Journal of Rural and Community Development

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Citation:
Weeden, A., & Kelly, W. (2021). Canada's (Dis)connected Rural Broadband Policies: Dealing with the Digital Divide and Building 'Digital Capitals' to Address the Impacts Of COVID-19 in Rural Canada. *The Journal of Rural and Community Development*, *16*(4), 208–224.

Publisher:
Rural Development Institute, Brandon University.

Editor:
Dr. Doug Ramsey

ISSN: 1712-8277 © Authors
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Canada's (Dis)connected Rural Broadband Policies: Dealing with the Digital Divide and Building 'Digital Capitals' to Address the Impacts Of COVID-19 in Rural Canada

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Abstract

While the multiple 'digital divides' created by Canada's ineffective broadband policies are not new, the unevenly distributed challenges produced by COVID-19 are revealing the consequences of Canada's failure to close the gap. Public health guidance encouraged people to move many of their social and economic activities of daily life 'online'; however, mitigating the threat of COVID-19 through digital technology requires reliable, high-bandwidth, high-speed Internet. In rural regions, in particular, the lack of universally accessible, affordable, and reliable high-speed broadband infrastructure means many people in rural Canada continue to face infrastructural barriers to maintaining essential social and economic activities while adhering to public health advice to limit physical contact with others.

In this policy review, we highlight critical issues in Canadian rural broadband policy and investment programs and the way the pandemic has increased the urgency of addressing these issues. In response, we propose conceptualizing a 'digital capitals cycle' as one potential framework for closing the digital divide. Consolidating rural digital policy to include both infrastructure investments and long-term capacity building enables a multi-factor approach for supporting rural people and communities in Canada in achieving full, equitable participation in our increasingly digitally mediated social, economic, and political systems.

Keywords: digital divide, Canada, COVID-19, rural policy interest

ISSN: 1712-8277
www.jrcd.ca

Politiques canadiennes sur le haut débit en milieu rural (dé)connecté : gérer la fracture numérique et bâtir des « capitaux numériques » pour faire face aux répercussions de la COVID-19 dans les régions rurales du Canada

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Résumé

Bien que les multiples « fractures numériques » créées par les politiques inefficaces canadiennes en matière de large bande passante ne soient pas nouvelles, les défis inégalement répartis produits par la COVID-19 révèlent les conséquences de l'incapacité du Canada à combler l'écart. Les conseils de santé publique ont encouragé les gens à mettre en ligne bon nombre de leurs activités sociales et économiques de la vie quotidienne ; cependant, l'atténuation de la menace de COVID-19 à travers la technologie numérique nécessite un Internet fiable, à large bande passante et à haut débit. Dans les régions rurales, en particulier, le manque d'infrastructures à large bande à haute vitesse universellement accessibles, abordables et fiables signifie que de nombreuses personnes dans les régions rurales du Canada continuent de faire face à des obstacles infrastructurels pour maintenir les activités sociales et économiques essentielles tout en respectant les conseils de santé publique pour limiter les contacts physiques avec les autres.

Dans cet examen de politiques, nous soulignons les problèmes décisifs des politiques et des programmes d'investissement en matière de large bande passante en milieu rural au Canada et la façon dont la pandémie a accru l'urgence de faire face à ces problèmes. En réponse, nous proposons de conceptualiser un « cycle des capitaux numériques » comme un cadre potentiel pour combler la fracture numérique. La consolidation de la politique numérique rurale pour inclure à la fois les investissements dans les infrastructures et le développement des capacités à long terme permet une approche multifactorielle pour encourager les personnes et les communautés rurales du Canada à atteindre une participation pleine et équitable, au sein de nos systèmes sociaux, économiques et politiques de plus en plus numérisés.

Mots-clés : fracture numérique, Canada, COVID-19, intérêt pour la politique rurale

ISSN: 1712-8277

1.0 Introduction—The Plurality of the Digital Divide(s)

As the novel Coronavirus (COVID-19) pandemic materialized in Canada in the spring of 2020, the consequences of unevenly distributed digital infrastructure and the challenged technical capacity of many individuals, communities, and organizations were quickly thrown into sharp relief. The virus itself has disproportionately impacted historically and currently marginalized people, including (a) unhoused people; (b) precariously employed or economically disempowered people; (c) Indigenous, Black, and people of colour; (d) people with disabilities; and (e) rural, remote, or otherwise underserved communities (e.g., Bryant et al., 2020; Robertson, 2020a, 2020b; Temerty Faculty of Medicine, n.d.). Broadband researchers and digital justice advocates, including ourselves, have frequently emphasized that the plurality of these same uneven geographical, gendered, racialized, and class-related consequences of and exclusions by Canada's digital policies mean that the costs of being digitally disconnected—or on the wrong side of the digital divide—are highest and experienced most deeply by these same groups (e.g., Weeden & Kelly, 2020, 2021; Hallstrom et al., 2017). As such, the "challenges associated with accessing the financial capital and building the human and social capacity required to address digital deficits often serve to layer digital injustice over deep, persistent, and systemic socioeconomic inequalities in both rural and urban areas alike" (Weeden & Kelly, 2020, p. 4). These layered injustices and inequities mean that the 'digital divide' is actually plural; there are multiple digital divides that have been created and exacerbated by the lack of universally available–accessible, affordable, reliable, and modern ultra-high-speed broadband. In this critical policy commentary, we have focused on the challenges and consequences of policy aimed at addressing the rural–urban digital divide. While it is beyond the scope and length considerations of this policy review to address the full extent and complexities of the plurality of the digital divide(s) and their intersections, beginning by acknowledging their existence serves as important contextual framing for both our policy critique and our proposed place-based model for policy interventions that are sensitive to diverse rural realities.

Globally, Canada's peers recognize the critical nature of equitable digital access (European Commission, n.d.) and have established that broadband and access to the Internet is legally a enforceable, fundamental human right (United Nations Human Rights Council, 2016; Broadband Delivery UK, n.d.). The COVID-19 pandemic has served to underscore how Canada's previous and current approaches to building both hard (i.e., fibre optic networks, facilities, etc.) and soft (i.e., digital capacity, skills, services, etc.) digital infrastructure has prevented many people and communities, especially rural communities[1], from accessing their digital rights, leaving them under-resourced and underprepared to easily pivot to 'digital by default' during times of crisis. In this critical policy review, we explore the gaps in hard and soft digital infrastructure that have challenged—and continue to influence—rural Canada's ability to navigate the pandemic. In response, we propose a new policy framework for building 'digital capitals' to support inclusive, meaningful recovery from COVID-19 and prepare for future socio-economic shocks.

[1] Our use of 'rural' throughout this policy review is intended to broadly represent small, island, Indigenous, northern, and remote communities, based on the Rural and Small Town Canada definition. We recognize that while these contexts share many similar challenges, they also each experience specific realities and needs. First Nations, Metis, and Inuit communities, in particular, have led the way with community-based approaches to connectivity and digital skill-building. Projects and organizations such as First Mile, K-Net, and the Indigenous Connectivity Summit offer critical lessons for Canadian rural digital policy.

2.0 Policy Failures, Inadequate Infrastructure, and Challenged Capacity: Persistent Challenges Meet Pandemic Crises

The Organization for Economic Cooperation (OECD) describes the digital divide as "the gap between individuals, households, businesses and geographic areas at different socio-economic levels with regard to both their opportunities to access information and communication technologies (ICTs) and to their use of the Internet for a wide variety of activities" (OECD, 2001, p. 5; see also OECD, 2018). In Canada, the digital divide between rural and urban communities remains a deeply entrenched policy problem. Governments across Canada continue to struggle to develop and implement robust, flexible, and effective rural policies and programs that are capable of meeting the ever-changing needs and contexts of rural communities (Weeden, 2020a, 2020b; Canadian Rural Revitalization Foundation [CRRF], 2015); digital policy is no exception. Even more concerning, the serious lack of data about the location, type, and uptake of broadband infrastructure in rural Canada remains a significant challenge to the ability of governments, communities, and civil-society actors to effective advocate for or ultimately craft robust digital policy (Hambly & Rajabiun, 2021). This state of affairs recalls Dye's (2005) questions about effective policy:

> Does the government generally know what it is doing? Even if programs and policies are well organized, efficiently operated, adequately financed, and generally well supported by major interest groups, we may still want to ask, so what? Do they work? Do these programs have any beneficial effects on society? Are the effects immediate or long range? (p. 332)

In this section, we argue that the challenges brought about by the COVID-19 pandemic emphasized that governments across Canada really *do not* know what they are doing when it comes to digital policy. We argue that Canada's lack of a comprehensive approach to digital infrastructure and capacity building represents total policy failure (see McConnell, 2015), which has produced inadequate infrastructure investments and challenged the capacity of rural people and communities to access and actualize the full socio-economic benefits of our increasingly digitally-mediated world.

Our critical policy review is based on a purportive search and review of existing literature and policy commentaries (Patton, 2015). Sources were located via both academic and government databases (e.g., Web of Science, Google Scholar, Library and Archives Canada (LAC)) using the terms 'Canad* AND COVID-19', 'Canad* AND broadband', and 'Canad* AND digital AND policy,' filtered to account for federal policies and research on a national scale and limited to a time-frame of 2016 through 2021.[2] These boundaries were selected to focus on current and contemporary broadband research in Canada and policy responses in the most immediate period preceding and following the development of the COVID-19 pandemic. Our thematic analysis (see Ayres, 2008) and critical engagement is informed by our own positionalities as researchers and rural development practitioners with experience working in digital policy and programming in the context we write about (i.e., rural Canada) (see Naples &

[2] Note that we have included seminal literature published before 2016 in our review. Our emphasis on post-2016 publications is aimed at policy documents and data collection through the immediate pre-pandemic period through to the time of writing in mid-2021.

Sachs 2000) and is framed within the broader literature of socio-technical studies, rural policy, and policy analysis.

We are limited, however, by the emerging nature of the issue at hand and the novelty of the pandemic as a driver in Canadian rural policy, as well as constantly evolving socio-economic and technological contexts. Critically, there are only a handful of researchers working on the intersections of broadband infrastructure, digital policy, and rural development in Canada. Further, publicly available content from the Government of Canada on this issue remains high-level and is frequently presented without tangible data or decision-criteria (e.g., Government of Canada 2021a). As such, despite the high quality of existing scholarly work on these themes, it is somewhat limited in scale and scope; as Hambly and Rajabiun (2021) put it: "rural broadband researh and policy development is a genuine work-in-progress" (para. 7). This policy review and our proposed framework of a 'digital capitals cycle' offers a timely contriution to this work-in-progress through an invitation to re-evaluate Canada's approach to digital infrastructure and policy.

2.1 Policy Failure

Reimer and Bollman (2009) described public policy as

> anything governments do or do not do [in order to ensure] the social order—the coordination of individuals, groups, and institutions within reasonably stable normative systems—so that basic needs can be met, groups, crises managed, and the future survival of the society enhanced" (p. 10).

Most public policy is developed and evaluated based on the assumption that the self-regulating market of a Western capitalist economic system and liberal democracy is the major mechanism for achieving these goals (Atkinson & Chandler, 1983). Multi-sector panels and tasks forces have understood the importance of a connected rural Canada for more than two decades (National Broadband Taskforce, 2001) and have consistently recommended comprehensive solutions to reducing access barriers in Canada (Broadcasting and Telecommunications Legislative Review Panel , 2020). However, when it comes time for action, Canada has largely relied on large telecommunications corporations—and little competition between them—to build broadband infrastructure (both wire and wireless based) (see Smythe, 1960; Babe, 1990; Joseph, 2018). Using Winseck's (1998) approach to political economy, McNally et. al. (2017) argued that the central conflict in Canadian telecommunications policy is between two irreconcilable goals: facilitating capital accumulation for the dominant firms constituting the telecom oligopoly versus enhancing democratic potential and human rights through the use of communicative technologies (p. 44–45; see also Winseck, 1997, 1998).

The results of this unproductive tension have been underwhelming. In 2019, while most urban households met Canadian Radio-television and Telecommunications Commission (CRTC) standards, 63% of rural households in Canada still lacked Internet services that met CRTC 'basic service' target of 50 Mbps download/10 Mbps upload (Hambly & Rajabiun, 2021; cf. CRTC 2019a, 2019b). Unsurprisingly this, disparity is reflected in consumer satisfaction. While a recent report from the Competition Bureau of Canada indicated the majority of Canadians are generally happy with market delivery of Internet services, the report noted that there is "a significant exception in

satisfaction for consumers in rural and remote areas of Canada, who typically have fewer, and less modern, options for internet services" (Competition Bureau of Canada, 2019, pg. 8). Despite (at least) eight federal broadband programs offered since 1994 and more than three decades of digitally oriented policies and programs, Canada has experienced significant decline in both the extension of broadband to underserved areas and the adoption of the latest advances in broadband technologies (Hallstrom et. al., 2017; McNally et. al., 2017). Broadband policy directives, and the billions of dollars attached to them in market stimulus, have yet to achieve the benchmarks and goals for rural Canada set decades ago, let alone those set in more recent years (see McConnell, 2015), pointing to overall policy failure.

With more than two-thirds of rural households lacking even basic Internet services pre-pandemic, rural communities have faced significant and ongoing challenges in accessing and leveraging the digital infrastructure and services required to meet their social and economic needs and goals.[3] Throughout the pandemic, these issues became more threatening, as digital connectivity—and the ability to use it effectively—has become critical for ensuring people can work, learn, and socialize remotely in order to reduce their risks of exposure to the COVID-19 virus.

2.2 Inadequate Infrastructure

Canada's reliance on capitalist approaches to digital policy has produced weak telecommunications regulation, a haphazard approach to public investment in broadband infrastructure, and unambitious speed and service level targets (see Hambly & Rajabiun, 2021; McNally et. al, 2017; McNally et. al, 2018; Weeden & Kelly, 2020). The current goal to connect every Canadian to Internet services capable of 50 Mbps download and 10 Mbps upload speeds by 2030 (CRTC, 2016b). Unfortunately, "targets tend to become ceilings rather than floors" (Weeden & Kelly, 2020, p. 6) and the 50/10 target is already well-behind service standards enjoyed by urban Canadians and even further behind service levels available in other OECD countries (OECD, 2018). Where infrastructure does exist in rural areas, it is often legacy infrastructure such as cable, DSL, or satellite—rather than fibre-optic—and/or poorly integrated (see Hambly & Rajabiun, 2021; McNally, n.d). Canada does not have comprehensive federal, provincial, or regional connectivity plans and as governments have funded one-off projects to connect individual sites (i.e., hospitals or schools) or individual communities, these networks are often disconnected from existing infrastructure (see Hambly & Rajabiun, 2021). Further, corporate capture of broadband infrastructure means it is often obscured from scrutiny due to its classification as a private asset vital to maintaining competitive advantage (Bain & Van Deurzen, 2019). As a result, rural Canada's broadband networks are built "like a series of parallel roads that only allow one or two types of vehicles to travel on them—rather than an integrated, holistically planned network" (Weeden & Kelly, 2020, p.8). Similar challenges exist with Canada's wireless broadband with spectrum licenses, which are dominated by large telecommunication providers, not strategically managed, and weighted towards increasing services in urban and peri-urban areas (McNally et al., 2018). Spectrum licensing represents a complex policy challenge beyond its use as a critical service delivery mechanism for more remote communities; while other forms of physical

[3] As noted in the opening of this policy review, the lack of sufficiently granular data about access and adoption makes it challenging to understand how additional layers to the plurality of digital divides (socio-demographic, economic, etc.) further contribute to these challenges.

infrastructure must respect Indigenous sovereignty across land, water, and air rights, questions about how spectrum licensing interacts with Indigenous sovereignty have yet to be addressed (Internet Society, 2021).

The implications of Canada's poorly planned, poorly executed, and weakly regulated broadband networks have become glaringly obvious during the pandemic. Throughout the early months of the pandemic, internet service providers (ISPs) identified an increase in demand ranging from 25% to 60% during peak hours (Weeden & Kelly, 2020, p. 6). One month into the pandemic, the Canadian Internet Registration Authority (CIRA) reported substantial gaps in both the availability and quality of broadband between rural and urban areas of Canada (CIRA, 2020). Where broadband was available, the increased demand for bandwidth produced considerable deterioration in the quality of broadband services during this time (CIRA, 2020). For example, in April 2020, "rural download speeds were nearly 12 times slower than those enjoyed by urban Canadians;" urban speeds increased to over 44 Mbps for urban users, while rural users struggled with speeds of 3.78 Mbps (CIRA, 2020). This was a more pronounced difference than pre-pandemic media speeds—which were approximately 35 Mbps in urban areas; 4–7 Mbps in rural areas (CIRA, 2020). A year later, in March 2021, the median download speed had increased to over 51 Mbps in cities and 9.74 Mbps in rural Canada; while rural areas saw some improvement, the difference between these two averages indicates that the rural–urban digital divide has grown substantially during the pandemic (CIRA, 2021).

2.3 Challenged Capacity

If the goal of public policy is to ensure "basic needs can be met, groups, crises managed, and the future survival of the society enhanced" (Reimer & Bollman, p. 10, 2009), the lack of universally available, affordable, reliable, high-speed Internet across Canada provides direct evidence of policy failure that produces a 'vicious cycle': (e.g Warren, 2007; CRRF, 2017; BDO, 2017): without access to affordable Internet services, people cannot develop the skills required to successfully navigate and participate in increasingly digitally-mediated social and economic systems; those with digital skills or demands relocate somewhere they can leverage those skills for their socio-economic benefit. The lack and/or loss of technical knowledge and/or skills constrains local capacity to advocate for and secure appropriate physical infrastructure investments—which then repeats into a lack of access, lack–loss of skills, and unrealized potential.

Connecting people and places to broadband infrastructure is just one—as yet unachieved—component in reversing this vicious cycle. Rural people, and the governments, businesses, and organizations that operate in rural contexts, must have both the appropriate digital infrastructure *and* skills and capacity to leverage its full potential (Hallstrom et. al., 2017; Kelly, 2020; Weeden & Kelly, 2020). Broadband access and digital capacity are critical to the future resilience of communities across nearly all indicators of economic development and well-being, such as (a) health, (b) education, (c) socialization, (d) political participation, and (e) access to meaningful employment (Kelly, 2020; Pant & Odame, 2017; Van Deursen & Helsper, 2017; Weeden & Kelly, 2020, 2021). During the pandemic, a person's ability to (a) successfully work or learn from home, (b) pivot creatively in their business models, (c) offer or receive critical services (such as remote medical care or social supports), and (d) socialize safely became directly linked to both individual and community digital capitals (Weeden & Kelly, 2020, 2021). As it remains unclear when the COVID-19 pandemic may end, and there will undoubtedly be future shocks that require

digital infrastructure and capacity to safely navigate, new approaches to investing in both individual and community digital capacity must become an urgent priority for rural Canada (Weeden & Kelly, 2020, 2021).

3.0 Digital by Default: Unraveling the Consequences of Policy Assumptions during COVID-19

In 2016, then CRTC Chair, Jean-Pierre Blais stated that "today, in Canada, broadband is vital." (CRTC, 2016a, ln. 7564). The COVID-19 pandemic quickly revealed just how vital broadband is to socio-economic activity, as nearly every aspect of day-to-day life moved 'online' in order to reduce the need for in-person contact (Weeden & Kelly, 2020). To this end, COVID-19 accelerated the roll-out of a 'digital by default' approach by public and private sectors alike (e.g., Gingras, 2020; Government of Canada, 2021b). However, this quick pivot is predicated on the assumption that everyone has access to high-quality, reliable Internet service capable of handling such demands. News stories in the first months of the pandemic highlighted that many rural Canadians struggled to participate in this suddenly 'digital by default' world (Carra, 2020; Li, 2020). While urban consumers had access to more options to upgrade their home Internet services—and they used those options—rural consumers continued to face default market monopolies in their communities, contributing to the deepening digital divide between rural and urban communities (CIRA, 2020). Some of this may be due to differences in infrastructure used to deliver broadband to rural communities, which are most often served by satellite or wireless services. These services had been oversubscribed pre-pandemic, with limited capacity to expand or improve throughout the pandemic (Weeden & Kelly, 2020). Media coverage highlighted stories of rural residents accessing Wi-Fi in school parking lots due to poor home service (Wichers, 2020) and the struggles of increasingly isolated rural people who could not see friends and family in person yet did not have the option to connect online (Robertson, 2020a, 2020b). The detrimental impacts of inequitable Internet access reduced the ability of many rural Canadians to respond and adapt to the new digital realities of society in the pandemic.

4.0 Correcting Course: Developing a New "Digital Capitals Cycle" for Post-Pandemic Digital Policy

Canada's approach to digital policy needs significant re-orientation. Below, we propose a new framework for supporting investment in both digital infrastructure and digital capacity across rural Canada.

Rural communities are not just passive consumers of digital services nor are they isolated from their urban counterparts; they are often innovators who develop creative means for building both hard and soft digital infrastructure capacity through rural-urban linkages. Examples include the Eastern Ontario Regional Network (Eastern Ontario Wardens' Caucus); Hamiota, Manitoba (Kelly & Hynes, 2018); Olds, Alberta; Caslo, British Columbia; and Southwestern Integrated Fibre Technology, Inc. (Western Ontario Wardens' Caucus) (Weeden, 2015). Alongside civic technology groups, agricultural organizations, educational programs, and private enterprise development, community networks have made significant inroads to building and managing their own broadband networks and digital capacity building initiatives. However, these initiatives represent outliers (see Ramirez, 2000); they have succeeded *despite* current policies and investment programs. While they represent admirable case studies of what rural communities can do through their own initiative, they vary wildly in their mandates and models, and in no way indicate 'problem solved' when it

comes to bridging the digital divide. Instead, through the lens of policy analysis and evaluation, these cases should be interpreted as evidence of broader policy failure. The lack of cohesive, effective digital rural policy at the federal and provincial levels and the lack of interjurisdictional coordination has left rural communities blowing in the wind and looking their own anchors.

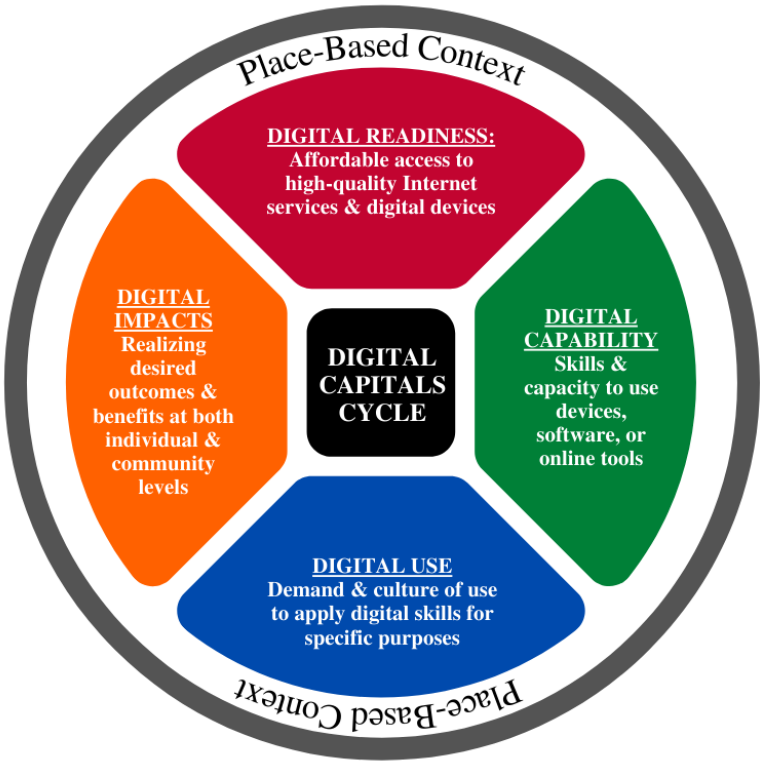
Effective digital policy for rural Canada must evolve to include a comprehensive national plan that adapts to place-based contexts and encompasses more than just physical infrastructure. This does not equal total decentralization, which usually results in the abandonment of communities to go it alone (Reimer & Markey, 2008). Logistically, local networks must connect to provincial and national networks in order to access key international networks (i.e., through the Toronto Internet Exchange, Canada's largest Internet exchange point) (Toronto Internet Exchange, n.d). Funding and governance frameworks must navigate to interjurisdictional arrangements while being capable of providing locally tailored approaches to building hard and soft infrastructures that reflect and respond to the diversity of rural realities. Further, policymakers must stop assuming a 'build, and they will come' approach to digital policy and programs, as building infrastructure alone will not solve all digital challenges for rural communities (Rajabiun & Middleton, 2013; Roberts et al., 2017). Investments in physical infrastructure must be accompanied by investments in building digital skills and cultures of use (Kelly, 2020).

To address current policy failures and avoid future failures, digital policy in Canada should reflect the cyclical nature of building local capacity, rather than singular initiatives that address either physical infrastructure or technical skill-building through siloed Ministerial portfolios. The literature points to comprehensive and community-based approaches as the most effective means of realizing the benefits of digital in rural contexts (McNally et al., 2016; Salemink et al., 2017). In response, we propose a cyclical mapping approach to developing effective rural digital policy (see Figure 1). Our 'digital capitals cycle' provides a more holistic foundation for developing effective digital policy that reflects and contextualizes the way that investments in physical infrastructure both support and require digital capacity and culture of use before achieving the anticipated and desired benefits of technology, which then feed into future investments in infrastructure. Approaching rural digital development as a place-based cycle that incorporates digital skills and adoption into policy design enables more tailored approaches for rural places and emphasizes the potential for creating 'virtuous cycles' that can adapt to technological and socio-economic change. This approach mirrors and integrates established concepts from the literature on policy analysis and policy development (cf. Howard, 2005; Howlett, 2009a, 2009b, 2014a, 2014b). The key benefit of using an approach that mirrors other social, economic, and environmental capitals (e.g., Flora & Flora, 2008) is that it creates a stronger base for supporting resilience to future shocks. Had such an approach been in place prior to the COVID-19 pandemic, rural people and communities would have already been engaged in managing core infrastructure investments, better able to leverage a culture of use for available infrastructure and equipped with the information required to effectively advocate for specific immediate and long-term investments to respond to and recover from the pandemic.

The digital capitals cycle emphasizes the importance of identifying, understanding, and addressing the multiple digital divides, opportunities and priorities that exist within and across rural communities (Kelly, 2020). The diversity of rural people and places means that digital infrastructure, skills and adoption opportunities and challenges occur at different levels and different

combinations. The digital capitals cycle has been developed by the authors to reflect the complementary, place-specific process of tailoring digital rural development to the specific needs of individual rural communities by accounting for unique combinations of digital access and adoption (Weeden & Kelly, 2020). Understanding place-specific digital landscapes and priorities is critical to understanding their impact on individual communities and determining how policy and development activities can address that community's unique needs and opportunities. It is also important for policymakers, development practitioners, and researchers alike to understand that rural communities do not go through the digital capitals cycle one time only; it is an ongoing and iterative process that must respond to changing contexts, new technologies (i.e., '5G', Internet of Things, machine learning, etc.), emerging opportunities, and as communities learn more about the plurality of local digital divides. The cyclical nature of the framework reflects lessons from the literature on community resilience and community capitals; communities are and will always be in a state of perpetual change (Magis, 2010; Roberts et al., 2017). We offer the digital capitals cycle as a holistic alternative to current digital policy that will help identify the barriers and opportunities for realizing the full potential of digital infrastructure in rural communities.

Figure 1: Digital Capitals Cycle.



Source: Created by Authors.

5.0 Summary & Next Steps

In this critical policy review, we have highlighted the major gaps in Canada's approach to rural digital policy and development and their implications during the COVID-19 pandemic. Canada's digital policy failures have produced inequitable access and left rural people and communities at particular social, economic, and public health disadvantages. It is essential that policymakers to understand that non-urban Canada encompasses a wide range of rural and socio-

economic realities, including (a) peri-urban; (b) northern and remote geographies; (c) First Nation, Metis and Inuit communities; and (d) regions with diverse socio-economic and demographic realities. Focusing primarily on market stimuli to deliver solutions to address the rural–urban digital divide has been ineffective for both building hard and soft digital infrastructure. To meaningfully address these issues and enable rural communities to realize the full benefits of the digital economy, Canada's digital rural policy must take a holistic approach to investing in connectivity, capacity, and culture of use. Effective and equitable digital policy for rural Canada requires tailored, place-based approaches that encompass the complete process of developing digital capitals.

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