

Bridging the digital divides in the most deprived Hungarian rural regions

Our paper studies the intersection of conventional social disparities and the digital divide in the context of post-COVID rural Hungary. We focus on the policy potential of digital inclusion interventions in social inclusion programs in general and in particular on the potential they carry in improving the lives of the most deprived Hungarian rural communities.

The study of digital divides captures the growing significance of digitalization in the three interconnected areas of access to technologies such as the internet and interaction-mediating devices, the skills and competencies employed in the use of digital technologies and, thirdly, the social, economic or psychological outcomes of digital practices (Hargittai 2002, Chen, Wellmann, 2004, van Deursen, Helsper 2015, van Deursen 2015, 2019, Lutz 2019, van Dijk 2020, Cotter, Reisdorf, 2020, Loh, Chib 2021). Digital inequalities have been identified as vital aspects of social and economic prosperity by scholars and policy-makers alike (van Dijk 2006, Ono, Zavodny, 2007, Halford, Savage 2010, Witte, Mannon 2010, Hargittai, Hsieh 2013, Helsper 2012, Robinson et al 2015, van Deursen et al 2017) triggering various programs and policy measures for digital inclusion (Boas et al 2005, Nemer 2015, Ragnedda 2017, Ragnedda 2020, Robinson et al 2020s, 2020b, Robinson 2020, van Dijk 2020). The vast digital inequality gaps recently exposed by the COVID-19 pandemic (Robinson et al. 2020a, 2020b, Van Deursen 2020, Nguyen, Hargittai, Marler 2021) call into question the validity of techno-optimistic expectations on the potential of internet as "great equalizer." An invention that makes a significant proportion of collective human knowledge available to the user 'with just one click' has understandably led to the emergence of a narrative that the internet represents a whole new social mobility channel. The immediate availability of knowledge and information on the web is understood to reduce the cultural dimension of social inequalities by counteracting phenomena such as the exclusion of disadvantaged groups from formal education, disadvantages due to locality, or simply the financial difficulty of obtaining books and newspapers. The power of this positive discourse on the internet has to some been fading already since the 2000s. One of the reasons is that the benefits of digitisation had been available decades earlier in urban areas better fitted with the necessary infrastructure, so the expected leapfrogging of rural districts could not be realised. Although the spread of smartphones and the deployment of broadband infrastructure made internet accessible more or less to everyone in the advanced countries, the spatial digital divide is still evident (Park 2017, Robinson et al., 2020). The first level of digital divides (access inequality), naturally determines the digital skills and capital-intensive use of the technology. Therefore even with a complete deployment of digital infrastructure, certain populations have to make up for up for 30 years of digital skills backlog. Access difficulties hinder the development of perceived usefulness of ICTs, reducing the adoption of the technology on a micro-level and the diffusion of innovations at the societal level. ICT adoption is especially problematic in deprived areas where, in addition to infrastructural deficiencies, problems such as lack of financial resources, unemployment, low educational levels are also present. These problems also effect rural areas and deepen regional disparities.

Hungary ranks around the EU average in terms of household internet access, with 91% of households having internet access in 2021. In the rural areas of Hungary, however, conditions are far less favourable and the digital rural penalty is strikingly evident. Rural Hungary also

embraces divergent spatial social transformation processes from more recent trends of rural gentrification (Tomay) to more conventional trends of micro-regional concentration of social exclusion. The spatial concentration of social exclusion, segregation, is typically an urban phenomena globally but in the Hungarian (and wider Eastern European) context, rural segregation affects regionally clustered pools of rural communities. The intersection of conventional social disparities and the digital divide in the context of post-COVID rural Hungary presents special challenges for social inclusion policy makers.

While social inclusion policies usually target a wide array of social exclusion processes, including their various spatial implications, digital inclusion objectives are more of an exception than a convention in the policy toolkit of complex social rehabilitation programs implemented in vulnerable communities. Our investigations are focused on the 300 most deprived Hungarian rural communities which are included in a comprehensive publicly funded Social Inclusion Program (<https://fete.hu>) implemented by five national charity organizations and a number of smaller charities since 2019. The program is local needs-tailored, as interventions are designed in response to an initial local social diagnosis. This policy design commitment opens the prospect of incorporating a wide array of social inclusion intervention measures, allows ample room for socially innovative solutions and creates the option for digital inclusion efforts that were shown to be most effective when tailored to local needs (Ragnedda 2020). What role does, and potentially could digital inclusion play in the intervention toolkit of professionals on the ground? In the wake of the challenges posed by the COVID-19 pandemic, have digital inclusion tools been added to the social inclusion policy solutions aimed at the most deprived Hungarian rural regions? To what extent are helping professionals themselves connected, in possession of digital skills and in a position to reap digital dividends? To what extent are locals in these deprived rural neighborhoods connected, in possession of digital skills, and in a position to reap digital dividends?

On the marco level, there are a number of composite indicators that capture where countries stand on the progressive trajectory of adapting transformative digital technologies. That is the aim of indicators such as the EU's Digital Economy and Society Index (<https://digital-strategy.ec.europa.eu/en/policies/desi>), the OECD's Going Digital Toolkit (<https://goingdigital.oecd.org>), the World Bank's Digital Adaption Index (<https://www.worldbank.org/en/publication/wdr2016>), ITU's ICT Development Index (<https://www.itu.int/itu-d/sites/statistics/>), IMD's World Digital Competitiveness Index (<https://www.imd.org/centers/world-competitiveness-center/rankings/world-digital-competitiveness/>), or Datareportal's Global Digital Overview series (<https://datareportal.com/reports/digital-2020-global-digital-overview>). On the regional and local levels, it makes sense to use and produce data that is comparable to input variables used in the calculation of these composite indicators. Our data collection on the level of local communities in the Social Inclusion Program (SIP) did just that. On the one hand we collected digital divide data among both the vulnerable families as well as the helping professionals working with them in the framework of SIP. From among macro level composite indicators of digitalization we selected a few key variables to assess the state of the digital divide in three of the most vulnerable rural communities in southern most Hungary. Our survey results confirm that fundamental aspects of all three digital divides continue to be real barriers for the deprived rural communities we study. The digital posture of helping professionals, on the other hand, provides ground for designing intervention tools that would target existing

potentials (such as the availability of smartphones) and assist helping professionals to become digital transformers. Given that social inclusion practitioners on site in these vulnerable communities are under considerable social innovation pressure, it is also of practical significance to investigate whether in the post-COVID era digital inclusion interventions are on their agenda and what kind of support they need to bridge the digital divide for these local communities. In contrast to the efforts it takes to have a meaningful impact on transport, educational, health care infrastructure or the regional labour market, connecting locals to the social mainstream via the digital highway offers more realistic options. Or case study offers empirical insight into the intersection of digital and social inequalities and informs digital inclusion policies and interventions in deprived rural communities. The digitalisation paradox, the twofold potential of digital transformation is most pronounced in the wider social context of rural deprivation. The promise of digital transformation to improve economic, social resilience and development for societies writ large stands in sharp contrast to its capacity to stimulate social exclusion in settings where communities are still entangled in the digital divides. The most deprived rural communities stand to lose relatively the most if digital inclusion measures do not improve digital connectivity, competences and meaningful uses of digital technologies in order to improve individuals' life chances (Ragnedda, 2017).