Implications of COVID-19 Across eGovernment Services: An Australian Taxation and Social Services Comparative Case to the Health Environment

Samantha Papavasiliou and Carmen Reaiche Adelaide Business School University of Adelaide, Adelaide, Australia e-mail: samantha.papavasiliou@adelaide.edu.au, carmen.reaiche@adelaide.edu.au

Abstract— COVID-19 has had a profound impact on people across the world and on the provision of government services. This has impacted how governments provide services to their citizens, in addition to the implications of digital first service provision which initially impacted how individuals interact with public sector entities. This research highlights the similar assistance requirements and concerns with different public sector digital services, while highlighting the differences across digital health and taxation and social services. Evidence for this research is presented through a case study on the Australian Taxation Office, data collection from the Services Australia and two digital health platforms, MyAgedCare and My Health Record. By understanding the different issues and assistance seeking requirements across the public sector digital services, particularly while responding to unpredictive and disruptive environments such as the ones triggered by COVID-19, digital service designers and policy makers can shape better services that meet the needs and expectations of users. A primary finding of this research highlights the need to maintain human interfaces for assistance-seeking, in order to maximise an individual's capacity to interact with the system successfully. General expectations and key concerns of users, particularly focusing on the current disruptions triggered by COVID-19 Pandemic are also discussed in light to advice policy-makers within the public sector digital environment.

Keywords- Digital Health; Assistance Seeking; Digital Inclusiveness; Digital Ecosystem; Public Sector.

I. INTRODUCTION

The implications of the COVID-19 global pandemic have impacted the methods used by government organisations and public sector entities in provision of services. To reduce the risk of infection to both patients and staff, services have had to swiftly shift from predominantly face-to-face to digital formats. These services encompass the scope services and include healthcare, social services, taxation, and private sector services. COVID-19 combined with the shift of public sector services to digital first technologies have created additional barriers and complexities to the adoption of services in the mandatory and voluntary services space. Shirley Papavasiliou Palliative Care Barossa Hills Fleurieu Local Health Network SA Health South Australia, Australia e-mail: shirley.papavasiliou@sa.gov.au

As public sector services adopt new technologies and start to identify the considerable benefits associated with utilising digital services, the availability and use of legacy systems will decrease [1] [2]. Public sector services are fundamental in a modern society and service availability is crucial. However, with the use of digital services in lieu of legacy systems, especially in the mandatory service space, users are becoming more and more limited in their choices [2]. Therefore, this paper argues that for governments to be truly inclusive, legacy systems must remain in place, to enable and provide access to all who require them.

The ongoing coronavirus (COVID-19) situation has led to a global health emergency and declared by the World Health Organisation as a pandemic on March 11th 2020 [3]. This situation has put previously unseen stress and unexpected impacts on the healthcare system across the world [4]. The current COVID-19 pandemic has created an opportunity for the extended use of digital technologies in the health sector. Digital health technologies and tools include telemedicine/telehealth, digital health records and mobile health technologies [5]. Although obvious benefits exist in the ability to provide services online, this opportunity does not come without complexities and difficulties for accessing and developing services (for both service users and developers). Especially as a result of the speed in which the transition to digital for many services from legacy was conducted.

This paper explores the responses across government organisations and public services to the global pandemic, through the application of findings from an Australian Taxation Office (ATO) case study, used to understand the barriers and opportunities affecting digital service provision in the public sector. Additional data was collected to develop a case study on social services in Australia, through exploration of the Australian service provider Services Australia. The findings from these two case studies have been used to start the discussion on the digital health environment, including the most common Australian digital health platforms known as My Health Record and MyAgedCare [6], both services which are displayed with similar digital formats. This paper does not argue against the use of digital approaches for service provision, however it questions the inclusiveness and equity of access of providing digital first services in mandatory service space (e.g., tax lodgement or aged care referrals). In addition this paper explores the responses to COVID-19 from the aforementioned government service providers in Australia, outlining how through a crisis government organisations responded quickly to an escalating situation.

The purpose of transitioning public sector services to digital platforms is clear, to provide easy access to government services, and to promote the transformation and delivery of modern and future proof digital services to those who need them [2] [7]. There are millions of Australians who utilise online government services through the central platform "myGov", as well as numerous state government online services [2]. The large numbers utilising the services are well adopted within the community. However, there are still pockets of the community who are struggling to access necessary services [2].

In addition to the global pandemic, government organisations and their associated public services have been progressively responding to other changes in the environment. All Australian Public Sector Organisations were impacted by the introduction of the Australian Digital Continuity Policy 2020, mandating the use of digital first channels for every public sector service provided [8]. This policy put considerable pressure on both public sector organisations and service users. Through exploration of previous literature, a considerable gap was identified between what is known about digital service users and nonusers, and those individuals who are required to use them. Therefore, the impact of shifting mandatory public sector services to a digital first platform is still largely unknown. As digital first service provision is the way forward for all public sector organisations (especially in Australia), a holistic view of users is needed. Research needs to support and assist users, improve services and inform policy to increase long-term voluntary compliance obligations in a mandatory service space. To support this view, this research is exploring the relevance of previous research based on a case study on the ATO, and comparing them to different services provided by the Australian Department of Health.

This paper will explore the barriers to digital adoption in the public sector space, specifically comparing mandatory and voluntary spaces. These comparisons will be based on understanding that ATO, Services Australia and MyAgedCare services are mandatory and My Health Record being voluntary. This research explores the common reported themes among digital barriers and proposes additional research to be undertaken to address the gaps. The themes will be derived from an ATO case study (conducted previously) and comparing to a pilot study undertaken on MyAgedCare. Additional research has explored the identified barriers to the use of My Health Record (a voluntary service), to understand the similarities across digital health and digital taxation, as well as

mandatory and voluntary. Through the use of thematic analysis outlining the barriers to digital adoption, links between the ATO and Services Australia case study and the digital health platforms are introduced to demonstrate the similar issues across the different eGovernment services. Further analysis was conducted to understand the implications of shifting traditionally in-person services (including doctors consultations) to digital platforms or telephone, during COVID-19 have been used to further understand the implications of digital services in healthcare. This is not to imply that the use of digital technologies in healthcare are not valuable, cost effective or is capable of providing high quality services to meet the needs of users, however this research indicates that the complexities of patients and their healthcare requirements can be missed without face-to-face consultations. In face-to-face communication, all participants can not only hear, but see body language and facial expressions, which can aid understanding of meaning behind the spoken words. Digital technology which uses video as a form of face-to-face has positive aspects but can impact eye gaze with participants concentrating on the screen. Any barrier which impedes medical staff ability to understand non-verbal cues, has the potential to detrimentally impact provision of patient centred care.

By exploring the various barriers and their links to the User Centred Model (Figure 1) the analysis provides lessons learned applicable to both policy makers and digital services designers.

The structure of this paper is divided into six sections. Section one contains the introduction, section two outlines the literature reviewed, section three discusses the ATO, social services, My Health Record, Telehealth and MyAgedCare, the fourth section outlines the methods, the fifth section highlights the results of the study and the final section is the conclusion.

II. LITERATURE REVIEW

All government organisations and public sector services across the globe have been impacted by COVID-19, with varying responses. The most significant affect has been felt in healthcare sector [9], where demand for services remain high and additional services are required to deal with COVID-19. Within the public sector space, there have been significant impacts for financial support sectors (including taxation and social services) [10]. With a critical demand for financial support as a result of increased rates of unemployment, lockdowns temporary closing businesses and restrictions impacting the number of patrons and employees allowed on site [11].

A. Digital Inclusion

Inclusion is complex as it incorporates numerous concepts including; awareness, acceptance, respect and understanding, to provide equal participation opportunities [12][13]. An inclusive environment encourages people with different characteristics, backgrounds and ways of thinking,

to work together to fulfil their potentials [12][13]. These environments require considering both internal and external stakeholder perspectives, and placing equal value on all perspectives regardless of where they originated [14]. Digital inclusiveness is also increasingly complex, as it involves multiple components within the specific digital ecosystem of an individual. Therefore, digital inclusion identifies the importance of access to information and communications technology and the resulting social and economic benefits for users [15]. An individual's level of digital inclusion is impacted by digital skills, connectivity and accessibility. Digital skills include the capacity to use technology to connect with the services (internet and computer), connectivity involves having internet access (the infrastructure) and accessibility is the user friendly digital services that assist in accessing the service [16]. Thus raising the question, does digital health have potential negative implications on levels of digital inclusiveness?

B. Digital Divide

One of the most significant issues towards the use of digital public sector services is the digital divide, whereby in Australia more than 2.5 million individuals are still not online [16] and the digital divide is largest in those older than 65 [16]. The digital divide is defined as the gap between individuals or groups with limited access to digital information and services, compared to those who have effective access [16]. With the shift of government services to online delivery methods, there is considerable potential for older Australian's to be disadvantaged from the greater use of emergent and dominant communication technologies [16], as digital services tend to leave older Australian's out [17]. An aging population is vulnerable and in some cases reluctant to use digital technology, raising concerns about ability to use technology, scams, privacy, self-diagnosis resulting from misunderstanding of information and the desire for face-to-face explanations [18]. Thus raising the question, how do digital health platforms affect service use?

The digital divide is an issue that effects lower income earners, individuals with poor access to the internet and/or those individuals who lack the skills to use technology, making it harder to access. Furthermore, lower levels of digital inclusion are associated with individuals who only access internet through mobile devices. Digital exclusion often exacerbates other forms of social exclusion; this includes unemployment, low education and poverty [19]. Therefore, the importance of digital inclusion is undeniable; all Australians require access to both technology and skills to ensure they can take part in every aspect of social and economic life. There are practical concerns for achieving equitable levels of access between different social groups and public services, as society is not homogenous, providing basic accesses to the community is not sufficient. Services provided to citizens by government need to align their design and application to the needs of the community, to encourage digital inclusiveness and begin to breakdown the digital divide.

C. Barriers to eGovernment

Previous research has explored the specific barriers to digital adoption within the eGovernment space. The European Commission, defines a barrier to eGovernment as the, characteristics within the contexts of legal, social, technological, or institutional which negatively impact the development of eGovernment [18, P.3]. This can be caused by users' lack of demand and the obstacles preventing engagement with services, or disincentives for the government to supply the eGovernment services or prevalence of obstacles preventing its supply [19]. This research identified barriers and compiled them into seven key categories; leadership failures, financial inhibitors, digital divide and choice, poor coordination, workplace and organisational inflexibility, lack of trust and poor technical design [19]. However, research suggests that regardless of the platform, the impact of stakeholders (internal and external) can negatively influence its use [20]. Therefore, successful eGovernment platforms depend on understanding the environments in which they operate [21]. These elements including stakeholder inclusiveness should be considered more in-depth, with their relationship to the multiple barriers preventing eGovernment/digital service adoption and their applicability across disciplines.

III. EGOVERNMENT SERVICES: ATO AND HEALTH

For this research, mandatory environments are classified as "Public Sector Organisations who must by legislation provide Digital Platforms for their services" [22][23]. Whereas mandatory interactions are defined as "Users who meet certain characteristics and must by legislation interact with the public sector service provider to meet these obligations" [22][23]. Therefore, users must engage with providers, but under the digital first mandate expectations around how they do so has changed. In contrast voluntary public sector services are similar to those provided by the private sector, in that an individual can decide whether they want to utilise the service or not.

A. ATO

The ATO was the first service provider to adopt digital first service provision, with the introduction of myTax for individuals, business portals, and tax agent portals. The ATO requires all individuals to interact annually with them to submit their tax return, all individuals who derive income within Australia. Since the digital first transition, the majority of services are digital and require an understanding of both taxation and computer systems. Taxpaying population is in Australia is over 16 million; of these 84% are individuals [23]. The ATO has high digital adoption rates of the MyTax platform, with 95% of individuals eligible to utilise the service [23], however there are still gaps within the population that need to be explored and understood.

In addition to the ATO's digital transformation and taxation responsibilities, they have been made responsible

for the implementation of various COVID-19 financial responses [24]. Firstly, the Jobkeeper Payment, which was available to businesses who were also employers (or sole traders) in order to continue to pay their employees during financial hardship (including lockdowns, restrictions and decreased financial turnover) [24]. Second, the Cash Flow Boost payment, which was made to businesses who met certain characteristics to maintain cashflow during financial difficulties [24]. Thirdly, remissions of general interest charges for taxation debts incurred post January 23rd 2020 [23]. Finally, the deferral of business reporting requirements and payments as a result of COVID-19 [24]. The ATO was also responsible for additional financial support measures for individuals including early release superannuation (\$10,000 payment from their retirement funds) [24]. The implementation and roll out of these measures required a rapid response, in many cases occurring over days or weeks. There is no doubt that the pandemic has driven innovative responses and overnight changes in how the ATO and day to day operations responded to disruption-leveraging on the capabilities of digital technologies.

Progressively the myTax platform became more inclusive, through annual and ongoing adaptions, and the progressive changes in the manner in which digital adoption and service provision has occurred [25] [26]. Each iteration incorporates the feedback from users to ensure ongoing viability of the platform, while also ensuring ongoing success [26]. The iterative approach of ongoing improvements has been a key component outlining the success of the myTax platform, which makes the platform a good case study on the creation of inclusive government services. This is not to say that the platform is 100% inclusive, there are still issues with accessibility, understanding and willingness to change that impact its use [27].

B. Social Services

Services Australia underwent digital transformation in 2016, shifting the majority of their services progressively to digital first platforms [28]. This was largely in response to the Digital Continuity Policy 2020. Services Australia is the overarching body of Centrelink, who is responsible for the provision of a number of social services including financial payments for multiple pensions (e.g., retirement, disability, carer and student) [29]. Therefore, they are responsible for the provision of financial support for some of the most vulnerable individuals in the community.

Social services in Australia were considerably impacted by the COVID-19 pandemic, specifically due to the increased need to access financial support, causing unprecedented site traffic [30]. This is largely the result of the increased unemployment rate in Australia, as a result of COVID-19 [31]. Similarly to the ATO, updates to the site and phone services were made in a matter of days. The impact of these recent events clearly highlights the need to evaluate and complement the existing digital ecosystem, setting out the plans (and supporting legislation) to address high volume systems' demand. There is an opportunity to further expand the scope to support a unified platform for the social service sector to speed data access and ensure privacy for users, during this accelerated process to digital transformation.

The responses to the digital transformation of social services has been mixed in Australia. With inconsistent levels of demand, access to the site can be limited and difficult at times [32]. The provided services can also be complex and difficult to understand, namely the wording, the documentation required and the process to obtain financial support [32]. As a result, there have been multiple iterations to the creation and development of the digital services, however there remains a high demand for legacy services and options moving forward [32].

C. Digital Health

Healthcare systems are becoming significantly more complex, with more professionals becoming involved in each individual patients care, and ever-changing healthcare needs of the population [33]. Healthcare is the product of a complex adaptive system, comprised of people, equipment, processes and institutions which all work together [34]. Healthcare systems operate at their best, by undertaking ongoing improvements. However, when the system fails to improve it negatively impacts the system [35]. Therefore, the research argues that through the application of a systems thinking lens, the complexity of the different interacting internal and external environments within organisations, health systems and society for example, can be better identified and understood. The systems complexity highlights both problems and opportunities and requires responsive organisations and systems capable of adjusting to changes. The ability of the system or components of the system to respond to changes, all depends on one's ability to understand influences [36]. Systems thinking can provide a holistic view and assist in identifying areas requiring revisiting [37].

D. Telehealth

Telehealth or telemedicine has had a transformative effect on healthcare delivery worldwide, especially as a result of the rapid shift in telemedicine adoption from both patients and providers during COVID-19 [38]. Research demonstrates that telemedicine is an important tool used by medical practitioners and their timely delivery of healthcare and support to patients during the COVID-19 pandemic [39]. Telemedicine (also referred to as telehealth) includes real-time audiovisual interactions between a patient and a healthcare provider [39]. Telemedicine allows providers and patients the opportunity to obtain healthcare regardless of geographic location and increases the number of interactions a health provider can have during the day [39].

Interestingly, research demonstrates how telemedicine visits typically include less information than video or inperson visits [39]. Furthermore, there are key barriers associated with the wider adoption including limited

financial reimbursement for appointments, reduced comfort levels with telemedicine technologies for both patients and providers and geographic limitations to the use [38]. Digital and telehealth is dependent on available technology, reliable data and phone/mobile connections [39]. Comfort levels with using technology, levels of digital and health literacy are important factors impacting adoption and use [39]. An argument for maintaining in-person-care or face to face consultations.

Further research demonstrates that the rapid development and application of telemedicine have required doctors and healthcare providers to quickly learn how to facilitate appointments online, which include empathy and appropriate diagnosis techniques [38]. Research into the satisfaction of users and providers of telehealth has provided unclear results, especially when it comes to perceived quality of care [40]. Effective communication skills are vital for health care workers, particularly when access to nonverbal cues is either diminished or absent in the case of telephone calls. There are also times when specialist medical staff are reliant on the physical assessment skills of a health care worker available with the patient.

E. My Health Record



Government, Department of Health

My Health Record is an online platform containing a summary of an individual key medical and health information (including histories). The site provides information for individuals and health practitioners who opted into the service to view medical histories, previous tests, medication (history and current) and diagnosis. The My Health Record platform was piloted in 2016 [41]. The aim of the platform was to provide a single location for all medical details of a patient that is readily available for health practitioners and users. The service is voluntary, there was an opt-out process between 2018 and 2019, where eligible Australians indicated whether or not they wanted the service [41]. To be eligible an individual must be registered with Medicare. Although there are a number of benefits from the provision of the online health record, more than 2.5 million Australians opted out of the platform [42]. The primary reason was privacy concerns, specifically

because not only doctors can view the records (any registered health provider can); data can be used for research; once created the record cannot be deleted and there is fear of hacking data [43]. Figure 1 provides a visual representation of how the health record digital platform interacts with the rest of the Australian health system.

F. MyAgedCare

MyAgedCare is an online platform for individuals aged 65 or older which is the starting point on an individual's aged care journey [44]. The site provides information for government-funded services available at home to enable individuals to continue living independently. The MyAgedCare platform has undergone numerous changes since its launch in 2013, aiming to provide a consistent, streamlined and holistic assessment of clients. However a study published in 2018 demonstrates service demand significantly outweighs supply. With 127,748 on waitlists or not receiving adequate levels of assistance based on their needs [45], and the waitlist growing by 20,000 every six months [46]. Furthermore, 96,000 people waiting since 2013 have found nursing home placements faster than their preferred option of home care, and more than 16,000 people died waiting for services [46]. Numbers are impacted by geographical location, types of services, financial outlay and availability of qualified staff. Although this backlog in services is important to note, it is not the key issue raised in this paper, this study focuses on the implications of MyAgedCare as a digital platform and how this, in turn, affects patient centred care and equitable access to identified care needs.

Both digital health eGovernment platforms under analysis are relatively new, having not undergone as many iterations as the ATO myTax platform. However, these platforms have a considerable impact on end users and the Australian population, as they are both critical for providing information and links to information that outline individuals health profiles, where and how to access services and has the capacity to act as a facilitator of medical services in Australia. This research intends to highlight the key lessons learned from the ATO digital experience, to help inform digital health service designers, to provide avenues for designers and policy makers to obtain guidance on how to develop more inclusive digital services in this space. Simultaneously, other eGovernment platforms can take advantage of the key learnings from the ATO digital experience, as this is transferable to eGovernment.

IV. METHODS

A qualitative approach was applied to this research. An integration of both interpretative and exploratory approach to obtain an in-depth understanding of the key barriers to digital adoption and how they were overcome was considered appropriate to the ATO, Services Australia, MyAgedCare and My Health Record cases. This approach provides evidence to describe the eGovernment environment and provide insights to promote ongoing service adoption.

This research has three components, the first component was the analysis of the ATO digital experience. The ATO study component for this research used primary data collected during a 4-week period over July 2018. A survey form was provided to 11 call centre operatives who populated numerous fields outlining reasons for call and demographics of callers; to understand why people were seeking assistance. Once collected the data (N = 3,990) was anonymised through aggregation techniques to group like individuals into similar groups to understand the population. As this research was designed to be exploratory in nature, the focus was to understand the different issues facing users, a thematic analysis was completed on the qualitative data obtained. Additional data was collected in June 2020 from users, seeking an understanding of the ATO's response to COVID-19. Users were asked what they perceived the ATO's response was to COVID-19, this provided insights into how they felt the response impacted their situation.

The second component discusses the Services Australia platform. This data was collected from individuals who sought social service payments after being financially impacted by the COVID-19 pandemic. In June 2020, users were asked what were the barriers to digital adoption while using the Services Australia services. Furthermore, the users were asked what they perceived Services Australia's response to COVID-19 to be, and how it affected them.

The third component incorporates the Digital Health sector platforms, My Health Record and MyAgedCare. For the MyAgedCare component of this research, data has been collected from concerns, interpretations and perceptions of various stakeholders engaged with the MyAgedCare platform (N = 543). Data analysed underpinned the actor's perception on "What do they think of the MyAgedCare platform?". The same method was utilised to explore the My Health Record platform which works on similar digital integration system approach (N = 350). The main focus of the discussions was to understand what different actor's perceptions are on "What do they think of the My Health Record Platform?". The data was consolidated and anonymised when analysed to identify common themes and trends within the responses. The data collected for this component has been treated as a pilot and comparative form to the ATO digital environment and therefore was only based on answering a singular question. The additional analysis conducted was on existing data provided outlining environmental components.

Additional data collection was undertaken to determine how users of health services perceived health response to COVID-19. Table I summarises key demographics of the Health data and Table II summarises Social Services and ATO data.

	MyAgedCare	Health Record
	N = 543	N = 350
Age Groups		
18-29	10 (1.9%)	40 (11.4%)
30-39	40 (7.4%)	66 (18.9%)
40-49	42 (7.7%)	71 (20.3%)
50-64	223 (41%)	85 (24.3%)
65+	228 (42%)	88 (25.1%)
Gender		
Male	190 (35%)	130 (37.1%)
Female	353 (60%)	220 (62.9%)
Occupation		
Client	391(72%)	252 (72.1%)
Carer	60 (11%)	40 (11.4%)
Doctor	5 (1%)	5 (1.4%)
Allied Health	37 (6.8%)	20 (5.4%)
Nurses	50 (9.2%)	33 (9.4%)

TABLE II. ATO AND SOCIAL SERVICES DATA DEMOGRAPHICS

	ATO	Social Services
	N= 3990	N = 170
Age Groups		
<18	1 (.1%)	0
18-29	1,955 (48.9%)	20 (11.8%)
30-39	758 (19%)	15 (8.8%)
40-49	479 (12%)	50 (29.4%)
50-64	519 (13%)	55 (32.5%)
65+	278 (7%)	30 (17.5%)
Gender		
Female	1,799 (45%)	90 (47%)
Male	1,947 (48.9%)	80 (53%)
Undisclosed	244 (6.1%)	0

Table III outlines the breakdown of how the data was used to inform this research, outlining the key findings and themes as per the findings of the Gioia Method.

TABLE III. HEALTH AND SOCIAL SERVICES FOCUS GROUP DEMOGRAPHIC

ATO (N = 3,990)	My Health Record (N =	MyAgedCare (N = 543)
	350)	
Randomised N= 160	Randomised N= 160	Randomised N= 160
Multiple questions -	Pilot: One key question	Pilot: One key question
Digital Adoption /	- Digital Adoption /	- Digital Adoption /
eGovernment digital	eGovernment digital	eGovernment digital
Interface	Interface	Interface
COVID-19 Implications	COVID-19 Implications	COVID-19 Implications
around 3 key areas:	around 3 key areas:	around 3 key areas:
Information Provision,	Information Provision,	Information Provision,
services and the core	services and the core	services and the core
business: Financial	business: Medical	business: Medical

V. UNDERPINNING FINDINGS: USER CENTRED MODEL

The research adopted an interpretive lens to guide analysis with a systems view. Through the analysis of the 11 call centre operatives' surveys, a conceptual model is proposed for the complete integration of key stakeholders influencing end user digital adoption: User Centred Model (see Figure 2). The key factors and element of this model emerged by observation and interpretation of all the stakeholders and interactive elements within the system and all the parts of the broader environment. The purpose of adopting a systems lens to build this model was to provide a user-centred research approach which can guide policy making as well as provide better support and understanding of the various needs of the different users. This conceptual model contributes to knowledge by initially identifying a number of factors within a user's environment and their degree of impact on willingness or capacity to adopt mandatory digital services. The model also provides the benchmarking factors to explore and categorized the emergent barriers of the above mentioned call centre operative's surveys.



Figure 2. User Centred Model

Table IV outlines the thematic analysis conducted within the ATO, this table demonstrates the different barriers, listed by ascending order, individuals face when interacting with the myTax platform and creates a basis for the analysis of the digital health platforms. The thematic analysis demonstrates that individuals seek assistance and advice on both tax technical components and general platform and technical support. Both of these scenarios are relevant for the digital health space, as language used in services and information provided can have a considerable impact on end users.

When comparing the themes outlined within Table IV, all themes influence an individual capability and willingness to utilise digital services. There are links within each section to legislation, mandatory services and the environmental impacts. From this, the research can infer that there is a lack of understanding of mandatory services, specifically what the legislation is requiring the shift to digital. Therefore, to address this, users need to be informed of the changes and the provision of transparent policies are required, these policies need to be easily interpreted by all users. Furthermore, by understanding how different policies interact with the mandatory services users can be more informed as to the security and safety of their data, without this understanding it is unclear how end users will feel confident and comfortable using the services.

TABLE IV. ATO BARRIERS TO DIGITAL ADOPTION

Themes	Users comments
(listed by	
priority order)	
Platform	 Do not know how to access the page
support and	- What are the security measures in place?
technical	 How do I link between the MyGov and MyTax
support	platforms?
	- I have not used this before
	- where is my prefilled data ?
	- How do I change my details/or name?
	- The identification questions were incorrect
	- I am having technical difficulties
Lacks computer	- I want to use myTax by I don't know how to use a
skills, and/or	computer
has preference	 I have no email address or digital presence
to use non	- Do not nor wish to, own a computer
digital	 How do I do this digitally?
	 I always do my taxes this way
	 Language barriers prevents the use of digital
	 Only completes old non digitalised forms
Requires	- How do I lodge?
education in the	- Why do I need to?
system,	 How does tax work?
platform	- Why do I have to pay money?
awareness	 How does income work?
	- Where do I put information on the form?
	- What are tax offsets?
	 How long does this take?
	- What is a deduction?

When comparing the findings within Table IV to the preliminary findings within Tables V-VI, lessons can be learned in relation to the potential inclusiveness of digital services, especially when looking beyond mandatory systems and simply exploring the various policies and involvement of stakeholders. For example, in both mandatory and voluntary systems, an important issue for end users is the security concerns related to their private data, how they access the digital services and their level of digital literacy. The users for these services also differ considerably, which demonstrates interesting findings when it comes to across the board generalisability of barriers to digital inclusiveness.

TABLE V. ATO'S RESPONSE TO COVID-19

Theme	Users comments
(listed by	
priority)	
Financial	- I was able to obtain financial business support to keep
	my employees quickly (job keeper allowances)
	 Accessed my superannuation
	- I was able to financial cash flow boosts because my
	business was struggling financially
	- Ability to defer debt payments and interest charges
Informatio	 Online information was easy to access
n provision	 Information was in plain language
	 Everything was available in one place
Services	- Online support (via email)
	- Phone support (contacted call centre) even on weekends
	- Business Portal.
	- Through my tax agent I was able to get help

Theme	Users comments
(listed by	
priority)	
Platform	 Do not know how to access the page
support	 The page keeps dropping out
and	 What are the security measures in place?
technical	 How do I link between the MyGov and Services
support	Australia platforms?
	- I have not used this before
	 How do I change my details/or name?
	- The identification questions were incorrect
	- I am having technical difficulties
Lacks	- I have no email address or digital presence
computer	 Do not nor wish to own a computer
skills,	 How do I do this digitally?
and/or has	 Language barriers prevents the use of digital
preference	 Only completes old non digitalised forms
to use non	
digital	
Requires	 How do I obtain support payments online?
education	- Why do I need to online?
in the	- Where do I put information on the form?
system	 How long does this take?

TABLE VI. SERVICES AUSTRALIA BARRIERS TO DIGITAL ADOPTION

 TABLE VII. SERVICES AUSTRALIA'S RESPONSE TO COVID-19

 me
 Users comments

Theme	Users comments
Financial	 I was able to obtain financial support after losing my job Health care card was given to me so that I could afford medical treatments are without a job
	medical treatments even without a job
Informati	 I found information online about how to get support
on	- I was able to find the information through social media
provision	platforms
Services	 Online application process
	- Phone support (contacted call centre) even on weekends

The results within Tables VIII-XI, highlight how regardless of platform, the assistance required relates to enduser concerns about terminology, accuracy of information and representation. Furthermore, there is a clear and direct relationship between digital awareness of the operations of online platforms (eGovernment) and the types of questions asked within the digital space (e.g., digital literacy questions, obtaining the correct information).

TABLE VIII. RESPONSES TO "WHY ARE YOU NOT USING DIGITAL SERVICES?"

Theme	Users comments
(listed by	
priority)	
Scams/Fraud	- Fear of scams
/Security	- Not sure which is the real website and which is
	fraudulent
	 Computer/cyber security concerns
No	- Have no experience utilising a computer or accessing the
computer/	internet
Internet	 Unclear on what a digital health service is
access	- Have no access to the internet of computer
Skills	- Lack of skills
	- Not sure how to use it
	- COVID impacted access to in person services
Attitude	- Do not want to use it?
	- Why should I?
	- I am too old to learn
Other	- How is my data being used?
	- Inconsistent information
	- Processes are complicated

TABLE IX. RESPONSES TO "WHAT DO YOU THINK OF MYAGEDCARE?"

Theme	Users comments
(listed by	
priority	
order)	
Phoneline	- Rude staff
	 Staff demanding to speak to client directly despite
	acknowledgement of advocate availability
	- Hearing impairment impacting communication
	- Language barriers
Confusing	- Terminology used by staff
	- Questions deemed by clients as intrusive and unnecessary
	 Inaccurate information provided on website
	- Clients unable to understand the different services and costs
	involved - written information only with a lack of visual
	representation
	 Sometimes inaccurate representation of available services
	 Availability of services for under 65 years
Difficultly	- Vision impairment
accessing	 A lack of comprehension
	- Unreliable or no internet in the home (particularly rural and
	remote)
	- Mobility impairment - unable to leave home to use public
	access computer
	 Inability to express urgency
Attitudes	- What is the point?
	- Do not see value
	- Poor design
	 Not compatible with my lifestyle

TABLE X. RESPONSES TO "WHAT DO YOU THINK OF MY HEALTH RECORD?"

Theme	Users comments
(listed by	
priority	
order)	
Privacy	 Confidentially and privacy concerns
	- Concerns for the ongoing privacy for their data stored
	online
	 Unhappy that it cannot be deleted once created
	- Unclear who can access my records and why?
	 Allied health services can access my records
	- What if my medical history is shared an
Confusing	- Terminology used online
	 Accuracy of information provided on online
	- Not every doctors client and hospital is represented
Difficultly	- Vision impairment
accessing	- Do not understand how to use the portal
	 Low levels of digital literacy
	- Unreliable or no internet in the home
	- Mobility impairment - unable to leave home to use public
	access computer

TABLE XI. HEALTH'S RESPONSE TO COVID-19

Theme (listed by priority order)	Users comments
Medical	 My doctors appointments are now online or over the phone I had my scripts faxed to the chemist, who delivered them to my house I am scared about contracting COVID by seeing the doctor and sitting in the waiting room
Informati on provision	 Information about the outbreak is online There is conflicting information about the spread of COVID Information not online was hard to find
Services	- I was able to see my doctor even on weekends

VI. DISCUSSION

More than ever, inclusive digital services are critical to keeping Australians connected during this pandemic. The extent to which the delivery of the Australian health care system is exposed to disruptions including those imposed by COVID-19, has been two fold. Firstly, some of the changes have left health providers more able to provide timely, efficient, and appropriate care for a given individual. However in contrast, the effectiveness of health care is often determined by the characteristics of the delivery system, in this case 'telehealth'. Moving to a learning healthcare system delivered solely online will require the identification of specific areas where system complexities slow or inhibit progress. Findings indicate that an online only approach slows the development of solutions due to the diversity of technological capabilities of the end user (i.e., patients). Overcoming impediments such as lack of computer literacy and absence of technology savvy skills amongst the end users is a priority for e-government platforms aiming digital inclusion between the general population.

At this point of time, it is almost impossible to foresee the horizon past the peak of the COVID-19 disruptions. However, it appears that once we move to the Post Pandemic phase, there will be a chance to reform Australian social service e-systems. The ATO case set the example by being a "fast mover" adjusting their e-services, embracing technology and the new ways of working. In doing so, it appeared that they touch on some of the themes influencing end user digital adoption: User Centred Model (as shown in Figure 2) and maintained a face to face contact when needed (i.e., human phone support access).

Disruptions such as the COVID-19 Pandemic demands a new value network that reinforces all stakeholder participation in the digital ecosystem. Findings show that this has not been the case in the health arena when participants were asked what they thoughts were in relation to My Health Records and the overall response to COVID-19. Information as well as clear accessibility to data were some of the barriers identified. This is of great concern when already analysts are seeing a significant increase in the uptake of telehealth since the outbreak of COVID-19. We must take into account that patients already have an expectation of how care should be delivered when liaising on a face to face health appointment, and these expectations are increased by the virtual care options in which they see themselves having a more personal medical consultation. Table XI shows how participants adopted this system to supplement in-person attendances. Overall, the participant perceptions were positive in terms of having access to an online care system and yet struggled with finding information and allocating the right process to follow.

These care models, which under the current environment, may become mandatory systems, demand health systems that are digital inclusive and user friendly. It is at this point that we argue that a better understanding of the stakeholders' interaction and behaviours is needed to

facilitate a rapid and effective integration. The patient's (i.e., end users) perception, is that technology is poised to flip healthcare from scarcity to abundance. Therefore it is highly likely that the type of healthcare online services expected is one that provides them with ongoing / unlimited access. These new models of care provide another layer of complexity to the already complex system in place. However, we argue that in these disruptive complex times, there is a great opportunity to improve healthcare policy and the many aspects of the digital healthcare functions keeping in mind the adoption of a User Centred Model. A User Centred Model, in particular, can focus on the digitalisation of systems that enables ongoing access to patient care; patient and provider experiences; as well as the productivity and efficiency of the health system in allowing fullengagement and understanding of all involved.

There is no doubt that Australia will need to have a structured approach to continue the virtual care motion from the COVID-19 pandemic. This approach can potentially be initiated by a complete understanding of all the stakeholders already involved in the current digital health eGovernment platforms (i.e., MyAgedCare and My Health Records) in order to guarantee a truly inclusive digital healthcare system and an effective telehealth tool. In addition, as the ATO case showed, the stakeholders within the health sector should aim to strengthen partnerships between Australia's technology sector and providers to drive virtual care inclusive systems. Australia is at a critical point in which the assurance of the development of policies balancing robustness with ease to support the adoption of new virtual care technologies is detrimental. As mentioned earlier, a good starting point is to encourage telehealth and other digital systems to connect to the My Health Record and other existing technologies that health professionals use today. However, of great importance is to enable trust levels prior engaging with technology, levels that are often triggered by first hand face to face consultations. Perhaps, this calls for an initial hybrid approach. An approach that can be considered a transitional and user training approach. Particularly in cases where digital health services were told to be unreliable or participants did not have strong internet connections. Therefore attention to the right infrastructure that enable data and information to freely and securely flow must not be left outside the health agenda.

Little was known prior to the experiences of 2020, that the digital divide was to become more complex and generate disruptions to the already challenging environment of mandatory digital systems. The COVID-19 pandemic is a unique disruptive element that will challenge our digital culture in many ways, not least in our expectations of how we receive healthcare and access all government social services. This research highlights that virtual healthcare and the lessons learnt from ATO have had an important role to play in the future of eGovernment digital platforms design and its expected that all the digital transformation in the eGovernment sector that will continue to occur will be as digital inclusive as that seen already in other industries. Therefore, a systems' worldview, a systems thinking lens can provide the avenues for a comprehensive analysis of the transformational forces within the Australian digital platforms by looking at different stakeholders and their ability to respond to change.

VII. CONCLUSION

The preliminary findings from the digital health space in comparison to the ATO case study demonstrates significant similarities between the digital/online platforms and the issues associated with digital awareness, acceptance, assistance seeking, accessibility and support. As demonstrated within the results of the ATO case study and Services Australia examples, the value of face-to-face or human interaction based assistance is still a necessary component of the success of eGovernment service inclusiveness. Digital health too quickly removed the faceto-face component of assistance in regard to both My Health Record and My Aged care, decreasing the inclusiveness and making it difficult for individuals who preferred face-to-face support. Human interaction support is available in this space, however does not provide the same emotional support often expected within the delicate situations evident in healthcare. However, acknowledging the disruptions caused by the COVID-19 pandemic, we are not critiquing the quick digital response provided by telehealth systems. But we are highlighting the fact that the digital platform of the Australian health care system faces major challenges in aiming for 'a digital inclusive' user interface. Challenges additional to digitalisation are to be consider while transitioning to different ways of working by citizens, these include: the increase of demand for provision of care in aging groups, and the rising costs due to COVID-19.

The responses on perceptions on what participants think about My Health records platform (see Table VIII) indicates that users will expect services to be tailored to their specific needs, to guarantee privacy of personal data and information, and to address their personal preferences in the way they will access the interface. For policy-makers in the design arena, the challenges and implications are around the identification and inclusion of knowing who these users are, responding to their specific demands, and developing platforms that personalizes the experience to what is relevant to them, especially for our more vulnerable users: the disable and aging population. Technology and data are only as effective and efficient as the insights they gain in order to better respond to all stakeholders' needs.

My Health Record and MyAgedCare have a considerable amount to learn from the ATO and Services Australia, who have maintained high adoption and satisfaction ratings within their digital service. Furthermore, through multiple iterations, ongoing improvements were made possible, while ensuring that different avenues for obtaining support and assistance were available to suit the user's needs (e.g., in person, over the phone and through intermediaries). What this research has indicated is that the digital health services have moved too quickly in their

transition from legacy to digital services. The ATO learned within their transition to digital first services, specifically what legacy systems they could do without and which ones they need to maintain and improve.

eGovernment services across the various sectors in which they operate must seek to further understand their stakeholders and overcome the barriers experienced in the full digital integration of its users in order to provide a truly optimised experience and maintain ongoing engagement. There are key elements that need to be addressed to be successful, and ones needing further research: such as the concept of "digital inclusion in disruptive times" and the service, whereby there must be a benefit for the user to allow access to their data without their ongoing concern of privacy laws and access inequality.

Future research is set to explore the role of digital health and telehealth in greater detail within the palliative care space. In order to assess the challenges and experiences across the different areas of health care.

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