

BRIDGING URBAN DIGITAL DIVIDE: DIGITAL HELPERS AND THE GOVERNANCE OF SMART CITIES

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Abstract

Digital inequalities shape not only the national and regional contexts, but also the urban and metropolitan landscape, amplifying existing social and spatial divides. The existing disparities are no longer limited to the peripheral areas but now affect access to services, participation, and opportunities, especially in the new highly connected smart cities. In response, several strategies, both formal and informal, have been implemented, from digital inclusion programs to development plans integrating digital access as key priority. One of the approaches that currently are gaining traction is represented by the digital helpers. These individuals, often younger family members, caregivers, social workers, or community volunteers, support others in navigating essential digital tasks, from online administration to accessing health or education services.

Our paper offers a comprehensive review of the concept of digital helpers, exploring their characteristics, the contexts in which they operate, and their potential to mitigate digital inequalities. Based on a multidisciplinary literature and urban policy frameworks, the paper highlights how integrating digital helpers into local strategies can provide a flexible complement to existing policies. It concludes with recommendations for urban and metropolitan policymakers to access and cultivate this social resource to promote digital equity.

Keywords: digital inequalities, digital helpers, urban policies, urban governance.

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1. Introduction

Over the past two decades, smart city policies and digital technologies have reshaped urban governance, city planning, public services, and day-by-day life in cities and metropolitan regions. As policymakers adopt smart city agendas and digital-first strategies at a higher pace than before, in order to progressively enhance efficiency and citizen engagement, they become confronted with a secondary, less-desired effect of these initiatives. While initially implemented as tools for inclusivity, many digital policies have reinforced existing social inequalities. Recent studies highlight that digital transformation processes, especially when designed under assumptions of universal accessibility, often amplify structural disparities, particularly for vulnerable groups who face barriers in accessing and/or utilizing digital services. In this context, digital inequalities are considered worldwide a top priority, both by scientists in urban studies and policymakers.

The study of digital inequalities has evolved and recently adopted theoretical frameworks to capture the multidimensional nature of exclusion. While early studies, at the beginning of the 2000s focused primarily on access (Gunkel, 2003; Kim and Kim, 2001; van Dijk, 2006) and especially on who owns or can connect to digital devices, recently, the shift towards the long-term impact became dominant (Litchfield, Shukla and Greenfield, 2021; Lythreathis, Singh and El-Kassar, 2022; Vassilakopoulou and Hustad, 2023).

Based on a strong selection of studies (Hargittai, 2002; 2003; DiMaggio *et al.*, 2004; van Deursen, Helsper and Eynon, 2016; van Dijk, 2006; 2020), a conceptual framework of a three-level digital divide model was created, which remains to date, the main approach for identifying and addressing digital inequalities. According to this framework, the first-level digital divide is related to the material access (hardware, internet connectivity) to engage in the digital world, the second-level is focused on disparities in skills and usage, and the third-level examines the outcomes of digital participation.

As digital tools become integrated parts of essential domains (healthcare, finance, public administration), those lacking digital skills rely on intermediaries to bridge the gap. One such intermediary figure, which has gained momentum but remains under-theorized, is the digital helper. The term refers to individuals who have sufficient digital skills and who assist others (family members, neighbors, or peers) with digital-related tasks (Allmann and Blank, 2021). While sometimes this type of help is either informal, or accidental, the involvement of digital helpers has become a widespread strategy.

Despite their impact, digital helpers have received limited conceptual attention in literature, or policy-orientated chapters in local strategies. Most research tends to treat them as an isolated phenomenon rather than as a key component of digital inclusion. Our paper aims to address this gap by offering a more systematic conceptualization of the digital helpers and a framework for understanding their role, scope, and impact in urban digital environments, as well as concrete policy suggestions regarding their implication in long-term strategies. We contribute to a more comprehensive understanding of how digital divides

are navigated in practice, not only through institutional interventions, but also through community-based dynamics.

2. Digital inequalities: the rising issue for urban and metropolitan policymakers

The digitalization of society has increased the academic and policy focus on digital inequalities, which, as proved by recent studies, extend well beyond basic access to technology (Robinson *et al.*, 2015; Robinson *et al.*, 2020). Initially understood as differences in access (NTIA, 1999), the digital divide has evolved into a multi-dimensional issue involving access, skills, usage, and the benefits derived from digital participation (Vassilakopoulou and Hustad, 2023; van Dijk, 2006). The existing inequality is deeply connected with the socio-economic, geographic, cultural, and political structures and is transforming how people engage with technology. Rather than a simple division between those with and without access (Centeio, 2017; Lythreatis, Singh and El-Kassar, 2022), current research defines digital inequalities as complex, layered, and systemic (Srinuan and Bohlin, 2011).

The scientific discourse has adopted a wide range of frameworks to explore the complexity of the issue, classifying digital inequalities along multiple axes to reflect the dynamics of digital exclusion (Maceviciute and Wilson, 2018; Robinson *et al.*, 2020; van Deursen, Helsper and Eynon, 2016; van Dijk, 2006; 2020). A central reference point is the three-level digital divide model, applied in contemporary research to map out differentiated forms of digital exclusion (Hargittai, 2002; 2003; DiMaggio *et al.*, 2004; van Deursen, Helsper and Eynon, 2016; van Dijk, 2006; 2020). While initially used exclusively for a research-based approach, the policy strategies adopted the model as well, in order to better prioritize and tackle the digital inequalities.

The first-level digital divide focuses on material access to digital technologies. Although global connectivity has advanced, the material (technical) dimension persists, linked to disparities in connection quality, speed, and affordability across socio-economic and geographic lines (Maceviciute and Wilson, 2018; Robinson *et al.*, 2020; van Deursen and van Dijk, 2019). In high-income contexts such as metropolises or big cities, and especially driven by smart strategies, broadband access tends to be generalized and affordable, yet infrastructure gaps remain for vulnerable populations, reflected in slower speeds and higher costs (Riggins and Dewan, 2005; Perera *et al.*, 2023). Some examples from the USA, Lithuania, the UK, and Romania highlight the persistent urban-rural or inter-urban divides (Maceviciute and Wilson, 2018). The pandemic exposed these access disparities, and in contexts where internet infrastructure was unstable or unaffordable, individuals faced disadvantages in education and employment (Beaunoyer, Dupéré and Guitton, 2020; Ibănescu *et al.*, 2023; Zheng and Walsham, 2021). Restricted access to essential services like telework, online learning, or telemedicine (Imran, 2023; Robinson *et al.*, 2020)

stressed the need to move beyond simplistic metrics of internet penetration towards more solid analyses of access quality to contemporary technical requirements.

The second-level digital divide shifts focus from physical access to usage patterns and digital skills. It examines how socio-economic groups diverge in their internet practices and capacities to utilize digital tools (DiMaggio *et al.*, 2004; Lythreatis, Singh and El-Kassar, 2022; van Dijk, 2006). Some researchers consider that access-centric models show only half of the image, arguing that inequalities are sustained when disadvantaged groups engage predominantly in entertainment or passive consumption online, whereas privileged groups use digital resources for education, career advancement, or civic engagement (Hargittai, 2002; DiMaggio *et al.*, 2004; van Dijk, 2006). This approach has evolved into more sophisticated typologies of digital skills, identifying operational, informational, social, and creative competencies necessary for meaningful digital engagement (van Deursen and van Dijk, 2010; 2015). Therefore, the list of skills extends from basic technical know-how to more complex activities like critically evaluating information, participating in online networks, and producing content (van Deursen, Helsper and Eynon, 2016). Researches from the past two decades identified socio-economic status, educational attainment, motivational factors, gender, and cultural background as drivers of skill disparities (DiMaggio *et al.*, 2004; Scheerder, van Deursen and van Dijk, 2017; van Deursen and van Dijk, 2010).

The third-level digital divide centers on the unequal outcomes and effects generated by digital participation (Scheerder, van Deursen and van Dijk, 2017; van Deursen and Helsper, 2015). It accentuates the translation of digital engagement into concrete life benefits such as employment, wages, social mobility, and political participation (Aissaoui, 2022; DiMaggio *et al.*, 2004). At a macro level, ICT adoption correlates with productivity growth in high-income countries, but the same effect fails to arise in many developing regions due to structural barriers like weak infrastructure, limited institutional support, and skills deficits (Acemoglu, 2007; Aissaoui, 2022; Korovkin, Park and Kaganer, 2023). Education, governance, and human capital development are key components for translating digital adoption into economic growth (Aissaoui, 2022; Pradhan, Malik and Baghci, 2018). At an individual scale, the third-level of digital divides are manifested into wage gaps, employment disparities, disproportionate benefits for digitally skilled workers while leaving others vulnerable to economic precarity (Acemoglu, 2007; van Deursen and Helsper, 2015). The pandemic highlighted this trend, as workers with high digital skills were more resilient in remote labor markets, while those with limited skills faced unemployment (Beaunoyer, Dupéré and Guitton, 2020). Beyond economic consequences, digital engagement also shapes civic participation, with digitally literate individuals more likely to engage in political processes and e-governance, supporting democratic engagement while excluding those with low digital skills (Aissaoui, 2022; Bucea *et al.*, 2021; van Deursen and Helsper, 2015).

As a result, the fight against digital inequalities is no longer reduced to merely connectivity. Policy strategies require tools tackling affordability, fair digital governance, and

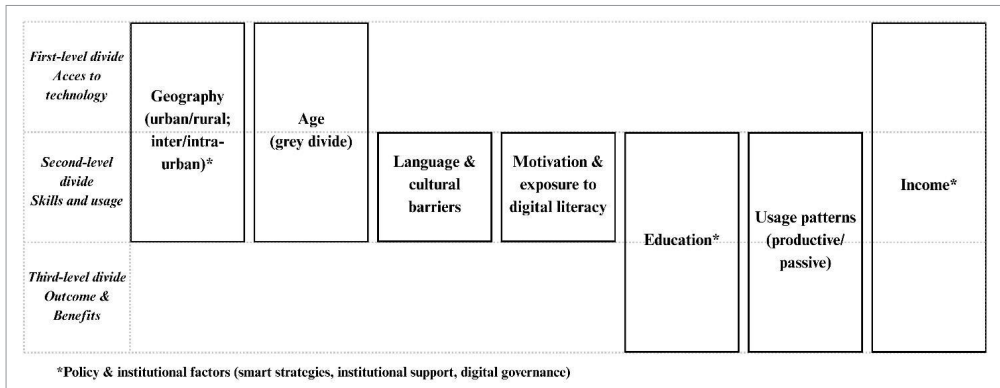


Figure 1: Main drivers of the three-level digital divide

Source: The authors, based on Maceviciute and Wilson, 2018; Robinson *et al.*, 2020; van Deursen, Helsper and Eynon, 2016; van Dijk, 2006; 2020

skills development (Lythreatis, Singh and El-Kassar, 2022). Income, education, geography, and especially the institutional prowess appear as key factors of differentiation, their continued intersection perpetuating unequal digital opportunities (Robinson *et al.*, 2020).

3. Territorial and policy determinants of digital inequality

Spatial factors are particularly important in creating or accentuating digital inequalities, with urban-rural split, regional infrastructure disparities, but also inter- and intra-urban differences shaping the divides across the geographical lines (Ibănescu *et al.*, 2024). Urban areas typically enjoy high-speed internet, widespread wi-fi access, and digital literacy programs, while rural areas often contend with slow connections, patchy service, and limited digital education (de Clercq, D’Haese and Buysse, 2023; Vicente and Lopez, 2011). The urban-rural divide remains an important feature across European Union, persisting despite ambitious targets under the EU Digital Agenda (de Clercq, D’Haese and Buysse, 2023; Lucendo-Monedero, Ruiz-Rodríguez and González-Relaño, 2019).

The digital inequalities spread beyond infrastructure to digital engagement itself, covering all three levels of digital divides. Wealthier, innovation-driven regions and neighborhoods benefit disproportionately from public and private digital investments, accelerating economic growth while peripheral regions are left lagging (de Clercq, D’Haese and Buysse, 2023; Vicente and Lopez, 2011; van Dijk, 2009). As such, the geographical splits in terms of digitalization can only be tackled by including digital inclusion into broader smart city and regional development frameworks to prevent certain areas from being further marginalized.

Income inequalities play a strategic role as well, shaping not only access to digital devices but also the quality of engagement and the capacity to transform digital access into

benefits. Low-income individuals face affordability challenges, often relying on limited mobile data, which constrains participation in bandwidth-intensive activities like online education, remote work, and telemedicine (Riggins and Dewan, 2005; Maceviciute and Wilson, 2018; Srinuan and Bohlin, 2011; van Deursen and Helsper, 2015; van Deursen, Helsper and Eynon, 2015). In contrast, higher-income households are more likely to invest in fast broadband and multiple devices, sustaining productive digital engagement (Robinson *et al.*, 2020). The long-term trap is that the income divides are self-reinforcing and limited access will translate into restricted skill acquisition and fewer economic opportunities, reducing initial aims of smart strategies to ashes. Beyond access, income play an important role on the stratification of types of digital activities individuals engage in with higher-income groups using digital tools for value-generating activities (online banking, professional networking, or educational), while low-income users are more likely to consume entertainment passively (Bucea *et al.*, 2021; DiMaggio *et al.*, 2004; Robinson *et al.*, 2020). This subtle third-level digital divide shows how differential usage patterns translate into long-term social and economic discrepancies (DiMaggio *et al.*, 2004). Additionally, social groups with fewer resources often lack exposure to digital literacy programs, making them more susceptible to data privacy risks or labor market exclusion.

The income divides are usually associated with two additional socio-economic factors, education and age. Educational attainment is influencing both initial access and the sophistication of digital engagement causing substantial divides in digital skills, often following education levels, despite the extension of digital infrastructure (van Deursen and van Dijk, 2014). Lower-educated individuals frequently lack the competencies to navigate digital environments in ways that can increase their social and economic opportunities (Cruz-Jesus *et al.*, 2016; Vassilakopoulou and Hustad, 2023). European studies highlight how e-service adoption correlates strongly with educational background (Bucea *et al.*, 2021), overlapping language barriers that generate exclusion for those with limited literacy (Maceviciute and Wilson, 2018). The paradox of the digital divide becomes evident when individuals with lower education spend more time online but derive fewer tangible benefits compared to their more educated counterparts (van Deursen and van Dijk, 2015). Such disparities are characteristic of the third-level digital divide, where unequal digital skills translate into unequal outcomes. The age factor is generating the grey digital divide, which defines the systematic exclusion of older adults from digital spaces (Mubarak and Suomi, 2022). Unlike younger generations, older adults confront digitalization as a late-stage adaptation, often lacking both the baseline skills and institutional support to integrate digital tools into their lives (Neves, Amaro and Fonseca, 2013; Antonio and Tuffley, 2015). The existing challenges revolve around physical limitations, small interfaces, cognitive load, and fears around cybersecurity (Neves, Waycott and Malta, 2018). A major implication of the grey digital divide is the reinforcing of the already existent cycles of exclusion (Antonio and Tuffley, 2015), especially as essential services move online.

Finally, digital inequalities exist in policies and institutional background as they cannot be reduced to questions of infrastructure or technology adoption. The effects that can

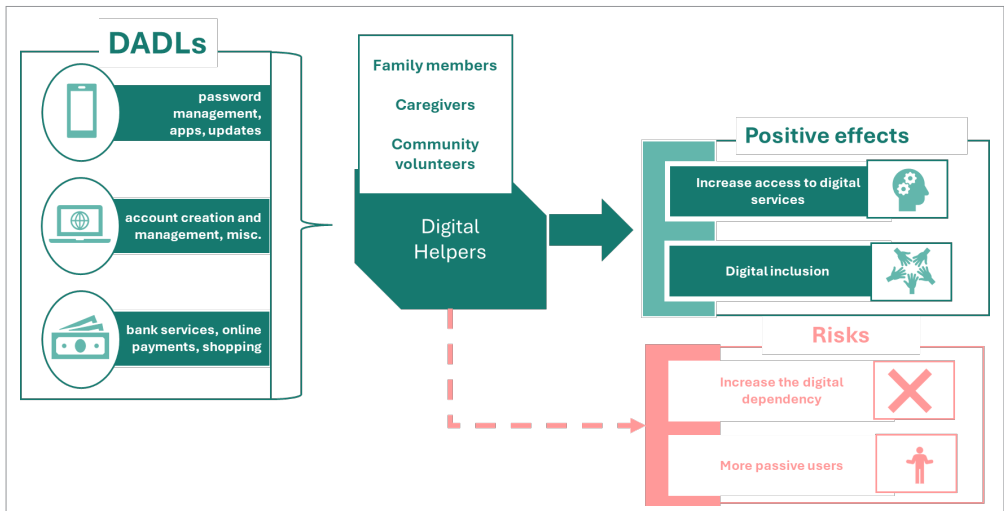


Figure 2: Conceptual representation of effects and risks of digital helpers

Source: The authors

be identified spatially or according to socio-economic variables are deeply dependent on wider social structures, shaped by intersecting lines of smart and digital strategies, regional development policies, institutional support, and community adaptability (Allmann and Blank, 2021; Bănică *et al.*, 2020; Beaunoyer, Dupéré and Guitton, 2020; Ibănescu *et al.*, 2020). The policies aimed at digitalizing and rendering smart public services start from the need to ensure mutual benefit to all social groups, but more often than not they are reinforcing and augmenting the cumulative nature of smart-derived inequalities, as the latest cannot be addressed with simplistic access-based interventions. In fact, recent case-studies, following the impact of smart strategies and smart policies, addressed the risk of accentuating the already existing gaps, instead of bringing new socio-demographical categories into the digital world (Allmann and Blank, 2021; Bejenaru, Ibănescu and Iașu, 2024; Ursache, 2023).

4. Digital helpers and their impact on reducing inequalities

During the past decades, several strategies have been tested within the smart cities to address the inequalities resulting from digitalization, with mixed success. One dominant approach, particularly among older adults and people with lower digital skills, is reliance on a category, generally called digital helpers: typically, younger family members, caregivers, or community volunteers who provide assistance with essential digital tasks like account creation, password management, and online services (Antonio and Tuffley, 2015). The term designates any individual, regardless of age, possessing the digital literacy necessary to assist others with tasks such as email, social media management, or online financial operations.

These tasks are collectively termed ‘digital activities of daily living’ or DADLs. Mois and Rogers (2024) wrote about the importance of DADLs for well-being and healthy aging, mainly highlighting tasks linked to health services (creating health insurance accounts) and financial management (online banking). Importantly, the role of digital helpers covers both informal interpersonal dynamics and formal organizational structures, the common denominator being digital access and facilitation.

Within organizational contexts and scientific literature digital helpers can be found under numerous names: local experts (Courtois and Verdegem, 2016; Stewart, 2007), facilitators and e-facilitators (Coles-Kemp, Robinson and Heath, 2022; Yoshinov, Chehlarova and Kotseva, 2021), digital assisters (Coles-Kemp, Robinson and Heath, 2022), digital helpers (Allmann and Blank, 2021), frontline workers (Rydén and Hofmann, 2024), peer coaches (Canaran, 2023), peer educators (Pizzul *et al.*, 2024), and digital champions (D’angelo, Ghezzi and Cavallo, 2024). In the UK, facilitators and e-facilitators typically refer to ICT professionals, often teachers or organizational employees, who support peers, students, or community members in building digital literacy (Coles-Kemp, Robinson and Heath, 2022; Yoshinov, Chehlarova and Kotseva, 2021). Similarly, digital champions are ICT professionals operating within corporate environments to increase employee digital competencies (D’angelo, Ghezzi and Cavallo, 2024). Peer coaches in the UK function within small professional groups, facilitating knowledge-sharing and collective problem-solving (Canaran, 2023). Local experts (USA/Belgium) fulfil a key social role in disseminating ICT skills across their social networks (Courtois and Verdegem, 2016; Stewart, 2007). Meanwhile, roles such as digital assisters (UK), digital helpers (UK), and frontline workers (Norway) act as intermediaries between individuals and organizational digital services, often easing self-service access in public administration (Allmann and Blank, 2021; Coles-Kemp, Robinson and Heath, 2022; Rydén and Hofmann, 2024).

In informal contexts, the ecosystem of digital help can expand even further, including new categories and new groups of persons. Close family members, partners, friends, and informal peers often provide support, with terminology adapted to reflect the abovementioned diversity: warm experts (Bakardjieva, 2005; Korpela, Pajula and Hänninen, 2024), tech-savvy individuals (Hunsaker *et al.*, 2020; Robinson *et al.*, 2015), digital caregivers or digital support partners (Mois and Rogers, 2024), peer-to-peer supporters, unsung helpers (Hunsaker *et al.*, 2020; Robinson *et al.*, 2015), peer supporters (Lindsay, Smith and Bellaby, 2008), computer expert helpers (Lindsay, Smith and Bellaby, 2008).

Notably, contrary to common assumptions about youth dominance in digital expertise, older individuals can also take over the role of digital helper. Peer-to-peer support models, described as peer support, peer-to-peer support, and unsung helpers, highlight the effectiveness of knowledge transfer within age-similar or socially connected groups (Hunsaker *et al.*, 2020; Robinson *et al.*, 2015; Lindsay, Smith and Bellaby, 2008). In the US, ‘tech-savvy seniors’ (typically aged 55+) assist their social circles with digital tasks, from social media to online banking (Hunsaker *et al.*, 2020; Robinson *et al.*, 2015). The

social network remains a strong resource in digital help, as Poole *et al.* (2009) emphasize in one of the first studies on the topic.

Digital helpers are therefore agents of digital inclusion that can reduce risks of exclusion through familial, professional, and peer networks (Coles-Kemp, Robinson and Heath, 2022) and enhance the overall impact of smart strategies. Hargittai (2003) offers a framework with a more detailed image on the subject, including technological infrastructure, access location, social support networks, and user experience levels, all these factors playing an important role in defining one's ability to provide digital assistance. Indeed, digital helpers can be found across all age groups, from young tech-savvy individuals (Poole *et al.*, 2009) to super-users aged 65+ who have integrated digital tools into daily life (Tyler, Simic and De George-Walker., 2018), provided they are proficient in DADLs and interpersonal support (Mois and Rogers, 2024).

It is worth mentioning that specific groups, particularly individuals aged 60–65 and above display a declining usage in online information seeking (Korpela, Pajula and Hänninen, 2024). In such cases, intergenerational support, often provided by adult children or grandchildren, proves to be the main mechanism of digital inclusion (Dolničar *et al.*, 2013). Still, digital need and digital assistance is not confined to marginal groups. While Coles-Kemp, Robinson and Heath (2022) identify a strong need among vulnerable populations (individuals needing access to housing, employment, healthcare, and social services), Hunsaker *et al.* (2020) argue that gaps in digital skills can be encountered across all socio-economic and age groups. Furthermore, it is wrong to assume that the younger generation is generally well equipped to provide digital help. Micheli, Redmiles and Hargittai (2020) caution against taking frequent internet use as digital proficiency, observing that even regular users encounter challenges.

5. Implications for urban policy makers and recommendations for long-term solutions

The literature examining digital inequalities calls for a time-sensitive reality for urban policymakers, meaning the widespread challenges of digitalization are not limited to infrastructure gaps but spread to deeper socio-technical divides. Although many smart frameworks have adopted digital strategies, their implementation often overlooks the most vulnerable groups, particularly older adults and marginalized communities (Ibănescu *et al.*, 2022; Masik, Sagan and Scott, 2021). Despite ambitious goals, digital strategies are frequently disconnected from everyday realities, leading to fragmented policies that fail to achieve digital inclusion. In this context, digital helpers can be used as grassroots bridging gaps in access and skills where formal structures underperform. Thus, any contribution from the population itself, including peer-to-peer digital support or intergenerational assistance, should be actively welcomed and incorporated by urban policymakers. Nevertheless, policy strategies that rely on digital helpers should be designed with care and attention to the complexities highlighted by existing research.

One key issue concerns trust, especially visible for older adults who often rely on digital support and are at risk of financial and digital fraud (Hunsaker *et al.*, 2020). This group may experience skepticism to accept help from unknown individuals, even if those individuals are trained digital helpers and included in institutional urban programs. The interpersonal dynamics of trust require that digital support structures be built around community trust, not just technical competence. For example, Coles-Kemp, Robinson and Heath (2022) documented situations where reliance on a single individual (often a close family member or friend) for digital help creates vulnerability. When this sole assister is no longer available the older adult risks abrupt digital disconnection, highlighting the need for more resilient, community-based support models.

In addition to trust concerns, the mode of digital skill transmission also demands special attention from the policymakers. Family members, though well-intentioned, may be impatient or inconsistently available, contributing to ineffective skill transfer (Courtois and Verdegem, 2016). This is especially relevant for older adults, who may require repetitive and patient instruction (Hunsaker *et al.*, 2020). Here, urban policies can benefit from structured peer-to-peer programs that pair older adults with similarly aged, empathetic digital mentors who understand their socio-cultural context.

Another central policy consideration is the link between digital exclusion and broader patterns of social exclusion. Digital participation is no longer a luxury but a prerequisite for accessing public services, civic engagement, and social inclusion. Without support, individuals who initially receive assistance may still feel overwhelmed and eventually regress into exclusion. Sustainable digital inclusion requires more than sporadic help, it requires ongoing guidance and reinforcement. Digital helpers, whether informal or organized, should therefore not be positioned as temporary fixes but as integral components of a community's social fabric.

Positive experiences with digital helpers exist and provide inspiration. Notable examples include Bordeaux, which integrated digital facilitators into neighborhood-level services, and Brussels, both structures being part of an ESPON project focused on the role of digital helpers in reducing the digital inequalities¹. These examples demonstrate that when digital assistance is formalized, structured, and community-oriented, it can help ease structural inequalities. However, each city presents unique challenges, a unique urban fabric with a unique demographic structure. Urban policymakers must integrate digital inclusion into their local needs, but also taking into consideration variations in social structures, digital skills, and infrastructural readiness.

Coles-Kemp, Robinson and Heath (2022) provide a useful starting point for urban and metropolitan policymakers designing strategies for digital helpers by identifying priority

1 For details regarding the aims and results of the ESPON DHAK project, check the following link: <https://www.espon.eu/engage/procurements/dhak-role-digital-helpers-reducing-digital-inequalities>

groups requiring digital assistance: a) individuals needing access to housing, employment, financial, and health services; b) the long-term unemployed; c) care leavers; d) individuals on the autism spectrum without cognitive disabilities; and e) older adults over 60. The vulnerable groups intersect with already existent urban vulnerabilities such as poverty, isolation, and health inequalities. Consequently, urban digital policies cannot operate in isolation but must be integrated into broader regional development strategies that explicitly address both urban and periurban divides.

Moreover, interventions should not be limited to providing internet access or public wi-fi. Studies show the need to move beyond access and tackle affordability barriers, device availability, and low skill levels (van Deursen and van Dijk, 2010; Vassilakopoulou and Hustad, 2023). Particularly for older adults, digitalization is not an extension of lifelong learning but a late-stage adaptation process (Antonio and Tuffley, 2015; Neves, Amaro and Fonseca, 2013) which requires lifelong learning programs with special modules dedicated to older populations and other marginalized groups. The goal must be to reduce lifelong digital inequality through systemic, long-term strategies involving education systems, community structures, and public services.

In terms of concrete solutions, urban policymakers can first invest in building structured, community-based networks of digital helpers, inspired by models such as the ‘digital neighborhood facilitators’. Local municipalities can either use, or employ digital facilitators integrated within their respective communities and pass through training programs that focus not only on technical digital competencies but also on communication skills, empathy, and awareness of fraud risks.

Second, policy should support intergenerational digital solidarity with incentives for younger generations and working-age adults to engage in digital volunteerism. Programs where younger generations work in collaboration with local NGOs and senior centers to provide regular workshops, could be scaled up and most importantly, these initiatives should provide continuity, as digital help should not be a one-time intervention but part of regular community services. Equity-focused digitalization should therefore incorporate socio-spatial justice principles, address economic redistributive needs, and ensure universal accessibility through age-sensitive and inclusivity-driven design. Cities have the responsibility to ensure that digital tools and services are not just technically available but meaningfully usable by all social groups.

Third, urban strategies should include sustainable funding mechanisms for long-term digital inclusion. Hybrid models combining public funding, private sponsorship, and volunteer engagement represent the most pertinent approach to avoid that digital inclusion becomes dependent on short-term project funding cycles and to ensure it is institutionalized within local governance structures. Policy frameworks should also follow periodic evaluations of digital inclusion programs, gathering user feedback, especially from vulnerable groups.

Ultimately, digital helpers should be seen not merely as support mechanisms but as foundational actors in creating inclusive, resilient urban digital ecosystems. Urban policy-makers have both the responsibility and opportunity to bind this potential, shaping cities where digital participation strengthens social inclusion rather than reproduces inequalities.

6. Conclusions

This paper aimed to offer a comprehensive understanding of digital helpers, who they are, what characteristics they have, and what policy implication their work might have in fighting the digital divide. Persistent digital inequalities continue to challenge the inclusivity and effectiveness of smart city agendas worldwide, and despite advances in connectivity, disparities across the three levels remain. The divides appear not only in the form of unequal material access to digital technologies, but also in uneven levels of digital literacy and in the capacity to translate digital engagement into tangible social, economic and civic outcomes. Therefore, addressing digital inequalities requires a decisive shift from the infrastructure-driven interventions to broader strategies that recognize the interplay between technological, social and institutional factors.

Thus, by linking the three levels of digital divide with the variety of contexts in which digital helpers operate, our paper highlighted how these actors can address gaps in access, skills and meaningful outcomes of digital participation. Irrespective of the name they take in function of age, geographical location, and the context (formal or informal), the digital helpers support digital inclusion and fight the digital divide among different vulnerable groups. Despite the fact their assistance is greatly appreciated, the concept of digital helpers is still in the incipient phase, which leaves the personas in need without help in facing the digital world. Our paper also highlights the need for concrete policy for digital helpers, in order to tackle the existing urban digital divides and to support communities at risk to face the digital challenges of nowadays.

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