



5-2023

DIGITAL INCLUSION IN THE LIS LITERATURE: AN INTERSECTIONAL ANALYSIS

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**DIGITAL INCLUSION IN THE LIS LITERATURE:
AN INTERSECTIONAL ANALYSIS**

A Thesis Presented for the
Master of Science
Degree
The University of Tennessee, Knoxville

Hannah Nichole Fountain
May 2023

Abstract

Digital inclusion refers to the conditions and degrees of access to information and communication technologies (ICT) among individuals and communities. This includes the variable determinants and outcomes associated with ICT connectivity, as well as efforts to mitigate digital exclusion. With the proliferation of ICT in the past 30 years, *digital inclusion* (and related concepts like the *digital divide* and *digital literacy*) has been a major focus of policymaking and public service efforts, with libraries serving as leaders in offering free public ICT and digital skills training. Digital inclusion research has commonly relied upon sociodemographic variables to survey determinants of digital inequality, with digital inequalities often characterized as reproductions and expansions of extant structural and social inequalities. The overlap and mutuality of digital inequalities is a consistent theme in digital inclusion studies, echoing the major points of intersectional theory, which seeks to understand inequality and discrimination as a complex multi-axial experience. In performing content analysis across the library-focused library and information science (LIS) literature, this thesis plans to use an intersectional framework to observe the relationship between presently surveyed digital in/exclusion and structural inequalities, and to provide an account of the myriad ways libraries engage with digital inclusion.

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Chapter 1:

Introduction

This introductory chapter presents the contextual background and significance of digital inclusion as it relates to libraries and intersectionality, followed by the problem statement, research questions, and definitions of major concepts which will further inform and guide this thesis.

1.1 Background and Significance

Driven by ICT innovation and its potential for economic growth, social connectivity, and democratic communication, the requirements for successful participation in our increasingly digital society continue to expand (Mariscal, 2005). Sustained access to high-speed, reliable broadband, in addition to adequate ICT equipment and software, has become indispensable in many places around the world. Additionally, the competence needed to effectively use these resources for individual, organizational, and social enrichment has become obligatory in our online era.

Recent telecommunications initiatives have extended the scale, scope, and affordability of digital services; however, elements of ICT infrastructure that are considered essential or basic in some countries are largely unavailable to significant percentages of the population in other countries (Mariscal, 2005). Globally, access continues to be of paramount concern, as the Internet has developed unevenly throughout the world, a phenomenon often attributed to culturally specific socioeconomic determinants as well as larger patterns of international dependency which further influence technological diffusion (Guillen et al., 2005).

Even in countries where ICT access is ubiquitous, digital inequity persists. As recently as 2021, an estimated 30 million Americans live in areas with little or no broadband infrastructure that can provide minimally acceptable speeds, and even more Americans are living with internet speeds suboptimal for standard internet use (The White House, 2021). The Covid-19 pandemic has further exposed weaknesses within our digital landscape. Pew Research Center (McClain et al., 2021) reports that 90 percent of adults identified the Internet as essential or personally important during the pandemic, though about a quarter of respondents shared that they usually require assistance to begin using a device and 10 percent reported that “they have little to no confidence in their ability to use these types of devices to do the things they need to do online.”. For households with school-aged children, the “homework gap”—a term coined by Federal Communications Commission chair Jessica Rosenworcel to refer to the students lacking access to broadband and the essential technologies needed to complete work outside of school—swelled to new heights, with teachers witnessing “kids sitting in the school parking lot with school laptops they had borrowed late into the evening, trying to peck away at homework because that was the only place they could get online. Or kids sitting in fast food restaurants and doing their homework with a side of fries” (Klein, 2021).

Since the proliferation of the Internet across the US during the 1990s, these gaps in access, use, skills, and potential have been commonly observed and described under the banner of the *digital divide*, though with numerous definitions and models thereof, achieving specificity can be difficult. Increasingly, the term *digital inclusion* has been used in addition to or in lieu of *digital divide*, as it succinctly encompasses many of the various levels and models of *digital divide* as well as its determinants and any associated efforts to reduce digital inequality. The US-based

National Digital Inclusion Alliance (NDIA) defines *digital inclusion* as “the activities necessary to ensure that all individuals and communities, including the most disadvantaged, have access to and use of Information and Communication Technologies (ICTs)”, which NDIA further describes through five key tenets: “1. Affordable, robust broadband internet service; 2. Internet-enabled devices that meet the needs of the user; 3. Access to digital literacy training; 4. Quality technical support; and 5. Applications and online content designed to enable and encourage self-sufficiency, participation and collaboration” (NDIA, 2022).

Due to its interdisciplinary posture, definitions of digital inclusion vary according to their application, though NDIA’s definition is typical—that is to say, one which prioritizes the digital inclusion’s multifaceted conceptual qualities and similarly complicated reality. Moreover, the concept’s fluidity allows its key features to adapt and evolve alongside ICT innovation, and its deemphasis of binary use and access models grants digital inclusion an advantage over adjacent concepts, most notably the digital divide. Major pitfalls of the digital divide metaphor include its essential reliance on a binary “divide” which suggests discrete group on either side of an insurmountable and stagnant gap (van Dijk, 2006). Still, the use of the digital divide concept maintains its popularity among researchers, policymakers, and stakeholders whose work addresses digital inequality. However, critiques of the digital divide metaphor help to further distinguish the value of digital inclusion as a nonredundant concept and hint at its relevance and utility in a range of applications.

From an interdisciplinary and multisector perspective, digital inclusion is pertinent to many relevant, urgent topics. From the arena of public health and medicine, digital inclusivity is of central importance in the accessibility and usability of telemedicine and digital health services

(Rodriguez et al., 2022). In disability studies, digital inclusion has been evaluated as a tool in mitigating stigma, examining unintentional harm in normative tech design, and evaluating inclusive technologies (Tsatsou, 2021a). As previously mentioned, digital inclusion is also a key priority in the arena of international development, particularly as it relates to the effects of various technologies on regional economic development, social inclusion practices, and quality of life. In education, digital inclusion serves as a vehicle for evaluating virtual learning environments, classroom technology, and school-based digital infrastructure, in addition to student and instructor capacity to use and exploit these resources.

Digital inclusion has also been used to better understand ICT experiences and outcomes for various sociodemographic populations in a range of contexts, including formerly incarcerated persons (Reisdorf & DeCook, 2022), Latino immigrant households (Tripp, 2011), and older adults (Betts et al., 2019), to name just a few groups. Further, digital inclusion is an integral concept in considering related topics like data literacy (Carmi & Yates, 2020), information literacy (Seo et al., 2021), and gatekeeping (Yang et al., 2021) all of which represent areas of further discourse and research engagement.

Efforts to enhance digital inclusion include policy work as well as individual and group action engaged at the micro, mezzo, and macro levels of society. Digital inclusion actions are commonly attributed to private, nonprofit, or public sector actors, though cross-sector collaborations are common. In the private sector, organizations like the World Benchmarking Alliance (WBA) continue to rank corporations' commitment and investment to a digital inclusion agenda using criteria focused on access, skills, use, and innovation. In 2021, the list included global companies like Sony, Apple, Samsung, and Microsoft, though WBA ultimately

found “the majority of tech companies still aren’t taking their responsibility to ensure that people are able to use technology [...] in a way that benefits them,” (WBA, 2021). Topics related to corporate ethics, such as corporate digital responsibility, continue to expound the role corporations are expected to play in reducing digital inequity as they continue to benefit from technological innovation and expansion. From the nonprofit sector, organizations like the National Digital Inclusion Alliance continue to survey digital inequality, promote awareness, and share resources, though funding is a persistent limitation—as is the case for many public sector organizations, including libraries.

Libraries serve as public sector leaders in the promotion of digital inclusion, offering digital skills training, information literacy resources, and accessible public technologies. In many countries, public libraries serve as reliable and accessible public technology centers. In the United States, the Public Library Association’s (PLA) *2020 Public Library Technology Survey* reports that public computers are now viewed as a universally indispensable and “ubiquitous” library service, and that across urban, suburban, and rural libraries, more than 80 percent host public color printers, fax machines, and scanners, while nearly all libraries surveyed offer public copy machine services (PLA, 2021). The same survey found that 30 percent of libraries overall allow users to check out Internet hotspots, with city libraries reporting rates above 50 percent. Public libraries also dedicate a substantial amount of time and resources toward the cultivation of digital literacy to benefit skills and use. Here, PLA again reports that nearly 90 percent of public libraries offer digital literacy programming via informal point-of-use instruction and formal classes.

As libraries continue to find new ways to support and enrich the lives of their users in our increasingly digital world—a world in which the aims of digital inclusion have become mandatory for success and survival—a thorough account of the ways digital inclusion is conceptualized, investigated, and advanced within a library-oriented context might serve to inform practitioners and scholars exploring digital inequity. Moreover, the interdisciplinary, intersectional nature of digital inclusion and its enmeshment with broader social and structural inequalities could benefit from a critical social theory lens. Intersectionality, a concept used to describe the compounding and mutually constructive nature of discrimination and inequity resulting from one’s sociodemographic identity, is one such theoretical concept. In the recent digital inclusion literature, the concept has been highlighted as an increasingly important tool, with one study concluding that “intersectionality will offer generative insights for framing the terms and agenda of digital inclusion in the next decade,” (Goggin and Soldatić, 2022, p. 385).

Using the analytical tools of intersectional theory, this thesis plans to address the need for a robust account of digital inclusion in the library-focused LIS literature and to better understand the relationship between libraries and digital inclusion.

1.2 Statement of the Problem

Digital inclusion refers to the conditions and degrees of access to information and communication technologies among individuals and communities. This includes the range of variables and associated implications of ICT connectivity, as well as efforts to mitigate digital exclusion. Existing research in the broader digital inclusion literature has examined the distribution of variables impeding ICT access with reference to intersectional theory, but no study so far has used an intersectional framework to explore the connection between such

variables and broader social issues. Similarly, no systematic account yet exists of the myriad approaches to and understandings of digital inclusion within LIS. Such a study would enhance insight for stakeholders who seek to increase digital inclusion (such as libraries, non-profit organizations, and government agencies) as well as researchers looking to further investigate digital inclusion in new ways.

1.3 Research Questions

In analyzing digital inclusion works in the LIS literature through an intersectional lens, this thesis would interrogate the following research questions:

RQ1: How is digital inclusion conceptualized and investigated in the LIS literature?

RQ2: From an intersectional perspective, are some aspects of digital inclusion more thoroughly examined than others in the LIS literature?

RQ3: From an LIS perspective, what if any insights into the relationship between digital inclusion and broader social inequalities can be gained by using an intersectional framework?

1.4 Definitions of Major Concepts

Digital Inclusion refers to the conditions and degrees of access to ICT among individuals and communities, including the skills, outcomes, and (dis)advantages associated with connectivity and use. Digital inclusion also describes efforts which seek to ameliorate existing digital inequity, sometimes referred to by its inverse term, digital exclusion. The term *digital inclusion* shares many key themes with the *digital divide* (see below) in its surveyance of ICT inequity but is distinguished by its greater breadth of scope and emphasis on activities which seek to ameliorate inequality.

Intersectionality, a term first applied in Black feminist legal studies by Crenshaw (1989), refers to the compounding, intersecting nature of discrimination, injustice, and oppression. Per Crenshaw's original definition, intersectionality as a critical social apparatus seeks to counteract historical notions of discrimination which relied on a single axis of oppression and privileged the experiences of a given groups' most normative members. In doing so, intersectionality allows for the investigation of the way various forms of structural discrimination reinforce one another through a critical social lens.

Digital Divide refers to, at its core, the gap between those who benefit from ICT and those who are unable to. The digital divide originally referred to gaps in Internet connectivity and personal computer ownership but has since expanded to address gaps in digital literacy skills, in addition to use patterns and outcome capacity. This term predates *digital inclusion*, and the two concepts are frequently used in tandem.

Information and Communications Technology, commonly abbreviated as ICT, is a composite term representing both information and telecommunications technologies, as well as any technology or new media used to execute communicative or social processes.

Digital Literacy, as defined by the American Library Association, describes the "ability to use information and communication technologies to find, evaluate, create, and communicate information, requiring both cognitive and technical skills" (ALA, 2022).

1.5 Chapter Summary

This chapter introduced digital inclusion as an increasingly important concept in our information-based society. The relationship of digital inclusion to both libraries and intersectionality were also briefly introduced, in addition to problem statement, research

questions, and definitions of major concepts used in this thesis. Building upon this introduction, Chapter 2 reviews the extant digital inclusion literature in-depth, further framing its relationship to intersectionality and libraries, while Chapter 3 presents the research design and methods for this project, Chapter 4 relays the results, and Chapter 5 concludes with a discussion, including implications and takeaways.

Chapter 2:

Literature Review

This chapter presents a review of the digital inclusion literature in three sections. The first section investigates the transition from *digital to divide* to *digital inclusion*, the major concepts associated with digital inclusion, and libraries' relationship to digital inclusion. The second section introduces intersectional theory and intersectionality and provides an overview of its applications within LIS. The third and final section presents a summary of the existing digital inclusion literature which addresses intersectionality.

2.1 Digital Inclusion

The goal of this section is to outline the essential concepts associated with digital inclusion via literature review. First, an overview of the concept's historical development is presented. Rooted in early digital divide discourse, the National Telecommunications and Information Administration's *Falling Through the Net* series is used to illustrate the transition from binary models of access to more complex inclusion-based frameworks (2.1.1). Next, an overview of digital divide and digital inclusion models illustrates the growing recognition of digital inequality's connection to larger socioeconomic systems (2.1.2). Finally, a brief introduction to digital inclusion and digital inclusion research (2.1.3) precedes an overview of libraries' relationship to the digital divide and digital inclusion (2.1.4).

2.1.1 Falling Through the Net and the Digital Divide

Before diving into *digital inclusion*, it is helpful to first explore the *digital divide*, a related concept which precedes and informs *digital inclusion*. Though research efforts have been concerned with information inequality since at least the 1960s, it was not until the late 1990s that

researchers began to engage with the concept of a “digital divide”, and by 2000, the *digital divide* had generated an estimated 14,000 publications from a range of disciplines (Yu, 2006). Published in 1995, *Falling Through the Net: A Survey of the “Have Nots” in Rural and Urban America*, the first in a series of reports by the National Telecommunications and Information Administration (NTIA), sought to investigate which Americans were excluded from the benefits of ICT proliferation, using population data to survey the influence of various sociodemographic determinants such as geography, age, race, and education on PC ownership.

In the years after the initial report, the second and third *Falling Through the Net* reports expanded the scope of the original report and are credited with mainstreaming the term “digital divide”. The second report, published in 1998, found that despite overall growth in personal computer (PC) ownership and usage, growth disproportionately favored higher income, White, and educated households (1998). The third report broadened its scope to examine the material and social conditions of access, considering factors like perception, incentive, attitudes, and socioeconomic barriers, arguing that “the divide between those with access to new technologies and those without [as] one of America's leading economic and civil rights issues.” (NTIA, 1999, Introduction) and that “no one should be left behind as our nation advances into the 21st Century, where having access to computers and the Internet may be key to becoming a successful member of society” (NTIA, 1999).

Released in 2000, the final report in the series, *Falling Through the Net: Toward Digital Inclusion*, represents a semantic shift in language and focus, most notably in its adoption of the term “digital inclusion”, though no definition of the term is presented. *Toward Digital Inclusion* departs from previous reports through the addition of new and more complex foci. Findings

indicate a persistent—and in some instances, a deepening—digital divide despite the overall increase in Internet access and computer ownership nationwide, identifying gaps among “different levels of income and education, different racial and ethnic groups, old and young, single and dual-parent families, and those with and without disabilities.” (NTIA, 2000, pp. xvi).

In reviewing the *Falling Through the Net* series, the trajectory of early digital divide discourse has been established: from the 1995 report which considered the digital divide in terms of PC ownership and access among “haves” and “have nots”, to the 2000 report which introduces digital inclusion, and along with it, more complicated elements of ICT adoption, balanced with the compounding nature of social, political, and economic factors.

2.1.2 Toward Digital Inclusion: Models and Major Themes in the Literature Since 2000

Since 2000, numerous terms, models, and frameworks have emerged which interrogate different aspects of digital inequality. Nemer’s positional review (2015) highlights several key descriptive models associated with the “second wave” of digital divide and digital inclusion research, which together form a conceptual evolution: “(1) usage gap, (2) second level digital divide, (3) emerging digital differentiation, and (4) digital inclusion” (p. 2). Using Nemer’s “evolving digital divide” as an entry point, this section will provide an overview of the literature associated with each descriptive model, advancing from the first-, second-, and third-level digital divide toward digital inclusion (*Figure 1*). Finally, a broad overview of digital inclusion and its foremost definitions will be discussed.

The first level digital divide encompasses most early digital divide discourse and generally refers to gaps in access, not unlike *Falling Through the Net*’s dichotomy of “haves” and “have nots”. Originally, first-level divide research surveyed gaps in access to computers,

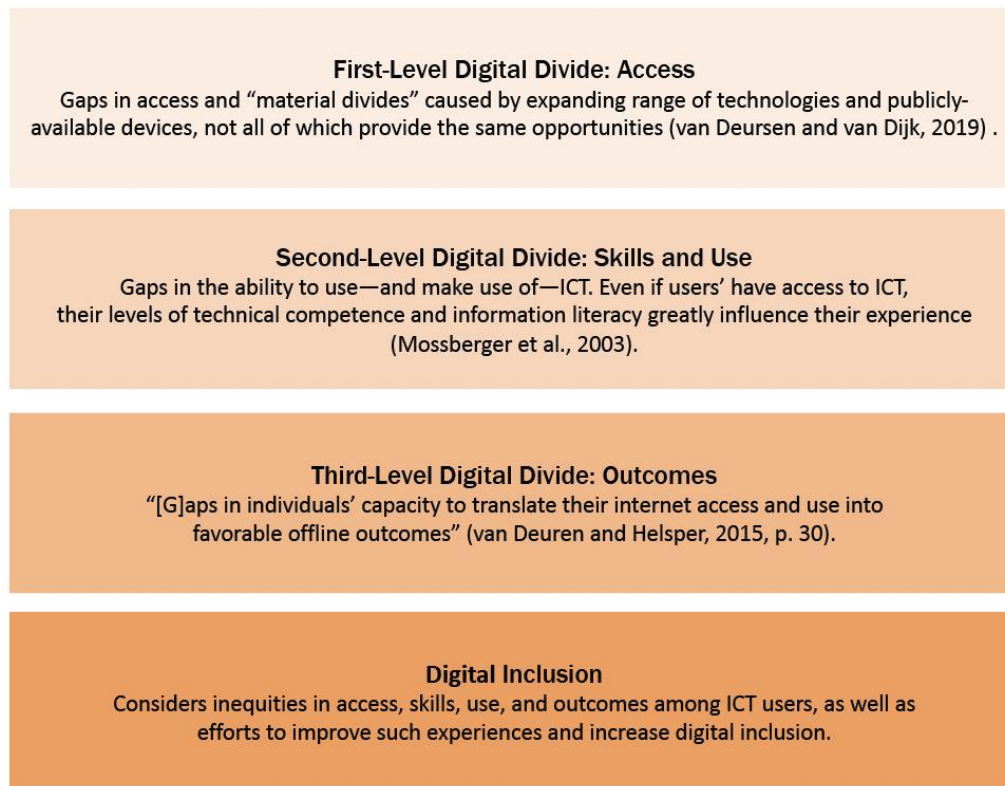


Figure 1. Visualization of progression of topics, from the first-, second-, and third-level digital divide toward digital inclusion.

before later expanding to include gaps in internet service as the web diffused rapidly across the developed world and became a primary object of computing (van Deursen & van Dijk, 2010). As broadband becomes increasingly ubiquitous in the Global North, first-level divide research has moved away from indicators related to gaps in Internet connection. Van Deursen and van Dijk point out that the rapid introduction of new technologies engages the first-level divide via questions of material access, where “new material divides appear as a result of rapidly changing technology, the large variety of devices available to the general public, and the reality that not all of the materials provide the same online opportunities” (2019, p. 355). Campos-Castillo (2015) engages the first level divide to observe access patterns across gender and racial/ethnic demographics in order to reintroduce questions of access that may be forgotten as ICT become increasingly abundant in developed countries, concluding that “we must not take for granted the most basic question of who has Internet access, even in the United States” (p. 436).

Building upon issues of access, second-level digital divide literature is concerned with literacy and use differentials. Research at the second-level divide examines the skills or knowledge required of ICT use, including usage patterns across sociodemographic groups, and the ways literacies, skills, and use inform one another. In a study analyzing users’ ability to perform online search tasks, Harggitai (2002) argues that surveys focusing solely on access become less impactful as the diffusion of technology increases. Finding substantial variance among participants’ ability to locate information and the amount of time required to perform the given tasks, Harggitai further points out the “need to start looking at differences in how those who are online use the medium, that is, differences in people's online skills. It is important to expand the research agenda to allow analyses of the differences *among* Internet users” (2002,

para. 3). Mossberger et al. (2003) further identify a “skills divide” among ICT users and deduce two primary metrics for assessing skills: technical competence, or “the ability of users to operate a computerized or electronic device” (p.40), and information literacy, defined as “the ability to recognize when information is needed and to locate, evaluate, and use effectively the needed information” (p.41). Van Deursen et al. (2016) further hone the classification of ICT skills by proposing five measurement scales: *operational*, wherein users can do things like open downloaded files, connect to WiFi networks, and add bookmarks; *information navigation*, which assesses users’ aptitude for locating and interpreting online content; *mobile*, referring to users’ ability to download, access, and manage apps on a mobile device; *social*, measuring users’ awareness of and engagement in online social conventions; and *creative*, which appraises users’ ability to create, modify, and repurpose online content.

In nations with high ICT penetration, the successful diffusion of technology into nearly all aspects of life has inspired researchers to interpret the second-level skills divide concepts of skills and use as they relate to structural and social inequalities. Friemel and Signer (2010) apply the second-level divide’s literacy and engagement as a lens to dissect the growing demand for user-generated content on Web 2.0, resulting in a theoretical matrix that gauges users’ Web 2.0 knowledge and use behaviors as either productive or receptive and further suggesting a correlative relationship between a narrowing first-level and widening second-level divide. Büchi et al. (2016) model Internet usage disparities for five countries with high rates of ICT penetration, finding that four core Internet usage types—social interaction, information seeking, entertainment, and commercial transaction—are primarily constructed and predicted by sociodemographic variables, with age being the most influential factor. Ruiu and Ragnedda

(2020) propose that users' digital capital affects their Internet use and ability, whereby the term "digital capital" serves a critical purpose by consolidating the breadth of users' accumulated digital competencies with the digital technologies at their disposal. This engagement with structural critique and theorization from second-level divide researchers is of central import in the third-level divide literature, which examines outcomes and implications of ICT connectivity and use.

In an early critical appraisal of the literature's shift toward questions of skills and use, Selwyn (2004) cautions against the potential for oversight and oversimplification, asserting that "use of ICT does not necessarily entail 'meaningful use of ICT' or what could be termed as 'engagement' rather than merely use where the 'user' exerts a degree of control and choice over the technology and its content, thus leading to a meaning, significance and utility for the individual concerned" (p.349) and moreover, "any conceptualization of the digital divide must combine questions of access and use of technology with the impact and consequences of engagement with ICT for individuals" (p. 350). What Selwyn refers to as the "consequences of engagement"—or what Nemer calls "emerging digital differentiation" (2015, p. 2)—are a key fixture of the third-level digital divide.

Van Deuren and Helsper (2015) define the third-level divide as involving "gaps in individuals' capacity to translate their internet access and use into favorable offline outcomes. Research into the third-level divide therefore seeks to determine who benefits in which ways from internet use in terms of a broad range of offline outcomes" (p. 30). Expounding van Dijk's (2005) earlier categorization of ICT outcomes, van Dueren and Helsper enlist a fivefold framework for assessing consequences according to their economic, social, political,

institutional, and educational effects among survey respondents. Their results echo arguments present at all levels of the digital divide literature which illustrate that digital inequalities represent reproductions, exacerbations, and permutations of extant structural inequalities (Wilson et al., 2003; van Dijk, 2005; Parsons & Hick, 2008; Stevenson, 2009). This is perhaps best summarized by Fuchs and Horak (2008): “people with high income, far-reaching and influential social relationships, good education and high skills are much more likely to have access to ICTs, to be capable of using ICTs, to benefit from this usage, and to be supported in political participation by ICTs than people who are endowed with only a little amount of economic, political, or cultural capital” (p. 102). In accordance with this perspective, Scheerder et al. (2017) conduct a systematic review of the second- and third-level divide research, finding that studies surveying skills, use, and outcomes overwhelmingly base their inquiry on discrete sociodemographic determinants, largely excluding more complicated variables related to access and motivation or the sociocultural, which require substantial theoretical grounding and nuanced methodologies that require reengagement with other levels of divide discourse. This kind of integrated consideration of access, skills, use, and outcomes is a key feature of digital inclusion.

2.1.3 Digital Inclusion

Digital inclusion encompasses numerous adjacent terms and concepts associated with the first-, second-, and third- level divides, and can be interrogated through the lens of critical theoretical concepts. The US-based National Digital Inclusion Alliance (NDIA) defines *digital inclusion* as “the activities necessary to ensure that all individuals and communities, including the most disadvantaged, have access to and use of Information and Communication Technologies (ICTs)”, which NDIA further illustrates through five agenda items for digital

inclusion: “1. Affordable, robust broadband internet service; 2. Internet-enabled devices that meet the needs of the user; 3. Access to digital literacy training; 4. Quality technical support; and 5. Applications and online content designed to enable and encourage self-sufficiency, participation and collaboration” (NDIA, 2022). This definition of digital inclusion is typical, though, much like definitions of the digital divide, descriptions of digital inclusion vary by approach, in large part thanks to its interdisciplinary posture and wide range of applications.

Though the digital divide, when considered as vast set of contingent theories and observations, can adequately describe the nuances of digital inequality, two key advantages of digital inclusion are its comprehensiveness and its fluidity, which allow the concept to adapt and evolve alongside ICT innovation. Moreover, another beneficial feature of digital inclusion is its avoidance of the digital divide’s original metaphor, and thus, the digital divide’s fundamentally dichotomous perspective. As further elaborated by Van Dijk (2006), there are four main pitfalls associated with the digital divide metaphor which may be responsible for misconceptions surrounding the topic. First, the visual metaphor suggesting two discrete groups, divided by a “yawning gap”; second, the metaphor suggests the gap is insurmountably difficult to bridge; third, the concept of a single divide suggests binary absolution among group membership; and finally, the metaphor may wrongly suggest that the divide is stagnant, betraying the fluid nature of this complex phenomenon (van Dijk, 2006, p. 222). The use of the digital divide concept is still popular among researchers, policymakers, and stakeholders whose work addresses digital inequality, and is entirely adequate in illustrating digital inequalities, though not without some finessing over its lexical multiplicities. However, critiques of the digital divide metaphor help to further distinguish the value and efficiencies of digital inclusion as a nonredundant concept while

hinting at its relevance and utility in a range of applications, not least of all, in the domain of library and information sciences. The following section explores libraries' relationship with digital inclusion, which will further inform the scope of this thesis.

2.1.4 Libraries and Digital Inclusion

As this thesis seeks to establish a systematic account of the ways digital inclusion is conceptualized, investigated, and advanced in the LIS literature, this section aims to contextualize the essential role of libraries in increasing digital inclusion by illustrating their engagement with the core issues of access, skills, use, and outcomes.

Public libraries serve as reliable and accessible public-access technology centers for communities across the United States. The Public Library Association's (PLA) *2020 Public Library Technology Survey* report provides a robust picture of how public libraries are approaching issues of access in their communities. With public access computers now viewed as a universally indispensable and "ubiquitous" public library service, the 2020 survey also found that across urban, suburban, and rural libraries, more than 80 percent host public color printers, fax machines, and scanners, and nearly 100 percent of libraries offer public copy machine services (PLA, 2021). The survey also found that urban or city libraries are more likely to offer additional public technology infrastructure for on-site use, including 3D printers, early learning devices, assistive technology, laptops, and gaming consoles. Off-site, circulating technology is an area receiving an increase in attention and resources: 30 percent of libraries overall allow users to check out Internet hotspots, with city libraries reporting rates above 50 percent.

Public libraries also dedicate a substantial amount of time and resources toward the advancement of skills and use. The *2020 Public Library Technology Survey* reports that nearly

90 percent of public libraries offer digital literacy programming via informal point-of-use instruction and formal classes. Additionally, more than a third of public libraries have dedicated staff for digital literacy and technology training (PLA, 2021). General computer, software, and internet skills were reported as the primary focus topics of skills training in public libraries, with marked discrepancies in skills training opportunities reported between libraries of varying service population size. For example, coding and computer programming training is offered in 65 percent of city libraries, but just 22 percent of town or rural libraries (PLA, 2021). Comparable incongruities exist among technology-enabled services and resources offered by libraries in cities, suburbs, and rural locations, with roughly 80 percent of libraries reporting the subscription costs and payment terms as an impediment in achieving ideal digital offerings (PLA, 2021). This category is similarly relevant to digital inclusion as it is closely aligned with “use” as described in the second-level divide literature, representing resources related to health information services, employment and job assistance, language learning, and homework help, as well as e-books, digital audiobooks, and streaming media.

Per Poll and Payne (2006), “‘Impact’ and ‘outcome’ are often used synonymously in the professional LIS literature. ‘Value’ or ‘benefit’ are generally broader terms. Definitions of library outcome generally highlight the effect on individual users or on users collectively,” insofar that “The existence of a library and the use of its services can effect changes in skills, competences, attitudes and behaviour of its users” (p. 548). In terms of outcomes and impacts as they relate to digital inclusion, public libraries regularly engage in impact assessments. Like all libraries, public libraries maintain quantitative performance metrics to assess their use and efficacy; examples include electronic circulation and collection counts, program attendance,

public computer sessions, and wireless sessions (Pelczar et al., 2021). Developed by the iSchool at the University of Washington, PLA now hosts a free readymade impact survey for libraries to distribute to their users, designed to measure “how [library users] use library technology services like public computers, wireless networks, online resources, digital literacy training, as well as outcome-oriented use in the following areas: Education, Employment, Entrepreneurship, Health & wellness, eGovernment, Civic engagement, eCommerce, Social inclusion” (PLA, 2019).

Jaeger et al. (2011) further suggest public libraries’ role in facilitating outcomes: “With public libraries serving as the trusted social outlet for free public computer and Internet access and assistance, people with no access, insufficient access, or insufficient digital literacy primarily turn to the library to apply for and access vital social services [...] Because public libraries are so well positioned to offer e–government services, use of public library computers for this purpose is high, especially among users who have no other access to the Internet outside of the library”.

While this section has explored public libraries’ relationship to digital inclusion, issues of access, skills, and use are also of great importance in academic library settings, though they are more commonly expressed outside the context of digital inclusion and instead appear in discussions of academic success, diversity, equity, and inclusion (DEI) initiatives, and/or general methods for enhancing discoverability, access, and digital skills. Frank et al. (2021) use digital inclusion as a framework for organizing their insights, experiences, and lessons learned while responding to students’ changing needs as their rural institution moved to online instruction, affirming that “Academic libraries are a central point of access for students in higher education, providing extensive digital resources, online services, and information literacy instruction. With their unique combination of services, academic libraries can advance digital equity and inclusion

with strategies and services that help bridge the digital divide, enable access, and promote digital accessibility” (p. 187-188).

Further research is needed to better understand the prevalence and value of digital inclusion in academic libraries and other library settings, and to obtain a clearer picture of the ways digital inclusion is conceptualized, realized, and advanced within the LIS digital inclusion literature.

2.2 Intersectionality

2.2.1 Defining intersectionality

The term *intersectionality* is widely cited and regarded as having originated in Kimberlé Crenshaw’s seminal article, “Demarginalizing the Intersection of Race and Sex: A Black Feminist Critique of Antidiscrimination Doctrine, Feminist Theory and Antiracist Politics” (1989), which sought to further Black feminist discourse within the scope of legal studies. Intersectionality is a mode of analysis that posits aspects of identity as mutually constitutive, meaning “people experience these multiple aspects of identity simultaneously and the meanings of different aspects of identity are shaped by one another” (Kang et al., 2017). Intersectionality also counteracts notions of discrimination that have historically relied on a “single-axis” of oppression and privileged the experiences of a group’s most normative members, betraying the compounding nature of structural inequities (Crenshaw, 1989).

Though Crenshaw is credited with coining the term “intersectionality”, it is worth noting that this concept long predates its naming convention. In 1988, King emphasized the adoption of a “multiple jeopardy” perspective, citing that “dual and systematic discriminations of racism and sexism remain pervasive, and, for many, class inequality compounds those oppressions” (p. 43). Moreover, King noted that additive thinking alone does not yield accurate portrayals of

compounding discrimination: “each discrimination has a single, direct and independent effect on status, wherein the relative contribution of each is readily apparent,” which “leads to non-productive assertions that one factor can and should supplant the other” (1988, p. 47).

Similarly, Lorde’s “There is No Hierarchy of Oppression” (1983) is another example of intersectional discourse which predates Crenshaw’s early description and its modern popularization, though many scholars regard the work as canonical within intersectional literature. “I simply do not believe that one aspect of myself can possibly profit from the oppression of any other part of my identity,” writes Lorde, “There is no hierarchy of oppression. I cannot afford the luxury of fighting one form of oppression only. I cannot afford to believe that freedom from intolerance is the right of only one particular group. And I cannot afford to choose between the fronts upon which I must battle these forces of discrimination, wherever they appear to destroy me” (Lorde, 1983, p. 9).

Research has considered intersectionality in a wide range of applications, as well as further debate, analysis, and theorization on its utility and essence. McCall (2005) defines intersectionality as the “relationships among multiple dimensions and modalities of social relations and subject formations” (p. 1771), and in analyzing the literature, identifies three common approaches used in applying intersectionality: *intracategorical complexity*, in which the focus emphasizes underrepresented social groups to reveal the complexity of their lived experiences; *anticategorical complexity*, which seeks to deconstruct extant categories on the basis of their insufficiency or inaccuracy; and finally, through the provisional examination of extant categories, *intercategorical complexity* which “begins with the observation that there are relationships of inequality among already constituted social groups, as imperfect and ever

changing as they are, and takes those relationships as the center of analysis” (2005, p. 1784). Hancock (2007) derives further insight from the existing literature by examining the role of fluidity and plurality in approaches to intersectionality, concluding that “intersectionality as a research paradigm can generate problem-driven research: it takes a problem in the world, analyzes and moves beyond earlier approaches to studying the problem, and develops a more powerful model to test for its effectiveness in addressing the problem” (p. 74).

In recent years, intersectionality has become something of a phenomenon, garnering interdisciplinary global attention and finding common use in popular culture. Intersectionality has come to serve as “a method and a disposition, a heuristic and analytic tool,” (Carbado et. al, 2013, p.11). In a 2013 reflection of the concept’s explosive popularity, Crenshaw and her co-authors identify critical themes that have emerged since its initial conceptualization. Paramount among the themes discussed are: first and most importantly, intersectionality’s inherent limitations, largely due to its provisional tendency. Intersectionality is not a self-contained entity reflecting specific interests or tasks, nor does one instance reflect the entirety of the concept’s applicability or potential use; and secondly, the intersectionality’s proven value to and use in a wide range of interdisciplinary applications (Carbado et. al, 2013).

2.2.2 Intersectionality in LIS

This range of applications includes library and information sciences (LIS), where intersectional theory has been used by librarians seeking a critical pedagogical perspective of library work. Intersectionality has served as a grounding concept in illuminating the experiences of librarians and library staff of color (Chou & Pho, 2017, 2018), LGBTQ+-identifying librarians (Ettarh, 2014), librarians and library staff with disabilities (Moeller, 2019; Schomberg, 2018;

George, 2020), and instances of gender discrimination in library settings (Lawton, 2018).

Intersectional theory has also served as a tool for evaluating collections policy and management (Hicks & Kerrigan, 2020; Bowers et al. 2017), archives and special collections practices (Hughes-Watkins, 2018), and LIS education (Mehra, 2019; Cooke & Sweeney, 2017).

Concerning methodologies in the LIS literature, intersectionality has been used as an analytical construct. Using a mixed methods approach, Hackney et al. (2018) critically explore the depth, context, and actualization of identity within the LIS literature to assess whether the works, which frequently advocates for enhanced diversity, equity, and inclusion (DEI) effectively challenges hegemonic structures. Reasoning that “[t]he literature of the discipline marks the key debates, ideas, concepts, and conceits of an academic field. As a sanctioned articulation of the field’s best work, peer-reviewed journal articles shape the discourse of LIS as an academic discipline,” (Hackney et al., 2018, p. 11), the authors develop twin scoring abstracts, intended to measure a given article’s engagement with discourse and practice as well as its discussion of identity. The first scale, gauges an article’s adherence to the “[...]iterative process of applying theory to practice and applying lessons from practice to shape the development of theory” (p.12), while the second scale measures the degree of nuance present in an article’s identity discussion, with “intersectionality” representing the most developed expression of identity in the current literature. Hackney et al. (2018) found that only a small fraction of the articles surveyed approached the concept of identity at all, and when they did, most only examined identity in a broad sense (44.5%) and fewer yet considered intersectionality (2.9%), thus underscoring the need for intersectionality as tool for future LIS scholarship and critical pedagogy: “When LIS scholars use the language of intersectionality to discuss identity,

their work contributes to a new narrative that can hold these differences. In our study, we therefore identified abstracts that indicated an intersectional perspective to have the greatest benefit to LIS discourse.” (p.14).

Floegel and Jackson (2019) use Collins’s work on intersectionality as the basis of their critical analysis of LIS, situating libraries within Collin’s “matrix of domination”, wherein power is perceived as “not as something groups possess, but as an intangible entity that circulates within a particular matrix of domination and to which individuals stand in varying relationships” (Collins, 2009, p.274). Originating in the tradition of Black feminist epistemology, Collins’s work represents a critical sociological extension of Crenshaw’s foundational theorization. As interpreted by Floegel and Jackson (2019),

Collins’s theory is two-fold. First, she describes identity as multifaceted and consisting of intersecting factors (e.g., race, gender, sexuality, nationality, disability, age) that affect how people act and are acted upon in their society. Individuals who lie outside dominant ideals in the United States (US) (e.g., those who are not white, straight, cisgender, able-bodied) tend to be marginalized. Second, she describes how societies function in relation to individuals’ identities by breaking them down into four intersecting domains: structural, or social structures that organize power; disciplinary, or bureaucratic organizations who control and organize human behavior through routine, rationalization, and surveillance; hegemonic, or a cultural sphere of influence that legitimizes oppression; and interpersonal, or personal relationships and interactions that make-up daily lives. (p. 412).

Using Collins's intersectional framework, Floegel and Jackson (2019) illustrate how structural, disciplinary, hegemonic, and interpersonal forces may perpetuate inequities within a matrix of domination in libraries. Examples include the *hegemonic* biases implicit in some cataloging standards, and the *interpersonal* denial of microaggressions occurring amongst colleagues in library work environments. The authors conclude by advocating for enhanced practice and awareness of intersectional pedagogy in LIS, which can be realized through an increased appreciation for the lived experiences of others, enhanced personal accountability, and the adoption of what Collins refers to as dialog-driven interaction (rather than argumentative discourse), informed by an ethics of caring, requiring virtue and benevolence in the delivery of information.

It is worth noting that Hackney et al. (2018) and Floegel and Jackson (2019) both stop short of imparting a critique which situates LIS within the larger context of the Information Age, and similarly, neither article highlights economic class or socioeconomic status as a facet of identity. Collin's work on intersectionality explicitly advocates for this kind of relational consideration, and as such, lends well to applications where additive thinking alone will not suffice.

2.3 Digital Inclusion and Intersectionality

In a critique of the digital divide metaphor, Gunkel (2009) expands upon the argument that the concept's foundational metaphor fails to adequately depict its intended plurality, described as a "constellation of different and intersecting social, economic, and technological differences": "Although these various inequalities and discrepancies may be related to one another, it would be hasty and inaccurate to conclude that they are identical, [thus requiring] that studies of the 'digital divide' need to learn how the various problems marked by this appellation relate to,

interact with, and influence each other” (p. 504). Though Gunkel’s critique makes no mention of digital inclusion or intersectionality, the notion of “intersecting social, economic, and technological differences” which are fundamentally incongruent, and “relate to, interact with, and influence each other” is an excellent entry point for describing the overlap of the two concepts.

Pérez-Escolar and Canet’s recent, first-of-its-kind taxonomical review of the digital inclusion literature (2022) emphasizes the digital divide as a persistent constraint in the process of achieving digital inclusion, with digital exclusion found to be especially acute among presently studied “vulnerable” groups (e.g., older adults, disabled people, inhabitants of rural areas, poor populations), and insufficiently reported or observed among other socially vulnerable groups such as refugees, the unemployed, single parent households and LGBTQ+ individuals. Pérez-Escolar and Canet also stress digital inclusion’s capacity for an appropriately nuanced understanding of digital inequality experiences, which they characterize as “intersectional”, and conclude by underscoring the need for a consolidated understanding of the relationship between vulnerable groups and digital inclusion (2022).

Pérez-Escolar and Canet’s use of “intersectional” as a characterization of digital inclusion is not unique to their study. Intersectionality is presently established in the digital inclusion literature. For example, Tsatsou (2021b) uses the concept of intersectionality to study relational patterns of digital and social inclusion among ethnic minorities, older people, and people with disabilities. In their study of automated decision-making in social and welfare services, Goggin and Soldatić (2022) highlight intersectionality as an increasingly important tool, stating that

“intersectionality will offer generative insights for framing the terms and agenda of digital inclusion in the next decade,” (p. 385)

As presented throughout the literature review, the overlap or mutuality of digital inequalities is a consistent theme in digital inclusion studies. This echoes the major points of intersectional theory, which seeks to understand inequality and discrimination as a complex multiaxial experience. While ICT continues to evolve, so too will digital inequality, and by extension, digital inclusion. Considering this trend, intersectionality’s unique capacity for fluidity, plurality, and nuance represents a worthy analytical tool for future digital inclusion research, as advocated for by Goggin and Soldatić (2022). Through the methods outlined in the chapter 3, this thesis seeks to add to the growing body of intersectional digital inclusion research.

Chapter 3:

Methods

This chapter presents the methodology for this thesis project. Guided by the research questions, an overview of the research design and justification introduces detailed sections which further describe the data collection, coding, and analysis processes.

3.1 Introduction

The methods for this thesis are informed by the problem statement and guided by the research questions presented in Chapter 1, reproduced for clarity in subsections *3.1.1* and *3.1.2*. Following the reiteration of the research questions and problem statement, a summary of systematic literature review, qualitative content analysis, and grounded theory methods precedes a justification for their use in this thesis (*3.2*), followed by a description of the population of interest and sampling methods (*3.3*), and a detailed overview of the multiphase research design, beginning with the systematic literature review then the qualitative coding and content analysis processes (*3.5*).

3.1.1 Statement of the Problem

Digital inclusion refers to the conditions and degrees of access to information and communication technologies among individuals and communities. This includes the range of variables and associated implications of ICT connectivity, as well as efforts to mitigate digital exclusion. Existing research in the broader digital inclusion literature has examined the distribution of variables impeding ICT access with reference to intersectional theory, but no study so far has used an intersectional framework to explore the connection between such variables and broader social issues. Similarly, no systematic account yet exists of the myriad

approaches to and understandings of digital inclusion within LIS. Such a study would enhance insight for stakeholders who seek to increase digital inclusion (such as libraries, non-profit organizations, and government agencies) as well as researchers looking to further investigate digital inclusion in new ways.

3.1.2 Research Questions

RQ1: How is digital inclusion conceptualized and investigated in the LIS literature?

RQ2: From an intersectional perspective, are some aspects of digital inclusion more thoroughly examined than others in the LIS literature?

RQ3: From an LIS perspective, what if any insights into the relationship between digital inclusion and broader social inequalities can be gained by using an intersectional framework?

3.2 Research Methods and Justification

As this thesis seeks to document and analyze how digital inclusion is presently conceptualized and investigated in the LIS literature through an intersectional lens, a multiphase research design comprised of systematic literature review and content analysis is well-suited to achieving this goal.

3.2.1 Systematic Literature Review

At its core, a literature review represents a “[c]ritical summary of the assessment of the range of existing materials dealing with knowledge and understanding in a given field” in order to “locate the research project, to form its context or background and to provide insights into previous work”, and “may form part of an empirical study or it may be a study in itself” (Blaxter et al., 2010, p. 124-125). A general literature review is often a necessary component of any research inquiry, as it can clarify the research questions, inform methodological choices, and

enhance subject knowledge relevant to the research topic (Kumar, 1996). Beyond the general literature review, additional review types exist and are distinguishable from one another based on their goals, procedures, and/or domain. The systematic literature review is one such review type and will serve as the first phase of the research methods for this thesis project.

The systematic literature review “[...] requires the use of robust techniques for searching for and identifying primary studies, appraising the quality of these studies, selecting the studies to be included in the review, extracting the data from the studies, and synthesizing the findings narratively and/or through pooling suitable quantitative data in meta analysis.” (Lewis-Beck et al., 2004, p. 111). The goal of a systematic literature review is to search the literature and, using specified inclusion criteria, identify relevant evidence in order to answer a particular research question. By using systematic methods when identifying and reviewing the relevant literature, bias can be minimized, thus providing reliable findings from which conclusions may be drawn. Systematic literature reviews are often used to identify any gaps in current research and suggest areas for further investigation, in addition to providing a framework or background which might appropriately position new research activities (Abrizah et al., 2016). This makes the systematic literature well-suited for addressing the research questions explored in this thesis, which aim to explore digital inclusion in the LIS literature using an intersectional lens.

Systematic literature review offers a means to synthesize research findings in a systematic, transparent, and reproducible way, and consequently, have been referred to as the “gold standard” among reviews (Snyder, 2019). In a systematic review on the methodology of literature review, Xiao and Watson (2017) report that most all literature reviews follow “eight common steps: (1) formulating the research problem; (2) developing and validating the review

protocol; (3) searching the literature; (4) screening for inclusion; (5) assessing quality; (6) extracting data; (7) analyzing and synthesizing data; and (8) reporting the findings” (p. 102). In an overview of systematic literature reviews for LIS, Wiley et al. (2020) provide general steps for conducting a review parallel to those outlined by Xiao and Watson (2017), offering tailored insight for LIS applications.

With research questions and a plan of action in place, the literature search serves as the next major step, with the formulation of search terms or themes that may be used to locate relevant sources of electronic/digital and physical information represents an essential primary step in any review process (Barron, 2006). In systematic reviews for LIS, Wiley et al. (2020) advise that the definition of literature expand to include not only primary studies, but additionally, the “many items that simply describe a project, service, or program” as they “are often useful for an LIS practitioner” (p. 200). During the search process, results may be refined by additional restrictions that suit the needs of the research questions, such as limiting results to a specific publication date range or to include only peer reviewed studies. Xiao and Watson (2017) suggest that literature review process may be iterative in nature, as unforeseeable problems may arise that requires modifications to the research question, search strategy, or review protocol. This idea of an iterative but systematic review protocol is echoed in Wiley et al. (2020), with the authors recommending researchers use a variety of search combinations and techniques to retrieve comprehensive results on a topic. Finally, a rule of thumb is that the search can stop when new searches return the same results with few new or relevant results (Xiao & Watson, 2017).

When the search is complete, Xiao and Watson (2017) recommend further screening each article for inclusion in data extraction and analysis using a two-stage procedure: “first start with a coarse sieve through the articles for inclusion based on the review of abstracts [...] followed by a refined quality assessment based on a full-text review” so that “By the time researchers arrive at the analysis and synthesis stages of the literature review, they should have a smaller number of articles, derived from a screening or inclusion process” (p. 105). The inclusion criteria can be based on research design and methodology and should reflect the needs of the research questions, and Xiao and Watson (2017) suggest adopting an “inclusive” posture—“if in doubt, always include the studies” (p. 106). Xiao and Watson (2017) also advise that studies might be excluded based on not satisfying any of the methodological criteria, though not all criteria must be used for screening. The idea of a quality assessment is partially integrated in the screening process and represents the “fine sieve” screening of articles for relevant criteria and validity, though not all review types require the same degree of quality assessment (Xiao & Watson, 2017). In systematic literature reviews for LIS, Wiley et al. (2020) also prescribe a two-stage method:

During the first round, reviewers will screen all items that resulted from the searches, determining which meet inclusion criteria, and begin to apply the predetermined codes to each item that will be included [...] The second round allows for deeper analysis of the items included in the master list. [...] During this round of analysis, reviewers can look more closely at the item content, rather than item characteristics, to code fields related to topics, key findings, and recommendations. Reviewing items a second time is also the

perfect opportunity to address issues and questions that came up in discussions after the first round of analysis. (p. 205).

As suggested by Xiao and Watson (2017) and Wiley et al. (2020), once the master list of items has been thoroughly analyzed and coded, reviewers can attempt to address the research questions they set out to answer through a more in-depth or critical analysis and synthesis, taking a sample of the data if needed. For this thesis, this secondary stage of qualitative coding and analysis will use qualitative content analysis via grounded theory methods, as discussed in the next section.

3.2.2 Content Analysis

Content analysis is a versatile research technique used to analyze messages and message characteristics from a variety of media, with a long history of use in communication, journalism, sociology, psychology, and business studies (Neuendorf, 2017). Weber (1990, “Introduction”) defines content analysis as “a research method that uses a set of procedures to make valid inferences from text.” Krippendorff further describes content analysis as a scientific tool which derives its insights through specialized procedures and is used to generate greater understanding of social phenomena, reasoning that “what distinguishes content analysis from most observational methods in the social sciences is that the answers to its research questions are inferred from available text” (2010, p. 235.)

Just as content analysis is not limited to inquiries of text-based media, content analysis can be both quantitative and qualitative. Neuendorf (2017) characterizes the relationship between quantitative and qualitative analysis as mutually constitutive, reasoning that “Often, the core task of quantitative measures is to put numerical values, either counts or amounts, to *qualities* of a phenomenon. [...]in content analysis, we have seen *quantitative* measures of such *qualities* as

the framing of a news item or the emotional tone of a political speech. That is, the phenomenon under investigation, or the constructs being examined, might be very *qualitative* in nature, and the analyses applied might be indisputably *quantitative*. The reverse is also possible, in which *quantitative* events might be interpreted in a *qualitative* fashion” (p. 9-10). Despite their reciprocity, quantitative and qualitative content analysis diverge in their respective empirical processes, with quantitative content analysis emphasizing “the soundness of a priori measurement instruments” (Neuendorf , 2017, p. 9), and qualitative content analysis relying on critical and interpretive analyses dictated by the researcher.

Qualitative content analysis will inform the second phase of the research process for this thesis, chosen for its aptitude in facilitating methodical, subjective interpretations of data to generate insight and discern underlying values and themes (Zaidman-Zait, 2014). Moreover, the subjective and inductive nature of qualitative content analysis will afford the use of intersectionality as an interpretive lens throughout, which aligns with the goals of this thesis. Additionally, no extant coding instruments or frameworks currently exist which could provide a means for analyzing digital inclusion vis-à-vis libraries and intersectionality, underscoring the utility of qualitative rather than quantitative content analysis in addressing the research questions.

From an LIS perspective, White and Marsh (2006) describe content analysis as a “flexible methodology” and further characterize qualitative content analysis as an iterative research process which yields a composite picture of the phenomenon being studied: “The picture carefully incorporates the context, including the population, the situation(s), and the theoretical construct. The goal is to depict the ‘big picture’ of a given subject, displaying

conceptual depth through thoughtful arrangement of a wealth of detailed observations.” (p. 39). To initiate this process, Marsh and White (2006) recommend beginning qualitative content analysis with the formulation of research questions, or “open questions that guide the research and influence the data that are gathered” (p.34). Then, flowing from the research questions, White and Marsh (2006) suggest the application of grounded theory methods in performing qualitative content analysis in LIS.

Unlike research that begins from a preconceived framework of logically deduced hypotheses, grounded theory begins inductively through data gathering and the gradual refinement of theoretical insights that are confirmed or disconfirmed during subsequent data collection (Milliken, 2010). As originally described by Glaser and Strauss (2017), grounded theory achieves its theory generation via the inductive processes of comparative analysis, termed *constant comparison*. In qualitative content analysis, grounded theory’s process of constant comparison entails a thorough, multistage coding process that can be viewed as hierarchal (Punch, 2014) and may also incorporate the use of memos. White and Marsh (2006) describe this process as iterative and hermeneutic, with analyses derived through many cycles of close reading and careful interpretation of both confirming and disconfirming evidence.

The use of a comprehensive, systematic literature review, complemented by qualitative content analysis and grounded theory methods will address the research questions by establishing a systematic account of the discourse and activities pertaining to digital inclusion and libraries as described in the LIS literature. Additionally, the interpretive analysis will be rooted in intersectional theory to identify patterns or trends in the research and propose new avenues of

interrogation. The following sections further describe the population and sampling methods used to obtain data (3.3) and detail the multiphase research design (3.4).

3.3 Population and Sampling

For inductive analyses, Glaser and Strauss (2017) recommend a sample which prioritizes theoretical purpose and relevance to the research project. Similarly, White and Marsh (2006) suggest that “[q]ualitative researchers focus on the uniqueness of the text and are consciously aware of the multiple interpretations than can arise from a close perusal of it. The need for close, reiterative analysis itself usually limits the size of the sample” (p. 36). In considering these provisions and applying the research questions as guiding rationale, this thesis focuses insight on peer-reviewed LIS research articles written on digital inclusion and libraries.

As articulated in Hackney et al. (2018), “[t]he literature of the discipline marks the key debates, ideas, concepts, and conceits of an academic field. As a sanctioned articulation of the field’s best work, peer-reviewed journal articles shape the discourse of LIS as an academic discipline,” (p. 11). For this thesis, the decision to focus on the scholarly LIS literature is based on the notion that scholarly communication is often representative of the major trends and developments in its field. Further narrowing the population to include only refereed LIS research articles which explicitly reference digital inclusion and libraries further narrows the population size, as recommended by White and Marsh (2006) in a way that specifically addresses the research questions. Given that articles in the population must detail research procedures and be peer reviewed, trade publications, magazines, and position papers were excluded. Finally, to be eligible for inclusion, articles must use the term “digital inclusion” in the body of the text (rather than solely in the abstract, title, keywords, or references), and must be meaningfully related to

libraries. To the latter point, articles were screened for thematic relevance. For example, an article written from a communications disciplinary perspective which surveys telehealth in rural environments and discusses libraries as stakeholders is included here, while an article which considers libraries only as site of possible connectivity and does not discuss or engage deeper is excluded here. With these criteria in mind, results were manually reviewed to ensure the match is in the body of the text.

All eligible research articles were sourced from Library and Information Science Abstracts (LISA) and Web of Science (WoS), made accessible via the University of Tennessee Libraries' subscriptions, between September 28 and October 3, 2022. To satisfy the stopping rule recommended for systematic literature reviews (Xiao & Watson, 2017) and the rules of triangulation associated with qualitative content analysis (White & Marsh, 2006), multiple searches were used. Most results were obtained via LISA, with WoS used mostly to verify that a sufficiently comprehensive range of results had been obtained from LISA (*Table 1*). The overlap among searches here reflects a strategy which aims to use language and terms pertinent to the research questions while leveraging LISA's classification scheme. For instance, the use of *digital divide* as a classification heading rather than *digital inclusion*. Search results were further limited to peer-reviewed scholarly publications, omitting results from trade publications, magazines, and theses or dissertations.

3.4 Research Design

As referenced in section 3.2, this thesis features a multiphase research design which uses descriptive systematic literature review and focused qualitative content analysis methods (*Figure 2*). The first phase of the research design consists of a systematic literature review. Using the

Table 1. Searches used to obtain relevant data points on both LISA and WoS.

Library and Information Science Abstracts (LISA) Searches	Web of Science (WoS) Searches
<p>“digital inclusion” AND librar*</p> <p>“digital inclusion” AND mainsubject(Digital Divide)</p> <p>IF(“digital divide”) AND “digital inclusion”</p> <p>IF(“digital divide”) AND librar*</p> <p>IF(“digital exclusion”)</p> <p>IF(“digital inclusion”)</p> <p>MainSubject(“digital divide”) AND MainSubject (“public libraries” OR “libraries” OR “Academic libraries”)</p> <p>MainSubject(“digital exclusion”)</p> <p>MainSubject(“digital inclusion”)</p>	<p>“digital inclusion” AND librar*</p> <p>“digital inclusion” AND digital divide*</p>

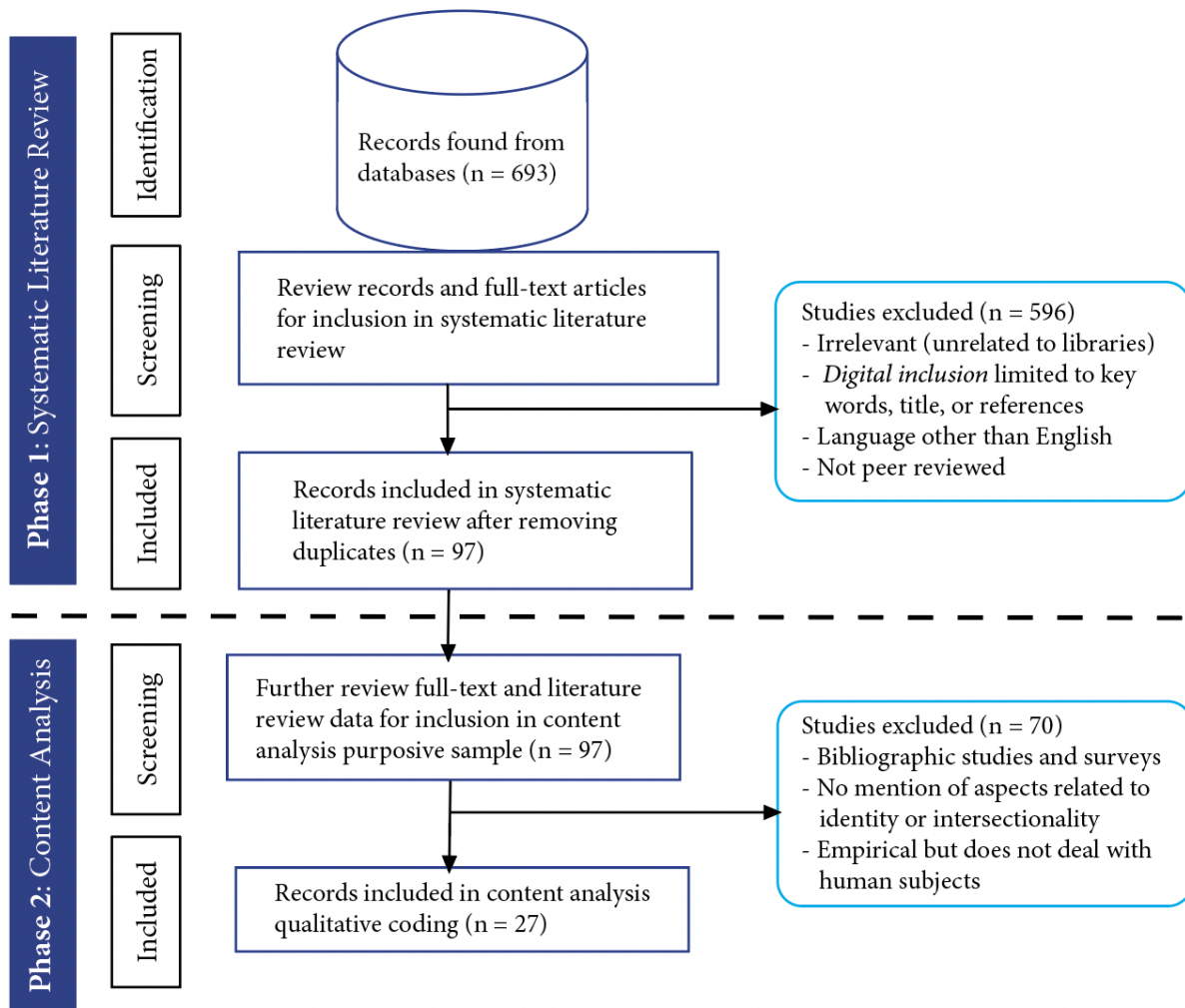


Figure 2. The research design for this thesis project consists of two phases: a descriptive, systematic literature review followed by a more focused content analysis.

search terms and criteria specified in section 3.3, the systematic literature review search and screening protocol identified articles which met the criteria for inclusion in the population. Per the recommendations of Wiley et al. (2020), all results returned in searches were documented, whether they met the criteria for inclusion or not. This was achieved using the library and folder functions on LISA, with articles saved into folders labeled “Thesis_Excluded_Articles” and “Thesus_Population_Articles”; a third folder “Thesis_Can’tFindFullText” was used to account for articles which seemed to meet inclusion criteria based on the contents of the abstract or keywords but needed to be sourced via interlibrary loan or library request. Upon screening the full-text articles, data for articles which met the criteria for inclusion in the population were entered into a Microsoft Excel spreadsheet and coded for basic features. Features examined in this early round of coding include publication year, journal, author assigned keywords, methods, and aspects related to intersectionality, as well as any definitions of digital inclusion or references to intersectionality included in the articles.

From the population of LIS articles which focus on libraries and digital inclusion, a purposive sample was selected for the second phase of coding, to allow for a more in-depth analysis aligned with the research questions. Per Palinkas et al. (2015), “Purposeful sampling is widely used in qualitative research for the identification and selection of information-rich cases related to the phenomenon of interest” (p. 533) and selected for the purpose of reducing variation and simplifying analysis. For this thesis, a homogenous purposive sample of articles was chosen based on criteria related to methods and the presence of intersectional aspects or concepts related to intersectionality. To the latter point, the presence of or relevance to intersectional concepts for a given article referred to the way in which identity-related sociodemographic factors for the

population of interest were considered in relation to one another; articles which treated survey populations as homogenous identity groups (ex: elderly adults; students) without further analyzing intragroup differences were excluded. So, to be selected for phase two, articles needed to demonstrate more than one aspect related to the sociodemographic identity of the population (coded as “aspects related to intersectionality”) *and* use empirical, human-focused research methods—features coded for in the descriptive systematic literature review—were chosen for use in phase two.

Rather than start with an established codebook, in qualitative content analysis and grounded theory methods, coding is an inductive process whereby initial coding is guided by the research questions. As recommended by Glaser and Strauss (2017), the initial coding process for the second research phase will ascribe data into many specific categories informed by the research questions, as advised by White and Marsh (2006). Coding for additional features will take place as they emerge from the data, emerging codes will be compared to those previously coded, and previously coded cases will be revisited for any subsequently developed codes.

This reiterative process will continue throughout coding. By applying the constant comparison method associated with grounded theory, conceptual or theoretical trends in properties across categories should emerge over time, “as different categories and their properties tend to become integrated through constant comparisons that force the analyst to make some related theoretical sense of each comparison (Glaser and Strauss, 2017, p. 110). New data will begin to fit into, challenge, or reshape existing categories, and as major categorical modifications wane over time and some categories achieve theoretical saturation. The goal of this process is the emergence of a coding structure which reflects patterns and idiosyncrasies in

the data and serves as the grounds for and product of a multi-tiered analysis (Glaser & Strauss, 2017). Gradual refinement and consolidation of the coding structure takes on a hierarchal organization, as outlined by Punch (2014): this process begins with *in vivo* codes, which focus on describing the content as it appears in the data, then moves to *open codes*, which introduce a higher degree of theoretical application guided by the research questions, succeeded by *axial codes*, used to highlight the interconnectedness among the open codes.

To achieve additional clarity and cohesion during this process, memos will be used. Memoing is not entirely removed from the coding process and requires a similarly integrative approach in its incorporation of analysis. White and Marsh (2006) advise the use of both conceptual and theoretical memos during all stages of the coding process to fully support the constant comparison process as used in grounded theory methods. As synthesized by Punch (2014), memos can serve many purposes, as they “may suggest still deeper-level concepts that the coding has so far produced,” and “may point towards new patterns and a higher level of pattern coding”, or “may also elaborate a concept or suggest different ways of doing this, or they may relate different concepts together” (p. 117).

In qualitative content analysis, analysis partially begins during the coding and memoing process in order to produce the “composite picture of the phenomenon being studied,” as described by White and Marsh (2006, p. 39). After completing the qualitative content analysis coding, the more formal stages of analysis will aim to address the research questions by examining the final codebook after coding the entire purposive sample of articles.

Analysis of basic descriptive statistics will account for the more discrete elements (chronology, names of journals, publication data, methods, etc.) derived from data collected

during the initial literature review phase of the research process. During the initial phase review process, the presence of definitions of digital inclusion and aspects related to intersectionality will also be coded, in order to obtain a sample for the second phase. Analysis of the second phase results will further address the research questions in elucidating how and to what extent digital inclusion is explored in the library-focused LIS literature, and similarly, what if any insights into relationship between digital inclusion, libraries, and broader social issues can be gained through using an intersectional lens. Due to the inductive nature of qualitative content analysis, it is difficult to predict where observable trends might emerge, but some area of potential interest or interrogation include: correlations between and among types of libraries, demographic factors, barriers to ICT or library use, and recommendations for digital inclusion initiatives. Analysis will take the form of descriptive statistics, an analysis of the final codebook, and some visualizations, where appropriate.

Coding and documentation for data collecting in phase one will be recorded and analyzed using Microsoft Excel, and all data will be collected at an article-level of granularity. The qualitative analysis in phase two will use NVivo qualitative data analysis software, obtained via the University of Tennessee's license subscription. Within NVivo, each individual article will be added as a case and subsequently coded, with articles serving as the units of analysis and coding occurring at sentence-level. Coding for additional features will take place as they occur from the data, and previously coded cases will be consulted as subsequent code emerge.

Chapter 4:

Results

4.1 Systematic Literature Review

Using a variety of search terms (as detailed in 3.3), 693 records were screened for inclusion in phase one. Upon scanning the abstracts and methods sections, ascertaining their relation to libraries, and searching for use of the phrase *digital inclusion* in full text versions of the articles, 596 articles were determined as falling outside of the criteria, largely based on their relevance to the research questions and inclusion criteria. For example, an article might be meaningfully *about* digital inclusion *and* reference aspects related to intersectionality without establishing a connection to libraries; while it could be argued that the content of the article would be of interest to library practitioners, this article would be excluded from the systematic literature review, as it does not specifically establish a connection to libraries in the text. In total, 97 articles met the criteria for inclusion in the systematic literature review and were coded for basic descriptive features.

The distribution of article publication years (*Figure 3*) indicates a general increasing trend, with 2020 representing a peak. Both 2021 and 2020 show a slight drop in number of articles, which may be attributed to delays in availability from publishers and/or LISA and Web of Science. It is also worth noting that the earliest publication year for an article included in this literature review is 2008—eight years after the NTIA’s *Toward Digital Inclusion* and the common introduction of the term.

The articles chosen for literature review came from 44 different journals (*Table 2*). *Library Philosophy and Practice*, an e-journal owned and published by the University Libraries

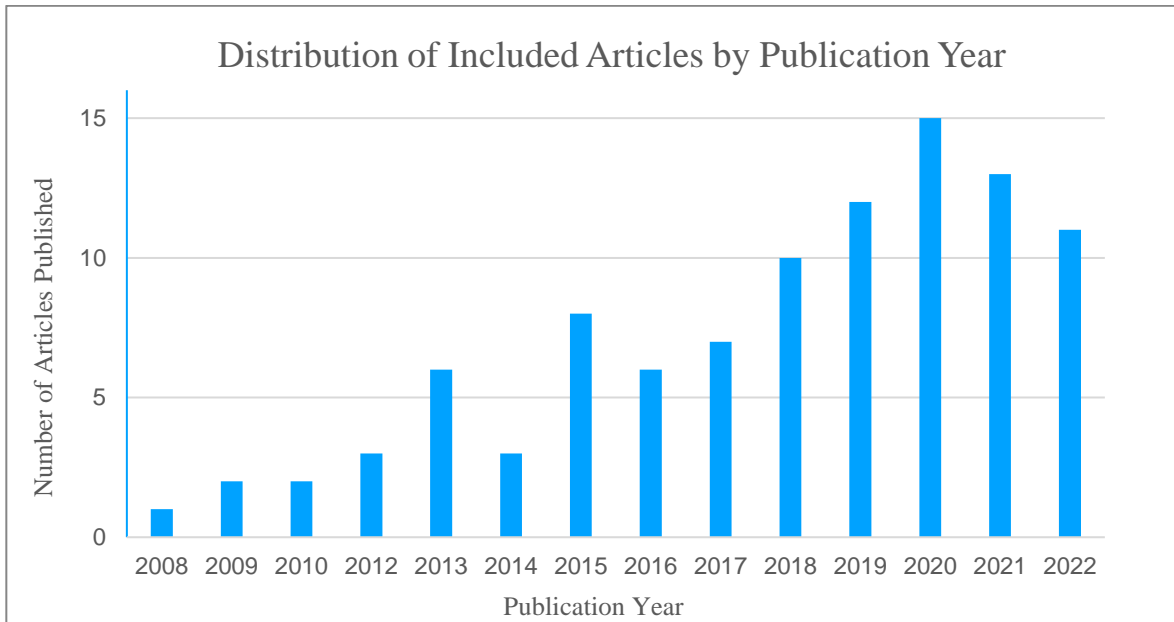


Figure 3. Distribution of publication year for articles included in the systematic literature review population.

Table 2. Distribution of journals represented in the systematic literature review.

Journal Title	Number of Articles
<i>Library Philosophy and Practice</i>	14
<i>Public Library Quarterly</i>	10
<i>Library Hi Tech</i>	6
<i>Information, Communication & Society</i>	5
<i>Information Technology & People</i>	4
<i>Library Trends</i>	4
<i>Information Technology and Libraries</i>	3
<i>Information and Learning Science</i>	3
<i>Journal of Documentation</i>	3
<i>Journal of Librarianship and Information Science</i>	3
<i>The Library Quarterly</i>	3
<i>Health on the Internet; Journal of the Association for Information Science & Technology; Journal of Consumer; Journal of Medical Internet Research; Library & Information Science Research; Library Management; Library Review; El Profesional de la Información; Reference Services Review</i>	2
<i>Advances in Librarianship; Behavior & Information Technology; Communication & Ethics in Society; Communication Research and Practice; Communications in Information Literacy; The Electronic Library; First Monday; Gerontology & Geriatrics Education; Global Knowledge; Information & Culture; Information Development; Information Discovery and Delivery; The Information Society; International Journal of Digital Literacy and Digital Competence; Internet Reference Services Quarterly; Journal of Information; Journal of Information Literacy; Journal of Library Administration; Journal of Map & Geography Libraries; Journal of Responsible Innovation; Journal of Web Librarianship; Learning, Media and Technology; Media, Culture & Society; Memory and Communication; Science and Public Policy; Universal Access in the Information Society; Voluntary Sector Review</i>	1

of the University of Nebraska—Lincoln, published the greatest number of articles, followed by *Public Library Quarterly*. Of the 44 journals represented in the literature review, just 17 published two or more articles which met the criteria for inclusion.

Author-assigned keywords and phrases appeared in 82 of 97 articles (*Figure 4*). Though LISA and Web of Science supply their own keywords, database-supplied keywords were excluded from this analysis. Additionally, articles without author-supplied keywords were excluded from keyword analysis. In tallying the keywords and phrases, *digital divide*, *digital inclusion*, and *public libraries* appeared most frequently, with related terms like *digital literacy* and *digital exclusion* also well-represented within the collection of over 200 unique keywords and terms.

The methods used underscore the interdisciplinary nature of digital inclusion research, with everything from healthcare analysis to critical and theoretical analysis represented in the population of articles (*Figure 5*). Methods in each article were analyzed based on the terms used by article authors to describe their research. Most articles described a combination of methods, with a total of 150 different method-related data points captured. Similarly, some articles did not identify an established method and were therefore excluded from this analysis. Interviews were the most common methodological device. Other common methods include surveys, case studies, focus groups, and field observations. Quantitative analysis methods were also well-represented among the articles reviewed, sometimes used alongside qualitative methods.

The populations of interest for the articles included in this literature review were analyzed for their geographic qualities or affiliations. The articles reviewed represent an international selection of 48 countries, regions, and continents (*Table 3*). Articles without distinct geographic affiliations were omitted here, such as bibliographic reviews of journals or wide sweeping analyses of global policy initiatives; in total, just five articles were omitted. The high



Figure 4. Word cloud featuring 40 most common author-supplied keywords, where font size represents frequency of occurrence.

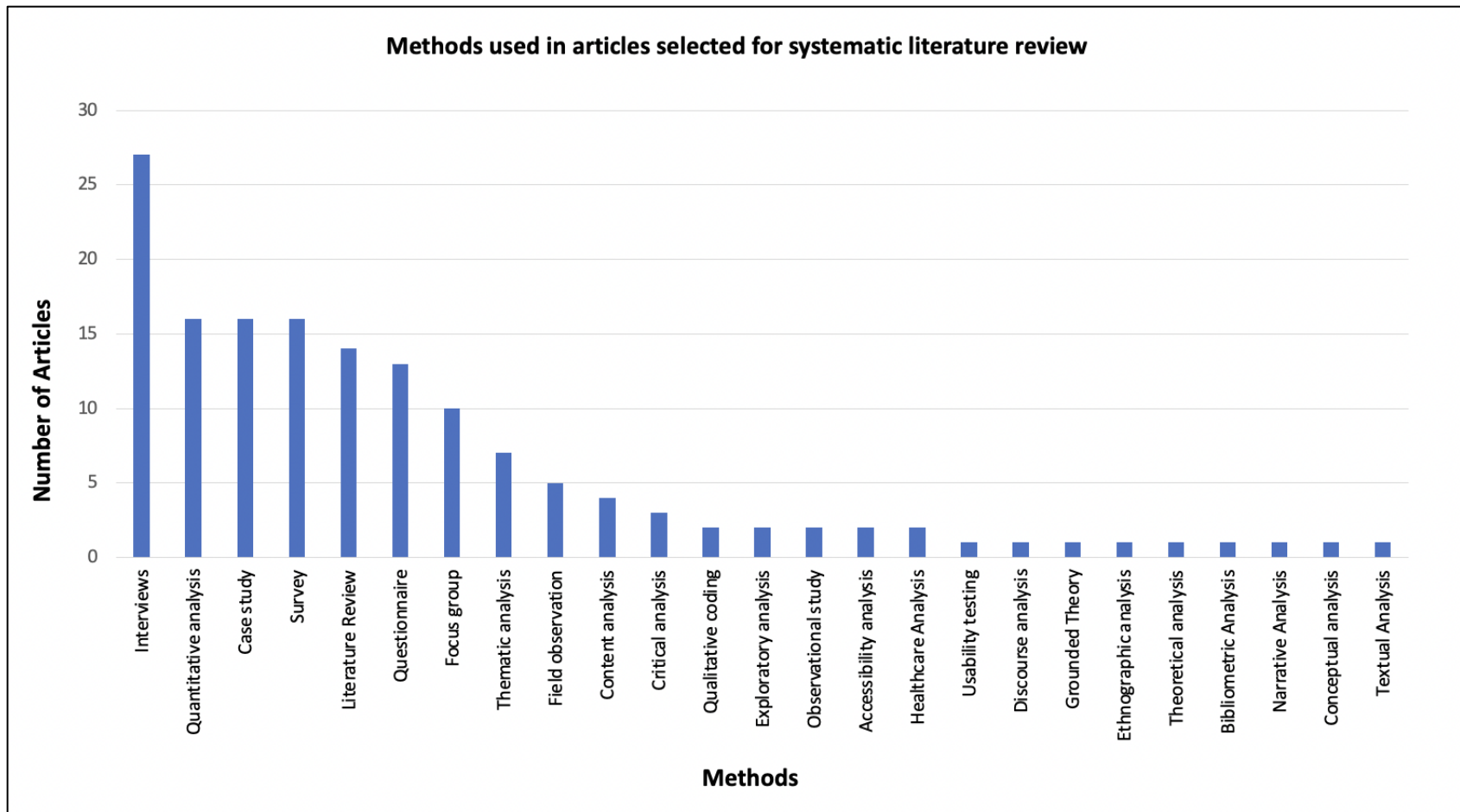


Figure 5. Distribution of methods used in articles included in the systematic literature review population.

Table 3. Distribution of countries, regions, and continents represented in systematic literature review.

Countries, Regions, and Continents	Number of Articles Each
United States	27
United Kingdom	14
Nigeria	9
Australia	6
India	5
New Zealand	4
China, Europe, Ghana, Oceania, Canada, South Africa	3
East Africa, South Korea, Colombia, Norway, Uganda, Asia, Turkey	2
Argentina, Bangladesh, Brazil, Chile, Costa Rica, Dominican Republic, Ecuador, Egypt, Georgia, Greece, Honduras, Indonesia, Kazakhstan, Kyrgyzstan, Lithuania, Malaysia, Moldova, Mongolia, Namibia, Nepal, Netherlands, North America, Pakistan, Peru, Philippines, Poland, Portugal, Spain, Sweden, Sri Lanka	1

number of geographic data points captured from 92 articles emphasizes the international, comparative, and frequently overlapping nature of digital inclusion research.

In phase one, 693 articles were screened for inclusion in the systematic literature review. Ultimately, 97 articles met the criteria for inclusion, and were coded for basic descriptive features. The articles analyzed for the literature review came from 44 journals. The publication years across articles demonstrate a general increasing trend. Author-assigned keywords from the articles emphasized *digital inclusion* as well as *digital divide* and *public libraries*. Most articles described a combination of methods, with interviews being the most commonly applied method. The articles reviewed also represent 48 countries, regions, and continents internationally, with the United States, United Kingdom, and Nigeria being the three most associated geographic entities.

4.2 Qualitative Content Analysis

For phase two, articles were further screened for inclusion in the qualitative content analysis process using data captured during the systematic literature review. For eligibility, articles needed to use human-centered research methods, rather than bibliographic or solely quantitative methods; additionally, articles needed to reference aspects related to intersectionality, such as facets of identity or sociodemographic factors. Twenty-seven articles in total met these criteria and were coded using the qualitative content analysis methods outlined in Chapter 3. Using NVivo, qualitative coding occurred at the sentence level and was guided by the research questions from the outset, as advised by White and Marsh (2006). In observing the research questions, early coding was focused on identifying content related to digital inclusion and libraries, such as determinants of digital inclusion and exclusion, sociodemographic markers, and

the ways in which libraries interacted with their users and communities to fulfill service and information needs.

The first codes were highly specific in vivo codes, which over time, were grouped or aggregated into more conceptual axial codes. For example, the early code *Lack of transportation to and from public ICT service points* became *Lack of support infrastructure*, which was later grouped into the axial code *Infrastructure and policy-related barriers*, nested under top-level code, *Barriers to ICT*. In a similar example, in vivo codes *Difficulties with email*, *Difficulties understanding technical jargon*, and *Search difficulties* became *Difficulties using or understanding digital technology*, which fit axial code *Knowledge and skills-related barriers* beneath top-level code *Barriers to ICT*. The final codebook (*Appendix, Table 18*) consists of 9 top-level axial codes (*Table 4*). The remainder of this section explores major trends and occurrences associated with each top-level axial code.

Barriers to ICT, the most frequently occurring top-level code, appeared in 22 articles with 394 instances. Within this code, narrower axial codes further characterized the barriers associated with ICT use (*Table 5*). The most frequent subcode, *Knowledge and skills-related barriers*, parallels themes associated with the second-level digital divide (2.1.2), with coded items referencing difficulty using or understanding ICT due to a lack of knowledge and training or support resources, as well as the conditions associated with relying on others for ICT instruction or successful ICT use. The second-most recorded subcode, *Access-related barriers*, recalls issues associated with the first-level digital divide (2.1.2), such as instances of limited access to ICT devices and services, including a sufficient broadband connection, data usage caps, and inaccessible ICT design. Though affordability can certainly be a barrier to ICT access, *Affordability and cost-related barriers* represented a distinct category related to financial barriers

Table 4. Top-level axial codes from final codebook, with number of articles and sentence-level items coded for each.

Top-Level Axial Code Name	Number of Articles Coded Each	Number of Sentences Coded Each
Barriers to ICT	22	394
Barriers to library use	16	143
Benefits of library	7	51
Demographic group	27	350
Information and service needs	26	263
Intersectional concepts	21	77
Library interventions	14	119
Suggestions and opportunities for libraries	14	61
Type of library	27	30

Table 5. Axial subcodes of *Barriers to ICT*, with number of articles and sentence-level items coded for each.

<i>Barriers to ICT</i> Axial Subcodes	Number of Articles Coded Each	Number of Sentences Coded Each
Access-related barriers	16	65
Affordability and cost-related barriers	8	49
Attitude and motivation-related barriers	13	64
Infrastructure and policy-related barriers	8	45
Knowledge and skills-related barriers	14	119
Pandemic-related barriers	2	7
Social and cultural barriers	11	45

associated with ICTs—particularly, mobile, broadband, and computer affordability. *Attitude and motivation barriers* accounted for instances of technology anxiety, privacy concerns, and a general lack of motivation. Similarly, *Social and cultural barriers* frequently referenced personal attitudes unique to various social and cultural experiences which may inhibit ICT use, such as generational attitudes and language barriers. *Infrastructure and policy-related barriers* reflects geographic barriers to ICT, the uneven development of ICT services across inhabited regions, and insufficient public access technology. Lastly, *Pandemic-related barriers* refers to barriers associated with the Covid-19 pandemic.

A related top-level code, *Barriers to library use*, was coded in 16 articles and 143 instances (Table 6). The most frequently related barriers to library use were those dealing with *resources, equipment, and service limitations*, such as limitations imposed by the shared nature of public computing and a lack of accessible resource formats where needed. Barriers to library use related to *library staff* also appeared frequently, accounting for instances of staffing issues, as well as library staff's attitudes in and familiarity with digital technology.

Other barriers to library use referenced the unique role of libraries within society: *physical library spaces and facilities, users' lack of confidence or familiarity with library sources and services, library funding limitations, lack of transportation to and from the library, and the availability of competitive alternatives to library service*. As with *Barriers to ICT*, both *social and cultural factors* and the *Covid-19 pandemic* represented barriers to library use with some shared features. For example, language barriers were coded as a *social and cultural factor* in barriers to both library and ICT use.

Coding for library type occurred in all 27 articles, with some articles referencing more than one type of library (Table 7). Public libraries were the most frequently coded *Type of library* by a

Table 6. Axial subcodes of *Barriers to Library Use*, with number of articles and sentence-level items coded for each.

<i>Barriers to Library Use</i> Axial Subcodes	Number of Articles Coded Each	Number of Sentences Coded Each
Barriers related to Covid-19	1	6
Barriers related to finances and funding	3	9
Barriers related to lack of user confidence or familiarity with library	3	4
Barriers related to library staff	6	24
Barriers related to physical space and facilities	6	13
Barriers related to resources, equipment, and service limitations	13	64
Barriers related to social and cultural factors	5	13
Barriers related to transportation to and from the library	4	6
Barriers to use due to competitive alternatives to library resources and services	1	4

Table 7. *Type of Library*, with number of articles and sentence-level items coded for each.

<i>Type of Library</i>	Number of Articles Coded Each	Number of Sentences Coded Each
Mobile libraries	3	3
Public libraries	24	24
School libraries	2	2
University libraries	1	1

significant margin, followed by mobile libraries, school libraries, and university libraries. The emphasis on public libraries here recalls the prevalence of *public libraries* as an author-assigned keyword from the previous section (4.1).

Information and service needs—that is to say, needs identified or associated with users within a library service population—were coded 263 times across 26 articles (Table 8). *ICT-related information and service needs* were the most common need, accounting for needs related to Internet and technology access, digital library materials, and ICT support and training. Another frequently coded category, *Everyday information needs*, accounted for needs associated with everyday life, societal information needs, including civic information services and involvement, health information and services, and housing or social care information. Other subcodes also emphasized themes commonly associated with libraries and library service, such as the opportunity for *social connectivity and inclusion*; *education and entertainment*; *work and employment-related information*; and needs related to the *physical space* of a library and the *shelter* it affords users.

In response to the range of information and service needs, various *Library interventions* were observed in 14 articles, with 119 data points (Table 9). Library ICT initiatives, such as expanded ICT services and resources or training and instructional opportunities represented the most frequently coded *ICT interventions*. *Outreach and community-focused interventions* were the second-most coded intervention, accounting for not only community involvement and partnerships, but also the curation of locally relevant and community specific resources. Interventions premised on *user empowerment*, a notion often associated with ICT use, included activities aimed to encourage and help users build trust and motivation to use digital technology. Additional areas of interventions focused on *staffing, policy, and infrastructure, programming,*

Table 8. Axial subcodes of Information and service needs, with number of articles and sentence-level items coded for each.

<i>Information and service needs</i> Axial Subcodes	Number of Articles Coded Each	Number of Sentences Coded Each
Education and entertainment-related information needs	15	42
Everyday information needs	18	43
ICT-related information and service needs	21	86
Physical space and shelter-related needs	3	5
Social connectivity and inclusion needs (digital and in-person)	12	43
Work-related technology and resource needs	15	44

Table 9. Axial subcodes of Library Interventions, with number of articles and sentence-level items coded for each.

<i>Library Interventions</i> Axial Subcodes	Number of Articles Coded Each	Number of Sentences Coded Each
Accessibility-related interventions	1	9
ICT interventions	9	49
Outreach and community-based interventions	4	19
Programming-based interventions (non-ICT related)	4	9
Service and resource-related interventions (non-ICT related)	3	5
Staffing, policy, and infrastructure-related interventions	4	10
User empowerment interventions	5	18

and *service or resource* beyond the domain of ICTs, including everything from staff training for working with diverse populations to offering free foods to users to mobile library initiatives.

Benefits of the library refers to advantages or benefits provided to users and communities through library service (Table 10). Unlike *Library interventions*, benefits emphasize qualities associated with library impact, rather than tangible actions or implementations. Codes highlighted the library's value as a *community resource*, which offers users opportunities for related benefits, such as *education* and *social inclusion and enrichment*. *Librarians* and the services they provide were also recognized as a benefit, as was the *free* nature of library services and resources.

Concerning areas for improvement, *Suggestions and opportunities for libraries* appeared in 14 articles with 61 coded items (Table 11), highlighting the potential for further *outreach and advocacy*, enhanced *programmatic* offerings and *training* for staff, and expanded resource and service offerings. ICT-related suggestions and opportunities arose throughout; for *outreach and advocacy*, this included digital inclusion advocacy, while *programming and training*-focused opportunities stressed training opportunities for both users and library staff, and *resources and services* recommended enhanced public ICT offerings, the provision of ICT equipment for training purposes, and improved accessibility for digital content.

To track the exploration of identity throughout the articles, coding related to *demographic groups* also occurred. Groups and persons associated with various demographic markers related to community type, and societal and economic class, and additionally, related to ability, age, education, employment status, etc. (Table 12; Table 13). *Age* was the most frequently referenced subcode, accounting for a range of overlapping age demographics: *older people*, *young people*, *teens*, *adults*, *elderly adults*, and *children*. *Older people* represented the most studied

Table 10. Axial subcodes of *Benefits of the Library*, with number of articles and sentence-level items coded for each.

<i>Benefits of the Library</i> Axial Subcodes	Number of Articles Coded Each	Number of Sentences Coded Each
Community resource	3	18
Educational benefits	2	3
Free resources and services	2	2
Librarians	2	3
Social inclusion and enrichment	4	25

Table 11. Axial subcodes of Suggestions and opportunities for libraries,
with number of articles and sentence-level items coded for each.

<i>Suggestions and opportunities for libraries</i> Axial Subcodes	Number of Articles Coded Each	Number of Sentences Coded Each
Outreach and advocacy	8	13
Programming and training	9	19
Resources and services	9	29

Table 12. Values and frequencies associated with the *Demographic group* top-level axial code.

<i>Demographic Group</i> Axial Subcodes - Groups	Number of Articles Coded Each	Number of Sentences Coded Each
Groups	13	46
<i>Families</i>	6	16
<i>Groups by community type</i>	7	20
Non-urban communities	2	5
Rural communities	6	13
Urban communities	2	2
<i>Groups by societal, economic, and political class</i>	4	10
Economically-disadvantaged groups	1	1
Middle class groups	2	4
Post-apartheid populations	1	1
Working class groups	1	4

Table 13. Values and frequencies associated with the *Demographic group* top-level axial code.

<i>Demographic Group</i> Axial Subcodes - Individuals	Number of Articles Coded Each	Number of Sentences Coded Each
Persons	26	285
<i>Persons by ability</i>	9	20
Disabled persons	9	20
<i>Persons by age</i>	20	76
Adults	8	10
Children	2	3
Elderly persons	2	5
Older persons	5	24
Teens	5	13
Young people	7	21
<i>Persons by education</i>	13	29
Persons with secondary and primary education	3	3
Formally educated persons	2	3
Homeschool	1	1
Students	9	22
<i>Persons by employment status</i>	13	46
Employed persons	7	17
Retired persons	5	10
Unemployed persons	10	19
<i>Persons by gender</i>	10	29
Cisgender persons	1	1
Men	7	10
Women	9	18
<i>Persons by housing status or experience</i>	4	12
Formerly homeless	1	1
Homeless	4	9
Rough sleepers	2	2
<i>Persons by income</i>	6	15
High income individuals	1	3
Low income or impoverished persons	5	12
<i>Persons by language[s] spoken</i>	4	5
Multilingual and non-English speaking groups	4	5
<i>Persons by marital status</i>	3	15
Divorced or widowed persons	2	4

Table 13 continued.

<i>Demographic Group Axial Subcodes - Individuals</i>	Number of Articles Coded Each	Number of Sentences Coded Each
Married or partnered persons	2	5
Single persons	2	6
<i>Persons by parental status</i>	1	3
Parents	1	3
<i>Persons by race and ethnicity</i>	7	17
African American persons	3	4
Asian persons	1	1
Bi- and Multiracial persons	1	1
Caucasian persons	2	2
Indigenous persons	1	1
Latino individuals and groups	4	8
<i>Persons with refugee and migrant status</i>	5	18

demographic factor of all subcodes, with 31 occurrences in 7 articles. *Employment status* was also a frequently occurring demographic, reflecting not only *employed* and *unemployed* persons, but *retired* individuals as well. *Gender* was also represented, with coverage referencing *men* and *women*, and in one instance, noting *cisgender* persons. *Education* was also observed frequently, with *students* coded 22 times across 9 articles. *Ability* was also coded for in 9 articles, frequently referencing the experiences of persons with disability. *Refugee and migrant status* and *race or ethnicity* were also observed, as were household-related demographics, such as *income*, *marital status*, *parental status*, and *housing status*. *Groups* noted by their demographic related properties were premised on *community* type, such as *rural* or *urban*, and *societal, economic, and political class*, with the latter group representing socioeconomic categories such as *working class*, *middle class*, and *economically disadvantaged* as well as *post-apartheid populations*.

Qualitative coding for *intersectional concepts* was also possible, with related axial codes emerging over time. Coding in this category sought to interrogate how intersectionality was presently used in the literature, with some shared properties among the four axial codes comprising *intersectional concepts* (Table 14).

First, *Digital inclusion/exclusion interacts with other demographic factors* noted instances where the interactions between digital inclusion and facets of identity were made clear in the text. For example, in their article examining mobile libraries and digital inclusion, Bell and Goulding (2023) write that “Another interviewee noted that older patrons who did not have access to the internet, or the skills to access digital materials, were especially excluded throughout Covid-19 lockdowns” (p. 11). Second, mentions of *Systemic or compounding inequality referenced in relation to DI* were coded to highlight any parallels drawn between broad social justice concepts and digital inclusion. One example of an item coded in this

Table 14. Values and frequencies associated with the
Intersectional Concepts top-level axial code.

<i>Intersectional Concepts</i> Axial Subcodes	Number of Articles Coded Each	Number of Sentences Coded Each
Digital inclusion/exclusion interacts with other demographic factors	18	38
Systemic or compounding inequality referenced in relation to DI	16	26
Intersectionality applicable, but not used	7	12
Intersectionality explicitly referenced	1	1

category comes from Thompson and Paul (2016), who note that “Hence, digital inclusion, an increasingly important component of social justice, has internal and external factors that can enhance or hamper it” (p. 104). Finally, the third and fourth codes in this category describe instances where intersectionality could serve as a relevant and useful tool, and instances where intersectionality was directly referenced in the article. An example item coded in this category comes from Beyene’s (2018) study of library experiences among users with print disability, noting that “In addition to the medical factors that obviously limit users’ ability to read printed text, the non-medical personal factors such as users’ past experiences and perceptions can affect users’ inclusion to information services” (133). Items emphasizing heterogeneity among sociodemographic groups appeared frequently in this category.

In looking to further examine intersectional relationships between digital inclusion and properties related to identity, co-occurrences among the various axial subcodes were observed, with particular emphasis on comparing *Demographic groups* across *Barriers*. Examining *Barriers to ICT*, *Age* was the most frequently co-occurring *demographic* subcode by a significant margin, followed by *education*, and *refugee and migrant status* (Table 15). *Age* was also the most frequently co-occurring demographic subgroup among *Information and service needs* (Table 16). *Community type* (which captured a community’s rural or urban status), *refugee and migrant status*, *employment*, *education*, and *housing status* were also found to coincide with *Information and service needs*. In terms of *Barriers to library use*, *Ability* was the most frequently coded demographic group, with *age*, *community type*, *refugee and migrant status*, and *housing status* occurring as well (Table 17).

*Table 15. Values and frequencies associated with co-occurrences among
Barriers to ICT and Demographic groups axial subcodes.*

<i>Demographic groups Axial Subcodes</i>	<i>Number of Co-Occurrences with <i>Barriers to ICT</i></i>
Persons by age	16
Persons by education	8
Persons with refugee and migrant status	7
Groups by community type	4
Persons by income	3
Families; Persons by employment status; Persons by language(s) spoken	2
Groups by societal, economic, and political class; Persons by ability; Persons by gender; Persons by housing status or experience	1
Persons by marital status; Persons by parental status; Persons by race and ethnicity	0

Table 16. Values and frequencies associated with co-occurrences among Information and Service Needs and Demographic groups axial subcodes.

<i>Demographic groups Axial Subcodes</i>	<i>Number of Co-Occurrences with Information and Service Needs</i>
Persons by age	12
Groups by community type	6
Persons with refugee and migrant status	5
Persons by employment status	4
Persons by education; Persons by housing status or experience	3
Families; Persons by ability; Persons by gender; Persons by language(s) spoken	1
Groups by societal, economic, and political class; Persons by income; Persons by marital status; Persons by parental status; Persons by race and ethnicity	0

*Table 17. Values and frequencies associated with co-occurrences among
Barriers to Library Use and Demographic groups axial subcodes.*

<i>Demographic groups Axial Subcodes</i>	<i>Number of Co-Occurrences with <i>Barriers to library use</i></i>
Persons by ability	4
Persons by age; Groups by community type; Persons with refugee and migrant status; Persons by housing status or experience	2
Persons by education	1
Persons by education; Groups by societal, economic, and political class	0

In phase two, 27 articles were analyzed using qualitative content analysis. Guided by the research questions, this iterative process yielded codes related to digital inclusion, libraries, and briefly, intersectional concepts. Public libraries were overwhelmingly the most common library type explored within the sample, which perhaps underscores libraries' association with public technology access and skills training. Barriers associated with ICT and library use were among the most frequently coded items, sharing some common themes among subcodes, and highlighting the aspects of digital inclusion most presently studied within the LIS literature. Information and service needs of library users emphasized the importance of ICTs, as did the library interventions observed. Library benefits underscored the role of the library as a community space offering opportunities for education, entertainment, and social inclusion. Suggestions and opportunities for libraries stressed the need for enhanced outreach and advocacy, a greater emphasis on staff training, and expanded programming and service offerings. Demographic groups relevant to the articles were also coded by ability, age, education, income, gender, housing status, and so on. From observing this emphasis on identity, trends in intersectional concepts within and across articles became discernible and pointed to the way intersectionality pertains and could be applied to discussions of digital inclusion and libraries, and suggested ways in which we might further interpret digital inequality as a plural experience in itself. Lastly, co-occurrences between demographic groups and information and service needs as well as barriers to library and ICT use revealed that age as a demographic indicator was heavily emphasized throughout the sample of articles, further illustrating how digital inclusion is considered in the LIS literature.

Chapter 5:

Discussion and Conclusion

The previous chapter presented the results of the two-phase research process and introduced discrete observations regarding the trends, correlations, and frequencies of data collected during the systematic literature review and qualitative coding process. This chapter seeks to expound upon those observations by using results as data-based evidence to answer the three main research questions outlined in 1.3, with additional contextualizing support derived from the literature review in some instances (2.1, 2.2, 2.3). After addressing the research questions, key takeaways related to the nature of digital inequality and implications for libraries, service populations, and digital inclusion are discussed.

5.1 RQ1: How is digital inclusion conceptualized and investigated in the LIS literature?

The first research question sought to establish an account of how digital inclusion is presently understood and explored within the LIS literature. Abrizah et al. (2016) describe a systematic literature review as a means for identifying any gaps in current research and identifying suggestions for further investigation. So, in analyzing data collected during the initial systematic literature review phase of this thesis project, a clearer image of the coverage and gaps concerning digital inclusion in the LIS literature was produced.

Given that no limits relative to publication date were used as search criteria, I was surprised to find that despite the increasing publication trend, the earliest article included in the population for phase one dated back to just 2008—especially considering the NTIA’s *Falling Through the Net: Toward Digital Inclusion* was published in 2000 (2.1.1). Further, the 44 journals represented in the literature review represent a wide range of intradisciplinary LIS perspectives. While many articles discuss practitioner applications and library-focused journals,

the prevalence of articles from publications beyond those explicitly focused on libraries and librarianship (*Journal of Medical Internet Research, Communication & Ethics in Society, and Journal of Responsible Innovation*) perhaps demonstrates a wider recognition of the role libraries play in digital inclusion discourse.

The relationship between *digital inclusion* and associated concepts—particularly those related to the digital divide and its various models and themes—can be partly observed through examining the author-assigned keywords. For example, even though this thesis project systematically prioritizes the use of *digital inclusion* over *digital divide*, the latter term still appeared more frequently, and was the most common author-assigned keyword overall. As these are author-assigned keywords, it poses the question as to whether the concept of *digital inclusion* is truly regarded in the literature as a sufficiently-known concept so as to eventually supersede *digital divide*, or whether the two will continue to function in tandem for the foreseeable future.

While many articles used a combination of methods, the use of interviews was the most common methodological device by a significant margin. Combined with the prevalence of case studies, focus groups, and observational studies, this emphasis on human-centered methods may support efforts to recognize or address the highly nuanced, personal nature of digital inequality. Conversely, quantitative analysis was the second-most common method, often used in tandem with survey to assess ICT-related properties related to a given population of respondents; frequently, these surveys included demographic characteristics of their respondents. This indicates an important limitation of the current study: intersectional consideration may have occurred during articles which used quantitative analysis but were excluded from phase two of this thesis project.

Digital inclusion is conceptualized as a parallel concept to the digital divide, and though its popularity appears to be increasing, it is unclear whether the concept will ever become the preferred term when discussing digital inequality writ large. Moreover, it seems that libraries and librarianship are also closely associated with the work of digital inclusion, which perhaps underscores the concept's emphasis on the actions taken to reduce digital inequality, as much of that work has been historically linked to libraries—particularly *public libraries*, a phrase which also appeared frequently in author-assigned keyword analysis, pointing to a close association between digital inclusion and public libraries. Interviews are a common technique for investigating digital inclusion in the LIS literature, as were other methods which prioritized human-focused research methods; however, quantitative analysis was also a frequently occurring method, and was underrepresented in the latter analysis of this thesis.

5.2 RQ2: From an intersectional perspective, are some aspects of digital inclusion more thoroughly examined than others in the LIS literature?

To answer the second research question, I looked to the frequencies and relative trends discernable from the final qualitative content analysis codebook. Barriers to ICT associated with *access* and *skills*—concepts associated with the first- and second-level digital divide—appeared the most frequently among the articles sampled, and within the context of LIS, both concepts bear a wide range of meanings and applications. *Access* represented many experiences related to ICT use (and disuse), a far cry from what has historically been a matter of “haves and have nots” (2.1.1). *Access* addressed not only physical access to ICT equipment in numerous ways, but the accessibility of the ICT itself for users of different abilities; the quality of the access itself, particularly as it pertains to shared ICT in physical spaces; access to the electricity and means with which to power ICT, and so on. In one instance, the legacy of early life access was

considered as a determining factor in successful ICT use later in life, which in some ways, serves as an intermediary bridge between the first- and second-level divides' defining concepts.

References to *skills*-related barriers were abundant and equally varied. Concepts we might expect to see discussed in relation to skills or knowledge were represented, such as difficulties in using search, email, and interpreting technical language or instruction. Even more frequently, articles referenced barriers related to the quality and availability of both formal and informal support resources which might provide the necessary skills training. Similarly, barriers perpetuated through the phenomenon of relying on others were common, such as a instances of relying on a family member or a librarian for ICT instruction and access due to skills-related limitations. Though this was not formally assessed during coding, there may or may not be a mutually constructive relationship between the latter two concepts related to the *quality* and *availability* of skills training and ICT self-reliance. Moreover, these related concepts pose implications for libraries, as librarians and library programming are often relied upon for ICT support and training.

Coding for *demographic groups* revealed that age was a common criterion in defining populations of interest, with a particular emphasis on older adults. It is also worth noting that throughout the sample articles, “older adults”, “elderly adults”, “adults” and “retirees” were all used to describe overlapping population groups, making it difficult to assess where these perceived generational ICT differences occur. Similarly, *groups by community type* were also commonly studied—especially rural communities. Rural communities were described interchangeably as “farming communities”, “non-urban communities”, and “remote” areas, and frequently emphasized the difficulties imposed by a lack of ICT infrastructure, with some implications for affordability and policy. These observations are consistent with those discussed

in Pérez-Escolar and Canet's (2022) taxonomical review, which found digital exclusion to be especially acute among presently studied "vulnerable" groups (e.g., older adults, disabled people, inhabitants of rural areas, poor populations), and insufficiently reported or observed among other socially vulnerable groups such as refugees, the unemployed, single parent households and LGTBQ+ individuals.

In this thesis, some demographic groups indeed seem comparatively understudied, such as those associated with gender identity, race or ethnicity, and surprisingly, housing status. I was astounded that, given the major focus on public libraries among the articles included in phase two, most insights related to persons experiencing homelessness, formerly homeless persons, and rough sleepers originated from just one article. As this service population is widely seen as being among the most reliant on public library services and support, I had anticipated further discussion and investigation than what was observed. Insight as to the lack of representation for this population might be gleaned from the sole article focused exclusively on this population, which argues that library users experiencing or perceived as experiencing homelessness have historically been subject to stigmatization and negative perceptions within the profession (Zhang & Chawner, 2018). Closer examinations of digital inclusion factors among those experiencing homelessness certainly exist beyond the scope of this thesis (Buré, 2006; Humphry, 2019), and given the associations between this population and public library service, this may be an area worthy of additional future research interest.

Though present in *Barriers to ICT* and *Barriers to library use*, the Covid-19 pandemic was relatively under examined, given it is now widely acknowledged that the pandemic exposed and exacerbated digital inequality; however, this is likely attributed to the timeline associated with writing and publishing and should be revisited in years to come. In particular, further

interrogation of the impact of Covid-19's effects on library and ICT use should be considered in relation to demographic groups which rely on libraries for their information needs. This could include persons experiencing homelessness, older adults, and refugee/migrant groups, who were coded as overwhelmingly relying on the library as a hub for everyday information needs, social connectivity, and ICT access—sometimes, with all three occurring simultaneously, as it was commonly observed that library ICT was used as a means for connecting socially and keeping abreast of daily information needs.

Benefits of the library also seemed comparatively underrepresented overall, coded in just 7 articles. As referenced in 4.2, this axial code was used to describe the more conceptual benefits associated with libraries, rather than actions or implementations related to services and programming, which were largely captured in *Library interventions*. Benefits cited the library's role as a community resource and source of social inclusion or enrichment, offering educational opportunities to users, with dedicated librarians available to help users with their information needs for free or minimal cost. As libraries are considered to be indispensable in advancing digital inclusion (2.1.4), it was somewhat surprising to not see the provisions of ICT and ICT-related programming and services reported as a major benefit of libraries, especially among a sample of articles selected, in part, on the basis that they thematically engage with concepts related to digital inclusion *and* libraries. Still, the implications for digital inclusion may yet be present in many of the coded-for benefits, and perhaps future impact assessments will increasingly resemble the one created by PLA (2.1.4) and be curated to account for not only use-, programming-, and circulation-related reporting, but benefits more closely aligned with the experiential impacts of library service related to quality of life among users.

In examining digital inclusion in the LIS literature using an intersectional perspective, a few aspects appear to be more thoroughly examined than others. Both access and skills—concepts associated with the first- and second-level digital divide—are thoroughly considered in a range of contexts. Similarly, age and community type appear to be the most examined demographic factors, particularly older adults and rural communities. Surprisingly, in this sample, demographic factors related to homelessness seem under explored. Moreover, aspects of digital inequality related to Covid-19 and discussions of library benefits related to quality of life were relatively infrequent.

5.3 RQ3: From an LIS perspective, what if any insights into the relationship between digital inclusion and broader social inequalities can be gained by using an intersectional framework?

Recalling Pérez-Escolar and Canet's taxonomical framework (2022), the results of this thesis project overwhelmingly concur with their finding that the relationship between vulnerable groups and digital in/exclusion is palpable though difficult to consolidate. Even trying to code for intersectional concepts in phase two of this thesis project presented a challenge: as the presence of aspects related to intersectionality (3.4) were a prerequisite for inclusion in the sample, coding here sought to evaluate where, if at all, intersectionality is presently or could be applied, and how digital inclusion interacts with intersectional experiences. Initial coding for intersectional concepts sought to evaluate the number of instances where intersectionality was explicitly used or where aspects of identity that, when considered together, were cited to have a compounding impact on one another, which could be inferred to constitute an intersectional experience, regardless of whether the formal concept itself was referenced.

Among the 27 articles included in the sample, overt references to intersectionality were limited to just one occurrence: “While occupational groups and therefore social class was identified as the primary factor in influencing benefits accrued from technological engagement, the intersectional relationship with gender is clearly important” (Clayton & Macdonald, 2013, p. 960). This observation aligns with those discussed in Hackney et al. (2018), which found that only a small fraction of LIS the articles surveyed approached the concept of identity at all, and when they did, most only examined identity in a broad sense and just 2.9% considered intersectionality, underscoring the need for intersectionality as tool for future LIS scholarship and critical pedagogy.

Coding for instances where intersectionality was not directly applied but may be relevant mostly involved instances where demographic attributes were described in relation to one another. For example, one item coded in this category considers the intersections of social, economic, and educational properties as they converge with rural experiences: “They included social as well as economic and educational reasons, but these users also have distinctive relationships to the rural location that highlight their differences from urban experiences or that might undercut assumptions about information connections in small towns” (Strover et al., 2013, p. 252). Another example, which could potentially leverage intersectionality’s capacity for describing experiences outside of historically binary systems, points to intragroup heterogeneity among older people: “[T]he notion of marginality focuses attention on those older people who may occupy positions between these two poles [have and have-nots], thereby acknowledging that the digital divide, and by extension internet engagement, involves more than simplistic binary distinctions between those who adopt, access and use internet technology and those who do not” (Hill et al., 2008, p. 259).

The above examples also hint at an important concept revealed during the coding process, gathered from surveying digital inclusion from an LIS perspective in the context of larger social inequalities: digital inequality itself can be viewed as both a systemic oppressive force and intersectional experience. To account for this concept, coding occurred for instances where *Digital inclusion and exclusion interacts with other demographic factors* and where *Systemic or compounding inequality referenced in relation to digital inclusion*. As was the case among all subcodes of *Intersectional concepts*, some overlap among the two occurred, underscoring the interdependent relationship among systemic and personal experiences of oppression, which is a core tenet of intersectional theory. An encapsulating example of these concepts interacting with one another comes from an assessment of ‘digital diversity’ among refugee asylum seekers from a Swedish library perspective: “These individuals [users] were dependent on these entangled relations to work, and they were dependent on the public organizations providing digitalized welfare services such as parental insurance, unemployment fund, health insurance, or income support” (Sefyrin et al., 2021, p. 845). In deconstructing this example, digital exclusion can be viewed as an individually oppressive factor insofar as digital competency hugely impacts these persons’ livelihood and wellbeing, which is further compounded by additional systemic experiences of digital disenfranchisement inherent to the populations’ identity as asylum seekers. Furthermore, this item could be coded as an instance where intersectionality was not used but may be beneficial in characterizing the “entangled relations” described here. Beyond *Intersectional concepts*, *library information and service needs* can also be extrapolated from this example, underscoring the role libraries can play in assisting vulnerable users achieve meaningful ICT use in an age of implicit digital participation.

Among the articles sampled in phase two, intersectionality was only formally mentioned in one instance. However, the results of this thesis suggest that intersectionality may be relevant to many of the complex experiences of digital inequality discussed throughout the sample. Additionally, coding for intersectional concepts revealed that digital inequality manifests as a systemic oppressive force through its macro-level consequences. Further, the relationship observed between digital inequality, demographic factors, and other forms of social, political, and economic inequality constitute an intersectional experience.

5.4 Implications and Takeaway

In examining the ways digital inclusion and its relationship to libraries are considered within LIS and applying an intersectional lens throughout, this thesis suggests the utility of considering digital inequality not solely as a systemic source of disempowerment, but as an individual and intersectional experience which defies binary or homogenous classifications. This prompts consideration of how libraries might begin to address the infinitely nuanced and complex—indeed, *intersectional*—experiences of its users to best address digital inequality and continue the critical work of advancing digital inclusion.

One way of approaching this that was observed throughout the literature is the notion that providing services or resources tailored to the needs of the most vulnerable users in turn may benefit all users. For example, in a survey of experiences using digital library materials among users with print disabilities, respondents indicated that “Prescribing solutions to users based on their disabilities may not be productive as users are diverse in their needs and preferences. Therefore, one way to ensure inclusion could be to present options so users are empowered to make their own informed choices” (Beyene, 2018, p. 136). Moreover, in an article which surveyed the experiences of users experiencing homelessness or housing insecurity emphasized

that “No one questioned whether providing services targeted to people who are homeless or sleeping rough reduced services to other groups, though all staff emphasized that these services are open to anyone” (Zhang & Chawner, 2018, p. 290). Coding for this approach to planning and implementing library service was limited, and instances were largely noted with memos rather than formal codes, as they varied greatly in their content and meaning—another instance of discernible concepts that remained difficult to articulate or fully theorize. Any further research which seeks to elucidate the specific experiences or needs of a group of users—particularly those experiencing plural forms of oppression or marginalization, in a range of service settings beyond just those associated with public libraries—may help library practitioners further plan for the evolving needs of their users in our increasingly digital age.

As quantitative analyses were underexplored in this thesis, future exploration in the arena of intersectional research concerning digital inclusion and libraries might consider the utility of quantitative analysis in assessing the relationships among demographic groups, library service, and experiences of digital inequality. Kinney’s (2010) exploration of the internet, public libraries, and digital inequality via quantitative analysis of U.S. census demographic data against public computing data represents an illustrative example of a study included in the systematic literature review that was excluded from further qualitative content analysis that may contain important insights relevant to themes explored in the latter phase’s more theoretically considered analysis. Specifically, Kinney’s (2010) conclusion that, while no disparity exists in the number of public computers available in areas with high and low incomes, significant and widening disparity in the number of computers available in areas with a higher versus lower percentage of non-white, non-English-speaking households would be worth of further consideration using an intersectional lens but was excluded from such analysis in this thesis.

In analyzing the final codebook, this thesis may also indicate aspects related to libraries, intersectionality, and ICTS worthy of further investigation. As discussed in section 5.2, experiences related to the Covid-19 pandemic and homelessness were both underdiscussed in the sampled articles. Similarly, coding revealed scant consideration of sociodemographic factors associated with gender identity beyond binary gender identities. With this in mind, future research might use the exploratory conclusions of this thesis to construct intersectional research projects examining experiences found herein to be presently understudied. For example, given that homelessness and LGBTQ+ identities were presently unconsidered in the contexts of ICTs and library services, this may represent an important area for future research which can inform practitioner interventions addressing this service population—a possibility further justified by the fact that LGBTQ+ youth are more than twice as likely to experience homelessness as their non-LGBTQ+ peers (Voices of Youth Count, 2018).

Similar areas worthy of future investigation may also harness intersectionality, and the notion of digital inequality as an intersectional experience, as suggested by this thesis, to more completely theorize aspects of digital inclusion and the digital divide which exist in and among the various established models. As briefly mentioned in section 5.2, this might include a more complete understanding of the ways access, skills, and outcomes directly influence one another, and more abstracted interpretations of these major concepts commensurate with the mass diffusion of these concepts into everyday life.

5.5 Conclusion

This thesis project examined digital inclusion in the LIS literature using an intersectional lens, in order to ascertain whether intersectionality could offer new or deeper insights into the complex nature of digital inequality, particularly as it relates to library service. It accomplished

this using a two-part research design consisting of a systematic literature review and subsequent qualitative content analysis. Through the two methodological phases, trends and gaps in the digital inclusion LIS literature were identified, and the relevance or potential value of intersectionality was considered in the context of ICTs and libraries, as previously discussed in this chapter.

Results support the idea that, while some concepts and demographic groups are well represented in the literature, there are still many perspectives related to ICTs, libraries, and digital inclusion worthy of further exploration. It is also important to note the limitations of this thesis research, which can largely be attributed to the exclusion of quantitative studies from the latter phase of analysis, as well as those inherent to the subjective nature of qualitative coding, and it is unclear to what extent these factors impede generalizability of the findings. Even so, the results and discussion presented herein offer takeaways related to the larger digital inclusion LIS discourse, emphasizing the utility of adopting an intersectional approach to the major concepts and research conventions associated with ICT and digital inequality, especially when sociodemographic factors and the various models and frameworks found in the digital inclusion and digital divide literature are discussed.

Digital inclusion research has commonly relied upon sociodemographic variables to survey determinants of digital inequality, with digital inequalities often characterized as reproductions and expansions of extant structural and social inequalities. Regarding the exploration of demographic factors in relation to digital inclusion research, this thesis project supports the notion that relying on discrete sociodemographic indicators may not be enough, and that regarding demographic groups as homogenous may be further insufficient or overly reductive. Instead, intersectionality can serve as a valuable heuristic for describing or situating the

multilayered experiences of persons experiencing not only digital inequality but additional forms of social, political, and economic oppression.

Similarly, digital divide models (the first-, second-, and third-level digital divide)—and corresponding terms and concepts (such as *access*, *skills*, *information literacy*, and *motivation*) are helpful in referencing and surveying major aspects associated with digital inequality. As illustrated in the digital inclusion literature and supported by this thesis project, everyday ICT experiences often defy neat categorization in and among these concepts, instead reflecting various intermediary and hybrid combinations thereof, and thus, are difficult to capture or describe. Whether this can be attributed to the status of digital inequality itself as an intersectional experience subject to many additional factors, as has been suggested in this thesis project, remains to be seen. No matter, as the digital landscape continues to rapidly evolve and ICTs are further enmeshed in everyday life and livelihood, conceptualizations of digital inequality, the digital divide, and digital inclusion must so evolve, too.

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Appendix

Table 18. Final codebook with descriptive definitions from phase two qualitative content analysis.

Code Name	Description
Barriers to ICT	Barriers which impede the use or adoption of ICT.
Access-related barriers	Barriers inhibiting access to ICT. Examples include inaccessible technologies, data usage caps, and time-limits for shared ICT.
Affordability and cost-related barriers	Barriers related to cost and affordability which impede use or adoption of ICT. This includes broadband, mobile phone, and PC affordability.
Attitude and motivation-related barriers	Barriers related to attitudes and opinions regarding ICT and motivation to use or adopt ICT. This includes a lack of motivation, ICT-related frustration, and perceived safety concerns.
Infrastructure and policy-related barriers	Barriers related to infrastructural factors or policy decisions which impact use or adoption of ICT. This includes poor quality of available ICT, geographic limitations, and policy-related complications or barriers.
Knowledge and skills-related barriers	Barriers related to insufficient or incomplete knowledge and skills which impact use or adoption of ICT. Examples include difficulties using or understanding ICT and limitations caused by relying on others for instruction or access.
Pandemic related barriers	Barriers related to the Covid-19 pandemic which impact use or adoption of ICT.
Social and cultural barriers	Barriers related to social, and/or cultural postures which impact use or adoption of ICT. This includes generational attitudes and norms as well as language barriers.
Barriers to library use	Barriers which inhibit or impact library use.
Barriers related to Covid-19	Barriers related to the Covid-19 pandemic which impact library use.
Barriers related to finances and funding	Barriers related to finances and funding which impact library use. This includes budget constraints and financial limitations, lack of sufficient or desired library funding.
Barriers related to lack of user confidence or familiarity with library	Barriers to library use related to users' lack of familiarity with the library. This includes difficulty locating physical resources or understanding how to access e-materials.
Barriers related to library staff	Barriers to library use relating to library staff. Examples include negative interactions among staff and patrons, staffing

Table 18 continued.

Code Name	Description
	issues, and knowledge or skills limitations among staff which impede service capacity.
Barriers related to physical space and facilities	Barriers to library use relating to the physical library facilities. This includes inaccessible physical spaces and materials, a lack of physical library space, and facilities-related issues, such as poorly maintained accommodations.
Barriers related to resources, equipment, and service limitations	Barriers related to resources, equipment, and services which impact library use. This includes prohibitive library policies, issues related to library search tools and metadata, and insufficient resources for a given service population.
Barriers related to social and cultural factors	Barriers to library use related to users' social and cultural factors. Examples include experiences related to public and community distrust, discriminatory treatment or stigmatization in library spaces, and language barriers which impede access.
Barriers related to transportation to and from the library	Barriers which impact a user's ability to travel to or from the library, thus impacting their ability to use the library.
Barriers to use due to competitive alternatives to library resources and services	Barriers to library use characterized by the presence of better suited, more accessible, or more efficient non-library alternatives, such as those available on the Internet.
Benefits of the library	Benefits offered to users and communities through library services and use.
Community resource	Benefits afforded to library service populations related to the library's role as a community resource. Examples here include the libraries which serve as a community space and physical shelter for users, as well as the libraries role in community partnerships and support.
Educational benefits	Educational benefits afforded to users by the library. This includes educational experiences and opportunities, as well as libraries' support of lifelong learning values.
Free resources and services	Benefits derivative of the free nature of library resources and services, particularly public libraries.
Librarians	Benefits associated with the presence and availability of professional librarians and library staff.
Social inclusion and enrichment	Benefits associated with the social enrichment and inclusion afforded by library, including the opportunity to interact with others, and the sense of connectivity and awareness associated with the library community.

Table 18 continued.

Code Name	Description
Groups	Groups and communities of individuals.
Families	Families and household units.
Groups by community type	Groups by community designation, such as urban, rural, and suburban.
Groups by societal, economic, and political class	Groups by societal, economic, and political class. This includes groups associated with class, as well as economically disadvantage and even post-apartheid populations.
Persons	Individuals
Persons by ability	Persons by ability. Examples include individuals with print disabilities.
Persons by age	Persons by age, including children, teens, and older adults.
Persons by education	Persons by education level or experience. Examples include homeschooled individuals, and those with a formal education.
Persons by employment status	Persons by employment status, such as employed, unemployed, or retired.
Persons by gender	Persons by gender, such as men, women, and cisgender individuals.
Persons by housing status or experience	Persons by housing status, including those experiencing homelessness.
Persons by income	Persons by income, including low- and high-income individuals.
Persons by language[s] spoken	Persons by languages spoken, including multilingual and non-English speaking groups.
Persons by marital status	Persons by marital status, including single, married/partnered, and divorced individuals.
Persons by parental status	Persons by parental status, including parents and non-parents.
Persons by race and ethnicity	Persons by race and ethnicity. Examples in this category include Latino, indigenous, multiracial, and African American individuals.
Persons with refugee and migrant status	Individuals with refugee and migrant status.
Information and service needs	Information and service needs of the user population.
Education and entertainment-related information needs	Educational and entertainment-related needs, such as reading and borrowing books, research resources, and free opportunities to watch films.
ICT-related information and service needs	ICT-related information and service needs, such as digital technology support and training, and access to digital technologies and the Internet.

Table 18 continued.

Code Name	Description
Physical space and shelter-related needs	Physical space-related needs, such as the need for a secure and safe shelter and for a physical meeting and gathering space.
Social connectivity and inclusion needs (digital and in-person)	Social connectivity and inclusion needs, including the library for community meeting space, offering opportunities for social inclusion.
Work and employment-related needs	Work and employment-related needs such as job search and resume building assistance and/or information.
Intersectional Concepts	Concepts or aspects related to intersectionality.
Digital inclusion and exclusion interacts with other demographic factors	Digital inclusion and/or exclusion is discussed in relation to demographic factors.
Intersectionality applicable, but not used	Instances where multiple factors related to identity are discussed as compounding or framed as intersectional, though intersectionality is not directly applied.
Intersectionality explicitly referenced	Instances where intersectionality or intersectional theory is referenced, directly.
Systemic or compounding inequality referenced in relation to DI	Instances where systemic inequality or oppression (e.g., racism, sexism, ableism, classism) is referenced in relation to digital inclusion and/or exclusion.
Library interventions	Library interventions and efforts to address needs of the service population.
Accessibility-related interventions	Interventions which address accessibility needs. For example, this includes interventions addressing the availability of alternative formats for users of different abilities.
ICT interventions	Interventions related to ICT, such as those seeking to expand ICT services and resource offerings, as well as ICT training and instructional opportunities.
Outreach and community-based interventions	Outreach and community-based interventions, such as community involvement and partnership and efforts to curate locally relevant library resources.
Programming-based interventions (non-ICT related)	Non-ICT related programming-based interventions, such as efforts to increase culturally-relevant programming specific to a given service population and non-ICT hands-on learning opportunities
Service and resource-related interventions (non-ICT related)	Non-ICT relate service and resource-related interventions, such as mobile library services and offering free coffee or free food to users.
Staffing, policy, and infrastructure-related interventions	Staffing, policy, and infrastructure-related interventions, including training opportunities for staff to increase ICT knowledge or digital technology skills.

Table 18 continued.

Code Name	Description
User empowerment interventions	Interventions promoting user empowerment, like those which assist users with building trust and motivation to adopt ICT.
Suggestions and opportunities for libraries	Future opportunities or suggestions for libraries to further address the needs of their service population.
Outreach and advocacy	Suggestions and opportunities related to enhanced outreach or advocacy practices, such as improved community partnerships, greater DI advocacy, and maintaining a visible presence in the greater community.
Programming and training	Suggestions and opportunities related to programming and training, such as offering more events appealing to the wider community, more digital literacy workshops, and more professional development opportunities for librarians.
Resources and services	Suggestions and opportunities related to resources and services, such as improved metadata or search features, extended open hours, and improved facilities.
Type of library	Type of library referenced.
Mobile libraries	–
Public libraries	–
School libraries	–
University libraries	–

Vita

Hannah Fountain was born and raised in San Diego county. She attended Stephens College, where she received a Bachelor of Science degree in 2017. Having been interested in librarianship from an early age, she entered the University of Tennessee Master's of Information Science program in spring of 2021. She is incredibly grateful to her family and friends for their support throughout her graduate studies.