The role of digital data on citizens in social work research: A literature review

This is the Authors Own Version (AOV) of the following article:

Andersen, L. B., Christensen, M., Danholt, P., & Lauritsen, P. (2022). The Role of Digital Data on Citizens in Social Work Research: A Literature Review. The British Journal of Social Work, bcac158. https://doi.org/10.1093/bjsw/bcac158

Abstract

This article presents a scoping review of existing research on the use of digital data in social work. This review focuses on research that includes empirical investigations of digital data on citizens in social work practices. The purpose of this review is to map the emerging field of research and contribute knowledge of the role of digital data on citizens in social work. This review includes 28 articles published between 2013 and 2020, and concludes that data pervades almost every aspect of social work and that there is a variety of research on the use of data in social work. However, detailed analyses of data that describe and conceptualise the production, circulation and utilisation of data are few. In consequence, this article introduces and discusses concepts from other data-laden fields of research, and calls for further research that addresses the challenges presented by digital data used in social work.

Keywords: Digital data, digitisation, review, social work

Acknowledgements: The authors wish to thank the anonymous reviewers and the journal editors for their close reading and commentary of the article.

Introduction

In recent years, digital data on citizens have become vital to social work. Digital data may be present in large databases, generated by case management systems, created through digitally-mediated forms of interaction between citizens and case workers, and in numerous other ways. In information theory, data are commonly conceptualised as the basic units that, when pieced together, generate information, which in turn contributes to knowledge of a given object, process or phenomenon (Ackoff 1989). Therefore, and given the turn to data evident in many practices today, attention to how data is collected, processed and used is crucial. The 'turn to data' in social work calls for research that investigates the problems, possibilities and performative effects of digital data used in social work, knowledge that may inform decisions made by politicians, managers, social workers, citizens and other actors involved in, or affected by the increased use of digital data. The current Covid-19 pandemic further exemplifies the pertinence of questions related to digital data, knowledge production and its integration across professions and institutions.

This article presents a review of existing research on the use of digital data in social work and the datafication of social work. 'Datafication' is defined as 'the quantification of human life through digital information' (Mejias & Couldry, 2019, 1). This review covers research that includes empirical investigations of digital data on citizens in social work. The aim of this review is to deepen our knowledge of the role of digital data in social work, and how social work and digital data may mutually transform each other. This review is guided by the following four research questions:

1. Which citizens are represented by digital data and how?

2. How and when are digital data on citizens used in which types of social work practices?

3. What are the implications of, or the conclusions drawn from the existing research on data on citizens in social work?

4. How does existing research theorise about or conceptualise digital data?

The empirical focus of the research questions excludes articles from the review that focus on implications of datafication for the economy or the performance of case workers; social-work education (e.g. in developing a curriculum on datafication); articles that address data in social work exclusively in terms of theory or method; and so forth.

The articles included in our study generally describe three different kinds of data on citizens. The first are data provided by social workers. The second are data already collected and stored in databases, often for other purposes. The third are the digital footprints of the citizens on social media and other platforms. This review also shows

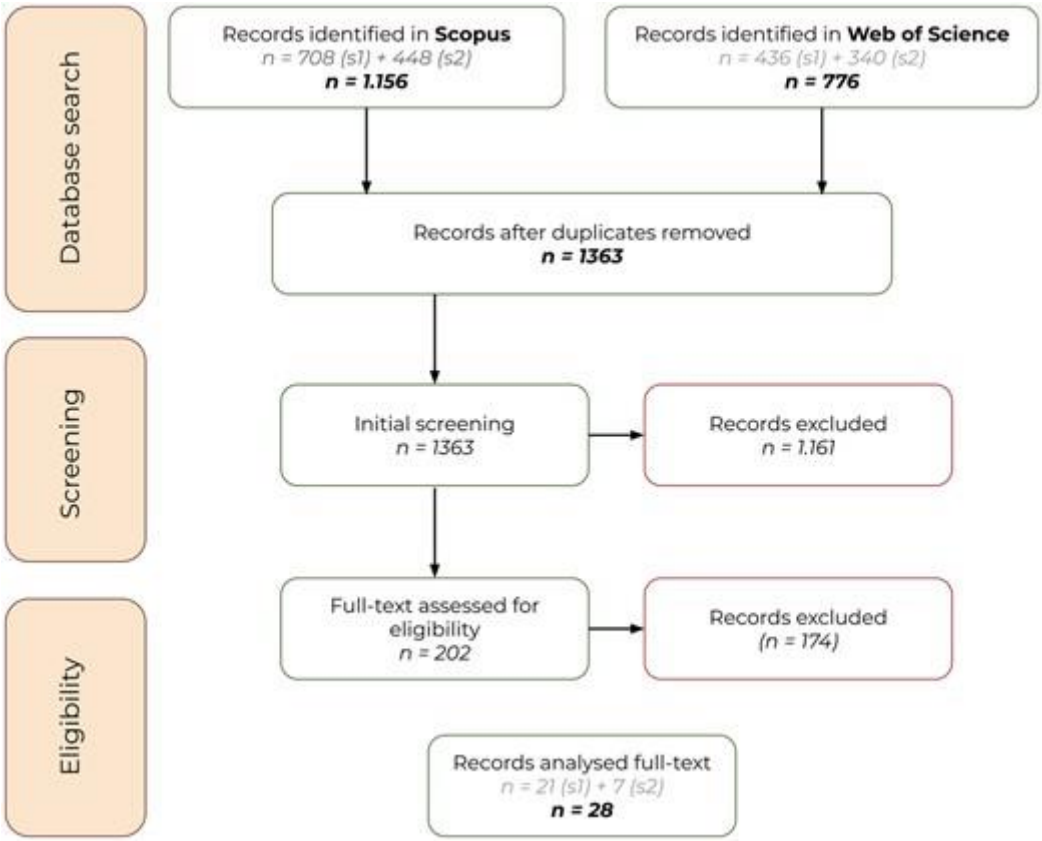
that there is a wide range of interesting projects and publications that investigate the production and use of digital data, and discuss the implications of this for citizens and social work. This research presents important observations and results. However, the number of empirical studies seems very limited when compared to the importance attributed to datafication of social work in public projects and strategies, and the research identified does not seem to match the diversity of contexts in which digital data are produced, shaped by and, in their turn, shape, social work. Thus, when the existing body of research is compared to the pace at which digital data are introduced to social work, and to the hopes and fears that cling to this development, more knowledge and research on the actual empirical consequences of data is needed.

Such empirical investigations should, of course, be informed by theoretical and methodological discussions. As this review shows, existing research draws on a range of different theories and concepts, but at the same time, the key concept of digital data needs to be further explored. What digital data are and how they may be investigated is only sporadically touched on in most existing research.

Method

'Digital data' is a very general and nebulous term, and what exactly comprise data and their empirical role seems to be contingent on empirical contexts as well as the theories and methods of different research traditions. As such, we did not aspire to evaluate the impact of digital data, as one might do in a systematic PRISMA-informed review. But instead applied an inductive, qualitative approach to how existing research describe the use of digital data in specific practices; therefore, we choose to conduct a scoping review. Our purpose was, first, to map an emerging and interdisciplinary field of research; secondly, to synthesise key findings and central themes, to provide guidance for future research (Arksey & O'Malley, 2005; Peters et al., 2015).

Research publications were identified, assessed for eligibility and analysed in a three-step process shown in figure 1 and described below.



Flowchart of database search, screening process and eligibility assessment.

The process began with a search of the Scopus and Web of Science (WoS) databases for empirical research on the use and production of digital data in social work. These databases were selected to ensure the best coverage, because together, they include all significant social work journals. Although there are some uses of the term 'social informatics' to describe the use of digital technologies in social work, there is no coherent field of research. Also, it is impossible to simply search for 'data in social work'. Such queries yield a large number of false positives, for instance, articles that refer to research data. Furthermore, few of the articles included in our criteria actually used the term 'data', but instead used other terms, such as 'documentation' and 'information'. Thus, we defined data as any form of digital information about citizens that is produced during, or used in social work. Another question is what constitutes social work, and how to differentiate between social work and health care, for example. In accordance with the international definition of social work, we chose to understand social work as 'the work of creating social change or development in relation to citizens' (Global Definition of Social Work, 2014). This definition, for instance, excludes practices that are predominately aimed at physical or practical assistance in relation to health.

Consequently, we constructed an overly inclusive search string around two sets of synonymous keywords that represent data and social work respectively, which we then subjected to a subsequent manual selection:

- **Data**: digital, digitisation, information technology, information system(s), ICT, IT governance, personal data, private data, big data, data sharing.
- **Social work**: social welfare, social care, welfare service(s), social work

The keywords were translated into the following search strings:

Scopus search string:

> *TITLE-ABS-KEY ("digital" OR "digitization" OR "information technology" OR "information system*" OR "ICT" OR "it governance" OR "personal data" OR "private data" OR "big data" OR "data sharing") AND TITLE-ABS-KEY ("social welfare" OR "social care" OR "welfare service*" OR "social work") AND PUBYEAR > 2013*

Web of Science search string:

> *TS=("social welfare" OR "social care" OR "welfare service*" OR "social work") AND TS=("digital" OR "digitization" OR "information technology" OR "information system*" OR "ICT" OR "it governance" OR "personal data" OR "private data" OR "big data" OR "data sharing"). Timespan: 2013–2020. Indexes: SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI.*

Our search was limited to research published from 2013 to 2020. We applied these limits because we were interested in the most recent publications on the subject which parallel the rise of projects and initiatives on 'big data' and 'data-driven' social work. In an international context these trends could, for instance, be observed in the Manage by Data Initiative in Maine described by Ross et al. (2013) and in the way educational institutions sought to prepare students for data-driven practice as described by Shaw et al. (2013) in the same year. In the author's own national context, the early 2010s also marked by a clear shift in digital policy from administrative systems and self-service portals towards increased use, production and exchange of data on citizens (Fahnøe 2015; Regeringen et al. 2013). When evaluating the articles for eligibility, we read the title, keywords and abstracts, to better assess whether they matched the inclusion criteria.

The database search was conducted in two rounds. An initial search (s1) was conducted on April 1st, 2019, and a supplementary search (s2) was conducted on November 27, 2020. With duplicates removed, the database search yielded 1,363 articles. In accordance with our research focus, the articles were screened and assessed for eligibility through the following inclusion criteria:

The article is relevant IF it contains an empirical analysis of the production or use of digital information about citizens in a social work practice directed at creating social change or development.

The screening and assessment were conducted as a blinded review, where each article was assessed by at least two of the authors to ensure a consistent and explicit interpretation of our inclusion criteria. In the initial screening, the reviewers assessed titles, keywords and abstracts through an overly inclusive process, where all research was deemed relevant, unless it clearly did not meet the inclusion criteria. The screening excluded 1,161 publications, leaving 202 items for full text assessment for eligibility. Full text assessment involved the same approach, and excluded a further 174 publications, leaving us with a final count of 28. It should be noted that one of the articles included was pending publication, and was published in 2021 (Wang et al., 2021).

We analysed the 28 articles by developing a series of analytical questions based on our initial reading and the overarching purpose of our research, each of which with several sub-questions:

- *Which citizens are represented by digital data?*
- *How are the citizens represented?*
- *How are the digital data collected or produced?*
- *How are they used? And in which practices?*
- *Which conclusions are drawn by the research?*
- *Which implications or perspectives are related to the use of digital data?*
- *How are digital data conceptualised or theorised?*

The analytical questions were supplemented by a more bibliographic mapping of the research related to the methods and theories used, who or what informs the analysis, and so forth. Again, at least two of the authors read through all the articles, and collaborated on answering the above-mentioned questions and mapping the research. Although we could have added more search terms and included more databases, there was no indication that this would have added a substantial amount of literature. Also, we reviewed the research literature, as we know that there is much grey literature on the topic that may be relevant. However, we imposed the following limitations on our review. We limited our selection to research literature, because it is peer reviewed, and our initial assessment of grey literature revealed a tendency for publications to be instrumental regarding the use of data, instead of empirically investigating how data are used. Lastly, our study is limited to research written in English.

Results

This section outlines some general characteristics of this body of research. First, the yearly research output on digital data used in social work grew from two in 2013 to six in 2020, which, although these numbers are low, indicates an increase in the research on data on citizens in social work.

The included research was published in 18 different journals. The *Journal of Social Work* (3 articles) and *The British Journal of Social Work* (8 articles) stand out as the journals in which most of this research is published. The articles cover cases from the following countries: Australia, Belgium, Canada, Denmark, England, Finland, Germany, Jamaica, New Zealand, Scotland, Sweden, The Netherlands and the United States of America. Thus, little attention is paid to data used in social work outside of Northern Europe and English-speaking countries.

Concerning methodology, most of the articles work with either a qualitative research paradigm or take an interventionist approach, such as design projects. In these cases, social workers are mostly interviewed or observed by the researcher. The perspectives of citizens, managers and others are second to those of the social workers. Only a few quantitative studies are represented.

Seven of the articles explicitly adhere to, or may be categorised as, action research. For example, this may be seen in articles that explicitly identify the empowerment of silenced groups as the purpose of their research. For instance, Heron and Steckley's (2018) action research project is focused on giving a voice to vulnerable young people by co-producing digital storytelling and thereby empowering them to participate in decision-making processes. In addition to this (and similar to Heron & Steckley, 2018), there are several articles that present design activities with different actors. For instance, Bowyer et al. (2018) used Family Design Games and card sorting as ways to facilitate ethnographic investigations.

Concerning theory, our initial observation was that seven articles did not explicate their approach, whereas most of the articles applied theories that, in various ways, stressed the mutually formative relationship between humans and technologies, such as Computer Supported Cooperative Work (CSCW) (Dolata et al., 2020; Holten Møller et al., 2019; Lecluijze et al., 2015; Wastell & White, 2014), affordance theory (Gillingham, 2018; Sarwar & Harris, 2019) and assemblage theory (Barfoed, 2019; Redden et al., 2020). Narrative approaches also figure prominently (De Witte et al., 2016; Heron & Steckley, 2018; Keymolen & Broeders, 2013; Lenette et al., 2015), alongside design theory (Chotvijit et al., 2018; Cooner et al., 2020; Gillingham, 2013, 2020; Rönkkö, 2018; Ross et al., 2013).

Although the research uses the foregoing theories to understand the broader practices in which digital data are produced and/or used, it must also be noted that only a handful of

the articles discuss more specifically what data are and how they may be conceptualised (e.g. data as data-doubles, socio-technical constructs, narratives, grounded phenomena). A general finding was that the majority of research does not conceptualise or theorise about data as a special or distinct type of phenomenon. We return to this below.

What are data?

The articles reviewed generally describe three different kinds of data on citizens. The first are data provided by social workers who interview or observe a client, and then store the information in a database. Like the mentioned example from Heron and Steckley (2018) where digital storytelling is used as a means of co-producing data about young people. Digital storytelling combines narrative storytelling with electronic records of the stories. The electronic accounts of the stories allow a variety of formats to be encompassed into the record (i.e. pictures, videos, music etc.). By co-producing data and addressing questions of importance to social work, dilemmas, settings of unease, emotional situations and so on may be examined in greater depth than the written or spoken word. Devlieghere and Roose (2019) and Dolata et al. (2020) emphasise a reflective, transparent practice when constructing data together with the citizen. Devlieghere and Roose argue that although information systems may help highlight and manage important questions concerning a case, it is important that the processes of data-gathering and -entry are transparent, because the systems tend to reduce the complexity of the cases (Devlieghere & Roose, 2019: 212–215).

The second type is data already collected and stored in databases, often for other purposes. For instance, Bowyer et al., (2018: 1) point out that civic data (e.g. date of birth, address, marital status, children, school records, welfare benefits, employment, criminal records, hospital records etc.) can 'provide care workers with holistic views of families they support'. Wang et al. (2021: 394) provide another example, which 'demonstrates the use of population-level data and GIS technology in social work research and practice'. Lastly, Chotvijit et al. (2018: 1) 'employs state-of-the-art data analytics and visualisation techniques to analyse six years of local government social care data for the city of Birmingham'.

The third type of data is the digital footprints of citizens on social media and other platforms (Frey et al., 2020). For instance, posts on social media may be used by social workers to better understand citizens in need of help, or activities that occur on the margins of society (Boddy & Dominelli, 2017). Redden et al. (2020) point out that such practices raise all sorts of questions related to privacy, surveillance and ethics.

Which citizens are represented by data?

Most publications describe data used to represent children/adolescents and/or their families (Boddy & Dominelli, 2017; De Witte et al., 2016; Devlieghere et al., 2018; Devlieghere & Roose, 2019; Fallon et al., 2017; Gillingham, 2013, 2016, 2018; Heron &

Steckley, 2018; Huuskonen & Vakkari, 2015; Keymolen & Broeders, 2013; Lecluijze et al., 2015; Redden et al., 2020; Rönkkö, 2018; Wang et al., 2021; Wastell & White, 2014). Many articles investigate the use practices and/or consequences of IT systems and data for social work related to child welfare and protection. For instance, De Witte et al. discuss a case from Flanders, Belgium, in which the children in focus are raised in circumstances deemed 'problematic', and 'in which their physical integrity or opportunities for affective, moral, intellectual or social development suffer due to incidents, relational conflicts' (De Witte et al., 2016: 1254). Another example of this is Bowyer et al.'s focus on how to use data to gain a holistic overview of families from a social work perspective (Bowyer et al., 2018). The article focuses on the perspective of the involved families concerning which data they would like to share with public authorities. Yet another example is provided by Boddy and Dominelli, who focus on the well-being of very young children raised by 'disempowered' young parents (Boddy & Dominelli, 2017). The focus on children/adolescents may be explained by a general interest in children's well-being, but some articles indicate that tragic incidents where children were abused or killed is a crucial motivation behind a given technological system, and the research into said system. And, by implication, the persistent need to protect children in marginal positions is a prominent driver of the datafication of social work, because data are regarded as improving the quality and effectiveness of social authorities, and thus constitutes a political response to public outcry (Lecluijze et al., 2015; Redden et al., 2020; Sarwar & Harris, 2019).

Although data on children/adolescents is dominant, there is research on other groups, too. Lenette et al. discuss single mothers with refugee backgrounds. Their article investigates the potential of digital technologies as means of producing narratives that may 'inform social work practices […] and address some of the intricacies of working in diverse and challenging contexts' (Lenette et al., 2015: 988). Anderson and Mansingh (2015) present a system architecture for decision support related to the provision of social benefits to the poor by integrating data from existing systems. In Hansen et al.'s study, the people in focus with regard to the datafication of social work are hospice patients, and the objective is to improve the quality of care via a system called Social Work Assessment Notes. This system is designed to 'integrate assessment, planning and outcome measurement' of care (Hansen et al., 2015: 191). Barfoed (2019) investigates the practice of translating questionnaire data about citizens into computer-generated narratives, thereby arguably making the constructed data more accessible to social workers. A last example is provided by Frey et al., (2020), where former gang members assist and collaborate with social workers in analysing Twitter data produced by young people, so the social workers may better understand their young clients and the conflicts in which they may be involved.

How are data used in social work?

The ways in which data are utilised or attempted utilised in social work are many. The following list is inconclusive, but covers many of the ways in which the purposes and contribution of data are referenced in the articles included in our study. Data are used (1) for 'automatisation' (Anderson & Mansingh, 2015: 250), (2), for 'decision making' (Gillingham, 2013: 430), (3) to establish 'an overview/a holistic view/transparency' (Bowyer et al., 2018: 1; De Witte et al., 2016: 1261; Devlieghere & Roose, 2019: 207), (4) for 'information sharing' (Gillingham, 2018: 523; Rönkkö, 2018: 5), (5) for 'control' (Keymolen & Broeders, 2013: 41; Sarwar & Harris, 2019: 702), (6) for 'improving quality' (Chotvijit et al., 2018), (7) for 'empowering citizens' (Heron & Steckley, 2018; Lenette et al., 2015; Rönkkö, 2018), (8) for 'assessment and evaluation' (Hansen et al., 2015), (9) for 'identification and/or prediction' (Fallon et al., 2017; Gillingham, 2016; Keymolen & Broeders, 2013; Lecluijze et al., 2015; Redden et al., 2020). It is evident that these are indeed general and common perceptions of what data may be used for, but they nonetheless provide some insights into the many different ways of producing, working with and utilising specific data in concrete social work practices. The articles rarely offer detailed accounts of specific 'data problems'. Two notable exceptions are Redden et al. (2020) and Barfoed (2019).

Understanding the relationship between data and practice

A prominent theme in the research is how the relationship between data and practice may be understood. Some articles highlight the positive potential of data and data use. For instance, Frey et al. (2020) identify Twitter data, and more generally, big data, as resourceful in relation to social work. Frey et al. (2020: 43) state, 'Big Data represents an unprecedented opportunity to understand and support segments of the human population that were at one time too difficult to reach through traditional methods.' Wang et al. (2021) and Chotvijit et al. (2018) also offer examples of research into how IT systems and data may improve social services. Other examples include articles on the potential of data with regard to digital storytelling as a therapeutic practice (Heron & Steckley, 2018; Lenette et al., 2015).

Most research publications take a clearly critical stance on the way data are used in social work. Many of the articles address the question of data – and IT systems in general – from a critical management perspective. In this perspective, IT systems and data are seen as being deployed as part of a new public management or neoliberal agenda with a focus on technology as a means of making the public service sector more efficient, less expensive and delivering better quality/service to both the individual citizen and society (Barfoed, 2019; De Witte et al., 2016; Devlieghere et al., 2018; Devlieghere & Roose, 2019; Gillingham, 2016; Redden et al., 2020; Sarwar & Harris, 2019). With regard to the criticism of new public management regimes in social work, it is also pointed out that data and the digital systems do not simply increase the efficiency and knowledge base of existing practices, but also displace this practice towards other ends like control of risk

and increased surveillance from managers (Keymolen & Broeders, 2013), or that systems intended to connect different work domains and thereby create a better overview, instead have the opposite effect, owing to different standards or understandings of phenomena such as 'risk' (Lecluijze et al., 2015).

Another point related to the foregoing criticism is that data use often become opposed to narrative and holistic understandings of the client, as pointed out by Lenette et al. (2015), for example. In another article, data are defined as mediators of a systems logic inherent to databases, which enable, 'decontextualisation by which clients are disconnected from their social and relational context […]. Consequently, a client's situation is split into a series of data elements and this risks breaking up the holistic view of the client's life story… the complexity of the client's situation is left out of account' (Devlieghere et al., 2018: 738). In these cases, data are considered to be reductive and alienating, and the social worker's understanding to be richer and more comprehensive than what may be derived from data.

Finally, some research articles point out that interpreting data is a difficult and complicated task. As touched on above, the point is that data do not speak for themselves, although they are often viewed as doing so (Frey et al., 2020; Huuskonen & Vakkari, 2015; Wastell & White, 2014). On the contrary, data require contextualisation and interpretation to become meaningful. With regard to this, Wastell and White (2014) show how presenting and organising data affects the possibility of social workers to make sense of the data. Also, Frey et al. (2020) actively involved former gang-members in the interpretation of social media data. Finally, Huuskonen and Vakkari (2015) show how sensemaking involves filtering out information from clients' records, which raises the important question of what constitutes relevant data. Such considerations mean that the question of data used in social work (and other practices) is addressed both broadly and in depth. Among the included articles an illustrative example of this is found in Redden et al.'s study (2020). This article draws on Rob Kitchin's concept of data assemblage 'as an analytical framework to deconstruct data infrastructures in order to better understand the relations and processes that are influencing how a particular data application works […] to better understand how the data system in question reinforces particular sets of rationalities, influences, how people and issues are represented and understood, and can lead to shifts in policy and governance more broadly' (p. 509). Such an approach analyses a given data system historically, politically, economically and at a concrete practical level related to social work and the citizens 'targeted' by those systems.

Conclusion

To summarise, this review notes the following:

1. Although it is evident that there is an interest in investigating data in social work, the amount of empirical research is still limited. As social work becomes increasingly datafied, more research is required and probably will also be expected.
2. The articles display a rich diversity, and draw on a variety of concepts and approaches. This diversity should be appreciated, and further explored and explicated. At the same time, it is important to note that the articles contain little empirical detail dedicated to data as an explicit phenomenon. It thus remains a principal challenge for research to investigate what data are empirically, and how they can be comprehended and researched. These are important questions that should be at the centre of the discussion of how research should proceed in the future.
3. Data are often referred to with limited theoretical development and conceptualisation. With few exceptions, the conceptualisation of data is often kept at a general level, for example, with a focus on the overall purpose or consequence of a given technology. We do not mean to suggest that the existing research is not interesting and relevant, only that detailed analyses of data that describe and conceptualise the production, circulation and utilisation of data are limited. Consequently, this means that there are obvious avenues for future research on developing theories and concepts explicitly devoted to researching data in social work.
4. The research reviewed shows how data already pervade social work practices. Children and adolescents are the most frequently mentioned groups, but other categories of citizens are also included. This clearly transforms the practices of social work, and often leads to concerns such as social work becoming disconnected from individual citizens, that narrative and holistic interpretations of citizens become difficult or impossible, and that data do not support social work or the citizen, but instead serve managerial and political interests.

Suggestions for future research on the digital transformation of social work

The use of data has already transformed the field of social work, and will continue to do so in the future. This calls for more research that contributes theoretically and empirically. How are data generated, processed, shared and distributed, used and interpreted, maintained, repaired and replaced? And with what concrete consequences? Research that focuses on the concrete and practical aspects of data work will enable us to better answer questions such as how may, and should, data be used, and thereby enable citizens, practitioners, managers and politicians to make informed decisions on data production and use (Bonde et al., 2019; Bossen et al., 2019).

Such a research agenda may draw inspiration from other areas and academic fields. Based on our own backgrounds, we will briefly suggest some possible sources of inspiration. Our aim is not to exclude other potential sources of inspiration, only to point out what we consider productive sources for future research.

One area research is surveillance studies. Harvesting and producing data on citizens clearly involve surveillance, and is increasing being subjected to legal scrutiny and regulation (Motzfeldt & Næsborg-Andersen, 2018). Within a surveillance framework, it becomes evident that data use may easily violate personal privacy of citizens (and social workers for that matter) (Andersen et al., 2016). Data may be used to sniff out more detail on people's private lives, and to increase control of their lives. However, as David Lyon points out, surveillance is not only a matter of control, but also a condition of care (Lyon, 2007). This is clearly relevant to social work, but it does not change the fact that data are also a means of control that must be restrained, if social work is to be ethical, and respect the autonomy of citizens. Here, a relevant concept from surveillance studies is the data double (Clarke, 1988, 1994; Solove, 2004; Barfoed, 2019: 202). The data double is the digital representation of a citizen which, in contrast to the actual citizen, the digital representation may be easily 'transported' over distance, shared and negotiated by various professionals, affect how decision-making may become more transparent, and how information and documentation can become readily available. However, as Clarke points out, the data double needs to be critically evaluated. For example, Clarke asks how to ensure that the data are valid? And whether it is possible for citizens to change incorrect data, and participate in the interpretation of his or her own digital double? Because data are not neutral, but crafted and worked with, it is vital for the citizen to be able to play a decisive role in data-based social work, especially as one may worry that it is already becoming far too common for social workers to work with clients' digital data than with the actual citizens.

Another potential resource for understanding data in social work is science and technology studies (STS). STS is a broad and diverse field that includes social constructivist perspectives on science, feminist approaches to technology, actor-network theory, and many other such research approaches (Jasanoff et al., 2001; Sismondo, 2010). STS is predominantly constructivist, and has contributed to understanding scientific knowledge as a product of associations of human and non-human actors and elements (Latour, 1999, 2005). In short, facts are neither completely social nor natural, but a conglomerate of the two. Equally true, but less controversial, is that technology is considered the product of a long chain of actors and forces such as materiality, economy, politics, culture, history and social factors, and therefore contingent on all of these all of the these in their consequences (Law, 1991; Winner, 1980).

In light of STS, data are constructed and conditioned in specific ways, which implies that we cannot regard them as neutral, objective or raw (Borgman, 2016; Boyd & Crawford, 2012; Edwards, 2013; Gitelman, 2013). Therefore, it becomes important to scrutinise

what motivates a given data project, how it is conceived and what assumptions underlie it. Who decides on a given data project, and on what grounds? What motivates data collection? How is data being collected, cleaned, prepared, processed and interpreted? What becomes visible and what becomes invisible in the process? Who benefits and who pays the price? In short, Cui bono (Star, 1990, 1999)?

The STS concept of infrastructure also has significant potential for social work and data research. Contemporary Western societies are inherently infrastructured. Moreover, the digital is a complex and highly opaque infrastructure on which large parts of society are dependent. These infrastructures configure the social relations and actors. Infrastructure studies involve analysing infrastructures as 'world producing' and as relational, in the sense that they have different consequences for different actors (Danholt & Langstrup, 2012; Harvey et al., 2017; Jensen & Morita, 2015; Ratner & Gad, 2019; Star, 1999; Star & Ruhleder, 1994). This entails multi-site approaches and analytical specificity concerning how those affected by infrastructures are situated.

Last, we emphasise a performative understanding of data and the digital (Barad, 2003; Barfoed, 2019; Lecluijze et al., 2015; Mackenzie, 2005; Pickering, 1995). Performativity is central to constructivist studies of technology, and entails an empirical focus on the concrete consequences of practices related to a given technology. The focus is anti-determinist and holds that the fate of a given technology, fact or policy is in the hands of those who use it (Callon, 1986; Latour, 1987). Thus, a given project or technology is translated, and possibly betrayed, by its users and their practices (Akrich, 1992; Callon, 1986; de Laet & Mol, 2000). A performative understanding invites us to study – not presume – the consequences of a given system under concrete circumstances, thereby establishing the possibility of surprising consequences that may be both positive and negative – or difficult to determine in binary terms. Nonetheless, surfacing those consequences is central to understanding, discussing and making informed decisions related to using and designing technological systems such as data and digital infrastructures.

References

Ackoff, R.L., (1989). From data to wisdom. *Journal of applied systems analysis*, 16(1), pp.3-9.

Akrich, M. (1992). The De-scription of Technical Objects. In W. Bijker & J. Law (Eds.), Shaping technology building society: Studies in sociotechnical change. MIT Press.

Andersen, L. B., Bøge, A. R., Danholt, P., & Lauritsen, P. (2016). Privacy encounters in Teledialogue. *Information, Communication & Society*, 1–16. https://doi.org/10.1080/1369118X.2016.1271904

Anderson, R., & Mansingh, G. (2015). KIISA: Towards a Reference Architecture for Integrated Knowledge Services. In D. Filev, J. Jabłkowski, J. Kacprzyk, M. Krawczak, I. Popchev, L. Rutkowski, V. Sgurev, E. Sotirova, P. Szynkarczyk, & S. Zadrozny (Eds.), Intelligent Systems'2014 (Vol. 323, pp. 247–257). Springer International Publishing. https://doi.org/10.1007/978-3-319-11310-4_22

Arksey, H., & O'Malley, L. (2005). Scoping studies: Towards a methodological framework. International Journal of Social Research Methodology, 8(1), 19–32. https://doi.org/10.1080/1364557032000119616

Barad, K. (2003). Posthumanist performativity: Toward an understanding of how matter comes to matter. Signs, 28(3), 801–831.

Barfoed, E. M. (2019). Digital Clients: An Example of People Production in Social Work. Social Inclusion, 7(1), 196–206. https://doi.org/10.17645/si.v7i1.1814

Boddy, J., & Dominelli, L. (2017). Social Media and Social Work: The Challenges of a New Ethical Space. Australian Social Work, 70(2), 172–184. https://doi.org/10.1080/0312407X.2016.1224907

Bonde, M., Bossen, C., & Danholt, P. (2019). Data-work and friction: Investigating the practices of repurposing healthcare data. Health Informatics Journal, 25(3), 558–566. https://doi.org/10.1177/1460458219856462

Borgman, C. L. (2016). Big data, little data, no data: Scholarship in the networked world. The MIT Press.

Bossen, C., Pine, K. H., Cabitza, F., Ellingsen, G., & Piras, E. M. (2019). Data work in healthcare: An Introduction. Health Informatics Journal, 25(3), 465–474. https://doi.org/10.1177/1460458219864730

Bowyer, A., Montague, K., Wheater, S., McGovern, R., Lingam, R., & Balaam, M. (2018). Understanding the Family Perspective on the Storage, Sharing and Handling of Family

Civic Data. Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems - CHI '18, 1–13. https://doi.org/10.1145/3173574.3173710

boyd, danah, & Crawford, K. (2012). CRITICAL QUESTIONS FOR BIG DATA: Provocations for a cultural, technological, and scholarly phenomenon. Information, Communication & Society, 15(5), 662–679. https://doi.org/10.1080/1369118X.2012.678878

Callon, M. (1986). Some Elements of a Sociology of Translation: Domestication of the Scallops and the Fishermen of Saint Brieuc Bay. In J. Law (Ed.), Power, action, and belief: A new sociology of knowledge? Routledge & Kegan Paul.

Chotvijit, S., Thiarai, M., & Jarvis, S. (2018). Big data analytics in social care provision: Spatial and temporal evidence from Birmingham. Proceedings of the 19th Annual International Conference on Digital Government Research Governance in the Data Age - Dgo '18, 1–8. https://doi.org/10.1145/3209281.3209300

Clarke, R. (1988). Information technology and dataveillance. Communications of the ACM, 31(5), 498–512. https://doi.org/10.1145/42411.42413

Clarke, R. (1994). The Digital Persona and its Application to Data Surveillance. The Information Society, 10(2), 77–92.

Cooner, T. S., Beddoe, L., Ferguson, H., & Joy, E. (2020). The use of Facebook in social work practice with children and families: Exploring complexity in an emerging practice. Journal of Technology in Human Services, 38(2), 137–158. https://doi.org/10.1080/15228835.2019.1680335

Danholt, P., & Langstrup, H. (2012). Medication as Infrastructure: Decentring Self-care. *Culture Unbound: Journal of Current Cultural Research*, *4*, 513–532. https://doi.org/10.3384/cu.2000.1525.124513

de Laet, M., & Mol, A. (2000). The Zimbabwe Bush Pump: Mechanics of a Fluid Technology. Social Studies of Science, 30, 225–263. https://doi.org/10.1177/030631200030002002

De Witte, J., Declercq, A., & Hermans, K. (2016). Street-Level Strategies of Child Welfare Social Workers in Flanders: The Use of Electronic Client Records in Practice. British Journal of Social Work, 46(5), 1249–1265. https://doi.org/10.1093/bjsw/bcv076

Devlieghere, J., Bradt, L., & Roose, R. (2018). Creating Transparency through Electronic Information Systems: Opportunities and Pitfalls. The British Journal of Social Work, 48(3), 734–750. https://doi.org/10.1093/bjsw/bcx052

Devlieghere, J., & Roose, R. (2019). Documenting Practices in Human Service Organisations through Information Systems: When the Quest for Visibility Ends in Darkness. Social Inclusion, 7(1), 207. https://doi.org/10.17645/si.v7i1.1833

Dolata, M., Schenk, B., Fuhrer, J., Marti, A., & Schwabe, G. (2020). When the System Does Not Fit: Coping Strategies of Employment Consultants. Computer Supported Cooperative Work (CSCW), 29(6), 657–696. https://doi.org/10.1007/s10606-020-09377-x

Edwards, P. N. (2013). A vast machine: Computer models, climate data, and the politics of global warming (First paperback edition). The MIT Press.

Fahnøe, K. (2015). Konstruktionen af it-systemet "Digitalisering – Udsatte Børn og Unge" som løsningen på problemer i den socialfaglige sagsbehandling. Nordisk Administrativt Tidsskrift, 92(2), 37–54.

Fallon, B., Filippelli, J., Black, T., Trocmé, N., & Esposito, T. (2017). How Can Data Drive Policy and Practice in Child Welfare? Making the Link in Canada. International Journal of Environmental Research and Public Health, 14(10), 1223. https://doi.org/10.3390/ijerph14101223

Frey, W. R., Patton, D. U., Gaskell, M. B., & McGregor, K. A. (2020). Artificial Intelligence and Inclusion: Formerly Gang-Involved Youth as Domain Experts for Analyzing Unstructured Twitter Data. Social Science Computer Review, 38(1), 42–56. https://doi.org/10.1177/0894439318788314

Gillingham, P. (2013). The Development of Electronic Information Systems for the Future: Practitioners, "Embodied Structures" and "Technologies-in-Practice." British Journal of Social Work, 43(3), 430–445. https://doi.org/10.1093/bjsw/bcr202

Gillingham, P. (2016). Predictive Risk Modelling to Prevent Child Maltreatment and Other Adverse Outcomes for Service Users: Inside the 'Black Box' of Machine Learning. British Journal of Social Work, 46(4), 1044–1058. https://doi.org/10.1093/bjsw/bcv031

Gillingham, P. (2018). Decision-making about the adoption of information technology in social welfare agencies: Some key considerations. European Journal of Social Work, 21(4), 521–529. https://doi.org/10.1080/13691457.2017.1297773

Gillingham, P. (2020). The Development of Algorithmically Based Decision-Making Systems in Children's Protective Services: Is Administrative Data Good Enough? The British Journal of Social Work, 50(2), 565–580. https://doi.org/10.1093/bjsw/bcz157

Gitelman, L. (Ed.). (2013). "Raw data" is an oxymoron. The MIT Press.

Global Definition of Social Work. (2014, July 31). Www.Basw.Co.Uk. https://www.basw.co.uk/resources/global-definition-social-work

Hansen, A. G., Martin, E., Jones, B. L., & Pomeroy, E. C. (2015). Social Work Assessment Notes: A Comprehensive Outcomes-Based Hospice Documentation System. Health & Social Work, 40(3), 191–200. https://doi.org/10.1093/hsw/hlv033

Harvey, P., Jensen, C. B., & Morita, A. (Eds.). (2017). Infrastructures and social complexity: A companion. Routledge, Taylor & Francis Group.

Heron, G., & Steckley, L. (2018). Digital storytelling using co-production with vulnerable young people. Journal of Social Work, 146801731881499. https://doi.org/10.1177/1468017318814993

Holten Møller, N. L., Fitzpatrick, G., & Le Dantec, C. A. (2019). Assembling the Case: Citizens' Strategies for Exercising Authority and Personal Autonomy in Social Welfare. Proceedings of the ACM on Human-Computer Interaction, 3(GROUP), 1–21. https://doi.org/10.1145/3361125

Huuskonen, S., & Vakkari, P. (2015). Selective Clients' Trajectories in Case Files: Filtering Out Information in the Recording Process in Child Protection. British Journal of Social Work, 45(3), 792–808. https://doi.org/10.1093/bjsw/bct160

Jasanoff, S., Markle, G. E., Peterson, J. C., & Pinch, T. J. (Eds.). (2001). Handbook of Science and Technology Studies (Revised). Sage Publications, Inc.

Jensen, C. B., & Morita, A. (2015). Infrastructures as Ontological Experiments. Engaging Science, Technology, and Society, 1, 81–87. https://doi.org/10.17351/ests2015.007

Keymolen, E., & Broeders, D. (2013). Innocence Lost: Care and Control in Dutch Digital Youth Care. British Journal of Social Work, 43(1), 41–63. https://doi.org/10.1093/bjsw/bcr169

Latour, B. (1987). Science in action: How to follow scientists and engineers through society. Harvard University Press.

Latour, B. (1999). Pandora's hope: Essays on the reality of science studies. Harvard University Press.

Latour, B. (2005). Reassembling the social: An introduction to actor-network-theory. Oxford University Press.

Law, J. (1991). A Sociology of monsters: Essays on power, technology, and domination. Routledge.

Lecluijze, I., Penders, B., Feron, F. J. M., & Horstman, K. (2015). Co-production of ICT and children at risk: The introduction of the Child Index in Dutch child welfare. Children and Youth Services Review, 56, 161–168. https://doi.org/10.1016/j.childyouth.2015.07.003

Lenette, C., Cox, L., & Brough, M. (2015). Digital Storytelling as a Social Work Tool: Learning from Ethnographic Research with Women from Refugee Backgrounds. British Journal of Social Work, 45(3), 988–1005. https://doi.org/10.1093/bjsw/bct184

Lyon, D. (2007). Surveillance Studies: An Overview (1st ed.). Polity.

Mackenzie, A. (2005). The Performativity of Code: Software and Cultures of Circulation. Theory, Culture & Society, 22(1), 71–92. https://doi.org/10.1177/0263276405048436

Mejias, U. A., & Couldry, N. (2019). Datafication. *Internet Policy Review*, *8*(4). https://doi.org/10.14763/2019.4.1428

Motzfeldt, H. M., & Næsborg-Andersen, A. (2018). Developing Administrative Law into Handling the Challenges of Digital Government in Denmark. Electronic Journal of E Government, 16(2), 136–146.

Peters, M. D. J., Godfrey, C. M., Khalil, H., McInerney, P., Parker, D., & Soares, C. B. (2015). Guidance for conducting systematic scoping reviews. International Journal of Evidence-Based Healthcare, 13(3), 141–146. https://doi.org/10.1097/XEB.0000000000000050

Pickering, A. (1995). The mangle of practice: Time, agency, and science. University of Chicago Press.

Ratner, H., & Gad, C. (2019). Data warehousing organization: Infrastructural experimentation with educational governance. Organization, 26(4), 537–552. https://doi.org/10.1177/1350508418808233

Redden, J., Dencik, L., & Warne, H. (2020). Datafied child welfare services: Unpacking politics, economics and power. Policy Studies, 41(5), 507–526. https://doi.org/10.1080/01442872.2020.1724928

Regeringen, KL, & Danske Regioner. (2013). Digital velfærd—En lettere hverdag. Fællesoffentlig strategi for digital velfærd 2013-2020. (s. 24). Regeringen. https://fm.dk/media/14150/Digitalvelfaerd_enletterehverdag_web.pdf

Rönkkö, K. (2018). An Activity Tracker and Its Accompanying App as a Motivator for Increased Exercise and Better Sleeping Habits for Youths in Need of Social Care: Field Study. JMIR MHealth and UHealth, 6(12), e193. https://doi.org/10.2196/mhealth.9286

Ross, T., Leberatto, A., & Rosenblum, R. (2013). Building Data Driven Child Welfare Practice:

An Evaluation of the Manage by Data Initiative, Northeast and Caribbean Implementation Center at the University of Southern Maine. https://www.researchgate.net/publication/291356156_Building_Data_Driven_Child_Welfare_Practice

Sarwar, A., & Harris, M. (2019). Children's services in the age of information technology: What matters most to frontline professionals. Journal of Social Work, 19(6), 699–718. https://doi.org/10.1177/1468017318788194

Shaw, T. V., Lee, B. R., & Wulczyn, F. (2012). "I Thought I Hated Data": Preparing MSW Students for Data-driven Practice. Journal of Teaching in Social Work, 32(1), 78–89. https://doi.org/10.1080/08841233.2012.640599

Sismondo, S. (2010). An introduction to science and technology studies (2nd ed). Wiley-Blackwell.

Solove, D. J. (2004). The digital person: Technology and privacy in the information age. New York Univ. Press.

Star, S. L. (1990). Power, Technology and the Phenomenology of Conventions: On being Allergic to Onions. The Sociological Review, 38(1_suppl), 26–56. https://doi.org/10.1111/j.1467-954X.1990.tb03347.x

Star, S. L. (1999). The ethnography of infrastructure. American Behavioral Scientist, 43(3), 377.

Star, S. L., & Ruhleder, K. (1994). Steps towards an ecology of infrastructure: Complex problems in design and access for large-scale collaborative systems. Proceedings of the 1994 ACM Conference on Computer Supported Cooperative Work, 253–264.

Wang, C., Mody, E. H., Hunting, D., Hoyt, J., & Ferguson, K. M. (2021). Data-driven outreach to opportunity youth using population data and Geographic Information System technology. Journal of Social Work, 21(3), 394–415. https://doi.org/10.1177/1468017320911371

Wastell, D., & White, S. (2014). Making sense of complex electronic records: Socio-technical design in social care. Applied Ergonomics, 45(2), 143–149. https://doi.org/10.1016/j.apergo.2013.02.002

Winner, L. (1980). Do artifacts have politics? Daedalus, 109(1), 121–136.