



closing gaps in European social citizenship

***Comparing the digital transformation of welfare
delivery in Europe***

EUROSHIP Working Paper No. 8

December 2021

Jacqueline O`Reilly

Rachel Verdin



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 870698. The opinions published in this deliverable only reflect the authors' view. The Agency and the Commission are not responsible for any use that may be made of the information it contains.

EUROSHIP Working Papers are outputs from EUROSHIP project (euroship-research.eu). The series is edited by the project coordinator Professor Rune Halvorsen. The working papers in the series are intended to meet the European Commission's expected impact from the project:

- i) to advance the knowledge base that underpins the formulation and implementation of relevant policies in Europe with the aim of exercising the EU social rights as an integral part of EU citizenship and promoting upward convergence, and
- ii) to engage with relevant communities, stakeholders and practitioners in the research with a view to supporting social protection policies in Europe. Contributions to a dialogue about these results can be made through the project website euroship-research.eu, or by following us on Twitter: @EUROSHIP_EU.

To cite this report:

O'Reilly, J, Verdin, R (2021) Comparing the digital transformation of welfare delivery in Europe. EUROSHIP Working Paper No. 8. Oslo: Oslo Metropolitan University. DOI: 10.6084/m9.figshare.17158028. Available at: <https://euroship-research.eu/publications>.

© Copyright is held by the authors

The original version of this working paper was submitted to the European Commission's Research Executive Agency (REA) as EUROSHIP Deliverable 8.1 in November 2021.

Authors

[Jacqueline O'Reilly](#), Digital Futures at Work Research Centre, University of Sussex, UK
[Rachel Verdin](#), Digital Futures at Work Research Centre, University of Sussex, UK
j.o-reilly@sussex.ac.uk

Acknowledgements

The basis of this report, in addition to our own research, was informed by a series of national reports on social protection systems from the EUROSHIP partners. Our thanks for these very informative publications include:

Rune Halvorsen, Ivan Harsløf, Bjørn Hvinden and Mi Ah Schoyen from Norway; Marge Unt, Kadri Täht, Mariann Märtsin, Tõnis Saarts and Epp Reiska from Estonia; Christopher Grages, Birgit Pfau-Effinger, Thurid Eggert and Jan Meid from Germany; Zyab Ibáñez, Margarita León and Llorenç Soler from Spain; Caterina Arciprete, Federico Ciani, Tullia Galanti, Matteo Jessoula and Roberto Pedersini from Italy; Fruzsina Albert, András Gábor, Róbert I. Gál, Melinda Kelemen, Ágnes Kozma Turnpenny, Márton Medgyesi and Péter Szivós from Hungary. Reference to their contributions can be found in the text and bibliography.

Abstract

This report compares the digital transformation of welfare delivery in Europe. It examines to what extent national governments have introduced digital welfare provision as part of the digital transformation of the economy across a series of dimensions. Drawing on comparative global and European data on the development of e-government we can see significant differences between countries, measure the extent of change over time and include an analysis of the acceleration effects resulting from the covid pandemic.

It raises the questions of how this transformation will affect: i) political debates around social protection in the digital age; ii) the digitalisation of social welfare systems; and iii) finally discussion on how these changes affect intersectional inequalities to participation and the exercising of social citizenship.

The work here lays the ground for future deliverables (D8.4) drawing on more qualitative expert and life course interviews focused on country studies. This will examine to what extent European countries have adjusted their social protection systems (income maintenance, social services, social regulation) to prevent social exclusion in the digital economy.

Table of Contents

- Acknowledgements..... 3
- Abstract 3
- List of figures4
- Introduction5**
- The Digital Economy and Society Index (DESI).....5*
- Comparing the development of digital public services in Europe.....6**
- The digital integration of public services over time.....9*
- The purpose and effect of the digital transformation of public services.....12*
- Emergent challenges and the effect of Covid13**
 - Digitalising public services 13
 - Lack of connectivity, socio-economic, generational and regional inequalities 14
 - Those with disabilities..... 14
 - Updating Skills and reducing polarisation..... 14
- Conclusions15**
- References18**

List of figures

- [Figure 1: A comparative analysis of Member State performance in the DESI’s Digital Public Services \(2020\) .. 7](#)
- [Figure 2: Progress from 2015-2020 for E-government indicator for selected European countries 9](#)
- [Figure 3: Progress from 2015-2020 for the Prefilled forms indicator for selected European countries 10](#)
- [Figure 4: Progress from 2015-2020 for online service completion indicator for selected European countries 11](#)
- [Figure 5: Progress from 2015-2020 in digital public services for business indicator for selected European countries 12](#)

Comparing the digital transformation of welfare delivery in Europe

Introduction

Alongside the growth of employment mediated through digital platforms (Verdin and O'Reilly 2021c; Neufiend et al. 2018) there has been an expansion of digitalisation of public service provisions across Europe. While on one hand digitalisation can enable a faster and more inclusive management of social provisions, on the other hand there is concern that particular groups will be excluded. The speed of this change across Europe is variegated with risks to individuals' capacity to exercise their full social citizenship. The implementation of digital technologies in public services is creating new layers of inequality between connected and disconnected communities (Schou and Svejgaard Pors, 2019).

This report examines to what extent national governments have introduced digital welfare provision as part of the digital transformation of the economy. Drawing on comparative global and European data on the development of e-government we can see can identify significant differences between countries, measure the extent of change over time and include an analysis of the acceleration effects resulting from the covid pandemic.

This work lays the ground for future deliverables (D8.4) drawing on more qualitative expert interviews focused on country studies examining three key areas: i) political debates around social protection in the digital age; ii) the digitalisation of social welfare systems; and iii) finally discussion on how these changes affect intersectional inequalities and digital divisions around participation and the exercising of social citizenship in Europe.

The Digital Economy and Society Index (DESI)

The aim of the DESI is to provide an indicator on general performance of EU countries' digital adoption, to make a comparative analysis of change over time, and to identify where performance needs improvement.

The DESI was first calculated in 2014 with twenty-five indicators divided into five different thematic dimensions. EU Member States are ranked according to their scores and the relative weighting afforded to each dimension: connectivity (25%), human capital (25%), integration of digital technology (20%), use of internet services, (15%) and public social services (15%). The DESI includes an analysis for Norway, although they are not given a ranking.

These indicators have been subject to change to reflect new priorities and increase the global comparison with countries outside the EU on the I-DESI (Foley et al., 2020).¹ The 2020 index now has thirty-seven indicators (Foley et al., 2020). The 2020 I-DESI report uses datasets from 2015-

¹ The countries included are: Australia, Brazil, Canada, Chile, China, Iceland, Israel, Japan, Mexico, New Zealand, Norway, Russia, Serbia, South Korea, Switzerland, Turkey, United Kingdom, and the United States

2018 to compare and track this broader progress. This shows that the best performing European countries (Finland and Denmark) are on a par with, or exceed, the top performing of the international comparator group (Iceland, Norway and USA). This remains true within the public services dimension.

Although the overall performance of EU Member States on measures of public sector adoption of digital technologies has been consistently below non-EU counterparts, there has been evidence of progress for all Member States in all key areas measured by the 2020 Index.

The most recent data available is the 2020 report, which uses 2019 data and so does not take account of Covid impacts. That said, alternative data streams evidence the increase in the uptake of digital technologies since the start of the pandemic, both for new and existing users across Europe (Anderton et al., 2020; Lloyds, 2021).

The development of and necessity for this capacity has been clearly demonstrated by Covid, enhancing the need to understand trends in progress. The level of digital performance has been key in enabling countries to transition to working from home and in shifting services online.

The DESI demonstrates that the largest EU economies are not the global frontrunners in terms of transformations and there is significant variation in the progress between Member States. In terms of overall progress, Spain join Ireland, the Netherlands and Malta in significantly improving their performance over the last five years.

The interconnectedness and importance of good performance across all dimensions measured is illustrated by the contrasting cases of Estonia and Italy, where the level of digital skill has affected user take up of digital public services (Commission, 2020e). To illustrate, Estonia performs well on both digital public services and human capital, leading to a high overall score (Unt et al. 2021). In addition, their 2020 report notes the risk of slippage in their ranking, despite relatively good educational attainment, due to skill shortages and a lack of teachers (Commission, 2020b). Conversely Italy's poorer human capital performance has negatively associated impacts in terms of digital public services take up (Arciprete et al. 2021).²

That said, the way dimensions interconnect is not entirely consistent. For instance, the low human capital ranking in the Spanish case has not impacted their performance in terms of digital public services where user engagement remains high (Commission, 2020g; Ibáñez et al. 2021). This reflects not only the heterogeneity between Member States but the complexity of factors affecting the adoption, implementation and effective use of digital technologies in the transformation of welfare governance across public services.

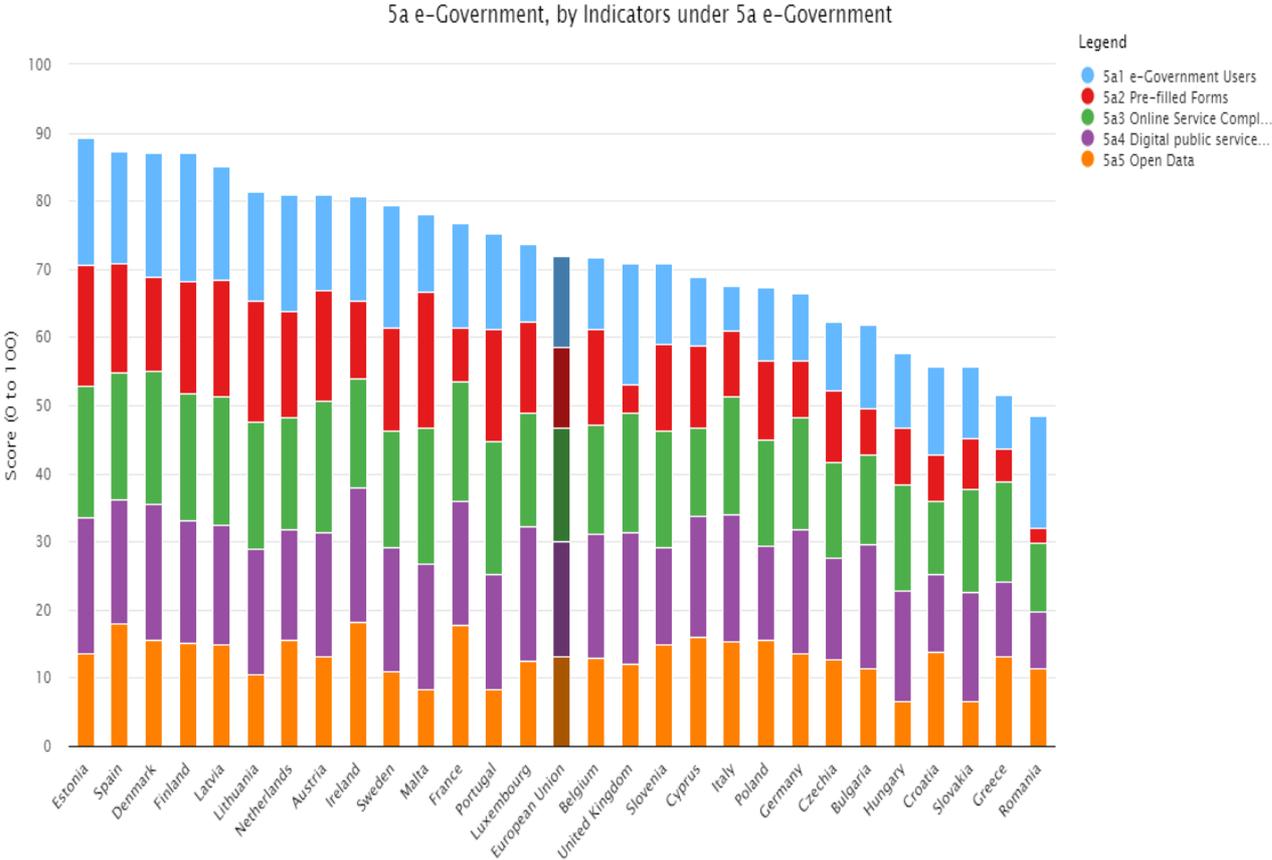
Comparing the development of digital public services in Europe

The development of digital public services clearly affects how people exercise social citizenship in terms of how they access information, services and benefits. The indicators within this dimension include e-government, the usage of already known data to prepopulate forms, the extent to which public services can be completed online, digital public services for business and

² D8.3 will examine difference in attitudes to digital usage in Europe and how this is related to structural developments, take up and adoption.

open data. Figure 1 shows the overall performance of Member States within this dimension, and the variability between them, particularly with reference to the e-government (in blue), pre-filled forms (in red) and open data indicators (in orange).

Figure 1: A comparative analysis of Member State performance in the DESI’s Digital Public Services (2020)



European Commission, Digital Scoreboard

Source: [DESI — Digital Scoreboard - Data & Indicators \(digital-agenda-data.eu\)](https://digital-agenda-data.eu)

According to the index, the top performing countries on the Digital Public Services dimension within EUROSHIP are: Estonia, Spain, and Norway (joining Denmark, Finland and Latvia, not in EUROSHIP), who all score over 85. Mid-performing countries within EUROSHIP are the UK, Italy and Germany. The worst performing EUROSHIP country is Hungary (joining Romania, Greece, Croatia and Slovakia, not in EUROSHIP), and scoring below 60. The average score across the EU is 72.2 (Commission, 2020a). While Europe is improving in most areas, the pace is uneven.

Estonia is a clear frontrunner, in terms of their performance in digital public services (Commission, 2020b). They use the X Road system to manage and drive their E-Estonia national data exchange system (Unt et al., 2021). The use of interconnected registers is important for the pre-filled forms indicator and reflects this performance. Their success in terms of e-government transformation was accompanied at the outset by a focus on ensuring good provision of digital skills. However, digital transformation has not been a magic bullet in terms of social citizenship. Research has highlighted that their reputation as ‘global leader’ in terms of e-government, needs to be contextualised by the marked social inequality that accompanies it (Mergel and

Kattel, 2019; Drechsler, 2018). This highlights the heterogeneity in the effects of adoption and implementation already flagged.

Spain is ranked 2nd for digital public services, demonstrating a high level of interaction with public authorities, businesses and the public (Commission, 2020g). They have made good progress on the e-government dimension in the last two years, pursuing a 'digital by default' strategy that has boosted their ranking within the dimension (Ibáñez et al., 2021). However, their overall ranking (11th) remains restricted by factors such as their relatively low score on human capital (43% of the population are lacking basic digital skills).

The UK falls below the EU average for the public services dimension. Their rank (16th) is adversely affected by a poor performance regarding prefilled forms and the open data indicator, despite scoring reasonably well on e-government and online service completion (Commission, 2020h; Verdin and O'Reilly, 2021a). Their efforts to digitalise public social services can be seen in the development of 'www.gov.uk', launched in 2012 with nearly 2000 government websites combined into a single domain. This was conceived as an integrated communication and public services channel that has improved their public services score (Allum, 2019). Various approaches are now being pursued including 'Government as a platform' (GaaP), part of the UK's Cabinet office, with a focus on the digital transformation of government. The UK's overall DESI rank is 8th, reflecting good performance in use of internet services, human capital and integration of digital technology, alongside relatively poor performance in terms of connectivity and digital public services.

Italy are ranked 19th for public social services despite having had one of the largest increases in digital public services for business (Commission, 2020e). Their overall DESI ranking (25th) reflects their below EU average performance on all measures (aside from connectivity where they perform at the EU average level). Their overall digital deficit has been attributed to the combined effect of an ageing population, the lowest share of ICT graduates in the EU and the prominence of small family-based businesses which typically lack the required skills for digitisation. These gaps are reflected in the low level of take up of online services (Arciprete et al., 2021).

Germany have also had a marked improvement in the digital public services for business indicator, yet remain ranked 21st (Commission, 2020c). The pandemic has resulted in increased efforts to improve levels of digitisation, building on the Online Access Act, brought in in 2017 to drive online provision of services (Commission, 2020c: 12). Despite also performing below average for integration of digital technology, their overall DESI ranking (12th) reflects their above average performance in the other dimensions (use of internet services, connectivity and human capital) (Grages et al., 2021).

Hungary are the poorest performing EUROSHIP country in terms of digital public services (24th), despite making good progress on the e-government indicator (see figure 2). They have numerous initiatives in place to support their digitisation plan, including the introduction of e-prescription redemption and e-access to medical records, accelerated by Covid. Their overall ranking (21st), is bolstered slightly by their above average connectivity score, however their lack of internet user skills (14% of the population have never used the internet) and their lack of advanced digital skills places them at a clear disadvantage (Commission, 2020d; Albert et al., 2021).

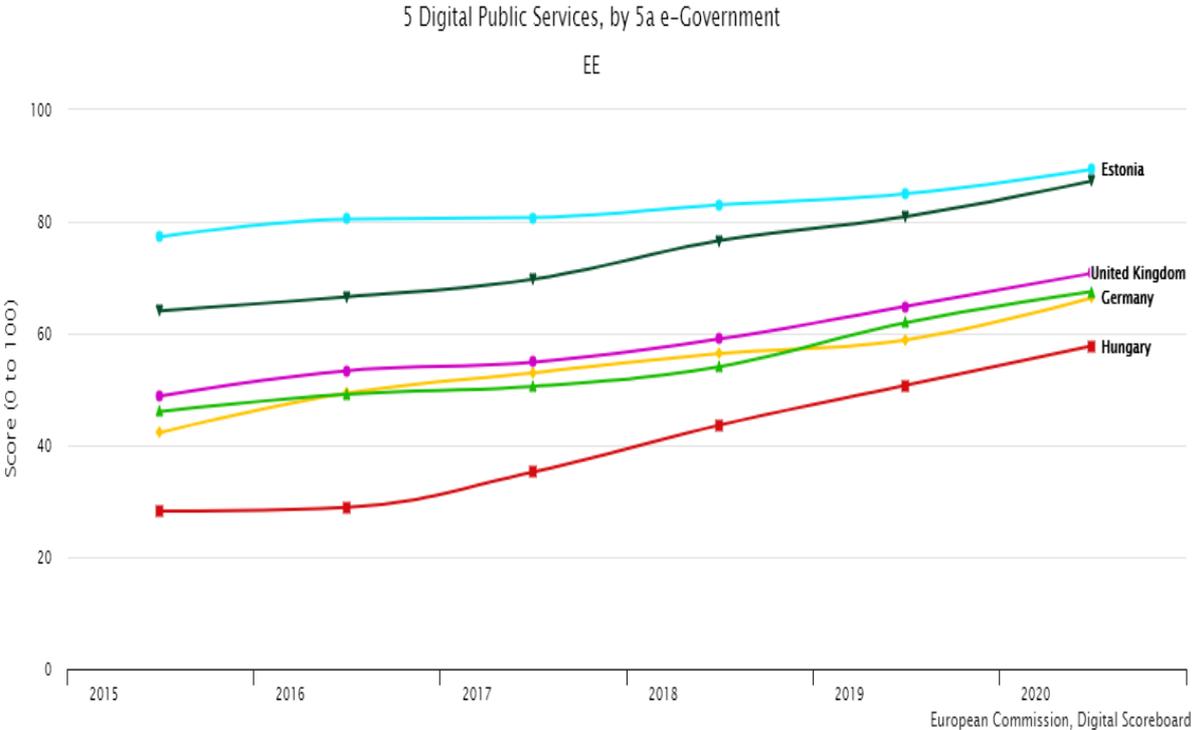
Norway is not ranked (and so does not feature on DESI analysis of comparative country progress that follows) though their performance on all measures positions them as an overall DESI frontrunner, ranking above the EU average on all dimensions (Commission, 2020f; Halvorsen et al., 2021). They score particularly well on connectivity (65.8: EU average 50.1) and use of internet services (80.6: EU average 58). For digital public services (84.9: EU average 72) their performance is slightly negatively affected by a lower than EU average score for open data (65%: EU average 66%) (Halvorsen et al., 2021).

Differential patterns of e-government are affected by a range of factors measured on the index in relation to infrastructural connectivity and human capital, which can partly account for some of these differences in scores. These macro factors affect the policy discourse, investment, implementation and barriers to the further digitalisation of public services, and the extent to which these facilitate social citizenship or exclusion and disconnection.

The digital integration of public services over time

There has been significant progress in the e-government indicator. This has been particularly marked at the bottom of the scale for Hungary. Likewise, at the top end of the measure progress in the Spanish case sees them perform at a similar level to the frontrunner Estonia in 2020 (see figure 2). The score recorded for e-government users in Norway (91% in 2020), would place them first in this indicator. The increase of e-government users across the EU is considerable. Those choosing to submit forms to public authorities via government portals has risen from 41% in 2013 to 67% in 2020.

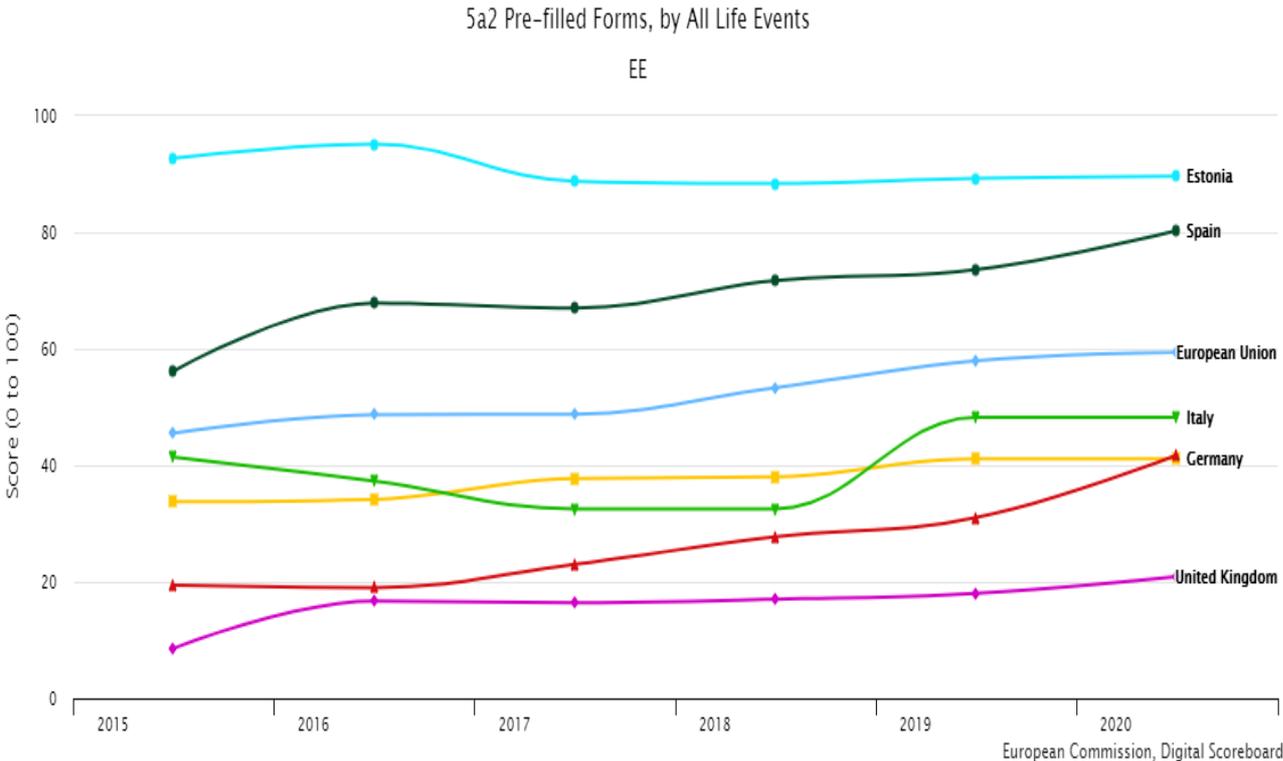
Figure 2: Progress from 2015-2020 for E-government indicator for selected European countries



Legend: Blue-Estonia; Dark Green Spain; Pink-UK; Green-Italy; Yellow-Germany; Red- Hungary.
 Source: [DESI — Digital Scoreboard - Data & Indicators \(digital-agenda-data.eu\)](https://digital-agenda-data.eu)

The prefilled data indicator measures the extent to which information that is already known to the public administration is used to prepopulate forms (see figure 3). Estonia leads in this indicator (alongside Malta and Lithuania, not in EUROSHIP), despite the fact their score has declined since 2016. Norway recorded a score of 80 in 2020, which would again position them as a frontrunner. The use of interconnected registers within these countries has invariably assisted their high scoring. Hungary (red line) and Spain (dark green) have recorded the biggest increases, although improvement on this measure is limited across all other EUROSHIP countries. This suggests that development of this indicator is not being prioritised to the same degree, or, that there are barriers with respect to its development. Both the UK and Germany have recorded relatively stagnant progress between 2015-2020, with the UK (Romania and Greece, not in EUROSHIP) the worst performers, scoring below 30 points. This indicator demonstrates the greatest variability within the dimension and also some of the lowest scores.

Figure 3: Progress from 2015-2020 for the Prefilled forms indicator for selected European countries

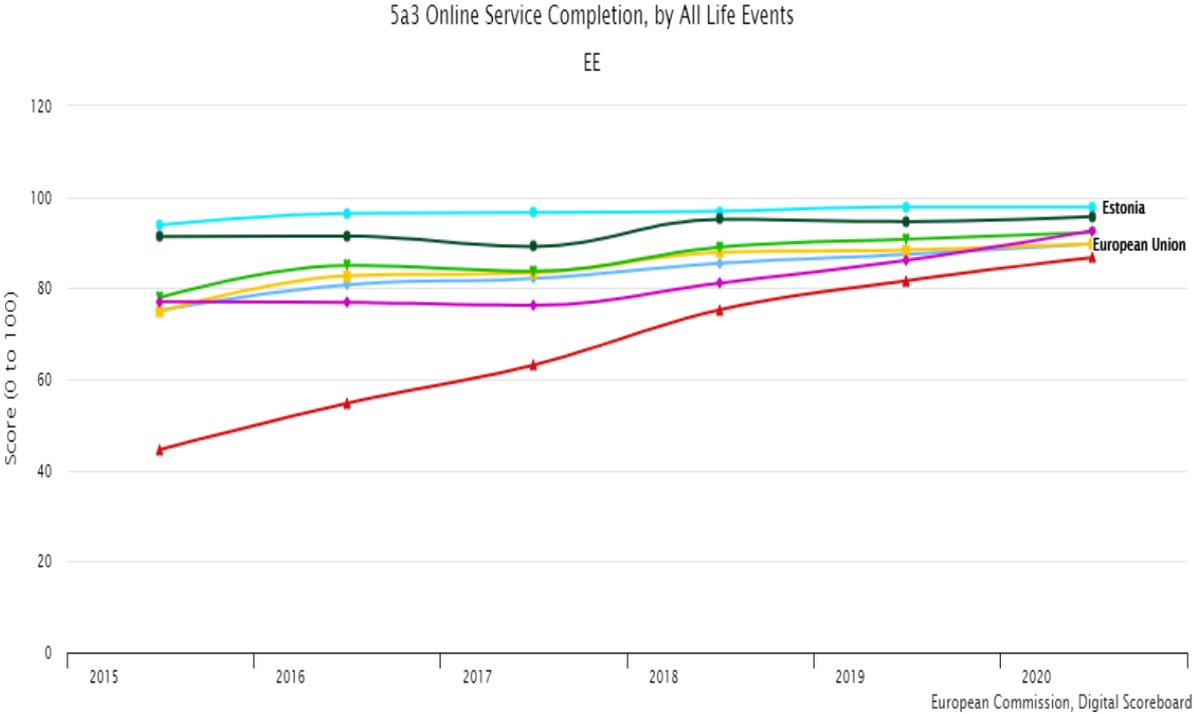


Legend: Blue-Estonia; Dark Green Spain; Pink-UK; Green-Italy; Yellow-Germany; Red- Hungary.

The online services completion indicator measures the degree to which services can be completed online. Estonia again leads the EUROSHIP countries, with Spain, UK and Italy all scoring well (see figure 4). Norway registered a score of 94, again putting them amongst the top performing countries. Hungary registered the biggest increase, though they are still the lowest of the EUROSHIP countries. The UK has also shown marked improvement. The aim of online service completion is intended to reduce the time required to process applications previously transferred on paper and / or facilitated by government workers. However, access to these kinds of services requires the ability to navigate online and internet connectivity which are not

ubiquitous or evenly distributed. Enabling disconnected communities to have these skills and access became even more critical during the Covid pandemic when face to face services were ended.

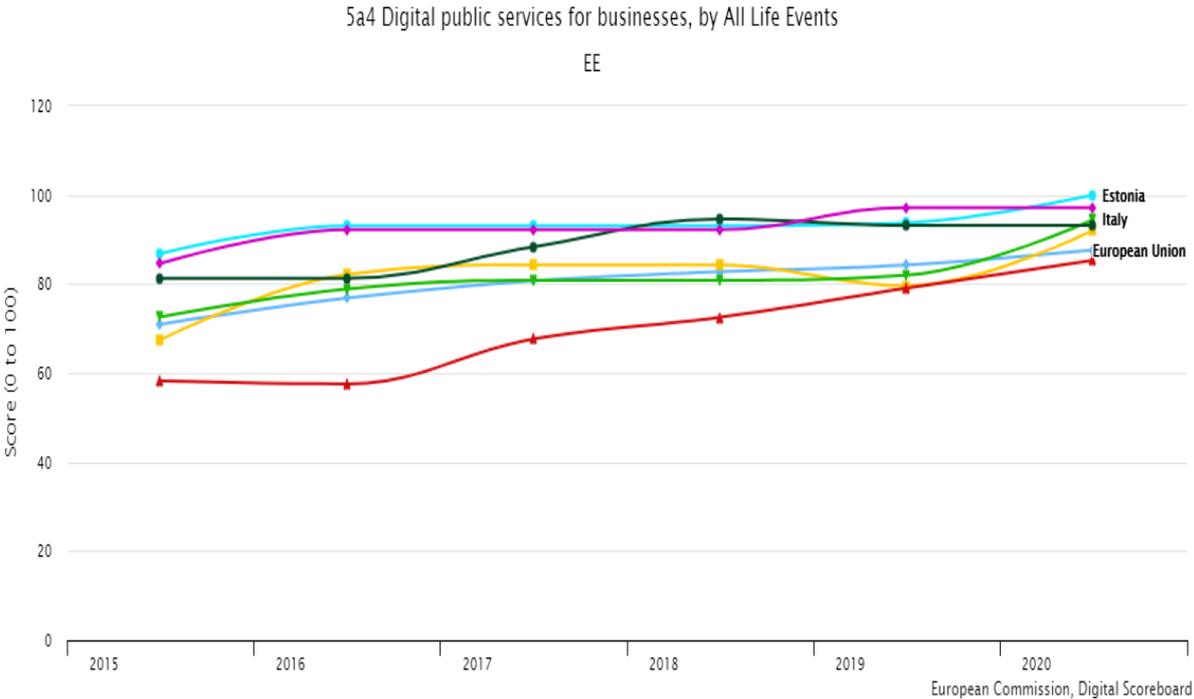
Figure 4: Progress from 2015-2020 for online service completion indicator for selected European countries



Legend: Blue-Estonia; Dark Green Spain; Pink-UK; Green-Italy; Yellow-Germany; Red- Hungary.

The ‘digital public services for business indicator’ measures the extent to which services for business are available either entirely or partly online (figure 5). Overall the measure scores well with marked improvement for Hungary, from a poor starting point in 2015, alongside good development recorded for Germany, Italy and the UK (see also national reports from Albert et al., 2021; Grages et al., 2021; Arciprete et al. 2021; Verdin and O’Reilly, 2021).

Figure 5: Progress from 2015-2020 in digital public services for business indicator for selected European countries



The open data indicator was only introduced in 2020 and so analysis of progress over time is not yet possible. The indicator shows good performance for Italy and Spain, while the UK lags behind and Hungary has the lowest level of performance. Again, there is large variability within the measure reflecting the different speeds of digital transformation between the selected countries in the EUROSHIP project, and indeed across Europe. These indicators are intended to highlight which countries need to ‘catch up’, but they tell us very little about those who may have fallen behind within these countries.

The purpose and effect of the digital transformation of public services

Having broken down how digital public services are measured and the variable trajectories of growth, the incentives and unintended consequences of these patterns are now considered. Digital transformations have shifted services and processes online with the intention that new capabilities can make services simple, agile, accessible and better for users (Molinuevo, 2020: 2). However, emerging research indicates that these changes come with considerable, and sometimes prohibitive, investment costs (Robertshaw forthcoming ‘Varieties of Employment Service Digitalisation’). While motivating factors have become even more relevant, as a result of welfare payments required during the Covid pandemic, they are accompanied by risks for those unable to connect to these new procedures.

Within the UK it has been estimated that for every £1 invested in digitalisation / digital transformation the UK economy stands to gain £15 in economic growth (Mathers, 2020:10). This business case justification was quantified in the UK as a contributing rationale behind the UK’s introduction of the Universal Credit benefit, the first major government public service to be

'Digital by Default'. It has been estimated that the £2bn cost of implementation will lead to a saving of £34bn over ten years (DWP, 2018). These savings are to be achieved as a result of efficiencies such as: the self-service application system; automated processing of claims; online delivery of the service and ongoing case management.

However, there are also barriers to digital transformation, already shown in the variability and extent of digital public service provisions across Europe. The cost of implementation may prove prohibitive. It is not only the costs of overhauling existing systems, but the potential workload increases for service staff, and the risk of suboptimal outcomes resulting from dehumanising public services (Molinuevo, 2020: 17, 22). As so poignantly illustrated in the film 'I, Daniel Blake' from Ken Loach, this can also exclude vulnerable groups. While there may be common characteristics of those excluded from exercising their social rights, this will also vary by country as indicated in the national reports (Albert et al., 2021 for Hungary; Arciprete et al., 2021 for Italy; Grages et al., 2021 for Germany; Halvorsen et al., 2021 for Norway; Ibáñez et al., 2021 for Spain; Unt et al., for Estonia; and Verdin and O'Reilly, 2021 for the UK). Relatively little attention has been given to this in research preceding the pandemic.

While the importance of digitisation and digital resilience for current and future crises has been clearly evidenced by the pandemic, Covid has escalated the speed of transformation forcing quicker integration of digitalisation within public services (Kudyba, 2020). It is, as yet, unclear whether the Covid-induced speed of adaptations has actually improved processes, or, simply enabled existing services, alongside any inherent flaws, to be maintained (Gabryelczyk, 2020: 307). Understanding how those without the capability and skills to access and navigate these public services will be critical (Schou and Svejgaard Pors, 2019).

Emergent challenges and the effect of Covid

Digitalising public services

Digital public service developments during the course of the pandemic have been evident across EUROSHIP countries and reflect how advanced their digital transformations are. For instance, in a digitally developed nation such as Estonia, this included the shift to online provision of applicable active labour market services and the creation of an online trade fair for temporary job offers. Reflecting the UK's mid-level performance, the speed of online service delivery has been rapidly increased, with record breaking visits to the pre-existing government portal, gov.uk (Allum, 2020).

In the less advanced countries, such as Italy, the pandemic has prompted a surge in the level of investment targeted at digitalisation (Za et al., 2021). Likewise, in Hungary, programmes such as 'Digital Collaboration' have been established to help provide digital tools and address the access needs and skill gaps that older people may face (<https://felajanlas.digitalisjoletprogram.hu/>) (Albert et al., 2021). Alongside this increased use of online services from 2020-2021, there are trends in this usage which highlight the need for caution. In many countries the need to connect those who have difficulties accessing these services is a major issue to enable their social citizenship which is caused by multiple factors affecting their connectivity.

Lack of connectivity, socio-economic, generational and regional inequalities

A significant factor identified the lack of connectivity in relation to data allowances and prohibitively high internet access costs despite increased access (Pew Research, 2021). Families particularly affected by this were those without work or in low paid jobs with few skills, and often living in poor quality rented accommodation. Research in the UK during the pandemic showed that 9% of households with children did not have access to a digital device (Baker et al., 2020). According to 2020 data, within the UK 1.5m more people are now using the internet, yet 2.6m of the population are still offline.³

Those in low skilled jobs have less time, less confidence and learning skills, and less support from employers needed to address these gaps. Trends in usage have been attributed to caution arising from concerns around security, lack of interest and lack of skill (Lloyds, 2021). The characteristics of these populations share some similarities across countries.

While age is a determining factor, one in ten of those not connected in the UK are under fifty. Those most likely to be offline and at associated risk of digital exclusion, are the elderly, retirees, those with low levels of income, those with low levels of education and those in more rural locations.

An associated analysis of the labour market in 2019 found that 82% of UK jobs required some level of digital skill. However, 13.6m workers (42% of the workforce) lacked these core skills with 9m adults unable to use the internet independently (Lloyds, 2020: 3). These are very significant numbers of people who cannot potentially access welfare services, if the default position is digital.

Alongside factors of socio-economic status and age, geographic barriers have also been identified. For instance, a lack of connectivity in rural areas has been evidenced in parts of Germany, Hungary and the UK (Molinuevo, 2020; Philip et al., 2017; Wilson and Hopkins, 2019; Lloyds, 2021; Commission, 2020c).

Those with disabilities

Despite the increased usage of the internet since the start of the pandemic, this growth is not reflected for those with disabilities or impairments (Lloyds, 2021). Evidence prior to the pandemic from 2017 has shown a lower proportion of disabled people (66%) use internet every day compared with the rest of the population (86%), and they were less satisfied with public online services in Norway. The usage of assistive technologies has also fallen.⁴ EU Policy to address this through the [EU Web Accessibility Directive](#) (Directive 2016/2102) and the EU Accessibility Directive requires all public sector websites to meet accessibility standards for disabled users or risk fines and legal action; this is being actively supported in Norway.

Updating Skills and reducing polarisation

While the pandemic has increased the speed of digital transformations, there is also a risk of further marginalising already vulnerable groups and exacerbating existing inequalities in relation

³ This equates to 5% of the UK population that have not used the internet in the last three months. See also D8.3.

⁴ Source: Tilgang og bruk (bufdir.no) and [ICT and digital participation \(bufdir.no\)](#)

to digital access and connectivity. For example, while the UK scores relatively highly on the DESI measure in terms of Human Capital of advanced level digital skills in the labour market, there is a very sharp level of polarisation. In recognition of these risks an All Party Parliamentary Group (APPG) has been established to explore the challenges, producing a series of recommendations (<https://connectpa.co.uk/digital-skills-appg/>). These include efforts to ensure basic levels of digital skill, development of lifelong learning initiatives, targeted support for those not online and the provision of devices. In August 2020 the UK's Department for Education introduced a legal entitlement to fully funded digital qualifications at entry level and level 1, for adults with low or no digital skills, in an effort to address the gaps in digital literacy (Mathers et al., 2020). Ensuring those in need of support, or seeking to access services, can keep pace with the speed of transformation is essential or the digital divide will widen across Europe, and globally.

While the same degree of skills polarisation is not evident in Norway, nevertheless the Norwegian Strategy for Skills Policy has been developed collaborative with the government and social partners. One of the policy initiatives in their 'Digital strategy for the public sector (2019-2025) is to *'strengthen and develop digital skills across the workforce to utilise new technology and ensure the successful implementation of new division of labour.'*⁵ In 2020 the Norwegian government renewed its action plan for digitalisation in primary education.⁶ The national strategy for digital participation and skills in the population 2021 aims to prevent digital exclusion and emphasizes education, guidance, and universal design.⁷

The extent of both digital employment and digital public services expose different aspects of the digital divisions and inequalities. The speed of transformation prompted by the pandemic and alternative foundations of digital infrastructure in the selected European countries assessed here present risks both for those who are successfully able to access and navigate the internet and those who are not. There are multiple causes for these varying levels of connectivity both within and across countries.

Conclusions

This report has set out to identify the divergent developments of digital transformation of welfare delivery in the public sector in Europe. This has developed independently and in parallel with the growth of digital forms of employment and governmental responses to these challenges to existing forms of social protection (D8.2). The evidence presented here, from the comparative DESI analysis, illustrates the level of difference, as well as the pace of change, between selected European countries. The acceleration effects resulting from the Covid pandemic look set to drive these developments and disparities further.

Growing socio-economic inequalities, evident before the pandemic (Atkinson, 2018), have become vividly transparent during periods of lockdown (Skountridaki et al., 2020). Some high digital density households eased into learning and working from home; others, lacking the hardware and connectivity, were marginalised, or disconnected (Ayllón et al. 2021 and 2020). Simultaneously, a growing group of frontline essential workers found their work being managed by digital devices and algorithmic decision-making, sometimes impinging on their family time.

⁵ <https://www.regjeringen.no/en/dokumenter/one-digital-public-sector/id2653874/>

⁶ [Framtid, fornyelse og digitalisering. Digitaliseringsstrategi for grunnsopplæringen 2017–2021 \(regjeringen.no\)](#)

⁷ [strategi-digital-hele-livet.pdf \(regjeringen.no\)](#)

Household inequalities have deep historical and structural roots. We are only just beginning to understand the variable effects of the accelerated process of digitalisation during the pandemic, arising from the households' ability to use digital technologies for learning, work and social support.

Overall, the level and quality of household digital assets is closely tied to country or regional levels of digitalisation and public policies (DESI, 2020; Neufeind et al., 2018; Verdin and O'Reilly 2021 D8.2). Governments have been aware of the need to identify policies to address the social, economic and cultural transformations resulting from digitalisation (Cabinet Office, 2014; European Commission, 2020i; Choroszewicz and Mäihäniemi, 2020). These policies often focus on issues of connectivity and digital assets, i.e. access to the hardware or the digital skills to use the software. However, access and usage are divided across a number of intersectional dimensions related to gender, class, age, ethnicity, disability and region (Zheng and Walsham, 2021). Some organisations are making innovative inroads to address these problems, but these actions are often fragmented and poorly coordinated. We are beginning to understand some of the causes of digital inequalities yet knowledge about effective policies to combat 'digital deficits and divisions' for various countries and communities across Europe remains limited.

Digital deficits are quite fragmented and difficult to compare within and across countries. While there are some interesting aggregate data on digital inequalities related to connectivity, skills and usage (D8.2 and D8.3), these are not well linked to micro level qualitative data; the EUROSHIP project aims to achieve this connection of knowledge through extensive life course and expert interviews. It is particularly difficult to understand how these assets and deficits accumulate in particular types of households, across intersectional differences and how this varies between countries. This gap in our knowledge presents significant challenges for both governments and civil society organisations. Effective solutions are needed to bridge these digital divisions and increase citizens' abilities to connect to digital infrastructures, enabling their social citizenship. The EUROSHIP project aims to address these major challenges to economic growth and social cohesion that are evident within and beyond the EU.

According to Van Dijk (2005), the digital divide results from personal (individual) and categorical (group) inequalities and the distribution of resources between groups. His theory of digital inequality identifies five key dimensions: i) categorical inequalities in society produce an unequal distribution of resources; ii) this causes unequal access to digital technologies; iii) the extent of these inequalities depends on the nature of these technologies; iv) unequal access to digital technologies brings about an unequal participation in society; and v) this reinforces categorical inequalities and an unequal distribution of resources. In recent work he distinguishes four levels shaping this divide: **motivation** to gaining access, physical **access**, digital **skills** and **usage** of digital technologies (Van Dijk, 2020). He argues that reducing the digital divide requires '*the full integration of all digital and social policies.*' The EUROSHIP project aims to address these gaps in our knowledge in the forthcoming research programme.

However, **intersectional critiques** question the conceptual distinction in 'the divide' approach between the '*haves and have-nots*', the '*can and cannots*'. This binary belies the complexity of multiple inequalities nested in systems of power with '*multiple hegemonies and hierarchies*' (Zheng and Walsham, 2021). Appreciating the complexity of numerous fractures of vulnerability and power problematises '*taken-for-granted boundaries*' when designing research and policy.

Technological '*solutions*' will not simply be '*connecting the disconnected*'. A wider understanding includes the role of how human support networks intervene, the positionality of the targeted in spaces of inclusion, exclusion, their experiences of multiple forms of inequality, and their values and agency. With this in mind, the concept of **inclusiveness and capabilities**, from Nussbaum and Sen (1993), is germane to understanding the abilities of vulnerable groups in achieving their valued goals (Tsatsou, 2021). Their capacity to realise their social citizenship is a further outlined objective of the EUROSHIP research programme.

The trends outlined here, in relation to the digital transformation of welfare delivery and digital employment, also reveal some of the challenges in integrating social protection policies in a more inclusive way across these many divided groups in different countries. These issues will be taken up in a later report (D8.3), examining quantitative evidence for public support for the use of the internet. A final report (D8.4) will provide more qualitatively informed evidence from the seven EUROSHIP countries to illustrate:

- i) **How political debates** on the issues of social protection for digital employees have developed
- ii) How technological **reforms** to improve existing welfare systems have been implemented, and
- iii) How digitalisation of work and public services have affected **opportunities** and created **obstacles** to participation and the exercise of social citizenship rights, recognising the differential impact of **intersectional inequalities**.

References

Albert, F., A. Gábos, R. I. Gál, M. Kelemen, A. Kozma Turnpenny, M. Medgyesi and P. Szivós (2021) Hungarian National report on Social Protection Systems, EUROSHIP working paper.

Allum, J. (2019) Transforming GOV.UK: the future of digital public services. *Government Digital Service* [Online]. Available at: <https://gds.blog.gov.uk/2019/11/05/transforming-gov-uk-the-future-of-digital-public-services/> [Accessed: 5 August 2021].

Allum, J. (2020) Update on the future of GOV.UK. *Government Digital Service* [Online]. Available at: <https://gds.blog.gov.uk/2020/05/28/update-on-the-future-of-gov-uk/> [Accessed: 5 August 2021].

Anderton, R., Jarvis, V., Labhard, V., Petroulakis, F., Rubene, I. and Vivian, L. (2020) The digital economy and the euro area. *ECB Economic Bulletin* [Online]. Available at: https://www.ecb.europa.eu/pub/economic-bulletin/articles/2021/html/ecb.ebart202008_03~da0f5f792a.en.html [Accessed: 5 August 2021].

Arciprete, C., F. Ciani, T. Galanti, M. Jessoula, R. Pedersini (2021) Italian National report on Social Protection Systems, EUROSHIP working paper.

Atkinson AB (2018) *Inequality: What Can Be Done?* Cambridge, Mass: Harvard University Press.

Ayllón S, Barbovschi M, Casamassima G, et al. (2020) ICT usage across Europe A literature review and an overview of existing data DigiGen -working paper series -literature review. *DigiGen working papers* 2. DOI: 10.6084/m9.figshare.12906737.

Ayllón S, Holmarsdóttir H and Lado S (2021) Digitally deprived children in Europe DigiGen -working paper series. *DigiGen - working paper series No. 3*. DOI: 10.6084/m9.figshare.14339054.

Baker, C., Hutton, G., Christie, L. and Wright, S. (2020) COVID-19 and the digital divide. London: The Stationery Office. Available at: <https://post.parliament.uk/covid-19-and-the-digital-divide/> [Accessed: 1 October 2021].

Choroszewicz M and Mäihäniemi B (2020) Developing a Digital Welfare State: Data Protection and the Use of Automated Decision-Making in the Public Sector across Six EU Countries. *Global Perspectives* 1(1). DOI: 10.1525/gp.2020.12910

Drechsler, W. (2018) Pathfinder: e-Estonia as the β -version. *EJournal of eDemocracy and open government*, 10, pp. 1-22.

DWP (2018) Universal Credit Programme Full Business Case Summary. London: The Stationery Office. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/725477/uc-business-case-summary.pdf [Accessed: 1 October 2021].

European Commission (2020a) Digital Economy and Society Index (DESI) 2020: Digital public services. Luxembourg: Publications Office of the European Union. Available at: [Digital Economy and Society Index \(DESI\) 2020 | Shaping Europe's digital future \(europa.eu\)](https://ec.europa.eu/digital-economy/index_en) [Accessed: 1 October 2021].

European Commission (2020b) Digital Economy and Society Index (DESI) 2020: Estonia. Luxembourg: Publications Office of the European Union. Available at: <https://digital-strategy.ec.europa.eu/en/policies/desi-estonia> [Accessed: 1 October 2021].

European Commission (2020c) Digital Economy and Society Index (DESI) 2020: Germany. Luxembourg: Publications Office of the European Union. Available at: <https://digital-strategy.ec.europa.eu/en/policies/desi-germany> [Accessed: 1 October 2021].

European Commission (2020d) Digital Economy and Society Index (DESI) 2020: Hungary. Luxembourg: Publications Office of the European Union. Available at: <https://digitalstrategy.ec.europa.eu/en/policies/desi-hungary> [Accessed: 1 October 2021].

European Commission (2020e) Digital Economy and Society Index (DESI) 2020: Italy. Luxembourg: Publications Office of the European Union. Available at: <https://digitalstrategy.ec.europa.eu/en/policies/desi-italy> [Accessed: 1 October 2021].

European Commission (2020f) Digital Economy and Society Index (DESI) 2020: Norway. Luxembourg: Publications Office of the European Union. Available at: <https://digitalstrategy.ec.europa.eu/en/policies/desi-norway> [Accessed: 1 October 2021].

European Commission (2020g) Digital Economy and Society Index (DESI) 2020: Spain. Luxembourg: Publications Office of the European Union. Available at: <https://digitalstrategy.ec.europa.eu/en/policies/desi-spain> [Accessed: 1 October 2021].

European Commission (2020h) Digital Economy and Society Index (DESI) 2020: United Kingdom. Luxembourg: Publications Office of the European Union. Available at: <https://digitalstrategy.ec.europa.eu/en/policies/desi-uk> [Accessed: 1 October 2021].

European Commission (2020i) [*Shaping Europe's Digital Future*](#). February.

Foley, P., Sutton, D., Potter, R., Patel, S. and Gemmell, A. (2020) International Digital Economy and Society Index 2020: Smart 2019/0087. Luxembourg: Publications Office of the European Union. Available at: <https://ec.europa.eu/digital-single-market/en/news/i-desi-2020-how-digital-europe-compared-other-major-world-economies> [Accessed: 1 October 2021].

Gabryelczyk, R. (2020) Has COVID-19 Accelerated Digital Transformation? Initial Lesson Learned for Public Administrations. *Information Systems Management*, 37 (4), pp. 303-309.

Grages, C., B. Pfau-Effinger, T. Eggers and J. Meid (2021) German National report on Social Protection Systems, EUROSHIP working paper.

Halvorsen, R., I. Harsløf, B. Hvinden and M.A. Schoyen (2021) Norwegian National report on Social Protection Systems, EUROSHIP working paper.

Ibáñez, Z., M. León and L. Soler (2021) Spanish National report on Social Protection Systems, EUROSHIP working paper.

Kudyba, S. (2020) COVID-19 and the Acceleration of Digital Transformation and the Future of Work. *Information systems management*, 37 (4), 284-287.

Lloyds, B. (2021) UK Consumer Digital Index 2021: The UK's largest study of digital and financial lives. London: Lloyds Bank. Available at: https://www.lloydsbank.com/assets/media/pdfs/banking_with_us/whats-happening/210513-lloyds-consumer-digital-index-2021-report.pdf [Accessed: 1 October 2021].

Mathers, D. A., Chambers, J. and Richardson, J. (2020) Shocks, knocks and skill building blocks -How Future Proof: Skills for Work created resilient workers and organisations. Good Things Foundation. Available at: <https://www.goodthingsfoundation.org/insights/shocks-knocks-and-skill-building-blocks/> [Accessed: 1 October 2021].

Mergel, I. and Kattel, R. (2019) Estonia's Digital Transformation: Mission Mystique and the Hiding Hand. In: Compton, M. E. and Hart, P. T. (eds.) *Great Policy Successes*. Oxford: Oxford University Press.

Molinuevo, D. (2020) Public services: Impact of digitalisation on social services. *Eurofound Research Report*. Luxembourg: Eurofound. Available at: <https://www.eurofound.europa.eu/publications/report/2020/impact-of-digitalisation-on-social-services> [Accessed: 1 October 2021].

Nussbaum M.C. and Sen A. (1993) *The Quality of Life*. Oxford England: Clarendon Press ; New York.

Pew Research (2021) Digital divide persists even as Americans with lower incomes make gains in tech adoption <https://www.pewresearch.org/fact-tank/2021/06/22/digital-divide-persists-even-as-americans-with-lower-incomes-make-gains-in-tech-adoption/>

Philip, L., Cottrill, C., Farrington, J., Williams, F. and Ashmore, F. (2017) The digital divide: Patterns, policy and scenarios for connecting the 'final few' in rural communities across Great Britain. *Journal of Rural Studies*, 54 (C), pp. 386-398.

Schou, J. and Svejgaard Pors, A. (2019) Digital by default? A qualitative study of exclusion in digitalised welfare. *Social policy & administration*, 53 (3), pp. 464-477.

Tsatsou P (2021) Vulnerable people's digital inclusion. [*Information, Communication & Society: 1–20*](#).

Verdin, R. and O'Reilly, J. (2021) UK National report on Social Protection Systems, EUROSHIP working paper.

Van Dijk J (2020) *The Digital Divide*. Cambridge: Polity Press.

Wilson, R. and Hopkins, J. (2019) The Changing Shape of Scotland's Digital Divide. *European Countryside*, 11 (4), pp. 563-583.

Za, V., Anzolin, E. and Pollina, E. (2021) Pandemic leaves digital laggard Italy scrambling to catch up. *Reuters* [Online]. Available at: <https://www.reuters.com/article/uk-health-coronavirus-italy-digital-insidUSKBN2BD0B6> [Accessed: 5 August 2021].

Zheng Y and Walsham G (2021) Inequality of what? An intersectional approach to digital inequality under Covid-19. *Information and Organizations* 31(1):100341