

# Grey digital outcasts and COVID-19

## by Simon Rogerson

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### Abstract

This paper investigates the relationship between the COVID-19 pandemic and digital technology with specific focus on the elderly who are acknowledged as being the most vulnerable group in this global health emergency. The paper commences by providing a global context through a brief analysis of both the pandemic spread and digital technology take-up. Clarification is provided for digital divide terminology. Actions and inactions relating to grey digital outcasts are analysed through a snapshot study, using a heuristic approach, of ten countries, including China, the U.K. and U.S. Sources include published papers and articles, newspapers, TV broadcasts, blogs and a qualitative survey. These analyses are used to tease out common global themes and issues. The paper concludes with a derived set of guiding principles which lays the foundation for a global response to address the support of grey digital outcasts particularly in times of crisis.

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### Introduction

Much has been, is being and will be written about the ramifications of the COVID-19 pandemic. Within this body of knowledge will be many valuable insights and discoveries. This paper aims to contribute to this resource through considering the relationship between the pandemic and digital technology with specific focus on the elderly who are acknowledged as being the most vulnerable group in this global health emergency taking a comparative approach to this global issue with reference to older individuals who continue to suffer disproportionate harm.

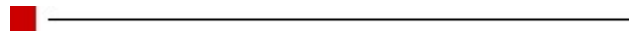
The world has changed. The social glue has come unstuck and we have turned to technology to allow us to live and keep us connected (Rogerson, 2020b). Communication channels

provide information about the latest developments, advice and restrictions. Social media keeps social groups and families emotionally together. Online outlets provide the products and services we need in our everyday lives. For digital natives the move to the virtual is plausible and possibly pleasurable but for digital outcasts the move is fraught and frequently frightening. Throughout history there have always been social divides predicated upon, for example, poverty, education, gender and status. With increasing technological global dependency, the digital divide has become one of the most significant social divides of our time. This has been acknowledged for many years. For example, in 2000 the U.K. saw an increasing number of digital natives which, at the time, was forecasted to rise to 60 percent of the total population by 2003 but with only 20 percent of the elderly using the Internet (Berg, *et al.*, 2000). “However, far from bridging the emerging inequality, the wave of growth is likely to exacerbate it, leaving a group of over 20 million citizens excluded from the fruits of the knowledge economy” (Berg, *et al.*, 2000).

Today, technological advance continues to accelerate and so the digital divide is likely to become more acute with every passing day (Rogerson, 2020a). One reason for this is because many in government and industry promote the myth that societal well-being and prosperity is achieved through the move to digital technology-based information, services and facilities with the imposition of these on the whole population without any opportunity of alternative choices. For example, a Pew Research report states that, “Digital tools will continue to be integrated into daily life to help the most vulnerable and isolated who need services, care and support.” [1] Thornham (2013) explains that there is political tendency to shift from “digital when appropriate” to “digital by default” which makes assumptions about digital literacy levels and puts safety and security at risk. The perceived over reliance on digital technology has spawned the concept of digital detox. Syvertsen and Enli (2019) explain that “Digital detox is a reaction to the experience of being temporally overloaded and invaded, trapped in a superficial, narcissistic and fabricated space, needing strategies to improve health and mindful presence.”

According to the World Health Organisation (WHO), “COVID-19 is the infectious disease caused by the most recently discovered coronavirus. ... Since early 2020, the COVID-19 pandemic has affected many countries globally with disproportionate impact on older individuals.” [2] WHO’s advice to the elderly states [3], “Inform yourself of the special measures taken in your community as well as the services and the sources of reliable information that are available during the health emergency (*e.g.*, home deliveries, psychosocial support, health ministry Web site, alternative access to your pension).” The implication is that the online channels are the primary sources of information and support. As WHO’s advice indicates, there appears to be a widespread assumption that the whole of the elderly population will have access to these online channels. Rapid access to information and support is vital in protecting people against this rampant pandemic. There is no acknowledgment of grey digital outcasts who cannot access online channels and thus become even more vulnerable.

This paper continues by first discussing the heuristic approach taken, to capture and interpret data about the rapidly changing pandemic landscape. It continues by defining the terminology used for the digital population culminating in a discussion about the elderly. New concepts are introduced which provide necessary scaffolding for this type of study. There then follow details of the empirical study. A world view of the pandemic, together with the use and value of digital technology, is undertaken through a global overview together with rich snapshots of 10 countries. The countries were chosen on the basis of geographic balance, news media coverage, WHO reports, personal contacts within countries and personal experience. These snapshots are used to tease out common themes which in turn provide pointers as to actions that might be undertaken to alleviate the grey digital divide. The paper concludes with comments concerning the interrelationship between the pandemic and the grey digital divide.



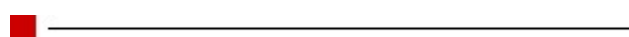
## Approach

The heuristic approach has been adopted which aligns with the four rules laid out by Kleining and Witt (2000). This is because the dynamic nature of the pandemic meant that preconceptions were problematic, outcomes of the crisis kept changing, people's differing and contradictory views evolved. The overall aim of this study was to try to identify some commonalities.

The paper draws upon significant existing literature which addresses the issue of the digital divide and the smaller subset which focuses on impacts on the elderly. However, given the dynamic nature of the pandemic, it was necessary to access new information as it became available. This was a challenge since later information sometimes contradicted previous information. It is recognised that both subjectivity and objectivity exist in this information and that it is hard to verify the integrity of some information. Information has been collected over a period from early 2020 through to mid-May 2021. A range of sources has been used to gather relevant information. Newspaper and television reports have been collected and analysed. Personal contacts in various countries have shared their observations on national situations as well as supplying relevant local information. A short qualitative questionnaire was used in Japan, the U.K. and U.S. to collect the views of a small sample of people, mainly over 65 years of age. The views expressed were divided in to positive and negative opinion concerning the current situation as well as future ramifications.

The use or non-use of digital technology has been differentiated by a simple three-part classification: *no-tech* — print media, written letters and face to face dialogue; *low-tech* — television, radio and telephone; and *high-tech* — smartphone, social media and Internet.

Quantitative measures were gathered from a range of national and international sources. These measures provide an indication of the size and seriousness of the existence of a digital divide at the time of the initial spread of the COVID-19 pandemic.



## Digital technology players

In this study the population is classified and grouped according to digital technology usage. It is therefore necessary to define the terms used. In this context it should be noted that demographic profile includes age, gender, ethnicity, faith, literacy and economic status.

### *Digital divide*

Norris (2001) explains that the digital divide comprises every disparity within the online community. Fuchs (2008) suggests this disparity relates to ability to access, usage capability and gained benefit not only related to the online world but also to all information and communication technologies. Therefore, this paper uses the term to describe the disparity in access, usage and benefit of any digital technology.

### *Digital native*

Selwyn (2009) argues convincingly that the term digital native is problematic as it describes distinct technological cultures and lifestyles of emerging generations of young people. This paper uses the term *digital native* to describe the digitally literate, regardless of demographic

profile, who use, and are somewhat dependent upon, digital technology.

### ***Digital outcast***

Wagner (2011) suggests that digital outcasts have been granted overt access to digital technologies but are not equipped with the skills, the finance or the critical acumen to access the transformative capacities of such technologies. Isaacs (2011) further suggests that these are people born in the information age and will suffer economic, political and social exclusion through being outcasts. This paper uses the term *digital outcast* to describe those, regardless of demographic profile, who are unable, for whatever reason, to access the benefits offered through the use of digital technologies.

### ***The elderly***

It is commonly accepted that “the elderly” refers to those in the population who are 65 years and older (see, for example, Netuveli and Blane [2008] and Vaccaro, *et al.* [2019]). However, there are alternative views. Muiser and Carrin (2007) explain that in sub-Saharan Africa it is commonplace to consider old as greater than 50 years. In the developed world subcategories of “younger”, “older” and “oldest old” are sometimes used when considering the needs and capabilities of the elderly (Muiser and Carrin, 2007). For this paper it is necessary to ground the term elderly in digital technology. The first computer in a British school was installed in 1965 (Fothergill, 1988). It took a further 15 years of technological advance and government funding before critical mass in school-based computers was achieved which in turn heralded the birth of educational computing (Gardner and McMullan, 1990). In the U.S. between 1966 and 1971, the use of computers in high schools quadrupled (United Press International, 1971). In 1975, Apple started donating computers to schools. The combination of technological and educational evolution in the 1970s was pivotal.

Those leaving school before that time are likely to (and often do) have a very different view of digital technology to those exposed to digital technology in their formative years (Rogerson, 2008). Therefore, this paper uses the term *Elderly* to mean anyone of 65 years and over. Older people are often referred to as grey to differentiate them as a population group; hence *grey digital divide* is now a commonly used term. Given the focus of this paper is the relationship between COVID-19 and digital technology usage by the elderly, it is appropriate to use new terms *Grey Digital Native* and *Grey Digital Outcast* to describe the elderly positioned either side of the grey digital divide.

The grey digital native concept is explored at length by Birkland (2019). A user typology of five types is proposed comprising Enthusiast, Practicalist, Socializer, Traditionalist and Guardian. The first three types are accepting of modern digital technology whereas the latter two prefer older technologies and are wary of the modern ubiquitous advance. The user typology is extended, forming the *Grey Digital Divide Typology*, by covering the outcast side of the grey digital divide with five types: Impoverished, Isolated, Illiterate, Wary and Uninterested (Rogerson, 2020c). This new typology aligns with Van Jaarsveld (2020) who asserts that both skill and motivation need to be addressed if the grey digital divide is to be breached. Both Birkland and Rogerson support the observation of van Dijk (2005) that the elderly move between native and outcast depending upon mental, physical, financial and motivational circumstance. Furthermore, it seems possible that an individual could reside in more than one type on one side of the divide.



The statistics used globally and for each country are taken from the WHO COVID-19 dashboard [4] unless otherwise stated. Globally, the total cumulative cases of COVID-19 was 15,785,641 on 20 July 2020 and 154,640,649 on 6 May 2021, a tenfold increase. The total cumulative deaths was 640,016 on 20 July 2020 and 3,232,285 on 6 May 2021, a fivefold increase. As of 5 May 2021, a total of 1,170,942,729 vaccine doses have been administered. In Europe it has been found that 94 percent of fatalities are uniformly concentrated in the population over 60 years of age [5]. An analysis of the WHO data for the period 2 March 2020 to 4 April 2021 found that the elderly accounted for 14 percent of reported global cases yet 76 percent of associated global deaths, whereas 25–64 year olds accounted for 66 percent of cases and just 23 percent of deaths. For the elderly who contracted COVID-19, 12 percent died, yet for 25–64 year olds who contracted COVID-19, only 0.8 percent died. On 25 March 2020 it was reported by the BBC that one quarter of the world’s population was living under some form of lockdown. Armitage and Nellums (2020) explain that self-isolation will disproportionality affect the elderly because of increased risk of cardiovascular, autoimmune, neurocognitive, and mental health problems.

It is estimated that 9 percent of the global population of 7.8 billion people are over 65 years of age [6]. Current access to the Internet stands at 62 percent of the global population [7] and of this 7 percent (0.3385 billion) are over 65 years of age [8]. This means that only 48 percent of the global population over the age of 65 years of age can be classified as grey digital natives. Therefore, the grey digital divide comprises 363.5 million digital outcasts. The global distribution of these outcasts will likely mirror disparities between developed and developing regions, urban and rural, rich and poor and literate and illiterate people. By way of illustration, out of the total global digital outcast population 27 percent reside in Africa, 31 percent in Southern Asia and 19 percent in Eastern Asia [9].

The global Internet economy has been defined as comprising three components: access provision — how we connect; service infrastructure — how we build and sustain the Internet; and Internet applications — how we communicate, share and innovate [10]. During the pandemic, the performance of these components has been mixed. For example, video conferencing through portals such as Zoom, has provided excellent links for digital natives although “zoom burnout” has become a new phenomenon. However, broadband in rural areas has significantly reduced the ability for reaching out to the elderly in those areas.



## U.K. perspective

For the U.K., the total confirmed cases of COVID-19 was 299,426 on 20 July 2020 and 4,425,944 on 6 May 2021. The total reported deaths was 45,752 [11] on 20 July 2020 and 127,570 on 6 May 2021. As of 3 May 2021, a total of 50,297,911 vaccine doses had been administered.

In March 2020 the total monthly deaths was 4,486 of which 3,843 or 85.7 percent were 65 years or over. In June 2020 the total monthly deaths had fallen to 2,525 of which 2,331 or 92.3 percent were 65 years or over [12]. The total population of the U.K. is 66.82 million, of which 12.54 million are over the age of 65 and 5.81 million are over the age of 75 [13]. There are 29 percent (3.64 million) of the elderly who are grey digital outcasts and 53 percent (3.1 million) of those over 75 years rarely use the Internet [14]. This means that there are 3.64 million elderly people in the U.K. who are reliant upon newspapers, television broadcasts and the telephone (*i.e.*, no-tech and low-tech) for current information about the pandemic.

The U.K. government and the National Health Service (NHS) each have dedicated COVID-19 Web sites to provide comprehensive information to citizens. These are the

primary official sources. Loveday and Wilson (2020) criticise the government for assuming that everyone has access and is able to negotiate Web sites. In addition, from the onset of the pandemic, the U.K. government held daily television broadcasts to keep the public informed. A member of the government was usually accompanied by two scientific advisors. Television and print media provided excellent numerical and graphical information to support the public information campaign (Loveday and Wilson, 2020). These briefings and supporting infographics were eventually halted at weekends and advisors became less frequent participants. On 23 June it was announced that regular briefings would end and now only take place for significant announcements. The importance of the two Web sites has therefore increased over time as being the only sources of official information. As a result, grey digital outcasts, numbering 3.64 million people, became less aware of detailed government information although extensive, albeit filtered, media coverage still continued. As the second wave hit in the autumn of 2020, the government bowed to pressure and reinstated the broadcasting of regular briefings which included specialist advisers.

The NHS administers a database of people needing shielding and protecting because they are defined on medical grounds as being extremely vulnerable from COVID-19. In England, this coronavirus shielded patient list (SPL) holds 4 percent of the total population and includes 1,156,115 people over 65 years of age which is 51.74 percent of the SPL [15].

The guidance on shielding states “If you have been told that you’re clinically extremely vulnerable, you should: follow the advice in this guidance, register online even if you do not need additional support now” [16]. There was no mechanism for registering any other way. Letters were sent to those shielding but this was inconsistent. Some shielded people did receive letters whilst others received several communications which at times were contradictory (this is based on the author’s own domestic experience). Those grey digital outcasts who need shielding are at a huge disadvantage with the reliance on predominantly online links. A letter was sent on 17 March 2021 to everyone who had been shielded explaining that on 31 March 2021 shielding was paused across the U.K. Once again the emphasis was on providing support and advice via the official Web sites. Grey digital outcasts were overlooked.

During the pandemic there has been a huge global increase in television news viewing figures. In the middle of March 2020, it was reported that the BBC News programmes viewing had increase by around 25 percent, the BBC News Channel had recorded its biggest weekly audience since 2015 and Channel 4 News’ audience had doubled in 10 days [17]. This low-tech information source is important to the grey digital outcasts and particularly those who are shielded. In the U.K. households have to pay a TV licence fee to access television, specifically the BBC. Since 2000, those over 75 years of age have been eligible for a free TV licence but this has been under review for some time. On 9 July 2020, the BBC announced that from 1 August 2020 this free licence would be scrapped. The only exceptions are those households, in which one person is over 75, receiving a low-income benefit called Pension Credit. There are currently 2.84 million households eligible for Pension Credit but only 1.69 million have taken this up [18]. This means that 1.15 million of the poorest pensioner households which include someone over 75 will be missing out on a free licence. As mentioned previously, 3.1 million pensioners who are over 75 rarely use the Internet and so are likely to be very reliant upon the television. Many of these will struggle to pay the licence regardless of whether they receive Pension Credit or not. This single act by government and the BBC has created an information poverty trap for some of the most vulnerable grey digital outcasts.

On Thursday night, 31 July 2020, Health Secretary, Matt Hancock announced via Twitter that increased measures were being brought in across parts of northern England because of dangerous increase in infection rates in the region. The public was given just a few hours’ notice as the restrictions commenced at midnight. Tracy Brabin, Labour MP for Batley and

Spencer in West Yorkshire, said “To announce this sort of measure late at night on Twitter caused an awful lot of anxiety in my community.” Full details were later posted on the government Web site during the night which kept digital natives informed. It is unclear whether any no-tech and low-tech channels were used to convey this urgent message which affected a very large population including those who were about to celebrate *Eid al-Adha* in a communal, albeit restricted, manner.

The importance of affordable broadband connectivity for all is now acknowledged but turning this into practice is problematic. Allman (2020) discusses a community-led broadband initiative, B4RN (Broadband for the Rural North) which has succeeded in connecting 7,000 homes in rural north-west England; it is one of the best Internet connections in the U.K. Community members undertake the complete installation from mapping routes to digging trenches and cabling through to connecting routers. B4RN runs a weekly computer club to help community members use these new facilities. The digital divide appears to be fading through community action. “The mutual understanding and genuine friendships fostered among local people during the building process last well beyond the installation itself. the collaborative effort that went into B4RN contributed to a pre-existing rapport that helped in the face of the coronavirus lockdown.” (Allman, 2020).

The U.K. residents who contributed to this study were all over 65 years of age. There was a mixture of grey digital outcasts and grey digital natives. It is interesting that some grey digital natives preferred low-tech to access COVID-19 information and so are classified as traditionalists and guardians in the user typology. So in this sample, there was a reliance on no-tech and low-tech to be kept informed of the current pandemic situation and the impact on people. Generally people felt that there was a real sense of community flourishing during the pandemic with many acts of kindness. However, there was a feeling that the pandemic had highlighted what was problematic with modern society such as the wealth gap, environmental indifference and political chaos. Isolation and lack of physical social interaction with family and friends were major concerns. One respondent wrote, “I felt like I aged and suddenly became an old person who had to be looked after and not in control of my life anymore.”

Overall, evidence suggests that the elderly are the most vulnerable and are more likely to die from COVID-19. For this reason, it seems that the whole of this group should receive special attention in terms of being informed and being socially and emotionally supported. Currently, this is not the case as information and support tends to be technology based. The grey digital outcasts have been and continue to be overlooked. In December, the Parliamentary Office of Science and Technology (2020) published its report entitled “COVID-19 and the digital divide”. This report acknowledges concerns about the digital divide during the pandemic “as people have been more reliant on the Internet to access services and health information, and socialise with friends and family”. It summarises the issues and problems but its recommendations are open to question. Under the heading “What has been done to tackle the digital divide during the pandemic?” there is no tangible worthwhile action for the grey digital outcast.



## **Perspectives from other countries**

In order to complete the global perspective, snapshots of nine additional countries have been developed using a variety of data sources. Each snapshot includes orders of magnitude of COVID-19 infections and related deaths together with digital technology usage figures. Many of the snapshots include examples of how communities are addressing the crisis. It is accepted that these nine countries plus the U.K. provide an indicative rather than comprehensive view.

## ***Australia***

For Australia, the total confirmed cases of COVID-19 was 13,950 on 20 July 2020 and 29,865 on 6 May 2021. The total reported deaths was 145 on 20 July 2020 and 910 on 6 May 2021. As of 28 April 2021, a total of 2,316,969 vaccine doses had been administered. Of the total population of 25 million, 15.8 percent (3.95 million) are 65 years or over.

Nicola Heath [19] reports that digital inclusion is influenced by income, age, education levels, employment and geography, with the indigenous Australians having the largest proportion of digital outcasts. It has been reported that the elderly, the group that is most at risk of COVID-19 are the most digitally excluded in the country. Many of the elderly are digitally illiterate and cannot function online without assistance, and it is at public libraries, which were all closed due to the pandemic, where they typically seek help. They are grey digital outcasts cut off from face-to-face and virtual interactions. A recent qualitative interview study found that the elderly mostly used television news reporting (low-tech) to glean information about the pandemic (Lupton and Lewis, 2021).

## ***China***

For China, the total confirmed cases of COVID-19 was 86,839 on 20 July 2020 and 103,731 on 6 May 2021. The total reported deaths was 4,659 on 20 July 2020 and 4,858 on 6 May 2021. As of 3 May 2021, a total of 280,349,977 vaccine doses had been administered.

Kummitha (2020) gives an account of how China adopted a techno-driven approach rather than the West's human-driven approach to control the transmission of COVID-19. He suggests that the techno-driven approach may be more productive in identifying, isolating and quarantining those infected but it also facilitates suppression and censorship. It would also seem to imply that digital outcasts are likely to be invisible. Fumian (2020) provides an analysis of the *Wuhan Diary*, written by 65-year old author Fang Fang, which provide an unofficial account of Wuhan's quarantine every day for two months. These entries were published as posts of her blog on Weibo. Although these post were censored by the authorities such as her following that they were copied and posted elsewhere beforehand. This account was seen by digital natives across the globe but it is unclear how many digital outcasts, particularly in Wuhan, had access to the diary, which Fumian implies is an emotional crutch for Wuhan's citizens who appear to have been pilloried by Chinese authorities and many compliant supporters of authorities.

A different dimension of the plight of the grey digital outcast relates to an observation which has been made that many of the elderly are suffering due to their lack of access to smartphones and contactless payment. For example, in April, 2020, an elderly man was found walking along the hard shoulder on a motorway towards a city in Zhejiang where he had a seasonal job offer at a small company that was about to reopen for business. He had walked for 20 days on the only open road from his rural village which was 1,000 kilometres away. He had not been able to use public transport because he did not have access to nor could afford a smart phone. He needed this because he was not allowed to book or board any train or coach without an app showing that he is not infected with COVID-19. At the end of May, the Chinese premier commented in Beijing that there are about 100 million elderly rural farmers who were relying on taking casual urban jobs but they were not familiar with using smart phones to book tickets or paying for services that are exclusively available via contactless payment. These people are suffering silently and unnoticed in remote places where they are reliant upon the postal service and being able to pay for goods and services with cash. Grey digital exclusion has been highlighted with the move away from cash to payment using online and smartphone apps. The grey digital chasm beckons with China projected to become an aged society by 2022 comprising 200 million people and rising to 380 million by 2050 [20].

## ***Hong Kong***



For Hong Kong, the total confirmed cases of COVID-19 was 2,779 and 11,799 on 6 May 2021. The total reported deaths was 20 on 20 July 2020 and 210 on 6 May 2021 [21].

In 2016, personal computer usage for those aged 65 and over was only 31.8 percent and 44 percent for Internet usage [22]. Chan, *et al.* (2020) have conducted a landline-based telephone survey to ascertain citizen perceptions of the pandemic. They found less than half of the participants (47.8 percent) reported that they had sufficient knowledge to manage the health risk and safety during the outbreak of COVID-19. How information is conveyed is important. Chan, *et al.* found that television, Internet and smartphone apps were the top three channels for obtaining infectious disease information, covering more than 90 percent of the population. In Hong Kong, the middle-aged and elderly prefer television, while the use of Internet and smartphone apps is more popular in the younger age group (Chan, *et al.*, 2020).

Recently, it has been observed that there has been an increased use of digital technology enabling the government, the police and the health authority to send vitally important messages. However, the digital divide has become more extreme leading, for example, to significant numbers not able to acquire surgical face masks because these are only available online.

### ***India***

For India, the total confirmed cases of COVID-19 was 1,385,522 on 20 July 2020 and 21,077,410 on 6 May 2021. The total reported deaths was 32,063 on 20 July 2020 and 230,168 on 6 May 2021. As of 4 May 2021, a total of 160,418,105 vaccine doses had been administered. 6.4 percent (1.23 million) of the total population are 65 years or over.

Some interesting observations were recently published [23]. The focus of attention is observed as being on the impact of COVID-19 on the working population with little consideration for the mental and emotional health of the elderly. Through a telephone survey it was found that many elderly people were feeling anxious or were finding it hard to sleep or even had had some form of mental breakdown. Interestingly it was found the majority of those in the survey had turned to digital technology during the pandemic. Many of these elderly people are now using digital technology for a range of functions including reading e-books, playing games on smartphones, ordering through delivery apps, watching videos or listening to songs online, and using Skype/Zoom/Hangouts/Whatsapp video calls to connect with friends. Reported on 3 October 2020, HelpAge India and the government's Common Service Centre have come together to address "digital inclusion and literacy of the rural elderly, especially those disadvantaged, at a time when online and digital services have assumed paramount significance due to social distancing in the wake of coronavirus pandemic." [24]

### ***Italy***

For Italy, the total confirmed cases of COVID-19 was 245,864 on 20 July 2020 and 4,070,400 on 6 May 2021. The total reported deaths was 35,102 on 20 July 2020 and 122,005 on 6 May 2021. As of 2 May 2021, a total of 20,684,263 vaccine doses had been administered.

In 2019, Italy was the European country with the largest percentage of elderly population with 22.8 percent (13.78 million) of the total population aged 65 years and older [25]. Only 34 percent of households made up exclusively of people over the age of 65 have broadband and only 41.9 percent of those over 65 use the Internet [26]. This suggests that Italy has approximately eight million grey digital outcasts. It has been observed that these outcasts rely upon television news and chat shows together with the telephone to remain connected and informed. The BBC reported on 14 March 2020 [27] that in a nationwide flashmob event Italians were singing from their windows and balconies to boost morale. It was to be repeated regularly over the following weeks. This is an example of bottom-up community action to

support others through being together during the pandemic crisis. This would complement more formal ways in which to address social isolation and psychological impacts as discussed by Rolandi, *et al.* (2020) in their Lombardy study.

### ***New Zealand***

For New Zealand, the total confirmed cases of COVID-19 was 1,206 on 20 July 2020 and 2,277 on 6 May 2021. The total reported deaths was 22 on 20 July 2020 and 26 on 6 May 2021. As of 30 April 2021, a total of 266,585 vaccine doses had been administered. Out of the total population of 4.97 million, 15.3 percent (0.76 million) are over the age of 65.

Kirkpatrick Mariner, the government's principal adviser on digital inclusion was reported as admitting that COVID-19 had highlighted the digital divide which mirrors social and economic inequality, and has exposed how digitally unprepared the country is. "Without affordable connections and devices for those who are most in need, and without the required skills, a huge number of New Zealanders will miss out on a suddenly critical ability to connect." [28] Grey Power in Nelson is an advocacy organisation promoting the welfare and well-being of all those citizens in the 50 plus age group. Half of its members do not have Internet access and, therefore, cannot access the government's four-level COVID-19 alert system. For this reason it started to use written information and the telephone to keep its members up to date [29]. The acceleration towards a cashless society is the focus of a report by the Citizens Advice Bureau in which cost and confidence were seen as key barriers for the vulnerable including the elderly [30].

### ***Japan***

For Japan, the total confirmed cases of COVID-19 was 29,382 on 20 July 2020 and 616,123 on 6 May 2021. The total reported deaths was 996 on 20 July 2020 and 10,517 on 6 May 2021. As of 1 May 2021, a total of 3,489,719 vaccine doses had been administered. Out of a total population 126.18 million, 28.2 percent (35.58 million) are 65 years or over. Internet usage rate is 79.8 percent but 76.6 percent for 60–69 year olds, 51 percent for 70–79 year olds and 21.5 percent for those 80 years old and over [31].

All those responding to the surveys were grey digital natives and yet some still used no-tech and low-tech combined with high-tech to remain informed in a balanced way. There was a common positive theme of having time to reflect and rethink life's priorities. Lack of direct contact was problematic for some. One person commented that, "many aspects of our values depend upon our interaction with other persons on the occasions of face-to-face talking and we used to believe that our personal selection and decision can change our future." A larger study has been undertaken (Rogerson, *et al.*, 2021) which confirms that the elderly, regardless of whether they are natives or outcasts, prefer no-tech or low-tech communication.

### ***Singapore***

For Singapore, the total confirmed cases of COVID-19 was 49,888 on 20 July 2020 and 61,268 on 6 May 2021. The total reported deaths was 27 on 20 July 2020 and 31 on 6 May 2021. As of 2 May 2021, a total of 2,213,888 vaccine doses had been administered. There are 0.58 million people who are 65 years or over [32] which is 10.18 percent of the total population of 5.7 million [33].

Several media articles have covered Singapore's grey digital divide which was observed as being particularly problematic for the low income elderly. At the end of 2018, it was reported that 80 percent of the elderly owned a smart phone but only 33 percent did mobile banking and 22 percent did online shopping [34]. This suggests that the majority of grey digital natives are traditionalists or guardians and that there are around 160,000 grey digital outcasts. Junie Foo explained that more than half of Singapore residents aged 65 and above live alone

or with their spouses only and that constant news updates and large amounts of information available online, was difficult for many of the elderly, who were digitally illiterate, to comprehend which made them susceptible to fake news and rumours and caused unnecessary fear and panic [35]. It has been suggested that the lack of social interaction and physical activity could have a negative impact on the mental and physical health of vulnerable elderly populations. Some try to reduce the impact of isolation through talking to friends over the telephone and watching television [36]. This sense of alienation and helplessness within the elderly population is highlighted by the increasing reliance of digital technology within Singapore's smart city (Das and Zhang, 2021).

### *United States*

For the U.S., the total confirmed cases of COVID-19 was 4,009,808 on 20 July 2020 and 32,167,970 on 6 May 2021. The total reported deaths was 143,663 on 20 July 2020 and 572,987 on 6 May 2021, of these 80 percent are in the 65+ age range [37]. As of 30 April 2021, a total of 241,639,173 vaccine doses had been administered. 16% (52.51 million) of the population are 65 or over [38]. Seventy-three percent of the elderly use the Internet [39] which means there are 14.12 million grey digital outcasts.

A newspaper report in Florida focussed on the inability of many elderly people in the state to utilise online facilities in the crisis resulting in potential mental health impact from the subsequent imposed isolation [40]. Conger and Griffith (2020) wrote about an elderly American:

“For more than a week, Linda Quinn, 81, has isolated herself inside her Bellevue, Washington, home to keep away from the coronavirus. Her only companion has been her goldendoodle, Lucy. To blunt the solitude, Quinn's daughter, son-in-law and two grandsons wanted to hold video chats with her through Zoom, a videoconferencing app. So they made plans to call and talk her through installing the app on her computer. But five minutes before the scheduled chat last week, Quinn realized there was a problem: She had not used her computer in about four months and could not remember the password. ... As life has increasingly moved online during the pandemic, an older generation that grew up in an analog era is facing a digital divide. Often unfamiliar or uncomfortable with apps, gadgets and the Internet, many are struggling to keep up with friends and family through digital tools when some of them are craving those connections the most.”

It is interesting that on 19 June, 2020, Florida Governor Ron DeSantis was reported to state that Florida needed to continue to function and promised not to enforce a lockdown, but to instead focus on protecting and informing the elderly [41].

On a positive note, Brown, *et al.* (2020) found that, since COVID-19, some U.S. cities had expanded low-cost or free Internet access and equipment as well as digital literacy training for residents. In contrast, medical clinicians Ramsetty and Adams (2020) describe the dire problems incurred while trying to support patients at free health care clinics as medical support transitioned into telemedicine. For example, their patients could not access the online system set up to operate screening processes for COVID-19. This problem was widespread and those whose access was impeded were the most vulnerable to poor health outcomes related to COVID-19. Many of these were grey digital outcasts. “... diminished accessibility

to technology ... was being exposed at a critical time in a public health crisis. Frighteningly, there were no measures at the ready to address it.” (Ramsetty and Adams, 2020)

In January 2015, President Obama stated that high-speed broadband is not a luxury it is a necessity [42]. However, broadband roll-out emphasis remains on the populated urban areas rather than rural regions. On 30 March 2020, Matt Dunne of the Center on Rural Innovation wrote in *The Hill*, “Elderly Americans are forced to travel long distances and risk infection at hospitals, or even go without care, because the lack of rural broadband prevents deployment of telehealth. ... Broadband is a critical piece of the infrastructure needed for rural communities to thrive.” [43] He explained how the Rural Innovation network of 20 rural communities has implemented high-speed broadband through local initiatives. Rural grey digital natives are thus supported but technology alone does not provide support for the rural grey digital outcasts.

Those responding to the survey were a mixture of elderly and non-elderly, native and outcast. Both no-tech and low-tech were used by most for keeping informed. One grey digital native, who was probably a practicalist on the user topology, only used high-tech to be informed. There were very few positive outcomes mentioned other than some felt community spirit had improved. Most found lack of freedom and isolation from friends and family a real problem. Economic disaster and government ineptness were mentioned by many. One respondent felt that, “life as we have known it will never be the same again and that jobs, education, worship will all be more difficult for everyone.”



## Commonalities and the way forward

There are many grey digital natives whose lives are enriched by digital technology but there are many grey digital outcasts who will never be inclined or able to engage with digital technology. There should be a choice. The elderly should be encouraged and supported to use the Internet but those who do not should be able to access services and resources in other ways that suit them [44]. Caro (2020) explores the use of digital technology for communication with the elderly who are technologically challenged and may also have cognitive impairment. The included checklist illustrates the issues that need to be considered when encouraging grey digital outcasts to cross the digital divide. The checklist is summarised as:

- The digital technology must arrive ready to go. There should be not set-up procedures.
- WiFi must be automatically connected or the digital technology has a built-in cellular connection.
- The interface needs to be very simple and not confusing.
- The use of the digital technology should not be dependent on the kindness of another person to operate it.
- If the digital technology stops working there needs to be a way to trouble shoot and fix the problem.
- The old-fashioned telephone is the acceptability benchmark for the digital technology.

In undertaking this study the author has been struck by the numerous community-led support initiatives (only some have been mentioned in this paper) which helped vulnerable outcasts during the COVID-19 pandemic, in particular grey digital outcasts when official responses have been sadly lacking. These have addressed not only the installation of digital technology but also the encouragement, mentoring and training of these people. This bottom-up community action is exemplary.

Understandably, governments and health-related organisations are focusing on the operationally feasible urgent actions in their attempts to overcome the pandemic. The juxtaposition of COVID-19 and digital technology has brought to the fore existing shortcomings in the social responsibility commitment of governments and organisations. The vast majority of COVID-19 related deaths are within the elderly population. The vast majority of digital outcasts are within the elderly population. Strategies of COVID-19 containment and eradication have centred predominantly on the Internet to inform and support people. This is socially irresponsible as grey digital outcasts have been put at greater risk which has possibly led to fatalities. It seems that this reliance on the internet as the first, and possibly only, means of communication is pervading social support and health care. For example, in April 2021, the author received a letter from his NHS hospital clinic informing him that face-to-face appointments would be replaced with video consultations. The letter stated, “To access your video consultation please type the full webpage address, as shown below, into your phone, laptop or tablet. ... If possible use a Google Chrome or Microsoft Edge internet browser ...” There was no mention of what was to be done or who to contact if access to the Internet was not possible for whatever reason. This leaves grey digital outcasts excluded and likely to become emotionally stressed at times of emergency.

Based on this study a set of guiding principles has emerged which lays the foundation for a global response to supporting grey digital outcasts particularly in times of crisis. These are as follows:

- There should be a practical demonstration of social, political and individual commitment to remove the digital divide.
- Respect, dignity, autonomy, privacy, choice, access, connectivity and duty of care should be taken into account when addressing the grey digital divide.
- Whilst reactive action is necessary in a state of emergency it should not be at the expense of proactive action aimed at long-term well-being.
- Those who are grey digital outcasts should not be subjected to the information poverty trap.
- There should be support for no-tech low-tech and high-tech preferences in time of public emergency when public information and public action are paramount.
- Listen to the community and support community-led actions.
- Social isolation on medical grounds should not lead to social exclusion through narrowly focusing on digital native networking.
- Fast broadband infrastructure should be a utility available to all regardless of location.




## Conclusion

This paper has been authored by a grey digital native who lives in England and who shielded for the majority of the first wave of the pandemic beginning on 5 March 2020. He has been physically isolated and yet connected with people across the globe, some of whom are long-standing colleagues and some are new contacts. Data repositories, newspaper and broadcasting media, and people’s public diaries (blogs) have been accessed online. During the COVID-19 pandemic these real-time feeds have created a new research experience for the author. Information alerts have been a constant reminder of the rapidly changing situation across the globe. Almost with each keystroke there has been new information and the need to change observation and inference.

This study has focused on the demise of grey digital outcasts during the COVID-19 pandemic. The adopted heuristic perspective has led to the creation of new concepts: grey

digital outcasts and grey digital natives; the grey digital divide typology; and no-tech, low-tech and high-tech preference differentiator. These provide a framework within which further research can be undertaken. Indeed, these concepts have already been used in the Japanese impact analysis undertaken by Rogerson, *et al.* (2021) which used a mixed method of both qualitative and quantitative inquiry.

The focus of this study has been on the plight of the grey digital outcast during a global health crisis. The irony is that the grey digital outcast is unlikely to read this account because it will only be available in the exclusive online world from which the grey digital outcast is excluded. This is a major global issue as there are an estimated 363.5 million grey digital outcasts. During the early months of the pandemic there was some coverage of the plight of grey digital outcasts but this plight is now yesterday's news and seems to be off the agenda of those who can realise change. This is totally unacceptable. Things have to, indeed must change because the digital divide "has created a new underclass, non-citizens with little hope of opportunities for success or of help in times of need" (Rogerson, 1997). Further work should be undertaken to confirm or, if necessary, adjust the proposed guiding principles derived from this current research. Once completed, these principles could then be used as a global catalyst for positive, worthwhile change which ensures no one is excluded from assistance during a worldwide health crisis. 

### **About the author**

Professor Emeritus from October 2010. Simon Rogerson is Professor Emeritus in Computer Ethics and former Director of the Centre for Computing and Social Responsibility at De Montfort University, U.K.

E-mail: srog [at] dmu [dot] ac [dot] uk

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