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The Right to the Smart City
An assessment of the implications
of smart city policies on aged 60+ residents
living in the London Borough of Tower Hamlets

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Abstract & Keywords

Smart city policies have been introduced into the City of London in the last 10 years, and the London Borough of Tower Hamlets over the last 5 years. As smart city policies continue to reshape the capital, little research has been attributed to understanding how smart city policies affect the ever-growing ageing urban populations globally, and in London. This research assesses the implications of smart city policies on residents aged 60+ in the Borough of Tower Hamlets. The framework of smart cities posed by Nam and Pardo (2019) is adopted to determine how smart city policies in the domains of increasing technology, institutional civic engagement strategies, and smart human-centered community strategies have affected aged 60+ residents. A mixed-methods research approach is undertaken, which data triangulates between eight semi-structured interviews, online and paper surveys (N= 200), and eight policy documents published by governmental departments in London and Tower Hamlets. Collectively, the data was also structured analysed in relation to the smart city framework outlined by Nam and Pardo (2011).

The research conclusions suggest that aged 60+ residents feel that they are under-consulted in local decision-making processes. On average, they had lower levels of internet access than their younger counterparts, and many participants felt that they did not have the skill set to operate smart technologies, or online services that the borough offer. This led to feelings of exclusion amongst some interview participants, but among others, smart technology within their home led to increased feelings of independence, and inclusion within new hybridised virtual communities. Older residents were also generally more involved in community events, especially community events organised by NGO's which support active ageing. The Borough of Tower Hamlets do provide internet training sessions for older residents, and a community ambassador scheme whereby younger residents volunteer to assist older residents, however the awareness, uptake and success of these schemes has significant room for improvement. Overall, this study contributes to a relatively under-explored field of ageing in places where smart city agendas are adopted ,and encourages further research to explore the localised effects of smart city policies on older residents, and their right to participate in the smart city.

Keywords: smart city, technology, civic engagement, smart communities, hybrid city, virtual communities, active ageing, ageing in place, right to the city

Acknowledgements

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List of Abbreviations

Abbreviation	Translation
AFC	Age-Friendly Cities
AAI	Authentication and Authorisation Infrastructure
ICT	Information and Communications Technology
NGO	Non-Governmental Organisation
NHS	National Health Service
SDG's	Sustainable Development Goals
UN	United Nations
TFL	Transport For London
WHO	World Health Organisation

1 Introduction

1.1. Societal relevance

Cities are becoming smarter whist undergoing geographic and demographic change, as there are an increasing number of older adults, and a higher number of people living in cities than ever before. Life expectancies globally have been increasing steadily over the years, and therefore populations in almost all countries are growing older (World Ageing Populations, 2019). In 2019, 9% of the global population was aged 65 or older, and these percentages are due to increase to 23% by the year 2100 (World Ageing Populations, 2019). This makes people aged 65 or above the fastest growing population in the world, with urban areas now accommodating for around half of world population growth (Torku et al., 2020). These are known as urban ageing populations. As well as the growth in urban ageing, smart city policies are also on the rise, and increasingly making their way into urban agendas. There are now officially 102 smart cities globally, of which London is ranked number 20 (IBD, 2019). Smart city policy was officially introduced in London in March of 2013, with an output by the Smarter London Board run by the Greater London Authority. This output focused on technology as a driver for increased citizen participation, smart communities, economic growth, sustainable development and environmental well-being.

There are multiple definitions of smart cities that are debated and discussed in the literature review, however, the most appropriate definition for this study is 'A humane city that has multiple opportunities to exploit its human potential and lead a creative life', and a 'Learning city, which improves the competitiveness of urban contexts in the global knowledge economy' (Nam and Pardo 2011, p.285). The approach of Nam and Pardo (2011) focuses on smart cities as an interconnected web of technology, institutions, and people, which is reflected in the policy documents analysed in this study, which are outputs from the London Borough of Tower Hamlets Council, and London City Hall that seek to place Londoners at the forefront of city planning and use countless digital tools to do so (Smarter London Board, 2013).

London is a self-proclaimed smart city, with 28,000 technology firms, more top-ranking universities than anywhere else in the world, over 450 public transport apps, Wi-Fi at almost all underground stations, and hundreds more smart technological features (Smarter London Board, 2013). London also is home to a large ageing population as a consequence of the baby

boom between 1946, and 1964, and the number of residents aged 65 and over is set to increase by 86% in the next thirty years (Biggs et al., 2007). Similarly, Tower Hamlets will have an ageing population, and aged 65+ residents are expected to increase by 10,000 by the year of 2030 (Tower Hamlets Ageing Well Department, 2021). Therefore, with an increase in life expectancies, urban populations, ageing urban populations, and smart city policies in London and Tower Hamlets, this study on the effects of smart city policies on ageing residents is situated in contemporary concerns regarding how smart city narratives affect urban ageing populations.

1.2. Academic relevance and research gap

The self-congratulatory branding of a city as 'smart' 'creative' or 'intelligent' has been on the rise in primarily Western cities especially since the emergence of the digital age, big data, and business-led urban development (Hollands, 2020). Smart cities have been increasingly criticised for marginalising segments of the population, and in particular contributing to spatial and income inequality, both in cities, and globally (Kaika, 2017). Similarly, Hollands (2020) expressed concern over exactly who smart cities are built for, and how big data and technology used in smart cities often supports neo-liberalism, and large profit-seeking corporations, at the expense of citizens that are exploited in the making of smart cities. With such critical thinking applied to how smart cities contribute to wealth inequality, there is a large gap in the literature in regard to how smart cities can contribute to a digital divide between not only people of different socio-economic backgrounds, but also people of differing ages. The effect of smart city policies on different age demographics is a relatively under-researched field, especially in the context of the UK, and more specifically London. Current research in this field is often produced overseas, for example there has been a large focus in Scandinavian literature about how to integrate ageing populations into smart city policies, and often ageing populations are actually placed at the forefront of their smart city planning and legislation, rather than as an afterthought (Skouby et al., 2014; Suopajärvi, 2018). Smart city policy in London is a relatively new introduction; introduced in 2013; less than ten years ago. This could explain why the research output has been so low in relation to how smart city policies affect the ageing population.

Tower Hamlets is selected as a case study, as there is an increasing ageing population, and there are also high levels of deprivation, and income inequality within the borough, averaging

5th out of 32 London Borough's in its deprivation score (Tower Hamlets Council, 2015). Similarly, a large proportion of age 60 and over residents live in social housing, with around half living in deprived households (Tower Hamlets Ageing Well Department, 2021). Therefore, older residents already experience an income divide, and it is important to explore whether they experience a digital divide, and if so how this affects their communities, and their participation in local decision making. Age 60+ residents were the focus of this study, however literature on ageing populations generally refer to those who are 65 and over. A significantly lower life expectancy within the borough compared to the rest of the London (65 for men and women) meant that the age of study was lowered to 60 and over, in keeping with the demographic characteristics of the local area (Tower Hamlets Ageing Well Department, 2021).

1.3. Research aim and research questions

The main research question is:

'*In what way have local government smart city agendas affected age 60+ citizens in the London Borough of Tower Hamlets?'*

Using the conceptual framework of Nam and Pardo (2011), this study views the smart city as a combination of three factors. Technology (digital city, intelligent city, information city), human (creative city, learning city, social city), and institutional (smart communities, smart growth). Using these three factors, this study identifies how all three of these smart city factors, and their operationalisation in smart city planning impact age 60+ residents in Tower Hamlets. This leads me to my three research questions…

1) How do smart city initiatives based on increasing technology and digitalisation affect ageing residents in Tower Hamlets?

2) In what ways, and to what extent do smart local government, and public institutions in Tower Hamlets harness over 60's participation in decision making within the borough?

3) In what way, if any, do smart community initiatives and volunteering initiatives engage and include ageing populations?

These questions are addressed thematically throughout the literature review and data analysis sections. This is performed through a mixed-methods research approach which combines policy document analysis, surveys, and semi-structured interviews, to create an extensive and simultaneously intensive understanding of how smart city policies are enacted, and how they affect age 60+ residents in Tower Hamlets. Policy documents are a combination of Tower Hamlets Council and London City Hall publications, and they are analysed in conjunction with surveys distributed to 18+ residents in Tower Hamlets, and eight interviews with age 60+ residents living in the borough. Sections 2.3, 2.4, and 2.5 review the literature surrounding technology, institutions, and communities, and how these are linked to smart city policies. Sections 4.1, 4.2, and 4.3 likewise assess the results of interviews, surveys, and policy document analysis regarding how the operationalization of these concepts in smart city planning affect age 60+ residents in Tower Hamlets.

1.4. Reading guide

This thesis is organized as follows: Chapter 2 provides an overview of literature on conceptualizing and defining the smart city. This assesses the role of technology, institutions, and smart communities in smart city policy. The literature on ageing in smart cities is outlined, in conjunction with a case study of a smart city in Oulu, Finland which is an AFC (age-friendly city). Methods for data analysis and collection are outlined in chapter 3, with an integrated discussion regarding ethics and positionality. Chapter 4 analyses data collected from survey participants, interviewees, and policy documents regarding technology, institutions, and smart communities. Chapter 5 and 6 provide a summary of the results, and how these links back to the literature, reflections on the research journey, and recommendations for future research in the same field.

2 Literature Review

This chapter will address the different and widely contested definitions of a smart city found in academic literature, specifically those pertaining to the recurring themes of environment and sustainability, transport, ICT (Information and Communications Technology), quality of life,

civic participation in government decision making, and economic growth. In section 2.2, the model for smart cities proposed by Nam and Pardo (2011) will be introduced, and in sections 2.3, 2.4, and 2.5, this model will be broken down into its individual components which are technology, institutions, and humans, and their role in the creation of a smart city. The current literature on ageing in the city will be addressed in section 2.6, and in section 2.7 the case study of Oulu in Finland will be explored, as an example of a smart city that is inclusive of an older demographic.

2.1 Defining the Smart City

The term 'smart city' is widely used, debated, and disseminated, but it is simultaneously a highly fuzzy concept (Lara et al., 2016). Fuzziness in this context, means that there is not a single agreed framing of smart cities, or a consistent globally agreed definition (Nam and Pardo, 2011). The subjectivity of the term smart city means that it can be translated differently in the context of different cities around the globe to suit the political and economic agenda of the city or local government adopting it (Hollands, 2020). There is, therefore, a danger that city authorities and local governments will only use the definition that is most favourable to the city they are representing, and in this sense, the term smart city is often regarded by Hollands (2020) and Kaika (2017), as a self-congratulatory declaration by cities to attract and increase economic investment in the area.

Smart cities first appeared in the literature in the late 1990's which compared the smart city to a large organic system; a system that integrates data on infrastructure to improve mobility, efficiencies, conserve energy and promote technology (Dirks and Keeling, 2009). Likewise, Mitchell (2007), compared a smart city to a fully formed human system, whereby information and communication technology reflected the human nervous system; where all elements interact with each other so that a cities performance is stable, and all problems are balanced and solved. The main message of both Dirks and Keeling (2009), and Mitchell (2007), that remains the primary principle of a smart city, is that 'Without the use of ICT, 'the correct operation of the organism would be impossible' (Orlowski and Romanowska, p. 120). ICT and technology was, and still remains the beating heart of smart city agendas. Likewise, Bowerman et al. (2000) agree that a smart city is one that monitors and integrates all of its important infrastructures, placing a large importance on the role of transport in the city such as roads, airports, and resources, assessing how technology facilitates the interconnected mobility systems within it.

Smart cities are criticised by Hollands (2020) and Kaika (2017) for being capitalist neoliberal systems that strive for economic growth, whilst simultaneously increasing spatial inequality both within cities, and globally. Definitions of smart cities fluctuate between focusing on technology as a vehicle for economic growth, or for technology increasing quality of life and citizen participation. Lee et al. (2013) for example, introduce their framework for analysing a smart city which is economically oriented, and consists of 7 dimensions: urban openness, service innovation, partnership formation; urban proactiveness, integrating infrastructure, and governance. The focus Lee et al. (2013) place on partnership innovation between public and private sectors, considers the smart city as a 'high-tech' variation of urban entrepreneurialism (Jessop, 1997). Economic definitions of smart cities which advocate for heightened public-private partnerships can be compared to the urban entrepreneurialism witnessed in the 1970's in Britain, whereby cities were, and still are, shaped increasingly by big-businesses and private corporations, working with local authorities to accelerate production and investment (Harvey, 1989). Smart cities in Britain are therefore still strongly tied with notions of economic growth, and urban entrepreneurialism is still a policy in many local authorities (Harvey, 1989). Local authorities are also quick to adopt smart city policies, as according to Glasmeirer and Christopherson, adoption of smart city agendas are lucrative, and the global market for smart cities was valued at $1.6 trillion dollars in 2020 (2015). The push for smart cities in Europe and America is therefore unsurprising given the economic growth and gain associated with the term.

Definitions of smart cities discussed so far hinge on both technology and economic development, and another significant focus in smart city literature is on sustainability and the environment, which has emerged primarily from the Sustainable Development Goals (SDG'S). The New Urban Agenda for the United Nations Conference on Housing and Sustainable Urban Development (HABITAT III) included a commitment to sustainable cities and communities as Goal 11 (Kaika, 2017). Although sustainability and the smart city are not conjusive to one another (Kaika, 2017), Sharifa et al. argue that it is possible to discern some common characteristics intrinsic to both, 'For instance, persistently-used smartness dimensions are also related to economy, people, environment, and data management' (2020, p. 353). Therefore, a push for sustainable cities and communities often becomes a push for smart city agendas. Yigitcanlar (2016) similarly argues that a smart city is an ideal format for building sustainable cities of the 21st century, that encompass the main traits of sustainability, where economic, societal, environmental, and institutional development is realised. The sustainable smart city

agenda is less economically driven than Lee et al's model (2013), as the need for a strong economy is also accompanied by the need for societal, environmental, and institutional development which are of equal importance.

2.2 Conceptualising the Smart City

As discussed, there are competing versions of what it means to be a smart city. This study borrows from the literature to select a framework for conceptualising smart cities which will then be unpacked in the case of how ageing residents in Tower Hamlets experience the smart city. Nam and Pardo define the smart city as 'A humane city that has multiple opportunities to exploit its human potential and lead a creative life' (2011, p. 285). A humane city, and a knowledge city function through a combination of three fundamental factors which will be individually unpacked in the following sub-chapters. These factors are technology, institutions, and community (people) which Nam and Pardo argue work in conjunction with one another to produce a smart city (2011). The below Venn diagram illustrates how technology, institutions and humans overlap to create a smart city.

Technology Factors
Physical infrastructure
Smart technologies
Mobile technologies
Virtual technologies
Digital networks

Digital city
Intelligent city
Ubiquitous city
Wired city
Hybrid city
Information City

Smart City

Smart community
Smart growth

Creative city
Learning city
Humane city
Knowledge city

Institutional Factors
Governance
Policy
Regulations / directives

Human Factors
Human infrastructure
Social capital

Figure 1: Fundamental Components of a smart city (Nam and Pardo, 2011)

Nam and Pardo's conceptual model brings together a range of terms within the smart city literature and situates them inside of a smart city framework which presents a holistic and citizen centred approach to the smart city, decentring economic narratives (2011).

2.3 The Technological Smart City

There are various cousins of the smart city that borrow from the technology perspective. The digital city for example refers to 'a connected community that combines broadband communications infrastructure; a flexible, service-oriented computing infrastructure based on open industry standards; and innovative services to meet the needs of governments and their employees, citizens and businesses' (Yovanof and Hazapis 2009, p. 446). The goal of the digital city is therefore to invent an environment to easily share and collaborate with citizens all over the world, from anywhere in the city; this could include social groups, medical institutions, governments, and enterprises (Calzada and Cobo, 2015). The technological city, however, also encompasses the ability to support learning, and knowledge production to decrease the digital divide present between different population demographics (Calzada and Cobo, 2015). This is imperative to the technological smart city, as Van Dijk and Hacker, (2003) argue that smart cities require a comprehensive understanding that not only focuses on connectivity and access to the internet, but also addresses inherent patterns of social inequality such as income, education, age, culture, and other forms of social capital. More than this, Rocha et al, (2019) argue that a technologically smart city needs to also address those who have access to the internet and technology, but do not feel they have the skill set to successfully operate it. Bandura's Social Cognitive Theory understands that a person acts according to their perceived capabilities and anticipated consequences from their actions (Partridge, 2004). Therefore, if a citizen feels under-trained or ill-prepared to operate online services, even if they have access to the internet, they may feel incapable of using technology. Therefore, if the technological smart city does not incorporate learning into its process, Khan et al. (2017) argue that they run the risk of catering for the rich, mobile creative businessman through the creation of online informational services and transport links that simultaneously ignore the welfare needs of the poorer residents. Likewise, Coe et al. stipulate that although smart city emphasis was focused on economic growth and competitiveness in the global knowledge economy, shifts towards linking governments and citizens through technological advancements allow opportunity for increased citizen participation, and opportunities for learning about digital infrastructure (2001).

In order for technological smart cities to function, they require investment, infrastructure, and data. Dodd advocates for the increased use of libraries in the technologically smart city, suggesting that they can act as hubs for populations that are otherwise unable to access online, and subsequently remain digitally disconnected (2019). Dodd argues that Libraries are an essential infrastructure that support technology usage, as citizens can engage in essential online public services, as well as view policy plans that are implemented by local authorities. Communication between citizens and governments online is a form of E-Governance, defined by the United Nations as 'the use of ICTs to deliver government services more effectively and efficiently to citizens and businesses…achieving public ends through digital means' (2019, unpaginated). Technologically smart cities are constantly moving essential services online to save money and increase efficiency, and methods of E-governance within the UK are fast becoming the default option for most council or civic services, including housing benefit, parking, disability benefits, passports, and visas (Tang et al., 2022).

However, technological improvements on their own cannot make a city a smart city. Ishkineeva et al. (2015) express concerns surrounding how a switch to E-governance will affect constitutional rights to personal information. Common databases are a large movement within the technological city agenda, and e-governance generates common databases concerning how 'all information about private life, income, family, property, and the other aspects of person's life can become a source of danger and sensibility … and it may become a reason of manipulation and the synonym of the society of control' (Ishkineeva et al. 2015, p. 71). Many technologically smart cities such as London are therefore implementing city-wide cyber security strategies which co-ordinate responses to cyber threats to businesses, public services, and citizens in order to strengthen trust on how publicly owned data is used (Greater London Together, 2018). Likewise in London, the National Health Service (NHS), and other public services are building co-partnerships with universities and the technology sector to create a London Counter Fraud Hub (Greater London Together).

Smart mobility is also a term which is incorporated in the technological smart city, representing 'mobility, broadly defined, the components of which comprise not only the traditionally understood transport of people and goods, but the dissemination of information by digital means' (Orlowski and Romanowska, 2019, p. 5). Smarter transport systems include Intelligent Transportation Systems (ITS), bicycle systems, parking, car-sharing and public transport which can often be managed using apps that channel live data and disseminate this across phone apps

and billboards to offer live and up to date information on transportation services within the city (Orlowski and Romanowska, 2019). Other smart technologies include short messages services (SMS) and wireless connectivity throughout the city, network connectivity from home and in public space, such as Wi-Fi, and Bluetooth, sustainable transport systems and mobility, and open data sources (Abusaada, 2020).

2.4 The Institutional Smart City

The smart communities movement occurred throughout the 1990s to enhance the number of users accessing ICT (Moser, 2001). Nam and Pardo define a smart community as 'a community broadly ranging from a small neighbourhood to a nation-wide community of common or shared interest, whose members, organisations, and governing institutions are working in partnership to use IT to transform their circumstances in significant ways' (2011, p. 286). Smart community initiatives developed in response to issues such as pollution, loss of historical places, high costs of public facilities, worsening traffic congestion and loss of open space (Ingram, 2011). The institutionally smart city therefore functions to combat urban problems, based on forms of governance with multiple stakeholders involved and consulted in decision making processes (Nam and Pardo, 2011). In combination with the technologically smart city, an institutionally smart city allows data to be shared in the virtual world, and communications to take place online, connecting multiple stakeholders through online systems, changing the face of civic engagement (Nam and Pardo, 2011).

Kaika (2017) argues that new urban agendas should engage with citizens beyond those who are usually consulted about aspects in the urban environment; beyond planners, designers and policy makers, technocrats and NGOs to citizens who are often side-lined, in a process of seeking dissensus. Kaika argues that for cities to reduce spatial inequality, and become institutionally smart, governments should seek for dissensus in meetings with stakeholders, as dissensus and disagreement acts as a living indicator for what urgently needs to be done, and where (2017). Likewise, Marcuse (2009) advocates for a diversity in stakeholders involved in institutional decision making, as financial powers, real estate owners and speculators currently have a disproportionate right to the city versus those who are alienated or directly oppressed. Therefore, both Kaika (2017) and Marcuse (2009) use critical urban theory to suggest that an institutionally smart city is one that dismantles the political hierarchy of state and corporate power, to extend to those who are often powerless and excluded from decision making processes, creating equity, democracy and unlocking the full potential of citizens capabilities.

Marcuse (2009) also advocates for politicisation in local governments, whereby attention is brought to day-to-day government decision making, and discussions can take place that challenge this. Locals can reassert power over who controls and dominates civic and public life, as empowerment is a huge proponent of the institutionally smart city (Heitliner et al., 2019).

Heitlinger et al. discuss how citizen participation in agriculture creates local agricultural communities using ICT, as technology allows for more voices to be introduced into the debates about what sustainability means, and how local agriculture can become sustainable (2019). The local agricultural community gather at the farm in Bethnal Green, in Tower Hamlets where local residents work together to maintain the material commons, and simultaneously use technology to create an urban digital commons where citizens can express their own understandings of sustainability, and sustainable smart cities (Heitlinger et al., 2019). This is a form of 'organising without organisations', which happens when civil society are provided with the digital necessities to collaborate separately to traditional organisational structures, forgoing top-down interference in local initiatives, and creating bottom-up solutions (Shirky, 2009). Similarly, Horings et al. (2021) discuss the transitions made in the last decade to forms of collective citizen engagement like the example above, whereby citizens can be witnessed taking matters into their own hands and using their own ideas and needs to actively shape the places they live in through a type of tactical urbanism (Lydon and Garcia, 2015). Civic initiatives nevertheless also offer public planners and local businesses the opportunity to adapt to, and learn from, the activities undertaken by citizen initiatives, especially in a fast-changing society. However, Nienhuis et al. (2011) stress that not all locals display a natural interest in participating in neighbourhood affairs or initiatives, these are known as sideliners who have a selective interest.

Tadill and Fasley (2019) conducted a survey with smart city stakeholders and experts across the world, and 71% of respondents identified smart city technologies as a priority to support civic engagement. However, only half of respondents felt that enough funding was being granted to civic engagement in smart city projects, and 72% of respondents ranged their budgets for civic engagement between 0-5% which was in the lower quartile (Tadill and Fasley, 2019). Therefore, despite increased advocacy for citizen collaboration initiatives, tactical urbanism and bottom-up planning in smart cities, this is not yet fully integrated into smart city planning.

2.5 The Human Smart City

Creativity is a buzzword for the smart city, and so education and learning play a significant role in smart city agendas, in addition to social capital and intellectual capital (Nam and Pardo, 2011). The human smart city places emphasis on citizens lived experience of space and everyday life, place attachment and social life, which all link to a sense of community in place. If technology is integrated into these networks and communities to increase social ties and allow community members to interact virtually too, then this is known as a smart community (Purcell, 2002). Smart communities are defined by Lindskog (2004, p. 3) as 'a community ranging from a neighbourhood to a nation-wide community of common or shared interest, whose members, organizations and governing institutions are working in partnership to use information and communication technologies to transform their circumstances in significant ways'. Smart communities are a modern-day extension of Gehl's early ideas of life between buildings (1987). Life between buildings is the notion that when someone starts to do something in public space or within the community, often other people join in, either to experience what others are doing, or to participate themselves, which creates a rich cycle of life between buildings and social interactions (Gehl, 1987). Similarly, there can be a negative cycle of decline of life between buildings, as if people would rather stay inside and use their smart phones, then there are less activities in public space, and consequently less people on the streets (Gehl, 1987). Smart cities strive for life between buildings, but also for virtual online communities leading to what is referred to by Kim and Kaplan, (2004) as a 'sense of community'.

'Sense of community' includes a shared emotional connection, feelings of attachment and belonging of an individual in a community and is equivalent to the social capital of a community (Pooley et al., 2005). If there are high levels of life between buildings, it is likely there will also be an increase in neighbourhood social capital and sense of community. Smart communities encourage active and inactive individuals in the community to jump online to share local knowledge and experiences on virtual platforms, whether this be on social media pages, or in local focus groups (Stratigea, 2012). Thus, social capital is increasingly being shared not only between buildings, but also online, where the digital and physical are emmeshed, producing the right to the hybrid city (Heitlinger et al., 2019).

2.6 Ageing in the Smart City

Cities are undergoing geographical and demographic change, as they are both increasing in older adults, and increasing in urban populations (Torku et al., 2020). Life expectancies have steadily increased over the years, subsequently, populations in most countries are growing older (World Ageing Populations, 2019). In 2019, 9% of the population was above the age of 65, and this is set to increase to 23% by 2100 (World Ageing Populations, 2019). Rapid rates of urbanisation will also mean that 68% of the population will live in Cities by 2050 (Urban Areas, 2018). This population ageing, coupled with urbanisation is defined as urban ageing, which inevitably has critical implications for developing smart cities (Marston and van Hoof, 2019). The increase across the globe in urban ageing will offer cities opportunities, and can be viewed as successful human development, but it will however pose new challenges to urban governments. Therefore, Buffel and Phillipson (2016) argue that smart cities must keep in mind and prioritise the future and current needs emerging from an increase in urban ageing.

The World Health Organisation promotes what is termed age friendly cities (AFC). AFCs are defined as 'policies, services, settings and structures support and enable people to age actively by: recognising the wide range of capacities and resources among older people; anticipating and responding flexibly to ageing-related needs and preferences; respecting their decisions and lifestyle choices; protecting those who are most vulnerable; and promoting their inclusion in and contribution to all areas of community life' (WHO, 2007, p. 5). Active Ageing in smart cities is therefore crucial to the maintenance of AFC's and refers to the ability of ageing populations to be physically active and play an active role in civic and social affairs (Buffel et al., 2012). Smart cities also aim to be AFCs, and smart city indicators are not only goals, but tools to create AFC's, and Winkowska et al., (2019) propose a model for merging smart age friendly cities and communities.
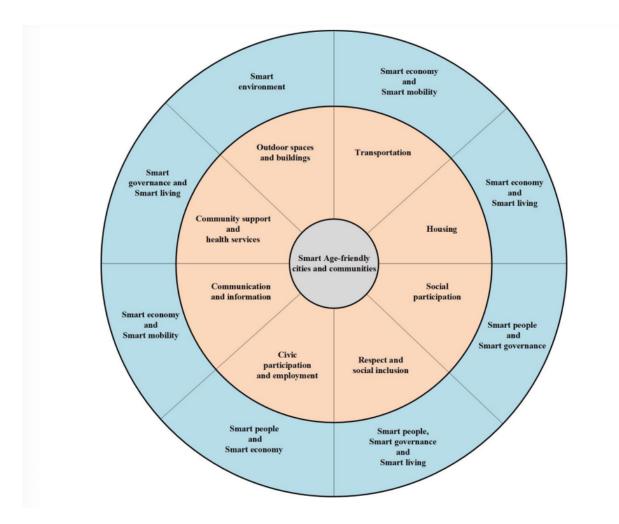
Figure 2: Smart Age Friendly Cities (Winkowska et al., 2019)

The inner orange ring demonstrates the requirements of an AFC's according to the WHO, and the outer blue ring consists of the indicators of a smart city, which have been appropriately aligned with the criteria for AFC's. Overlapping criteria include a smart economy and mobility and transport, smart people and governance (civic participation and learning), and a smart environment.

ICT and the integration of technology into ageing smart city residents' life is also a crucial component of Nam and Pardo's sustainability model (2011). Skouby et al. (2014) unpack how ICT is supporting ageing citizens, arguing that smart technology increases access to public services from the home environment, but also allows for social spaces usually found outside of the home, to be replicated inside of the home through online communications spaces. Using ICT inside of the home for elderly people can 'provide personalised health care, social services and intelligent community services' (Skouby et al., 2014, p. 2). Von Hippel (2009) argues that for technology to be successfully integrated in ageing populations' everyday lives, innovation

should be, what is termed 'democratised'. This means that for citizens to be empowered through smart technologies, smart city projects run by public and private stakeholder must place citizens at the heart, in a concept called 'Cityzentrism', which sees older residents as agents of change. Involving older residents in smart city projects will likewise support ageing residents' quality of life and social interaction (Von Hippel, 2009). Von Hippel (2009) states that research shows that this interaction can help older adults sustain excellent emotional and physical health, and good cognitive and mental health, in the face of age-specific barriers such as limited mobility, visual and hearing impairments.

Torku et al. (2020) however stress that adopting age friendly technology is often very arduous, despite the obvious benefits of it. The successful adoption of these technologies is often impacted by how older or elderly residents perceive the usefulness of them, and the context in which they are being introduced (Rogers, 2003). Remillard-Boilard et al. (2017) similarly argue that if smart technologies are not carefully implemented and analysed in smart cities, then they may pose threats to the extent of ageing residents' participation in the spheres of daily life (Torku et al., 2020). Remillard-Boilard et al. (2017) posit that the introduction of spatial reconstruction in smart city life may hinder greying populations from participating in social life, as often smart cities and technology attract gentrifiers and increasing urban populations. This can further heighten the risk of exclusion among older residents, often perpetuating feelings of economic or cultural exclusion, changing both the material (buildings) and immaterial essence (sense of belonging) in the city (Remillard-Boilard et al., 2017). Smart cities in this way bring both challenges and opportunities for an increasingly ageing demographic.

2.7 A Case Study of Ageing in the Smart City: Oulu, Finland

Finnish cities are leading the way in sustainable urban smart city development and urbanisation, and six cities in Finland are now classed as smart cities (Dimitrov, 2019). They are part of the 6Aika programme (6 cities), including Helsinki, Espoo, Vantaa, Turku, Tampere, and Oulu, which are collectively home to around 30% of the Finnish population (Dimitrov, 2019). The Six City Strategy is implemented in different projects which range from smart mobility, health and well-being, circular economy and energy. This sub-section will explore the smart city agenda in the city of Oulu.

The City of Oulu in Finland prioritises elderly people in terms of increasing their access to services (Koistinen et al., 2013). Towards the end of the 2000's the city began to develop, and computing infrastructure was deployed down-town, with new opportunities for citizen interaction within the city (Skouby et al., 2014). The city has put together certain services for elderly citizens. Vanhusneuvosto for example is a collaborative city council for the elderly with frequent meetings to collect information, and maintain active communication (Skouby et al., 2014). The city council likewise provides a collective health service platform called OMA which maps the needs of the care recipients by visiting them in person or online to diagnose the situation and determine the correct type of support system they need (Dimitrov, 2014). This could include services at citizens' houses, which include education in citizens' homes to give them basic skills for using the internet and ICT and providing financial assistance for this service. COVID-19 notably did not allow for this type of service to take place due to social distancing rules, and therefore many elderly people were unable to use this service increasing feelings of technological exclusion for some (Abusaada, 2020).

On the other hand, technology such as the SILVER project assesses how new technologies and solutions can assist older residents in every-day life using robotics that can allow elderly people to continue living independently at home, whilst receiving necessary help from robots (Skouby, et al., 2014). Similarly, the city council in Oulu has suggested an Integrated smart home and smart city-based infrastructure. This is illustrated in figure 3.
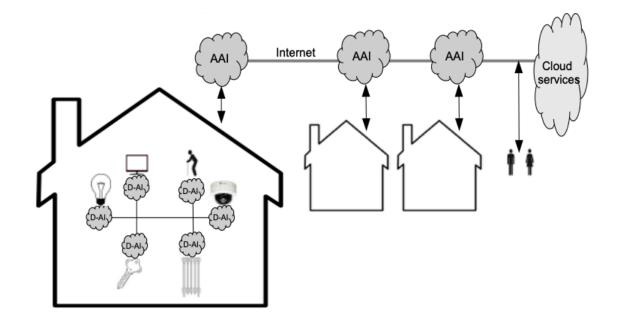
Figure 3: Modern ICT based infrastructure for future smart cities (Skouby et al., 2014)

It is made up of a collection of smart homes which are equipped with internet and technology, and this includes, intelligent lighting, heating, Wi-Fi, security and entertainment systems. AAI is a system that all homes are equipped with, that controls home services and security, supporting those with potential physical impairments (Skouby et al., 2014). These technologies are used to promote active ageing at home, as usually active ageing refers to mobility, but it also importantly includes the ability of citizens to stay creative and have access to public and commercial services from home (Rocha et al., 2019).

Citizens of Oulu were asked about the development of new public welfare services using user driven methods, a vital institutional component of Nam and Pardo's (2011) model of smart cities. Elderly members were recruited for online discussions and evaluations of everyday matters, summoning 550 participants who inputted into decisions around interactive large displays in public locations, and ideas (Skouby et al., 2014). According to Suopajäryi (2018), there are laws in place in Finland to ensure participatory planning includes elderly people, such as an obligation of municipalities to include older adults in the decision and design processes of the public services that are made for them (Skouby et al., 2014). Suopajäryi (2018) therefore argues that 'the best way for all citizens to include 'smart-ness' in their everyday lives should be carefully considered, rather than how citizens should adapt their lives to these technologies. Knowledge or the lack of it, are central in the concept of urban assemblages, as it constitutes power imbalances in cities' (Suopajäryi, 2018, p. 95).

2.8 Smart City Critics

This literature review has outlined several critiques of smart city policies, including issues surrounding cyber security (Ishkineeva et al., 2015), the impacts of COVID -19 (Abusaada, 2020), the exclusion of alienated members of society from participating (Marcuse, 2009), and neoliberal agendas which increase spatial inequality (Hollands, 2020).

Kaika (2017) Barry (2020) and Hollands (2020) argue against the development of smart cities, on the basis of that they lead to the systematic exploitation of less economically developed regions. Kaika unpacks how smart cities rely on forced labour, as coltan, a metal found in a lot of smart city infrastructures (including phones, laptops and Ipads), 'is mined by hand under what the UN repeatedly reports to be a highly organized and systematic exploitation of both local nature and local people'. (Kaika, 2017, p. 90). This therefore increases spatial inequality

globally. Barry (2020) likewise expresses concern over smart city narratives which place economic growth at the centre of city planning, arguing that human well-being is jeopardised in a pursuit for economic growth. Barry (2020) argues that the only way to achieve a high quality of life, is to decouple economic growth from notions of high quality of life, advocating for a degrowth perspective. Definitions of smart cities that encompass both economic growth and high quality of life such as Caraglui et al's (2009) which aims for sustainable economic growth and a high quality of life, are criticised as oxymoronic and unachievable.

Heitlinger et al., (2019) similarly argue that smart cities that ignore participatory planning and governance as a pillar of smartness, use data in a way where the algorithms are steered towards increasing profits for huge corporations, rather than to increase levels of civic participation. Calzada and Cobo do however argue that smart cities are making progress to resist technocratic determinism through bottom-up, community-driven, low-cost, local innovative efforts to "increase transparency, accountability, participation, and collaboration" (2020, p. 3). Hollands on the other hand contests this, as whilst many measures such as successful ICT participatory projects can still be viewed as progressive, they are still neo-liberal attempts to incorporate locals into the entrepreneurial city, as opposed to incorporating entrepreneurial smart cities into the lifestyles and needs of local people (2020). Questions of spatial inequality, inclusion and economic growth also link back to Marcuse's concerns over the right to the city (2009). He argues that critical urban theory should be about exposing the roots of dissatisfaction and inequality within cities. The directly oppressed are oppressed along the lines of race, ethnicity, gender, lifestyle, and often labelled as excluded, the alienated are those who feel alienated and side-lined within the city but are not directly oppressed (Marcuse, 2009). Ageing populations, and age itself are a sub-group within the alienated, and Marcuse argues that this group should make common cause in the pursuit in the 'Right to the City', if neoliberal and capitalist notions lead to alienation. Smart cities are multifaceted, and every one differs in their priorities, so it is unfair to generalise that smart cities always lead to alienation of elderly groups. This study will unpack and explore some of these criticisms in relation to the smart city policy undertaken in Tower Hamlets, London.

3 Methodology

3.1 Research approach

The aim of the research undertaken, was to assess how residents aged 60 and over, living in the London Borough of Tower Hamlets, experienced smart city initiatives introduced by the borough, in regard to technological, institutional and human-based interventions (Nam and Pardo, 2011). A mixed-methods research approach is used, whereby quantitative data (surveys), and qualitative data (interviews and policy document analysis) are analysed and cross-compared to provide both an extensive and simultaneously intensive overview of how smart city policies affect ageing residents within Tower Hamlets. Mixed methods research can provide more accurate conclusions, as if the results from qualitative and quantitative data are merged, the validity and reliability of the corresponding results will create stronger conclusions than those using just one research method (Lund, 2012). Policy documentation was provisionally studied prior to the creation of the surveys and interview questions to understand the smart city policies taking place in the borough, and subsequently steer survey and interview questions towards these policy topics and initiatives in order to make the research more grounded and relevant to the Borough of Tower Hamlets, and the initiatives happening in the local areas, as opposed to London as a whole. This mixed-methods approach also allows for data triangulation to occur between surveys, interviews and policy documentation, whereby there are a combination of methodologies used to study the same phenomena, to see whether collected data corroborates or confirms the results from another method of data collection (Denzin, 1970). This chapter explains each individual method used to collect data, and how the data was analysed. Section 3.2, 3.3, and 3.4 outline the research methods of surveys, interviews, and policy document analysis with an integrated narrative regarding ethics, positionality and data protection. Section 3.5 outlines the case study of Tower Hamlets, and why this area was selected for this research study.

3.2 Surveys

As outlined throughout the literature review, the internet is increasingly a tool for carrying out spatial and social scientific studies, especially with the development of online surveys that are accessible through QR codes and URL links. Van Selm and Jankowski (2006) note that using the internet for survey purposes among young people may result in higher response rates, in comparison to older respondents. This research used an online survey made on Qualtrics and

was distributed primarily through a URL. Survey questions can be found in appendix 1, and consist of 21 questions, 19 of which are closed-ended questions, and 2 of which are open-ended, giving respondents the opportunity to disclose any volunteering work or participation they have in government decision making. The survey format followed a line of questioning that pertained to technological initiatives in the borough, institutional initiatives and community initiatives, in line with Nam and Pardo's (2011) conceptual model, using case study specific examples such as the Ideas store in Tower Hamlets, and community ambassador schemes found in the policy documentation analysed. These are outlined below in themes; however, all questions are interconnected and pertain to more than one theme. Open-ended questions are excluded from the table below but can be found in appendix 1.

Table 1: Theming of Survey Questions

Theme	Question
Demographic characteristics:	Q1 Please identify your gender
	Q2 Please specify your age
Prior knowledge	Q3 Have you heard of the term 'smart city' before?
	Q4 Have you heard of any smart city initiatives happening in the borough?

Technology	Q5 How often do you have access to the internet on any device (could be a phone, laptop, computer, iPad)? Q6 Do you go online to fill in forms for government services such as housing benefit, parking permits, council tax, disability benefits, passports, visas and civil claims? Q7 How easy do you find it to navigate these online services? (housing benefit, parking permits, council tax, disability benefits, passports, visas and civil claims) Q8 Do you use the internet and digital technology to access care services, medical advice or formal care? (could be online prescriptions, appointments etc.) Q9 How easy do you find using the internet and digital technology to access care services, medical advice or formal care? Q10 If you use public transport, what method of payment do you use? Q12 Have you ever used the Ideas Store in Tower Hamlets to access online services such as books magazines and newspapers or to use the Digital Hub?
Institutions / Civic Participation/ Governance	Q11 How do you prefer to contact Tower Hamlets council? Q13 Have you ever attended a free digital skills training programme session offered by the borough? Q16 Have you been part of any citizens' panels, juries, neighbourhood committees, forums, or community focus groups, set up within Tower Hamlets?
Human / Communities	Q14 How many community / local events have you attended this year so far? (Could be street parties, local festivals, parades, community social groups etc.) Q15 Do you ever feel lonely in this community? Q18 Have you heard of the Community Ambassador scheme where local residents support vulnerable older people in their local area? Q19 Do you volunteer in anyway in the local community, or are you the recipient of volunteering work?

The total number of survey respondents were N= 200, and notably females were over-represented in the study compared to their male counterparts 27% < 68%, which does not necessarily reflect the general population of Tower Hamlets

Table 2: Survey Gender Distribution

Gender	Percentage	Total
Male	68.00%	136
Female	27.00%	54
Non-Binary / Gender neutral	2.00%	4
Prefer not to say	3.00%	6
Total		N= 200

Critical urban theory could suggest that the reason for this, is women's voices are lacking in policy discourse, and therefore women are more likely to be passionate about their opinions and views being heard by wider society, and are more likely exercise their right to the city when provided an opportunity (Marcuse, 2009). There was a relatively representative sample of age ranges across the borough as displayed in the table below.

Table 3: Survey Age Distribution

Age range	Percentage	Total
18-26 years old	7.50%	15
27-37 years old	14.00%	28
38-48 years old	14.50%	29
49-59 years old	19.00%	38
60-70 years old	23.00%	46
71 -80 years old	15.00%	30
80+	7.00%	14
Total		N =200

45% of respondents were in the 60+ age range in comparison to 55% of respondents in the under 60's category. The survey was open to all age ranges in order to draw a point of comparison between the responses of the 60+ community, versus under 60's to critically assess how smart city policy impacted both groups, and what these similarities or differences were. Initially, because the survey was published online, there was only a small handful of over 60's taking part, but no 70+ citizens, which is problematic for a study on ageing cities. Kaye and Johnson (1999) comment that there will always be a sampling bias in internet surveys, as a random sample of internet users is not possible, as limiting factors include age, limited internet access, and lack of digital skills. I therefore adapted my survey distribution method to overcome the low numbers of 60+ residents taking the survey, and attended a Young at Heart club coffee morning, and a Parmiter's school pensioners charity event in order to distribute 50 paper surveys to age 60+ residents, and this data was then entered manually into Qualtrics. I found out about these charity events through snowball sampling, whereby networks of people I contacted in the borough were able to advise me as to when and where events were happening that age 60+ residents would be attending, and these interviewees then told their friends about the project, and so on (Jones et al., 2013).

Access to the survey was unrestricted to anyone who used the link, however an introduction to the survey explained that respondents must be living in the Borough of Tower Hamlets, and they were provided with a summary of the research, and an email address for any further questions. The survey link was distributed through emailing: contacts living in Tower Hamlets, a contact running the Tower Hamlets news outlet, local councillors, local community groups, and Tower Hamlets council. These respondents shared the URL via email and social media to others create a snowball sample (Etikan et al., 2016). The bias in a snowball sample should be made clear, as sampling units are not independent, i.e., respondents are generally in each other's networks, and can fail to reach those outside of this (Etikan et al., 2016). I also circulated a QR flyer. This could only be circulated online, as the circulation of flyers in public space in Tower Hamlets requires a license from the council (appendix 2).

3.3 Interviews

Semi-structured interviews with residents aged 60 + living in the Borough of Tower Hamlets were carried out to supplement the surveys and policy document analysis through data triangulation (N=8). Questions asked were once again based on the theoretical framework outlined by Nam and Pardo (2011), and enquired around the themes of technology, institutions

and society (appendix 3). Whilst there was a set list of questions, these were adapted during the interviews based on new and interesting topics raised by research participants, and differing levels of comprehension, and are sorted into themes pertaining to each question in table 4.

Table 4: Interview Questions grouped into Nam and Pardo's Framework (2011)

Theme	Questions
Prior Knowledge	Q1 How would you define a 'smart city', what do you think of, what does it mean to you?
Technology	Q2 Do you use technology on a day-to-day basis? For example, if you are travelling maybe, filling in forms, returning things to the council, getting in contact with the council etc.?
	Q3 How easy or difficult do you find operating the online services that the borough offers (parking permits, pension, UC, services, council services)?
	Q4 Do technology / smart city initiatives make you feel included?
	Q5 Do you use the internet and digital technology to access care services, medical advice or formal care? How easy do you find this?
	Q6 Do you feel that your cyber security and privacy is protected when you use smart technology?
	Q7 Does technology support your mental and physical well-being, or do you feel otherwise?
	Q14 Have you ever made use of the Open Access data sources, or the idea store in Tower Hamlets?

Institutions / Civic Participation/ Governance	Q9 The smart city is also about engaging with local people, do you feel that the borough of Tower Hamlets support social participation in local events and with other local people - Are that events that you attend where you are asked for your opinions? Or when you can chat to others? Q11) Have Tower Hamlets ever offered free basic training in how to use their online systems, and if they did would you take this up? Q13 Are there opportunities for you to input into decision-making process is within the community or the borough? do you have the chance to have your say on community issues?
Human / Communities	Q8 In what way, if any does technology improve your social inclusion? Any apps you use, services you use that bring you closer to people? Q10 Are there any community events that you attend, and if So what are they, and are they organised digitally or how are they organised? Q12 Smart city initiatives were introduced into the borough in in the last five or so years, and London in general in the last 10 years. have you noticed an impact of this on your daily life? This could be increasing social activities or increase in digitalization?

As Longhurst (2003) notes, cold-calling as a method for selecting interview participants is no longer a popular method, as there is both a high safety risk associated with knocking on strangers doors, but also it would be ethically questionable to knock on elderly residents' doors without giving them pre-warning of a visit, especially because of concerns surrounding COVID-19 which heighten risk-factors for interviews carried out inside, especially with elderly people who are a higher category risk group (Bettlingtier and Sharifian, 2016). Given this, and also given that a high proportion of over 60's, especially over 70's are not online, I attended a coffee morning run by Young at Heart pensioners group, and a Parmiter's pensioners charity event in order to enlist participants for the interview. Participants were provided with a research summary, detailing the goals of the research, notice that the interviews were going to be recorded and transcribed, the anonymity policy, and information regarding the dissemination of completed piece of research (appendix 4). They were asked to read and understand the document before signing two consent forms, one for myself and one for the participant, and were given the opportunity to ask questions about the research, and an email address for any further questions in line with protocols for informed consent (Alt-White, 1995) (appendix 5) .

Pseudonyms were given to each participant to ensure anonymity, and recordings were stored in a password protected laptop, in a password protected file to ensure only the research co-ordinator had access to the original recordings (De Witt et al, 2006).

Interviews were recorded, transcribed, and analysed using a content analysis through deductive coding which once again was based on the components of technology, institutions and human society outlined by Pardo and Nam (2011). Transcripts were analysed through a thematic analysis approach using the six steps adapted from Clarke et al. (2015). The first phase involved reading and re-reading the transcripts to familiarise myself with the data. The second step included formulating codes for the transcripts and organising the data into different groups and codes. The third phase looked at finding sub-themes, and how these may combine to form overarching themes. The fourth phase looked at the relationships between codes, and whether some were overlapping, for example fitting into both technology and institutional governance. Finally, each theme was defined and named, and sub-themes were outlined (Clarke et al., (2017). The resultant themes and quotations will also be used to support the analysis section of this research.

Sub-themes are displayed in table 5, and in appendix 6 where the transcripts are located (Schmidt, 2004). These codes and sub-codes were also used to deductively code the policy documents outlined in section 3.3.

Table 5: Deductive Codes and sub-themes for interview transcripts and policy documents

Codes	*Sub-themes*
Technological City	Transport, mobility, contactless
	Phones / access to the internet
	Online form-filling and cyber security
Institutional City	Participation in local decision making
	Accessing NHS Services
	ICT training sessions
	Ideas Store
Human / Social City	Community events / feelings of community
	Feelings of inclusion and exclusion

Interviewees were primarily female, as more females attended the local charity events that were visited, which once again, similarly to the survey participants, will need to be considered, as the sample size is not reflective of the general population of Tower Hamlets. The relevant demographics of research participants are demonstrated in table 6.

Table 6: Demographic of Interview Participants

Interviewee	Age	Gender
Participant 1: Marie	80+	Female
Participant: 2: Josie	70-79	Female
Participant 3: Carol	70-79	Female
Participant 4: Marvin	60-69	Male
Participant 5: Rose	80+	Female
Participant 6: Tally	80+	Female
Participant 7: Dave	70-79	Male
Participant 8: Angela	60-69	Female

Females disproportionately make up 6 of the sample size (N= 6), whereas males make a much smaller proportion of the sample (N= 2). On the other hand, there was a relatively even split between the age-groups represented as shown in table 6, with 3 interviewees over 80, 3 interviewees in their 70's, and 2 interviewees in their 60's

All interviews were conducted in a place of choice for interviewees, near to the main event they was attending, this was on garden benches in public gardens, and in a café where interviewees felt most comfortable, as they represented safe and familiar environments for elderly people. After the semi-structured interviews with older people, participants were invited to undertake a survey either online or in person (Longhurst, 2003). A small number of older people did not wish to participate in interviews due to health-related problems, mobility issues or because of their busy schedules. Interviewees did not receive any reward for their participation in the study, and all audio recordings were recorded and transcribed in English.

3.4 Policy document analysis

Document analysis is the systematic procedure of reviewing and evaluating documents, and in this case, all analysed documents were computer-based government documents (Bowen, 2009). Document analysis requires data to be examined and interpreted to elicit meaning, which is inherently affected by a researcher's positionality. Positionality refers to a researchers position within the wider world, and the epistemic knowledge they align with, which is inherently constituted by the environment a researcher lives in, and the cultural and moral norms which inform a researchers world view. Cloke et al., (2000) argues that researchers must try being aware of their own positionalities, so they can understand how their epistemology impacts the meaning that they read into data, especially qualitative data which is undoubtedly more subjective than quantitative. Being aware of one's own epistemology is termed being reflexive (Cloke et al., 2000). In the same manner as deductive interview coding, eight government policy documents were selected. Data from these was then summarised and organised into themes and sub-themes which were the same used in the interviews (table 5) (Bowen, 2009). The policy documents studied, and the associated governmental organisations that published them are listed in table 7. Six are Tower Hamlets council publications, and other two are publications of the Smarter London Board and The Greater London Authority. The Smarter London Board is run by the Greater London Authority, who guide the introduction of smart city policies within local boroughs, but different boroughs are free to operationalise smart city policies in different ways, and exercise some degree of autonomy (Pilgrim, 2006).

Table 7: Policy Documents Analysed

Department of Issue	Publication Name & date	Content Analysed
Smarter London Board	The Smart London Plan (2013)	Smart city policies in London covering: Open data and transparency, collaboration and engagement, technological innovation and resource management
Greater London Authority	Greater London Together, Smarter London Together (2018)	Details commitment to better digital services, open data, connectivity, digital inclusion, cyber-security, innovation, and the growth of London's population to 11 million by 2050.
Tower Hamlets Council, Corporate Research Unit	Deprivation in Tower Hamlets (2015)	Distribution of deprivation and poverty in Tower Hamlets

Tower Hamlets Council	Tower Hamlets Strategic Plan 2020-2023 (2020)	The growth of the ageing population in Tower Hamlets, residents' access to internet, collaboration in local issues, moving government services online.
Tower Hamlets Council	Tower Hamlets Community Engagement Strategy (2018)	Engaging local citizens, increase sense of belonging and community spirit, ensure digital access, and guarantee that citizens have the power to influence decision making.
Tower Hamlets Council	Communications and Digital Inclusion (2014)	Access to the internet between different demographics including gender and age. Digital exclusion and social media.
Tower Hamlets Council	Digital Inclusion Strategy (2021 -2024)	Impact of COVID-19 in digital usage, digital exclusion, ICT education, cyber security, digital exclusion of elderly and low-income groups, digital buddying schemes.
Tower Hamlets Ageing Well Department	Ageing well in Tower Hamlets (2021)	Loneliness, NHS and health services, Community based activities for active ageing, focus groups for elderly, digital inclusion, and voluntary sector.

3.5 Case Study: Tower Hamlets

To assess how smart city policy affects ageing residents, this research looked to London, as not only do I live in London, but London is a self-proclaimed smart city on the basis that it is the 'tech capital of Europe – by size, level of investment and the presence of more than a third of Europe's billion-dollar unicorn companies' (Greater London Together, 2018, p. 8). Living in a city that is also the subject of your research requires a high level of reflexivity to understand how, as a researcher, this may affect how I interpret results, phrase questions and carry out the research in general. Therefore, a policy document analysis was necessary, as through consulting 8 government documents I compiled a wider perspective of the initiatives being undertaken in London as a whole, and relied less on prior, preconceived notions of London as a smart city from my own observations.

Tower Hamlets is one of 32 London Borough's (Pilgrim, 2006). A borough is an administrative division, which can be regarded as its own town, with its own government. Governments in boroughs have some level of autonomy, however they are generally governed by the Greater London Authority (Pilgrim, 2006). Tower Hamlets is situated in the East of London as depicted in the figure below.
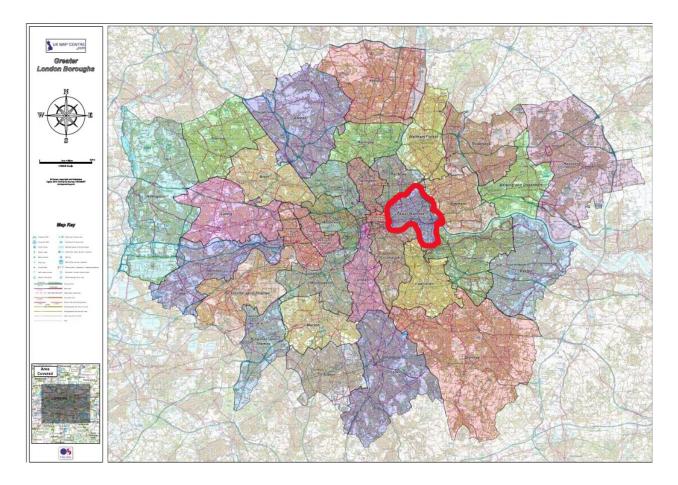
Figure 4: The Borough of Tower Hamlets, London Boroughs Map (UK Map Centre, 2022)

Figure 4 illustrates the geography of Tower Hamlets, especially notable is its proximity to the River Thames, the lack of green space, and the density of housing.
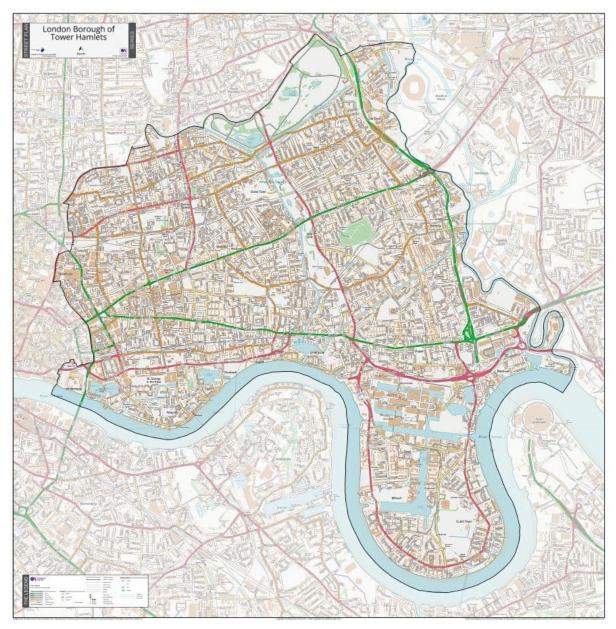
Figure 5: The Borough of Tower Hamlets (Map L, 2022)

Around 8% of residents living in Tower Hamlets are age 60+ which is substantially lower than the national average which sits at 22%, which reflects the levels of gentrification happening in the borough, as young to middle-aged middle-class workers migrate to Tower Hamlets for its close proximity to central London, which can leave residents 60 and over in the minority group (Borough Profile, 2022). However, it is anticipated that the number of older people living in the borough will increase to 26,700 by 2030 which presents a desperate need for the smart city policies introduced into the borough to be inclusive of an ageing and growing elderly demographic (Tower Hamlets Council, 2020). This is illustrated in figure 6, which shows that over the next decade, the age structure of Tower Hamlets is expected to change slightly, with

the proportion of young adults in their twenties and thirties decreasing, and the proportion of older adults increasing by 2026 in both London as a unit, and Tower Hamlets.
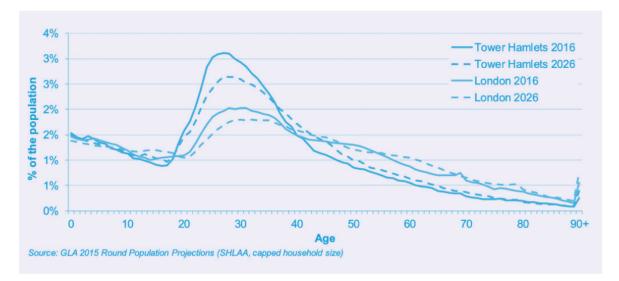
Figure 6: Changing age structure in Tower Hamlets 2026 (Tower Hamlets, 2021)

Tower Hamlets is also the 5th most deprived borough in London (Tower Hamlets Council, 2015), and over half of older people in the borough live in income deprived households, with a higher proportion of older people living in social housing in Tower Hamlets than in London, standing at 64% - 69% of over 60's (Tower Hamlets Ageing Well Department, 2021). In this way, some ageing residents may be, or feel excluded not only because of age, but because of income disparities which perpetuate intersectional inequalities (Tower Hamlets Council, 2021).

The following chapter will analyse Tower Hamlets' smart city policy adoption using the eight aforementioned policy documents, and examples of initiatives selected from these, based on the themes of technology, human and institutional smart city policies enacted in the borough.

4 Data & Data Analysis

Section 4.1 will address research question 1, entitled 'How do smart city initiatives based on technology / digitalization affect ageing residents in Tower Hamlets?'. This assesses the use of technology as a pillar of smart city policy, and discusses the sub-themes of transport, access to the internet, and online form-filling and cyber security.

Section 4.2 will address research question 2 entitled 'To what extent do smart local government, and public institutions in Tower Hamlets harness over 60's participation in decision making within the borough?'. This section of analysis will unpack the role of age 60+ citizens in local decision making, and their ability to, or lack thereof, to shape public services. Analysis includes mention of the NHS as a public institution, and how new online services affect age 60+ residents. Lastly, government funded ICT and digital training in the Idea Store in Tower Hamlets will be discussed, and its effectiveness and uptake analysed among ageing residents.

Section 4.3 corresponds to the human side of Nam and Pardo's theoretical framework for the smart city (2011) and is based on research question three entitled 'In what way, if any, do smart community initiatives and volunteering initiatives engage and include ageing populations?'. Within this topic, sub-themes include residents aged 60 and over's attendance at community events, feelings of community and belonging in the borough, feelings of inclusion or exclusion, and the impacts of COVID-19 on the community and human side of smart city policy. It is worth noting that all three research questions, and all three aspects of Nam and Pardo's smart city model (2011) (technology, institutions, and society / humans) are interconnected and cannot be separated from one another. Therefore, all sup-chapters will be linked to one another, and are not discussed in a neat mutually exclusive way.

4.1 The Technologically Smart City

Research findings discussed in this section begin by addressing the shift that the council of Tower Hamlets have made towards moving services online, including form-filling and new online modes of contact, and cross-compare these policies with the findings from interview and survey participants, especially monitoring how this shift has affected older residents in the borough. Following this, borough initiatives, and London wide policies that promote the use of 5G, and internet access for all households to achieve digital inclusion strategies will be triangulated with research participants experiences with this technology, probing questions about what technology they use or don't use, and why. Finally, transport initiatives undertaken by Transport for London (TFL), will be outlined in combination with the move towards cashless societies, and how this affects older residents living in the borough.

4.1.1 Online form Filling and Cyber Security

The Smarter London Board sees data as

'the backbone to planning and operating cities' (2013, p. 24).

Data as central in smart city planning is an infrastructure criticised by both Kaika (2017) and Hollands (2020) for perpetuating spatial inequalities. Nationally, and within Tower Hamlets there has nevertheless been a push to move data collection online, to create an initiative referred to as a

''Digital by Default' programme which makes it easier for residents to access digital services (and as a result helps to improve efficiency)' (Tower Hamlets Council. 2018, p. 28).

These digital services take the form of online form-filling, on a platform called 'My Tower Hamlets Hub' which provides access to

'Managing council tax, parking permits, planning and licensing applications, refuse collection, complaints and freedom of information requests' (Tower Hamlets Council. 2018, p. 30).

Out of 8 interviewees, only 2 agreed that they did use the internet to fill in forms, and out of those two, both agreed they found difficulty and frustration using these online services. Smart cities therefore require residents to have a comprehensive understanding of how to operate online services, not just an established internet connection, or 5G (Calzada and Cobo, 2015). Angela stated that

Parking is a good example, so you go in, and you get so far, and suddenly all they keep saying is that if you need more information go to our website ... and still sometimes you do not get to the end of the inquiry form because they refer you back to somewhere else, and that is so frustrating'. (Angela)

Likewise, participants that did not use the internet also found that it was not an efficient way for them to access council services, and fill in necessary forms, as they would rather use the telephone to contact the council or rely on a friend or family member to help them, in an act of community spirit of reciprocity, where informal exchanges are made, and community members selflessly aid one another (Putnam, 2000). When asked whether operating the borough's online services was easy or difficult Josie stated

'Yes they become a pain, the system and how it's gone now. You know, I have three sons who help, and a volunteer for the pensioners helps me with online paperwork, to get the forms and

all that but we waited and waited – you can't just ring up now and say you need something,

that is all gone. And I find it is err not right really'. (Josie)

Similarly, it became apparent in the survey results that a larger proportion of the older demographic were more likely to contact the council via the telephone than under 60's in Tower Hamlets, as 55.17% use the telephone as their main means of contact with the council.
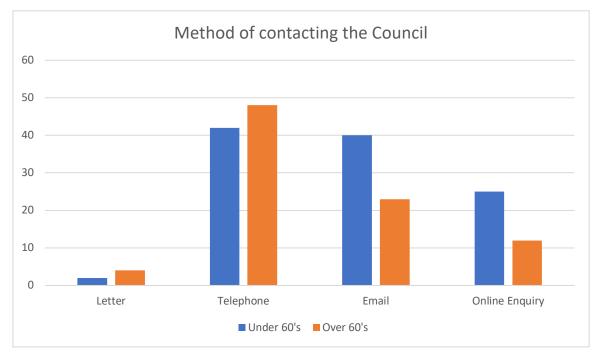
Figure 7: Which method would you most likely use to contact the council?

Under 60's however were twice more likely to use the online Tower Hamlets Enquiry form, and more likely to use their email to access the council, however only 1.83% used letter, compared to 4.6% of over 60's.

Interviewees also agreed that going online to access council support or services was difficult, and so were less likely to do so. Even so, contacting the council through use of the telephone was labelled as frustrating by several interviewees, who stressed difficulty in speaking to someone who was willing to help. Marie explained

'Well, I don't use online so it would be very difficult for me to go online to use borough services, I've not got internet - so I would ring them preferably, and I would wait three hours for them to answer. You're hanging there and hanging there and hanging there.' (Marie)

However, without internet, there is little other options other than writing a letter, which was also explained to be an unresponsive method of contacting the council.

'I recently wrote to the council about getting a parking space outside for my disabled mum, It took me an hour to write the letter, and they didn't even reply.' (Marvin)

This led 5 out of 8 participants to find that they were relying on members of their families or friends to fill in these online forms for them. Living in a smart city and accessing borough services in the home is praised by Skouby et al. as allowing older citizens independence, autonomy and dignity, however this is simply not the case for many interview participants and can be seen as a limiting factor as opposed to freeing for some residents (2014). Carole for example asked her daughter to claim her online parking permits, stating

'What out council? I don't bother with it…my daughter does the parking permits, and the pension is done over the phone'. (Carole)

Similarly, a digital divide was detected in surveys between those under 60, and 60 and over, going online to fill in government forms, and this digital divide increased throughout the 60's 70's and 80's as residents aged. The older the resident, the higher the digital divide, similar to the conclusions made by Dodd (2019).

Figure 8: How frequently do you go online to fill in government forms?

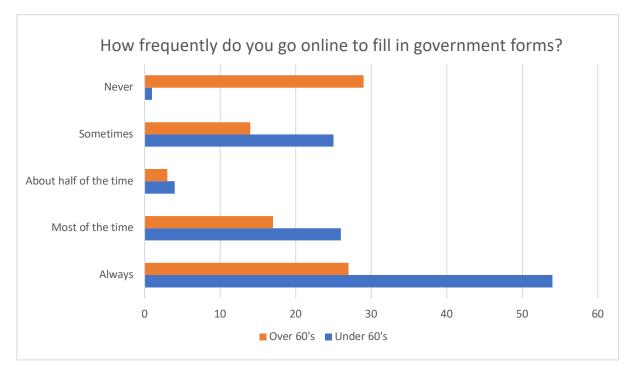This is demonstrated through survey data which shows that 72.73% of under 60's go online to fill in their forms always or most of the time (blue), and only 0.91% never go online. On the other hand, hand, 32.22% of age 60+ residents never go online to fill in their forms, 54% of over 70's, and 71.43% of over 80's (orange). This could be due to lack of internet access which disproportionally affects older populations in the borough as well as ethnic minorities, or a lack of digital training for the elderly population which hinders their participation in forms of e-governance (Dodd, 2019).

Another plausible explanation for older residents' hesitance towards jumping online was notable issues of cyber security and data protection, which interviewees were generally concerned about. The active implication of a data oriented smart city arises the question of constitutional rights concerning all information regarding private life, income, family and property, and are aspects of people's life that are data sensitives, which dissuades older citizens from partaking in forms of E-governance, as issues of data protection can arise (Ishkineeva et al., 2015). Greater London Together, address that

'While poor digital skills can limit the ability of a citizen to get the most from online services, a lack of digital understanding can expose people to misinformation, 'fake news' or online fraud.' (2018, p. 15)

Policies that are undertaken by the Borough of Tower Hamlets in order to increase cyber security, and increase public trust, include hackathons, which involve Londoners and businesses in solving cyber security problems. Smart London Board also details that

London is working with Bologna, Genoa, and Barcelona as part of the €5.2million EU iCity programme to develop an 'urban platform' that will test the sourcing, capture, and storage of different types of public and private data from millions of sensor devices across the capital (2013, p. 25).

This initiative aims to increase cyber security after an abundance of public services are now online which leaves some residents in smart city boroughs feeling vulnerable. Hackathons are a way of integrating businesses with public services in order to strengthen trust on how publicly owned data is used (Abusaada, 2020). Tally for example listed cyber security as a real concern to hers. When asked if she felt that her cyber security was protected using smart technology, she replied

'Not now Oh no. And I was even warned about this from a friend in Russia he said don't do this everyone make sure you opt out.' (Tally).

Likewise, Marvin stated

'I have got no idea what they can do. Sometimes they ask me something and I think 'should I give them that'. My bank constantly asks me to go online with my banking, I won't do it because I feel like someone will use my ignorance to take a lot of money out of my banking' (Marvin).

This relates back to the issues raised by Ischkineeva et al. (2015), that smart cities that pride themselves purely on technological improvement and data analysis can be one-sided, and neglect to assess citizens feelings of protection and data privacy.

4.1.2 Phones and Access to the Internet

Tower Hamlets digital inclusion strategy for 2021 to 2023 aims to ensure that every resident is able to access an internet-connected device, and high-quality internet and broadband access from their home, and also within public spaces, such as at libraries like the Idea Stores in Tower Hamlets, as

'To be able to engage in the digital world, residents must firstly be able to access it. Not only will they need an internet-enabled device e.g., laptop, smartphone, PC, they will also need a connection e.g., Broadband, Mobile, WIFI hotspots. Having a device connected to the internet will allow our resident to get online.' (Tower Hamlets Council, 2021, p. 8).

This desired outcome is being pursued through an effort to drive forward the use of 5G and increase the number of providers offering the service. 5G is the fastest cellular networking programme to date. In addition to this, the borough also aims to improve the availability of Wi-Fi, to make more computers with free internet access available in public spaces and council buildings, so that those who do not have a mobile phone or personal laptop can access the internet in other ways outside of their home (Tower Hamlets Council, 2018). The aim of this policy is to facilitate increased citizen participation using online services, which is a building block of smart city policy for Coe et al. (2001), who argue that this is necessary for economic growth and competitiveness in the global economy.

In keeping with smart city digitalisation efforts, mobile data use in London as a whole is growing at a rate of more than 30% per year. The Smarter London Board therefore propose that

> *'The current provision of connectivity across London needs to improve significantly so that the city can continue to grow and prosper as a digital economy and smart solutions can be tested and adopted…. We will launch a new Connected London programme to coordinate connectivity and 5G projects' (Greater London Authority, 2018, p. 27).*

However, where the elderly fit into this narrative is rather uncertain. Skouby et al. (2014) argued that during earlier times it was expected that ICT technology was intended to help mainly younger people and businesses, however it now proves important for elderly people too in keeping them connected to the outside world from the comfort of their home. There are also a lot of smart city policies that focus on supporting 16–24-year-olds with digital inclusion, which can oftentimes be perceived to further marginalise ageing people as a lower priority group for digital inclusion (Smarter London Board, 2013). The Mayor's fund for London has

> *'Announced its support of 'Tech City Stars', a new programme to connect young Londoners from the local Boroughs of Hackney, Islington and Tower Hamlets with the burgeoning digital technology industry cluster around London's Old Street. Tech City Stars is led by employers and will equip local youngsters, who live in an area where some 40% of 16–24-year olds' (Smarter London Board, 2013).*

An exact equivalent version of this initiative is not offered to elderly people, and moreover, the Idea Store digital training, which does provide support for elderly people using the internet, had a relatively small 12.97% take-up from age 60+ citizens surveyed.
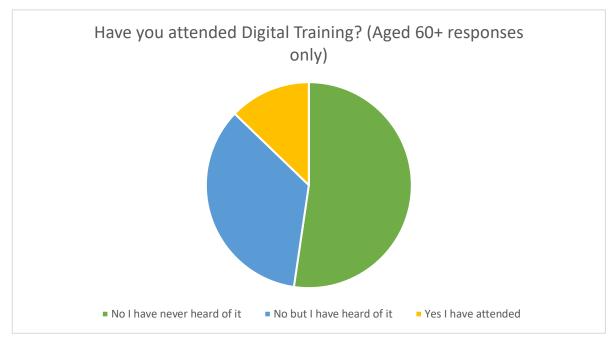
Figure 9: Have you attended Digital Training (60+)

Perhaps the reason for low uptake is because a lot of aged 60+ residents have access to the internet at home, and therefore have become self-taught in certain technologies. According to Tower Hamlets Council (2018), the number of people with internet access in Tower Hamlets is high and resembles London averages of around 92%. A publication from 2014 stated that 96% of residents aged 18 -14 had access to the internet compared with only 38% of those age 60 and over (Tower Hamlets Council, 2014). Figures for internet access among ages 60+ are much higher now according to the survey, which found that 75.55% of older residents had access to the internet either most of the time, or always as demonstrated by the orange bars.
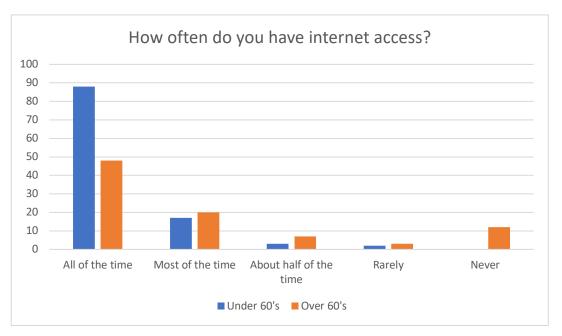
Figure 10: How often do you have access to the internet?

This is still less than their younger counterparts , of whom 95.45% had internet access always or most of the time as depicted by the blue bars. In this regard the digital divide may have been closed slightly since the digital inclusion policy published 8 years prior (Tower Hamlets Council, 2014).

Moreover, all of the interview participants admitted to having either a mobile phone (6) or a landline (8), all of which viewed it as a positive addition to their everyday life, especially throughout COVID-19. Rose explains how a mobile phone enhanced her social engagement, through

'Using my mobile phone, by arranging to meet people and go places' (Rose).

When asked about how COVID-19 had impacted her phone usage, Rose followed

'I was attached to my phone quite a bit' (Rose).

Similarly, Angela concurs that her iPad was her lifeline to the outside community when restrictions did not allow for in person social activity, as

'I think the tablet for me, for instance during the pandemic was my saviour because…it is funny you know people ask 'well how did you get through it', the silly thing I am going to tell

you is that it was not about getting a food parcel, but that tablet was a God send, because you

know it was just taking you into a different world in some ways.' (Angela)

In light of the pandemic therefore, older residents seemed to seek comfort in using mobile phones as portals to their usual in-person social communities, and this is a movement that is encouraged by smart city communities, who encourage individuals to jump online to share their knowledge and experience on virtual platforms and share social capital in material and virtual spheres (Stratigea, 2012). This likewise emphasises that more does need to be done to ensure those residents without access to phones or other smart devices can be moved online so they do not feel excluded from these new hybrid communities (Heitlinger et al., 2019). Not all community members do want to be moved online however, as many older people find that

'The internet, and other electronic means of communication are not necessarily their preferred ways of accessing information… so accessible in this context means paper-based information (newsletters and similar), written information available in public spaces such as GP surgeries, face to face and telephone communication and 'word of mouth' (Tower Hamlets Ageing Well Department, 2021, p. 28).

4.1.3 Transport, Mobility and Cashless Society

Digital technology is making profound changes to the way that citizens experience the city, and Smart London as a whole is about using new technology and data so that Londoners and visitors can experience the city in an efficient way, without hassle and congestion. In order to help Londoners and visitors travel in the city, The Smarter London Board have begun

'Including improved data for journey planning tools, expanding the use of digital technologies as part of Legible London, and accelerating the innovation and adoption of digital money - establish a digital money demonstrator (Smarter London Board, 2013, p. 13).

Methods to navigate the smart city include

'London's move towards digital money is bringing efficiency savings - from Transport for London's contactless Oyster card to using credit and debit cards to instantly pay for travel (Smarter London Board, 2013, p. 17).

Therefore, transport is leading the way to promoting a cashless society in all 32 London boroughs, through the use of oyster cards which can be topped up using a card, or online, or

using what is termed 'contactless' where bank cards can be registered with TFL. Tapping in and out of the barriers immediately withdraws the money straight from the registered bank account to create smart and efficient mobilities, and intelligent transport systems which produce new forms of data which track and monitor transport use (Orlowski and Romanowska, 2019).

Likewise, data collection is integrated into smart mobility initiatives, as the demand for real-time information has never been higher across all TFL services: buses, trains, and Barclays bike hire stations. An example of real time data initiatives is the

"Countdown" service, which provides live bus arrival information for all 19,000 bus stops in London's network via fixed & mobile web, SMS (Text Message) and via 2,500 roadside signs... the real-time data is syndicated to smart phone developers, who have created over 60 transport apps, all providing real time information to TfL's passengers' (Smarter London Board, 2013, p. 39).

Therefore, mobile phones become a crucial infrastructure for accessing information on transport in the city and planning efficient journeys. However, these online and live data updates should not replace other forms of age friendly communication systems, as those who do not have mobile phones should also have an equal right to the city and its transport systems (Marcuse, 2009). Interviewee Tally (80) expressed interest in using the TFL app to show when a bus may be coming, but did mention that live bus updates on the TFL app were replacing the bus timetables at the bus stops themselves, explaining

'Yes I've only recently started using the TfL Transport for London app to show me when there might be a bus coming, I previously use the thing in the bus stand ... and only last week did one of the drivers say we are stopping that because everybody else is using their magic phones. OK I've seen many people use it, and they're waiting, and I think I'm going to do that and I'm very competent at these technical things so I should do that' (Tally).

For Tally, the removal of the information at the bus stand did not seem to be problematic, however, considering that just over 25% of age 60+ residents surveyed did not have access to the internet frequently (Figure 10), this would be a rather problematic shift, and as Tower Hamlets Ageing Well Department (2021), suggest electronic means of communication are not necessarily preferred by ageing residents. Additionally, half of older people in the borough live in income deprived households, and a higher proportion of older people live in social housing

in Tower Hamlets, so accessibility to mobile phones is also limited by income inequality (Tower Hamlets Ageing Well Department, 2021). Therefore, in order to remain an age-friendly city, smart mobility systems should also encompass offline data on transport for those without access to smart phones (WHO, 2007).

Transport mobility smart city initiatives also bring attention to the notion of a cashless society. Other modes of transport within the city that are not run by TFL are licensed black cab services. Marvin is a black cab driver. Having card machines in black cabs became a standard 5 years ago but became compulsory 2 years ago in London. Although smart city policy has been established since the 1990's, its actual implementation has been much slower; adopted in London in the past ten years, and Tower Hamlets in the last five (Moser, 2001). He explained his dissatisfaction with a cashless society, but moreover with the requirement for cabs to accept cards, as

> *'Last night someone tried to use contactless to pay me and they failed to pay me, and then I had to send her my bank details to pay me. People should be obliged to carry cash. How do you pay a beggar now, or a busker? People still need cash… In the past I have got on the bus, and you can't pay by cash, who says that is fine, sometimes I have walked because I haven't got a card … they encourage technology all the time. Every year it costs me about 800 pounds to use a card facility for my business, why and who is getting that 800 pounds?'*
> *(Marvin).*

Questions regarding who is benefitting from imposing smart city policies link to the work of Hollands (2020), and Harvey (1989) who argue that smart city policies often reinforce neoliberal, urban entrepreneurial agendas that substantially benefit private business corporations, at the cost of exploiting certain members of society. In this way Marvin expresses concern regarding who the smart city is made for, and how it benefits him (Marcuse, 2009). Marvin also expresses a large sense of exclusion, as cashless bus services have prevented him from using the bus, as he does not carry a bank card. When survey participants were asked what method of payment they use on public transport, 80% of over 60's used a Freedom Pass.
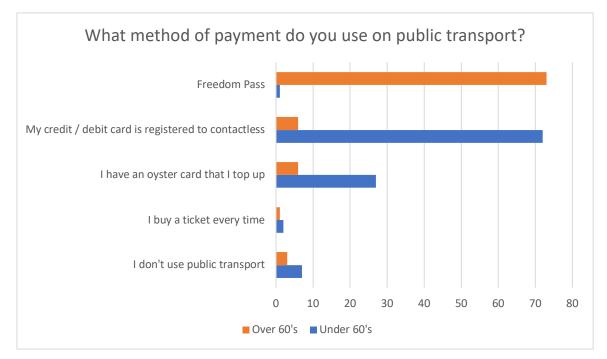
Figure 11: What method of payment do you use on public transport

A freedom pass is a Greater London Authority initiative that spans all London boroughs and provides pensioners (anyone aged 66+) a freedom pass, which allows for free access to public transport including London Underground, Overground, buses and trams. The Freedom Pass also promotes the cashless smart city narrative, as residents 66%+ no longer carry cash to use public transport. Similarly, only 3 survey respondents (1.5%) buy a ticket every time they use public transport, and this can be done using a card, or using cash at one of the ticket / oyster card machines at the station. Cashless transport systems are promoted, because according to the Greater London Authority

> *'These generate an estimated annual economic benefit and savings of up to £130m a year. Since 2014, TfL has also played a crucial role in contactless payment.'(Greater London Authority, 2018, p. 10).*

As TFL is a publicly funded body, promotion of cashless society is in their best interest, as it leads to economic savings, but at what cost for those who do not want to participate in this way of life? Arguably, it is a top-down imposition that benefits corporations and governments looking to make economic savings and sell card machine services, whilst simultaneously perpetuating spatial inequality, and disproportionately affecting ageing populations' access and rights to moving in the City (Remillard-Boilard et al., 2017).

4.2 The Institutionally Smart City

This sub-chapter will explore how, and if, smart city initiatives in the Borough of Tower Hamlets encourage participation in local decision making, and whether this incorporates the voices of the ever-growing ageing population. The NHS as a government funded institution will be discussed, in relation to the shift online for a lot of NHS services, and how the ageing population contribute to shaping this service. Finally, local government efforts to increase citizen engagement with smart city agendas will be discussed focusing on the new efforts to provide digital training and ICT sessions.

4.2.1 Participation and collaboration in local decision making

The Localism Act (2011), introduced for local governments, stipulated new rights and powers for communities, giving them the power to be better involved in how local decisions are made, and express more influence over the services they use, and the area that they live in (Tower Hamlets, 2018). Public-service providers nationally have used a variety of approaches to involve their local communities. These include citizens panels and juries, neighbourhood committees and forums, community champions and joint approaches. Tower Hamlets had set themselves three objectives to follow in order to promote higher citizen engagement. These are displayed in table 8.

Table 8: Tower Hamlets Community Engagement Strategy (Tower Hamlets Council, 2018)

Objectives	Outcomes
1. Involve communities through elected representatives	Information and insight from local communities (community intelligence) is clearly reflected in the decisions we make
2. Improve transparency and accountability	Information is easily accessible to communities and open to scrutiny
3. Increase support for people to take part in community life	Local people influence issues that affect their communities and are involved in improving their local area

There are therefore locally elected representatives which play an important role in helping communities to make use of the opportunities available to them and spread awareness of these opportunities. Communities are highly aware of their local councillors; however, they do recognise that more can be done to make them more accessible (Tower Hamlets, 2018). In

order to involve more citizens in decision making, the community engagement strategy states that

'We will use more innovative methods alongside our traditional approach. This will include things such as World Café, Open Space, participatory appraisal, and peer research, appreciative enquiry, Forum Theatre, and asset mapping (recording a community's strengths and resources) (Tower Hamlets, 2018, p. 25).

To ensure stakeholders and citizens stay active, Tower Hamlets will develop an online engagement tracker which will report on how opinions collected through previous citizen involvement have influenced certain outcomes or decisions in the borough (Tower Hamlets, 2018, p. 25).

Interviewees tended to agree that they were not included in decision making in the local borough, and some attributed this to their age. A quarter of interviewees were involved and active in local decision making in some capacity, however both of these interviewees were part of that process through either charity work, or working on the board of a housing association, and were approached through these links. For Nam and Pardo however, the smart city should function to combat urban problems using multiple stakeholders, with citizens at the heart of decision-making frameworks (Nam and Pardo, 2011). When asked if she had been able to give her input into the borough, and decision-making processes, Marie claimed

'No No no, I I don't think they care about us anyway; I think when you get to a certain age, I don't think you are included in any discussions, I don't think they want to know, I really don't. At my age you tend to just say the truth, and that hurts, and I don't think they want to hear it' (Marie)

Likewise, Carole agreed that Tower Hamlets used to ask for her opinions and views, however the meetings she used to attend run by Tower Hamlets Community Housing no longer take place, stating

'No not Tower Hamlets they don't ask anything. We used to have a meeting quite regularly with Tower Hamlets Community Housing but all that has now stopped. We have got no one to sort of discuss anything with.' (Carole).

When then asked about whether these meetings were taking place, Carole stated

'Well, I know that they're happening online' (Carole).

This begs the question as to whether community engagement strategies that are being offered in the borough are being offered in age inclusive settings. Tower Hamlets engagement strategy does point towards the digitalisation of some feedback forums, for example increasing the use of online petitions and social media to give people more opportunities to partake. This could include

'Live streaming through services such as YouTube and allowing questions via social media. As part of this process, we aim to gain the Social Media Friendly Mark developed by the Local Government Association, demonstrating our commitment to using social media.'
(Tower Hamlets Council, 2018, p. 19).

Similarly, the Smarter London Board encourage Local Borough's to use technology to shape the capitals future through using the Talk London community which aims to bring Londoners into the policy making process. Talk London hosts

'Online discussions, polls, live Q&A events, surveys and focus groups - discussing a wide range of topics from improving standards in the private rented sector to cyclist safety around HGVs (heavy goods vehicles). Through the community, Londoners are taking part in policy conversations to generate new ideas. (Smarter London Board, 2013, p. 22).

This shift online is potentially leaving the 13.33% of age 60+ survey respondents, who do not have access to the internet, or those who do not understand how to operate it, isolated from decision making (figure 10). For example, Angela is a is a school governor, and Trustee for the Parmiter's school pensioner's charity. When asked how invitations to focus groups, or local community events come through from the borough, she said

'Well, this is a good question because if you don't know about it you won't go, and if you don't use the Internet to look at their websites you will probably never ever find out about events… but if you have to go onto the website to book it that's hard' (Angela).

There must therefore be alternatives to online invitations and spaces of collaboration for those without the access to these online spheres. Heitlinger et al. (2019) likewise concur that residents should be working together in a combination of in-person community gatherings, and also through an urban digital commons to create a hybrid form of citizen engagement, which

remains inclusive for those without internet access. Similarly, Tally was a volunteer at the charity called Age UK, who work closely with the borough of Tower Hamlets to give support to elderly people. She had been involved in research that had later been used and adapted by the council to provide better support to elderly people. She states

'I would be able to quote some names of counsellors that have turned up with older person reference group meetings spoken to us, this is sort of face to face with the elderly and the council about age UK' (Tally).

Angela Tally and Rose were the only participants asked for their input into decision making processes within Tower Hamlets, and 2/3 of those participants were part of local organisations which suggested that the everyday ageing citizen was not consulted in decision making. Horlings et al. (2021) argue that tactical urbanism in the smart city should be led by citizens in a bottom-up way. This opportunity should be presented to all citizens, not just those that are part of organisations. Tally showed an active interest in participating in decision making outside of Age UK, however expressed that the borough had not followed up with her after this, stating

'Yes, if you are reading the borough's inputs to social platforms, or whatever you call it, they do invite for consultation, and I responded at least twice and have not had the next step sent to me' (Tally).

The link to sign up for inputting into social platforms came through her email address in a council newsletter she signed up for. This likewise begs the question 'what about those who do not use or have email?', and as figure 7 shows, only 26.4% of over 60's preferred to contact the council through email over other methods (figure 7) which signals the need for an alternative mode of communication. The council used to publish and distribute a newspaper every other week called 'Eastend Life'. This ceased publication in 2016 and was replaced by 'Our Eastend' which is now distributed quarterly. Several interviewees expressed dissatisfaction with this, as this is the way that many of them stayed up to date with events within the borough. Dave for example expressed

'You found out a few things going on, but now, nothing. It most likely is online. We used to have it delivered and that. We wouldn't read it online because we don't know how to do it and that.' (Dave)

Not only was there a sense of digital exclusion from participating in decision making processes and local events, but one interviewee experienced access problems. Rose found that she was unable to attend a focus group organised by Queen Mary University, in conjunction with Tower Hamlets council, as it was not accessible to her because she could not walk to the meetings due to infringed mobility and health issues, stating

'I'm not very good at walking' (Rose)

When asked if she would go if it was made accessible she replied

'Yes if they was to offer me transport and it was easy for me to go I might go' (Rose).

Another consideration for smart city councils is therefore to provide mobility access to older residents that may be limited by health conditions or infringed mobility, as inevitably a higher proportion of elderly residents suffer from these issues, which heightens their exclusion as a group. In Oulu in Finland, Suopajärvi (2018) likewise notes that participatory planning structures include elderly people through design processes that are made for them. Design processes made for elderly people in this way, have to account for the fact that they are more prone to mobility limitations which require special assistance to attend meetings.

Surveys did however find that a higher proportion of 60+ residents were involved in attending focus groups, juries, panels or community neighbourhood groups. The age of pension in the UK is 66+ which could explain the higher number of over 60's attending these focus groups in order to keep socially and mentally active in potential free time (Godschalk et al., 1966).
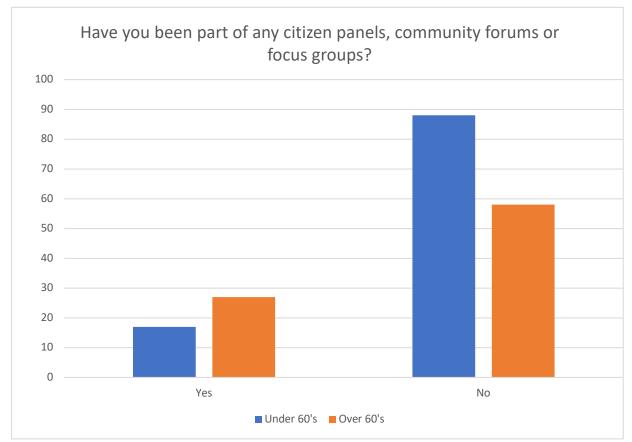
Figure 12: Have you ever been part of any citizens panels, jury's neighbourhood committees or focus groups?

Moreover, age 60+ citizens have valuable experiences and life lessons to contribute to a focus group setting, and often times have been on boards or committees for years, like Angela who has been working with the resident's association since the 1980's. However, although there are a higher proportion of older citizens attending these sessions, it does seem, through the interviews conducted, that more are interested in attending these sessions, but either have not been invited, or have not been given mobility support to attend. This can lead to the disempowerment of ageing residents, who feel that their desires to participate are remaining unheard (Suopajärv, 2018).

4.2.2 The NHS and smart medical care

The NHS is the National Health service in the UK, and of course has been swept into smart city planning initiatives in London and Tower Hamlets. The NHS is a service that particularly affects elderly people, as ageing can lead to health problems which require more medical support than the average citizen. In order to turn the NHS into a smarter health service, the Mayor will work with the NHS and health organisations to ensure

'That all Londoners can benefit from digital health and social care by linking NHS data and digital transformation with other city-wide initiatives.' (Greater London Together, 2011, p. 38).

In Tower Hamlets a lot of these NHS services have been moved online, particularly concerning COVID-19 vaccinations, appointments and prescriptions, and can be managed through logging into the NHS portal online which logs and stores health-related data and upcoming appointments for citizens. Care Connect is an initiative throughout London that allows for

'A simple point of access through a range of channels (online, phone, text and social media) for the non-clinical aspects of a comprehensive customer service (general enquiries, complaints triage and feedback)…interactive maps and dashboards enable the public to track progress and openly see how NHS providers are responding. (Smarter London Board, 2013, p. 40)

Tower Hamlets Department for Ageing Well found that the majority of people using these online NHS services were middle-aged and in work, and 50 years old or younger (2018). Surveys indicated that 44.44% of age 60+ respondents never accessed care services online, 61.36% of over 70's had never, and 71.43% of over 80's had never. The inner ring in figure 13 shows the responses of the over 60's, and the outer the responses of the under 60's
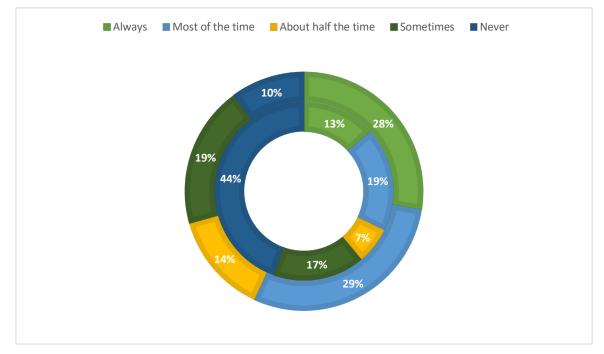
Figure 13: How often do you go online to access medical care?

In comparison, only 10% of those under the age of 60 never used the internet to access care services, inferring that a large proportion of over 60's would prefer to use other methods of accessing care, such as using the telephone, or going to the Doctor's surgery. Likewise, older survey respondents found using the NHS online services to be more difficult than under 60's. Only 37% of age 60+ residents found the online services easy to navigate versus 53.21% of under 60's. Interviewees generally preferred to access NHS services in person, or to ask a family member or friend to help them navigate the online systems. Josie noted that during COVID-19, because she could not see her Doctor in person, she only had 2 appointments, suggesting that not seeing a GP in person was a deterrent for using the service, stating

'I must admit since we have not had our doctors open to physically go round to, I've only been twice… we just ring up the Dr and say we are due for so and so, you know that when certain ones are running out and you think 'ohhh I must be due my prescription now''.

(Josie)

Similarly, to Josie, Rose used her phone to contact her Dr as opposed to the NHS online service, stating

'No, I use phone numbers, I only need sometimes to phone the doctor and I can do that on my mobile phone'(Rose).

Likewise, Tally delivers letters to the Dr by hand in order to actively avoid going online to contact her GP, disclosing

'I am only around a quarter of a mile from my GP, I have been writing my doctor a letter and delivering it by hand... So no, I don't contact my GP online if I can get away with it.' (Tally.)

Despite six out of eight interviewees having access to a mobile phone, none of them wanted to download the NHS App and manage their healthcare online. It seemed that participants felt more comfortable talking with someone, or to someone about their health care in person. This could link back to the concerns raised regarding cyber security and sensitive information, with person-centred care linked to feelings safety (Ishkineeva, et al., 2015). E-governance during COVID-19 is nevertheless a resilient urban environment, as the NHS adapted to the political climate, however it does not appeal to everybody, specifically ageing populations (Abusaada, 2020).

4.2.3 Government-run Digital Training Sessions and the Idea Store

The Idea Stores in Tower Hamlets are public libraries that offer a range of services, but most importantly in this context, they offer free Wi-Fi and internet access on all computers. In addition to this they offer digital training (Tower Hamlets Ageing Well Department, 2020). This is done through working with Age+ UK in order to arrange computer literacy programmes that are free of charge, in order to train and support local residents using the internet. The Idea Store's Learning programme works with

'Voluntary and community sector providers to deliver basic computer literacy programmes that give an increasing number of older people the skills and confidence to make more use of the internet as a source of information…to seek opportunities to develop new intergenerational programmes to supplement existing schemes that bring together younger and older people to support increasing computer literacy'. (Tower Hamlets Ageing Well Department, 2020, p. 29)

As half of the older people living in the borough live in deprived households, providing the facilities and infrastructure to access the internet free of charge is of significant benefit. Providing an internet connected device is only the first step, the second step is education in digital literacy to use these devices. In order to do this, there has been an effort to encourage

intergenerational volunteer work, whereby younger residents volunteer to help those who need help learning to navigate the internet at the Ideas Store (Tower Hamlets Council, 2014). Likewise, Ideas Stores will contain key information on consultation and decision-making activities within the borough, providing visitors with a calendar about when local forums and groups are taking place, and the frequency of these events (Tower Hamlets Council, 2018).

Survey responses showed that a much larger proportion of age 60+ residents had attended digital training than under 60's, as 12.79% of over 60's had attended, and only 2.86% of under 60's had attended.
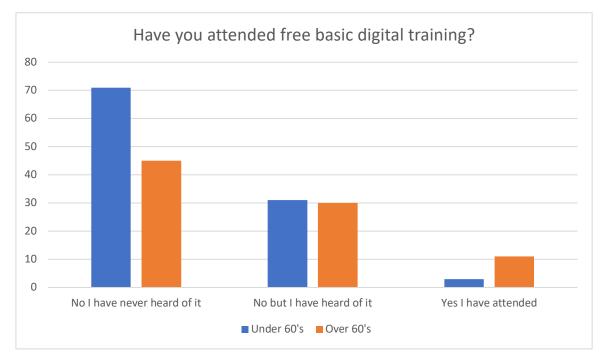
Figure 14: Have you attended free basic training?

Quite evidently however, those who had attended digital training were a lot more likely to not use the internet to access borough and medical services, as the survey found that over half of the residents that attended this training do not go online to fill in their government forms. One interview respondent had attended the borough training, and did not find it useful, stating

'My friends and I went to it and learnt in parrot fashion, and then went to one at the library, but we don't hear about none of that now.' (Josie)

Similarly, Dave agreed that despite attending the free training years ago, he never fully understood it, as

In the public library years ago… did try it yeah, but I couldn't get to grips with it' (Dave).

Likewise, Angela mentioned that the Council sometimes paid people to go to internet training, and explained that the training is not necessarily effective because

'They will learn whilst there sitting there but once they come home they forget' (Angela).

This is supported by the survey data which suggests that those who attended the digital training were much more likely than the average respondent to report using online services to be difficult, as 42.86% of respondents who attended free basic training still found difficulty using online services, and 35.71% admit to never having used it. This further leads to the conclusion that digital training in the Idea Store may not be the most sustainable way of learning, as by the time trainees returned home, 42.86% were still finding difficulty operating online borough services. As much as libraries are an essential infrastructure to support technology usage, as Dodd (2019) argues, the data in this research shows that they are limited in providing support for older citizens when they get back to their house, and use their own devices, something unaddressed in Dodd's research (2019). Rose similarly expressed that COVID-19 played a role in heightening the digital divide, as she wanted to learn more about how to use online services, however she found these services difficult to operate, and would have preferred someone to come into her home to teach her how to use them, stating

'Yes because lockdown came along and otherwise I might have learnt more. Someone could have come over and instructed me on how to use my mobile phone.' (Rose)

Therefore, encouraging technology in 'home settings' as part of smart city initiatives may also require in-home training sessions, so older residents can directly learn how to access online services using their own devices. In the long-term, as posited by Tang et al. (2022), offering in-home training to older residents will improve their quality life and independence, whilst saving money, by increasing the efficiency of processing data in both local government and NHS services.

4.3 The Social and Human Smart Cities /Communities

This sub-chapter will unpick how the London Borough of Tower Hamlets incorporates notions of smart and social communities through community events, and how this affects residents' sense of belonging. Older residents' feelings of inclusion and exclusion within the borough

will then be analysed, with reference to how increased technology and smart city policies can affect these feelings.

4.3.1 Community Events and Feelings of Community

Tower Hamlets promotes a lively voluntary and community sector, which includes faith-based organisations, as there are over 1400 community-based groups and organisations which provide valuable support and services to the residents of Tower Hamlets (Tower Hamlets Council, 2018). Tower Hamlets Community Engagement Strategy states they recognise that certain groups can become marginalised from partaking in community events

'We recognise that people are members of several different 'communities', and that some people find it harder to make themselves heard than others. This can be the case where individuals belong to marginalised groups or because they haven't been involved in a way that's properly inclusive.' (Tower Hamlets Council, 2018, p. 9)

These community events include

- Summer reading challenges
- Idea Store summer activities
- Swimming lessons
- Gym sessions
- Table tennis in the park
- Music classes
- Volunteering opportunities
- Nature walks

In order to increase social participation in events like the ones listed above on Tower Hamlets website, Tower Hamlets state that they give people information about events and services which may affect them or interest them in various ways,

'Including through our website, the 'Our Eastend' newsletter, and fortnightly email bulletins, social media and printed information, for example leaflets' (Tower Hamlets Council, 2018, p9).

This strategy seems all encompassing, as printed paper methods of distribution include those who do not have access to online news forums. Notably, 'Our Eastend' is now a quarterly newsletter which is less effective at keeping residents up to date, than the former fortnightly edition. Tower Hamlets Council (2014) found that East End life (now 'Our Eastend') had higher readership amongst those groups who were less likely to favour online methods of contact, and those readers were also less likely to use online methods of contact to the council. Age is strongly related to the use of online methods, as 13.33% of over 60's in the borough do not have access to the internet, so are therefore less likely to favour online methods (figure 10). Therefore, the less frequent distribution of 'Our Eastend' will disproportionately affect the 60+ population, and the subsequent likelihood of them being informed about community events within the borough.

Attendance at community events creates life between buildings, and Gehl (1987) agrees that if people are having rich social interactions in place, this then attracts more people, which is a cyclical process. The more people that know of these events, the faster the cycle increases, until there is a rich 'life between buildings' community, which will subsequently lead to more activates happening in public space, and higher 'sense of community'. This is further confirmed by the fact that 6 out of 8 research participants had not been invited to, or heard of community events happening in the borough, because they had not been informed. Marie, when asked if she had been invited to community events by Tower Hamlets Council, posited,

'No. err no, a volunteer runs a coffee morning for us, but she is a volunteer, err no no I don't.'(Marie)

Likewise, Carole replied

'No only Tower Hamlets community events like Parmiter's charity, that's the only one, not the borough' (Carole).

Both Marie and Carole referred to being invited to community events held in the borough, but these were not organised by Tower Hamlets council. Perhaps then the strongest community networks in the borough are relatively informal and happen outside of the sphere of government organisations. Especially for older people who access the internet less regularly than under 60's, finding out about government organised community events is trickier. Community events organised by non-government organisations seem to distribute invitations to older residents

through alternative means, such as by letter, word of mouth, or the telephone and are more effective at engaging with older residents. For Horlings et al. the most effective forms of citizen engagement are not actually organised by institutions themselves, but rather are formed when citizens take matters into their own hands and use their own ideas to shape where they live (2021). Marie and Carole receive phone calls from their local pensioners charity to inform them of events, Josie receives letter invitations, and Angela organises events for local pensioners through using posters and ringing residents, primarily through WhatsApp or landline if necessary.

Volunteers surveyed volunteered in a mix of Tower Hamlets run charities, but the majority notably volunteered in independently run groups. These included, but were not limited to:

- Church groups for elderly / church 5
- Covid vaccination park rangers
- Resident community groups
- Young at heart pensioners group
- Ideas store volunteer
- Homelessness charity
- Coffee and art group
- Supporting local residents with housing and forms.
- Theatre group
- Animal Trust
- Textile art charity
- Pensioners charity
- Air ambulance at royal London
- Telephone buddy
- Gardening group
- Food bank and legal advice
- Social group
- Children and Youth forum
- Shelter for homeless and elderly - CRISIS
- Clothes exchange
- Beehives in local vegetable gardens

- Local Facebook group

- Director of East London Marine venture

Local volunteers were a mix of under and over 60's, but the proportion of age 60 and over volunteers was notably higher. Figure 15 demonstrates the proportion of age 60+ residents volunteering in the community in comparison to under 60's.
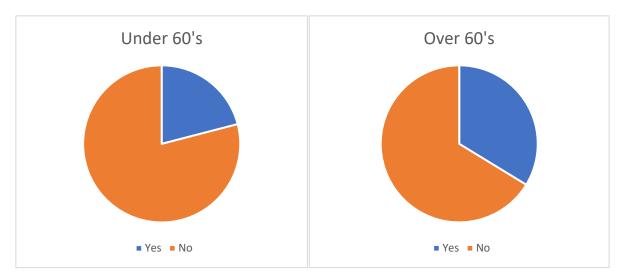
Figure 15: Proportion of 60 + and under 60's volunteering in the community

13% more of over 60's were volunteers in comparison to under 60's, which was similar to the higher number of over 60+ residents that attended community jury's and focus groups as displayed in figure 12. Therefore, community initiatives within the borough do involve and promote the involvement of 60+ residents, however, a lot of these initiatives are not organised by Tower Hamlets Council, but in more bottom-up informal networks that reach those that are sitting on the side-lines of the community, that the council find harder to reach (Nienhuis et al., 2011). There is significant evidence that people who provide volunteering services benefit in terms of their independence, quality of life, and well-being, which is also a goal and a measure of smart city indicators, which according to the survey disproportionally benefit ageing populations within the borough (Von Hippel, 2009).

The voluntary and community sector providers also work to deliver basic computer literacy programmes that give an increasing number of older people the skills and confidence to make more use of the internet as a source of information. This includes a telephone buddy scheme, and an intergenerational community ambassador programme where younger adults volunteer to speak to older residents every-so-often to prevent feelings of loneliness in the community

(Tower Hamlets Ageing well Department, 2021). In addition to this, intergenerational programmes at the Ideas Store include younger adults volunteering to help age 60+ adults use and navigate technology. Two participants surveyed were part these schemes, and both were under the age of 60, however 84.21% of research participants had never heard of community ambassador schemes. There is also evidence to suggest that recipients of volunteering work benefit from independence, well-being and quality of life; all indicators of a successful smart city (Von Hippel, 2009). Therefore, the more recipients and volunteers participating in this scheme, the higher the overall quality of life and well-being of residents in the community.

Many interview participants did raise the issue that social and demographic change within the borough over the last 10 years or so had led to a decrease in community activities and events, similarly to Torku et al. who found that gentrification and urban change often led to a heightened risk of exclusion among older residents in the borough (2020). Marie noted that she had seen things closing down within the last 10 years since smart city policy has been introduced into the borough, as

> *'Street supermarkets have gone, a lot of shops, some events, so no not really I haven't seen any nice increases' (Marie).*

Carole also notes the change in infrastructure within Tower Hamlets, and how this has led to less outdoor space, responding,

> *'Lots of changes. it is awful, the way they are building everything everywhere, there is no space, I feel like they're closing us in more and more' (Carole).*

Tower Hamlets has experienced high levels of gentrification over the last 20 or so years, especially spurred on by the hosting of the Olympics in neighbouring Stratford in 2012 which increased economic investment in the borough. Canary Wharf and the Docklands area is also home to some of the largest financial corporations in the world, such as KPMG and Goldman Sachs, which attracted a new, middle-class, gentrifying, working, younger demographic, which leads to an increase in building in the area, and higher house prices (Taylor-Beck, 2019). This could lead to feelings of exclusion, as elderly people now make up a relatively small portion of the population as a whole, as Tower Hamlets itself is currently the youngest borough in London (Borough Profile, 2022).

4.3.2 Feelings of inclusion or Exclusion

Feelings of inclusion and exclusion in relation to technology have already been unpacked in this chapter in relation to the phenomenon of digital exclusion. This sub-chapter will delve slightly deeper into how residents feel digitally excluded. Nationally, research shows that people who are digitally excluded are more likely to have some of the following features:

- are older
- do not have formal qualifications
- are in the lower socio-economic groups
- have a disability
- are not confident in their literacy' (Tower Hamlets Council, 2019, p. 5)

Interviewees Marie, Marvin, Rose and Dave noted that technology left them feeling excluded from society. Marvin compared his lack of ICT skills to not knowing how to read or write, stating,

> *'Well, we are not happy, old people are not happy. I feel like someone who can't read and write. When I was young, you would meet people that couldn't read or write and I feel like that person, the way they just move things on'. (Marvin)*

Likewise, Marie concurred,
> *'It leaves me out because I'm not into technology. I am 83 years of age, and I am not into this new, smart city thing, I am not. So, this makes me excluded'. (Marie)*

Not only were feelings of exclusion noted, but also feelings of anxiety and fear were associated with the growing use of technology, as some interviewees did not feel themselves capable of operating technology. This aligns with Bandura's Social Cognitive Theory, as people act in accordance with their perceived capabilities (Rocha et al., 2019), as Carole explained that she is

> *'Absolutely terrified of it all. I just like my mobile and my house line. I don't want nothing complicated.' (Carole)*

However, Angela noted how technology gave her a sense of inclusion in society, conversely, as when asked if technology makes her feel included, she stated

'I suppose it does, I suppose it does give you different opportunities' (Angela).

This was through the use of her smart phone and iPad which led to feelings of inclusion in the community, even when she was inside of her house. These feelings of inclusion can leave technologically connected older residents with a sense of independence, similar to Skouby et al.'s study (2014) which saw that technologies used inside of the home promoted active ageing, as citizens were able to use their creativity to involve themselves in public and commercial services from the comfort of their home. Angela explained that she is very proficient and capable of using smart devices, so this could contribute to her perception of smart technology as positive and inclusionary devices for social interaction (Partridge, 2004). This is in comparison to other interviewees who noted struggling with smart technologies.

Survey participants were similarly asked whether they experienced feelings of loneliness in the borough. Based on national estimates, approximately 10% of the over 65 population are likely to be lonely, however rates in deprived boroughs like Tower Hamlets are generally found to be higher at around 16% (Tower Hamlets Council, 2014). Age + programmes within the borough aim to combat this by using

> *Specific outreach provision designed to make contact with isolated and lonely older people and to support them to access services; (Tower Hamlets Ageing well Department, 2021 p. 41).*

Survey responses showed that under 60's were for more likely to experience loneliness within the borough. They were three times more likely to always feel lonely. Moreover, 79.2% of 60 and over respondents rarely or never felt lonely, compared to 60% of under 60's as demonstrated in figure 16.
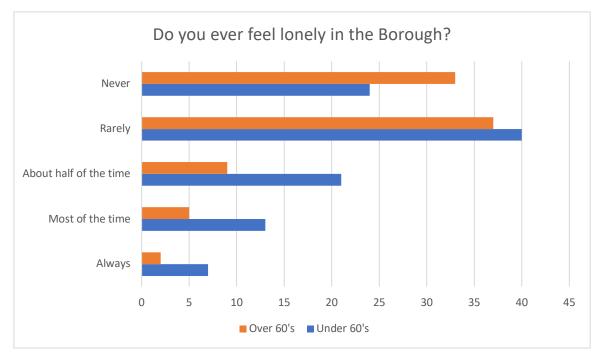
Figure 16: Do you ever feel lonely in the borough?

This could be because just over half of age 60+ survey respondents were given paper copies of the survey to fill in at a community coffee morning and at a pensioners charity event. This could skew the result, as these respondents were part of a social organisation which may naturally decrease their feelings of loneliness within the borough and increase their sense of community.

5 Discussion and Conclusions

This chapter summarises the findings of this mixed-methods research in relation to the main research question '*In what way have local government smart city agendas affected age 60+ citizens in the London Borough of Tower Hamlets?*' by breaking down the main research question into three sub-research questions, which discuss the effects of smart technology, institutions and communities on aged 60+ residents. First, the effects of increasing digitalisation on elderly and 60+ populations are unpicked, in regard to both the opportunities it poses for residents, but also the threats of technology, and its contribution to feelings of digital exclusion. Secondly, the extent to which Tower Hamlets council and public institutions such as the NHS actively involve age 60+ residents in decision making, and the effects of smart city digitalisation are linked to new models of citizen participation and their effectiveness.

Thirdly, smart communities within Tower Hamlets are unpacked, and this section addresses whether over 60's are represented in community events and volunteering programmes, and how their participation, or lack thereof, in smart communities can lead to feelings of inclusion or exclusion. The usefulness of this research beyond the case study of Tower Hamlets is then discussed, and its applicability to London as a whole, or smart cities in general is evaluated.

5.1 Summary of research findings

1) How do smart city initiatives based on increasing technology and digitalisation affect ageing residents in Tower Hamlets?

There is no doubt that the data collected supported the common notion in the literature, that there is a significant digital divide between residents under 60, and 60+, and this digital divide increases with age, which is similar to most publications on ageing in the smart city (Dodds, 2019). On average, the older the resident, the less likely they were to fill in government forms, and apply for government services online, and the more likely they were to have limited internet access. Interviewees generally noted feelings of cyber insecurity when putting their data into online systems, and this is definitely a causal factor which drives and increases older residents' reluctancy to use these services, as previously identified by Ishkineeva et al. (2015). Tower Hamlets council do invest in learning opportunities for older residents, as will be discussed in relation to research question 2, however only a relatively small proportion of 60 and over residents had heard of this scheme, and an even smaller number had attended sessions, which supported the findings of Calzada and Cobo (2015) that limited internet access is not enough to explain the digital divide, but lack of education also plays a huge role. These services must therefore be advertised using non-digital methods, as the demographic they target are unlikely to use the internet to find out about digital learning opportunities within the borough. Despite older residents being less likely to use online services, access to the internet either most of, or all of time was generally high, but relative to their younger counterparts was lower, as anticipated.

Technology of course played an important and positive role for some older residents, especially during the pandemic. Smartphones in general were regarded by most older participants as a useful tool for communicating with friends and family, without having to leave the house. These allowed somewhat for communities to be moved online during the pandemic, and for community groups to share knowledge and experiences on virtual platforms instead of in-

person, decreasing feelings of loneliness. This does nevertheless bring further attention to those older residents without access to phones or in-home internet access, as they are further excluded from participating in these online communities which contribute to a hybridised smart city – a right that those who do not own smart phones do not have, as explained by (Heitlinger et al., 2019). Mobile phones likewise proved useful in navigating transport around the city, as the majority of live updates now happen online, or on mobile apps. These should not act as replacements to material bus and train timetables, as this will of course further marginalise those older residents who do not have mobile phones, or access to 4G and 5G, which disproportionately affects age 60+ citizens.

Over the last 10 years, Tower Hamlets has transitioned into a mostly cashless society, and transport as a whole is cashless. For aged 66+ residents this is not a major issue, as pensioners are able to travel for free using freedom passes, so have no obligation to pay for most methods of transport. For those residents aged 60-65, cashless transport systems had led some to walk instead of catching the bus, as carrying a card was not common practice. This type of transport system therefore is inclusive to those carrying freedom passes, however if these are forgotten, or if residents generally do not carry a debit or credit card, they can be excluded from travelling on buses. This raises questions regarding who cashless society is made to benefit, as it leads to huge economic savings for local government. The mandatory fee to operate cash machines in black cabs was also regarded as expensive, and in the best interest of large private corporations who provide this service, and also receive a fee for their operation which aligned with Calzada and Cobo's findings regarding digital cities often benefitting huge corporations (2015).

2) In what ways, and to what extent do smart local government, and public institutions in Tower Hamlets harness over 60's participation in decision making within the borough?

Tower Hamlets council make use of locally elected representatives and local councillors to advertise opportunities and events for communities to become engaged in local decision making. Age 60+ residents who undertook the survey were generally more active in community jury's panels, focus groups, however the majority of interviewees stressed that they had not been invited to participate in any decision-making groups or panels, and some attributed this to their age, and their opinions being unheard and undesired by the local council. An online community engagement tracker tracked levels of involvement in decision making in the borough, and provided a space for online feedback forums, which exclude a disproportionately higher number of 60+ residents, as some are less likely to have internet access or have the tools

to navigate these forums. Interviewees likewise agree that a lot of invitations to participate in discussions come through on the Tower Hamlets website, and explained that they do not use the website, they rather prefer invitations through the telephone or via letter in an age-friendly format that supports their active engagement (Torku et al., 2020) . In which case Tower Hamlets should provide multiple platforms for citizens to find out about these meetings, which cover both written invitations, posters or leaflets, as well as posting online and through email. Meetings should likewise be held both in person and online, to give those that do not use online applications like zoom an alternative way to get involved, in a hybridised way (Heitlinger et al., 2019). Many interviewees noted that they used to read the local newsletter to stay in touch with events happening within the borough, and readership for 'Our Eastend' was higher amongst older residents. This newsletter is now only published quarterly which further eliminates many over 60's from finding out about these events and forums.

Interviews also showed that everyday citizens were less likely to be involved in decision making processes, as those that were connected with a charity, or a housing association were far more likely to be invited to give their opinions. One interviewee who was not part of a board or charity was asked to a consultation meeting regarding a new building on her road, however she was not provided with access to this meeting, and she has a condition which limits her mobility. Access and transport is another factor that should also be considered when organising in-person meetings, especially as limited mobility is more likely to affect ageing residents, as also posited by Skouby et al. (2014) that advocated for intelligent technology to aid ageing residents with their mobility both inside the home, and out.

In terms of the NHS as a healthcare institution, interviewees seemed to access care services through the telephone and face to face rather than through the smart phone app. Likewise surveys showed that the majority of older residents faced more difficulty operating this app compared to under 60's which could also be a deterrent from using it. Digital training in the Ideas Store is however offered in the borough to offer computer literacy training free of charge. Only a small number of research participants had used or heard of this service, and interview feedback suggested that by the time they got home, they had forgotten how to perform what they had learnt on their own devices, as also found by Skouby et al. who stressed the importance of personalised technology within the home (2014). Similarly, survey respondents who had training sessions were far less likely to use the government and NHS' online services to fill in their forms. COVID-19 proved to be a difficult time for at home training and education but

moving forward it may be valuable for computer training to happen in people's homes where possible. Some residents will not have their own computers and smart phones; however, lots do but require a more personalised session in order to retain relevant information and use their training in the future. This will allow them to access online forums, zoom consultation meetings, and other online engagement tools for citizen participation.

3) In what way, if any, do smart community initiatives and volunteering initiatives engage and include ageing populations?

Tower Hamlets has a lively voluntary and community sector, with many survey participants playing an active role in their community through involvement in charity work and local government volunteering. Similarly, to jury's and focus groups, 60+ residents were more likely to be involved in, and volunteer in, community activities than under 60's which suggests a large sense of inclusion of older residents in community life. Similarly, to government organised focus groups, the 'Our East End' newsletter now being a quarterly publication disproportionately affects over 60's as they make up the biggest readership, so they will have to look elsewhere to find out about community events. The majority of interviewees therefore had not been invited to or heard of community events being held by the council, but had heard about community events run by charities through letters and landline calls. Interviewees suggested that most community events within the borough happen outside of the sphere of government organisations, through more informal acts of community and bottom-up networks (Horlings et al., 2021). Community volunteers and ambassadors also work to reduce loneliness by providing telephone buddy schemes which pair older and younger residents together to talk over the phone. Intergenerational digital training also works for younger residents to teach older residents about how to use technology. This increases both recipients and volunteers' quality of life and independence. However, most survey respondents, both old and young, had never heard of this programme before. Since the introduction of smart city policies around 10 years ago, and even before, the Borough of Tower Hamlets has undergone gentrification, which has led to social demographic change, and interview respondents found a decrease in community events. This heightened feelings of exclusion amongst elderly populations, as also found by Taylor-Beck's study in London (2019).

Digital exclusion affected half of interviewees, who reported feeling anxious, unintelligent, and fearful of new technology being used in the borough. They did not see themselves as capable of using the technology or equipped with the skillset to do so which is explained by

Bandura's Social Cognitive Theory (Rocha et al, 2019). However, some respondents noted feelings of inclusion associated with increased use of technology, especially in the home. They noted feelings of active ageing and increased social action from the comfort of their home, which in turn decreased general senses of loneliness (Skouby et al., 2014). Overall, survey responses demonstrated that residents under age 60 were slightly more likely to feel lonely within the borough than younger residents, despite higher rates of digital exclusion among the older demographic.

5.2 Practical implications

The findings from this research are case-study based in Tower Hamlets, as every London Borough operationalises smart city policies in slightly different ways, however, this research is somewhat applicable to London as a whole, as much of Tower Hamlets smart city policies, and ageing well policies are guided by the Greater London Authority (2018). In this way, the findings of this research, especially the findings related to the NHS and Transport for London (London-wide organisations) are of great use to London borough's as a whole. Of course, Tower Hamlets has a slightly lower than average ageing population, so the need for studies of this kind in London boroughs with substantially higher ageing populations is even more necessary. It is worth noting that Tower Hamlets is the 5th most deprived borough in London, so this further increases the digital divide for those who experience income inequality, which may differ from borough to borough (Tower Hamlets Council 2015).

In terms of globally, this research contributes to a neglected field of work, that focuses on how ageing residents are affected by smart city narratives. Using Nam and Pardo's framework, other global smart cities can assess how the introduction of technology, civic participation, and smart communities in smart city policy has affected their ageing residents (2011). It is worth noting that economic and environmental smart city policies are not necessarily covered under this framework, or within this research, so future research in smart cities that perhaps focus on these aspects may be wise to choose a different framework from that of Nam and Pardo that is more personalised to that particular place (2011). Nam and Pardo's framework proved extremely useful in categorising smart city policies within Tower Hamlets, however this research found technology to be the main driving force behind both institutional and smart community policies within Tower Hamlets. Therefore, upon reflection, especially analysing policy documents, it became clear that future models assessing smart city policy in London should place technology

as slightly more central than it appears in Nam and Pardo's model (2011), but definitely not all-consuming.

6 Reflection and research agenda

The importance of this research, and the current lack of research into how smart cities affect ageing populations, especially in London, was confirmed throughout the course of data collection and analysis, as results suggest that there is still a long way to go in ensuring that age 60+ residents feel included in decisions regarding services, communities and events that affect their everyday life, and currently they are under-consulted. Smart city policies are still a relatively new phenomena within Tower Hamlets (last 5-10 years), so the sooner the borough take action to do this, the better. Despite general under-consultation, there we some significantly positive findings about some elements of smart city policy, for example smart phones as a way to decrease loneliness, freedom passes as a useful cash-free initiative, and generally over 60's were more represented in spheres of community work, and community focus groups, jury's and panels than under 60's. There is still a general lack of attention in the current field of smart city research on intersectional digital exclusion, and I would therefore suggest that future research delves into how income inequality, age, ethnicity, gender and other factors are interconnected, and how smart city policies affect intersectionally marginalised populations. I would also advise future researchers to try and contact older residents outside of social networks, as snowballing methods can mean that answers to community-based questions are slightly skewed. I would also increase the representativeness of the sample size, as more male participants in surveys and interviews would have created a more representative sample size. I would also recommend to future researchers to distribute paper surveys to older residents, as providing only online surveys will further marginalise those voices that we, as researchers, want to hear from. Fortunately, and thankfully, survey and interview respondents were helpful, passionate, and co-operative, which made the data collection that underpins this integral piece of research possible.

Bibliography

Abusaada, H. and Elshater, A., 2020. COVID-19 challenge, information technologies, and smart cities: considerations for well-being. *International Journal of Community well-being*, *3*(3), pp.417-424.

Alt-White, A.C., 1995. Obtaining" informed" consent from the elderly. *Western Journal of Nursing Research*, *17*(6), pp. 700–705.

Anthopoulos, L.G., 2015. Understanding the smart city domain: A literature review. *Transforming city governments for successful smart cities*, pp. 9–21.

Barry, J., 2019. Planning in and for a post-growth and post-carbon economy. In *The Routledge Companion to Environmental Planning* (pp. 120–129). Routledge.

Bellingtier, J. and Sharifian, N., 2016. *Ethical considerations for researchers working with older adults*. [online] https://www.apadivisions.org. Available at: <https://www.apadivisions.org/division-20/publications/newsletters/adult-development/2016/10/ethical-issues> [Accessed 1 August 2022].

Biggs, S., Phillipson, C., Leach, R. and Money, A., 2007. Baby boomers and adult ageing: Issues for social and public policy. *Quality in Ageing and Older Adults*.

Boroughs Map – UK Map Centre. Blog.ukmapcentre.co.uk. (2022). Retrieved 12 April 2022, from <https://blog.ukmapcentre.co.uk/products/london-boroughs-map/?sku=0702785140109>.

Bowen, G.A., 2009. Document analysis as a qualitative research method. *Qualitative research journal*.

Bowerman, B., Braverman, J., Taylor, J., Todosow, H. and Von Wimmersperg, U., 2000, September. The vision of a smart city. In *2nd International Life Extension Technology Workshop, Paris* (Vol. 28, No. 7).

Bowerman, B., Braverman, J., Taylor, J., Todosow, H. and Von Wimmersperg, U., 2000, September. The vision of a smart city. In *2nd International Life Extension Technology Workshop, Paris* (Vol. 28, No. 7).

Buffel, T. and Phillipson, C. (2016), "Can global cities be 'age-friendly cities'? Urban development and ageing populations", Cities, Vol. 55, pp. 94–100.

Buffel, T., Phillipson, C. and Scharf, T., 2012. Ageing in urban environments: Developing 'age-friendly'cities. *Critical social policy*, *32*(4), pp. 597–617.

Calzada, I. and Cobo, C., 2015. Unplugging: Deconstructing the smart city. *Journal of Urban Technology*, *22*(1), pp. 23–43.

Calzada, I., 2020. *Smart city citizenship*. Elsevier.

Caragliu, A., Del Bo, C. and Nijkamp, P., 2009. Smart cities in Europe (2009). In *3rd Central European Conference in Regional Science*.

Clarke, V., Braun, V. and Hayfield, N., 2015. Thematic analysis. *Qualitative psychology: A practical guide to research methods*, *222*(2015), p. 248.

Cloke, P., Cooke, P., Cursons, J., Milbourne, P. and Widdowfield, R., 2000. Ethics, reflexivity and research: Encounters with homeless people. *Ethics, Place & Environment*, *3*(2), pp. 133–154.

Coe, A., Paquet, G. and Roy, J., 2001. E-governance and smart communities: a social learning challenge. *Social science computer review*, *19*(1), pp. 80–93.

De Witt, L., Ploeg, J. and Black, M., 2009. Living on the threshold: The spatial experience of living alone with dementia. *Dementia*, *8*(2), pp. 263–291.

Denzin, N.K., 1970. The research act in sociology: A theoretical introduction to sociological methods.

Dimitrova, M., 2019. *Six Finnish Smart Cities work together*. [online] Themayor.eu. Available at: <https://www.themayor.eu/en/a/view/six-finnish-smart-cities-work-together-2501#:~:text=Six%20cities%20from%20Finland%20are,by%20the%20European%20Cohesion%20Policy.> [Accessed 13 April 2022].

Dirks, S. and Keeling, M., 2009. A vision of smarter cities: How cities can lead the way into a prosperous and sustainable future. *IBM Institute for business Value*, 8.

Dodd, S., 2019. Marginalised Public Library Patrons in E-Governed Smart Cities: Ethics, Access & Inclusion.

Etikan, I., Musa, S.A. and Alkassim, R.S., 2016. Comparison of convenience sampling and purposive sampling. *American journal of theoretical and applied statistics*, *5*(1), pp. 1–4.

Gehl, J., 1987. *Life between buildings* (Vol. 23). New York: Van Nostrand Reinhold.

Glasmeier, A. and Christopherson, S., 2015. Thinking about smart cities. *Cambridge Journal of Regions, Economy and Society*, *8*(1), pp. 3–12.

Godschalk, D.R. and Mills, W.E., 1966. A collaborative approach to planning through urban activities. *Journal of the American Institute of Planners*, *32*(2), pp. 86–95.

Greater London Together, 2018. *Smarter London Together*. London: Greater London Authority, pp. 1–60. Available at: <https://www.london.gov.uk/sites/default/files/smarter_london_together_v1.66_-_published.pdf> [Accessed 24 May 2022].

Harvey, D., 1989. From managerialism to entrepreneurialism: the transformation in urban governance in late capitalism. *Geografiska Annaler: series B, human geography*, *71*(1), pp. 3–17.

Heitlinger, S., Bryan-Kinns, N. and Comber, R., 2019, May. The right to the sustainable smart city. In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems* (pp. 1–13).

Hollands, R.G., 2020. Will the real smart city please stand up?: Intelligent, progressive or entrepreneurial?. In *The Routledge companion to smart cities* (pp. 179–199). Routledge.

Horlings, L.G., Lamker, C., Puerari, E., Rauws, W. and van der Vaart, G., 2021. Citizen engagement in spatial planning, shaping places together. *Sustainability*, *13*(19), p. 11006.
IMD business school. 2019. *IMD Smart City Index 2019 - IMD Report*. [online] Available at: <https://www.imd.org/research-knowledge/reports/imd-smart-city-index-2019/> [Accessed 2 August 2022].

Ingram, G.K., Carbonell, A., Hong, Y.H. and Flint, A., 2009. Smart growth policies. *Cambridge, MA: Lincoln Institute of Land Policy. Retrieved December*, *14*, p. 2011.

Ishkineeva, G., Ishkineeva, F. and Akhmetova, S., 2015. Major approaches towards understanding smart cities concept. *Asian Social Science*, *11*(5), p. 70

Jessop, B., 2005. The Entrepreneurial City: Re-imaging localities, redesigning economic governance, or restructuring capital? 1. In *Transforming cities* (pp. 28–41). Routledge.

Jones, T.L., Baxter, M.A.J. and Khanduja, V., 2013. A quick guide to survey research. *The Annals of The Royal College of Surgeons of England*, *95*(1), pp. 5–7.

Journal of Community well-being, *3*(3), pp. 417–424.

Kaika, M., 2017. 'Don't call me resilient again!': the New Urban Agenda as immunology… or… what happens when communities refuse to be vaccinated with 'smart cities' and indicators. *Environment and Urbanization*, *29*(1), pp. 89–102.

Kaye, B.K. and Johnson, T.J., 1999. Research methodology: Taming the cyber frontier: Techniques for improving online surveys. *Social Science Computer Review*, *17*(3), pp. 323–337.

Khan, Z., Dambruch, J., Peters-Anders, J., Sackl, A., Strasser, A., Fröhlich, P., Templer, S. and Soomro, K., 2017. Developing knowledge-based citizen participation platform to support Smart City decision making: The Smarticipate case study. *Information*, *8*(2), p. 47.

Kim, J. and Kaplan, R., 2004. Physical and psychological factors in sense of community: New urbanist Kentlands and nearby Orchard Village. *Environment and behavior*, *36*(3), pp. 313–340.

Koistinen, P.O.I., Elo, S., Ahlroth, M., Kokko, J., Suistio, S., Kujala, V., Naarala, M. and Rissanen, T., 2013. OLDWELLACTIVE-A self-rated wellness profile for the assessment of wellbeing and wellness activity in older people. *European Geriatric Medicine*, *4*(2), pp. 82–85.

Lara, A.P., Da Costa, E.M., Furlani, T.Z. and Yigitcanla, T., 2016. Smartness that matters: towards a comprehensive and human-centred characterisation of smart cities. *Journal of Open Innovation: Technology, Market, and Complexity*, *2*(2), p. 8.

Lee, J.H., Phaal, R. and Lee, S.H., 2013. An integrated service-device-technology roadmap for smart city development. *Technological Forecasting and Social Change*, *80*(2), pp. 286–306.

Lindskog, H., 2004, April. Smart communities initiatives. In *Proceedings of the 3rd ISOneWorld Conference* (Vol. 16, pp. 1–16).

Lockhart, A., 2021. Local's Need Protection. *Hackney Citizen*, [online] Available at: <https://www.hackneycitizen.co.uk/2021/07/20/gentrification-shoreditch-campaign-save-brick-lane/> [Accessed 5 February 2021].

Longhurst, R., 2003. Semi-structured interviews and focus groups. *Key methods in geography*, *3*(2), pp. 143–156.

Lund, T., 2012. Combining qualitative and quantitative approaches: Some arguments for mixed methods research. *Scandinavian journal of educational research*, *56*(2), pp. 155–165.

Lydon, M. and Garcia, A., 2015. A tactical urbanism how-to. In *Tactical urbanism* (pp. 171–208). Island Press, Washington, DC.

Map, L. (2022). *London Borough of Tower Hamlets - Street Map*. The Map Centre. [Retrieved 12 April 2022], from <https://www.themapcentre.com/london-borough-of-tower-hamlets---street-map-22655-p.asp>.

Marcuse, P., 2009. From critical urban theory to the right to the city. *City*, *13*(2-3), pp. 185–197.

Marston, H.R. and van Hoof, J., 2019. "Who doesn't think about technology when designing urban environments for older people?" A case study approach to a proposed extension of the WHO's age-friendly cities model. *International journal of environmental research and public health*, *16*(19), p. 3525.

Mitchell, W.J., 2007. Intelligent cities. *UOP e-Journal on the Knowledge Society*, (5).

Moser, M.A., 2001. What is smart about the smart communities movement. *EJournal, 10*, *11*(1), pp. 1–11.

Nam, T. and Pardo, T.A., 2011, June. Conceptualizing smart city with dimensions of technology, people, and institutions. In *Proceedings of the 12th annual international digital government research conference: digital government innovation in challenging times* (pp. 282–291).

Nienhuis, I., Van Dijk, T. and De Roo, G., 2011. Let's collaborate! But who's really collaborating? Individual interests as a leitmotiv for urban renewal and regeneration strategies. *Planning theory & practice*, *12*(1), pp. 95–109.

Orlowski, A. and Romanowska, P., 2019. Smart cities concept: Smart mobility indicator. *Cybernetics and Systems*, *50*(2), pp. 118–131.

Partridge, H.L., 2004. Developing a human perspective to the digital divide in the'smart city'. In *Australian library and information association biennial conference*.

Pilgrim, M., 2006. London regional governance and the London boroughs. *Local Government Studies*, *32*(3), pp. 223–238.

Pooley, J.A., Cohen, L. and Pike, L.T., 2005. Can sense of community inform social capital?. *The Social Science Journal*, *42*(1), pp. 71–79.

Purcell, M., 2002. Excavating Lefebvre: The right to the city and its urban politics of the inhabitant. *GeoJournal*, *58*(2), pp. 99–108.

Putnam, R.D., 2000. *Bowling alone: The collapse and revival of American community*. Simon and schuster.

Rémillard-Boilard, S., Buffel, T. and Phillipson, C., 2017. Involving older residents in age-friendly developments: from information to coproduction mechanisms. *Journal of Housing for the Elderly*, *31*(2), pp. 146–159.

Rocha, N., Dias, A., Santinha, G., Rodrigues, M., Queirós, A. and Rodrigues, C., 2019. A systematic review of smart cities' applications to support active ageing. *Procedia Computer Science*, *160*, pp. 306–313.

Rogers, E.M. (2003), Diffusion of Innovations, 5th ed., Free Press, New York.

Schmidt, C., 2004. The analysis of semi-structured interviews. *A companion to qualitative research*, *253*(258), pp. 7619–7374.

Sharifi, A., Kawakubo, S. and Milovidova, A., 2020. Urban sustainability assessment tools: Toward integrating smart city indicators. In *Urban systems design* (pp. 345–372). Elsevier.

Shirky, C., 2009. *Here comes everybody: How change happens when people come together*. Penguin UK.

Skinner, M., 2022. We repond to livable streets schemes consultations. *NHS*, [online] Available at: <https://www.bartshealth.nhs.uk/news/we-respond-to-liveable-streets-schemes-consultation-13749> [Accessed 8 August 2022].

Skouby, K.E., Kivimäki, A., Haukiputo, L., Lynggaard, P. and Windekilde, I.M., 2014, May. Smart cities and the ageing population. In *The 32nd Meeting of WWRF* (pp. 1–12).

Smarter London Board, 2013. *The Smart London Plan*. London, pp. 1–54 Available at: <https://www.london.gov.uk/sites/default/files/smart_london_plan.pdf> [Accessed 3 March 2022].

Stratigea, A., 2012. The concept of 'smart cities'. Towards community development?. *Netcom. Réseaux, communication et territoires*, (26-3/4), pp. 375–388.

Suopajärvi, T., 2018. From tar city to smart city: Living with the smart city ideology as senior city dweller. *Ethnologia Fennica*, *45*, pp. 79–102.

Tadili, J. and Fasly, H., 2019, October. Citizen participation in smart cities: A survey. In *Proceedings of the 4th International Conference on Smart City Applications* (pp. 1–6).

Tang, J., Wan, L., Schooling, J., Zhao, P., Chen, J. and Wei, S., 2022. Automatic number plate recognition (ANPR) in smart cities: A systematic review on technological advancements and application cases. *Cities*, *129*, p. 103833.

Taylor-Beck, Tracy. "Using London as a Case Study to Examine the Positive and Negative Aspects of Urban Gentrification." *Ideas from IDS: Graduate Papers from 2017/18* (2019): 90.

Torku, A., Chan, A.P. and Yung, E.H., 2020. Implementation of age-friendly initiatives in smart cities: probing the barriers through a systematic review. *Built Environment Project and Asset Management*.

Tower Hamlets Ageing Well Department, 2021. *Ageing well in Tower Hamlets*. London, pp. 1–48. Available at: <https://www.towerhamlets.gov.uk/Documents/Adult-care-services/Supporting-adults/Ageing_Well_Strategy.pdf> [Accessed 25 May 2021].

Tower Hamlets Council, 2014. *Communications and Digital Inclusion*. London, pp. 1–14. Available at: <https://www.towerhamlets.gov.uk/Documents/Borough_statistics/Digital_inclusion/Comms-digital-inclusion-briefing-2014-08.pdf> [Accessed 31 June 2022].

Tower Hamlets Council, 2015. *Deprivation in Tower Hamlets*. [online] London: Corporate Research Unit, pp. 1–47. Available at: <https://www.towerhamlets.gov.uk/Documents/Borough_statistics/Income_poverty_and_welfare/Indices_of_Deprivation_Low_resolution.pdf> [Accessed 18 January 2022].

Tower Hamlets Council, 2018. *Tower Hamlets Community Engagement Strategy*. London, pp. 1–38. Available at: <https://www.towerhamlets.gov.uk/Documents/Community-safety-and-emergencies/Community_engagement/TH_Engagement_Strategy.pdf> [Accessed 24 May 2022].

Tower Hamlets Council, 2020. *Tower Hamlets strategic plan 2020 – 2023*. London. Available at: <https://democracy.towerhamlets.gov.uk/documents/s165904/Tower%20Hamlets%20Strategic%20Plan%202020%20-%20For%20Cab.pdf> [Accessed 20 July 2022].

Tower Hamlets Council, 2021. *Digital Inclusion Strategy 2021 - 2024*. London, pp. 1–10. Available at: <https://democracy.towerhamlets.gov.uk/documents/s194601/6.1a%20Appendix.%201%20for%20Tower%20Hamlets%20Digital%20Inclusion%20Strategy%20and%20Action%20Plan.pdf> [Accessed 25 May 2022].

Tower Hamlets Council, 2022. *Tower Hamlets Strategic Plan*. London, pp. 1–26. Available at: <https://www.towerhamlets.gov.uk/Documents/Strategy-and-performance/Tower-Hamlets-Council-Strategic-Plan-2022-2026.pdf> [Accessed 4 June 2022].

Towerhamlets.gov.uk. 2022. *Borough Profile*. [online] Available at: <https://www.towerhamlets.gov.uk/Documents/Borough_statistics/Research-briefings/Population_2_BP2018.pdf> [Accessed 5 August 2022].

Towerhamlets.gov.uk. 2022. *Digital Hubs*. [online] Available at: <https://www.towerhamlets.gov.uk/content_pages/online_services/Digital-Hubs.aspx> [Accessed 6 April 2022].

Un.org. 2019. *World Ageing Populations*. [online] Available at: <https://www.un.org/en/development/desa/population/publications/pdf/ageing/WorldPopulationAgeing2019-Highlights.pdf> [Accessed 2 August 2022].

Van Dijk, J. and Hacker, K., 2003. The digital divide as a complex and dynamic phenomenon. *The information society*, *19*(4), pp. 315–326.

Van Selm, M. and Jankowski, N.W., 2006. Conducting online surveys. *Quality and quantity*, *40*(3), pp. 435–456.

Von Hippel, E., 2009. Democratizing innovation: the evolving phenomenon of user innovation. *International Journal of Innovation Science*.

Winkowska, J., Szpilko, D. and Pejić, S., 2019. Smart city concept in the light of the literature review. *Engineering Management in Production and Services*, *11*(2), pp. 70–86.

World Health Organization, 2007. *Global age-friendly cities: A guide*. World Health Organization.

Yigitcanlar, T., 2016. *Technology and the city: Systems, applications and implications*. Routledge.

Yovanof, G.S. and Hazapis, G.N., 2009. An architectural framework and enabling wireless technologies for digital cities & intelligent urban environments. *Wireless personal communications*, *49*(3), pp. 445–463.

Appendices

Appendix 1: Paper and online copy of the distributed survey

Smart City Initiatives: London Borough of Tower Hamlets

Thank you for participating in this survey, your responses are really appreciated.

My name is Sarah Tyrrell, and I am a master's student in the Faculty of Spatial Science at the University of Groningen (Netherlands).

The data collected will inform my master's Thesis on the implications of smart city policies on residents living in Tower Hamlets.

This survey takes approximately 7 minutes to complete and consists of 20 short questions. Please only complete this survey if you are over the age of 18 and are living in Tower Hamlets.

This survey is completely anonymous, and all data collected will be used strictly for the purpose of this research. Your participation in the survey is voluntary, and you may withdraw from the survey at any point by leaving the site.

If you have any queries or are interested in this research, feel free to email me at: s.m.tyrrell@student.rug.nl

- -

Q1 Please identify your gender

○ Male (1)

○ Female (2)

○ Non-binary / third gender (3)

○ Prefer not to say (4)

- -

Q2 Please specify your age

○ 18-26 years old (1)

○ 27-37 years old (2)

○ 38-48 years old (3)

○ 49-59 years old (4)

○ 60-70 years old (5)

○ 71-80 years old (6)

○ 80+ years old (7)

Q3 Have you heard of the term 'smart city' before?

○ Yes (1)

○ No (2)

○ Somewhat (3)

Q4 Are you aware of smart city initiatives happening in the borough of Tower Hamlets?

○ Yes (1)

○ No (2)

○ Somewhat (3)

Q5 How often do you have access to the internet on any device (could be a phone, laptop, computer, iPad)?

○ Always (1)

○ Most of the time (2)

○ Sometimes (3)

○ Rarely (4)

○ Never (5)

Q6 Do you go online to fill in forms for government services such as housing benefit, parking permits, council tax, disability benefits, passports, visas and civil claims?

○ Always (1)

○ Most of the time (2)

○ About half the time (3)

○ Sometimes (4)

○ Never (5)

Q7 How easy do you find it to navigate these online services? (housing benefit, parking permits, council tax, disability benefits, passports, visas and civil claims)

○ Extremely easy (1)

○ Somewhat easy (2)

○ Neither easy nor difficult (3)

○ Somewhat difficult (4)

○ Extremely difficult (5)

○ I have never used these online services (6)

Q8 Do you use the internet and digital technology to access care services, medical advice or formal care? (could be online prescriptions, appointments etc)

○ Always (1)

○ Most of the time (2)

○ About half the time (3)

○ Sometimes (4)

○ Never (5)

Q9 How easy do you find using the internet and digital technology to access care services, medical advice or formal care?

○ Extremely easy (1)

○ Somewhat easy (2)

○ Neither easy nor difficult (3)

○ Somewhat difficult (4)

○ Extremely difficult (5)

○ I never use the internet to access care services (6)

Q10 If you use public transport, what method of payment do you use?

○ I don't use public transport (1)

○ I buy a ticket every time (2)

○ I have an oyster card that I top up (3)

○ My credit / debit card is registered to contactless (4)

○ Freedom Pass

Q11 How do you prefer to contact Tower Hamlets council?

○ Letter (1)

○ Telephone (2)

○ Email (3)

○ Using the Tower Hamlets website enquiry form (4)

Page Break

Q12 Have you ever used the Ideas Store in Tower Hamlets to access online services such as books magazines and newspapers or to use the Digital Hub?

○ Yes (1)

○ No (2)

Page Break

Q13 Have you ever attended a free digital skills training programme session offered by the Borough?

○ No, I have never heard of it (1)

○ No, but I have heard of it (2)

○ Yes I have attended (3)

Q14 How many community / local events have you attended this year so far? (Could be street parties, local festivals, parades, community social groups etc.)

○ None (1)

○ 1-3 (2)

○ 4-6 (3)

○ 7-9 (4)

○ 10+ (5)

Q15 Do you ever feel lonely in this community?

○ Always (1)

○ Most of the time (2)

○ About half of the time (3)

○ Rarely (4)

○ Never (5)

Q16 Have you been part of any citizens' panels, juries, neighbourhood committees, forums, or community focus groups, set up within Tower Hamlets?

○ Yes (1)

○ No (2)

Q17 If you responded 'yes' to the previous question, please specify what citizens' panels, juries, neighbourhood committees, forums, or community focus groups you have been a part of, and how these operate.

_____

Q18 Have you heard of the Community Ambassador scheme where local residents support vulnerable older people in their local area?

○ Yes I have and I am part of it (1)

○ Yes I have but I am not part of it (2)

○ No, I have not heard of this scheme (3)

Q19 Do you volunteer in anyway in the local community, or are you the recipient of volunteering work?

○ Yes I volunteer (1)

○ Yes I am a recipient (2)

○ Yes I am both a volunteer and a recipient (3)

○ No, I am neither a volunteer nor recipient (4)

Q20 If you specified yes to the above question, please outline the volunteering you do, or are a recipient of.

_____

Q21 I consent to the data I have provided being used to inform a master's dissertation on smart city initiatives in Tower Hamlets.

○ Yes (3)

○ No (4)

End of Block: Default Question Block

Appendix 2: Flyer with QR code link to access the online survey

Appendix 3: Interview Guide

1) How would you define a 'smart city', what do you think of what does it mean to you?

2) Do you use technology on a day-to-day basis? For example, if you are travelling maybe, filling in forms, returning things to the council, getting in contact with the council etc?

3) How easy or difficult do you find operating the online services that the borough offers (parking permits, pension, UC, services, council services)?

4) Do technology / smart city initiatives make you feel included?

5) Do you use the internet and digital technology to access care services, medical advice or formal care? How easy do you find this?

6) Do you feel that your cyber security and privacy is protected when you use smart technology?

7) Does technology support your mental and physical well-being, or do you feel otherwise?

8) In what way, if any does technology improve your social inclusion? Any apps you use, services you use that bring you closer to people?

9) The smart city is also about engaging with local people, do you feel that the borough of Tower Hamlets support social participation in local events and with other local people - Are that events that you attend where you are asked for your opinions? Or when you can chat to others?

10) Are there any community events that you attend, and if so what are they, and are they organised digitally or how are they organised?

11) Have Tower Hamlets ever offered free basic training in how to use their online systems, and if they did would you take this up?

12) Smart city initiatives were introduced into the borough in in the last five or so years, and London in general in the last 10 years. have you noticed an impact of this on your daily life? This could be increasing social activities or increase in digitalization?

13) Are there opportunities for you to input into decision-making process is within the community or the borough? do you have the chance to have your say on community issues?

14) Have you ever made use of the Open Access data sources, or the Idea Store in Tower Hamlets?

Appendix 4: Participant Information Sheet

Participant Information: Smart City policies in Tower Hamlets

You are being invited to take part in a research project. Before you decide it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully. Ask me if there is anything that is not clear or if you would like more information.

Who is organising the research?

Principal Investigator: Miss Sarah Tyrrell (MSc student at The University of Groningen)

Email: s.m.tyrrell@student.rug.nl

What is the purpose of the project?

The purpose of this project is to assess how smart city government policies affect residents in Tower Hamlets who are 60+. You do not have to have any knowledge about smart cities to participate in this study.

Why have I been chosen?

I am interviewing age 60+ residents living in the London Borough of Tower Hamlets.

Do I have to take part?

It is up to you to decide whether or not to take part. If you do decide to take part, you will be given this information sheet to keep and be asked to sign a consent form.

Can I change my mind about taking part?

Yes, you can stop the interview at any time without giving a reason and your responses will be withdrawn. After the interview has taken place, and for 5 days following you can still ask to withdraw your responses using the email at the end of the information sheet. After this, it is not possible to withdraw responses, as my thesis will be almost finalised.

What would taking part involve?

A 10-minute interview (roughly) consisting of some questions based on new smart city policies in the Borough of Tower Hamlets.

Will I be recorded, and how will the recorded media be used?

The audio recordings of your interview will be used only for analysis. The anonymised transcription of the recording(s) for the master's thesis will be shared with the University of Groningen in the appendix of the study, and quotes may be taken from transcripts, and

pseudonyms assigned to you upon possible publication of this research so your identity is protected.

How will my information be managed?

You will remain "anonymous" which means that you will not be able to be identified in any external reports or publications about the research without your specific consent. The recording will only be accessible to me. You will be given a pseudonym to conceal your real identity.

Further use of your information

The information collected from you may be used to support other research projects in the future. It will not be possible for you to be identified from this.

Keeping your information if you withdraw from the study

Project governance documentation, including copies of signed participant agreements: I will keep this documentation for a long period after completion of the research, so that I have records of how I conducted the research and who took part. The only personal information in this documentation will be your name and signature, and we will not be able to link this to any anonymised interviews.

Contact for further information

If you have any questions, or would like to see the outcomes of this study, please email myself (Miss Sarah Tyrrell) at:

s.m.tyrrell@student.rug.nl

Finally

If you decide to take part, you can keep this sheet, and a signed participant agreement form.

Thank you for considering taking part, I really appreciate your time.

Appendix 5: Consent Form for Interviews

Consent Form for Interviews: Smart City policies in Tower Hamlets

Thank you for reading the information sheet about the interview research. If you are happy to participate then please complete and sign the form below. Please cross the boxes below to confirm that you agree with each statement:

Please cross box:

I confirm that I have read and understood the information sheet provided and have had the opportunity to ask questions.

I understand that my participation is voluntary and that I am free to withdraw my responses anytime during the interview, and up to 5 days after without giving any reason, and without there being any negative consequences. In addition, should I not wish to answer any particular question or questions, I am free to decline.

I agree for this interview to be recorded. I understand that the audio recording made of this interview will be used only for analysis and that extracts from the interview, from which I would not be personally identified, may be used in any conference presentation, report or journal article developed as a result of the research. I understand that quotes and transcripts will be anonymised, and a pseudonym granted. I understand that no other use will be made of the recording without my written permission, and that no one apart from the principal investigator will be allowed access to the original recording.

I agree that my anonymised data will be kept for future research purposes such as publications related to this study after the completion of the study.

I agree to take part in this interview.

_____ _____

_____

Name of participant   Date   Signature

_____ _____

_____

Principal Investigator   Date   Signature

Deductive Codes

Technology

Transport, mobility and contactless
Phones / access to internet
Online form filling and cyber security

Institutional

Participation in local decision making
NHS services
ICT training sessions / Ideas Store

Social

Community events / feelings of community
Feelings of inclusion and exclusion
COVID-19

Interview 1: Marie

Sarah**:** This is interview number 1 with Marie. How would you define a smart city?

Marie: I do not know what it means, no idea whatsoever

Sarah: That's absolutely fine. And so do you use technology on a day-to-day basis, phone computer, laptop

Marie: No, I don't, no email or laptop or computer

Sarah: And if you try and get in contact with the council, how would you do that?

Marie: By telephone

Sarah: How easy do you find it to go online, or use the boroughs online services - for example to get pension, parking permits etc

Marie: Well, I don't use online so it would be very difficult for me to go online to use borough services, I've not got internet - so I would ring them preferably, and I would wait three hours for them to answer

Sarah: Oh, has that happened before then?

Marie: You're hanging there and hanging there and hanging there

Sarah: Do they ring you back?

Marie: Very seldom, very seldom, I always ask who I am speaking to to get their name

Sarah: That is very interesting, and so does technology and things being online like council services, does that make you feel included

Marie: No, it doesn't,. It leaves me out because I'm not into technology. I am 83 years of age, and I am not into this new, smart city thing, I am not. So, this makes me excluded

Sarah: Ok so you feel excluded, and do you feel you use technology at all to support your mental health, so for example some people use the phone to talk to others, does it make you feel connected at all?

Marie: An ordinary landline I am using it all the time. I get about 3 phone calls from friends in the morning, and a few friends in the evening. That keeps me going, so landline is my lifeline

Sarah: Landline is your lifeline, ok, that makes sense… and so the smart city is about engaging with local people, so it's about technology but also about reaching out and including people. Do you feel the borough of tower hamlets supports your social life - maybe in local events with local people? Do you go to local events organised by Tower Hamlets?

Marie: No. err no, a volunteer runs a coffee morning for us, but she is a volunteer, err no no i don't

Sarah: So, you do attend community events, but they are not organised by the borough?

Marie: No, they are not, exactly right.

Sarah: Do you think you would attend if they did organise something

Marie: All depends on what it is, if it interests me I would and if it didn't I would not, but I don't get any invites or things to events from the council.

Sarah: Ok so none organised by the borough, but are there any community events you attend in general? If so what are they, and how are they organised?

Marie: I find out off of a volunteer called Ann – she will telephone the pensioners in the tenants society and ask them if they want to come to coffee mornings round the church, and this is a lovely little break for us it is. This is my community. She just rings me, and if I needed to use the internet she would come to my house and help me or do it for me.

Sarah: Ahh that is lovely, so for you, you rely on the support of the community to help you with technology rather than the borough

Marie: Not Tower Hamlets, I don't rely on them at all to help me with technology.

Sarah: And so, have Tower Hamlets ever offered you free basic training in how to use their online systems?

Marie: No

Sarah: And so, in general smart city initiatives were introduced into the borough in the last 10 years or so – this includes an increase in technology and social activities – have you noticed a difference in your daily life?

Marie: No, no, in fact I have seen things are closing down.

Sarah: Oh ok, do you have an example?

Marie: Our street supermarkets have gone, a lot of shops, some events, so no not really I haven't seen any nice increases

Sarah: And in terms of technology have you seen increasing amounts across the city? For example, on Public transport or on the street

Marie: If I get on the bus they are always using technology

Sarah: Are there opportunities for you to give your input to the borough? Are you ever invited to do so?

Marie: No no, I I don't think they care about us anyway; I think when you get to a certain age, I don't think you are included in any discussions, I don't think they want to know, I really don't. At my age you tend to just say the truth, and that hurts, and I don't think they want to hear it

Sarah: So, you don't feel like they value or want to hear your opinions

Marie: Not my opinions

Sarah: One last question: have you ever used the Ideas Store in Tower Hamlets

Marie: I've seen it but never used it. I don't know what goes on in there

Sarah: So, they have some free basic training in computer skills

Marie: No not been advertised to me.

Sarah: Thank you so much for your participation

Sarah: So, I have a few questions to ask you, feel free to have as long or short answers as you want, so how would you define a smart city. Do you know what it means?

Josie: No, no I haven't got a clue

Sarah: That's ok, no problem, do you use technology on a day-to-day basis?

Josie: Only a mobile phone

Sarah: Ok, only a mobile phone. And things like computers, laptops, what about those

Josie: No

Sarah: If you fill in forms for the council how would you do this?

Josie: Handwritten and sent back

Sarah: So, sent by letter

Josie: yeah that's right. We do like paperwork

Sarah: How easy or difficult do you find operating online services that the borough offers? Do you find it easy difficult?

Josie: Well, I live in private accommodation, so I don't live in THCH housing, so basically we don't really get a lot of truck with the borough other than the essential services, the cleaning and that is really, nothing more.

Sarah: And if you have any kind of queries and questions – things like parking permits and all of that?

Josie: Yes they become a pain, the system and how it's gone now. You know, I have three sons who help, and a volunteer for the pensioners helps me with online paperwork, to get the forms and all that but we waited and waited – you can't just ring up now and say you need something, that is all gone. And I find it is err not right really.

Sarah: I suppose if you did need to get hold of the council for parking permits and things like that, would you ring the council.

Josie: I would have to ask someone else to do it for me – our volunteer for the pensioners club is a good girl, she helps us with all of that. I have got to say we do get in touch with her, and she helps us.

Sarah: So, you rely on someone to help you go online and do those things?

Josie: Yeah. During the covid, all the pensioners met for a coffee morning for the first time in 2020, organised by the volunteers. So, we have been going to coffee mornings now for about 18 months going on 2 years and we all enjoy it.

Sarah: After the pandemic, did technology play a bigger role in your life? How do you get your invites to these coffee mornings? Did you use your phone more?

Josie: By phone, we are all by phone us little lot at the coffee mornings. None of us older people can use the computers. Our families can, our kids can. My granddaughters come round and sort me out on the phone. Like is aid me and my husband like paperwork. Send it on paper. Doctors, anything like that we always ask can you send us a letter please on the calendar. That is how we have always lived our lives. But that's an age thing I think

Sarah: And that was one of my questions as well, because the borough works with the NHS, so a lot of those services are online now, and how do you manage that?

Josie: I must admit since we have not had our doctors open to physically go round to, I've only been twice. At the end of the day, I do not agree with these automated three-month prescriptions, because it suits me fine – but the waste that is given out is colossal for the NHS. I don't need three months' worth, when I want it, I will ask for it again. If you get your prescription at the doctors you can physically tick off what you want, but online you just get repeats.

Sarah: So, you don't really use online for these services then

Josie: No – we just ring up the dr and say we are due for so and so; you know that when certain ones are running out and you think ' ohhh I must be due my prescription now'.

Sarah: Interesting and so do you feel that technology supports your mental health in anyway… so landlines

Josie: Oh yeah yeah, I have got to say it technology is a good thing in a lot of ways. My brother who died in the 1960s was a computer programmer in systems analysis. He died before he had the chance to benefit from it, and he used to use computer when they were as big as a brick wall, and he said to dad in years to come everyone will have one of these in their own home. It is a good think in a lot of ways, but it aint so good in others, I think its killed a lot of close communities, mind you people moving out of the boroughs has done that as well. Splitting families up because you can keep in touch with them on Facebook. I don't like Facebook, you know why because I'm old school, and when I talk to old friends on there, it makes me want to cry because I miss them. But we talk everyday but I do say if come down and see me in person, and they do.

Sarah: I mean that is very interesting, and you know, the smart city is not only about technology, but it's about engaging local people to feel they have social participation in local events, so the borough do they organise any events?

Josie: No not really, I do not know the people living on council estates anymore, but they don't invite me as far as I am concerned, and the housing associations used to allow for a really good social life, but that is all done now, they don't do none of that.

Sarah: So, you find it difficult to go to borough events and they don't invite you?

Josie: I mean when Biggs was in he shut all the events down, you know it is swings and roundabouts. I can remember sitting over at cable street and Biggs came over and he was sitting talking to my friend whose estate did not have a lift in it and lived on the top floor. And Biggs said you have got a point, I will find out more from you… but I am glad you mentioned it, and I will get back to you, and he never did, and you think why did you pretend to care and you think why am I telling you this, you ain't even gonna answer me.

Sarah: So, you don't feel included in the decision making – are there any community events you attend outside the borough and how are they organised?

Josie: Yeah I am part of parmiters pensioners charity, and we get letter invitations to events, and we know where we stand with it, it is a good charity, and it looks after all of us old people and we are grateful for it. That is the only one we belong to. And other than that, it is just what families do for each other. Nothing is done by the borough at all for us

Sarah: And so, have Tower Hamlets ever offered free basic training in how to use their online systems?

Josie: No, the only one that done that was the Zacharias project in approach road and my friends and I went to it and learnt in parrot fashion, and then went to one at the library, but we don't hear about none of that now.

Sarah: And so smart city initiatives were introduced into the borough within the last 10 or so years. Have you noticed a difference in your daily life and social activities or technology?

Josie: Not really no

Sarah: Are there opportunities for you to input into decision making processes?

Josie: No not been offered any no

Sarah: Have you ever made use of the Ideas Store?

Josie: Well, the only one I know is down the roman and we have to go there and get our recycling bags and err no, We have not had no calls to, as we do not live in council properties these invites do not apply to us. I will use their loo if I go down there, but never used the computers. I do know that libraries do have the computers, but I use my phone and that suits me. I google, I do a crossword on there, I cheat like mad.

Sarah: Well, that is it, all the questions are done, Thank you so much for your participation

Interview 3: Carole

Sarah: Have you heard of a smart city before

Carole: No, no idea.

Sarah: And so, do you use technology on a daily basis, this could be a computer or a phone?

Carole: Just mobile and landline

Sarah: And do you have Wi-Fi?

Carole: no

Sarah: If you were to get in contact with the council how might you do that?

Carole: What our council? I don't bother with it.

Sarah: Do ever use the online services to get parking permits or pensions or anything like that?

Carole: Well, my daughter does the parking permits, and the pension is done over the phone.

Sarah: Ok cool so you do that over the phone and get the help of your daughter to do the permits.

Carole: Yeah

Sarah: And so, does technology make you feel included

Carole: Well, I have to be honest with you I am absolutely terrified of it all. I just like my mobile and my house line. I don't want nothing complicated. And when my grandchildren come up, well you know what I am going to tell you. The eldest is 37 and they are on these phones all the time and my son goes 'mum you need an apple' and I say no. I like things very simple and plain; I don't like changes. Don't teach an old dog new tricks

Sarah: Right so do you use your phone to contact people at all?

Carole: Yes

Sarah: In that sense you feel connected but in other ways not so much.

Carole: No not really, I do like the mobile, but I don't like this smart technology, not digital things

Sarah: It's the same thing in terms of contacting the borough, you don't like to use those digital things?

Carole: No

Sarah: And so, err the smart city is about engaging with local people. Do you get invites from the borough do they try and engage you?

Carole: no only Tower Hamlets community events like parmiter's charity, that's the only one, not the borough no

Sarah: they don't contact you no?

Carole: no

Sarah: So, they don't ask you for your opinions or invite you to partake in different things?

Carole: No

Sarah: So, are there any community events that you attend, and if so what are they and are they organised digitally, so this doesn't have to be by the borough but just community events in general, and how are these organised is it by letter by phone?

Carol: so, I go to community events for a charity called parameters, and these invites are given out by letter or by phone, and I reply by letter yes

Sarah: yes brilliant, OK err have Tower Hamlets ever offered basic training and how to use their online systems and if they did would you take this up?

Carol: Nah, no I wouldn't do it anyway because I wouldn't know how to

Sarah: yes, but if they offered you the training

Carol: Nah I am too old

Sarah: It is a different way of doing things and it's a change in lifestyle

Carol: that is right

Sarah: so smart city initiatives were introduced in the borough over the last five- or ten-years London in general in the last 10 years, have you noticed an impact of this on your daily life, this could be more technology or more social engagement?

Carol: lots of changes. it is awful, the way they are building everything everywhere, there is no space, I feel like they're closing us in more and more

Sarah: do you mean that they are building upwards, and lots of development?

Carol: It is a bit like New York when I look out my window now

Sarah: I suppose the change that you've seen can in some way be linked to smart cities. Errum are there opportunities for you to input into decision making process is within the community or borough. do Tower Hamlets ask you for your opinion?

Carole: No not Tower Hamlets they don't ask anything. we used to have a meeting quite regularly with Tower Hamlets Community Housing but all that has now stopped. we have got no one to sort of discuss anything with.

Sarah: Do you think those spaces have moved online?

Carole: Well, I know that they're happening online

Sarah: and how do you think that COVID impacted your social engagement?

Carol: ah well it has messed everything up, and I can honestly say I do not see anything getting back to normal

Sarah: yes, and what is normal?

Carol: well, I was just going to say to you what is normal

Sarah: and how do you think technology has played a role in that change, technology and covid?

Carole: At first I thought it was a get up at first I thought it was a get up, but as it went on I thought 'this has to be real'.

Sarah: and did you use technology more during that time to communicate

Carole: no just me mobile and that is it, I had a problem with getting my last COVID injection, so I had to go to one of the neighbours to book it online, and then they phoned my daughter and told her that my injection had been verified, and that they will send me a text message.

Sarah: yes well I was actually going to ask you whether you use the Internet to access care and medical services online?

Carole: I ain't got the Internet

Sarah: Yes so how do you do it - do you do it yourself, or do you get somebody else to do it, how do you manage if you want to use the NHS services?

Carole: My daughter would normally do it for me online, she did the booking for me for my - you know when we was having the COVID injections, my doctors were getting through to my daughter, not me

Sarah: That's very interesting, and my last question for you is have you ever used the Ideas Store in Tower Hamlets?

Carol: I have yes

Sarah: And did you go in there to access the digital hub or to use the computers?

Carol: No, never heard of it

Sarah: So, they offer Internet, and free basic training and they have an open data store. Thank you so much for your participation.

Sarah: so, my first question for you is, what is a smart city what does it make you think of?

Marvin: A nice tidy city

Sarah: Ok cool, and do you use technology on a day-to-day basis? This could be a computer a laptop phone

Marvin: Yes – an iPad and phone

Sarah: iPad and iPhone, and so if you are filling in forms, getting in contact with the council, would you do this online or via your phone or via letter?

Marvin: Letter or phone

Sarah: So how easy or difficult do you find operating the online services that the borough offers, this could be to access parking permits, pension or universal credit, disability services or council services?

Marvin: Nothing, I find it difficult, I just don't want to be doing that stuff, I want to phone someone up or do it by post. If I want to park outside my house now, I can't. Once upon a time you could put 4 quid in the meter and park, now you've got to download an app, so I just can't do it.

Sarah: And so, does this make you feel – or technology in general in city, especially these council-based services being online, do these make you feel included at all?

Marvin: No, they make me feel excluded, why? Because I can't do it. I recently wrote to the council about getting a parking space outside for my disabled mum, It took me an hour to write the letter, and they didn't even reply.

Sarah: So how did you get the permits?

Marvin: I didn't, I gave up.

Sarah: That is frustrating, and so do you use the internet to access medical or formal care?

Marvin: If I have to do that I get my brothers and sisters to do it.

Sarah: So, have you ever tried to do it?

Marvin: No. I have not tried.

Sarah: So, you wouldn't be able to say whether it is difficult?

Marvin: No, I assume it's difficult. I want to phone someone up or write to someone and that is It. I embrace technology where I have to, but I guess if I absolutely have to I will get someone else to do it I don't want to have to learn something new. My brain is full up, and they change it all the time anyway.

Sarah: And do you feel like you have to operate technology to participate in a lot of things

Marvin: Yes I do where I absolutely have to, but I do it because I have to.

Sarah: In what scenarios do you have to use technology?

Marvin: I have to use my satnav; I occasionally order things online.

Sarah: What about when you travel in the city?

Marvin: I am supposed to have an oyster card, but I think you have to go online to get the oyster card, as it is a free oyster card for over 60's, I feel like that should be by post. A lot of people must be like me and just think 'I am not going to bother with that' because its online, so I don't use the train much, but it probably costs be about 150 quid a year not having that

Sarah: Would you ever consider using contactless?

Marvin: I carry cash. Last night someone tried to use contactless to pay me and they failed to pay me, last night, and then I had to send her my bank details to pay me. People should be obliged to carry cash. How do you pay a beggar now, or a busker, people still need cash?

Sarah: So, you feel that the smart city doesn't really accommodate for cash?

Marvin: No not really, they encourage technology all the time. Every year it costs me about 800 pounds to use a card facility for my business, why who is getting that 800 pounds for me is more than a weeks worth of work, and I pay it

to nobody, if I just got the cash, I would have the cash, but at the end of the year I am 800 pounds down and someone has the cash. Someone who is encouraging a noncash society.

Sarah: And just to clarify, you are using a card machine for your business, could you clarify what that is?

Martin: It is a black taxi, and 80% of people pay by card

Sarah: And when did that shift happen?

Marvin: It became standard 5 years ago, but it became compulsory 2 years ago, so I held out til the very last minute

Sarah: Yes well I had a question for you which is similar anyway, so smart city initiatives were introduced into the borough in the last 5 – 10 years

Marvin: I have never heard of that initiative. First time I have heard of it is today

Sarah: It is policies like these that you wouldn't necessarily know the name of, that come under this umbrella of smart city which is the shift to digitalisation in the city.

Marvin: Who have they consulted? A bunch of 20–30-year-olds have decided that this is the way to go, but there is still a lot of us now, I still pay by check and stuff like that. Now the bank don't send us a check, you have to contact them to request one

Sarah: Well, this is the purpose of the research…

Marvin: Well, we are not happy, old people are not happy. I feel like someone who can't read and write. When I was young, you would meet people that couldn't read or write and I feel like that person, the way they just move things on

Sarah: That makes sense, and this has kind of happened in the last 5 – 10 years, and you have noticed an impact on your life, because you noticed that that card machine procedure had come into place within the last 2 -5 years but have you in general noticed the impact on your daily life – so smart cities…

Marvin: In the past I have got on the bus, and you can't pay by cash, who says that is fine, sometimes I have walked because I haven't got a card. I go to

football now, I have 400 pounds in my pocket, but I have to wait for someone with a card to turn up to buy me a pint, who said that is ok. That demographic is an older demographic as well. That is not 20-year-olds. There are 20-year-olds there, but it is a lot of 50,60- and 70-year-olds, They should not make a system where you can't pay cash

Sarah: The other question is, does it swing the other way, in what way if any does technology improve your social inclusion, are there any apps that you use that bring you closer to other people?

Marvin: No

Sarah: In lockdown?

Marvin: No, what would you do on them?

Sarah: For example, zoom

Marvin: No, I hate zoom.

Sarah: That is fair enough. And do you feel that your cyber security is protected when you use cyber technology

Marvin: I have got no idea what they can do. Sometimes they ask me something and I think 'should I give them that'. My bank constantly asks me to go online with my banking, I won't do it because I feel like someone will use my ignorance to take a lot of money out of my banking

Sarah: So, it puts you off essentially?

Marvin: Yes it does, and they constantly push it.

Sarah: And so, do you think technology is safer than doing things by hand?

Marvin: No, every month my statement comes, and I go through it, and I go through my check book, and I tick off everything and I understand it and if there is something not right, I know it's not right and I understand it. Very simple

Sarah: That makes sense, and so the smart city is also about engaging with local people, do you feel the borough supports social participation in local events with other local people?

Marvin: No

Sarah: Are there events you have attended where they ask for your opinion?

Marvin: No

Sarah: No, so the borough haven't reached out to you?

Marvin: No, how old is my mum, she is 86, and they never say does she need meals on wheels, does she need care, nothing

Sarah: and if they did how would you prefer them to do that?

Marvin: Well, if they would write me a letter

Sarah: Ok, and so are there any community events in general, not necessarily organised by the borough that you have attended?

Marvin: No

Sarah: No, and have tower hamlets ever offered free basic training on how to use their online systems, and if they did would you take this up?

Marvin: No and probably no, it's just a waste of time. I don't want much off of them, and they don't deliver much do they. What do they do? They take the rubbish and that is it really. Most of the stuff they do is just annoying, like the interaction we have with the council is to do with parking and parking tickets. The only time I really phone them, and I get a response is when I phone up to pay a ticket is when I have parked wrong, and it is press this and press that and they take the 60 quid.

Sarah: So, you are not actively involved in decision making, or to discuss plans?

Marvin: No, and I don't want to be either

Sarah: I mean you mentioned digitalisation, you asked who was consulted about this?

Marvin: They shut streets all the time they don't consult anybody

Sarah: But what about this digitalisation, if they were to say, ok, let's consult over 60s?

Marvin: What but would we have to go online to do it I guess. If they wrote me a letter saying do you want digitalisation, I would say no, and they put a stamped address envelope I would say no, keep it as it is. I wanna pick up the phone and talk to someone

Sarah: Do you think that those forums where they do ask for opinions are online?

Marvin: Yeah yeah, all 20-year-olds and 30-year-olds are into that

Sarah: Have you ever made use of the open access data stores or the Ideas Store in Tower Hamlets?

Marvin: I don't know what the open data source is

Sarah: The first one, open access data source is a smarter London policy that allows anyone from anywhere to access thousands of pieces of data from the Borough and London with different indexes. The Ideas Store in tower hamlets, have you heard of it?

Marvin: Yes it is a library

Sarah: And have you ever been there? It has digital services for free and digital training there. Is that somewhere you would want to visit?

Marvin: No

Sarah: Great I think that is all of my questions, if you have any other questions for me feel free to ask them.

Marvin: No, I think I have made myself quite clear. I know I am in the minority.

Sarah: Thank you

Interview number 5: Rose

Sarah: So, Rose, how would you define a smart city? Have you heard of this term before?

Rose: Yes I have, a smart city is one where you can get anywhere by bus or by train walking and cycle lanes

Sarah: That is very good, I would say that's somewhat accurate, that is part of the smart city.

Rose: And we can also use taxis and you can use tourists buses and buses.

Sarah: Exactly, a smart city is one where technology is used to make life easier, that is the goal for everybody. And it is also about increasing social engagement between different people. So, let's get into it, do you use technology on a day-to-day basis?

Rose: No

Sarah: Do you have a phone, laptop, computer?

Rose: I use my phone every day, I think there is Wi-Fi in the house, but I don't use it. I don't use a laptop or a computer.

Sarah: And what about if you are filling in forms or returning things to the council, how would you do this?

Rose: I can fill forms and I write letters to the council, or phone them

Sarah: And if you fill in forms do you do this online?

Rose: I fill in the form by writing on the forms and I post it to the council.

Sarah: Great so you use letter and telephone to communicate with the council

Rose: Yes to ask for my pensioners permit

Sarah: Yes, and so have you tried to operate the online services that the borough offers?

Rose: I haven't no, I need to be taught more about it.

Sarah: Yes so you find it difficult you would say?

Rose: Yes because lockdown came along and otherwise I might have learnt more. Someone could have come over and instructed me on how to use my mobile phone.

Sarah: And so, you would like actually someone to come over and teach you these things?

Rose: I think that most likely Tower hamlets did offer this service at some stage, that would be before lockdown.

Sarah: And do you feel like after lockdown there was more technology?

Rose: Well after lockdown came covid again so we don't want to mix so much with other people, so I haven't learnt how to use it, because they said today 1/25 people have covid.

Sarah: Oh ok, and so does technology – using technology to use transport, fill in forms, access medical care, etc, do all of those things make you feel included in the city?

Rose: I am not keen on technology except when my dr sends me things on the phone, I can sort that out, and I can reply to them

Sarah: So, in terms of inclusion, so feeling included, would you say that technology makes you feel included?

Rose: Excluded, excluded

Sarah: and so, in terms of digital technology, and the internet, do you use it to access care service and medical care? So, the NHS for example?

Rose: No, I use phone numbers, I only need sometimes to phone the doctor and I can do that on my mobile phone

Sarah: Yep yeah

Rose: I don't need to use those online services

Sarah: Ok, and do you feel that your security is protected when you go online?

Rose: Yes

Sarah: And so, in what way if any does technology improve your social inclusion, how does it bring you closer to others if at all?

Rose: Err using my mobile phone, by arranging to meet people and go places.

Sarah: And so, during lockdown did you feel like you was using your phone more or?

Rose: I was attached to phone quite a bit

Sarah: Ha-ha yes, and so the smart city is also about engaging with local people, do you feel like the borough of tower hamlets supports social participation in local events with other local people?

Rose: No not really not really I am not known to them, I have not made myself known to them really. that is so many people in the borough. generally, they might be in touch with people looking for care, and then because you're in touch with them they keep in touch with you, and then you will know how good or bad the services are

Sarah: So, you are not aware of any kind of social events going on?

Rose: No, I think a lot of things have closed down

Sarah: OK, like what?

Rose: A lot of the older peoples day care services have closed a while back, and I am not aware of how many are open now, I have not been sent any letters to say that there is a day care anywhere something, yeah but I do think that some people go to local care centres

Sarah: interesting and so are there any community events in general that you attend?

Rose: no

Sarah: And if there were would you go?

Rose: no

Sarah: No, that is fair enough and so have Tower Hamlets ever offered free basic training in how to use their online systems?

Rose: no not really, I think that they have offered people in the past, not personally

Sarah: Do you know where this was advertised?

Rose: It would be in a newsletter or something, that would be a few years ago

Sarah: Okay, do you still get a newsletter?

Rose: no there is not much communication now, but there is a newsletter about every, there is some kind of Tower Hamlets newsletter every six months.

Sarah: yes I think what you're referring to is East End life, but I think it has changed its name - do you think they have stopped publishing them then?

Rose: No, I don't think so, I think I do get them, I think it is every four months, I've got one in the house

Sarah: and do you think you would like this newsletter to come more often, do you read it

Rose: Yes, I would like to get that about every two months really, every two or three months, I think to save money they may have stopped

Sarah: So smart city initiatives were introduced into the borough in the last five years or so, 10 years and London in general in the last 10 years have you noticed the impact of this on your daily life?

Rose: No because I'm boring

Sarah: Are there any opportunities for you to input into decision-making in the community or in the borough - do they invite you?

Rose: No, I am quite private about that

Sarah: Would you attend if they did?

Rose: I have been invited to something that has taken place, about buildings across the road, about new buildings that are near to me, and I haven't gone to it

Sarah: And was it is the that the council that organised it?

Rose: Yes or from Queen Mary university

Sarah: And why didn't you go?

Rose: Because I'm not very good at walking

Sarah: so, it wasn't very accessible for you - and would you go if they said that they would ensure that they could pick you up and offer you transport

Rose: Yes if they was to offer me transport and it was easy for me to go I might go

Sarah: Interesting, have you ever used the Idea Store in Tower Hamlets?

Rose: Yes I have been to the idea store some years ago

Sarah: How many years ago would you say?

Rose: I would say about 10 years go

Sarah: And what services did you use when you went

Rose: Well, I went there, and I think at one stage I used to pick up some library books, I don't really remember what I was in there for, but I did have a look around

Sarah: Have you ever used the computers in there?

Rose: no

Sarah: OK interesting alright great! Thank you so much for your participation in this project.

Interview 6: Tally

Sarah: This is interview number six with tally, tally do you know what a smart city is?

Tally: I didn't but having filled in the initial questionnaire I have the idea that it's one oriented to the smartphone things are online an easy to get to through the computer and stuff.

Sarah: Yes yeah that definitely makes sense, so do you use technology on a day-to-day basis?

Tally: Yes absolutely absolutely I spend too much time online.

Sarah: How do you access online what do you use?

Tally: Through my laptop through my mobile phone and sometimes I'm waiting for the rattle rattle to stop sometimes in the Idea Store where I've got access to printing facilities and scanning and downloading facilities courtesy of the council in the library.

Sarah: Yes yes so you use council facilities to access the Internet?

Tally: Sometimes as necessary yes

Sarah: And in your in your home do you have any computer or laptop?

Tally: I have my own laptop and my mobile phone and yes the landlord would say yes we provide a computer but I'm not sure it's up and running at present which is sad

Sarah: Yes, and another question and do you use a card as well, do you have a bank card that you use when you're out?

Tally: Yes I do and I'm currently using a debit card a lot, a lot of my cash purchases all I do is paid at off within a day or two of getting it back then there's no interest no nothing yet, and I've got all my most of my purchases down there that I can look at. And to use actual money now is so little, yeah there's a very good greengrocer near to me that I so enjoy, and I'm trying to use cash money

with them, though they will let me use my card if necessary. But I'm I'm getting to be money free which is interesting yeah.

Sarah: Yeah exactly, you're making a transition between carrying money and using a card?

Tally: Yeah yes I am yes

Sarah: So how easy do you find it to operate the online services that the council offer, this can be parking permits, pensions, Universal Credit?

Tally: I use the online service is so rarely, partly because it's so difficult to get in and navigate their pathways. I'm currently trying to get hold of the 150-pound rebate to the older person in lower grade housing. I've opened the e-mail, I've opened the tab, I've tried to work it and then it says, 'upload a recent bank statement'. Well, I haven't got upload kit that I know I can take a photo of the statement, and it's in my mobile telephone but to change it from the gallery of my photos into their programme, I'm I'm finding difficulty there. and I have rung up the council this morning Tuesday the 11th and they said go to the idea store there should be someone there who will help you, and I'm thinking goody goody, I'll have a go at that tomorrow that's the first of two reasons I'm anxious about all this, is it it's so awkward I think I'm a reasonably clever sod and I am finding difficulty. The other one is that once data and photos are in the cloud or whatever they call it's there permanently and we can't do anything about it. We the original owners can't do anything about it. So, I am very loath to put my bank details into the cloud. Very loath

Sarah: I mean that links to a question I have regarding cyber security, I mean do you feel that your cyber security is protected when you use smart technology?

Tally: Not now Oh no. And I was even warned about this from a friend in Russia he said don't do this everyone make sure you opt out.

Sarah: And you are weary of putting your bank statement online in order to get this rebate as well? So that is a concern of yours then?

Tally: It is

Sarah: So, do you use the internet to access care services or medical services, this could be the NHS, this could be prescriptions or appointments?

Tally: No only recently do I see that I can put a message into my GP online, before there is no message facility so although I am only around a quarter of a

mile from m GP, I have been writing my doctor a letter and delivering it by hand. And then I find from my frustration, and probably his too, that I put in Four days after he went off sick with COVID, so he didn't see it for a fortnight. So, I thought what is going on here, is there no one that can read and sort of filter that this is urgent. That he needs to attend to it by telephone, or no that this can sit tight for a month or so if necessary. So no, I don't contact my GP online if I can get away with it.

Sarah: Have you tried using those services just out of curiosity and how do you find them find it

Tally: I find it too difficult, and I want to give up, the same as this rebate for 150 quid cash.

Sarah: And do you feel the same about giving your medical details online, do you feel a cyber insecurity?

Tally: I am vaguely aware, but I feel like I want to be 'choosy' with what I do put in what I don't. I do not have banking facilities for instance

Sarah: Yeah, and so, I mean does technology support your mental and physical wellbeing?

Tally: Absolutely amongst other things I am a chartered engineer so technical stuff, and this sort of thing is bread and butter.

Sarah: So, in what way, if any, does technology improve your social inclusion, so are there any apps that you use that maybe bring you closer to people, or any way you can think of that it brings you closer to people?

Tally: Yes I've only recently started using the TfL Transport for London app to show me when there might be a bus coming previously use the thing in the bus stand to show what's coming when and, and only last week did one of the drivers say we are stopping that because everybody else is using their magic phones. OK I've seen many people use it, and they're waiting, and I think I'm going to do that and I'm very competent at these technical things so I I should do that

Sarah: yeah yeah and so you have even seen a transition by taking away the times at the bus stop because people are doing it on their phones?

Tally: I haven't seen it done but if the guy said it's been done OK.

Sarah: yeah yes that is really interesting, that is all smart cities. And so, the smart city is about engaging with local people, does the borough themselves invite you to events?

Tally: Yes, if you are reading the borough's inputs to social platforms, or whatever you call it, they do invite for consultation, and I responded at least twice and have not had the next step sent to me. You have got your, your residents responding but then how about the next link? Yeah

Sarah: And so how did you see this, where did you see the advertisement?

Tally: By reading the council's newsletter. It comes through my e-mail because I've asked them to keep me in touch with me and whatever. through my e-mail address

Sarah: And you've then replied, how have you responded to this?

Tally: Well, I get the newsletter that is sent regularly and it's whether or not I read it

Sarah: And then when you responded to say that you wanted to participate?

Tally: Silence – Well I touched the key, there's often a link within the posting, there's a link and you respond and that's it; silence.

Sarah: yeah so you want to be involved in decision making?

Tally: I do, yes.

Sarah: And how long ago was it that you responded?

Tally: this year certainly this is month 7 of 22. this year certainly. And it is partly because I'm getting so little feedback from my response that I am sort of not reading the posts, the council is posting so often, and I should

Sarah: So, the council is inviting you in for your opinions on council issues, What about local events, do tower hamlets the council organise any social events for you?

Tally: I noticed the Posters around all over the place for the full age group, and I live close by weavers fields which is close by Bethnal Green overground station, And I like to see the small funfair there and I also like outdoor gym I'm going to start using, and I so like Oxford house which is on the Northside of

weavers fields this. there's a lot of things that council do make for us which I so like.

Sarah: Yes yeah, so you see kind of like posters that have been put up and that is how they communicate those events, have you been to any of them?

Tally: I have not for a while no

Sarah: And so, are there any events that you attend in the borough that are not organised by the council?

Tally: Yes, Age UK are strong on the older persons reference group which I have known of for about 10 years now, and the council do go to them to ask for research to be done which I'm thrilled about. and also, the London hospital has gone to them for some research, notably food given to impatience as in many ways the food the patients have is so important to their recovery from whatever reason that they're in hospital. I went along to a tasting session, fabulous

Sarah: Yes and so the borough of Tower Hamlets are using your research that you do with Age UK?

Tally: Yes they do

Sarah: And do you know how they implement that?

Tally: No, I don't, but I'd like to think it's in your court to make contact with the council to see how many of them registered this. I would be able to quote some names of counsellors that have turned up with older person reference group meetings spoken to us this is sort of face to face with the elderly and the council about age UK.

Sarah: And so, you're kind of included in council decision-making, they include you because they include some of the work that you do for Age UK, and they consult you about what you've researched and things like that um great. Have Tower Hamlets ever offered you free basic training in how to use their online services?

Tally: Not to my knowledge, but my landlord does the previous landlord does.

Sarah: And so smart city initiatives were introduced into the borough in the last five or so years, have you notice to impact of this on your daily life? increase in technology increasing social…

Tally: Only on a negative way in that if you ring up they refer you to go online and the people that you are speaking to know very little and cannot answer your question or takes a long time to get through to someone and then they don't know so only from a negative point of view, sorry.

Sarah: No no, that makes sense, and one last question that I have for you is that we have spoken about the Idea Store, we have spoken about training, another smart city policy that Tower Hamlets have, is they have an Open Access data resource have you ever heard of this before?

Tally: From from the medical point of view yes, that the NHS is opening up the system, that by the time you have your laptop for instance or your passwords go in and see your own you can go in and see your own medical notes, medicines that you are prescribed and be able to reorder stuff as and when necessary, this sort of thing which I am a bit wary of as we have already discussed my scepticism about having information in the cloud I can only see the council opening up their side of a person's background from the same point of view. So, if I were to log in and find out how much council tax I paid, then I should be able to find out

Sarah: Yep yes and so that is Open Access data in terms of medical information which is definitely one of the ways that they are opening up so Open Access data can be medical it could be looking at historical records or statistics on deprivation education, is that something that you would be interested in looking at?

Tally: Yes, in theory I would like to have access to it from the anonymous point of view because there is such a huge amount of data, that researchers want and like and can you use to do all sorts of fabulous stuff. Someone like yourself is going to use the 2021 census to find out the population of Bethnal green and its various demographic units. I would in your shoes.

Sarah: Yes so it is definitely useful in some ways, and it is good that you see the usefulness of this

Interview Number 7: Dave

Sarah: So, Dave, how would you describe a smart city. Have you ever heard of a smart city?

Dave: No not really, no

Sarah: That is okay, what do you think of when you think of smart it could mean?

Dave: Television phones

Sarah: Do you use technology on a day-to-day basis this could be a computer laptop phones?

Dave: No no

Sarah: Card?

Dave: Card I use yes.

Sarah: And how easy or difficult do you find using the online services that the borough offers, this could be parking permits pensions?

Dave: I don't understand it, I cannot understand none of it, I have tried it and I now get my grandson to do it.

Sarah: What do you find difficult about it?

Dave: Well, I don't use computers

Sarah: And do you have Wi-Fi?

Dave: I have Wi-Fi, but I still find it difficult

Sarah: And if you need to use council services like pension parking permits how would you contact the council?

Dave: My grandchildren would do it for me, yeah that is it because I can't understand it

Sarah: that makes sense, and so does technology in this way make you feel included

Dave: excluded yeah - if you try and get hold of anybody now they want you to do it on a computer and that, and I cannot work on a computer, so I am not included in nothing really and that is it

Sarah: Do you use the Internet to access medical care?

Dave: No no no I just used the phone because I can't work the Internet so

Sarah: Is there any way that technology improves your social inclusion?

Dave: No no no not really no

Sarah: The smart city is also about engaging with local people, do you feel that the borough of Tower Hamlets engages you in local events

Dave: No no they don't organise nothing I have never heard of nothing
Sarah: do you know of any other community events that happen no no the only thing is festival sometimes but those are for the youngsters

Sarah: Festivals. And so, have Tower Hamlets ever offered free basic training in how to use their online systems?

Dave: No no

Sarah: And if they did would you take it up?

Dave: Well actually yes they have in the library didn't they, in the public library years ago. I did try it yeah, but I couldn't get to grips with it

Sarah: And so how was they offered?

Dave: Somebody told us, I heard it by ear

Sarah: So at least you found out, smart city initiatives were introduced into the borough in the last 10 years, have you noticed an increase in technology?

Dave: Everything is done now by computer and that. If you want to speak to someone. We used to have a community officer, but you can't talk to people now. Phone them up now, 15 minutes if you are lucky to get through. They all say go on the internet and do this, but If you can't work it.

Sarah: Yeah so it is all automated. Are there opportunities for you to input into decision making processes in the borough? Do Tower Hamlets ever invite you in to give you opinions

Dave: No no never. We don't receive any letters or nothing.

Sarah: Do you receive east end life?

Dave: No not now. Used to but not anymore.

Sarah: Did you read that?

Dave: We used to but not anymore

Sarah: Was that a good way of you staying in touch?

Dave: You found out a few things going on, but now, nothing. It most likely is online. We used to have it delivered and that. We wouldn't read it online because we don't know how to do it and that.

Sarah: My last question for you is have you ever used the Ideas Store?

Dave: The only time I used it was to get my covid masks. Never used the computer there.

Sarah: Great. Thank you so much for taking part.

Interview 8: Angela

Sarah: So, Angela how would you define a smart city if you know what it is if you don't know what it is what do you think it means?

Angela: I don't know much about the smart city, but I can only assume that obviously it's about digitalization of all our lives, but of course the main thing would be laptops smart phones, and how that all joins up with the rest of the worldwide web

Sarah: Well, that is quite spot on to be honest, it is this digitalization but also social initiatives to bring communities together, or using technology to do that, or whether the inverse. So, question, do you use technology on a day-to-day basis this could be phones computers laptops, and if so would you specify what they are and when you use them?

Angela: So mainly it is obviously my smartphone come on you can get everything on there these days can't you. I have two smart phones I've got a tablet and I've got a laptop so obviously I use my smartphone on a day-to-day basis, and I think it is WhatsApp, I have WhatsApp on that, and and messenger and stuff like that on the second phone. you go into photos and Google and whatever. the tablet, I think the tablet for me, for instance during the pandemic was my saviour because, you know, I don't know what I did, it is funny you know people ask 'well how did you get through it', the silly thing I am going to tell you is that it was not about getting a food parcel, but that tablet was a God send, because you know it was just taking you into a different world in some ways. and then I have a laptop on the laptop is what I do banking on, if I do online banking, or anything that needs protection, I use my laptop.

Sarah: You feel that actually technology brought you closer to people in some ways, especially during the pandemic?

Angela: Yes yes yes, I suppose it is a crazy thing to say, it probably wasn't just the pandemic but the fact that I organised community groups. in the old days you would ring people up or whatever, but that does cost money, but WhatsApp has been a saviour - the first thing I ever say to people is are you on WhatsApp, and then you try your best to get them on there. when I organise these events, you forget that some people are not on WhatsApp, so you have to send them an e-mail. the one thing I don't do, and I am really terrible for, is I don't spend my money unless they have a home phone number.

Sarah: And so, when you organise these community events, if people don't have a WhatsApp, and they don't have a phone number, do you contact them in a different way?

Angela: You just contact them by doing a poster. the biggest thing I missed when I left work is that I didn't have a photocopy machine to photocopy leaflets or posters. what I do now is put on my memory stick and go round to the library.

Sarah: That makes sense, and it sounds like you're quite techno savvy. I mean on the topic of technology, how easy or difficult do you find operating the online service is that the borough offers this could be parking permits, Universal Credit and council services?

Angela: So, I don't do much council tax, but trying to even get through on the council's website is an absolutely nightmare, and you cannot talk to a real person, so you have probably been through it yourself. you go on and they say which service do you want, please say the name of the service, so I say blah blah blah blah blah blah, and then they say please say that again, so I say blah blah blah. then they say well we will put you through to an operator, so I think why didn't you do that in the first place. and after all of that I still got an automated response.

Sarah: So, I suppose that if you use the telephone you get an automated response. have you ever tried using be online inquiry form?

Angela: Parking is a good example, so you go in, and you get so far, and suddenly all they keep saying is that if you need more information go to our website. and still sometimes you do not get to the end of the inquiry form because they refer you back to somewhere else, and that is so frustrating. sometimes you do have to resort back to the telephone because you cannot get any sense from the inquiry form. sometimes what you don't get is evidence that you have actually done anything, so if you fill in the form it doesn't actually send you back a copy, so you don't know what you filled in and you cannot prove that you have done it.

Sarah: Do you get an application number?

Angela: Err no, you don't get anything so obviously the business with the parking permit. it is still complicated. you cannot expect 80-year-olds to do this. a lot of the time I encourage older people to take their forms and bring them to the office.

Sarah: Ahh so you are helping other people that forms, and what age group all these people that you help?

Angela: 60 plus at least, even some younger ones, so you are dishing out forms left right and centre for them.

Sarah: And so, does technology make you feel included in general?

Angela: I suppose it does, I suppose it does give you different opportunities

Sarah: And so, do you the Internet and digital technology to use NHS services, for medical care?

Angela: and the only thing that I think I really use it for is, to log my covid tests, and I think until the vaccine came out I did not have an NHS number, so I had to go through a lot of paperwork. I was not going to sign up with the doctor just to get an NHS number. so, if I do a test now I always log it online, otherwise how does anybody know

Sarah: Do you find it easy to use these NHS things?

Angela: I mean that one is not too bad, once you have done it once you type in your first name and it all comes up

Sarah: In general, would you use the NHS online to book an appointment?

Angela: I don't use the doctors much; it would not faze me if I had to but luckily I do not have to

Sarah: So, the smart city is also about engaging with local people, do you feel that the borough of Tower Hamlets encourages social participation through local events – are there events Tower Hamlets organise?

Angela: I think every now and then you might get some sort of an invite to go to training or something like that - but this is usually from the local housing, the council will probably think that it is not their responsibility to do this

Sarah: And how do these invitations come through?

Angela: Well, this is a good question because if you don't know about it you won't go, and if you don't use the Internet to look at their websites you will probably never ever find out about events.

Sarah: So, you find out about these events through having access to technology?

Angela: Yeah that is right, and also I also talked to my own landlord; they advertise different things - but if you have to go onto the website to book it that's hard.

Sarah: That's very interesting, you mentioned training there, have Tower Hamlets ever offered free basic training in how to use their online systems?

Angela: I think that there are, I don't think that it is Tower Hamlets that offer these services, but there is a group of housing associations that get together every year, and they have a whole list of training, and it is free to all of the residents. I know our housing association or advertise this with posters in the reception. but that is housing associations getting together.

Sarah: And housing associations are not actually owned by the council, they used to be but they're not anymore?

Angela: No no no they are not anymore

Sarah: And so smart city initiatives were introduced into the borough in the last five or so years and London in general in the last 10 years, have you notice any changes in the local area in terms of technology and social engagement?

Angela: I suppose it has to be no really; I suppose we have seen the rewiring for better Wi-Fi access - this is supposed to make it cheaper. One of the policies was, that every household should have free Wi-Fi, but where has that got to. there is no point putting Wi-Fi in, and not teaching people how to use it. in some instances, the council pay people to go to internet training - they will learn whilst there sitting there but once they come home they forget

Sarah: And so, do Tower Hamlets ever invite you to participate in meetings about how things are done, or decisions are being made?

Angela: When I first went on to the housing association committee, the counsellors were given tablets, but committee members were not and obviously it was hard to get access to the Tower Hamlets hub, say we were not allowed to go into that. so, we asked how we were supposed to get involved, and I insisted that we got paper copies. During the pandemic it has all been on zoom, we had to just get used to it, but it is not a good way, as I do like to scribble.

Sarah: So, have Tower Hamlets themselves asked you to come in and give your opinions on services in the borough or where things are being built?

Angela: Obviously it came up because I am on one of their committees, it is a bit different - because I am on the housing committee we do get input. It is in the form of a meeting every three months on housing and regeneration. the good thing about it is you get a lot of top officers, the mayor turns up, but the other opportunity that it gave me, they invited me into the stakeholder interviews with some of the officers, so I got to interview the current corporate director of the place and I didn't even know what that meant. it is who you know not what you know.

Sarah: So, you, you have had input into the council because they have asked for it, and if you was in everyday citizen...

Angela: No, they would not have asked me, I think that it is just because I work with a residents association since the 1980s and if we did not turn up the meeting did not happen - so you build up all this knowledge.

Sarah: My last question for you, is have you made use of the Idea Store, and what do you use it for?

Angela: funnily enough I don't actually use it as a library, the main thing that I go in there for is to use the computers and use the printer 50 people because I need a photocopy, once you have your library card you can go to 40 other different libraries within the borough, and you can return books to different libraries. I always thought they was a bit dull to be honest. they also reopened the Bethnal green library, as an Idea Store, but people do not recognise it as one. the Bethnal Green one the chairs are not comfortable; they would not pass a check as the chairs are all old. It is not brand-new computers. so, the Idea Store is more known for the library rather than the old computers.

Sarah: Thank you so much, those are all of my questions.