with established schedules and fixed stops, carried out by buses, trams, trolleybuses, subways and light rails. Also included are airport and station service lines and the operation of funiculars and teleferics if they are part of urban or suburban transit systems.

49.39 Other passenger land transport n.e.c.

Includes scheduled long-distance bus services, occasional coach services for excursions, in-airport shuttle services and the operation of funiculars, teleferics and chair lifts if they are not part of urban or suburban transit systems. Also included are the operation of school buses and buses for the transport of employees.

2.2 Time scope

The reference period of the survey is the calendar month.

2.3 Geographical scope

All the statistical units located in the national territory that are included within the population scope are the object of research.

3. Statistical unit

The *statistical unit* is defined as the element of the population under observation and research to which the data tabulation of the statistical aggregates obtained as a result of the surveys refers.

In this survey, the statistical unit is the company, generally identified by the legal unit, which carries out as an economic activity the provision of some of the services included in the population scope. The company is also the informant unit, as it is perfectly defined, located and has the accounting and employment data, which facilitates the response and provides homogeneous information.

4. Definition of variables

- **Urban transport:** transport that runs entirely on urban or developable land or is dedicated to connecting different urban centres *located within the same municipality*. Urban transport can be classified into:
 - *Bus transport:* transport intended to carry all types of passengers in general in buses, trams, trolleybuses, light railways, funiculars and

urban teleferics that have a pre-established itinerary subject to pre-established schedules and timetables, taking passengers at fixed stops within the same municipality. An administrative concession is required to carry out this type of transport.

- *Subway transport*: this includes all passengers transported by the subway companies of Madrid, Barcelona, Valencia, Bilbao, Sevilla, Málaga and Palma.
- **Interurban transport**: that intended to transport all types of passengers by bus, air plane, ship or rail that have a pre-established itinerary subject to fixed schedules and timetables, taking passengers at fixed stops between different municipalities. An administrative concession is required to carry out this type of transport.

As of January 2009, for bus and rail transport, the following breakdown by distance travelled is collected, the results of which began to be published in January 2010.

- Local distance: transport carried out in the urban centre and its area of metropolitan influence over distances of less than 50 km.
- Regional distance: transport carried out in distances less than or equal to 300 km not included in local distance.
- Long distance: transport over distances of more than 300 km.

As of January 2017, the following breakdown is published for air transport: Peninsular, Peninsula-Rest of Territory and Inter-island

- **Special and unscheduled transport by bus**: includes special and unscheduled passenger transport by bus, which carries out non-regular passenger transport services, without being subject to any itinerary or timetable, including occasional coach services for excursions, bus rental with driver, etc. Special transport can be classified into:
 - *School transport*: this is intended to transport exclusively schoolchildren, students, elderly or disabled people by bus or coach, within the same municipality (urban) and between different municipalities (interurban).
 - *Labour transport*: transport intended for the exclusive transport by bus or coach of homogeneous groups of workers (company workers, military personnel, service lines to airports or train stations for the transport of crews, etc.) within the same municipality (urban) and between different municipalities.

5. Dissemination

The dissemination of information is carried out exclusively at national level, except:

- in scheduled urban bus transport (disaggregated information at the Autonomous Community level and at the city level for those with subway) and subway transport (disaggregated information at the level of the seven Spanish cities with subway: Barcelona, Bilbao, Madrid, Málaga, Palma, Sevilla and Valencia).
- in air transport, where the data are broken down between peninsular, peninsula and rest of the territory and inter-island.
- in interurban bus and rail transport, where the data are disaggregated into local, regional and long distance.

Passenger Transport Statistics

6. Framework

As a framework for the Passenger Transport Statistics, the Central Business Register (CBR) and other auxiliary sources are used, including the directories of companies with passenger transport concessions in the Autonomous Communities.

The CBR is a list of companies that is updated once a year with administrative sources, mainly related to taxes and Social Security. It contains information on the main economic activity and on the number of employees, variables that are used in the sample design, and on identification and location data, which are necessary for the correct collection of information.

7. Sample design

The type of sampling used is stratified random sampling. A random sample is obtained in each stratum, with the exception of the sample made up of companies with 50 or more employees, which is comprehensive and where all units are included in the sample. Scheduled urban transport companies and those with fewer than 50 employees but a large number of passengers are also studied in a comprehensive way. The sample size is distributed among the strata in proportion to the number of companies and the estimators are those of simple expansion.

Each of the design stages is detailed below.

7.1. Stratification

The target population is divided into groups, called strata, trying to make them as homogeneous as possible with respect to what is being studied and separated. The strata are formed by the crossing of several variables: Autonomous Community, size, measured by the number of employees and economic activity. The following size groups are considered:

- 0 employees
- From 1 to 2 employees

- From 3 to 9 employees
- From 10 to 49 employees
- From 50 or more (comprehensive stratum)

7.2. Sample size and selection

Once the total sample size, n , has been determined, it is distributed among the strata h by means of proportional allocation, that is:

$$n_h = N_h \frac{n}{N}$$

Where:

- N : Number of companies of the framework
- N_h : Number of companies of the framework in stratum h
- n_h : Number of companies of the sample in stratum h

The minimum number of sample units per stratum is 3.

The sample is selected randomly within each stratum. In order to avoid the tiredness of the informants and the ageing of the sample, allowing the selection of newly created companies, an annual rotation of 25% of the non-comprehensive strata is carried out.

7.3. Estimators

The estimator of the number of passengers in the month m for any domain D , is:

$$\hat{V}_{D,m} = \sum_h \sum_{k \in D} F_h V_{hk,m}$$

With:

$V_{kh,m}$ = Number of passengers reported in the questionnaire k selected in stratum h in month m

$F_h = N_h/n_h$, $h=1,.., H$, elevation factor for all questionnaires included in stratum h -th. Where:

The estimator of the total number of passengers in the month m , for the national total, is given as the sum of the totals estimated in each of the strata:

$$\hat{V}_m = \sum_h \sum_k F_h V_{hk,m}$$

It is important to note that the elevation factors remain fixed throughout the year. In the case of lack of response, information from units that have not been received is imputed according to various criteria, hence no reweighting tasks are performed.

7.4. Sampling errors

Estimates of relative sampling errors or coefficients of variation in % are calculated and published for bus passengers of the national total for the following types of transport: total, scheduled urban transport, scheduled interurban transport and special transport.

The relative sampling error for the estimator of the total number of passengers, in a given month m and domain D , is given by the following expression:

$$CP(\hat{P}_{D,m}) = 100 \times \frac{\sqrt{V(\hat{P}_{D,m})}}{\hat{P}_{D,m}}$$

To calculate $V(\hat{P}_{D,m})$ the Raulin formula is used, which gives a good approximation to the direct method and is given as follows:

$$\hat{V}(\hat{P}_{D,m}) = \sum_h \frac{n_h}{(n_h - 1)} F_h (F_h - 1) \sum_k (V_{hk,m} Z_{Dhk} - \hat{V}_{Dh,m})^2$$

Being:

- $\hat{P}_{D,m} = \sum_h \sum_{k=1}^{n_h} F_h V_{hk,m} Z_{Dhk}$
- $\hat{V}_{Dh,m} = \frac{\sum_k V_{hk,m} Z_{Dhk}}{n_h}$
- Z_{Dhk} : a random variable that takes value 1 if the company k belongs to the domain D and 0 if not.

8. Statistical secrecy

Information may be provided for all those strata where the number of units in the sample is greater than 3 and where there is no unit whose number of passengers in the reference month exceeds 70% of the total number of passengers in the stratum.