2019 Survey on Equipment and Use of Information and Communication Technologies in Households (ICT-H 2019)

Methodological report

INSTITUTO NACIONAL DE ESTADISTICA

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1. Introduction

The Survey on Equipment and Use of Information and Communication Technologies in Households, ICT-H 2019, has been carried out by the National Statistics Institute (INE), following the methodological recommendations of the Statistical Office of the European Union (EUROSTAT). This statistic has been cofunded by the European Commission.

The overall objective of the ICT-H Survey is to obtain data on the development and evolution of what has been termed the **Information Society.**

The specific objectives of this annual survey are:

- To identify the information and communication technology equipment in Spanish households (ICT products: television, landline and mobile phones, computer equipment).

- To determine the Spanish population's use of the Internet and e-commerce, their computer skills and literacy, and the activities carried out and relations with electronic administration.

- To serve as a basis for comparisons between Spain and other countries and to meet the requirements of international bodies. It is the only source of its kind whose data are not only strictly comparable between EU countries, but also in other international contexts

- To obtain comparable information between Autonomous Communities.

This operation is a statistic for central government purposes and is included in the 20172020 National Statistical Plan.

The ICT-H Survey is framed within the Community statistics on the information society, so it is subject to the following Community regulations:

- Regulation No. 808/2004 of the European Parliament and Council of 21 April 2004 concerning Community statistics on the information society.

- Commission Regulation No. 2018/1798 of 21 November 2018 implementing the above Regulation.

2. Research scopes

2.1 Geographical scope

The geographical scope of the research is comprised of the entire Spanish territory.

2.2 Population scope

The Survey investigates the main family households and persons residing in them aged 16 or over at the time of the interview; one is then selected for more exhaustive research into their internet use through a random procedure.

In addition, if there are children aged 10 to 15 in the household, a minimum set of questions related to this topic are asked to all of them.

In order to achieve greater comparability with data published by Eurostat, results published since the first quarter of 2006 refer to households inhabited by at least one person aged 16 to 74 and to people in the same age group. However, the microdata files provide complete results of the Survey's target population.

However, it includes additional information on tables concerning minors (10 to 15 years) and people aged 75 and over.

- Family household:

Household intended to be inhabited by one or several persons who do not constitute a collective, regardless of existing links between them.

- Main family household:

A family household is considered to be the main household when it is used as a habitual residence for all or most of the year.

2.3 Time scope

The Statistic is carried out annually.

Reference period of the survey results: from February to May 2019

Reference period of the information: the majority of the ICT-H variables refer to the twelve months prior to the time of the interview. However, the variables on ICT equipment refer to the time when the interview is carried out whilst the variables on the use of mobile ICT devices, activities carried out through the internet and the number and value of purchases made through e-commerce refer to the past three months. The variables related to minors also refer to the last three months.

3. Questionnaire design

3.1 Questionnaire structure

The questionnaire is divided into three large sections:

1. ICT information on the household (parts I, II and III of the questionnaire)

- Household composition and selection of the person to be interviewed through the individual questionnaire (part I)

  The "Members of the household" table is filled out first in order to decide which people are members of the household and which of them are surveyable (members of the household aged 16 or over).

  The person to be surveyed is selected electronically through a random procedure

- Household equipment with new technologies (computers, mobile phones…) (Part II)

- Type of internet access used in the home: broadband fixed connection (fiberoptic, cable network, ADSL) or mobile (3G, 4G…); fixed narrowband connection (through the conventional phone line or mobile (GPRS).

  Finally, if applicable, reasons for which a home does not have access to the Internet. (Part III)

2. ICT information about minors (10 to 15 years) living in the household (Part IV)

This part is completed if there are children aged 10 to 15 in the household and is made up of a minimum series of questions all relating to the use of computers, Internet and mobile phones.

3. ICT information about the person selected in the household (parts V to XII)

This part is filled in exclusively by the selected person and consists of parts V to XII.

Use of mobile phones and internet, access devices and activities carried out (part V).

Firstly, it informs us about the use of mobile phones by the selected person in the last 3 months, then continues on to ask about use or non-use of the Internet

"**To use or access the internet**" is considered to mean the use of any device (laptop, hand-held device such as a mobile phone, tablet…) with internet access to search, consult, send or receive information and buy or download products, browsing through web pages or apps. This can be done in completely alone or with other people.

For all people:

- frequency of internet use from any location, for any reason, on any device.
The following frequency of use scales are used:

  • several times a day

- daily

- at least once a week

- at least once a month

- at least once in the last three months

- at least once in the last twelve months,

- at some point in their lives

- have never used the internet.

This question is the basis for the application of filters throughout the questionnaire.

For people who have used the internet in the last three months:

- type of mobile devices used to connect to the internet from outside the house or place of work and for any reason in the last three months, differentiating between the use of a laptop, tablet, mobile phone and the use of other mobile devices (such as a multimedia player or games console, e-book reader or smart watch).

- type of activity carried out on the internet from any location in the last three months and for particular reasons, differentiating by type of activity.

- Communication activities: sending or receiving e-mail, phone calls or video calls (through a web camera) on the internet, social networking or using instant messaging services.

- Information access activities: read news, newspapers or magazines, search for information about health topics or on goods and services.

- Activities related to civic and political participation: voice opinions on political or civic matters, take part in online consultations or vote on civic and political rights.

- Employment-related activities: job search or sending a job application.

- Interaction through the Internet with equipment or household appliances

- Other activities: selling goods or services (for example, in auctions), electronic banking and/or use of storage space on the internet (cloud computing service), posting own content on a site to be shared, or listening to music (such as online radio or streaming).

- learning activities conducted over the internet in the last three months for educational, professional (**included in this case**) or private purposes: taking an online course, using learning material that does not constitute a complete online course, communicating with monitors, students using portals or educational web sites, other learning activities on the Internet.

Collaborative Economy services (part VI)

This part includes the use of the Internet to make arrangements for accommodation, means of transport and/or paid work with another individual.

Shared economy refers to trade relations **exclusively** between individuals. The agreement and contact must be carried out via an intermediary application or website. This excludes orders made via email, WhatsApp, phone calls.

They should be carried out by people who have used the internet in the last 3 months, but the temporary reference period of the questions in this part are the twelve months prior to the interview

- use of any website or application to arrange accommodation (room, apartment, house, villa, etc.) with another person in the last 12 months, for private purposes (therefore excluding employment reasons).

- use of any website or application to arrange a transport service (for example, car) with another individual, for private purposes (excluding employment reasons).

- use of intermediary websites or applications to obtain paid employment

Electronic administration (part VII)

This part is aimed at investigating the selected person's Internet use relating to public administrations and services. These services also include public education services and health services (such as booking a medical appointment…)

It refers to public administrations at all levels, including local or city council, Autonomous Community, State, companies of the administration, etc.

The time reference period for the questions in this part will be the twelve months prior to the interview and only private reasons are included (therefore excluding work reasons...).

It should be filled in by people who have used the internet in the past twelve months.

Information is obtained on:

- method used to interact with Public Administrations via the internet (excluding emails) to:

  • obtain information from administration or services websites or applications

  • download or print official forms from administration or services web sites and/or

  • submit forms completed online to the administration or public services (including the payment of taxes, utilities, tax declaration, **requesting a medical appointment**…).

For people who have not submitted forms completed online to administration web sites or applications despite the need to submit official forms, reasons for non-submission should be specified:

  • another person (friend, relative, manager...) submitted the form via the internet in their name

  • service is not available on the web

  • they have problems with or do not have digital signatures or certificates

  • lack of knowledge or skills

  • they are concerned about the protection or security of personal data and/or

    ◻ other reasons

Internet trust, security and privacy (part VIII)

This part refers to the use of the internet from any location and through any device, such as a desktop computer, laptop, mobile phone...

The time reference period for the questions in this part will be the twelve months prior to the interview and only private reasons are included (therefore excluding work reasons...).

It should be filled in by people who have used the internet in the past twelve months.

- Security problems when using the internet

- Fraudulent use of your credit or debit cards

- Loss of documents, photos or other data due to a virus or other computer infection

- Misuse of personal information available on the internet

- Your network or email account has been hacked and content posted or sent without your knowledge

- Online identity theft

- Receive fraudulent messages (phishing)

- Being redirected to fake websites that request information (pharming)

- Children's access to inappropriate websites

For people who have used the internet and have suffered problems such as identity theft, phishing or pharming, they are asked if this resulted in economic loss.

- Limitation or avoidance of carrying out the following activities: ☐   Buying   or commissioning goods or services

- Electronic banking, such as bank account management

- Providing personal information to social or professional networking services

- Communicating with public administrations via the Internet

- Download software or apps, music, video files, games or other data files

- Using the Internet over public WiFi

- Other activities

- Backing up your files on external devices, or on online storage space.

- use of computer security software or tool (anti-virus, anti-spam, firewall...).

- degree of trust in the internet.

Computer skills (part IX)

This part only includes a couple of questions relating to computer skills.

The time reference period for the questions in this part will be the twelve months prior to the interview and only private reasons are included (therefore excluding work reasons...).

It should be filled in by people who have used the internet in the past twelve months

- tasks carried out relating to phones and computers:

- transfer files between the computer and other devices
- install software or apps
- change the configuration of any software (including the operating system and security programs).

- computer-related tasks:

- copy or move files or folders
- use a word processor
- create presentations or documents that include text, images, tables, or graphics
- use spreadsheets
- use software to edit photos, videos or audio files
- program in a programming language.

The digital skill level is calculated as the combination of activities carried out (part V) and computer skills based on EUROSTAT methodology. For more information consult Annex IV:

E-commerce (part X)

Purchases made from any location, for personal reasons (purchases made for work reasons are not included) and using any device.

This does not include goods and services obtained via the Internet free of charge.

Reservations have to be included where they are legally binding, e.g., tourism services (hotels, apartments, public transport tickets, car hire, etc.).

The payment does not have to be made online (any payment system in use is included).

Orders made through email or text messages are not considered. Orders made through websites or apps should be included

The time reference period for the questions in this part will be the twelve months prior to the interview and only private reasons are included (therefore excluding work reasons...).

It should be filled in by people who have used the internet in the past twelve months *For*

people who have used the internet in the last twelve months:

- frequency of purchases. The following frequency of use scales for e-commerce are used:

- at least once a month
- at least once in the last three months
- at least once in the last twelve months
- at some point in their lives
- they have never made a purchase using the internet.

For people who have made a purchase using the internet in the last twelve months:

- type of product purchased or ordered, differentiating between

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- food and other perishable consumer goods (cleaning, hygiene...)

- durable household goods (furniture, household appliances…)

- medication

- films and music

- books (including e-books) and newspapers or magazines

- online training material

- sports equipment and clothing

- computer or video console games and their updates

- other computer software and their updates

- computer equipment

- electronic equipment

- telecommunications services (broadband contracts, telephone lines or TV, prepaid cards...)

- holiday accommodation

- other travel services (transport, car rental...)

- tickets for events and/or

- other products or services.

- Products downloaded (films or music, e-books, digital magazines or newspapers, computer games and video games consoles and computer software)

- Origin of the seller (national, other EU countries, rest of the world and/or unknown)

- Problems when purchasing or ordering goods or services on the Internet: technical failures, lack of information on rights and guarantees, delays in delivery, higher end cost, products with defects or differing from descriptions, fraud problems, problems in claims and compensation, vendors that do not serve Spain and/or other problems *For people who have made a purchase using the internet in the last three months:*

- number of times they have purchased something in the last three months

  ◻ monetary value of the goods or services (excluding financial) purchased in the last three months

For people who have used the internet in the last three months:
- undertaking financial activities (excluding operations carried out by e-mail), differentiating between the selling or buying of shares, bonds or other financial investment products, subscribing or renewing insurance policies and/or formalising loans or credits.

For people who have never made a purchase via the Internet or have not done so in the last year and have used the Internet in the last twelve months

- reasons why they have not made purchases or orders via the Internet :

- Because they prefer to buy something themselves in a shop

- Due to a lack of skills or knowledge

- Because the delivery of products ordered online is problematic

- Because they are concerned about payment privacy or security

- Due to lack of confidence in the reception or return of the products and in claims and compensations

- Because they do not have a card that allows them to pay on-line

- Because foreign sellers do not take orders in Spain

- Because another person does it for me

- For other reasons

Socio-economic characteristics of the selected person (Part XI)

Questions exclusively related to the socio-economic characteristics of the selected person are included in this part.

Respondents must provide information on their country of birth, nationality, marital status, whether they cohabit with their partner, level of education, employment status (connected to the activity; type of workday, activity of the establishment where they work and occupation), and level of household net monthly income regardless of the other people in the household.

See **Annexes**

3.2 Differences between the ICT-H 2019 questionnaire and the ICT-H 2018 questionnaire

With the aim of analysing and exploring the various aspects of the Information Society in more detail, the ICT-H questionnaire is a dynamic questionnaire throughout its various editions as it includes modules of different frequencies (annual, biennial, every three years) and new sections as a result of the evolution of new technologies and users' information needs.

As in the past, the main differences are due to changes needed in order to comply with the minimum requirements of the model questionnaire proposed by Eurostat and our agreements with other institutions. The part on the *use of ICT at work* has been removed.

The following parts have changed since last year's survey, with the **most important differences** indicated.

· Part III– Household Internet access

-        Question **P4** on the household's Internet connection is raised again. The different options for broadband connection are grouped into two items: *fixed broadband connection* and *mobile broadband connection.*

-        Question **P5** on the *reasons why the household does not have Internet access* has been included.

· BLOCK V.- Mobile phone and Internet use by the selected person

- The title of this part has been rephrased, including the use of mobile phones and including question **P11a** on the *possible use of mobile phones in the last 3 months.*

- Item **P16d** on the *use of instant messaging services is included.* Previous item P16d (*searching for information on goods or service*s) becomes **P17d**, replacing *view programmes broadcast by TV channels via the Internet.*

- Question **P17**, previously P18, includes a new item on *reading news, newspapers or magazines online* (**P17a**)

- Questions **P18** and **P19** on *political participation and online job search* respectively are included.

- Questions **P21** and **P23** on *carrying out online learning activities* and *interaction with home equipment via the Internet,* respectively, are included.

- Question **P20,** previously P19, now includes items **P20c** on *posting your own content on the Internet* to share it and **P20d**, previously P17b, on *listening to music via the Internet*.

· Part VI (formerly **Part VIII**) **- Use of shared economy services**

- Question **P26** concerning possible *work found using any website or app that acts as an intermediary* is reworded.

· Part VIII– Security and trust on the Internet

- Restructuring of the previous part, which provided two questions: *use of any security software* (currently **P35**) and *degree of trust in the Internet* (currently **P36**), and the inclusion of four new questions. The first two, **P31** and **P32,** relate to *possible security incidents,* the third, **P33**, refers to the *limitations of Internet activities for security reasons* and the last, **P34,** refers to *creating backups.*

· Part IX– Computer skills

- The part's previous questions are replaced by two new questions. The current **P35** investigates *possible tasks performed with mobiles and computers in the past 12 months* and the current **P36** is on *the computer-related tasks performed in the last 12 months.*

· Part X.- E-commerce

- Questions relating to *products purchased online that have been downloaded* and *reasons for not having purchased through the internet,* current questions **P42** and **P49** respectively, have been included once more.

- Questions **P46** and **P47** on *possible problems when purchasing or ordering goods or services on the Internet in the past 12 months* have been included.

4. Sample design

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4.1 Type of sampling

Three-stage sampling was used with stratification of first stage units.

The first stage units are the census tracts. The second stage units are the main family households and, in the third stage, **one person** over 15 years old is selected from each household. At the same time, **all minors** aged 10-15 are studied.

To select the sample, a framework of areas made from the list of existing census sections, relating to November 2015, was used. Notwithstanding the changes that occur over time, these are regularly included in the sample.

The list of main family households was used to select second stage units in each of the sections selected for the sample, obtained from the most up-to-date Continuous Register available.

Within each Autonomous Community, the sections were grouped into strata according to the size of the municipality to which they belong.

The following strata were considered:

Stratum 0: Municipalities with 500,000 inhabitants or more.

Stratum 1: Municipalities that are provincial capitals with fewer than 500,000 inhabitants.

Stratum 2: Municipalities with 100,000-500,000 inhabitants that are not provincial capitals.

Stratum 3: Municipalities with 50,000-100,000 inhabitants that are not provincial capitals.

Stratum 4: Municipalities with 20,000-50,000 inhabitants that are not provincial capitals.

Stratum 5: Municipalities with 10,000-20,000 inhabitants.

Stratum 6: Municipalities with fewer than 10,000 inhabitants.

For each Autonomous Community, an independent sample is designed to represent it, as one of this survey's objectives is to provide data to this level of disaggregation.

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4.2 Sample size.- Allocation.

To meet this survey's objectives of providing estimates with a certain degree of reliability, a sample size of 2,500 census tracts has been established at the national and Autonomous Community level, with 13 (*) initial households selected in each census tract.

The distribution of the sample by Autonomous Community is established through a compromise between uniform allocation and allocation that is proportional to the size of the Community. In this way, an attempt is made to guarantee a sufficient sample size that can provide reliable estimates for each Autonomous Community.

The distribution of the number of selected tracts by Autonomous Community is:

Autonomous Community	Number of census tracts
Andalucía	236
Aragón	112.
Asturias, Principado de	120
Balears, Illes	116
Canarias	136
Cantabria	112.
Castilla y León	136
Castilla - La Mancha	132
Cataluña	216
Comunitat Valenciana	180
Extremadura	136
Galicia	152
Madrid, Comunidad de	200
Murcia, Región de	124
Navarra, Comunidad Foral de	116
País Vasco 140 Rioja, La 108	
Ceuta and Melilla	28
TOTAL	2,500.

Regarding strata, allocation is strictly proportional to the size of these.

(*) Note.- Since 2016, and following Eurostat recommendations, the use of a sample of reserve households for each tract has been discontinued, with substitutions made where there are incidences in the main sample. For this reason, in order to not decrease the size of the effective final sample, the number of sample households for each tract has been increased from eight to thirteen.

4.3. Sample selection

To carry out the survey, the first stage units in each stratum were selected with probability proportional to the size of each tract. In the second stage, households were selected with equal probability, through a systematic sample with random start, between the tract's households, a procedure that allows us to obtain self-weighted samples of households for each stratum.

In the third stage, and within each household, a person aged 16 and over is chosen with equal probability.

4.4 Sample renewal

This research is a continuous survey that is carried out annually. In order, on the one hand, to incorporate the changes that occur in census tracts and, on the other, to avoid tiring the collaborating families and to give the opportunity for new families to be selected, the tract and household sample is partially renewed, establishing a rotation shift system.

Rotation shifts are groups of sample tracts that are used to gradually incorporate changes into the sample. The number of sample tracts by stratum in each Autonomous Community is distributed between rotation shifts so that these are representative.

This survey is a rotating panel with four rotation shifts.

4.4.1. Renewal of tract sample. Updating of selection probabilities.

On the basis of information from electoral files and the Continuous Register, the selection probabilities of the tracts are updated.

The changes that occur as a result of this update are continuously incorporated into the sample through the rotation shifts.

In 2019, changes occurred in rotation shift 2, corresponding to the renewal of the household sample.

The procedure used for the update is that proposed by L. Kish and A. Scott (JASA 1971).

4.4.2 Renewal of household sample.

As indicated above, in order to avoid tiring the families surveyed as well as to give new families who have entered the census tract the opportunity to be selected, the household sample is partially renewed through rotation shifts.

Therefore, new households are selected in all tracts that pertain to a given shift.

In 2019, the households from the tracts of rotation shift 2 were renewed.

4.5. Estimators

To estimate the survey characteristics, the following types of estimators are considered:

- ☐ Estimator for household data
- ☐ Estimator for data on persons aged 16 and over.
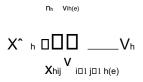- ☐ Estimator for data on persons aged 10-15.

Ratio estimators are used in all cases, calibrated according to the information from external sources.

A) Estimator for household data

For household characteristics, an estimator is used that is obtained through the following steps:

A1) Expansion estimator based on the design factor, with correction of nonresponse at the stratum level.

In each stratum h, the estimator of the total of characteristic X is obtained through the expression:

$$\hat{X}_h = \sum_{i=1}^{n_h} \sum_{j=1}^{V_{ih(e)}} x_{hij} \, \frac{V_{ih(e)}}{v_{h(e)}} V_h$$

where:

V_h : Households in stratum h.

$V_{h(e)}$: Effective sample size of households in stratum h.

x_{hij} : The characteristic value that is the subject of study in household j of tract i.

n_h : Number of sample tracts in stratum h

$V_{ih(e)}$: Actual number of households in tract i of stratum h.

A2) Ratio estimator, to adjust to the population in each stratum h.

$$\hat{X}_{Rh} = \frac{\sum_{i=1}^{n_h} \sum_{j=1}^{V_{ih(e)}} x_{hij}}{\sum_{i=1}^{} \sum_{j=1}^{} p_{hij}} P_h$$

where: p_{hij}

: Total number of sample persons (aged 16 and over) of household j of tract i.

P_h : Population in stratum h.

A3) The final estimator is obtained by applying re-weighting techniques to the above estimator, using CALMAR software.

An estimate of the total main households classified according to size (5 sizes) for each Autonomous Community, with reference to 01 April 2019, was used as an auxiliary variable.

B) Estimator for data on persons aged 16 and over

This is obtained through information from the individual questionnaire, whose responses are provided by a person aged 16 and over selected from the members of the household. The estimator is similar to that used for the household but 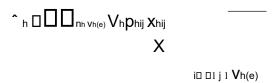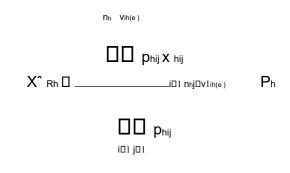takes into account the existence of a factor that incorporates the probability of selection of the person within the household.

B1) Estimator based on the design factor, with correction of non-response.

$$\hat{X}_h = \sum \sum \sum_{n_h\ V_{h(e)}} \frac{\overline{V_h} p_{hij}\ x_{hij}}{V_{h(e)}}$$

$$i=1\ j=1$$

B2) Ratio estimator to adjust to the population of the stratum.

$$\hat{X}_{Rh} = \frac{\sum_{i=1}^{n_h} \sum_{j=1}^{V_{ih(e)}} p_{hij}\ x_{hij}}{\sum_{i=1}^{n_{hj}=1}{V_{1ih(e)}}} \cdot P_h$$

$$\frac{}{\sum\sum_{i=1\ j=1} p_{hij}}$$

B3) Application of calibration techniques using the population by age, sex and nationality groups to the level of the Autonomous Community as an auxiliary variable, for which the CALMAR framework is used.

The population used in the survey was an estimate of the population residing in main family households on 01 April 2019, deduced from the *Population Figures.*

C) Estimator for data on persons aged 10-15

The sampling information relating to all members of the household aged 10-15 is provided by the person aged 16 and over selected in each of these.

The estimator used to obtain information about these people is similar to that described in section A, with the exception that the auxiliary variables used for calibration (section A.3) are estimates of the population residing in main family households aged 10-15 by sex in each Autonomous Community, deduced from the *Population Figures.*

4.6. Sampling errors

The indirect Jackknife method[1] is used to calculate the sampling errors of the main characteristics investigated.

This method is based on the creation of sub-samples, where each of these is obtained by eliminating a primary unit from the total sample. The estimated variance of the estimator is represented by the expression:

$$V\left(\hat{X}\right) = \sum_h \frac{n_h - 1}{n_h} \sum_{j \in h} \left(\hat{X}_{hj} - \hat{X}\right)^2$$

where:

$\hat{X}_{hj}$ is the estimate of characteristic X when primary unit j of stratum h is removed from the sample.

$\hat{X}$ is the estimate of X obtained with the entire sample. n_h is the number of primary units in stratum h.

The sampling theory determines that in the interval between

$$\left(\hat{X} - 1{,}96\sqrt{\hat{V}(\hat{X})} \ , \ \hat{X} + 1{,}96\sqrt{\hat{V}(\hat{X})}\right)$$

there is 95 percent confidence that the true value of parameter X is found

On the INE website (www.ine.es), sampling errors from some of the main variables relating to households, people (16-74 years old) and minors (10-15 years old) are published. They are grouped into three tables located after the Survey's results that include information at both the national and Autonomous Community level.

Formally, these errors are estimated *standard deviations* of the estimators of the characteristics in question.

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[1] The CALJACK software, developed by P. Lavallé from Statistics Canada, was used.

5. Information collection

The field work was carried out throughout the Spanish territory.

The information collection period covers the months from February to May 2019.

5.1 Fieldwork organisation

The information has been received through different completion processes, with three different interview methods used:

- **CAWI** Data from this process are collected via an electronic questionnaire available on the Internet, through the IRIA (integration of information collection and administration) application.

This process was introduced for the first time in 2017 and has been offered to all sample units, regardless of whether they were assigned to a CAPI or CATI centre, before they were visited or called by the centre corresponding to the household.

Once the questionnaire was filled in, the same web application determined its completeness and validity, transferring the information to the central database.

- **CAPI** Personal interview using a laptop or tablet: The interviewer does not use paper questionnaires; instead, they have a laptop that has the questionnaire on it, so they perform the interviews on this laptop.

- **CATI** Phone interview from a CATI centre. The interviewer does not use paper questionnaires; instead, they directly record the respondent's responses in the electronic questionnaire.

The CATI centres are located in the Delegations of Madrid, Barcelona, Cádiz, Coruña,Sevilla, Valencia and Bizkaia and each makes calls to the following provinces:

Province in which the CATI centre is located	Provinces for which they collect information
Madrid	Albacete, Ávila, Burgos, Ciudad Real, Cuenca, Guadalajara, Rioja, Madrid, Palencia, Salamanca, Segovia, Soria, Toledo, Valladolid and Zamora
Barcelona	Baleares, Barcelona, Girona, Lleida and Tarragona
Coruña	Coruña, León, Lugo, Ourense, Asturias and Pontevedra
Cádiz	Almería, Cádiz, Granada, Jaén, Málaga, Las Palmas, Tenerife, Ceuta and Melilla
Sevilla	Badajoz, Cáceres, Córdoba, Huelva and Seville.
Vizcaya	Áraba/Álava, Gipúzkoa, Navarra, Cantabria and Bizkaia
Valencia	Alicante, Castellón, Huesca, Murcia, Teruel, Valencia and Zaragoza

The staff in the CATI centres were divided into two working shifts from Monday to Friday. The first shift was from 9:00 to 15:00 and the second from 15:00 to 21:00.

In those centres where there was not enough staff to fully collect the sufficient sample, an external company was used to help in the afternoon.

Each sample section is assigned an initial work week and 3 more weeks to retrieve absent and inaccessible information. Survey presentation letters were sent the week before the section's first work week.

Regarding the staff hired to carry out the survey, there were 24 Interview Inspectors and 125 Interviewers for the 14,588 CATI households as well as 29 Interview Inspectors and 97 Interviewers for the 10,853 CAPI households.

In the event that the questionnaire was collected via 2 different processes, CAWI and CATI or CAWI and CAPI, the information collected by an INE interviewer prevailed (CATI or CAPI).

5.2 Collection method

The selected households were initially contacted through a presentation letter requesting their collaboration, informing them that they had been selected for the survey and informing them of its confidential nature.

It also provided them with an access address to fill in the questionnaire via the web (CAWI) with their corresponding username and password.

The households that **did NOT fill in the questionnaire via the Internet** within the deadline, or that had filled it in but not completely or with inconsistencies, were subsequently contacted to carry out an interview or complete/filter the questionnaire using:

- Personal interview (CAPI). For households in the first interview tracts and those of subsequent interviews where there was no telephone or they stated that they would prefer this type of interview.

- Phone calls (CATI). For the rest of the households that did not fill in the questionnaire via the internet (CAWI).

In other words, information is collected in two stages:

- 1st stage. For all households: Opportunity to fill in the questionnaire via the internet (CAWI)

- 2nd stage. For those households that have not filled in the CAWI questionnaire: CATI or CAPI interview, depending on the household's characteristics.

5.3 Incidents in households and groups and their processing

Household codes that have been considered are:

- Unlocatable dwellings (IL)

For CAPI, this incidence occurs when the household cannot be located due to an error in the initial address. The household cannot be located at the address that appears in the list of selected households because the address is not correct, it is a duplicate of another household included in the sample or the household does not exist any more.

There are no incidences for CATI.

- Household used for other purposes, (OF)

The entire selected household is used for purposes other than family residence. For example: convent, nursing home, garage, office, etc.

- Inaccessible household (IN)

For CAPI, this is a household that cannot be accessed in order to carry out the interview due to weather (floods, snow, etc.), geographical (where there are no roads to reach it) or any other reasons.

For CATI, this incidence is automatically assigned when a household's telephone number does not correspond to the address at which the interview should take place and it has not been possible to identify the correct number.

- Empty household (V)

The selected household is not a main household, possibly being a seasonal residence (inhabited or not at the time of the interview) or being uninhabited for any reason, such as due to death or a change in residence of the people who lived in it previously.

- Previously selected household (SA)

This is a household that has already been selected previously (less than five years ago) *in the sample of any other INE population and household survey* and, having cooperated in this survey, has been selected again.

- Surveyable households (E).

The **group codes** that have been considered are:

- Total refusal (NT)

This is considered to be the case when it has not been possible for an interview to take place due to a refusal by the initial respondent, whether this is a direct, initial refusal or whether it occurs later, after collaboration has begun.

- Selected person's refusal (NS)

This is considered to be the case whenever the initial respondent answers questions related to the general household but **the selected person refuses to provide**

information, whether this is a direct, initial refusal or whether it occurs later, after collaboration has begun. - Total absence (AT)

This incidence occurs when, after successive visits (through CAPI) or successive calls (through CATI) no contact has been made with anyone in the household or when contact is established with someone who does not live in the household and reports that its occupants are absent.

- Absence of the selected person (AS)

This occurs when, following successive visits or calls to the household, it is not possible to carry out an interview because the selected person is absent and are not able to be contacted.

- Inability to answer (CI)

This incidence occurs when it is not possible to carry out an interview due to an inability to respond, either due to age, disability, illness, lack of knowledge of the language or any other circumstance, both of members of the household as a whole, preventing initial contact, and of the selected person.

Where the selected person is unable to answer, the interviewer is permitted to use a third person as an intermediary to obtain the information.

- Other Incidences (OI)

This incidence occurs when none of the previous incidences have occurred and the filled in questionnaire does not fulfil the requirements to be considered *complete* due to incomplete or incoherent information.

- Surveyed (E)

The filled in questionnaire meets the requirements to be considered *complete.*

A questionnaire is **complete** if all the corresponding questions have been answered following the flow of the electronic questionnaire.

The CAWI interviews are all considered to be Surveyed (E) as, if a filled in and complete questionnaire is not obtained due to any incidence, a CAPI or CATI centre are assigned to them to carry out an interview or to complete/filter the questionnaire.

5.3 Response rate

The distribution of incidences in households and the response rate was as follows:

Incidences in households

	Total Muestra	Encuestables	Innacesibles	Vacías	Destinadas a otros fines	Seleccionada anteriormente	Ilocalizables
TOTAL	**25.441**	22.889	982	1.447	63	9	51
%		90,0%	3,9%	5,7%	0,2%	0,0%	0,2%

The initial theoretical sample consisted of 25,441 households, of which 22,889 (90.0%) were surveyable.

Group incidences

	Encuestables	Encuestadas	Negativa Total	Negativa de la Persona seleccionada	Ausencia Total	Ausencia de la Persona seleccionada	Incapacidad para contestar	Otras incidencias
TOTAL	**22.889**	17.196	1.666	136	3.620	98	170	3
%		75,1%	7,3%	0,6%	15,8%	0,4%	0,7%	0,0%
CAWI	**8.079**							
%								
		8.079						
		100,0%						
CATI	**8.534**	5.126	847	90	2.315	54	101	1
%		60,1%	9,9%	1,1%	27,1%	0,6%	1,2%	0,0%
CAPI	**6.276**			46		44	69	2
%			13,0%	0,7%		0,7%	1,1%	0,0%
		3.991	819		1.305			
		63,6%			20,8%			

Of the 22,889 households surveyable from the start, 17,196 households filled in a complete questionnaire (Surveyed household or Net Sample). Therefore, **the nonresponse rate** is **24.9%** (39.9% for CATI interviews and 36.4% for CAPI interviews)

For the CAWI process, group incidences due to a non-response do not apply as the households that did not initially fill in the CAWI questionnaire (64.7% of surveyable households) were assigned to their corresponding CATI or CAPI interviews.

Percentage of households surveyed by interview method

	Total de Viviendas Encuestadas	CAWI (web)	CATI (teléfono)	CAPI (personal)
TOTAL	**17.196**	8.079	5.126	3.991
%		47,0%	29,8%	23,2%

Of the total number of households surveyed, 47.0% were collected by filling in the questionnaire via the internet (CAWI), 29.8 % via telephone interview (CATI) and the remaining 23.2% through personal interview (CAPI)

6. Dissemination of the results

The dissemination of the results has an annual periodicity. The statistical tables of the survey results, along with the methodological report and other supplementary information, are published on the INE website (www.ine.es) and, where applicable, in the relevant electronic publication.

In 2019, the time interval between the end of the reference period and the publication date of the definitive results was 138 days.

The commitment to publish the homogeneous series of survey results corresponding to the 2006-2013 period, with the latest updates to the population base of the 2011 Census, was fulfilled on 30 May 2014. Taking advantage of this review, calibration of people's ICT by nationality was introduced, as well as the traditional calibrations by sex and age, in order to improve the survey's quality. In 2019, the number of comparable years of published series was 14 (2006 to 2019).

As with previous editions, and in order to achieve greater comparability with data published by Eurostat, the ICT-H 2019 statistical results tables presented refer to households inhabited by at least one person aged 16 to 74 and people from the same age group (16 to 74 years old).

This information is supplemented with additional tables relating to minors (10 to 15 years) and people 75 years and older.

In the successive surveys household ICT equipment (television, computer, telephone, radio, video, etc.) along with the availability of access and the form of Internet connection are presented as significant values in the tables relating to households. Regarding people, tables on Internet use, activities carried out on the internet, computing knowledge and skills, e-commerce, connection with the electronic administration, security and confidence on the internet are compiled.

These statistical variables inherent to the survey intersect with the socio-demographic variables collected, such as household size and the municipality in which the household is located, sex, education level, work situation, etc.

Annex I

LEVEL OF EDUCATION

0 Illiterate and incomplete primary education

1 Primary Education

2 First stage of Secondary Education and equivalent

3 Second stage of Secondary Education and equivalent (Bachillerato [Spanish Baccalaureate] and intermediate vocational training)

4 Post-secondary non-tertiary education

5 Higher vocational training and university own qualifications of 2 years or more.

6 University degrees of 240 ECTS credits (Bologna), university graduates, university own expert or specialist qualifications and equivalent

7 University degrees of over 240 ECTS credits (Bologna), university graduates, masters and specialisation degrees in Health Sciences through the residency system and equivalent

8 PhD

9 Cannot be coded

The studies are coded according to the National Classification of Education (CNED) 2014, which are grouped in a particular way for ICT-H.

CNED-2014 Codes	ICT-H'19 Codes (P62)
01, 02	0
10	1
21, 22, 23, 24	2
32, 33, 34, 35, 38	3
41	4
51, 52	5
61, 62, 63	6
71, 72, 73, 74, 75	7
81	8
-	9

Clasificación de programas, titulaciones y certificaciones en niveles de formación alcanzados, CNED-A

Observación: La CNED-A es la clasificación de referencia para recoger información sobre el nivel de formación, y contempla tanto a programas vigentes como no vigentes, pero solamente a aquellos que son educación formal

A **Primera etapa de educación secundaria e inferior**

0 **Menos que primaria**

AA **Menos que primaria**

01 Analfabetos

02 Estudios primarios incompletos

1 **Educación primaria**

AB **Educación primaria**

10 Educación primaria

2 **Primera etapa de educación secundaria y similar**

AC **Primera etapa de educación secundaria y similar, con orientación general**

21 Primera etapa de educación secundaria sin título de graduado en ESO y similar

22 Primera etapa de educación secundaria con título de graduado en ESO y equivalentes

AD **Primera etapa de educación secundaria y similar, con orientación profesional**

23 Certificados de profesionalidad de nivel 1 y similares

24 Certificados de profesionalidad de nivel 2 y similares

B **Segunda etapa de educación secundaria y educación postsecundaria no superior**

3 **Segunda etapa de educación secundaria y similar**

BE **Segunda etapa de educación secundaria, con orientación general**

32 Bachillerato y similares

BF **Segunda etapa de educación secundaria, con orientación profesional (y continuidad en la educación superior)**

33 Enseñanzas de formación profesional, artes plásticas y diseño y deportivas de grado medio y similares

BG **Segunda etapa de educación secundaria, con orientación profesional (sin continuidad en la educación superior)**

34 Enseñanzas profesionales de música y danza y similares

35 Certificados de las escuelas oficiales de idiomas de nivel avanzado y similares

38 Formación profesional básica

4 **Educación postsecundaria no superior**

BH **Educación postsecundaria no superior**

41 Certificados de profesionalidad de nivel 3; programas de corta duración que requieren segunda etapa de secundaria y similares

C **Educación superior**

Enseñanzas de formación profesional, artes plásticas y diseño y deportivas de grado superior y equivalentes; títulos 5 propios universitarios que precisan del título de bachiller, de duración igual o superior a 2 años

CI **Enseñanzas de formación profesional, artes plásticas y diseño y deportivas de grado superior y equivalentes; títulos propios universitarios que precisan del título de bachiller, de duración igual o superior a 2 años**

51 Enseñanzas de formación profesional, artes plásticas y diseño y deportivas de grado superior y equivalentes

52 Títulos propios universitarios que precisan del título de bachiller, de duración igual o superior a 2 años

Grados universitarios de hasta 240 créditos ECTS, diplomados universitarios, títulos propios universitarios de experto o 6 especialista, y similares

Grados universitarios de hasta 240 créditos ECTS, diplomados universitarios, títulos propios universitarios de experto o

CJ especialista, y similares

61 Grados universitarios de hasta 240 créditos ECTS y equivalentes

62 Diplomados universitarios y equivalentes

Títulos propios universitarios de experto o especialista, de menos de 60 créditos ECTS, cuyo acceso requiera ser titulado

63 universitario

Grados universitarios de más de 240 créditos ECTS, licenciados, másteres y especialidades en Ciencias de la Salud por 7 el sistema de residencia, y similares

CK Grados universitarios de más de 240 créditos ECTS, licenciados y equivalentes

71 Grados universitarios de más de 240 créditos ECTS y equivalentes

72 Licenciados y equivalentes

CL Másteres, especialidades en Ciencias de la Salud por el sistema de residencia y similares 73   Másteres oficiales universitarios y equivalentes

74 Especialidades en Ciencias de la Salud por el sistema de residencia y similares

75 Títulos propios universitarios de máster (maestrías), de 60 o más crédito ECTS cuyo acceso requiera ser titulado universitario

8   Enseñanzas de doctorado

CM Doctorado universitario

81 Doctorado universitario

Annex II:

CODING OF OCCUPATIONS

This variable is divided according to two pairs of categories: manual workers/non manual workers and ICT workers/other workers. The National Classification of Occupations 2011 (CNO-11), the national version of the ISCO-08 classification (on which codification should be based, according to Eurostat) is used for this.

1) MANUAL WORKERS/NON MANUAL WORKERS

According to the Eurostat guidelines, the *"Manual Workers"* category will correspond to Major Groups 6 to 9 of the National Classification of Occupations 2011 (CNO-11) while the *"Non Manual Workers"* category will correspond to the rest of the Major Groups in the aforementioned classification (1 to 5 and 0).

a) MANUAL WORKERS

6.   Skilled agricultural, livestock, forestry and fishing sector workers. For example, fruit growers, flower growers, vine growers, pruners, nursery workers, gardeners, breeders, poultry farmers, bee-keepers, livestock owners, shepherds, shearers, lumberjacks, shellfish gatherers, fishers, hunters...

7.   Craftspersons and skilled workers in manufacturing industries and construction (except installation and machinery operators). Includes occupations such as masons, formwork operators, concrete finishers, carpenters, plasterers, pipefitters, heating electricians, electricians, painters, tilers, marble workers, welders, plumbers, metal workers, blacksmiths, gunsmiths, locksmiths, polishers, sharpeners, mechanics, watchmakers, jewellers, compositors, bookbinders, potters, ceramists, slaughterers, bakers, cabinetmakers, tailors, furriers, upholsterers, cobblers...

8.   Installation and machinery operators and assemblers. E.g., mining installation operators, drillers, sawmill operators, operators in industrial chemical

plants, oil refineries and natural gas refineries, stokers, machine operators (embroidery, sewing, washing, tanning, canning...), drivers and operators of mobile machinery, crane operators, taxi drivers and drivers of cars and vans...

9. ***Elementary occupations*** These include domestic workers, cleaners (of windows, offices, hotels, cars...), kitchen porters, kitchen helpers, street vendors, advertisement distributors, elevator operators, administrative assistants, porters, meter readers, refuse collectors, street sweepers, labourers (agricultural, livestock, forestry, fishing, mining, construction), supermarket stockers...

b) NON MANUAL WORKERS

1. ***Directors and managers.*** Including deputies, senators, ambassadors, consuls, under-secretaries of State, public service directors and vice-directors, councillors, mayors, leaders of political parties, business organisations and trade unions, general directors (private and public), department directors, managers...

2. ***Scientific and intellectual technicians and professionals.*** Including health professionals (doctors, nurses, veterinary surgeons, pharmacists...), infant, primary, secondary and post-secondary education professionals (university professors and other higher education, vocational training, secondary education, secondary...), other education professionals (special education, non-regulated education...), physics, chemistry, mathematics and engineering professionals (physicists, chemists, mathematicians, engineers, technical engineers, architects, technical architects...), legal professionals (judges, magistrates, lawyers, attorneys, notaries...), specialists in organisation of Public Administration and companies and marketing (accounting specialists, financial advisors, sales professionals...), information technology professionals (analysts and designers of software and multimedia, specialists in databases and computer networks), social science professionals (economists, sociologists, psychologists, priests...), culture and entertainment specialists (archivists, librarians, writers, journalists, creative and interpretive artists...)

3. ***Technicians; support professionals.*** Science and engineering technicians (technical drafters and designers, physics, chemical, environmental and engineering technicians, process control technicians, maritime and aeronautical navigation professionals, quality control technicians...), mining engineering, manufacturing and construction industry supervisors, health technicians and alternative therapy professionals, financial and mathematical support professionals, representatives, commercial agents and related, administrative management support professionals; law enforcement technicians, legal, social, cultural, sports and related service support professionals, ICT technicians (technicians in computer systems, networks, web operations, software developers, audiovisual recording, broadcasting and telecommunications technicians...).

4. ***Accounting, administrative and other office employees.*** Such as: accounting, financial, production and transport support service employees, library, postal service and related employees, other administrative employees unrelated to public tasks, travel agency employees, receptionists and switchboard operators, counter staff and related...

5. ***Workers in catering, personal, protection and retail services.*** Includes waiters, cooks, shop assistants in shops and department stores, vendors in kiosks or at markets, other vendors, cashiers and tellers, workers who care for people in the healthcare services (nursing assistants...), other workers who provide healthcare to people (childminders...), personal service workers (hairdressers, cabin crew, tourist

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guides, stewards, janitors, driving instructors...), protection and security service employees (civil guards, police, fire fighters, private security staff...)

0. Military occupations. Officers, non-commissioned officers, troops and sailors of the armed forces.

2) ICT WORKERS/OTHER WORKERS

In this case, and following the Eurostat indications in the same way, a definition through exclusion is used: those occupations included in *"ICT Workers"* are specified, with those not included in this being considered as *"Other Workers"*. Given the potential nuances of some of the texts below, the corresponding CNO-11 codes are included so that, where applicable, they can be consulted if doubts exist.

a) ICT WORKERS

This includes the following CNO-11 positions:

1321: *Directors of information and communications technology (ICT) services.*
Includes: Application development directors, information managers, data processing managers, ICT development managers, ICT managers...

2325: Information technology tutors in non-regulated education. They create, structure and manage programmes and training courses for information technology users outside of the general primary, secondary and higher education systems. This section includes: ICT teachers (private classes or academies), information technology training course teachers... It does NOT include university, vocational training, secondary or primary school teachers.

27: Information technology professionals. Includes the following codes:

2711: Systems analysts Information system engineers, systems analysts, systems consultants...

2712: Software analysts and designers. Programme analysts, application analysts, application engineers...

2713: Web and multimedia analysts, programmers and designers. Internet, intranet and website developers, multimedia animation developers, computer games developers...

2719: Software and multimedia designers not included under different headings. Information systems quality analysts, information auditor advisers...

2721: Database designers and managers. Database designers, administrators and analysts.

2722: Systems and network administrators. Information systems administrators, network administrators.

2723: Computer network analysts. Information communications analysts, network information engineers.

2729: Database and computer network specialists not included under other headings. ICT security specialists, database miners...

38: Information and communications technology technicians. Includes the following codes:

> *3811: Computer system operations technicians.* Computer equipment operators, peripheral operators, computer programme performance controller.

> *3812: Information technology user support technicians.* Technical assistance operators, IT support technicians, computer system installation engineers...

> *3813: Network technicians* Computer network technicians, network operators.

> *3814: Web technicians* Website administrators, webmasters.

> *3820: Computer programmers* Application programmers, computer programmers, software programmers.

> *3831: Audiovisual recording technicians.* Camera operators, sound recording technicians, video editors, audio-visual technicians.

> *3832: Radio broadcast technicians.* Radio broadcasting operators, radio broadcasting technicians.

> *3833: Telecommunication engineering technicians.* Telecommunications technicians.

7533: Information and communication technology installers and repairers. Computer equipment repair technicians, computer installers, telecommunication and data cable fitters, computer equipment fitters, telecommunications equipment repairers, telephony installers.

b) OTHER WORKERS

Includes the rest of the occupations not included in a).

- Manual workers Vs. Non manual workers

CNO-2011 Codes	ICT-H'18 Codes (P66a)
Codes beginning with:	
0	6
1	6
2	6
3	6
4	6
5	6
6	1
7	1
8	1
9	1

- ICT workers Vs. Other workers

CNO-2011 Codes			ICT-H'18 Codes (P66b)	
1321			☐	1
2325			☐	1
All of 27				
2711		1		
2712		1		
2713		1		
2719			1	
2721		1		
2722		1		
2723		1		
2729			1	
All of 38				
3811			1	
3812			1	
3813			1	
3814			1	
3820			1	
3831	1			
3832	1			
3833	1	7533	1	
Rest of codes			6	

Annex III

CODING OF THE ACTIVITY OF THE ESTABLISHMENT (IN WHICH THE SELECTED PERSON WORKS)

This variable has been introduced for the first time (on a compulsory basis) in the ICT-H questionnaire. A highly grouped classification of the different activities has been used. The subject is presented as such (question P65):

Agriculture, forestry and fishing.. ☐**1**

Extractive industries, manufacturing and other industries………..... ☐2

Construction.. ☐3

Wholesale and retail trade, transport and accommodation .... ☐4

Information and communications.. ☐5

Financial and insurance activities.. ☐6

Real estate activities.. ☐7

Business services... ☐8

Public Administration, defence, education, healthcare and social service activities

....☐9

    Other services..☐ 10

    Cannot be coded..☐ 11

CNAE-2009 Codes	ICT-H'19 Codes (P65)
Sections (Divisions):	
A (from 01 to 03)	1
B (from 05 to 09), C (from 10 to 33), D (35), E (from 36 to 39)	2
F (from 41 to 43)	3
G (from 45 to 47), H (from 49 to 53), I (from 55 to 56)	4
J (from 58 to 63)	5
K (from 64 to 66)	6
L (68)	7
M (from 69 to 75), N (from 77 to 82)	8
O (84), P (85), Q (from 86 to 88)	9
R (from 90 to 93), S (from 94 to 96), T (from 97 to 98), U (99)	10
-	11

Annex IV Digital Skills[2]

The construction of the *Digital Skills* **(Overall skills)** *variable* is done through four intermediate variables or fields: *Information Skills*, *Communication Skills*, *Problem solving skills and Software skills*

The four levels of *Digital skills* (Overall skills) are the following:

- *None*: individuals without skills in the four fields studied but who have used the internet during the 3 months prior to the interview.
- *Low*: individuals without skills in at least one of the fields studied but not in all four.
- *Basic*: individuals with a basic skill level in at least one of the fields studied and that does not lack skills in any of them.
- *Above basic*: Individuals with an advanced level in all four fields

Activities used to calculate the *Information skills*:

- Copy or move files or folders
- Save files in storage space on the Internet
- Obtain information from websites of Public Administrations
- Search for information on goods or services
- Search for information on health-related issues Levels of *Information*

skills:

- **None:** There has been no activity
- **Basic:** an activity has been carried out
- **Above basic:** more than one activity has been carried out

Activities used to calculate *Communication Skills*:

- Send or receive emails
- Participate in social networks
- Making telephone or video calls via the internet
- Posting your own content on the Internet to be shared Levels of

Communication skills:

- **None**: there has been no activity
- **Basic:** an activity has been carried out
- **Above basic:** more than one activity has been carried out

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[2] The Eurostat methodology only considers people who have used the Internet in the last three months to calculate the digital skills variable.

Activities used to calculate *Problem solving skills*:

List A
- Transfer files between a computer and other devices
- Install software or apps
- Change the configuration of any software, including the operating system and security programs

List B
- Have made a purchase via the internet in the last 12 months
- Making online sales
- Electronic banking
- Use of online learning resources Levels of *Problem solving skills*:

- **None:** There has been no activity
- **Basic:** one or more activities from only one of the lists has been carried out
- **Above basic:** at least one activity from each list has been carried out

Activities used to calculate *Software skills*:

List A
- Use a word processor
- Use a spreadsheet
- Use software to edit audio, photos or videos

List B
- Create presentations or documents that include text, images, tables, or graphics
- Use advanced features on a worksheet
- Write a code in any programming language Levels of *Software Skills*:

- **None:** There has been no activity
- **Basic**: one or more activities form list A and none from list B have been carried out
- **Above basic**: at least one activity from list B has been carried out

The following table specifies the equivalences between each of the activities used to calculate the Digital Skills variables and their names in the microdata file of the TIC Hogares 2019 survey, available on the INE website.

Variable name	Variable description
	Information skills
TAREAINF1	Copy or move files or folders
ALMINT	Save files in storage space on the Internet
INTERAP1	Obtain information from websites of Public Administrations
SERV17_2	Search for information on health-related issues
SERV17_3	Search for information on goods or services
	Communication Skills
SERV16_1	Send or receive emails
SERV16_2	Making telephone or video calls via the internet
SERV16_3	Participate in social networks
SERV20_3	Posting your own content on the Internet to be shared
	Problem solving skills
TMOR1	Transfer files between a computer and other devices
TMOR2	Install software or apps
TMOR3	Change the configuration of any software, including the operating system and security programs
ULT_COM	Have made a purchase via the internet in the last 12 months
SERV20_1	Making online sales
SERV20_2	Electronic banking
SERV21_1 SERV21_2 SERV21_3	Use of online learning resources
	Software skills
TAREAINF2	Use a word processor
TAREAINF4	Use a spreadsheet
TAREAINF3	Use software to edit audio, photos or videos
TAREAINF5	Create presentations or documents that include text, images, tables, or graphics
TAREAINF4_1	Use advanced features on a worksheet
TAREAINF6	Write a code in any programming language