Accountability and neglect in UK social care innovation

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Abstract

Innovation alters who is accountable for social care and how they are held to account. This article shows how organisational, institutional, and technological innovation in infrastructures of social care can reconfigure accountability instruments and propel change between distinct modes of accountability. But innovation also sustains neglect: in terms of issues, objects and subjects missing from research; and in terms of low levels of institutional reflexivity mobilized to evaluate and direct innovation's impacts. Evidenced using two-level situational analysis— across a UK research portfolio and within a public robotics lab – we argue confronting this neglect is critical for post-pandemic reform.

Keywords: Social care policy; innovation policy; accountability; infrastructures of care; long-term care

1. Introduction

It is time to “make permanent the innovations that Covid-19 has accelerated”; to “harness the power” of innovation; and to “accelerate opportunities for innovation” (Department of Health and Social Care 2021a, 6; 2021b; Local Government Association 2020). As policy professionals promise plans for recovery and reform in social care, innovation is set for a starring role.

This is curious. In line with trends across public policy domains (Pfotenhauer, Juhl, and Aarden 2019), organisational, institutional, and technological innovation have long been drivers of change in what we call social care in the United Kingdom and colleagues elsewhere call long-term care. For instance, in the 1980s and '90s processes of institutional innovation embedded ideological shifts in post war social welfare systems built originally on values of universalism, but ultimately reconfigured around individual choice and market logics (Osborne 1998). If innovation is to be further prioritised following the pandemic, it is reasonable to ask what historic role it played in configuring the infrastructures of social care that have been so badly exposed (Comas-Herrera et al. 2021; Byrd et al. 2021)? And how too is innovation implicated in configuring accountability instruments designed to make sure those who most needed care were not neglected?

Prospective policies such as those cited above have little to say on these questions. But if they go unanswered, the procedures and outputs of innovation that follow covid-19 risk repeating the mistakes of the past exactly at a time when new perspectives on social care are urgently needed (Tronto and Fine 2022). Addressing these concerns, we ask the following research question: how has public innovation prior to the pandemic sought to reconfigure social care, and with what implications for accountability?

Social care is how society orders practices of care and distributes responsibilities and obligations for these practices between markets, the welfare state, voluntary sectors and families (Daly and Lewis 2000). Social care takes place across a dynamic set of locations and contexts and in all of them accountability is a critical obligation - a form of relation that demands a response (Tronto 1993). Accountability directs interest and concern towards how things are and sustains an ethical duty to ensure people and things that matter are not neglected (Puig de la Bellacasa 2011). In these regards accountability is both evaluative and performative (Marres

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2012; Ezrahi 1990) – in theory, practices and instruments of accountability reveal the quality or absence of care in order to direct care to those who need it most (Naylor 2018).

In practice, accountability “both depends on getting some deep-seated cultural and personal factors, and also on getting some technically complicated things right” (Hudson 2016, 7). Moreover, determining for instance who it is that is entitled to care is a form of political, ethical and administrative calculus often formalized and enacted through various norms, routines, and mechanisms. What we call *modes* of accountability include market-based systems of choice where end-users or insurers exert consumer pressure; direct incentives through managerial control, payment mechanisms or transparency mechanisms designed to support ensure minimum standards; professional oversight and control maintained through regulation or professional accreditation; and elections for relevant authorities at local and national level (Smith et al. 2012).

Innovation then is a practice of developing and implementing new ideas (Freeman and Soete 1997) across public sectors. It can be understood as a form of conversation between needs and possibilities of designers, users and society, often contested and always political (Stilgoe 2019) which is important to note because not all consequences of innovation are positive (for instance, Mort, Roberts, and Callén 2013). Nor do any benefits unfold automatically (Haeusermann, Romero-Kornblum, and Dzeng 2021; Stirling, O’Donovan, and Ayre 2018).

Yet when it comes to policy for innovation, the focus more often than not is on identifying barriers to accelerating innovation (for instance, Greenhalgh and Papoutsis 2019) rather than assessing how innovation is directed and to whose benefit, constituting a pro-innovation bias (Hamblin 2020; Osborne 1998). And so, understanding the *logics* of innovation - that is how innovation in its social, institutional, organisational and technological forms is imagined and directed towards addressing issues such as distribution of benefits, costs of implementation, or configuring of accountability within social care systems, or what we call infrastructures of social care - is a fundamental challenge in addressing how innovation might in turn reconfigure accountability structures.

Infrastructures of social care are the social, material and technological systems of knowledge, people, relations, rules and resources required to imagine, build, maintain and deliver care practices (Danbolt and Langstrup 2012). These socio-material entities include the people involved in care such as professional and unwaged carers, people receiving care and their families; their routine activities and conventions that guide them; the often mundane objects and technologies they use such as thermometers and medication; emerging technologies such as digital monitoring devices and the data they produce; as well as the actual locations and places care takes place in, their cultures, policy regimes and public values (Langstrup 2013).

Thinking infrastructurally is useful because it helps us develop a systematic understanding of these socio-material entities, spatialities and temporalities on which care depends (Buse, Martin, and Nettleton 2018). Take for instance evidence that shows the increased use of digital services such as telemedicine during the early months of the pandemic (Mann et al. 2020). Assessing the infrastructures and materialities of social care alerts us to the political work innovation does in reconfiguring, reordering and rearranging the socio-material entities in settings such as hospitals, care homes and people’s houses that underpin digitalisation (Weiner and Will 2018). It also reveals how the diffusion of digital services requires underlying shifts in norms, practices, incentives and routines across locations and institutional settings, from care and data regulators to the insurance industry. And it reminds us that care is not an automatic output of systems, but rather is situated within and amongst their constituent socio-material parts, and, dependent on how these parts are configured (Light and Seravalli 2019).

Accountability is an emergent feature of these infrastructures and is influenced both by their composition and configuration. Innovation changes what's accounted for because it re-configures infrastructural entities. The state plays a part in shaping and configuring these activities, relations and innovation logics, as do private players (Vickers et al. 2017). One important arena in which we can follow these players is public research, the analytical focus of this study.

The paper proceeds as follows. In Section 2 we further develop our conceptual understanding of innovation logics and accountability modes by introducing empirical examples from the UK. Using an heuristic, we describe operationalising this work in Section 3. The heuristic is applied at the level of a research portfolio, and the level of research practice and the results discussed in Section 4. In Section 5 we discuss these findings and conclude with implications for theory and policy in the UK and internationally.

2. Accountability in social care infrastructures

2.1 How accountability is organized in UK social care

It is impossible to separate the infrastructures of social care from their social, political and economic contexts. In the UK these contexts are messy. Social care infrastructures, and ideas about how best to configure them have evolved over decades alongside broader political currents. Care that is administered outside of hospitals and surgeries takes place 'in the community' – a singular phrase for what is in reality a patchwork of communities, collectives, firms and charities, around 19,000 'providers' in all (The King's Fund 2019). Approximately 1.5 million staff, managers, administrators and others are involved in delivering this care (Skills For Care 2021). There is no single policy, funding or service stream that is widely understood as 'long-term care'. Responsibility for policy, legislation, standards and the allocation of funding is devolved to the four nations and the delivery of services is the responsibility of 152 local authorities in England, 22 in Wales, 32 in Scotland and 5 in Northern Ireland separately elected and responsible to their own local populations (Gray and Birrell 2013).

In recent decades government policies have pursued a logic of institutional innovation directed towards the creation of quasi-markets and follows a health care logic of patient choice (Glendinning 2017; Baxter, Heavey, and Birks 2020). But by the end of 2019, just before the pandemic hit, resources such as finance, knowledge and people's time were insufficiently available across care sectors, and adequate finance was not getting through to where it was needed most (National Audit Office 2018; Blakeley and Quilter-Pinner 2019). Whatever the justifications for these logics in the UK, they are not working. One explanation is that the organisation of responsibilities within the English care sector is highly fragmented (Care Quality Commission 2018). Structures of accountability that would ground responsibilities locally with councils and local authorities are not coupled with adequate flows of finance. State funding is a mish-mash of entitlements, needs based assessment, and local arrangements controlling access and levels of provision which are not supported by national commitments to adequate funding and good governance (Ranci and Pavolini 2013). This purposeful and systemic fragmentation of funding through local government, the NHS and individuals themselves has led to a significant accountability deficit (Shakespeare, Stöckl, and Porter 2018).

Specific accountability frameworks and reporting systems in England, the largest of the UK's four nations, have developed through a mix of political expediency, contingency and historical accident rather than specific top-down design (Smith et al. 2012). Today they are a patchwork of frameworks and cultures (Hudson 2016). At the heart of this milieu are a set of shared and dynamic norms and behaviours intertwined with rewards and sanctions that promote and reinforce collective action (Romzek, LeRoux, and Blackmar 2012). We use these concepts as the basis of a heuristic with which to trace: (i) to whom organisations or individuals are

answerable; (ii) expectations of the accountable organisation or individuals' performance; and (iii) the instruments, frameworks and technologies through which organisations or individuals are held accountable (Romzek, LeRoux, and Blackmar 2012, 443).

Using this analytic entry-point to trace the impact of innovation in benefit payments such as personal care budgets, Bracci (2014) identifies three modes of accountability in English social care systems. Public administrative accountability, which is hierarchical and applies to situations where there is a public governance enforcement mode; professional accountability, where public bureaucrats become expert groups specialised in delivering complex tasks relevant in the case of technically uncertain problems; and participative accountability, which refers to the role of citizens, customers or voters as receivers of accountability and emphasises horizontal account giving between publics, public servants and social care givers.

These modes of accountability can be observed in instrumental frameworks. For instance the Safeguarding Accountability and Assurance Framework (NHS England and NHS Improvement 2019) provides public administrative accountability. It seeks to establish designated accountability roles within organisations, and establishes minimum standards and a set of legal duties. This is designed to address safeguarding and risk, the dominant concern of accountability in UK health and social care sectors (Gray and Birrell 2013). This was initially an attempt to broaden 'child protection' to include multi-agency support for families in need, rather than simply concentrating on investigating incidents of abuse once something bad had happened (Copperman and Brown 2013).

The Adult Social Care Outcomes Framework also instrumentalises forms of public administrative accountability. The framework is used by government and others to produce annual reports on instrumental measures of care outputs and outcomes for the care of adults in care homes and residential settings grouped into four domains: enhancing quality of life; delaying and reducing the need for care and support; ensuring people have a positive experience of care; and safeguarding adults whose circumstances make them vulnerable. ASCOF aggregates data from a range of different databases and is used by central government for policy development and monitoring, and by local authorities (councils) with Adult Social Services Responsibilities (CASSRs) - for measuring local performance and for benchmarking against other CASSRs. What tends to be absent however are indicators that reflect the quality of life of people receiving and delivering care (Jones and Meyer 2021) along with assessment and accountability that can take place close to real time. Also, neglected in the underlying survey data are experiences of people who are excluded from or not able to access local authority funded care services. As a result, ASCOF alone is unlikely to capture the degree of unmet need in communities (John 2021). Indeed, this is a feature of accountability structures in the UK which often performatively focus on how well a system is functioning, and rather less on assessing needs, monitoring practices, programmes and services, and evaluate interventions and policies (Naylor 2018; O'Donovan, Smallman, and Wilson 2021).

Research and innovation has its own accountability framework, the UK Policy Framework for Health and Social Care Research (Health Research Authority 2017) which offers guidance to researchers in social care but has been designed and evolved primarily to meet the requirements of research in clinical settings and population health approaches. Despite the prominence of frameworks such as these, in reality they are complemented by a substantial variety of rules, routines and practices across the sector. In tracing the aims of innovation, it is critical to attend to both.

2.2 How innovation re-configures accountability

In reconfiguring spatialities, temporalities and practices of care, innovation changes what's accounted for. For instance the example of personal care budgets mentioned in Section 2.1 are

an innovation that introduced a logic of patient choice (Mol 2008) into how end-users finance their own care services (Stevens et al. 2014). This innovation cut across institutional and individual scales to reconfigure relationships between end-users, funders and service providers in terms of how finance was distributed, and care services were allocated. Although framed in terms of budgets at individual level, the core innovation was institutional. Via the creation of new markets and eligibility criteria based on self-assessment practices, care recipients were given their own budgets to spend on care services within a market logic. At the same time accountability structures evolved from duties placed on public administrations to participative obligations based on horizontal account-giving between public servants and customers/citizens. Ultimately responsibility to account for the resources used and the outcomes achieved shifted from service providers and local authorities towards consumers, as did the burden of risk (Bracci 2014). Yet a decade later, overall gains made from this innovation remain ambiguous and contested; for some, gains in personal accountability have come at the cost of increased administrative burdens placed on end-users (O'Donovan 2021). Also, the governance roles of stakeholders have shifted: local authorities are now charged with shaping and steering markets through commissioning, not simply delivering care.

Innovation also reconfigures infrastructures of care and accountability in more ambiguous ways. Take telecare for instance, an umbrella term for the technologies and services that aim to diagnose, monitor and provide care at a distance (Milligan, Roberts, and Mort 2011) and the dominant form of technological innovation in UK adult social care over the past twenty years (Hamblin 2021). Telecare in some circumstances may result in more frequent and more specialised contacts between nurses and patients making care practices more effective or more efficient (Pols 2010). But telecare innovations are not simply put to use, they are unleashed across infrastructures of care, often affecting care practices in unforeseen ways. For example, they can reinforce certain dependencies that they were supposed to liberate, such as tying older people to life in the home, rather than allowing greater independence from it (Aceros, Pols, and Domènech 2015).

2.3 Exploring sites of public innovation: innovation project design and practice

Ahead of post-pandemic reform, decision makers may benefit from better understanding this ambiguity. Moreover, understanding the logics of innovation – that is the aims and direction of innovation as well as its potential and actual impacts – is important because by reconfiguring infrastructures, and by performatively re-arranging the facts that are made to matter in, innovation shifts who it is that is made accountable as well as how.

One site where we can explore this ambiguity is public innovation research. Sites of research and design such as public research projects offer rich locations to study what Pfotenhauer and Jasanoff (2017) term innovation as-diagnosis, in which a particular innovation cure is prescribed for a diagnosed societal pathology. The implication being that both the diagnosis and cure are shaped by and reinforce pre-existing visions of desirable and undesirable futures in a given society. For instance (Peine et al. 2015) show how social care policy objectives are articulated into often contradictory definitions, role models and scripts of techno-scientific infrastructures and objects (Akrich 1992). They describe how implicit and explicit ideas about later life are operationalized through specific innovation policy goals such as ‘independent living’ and ‘healthy ageing’, and how these in turn have been orientated to fit innovation framings such as grand challenges. These policy goals are not neutral. While they are not straightforwardly deterministic, they do influence who acts and who has agency in innovation processes and re-configured infrastructures. For example framings of later life can structure age related stereotypes of vulnerability and decline, in turn influencing the way people see and imagine possibilities for themselves (Aceros, Pols, and Domènech 2015).

The point here is this: how researchers imagine the world matters. Not because they have the power to order and configure social and material worlds strictly as they see fit – such change is often deeply contested. But rather because their orientations are a form of often unacknowledged politics that play out between designers, end-users and those charged with governance and accountability. And so, this study seeks to explore how the logics of innovation and the shared beliefs and collective expectations of policy makers, funders, innovators, and sometimes end-users at these sites constitute ideas about how exactly innovation should reconfigure care and accountability.

3. Research design, methodology and evidence

To understand how those involved in public innovation research imagine and configure accountability in social care we operationalise ideas introduced in Section 2 using situational analysis. Situational analysis is an interpretive, grounded theory approach that offers a materialist constructionism by mapping the social and material phenomena that *make a difference* in a situation (Clarke 2009). The methodology lets us go beyond highly bounded sociological framings of organisations, institutions and collective action and allows us think about ecologies of discourse based social action – well-suited to assessing the content and configuration of socio-material infrastructures. Situations are sets of distributed discourses, actions, and accomplishments, which are produced through the coming together of heterogeneous entities that constitute social care infrastructures such as people, goals, expectations, rules, knowledge, data, technologies, frameworks and relations. The analytic goal of this study was to specify which of these entities make a difference to the situation of innovation in social care infrastructures from the perspective of the people involved.

Innovation situations are investigated at two scales using questions assembled in the heuristic as an entry-point. To understand how innovation directed by national level actors configures accountability we evaluated a portfolio of projects from the UK's largest public research and innovation funder, United Kingdom Research and Innovation (UKRI). UKRI was chosen over other funders such as National Institute of Health Research, Wellcome and the European Commission because it is the largest single funder of research, it offers the broadest scope of cross-disciplinary societal domains, and is the funder most implicated in the *innovation turn* in public policy discussed in Section 1.² Indeed, the amalgamation in 2018 of the UK's disciplinary-based research funding councils into UKRI, a super-agency with the word innovation in the title is an indication of just how pervasive this turn to innovation-as-social-policy is.

Publicly funded innovation research in social care was identified in the UKRI's Gateway to Research database at <https://gtr.ukri.org> using queries of the form ["social care" AND innovation] snowballing variants and synonyms until no new and appropriate results were returned. 218 unique research projects were returned. Following iterative review and exclusion, 127 projects funded between 2006 and 2019 were included in the final corpus (available in the online supplemental data). Note, the search protocol was designed to reveal the projects that are most likely to correspond to this paper's interest in purposeful and impactful innovation in the sector rather than comprehensively report all studies that in some way incorporate innovation.

Analysing the corpus we followed a situational analysis approach for the study of situations using computational data (Marres 2020). Abstracts for each of the 127 projects were

² The National Institute of Health Research (NIHR) is also a significant funder of research in UK social care. Nevertheless, our choice of examining UKRI is justified by the aims of the research, to track how the logic of innovation-as-treatment across society is reconfiguring accountability. Of course, the approach followed in this paper might in the future be usefully applied to NIHR's portfolio and the results discussed below offer an initial point of comparative analysis for such work.

systematically mapped to locate and analyse discursive arrangements of socio-material infrastructures and associated structures of accountability. Typically, each abstract describes a prospective research situation. This description serves as a promise to carry out certain methods and answer certain research questions, and also to follow certain innovation logics, matching a particular vision of how socio-material care infrastructures are and should be (Jasanoff and Kim 2015). The discursive arrangements were categorised, and categories reduced until coherence could no longer be sustained.

To understand how the practices and procedures of innovation on the ground configure accountability and to test how the practices of innovation might further inform the study beyond the promises made to research funders via project abstracts, we carried out situational analysis at the site of infrastructure development and reconfiguration. A critical case study (Flyvbjerg 2006) shows participative practices in the research of assistive living robotics. Non-interventional research in the form of site visits were conducted during down-time and interviews conducted with researchers and managerial staff in office settings. Stakeholder workshops with roboticists and reviews of academic and policy literature was also conducted as part of a larger project investigating public innovation practices in robotics research and reported elsewhere (Michalec, O'Donovan, and Sobhani 2021). Evidence was produced by observing researchers' innovation practices and interviewing researchers, technologists, care home operators and related experts. In the following section we report a case study narrative that teases out how the participants and organisers of innovation research brought together their preferences, motivations and expectations; where these came from, and what tensions they brought into the situation. The heuristic is summarised in Table 1.

Table 1. A heuristic to guide the situational analysis of social care innovation

	Probing questions	Sites and situational entities of interest revealed in review of accountability in UK care infrastructures
The logics of innovation in social care	What problem is innovation being used to solve. What are the practices and procedures of innovation attempting to reconfigure in order to solve these. Who and what is innovation targeted at?	Innovation in personal budgets. Advancements in the use of administrative data. Funding of technological innovation for independent living and healthy ageing. Innovation in caring practices and community organisation.
Mapping the situation: determining modes of accountability	What are the guiding visions and expectations about how social care should function? How do innovation actors think accountability should be structured?	Logics of public administrative accountability; professional accountability; participatory accountability.
Mapping the situation: relevant human entities	Who is deemed accountable and who makes a difference in an innovation situation? To whom is account rendered; who makes a difference to this? How is accountability understood in innovation?	Local authority, care manager; professionals, experts; customers/partners and professionals. Government, supervisors, managers, citizens; peers, supervisors, experts; customers/partners and professionals

Mapping the situation: other social and material entities	What experts and expertise matters and how is it made to matter in accountability structures? What data is important? What frameworks, rules, codes of practice and norms have been established and by whom? What are the performative roles of infrastructures (e.g. what is data foregrounding, what is it backgrounding? Where are questions of accountability not directed?)	Safeguarding Accountability and Assurance Framework. Role of ASCOF framework Impacts of shift to personal budgets. Invisibility of older people in care home data. Invisibility of people who pay for their own care in social care data.
Implications for accountability after innovation	Who decides innovation logics and research questions? Who benefits from innovation? Does innovation explicitly target governance?	Innovation can reconfigure public administrative accountability through new data schema, data use; shifts in accountability relations between scales - e.g. national level responsibilities shifted to local authorities or communities.

4. Mapping logics of innovation in social care and exploring implications for accountability

4.1. Analysis of the UKRI's portfolio of social care research

In this section we map the goals of innovation across 127 research projects and then explore the implications these goals and understandings of innovation in social care have for how accountability is structured. Table 2 shows the distribution of the corpus of 127 with a total funding from UKRI research councils of £111,715,022 across the UK's disciplinary research councils from 2006 to the end of 2019, and the relative distribution of funding on a project basis is illustrated in Figure 1.

Table 2. Distribution of projects and funding in social care research across UK research agencies (2006-19)

Agency	Projects	Funding value (£)
Arts and Humanities Research Council (AHRC)	12	2,379,175
Biotechnology and Biological Sciences Research Council (BBSRC)	1	221,357
Engineering and Physical Sciences Research Council (EPSRC)	27	47,680,830
Economics and Social Research Council (ESRC)	39	31,933,346
Innovate UK	39	26,890,647
Medical Research Council (MRC)	8	4,917,896
Natural Environment Research Council (NERC)	1	726,905

Projects range in funding and duration from one-off sandpits, conferences, and seminar-series to major 5-8 million-pound investments lasting up to five years with some centres for doctoral training funded for longer still. The 15 largest projects by funding account for 60% of the total funds. In some projects, social care is the central focus of the proposed research. In others social care is sub-domain of a broader scope of inquiry.

Figure 1. Distribution of projects and funding in social care research across UKRI research agencies (2006-19). Numbers in boxes: project codes, see appendix. Left hand side labels: funder (number of projects). Right hand side labels: net funding per agency (GB£).

Logics of innovation in public research on social care

Situational maps created during the analysis of the corpus revealed four distinct discursive arrangements of innovation in social care with 111 of 127 project abstracts mapping on to one of the four emergent arrangements. These are outlined in Table 3. The dominant discursive arrangement was that of innovation understood by researchers as improving the distribution of resources, usually led by professionals, and usually, but not exclusively, organised through market arrangements – what we label care as *improving service provision*. For instance, *Innovative Technology for Healthcare Delivery - The MIMIT: CIMIT Collaboration* was a 43-month health and social care research project which promised to develop technology for expert users engaged in the delivery of services in Manchester. The primary focus of the project was to “accelerate the scope and development of new healthcare technologies” (project 4, supplemental data) and enable users to benefit from care “faster and more effectively”. Representations of social care closely matches the incumbent position found in government and policy literature discussed above and the stated aim of innovation was to “optimise” existing services rather than reimagine or reinvent them. Innovation in this category is not exclusively technological. For instance, the project *What are the impacts of user involvement in health and social care research and how can they be measured?* (project 12, supplemental data). Again, the project researchers understood the aims of social care innovation in terms of provision of services. But here, innovation activities focussed on research infrastructures and practices and attempted to “advance understanding of the impact of user involvement in health and social care research.”

Table 3. Mapping logics of innovation in social care across 127 UKRI project abstracts

Innovation logic	Projects	% of funding
Improving service provision	52	49%
Building techno-deterministic infrastructure	32	23%
Better situating knowledge and resources	23	8%
Building and strengthening human relations	12	3%
[Unresolved]	8	18%

The next set of projects were characterised by technology diffusion and maintenance within infrastructures of care, a *techno-deterministic* logic of innovation. Technological innovation is a defining discursive element in this category. Take for instance the project *How Can Smart Home Data and Systems Improve Assisted Living Services*. The abstract promised to carry out “a review of the current situation in the Assisted Living and Smart Home markets and ask key

questions about how these could be improved through embracing Internet of Things concepts in terms of data sharing and application development” (Project 28). Like this abstract, projects mapping to this category framed technology and innovation as an unquestionable good - challenges of innovation in these projects included increasing acceptability amongst users and ensuring rapid technology roll-out. Projects funded through the Engineering and Physical Sciences Research Council (EPSRC) and Innovate UK are over-represented in this group compared with the corpus.

A third set of projects sought to *situate and reconfigure knowledge and resources* in social care settings, acknowledging the complex socio-material infrastructural elements of care. For instance, the project *Therapeutic placemaking as a pathway to improved public health* (Project 103):

“The Fellowship will enable innovative and collaborative research leadership in regional efforts to improve infrastructures and facilities for health provision in NHS Greater Glasgow. It will embed a 'therapeutic placemaking' approach in the health, public and education sectors, and the architecture and design industry. Additionally, it will engage local community representatives in knowledge exchange, and consultative and evaluative processes around the application of novel therapeutic placemaking interventions.”

In this and other projects we have categorised as *situated*, the driving logic of innovation was to improve the provision of care in markets, as well as the provision of care in community, voluntary and unwaged settings. ESRC and AHRC projects are over-represented here. Interdisciplinary research design and participatory methods that sought to open-up innovation procedures to people often excluded from research were common amongst these projects.

Interdisciplinary and participatory approaches were also common amongst innovation projects we categorised as *relational* in intent. These projects foregrounded the role of human networks and communities in social care innovation. The relatively small number of projects in this category focussed on research problems involving informal carers, the empowerment of social care users and innovating social care practices. For instance, the project *Buildings in the making: a sociological exploration of architecture in the context of health and social care* used ethnographic and design approaches to investigate the way knowledge about health and social care is engineered into buildings designed for care and how innovation and design can re-configure relations and caring practices (project 61). Notably, of the 127 projects analysed, only in one did researchers explicitly state the goal of innovation was to enhance well-being and cultivate capabilities in carers rather than in those cared for (project 30).

To be clear, these four logics are emergent from the data and remain under-theorised at this point. Some overlap exists – for instance between techno-deterministic logics and innovation aimed at providing service efficiencies. Nevertheless, they illustrate that considerable diversity exists in the logics of innovation within the overall UKRI portfolio, and even within specific disciplinary research councils as illustrated in Figure 2.

Figure 2. Mapping UK research council projects (left of figure, weighted by budget allocation) to logics of innovation in social care (right of figure) located within individual project documentation for 127 UKRI research projects.

The implications for modes of accountability in social care

None of the projects analysed explicitly aimed to strengthen, change or reconfigure accountability structures in social care. Nevertheless, following the heuristic in Table 1 it was possible to arrive at implications for how innovation might reconfigure accountability in 87 of the 127 projects. Three modes of accountability were identified (Table 4).

Table 4. Implications for how innovation in social care structures accountability across 127 UKRI project abstracts

Mode of accountability	Projects	% of funding
Professional and expert decision makers	42	39%
Technocratic and public administrative structures	29	25%
Participatory and collective obligations	21	7%
Unresolved	35	28%

Professional and expert accountability modes were identified in projects in which agency to make substantive decisions about the provision of care was to be made by elite political actors, certified professionals and others with expert knowledge. For instance, the £2m EPSRC funded project *Wearable Soft Robotics for Independent Living* (project 59) aimed to create new technologies and materials that would contribute service efficiencies to programmes such as stroke rehabilitation. In this early-stage development project critical decisions about the direction of innovation and how success was evaluated were made by expert academic researchers and funders with no explicit mention of how ultimately either procurement managers in local authorities or end-users in the field could configure accountability.

For 29 projects the implications for accountability after innovation shifts from residing with expert decision-makers to accountability embedded in *technocratic and public administrative structures*. For instance, innovation projects that promised to enhance care services through advances in data methods and data-use (e.g. by liberating and connecting data ‘stuck’ in case notes or legacy administrative systems). Projects such as *Administrative Data Research Centres 2018* (project 98) and *Maximising the Use of Existing Administrative Data Sets for Wales*

through Computer Modelling and Simulation (project 20) exemplify this. These projects seek to make use of the very large administrative databases held by central and local governments to for example “explore the interactions between health and social care and the implications of informal care for service delivery for older people” (project 98) benefitting in the first instance the departments, services and data managers supplying administrative data with accountability structures remaining embedded in already existing infrastructures.

For 18 projects innovation had implications for modes of *collective accountability*, where accountability was emergent from participative practices and collective action. For instance, innovation in these projects sought to co-produce care services with people usually excluded from innovation processes (projects 33 and 25); establish convivial relations amongst communities and infrastructures (projects 89, 103, 104, 118); empower individuals through user-centred understandings of their environment (project 75); and build human capabilities (projects 14, 25, 105).

Some overlap between categories was observed, particularly between *professional and expert accountability* and *technocratic* modes. In both categories, accountability and decision-making power tended to be constrained to select actors and networks. Conversely, although relatively marginal in the corpus, *collective* modes featured the broadening-out of participation in care practices and situated accountability and responsibility at multiple levels of governance, including at local and community levels. In 32 research projects, it was not possible to classify understandings of proposed or existing accountability structures. In some cases it may have been that this was not considered by researchers, in others, the space available to document the project may have been insufficient. Regardless, this absence is notable, after all, research councils in recent years have made some efforts to address issues such as responsibility in innovation, of which accountability is a major component.

4.2 Analysis of practices of public innovation research at the research project level: a case innovation in an assistive living robotics lab

What implications does innovation have for accountability when we look at the level of research activities and practices on the ground? The following vignette of robotics innovation illustrates further complexities to consider.

The diffusion of robotics and autonomous systems into social care sectors has been promoted by research funders in the UK and Europe (InnovateUK 2013; Khaksar et al. 2016; Parliamentary Office of Science & Technology 2018) and, for instance, includes projects 59, 72, 73, 74, 78, 81 and 92 in our UKRI dataset (see supplemental data). At the level of national policy and funding portfolios, a discursive framing of crisis was driving this research even before the covid-19 pandemic. Ageing populations, insufficient finance in health and social care budgets and recently in the UK, a shortage of low-cost health care workers unwilling or unable to come and look after Britain's elderly following Brexit are all presented at the level of innovation policy as rationales for urgent innovation (Prescott and Caleb-Solly 2017). But the story on the ground is more complex.

Take innovation in assistive living robotics (ALR), a set of technologies that has received funding support for use in averting people's early move into more institutionalized or acute care (Gallistl and Wanka 2019). ALR research involves understanding how people and robots can interact "intuitively, safely and effectively" (Caleb-Solly 2016) and combines mechanisms of behaviour modification, human robotics interfaces, surveillance technologies and data analysis such as machine learning techniques.

ALR researchers face a set of general challenges in integrating these complex technologies into even more complex socio-material infrastructures of social care. Some of these challenges are technical – such as the limited abilities of robots and algorithms to interpret unforeseen

situations and complex dynamic environments like care homes (Buhalis and Darcy 2010). Other challenges are social. Challenges relating to the complexity of care-related needs of people makes it difficult for assistive technology to stay useful as people's needs change over time. And socio-economic challenges such as social isolation, ill health and poverty (Age UK 2019) mean people who most need assistance are amongst those who are least likely to gain access to research, design and testing environments.

The implications of these challenges for accountability are two-fold. First, design processes which neglect the needs, wants and values of care users and staff risk diminishing accountability and further marginalising vulnerable people (Spanakis et al. 2016). And second, it's often easier to adapt people's routines, practices, and environments to robots rather than designing robots to adapt to their application domains (Miller, McDaniel, and Bernstein 2020) – especially some older or disabled people with relatively low agency in innovation procedures. Because of this robotics researchers have a tendency to objectify the very people that are under care thereby risking the diminishing of some accountability relations entirely (Sharkey and Sharkey 2012).

Addressing some of these challenges, Praminda Caleb-Solly, a robotics professor at the Bristol Robotics Laboratory (BRL), explains (in a presentation to the European Robotics Forum, Malaga, Spain, March 2020) that the goal of ALR for her and colleagues is to enhance people's well-being across a range of dimensions, to “address unmet social needs, to add value, and to bring joy” to receivers of care, their families and staff. They aim to embrace contingency and context and broaden-out participation in the procedures of innovation to people usually excluded (Michalec, O'Donovan, and Sobhani 2021). These aims also explicitly recognise and address limitations of deterministic understandings of innovation prevalent in robotics through three strategies.

First, they use co-creation methods that foreground participation and two-way learning between designers and end-users in the innovation of ALR for therapy (Winkle, Caleb-Solly, et al. 2019; Winkle, Lemaignan, et al. 2019).

A second set of strategies revolve around research infrastructures such as open living labs designed to enrol end-users and robotics in test-beds that mimic for instance the real-life environment of an apartment (Ballon, Pierson, and Delaere 2005). The idea is that by testing robots with their interlocutors in realistic settings, robots will be more likely to meet ethical and cultural criteria as decided by care-receivers and care-givers.

A third set of strategies involves leaving the lab entirely. To militate against broader structural challenges such as the difficulty of involving poorer and more vulnerable users in social care innovation researchers are trialling new ways to work with community organisations and city councils. For instance, a project funded by Innovate UK has built a living lab test-bed inside a near-by extra care housing scheme. This is designed to develop “working expertise of smart living technologies [...] with the aim of improving service provision and upskilling staff” within the partner care organisation (project 92, supplemental data).

However, accountability challenges remain. For instance, the on-site engineer at the extra care living lab was concerned that a considerable amount of their time was spent installing consumer devices such as Amazon's *Alexa* product – used as a voice activation interface for automation technologies. Initially these seem like cheap solutions that allow for easy interoperability amongst devices. But the scope of the £70,000 Innovate UK project did not allow for a robust exploration of the implications for ongoing maintenance and repair of the physical, social and data infrastructures on which robotics depends. Uncertainty remains about who to call when these devices fail, and who might be responsible for ensuring data recorded is accurate and conforms to ethical standards in social care.

More broadly, while the strategies of ALR researchers focus on broadening-out participation in innovation procedures, they do not directly engage in reconfiguring the UK's major accountability structures such as the ASCOF framework. Where there is focus on accountability relations, it remains locally situated.

5. Discussion – what innovation in social care neglects

Answering the research question, the analysis reveals four logics of innovation to which project goals align: improving service provision, building techno-deterministic infrastructure, better situating knowledge and resources and building and strengthening human relations. The results show diversity in the aims of innovation, but in the main there is strong coherence with incumbent ways of configuring social care infrastructures in UK policy. Almost £3 out of every £4 of funding goes towards improving services and technological infrastructure. Recall that social care does not have to be organised through the provision of services in a market. This is a political choice, to which the stated goals of these UKRI research projects adhere. Intended beneficiaries of this innovation are national and local government through cost efficiencies; service providers by way of data and technological efficiencies; and individual end-users.

The implications for accountability are as follows. We found little evidence in the corpus of projects that explicitly aimed to improve accountability structures. The evidence base cannot tell us whether this is because researchers do not acknowledge aims to address accountability in their research; because problems with accountability are simply not recognised by research; or because projects that would confront accountability are not deemed fundable. Whatever the reasons, this is a significant gap in UKRI's portfolio.

Indirectly, modes of accountability revealed in research centred professional and expert decision makers, technocratic and public administrative structures, and participatory and collective obligations. These findings align closely with the Bracci's three mode of accountability introduced in Section 1 (Bracci 2014) and suggest that Bracci's framework might usefully underpin further analysis of innovation logics in social care sectors.

Our close inspection of research on the ground also revealed attention to accountability. The participative methods in the robotics research discussed in Section 4.2 accords with a Mode-2 or Triple Helix approach to science-society knowledge production that seeks to build accountability into research by working more closely with publics (Nowotny 2003; Etzkowitz and Leydesdorff 2000). Finding ways of “*really* involving stakeholders in innovation and practice” (Stahl and Coeckelbergh 2016, 153) in order to make robotics more ethically and socially accountable. Moreover, the participative methodologies employed tend to emphasise locally situated elements in infrastructures of care. For instance, working with civil society groups, charities, and local authorities. However, ambitions or procedures with which to reconfigure accountability structures at national or international scales are neglected.

We find neglect in two other respects. First, there is neglect of a diversity of issues and people in the focus of public innovation and research. Research documentation examined tended to background aspects of social care that are outside of market arrangements or service provision models. Typically missing was explicit focus on professional and unwaged carers, but also families, wider communities, and the social components of care infrastructures. Moreover, methods and opportunities to cultivate capabilities in the care sector that would mutually benefit neglected actors and build resilience and care capacity over time were almost entirely overlooked.

Second, we find neglect in terms of the low level of institutional reflexivity mobilized by innovation research. Public research is an important way in which to evaluate how well innovation contributes towards social progress (Stirling, O'Donovan, and Ayre 2018). In this sense, public research and innovation in social care research might contribute a public good in its ability to reflexively consider its own impact. The point here is not to say that research on innovation is uncritical. This article has reported other impressive contributions that reveal the diverse impacts of innovation in the sector. Rather, what is puzzling is how critical reports such as these are marginalized in the framing of new research. For instance Woolham et al. (2018) show that many local authorities don't take into account negative research on telecare. Missing from the corpus are systematic evaluations of prior innovation policy, and evidence of learning processes between innovation policy, innovation research, and practices on the ground. The danger here is that unless research and innovation is accountable at a system-level, there may be a continued blind adherence to innovation logics proved inadequate by covid-19.

More broadly, it is difficult to interpret policy decisions and indecisions in UK social care in the decades before covid-19 as anything other than sustained neglect. A grave risk of sticking with inadequate innovation logics there and elsewhere is that neglectful innovation sustains the machinery of a neglectful state – “one that does not take easy steps that could have been taken to reduce risks to health and as a result allows significant numbers to come to harm or die” (Wilson 2021). Future research might draw attention to specific examples of how it is that innovation directed towards social care can in the end neglect those who most need that care. Here we suspect systematic attention to how innovation logics performatively direct modes of accountability would yield useful results. It is worth then returning to theory briefly. Taking diverse matters of care seriously (Puig de la Bellacasa 2011), this research shows that obligations of accountability and the social and material things that structure them are not optional features of social care's infrastructures. Rather, they may be a critical emergent feature on which the long-term health and wellbeing of people who need social care depends.

6. Conclusion

This study sheds lights on two critical roles innovation plays in social care and long-term care. First, in reconfiguring infrastructures of care, diverse logics of innovation propel shifts between modes of accountability. Second, innovation offers the possibilities of improving instruments of accountability within those modes. But we have also shown that research on innovation has a third role, often backgrounded at the project level. That is to reflexively consider the progress and impacts of innovation – positive and negative – and the extent to which such innovation aligns to how publics value obligations such as accountability in the first place. In that, policies and practices of innovation must not only consider what social care infrastructures hold to account, but also what they neglect.

In this regard we have suggested ways in which Bracci's framework (2014) for evaluating service innovation would be usefully augmented first by concepts of care and neglect (Puig de la Bellacasa 2011) and infrastructures of care (Weiner and Will 2018) but also second on perspectives on the performativity of innovation and innovation's outcomes (Ezrahi 1990; Marres 2012). This is not to decide in advance that accountability structures emphasising, for instance, the role of professional and expert decision makers are any better or worse than technocratic and public administrative structures. But it is to recognise that such emphasis is a political choice, and that innovation that accords with values of accountability and democracy might usefully broaden-out decision making to stakeholders and publics at various levels.

Such a framework is not predictive. We cannot tell in advance how the logics of innovation projects will actually reconfigure infrastructures and accountability on the ground. For this, funders and governments must build better capacity to reflect, adapt, steer and learn from innovation in social care. For example by incorporating formative evaluation that assesses the processes of innovation as well as outcomes (Bone et al. 2020; O'Donovan, Michalec, and Moon 2021). This sort of evaluation is vital if we are to sufficiently interrogate existing and emerging logics of innovation such as digital transformation in care (Zanutto 2021).

What this analysis does show however is that innovation on its own cannot be expected to resolve problems with accountability and neglect in social care. In fact, innovation that sustains neglect may make them worse. Without accompanying work that identifies and critically challenges deficient modes of accountability, infrastructures of care will continue to be a trap from which many participants have no exit and are granted little voice.

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Supplemental data: UK social care innovation and technology research funding. UKRI funded projects 2006-2019

UK public funded innovation and technology research in social care was identified in the UKRI's Gateway to Research database at <https://gtr.ukri.org/> using queries of the form "social care" AND innovation; "social care" AND technology snowballing variants until no new and appropriate results were returned. 218 unique research projects were returned. 127 were included in the final corpus after projects were excluded following an initial review. Total funding from UKRI research councils across the corpus was £111,715,022.

Note, the search protocol was not designed to comprehensively report all studies that in some way incorporate innovation and social, rather to reveal the projects that are most likely to correspond to this paper's interest in purposeful and impactful innovation in the sector.

Ref #	Funder	Title	Start date	Duration (months)	Award (£)	Funder reference
1	EPSRC	Health and Care Infrastructure Research and Innovation Centre (HaCIRIC)	Jun 2006	60	7,236,672	EP/D039614/1
2	EPSRC	IMA International Conference on Quantitative Modelling in the Management of Health Care	Apr 2007	3	3,824	EP/E065643/1
3	AHRC	Women, Ageing and Media (WAM)	Jul 2008	6	24,358	AH/F012667/1
4	EPSRC	Innovative Technology for Healthcare Delivery - The MIMIT: CIMIT Collaboration	Apr 2009	43	1,293,604	EP/G041733/1
5	EPSRC	MultiMemoHome: Multimodal Reminders Within the Home	Sep 2009	42	246,011	EP/G060614/1
6	EPSRC	MultiMemoHome: Multimodal Reminders Within the Home	Oct 2009	41	57,585	EP/G060797/1
7	EPSRC	MultiMemoHome: Multimodal Reminders Within the Home	Oct 2009	42	474,931	EP/G069387/1
8	Innovate UK	PEACEanywhere	Oct 2009	39	1,214,451	400055
9	Innovate UK	Utilising communications technologies for anytime and anywhere assisted living solutions	Oct 2009	26	1,420,132	400052
10	MRC	Development of interventions to enhance health and wellbeing in later life (The LIVEWELL programme)	Mar 2010	60	2,246,699	G0900686
11	EPSRC	The Care Life Cycle: Responding to the Health and Social Care Needs of an Ageing Society	May 2010	66	2,808,300	EP/H021698/1
12	MRC	What are the impacts of user involvement in health and social care research and how can they be measured?	Jan 2011	33	685,814	G0902155
13	Innovate UK	Scaleable and Open Framework for Human and Digital Trust between Informal and Formal Infrastructures in Personal Health Care	Feb 2011	24	802,964	400205
14	Innovate UK	Assistive Technologies for Healthy living in Elders: Needs assessment by Ethnography	Jun 2011	27	583,297	400217
15	Innovate UK	Overcoming barriers to mainstreaming Assisted Living Technologies	Jun 2011	42	1,806,533	400220
16	EPSRC	Health and care infrastructure research and innovation centre (HACIRIC) extension.	Jun 2011	30	3,876,561	EP/I029788/1
17	Innovate UK	Designing Scalable Assistive Technologies and Services for Independent Healthy Living and Sustainable Market Development in the Mixed Digital Economy	Jul 2011	37	1,433,287	400218
18	AHRC	International Health Humanities Network	Aug 2011	24	30,254	AH/J002208/1

19	Innovate UK	Tackling Barriers to Adoption of Assisted Living Technology for Older Adults	Sep 2011	30	520,832	400221
20	ESRC	Maximising the Use of Existing Administrative Data Sets for Wales through Computer Modelling and Simulation	Oct 2011	12	66,525	ES/J011363/1
21	Innovate UK	CAREatHOME	Dec 2011	36	100,100	600421
22	ESRC	The role of mutuals in public service innovation	Jan 2012	24	224,922	ES/J008435/1
23	Innovate UK	METALL (Metadata-Enabled Tools for Assistive Living & Learning)	Jan 2012	19	620,781	101034
24	EPSRC	TRUMP: A Trusted Mobile Platform for the Self-Management of Chronic Illness in Rural Areas	Jan 2012	49	1,684,860	EP/J00068X/1
25	MRC	Multi-dimensional Health Risk Appraisal for Older People: embedding promotion of health and well-being in practice	Jan 2012	24	256,736	G1001822
26	ESRC	Making Social Work Count: A National Curriculum Development Programme Pioneered in Three Universities	Jan 2012	36	70,754	ES/J011835/1
27	AHRC	Improving well-being and community connectivity for people with dementia through community based arts interventions	Feb 2012	4	11,996	AH/J011029/1
28	Innovate UK	How Can Smart Home Data and Systems Improve Assisted Living Services	Mar 2012	4	50,000	130755
29	ESRC	NILS-RSU: Continuation 2012-2017	Aug 2012	68	1,099,703	ES/K000462/1
30	ESRC	CARERS IN THE 21ST CENTURY: DEVELOPING THE EVIDENCE BASE	Sep 2012	12	15,360	ES/J021229/1
31	EPSRC	Kinetic User Interfaces and Multiuser 3D Virtual Worlds for Older People	Sep 2012	15	97,396	EP/J010766/1
32	ESRC	The Market and Health Care Production	Dec 2012	48	500,351	ES/J023108/1
33	ESRC	Towards equal and active citizenship: pushing the boundaries of participatory research with people with learning disabilities	Dec 2012	2	18,146	ES/J02175X/1
34	ESRC	Creating a 'Health Talk Online' web-based resource on family experiences of disorders of consciousness	Feb 2013	18	23,920	ES/K00560X/1
35	ESRC	Towards equal and active citizenship: pushing the boundaries of participatory research with people with learning disabilities	Mar 2013	22	16,411	ES/J02175X/2
36	ESRC	Does Smaller mean Better? Evaluating Micro-Enterprises in Adult Social Care	Apr 2013	27	357,580	ES/K002317/1
37	ESRC	AAL-WELL Ambient Assistive Living Technologies for Wellness, Engagement and Long Life	Apr 2013	46	144,591	ES/K011138/1
38	BBSRC	Visual motion perception in healthy ageing	Jul 2013	28	221,357	BB/K007173/1
39	EPSRC	Mobility, Mood and Place: a user-centred approach to design of built environments to make mobility easy, enjoyable and meaningful for older people	Sep 2013	44	1,273,656	EP/K037404/1
40	Innovate UK	One Precious Life	Jan 2014	9	425,784	971382
41	ESRC	Smart Data Analytics for Business and Local Government	Jan 2014	82	5,198,275	ES/L011859/1
42	AHRC	A Development project to determine and progress the 'state of the Art' of Design theory and Practice in healthcare	Mar 2014	6	39,530	AH/L013908/1
43	ESRC	Comprehensive approach to modelling outcome and cost impacts of interventions for dementia	Mar 2014	57	2,613,207	ES/L001896/1
44	AHRC	Developing a co-produced, digital, and living archive of learning disability history: An exploration of ethics, ownership and new connectivities	Apr 2014	39	805,223	AH/K007459/1

45	EPSRC	EPSRC Centre for Doctoral Training in Digital Civics	Apr 2014	102	4,707,495	EP/L016176/1
46	EPSRC	EPSRC - NIHR HTC Partnership Award: Promoting Real Independence through Design Expertise (PRIDE)	May 2014	39	149,896	EP/M000273/1
47	Innovate UK	Big Data: Digitisation, Semantic Analysis, Topic Modelling, Visualisation and Exploration.	May 2014	24	356,457	101779
48	ESRC	Investigating the barriers and facilitators of the implementation of NICE's public health guidance and quality standards in	May 2014	23	86,278	ES/L006995/1
49	Innovate UK	Aerospacer: A pressure relieving mattress overlay from Medstrom Ltd for the prevention of pressure ulcers	Oct 2014	14	70,466	720552
50	AHRC	Designing Innovative Interventions with People Living with Dementia	Nov 2014	15	83,366	AH/M005348/1
51	ESRC	Family inclusive policy and practice after 'Think Family'	Dec 2014	16	82,536	ES/M006018/1
52	Innovate UK	Limb Glider Intelligent Rehabilitation Device	Jan 2015	24	239,711	720437
53	Innovate UK	AAL IntegrAAL	Jan 2015	30	295,018	600468
54	ESRC	Inciting dialogue and disruption - developing participatory analysis of the experience of living with dementia and dementia care	Feb 2015	18	163,892	ES/L01470X/1
55	ESRC	Euro-China UPC: Optimising care delivery models to support ageing-in-place: towards autonomy, affordability and financial sustainability - ODESSA	Feb 2015	19	374,609	ES/L016095/1
56	Innovate UK	Assistive Smart Watch Applications	Apr 2015	7	76,308	710662
57	AHRC	Phronesis and the Medical Community	May 2015	36	659,968	AH/M006646/1
58	MRC	META-DAC - Managing Ethico-social and Technical issues and Administration of Data Access Committee	Jun 2015	21	309,884	MR/N01104X/1
59	EPSRC	Wearable Soft Robotics for Independent Living	Jul 2015	42	2,026,737	EP/M026388/1
60	EPSRC	The CHERISH-DE Centre - Challenging Human Environments and Research Impact for a Sustainable and Healthy Digital Economy	Jul 2015	71	3,091,610	EP/M022722/1
61	ESRC	Buildings in the making: a sociological exploration of architecture in the context of health and social care	Aug 2015	38	355,626	ES/M008398/1
62	ESRC	Establishing outcomes of care proceedings for children before and after care proceedings reform	Sep 2015	35	455,788	ES/M008541/1
63	Innovate UK	Collaborating to deliver social-prescribing in Bath and North East Somerset	Oct 2015	27	301,973	102412
64	ESRC	New practices for new publics: interdisciplinary dialogues about practice theory approaches and civil society. Seminar series.	Nov 2015	28	30,184	ES/N009398/1
65	EPSRC	DERC: Digital Economy Research Centre	Nov 2015	69	4,051,357	EP/M023001/1
66	ESRC	Democratic renewal in Civil Society Organisations	Nov 2015	24	21,655	ES/N009096/1
67	ESRC	HEALTHY URBAN LIVING AND AGEING IN PLACE: PHYSICAL ACTIVITY, BUILT ENVIRONMENT AND KNOWLEDGE EXCHANGE IN BRAZILIAN CITIES (HULAP)	Jan 2016	39	468,570	ES/N013336/1
68	Innovate UK	Caring Cloud	Feb 2016	6	5,000	753559
69	Innovate UK	CityVerve	Jul 2016	33	9,781,984	102561
70	EPSRC	Fast ASessment and Treatment in Healthcare (FAST Healthcare)	Aug 2016	54	628,709	EP/N027000/1

71	ESRC	Euro-China UPC: Optimising care delivery models to support ageing-in-place: towards autonomy, affordability and financial sustainability - ODESSA	Sep 2016	18	207,006	ES/L016095/2
72	EPSRC	A Robot Training Buddy for adults with ASD	Nov 2016	50	711,763	EP/N034546/1
73	EPSRC	Acoustic Signal Processing and Scene Analysis for Socially Assistive Robots	Jan 2017	36	330,104	EP/P001017/1
74	EPSRC	A Robot Training Buddy for adults with ASD	Jan 2017	42	355,563	EP/N035305/1
75	AHRC	Supporting the creative use of technology to improve life story work for vulnerable children- trove as a case example from REACT	Jan 2017	23	161,560	AH/P013252/1
76	Innovate UK	A Mental Health Patient Centric Continuous Care Solution: The Balsamee Care Solution	Mar 2017	9	68,781	102989
77	MRC	META-DAC - Managing Ethico-social and Technical issues and Administration of Data Access Committee	Apr 2017	16	139,017	MR/N01104X/2
78	Innovate UK	YOUBAN: robotic solutions to assist the elderly in daily mobility activities and using robot companionship to offset loneliness and isolation	Apr 2017	28	667,185	102871
79	MRC	Going beyond health related quality of life - towards a broader QALY measure for use across sectors	May 2017	42	445,442	MR/P015549/1
80	Innovate UK	Aston University and The Extracare Charitable Trust	Jun 2017	18	55,443	511019
81	EPSRC	Number Understanding Modelling in Behavioural Embodied Robotic Systems	Sep 2017	38	100,958	EP/P030033/1
82	Innovate UK	CAT/2: Big Data Content Analytics with particular reference to Probabilistic Neural Topic Models	Oct 2017	27	645,150	103652
83	Innovate UK	Monitoring physical frailty in older adult's homes with a new walking speed sensor; from prototype to proven concept	Jan 2018	12	56,325	133400
84	ESRC	Advancing business innovation and skills development in the home care sector	Jan 2018	36	266,499	ES/S001700/1
85	AHRC	The Imagination Café	Jan 2018	12	79,860	AH/R004900/1
86	Innovate UK	Team gamification of health CPD: closing the gap between research and practice.	Feb 2018	12	33,180	133414
87	Innovate UK	TALKING TECHNOLOGY ENABLED CARE - A personalised, visual, digital platform to transform health, social care and housing services	Feb 2018	12	56,628	133418
88	MRC	Methods for the privacy preserving analysis of sensitive health data: text analysis and data visualisation	Feb 2018	36	224,395	MR/S003959/1
89	ESRC	Reclaiming social care: Adults with learning disabilities seizing opportunities in the shift from day services to community lives	Feb 2018	24	296,996	ES/P011764/1
90	Innovate UK	Introduction of GaitSmart in the care pathway for the elderly to reduce falls and improve the quality of life of individuals	Jun 2018	10	76,474	133680
91	EPSRC	Data Analytics for Health-Care Profiling using Smart Meters	Jun 2018	14	99,892	EP/R020922/1
92	Innovate UK	University of the West of England, Bristol and The Extracare Charitable Trust	Sep 2018	24	74,207	511283
93	Innovate UK	Supporting innovation in health and social care - What does good innovation look like?	Oct 2018	18	593,475	104671
94	EPSRC	SPHERE - A Sensor Platform for HHealthcare in a Residential Environment (IRC Next Steps)	Oct 2018	42	3,630,821	EP/R005273/1

95	Innovate UK	Care City: Transforming how we find, treat and manage long-term conditions	Oct 2018	18	1,397,367	104654
96	Innovate UK	An Intergenerational Housing Model	Nov 2018	12	76,201	104661
97	ESRC	Violence, Abuse and Mental Health: Opportunities for Change	Nov 2018	48	1,020,181	ES/S004424/1
98	ESRC	Administrative Data Research Centres 2018	Nov 2018	29	2,786,405	ES/S007407/1
99	Innovate UK	Engaging Rural Micros for increased productivity	Dec 2018	6	58,483	104763
100	ESRC	Improving health and reducing health inequalities for people with severe mental illness: the 'Closing the Gap' Network+	Dec 2018	48	1,022,359	ES/S004459/1
101	ESRC	Enhancing the population-wide Northern Ireland Registry of Self-Harm and Suicide Ideation through data linkage	Dec 2018	24	157,410	ES/R011400/1
102	EPSRC	IRC Next Steps Plus : OPERA - Opportunistic Passive Radar for Non-Cooperative Contextual Sensing	Jan 2019	36	1,363,228	EP/R018677/1
103	AHRC	Therapeutic placemaking as a pathway to improved public health: realising our health and care centres of the future	Feb 2019	34	202,317	AH/S004459/1
104	AHRC	ART/DATA/HEALTH: Data as creative material for health and wellbeing	Feb 2019	27	200,750	AH/S004564/1
105	Innovate UK	Novel sensor algorithms for elder care	Mar 2019	14	206,854	105011
106	ESRC	The potential of Land Value Capture to secure sustainable urban development supporting air quality enhancement	Apr 2019	36	296,758	ES/T000279/1
107	Innovate UK	NQM Care Analytics	Apr 2019	21	342,120	105067
108	Innovate UK	Maternity Connect	Apr 2019	24	717,701	25397
109	EPSRC	UKRI Centre for Doctoral Training in AI-enabled healthcare systems	Apr 2019	102	6,684,742	EP/S021612/1
110	Innovate UK	TaCT Tracking and Communication Technology	Jun 2019	15	185,191	105253
111	ESRC	Dying in the Margins: uncovering the reasons for unequal access to home dying for the socio-economically deprived	Sep 2019	42	389,206	ES/S014373/1
112	Innovate UK	Engaging Rural Micros for increased productivity Trial	Sep 2019	17	399,957	105437
113	ESRC	Supporting adult social care innovation (SASCI)	Sep 2019	61	1,637,433	ES/T001364/1
114	MRC	Bringing Innovative Research Methods to Clustering Analysis of Multimorbidity (BIRM-CAM)	Oct 2019	36	609,909	MR/S027602/1
115	ESRC	Developing the evidence base for innovation in social care for children and families affected by domestic abuse	Oct 2019	48	1,628,380	ES/T001399/1
116	ESRC	The Research Centre on Micro-Social Change (MiSoC)	Oct 2019	60	6,114,094	ES/S012486/1
117	ESRC	Improving social care systems and practices for safeguarding young people at complex risk: what promotes and sustains innovation?	Nov 2019	48	1,529,006	ES/T00133X/1
118	AHRC	Memory - Identity - Rights in Records - Access: Embedding Participatory Recordkeeping in Child Social Care	Nov 2019	12	79,993	AH/T005343/1
119	ESRC	Exploring innovations in Transition to adulthood (EXIT Study)	Dec 2019	48	1,653,903	ES/T001348/1
120		Built Infrastructure for Older People in Conditions of Climate Change (BIOPICCC)		39		
	EPSRC		Sep 2009		279,282	EP/G061246/1
121	EPSRC	Built Infrastructure for Older People in Conditions of Climate Change (BIOPICCC)	Nov 2009	37	415,273	EP/G060843/1

122	Innovate UK	Warrington Intelligent Systems Engagement (WISE) - integrating multiple information flows to improve resilience for all urban communities.	Sep 2012	3	48,000	130970
123	ESRC	Support for carers of people with early onset dementia	Mar 2014	42	201,321	ES/L008866/1
124	ESRC	Utilising Big Data in the Practice of Torture Survivors' Rehabilitation	Sep 2015	24	211,183	ES/M010422/1
125	NERC	'Green infrastructure and the Health and wellbeing Influences on an Ageing population (GHIA)	Aug 2016	48	726,905	NE/N013530/1
126	ESRC	Inclusive and healthy mobility: Understanding trends in concessionary travel in the West Midlands	Feb 2017	15	126,323	ES/P010741/1
127	Innovate UK	100CC - The 100% Connected Community	Jun 2018	21	1,026,847	104212

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Update log

- Version 1 – November 20th, 2020
- Version 2 – December 3rd, 2020.
 - Added ORCID info
 - Added DOI
 - Fixed missing supplemental data
- Version 3/4 – February 2022
 - Major revision to all sections