INFRA4NEXTGEN

Data Summary

The Digital Divide across Europe

Lasse Marz and **Anja-Kristin Abendroth**
Bielefeld University

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MAKE IT GREEN
DIGITAL
HEALTHY
STRONG
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Abstract

Background: Unequal access to the internet, which is often referred to as one dimension of the 'digital divide', has been a matter of concern since the emergence of the internet as a global phenomenon. Despite a decline in the inequality of internet access across Europe over time, disparities in opportunities to benefit from extended connectivity in the digital realm persist, and are becoming increasingly salient.

Aim: This data summary provides a descriptive overview of the extent to which digital connectivity permeated the life of younger Europeans, who are often labelled as 'digital natives'. It also examines to what extent they can actually rely on digital skills to benefit from digital connectivity, and whether they experience social inclusion as well as new digital stressors, such as online harassment and scamming or increased blurring of boundaries between life domains. Based on existing conceptualisations and investigations of the digital divide we pay specific attention to gender, educational, regional (rural-urban) and European differences.

Data: The report relies on existing representative cross-national surveys that cover EU member states, Iceland, Norway, Switzerland and the United Kingdom and available survey questions on digital connectivity, skills, inclusion, and digital stressors. Both available information over past and current patterns is provided to gain at least some insights into time trends.

Results: The descriptive results show that the majority of young Europeans have access to the internet and are frequent users but that differences in digital skills, opportunities and stressors involved in the digital transformation persist even for the younger generation. In particular, the report identifies an educational and regional digital divide. In addition, northern European countries appear to be at an advanced stage in terms of infrastructure and equality. One limitation of the report is that it does not take into account more recent technological innovations, such as the use of artificial intelligence and required skills, which have not yet been measured in existing representative European surveys.

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1 Introduction

The ongoing digital transformation – the process of developing, introducing and using digital technologies (such as computers and, smartphones and artificial intelligence) in different life domains – brings opportunities but also a number of challenges. For example, the ubiquity of the Internet enables people to stay in touch over long distances. However, communication via social media can also introduce unique stressors, such as experiencing online hate speech. Moreover, increased exposure to misinformation on the internet and social media platforms might undermine people's trust in public institutions and destabilise democratic societies.

In order to deal with the challenges involved in the digital transformation the EU has established various objectives as part of the agenda 'Make it Digital' in the NextGenEU strategy. The development of digital infrastructure (broadband) and the improvement of public services and general data security are pivotal to this. Furthermore, the EU seeks to leverage innovative technologies, including artificial intelligence to promote greater sustainability and efficiency. In this regard, a framework has recently been instituted at the European level. The most prominent examples are the Data Act (November 2023), which aims to regulate access to and use of (digital) data, and the AI Act (May 2024), which aims, among other things, to prevent the misuse of artificial intelligence through regulation.

This data summary seeks to describe the digital transformation, paying attention to the unequal permeation of digital connectivity, digital skills, digital inclusion and exposure to digital stressors to provide a source for informed decision making in the realization of the EU 'Make It Digital' objectives. Based on existing representative European surveys, our descriptive analyses focus on young Europeans, who are often referred to as digital natives (aged under 35 years). These survey respondents are compared to older Europeans (aged 35 years and older) to identify their unique skills, opportunities and challenges, and highlight differences and similarities in gender and education within the younger age group in line with literature on the digital divide. In addition, regional differences and disparities between countries often referred to as the global or European Digital Divide are illustrated.

2 A conceptual model of the digital divide

The conceptualisation of the digital divide initially addressed restricted opportunities for digital **connectivity** (DiMaggio & Hargittai, 2001), or whether people had an internet connection and an internet enabled device. As well as socio-economic status for affording digital devices, existing literature on the global digital divide identified the importance of country and region-specific digital infrastructures (Choi et al., 2022; Hargittai, 1999; Vicente & López, 2011).

It soon became clear that certain digital **skills** are required to use the internet to one's own advantage. The development of these skills requires access to the internet, but the actual skill level also depends on other resources already available, such as contextual knowledge. Digital skills are often referred to as the second level of the digital divide (DiMaggio & Hargittai, 2001). Existing research suggests both persistence and change in this digital skill divide. While gendered patterns appear to have vanished over time, at least for the use of information and communication technologies (Acilar & Sæbø, 2023; DiMaggio & Hargittai, 2001; Hargittai & Shafer, 2006; MacLeavy, 2021; van Dijk, 2020), age, educational and social class differences appear to persist. Younger generations and those with higher education and socio-economic status on average tend to be better equipped with digital skills (Hargittai, 2010; van Deursen & van Dijk, 2019).

In this data summary we want to broaden the concept of the digital divide and additionally focus on the unequal distribution of both opportunities and stressors of digital connectivity. With digital **inclusion** we refer to the maintenance of social relationships regardless of time and place due to opportunities for digital connectivity. Theoretical considerations of social network theory have led to the assumption that existing social networks continue and can be sustained or enhanced in the digital world (Haythornthwaite, 2005).

As a counterpoint to these opportunities, we will discuss the **stressors** associated with the utilisation of digital technologies (Brod, 1984). In line with the concept of techno-stress, we examine how demanding people find digital technology in different areas of life, and how they feel about issues such as personal privacy and the blurring of boundaries between work and other domains of life (Dragano & Lunau, 2020; Ragu-Nathan et al., 2008). Moreover, we consider online harassment and online scams.

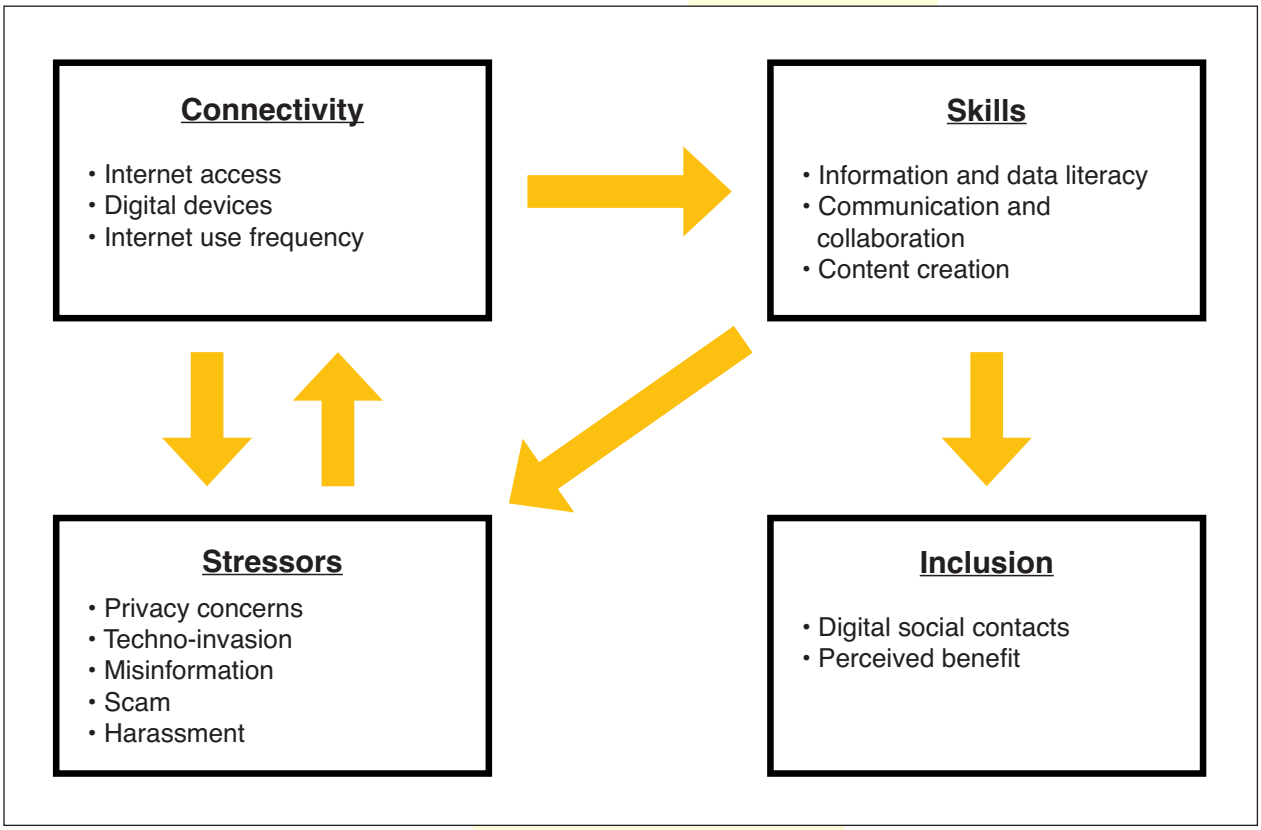
The rapid pace of innovation requires people to constantly adapt to new technologies. This necessity for adaptation is especially apparent in the workplace, as innovative technologies increasingly perform tasks previously carried out by humans. The inherent unpredictability of technological development has the potential to create insecurity among employees and make them question the security of their jobs. This phenomenon is referred to as *techno-uncertainty*. Furthermore, individuals may experience elevated levels of stress in response to the advent of highly complex technologies (*techno-complexity*) or recurring system errors and crashes (*techno-unreliability*).

In order to provide a comprehensive overview, this study also incorporates stressors that have been in existence in the analogue world, but which have been assumed to intensify in the digitalised

world. Here, a focus on experiences of cyber harassment and fraud, and the extent to which people are concerned about potential stressors, are included.

Figure 1 shows the subsequent conceptual model of the digital divide used for the report. The conceptual model acknowledges that the different sub-dimensions, connectivity, skills, inclusion and stressors are likely to be interrelated. For example, the extent to which digital stressors are experienced is likely to partly depend on the digital skill (Ragu-Nathan et al., 2008).

Figure 1. Conceptual model



3 Analysis strategy

In this data summary, we are making use of multiple sets of data from multiple sources. Consequently, it is not feasible to utilise the same sample for all analyses, as is typically done in empirical research. The rules we apply are the same for all the datasets. For each analysis, the valid responses of all individuals for which we have information on age, gender, harmonised level of education and whether they live in a rural or urban area are included. The country of residence is always known too.

The objective of the present analysis is to provide information on all aspects of the digital divide. Firstly, this means descriptively presenting the available data. A range of approaches is employed to provide the broadest possible perspective, while ensuring comprehensibility. In general, we endeavour to present a comparative perspective on all the described dimension of the digital divide.

To this end, individuals have been grouped by age (two or four groups), gender (male and female), education (low, middle, high) and place of residence (rural, urban). The age groups we use are 'under 25', '25 to 34', '35 to 54' and '55 and over'. In certain instances, the two lower age groups (young Europeans) and the two upper age groups (older Europeans) are combined.

The classification into low, medium, and high education levels is based on the ISCED (International Standard Classification of Education) variable provided in the respective dataset. Low education refers to qualifications at the lower secondary level or below. Medium education includes the upper secondary level as well as post-secondary non-tertiary education. High education encompasses qualifications at the first stage of tertiary education and beyond. The first wave of the EQLS (2003) is an exception to this. Here, a distinction is made between primary, secondary and tertiary education. The data set only contains an education variable with this distinction.

When comparisons are made by gender and education, these are only made for young Europeans. For each of the themes, we prepared visualisations of the one or two most relevant group comparisons. It should be noted that in certain instances, the limited number of cases within the subgroups precludes the presentation of meaningful findings.

In instances where the same or a comparable variable has been measured across multiple waves of a study programme, it becomes feasible to demonstrate a trend over time. In such instances, the means or proportions are presented for all available points in time. Despite the possibility of differing participating countries from year to year, all respondents are grouped together for each survey date.

In instances where a variable has been surveyed on a single occasion, the manner of presentation is determined by the number of values or categories that the variable comprises of. In instances where the number of categories exceeds two, the distribution of these categories is visualised or various categories are grouped accordingly. In instances where the variable of interest is limited to two values, the proportion of respondents who answered in the affirmative is presented.

When the variable possesses a substantial number of values, the mean is presented. In both scenarios, the distributions, means or shares are presented by the subgroups mentioned across all countries in the sample. Additionally, in some cases, a comparison is made between the values of the countries, with the aim of demonstrating how specific groups differ within the countries.

To increase the reliability of the results, the analyses were weighted with the weights provided. Ideally, these are weights that take into account both the draw probability within the countries (post-stratification weight) and the number of inhabitants (population weight). The European Social Survey (ESS) provides all weights that are needed (Kaminska, 2020). The same applies for the European Quality of Life Survey (Eurofound, 2012). The International Social Survey Programme (ISSP) does not provide a uniform weight for all countries, nor population weights. For some countries there are no weights at all depending on the year.

4 Results

In the following section, we present a visualisation of representative cross-national data from the last 25 years on digital connectivity, digital skills, digital stress and digital inclusion. For each aspect of the digital divide, a short explanation of the highlighted sub-dimensions and a brief overview of the main findings in terms of age, gender, education, level of urbanisation and country differences are provided. This is followed by more detailed descriptive information.

4.1 Digital Connectivity

In this sub-chapter, results on people's internet connectivity are presented. We distinguish between internet access, digital devices and internet use time.

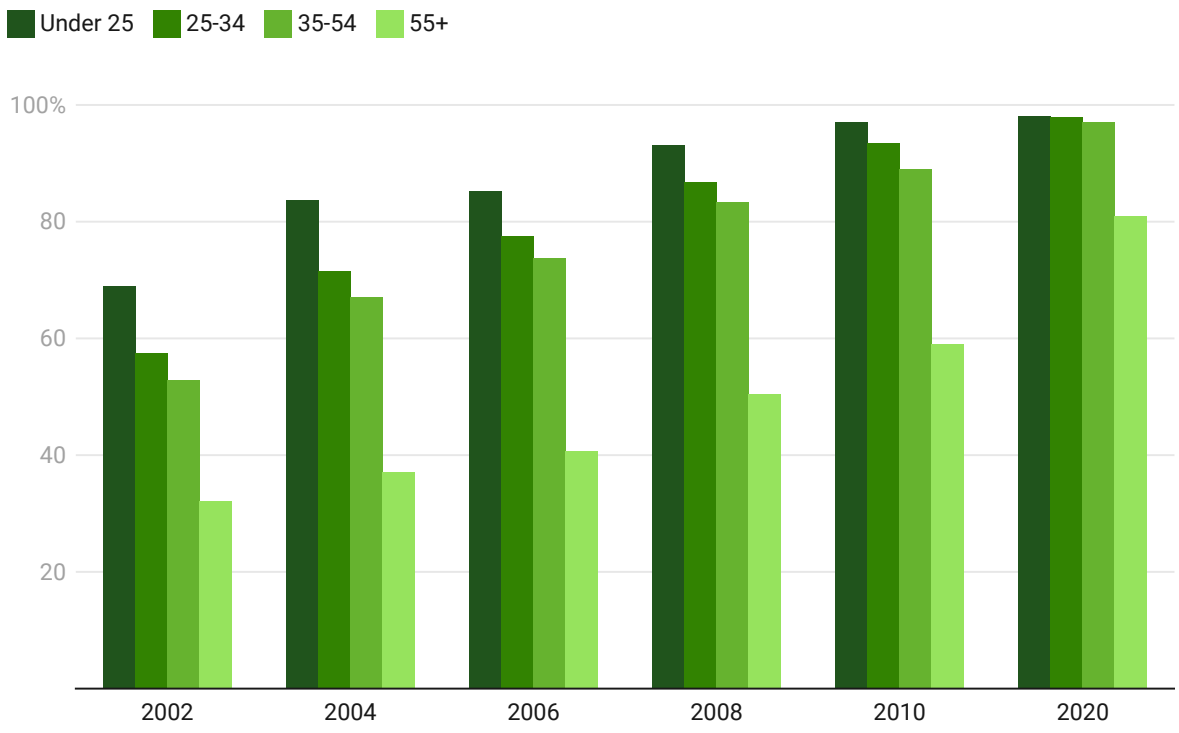
Key findings 1: Digital connectivity

Age	Young Europeans are the most likely to have access to mobile internet and to use it frequently.
Gender	The gender internet access and use gap has declined over time.
Education	Highly educated young Europeans have best access and highest use time.
Urban-Rural	Internet availability is best in urban areas.
Country	Spain and Latvia have the highest average internet use time among young people. Young people in Finland and Netherlands are most likely to have internet access on the move.

4.1.1 Internet Access

Figure 2 illustrates the trend in Internet access among Europeans over time. Since 2002/03, there has been an increase in the proportion of people with access to the internet across all age groups. While individuals under the age of 25 were more likely to have internet access than all other age groups in the early 2000s, this gap has since narrowed. In 2020-22, the likelihood of having internet access was close to 100% and was about the same for all age groups under 55. Internet access was not explicitly asked about in the surveys between 2010/11 and 2020-22.

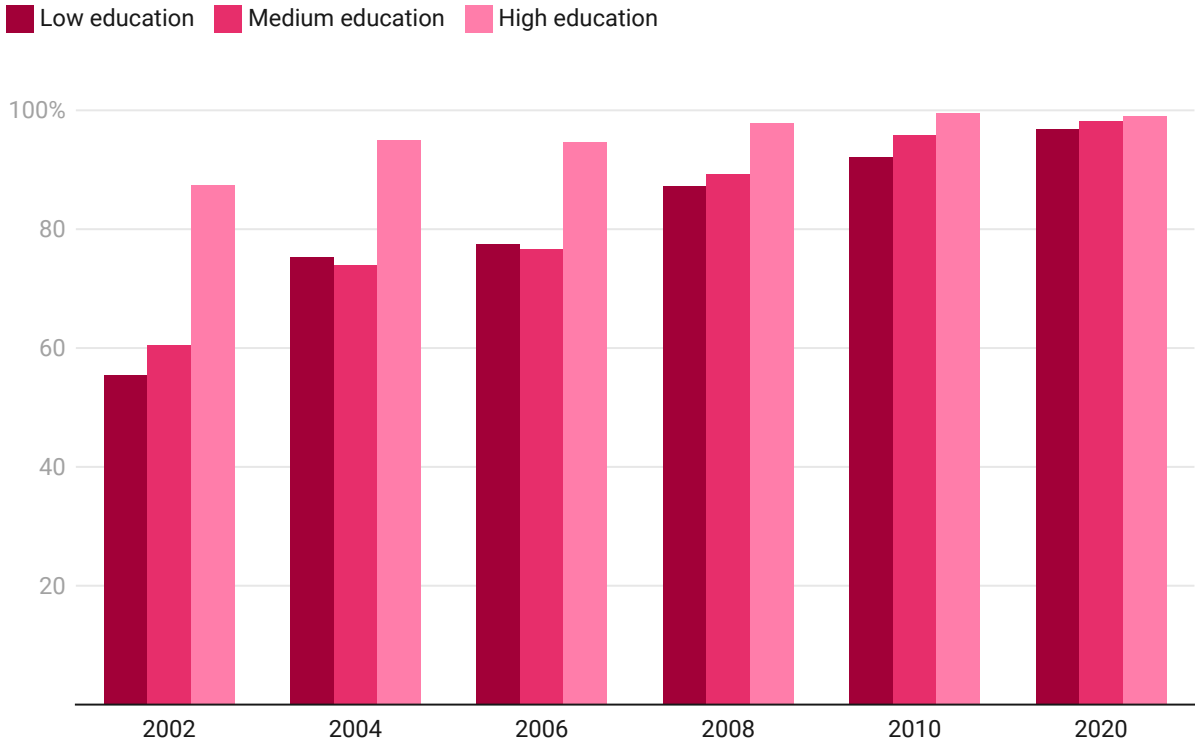
Figure 2. Internet access at home or work by age group over time



European Social Survey Rounds 1 to 5 and 10. Own Calculation. 2002: Belgium (BE), Switzerland (CH), Czechia (CZ), Denmark (DK), Spain (ES), Hungary (HU), Luxembourg (LU), Netherlands (NL), Norway (NO), Poland (PL), Slovenia (SI) (n=19,141). 2004: BE, CH, CZ, Germany (DE), DK, Estonia (EE), ES, HU, Iceland (IS), LU, NL, NO, PL, SI, Slovakia (SK) (n=26,336). 2006: BE, CH, DE, DK, EE, ES, France (FR), HU, NL, NO, PL, SI, SK (n=23,233). 2008: BE, CH, CZ, DE, DK, EE, ES, FR, Croatia (HR), HU, Latvia (LV), NL, NO, PL, Portugal (PT), Romania (RO), SI, SK (n=33,347). 2010: BE, Bulgaria (BG), CH, Cyprus (CY), CZ, DE, DK, EE, Greece (EL), ES, Finland (FI), FR, HR, HU, Ireland (IE), Lithuania (LT), NL, NO, PO, PT, Sweden (SE), SI, SK, United Kingdom (UK) (n=45,136). 2020: Austria (AT), BE, BG, CH, CY, CZ, DE, EE, EL, ES, FI, FR, HR, HU, IE, IS, Italy (IT), LT, LV, NL, NO, PL, PT, SE, SI, SK, UK (n=51,648).

Examining the educational differences in internet access among young Europeans, a comparable trend emerges. Since 2002/03, when the majority of highly educated individuals had internet access (87%) and the less educated were significantly less likely to have internet access (55%), there has been an increase in the rates, and in 2020-22, the rates are almost equal.

Figure 3. Internet access at home or work among young Europeans by education level over time

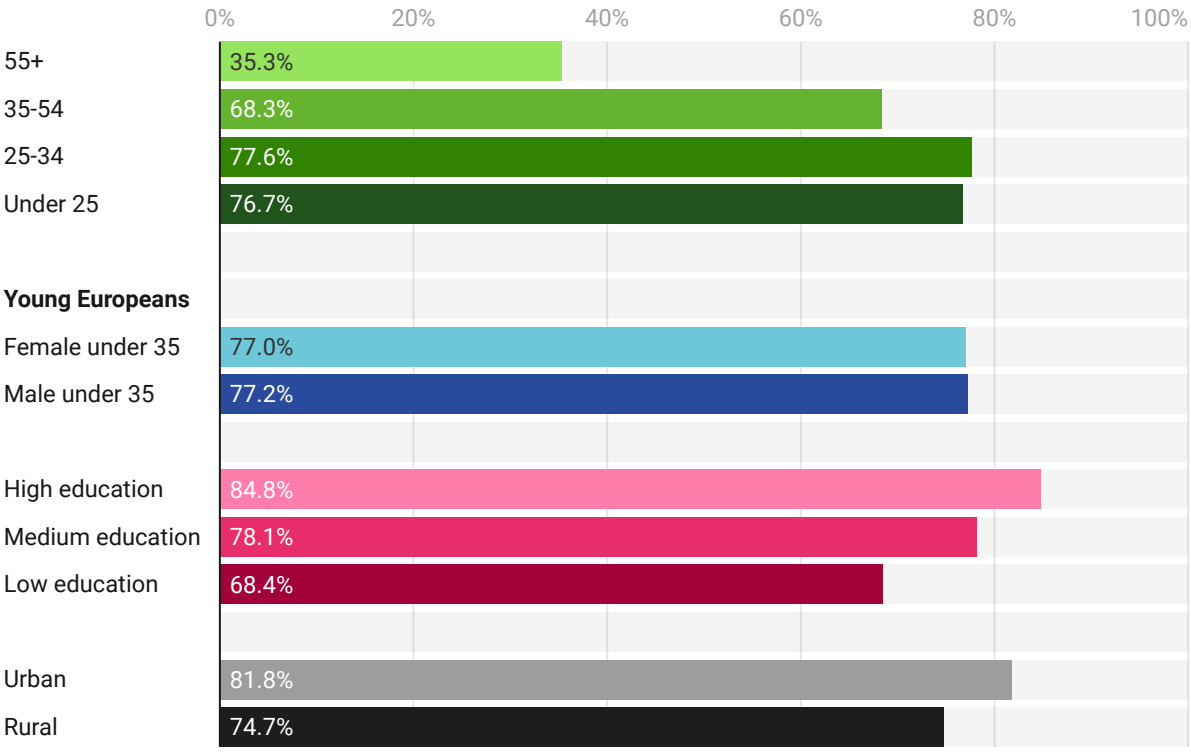


European Social Survey Rounds 1 to 5 & 10. Young Europeans refers to respondents aged under 35. Own Calculation. 2002: BE, CH, CZ, DK, ES, HU, LU, NL, NO, PL, SI (n=5,632). 2004: BE, CH, CZ, DE, DK, EE, ES, HU, IS, LU, NL, NO, PL, SI, SK (n=8,007). 2006: BE, CH, DE, DK, EE, ES, FR, HU, NL, NO, PL, SI, SK (n=6,560). 2008: BE, CH, CZ, DE, DK, EE, ES, FR, HR, HU, LV, NL, NO, PL, PT, RO, SI, SK (n=9,204). 2010: BE, BG, CH, CY, CZ, DE, DK, EE, EL, ES, FI, FR, HR, HU, IE, LT, NL, NO, PL, PT, SE, SI, SK, UK (n=12,084). 2020: AT, BE, BG, CH, CY, CZ, DE, EE, EL, ES, FI, FR, HR, HU, IE, IS, IT, LT, LV, NL, NO, PL, PT, SE, SI, SK, UK (n=11,976).

In addition to the question of whether individuals have access to the internet, it is imperative to consider the role of technological advancement. For instance, mobile internet has become increasingly more common today than in the past. Figure 4 illustrates the proportion of the population with internet access whilst on the move. It is particularly noteworthy that young Europeans are highly connected in this regard.

Across Europe, approximately 77% of individuals under the age of 35 have access to the internet on the move. While there is no observable gender gap, education plays an important role. Individuals with higher levels of education are more likely to have internet access on the move than those with lower levels. A similar pattern is evident when examining geographical differences, with 82% of individuals residing in urban areas having access to the internet on the move, compared to 75% of those living in rural areas. Overall, mobile internet is accessible to the vast majority of the population.

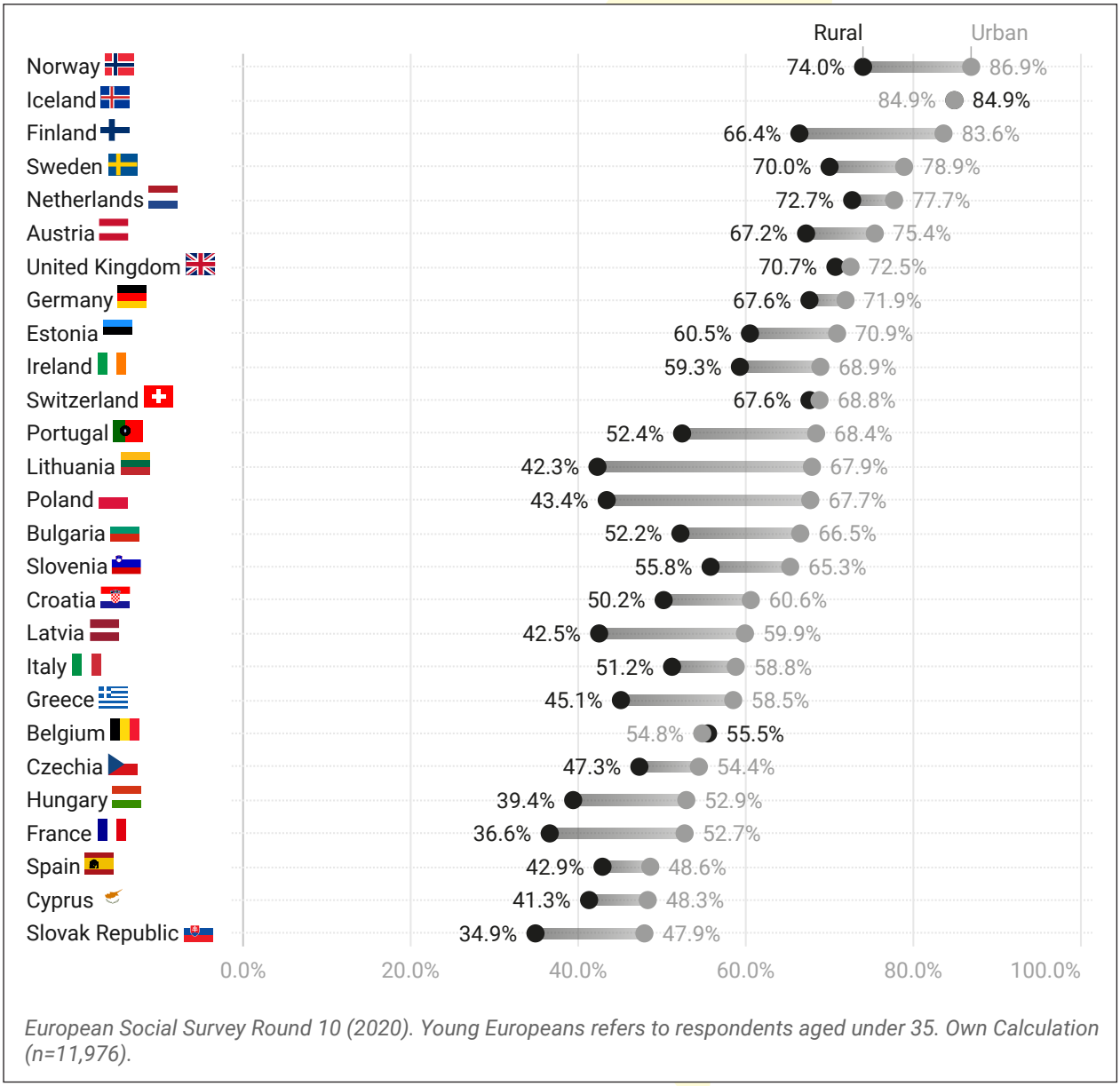
Figure 4. Internet access on the move by age group, gender, education level and place of living



European Social Survey Round 10 (2020). Young Europeans refers to respondents aged under 35. Own Calculation. Without DK, LU, Malta (MT) and RO (n=51,648).

Figure 5 demonstrates the accessibility of mobile internet among young Europeans, by urbanisation degree and country. The results indicate significant disparities in mobile internet connectivity between countries. The highest levels of mobile internet connectivity are observed in Northern European countries. The urban-rural disparity that was observed within the overall comparison also applies to most countries. Notably, Iceland, Switzerland, and Belgium represent exceptions to this trend. The most pronounced gaps between urban and rural areas are found in Poland and Lithuania. In approximately half of the countries, less than half of the population residing in rural areas has access to mobile internet.

Figure 5. Internet access on the move among young Europeans by place of living



European Social Survey Round 10 (2020). Young Europeans refers to respondents aged under 35. Own Calculation (n=11,976).

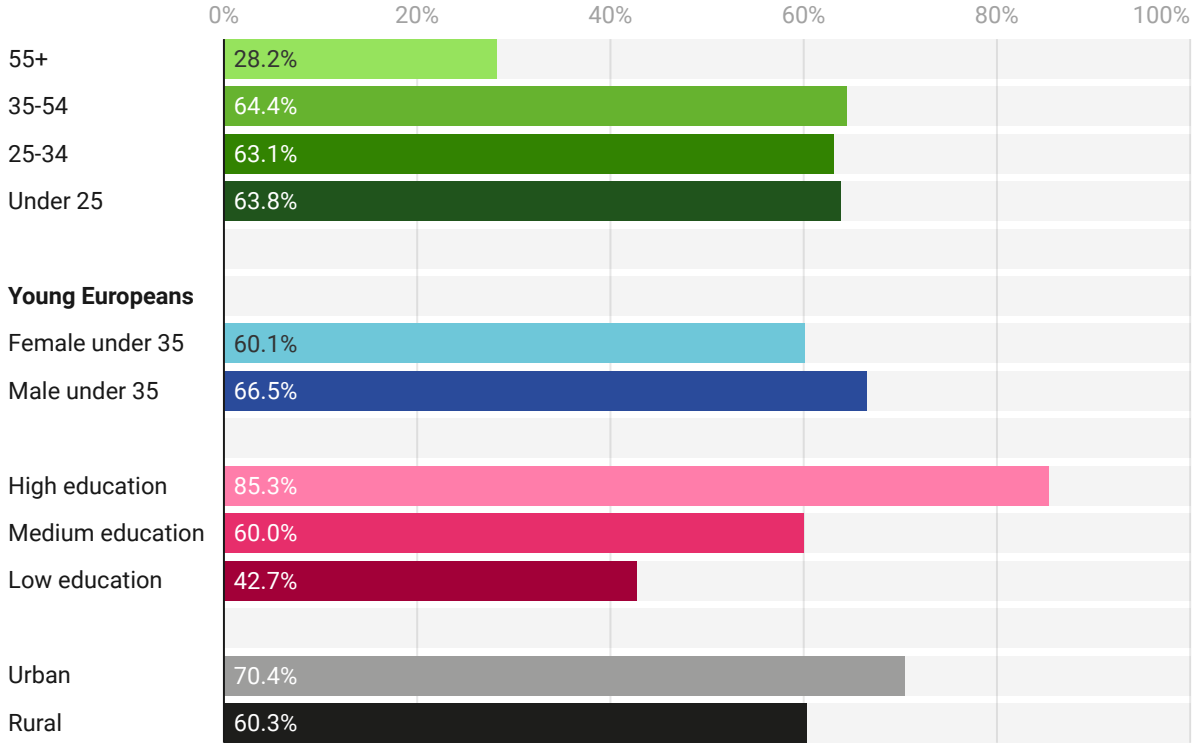
4.1.2 Digital Devices

In order to access the internet, it is necessary to have both an internet contract and a digital device. Regrettably, available representative surveys do not include recent data on this dimension of connectivity. The most useful data on this subject is drawn from a 2003 survey, which inquired about the presence of a computer in the household and the presence of financial barriers to its use. The subsequent chart illustrates the distribution of home computers across various demographic sub-groups.

The data reveals that, 22 years ago, young males, those with higher levels of education and those residing in urban areas were most likely to live in a household with a computer. While there was no significant disparity between the three younger age groups (with rates ranging from 63-64%), only 28% of the highest age group resided in a household with a home computer. A higher proportion of young men than young women lived in households with computers (67% and 60% respectively). Furthermore, individuals with higher levels of education were found to be twice as likely as their less educated counterparts to reside in households with a home computer (85% and 43%, respectively). It is important to note that the educational categories in this survey differ from those used elsewhere in this report. The 2003 European Quality of Life Survey distinguished between primary, secondary, and tertiary education.

While a computer was present in 70% of households of young people living in urban areas, this figure was only 60% among young people living in rural areas.

Figure 6. Home Computer in household by age group, gender, education level and place of living

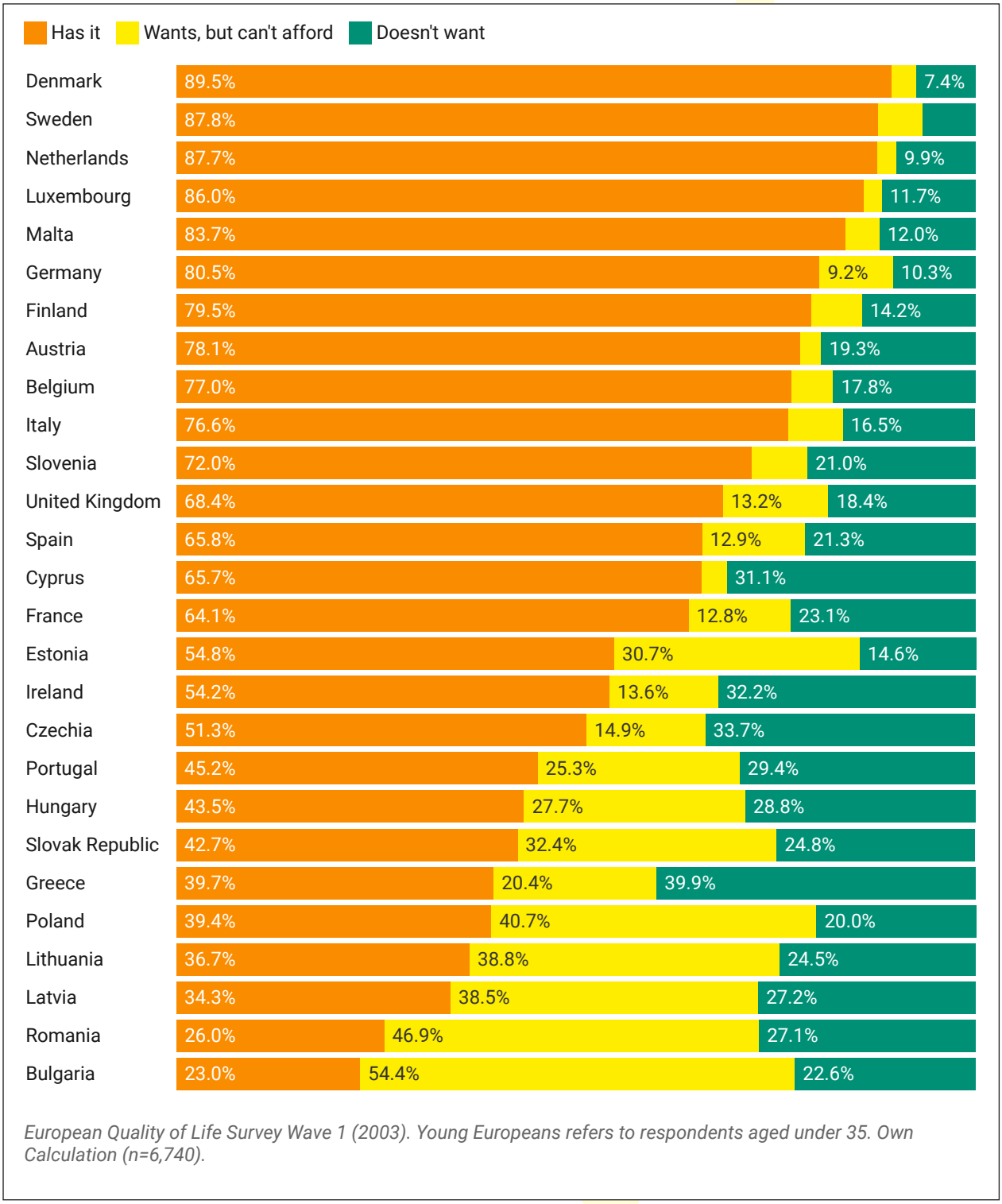


European Quality of Life Survey Wave 1 (2003). Young Europeans refers to respondents aged under 35. Own Calculation. Without CH, HR, IS and NO (n=24,838).

Figures 7 and 8 show a country-by-country comparison of young and older Europeans. The findings indicate that the majority of observed variations among countries can be attributed to deficiencies in economic resources. Across all countries, the proportion of individuals under 35 years residing in households with a computer or expressing a desire for one but encountering financial barriers to afford it is over 60%. The proportion of individuals who express a desire for a home computer yet find themselves unable to procure one is notably high in countries with the lowest home computer ownership rates. This finding indicates that older individuals are less likely to reside in households with a home computer and are simultaneously more likely to report a lack of necessity for such a device in comparison to younger Europeans.

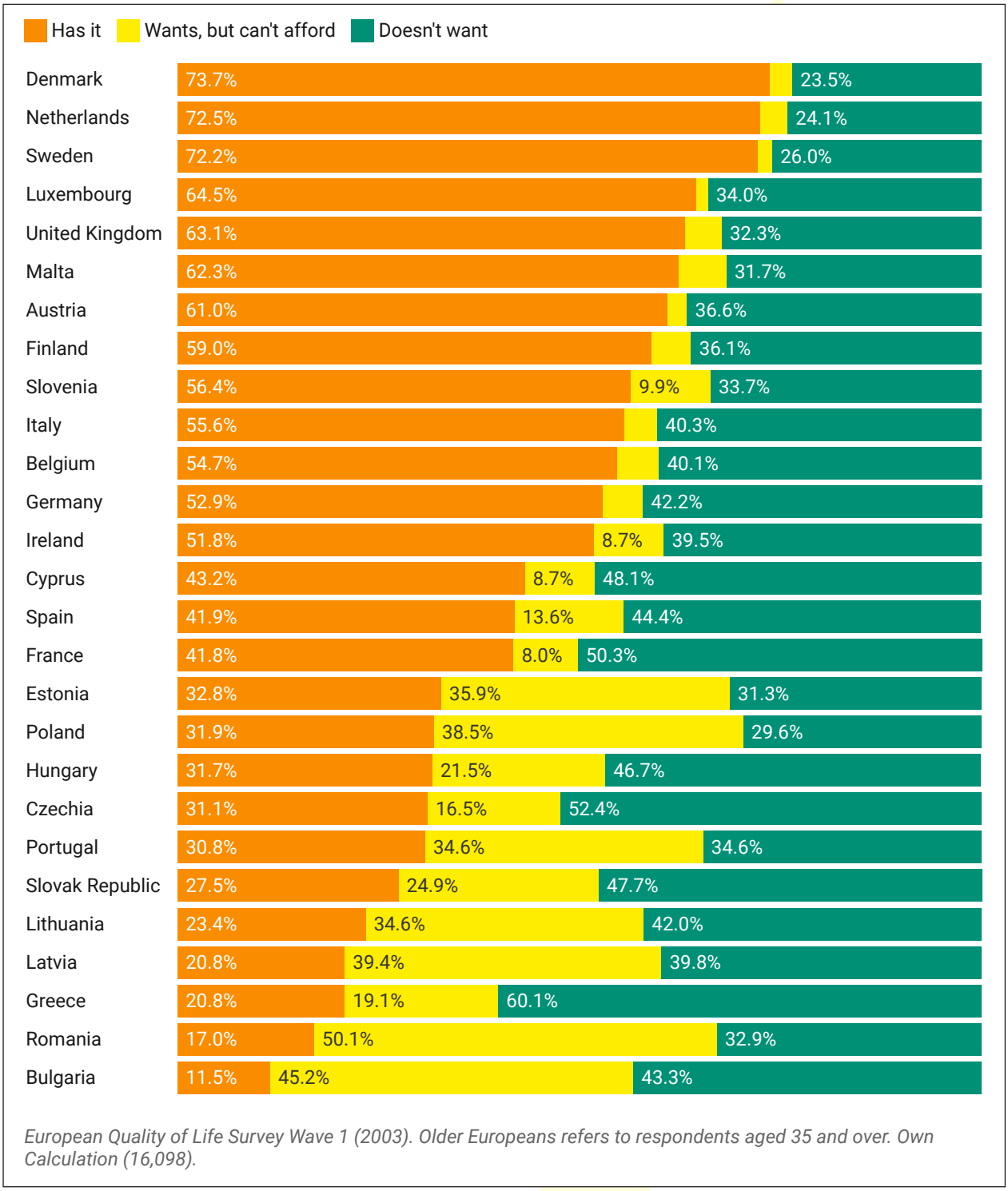
It is important to note that the presence of a computer in a household does not guarantee its utilisation or access to the internet by all members of the household. The absence of further data on digital devices in the available data precludes the possibility of demonstrating any development in this area. Other research has indicated that home computers are no longer a reliable indicator of connectivity, given the emergence of notebooks, tablets and smartphones (United Nations Conference on Trade and Development, 2024). Additionally, a discernible trend towards a greater proliferation of digital devices per capita has been observed (Cisco, 2020).

Figure 7. Home computer in household among young Europeans



European Quality of Life Survey Wave 1 (2003). Young Europeans refers to respondents aged under 35. Own Calculation (n=6,740).

Figure 8. Home computer in household among older Europeans



European Quality of Life Survey Wave 1 (2003). Older Europeans refers to respondents aged 35 and over. Own Calculation (16,098).

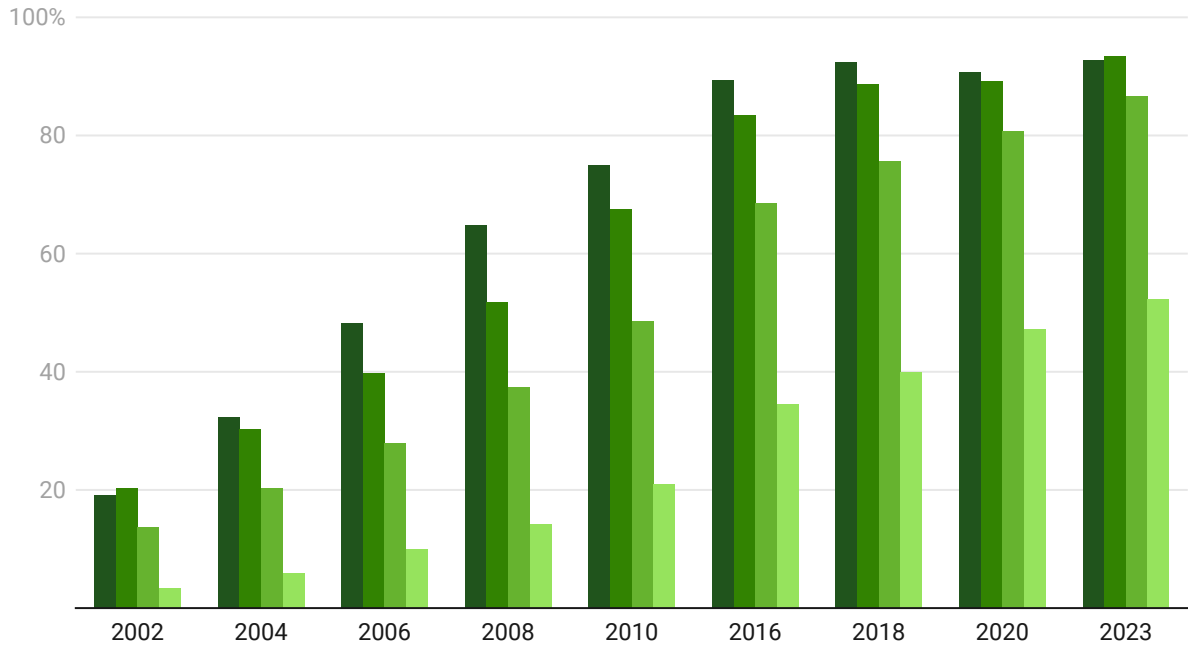
4.1.3 Internet Use Frequency

If the two mandatory conditions – an internet access point and a digital device to use it – are met, the subsequent question is to what extent the individuals use the internet. It must be noted that the mere duration of usage does not necessarily equate to its utilisation and thus requires additional investigation to study digital connectivity (van Dijk, 2005).

In general, two typical questions are utilised to measure internet usage. Respondents are either asked about the frequency of their internet use (e.g., daily, weekly) or about the average amount of time they spend online per day. In light of the ubiquity of the internet, which has become an integral part of modern life, the measurement approaches have been adapted over the years to cover usage times or frequencies that were unrealistic in the past and are now very common.

Figures 9 and 10 illustrate the evolution of daily Internet use, including leisure and professional use, between 2002/03 and 2023/24, showing that the proportion of daily Internet users has risen sharply in all age groups over the period. It is noteworthy that young people have consistently exhibited a higher rate of daily internet use than others. However, between 2016/17 and 2023/24, the proportion of daily internet users in the youngest age group exhibited hardly any growth. The proportion of daily internet users in the youngest age group remained at approximately 90%, while the daily internet use rate continued to rise for people aged 35 and over.

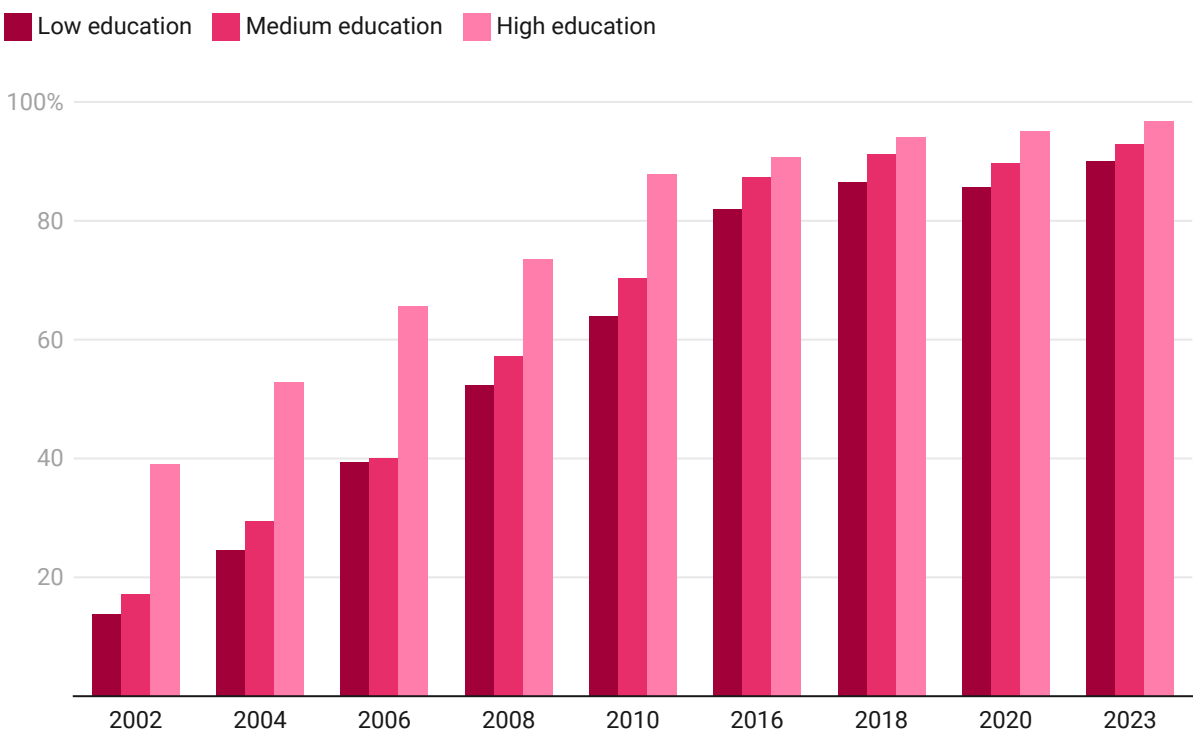
Figure 9. Daily internet use by age group over time



European Social Survey Rounds 1-5 and 8-11. Own Calculation. 2002: BE, CH, CZ, DK, ES, HU, LU, NL, NO, PL, SI (n=19,141). 2004: BE, CH, CZ, DE, DK, EE, ES, HU, IS, LU, NL, NO, PL, SI, SK (n=26,336). 2006: BE, CH, DE, DK, EE, ES, FR, HU, NL, NO, PL, SI, SK (n=23,233). 2008: BE, CH, CZ, DE, DK, EE, ES, FR, HR, HU, LV, NL, NO, PL, PT, RO, SI, SK (n=33,347). 2010: BE, BG, CH, CY, CZ, DE, DK, EE, EL, ES, FI, FR, HR, HU, IE, LT, NL, NO, PL, PT, SE, SI, SK, UK (n=45,136). 2016: AT, BE, CH, CZ, DE, EE, ES, FI, FR, HU, IE, IS, IT, LT, NL, NO, PL, PT, SE, SI, UK (n=39,026). 2018: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES FI, FR, HR, HU, IE, IS, IT, LT, LV, NL, NO, PL, PT, SE, SI, SK, UK (45,756). 2020: AT, BE, BG, CH, CY, CZ, DE, EE, EL, ES, FI, FR, HR, HU, IE, IS, IT, LT, LV, NL, NO, PL, PT, SE, SI, SK, UK (n=52,088). 2023: AT, BE, CH, CY, DE, EL, ES, FI, FR, HR, HU, IE, IS, IT, LT, NL, NO, PL, PT, SE, SI, SK, UK (n=38,036).

Education differences in individuals' daily use of the internet, remain to be important, but the differences have narrowed over time. For example, in 2002/03, only 14% of young Europeans with a low level of education used the internet daily, which was 25 percentage points less than the proportion of young Europeans with a high level of education. By 2023/24, 90% of young Europeans with low educational attainment used the internet daily, which was still seven percentage points lower than the proportion of young Europeans with high educational attainment. This finding suggests that the inequality in use of internet has been reduced, while at the same time reaching record levels for all educational groups.

Figure 10. Daily internet use among young Europeans by education level over time

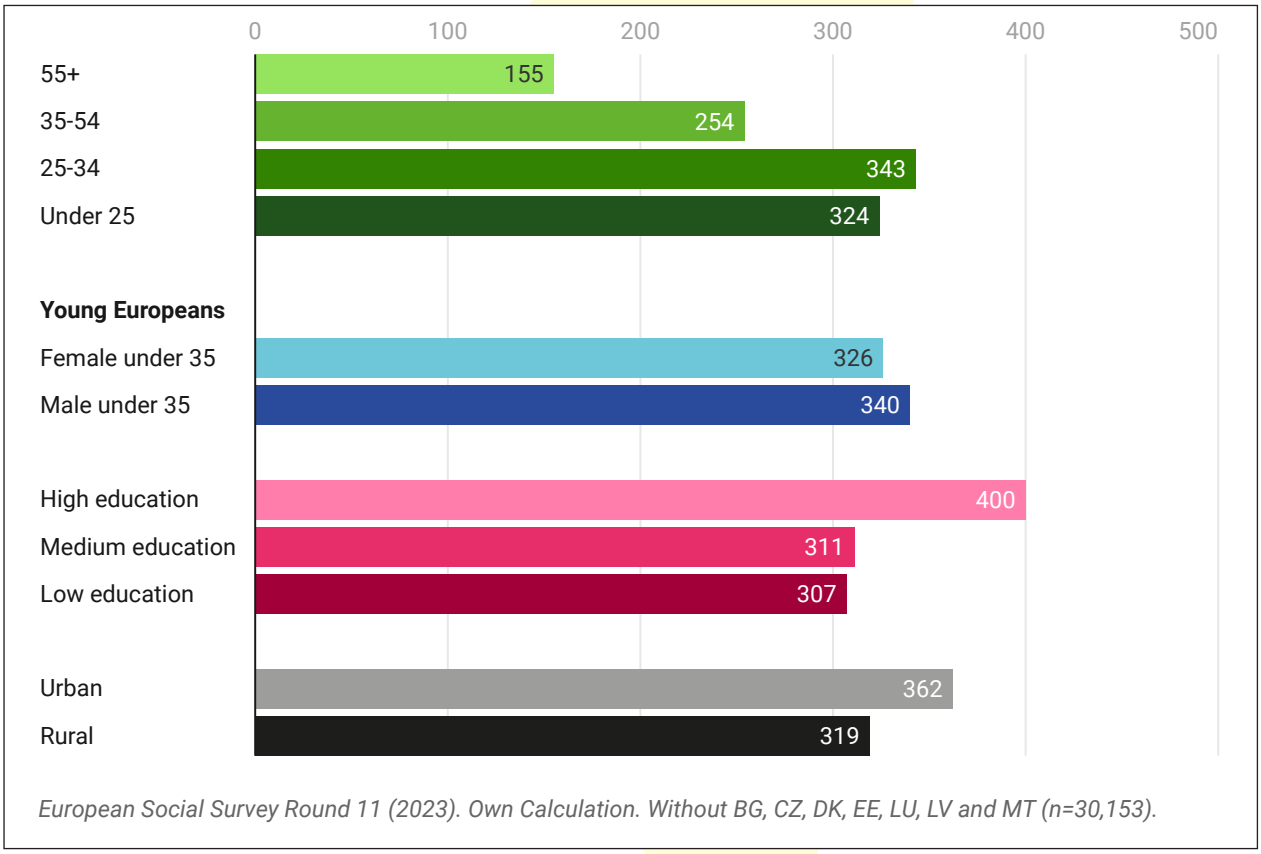


European Social Survey Rounds 1-5 and 8-11. Young Europeans refers to respondents aged under 35. Own Calculation. 2002: BE, CH, CZ, DK, ES, HU, LU, NL, NO, PL, SI (n=5,632). 2004: BE, CH, CZ, DE, DK, EE, ES, HU, IS, LU, NL, NO, PL, SI, SK (n=8,007). 2006: BE, CH, DE, DK, EE, ES, FR, HU, NL, NO, PL, SI, SK (n=6,560). 2008: BE, CH, CZ, DE, DK, EE, ES, FR, HR, HU, LV, NL, NO, PL, PT, RO, SI, SK (n=9,204). 2010: BE, BG, CH, CY, CZ, DE, DK, EE, EL, ES, FI, FR, HR, HU, IE, LT, NL, NO, PL, PT, SE, SI, SK, UK (n=12,084). 2016: AT, BE, CH, CZ, DE, EE, ES, FI, FR, HU, IE, IS, IT, LT, NL, NO, PL, PT, SE, SI, UK (n=9,815). 2018: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES FI, FR, HR, HU, IE, IS, IT, LT, LV, NL, NO, PL, PT, SE, SI, SK, UK (10,361). 2020: AT, BE, BG, CH, CY, CZ, DE, EE, EL, ES, FI, FR, HR, HU, IE, IS, IT, LT, LV, NL, NO, PL, PT, SE, SI, SK, UK (n=12,087). 2023: AT, BE, CH, CY, DE, EL, ES, FI, FR, HR, HU, IE, IS, IT, LT, NL, NO, PL, PT, SE, SI, SK, UK (n=8,292).

Figure 11 shows the average daily internet use of Europeans in minutes in 2023/24. Europeans aged 34 and under use the internet about 5.5 hours daily. That corresponds to about 80 minutes longer than an average middle ager (35-54 years). Further analysis has shown that 50% of all respondents spent three hours and more on the internet daily. For young Europeans, this figure is five hours and more. The gender gap amongst young people is small in comparison to the gap between different age groups. Young men have a 14-minute higher use time than young women on average.

Furthermore, more highly educated Europeans use the Internet for more than six and a half hours a day on average, while those with medium or lower education use it for about five hours on average. This disparity may be partly attributed to the fact that highly educated individuals are more likely to utilise digital devices in the context of their work. Furthermore, individuals residing in urban areas demonstrate a significantly higher rate of internet use than those residing in rural areas.

Figure 11. Daily internet use in minutes by age groups, gender, education level and place of living

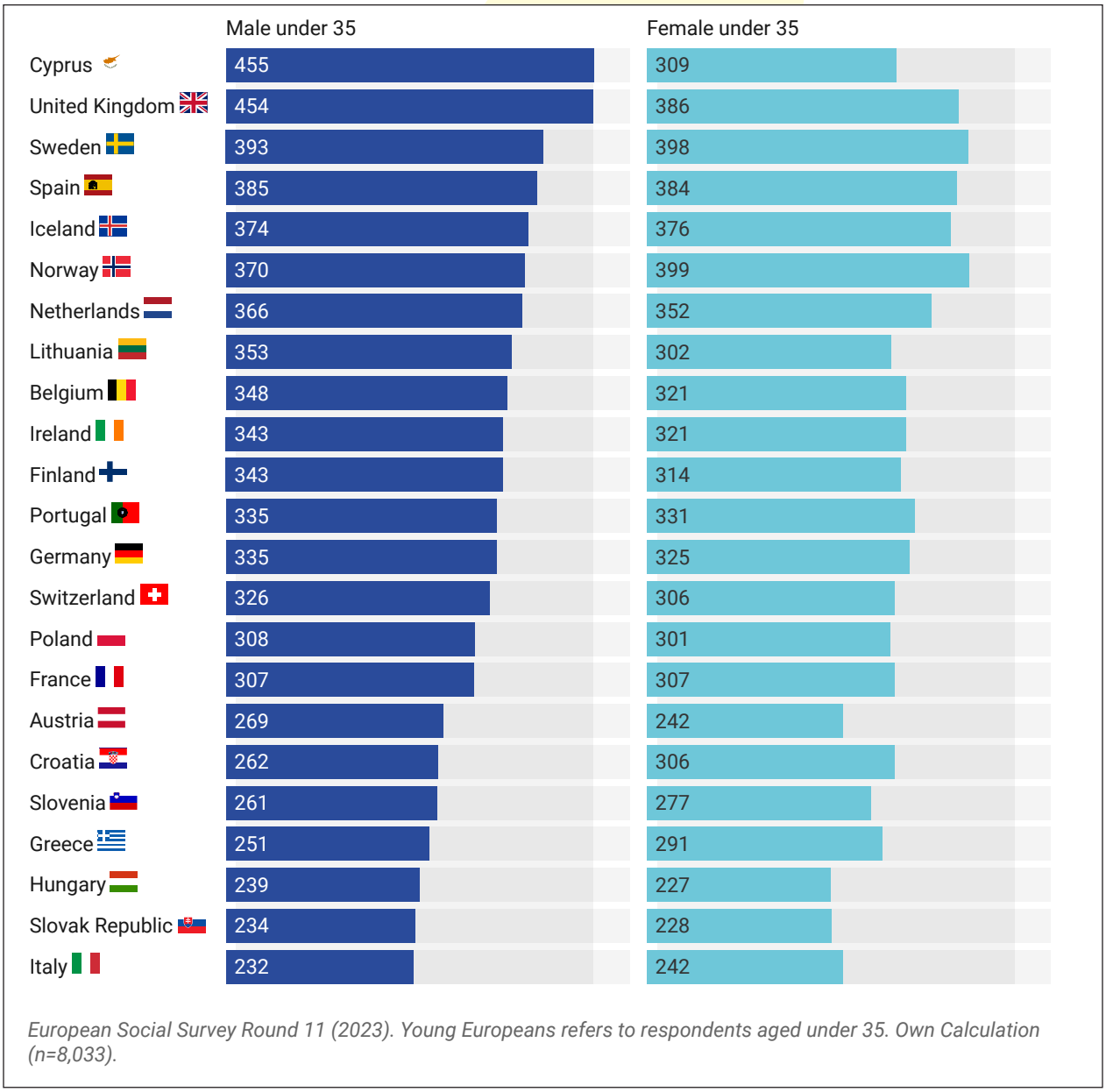


European Social Survey Round 11 (2023). Own Calculation. Without BG, CZ, DK, EE, LU, LV and MT (n=30,153).

Figure 12 provides a more comprehensive insight into the differences between countries in terms of daily time spent online. The countries with the highest average internet use time of young respondents are Cyprus and the United Kingdom. In both countries, young men reported spending 7.5 hours on the internet daily. It is also identified that a significant gender disparity exists in both countries. In the majority of other countries, young men also tend to spend more time online than young women, but the differences are relatively small.

Conversely, in countries where the daily internet usage is comparatively low, a higher frequency of internet usage was observed among young women in certain instances. The ESS has documented the amount of daily internet use in minutes four times since 2016/17. While respondents reported significantly higher utilisation times in 2023/24 than in 2016/17, the average utilisation time was observed to be highest in 2020-22, indicating a period of stagnation regarding the increase in utilisation times.

Figure 12. Daily internet use in minutes among young Europeans by gender



European Social Survey Round 11 (2023). Young Europeans refers to respondents aged under 35. Own Calculation (n=8,033).

Overall, the results indicate that internet access has become pervasive across Europe in recent years. While in 2002/03, less than 20% of young Europeans used the Internet every day, daily use has increased to over half of them accessing the Internet on the move and a majority spending four hours or more per day online. This phenomenon clearly differentiates young Europeans from other age groups. Internet use also varies considerably between countries. A notable observation is that the highest average daily internet usage is observed in countries where a comparatively low proportion of the population has access to the internet on the move. It is also noteworthy that there is an absence of a distinct gender gap in terms of both material access to the Internet and frequency of Internet use.

4.2 Digital Skills

The permanent availability of the Internet is associated with a variety of opportunities for users. A substantial corpus of research literature has been attempting to identify the skills that people currently need to benefit from these opportunities for their work and personal lives. Analogous to digital connectivity, these skills are distributed unequally. Researchers have referred to 'skills access' to denote this phenomenon (van Dijk, 2005; van Laar et al., 2020). The level of digital skills has an impact on people's usage behaviour and their ability to participate in society.

The concept of digital skills is closely associated with the notion of '21st century skills', a term that emerged in the early 2000s (DiMaggio & Hargittai, 2001; van Laar et al., 2020). Depending on the approach adopted, five to six digital skill dimensions have been identified. For the purposes of this analysis, the five dimensions of the DigComp2.2 Framework, as suggested by the European Commission (European Commission. Joint Research Centre., 2022) have been utilised. For each skill dimension people need to have certain abilities and context knowledge to apply the skill properly.

Information & Data Literacy is defined as the ability of individuals to search and evaluate information on the Internet. In order to undertake this task, it is imperative that individuals possess the knowledge of how to use search engines – including how to choose the right keywords – and be aware that not all digital content is trustworthy. **Communication & Collaboration** encompasses a wide range of competencies pertaining to digital communication and self-presentation in the digital world.

This encompasses communication via electronic mail, collaboration on shared documents, political engagement online, and the utilisation of video conference tools. It also encompasses the ability to behave appropriately and to manage one's own digital identity.

Digital Content Creation refers to people's ability to create and modify documents and files. This includes, for example, the use of word processing software, video or image editing and programming. **Safety** means to summarise all actions needed to protect oneself and others. This includes simple device and account protection techniques such as knowing how to choose strong passwords. **Problem solving** refers to people's ability to deal with technical problems and use suitable applications to cope with everyday life.

Key findings 2: Digital skills

Age	Among all age groups, young Europeans report the highest familiarity with digital applications and online functions.
Gender	Young men are slightly more likely to report high information and data literacy skills than young women.
Education	Highly educated respondents report higher digital skill than others.
Urban-Rural	Digital skills are similarly developed among the rural population as among people living in larger cities.
Country	Scandinavians and Austrians reported highest skill.

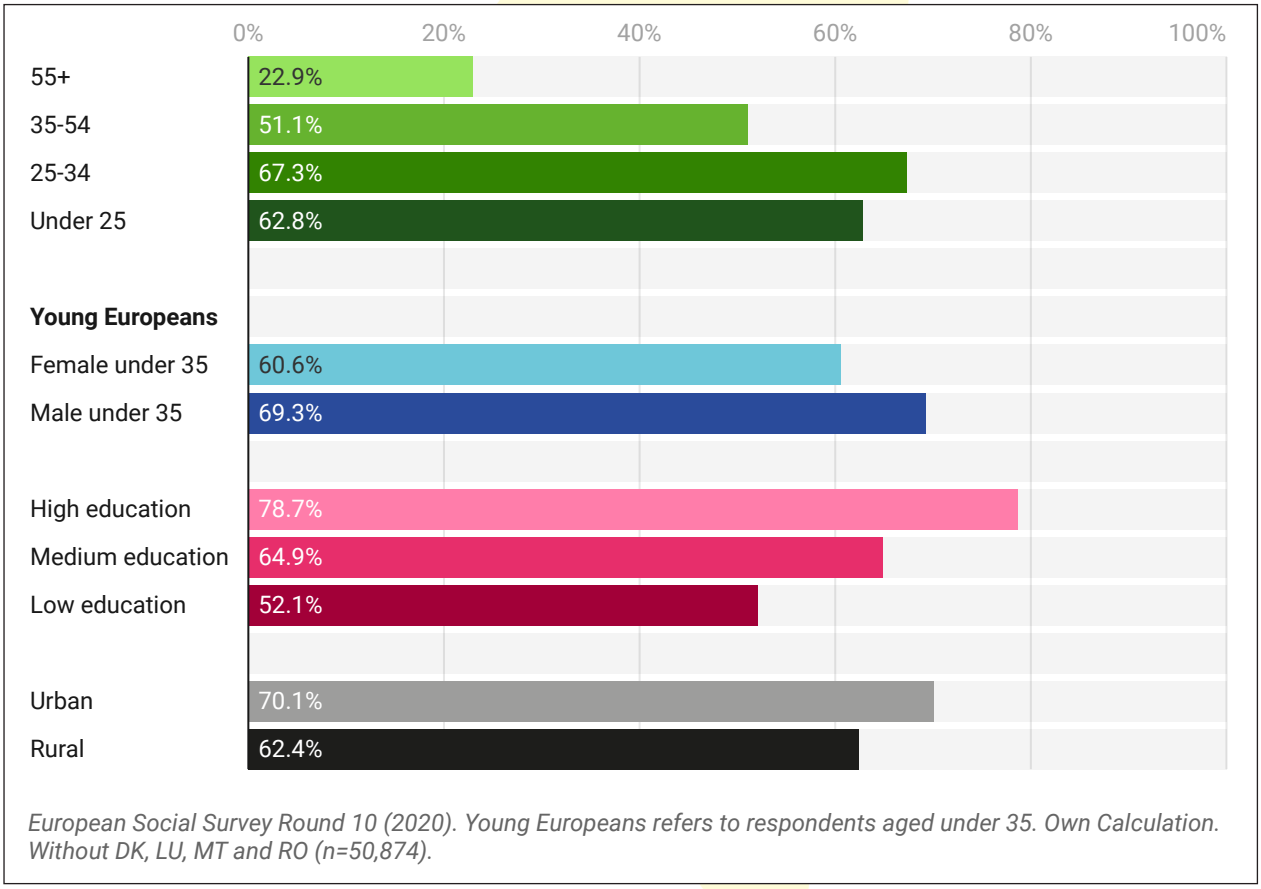
Measuring digital skills is a complex task. In existing representative European surveys, there is little room for directly testing digital skills. Instead, it is common to ask respondents how they rate their own skills or to indirectly assess the skills with information on the engagement in digital activities (Allen & van der Velden, 2005). Unfortunately, none of the specific skill dimensions presented beforehand is yet fully covered in available representative cross-national surveys. In the following pages we present what is available and try to integrate the existing items into the framework.

4.2.1 Information & Data Literacy

In Round 10 of the ESS respondents were asked to rate their familiarity with a number of functions on a scale of 1 to 5, with 5 meaning 'completely familiar'. Using 'advanced search' requires the skill 'information and data literacy'.

Figure 13 shows the proportion of people who say they are at least 'very familiar' with advanced search. We observe a clear age-skill gap when it comes to self-reporting. While only half of the middle-agers' (35-54 years) reported being very familiar, more than 60% of young Europeans reported a high familiarity. Within the group of young Europeans, men are more likely than women to report being at least very familiar (69 and 61%). We also identify a large education gap. While nearly four out of five highly educated young Europeans (79%) reported a high familiarity with advanced search, only half of the low educated did so (52%). The results also imply a gap between people living in cities and people living in the countryside (70 and 62%).

Figure 13. At least very familiar with advanced search by age group, gender, education level and place of living

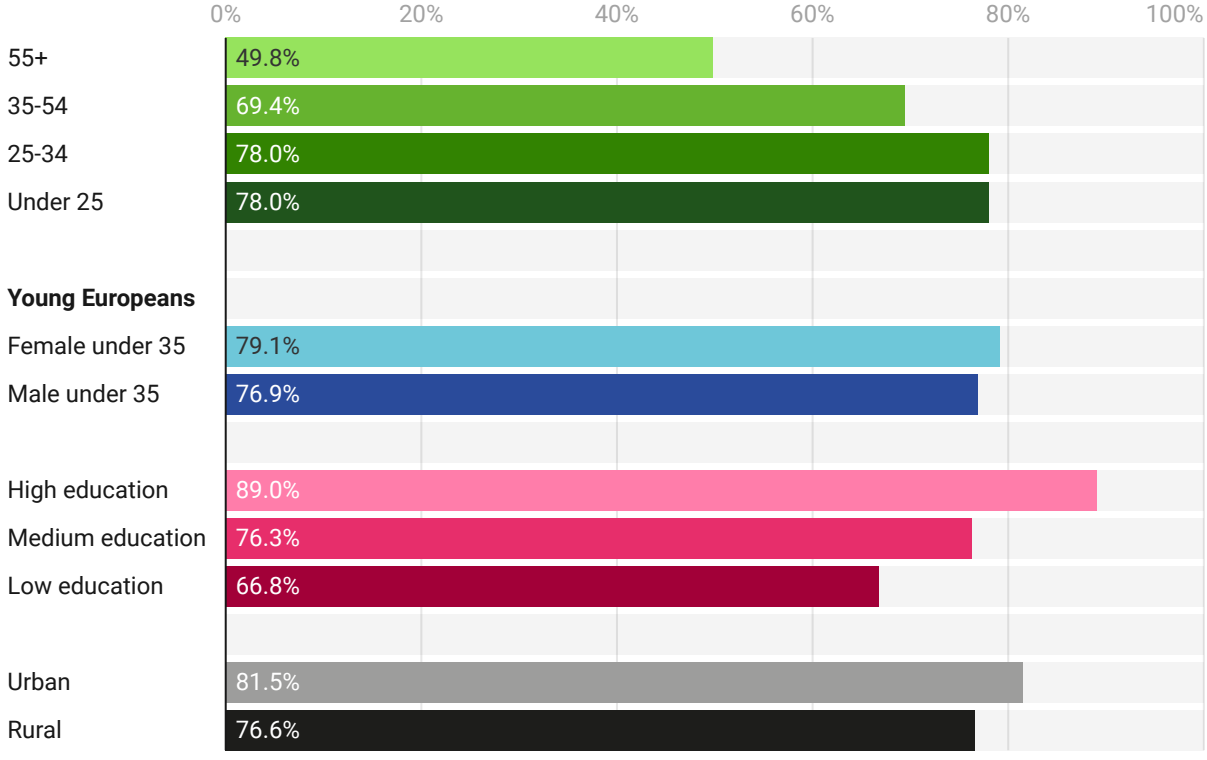


European Social Survey Round 10 (2020). Young Europeans refers to respondents aged under 35. Own Calculation. Without DK, LU, MT and RO (n=50,874).

Carrying out online activities requires digital skills, but given conditions are also relevant. For example, the financial resources available to people and the infrastructure at their place of residence. These vary between individuals and countries. Figure 14 shows the percentage of people who have bought something online in the last twelve months by different groups. This activity is at least partly a manifestation of people's ability to find out about products on the Internet and therefore requires digital skills, such as information and data literacy. Three out of four young Europeans have used the Internet for shopping, making them more likely to do so than older Europeans.

Among young Europeans, the highly educated are the most likely to shop online. There is also a gap between the medium and low educated, with the low educated at a disadvantage. It should be noted that individuals' level of education is also a good indicator of an individual's financial opportunities. Online shopping is likely to relate to both digital skills and financial opportunities. The gap we find is likely to reflect both. In addition, there is no clear gender gap and a small gap between people living in urban and rural areas.

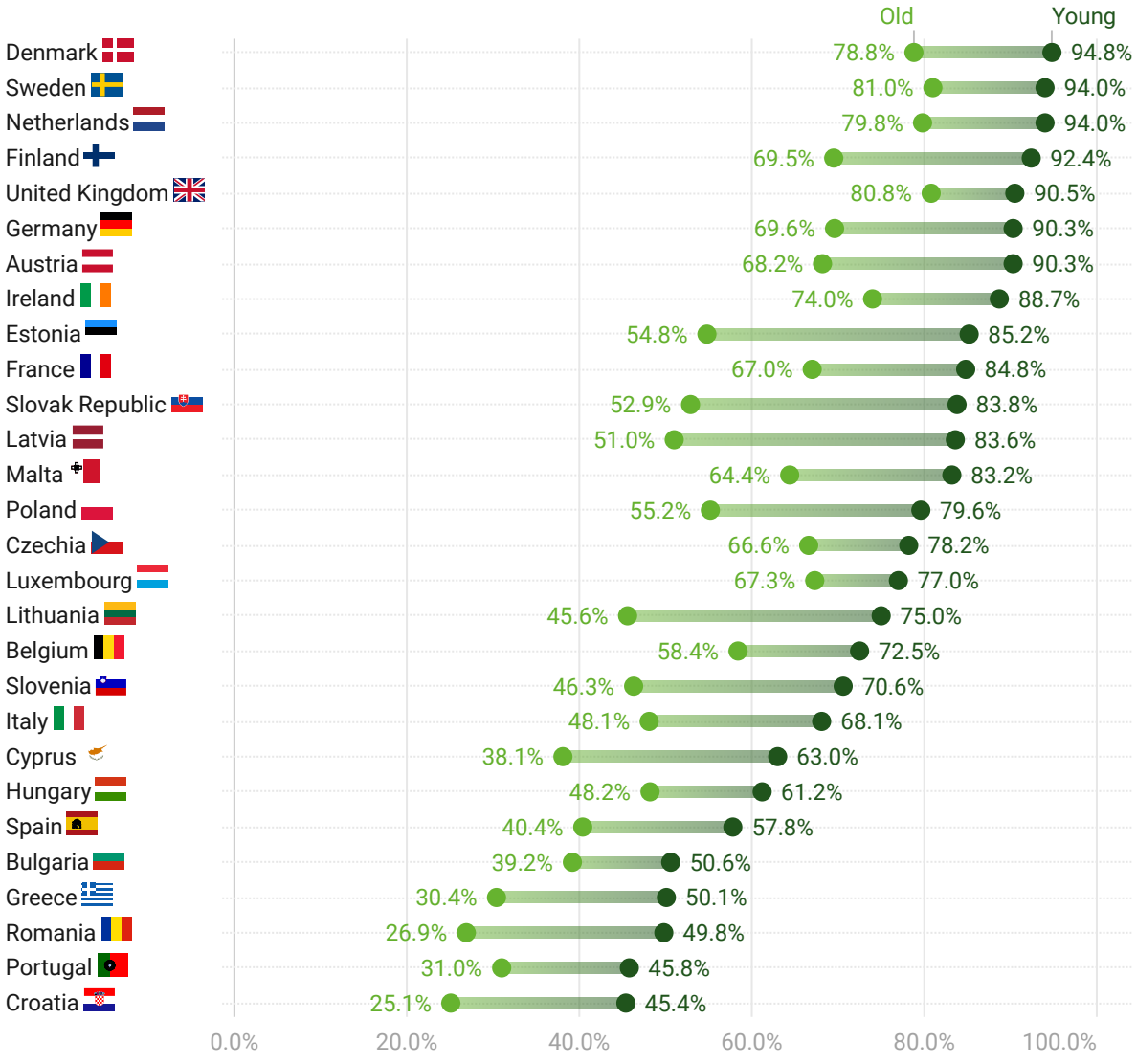
Figure 14. Online purchases by age group, gender, education level and place of living



European Quality of Life Survey Wave 4 (2016). Young Europeans refers to respondents aged under 35. Own calculations. Without CH, IS and NO (n=22,772).

Figure 15 shows that there are considerable differences between countries. While in Denmark and the Netherlands more than 90% of young Europeans have bought something online, in Portugal and Croatia it is less than half. The age gap itself varies from country to country. Again, the availability of economic resources can have a big impact.

Figure 15. Online purchases by age group



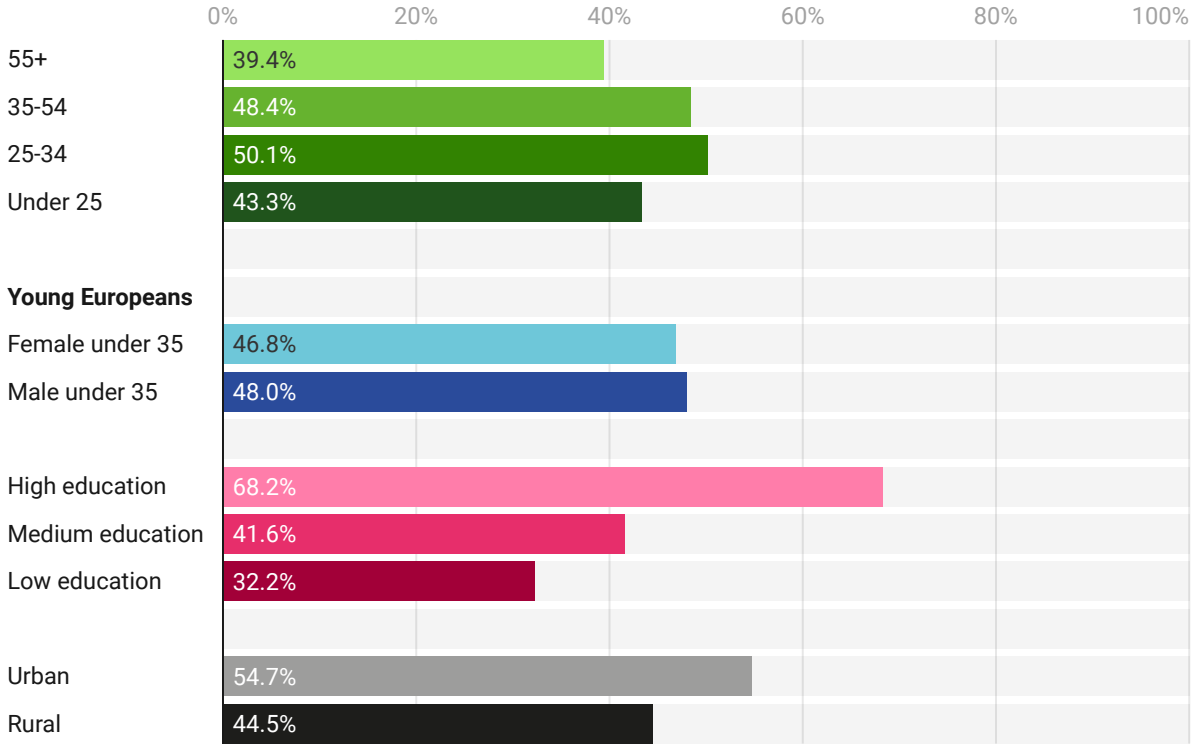
European Quality of Life Survey Wave 4 (2016). Young Europeans refers to respondents aged under 35. Older Europeans refers to respondents aged 35 and over. Own calculations (n=22,772).

Figure 16 shows the proportion of people who have used public administration online facilities in the last twelve months. This activity can also partly depend on 'information and data literacy', as people need to find information and navigate through websites. Again, local circumstances are also likely to have a significant impact on usage, especially whether a country – or even local or regional – public administration provides this kind of online service and whether it is a user-friendly service or not.

Overall, those aged between 25 and 34 years are most likely to use public administration online facilities. About half of them (50%) used it in the previous twelve months. Closely followed by those aged 35-54 (48%) and respondents in the youngest age group (43%). Again, there is no clear gender gap for this activity, but the role of education is important. Over two out of three highly educated young Europeans reported using the public administration online facilities. This is more than twice as many as young Europeans with the lowest levels of education. The likelihood for medium educated Europeans is slightly higher.

Part of the age gap (especially for the two lowest ages groups) can perhaps be explained by the circumstance that young adults generally do not need to have as much contact with the public authorities as older people, e.g. because they still live with their parents. People living in urban areas have a higher likelihood of using public administration online facilities than people living in rural areas.

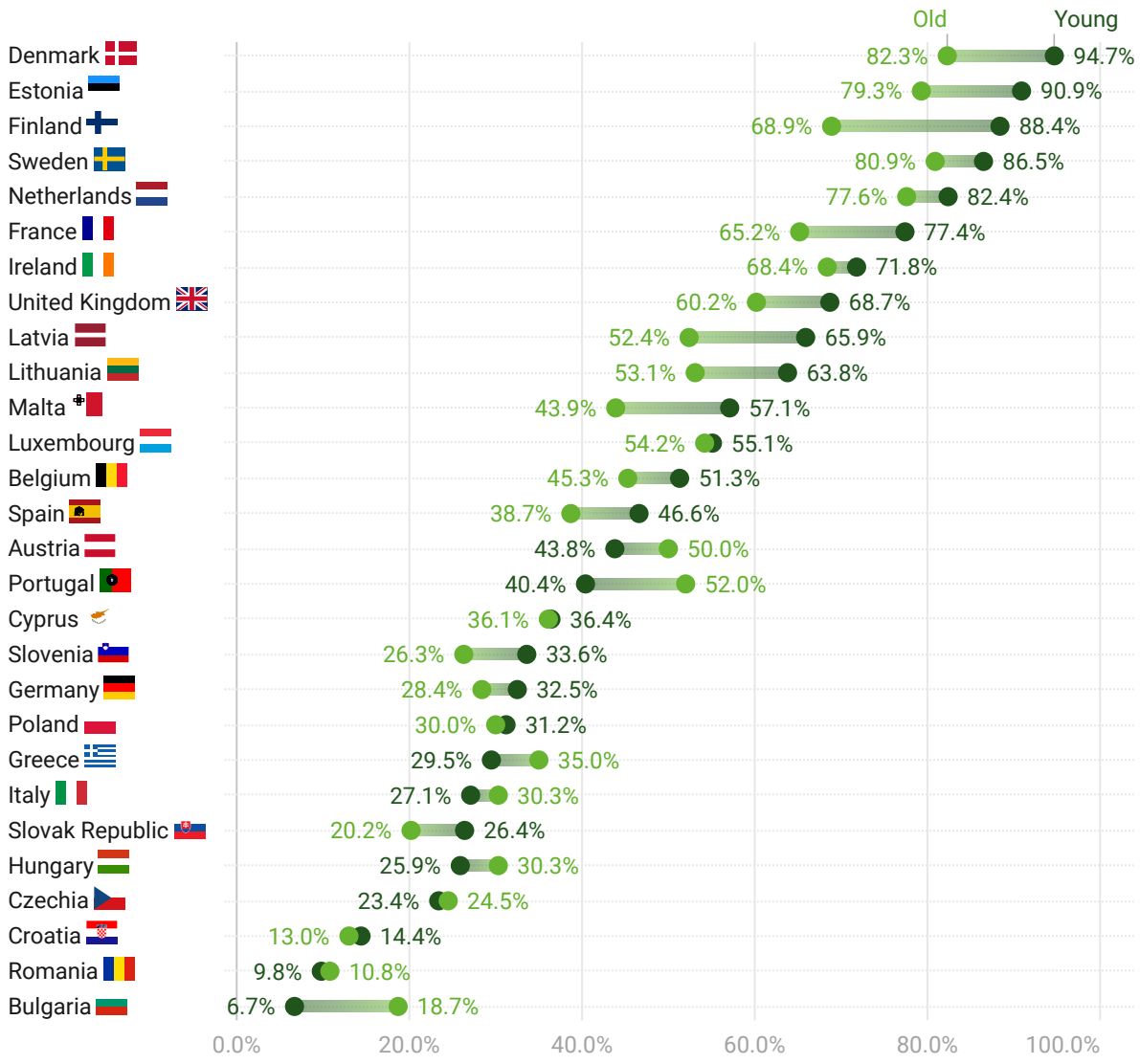
Figure 16. Use of public administration online facilities by age group, gender, education level and place of living



European Quality of Life Survey Wave 4 (2016). Young Europeans refers to respondents aged under 35. Own calculations. Without CH, IS and NO (n=22,760).

Figure 17 shows the distribution of public administration online facility use by age group within countries. In most countries, young people were more likely to use public administration online facilities. This is especially true of respondents in Denmark, Estonia and Finland where more than 75% of the older and 85% of the young age groups used these facilities. In countries with lower use, the age gap tends to be smaller, disappears completely, or shifts into the opposite direction. Examples for that are found in Luxemburg, Bulgaria and Portugal. In Romania, Croatia and Bulgaria, no age group has a share higher than 20%. As this data is nearly ten years old, it is safe to assume that many public administration online services have improved and/or expanded.

Figure 17. Use of public administration online facilities by age group

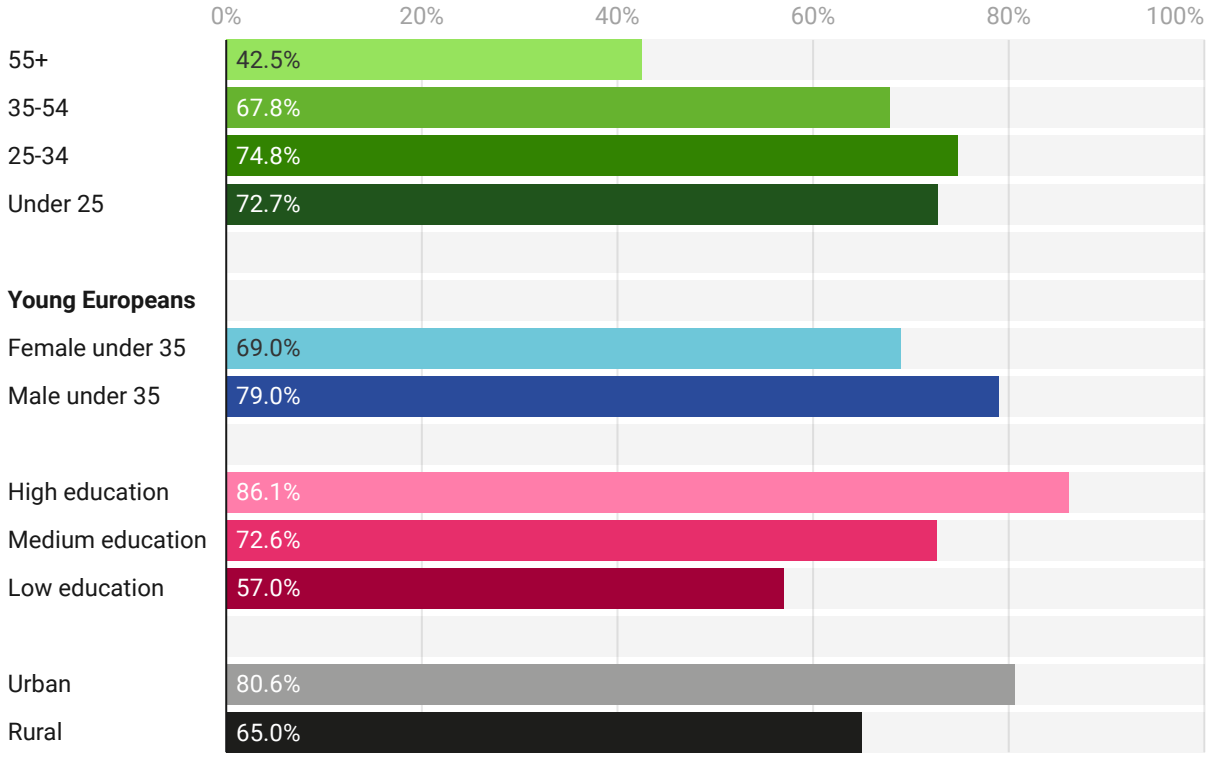


European Quality of Life Survey Wave 4 (2016). Young Europeans refers to respondents aged under 35. Older Europeans refers to respondents aged 35 and over. Own calculations (n=22,760).

Another example of online activities that require digital information and data literacy can be found in the 2014 ISSP. Participants were asked how often they typically use the Internet to inform themselves about politics. The results show the proportion of people who use the Internet to inform themselves about politics. Here, rates for young Europeans are remarkably higher than for older Europeans. While three out of four young Europeans use the Internet to inform themselves on politics, only 42% of those aged 55 and older do.

Young men are more likely to use the Internet to find information on politics than young women. Respondents with higher levels of education also have a higher likelihood of finding political information. No survey data is available on specific sources used by these individuals to gather more information about politics. The gap between those who live in cities and the countryside should be emphasised here, too. While 81% of people living in urban areas used the internet to inform themselves about politics, the share is only 65% for people in rural areas.

Figure 18. Information on politics sought on the internet by age group, gender, education level and place of living



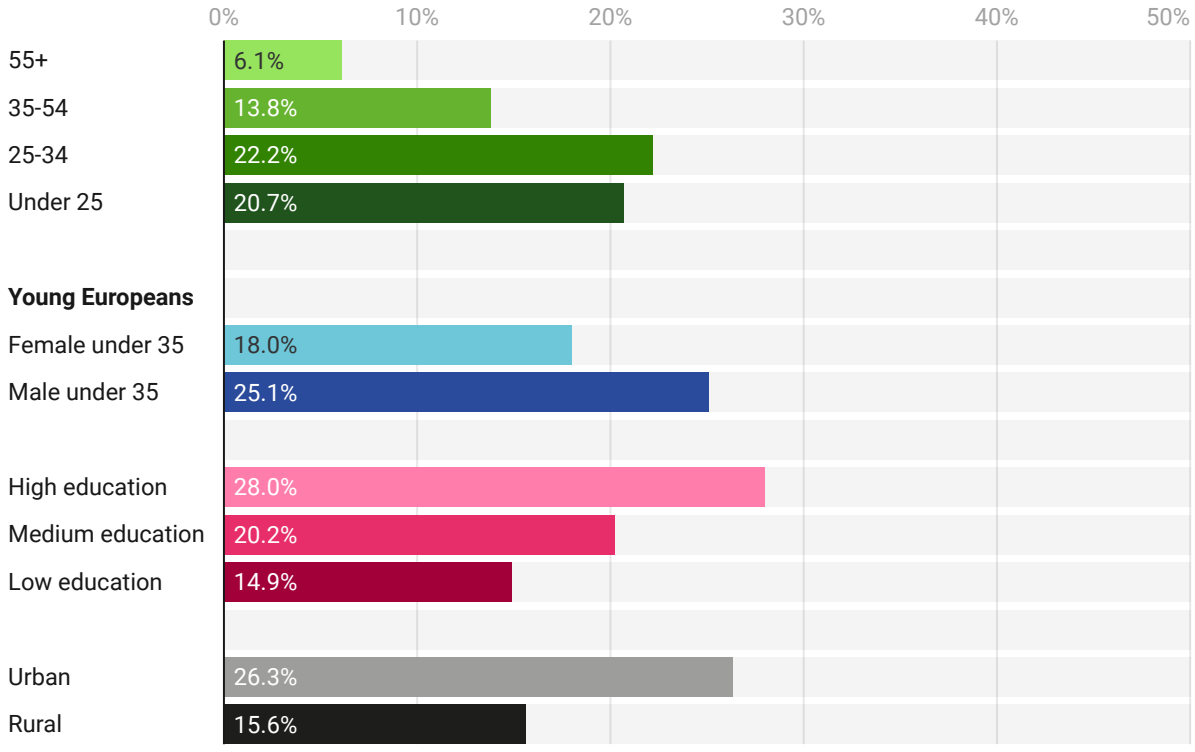
International Social Survey Programme (2014). Young Europeans refers to respondents aged under 35. Own calculations. Countries: BE, CH, ES, FI, FR, HU, IS, LT, NL, PL AND UK (n=11,629).

4.2.2 Communication & Collaboration

The internet can not only be used to seek information on politics but also to express one's own political views. This requires the skill of communication and collaboration. It could also be argued that sharing something online is a kind of content creation, since something has to be created before it can be shared. On the other hand, creating digital content is not necessarily an act of digital communication, whereas expressing political views is.

Figure 19 shows that young Europeans are more likely to express their political views on the internet than older Europeans. The same applies for young European men compared to young European women, highly educated young Europeans compared to those with medium or lower education, and people from urban areas compared to people from rural areas. Depending on sub-group, the proportion of young people who expressed their political views on the internet ranges from 15-28%.

Figure 19. Political views expressed on the internet by age group, gender, education level and place of living

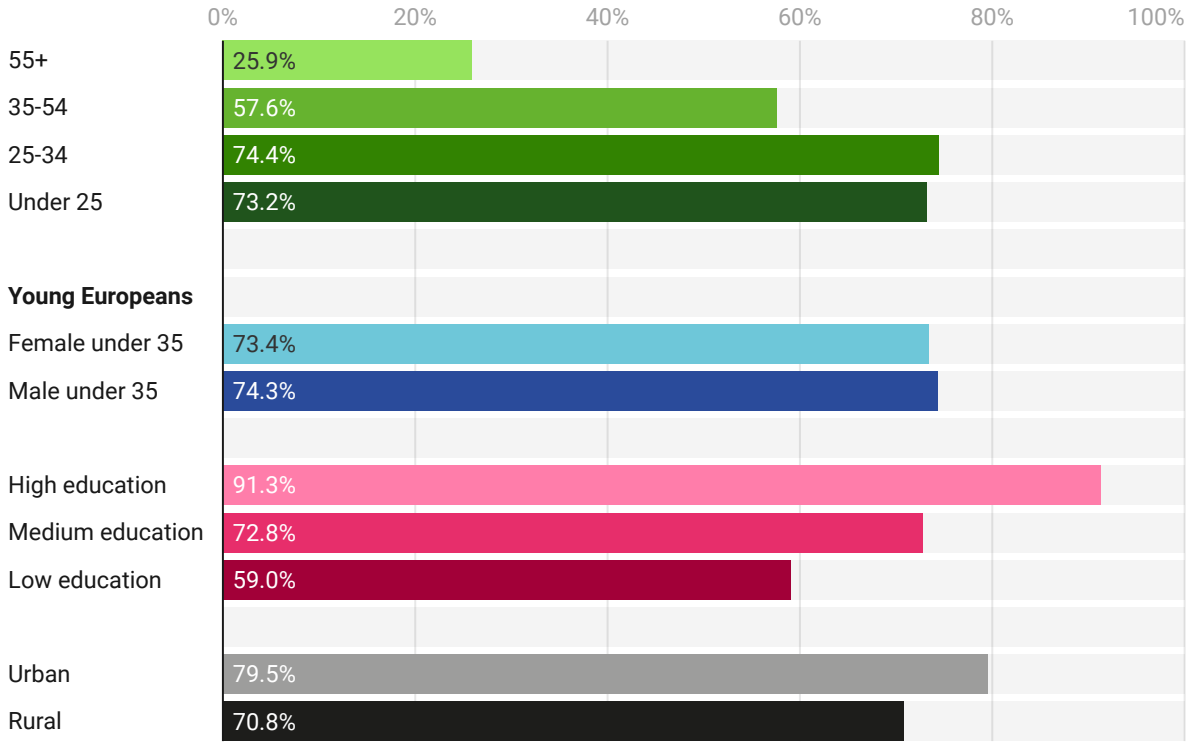


International Social Survey Programme 2014. Young Europeans refers to respondents aged under 35. Own calculations. Countries: AT, BE, CH, CZ, DE, DK, ES, FI, FR, HR, HU, IS, LT, NL, NO, PL, SI, SK, SE and UK (n=19,487).

4.2.3 Content Creation

In ESS Round 10 respondents were asked to rate their familiarity with PDF. This was measured on a 5-point scale from 1 (not at all familiar) to 5 (completely familiar). Figure 20 shows the proportion of those that answered they were 'very familiar' or 'completely familiar with PDF. Three out of four young Europeans reported being at least very familiar, with no differences between genders here. 91% of highly educated respondents claim to know about a PDF, while only a little more than half for those with lower education (59%) and medium education levels (73%) are familiar. 80% of the young Europeans living in urban areas report being familiar with PDF, compared to 71% of people living in the countryside.

Figure 20. At least very familiar with PDF by age group, gender, education level and place of living



European Social Survey Round 10 (2020). Young Europeans refers to respondents aged under 35. Own Calculation. Without DK, LU, MT and RO (n=50,874).

Overall, information and data literacy is widespread across Europe. Young people, especially those with high levels of education, tend to be the most skilled. The online activities measured in existing surveys are not only dependent on digital skills, but also likely to be highly dependent on existing infrastructure and financial resources. Existing data do not allow for a detailed analysis of specific digital skills across Europe in this context.

4.3 Digital Inclusion

Digital inclusion refers to the maintenance of personal relationships via digital information and communication technologies. This specific use of digital technology can have an impact on the stability and quality of relationships, which can affect social integration and subsequently life satisfaction and mental health. Online communication can be used for work, as well as for private purposes.

Key findings 3: Digital inclusion

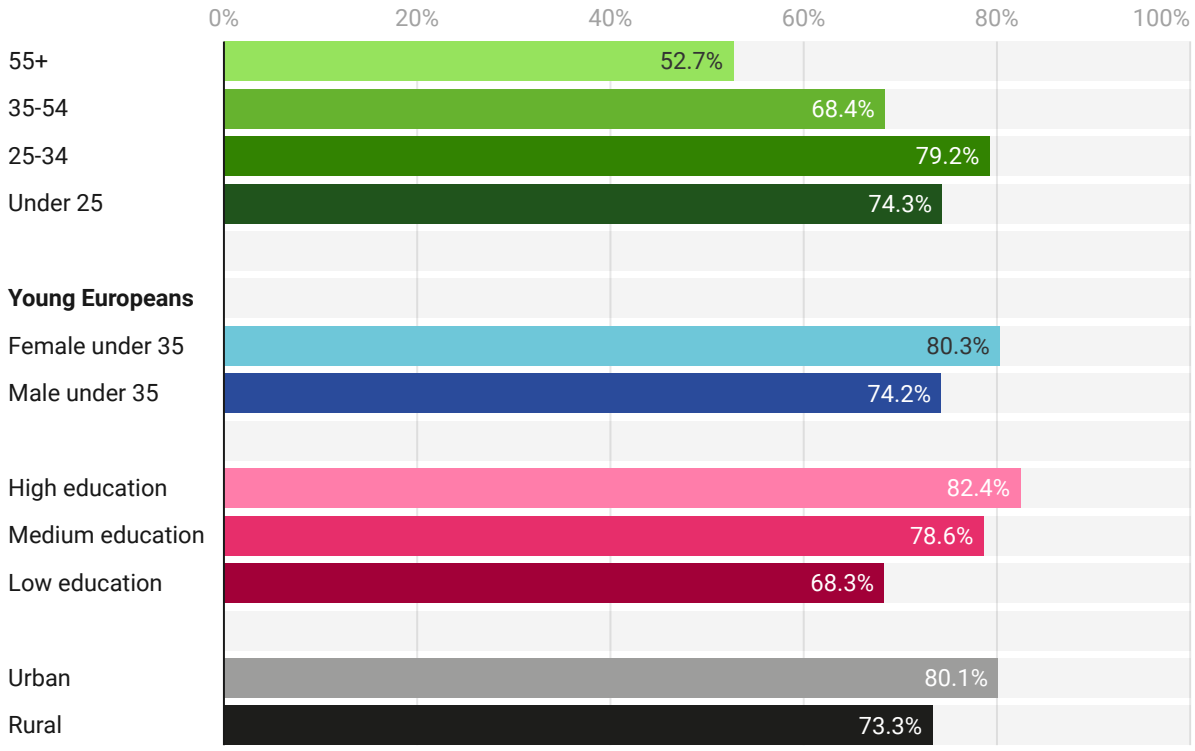
Age	Young Europeans are more likely to maintain their social contact via digital technologies than older Europeans. Young Europeans rate the positive aspects of digital communication higher than older Europeans.
Gender	Young women communicate with their parents via digital communication technologies much more frequently than young men.
Education	Online communication at work is mainly used by highly educated employees.
Urban-Rural	City dwellers use online communication at work more often than rural respondents.
Country	Frontrunners in digital communication at work are Cyprus and the Netherlands.

4.3.1 Digital Social Contacts

More means of communication signify more opportunities for contact maintenance. Moreover, in times of flexible working arrangements – such as work from home/ remote work – digital communication can be used to sustain work relationships. The same applies for distance relationships with family members and friends. The following figures focus on the social contacts of the people in the digital world.

Figure 21 shows what share of people reported that at least half of their social contacts are digital in the 2017 ISSP. Young Europeans are more likely to say that half or more of their social contacts are digital. Within this group, women are more likely to have a large share of their social contacts digitally. There is also an education gap: those with higher levels of education are more likely to have the majority of their social contacts via digital channels than those with medium or low education. The same applies for people living in urban areas compared to people living on the countryside.

Figure 21. At least half of social contact is digital by age group, gender, education level and place of living



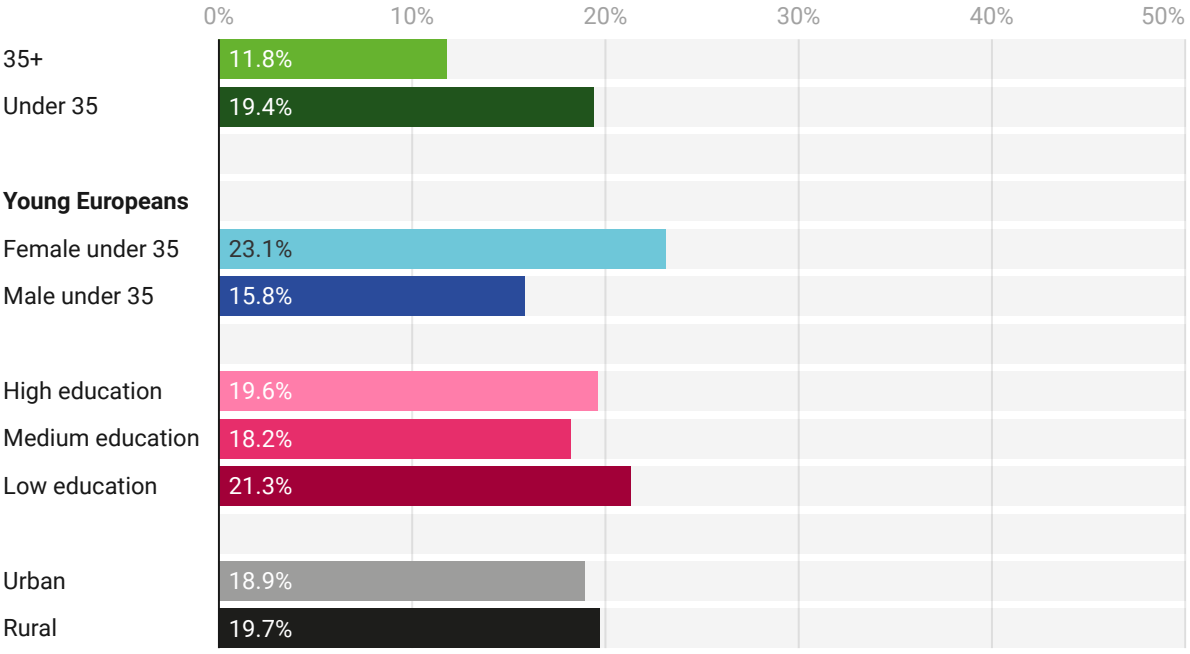
International Social Survey Programme 2017. Young Europeans refers to respondents aged under 35. Own Calculation. Countries: AT, CH, CZ, DE, DK, ES, FI, FR, HR, HU, IS, LT, SE, SI, SK and UK (n=13,642).

Additionally, the ESS provides an opportunity to observe how often people communicate with family members (children and parents) and their colleagues (co-workers and line managers), and how they do that (face to face, phone, screen and text). This battery of questions was fielded as part of the digital social contacts in work and family life in ESS Round 10 (2020-22). The next twelve figures show how frequently Europeans communicate with their parents and colleagues via screen and text message (Abendroth et al., 2023).

It is important to point out that the sample is not the same for all figures as only valid cases have been considered. This means, for example, that only people with living parents were posed questions on their communication with them. The same applies for colleagues – only people in work were asked these questions. The number of age groups has also been reduced from four to two (under 35 and 35 and over), to ensure large enough sample sizes for the overall picture and country comparison.

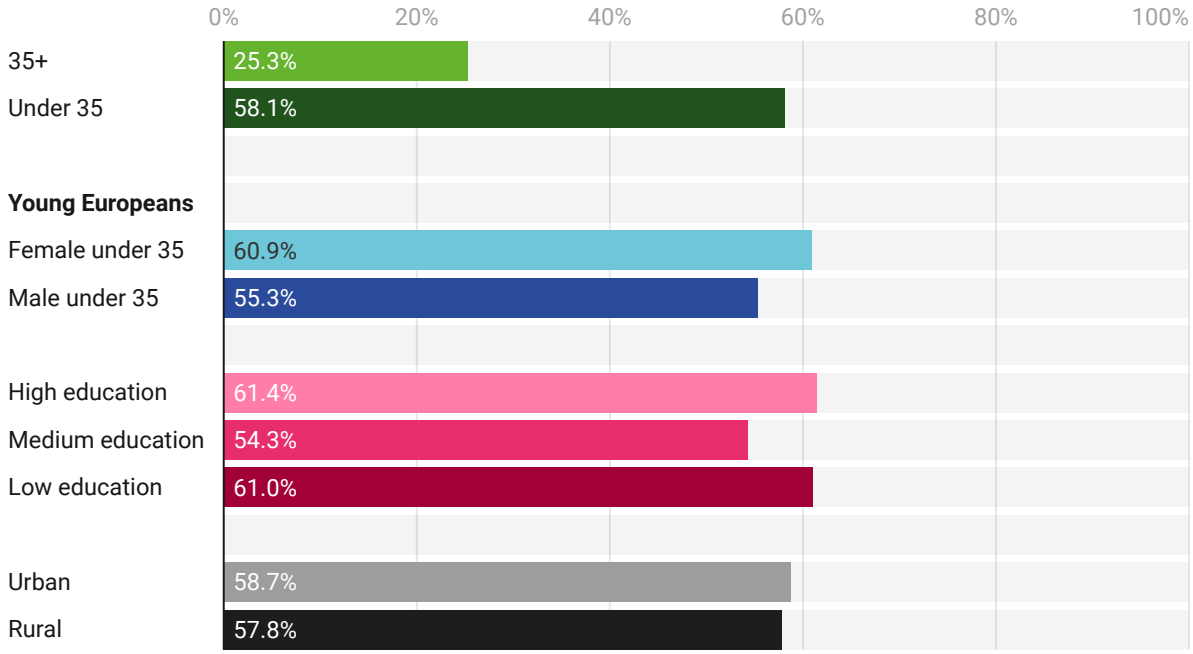
The results show that people are overall more likely to communicate via text, email or messaging apps than via video call with their parents. Whilst 19% of young Europeans (under 35 years old) conduct a video call with their parents several times a week, more than half of them (58%) communicate via text messaging as frequently. Young people are more likely to communicate with their parents than older people (35+) whose parents are still alive. No educational communication gap was identified. Young women tend to communicate via text and video call more frequently with their parents than young men.

Figure 22. Video call with parents at least several times a week by age group, gender, education level and place of living



European Social Survey Round 10 (2020). Young Europeans refers to respondents aged under 35. Own Calculations. Without DK, LU, MT and RO (n=30,324).

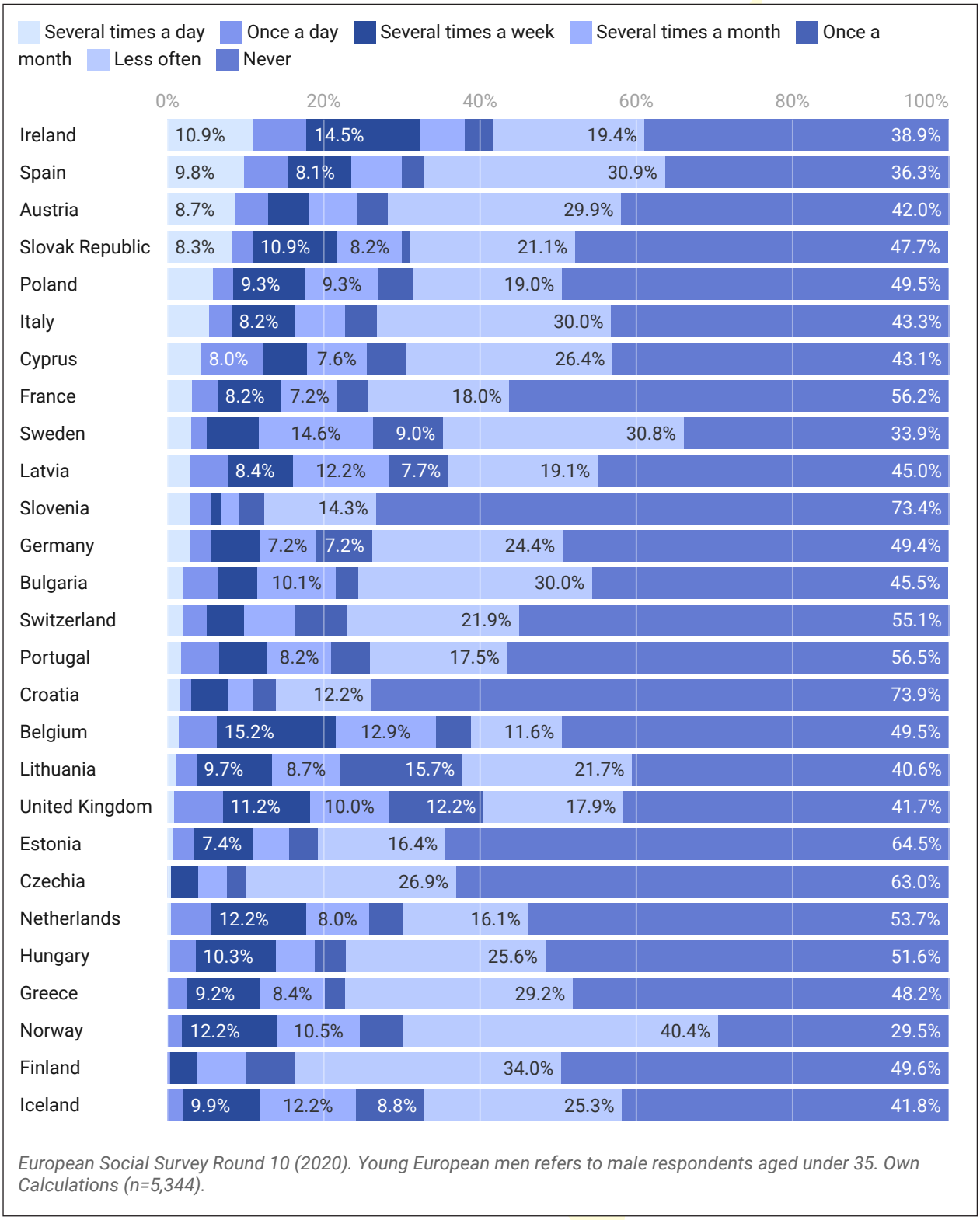
Figure 23. Text message with parents at least several times a week by age group, gender, education level and place of living



European Social Survey Round 10 (2020). Young Europeans refers to respondents aged under 35. Own Calculations. Without DK, LU, MT and RO (n=30,352).

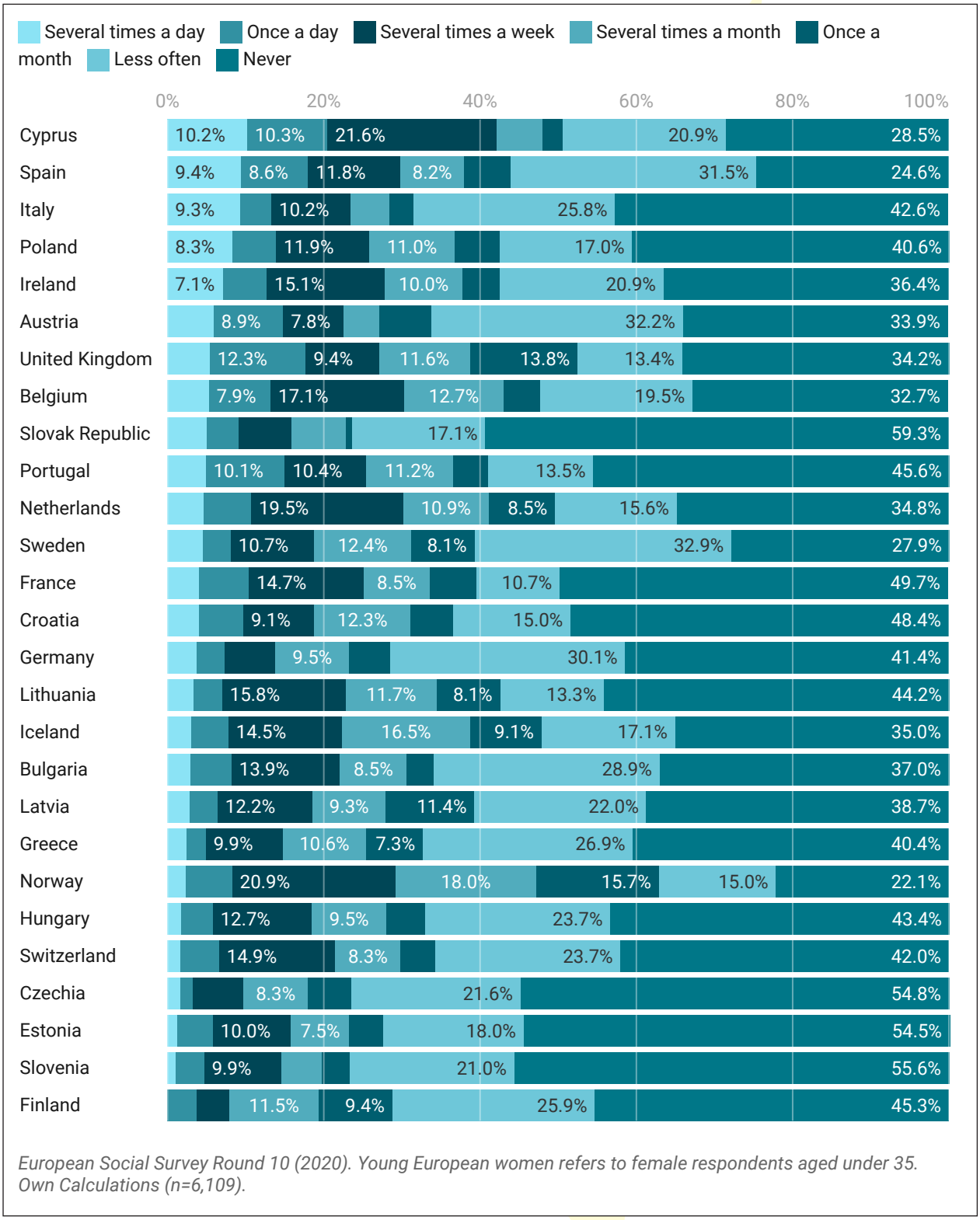
Figures 24 to 27 show the online communication behaviour of young Europeans by country and in more detail. When it comes to holding video calls with parents, the differences between countries are rather small. More than half of the young age group make a call to their parents less than monthly or never in all countries. The differences are bigger for text communication with parents. In nearly all countries more than half of young people communicate at least weekly with their parents in text format. The rates for daily communication are highest in Spain, Italy and Cyprus. We can also see that the gender communication gap mentioned before is visible in all countries. This applies to both video and text communication.

Figure 24. Communication via video call with parents of young European men



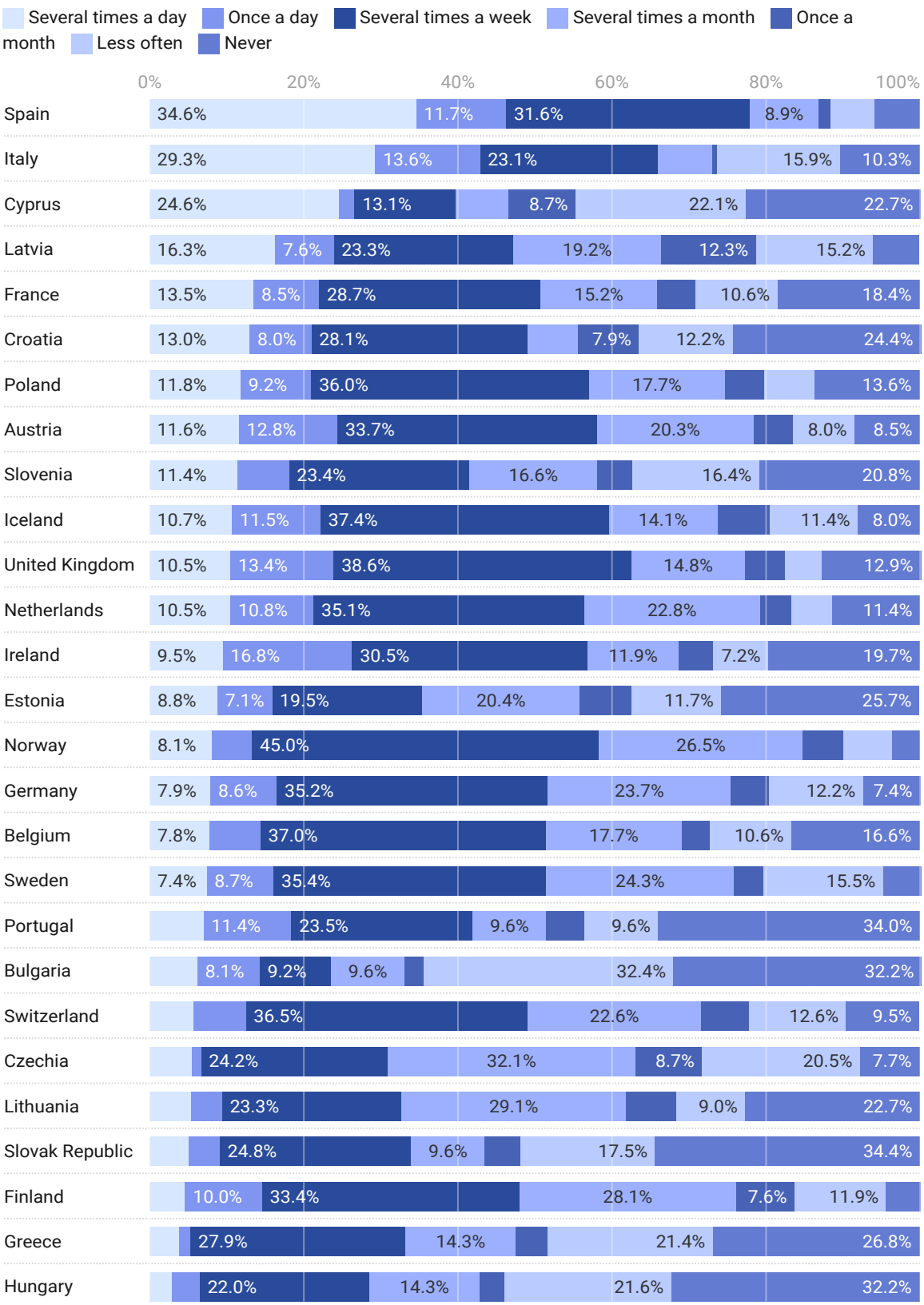
European Social Survey Round 10 (2020). Young European men refers to male respondents aged under 35. Own Calculations (n=5,344).

Figure 25. Communication via video call with parents of young European women



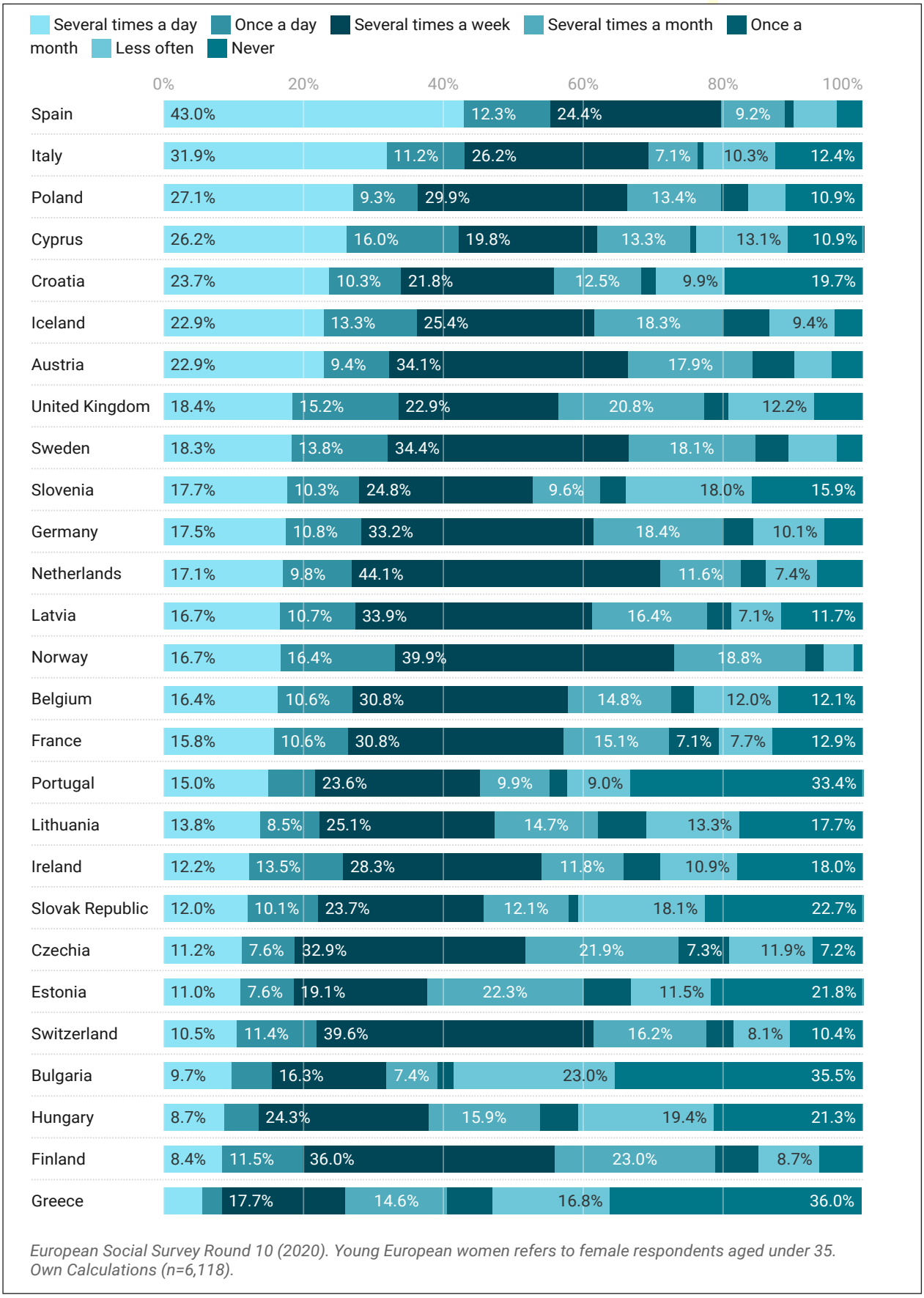
European Social Survey Round 10 (2020). Young European women refers to female respondents aged under 35. Own Calculations (n=6,109).

Figure 26. Communication via text message with parents of young European men



European Social Survey Round 10 (2020). Young European men refers to male respondents aged under 35. Own Calculations (n=5,353).

Figure 27. Communication via text message with parents of young European women

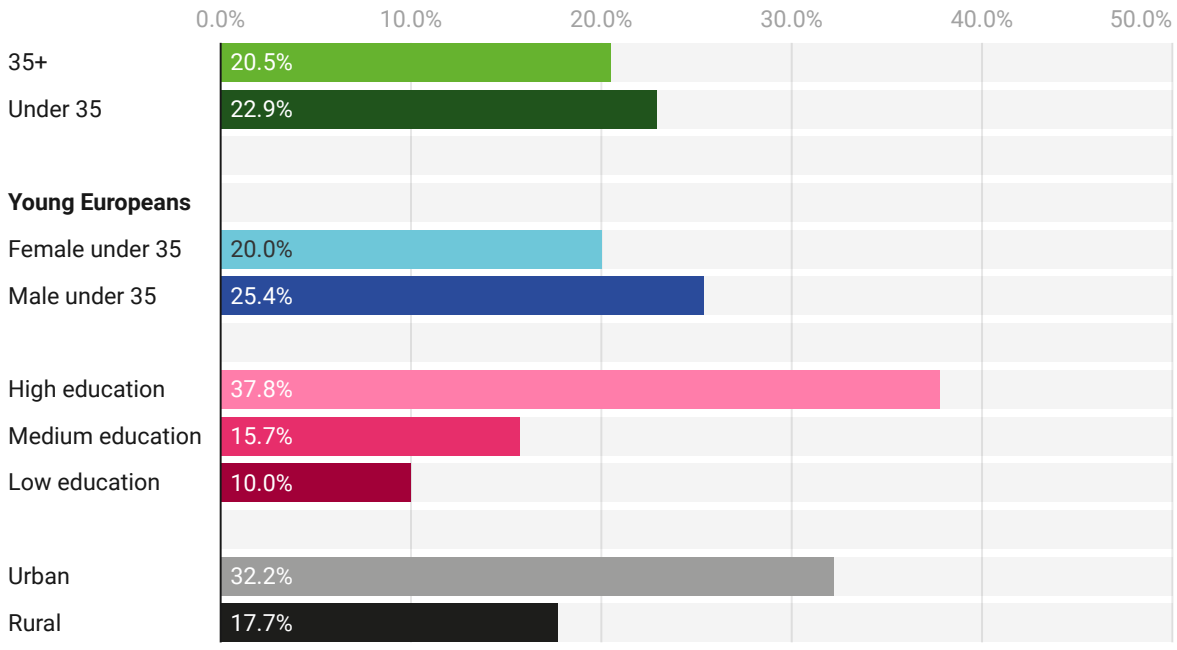


European Social Survey Round 10 (2020). Young European women refers to female respondents aged under 35. Own Calculations (n=6,118).

Considering online communication in the work domain, young Europeans are slightly more likely than older Europeans to engage with their colleagues frequently via text and video calls, but the gap is rather small compared to communication with parents. The gender gap is not as distinct: young men are slightly more likely to communicate via video call and text, email or messaging apps than young women.

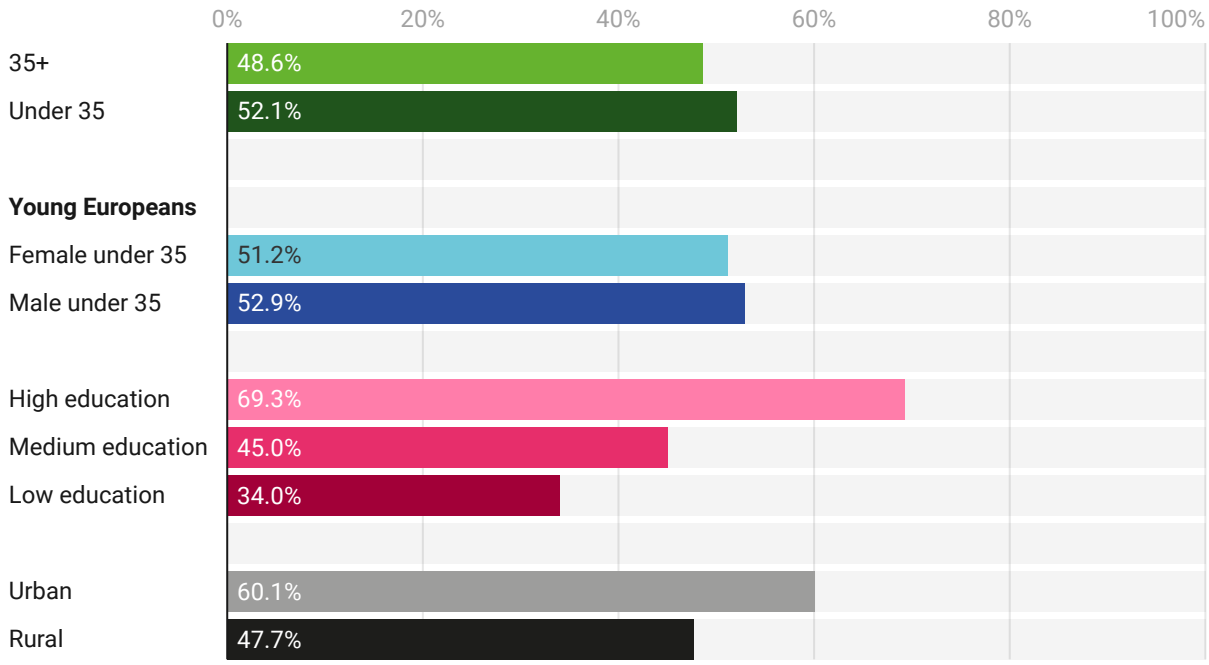
In contrast to communication with parents, education plays a strong role in digital communication with work colleagues. The higher the level of education, the more likely it is that digital communication media will be used. The differences between medium and low educational levels are smaller, but the numbers show unequal access to digital communication between the medium and low educated. Digital communication technologies are most often used at work by people living within urban areas. These findings apply for text and video call communication.

Figure 28. Video call with colleagues at least several times a week by age group, gender, education level and place of living



European Social Survey Round 10 (2020-22). Young Europeans refers to respondents aged under 35. Own Calculations. Without DK, LU, MT and RO (n=25,454).

Figure 29. Text communication with colleagues at least several times a week by age group, gender, education level and place of living

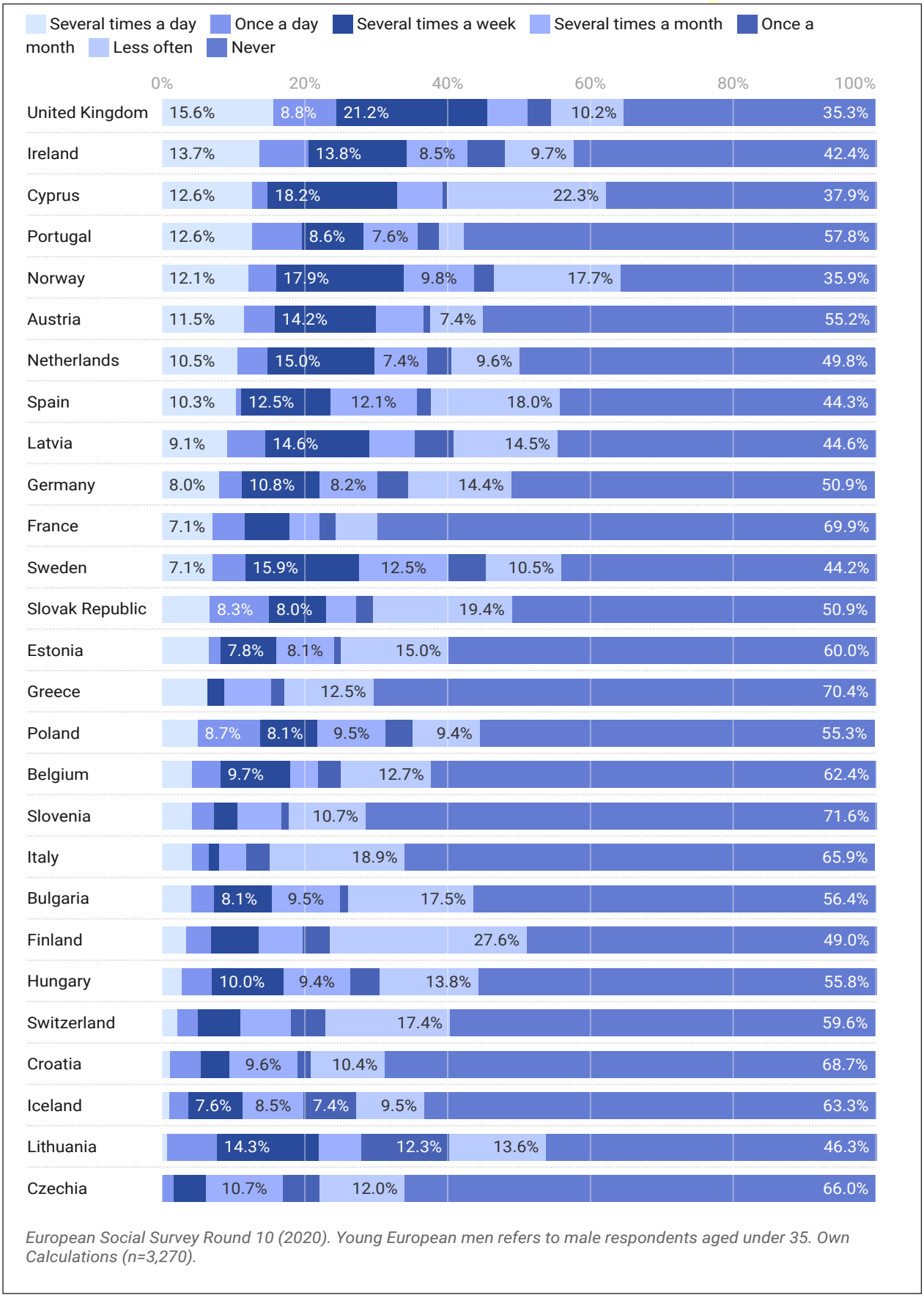


European Social Survey Round 10 (2020). Young Europeans refers to respondents aged under 35. Own Calculations. Without DK, LU, MT and RO (n=25,423).

In some countries, more than 25% of employed young people use video calls to communicate with their colleagues on a weekly basis. Examples for that are Cyprus, Latvia and Ireland. The highest rate is observed for young men in the United Kingdom, while young women in the United Kingdom tend to be the least likely to communicate via videocall at work.

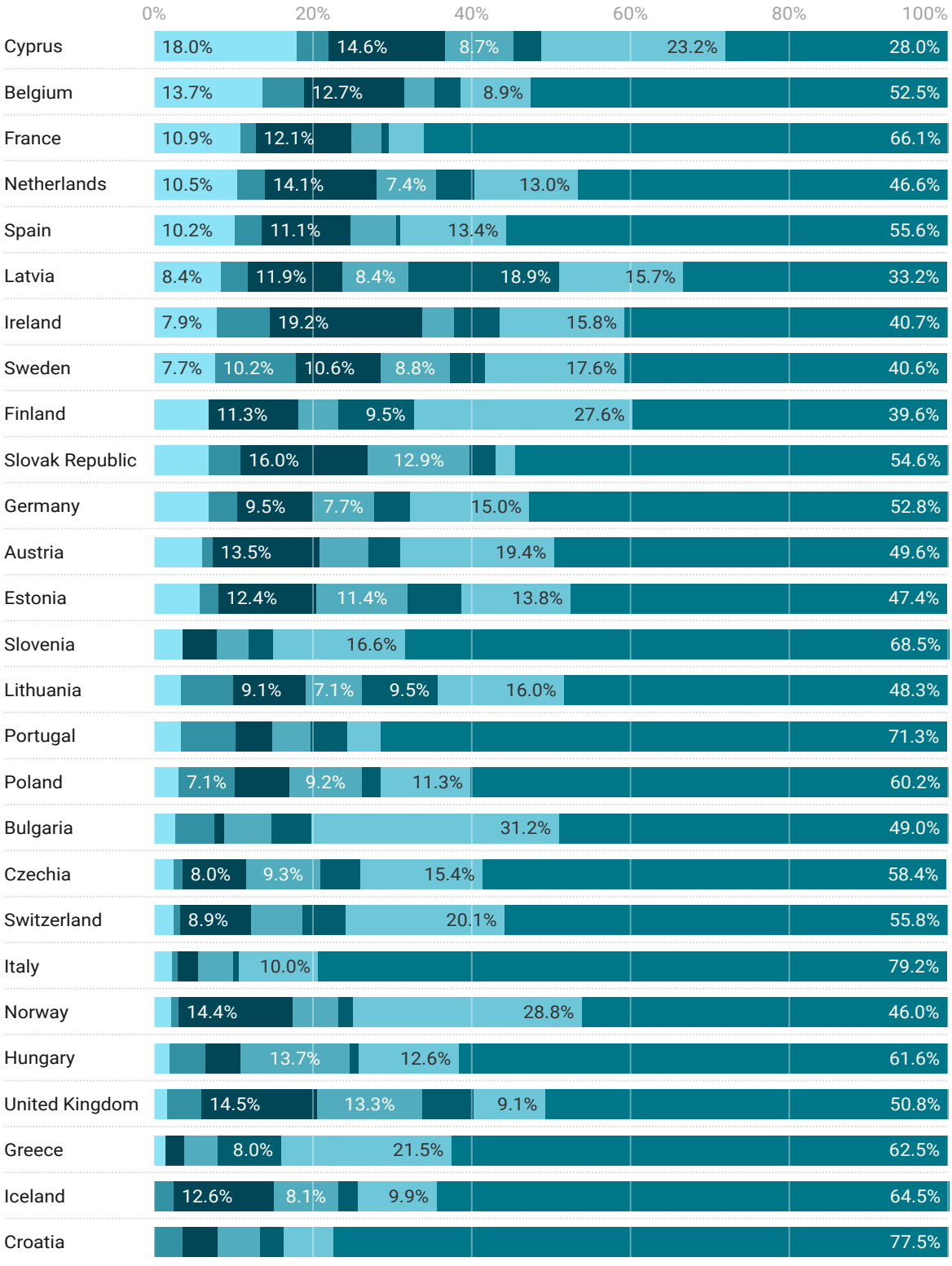
On the other hand, there are countries where this technology seems to be barely used. In Croatia, Italy and Slovenia less than 25% of young employees use video calls monthly or more often. Text based communication with colleagues is very frequently used by young employees in most European countries. The greatest exceptions are found in Hungary, Czechia and Greece. These observations give a good impression on the structural opportunities people are given in different countries. Local labour sector circumstances play a role in how communication behaviour manifests structurally. For example, some countries have a larger industrial sector, while others have more office-based jobs (which are more likely to use communication tools).

Figure 30. Communication via video call with colleagues of young European men



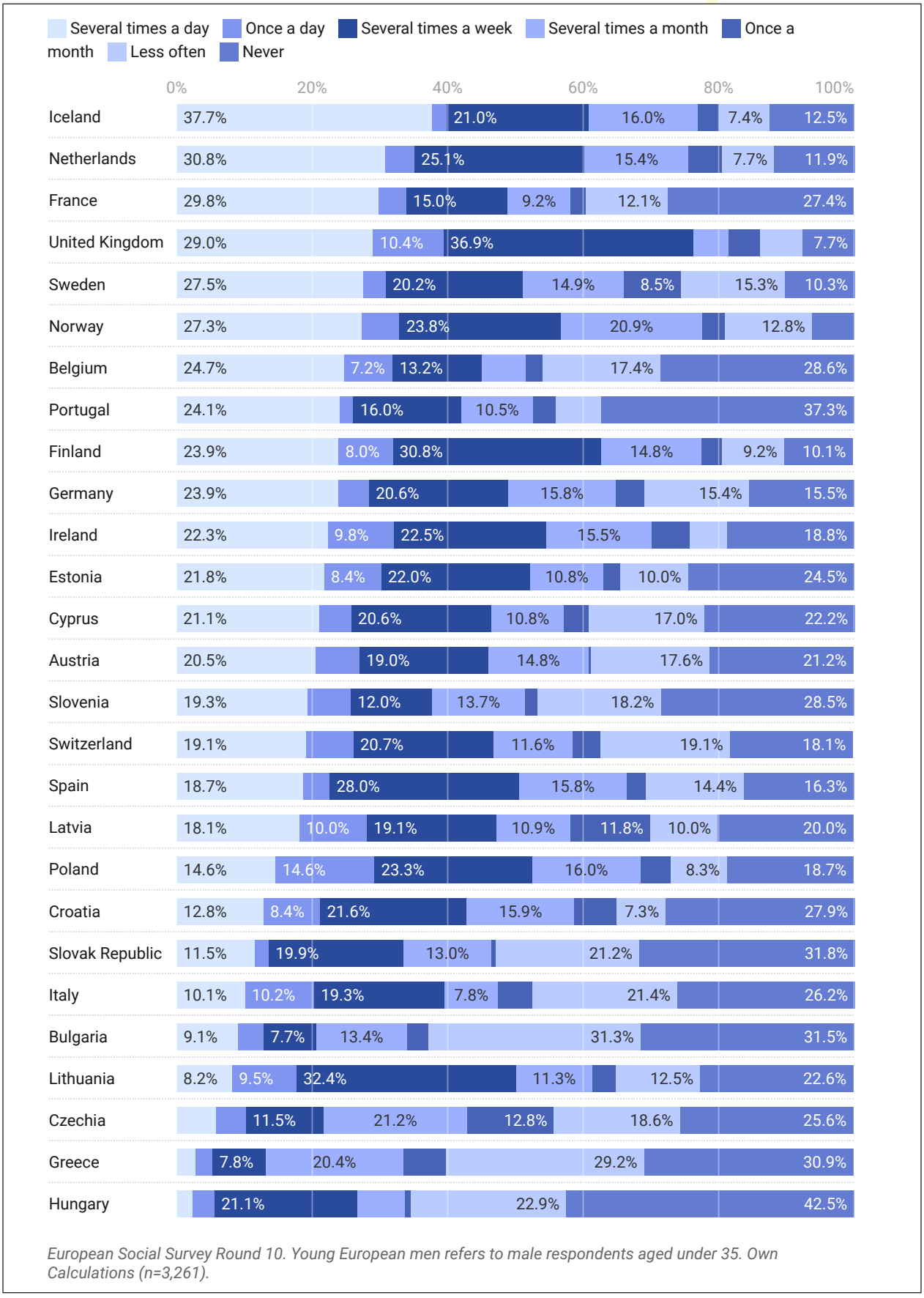
European Social Survey Round 10 (2020). Young European men refers to male respondents aged under 35. Own Calculations (n=3,270).

Figure 31. Communication via video call with colleagues of young European woman



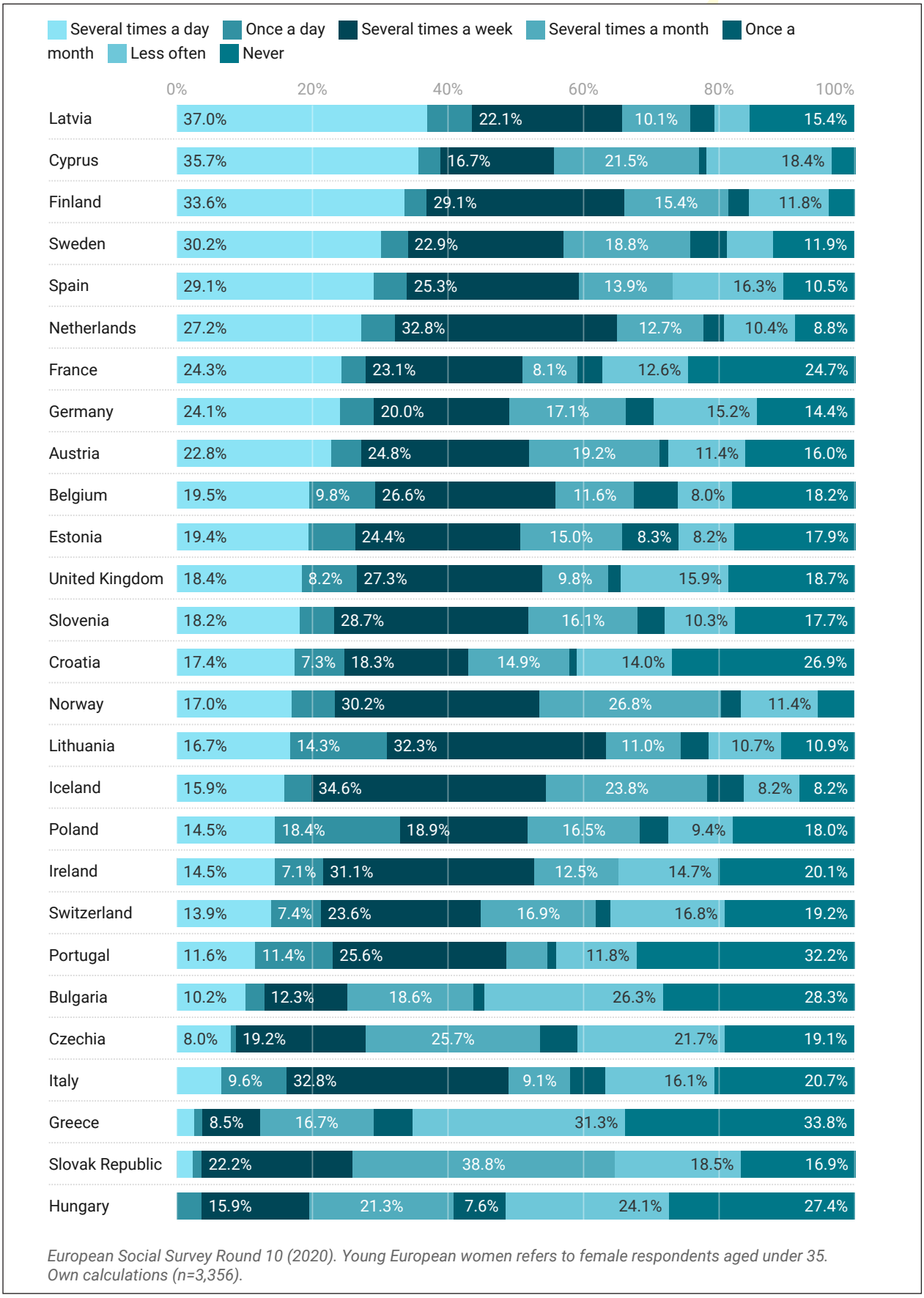
European Social Survey Round 10 (2020). Young European women refers to female respondents aged under 35. Own Calculations (n=3,360)

Figure 32. Text communication with colleagues of young European men



European Social Survey Round 10. Young European men refers to male respondents aged under 35. Own Calculations (n=3,261).

Figure 33. Text communication with colleagues of young European women

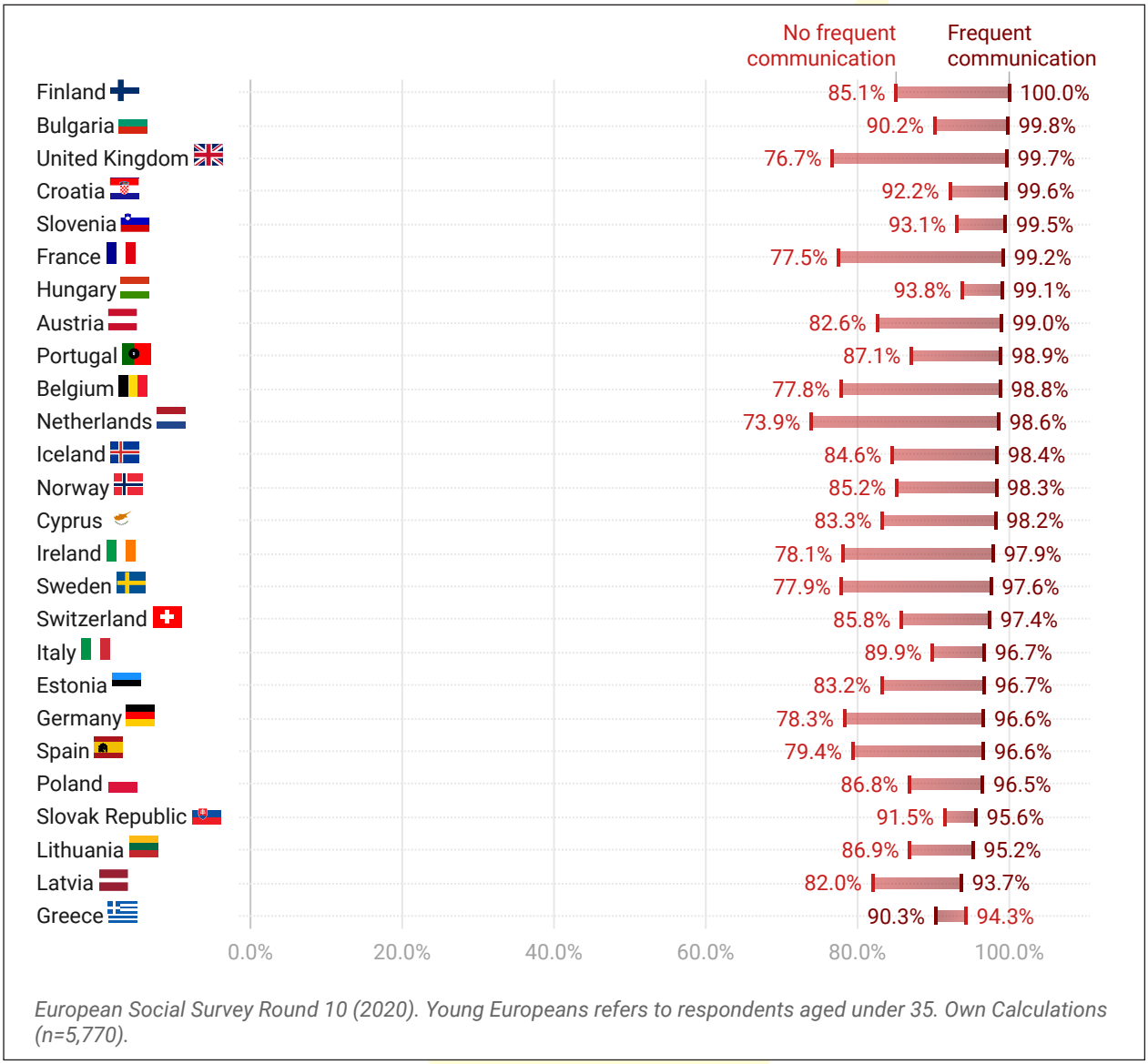


European Social Survey Round 10 (2020). Young European women refers to female respondents aged under 35. Own calculations (n=3,356).

The following figure shows how young Europeans perceive the relationship to their parents depending on how frequently they used the technologies mentioned in earlier presented figures (Figure 22 to Figure 27) to communicate with them. The closeness was measured using a five-point scale. The graph shows the share of people who reported feeling at least 'quite close' (3 out of 5) to their parents. To give an impression of the relation to digital communication frequency we distinguish between those who either video call or text with their parents at least several times a week and those who communicate less.

The results show that there are no significant differences between the countries when it comes to how young people perceive the closeness to their parents. All rates are above 70%. The main finding here is that nearly everyone who uses digital communication to interact with their parents at least several times a week feels close to their parents, while for the others the range is between 74% and 94%. The only exception for this finding is Greece, where those with no frequent digital communication tend to report more closeness to their parents. It must be noted that frequent communication can be a result of a good relationship and may therefore not automatically be the cause of it. Further analysis has shown that frequency of written communication and feeling of closeness to parents are related, but the strength and the direction of this relationship differs between countries (A. Abendroth et al., 2023).

Figure 34. Young Europeans feeling at least quite close to parents by frequency of digital communication

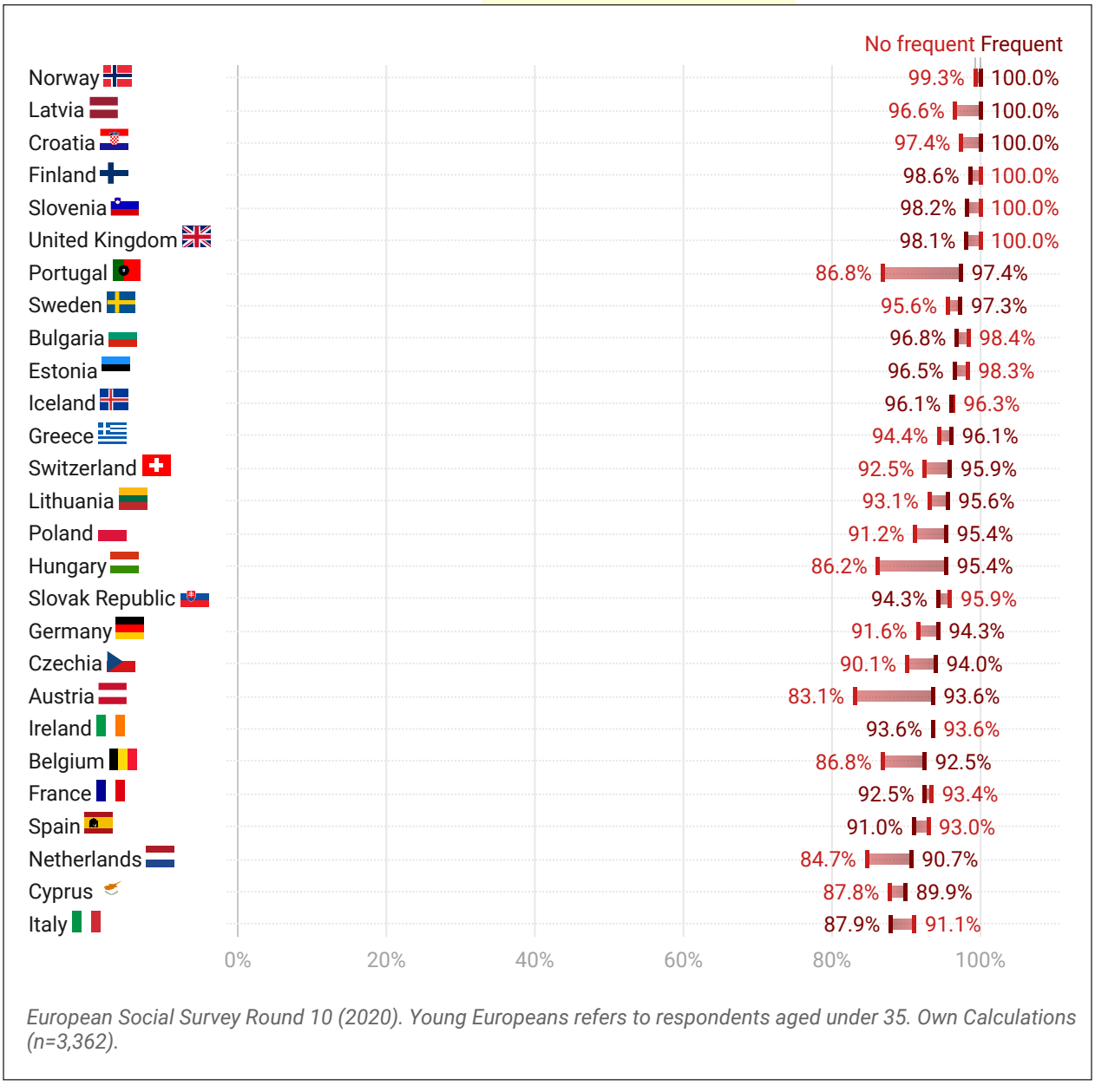


European Social Survey Round 10 (2020). Young Europeans refers to respondents aged under 35. Own Calculations (n=5,770).

Figure 35 additionally shows what share of employees think their co-workers are likely to give them work-related advice if needed. The original item contains four answer categories (ranging from 'very likely' to 'not at all likely'). We have summarised the two upper and the two lower categories for the following analysis. We apply the same communication-frequency groups to distinguish as we did in the previous figure.

Overall, most respondents think that it is likely that they receive work-related advice from their colleagues. Even the lowest rates are at 85%. In most of the countries people are more likely to think they will get work-related advice from their colleagues if they communicate at least several times a week with them. The biggest differences are found in Portugal, Hungary with nearly 10 percentage point differences. In some countries the relation is reversed, for example in Finland and Slovenia.

Figure 35. Likeliness of young Europeans to receive work related advice by frequency of digital communication

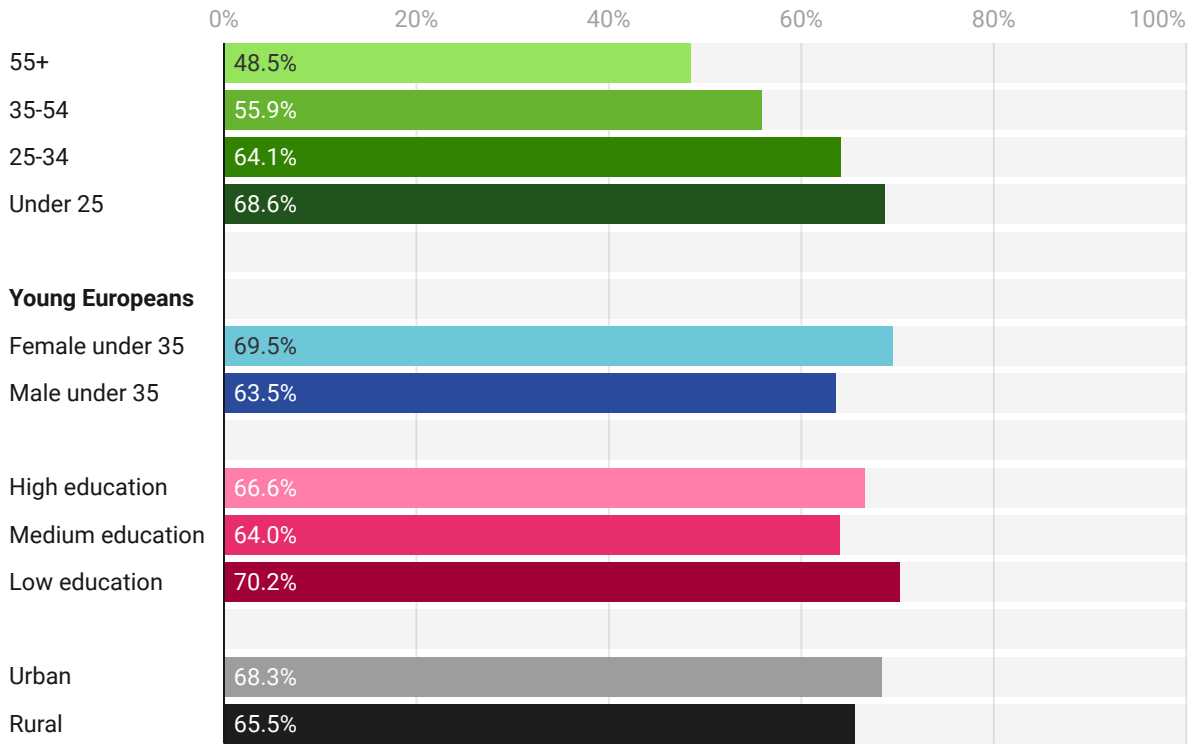


European Social Survey Round 10 (2020). Young Europeans refers to respondents aged under 35. Own Calculations (n=3,362).

4.3.2 Perceived benefit

Finally, to what extent do Europeans perceive digital communication as a means for social inclusion? In ESS Round 10 respondents were asked whether they think online and mobile communication make people feel closer to each other on a scale from 0 (not at all) to 10 (completely). Figure 36 shows the share of people who were agreeing with this statement (answering 7 or higher). The statement that online communication makes people feel closer to one another is agreed to by about a half of the older Europeans and a great majority of young Europeans. Young women are more likely to agree with this statement than young men; for the other subgroups no clear gaps can be reported.

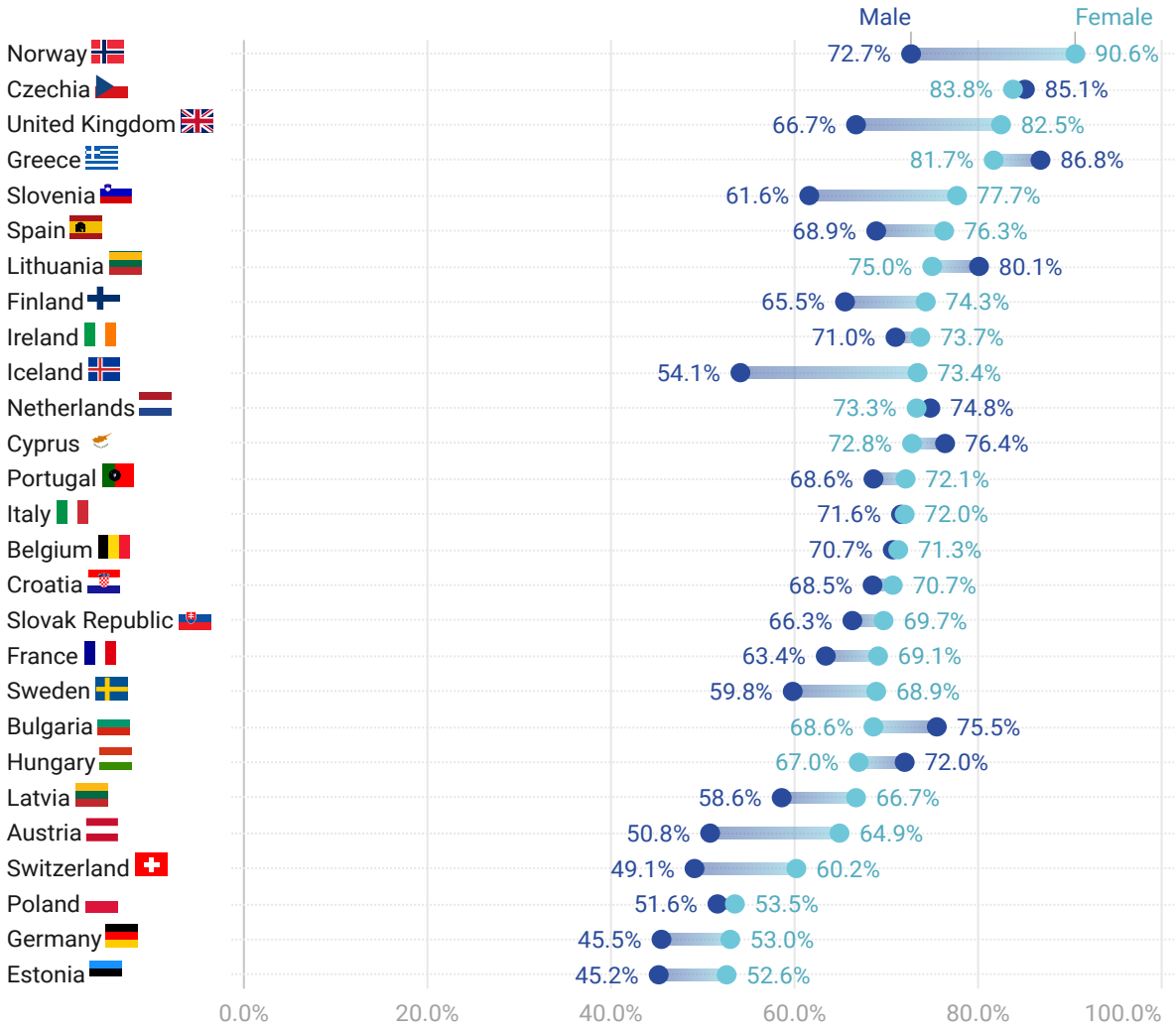
Figure 36. Support for the statement: 'Online and mobile communication makes people feel closer to one another' by age group, gender, education level and place of living



European Social Survey Round 10 (2020). Young Europeans refers to respondents aged under 35. Own Calculations. Without DK, LU, MT and RO (n=50,477).

Agreement with the statement that digital communication makes people feel closer to each other varies from country to country. For example, in Norway and Spain people are quite positive (69-91%) yet only half of young Germans and Estonians agree with this statement. The question of whether men or women are more likely to endorse the statement also differs between countries. In most countries, young women display higher levels of agreement than young men. Exceptions can be found in Czechia, Greece, Bulgaria and Hungary.

Figure 37. Support for the statement: 'Online and mobile communication makes people feel closer to one another' among young Europeans by gender



European Social Survey Round 10 (2020). Young Europeans refers to respondents aged under 35. Own Calculations (n=11,904).

Digital communication is used and perceived as a tool for maintaining social contacts and networks. However, its use varies between countries and different social groups. The data show that those with a high level of education and who live in urban areas are most likely to use digital means to communicate at work. For more details on the use of digital communication in work and family life, its drivers and implications see the special issue based on the module on digital contacts in work and family life in (Abendroth et al., 2023).

4.4 Digital Stressors

Digital technologies can also bring with them multiple stressors as indicated in the concept of techno-stress (Brod 1984; Dragano 2020; Ragu-Nathan 2008). Based on available European representative data we can distinguish between some potential stressors and investigate to what extent they vary across Europe and among young Europeans.

The first stressor is people's privacy concerns, that is, the extent to which people perceive their privacy as being at risk because of online and mobile communication. Next, the focus is on techno-invasion, meaning the extent to which work-life-balance suffers from online and mobile communication. The third stressor is misinformation – the extent to which people feel exposed to misinformation by online and mobile communication.

Data also shows whether people have been scammed online, meaning they have fallen victim to deceptive practices conducted via the internet, such as phishing, fake online shops, or fraudulent investment schemes. Lastly experiences of online harassment are assessed – whether respondents have encountered offensive, aggressive, or intimidating interactions in online spaces such as social media, messaging apps, or forums.

Key findings 4: Digital stressors

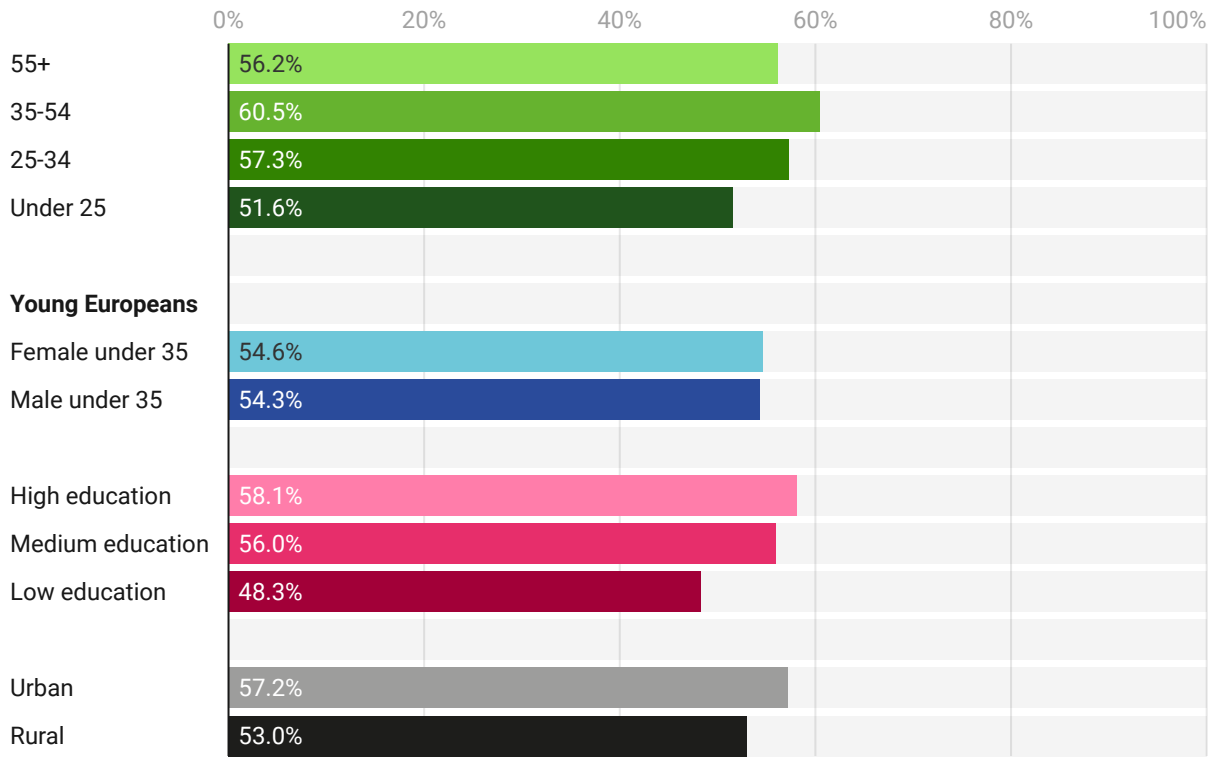
Age	Young Europeans are more likely to experience online fraud than older Europeans.
Gender	Digital stress does not vary between young men and women
Education	The highly educated are most likely to see privacy undermined by online and mobile communication.
Urban-Rural	People living in urban areas are more likely to be aware of techno-invasion as a stressor.
Country	Harassment is most reported in German speaking countries.

4.4.1 Privacy Concerns

The following figures (Figures 38-39) show to what extent people agree with the statement that digital and mobile communication undermine people's privacy. Respondents were asked whether they think online and mobile communication undermines people's privacy on a scale 0 (not at all) to 10 (completely).

Figure 38 shows the share of people who were agreeing (answering 7 or higher) to this statement. In all age groups, slightly more than half of respondents agree with the statement (52-60%). Young people are least concerned, and no gender gap is identified. Highly educated younger Europeans (58%) are more likely to think that digital and mobile communication undermine personal privacy than those with the lowest levels of education (48%). The rate for those with medium education lays between these groups (56%) but it is closer to the highly educated. People living in urban areas are slightly more likely to perceive digital communication as a threat for personal privacy than people from rural areas.

Figure 38. Support for the statement: 'Online and mobile communication undermines personal privacy' by age group, gender, education level and place of living

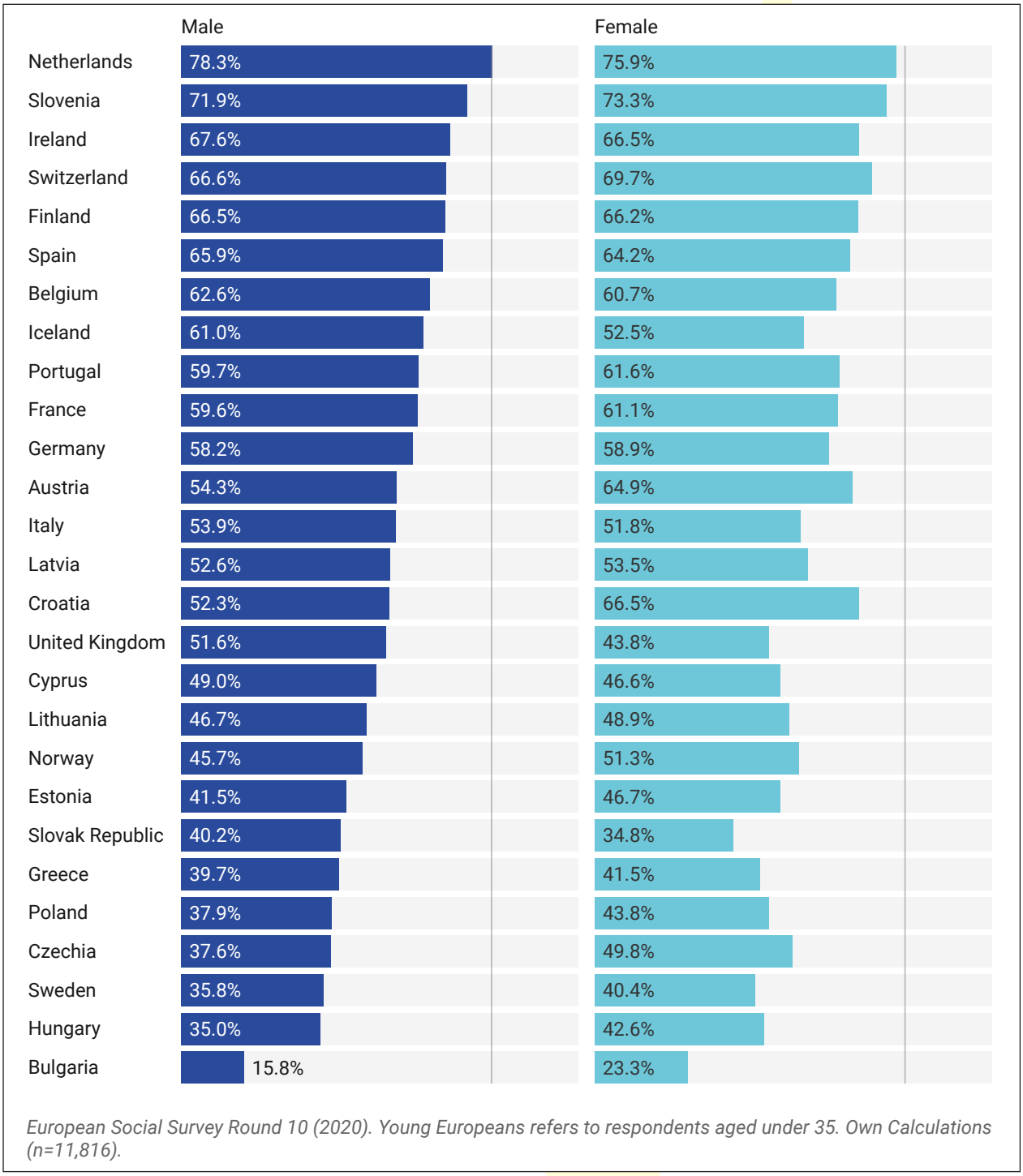


European Social Survey Round 10 (2020). Young Europeans refers to respondents aged under 35. Own Calculations. Without DK, LU, MT and RO (n=50,018).

Comparing the proportion of respondents who agree with the statement that online and mobile communication undermine people's privacy, there are large gaps between the countries. While in the Netherlands, more than three out of four young people agreed, less than half agreed in Greece, Sweden, Bulgaria and multiple other countries.

Especially in countries with lower rate of agreement, young women tend to be more likely to agree than young men. The reasons for the large differences between countries may be diverse. One explanation for this may be that education systems make people more or less aware of the problem. Another possibility is that structural circumstances require more caution. In some cases, leaked private information may be used against individuals and cause sanctions. Overall, respondents are not overly concerned about possible privacy threats.

Figure 39. Support for the statement: 'Online and mobile communication undermines personal privacy' among young Europeans by gender

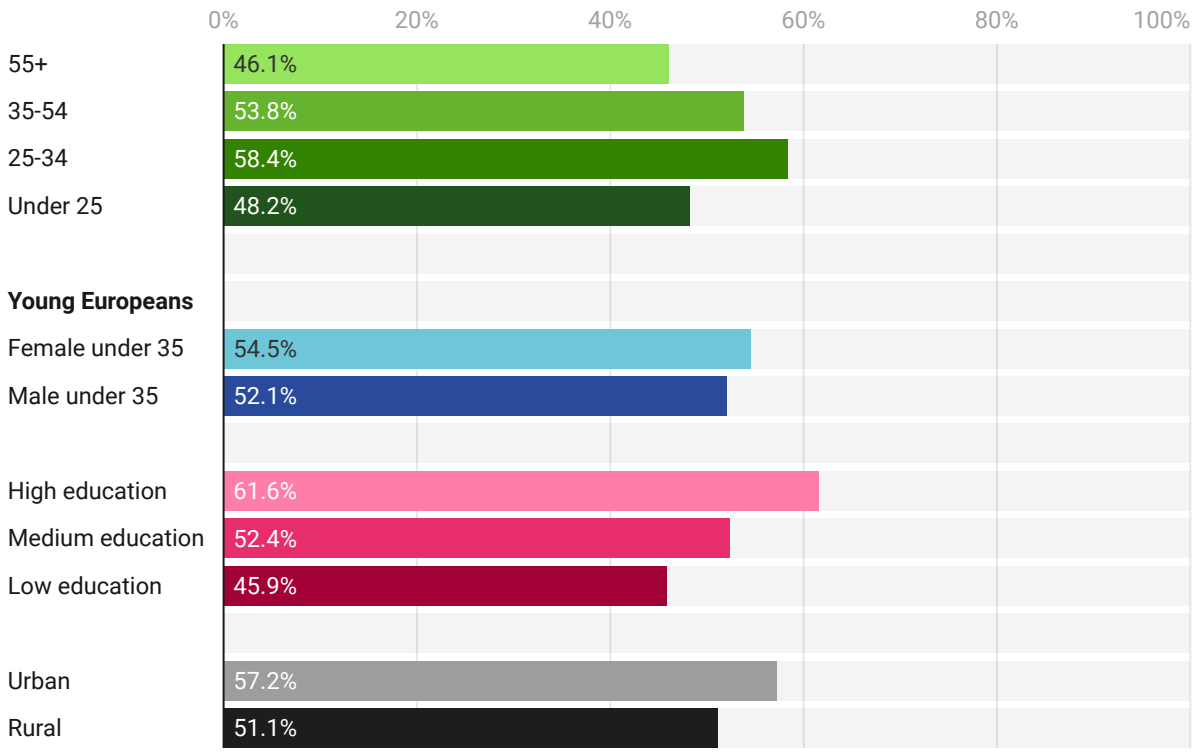


European Social Survey Round 10 (2020). Young Europeans refers to respondents aged under 35. Own Calculations (n=11,816).

4.4.2 Techno-Invasion

The next two figures (Figures 40-41) show the extent to which people think digital communication reinforces work-life interference. All respondents – regardless of their employment status – were posed this question. There is a tendency that people of working age are more likely to agree with this statement more than others. The lowest values are found for respondents aged 55 years and older (46%). Young women tend to see digital communication as work-life interference factor a little more than young men. The higher the levels of education achieved by young people, the more they tend to perceive digital communication as a factor for work-life interference.

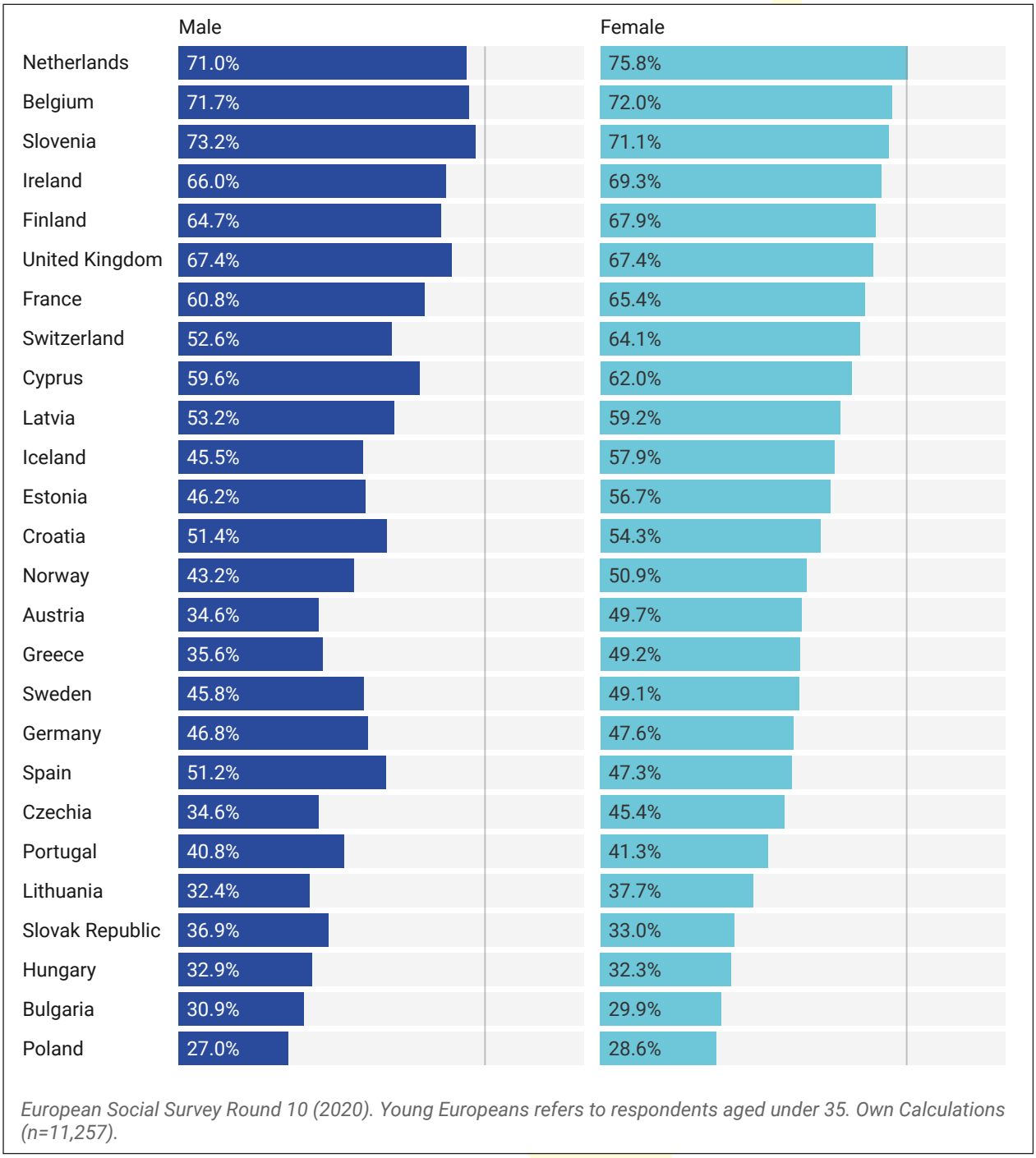
Figure 40. Support for statement: 'Online and mobile communication makes work and personal life interrupt each other' by age group, gender, education level and place of living



European Social Survey Round 10 (2020). Young Europeans refers to respondents aged under 35. Own Calculations. Without DK, LU, MT and RO (n=47,095).

When comparing agreement with this statement by gender within countries, highest agreement rates are found in the Netherlands, Slovenia and Belgium. The gender gap is small and not distinct in those three countries, but in the majority of countries young women agree with the statement more than young men. People in Poland and Bulgaria show the lowest levels of agreement with the statement that digital communication makes work and life interfere with each other.

Figure 41. Support for statement: 'Online and mobile communication makes work and personal life interrupt each other' among young Europeans by gender

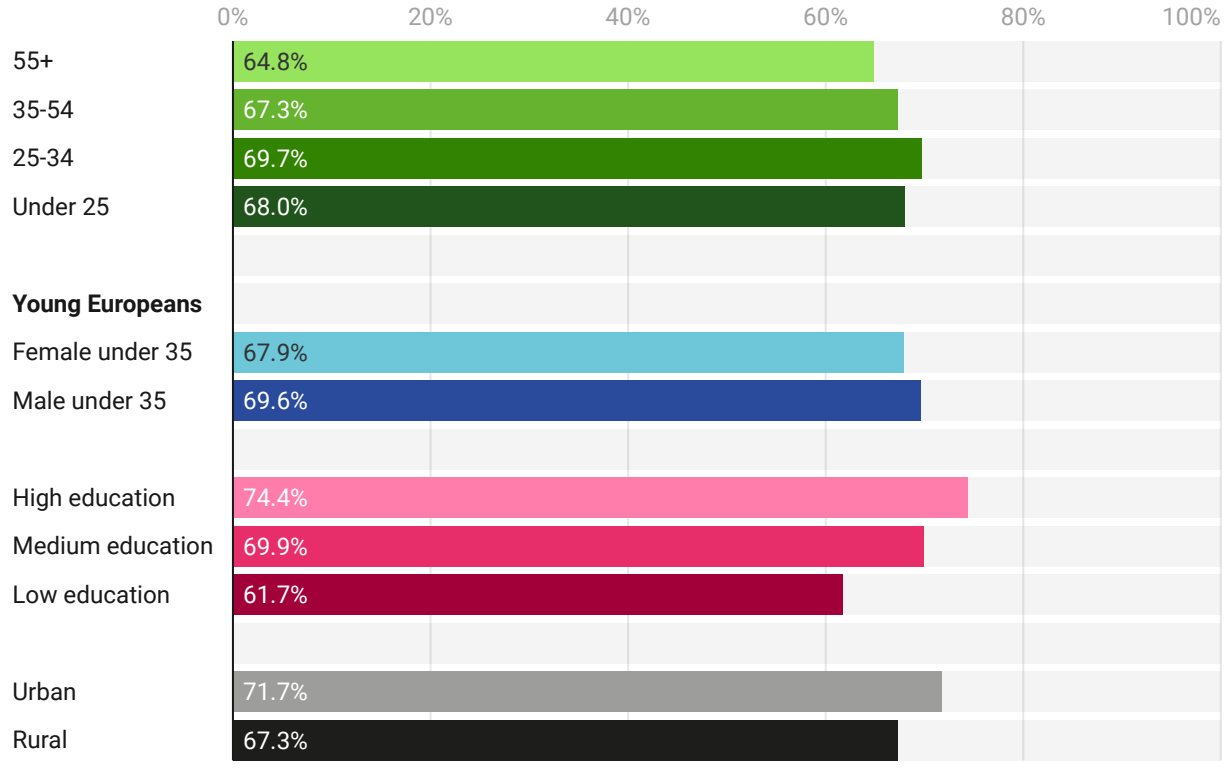


European Social Survey Round 10 (2020). Young Europeans refers to respondents aged under 35. Own Calculations (n=11,257).

4.4.3 Misinformation

The following figures (Figures 42-43) show whether people think that digital communication exposes people to misinformation. Among the three statements that address potential stressors, this statement is most likely to be agreed with across all groups. Only small variation is identified between age groups and genders. Those with high education are more likely to agree with the statement than people with medium or low education.

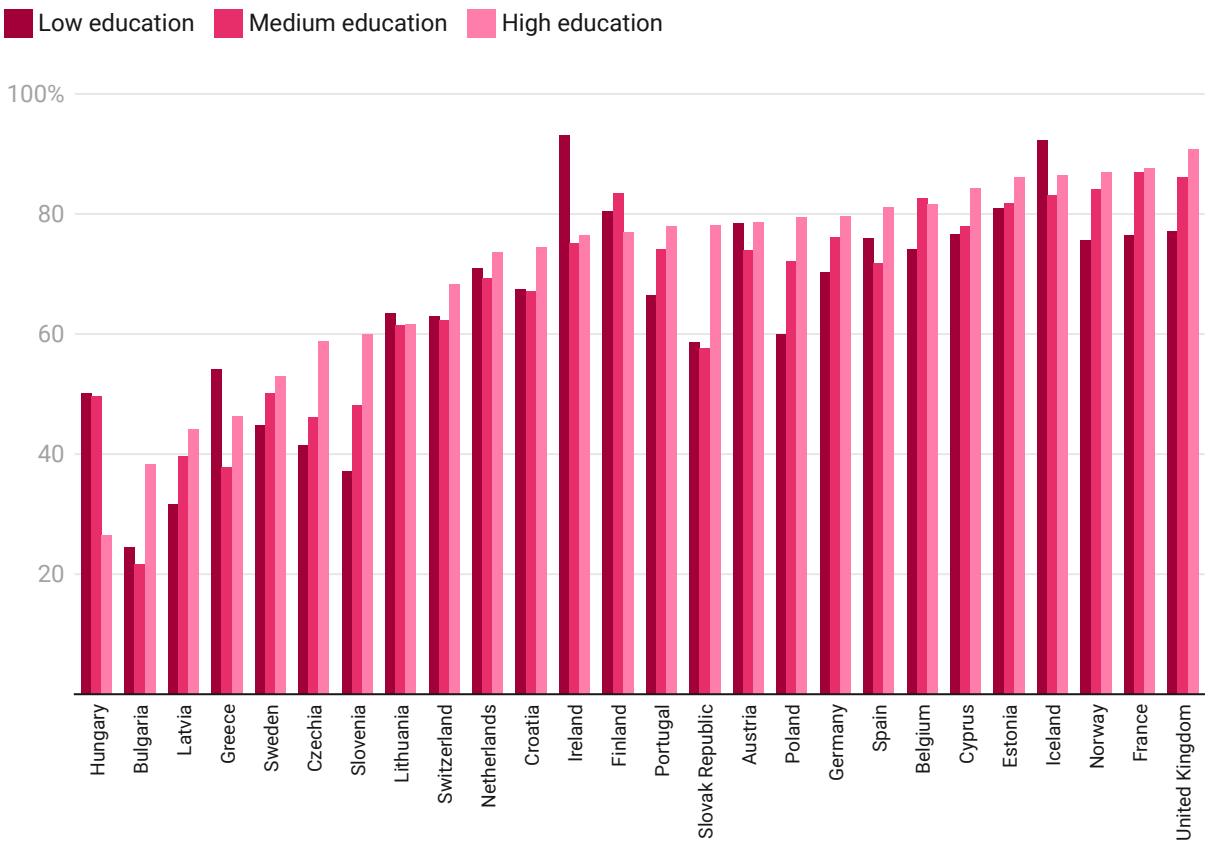
Figure 42. Support for the statement: 'Online and mobile communication exposes people to misinformation' by age group, gender, education level and place of living



European Social Survey Round 10 (2020). Young Europeans refers to respondents aged under 35. Own Calculations. Without DK, LU, MT and RO (n=48,859).

As most of the variation of this item is related to education, agreement with this statement has also been assessed within countries by education level. The education gap varies significantly between countries. Overall, the tendency that highly educated people are most likely to agree with the statement continues. At the same time, the highly educated in Ireland, Finland and especially Hungary are relatively uncritical. Agreement with the statement is clearly higher in at least one of the other education groups.

Figure 43. Support for the statement: 'Online and mobile communication exposes people to misinformation' among young people by education level

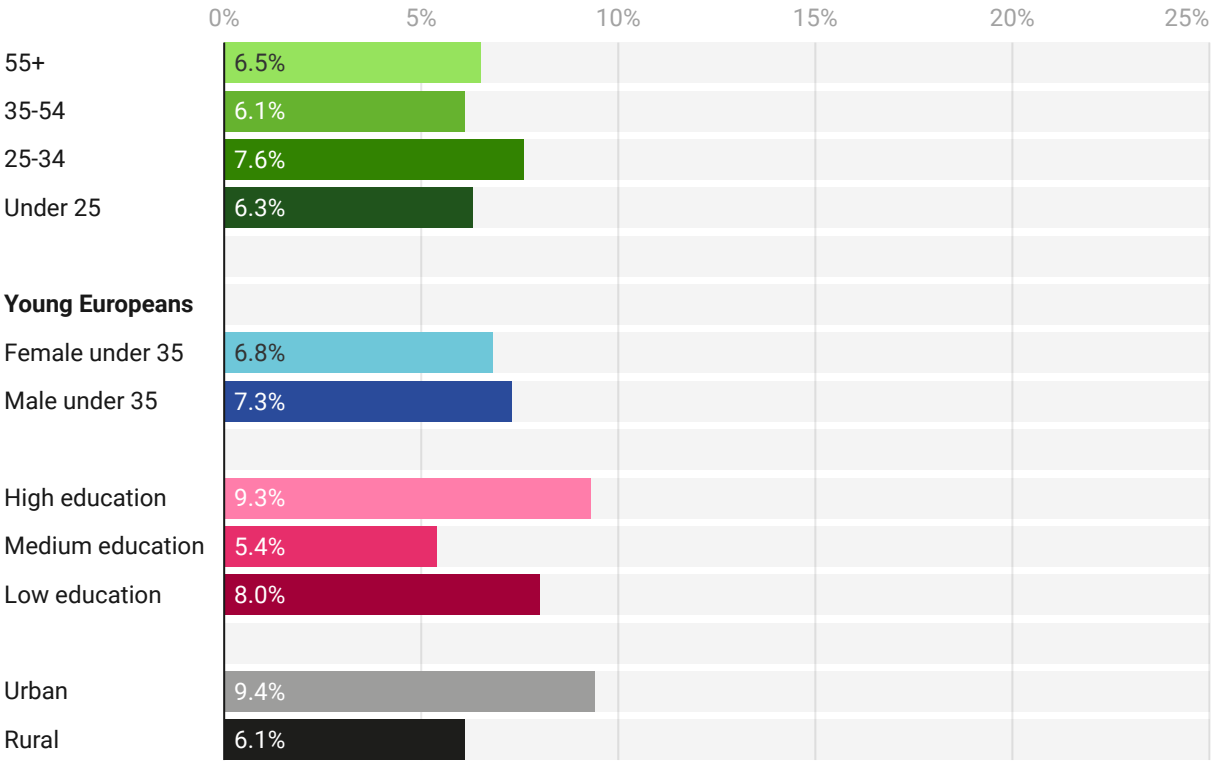


European Social Survey Round 10 (2020). Young Europeans refers to respondents aged under 35. Own Calculations (n=11,848).

4.4.4 Online Scam

We also consider digital stressors that already existed in some way before the Internet and have merely gained new facets as a result of digitalisation. The internet offers criminals further opportunities for scams. The following graphs include responses from internet users only in order to gain a better idea of who is victimised online. Around 5-9% of respondents report that they have experienced fraud on the internet before. The highest rates are found for the most highly educated, most lowly educated and people living in urban areas. The gaps for the other subgroups are rather small.

Figure 44. Experience of online fraud by age group, gender, education level and place of living

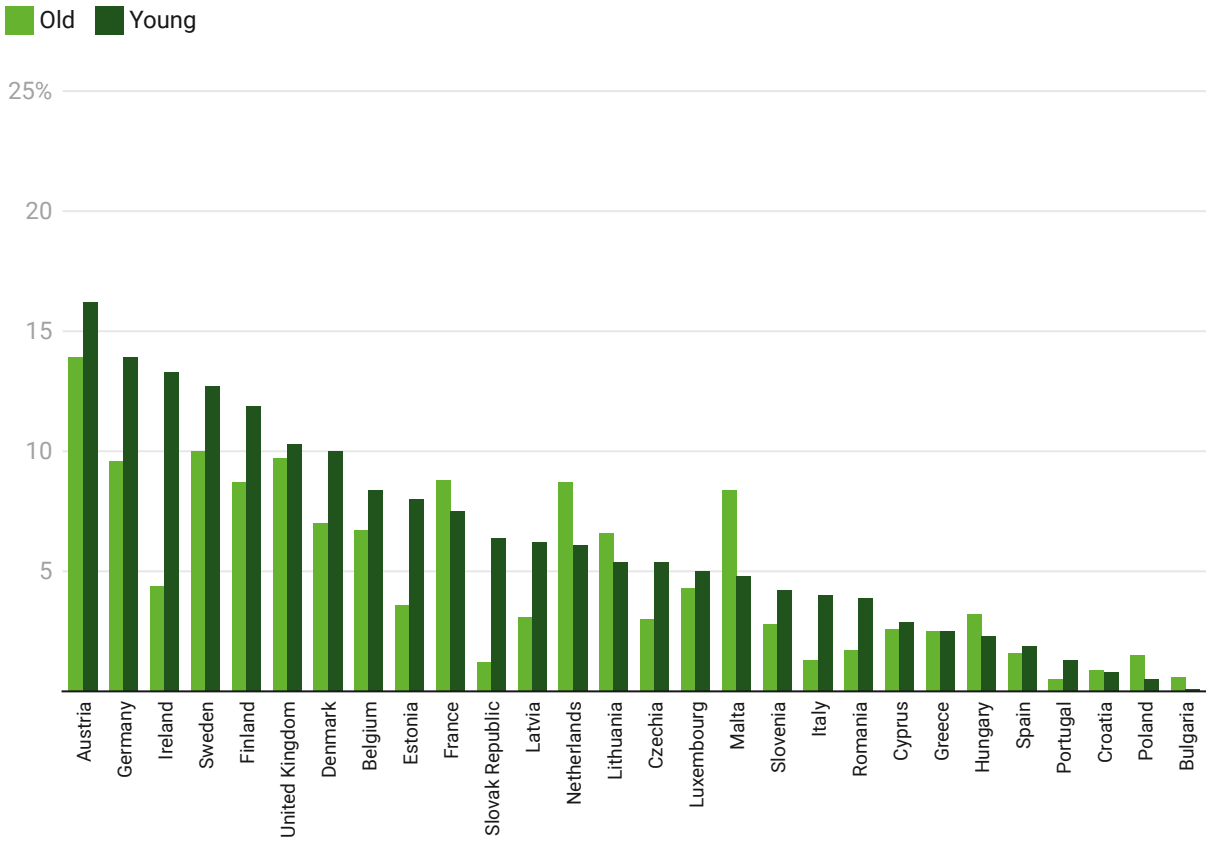


European Quality of life Survey Wave 4 (2016). Young Europeans refers to respondents aged under 35. Own Calculations. Without CH, IS and NO (n=22,754).

Figure 45 shows that people's experience with internet scams differ substantially across Europe. Overall, only a minority has experienced a scam in the past. The highest rates for people under 35 are found in Germany and Austria (14-16%). When comparing experiences of fraud, young people are more likely to be victims than older people in most countries. The size of the gap varies substantially and there are exceptions.

In countries with the lowest rates of online fraud, young people are less likely to experience fraud than older people. These countries are Poland, Croatia and Bulgaria. In Malta the share of people who reported experiences of online fraud is twice as high for older people than it is for younger people. The highest share of older people with online fraud experience is found in Austria, Germany, Sweden and Malta. For young people, highest levels of online fraud are found in Austria, Ireland, Germany and Sweden.

Figure 45. Experience of online fraud by age group

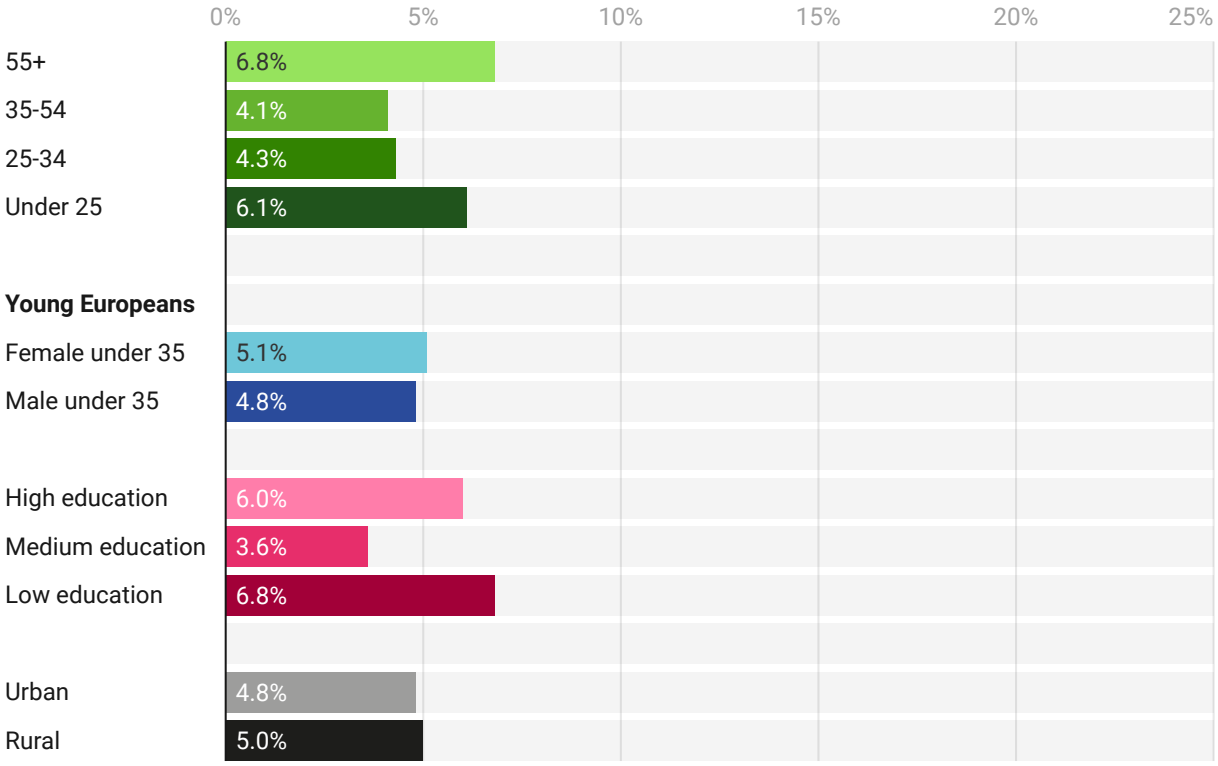


European Quality of life Survey Wave 4 (2016). Young Europeans refers to respondents aged under 35. Older Europeans refers to respondents aged 35 and over. Own Calculations (n=22,754).

4.4.5 Online Harassment

The next figures show who has experienced harassment on the internet. In general, it should be noted that the perception of what is considered harassment can vary greatly from person to person, and that language and sensitivity in the environment may also play a role. According to the data, 3.6-6.8% of Europeans have experienced harassment online. No gender gap amongst young people was identified. Medium educated people are least likely to report experiences of online harassment (3.6%). For lower and higher educated respondents, the rate is nearly twice as high. The variation between age groups is rather low. The highest harassment experience rate is found amongst the oldest respondents.

Figure 46. Experience of online harassment by age group, gender, education level and place of living

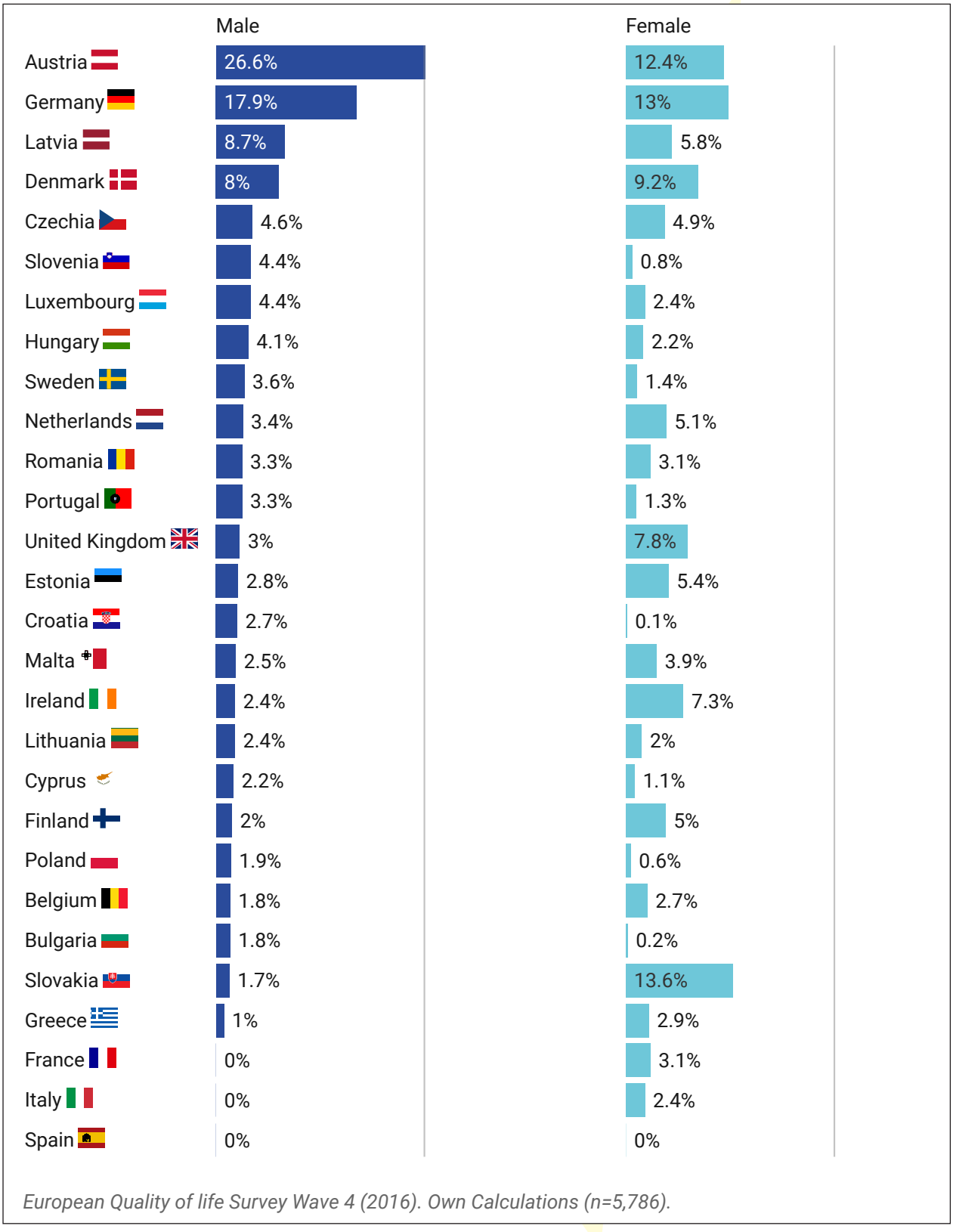


European Quality of life Survey Wave 4 (2016). Young Europeans refers to respondents aged under 35. Own Calculations. Without CH, IS and NO (n=22,776)

Figure 47 additionally shows who experiences harassment online by country. Interestingly, there are two countries where the rates are significantly higher than in the other countries. In Germany and Austria, more than 12% of young women and men reported that they had experienced internet harassment before. The rates in almost all groups in all the other countries are below 10%, and in many of them even below 5%.

If we compare the harassment experience by gender, the result is quite surprising again. In many countries – especially in those with the highest rates – men were more likely to report that they had experienced harassment before. There are exceptions for that (especially the Slovak Republic, France and Italy). Accordingly, it can also be stated here that cyber harassment is a pan-European problem. Based on the data, it is more pronounced in German-speaking countries. These results should also be interpreted through the prism of the fact that the data was collected almost a decade ago. Back then social media already existed, but it became a lot more popular in the last decade.

Figure 47. Experience of online harassment



European Quality of life Survey Wave 4 (2016). Own Calculations (n=5,786).

5 Conclusion

Unequal internet access, often highlighted as a facet of the 'digital divide', has raised concerns since the internet became globally prominent. Although discrepancies in internet access across Europe have decreased, significant gaps in the ability to leverage digital connectivity remain, as not only opportunities but also new stressors seem to evolve.

This summary outlined how digital connectivity affects younger Europeans – often seen as digital natives – specifically regarding their digital skills and the benefits of social inclusion. It also examined new challenges, like the online harassment and blurred personal boundaries young people today face. The analysis focuses on gender, education, and geographical differences (urban/rural) while considering variations within countries across Europe.

The report utilised data from representative cross-national surveys covering EU member states, as well as Iceland, Norway, Switzerland, and the UK, addressing digital connectivity, skills, inclusion and stressors.

Findings on digital **connectivity** indicated that Internet access and usage time have increased across all demographic groups over the last 20 years. The gender gap has almost disappeared during this period. The highest access and internet use rates are found among young people living in urban areas, as well as among young, highly educated individuals. Internet access rates and usage time vary considerably between countries, with the highest levels of accessibility in Northern Europe. However, no recent data on the possession and use of certain digital devices or the variety of internet activities is available in the datasets.

The results regarding digital **skills** showed that the highly educated young scored highest in both self-assessment of skills and reporting of online activities, compared to those with a medium or lower level of education. The gender gap is largest with regard to political involvement online. Men are more likely to engage with politics online or inform themselves about it. Overall, young Europeans report higher skills than older Europeans. However, the existing items only allow digital skills to be portrayed to a limited extent. Furthermore, some of the data is too old to provide an accurate evaluation of the current situation.

Findings on digital **inclusion** indicated that the use of digital communication technologies depends heavily on the purpose of use. City dwellers and highly educated individuals are more likely to use digital communication technologies for work than people from rural areas or with lower levels of education. This applies to both text messaging and video calls. The gender gap is rather small here, with young men being slightly more likely than young women to use digital communication at work. However, young women are more likely to frequently video call and text their parents than young men. Education level does not affect communication frequency with parents. The perception of digital communication as an inclusion factor varies between countries.

The results regarding digital **stressors** suggest that approximately half of respondents believe that their privacy is at risk due to digital communication. The higher educated are slightly more likely to feel this way than others. Perceptions of digital stressors vary considerably between countries, with no clear systematic structure.

The data on online harassment and fraud need updating. Results from 2016 show that these issues are prevalent.

The report holds limitations. Particularly in the area of digital skills and stressors, where representative European comparative data is limited. One of the reasons is that the digital transformation is an ongoing process with limited predictability, which makes it difficult to adjust survey instruments to capture technological innovation, its use and required skills. This also becomes evident by the fact that there is an EU AI Act in place but inadequate measures of attitudes and knowledge of AI, as well as AI use in European surveys. In times of targeted misinformation paired with artificial intelligence advances, it is also important to research people's understanding and trust in innovative technologies and those who design them which is something that, as yet, is rarely captured in existing European surveys.

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European
Social
Survey

European Values Study

GGP

MAKE IT GREEN
DIGITAL
HEALTHY
STRONG
EQUAL

INFRA4NEXTGEN

Funded by
the European Union

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