1   **Title** A systems approach to the exploration of research activity and relationships within a
2   local authority

3   Authors: Judith F Fynn, John Jones, Andy Jones

4   **Affiliations**

5   Judith F. Fynn, Norwich Medical School, University of East Anglia, Norwich, UK

6   John Jones, Directorate of Community & Environment Services and Public Protection,
7   Norfolk County Council, Norwich, UK

8   Andy P. Jones, UKCRC Centre for Diet and Activity Research (CEDAR) and Norwich
9   Medical School, University of East Anglia, Norwich, UK

10   Corresponding Author

11   Correspondence to Judith F. Fynn: j.fynn@uea.ac.uk

12   # Abstract

13   **Background:** Organisations with responsibilities for public health are increasingly required
14   to use evidence-based practice to inform programme delivery, requiring research to
15   generate relevant evidence, dissemination and use of evidence to inform decisions and
16   practices. Understanding how relationships between organisational structures, systems and
17   processes influence evidence-based practices is critical to improving practice at both an
18   institutional and system level, yet how these relationships should best operate is not well
19   understood. Understanding how to better support research within local authorities, the
20   elected administrative bodies responsible for services including public health at a regional
21   level in the UK, is a priority for the National Institute for Health Research (NIHR) Public
22   Health Research. This study is based on Norfolk County Council, a local authority in the East
23   of England. We aimed to apply a systems perspective to develop a better understanding of
24   the structures, systems and processes that support a local authority to become research-
25   active, identifying gaps in understanding and recommendations for action to address them.

26   **Method:** Taking a participatory action research approach, we applied qualitative methods to
27   explore research activity and relationships in Norfolk County Council. We surveyed
28   employees and used network analysis to map individuals, departments and external partners
29   involved in research activities and the connections between them. We then applied
30   participatory approaches to conduct a series of focus groups and semi-structured interviews
31   to explore stakeholders' experiences and perceptions of being involved in research at, or
32   with, the authority, and their ideas for recommendations for future actions.

33 **Results:** A range of research activity is undertaken at the local authority, with an emphasis

34 on applied work to improve service delivery. We identified several examples of effective

35 practice and models of research collaboration in some departments. Challenges such as

36 limitations in resources, capacity and knowledge exchange were evident, yet there was a

37 readiness amongst key stakeholders to develop and implement actions that may better

38 support the authority to become more research active.

39 **Conclusion:** In large complex organisations a key challenge is how to share learning across

40 teams and implement good practice at an organisational and system level. Our findings

41 highlight the potential of developing improved collaborative partnership models and systems

42 to support sustainable processes and practices for research and knowledge exchange at an

43 institutional and inter-organisational level. The insights gained and shared will support other

44 local authorities and similar large, multi-level organisations with responsibilities for evidence-

45 based public health to explore their own setting and implement change where needed, and

46 provide stimulus for further research into system level change.

47

48

Background

52 Public organisations with responsibilities for the health of the population they serve are

53 increasingly required to use evidence-based practice to ensure that policy and practice are

54 based on sound evidence. Evidence-based practice requires: (i) the generation of relevant

55 evidence, (ii) dissemination to communicate knowledge and information, and (iii) the use of

56 evidence to inform decisions and practices (1, 2). These processes are critical to ensure that

57 resources are focused on actions and interventions that have a good prospect of being

58 effective (3). Failure to do so risks valuable resources being spent on ineffective

59 interventions and/or reduced resourcing for interventions proven to be effective and limits the

60 ability of organisations and the wider system to meet public health objectives and targets.

61 Nevertheless, stakeholders with responsibilities for decision making, and for delivery and

62 evaluation of services and interventions, face several challenges in implementing evidence-

63 based practices (4-7). Stakeholders involved can include researchers, policy makers and

64 practitioners from a range of public, private and third sector organisation. Examples of the

65 challenges to applying evidence-based practice include: conducting research that will

66   generate evidence that is relevant to current practice and to future strategies and funding;
67   reporting in a time-frame, style and language that is appropriate for a range of stakeholders
68   to make use of the evidence; generating evidence from practice-based projects that is robust
69   to facilitate knowledge mobilisation and implementation of good practice; limited stakeholder
70   awareness of alternative approaches to evidence production and use; and generating and
71   using evidence with limited financial resources and methodological skills (7-10).

72   There has been a growing understanding and appreciation of how factors such as
73   resources, individual and organisational capacity, and organisational structures and
74   systems, can act as barriers or facilitators to research and evidence-based practice (8-11).
75   The relationship between the extent to which good-practices are embedded within
76   organisations and the development of a "culture of evaluation" or "research culture" has also
77   been discussed within the literature (7, 9). Schwarzman et al. (9) describe an organizational
78   culture that places value on evaluation and research as a facilitator for staff to take up and
79   use evaluation, and for supporting systems and structures to be embedded in the
80   organization. Previous studies have shown that research-practice partnerships can improve
81   practice, help build individual and organisational capacities to undertake research and
82   facilitate the development of a research culture within organisational teams (9). Others have
83   described improvements in adoption of evidence-based practices through such partnerships
84   (12). However, the degree to which collaborative research practices are embedded within
85   organisations and the nature of relationships can influence the effectiveness of research
86   partnerships and activities (8). There is a pressing need to improve understanding and
87   implementation of organisational structures, systems and processes that can facilitate
88   initiation and maintenance of research partnerships and networks within organisations and
89   multi-agency systems that have an interest in applying evidence-based practices (9, 13, 14).

90   In England local authorities are the elected municipal bodies with responsibility for the
91   delivery of essential public services; these are organised by county and district council, as
92   well as unitary authorities which typically encompass large urban localities, that serve
93   specific geographical areas. Since 2013 local authorities have been responsible for
94   maintaining and improving the health of the population they serve. Some of the benefits of
95   embedding public health within local authorities highlighted at the time public health was
96   incorporated into the local authority remit were the opportunities to work across directorates
97   and departments to address local needs and wider determinants of health (15, 16).
98   However, such cross-directorate working can be challenging. In the UK, the National
99   Institute for Health Research (NIHR) was set up in 2006 to "provide a comprehensive
100   research system focused on the needs of patients and the public" (17). In 2020 the NIHR

funded fourteen research projects as part of a programme to help them understand how to build a research system that could better support research activities and build research capacity in local authorities (18). Each of the funded projects within the NIHR Local Authority Research System call were linked to a different local authority in England, this manuscript reports on the findings from one of those research projects undertaken with Norfolk County Council in England.

Norfolk County Council (hereafter referred to as the Council or the Local Authority) was used as a case study to explore stakeholders' experiences of undertaking research activities and collaborating with research partners within a local authority context. Norfolk County Council serves a predominantly rural county in the East of England with a population of 903,000 in 2019, and a population density of 169 persons per km^2, making it one of the most rural counties in England. Services are organised within six core departments: Community and Environmental Services (which includes Public Health), Adult Social Services, Children's Services, Finance and Commercial Services, a Governance Department, and a Strategy and Transformation Department (19).

Over the last decade, Norfolk County Council (NCC) has collaborated with research partners, including the local university (the University of East Anglia (UEA)), to jointly deliver and evaluate many projects. Through these projects the Council has increased its understanding of research, and its awareness of challenges in evidence generation and dissemination that a local authority might face. Questions have arisen within the Council around the extent to which examples of good practice in research are localised within individual relationships or departments or are institutionalised and shared across departments and local authorities. This was adopted as a case study theme to explore the relationships between intra- and inter- organisational structures and processes, and internal and external influences on research activities and evidence-based practices; developing a better understanding of these is critical to improving practice at both an institutional and system level (9, 13, 14).

Through the lens of a systems approach that would enable us to view the Council and the wider system in which it operates, we explored current research activity, existing research relationships, and stakeholders' experiences of being involved in research activities at, or in partnership with, Norfolk County Council. For the purposes of this work, research was defined as the systematic inquiry for the generation of knowledge and understanding; and included applied research which seeks to find solutions to everyday problems, and evaluation. Research activities were defined as activities inclusive of conducting research and using evidence from research.

136 Firstly, we aimed to develop a better understanding of the organisational structures,

137 processes and practices that support a local authority to become research-active. Secondly,

138 we aimed to apply the insights gained to understand how lessons from individual projects

139 may be implemented at an organisational level, and what actions may be needed to address

140 gaps within the local network and to support and embed good research practice across the

141 organization. Although the focus in this case-study is on a specific local authority, the

142 learning from the research is intended to be applicable to other local authorities and multi-

143 level organisations facing similar challenges, and more broadly those with an interest in or

144 responsibility for systems and practices to support evidence-based public health. To address

145 these aims we identified the following objectives:

146 **Research Objectives**

147 1. To identify existing partnerships, departments, groups and individuals that play a role

148   in, or oversight of, research activity and evidence-based decision making within the

149   Local Authority.

150 2. To explore processes and practices operating within the current organisational

151   structures and systems within the Local Authority that facilitate research activities,

152   knowledge mobilisation and use of research evidence.

153 3. To identify gaps in current processes and practices in terms of supporting research

154   activities within the Local Authority, and identify what may be needed to address

155   these gaps.

156 4. To use these insights to develop recommendations for action to address the gaps,

157   build on strengths, and identify how lessons from individual projects and partnerships

158   may be implemented and embedded at an institutional or system-wide level.

159

Method

161 **Study Design**

162 The research was a collaboration between Norfolk County Council and UEA. To address

163 objectives one and two and explore the processes, practices, and factors influencing

164 research activities and relationships within a multi-sectoral public health setting, we applied a

165 multi-disciplinary approach (20). This was informed by a recognition of the need for a

166 breadth of enquiry beyond the strict boundaries of the local authority, and the boundaries of

167 internal departments and teams, so as to situate the study in the wider system in which the

168   local authority operates and research activities take place. This context is depicted in the

169   logic model we developed to guide the research (Figure 1).

170   The research was conducted by applying qualitative methods across two stages. Firstly, we

171   applied network analysis (21) to understand how the local authority and partner

172   organisations may be viewed as a system in which research activity sits. Network analysis is

173   a way of mapping and developing a visual representation of the key players (often termed

174   'actors') and relationships. It is a method that can be used as a descriptive and diagnostic

175   tool (22). Secondly, we applied participatory action research approaches that involve the

176   input of those key players (23) to allow us to engage and work collaboratively with

177   stakeholders from the local authority and related organisations, to adapt our methodologies

178   in response to emerging stakeholder requirements and priorities, and to collaboratively seek

179   recommendations for action.

180   [Figure 1. Logic model for the study]

181

182   **1.Stage 1 Network Analysis**

183   1.1 Data Collection for the online survey

184   We used an online survey to identify individuals in the local authority that are engaged, or

185   have an interest, in research activities as part of their work. To explore the breadth of

186   research activities and how they may be used, it was important to ensure stakeholders had a

187   shared understanding of what we meant by the term "research activity". As defined in the

188   background, research activities were defined as inclusive of conducting research and using

189   evidence from research.

190   To ensure we reached as many staff across all departments and teams at the Council, we

191   contacted the directors of all departments and heads of service teams, as well as the internal

192   communication team to provide them with the details and link for the online survey, and to

193   ask them to share this with all staff. The survey remained open for the duration of the study

194   (four months), although no responses were received after the second month.

195   The survey was designed and agreed by all authors, and asked respondents 15 questions

196   about their involvement, or interest, in undertaking or using research as part of their work in

197   the local authority. This included asking them to identify up to ten people that they currently

198   collaborated with or had collaborated with in the past two years for research purposes, and

199   to state if those partners were employed within the local authority or were from an external

200   organisation. We included two categorical questions to help understand the nature of the

201 relationship and communication with each identified partner. Firstly, respondents were asked

202 to select the most appropriate description of the communication: Formal (e.g. scheduled

203 meetings), Ad-hoc as required (e.g. to ask a specific question or respond to a specific

204 question), Mixture of ad-hoc and formal, or By-chance (e.g. only when your paths cross).

205 Secondly, they were asked to select the most appropriate description of the frequency of

206 contact: Rarely (e.g. We hardly ever communicate unless we need a specific piece of

207 information or other input), Occasionally (e.g. There may be long periods when we are not in

208 contact during a project, but we will be in contact at key milestones), Frequently (e.g. We are

209 in regular contact throughout our collaboration), Very Frequently (e.g. We are in contact at

210 least weekly when we are working together, we always know what is happening in relation to

211 each other's work).

212

213 **1.2 Data Analysis for the online survey**

214 After the survey had been available to participants for two months, the survey outputs were

215 exported into a Microsoft Excel file for cleaning and data management. Each respondent and

216 named partner were given a unique code to de-identify them. Each person was also coded

217 with attributes based on the survey responses, including whether they were a respondent or

218 named partner; their organisation, team or department; and their engagement with or

219 interest in research activities. The coded data was then imported into the Ucinet software

220 package (24) where it was used to generate network maps to describe the connections

221 between stakeholders, internal departments and external research partners.

222

223 **2. Stage 2 Focus groups and semi-structured interviews**

224 The second stage of the research was conducted over three phases of data collection, each

225 with a differing purpose (as shown in Table 1). In line with a participatory action research

226 approach adopted, the research was iterative, and the themes and findings identified in each

227 phase were used to inform the subsequent phase. In this way, the focus groups and

228 interviews were used to provide feedback on the findings from the preceding phase, and to

229 facilitate discussion around emerging issues and themes to gain a fuller understanding of

230 stakeholders' experiences and perspectives (Additional File 1 provides details of the

231 supporting material provided and semi-structured questions). To allow this circular action

232 research approach, the focus groups and interviews for each of the three phases in Stage 2

233 were conducted sequentially over the final three months of the study.

2.1 Study Sample

Purposive and snowball sampling approaches were applied to identify potential participants to include in the second stage of the research. Initially, survey responses were used. All respondents that indicated their willingness to participate, and that had shared their email address with us via the survey, were contacted to invite them to participate in a focus group or interview. We also used survey responses to identify named external partners; where these people had their contact details readily available on organisational websites, we contacted them to provide details of the study and to invite them to participate. In addition, employees who had key roles related to research activities at the Council, such as staff involved in data analytics, research governance, or working in research-active teams, were contacted to invite them to participate in Phase 1.

In Phase 2, using the findings generated from Phase 1, we identified six examples of different approaches to research activities being undertaken by different teams that involved staff located within Community and Environmental Services, Adult Social Services, Children's Services, and the Strategy and Transformation Department. We contacted key informants from each of these groups to invite them to participate in an interview or focus group to develop a case study that could be used to: (i) show case their research approaches and practices, (ii) share examples of good practice, and (iii) help identify approaches to facilitating research and challenges they face in engaging in research, that may help inform future practice and support research capacity building within other departments or teams. Stakeholders from four different departments responded and collaborated to develop four case studies.

In the third phase, we sent an invite to all stakeholders who had participated in any of the interviews or focus groups to participate in a focus group to discuss the findings of the study and to provide the opportunity to comment and feed into conclusions and recommendations. In this final phase of the research, findings were also presented to the Corporate Board (governing body) of the Council for comment.

Table 1. Description of each phase of data collection within Stage two of the study

Phase	Purpose	Participants (total number)
1	To explore internal stakeholders' experiences of research relationships and the types of research activities undertaken	3 focus groups (n = 10) 4 interviews (n = 4)
	To explore external stakeholders' experiences of research relationships and the types of research activities undertaken	2 focus group (n = 7) 4 interviews (n = 4)

2	To collaboratively develop case studies to explore approaches adopted within internal teams to facilitate research activities and partnerships	3 focus groups (n = 9) 5 interviews (n = 5)
3	To explore preliminary findings and provide opportunities to feed into the study conclusions	2 focus groups (n = 12) Presentation and discussion with the local authority Corporate Board

262

263

2.2 Data Collection for the interviews and focus groups

Supporting material and a topic guide with indicative questions were developed for each of the three data collection phases in Stage 2 of the research (these are provided in Additional File 1). These were sent to participants to facilitate reflection on their experiences and practices in advance of each focus group and interview, along with a Participant Information Sheet and Consent Form to be signed prior to further participation in the study. In Phase 1, eight questions were included that focused on exploring the types of research activity that stakeholders were engaged in, and their experiences of research activity and research partnerships. In Phase 2, seven questions focused on how research practices had evolved in specific teams, the benefits and challenges of the approaches and practices they adopted, and stakeholders perceptions on how these approaches may fit across other departments and teams within the local authority. In Phase 3, initial findings from the previous research phases, including the network map, were used as prompts for discussion to explore potential next steps for promoting and supporting research activities across the local authority.

Focus groups lasted approximately 60 minutes and had between 3 and 4 participants in each, whilst interviews lasted between 26 and 50 minutes. Focus groups were facilitated by JF and/or AJ, all interviews were conducted by JF. Focus groups and interviews were conducted using Microsoft Teams and recorded on an audio-recording device. These were then transcribed by JF.

283

2.3 Data Analysis for the interviews and focus groups

An inductive approach was applied to identify key themes in the transcribed data following Phase 1. These initial themes were used to develop a coding framework, which was discussed and agreed by all authors. This was then applied to code the data generated from each of the phases of Stage 2, with additional emergent codes added iteratively. In addition,

289 a set of case studies were developed as examples of research approaches adopted within
290 teams at the local authority.

291

Results

293 The findings are presented as a narrative synthesis, linked to the stages of the research.

Stage 1: Survey and Network Analysis

295 After removal of eight incomplete responses, the survey sample consisted of 104
296 participants. Of these 54 (52%) stated they were either currently engaged in doing research
297 or had been in the last two years, and a further 43 (41%) respondents stated they were not
298 engaged in research but were interested in doing so. Some 68 (65%) were currently
299 engaged in using research evidence or had been in the last two years. Respondents
300 identified 174 partners that they collaborated with for the purposes of research; this included
301 69 internal partners that had not completed the survey and 105 external partners.

302 Respondents described the nature of collaborations and communication with partners
303 variably. In total, 217 relationships were identified. The most common categorisation used to
304 describe the nature of communication was 'a mixture of ad-hoc and formal' (n=118, 54%);
305 followed by 'ad-hoc' (n=54, 25%), 'formal' (n=41, 19%) and then only 2% (n=4) describing
306 communication as 'by-chance'. Frequency of contact within relationships was generally high,
307 with these described as 'very frequent' in 27 (14%), 'frequent' in 79 (42%), 'Occasional' in 59
308 (31%), and as 'rare' in only 23 (12%) of relationships.

309

The network of research relationships

311 Figure 2 shows the network map of individuals, and their connections to internal and external
312 partners. Internal partners are colour coded by department or team (e.g. Public Health,
313 Insight and Analytics etc). To preserve anonymity these teams are not labelled. External
314 partners are coded as "university" or "other."

315 The map shows several relationships between the local authority and university partners,
316 primarily the local university, but also other universities in England and across Europe where
317 there are connections through specific research projects. The category grouped as "other"
318 includes research partnerships that were less frequently mentioned, such as other local
319 authorities, government departments, quasi-governmental organisations, research networks,
320 professional associations, the public, and charitable and voluntary organisations.

10

321   The map also shows that stakeholders from a wide range of departments are involved in
322   research activities. It also shows clusters of research relationships, with several clusters
323   around individuals who connect groups and may act as important links within the network.
324   The map also shows several examples of inter-departmental research collaborations, along
325   with isolated stakeholders who have not described themselves as connected to others
326   through research.

327   [Figure 3. The network of research active individuals and linkages]

328

329   **Stage 2: Focus Groups and Interviews**

330   **Phase one: What are the types of research activity that stakeholders are engaged in,**
331   **and what are their experiences and perceptions of research activity?**

332   Stakeholders described various examples of research activities. These included: ongoing
333   use of evidence in service improvement and development plans; public consultations;
334   drawing on evidence from other local authorities informally and formally; devising tools,
335   methods and interventions, testing implementation, and evaluation. Some stakeholders
336   thought there were differences in how people across the local authority would interpret
337   research; for example things like quality assurance and evaluation may be considered as
338   "business as usual" and not categorised as research if they do not have wider applicability.

339   Stakeholders emphasised the importance of research being applied, and outputs needing to
340   focus on service development and improvement for the people across the County. One
341   stakeholder commented:

342   *"We are very evidence-based, and feel we shouldn't be making decisions unless it is*
343   *evidence-based … It is public money, so we should be squeezing every drop of value out*
344   *of it, and for me that is what research is about, to understand things and to make things*
345   *better. We need to use research to inform the things we do."*

346   The benefits of bringing grant funding for projects, and their value in enabling assemblages
347   of tailored teams to address specific issues, "out of the box" thinking, and proof of concept
348   testing before embedding systematic change were all highlighted. Participants also
349   acknowledged that project work is time limited, and once a project is completed, the
350   knowledge gained is not always retained. It was felt that within departments and project
351   teams there are people with transferrable research skills that could be used across the
352   service and in other departments with wider sharing, and that there are missed opportunities

353 for learning and knowledge from the practices of research to be shared across the Council.

354 As one participant commented:

355 "*Working at the local authority has been a great experience for me, and it has given me*

356 *time to do research, but maybe fewer opportunities to say what we have done. I think we*

357 *need to celebrate it a bit more.*"

358 We identified several key themes related to participants experiences of research activities

359 and research relationships, as shown in Table 2. These themes show important factors that

360 stakeholders described as challenges or facilitators to being research active within their role

361 at the local authority.

362 Table 2. Themes related to stakeholders' experiences of research activities

Key themes	Examples of challenges and facilitators
Research activities	
Limited awareness and knowledge of what others are doing	Challenges are associated with being a large organisation that fulfils many functions
	Duplication of efforts and missed opportunities for greater efficiency
	Fluidity of roles across different departments
	Communication is important to help people know what questions to ask, how to find answers, and who to ask
Limitations in resources	Limited financial, analytical and time resources
	No specific people managing research
	Lack of resilience and fragile staff teams
Alignment of research with long term strategy	Importance of applied research that will develop and improve service is recognised
	Challenges of knowing how outputs will be used
	Limitations in the capacity to align research to longer term strategic needs
	Longitudinal studies are difficult within an applied context, and traditionally not done
	The balance between time spent now for better working in the future needs to be improved
Research relationships	
Openness to collaborating with external partners	Range of projects with internal and external partners
	Good relations with universities, particularly local ones and those with relevant expertise
	Existing and new networks e.g. Health and Care Partnerships, data analytic networks, local practice networks
	Partnering with external companies and consultants is a newer way of working and needs developing
	Challenges of working with dispersed groups and timelines for feedback
	Benefits of access to research expertise, tools, external funds and improved capacity to do research

Collaboration, networks and knowledge sharing	Based on relationships built over time, informal, personal connections
	New links remain based on existing relationships where there is trust
	Networks may not be accessible to all staff (e.g. mainly limited to directors of teams)
	Balance between naturally forming relationships and putting a structure on that (potential resistance)
	Trade-offs between collaborative approaches and time spent learning on the job doesn't always favour networks of learning
Suggested developments	Development of a knowledge hub
	Engagement of staff with responsibility for liaison and facilitating research
	Framework for collaborations and capacity building, training element, working across departments and opening minds
	Moving from informal connections to systemise and enduring partnerships

363

364 **Phase two: Case studies as examples of research activities**

365 We identified several examples of collaborative research, internal and external research

366 partnerships, innovative approaches, and good practice across the local authority. We

367 collaborated with stakeholders to develop four case studies as examples of differing

368 approaches and models of research activity within different local authority teams or

369 departments (these are provided in Additional File 2). Table 3 provides a summary of the

370 different approaches to research identified in the case studies, and the key strengths and

371 challenges that stakeholders described as being associated with these approaches.

372 Table 3. Approaches to research identified by stakeholders involved in the case study
373 development

Approaches to facilitate research activities within local authority teams/departments	Strengths and challenges associated with these approaches described
Project based research-practice partnerships between the Council and universities	- Brings access to academic expertise and advice - Exposure to new ways of working that support skills development and capacity building - Brings credibility that can improve buy-in from internal and external stakeholders - Can bring in external funding - Good communication & relationships are needed - Short-term nature of projects can be a challenge to long term planning
Leveraging existing connections to establish working relationships and inter-agency partnership in response to shared needs or concerns (e.g. response to Covid-19)	- Mutually beneficial research collaboration in which all partners, services and wider stakeholders gain - Established connections are key to initiating new collaborative projects rapidly - Engagement in collaborative work strengthens relationships and increases opportunities for ongoing or future collaborations

Evolving models of collaborative working (e.g. joint funding of research, commissioning research, providing data, interventions or participants for external research, collaborative/co-developed research)	• Shifting model as relationships are built and embedded • Shifting model as individual and organisational capacity to engage in research is built and embedded • Differing models allow flexibility and adaptation to the needs of specific projects
Departments where research culture is established and embedded and / or staff and teams are research-ready or research-active	• Provides a level of autonomy that allows flexibility to take opportunities • Challenges include being restricted by timescales, budgets and other work commitments) • Relies on pro-activity of staff in looking for opportunities to do research, to bring in external funding, and develop partnerships • Brings skills set for research • Brings connections for research
Engagement between departments, including formal and informal arrangements for fixed shared posts or resource across departments	• Helps build relationships • Improves sharing of insights, learning & resources • Improves internal network • Builds capacity and skills • Builds confidence around joint working
Dedicated research staff within departments or the organisation	• Central support to facilitate research, training and capacity building • Develops and embeds a culture of valuing and using insight & evidence for research • Central role helps to understand and align research with longer term strategies • Ensure research and collaborations are practical and meaningful to the Council and stakeholders
Collaboration platform	• Having agreed platform facilitates processes in setting up collaborations and auditing, & overcomes some of the challenges of setting up contractual arrangements and procurement

374

375 **Phase 3: Key themes identified from the final workshops and next steps**

376 Stakeholders thought the study had been a good starting point to bring people from different

377 teams and departments together, and to start conversations about what more could be done.

378 The mapping was seen to have been useful to stimulate discussion around how the

379 networks may be developed and shaped going forward. Bringing people together in the

380 focus groups and showcasing research activity through the case studies was thought to

381 have helped develop a better understanding of the breadth of on-going research activity and

382 opportunities for future collaboration. Stakeholders expressed a desire to engage in further

383 discussion around how best to build on the study and its findings, and to develop and

384 implement interventions that may better support the authority to become more research

385 active. Table 4 shows the key themes identified by stakeholders as important for informing

386 potential recommendations and implementation.

387 In thinking about potential next steps, stakeholders highlighted the importance of recognising
388 the nature of funding within the public sector and resource limitations, as these concerns will
389 continue to mean that research activities will typically need to be shaped around short-term
390 project work. Capitalising on existing strengths and capacity within the organisation and
391 recognising the added value of project work and partnerships were seen as key to enabling
392 change. There was also interest in thinking about the issues the County is going to be facing
393 in the recovery period following the Covid-19 pandemic, e.g. the economic situation, mental
394 health concerns long term health issues such as post-COVID syndrome (otherwise known
395 as Long Covid) (25). Stakeholders thought this brought potential for innovative projects and
396 joined-up thinking that could draw on non-typical resources to find interventions to address
397 these needs, one example given was to look at the potential role for Library and Museums
398 Services to improve health and well-being.

399

400 Table 4. Themes identified by stakeholders as important for informing recommendations and
401 implementation

Themes	Factors	Potential next steps
Build on existing strengths, resources and good practice	Capitalise on: (i) new and ongoing collaborations, (ii) existing Collaboration Platform; (iii) recent COVID-19 work that has helped unlock benefits of sharing knowledge and skills across organisations	• Explore ways to share skills, resources and good practice • Link stakeholders internally • Move from ad hoc to more systematic and embedded relationships and research arrangements • Celebrate and share successes
Training and building capacity for research	Focus on: (i) working across departments & with universities; (ii) using & extending existing models currently operating within some departments	• Identifying and implementing a range of training models, e.g. secondments, apprenticeships, champions, internships, professional development programmes • Engaging staff with responsibilities for promoting and facilitating research and partnerships
Strengthening networks across departments and with external partners	(i) Balancing Council needs for knowledge that cannot be met internally with what works for a university, educationally, professionally, and financially; (ii) Moving from informal connections and isolated projects to systemised and enduring relationships and activities; (iii) Increasing requirements for universities to show impact offers opportunities for applied research	• Build relationships and identify mutual benefits • Develop a framework to facilitate research, collaboration and capacity building • Develop a knowledge hub to facilitate sharing or knowledge and resources

Alignment of research activities with the strategic short, medium and longer-term needs	(i) Interest in exploring key issues the County faces, and potential for innovative projects and joined-up thinking that could draw on non-typical resources to find interventions to address these needs; (ii) Coproduction is increasingly valued and required	• Identify a handful of projects that can be used to help formulate a structured approach to identify short, medium and long term research priorities for the Council

402

Discussion

404 This study found strong evidence of embedded good practice in relation to conducting
405 research and using associated evidence to inform service delivery in some teams, and
406 strong collaborations within sections of the local authority. There was a clear focus of
407 interest amongst stakeholders across the authority on research that is applicable and that
408 will improve the service and outcomes for the people it serves. The value of research
409 projects to access funding, and to allow innovative thinking and testing before embedding
410 systematic change, were recognised. Yet stakeholders also emphasised challenges, such as
411 limitations in alignment of research activities with longer term strategic needs, limitations in
412 resources and capacity for research in some teams, and a lack of awareness of what
413 research activities other teams are doing. Stakeholders highlighted missed opportunities for
414 shared learning, shared resourcing, and knowledge exchange, and for service improvements
415 and efficiencies that this would allow.

416 Many of the challenges identified in this study are typical of large multi-sectoral and resource
417 limited organisations, and of siloed working. For example, there was strong evidence of
418 research being conducted within many departments, yet this was generally carried out by
419 individuals or groups within discrete projects, often with fixed duration and funding. These
420 findings align with those of previous studies that have explored the functioning and
421 challenges of public health services within local authorities (16, 26), and of implementing
422 evidence-based practices in public health or real-world settings (9, 10). From a local
423 authority perspective, it is critical to understand the benefits of research, how it can be used
424 to improve services, productivity and to provide public benefits. It is important to explore and
425 consider how the organisation may best invest in research, how return on investment is
426 measured, and how research could inform a framework for short, medium, and long-term
427 goals. Resources, including staff, time, funding and analytical resource, were identified as
428 critical to enabling research activities and to facilitate capacity building and development of a
429 research-active workforce. Resources and a research culture were also thought to be
430 essential to allow the initiation, development, and sustainability of research relationships and

16

431   networks, which in turn supported the embedding of a research culture and good practice
432   within teams.

433   The findings also support previous studies that have highlighted the benefits of research-
434   practice relationships, and the importance of understanding how those relationships can
435   influence practice (8, 9, 27, 28). Such benefits include building individual and departmental
436   capacity, and providing access to tools, expertise and external funds to do research. The
437   importance of existing relationships in developing new relationships, providing opportunities
438   for collaborative projects, and in building capacity and embedding a research culture was
439   highlighted by many stakeholders. Leveraging existing relationships and making better use
440   of stakeholders with transferable research skills were thought to be important strategies to
441   improve knowledge exchange and address some of the challenges and missed opportunities
442   for greater efficiencies and capacity building. Findings from the case studies illustrated that
443   where there were existing relationships these were more easily called upon when needed.
444   One such case was the partnership working in response to the Covid-19 pandemic that
445   enabled working relationships to be initiated rapidly, and effective working practices to be
446   established to facilitate sharing of data and relevant evidence across service teams and
447   organisations.

448   Recognising the value of leveraging existing relationships, within the context of this study the
449   network mapping was a useful tool to identify key stakeholders that could connect others,
450   and individuals and groups that appeared to operate in siloes that may benefit from greater
451   connectivity. Thus the value of network mapping was not just as a descriptive or diagnostic
452   tool (22), but as a tool to prompt discussion and stimulate solution seeking activities about
453   how to leverage existing connections and to better connect individuals and teams internally
454   and externally. It's use was critical to understanding the wider system in which research
455   activities within the local authority sits, and to applying a participatory action research
456   approach that could respond to emerging findings and stakeholder priorities to generate data
457   that could inform actions and change (23).

458   The collaborative and iterative methodology applied enabled us to identify key themes, and
459   also revealed a range of different collaboration models operating within different teams. The
460   findings showed evidence of evolving working practices with a shift towards a greater focus
461   on internally led research and co-production as research relationships, capacity and cultures
462   became embedded. Thus, the collaborative models can be viewed as a continuum; for
463   example, moving from engagement of external research partners in a consultative
464   relationship or providing access to data, services or participants for externally led research at
465   one end, to co-produced jointly led or internally led research projects and research expertise

466 embedded in the staffing structure at the other. Stakeholders within research-active teams
467 recognised that a flexible approach to adopting different models allowed adaptation to the
468 needs and nuances of specific projects, research and opportunities. Having stakeholders
469 and research expertise embedded within the organisation may be critical to the
470 organisation's ability to recognise the value of differing approaches and to capitalise on
471 opportunities for research, collaboration, and funding. The findings highlight the importance
472 of understanding and implementing organisational and staffing structures and systems that
473 can facilitate processes and practices to support research and evidence based practices, as
474 discussed elsewhere (8, 9). Further, the study highlights the importance of understanding
475 the wider system and opportunities for mutually beneficial inter-departmental, and inter-
476 organisational relationships.

477 This work suggests there remain several key questions to be answered, in particular; what
478 model is appropriate in organisations, such as local authorities, to support collaborative
479 research?; how do such organisations, and individual staff, get more involved in research
480 activities?; how can lessons from discrete projects be shared to improve practice at
481 organisational level?; and how can organisations ensure that research activities are used to
482 drive decisions that facilitate continuous service improvement, and are effective and
483 transparent?

484

485 **Strengths and limitations**

486 The strengths of this study include the collaborative approach and the use of systems
487 approaches, such as the network mapping, to facilitate this. Prior to the commencement of
488 the project, the first author was a university researcher independent from the Council. They
489 were however employed by the Vouncil for the duration of this research study, although they
490 operated in an independent manner. Having the researcher embedded in the Council for the
491 duration of the study facilitated access to people within the organisation and allowed trust to
492 be built and multiple perspectives to be gathered. Collaborating with key stakeholders using
493 our methodological approach allowed us to capture data from a wide range of departments
494 and activities to provide an overview of the diversity of research practices and experiences.
495 An additional key strength of the study was the timely and broad dissemination; findings
496 were fed back to staff and heads of departments at the Council and to the elected governing
497 board, and have also been reported to the Department of Health and Social Care (the
498 government body responsible for public health in the UK).

499   There were limitations in our ability to rapidly reach the target population for the survey. This

500   was influenced by the short time frame for the study (four months), the context (the 2020-21

501   COVID-19 pandemic), and the complexity of the organisation and its communication

502   channels. Survey responses therefore represent a select sample of individuals from a very

503   large and complex organisation, and the results likely underrepresent the full extent of

504   research activities taking place and stakeholders engaged. It should also be noted that

505   departments are likely to be differentially represented; for example it is likely that the most

506   research active individuals responded, and those in departments at the heart of the

507   response to Covid-19, such as Public Health, are underrepresented. The findings should

508   therefore be viewed as a sample of the population only, and as a snapshot at a given time.

509   Nevertheless, the map serves as a starting point for discussions around how the network

510   may be shaped to capitalise on existing research relationships and resources, and further

511   developed to facilitate knowledge exchange and capacity building to conduct and use

512   research.

513

514   ## Conclusion

515   There are clear benefits to local authorities and similar organisations from initiating and

516   embedding research-practice partnerships and collaborative working models, conducting

517   applied research, and in making use of evidence to inform service delivery. In large complex

518   organisations, which are often resource limited, a key challenge is how to share learning

519   across teams, and to move away from siloed working and implement good practice at an

520   organisational level. Better understanding of how project work can influence organisational

521   policy and governance and how a collaborative platform could be further improved to deliver

522   long lasting and sustainable improvements is needed to bring about action and effect

523   change. It is crucial that any system or actions proposed for implementation are cost

524   effective, realistic, and achievable.

525   In adopting a collaborative participatory action research approach for this study, its impact is

526   centred around the potential for outputs to be translated into actions that are implementable

527   and bring about changes in practices, processes and systems, as illustrated in the logic

528   model for the case-study organisation (Norfolk County Council) (Figure 1). The anticipated

529   impact in the short term will be evidence of an improved collaborative partnership model and

530   a system initiated and embedded to support sustainable processes and practices for

531   research and knowledge exchange at an institutional level. In the longer term, the insights

532   gained are intended to be applicable to any organisation seeking to develop research and

533   evidence-based practices, and will be of particular value in supporting other local authorities

534   and similar large, multi-level organisations to explore their own setting and implement

535   recommendations where applicable. There would be value in further research to evaluate

536   implementation of actions taken in respect of the findings from this study, and their impacts

537   on organisational or system wide changes and capacity for research.

538

539   **List of abbreviations**

540   NCC   Norfolk County Council

541   UEA   University of East Anglia

542   NIHR   National Institute for Health Research

543   **Declarations**

544   **Ethics approval and consent to participate**

545   Ethical approval was received from the University of East Anglia Faculty of Medicine and

546   Health Sciences Research ethics Committee (REF: 2020/21-023). Consent to participate

547   was received from all participants in the survey, focus groups and interviews.

548   **Consent for publication**

549   Not applicable

550   **Availability of data and materials**

551   Dataset(s) used and analysed during the study are not publicly available due to them

552   containing information that could compromise research participant consent and anonymity.

553   Data sets are available from the corresponding author on reasonable request, and subject to

554   permission from Norfolk County Council.

555   **Competing interests**

556   The authors declare that they have no competing interests

557   **Funding**

558   This study is funded by the National Institute for Health Research (NIHR) Public Health

559   Research programme (project reference NIHR132640). The views expressed are those of

560   the author(s) and not necessarily those of the NIHR or the Department of Health and Social

561   Care.

562   **Author contributions**

563   JF, AJ, and JJ conceptualised the research questions and designed the study. JF and AJ

564   conducted the focus groups, JF conducted the interviews, and transcribed and analysed the

565   data. JF and AJ contributed to the manuscript, all authors critically reviewed and approved

566   the final manuscript.

572   **List of Figures**

573   Figure 1. Logic model for the study

574   Figure 3. The network of research active individuals and linkages

575   **List of Tables**

576   Table 1. Description of each phase of data collection within Stage two of the study

577   Table 2. Themes related to stakeholders' experiences of research activities

578
579   Table 3. Approaches to research identified by stakeholders involved in the case study development

580
581   Table 4. Themes identified by stakeholders as important for informing recommendations and implementation

Context

Public Health Interventions need cross-sector, whole system approaches

Evidence-based Public Health requires practice-relevant evidence

Need to improve research activity & knowledge mobilisation within Local Authorities

Research-practice partnerships facilitate research activity & generate practice-relevant evidence

Existing collaborative projects within NCC provides opportunity to learn and improve understandings of the system

Aim to explore structures, processes & practices that support a local authority to become research-active, to design & implement as system to embed good practice at an organisational level.

Objectives

1. Identify existing partnerships, departments, groups and individuals with a role in research activity and evidence-based decision making within NCC

2. Explore processes & practices within the current organisational structures and systems that facilitate research activities, knowledge mobilisation and use of research evidence

3. Identify gaps in current processes and practices, and identify what may be needed to address them

4. Develop and implement recommendations for action to address the gaps, build on the strengths and embed lessons across the institution

Inputs

Funding to support the study (staff, time, resources)

Expertise in research, evaluation & project management

Stakeholder experience & knowledge of existing local partnerships, research activities and processes

Stakeholder experience & knowledge of local organisational structures, systems & communication channels

Stakeholder knowledge of networks of external organisations, groups and authorities

Activities

Jointly refine & agree research protocol

Stage 1 Survey & Social Network Analysis

Stage 2 Participatory Action Research: workshops & interviews

PAR

Data collection, analysis, synthesis, identify & present emerging themes

Facilitate discussion & reflection through workshops & interviews

Co-design recommendations for action & implementation

Action, Implementation, observation

Outputs

Network Map

Recommendations for initiating & embedding cross-sector research activity

Recommendations for improved research activity at institutional level

Reports & dissemination

System design to support implementation of recommendations and actions

Outcomes

Improved collaborative partnership model

Embedded & sustainable process and practices for research at an institutional level

Better understanding & implementation of recommendations across other local authorities & similar organisations
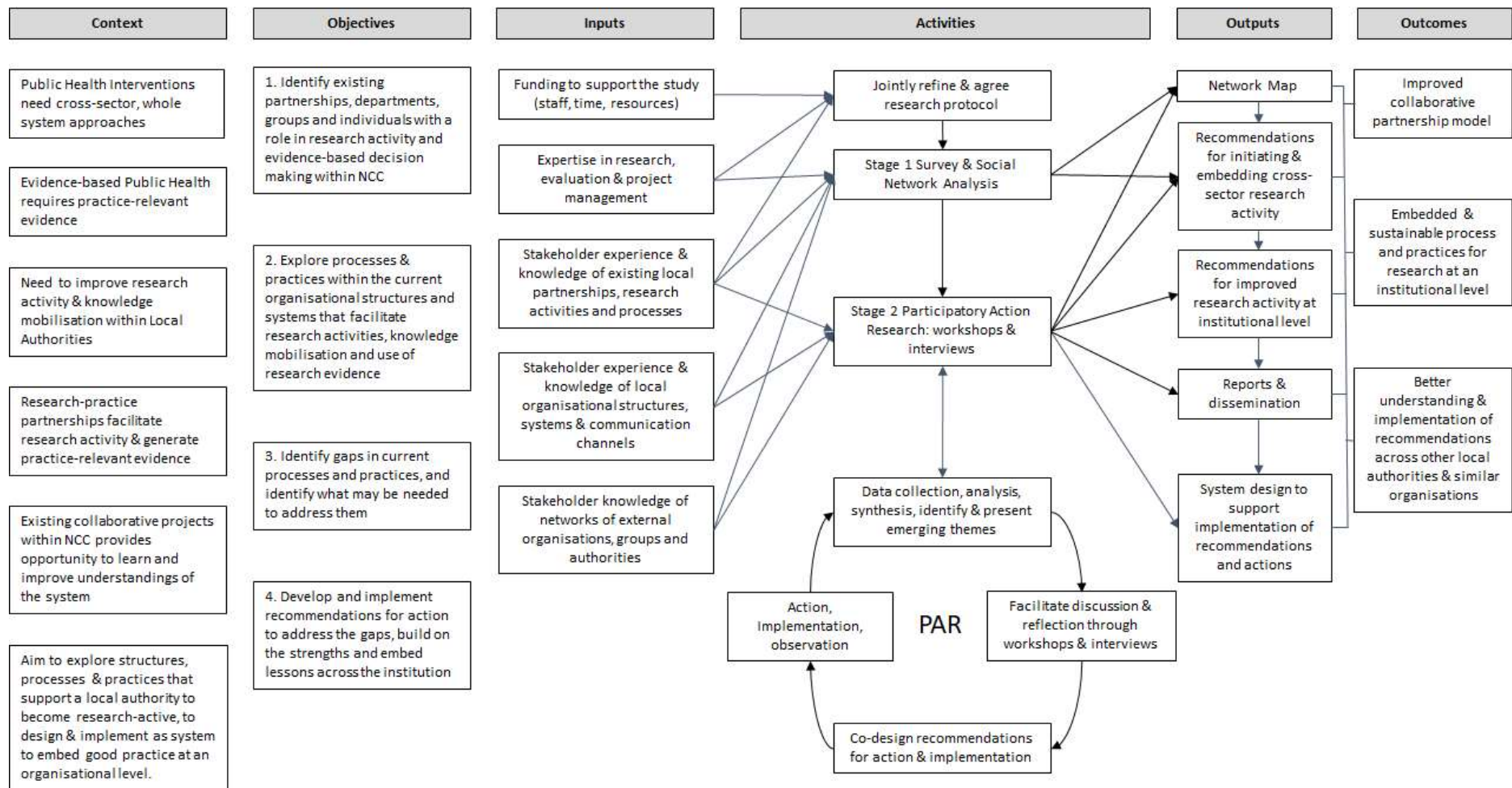
Figure 1. Logic model for the study
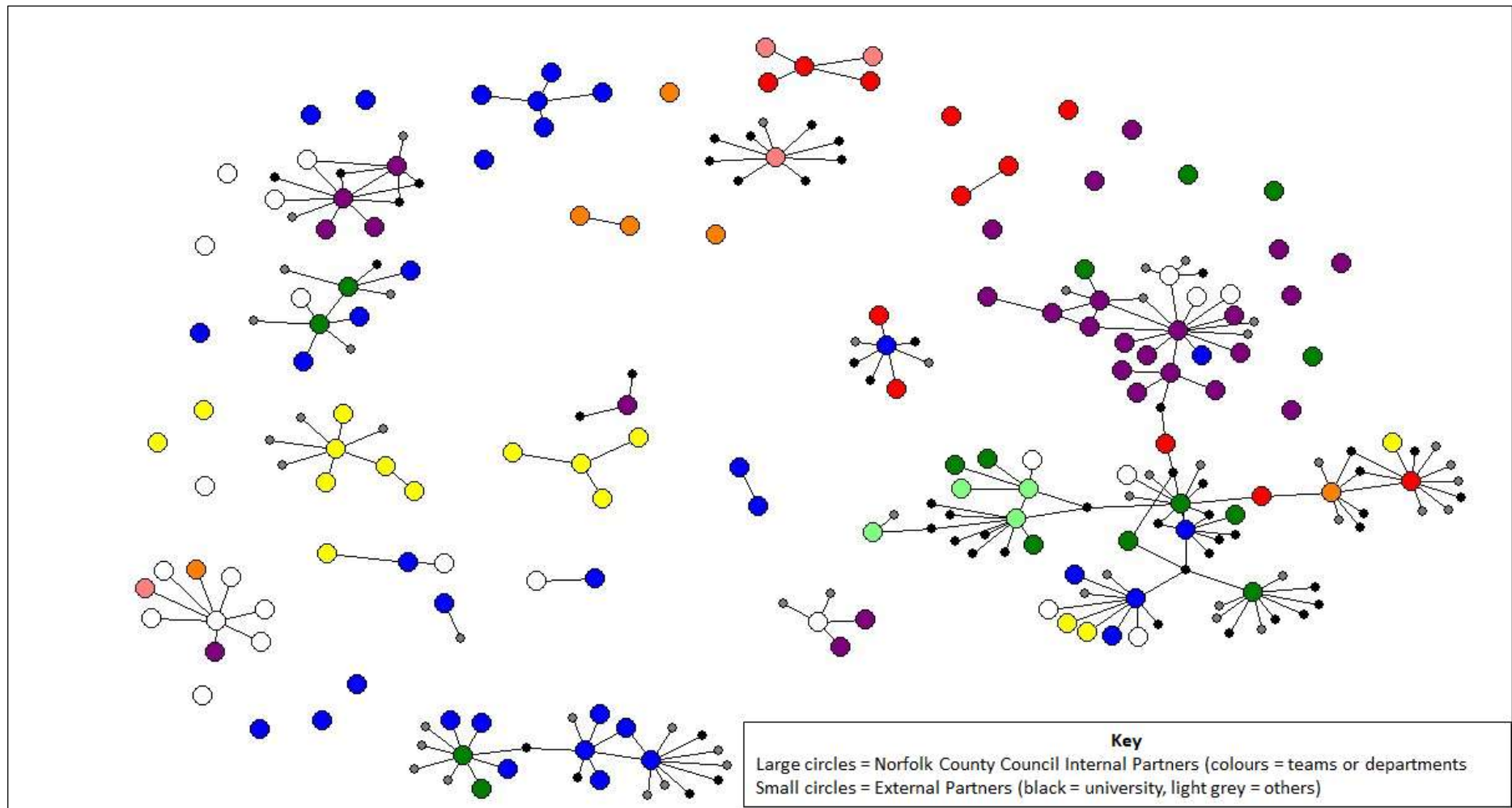
Figure 2. Network map to show individuals engaged in or with an interest in doing or using research, and the partnerships they identified

Key

Large circles = Norfolk County Council Internal Partners (colours = teams or departments
Small circles = External Partners (black = university, light grey = others)

References

1.   Brownson R, Fielding J, Green LW. Building Capacity for Evidence-Based Public Health: Reconciling the Pulls of Practice and the Push of Research. Annual Review of Public Health. 2018;39(1):27-53.

2.   Learmonth AM. Utilizing research in practice and generating evidence from practice. Health Education Research. 2000;15(6):743-56.

3.   Li V, Carter SM, Rychetnik L. Evidence valued and used by health promotion practitioners. Health Education Research. 2015(2):193.

4.   Datta J, Petticrew M. Challenges to evaluating complex interventions: a content analysis of published papers. BMC public health. 2013;13(1):568.

5.   Craig P, Cooper C, Gunnell D, Haw S, Lawson K, Macintyre S, et al. Using natural experiments to evaluate population health interventions: new Medical Research Council guidance. J Epidemiol Community Health. 2012;66(12):1182-6.

6.   Craig P, Dieppe P, Macintyre S, Michie S, Nazareth I, Petticrew M. Developing and evaluating complex interventions: The new Medical Research Council guidance. British Medical Journal. 2008;337:a1655.

7.   Schneider CH, Milat AJ, Moore G. Barriers and facilitators to evaluation of health policies and programs: Policymaker and researcher perspectives. Evaluation and Program Planning. 2016;58:208-15.

8.   Fynn JF, Hardeman W, Milton K, Jones A. Exploring influences on evaluation practice: A case study of a national physical activity programme. International Journal of Behavioral Nutrition & Physical Activity. 2021;In Press.

9.   Schwarzman J, Bauman A, Gabbe B, Rissel C, Shilton T, Smith B. Organizational determinants of evaluation practice in Australian prevention agencies. Health Education Research. 2018;33(3):243-55.

10.   Habicht JP, Victora CG, Vaughan JP. Evaluation designs for adequacy, plausibility and probability of public health programme performance and impact. International Journal of Epidemiology. 1999;28(1):10-8.

11.   Rychetnik L, Bauman A, Laws R, King L, Rissel C, Nutbeam D, et al. Translating research for evidence-based public health: key concepts and future directions. Journal of Epidemiology and Community Health. 2012;66(12):1187 -92.

12.   Harden SM, Johnson SB, Almeida FA, Estabrooks PA. Improving physical activity program adoption using integrated research-practice partnerships: an effectiveness-implementation trial. Translational Behavioral Medicine. 2017;7(1):28-38.

13.   Rutter H, Savona N, Glonti K, Bibby J, Cummins S, Finegood DT, et al. The need for a complex systems model of evidence for public health. Lancet. 2017;390(10112):2602-4.

14.   Peters DH. The application of systems thinking in health: why use systems thinking? Health Research Policy and Systems. 2014;12(1):1-6.

15.   Department of Health. Public Health in Local Government Factsheets 2011.2011 26 March 2021; Gateway reference: 16747. Available from: https://www. gov.uk/government/uploads/system/uploads/attachment_data/ file/216708/dh_131904.pdf

16.   Jenkins LM, Bramwell D, Coleman A, Gadsby EW, Peckham S, Perkins N, et al. Integration, influence and change in public health: findings from a survey of Directors of Public Health in England. Journal of Public Health. 2016;38(3):e201-e8.

17.   National Institute for Health Research (NIHR). Welcome to NIHR Evidence London: NIHR; 2016-2020 [cited 2021 9 March]. Available from: https://evidence.nihr.ac.uk/.

18.   National Institute for Health Research Public Health Research. National Institute for Health Research Public Health Research: Exploring how to support local government health research: National Institute for Health Research Public Health Research; 2020 [Available from: https://www.nihr.ac.uk/explore-nihr/funding-programmes/public-health-research.htm.

19.   Norfolk County Council. Norfolk County Council: Council Departments: Norfolk County Council; [cited 2021 June 25]. Available from: https://www.norfolk.gov.uk/what-we-do-and-how-we-work/structure-of-the-council/council-departments.

20.   McGill E, Er V, Penney T, Egan M, White M, Meier P, et al. Evaluation of public health interventions from a complex systems perspective: a research methods review. Social Science & Medicine. 2021;Jan 11:113697.

21.   Chambers D, Wilson P, Thompson C, Harden M. Social network analysis in healthcare settings: a systematic scoping review. PloS one. 2012;7(8).

22.   McAuliffe E, De Brún A, Ward M, O'Shea M, Cunningham U, O'Donovan R, et al. Collective leadership and safety cultures (Co-Lead): Protocol for a mixed-methods pilot evaluation of the impact of a co-designed collective leadership intervention on team performance and safety culture in a hospital group in Ireland. BMJ open. 2017;7(11):e017569.

23.   MacDonald C. Understanding participatory action research: A qualitative research methodology option. The Canadian Journal of Action Research. 2012;13(2):34-50.

24.   Borgatti SP, Everett MG, Freeman LC. UCINET for Windows: Software for Social Network Analysis Version 6.705. 2020.

25.   National Health Service England. Post-COVID Syndrome (Long COVID): What is Post-COVID syndrome/Long COVID? London: NHS England; 2021 [cited 2021 June 20]. Available from: https://www.england.nhs.uk/coronavirus/post-covid-syndrome-long-covid/.

26.   Jenkins LM, Bramwell D, Coleman A, Gadsby EW, Ogilvie J, Peckham S, et al. Public Health and Obesity in England - The New Infrastructure Examined (Phoenix) Findings from Surveys of Directors of Public Health and Elected Members in English Local Authorities 2014 and 2015 - Second Survey Report. Kent: University of Kent; 2016.

27.   Mansfield L. Resourcefulness, reciprocity and reflexivity: the three Rs of partnership in sport for public health research. International journal of sport policy and politics. 2016;8(4):713-29.

28.   Nyström ME, Karltun J, Keller C, Gäre BA. Collaborative and partnership research for improvement of health and social services: researcher's experiences from 20 projects. Health research policy and systems. 2018;16(1):1-17.