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Digital inequality and old age:
the digital divide gap that still needs closing

Executive summary

Keywords: Digital divide, Old age, Third age, Fourth age, Elderly, Inequalities, Ageism (age discrimination), Rurality

The digital divide affecting the elderly is very worrying. All available indicators in Catalonia show disadvantages starting from the age of 65 onwards. Moreover, there is also a pronounced digital divide among the *elderly* population as a whole: where data are available, the 75+ age cohort is significantly below the 65-74 age cohort.

Specifically:

— The **connectivity** infrastructure is considered to be more limited than that of the rest of the population. It is worse in rural areas, both in terms of fixed (fibre optic) and mobile (4G and 5G) networks, and they are comparatively less well connected than urban areas. In addition, single-person households, common in the case of elderly people, are the least connected to the Internet.

— Older people are the ones who access and use the **Internet** the least. The access gap is gradually closing, but only in the younger cohort (65-74 years).

— **Internet activity** is lower among older people, indicating less diversity and less advanced usage.

— The indicator that approximates **digital skills** also shows a clear disadvantage in the 65-74 age cohort (no data is available for the 75+ age group).

The phenomenon of the digital divide is **multidimensional** and it is necessary to take into account not only the access, but also the forms of use and the digital skills available to be able to take advantage of the Internet access with autonomy and obtain sufficiently inclusive results.

The digital divide is cross-cutting, since digital, social and economic inequalities intersect with each other, conditioning the benefits that a person can get when using the Internet. The term *socio-digital divide* expands the concept of the digital divide to highlight that **digital inequality is another form of socio-economic inequality**. As such, the divide is more severe when people are older, have low levels of education, low levels of income or live in rural areas. The gender component is also relevant: older women face more disadvantages than older men. These digital exclusions have recently been exacerbated by the accelerated and hasty process of digitalisation in response to the restrictions on mobility and personal relationships associated with COVID-19.

Public policies strive to close this gap by creating bridges so that the entire population is in a position to

make the most of the Internet's potential, according to their priorities and values. In general, Catalonia, Spain and the EU share common objectives in terms of digital policies, such as the promotion of digital skills, the guarantee of access to connectivity and infrastructure, and the protection of digital rights. The joint vision of these measures, strategies, plans and proposed actions shows that the current main focus of attention is on the acquisition of digital capacities and skills by citizens. Although the focus is mainly on working people, interest in the digital inclusion of older people is finally increasing.

As for older people and the digital sphere, we can detect a vicious circle: (a) data on the elderly population and digitalisation are limited; (b) older people do not participate in the design of digital products and services, and if they do, it is in a limited way; and (c) these inequalities are reinforced by stereotypes about the elderly, making the digitalisation of these people a greater challenge. This is not only because of a lack of skills, but because they are not considered to the same extent as other younger populations. The result of this vicious circle is a specific form of age discrimination called **digital ageism**, which reinforces the dynamics of digital exclusion of the elderly.

Lastly, a total of 12 **recommendations are proposed to reduce the digital divide and promote the digital inclusion of the elderly in Catalonia**. These include promoting training and information programmes, using unified instruments to measure the digital divide and digital skills, encouraging the creation of advisory programmes and support networks, and developing simple and quality digital services adapted to the needs of all strata of the population. These accessible services, which must follow universal design parameters, are essential in both the public and private spheres. Finally, it also emphasises the importance of maintaining analogue care channels to ensure access to essential services.

Introduction[1]

The digital sphere not only changes rapidly but also invades and conditions all areas of our lives. We live in hyper-digitalised societies. Full participation in society in this context is conditioned by access to the Internet, how we use online services and our digital skills. However, there is a part of the population that either does not have access to digital environments or, if they do, it is under precarious conditions, something that particularly affects older people.

The term **digital divide** was coined in the 1990s to define the divide between those who are digitised and those who are not. More specifically, it refers to the significant inequalities between those who can access the Internet and benefit from digitalisation and those who cannot access it or suffer from limitations due to technical, economic or lack of skills. The phenomenon is multidimensional. As developed by authors such as Eszter Hargittai, Ellen Helsper, Alexander van Deursen and Jan van Dijk, the digital divide has three levels:

— The *first level digital divide* refers to inequalities in access, the quality of the Internet connection and the type and device diversity used to connect. On the one hand, having a flat rate and a good connection allows you to determine digital practices not because of economic or technical restrictions, but because of your own interests. On the other hand, the devices available to access the Internet can also generate inequalities, since small screens do not allow for the same tasks as larger ones.

— The *second level digital divide* refers to digital skills and the way the Internet is used. Therefore, minimum skills are required to participate autonomously in the digital sphere, and it is assumed that the greater the diversity of uses the more effective the digital practices.

— Finally, the *third level digital divide* refers to the results, or benefits, that are obtained from using the Internet. For example, learning, searching information, finding a job or generating a product or service, among others. Therefore, the so-called digital capital is associated with a person's cultural, economic and social capital.

Although the digital divide did not generate too much media interest for a few years, the divisions have not disappeared, but those associated with the evolution of digital technology have been added to the already existing ones. As such, the 2019 Catalan Charter for Digital Rights and Responsibilities considers that «it is necessary to take special care of the rights of people and groups potentially more vulnerable and at risk of discrimination, and also to prioritise tasks aimed at reducing the digital divide» (Generalitat of Catalonia, 2019, p. 6).

As Internet use has become more universal, the digital divide is no longer a dichotomous issue, i.e. black or white. While at one time it was considered that there were two possible situations, digital inclusion or ex-

clusion, it is now considered that there is a continuum and therefore **using the Internet regularly does not guarantee full digital inclusion**. Other ingredients are needed such as, but not limited to, appropriate skills. The structure of the digital divide changes over time and is deeply linked to social inequalities, which is why we talk about the socio-digital divide: the Internet continues to be more beneficial for people of higher social status (van Deursen i Helsper, 2015). In this sense, the digital divide is cross-cutting since social, digital and economic inequalities intersect with each other.

The data we currently have show that digital exclusion is particularly serious in the case of the elderly. However, the ageist component of the digital divide has received comparatively less attention than others. Since 2020, interest has increased even though, as shown throughout this report, the available data do not allow a complete assessment of the situation. COVID-19 made the digital divide a hot topic. At the root of the restrictions on mobility and social relations there was an unexpected acceleration of digitalisation that has particularly harmed the elderly, both during and after the health crisis. Activities that no one used to question had to be face-to-face are now conducted through digital channels, for example: doctor's visits, banking transactions or dealings with the public administration. A telephone or face-to-face channel is maintained but, in some cases, this has already become extraordinary. However, this hasty digitalisation has increased (the risk of) digital exclusions, with serious effects on the lives of citizens. A study on Catalonia published in June 2023 concludes that the digital divide affects autonomy, health and job opportunities, especially in the case of groups in more vulnerable situations (Secretaria de Polítiques Digitals, s.d.).

In addition, the sustained increase in life expectancy and the low birth rate mean that our societies are ageing. Thus, the demographic transition makes it necessary to better understand the characteristics and needs of the elderly, since if, at present, 1 in 5 people resident in Catalonia are elderly (65 years or older), it is expected that in 50 years, 1 in 3 will be (Idescat, 2021b, 2023b).

Social awareness of the socio-digital situation of the elderly has increased in this context, and this report is an example of this. This report, commissioned by the Parliamentary Advisory Council on Science and Technology (CAPCIT), aims to provide information on the digital divide faced by the elderly in Catalonia. It is based on studies, evidence and data published by official bodies in order to provide an overview of the situation to the members of the legislative body of the Generalitat of Catalonia.

Finally, here are some further clarifications.

Firstly, the report analyses the population aged 65 and over. There is no international consensus on the age at which old age begins, partly because of the increase in life expectancy and partly because the social and physical indicators that define the entry into this social category vary between cultures and over time. In any case, retirement is a moment of vital change and can be considered to mark the entry into old age. Thus, despite recent legal changes in the retirement age, the 65-year-old threshold is relevant in our context, as is the level of data availability in official statistical sources, where age segments are grouped in blocks of 10 years: 16-24, 25-34, 35-44, 45-54, 55-64, 65-74 and, if data is available, the final group is the 75 and over group (Idescat, INE and Eurostat).

Secondly, we use the most up-to-date and complete data possible, taking into account the breakdown by age offered by the consulted data sources and the particular interest in the elderly population of Catalonia. Thus, the main source of information will be the official statistics produced by Idescat and the INE since they allow a deeper analysis.

And thirdly, although the age divide is very relevant, it is not age in itself that explains the digital divide; that is to say, it is not the cause. Having a certain chronological age does not make us, neither more nor less capable in the face of digital challenges *per se*, but it conditions the forms of contact with the digital sphere and the vital moment in which we begin to relate to it. The elderly have lived through a changing technological landscape. For example, a person born in 1958 and now 65 years old will probably remember when they bought their first television set at home. While in the 1920s there were already electric refrigerators, it is very likely that someone born in 1940 (85 years old) will explain to us that they knew about ice refrigerators. We are talking about generations with a very high capacity to adapt to change who, despite everything, face a significant digital divide that still needs to be closed.

The document has the following structure: first, we review the main characteristics and determinants of the digital divide affecting the elderly. Next, we present the data relating to the digital divide of the elderly in Catalonia in relation to infrastructure, Internet use, Internet activities and digital skills. Thirdly, we make an illustrative collection of measures, plans, actions and strategies dedicated to combating the digital divide in Catalonia and its surroundings. The fourth section is dedicated to presenting some particularly relevant re-

flections on the study of the digital exclusion of older people. Finally, the study's conclusions and a series of recommendations are set out to continue making progress in overcoming the digital divide that affects the elderly and towards a fairer and more inclusive digital society.

What do we know about the digital divide for the elderly?

The digital divide has a comparatively greater impact on the elderly and this is evident at local, national and international levels, as shown by studies carried out in Catalonia, Spain, the European Union, the USA, China, Russia, Australia, New Zealand, Latin America and Africa.

Although this has not been a central issue until now, the particularities of the digital divide and the socio-digital divide faced by the elderly are being studied in greater depth. Aside from age, the patterns of privilege/disadvantage that condition the ability to access and use digital technologies are very consistently related to educational level, income level and gender.

A low *educational level* can limit the way in which a person uses the Internet, and in any case affects the results (or benefits) one may obtain from it, whether economic, cultural, social or personal. Older generations did not go to school as long and tend to have lower levels of education than the younger population, so they are mostly at a comparative disadvantage. *Income level* determines the ability to have an adequate connection as well as the type and number of digital devices to access the Internet. In low-income households, access to the Internet often depends solely on the mobile phone, while in middle- and high-income households it is multi-screen. It should be noted that a smartphone does not have the same functionalities as a computer. For example, it is more difficult to edit text documents or spreadsheets on a mobile phone because the screen is smaller and less user-friendly, but also because the applications do not allow the same type of tasks. On the other hand, although services such as Bizum are associated with the phone, some online banking functionalities are not always available in mobile applications. Finally, the digital *gender* divide has not completely disappeared and not only does it increase with age but, when data is available, it shows that it affects women aged 75 and over comparatively more.

Apart from these, four other significant aspects are identified, although the results are not as conclusive as those already mentioned. First, the native population of a country and the migrant population already established have easier access to the Internet than the *recently migrated population*. However, recently migrated people who access the Internet use it more intensively. Second, living in urban environments implies a greater probability of accessing the Internet compared to rural environments. Third, widowed people and elderly people living alone tend to access and use the Internet less. Fourth, disability is negatively related to digital uses.

Finally, there are other differential barriers that intersect with the socio-economic characteristics already seen and make it even more difficult to access and use the Internet, particularly in the case of the elderly. This is the lack of trust and effectiveness; limited social support; and limited or no knowledge or understanding of digital tools.

First, approaching any tool with a *lack of confidence* results in its limited use. The stereotypes that operate in society and at the individual level can reinforce the idea that «digital technologies are not for the elderly.» This assumption may increase caution and, therefore, lead us to engage in very basic digital practices to avoid doing something «wrong», for example, installing a virus or making a payment unknowingly. In a study carried out in Spain, it was observed that men feel more prepared for digital challenges, that is to say, they have more self-confidence than women, and that the difference widens with age (Usart Rodríguez, 2023). The *lack of effectiveness*, in turn, means having difficulty completing tasks, which would reinforce the lack of confidence.

Second, obtaining the knowledge necessary to live in a constantly changing digital environment often depends on the information we exchange with people around us. We don't always learn alone, but we share ways of doing things in everyday situations. When a person has limited or no digital knowledge, it is important to have a mediator nearby, i.e. a «friendly expert». According to Maria Bakardjieva's (2005) definition, this is a person who translates their knowledge into specific practices and helps solve specific questions and needs. In addition, we can also have a personal network with whom to share doubts and questions, so that the role of friendly expert is interchangeable and a person can receive help at one time and give it at another. These knowledge exchanges occur at all ages, as can be seen by analysing the digital practices of older people living in Barcelona for whom WhatsApp groups become a space to share learnings (Fernández-Ardèvol i Rosales, 2017). However, when social support is limited, it is also limited in the digital sphere. If support is not available to resolve doubts or day-to-day problems, Internet access and digital

practices are usually affected regardless of the person's desire to interact with the digital sphere. Social support is key to knowledge flow in digital environments, particularly when knowledge is limited. Self-taught learning rarely works and only when the level of motivation is high.

Finally, once we have acquired some minimal knowledge, it is easier to deal with digital developments, which are constant. If this knowledge or understanding of digital tools is limited or non-existent, the ability to assimilate and apply new knowledge is limited and each change in the system can undermine self-confidence, which generates a vicious circle of exclusion. As such, the self-perception of digital skills falls from the age of 65, which decreases the effective use of digital technologies. Calderón Gómez concludes that, «beyond the barriers to access, which have an eminently economic component, the fundamental problem is training and digital literacy, that is, the acquisition and the skills necessary to live [in the contemporary societies]»(Calderón Gómez, 2023, p. 27). However, digital services and the way they are provided can also create barriers if they are not designed properly and with all types of users in mind.

What is the situation in Catalonia?

In this section we analyse the most up-to-date and most complete data available for Catalonia, taking into account the breakdown by age and the particular interest in the elderly population. The main sources of information are the official statistics produced by Idescat and the INE, as they allow the most in-depth diagnosis at Catalan level.

Infrastructure

At national level, fixed and mobile coverage data (Table 1) show imbalances between rural and urban areas. 83% of the municipalities in Catalonia have *some kind of coverage* of fibre optic, a ratio that increases to 100% in the case of municipalities with 10,000 inhabitants or more and that falls to 68% in those with less than 1,000. However, since minimum coverage is required to guarantee equal access to the Internet, it is important to analyse which municipalities have *coverage in 90% or more of households*, which is a percentage that we consider as an *acceptable* level of coverage. In this case, acceptable coverage is present in 47% of households in Catalonia. And although the rate is 100% in municipalities with 50,000 inhabitants or more, the figure falls as the size of the municipality

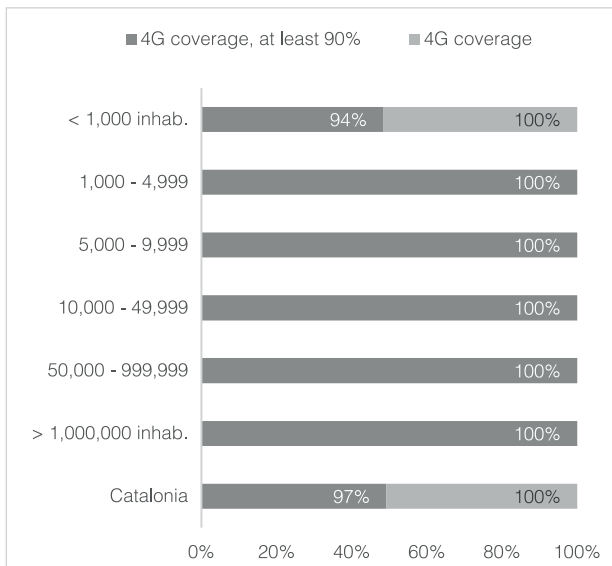decreases and reaches 26% in the case of the smallest (up to 1,000 inhabitants).

As for mobile connections, 4G technology is available throughout the country. 97% of municipalities have what we call acceptable coverage in this report (at least 90% of households have access). 5G coverage, which has the capacity to replace fixed Internet provision, has a much more unbalanced distribution, probably because the deployment of the network is still in process. For Catalonia, 23% of households have 5G coverage, a figure that varies between 12% in the case of the smallest municipalities, increases to 77% in municipalities between 50,000 and 100,000 inhabitants and reaches 100% in case of Barcelona city.

As ageing in the rural world is more pronounced than in urban areas (Departament d'Acció Climàtica Alimentació i Agenda Rural, 2022), we can affirm that the shortcomings in the coverage of Internet services affect the elderly comparatively more. Specifically, one in five people in Catalonia's rural population is at least 65 years old and, of this, almost 20% are over 85. Thus, while 97% of households have a broadband Internet connection in Catalonia, the lowest connectivity occurs in single-person households (94%) and those with a net monthly income of less than € 900 (93%) (Idescat, 2022a). It is worth saying that the available data refer to homes with a member between 16 and 74 years of age.
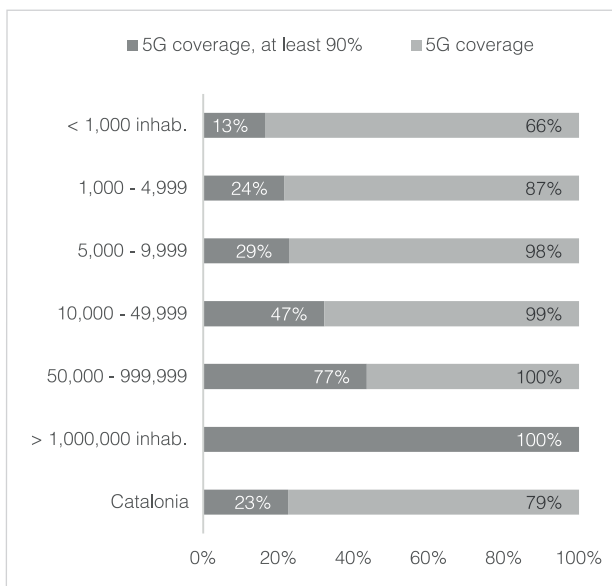
Table 1. Fibre optic, 4G and 5G coverage in the municipalities of Catalonia, by size of municipality (number of inhabitants). June 2022. Municipalities with at least 90% household coverage and municipalities with some type of household coverage.
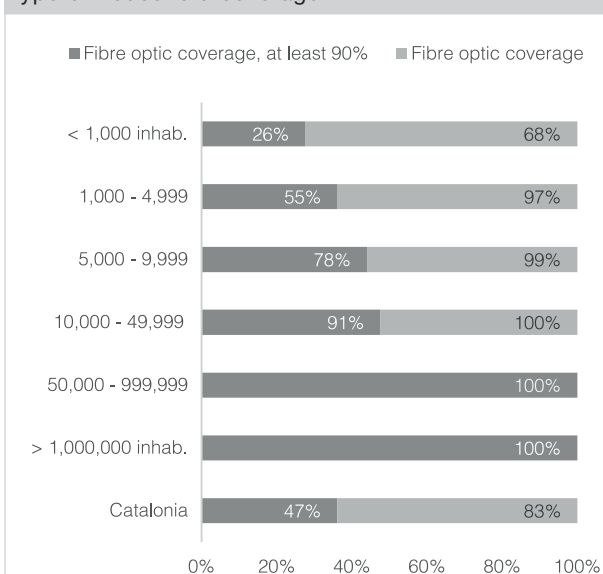
Fibre optic: FTTH connection or fibre to the home. It allows advanced services such as the so-called *triple play* (telephone, broadband, television and streaming). Source: «FTTH», s. d.

Chart showing 4G coverage by municipality size:

	4G coverage, at least 90%	4G coverage
< 1,000 inhab.	94%	100%
1,000 - 4,999		100%
5,000 - 9,999		100%
10,000 - 49,999		100%
50,000 - 999,999		100%
> 1,000,000 inhab.		100%
Catalonia	97%	100%

4G: Fourth generation of mobile phone technologies. It can be used by wireless modems, smart phones and other mobile devices. The access speed it can provide exceeds 100 Mbit/s in motion and 1 Gbit/s at rest. Source: «4G», s. d.

Chart showing 5G coverage by municipality size:

	5G coverage, at least 90%	5G coverage
< 1,000 inhab.	13%	66%
1,000 - 4,999	24%	87%
5,000 - 9,999	29%	98%
10,000 - 49,999	47%	99%
50,000 - 999,999	77%	100%
> 1,000,000 inhab.		100%
Catalonia	23%	79%

5G: Fifth generation of mobile phone technologies. It is expected to replace 4G. Moreover, given the bandwidth and its speed, it can replace fixed Internet connection services. Source: «5G», s. d.

Self-made using MINECO (2023).

Internet usage

In Catalonia, 96% of the population between the ages of 16 and 74 are **Internet** users, which would lead us to talk about universal access (Idescat, 2022a). Now, the **age division** is still very important: the rate falls to 79% between the *young elderly* (the 65 to 74 year old cohort). On the other hand, although the data are not included in the aggregate for the population as a whole, among the *older elderly* (cohort 75+, or 75 and over) the value plummets to 42% (INE, 2022).

This data shows that division is also very important within the *elderly* category, as Internet users aged 65 to 74 almost double those aged 75 or over. Moreover, the **forecast for digital divide by age is not very optimistic**. The trend of the last five years shows a slow closing in the 65-74 cohort, but in the 75 and over cohort, the divide is still very large compared to Catalonia as a whole (Graph 1). The figures are slightly higher than the Spanish average and are above the European Union average [total population 65-74: 95% (ES.), 90% (UE); cohort 65-74: 76% (ES.), 67% (UE); cohort 75: 36% (ES.), no data (EU) (Eurostat, 2023)].

Graph 1. The evolution of the number of Internet users, 2018-2022.
Catalonia and selected age groups.

	2018	2019	2020	2021	2022
Catalonia	88%	94%	96%	96%	96%
65-74 yo	54%	74%	77%	79%	79%
75+ yo		28%	29%	37%	42%
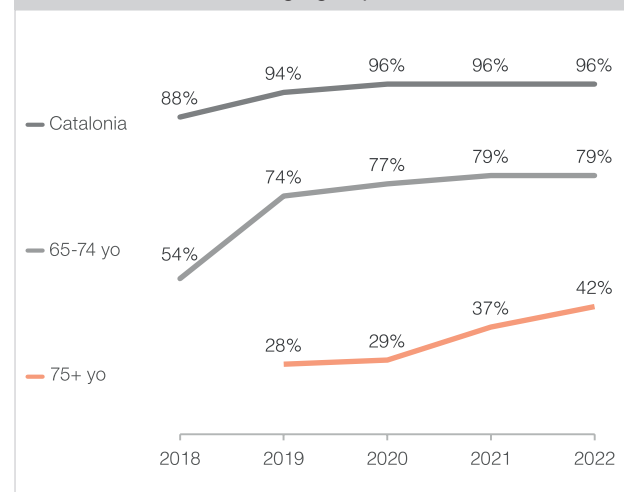
Internet user: person who has used the Internet in the last three months.
The data for Catalonia refers to the population aged 16 to 74. Source: (Idescat, 2022a), and (INE, 2022) for the 75+ population.

Mobile phones are an important form of Internet access, a very popular technology also among older people: 99% of people aged 65-74 use them regularly (Idescat, 2022a). However, the figure must be understood with caution. First, because there is no data for the 75+ cohort. Second, because having a mobile phone does not mean accessing the Internet: you need a smartphone with mobile data or Wi-Fi. And third, if the only point of access to the network is a smartphone, the potential for Internet use is limited. As such, single-person households and those with low incomes have computers to a lesser extent (Idescat, 2022a) and, therefore, even if they have access to the Internet, they will face more barriers in their digitalisation.

The official sources do not provide sufficient disaggregated information to determine the effect of the intersection of age with other axes of inequality, such as gender, level of education or rurality. Table 2, with aggregated data for Catalonia as a whole, shows

that being a woman, a pensioner, or with a low level of education is associated with Internet use below the Catalan average. The foreign population, on the other hand, uses the Internet more than the average, while the Spanish population uses it less. Finally, single-person households, those with low incomes and those located in small municipalities also make comparatively lower Internet use than average. Compared to the total of Catalonia, the 65-year-old population is more feminised and has a higher percentage of people with Spanish nationality (Idescat, 2023a). On the other hand, since the elderly are mostly pensioners, the level of income tends to be limited (particularly in the case of non-contributory pensions). Finally, as argued above, rurality is also a relevant phenomenon in the case of old age. Therefore, we can state that **socio-economic inequalities and digital inequalities are interrelated** both at the aggregate level of Catalonia and among the general population.

Table 2. Internet users (%), Catalonia, 2022. Selected socio-economic characteristics.

Catalonia (16-74 yo)	95,7	
Male	96,4	⬆
Female	95,2	⬇
Spanish nationality	95,2	⬇
Foreign nationality	98,7	⬆
Pensioner	86,7	⬇
Low educational level[1]	89,2	⬇
Single-person household	92,8	⬇
Low income[2]	90,9	⬇
Less than 10,000 inhab.	94,3	⬇

Percentage of population that, in each group, has used the Internet in the last three months.

[1] Up to the 1st stage of secondary education completed.

[2] Net household income up to €1,600 per month. A green arrow indicates that the value is higher than the average for Catalonia, a red one that is lower.

Source: Self-made using Idescat (2022a).

Internet activities

Regarding Internet activities, there are substantial differences between the youngest cohort (65-74) and the oldest (75+), and both are below the average values for Catalonia (Graph 2). First of all, the most common activity is communication, including WhatsApp instant messaging (100% in the 65-74 segment, 41% in the 75+ segment). And secondly, that up to 62% of Internet users aged between 65 and 74 use online banking, a figure that drops to 21% in the 75+ segment, a result that may be a response to the closure of bank offices and customer relations policies that have been imposed since the pandemic (Idescat, 2022a).

We could go deeper on an individual level in each of the 8 activities from Graph$_2$, but to analyse inequalities globally it is more illustrative to calculate in how many cases a given group is above or below the Catalan average since the diversity of uses is also an indicator of how refined digital practices have become. Thus, the 65-74 cohort is below average in 7 of the 8 activities, while the population aged 75 and over is in all cases. In the latter case, the values are markedly below, so that the 75+ cohort faces a greater digital divide in uses than the younger elderly cohort. The same exercise by socio-economic axes confirms the usual trend according to which social and digital inequalities are associated (see Appendix, Graph A. 1).

Graph 2. Online activities of regular Internet users, 2022. Catalonia* and selected age groups.
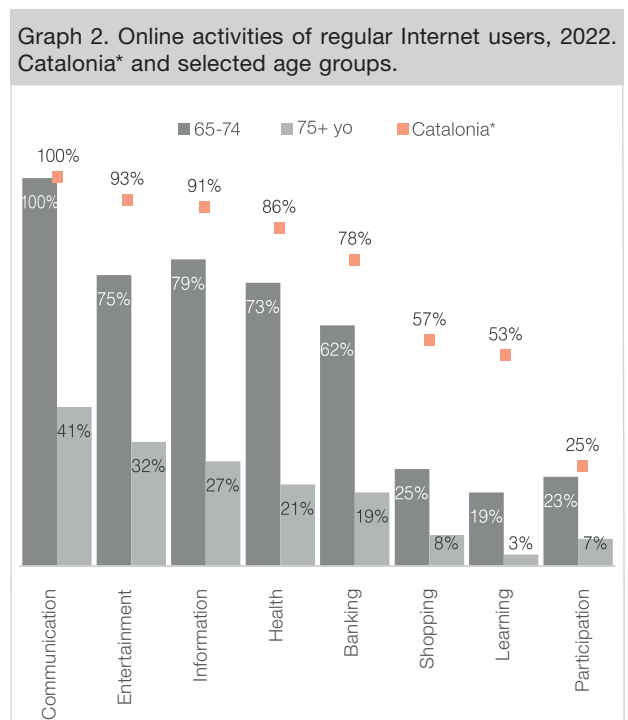
People who have used the Internet in the last three months. Percentage of people who, within each group, have used the service. *The data for Catalonia as a whole refer to the population aged 16 to 74.

Sources: Idescat, 2022a, data up to 74 years, and INE, 2022, data 75 years and older.

The categories include the following activities (at least one):

Communication: a) Receive or send e-mails, b) Make phone calls or make video calls over the Internet (WhatsApp, Skype, Messenger, Facetime, etc.); c) Participate in social networks; d) Use instant messaging (WhatsApp, Skype, Messenger, etc.).

Entertainment: a) Listen to or download music (from a radio broadcast over the Internet or streaming, YouTube, Spotify); b) Watch programs broadcast over the Internet (live or delayed) from television channels; c)

Watch films or videos on demand from commercial companies; d) View video content from sharing sites (e.g. YouTube); e) Play or download games.

Information: Includes: a) Searching for information on goods or services, b) Reading news, newspapers or current affairs magazines online.

Health: a) Search for information on health topics (e.g. injuries, diseases, nutrition, etc.); b) Make an appointment with a doctor through a website or a mobile app; c) Access personal health files; d) Access other health services through a website or a mobile app instead of having to go to the hospital or visit a doctor.

Bank: Online banking, whether on a computer or mobile.

Purchases: Online purchases of goods or services.

Learning: a) Take an online course; b) Use online learning material other than a full online course; c) Communicate with teachers or students using online audio or video tools.

Political and citizen participation: a) Issue opinions on civic or political matters on websites or social networks; b) Take part in online consultations or votes on civic or political matters

Digital skills

In Catalonia, 62% of the population between 16 and 74 report having basic or advanced digital skills, 28% low and 3% report no skills in this area (INE, 2019). Unfortunately, there is no information available broken down by age groups at the level of Catalonia.

In the absence of a scenario with richer data and understanding that we do not exhaust all the desirable indicators to measure them, one way to approximate digital skills is to analyse the tasks that a person does, both with their devices and the Internet. Specifically, we focus on three activities: mobile or computer management, use of computer software and management of access to personal information on the Internet (Graph 3). In all cases, the divide between the 65-74 cohort and the average for Catalonia is very pronounced, and the biggest difference is found in the use of computer software, which includes, among other things, the use of word processors, spreadsheets, or photo, video or audio editing programs. In this case, the Catalan value is more than double that of the 65-74 cohort (73% and 35% respectively). The cross-cutting nature between social and digital inequalities is also confirmed (see Appendix, Table A 1).

Graph 3. People who have used the Internet in the last 3 months and carried out the indicated tasks. Catalonia, 2021 and 65-74 cohort.
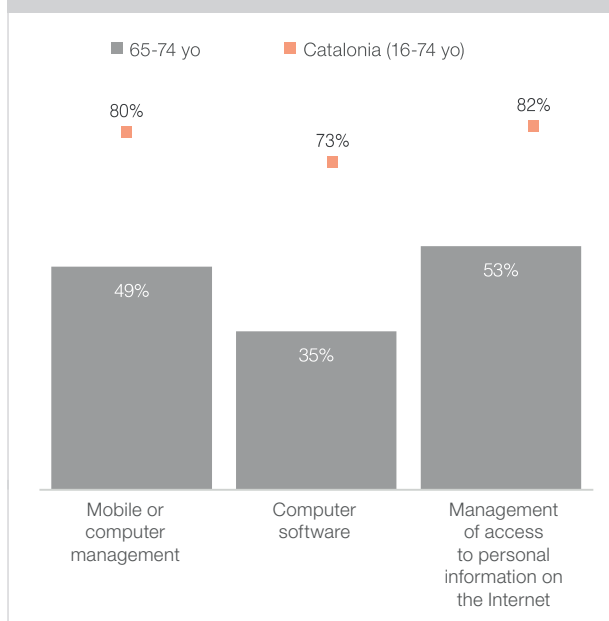
Note: No data available for the 75 and over cohort.

Source: Idescat (2021a).

The categories include the following activities (at least one):

Mobile or computer management: a) Copy or move files between folders, devices or in the cloud; b) Download or install software or applications; c) Change the configuration of the software, the app or the device.

Computer software: a) Use a word processor; b) Create files that incorporate various elements (text, tables, graphics, animation...); c) Use spreadsheets; d) Use advanced spreadsheet functions to organise and analyse data (sort, filter, use formulas or build graphs); e) Use software to edit photos, videos or audio files; f) Programming in a programming language.

Management of access to personal information on the Internet: a) Read the privacy policy of the websites before providing personal information; b) Restrict access to your geographic location; c) Limit access to your profile or content on social networks; d) Deny permission to use personal information for advertising purposes; e) Verify that the website where personal information was required to be provided was secure; f) Request the administrator or website or search provider to update or delete personal data.

What actions are being taken to reduce the digital divide?

This section presents a collection of measures, strategies, plans and actions dedicated to combating the

causes and effects of the digital divide, of particular interest to this report. Priority is given to those promoted at the Catalan level, but some particularly outstanding ones in the geographical areas relevant to Catalonia are also included. It is not, therefore, an exhaustive mapping.

The joint vision of these measures, strategies, plans and proposed actions shows that the current main focus of attention is on the acquisition of digital capacities and skills by citizens. Although there is a special interest in working people, and therefore in the productive sector, for the first time the digital inclusion of older people is made explicit and, therefore, in spheres that go beyond the productive environment.

In Catalonia, the National Pact for a Digital Society in Catalonia (Generalitat de Catalunya, 2017, 2020), identifies several challenges to ensure the rights and duties of civil society and empower it in the digital environment. This is reflected in the Catalan Charter for Digital Rights and Responsibilities (Generalitat de Catalunya, 2019), which recognises the Internet as a global public good with universal access, equitable, non-discriminatory, unrestricted, affordable and with the necessary bandwidth. The importance of the Internet governance model being open and including the participation of empowered citizens with mechanisms provided by the public authorities is highlighted. The Charter also includes rights such as data protection and privacy, and highlights the guarantee of training and digital inclusion. Emphasis is placed on ensuring equal access to competent, safe and specialised digital education for social groups that need special attention.

We highlight two challenges faced by the National Pact. First, Challenge 4 aims to ensure connectivity and digital infrastructure throughout the territory. Priority is given to completing network infrastructures with fibre optics, guaranteeing voice and data coverage in mobility, and facilitating cloud computing services, and the catalogue of products and services on infrastructures and networks is established. In this sense, the SmartCatalonia strategy promotes the creation of infrastructures that comply with the connectivity standards established by the EU. It includes several government and regulatory agreements, such as the application to develop a participatory mobile coverage map, digital skills training and accreditation programmes, and the expansion of the XFOCAT Fibre Optic Network. In turn, Challenge 10 wants to define mechanisms to guarantee the co-governance of digital transformation, involving citizens in the design and evaluation of digital public services of Public Administrations. The drafting of the pact incorporated a certain degree of citizen participation through working groups, presentation of proposals and participation in presentation activities.

Likewise, the General Directorate of Digital Society of the Generalitat of Catalonia has several initiatives and lines of action in the field of digital policies underway (Generalitat de Catalunya, s.d.-b) that seek to combat the digital divide (access, use and knowledge) through: social digital bonds, reuse and recycling of devices, the ACTIC skills certificate or the public access ICT Point Network. The Shock Plan against the digital divide (Generalitat de Catalunya, s.d.-a) wants to digitally empower citizens to communicate, buy, make transactions or relate to administrations digitally with autonomy. Specifically, it wants to train more than 90,000 people at risk of digital exclusion in basic skills, prioritising these people: over 60; the unemployed; members of families with school-age children at risk of exclusion; with disability; included in this category according to the criteria/scales of the social services of the municipality where the training is offered; and inmates in penitentiary centres.

In general, Catalonia, Spain and the EU share common objectives in terms of digital policies, such as the promotion of digital skills, the guarantee of access to connectivity and infrastructure, and the protection of digital rights.

The Digital Spain Strategy (Gobierno de España, 2022) aims to improve the digital skills of both the general population and professionals, guarantee digital inclusion and protect digital rights, and has launched several plans guided by the *Charter of Digital Rights* (Gobierno de España, 2021a), of which we highlight two. First, the National Digital Skills Plan (Gobierno de España, 2021b) focuses on the development of digital skills for citizens, the reduction of the digital gender divide and the promotion of digital skills in education and the workforce. Within its framework, the Pact for Generation D is established which focuses on raising awareness, training and certification of digital skills to overcome digital divides, aligning with European frameworks and indicators. And second, the Digital Connectivity and Infrastructure Plan (MINECO, 2020) aims to reduce territorial and social divide by facilitating broadband access for 100% of the population and connectivity vouchers for economically vulnerable groups.

The European strategy, called Digital Compass 2030, (European Commission, s. d.-a), aims to reach 80% of the adult population with at least basic digital skills, through accessible education, affordable, secure and high-quality connectivity, and digital public and health services through a universal digital identity. The importance of protecting privacy and data protection rights,

freedom of expression, children's and consumer rights is highlighted. The EU also has other plans for the development of digital skills, such as the Digital Education Action Plan 2021-2027 (European Commission, s. d. -b) and the European Capacity Agenda (European Commission, s. d. -c). The former aims to enhance the digital capabilities of the young and adult population, while the latter implements a pact for skills between the public and private sectors to train the population, ensure the skills necessary for work and provide continuous support for careers professionals.

Some reflections

Shortcomings for the detailed study on the digital divide among the elderly

The information available on digitalisation of the population aged 75 and over is nil or limited. The statistics produced by Idescat and INE are harmonised with the European statistical system led by Eurostat. In the harmonised statistics on digitalisation, only homes with a resident between 16 and 74 years of age are included. This was a design agreed upon at the level of the European Union, in the early 2000s, when the statistics on information and communication technologies (ICT) were designed. It was chosen to follow the design of the active population survey since the Internet was associated with productivity and the economic sphere (Fernández-Ardèvol i Grenier, 2022). It was not a priority to study people who were not part of the labour market, including retirees. However, one in 10 people in Catalonia is 75 or older, and a significant part of the elderly population lives alone (Idescat, 2020, 2022b). Thus, the statistics leave out an increasingly important segment of the older population because it is not considered in the sampling methodology.

As statistics from other countries and continents show, this problem can be solved with a design change. As such, since 2019, the INE has published a block of specific data for the population aged 75 and over. It is a first step, but the information is still limited compared to the other age segments and, therefore, improvements are needed to be able to evaluate the digitalisation of the entire population.

On the other hand, it is common for old age to be conceptualised as a single category. However, the label *elderly* includes a wide range of heterogeneity because it refers to generations ranging from the sexagenarians to the centenarians. In this sense, older people are individuals with different life trajectories, diverse interests and very varied life and socio-economic contexts. Thus, Paul Higgs and Chris Gilleard distinguish

between the third and fourth ages. The third age corresponds to the period of active retirement and active ageing that follows middle age, while the fourth age is associated with the period when people become inactive, have poor health and therefore inactive ageing (Higgs i Gilleard, 2015). It is not chronological age that marks the border between the third and fourth age, but life events and physical condition.

It should be noted that a series of recent surveys already include the elderly population without an upper age limit and collect the same data for all age groups. Thus, those of the Hospitalet de Llobregat (2022), Mataró (2022) or Barcelona (2020) councils distinguish between cohorts 65-74 and 75+, but this is not always the case. However, the survey for the entire Spanish State carried out by the Ferré i Guàrdia Foundation in 2022 considers the entire elderly population in a single category (65 and over), which prevents observing the differences between two large population cohorts.

Stereotypes

The elderly have not exactly been the centre of attention of digitalisation policies. The Internet is a general-purpose technology, like electricity, and in its beginnings it was associated with the productive sector. Therefore, the elderly digital inclusion was not considered a priority since, once retired, they do not participate in the productive sector. They have also not been the focus of attention in academic and industry studies because digital culture is mainly a youth culture, and it has been considered more important to study the population and consumer groups that set trends.

Therefore, the elderly have either tended to be invisible or are not studied in the same way as the rest of the adult population in the digital sphere. As a result, stereotypes carry much more weight, which can affect public policy. Stereotypes are generalised beliefs about a specific category of people. They are used to function on a day-to-day basis and although they can be accurate on some occasions, the most common is that they become excessive and imprecise generalisations. One of these inaccurate stereotypes is to consider that older people do not know how to use the Internet and do not have the capacity to learn. One way to avoid this excessive generalisation is to study how older people, who are heterogeneous and diverse, relate (or not) to the Internet. Indeed, the research that focuses on older people shows the diversity of ways in which they approach the Internet, how they acquire skills or what barriers they face to acquire them and in what ways they use the Internet on a day-to-day basis.

Technological design is also relevant

The acquisition of digital skills is key to closing the divide, but it is not the only factor. Digital services and products must be guaranteed to meet universal design criteria to ensure that the maximum number of people can use them without the need for specific adaptations. The case of online banking illustrates the need for a balance between skills and universal design. The campaign highlighted I'm old, not an idiot, which was promoted by Carlos San Juan at the end of 2021, in which he denounced the banks' dehumanising treatment of the elderly. Media coverage contributed to some legislative changes at the beginning of 2022. Although it was widely argued that the problem was a lack of skills, the situation is the result of a set of trends that reinforce the digital exclusion of the elderly.

Firstly, these include the COVID-19 restrictions, which led to the hasty universalisation of online banking. Second, the restructuring of the banking sector has led to the massive closure of bank offices, the dismissal of staff and the limitation of face-to-face services. And third, digital banking was originally designed for a type of clientèle that does not want to do face-to-face transactions, has advanced digital skills and trusts its capabilities to operate remotely. In other words, until the lockdowns, digital banking was not aimed at customers with limited digital skills or with reluctance towards online banking because the main channel, the default form of relationship, was face-to-face. Therefore, we can infer that the design of these banking platforms was aimed at an audience with sufficient digital skills and a clear interest in online banking. In particular, the elderly were not considered to be target customers for the digital channel, perhaps also because stereotypes indicate that they are not interested in it.

Thus, it creates a vicious circle:

(a) data on the older population are limited

(b) older people do not participate in the design of digital products and services, and if they do, it is in a limited way

(c) because of (a) and (b), and with the reinforcement of stereotypes, the digitalisation of older people is quite a challenge. Not only because of a lack of skills but because they are not considered to the same extent as other younger populations.

The result of this vicious circle is a specific form of age discrimination that we have called digital ageism (Rosales et al., 2023) and which reinforces the dynamics of digital exclusion of the elderly.

The case of banking is just one example, albeit a very clear one, of the causes and effects of the digital exclusion of the elderly.

Conclusions

The digital divide facing the elderly is very worrying. It is estimated that they have less connectivity, Internet access is lower, digital uses are markedly less varied and they have fewer skills than the younger population segments. In addition, within the older population there is also a distinct digital divide: when data is available, it shows that people aged 75 and over are significantly below those aged 65 to 74.

Digital inequality is not only solved with access to the Internet, as the problem of the digital divide is multidimensional. Specifically, three aspects are relevant: access to the Internet, forms of use and the ability to use the Internet, and the benefits obtained from this use. The cultural, economic and social capital conditions the benefits that people can obtain from participating in the digital sphere. The term *socio-digital divide* highlights how **digital inequality is another form of socio-economic inequality** and it is more serious when older people have low levels of education or income, when they live in rural areas, or when they are women. All these aspects are interrelated.

Given the speed with which the digital environment changes, a constant update of basic digital skills and competences is necessary, since every innovation that succeeds in the market can exclude people who do not have the capacity to make autonomous and informed use of it. Often, however, skills are not enough. Universal technological design and the extension of infrastructures are essential to avoid exclusions. Also, as the example of banking illustrates, complex trends need to be reversed, which are influenced by social, economic, cultural and technological factors that systematically lead to the digital exclusion of (especially) the most disadvantaged people. Thus, we need to ask ourselves what is the most socially just, effective and appropriate way to design, develop and undertake new digital technologies so that they effectively benefit and do not harm people in general and older people in particular. And also what mechanisms must be guaranteed so that citizens can participate in this technological development. Likewise, updated and accurate data on the effects of digitalisation on all strata of the population are needed, changing the current custom of leaving out of official statistics on digitalisation relevant groups such as those aged 75 and over.

On the other hand, it should not be forgotten that the reduction of the digital divide is part of the United Nations 2030 Sustainable Development Goals (SDGs). Several plans, strategies and actions to close the digital divide treat access to the Internet as a fundamental right, including the Catalan Charter for Digital Rights and Responsibilities, which considers **Internet** to be **public asset**. Universal access must therefore be guaranteed. However, right of access and right of use does not mean obligation to use the Internet. Thus, people who do not want or cannot use the Internet, particularly vulnerable social groups, must have non-digital alternatives.

The digital divide is alive and constantly evolving. This is why **permanent monitoring must** be carried out, adapting the analysis to new realities, given that social inequalities are continually widening and being reproduced. This is essential information to develop more efficient public policies.

Recommendations

Based on the information analysed in this report, the following recommendations are put forward to reduce the social and digital inequality and exclusion of the elderly in Catalonia:

1. Ensure that the actions, plans, measures and strategies against the digital divide are **guided by democratic and egalitarian principles**, many of which are collected in declarations and charters of (digital) rights, and focused on the **protection of the rights and freedoms of citizens**. This implies recognising the **digital technologies and the Internet as universally accessible public assets**.

2. **Apply** the pacts, measures, strategies and actions proposed by local, national or international bodies **with rigour and guarantees of transparency**. It is necessary to support independent public bodies that **monitor its correct implementation**, as well as its adaptation to changes in the digital field.

3. Promote open and adapted **training and information programmes** so that citizens, especially older people, have up-to-date, transversal digital **skills and competences to access, use, understand and harness the potential** of the digital world according to their needs and desires, and to adapt to a **changing digital environment** with **autonomy**.

4. Implement **instruments with unified criteria to measure digital skills and capabilities** that are transparent and adapted to the diversity and local specificities of older people.

5. Encourage the creation and permanence of **counselling and support programmes and support and mediation networks** where the elderly can share learnings, question, train and participate in the digital environment. These spaces should include a wide participation of older people in the roles of advisors, companions or trainers, as well as fostering intergenerational cooperation.

6. **Promote awareness** of the population in general and economic and social agents **in the fight against stereotypes** about old age, which often generate lacks of confidence, self-esteem or self-efficacy that negatively affect the relationship of older people with digital technology. Understand that older people are one **source of experience and expertise in the digital world** of maximum relevance to take advantage of the opportunities of digitalisation at a social level and to combat its negative effects.

7. **Promote co-governance and citizen participation in technological design**, including, the definition of measures, strategies, plans and actions to combat the digital divide. This requires developing and offering the appropriate mechanisms for citizens to do so **equally and autonomously**.

8. **Create simple and quality digital services, suitable to the preferences and needs of all strata of the population**. This refers especially to services driven by *public administrations*, but also to the essential services provided by *private institutions*, as can be the example of banking, water, electricity, health, over which a certain control must be exercised. It is also key to **guarantee a universal technological design**, which favours the digital inclusion of the elderly.

9. **Support the provision of analogue services** (non-digital) to avoid the harmful effects of forced digitalisation and guarantee the basic rights of citizens to essential services, such as those mentioned in the previous point.

10. **Ensure the necessary investment** so that all citizens and, in particular, the elderly have the necessary resources to **access, use and understand** the Internet and **digital equipment suitable for the tasks they have to carry out**. It is about favouring all citizens equally that **can take advantage of digital technologies**, according to their needs and wishes. This includes actions such as: strengthening **economic aid** programmes for people in unfavourable economic situations; encouraging the **reuse** of devices; promoting **training and support** measures; and deploying the necessary **public infrastructures** to cover the all Catalonia with an acceptable level of **network connectivit**y.

11. Data reflecting the situation of older people in relation to the digital environment, broken down by age from the age of 65 onwards and without an upper limit, must be **made available in order to promote research and public knowledge**. It is essential to be able to analyse the **(significant) differences between levels of digital inclusion and exclusion** of the 65-74 cohort and the 75+ cohort with the same level of detail as data for younger population segments allow. It would also be relevant to obtain information on the digital needs and uses of people living in homes for the elderly.

Furthermore, **data must be collected** to analyse the exclusion of all cohorts of older people **in relation to other factors of socio-economic inequality** such as gender, level of education and income, rurality, nationality of origin, employment (or lack thereof) or household composition, among others.

These data must be collected especially but not only, in the official statistics, and in relation to the frequency and intensity of access and use, the diversification of activities, connection devices, quality and place of the connection, etc.

12. Finally, all measures, plans, actions and strategies focused on combating the digital divide must **complement others that reduce factors and trends that cause socio-economic inequalities** which especially affect the elderly.

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Appendix

Graph A. 1. Internet activity. Catalonia. 2022, and selection of socio-demographic characteristics. Population 16-74 years.

%	Communication	Entertainment	Information	Health	Banking	Shopping	Learning	Participation	Number of activities below average
Catalonia (16-74 yo)	100	93	91	86	78	57	53	25	
Male	↑	↑	↑	↓	↑	↑	↓	↑	2
Female	↓	↓	↓	↑	↓	↓	↑	↓	6
Spanish nationality	↑	↓	↓	↓	↑	↑	↓	↓	5
Foreign nationality	↓	↑	↑	↑	↓	↓	↑	↑	3
Pensioner	↑	↓	↓	↓	↓	↓	↓	↓	7
Low educational level[1]	↓	↓	↓	↓	↓	↓	↓	↓	8
Single-person household	↓	↓	↑	↓	↑	↓	↓	↑	5
Low income[2]	↓	↓	↓	↓	↓	↓	↓	↓	8
Less than 10,000 inhab.	↓	↓	↑	↓	↑	↑	↓	↑	4

A green arrow indicates that the value is (equal to or) higher than the average for Catalonia, a red one that is lower.
Source: Self-made using Idescat (2022a).

Table A 1. People who have used the Internet in the last 3 months and carried out the indicated tasks. Catalonia 2021. Selected socio-economic characteristics.

%	Mobile or computer management	Computer software	Management of personal information on the Internet	Nombre d'activitats per sota de la mitjana
Catalonia (16-74 yo)	80	73	82	
Male	↑	↑	↑	0
Female	↓	↓	↓	3
Spanish nationality	↑	↑	↓	1
Foreign nationality	↓	↓	↑	2
Pensioner	↓	↓	↓	3
Low educational level[1]	↓	↓	↓	3
Single-person household	↓	↓	↓	3
Low income[2]	↓	↓	↓	3
Less than 10,000 inhab.	↓	↓	↓	2

See definitions at Graph 3. A green arrow indicates that the value is higher than the average for Catalonia, a red one that is lower.
Source: Idescat (2021a).

Digital inequality and old age: the digital divide gap that still needs closing

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