Combining data to identify families at risk of the harmful health effects of overcrowded housing – a feasibility study

Study Protocol

Short title: Le-HOMe: Lived Experience of Household Overcrowding Measure

Funder: National Institute for Health and Care Research, Public Health Research funding stream

Timeframe: 1 October 2023- 30 September 2024

STUDY TEAM	NAME	AFFILIATION
PI/STUDY MANAGER	JESSICA SHERINGHAM	UCL
CO-INVESTIGATORS	MARCELLA UCCI	UCL
	ELIZABETH EVELEIGH	UCL
	EMMA WHITBY	HEALTHWATCH ISLINGTON
	MAJIDA SAYAM	JANNATY
	LAURA NIXON	*QMUL*
	MATHILDA O'DONOGHUE	*QMUL*
	PRATIMA SINGH	*QMUL*
	NAOMI MEAD	*BROMLEY BY BOW CENTRE*

Version number	Version date
1.0 – submitted to NIHR	21 March 2023
2.0 - submitted to UCL ethics committee	9 April 2023
3.0 – following ethical approval, obtained 8 June 2023	30 December 2023

APPENDICES

Appendix A: Recruitment emails

Appendix B: Information sheets

Appendix C. Registration form

Appendix D: Topic guide

Appendix E: GANNT chart

KEY ABBREVIATIONS

DCHV - Diverse Communities Health Voice partnership (DCHV)
ARC – Applied Research Collaboration
EPC - Energy Performance Certificates
GP – General Practitioner
HWI - Healthwatch Islington
LA – local authority
LBI - London Borough of Islington
LBTH - London Borough of Tower Hamlets
LSOA - lower level super output area
ONS - Office for National Statistics
NIHR – National Institute of Health and Care Research
PPI – Patient and Public Involvement
QMUL – Queen Mary University of London
UPRN - Unique Property Reference Number
WHO - World Health Organisation

Summary

Background: Household overcrowding is a growing problem in England. It often coincides with and contributes to other housing problems, such as damp and mould, it is a risk factor for many health outcomes including infections, injuries and poor mental health.

For councils to alleviate the effects of overcrowding, new methods are required to identify which houses are overcrowded and how it affects residents. In particular, existing measures are not tailored to particular populations, such as families, where overcrowding limits children's ability to play and study.

What are we seeking to do? In this feasibility study we are seeking to develop a method to identify households with families at high risk of overcrowding affecting their wellbeing.

Objectives:

- Agree a definition of household overcrowding affecting family wellbeing with people that have lived experience of overcrowding
- Operationalise this measure in one council, by combining publicly available and council-held data, to identify households with families at risk of the health effects of overcrowding
- Understand the wider applicability of this measure with other councils and its implications for population-level intervention design

Methods: A mixed methods design will be used. A resident engagement approach will be taken throughout the project. This considers families with lived experience of overcrowding and community representatives as partners in the project, alongside service professionals and researchers. From discussions with these groups, a description and definition of overcrowding affecting households with families will be produced. Based on this definition, data available to the council will be combined and analysed quantitatively to provide a composite measure of household overcrowding affecting family wellbeing. The methods and illustrative results from one council will be shared with other councils, with a short survey to understand its wider applicability.

Anticipated impact and dissemination: For councils, the project will provide a feasible method of identifying areas of potential overcrowding affecting the health of families in their area. Longer term, it will enable councils to design and target interventions to alleviate the effects of overcrowding and that may increase the wellbeing of families. Guidance will be produced and disseminated through council and public health networks.

For lived experience volunteers, the project should immediately provide the sense of feeling heard. Longer term, their views will have an influence on local and wider policy. Lay summaries in visual forms (e.g. video) will be developed with lived experience partners and disseminated via HealthWatch networks.

For research, this project will advance our understanding of methods to identify overcrowding affecting specific populations. Findings will be disseminated via peer-reviewed publications and conferences.

BACKGROUND AND RATIONALE

Household overcrowding is a growing problem in England, with 8.7% of households in the social rented sector and 6.7% in the private rented sector overcrowded in 2019/20, the highest levels since 1995/96.[1-3] There are many definitions of overcrowding, but the underlying concept is about having enough space for daily living.[4] Household overcrowding facilitates the spread of infections (e.g. individuals in overcrowded conditions had up to four times the risk of COVID-19 than those in under-occupied households).[5] Overcrowded housing is often coupled with poor housing quality, leading to environmental hazards such as damp and mould, disrepair or clutter.[6] Combined other adverse housing circumstances, it can contribute to poor mental health.[4,7]

From recent research we conducted with two London councils and with representatives of people with lived experience of housing problems, we learnt that overcrowding was their most important housing problem linked to health.[8] We heard of problems associated with overcrowding in low-income households, some unable to move or to pay to heat or ventilate their homes. While overcrowding is most prevalent in London (8% vs 3% in England overall), there are pockets of overcrowding throughout England, particularly in populations other than White British.[9]

Council staff and those with lived experience also told us the effects of overcrowding are different for different populations. For example, when children do not have the space to work or play at home, this causes stress for all the family in the short term and can affect life chances longer term. In its international systematic review, WHO also identified families with children under 10 years as vulnerable to the health effects of household overcrowding.[4] In the English context, grey literature supports a focus on this population too. The Office for National Statistics (ONS) reported that young people are up to two times more likely to report poor health if living in overcrowded than under-occupied conditions.[10] In Shelter's survey of teachers, over 90% reported that effects of overcrowding was apparent on pupils.[11]

Why are existing methods either absent or inadequate?

When overcrowding can be identified, population-level strategies hold promise for improving health, though evidence is limited and pathways linking improving housing circumstances and health are complex.[5,12] Relocation of householders may improve psychosocial health but can cause significant disruption to educational and social networks It may also require high investment for building new housing stock, which may not be feasible, at least in the short term. Local approaches that do not require relocation also hold promise, such as prioritising repairs in existing properties, mobilizing community assets and increasing green space to provide families with alternatives for play, study or socialising.[13]

There is a need for better and more tailored methods for identifying overcrowding to inform policy, research and service delivery.[4] Prior research found that the choice of overcrowding measure depends on the mechanisms between overcrowding and health outcomes, and relevant household information is required to understand these mechanisms.[14] The person per room ratio, the statutory standard by which overcrowding is assessed, generally underestimates overcrowding and doesn't take into account age and gender and undesirable sharing.[15,16] The bedroom standard is more widely used because it does take into account the age and gender of household members. Using rich longitudinal survey data, Cable and Sackler found variation in the households identified as overcrowded using these different measures and in their associations with self-reported physical and mental health.[14] They and others also recognise these definitions do not take into account other potentially important factors like the extent of usable dwelling space available, irrespective of number of rooms.[4] For example, overcrowding can make issues like damp worse, making certain household areas unusable and thus in turn exacerbating the lack of household space.

In council settings, where frequent detailed bespoke surveys are not feasible, they do not have reliable lists of overcrowded households. Census data on household occupancy is only available at lower-level super output area, which is not of sufficient granularity to target local interventions.[10] Also, with updates only every ten years, it becomes out of date very quickly, particularly in areas with mobile populations. Councils do hold a range of routinely collected data that may be useful for locating areas where households are at risk of overcrowding. Some councils have made promising

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progress in combining such data to understand their populations,[4] and to identify indicators of household occupancy. For example, Islington in London, has mapped a range of data sources available to the council that align to statutory definitions of household overcrowding, and has identified some candidate variables that may align to other factors that influence the experience of overcrowding amongst families.

The outcomes of this methods development project include a new overcrowding metric to identify hotspots of household overcrowding that may affect the health of families. It addresses a stated need by policy makers at national levels and international levels for improving ways of identifying overcrowding.[4,15] It will enable local councils to target interventions to those areas that need them most, and will also guide the design of new interventions, by highlighting families' perspectives on the aspects of overcrowding that have greatest impact on their wellbeing.

RESEARCH QUESTIONS (RQs)

1. What are feasible methods to define and identify hotspots of household overcrowding affecting the wellbeing of families using publicly available and council-held routine data?

2. How relevant and usable is the definition and the method developed within one London local authority to other councils?

3. What can we learn from the lived experience of overcrowding amongst families to inform the design of local public health interventions delivered within council areas?

Objectives:

1. Agree a definition of household overcrowding affecting the health of families with school age children that would be feasible to implement based on the data available to councils

2. Operationalise this measure in one council, by combining publicly available and council-held data on households, housing and the wider built environment, to identify hotspots of households at risk of the health effects of overcrowding (RQ1)

3. Understand the wider applicability of this measure with other councils and its implications for population-level intervention design (RQ 2, 3)

RESEARCH PLAN/METHODS

Design: This study is a mixed-methods pilot study, taking a community participatory research approach, to explore the feasibility and relevance of a method developed in one council to identify areas at high risk of household overcrowding affecting the health of families.

Setting: We will work in two councils, London Borough of Islington (LBI) and London Borough of Tower Hamlets (LBTH), for the qualitative research and with Islington to develop an overcorwding metric.

Islington provides a useful test bed of this approach because its high levels of overcrowding are interspersed with under-occupied housing and has extensive ethnic and socioeconomic diversity within the borough. It has also committed to developing an overcrowding metric. Tower Hamlets has high overall levels of overcrowding and a different resident profile, thus offering a useful comparator to Islington. *LBTH contributions are funded by ActEarly rather than NIHR and are indicated in italics.*

Other councils within and beyond London, including those listed as collaborators, will be involved to provide feedback on the wider face validity and feasibility of implementation.

Study population: Families with school-age children that have, or may experience, household overcrowding.

Workstream 1: Agree a definition of household overcrowding affecting the health of families (Obj1, research team: EW, DCHV, EE, JH, JS *(+ QMUL Team)*

There are two interdependent parts of this workstream:
1. Lived experience partners: focus groups and interviews

In each borough, we will convene ~ 4 focus groups in total, each of 4-8 people. At least one group will comprise people with direct lived experience of overcrowding. Informed by our PPI consultations, we will also hold one group with volunteers or members of grassroots community organisations that work directly with families living in overcrowded housing, e.g. people that left Afghanistan in 2021 and are still living in hotels. A final group will comprise those with experience through their professional role which may include social workers, estate care workers, and GPs. Where focus groups are not feasible or acceptable to potential participants, we will convene the equivalent number of interviews.

Recruitment, sampling and involvement: In Islington, Healthwatch Islington (HWI) working with DCHV will lead the recruitment of eligible resident participants, community representatives and staff (n~20 individuals in total) through community group and school networks and, working with researchers EE and JH. A sample size of around 20 has been selected to enable sufficient diversity across participants and thus a range of perspectives and themes to emerge but also to be feasible to achieve within the timescales of the project. We are planning a wide range of recruitment channels to maximise the diversity of the sample. HWI will develop the role descriptions, recruitment materials and have conversations with local partners to get the materials into the community. They will train representatives from the Diverse Communities Health Voice partnership (DCHV), which brings together community groups representing populations from diverse ethnicities and backgrounds that often do not get their voices heard and/or have struggled to access public services such as statutory housing support.[17] These trained DCHV representatives will support onward recruitment of individuals with first-hand experience of overcrowding (here referred to as lived experience partners), data collection and analysis. HWI will also discuss the study with their contacts in Disability Action, Centre 404 (learning disability), and MIND to ensure we reach a broad spectrum of potential participants. Other DCHV representatives that have worked with individuals with lived experience of overcrowding will be eligible to take part in the indirect experience focus group. *In LBTH, two community researchers and a qualitative researcher employed by QMUL will recruit participants utilising council wide and community contacts through NM (Bromley by Bow Centre).*

Adult residents will be eligible to participate if they have or have had school-age children and self-identify as having experience of household overcrowding, for any duration of time. Representatives – voluntary or professional – need to have worked with individuals that have or school-age children and live in situations of household overcrowding. Informed by The Research Design Service EDI toolkit,[18] we have designed recruitment and data collection to encourage participation as diverse a sample as possible, so long as individuals are able to give informed consent to participate.

2. Discussion with council staff and lived experience or community sector representatives

We will convene a discussion to agree a definition of household overcrowding that can be operationalised with the data available to the council.

Sampling and recruitment: We will invite participation from Islington Council housing teams, environmental health and public health staff, and DCHV or lived experience partner representatives that participated in the first part of this workstream (n~5-8 in total).

Discussion focus: The group will be asked to review findings from the rapid analysis of focus groups, in conjunction with the data available from the council on relevant dimensions of the built environment, household occupants and other factors, and explore the implications for public health strategies resulting from inclusion of these dimensions.

Analysis: as with lived experience groups, demographics will be collected, the discussion will be recorded, a transcript produced, and a rapid summary provided for the next phase of the project. The data will be stored for further in-depth analysis alongside other project data.

In LBTH, findings will be shared with housing policy sector representatives with a view to informing LBTH housing policy.

Workstream 2: build a composite indicator of households with high risk of the health effects of overcrowding (obj 2, research team: LS, MU & JS)

This workstream will run concurrently with WS1 and will have 5 stages, described below.

1. **Generation of household occupancy rating as a baseline**

The first stage involves generation of a standard rating of occupancy to build a comprehensive picture of household occupancy for all of Islington's households. This is needed so that we can add to and refine this in later stages with other pertinent data, informed by lived experience perspectives. Building such a picture is also in itself novel as most LAs have a patchy insight into overcrowded levels, even when using standard definitions.

There are two essential sources of data needed to calculate a household occupancy rating: household composition and dwelling size. The bedroom standard, the most widely used metric of household occupancy, requires data on the number of bedrooms per dwelling. It is used to report household occupancy derived from the Census data,[24] and the approach (modified at times) is used by LAs to determine entitlement to housing for those on the Housing Register, so it is potentially an important driver for re-housing choices.

The bedroom standard assigns a required number of bedrooms to a household. It makes an assumption that children under 10 years and couples can comfortably share a bedroom, and children between 10 and 18 years can share with children of the same gender. For example, for a family consisting of one adult couple and three children aged 4, 5 and 8, three bedrooms would be required. For a family with one adult and two children aged 11 and 14 of different genders, three bedrooms would also be required. If there are fewer than three bedrooms, the household would be classified as overcrowded.

Data sources:

- *Household composition:* We will use **Islington's Population Register**, an up-to-date list of all residents, comprising children's ages and genders and numbers of adults per household. It does not routinely hold information on adults' age or relationship status, therefore, in applying the bedroom standard, we will need to make assumptions about whether adults in the same household are in a couple and may need to simplify the standard, particularly for multigenerational households, e.g. assigning one bedroom to any pair of adults residing in the household.

Dwelling size - Number of bedrooms: We will explore the value of a range of data sources to estimate the number of bedrooms in Islington dwellings. These sources will include: i.) **Council housing dataset:** the council hold comprehensive data on the number of bedrooms in council housing stock (comprising 25% of Islington's households). ii.) **Energy Performance Certificates** (EPC) provide information on the number of rooms in a property.[25] These are conducted when a property is due to be rented or sold and have been used by others to generate a proxy for number of bedrooms.[26] EPC data are available for 64% of Islington's dwellings, with 50% coverage in council housing and highest coverage for the private rental sector. The overlap between the social housing records and EPC data sources has already been used in Islington to correct errors in EPC records.iii.) **Publicly available commercial data on house sales**: Commercial data e.g. through websites such as RightMove may

be useful adjuncts to EPC data for owner-occupied households. These data can provide the number of bedrooms. We will report agreement between number of bedrooms generated from these different data sources, to give an indication for other councils of potential inaccuracies if EPC (the most widely available data source for most councils) are used as the default.

Management and analysis

Bedroom number data will be linked with household composition data at household level using the Unique Property Reference Number (UPRN) as a common identifier.[27] Islington has already attached UPRN to the Islington Population Register, the council housing dataset and Islington's EPC data, which makes this process feasible.

A household occupancy rating will be generated for all properties where data on bedroom number and household composition are available. This measure will be used to conduct a preliminary examination of overcrowding (i.e. where the number of bedrooms is one or more smaller than the resident entitlement) by this measure and: Tenure, ethnicity and lower level super output area (LSOA).

The distribution and number of properties in which overcrowding is present according to this measure will be compared with other available measures of overcrowding, i.e. overcrowding as calculated by the census at LSOA level, properties on Islington's Housing Register where self-reported overcrowding has been identified.

2. **Exploration of candidate variables to include in a tailored family measure of household overcrowding**

We will assess the coverage and quality of data sources available to the council, for the candidate variables that may be of relevance to the experience of overcrowding. Table 1 lists the candidate dimensions identified so far from prior qualitative exploration by Co-I Ucci et al,[28] and our consultations in Islington.[8] These cover conditions of the dwelling and characteristics of the family or household.

Table 1. Candidate dimensions of potential relevance to families' experience of household overcrowding

Candidate Dimension	Justification for possible inclusion, to be explored with lived experience participants	Possible sources
Housing conditions	if properties affected by damp or disrepair this might indicate part or all of a room was unusable	Council housing repairs lists, inventories
Property /room size (which aligns with statutory definitions of overcrowding under the Space Standard)[29]	Larger rooms might be put to multiple uses Small rooms might not be fit for the purposes intended	EPC, which includes data on dwelling size in m^2
Outdoor space	Access to outdoor space might lessen the dependence on space inside a property, particularly, but not exclusively, during summer months	EPC, using data on housing type, storey if flats or maisonette to infer likely access to outdoor space Council housing dataset
Fuel poverty data	Areas of a property might become uninhabitable if energy costs were too high for household incomes	EPC, energy efficiency data
Household composition, e.g. age	Effects on family wellbeing may be different in households with young	

of the children, presence of one or more parents	children than older children, e.g. needs for space for physical activity, vs. a place for study and privacy	
Household composition, e.g. single, dual parent households, multigenerational households	The number of adults in the household will influence demands on space, but may also influence capacity to cope with limited indoor space.	

The preliminary outcomes of this work will be shared in WS1 discussions. The list of candidate variables will be iterated and developed following WS1 discussions. We will then explore the coverage and quality of any additional data sources that WS1 discussions have highlighted as relevant to the lived experience of overcrowding and that have relevance to policy levers available to the council. The list will also be used to highlight limitations of the measure, e.g. where lived experience discussions identify information that would be useful to include in the measure but where data were not available.

3. Generation of tailored measure and illustrative epidemiology

Using information from WS1, we will include other dimensions identified as relevant to the experience of overcrowding and to local policy into the basic measure we generated in stage 1. The measure we construct will also depend in part on the outcomes of WS1 discussions. For example, it may be appropriate to generate an index of increasing possible harm from overcrowding. Alternatively, it may be more appropriate to indicate the prevalence of different types of possible harm or mitigating factors present in overcrowded households where families live. We give the following as an illustration of the kinds of measure and outputs we may generate:

- a categorical variable applied to households where children under 12 are living, that flags overcrowded households where additional risk factor/s are present e.g. where the property size is particularly small, if this emerges as important.
- heat maps indicating the prevalence across the borough of households where family wellbeing is at risk from overcrowding. For sharing externally, different data displays will be produced that do not reveal potentially identifiable data, potentially making use of geo-masking techniques.[30]
- flags on Islington's Housing Register for which households might be prioritised by this measure for rehousing or intervention.

Sensitivity analyses will be conducted to explore how results change if we alter parameters, e.g. whether estimates are used for the entire population, including private rental sector, or just those in social housing data alone.

4. Feasibility of examining the impact of household overcrowding using the tailored family measure of household overcrowding

We will explore the feasibility of conducting a longitudinal study examining the impact of overcrowding on wellbeing. This stage is intended to provide councils with a method to prospectively examine longitudinal associations between the tailored family measure of household overcrowding that we construct and wellbeing outcomes in the future.

There are two parts to this stage:

i.   We will conduct a cross-sectional study using council records to examine at household level the association between school performance and exposure to potentially harmful overcrowding using the tailored family measure. In this exploratory analysis, we will use

educational performance (Early Years Foundation Stage or GCSE results, for example) for one student cohort (n~3000) as the test outcome variable. Education has been selected because we have learnt from consultations that ability to study is affected by overcrowding and because we have confidence the council has a comprehensive dataset on it. This is contingent on a successful data protection impact assessment application (see: ETHICS). The council's education dataset already has UPRN, enabling household-level linkage to the newly constructed tailored family overcrowding measure and to other salient household level characteristics (e.g. duration of tenure, which would enable us to exclude records where children have lived in a property for a very short period and thus have had limited exposure to overcrowding). It also has other relevant covariates, e.g. Free School Meals status as a proxy for low income, and ethnicity, which will enable a regression analysis to be conducted to adjust for other potentially influential factors on school performance. The study is intended to inform the development of methods for longitudinal study designs (e.g. retrospective cohort studies) that could be conducted on council-held data in the future.

ii.   Informed by WS1 discussions on which dimensions of wellbeing participants report are affected by overcrowding, we will explore the availability and quality of data sources accessible to the council on the dimensions.
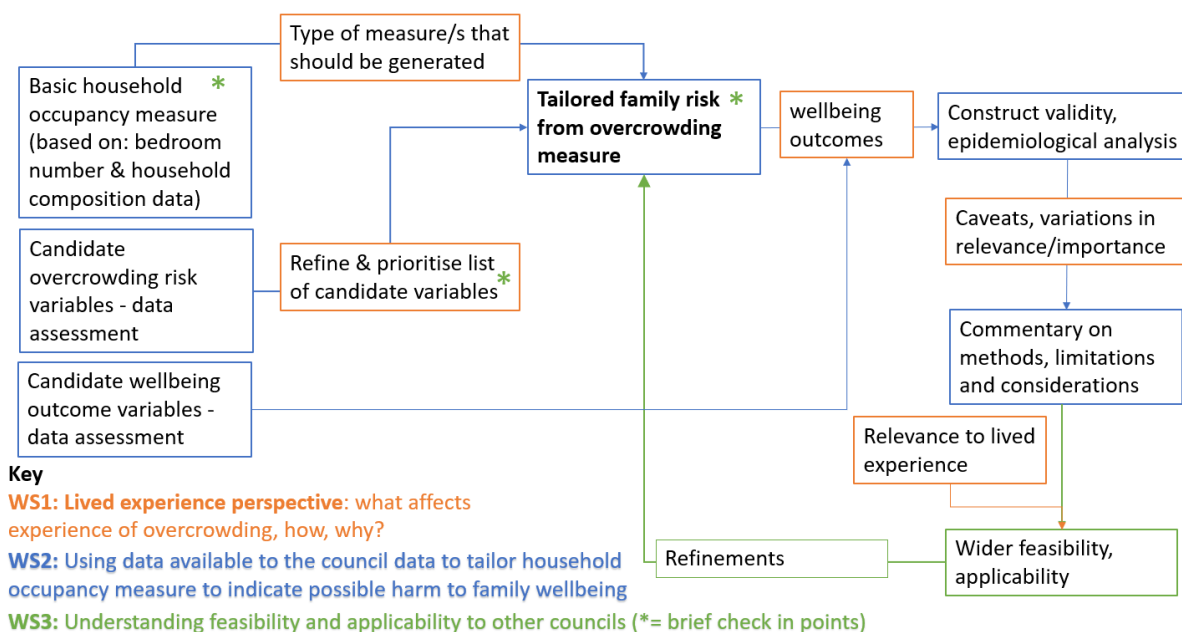
5. Generation of report and commentary on the tailored family overcrowding measure

We will report on the following:

- Methods to construct a tailored family measure of overcrowding
- Illustrative epidemiology of the risk of household overcrowding in families using this measure (i.e. heat maps showing areas in the borough with greatest prevalence, overall prevalence)
- Feasibility of using the tailored family overcrowding measure to examine the impact of household overcrowding using longitudinal study designs with recommendations for which measures of wellbeing could be used.
- Limitations of and considerations about the measure, e.g.. where dimensions raised by WS1 participants could not be included, where aspects may be more relevant to certain populations or circumstances (e.g. for populations with uncertain residency status who may not wish to have direct contact with statutory services).

Figure 1, below, illustrates how the workstreams link and particularly how WS1 is anticipated to inform the process and outputs of this project:

Figure 1. Illustration of the workstreams inform the process and outputs of the project

Figure 1. Illustration of the workstreams inform the process and outputs of the project

Key

WS1: Lived experience perspective: what affects experience of overcrowding, how, why?

WS2: Using data available to the council data to tailor household occupancy measure to indicate possible harm to family wellbeing

WS3: Understanding feasibility and applicability to other councils (*= brief check in points)

Workstream 3: Transferability and feasibility evaluation with other councils (obj 3, research team: JS, EE)

We will hold a knowledge exchange workshop for councils in England on using data to identify overcrowding once we have initial data from workstream 2 of the project. We will approach this event in a similar way to other knowledge sharing events we have held in the past with service partners.[31]

Preparation: We have set up multiple opportunities to gather and incorporate wider council staff views/experiences through complementary projects and regional and national networks. (see COLLABORATORS).

We will engage with council collaborators [*letters of support*] in advance to share our mutual progress on this issue and invite presentations from them on their perspectives on this problem. We will then use our regional and national networks such as ARC (JS) and built environment (MU) to reach other councils outside of our immediate contacts to surface other practitioners and policy makers interested in tackling overcrowding at a local or county council level. We will share a summary of our methods and the data used to construct it with all due to attend.

Workshop: During this event, we will share more details of the measure and data used to construct it, together with the perspective of lived experience partners, presented by lived experience partners or DCHV. We will invite discussion from other councils on:

- how household overcrowding in families aligns with their council priorities and populations (i.e. priority of household overcrowding affecting families as a public health issue, perceptions of how the new overcrowding measure 'fits' their population and/or built environment locally and suggestions of other data to consider)
- feasibility of applying the method (barriers and motivations for other councils in taking forward this work in their own council, including availability and quality of data)
- Implications for design of population level interventions (interventions or policies that are already used or the council is considering and the extent to which they address the specific impacts of overcrowding identified by lived experience partners).

At the end of the workshop, we will share a link to a brief online survey administered via RedCap to summarise views of collaborators on the extent to which the measure aligns with other councils' perceptions about overcrowding amongst families in their own populations; availability of data in

other councils to take forward such a measure and the numbers of councils expressing willingness - in principle - to take forward this work in their own area.

DISSEMINATION, OUTPUTS AND ANTICIPATED IMPACT

From workstream 1, we will produce a **summary in visual form** (e.g. video, or infographic) with lived experience partners to inform residents and the wider population about this work. This is likely to cover: how families in Islington experience overcrowding and how it affects their wellbeing; the relevance of different aspects of the household, the house and wider environment to their experience of overcrowding and impacts on health; implications for population-level intervention designs to alleviate the effects of overcrowding in this population. This will be a public facing product for the lay public, and can be hosted on HealthWatch Islington's website. It will be disseminated through the wide network of community organisations allied to HealthWatch Islington, school networks and national ARC PPI networks.

From workstream 2 we will produce a **draft guidance document** - target audience: council collaborators - describing the process and data used to construct the measure locally and some illustrative results from Islington to demonstrate how the measure can be used to understand overall prevalence and to identify areas within a borough where prevalence is likely to be highest. It will be sent directly to the councils that have already agreed to collaborate with the project and others identified through ARC networks. Its intended impact is to inform collaborators about the project's progress so far, in order for them to contribute to workstream 3.

Following the knowledge exchange workshop, our final dissemination outputs on the development and wider transferability of a method to identify hotspots of overcrowding affecting the health of families will include:

- **Final guidance document** for councils, refined with information from other councils setting out the methods used to measure overall prevalence and identify hotpots of household overcrowding affecting families with some illustrative results produced from applying the method in one local area. It will be disseminated through stakeholders and collaborators such as ARC North Thames, local authority public health research and Housing & Health networks, personal and institutional twitter accounts.
- **Accessible lay summary ('ARC bite')** of the entire project, that will first be reviewed by ARC's lay advisory panel. This will be shared through ARC networks and our NIHR ARC North Thames website. We have also budgeted to commission local voluntary sector partners to translate the summary into relevant community languages and share with their communities and working with Islington Council's Sign Language Interpreting service, we will include the summary in Signed Newsletter Signpost or through the local Deaf Social Media channel.
- **Peer-reviewed conference presentation submissions** e.g. to *The Lancet Public Health Science,* UK Indoor Environments Group (UKIEG) and a **paper** submission to a relevant journal, such as: *International Journal of Environmental Research and Public Health (IJERPH).* The impact of this will be an important contribution to the literature to set out the distinct ways in which families experience overcrowding and their impacts on health and wellbeing.
- **Healthwatch England Annual Conference submission** to share findings on the process of involvement and the outputs of the project.

These outputs will be supplemented by **regional and national presentations to existing networks** concerned with local authority public health research and housing e.g. London Public Health and Housing network, which is well attended by regional and local government housing leads and presentations at local professional forums: Health and Well-Being Board (Islington and other North Central London boroughs), Integrated Care Partnership (North Central London), All Age Mental Health Partnership Board, Fairer Together Partnership Board.

We have budgeted for paid involvement of lived experience partners to co-author and/or present dissemination outputs, which might include videos on the HWI website.

PROJECT / RESEARCH TIMETABLE

The project timetable is set out in a flow chart, with key milestones indicated (*see Gannt chart, appendix D*). In addition, activities to support project set-up will commence in April 2023 as soon as the decision from NIHR is communicated, e.g. ethics application submission to enable data collection to start on time.

PROJECT MANAGEMENT

The PI will manage this grant and ensure the project meets the milestones set out above, with support on administration and finance from NIHR ARC North Thames Core Team. In additional to individual workstream meetings, we will hold monthly co-investigator meetings throughout the duration of the project to monitor the progress of each workstream and to ensure that developments in one workstream can influence the others. The PI will update current and potential collaborators at key points in the project (*see Gannt chart*).

The project will be adopted by NIHR ARC North Thames and will report monthly to its population health and social care theme meetings, which comprises researchers with public health expertise and local authority representatives. The PI will report monthly updates to the theme meetings to monitor whether the project is on track and to access wider pool of researcher advice to aid with trouble shooting.

ETHICS

As of December 2023, UCL ethics committee approval has been obtained for the entire project, to provide ethical scrutiny to our proposed methods and to facilitate publication of findings in peer-reviewed journals. We will submit the study for low-risk review. This is sufficient given that in workstream 1, the lived experience participants will not be subject to interventions and in workstream 3, data collection with service professionals will be undertaken by virtue of their professional roles. For workstream 2, an additional data protection impact assessment was undertaken according to Islington council's governance requirements, which requested updating of the adult data in the Islington Population Register and linkage of a subset of educational performance data at household level with housing data and the Tailored family overcrowding measure. Only aggregate level data with no risk to the identification of individuals will be shared outside of Islington Council.

The project presents some important ethical issues in relation to the recruitment and involvement of people with lived experience of overcrowding housing. We have set out below these issues and how we plan to address them.

Issue	Steps to address
Power imbalance: We are seeking to include the views of those who may be marginalised and underserved by public services and by research. There may therefore be a perceived or actual power imbalance between researchers, council staff and participants which may risk participants feeling coerced to take part or to give particular viewpoints.	Recruitment settings and activities will be carefully chosen so as not to put undue pressure on any individual to take part. For example, recruitment will not take place when residents are seeking or receiving services. Where school networks are used, communication will be directly between the school and parents, e.g. school email newsletter, not through children or on school premises. DCHV may well know resident participants and may have first-hand experiences themselves so can relate more closely to participants. This has informed our model whereby researchers

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	support and guide DCHV in developing materials, recruiting participants, and facilitating groups. Where possible DHCV (community organisation partners) will lead discussions with support and guidance of council staff and researchers.
Distress: It is important that we include the views of those with first-hand experience of overcrowding but there is a risk that disclosing first-hand experiences of household overcrowding could be distressing for participants.	We will develop vignettes with DCHV partners to be used in part of the discussions in order to provide some distance from participants' own experiences. Using the same vignettes across all focus groups and interviews also provides a common point of comparison. Two people will be facilitating each group – one leading, the other taking notes, observing and available to take action is someone appears distressed. The lead facilitator will not press individuals for a response. We will make clear to all it is OK to take time out of the group if needed.
Equality, diversity and inclusion: It is possible the literacy levels of those interested to take part are low and likely that for some members English is not their first language. If materials or discussion is expressed in complex terms or uses jargon, they may feel excluded from contributing.	The PPI Co-I will work with DCHV to generate accessible materials for recruitment. We have budgeted to translate consent and information sheets into up to 4 languages. Where possible, graphical displays of materials will be used, e.g. vignettes can be presented mainly through photos /pictures and minimal text. We will translate materials into key languages as advised by HWI. We will limit interviews to the languages in which DCHV are fluent in order to ensure that interviews are conducted by those trained in the research study rather than generic interpreters.
Wellbeing of research team: DHCV may be new to research activities and facilitating groups and find delivering on these new tasks stressful. It is also possible researchers and DCHV may be distressed by what they hear in discussions.	HWI will lead training and debriefing to ensure they feel confident in their roles. The research team (EE, LN, MOD and PS) will also be present in all groups to support and guide. We will schedule debrief sessions afterwards for researcher with JS and for DCHV with EW.
Over-consultation: The Council has recently undertaken extensive consultation with residents in Islington (LTI). Our PPI Co-I partner (HWI) has advised there is sensitivity about residents being over-consulted and at the same time, there is concern about a lack of response to the themes expressed by residents in the consultation.	In our communication with potential participants we will make clear how this research seeks to build on and guide action in the council while at the same time not unfairly raising expectations that this will accelerate a resolution to their own housing situation. Since our first submission, LBI have also shared themes relating to overcrowding that were expressed by residents in LTI. We will - Make clear how this research seeks to build on the views already expressed to guide local action (noting this is not a 'quick fix) - acknowledge and draw on themes already shared in our discussions (i.e. some

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	residents said x…) rather than seeking to replicate them.
Confidentiality: In groups and interviews where participants comprise those that work with individuals that are experiencing overcrowding, we must be mindful the stories belong to the individuals.	We will work together with the community researchers in the focus group preparation to develop examples of how personal accounts can be shared whilst maintaining confidentiality. In all groups we will stress the importance of anonymised forms of disclosure where individuals have knowledge of others' lived experience of overcrowding, i.e. no names, addresses or specific locations of housing, and generalising certain details to avoid inappropriate sharing of personal and sensitive information.
Offering a benefit to those that take part: In their feedback on this proposal, community organisations expressed concern that those in unsatisfactory housing conditions would not derive tangible benefit from taking part (i.e. it would not accelerate a solution to their own housing problem). However, they advised that there is a lot of support and advice available to the council.	In all groups and interviews, researchers will bring information on where residents can get help, e.g. the location and contacts for Islington's family hubs, Heat Cafes and reliable advice on housing problems such as dealing with/preventing mould, maximizing energy efficiency.

A community participatory approach to research also raises additional ethical issues to conventional research approaches, because the distinction between researcher and participant is blurred. Informed by community participatory research guidance,[20] we will draft a partnership agreement with lived experience participants, DCHV volunteers, and researchers. This will include standard research procedures such as informed consent. It will also set out how information generated in the project will be used and shared, and ways of working for all partners, including conventional researchers.

PROJECT / RESEARCH EXPERTISE

The research team and expertise are set out in the table below.

Name, Institution	Role & expertise	FTE
Jessica Sheringham, Senior Research Fellow, UCL	PI, oversight of all aspects of the project, leading workstreams 1 and 3 and line management of EE. Expertise in research involving local data linkage, strong service links through years of working in ARC research.	15%, 12 months
Laura Scott, Principal Data Scientist Islington Council	CoI – extensive expertise with council data. Her role will be to lead on WS2 (identifying relevant data and linkage in Islington, producing an indicator to identify areas where families are at risk of household overcrowding)	10%, 12 months
Marcella Ucci, UCL	CoI, with extensive expertise about the built environment and use of data. Her role will be to oversee the work of LS on generating a measure, and contributing to all workstreams to give a built environment perspective.	10%, 12 months

Emma Whitby, Healthwatch Islington	PPI CoI lead – has strong links with local organisations and extensive experience of community engagement. Her role will be identifying and recruiting individuals with lived experience as partners	5%, 4 + 4 months
Jamie Hertel, Islington Council	Named embedded researcher, will support qualitative and quantitative research streams, with local knowledge.	
Elizabeth (Beth) Eveleigh, grade 7, UCL	Researcher with qualitative skills: to conduct focus groups and qualitative data analysis in WS1, overseen by JS; lead liaison with collaborating councils in preparation for WS3. (NB time commitment reduced because ethics application and data collection tool development will be completed before the project begins).	100%, 10 months
ARC North Thames core team, UCL	Project administration and finance	5%, 12 months

COLLABORATORS

Collaborators in other councils have contributed to the proposal by helping us to understand the relevance and nature of overcrowding in their own areas. For example, councils shared with us how the COVID-19 pandemic brought to light the extent to which household overcrowding was a public health problem in areas outside of London. We also heard the extent of political support for this (for example, tackling household overcrowding is a priority for the mayors in Newham and Tower Hamlets).

We are working with some of these councils (Newham, Islington, Camden and Doncaster) on a complementary realist review project on the evidence of the effectiveness of local strategies to mitigate the harmful effects of overcrowding, which will also provide opportunities for a brief update on this project (see: *Gannt Chart*). We attend London's regular Health and Housing Network meetings and will also use these meetings as an opportunity to share updates. JS also co-chairs two networks with representatives from local authorities interested in research: The national Clinical Research Network-funded Consultants and Directors of Public Health network and the London/North Thames Local Authority Research Network, both of which meet quarterly and offer opportunities for discussion and updates.

ARC North Thames has given its full support for the project. It has already provided lay review of the lay summary and agreed to provide wider researcher links through adopt in the Public Health and Social Care Theme and offers access to regional and national ARC networks of researchers and local authorities.

SUCCESS CRITERIA AND BARRIERS TO PROPOSED WORK

Success criterion	Indicators	Risks	Mitigation
Engagement of lived experience partners to understand families experience of overcrowding	Sufficient numbers and diversity of people with lived experience to take part in at least 2 FGs and 3 interviews.	Too few participants agree to take part None of the participants agree to take part in later stages of the project	Multiple strategies for recruitment have been identified. Approach to be led by experienced PPI lead (EW) working with community groups and embedded researchers with

			coproduction skills and networks.
and its impacts on wellbeing	Diversity achieved in sample in terms of ethnicity, household size, tenure

Positive feedback from partners and participants with lived experience on the process and outcomes of the project | Feedback indicates participation is not a positive process | Interviews will be held instead of focus grops if focus groups do not prove to be feasible to schedule.

Format and location of groups informed by local knowledge e.g. attendance at the end of focus groups by the council's housing team has before motivated participants to attend |
| Construction of a tailored family overcrowding measure | Access to sufficient data of sufficient quality within the council to enable construction of a meaningful indicator | Information governance restrictions on linkage of data within the council

Data quality limits use of data

Restrictions on LS's time due to urgent council priorities | Initial mapping identified data of sufficient breadth and quality: main data sources are in Islington's population register (already created), Social Housing datasets (a Data Protection Information Assessment to be completed for its use in this project) EPC data (publicly available) and Census data (available in 2021).

Sensitivity analyses to be undertaken to explore how estimates vary with different datasets included, or on different subsets of the population.

LS will be supported by JH. Both have senior support for their time on this project |
| Engagement of other councils to review transferability and evaluate feasibility | KE workshop attended by least 5 other councils.

Workshop & survey indicates whether other councils would use the measure, identifies suggestions for improvement. | Not possible to hold an in-person workshop

Council collaborators that supported the bid have left/no longer work on housing | If travel is restricted due to pandemic, strikes or other restrictions on travel, we will hold the workshop online

We will engage with other councils to share interim outputs and check in on their own activities through: London's Health and Housing Network, our complementary realist review project |

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References

1. The *Department* for *Levelling Up*, Housing and Communities. *English Housing Survey 2020 to 2021: Headline Report*; 2021.

2. The *Department* for *Levelling Up*, Housing and Communities. *English Housing Survey Household Resilience Study, Wave 3 April-May 2021.* The *Department* for *Levelling Up*, Housing and Communities. 2021.

3. The Health Foundation. Trends in Household Overcrowding by Tenure. Webpage. Accessed online at: https://www.health.org.uk/evidence-hub/housing/housing-stability-and-security/trends-in-household-overcrowding-by-tenure. (accessed 10 August 2022).

4. Shannon, H.; Allen, C.; Clarke, M.; Dávila, D.; Fletcher-Wood, L.; Gupta, S.; Keck, K.; Lang, S.; Ludolph, R.; Allen Kahangire, D. *Web Annex A. Report of the systematic review on the effect of household crowding on health. In: WHO Housing and health guidelines.*; World Health Organization: Geneva, 2018.

5. Aldridge RW, P. H., Fragaszy E et al. , Household overcrowding and risk of SARS-CoV-2: analysis of the Virus Watch prospective community cohort study in England and Wales [version 1; peer review: awaiting peer review]. *Wellcome Open Res* 2021, *6*, 347.

6. Lorentzen, J. C.; Johanson, G.; Björk, F.; Stensson, S. Overcrowding and Hazardous Dwelling Condition Characteristics: A Systematic Search and Scoping Review of Relevance for Health. *IJERPH* 2022, *19* (23), 15542.

7. Pierse, N.; Carter, K.; Bierre, S.; Law, D.; Howden-Chapman, P., Examining the role of tenure, household crowding and housing affordability on psychological distress, using longitudinal data. *J Epidemiol Community Health* 2016, *70* (10), 961-6.

8. Sheringham, J. Housing and Healthcare Inequalities. Webpage. Accessed online at: https://www.arc-nt.nihr.ac.uk/research/projects/housing-and-healthcare-inequalities/. (accessed 10 August 2022).

9. Ministry of Housing, Communities and Local Government. Overcrowded households. Webpage. Accessed online at: https://www.ethnicity-facts-figures.service.gov.uk/housing/housing-conditions/overcrowded-households/latest#by-ethnicity-and-area. (accessed 10 August 2022).

10. Nash, E. *2011 Census analysis: General Health in Overcrowded and Under-occupied Households in England and Wales*; Office for National Statistics. 2015. Accessed online at https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/families/articles/generalhealthinovercrowdedandunderoccupiedhouseholdsinenglandandwales/2015-02-19#background-notes (accessed 10 August 2022).

11. Shelter, Homeless at school: 56% of teachers have worked with homeless children. 2020. Webpage. Accessed online at: https://england.shelter.org.uk/media/press_release/homeless_at_school_56_per_cent_of_teachers_have_worked_with_homeless_children (accessed 10 August 2022).

12. Thomson, H.; Thomas, S.; Sellstrom, E.; Petticrew, M., Housing improvements for health and associated socio-economic outcomes. *Cochrane Database of Systematic Reviews* 2013, (2).

13. Communities and Local Government. *Tackling Overcrowding in England: Lessons from the London pilot schemes and sub-regional coordination*; 2008.

14. Cable, N.; Sacker, A., Validating overcrowding measures using the UK Household Longitudinal Study. *SSM Popul Health* 2019, *8*, 100439.

15. Wilson, W. Barton, C. *Overcrowded housing (England)*; House of Commons Library. London, 2021.

16. Kearns, A., Housing space and occupancy standards: developing evidence for policy from a health and wellbeing perspective in the UK context. *Building Research & Information* 2022, 1-16.
2

17. HealthWatch Islington. Diverse Communities Health Voice. 2022 Accessed online at: https://www.healthwatchislington.co.uk/our-partners. (accessed 10 August 2022).

18. Research Design Service. Equality, Diversity and Inclusion Toolkit. Accessed online at: https://www.rdsresources.org.uk/edi-toolkit (accessed 10 August 2022).

19. Rizvi, S. Using Fiction to Reveal Truth: Challenges of Using Vignettes to Understand Participant Experiences Within Qualitative Research. *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research* 2019, *20* (1). DOI: 10.17169/fqs-20.1.3101 (acccessed 8 Dececember 2022).

20. Centre for Social Justice and Community Action; National Co-ordinating Centre for Public Engagement. *Community-based participatory research. A guide to ethical principles and practice*; Centre for Social Justice and Community Action, Durham University. National Co-ordinating Centre for Public Engagement: 2012.

21. Hanc, M.; McAndrew, C.; Ucci, M., Conceptual approaches to wellbeing in buildings: a scoping review. *Building Research & Information* 2019, *47* (6), 767-783.

22. Rapid research evaluation and appraisal lab. (RREAL), Rapid research resources. Accessed online at: https://www.rapidresearchandevaluation.com/resources. (accessed 10 August 2022).

23. Braun, V.; Clarke, V., Using thematic analysis in psychology. *Qualitative Research in Psychology* 2006, *3* (2), 77-101.

24. Census 2021. Estimating the number of rooms in Census 2021: an update on deriving an occupancy rating from Valuation Office Agency number of rooms. Office for National Statistics. Accessed online at: https://www.ons.gov.uk/census/censustransformationprogramme/questiondevelopment/housingcommunalestablishmentsandvisitors/estimatingthenumberofroomsincensus2021anupdateonderivinganoccupancyratingfromvaluationofficeagencynumberofrooms#:~:text=A%20household%20is%20considered%20overcrowded,more%20(positive%20occupancy%20rating) (accessed 10 December 2022).

25. The *Department* for *Levelling Up*, Housing and Communities. Energy Performance of Buildings Data: England and Wales. Accessed online at: https://epc.opendatacommunities.org/. (accessed 10 August 2022).

26. Wilk, M.; Dezateux, C.; Liverani, S.; Harper, G. Who lives in overcrowded households in north-east London? Cross-sectional study of linked electronic health records and Energy Performance Certificate register data. *International Journal of Population Data Science* 2022, *7* (3). DOI: 10.23889/ijpds.v7i3.1827 (acccessed 12 December 2022).

27. GeoPlace The power of the Unique Property Reference Number (UPRN). Accessed online at: https://www.geoplace.co.uk/addresses-streets/location-data/the-uprn. (accessed 10 August 2022).

28. Ucci, M.; Ortegon-Sanchez, A.; Mead, N. E.; Godward, C.; Rahman, A.; Islam, S.; Pleace, N.; Albert, A.; Christie, N. Exploring the Interactions between Housing and Neighbourhood Environments for Enhanced Child Wellbeing: The Lived Experience of Parents Living in Areas of High Child Poverty in England, UK. *IJERPH* 2022, *19* (19), 12563.

29. Shelter. Check if your home is overcrowded by law. June 2021. Accessed online at: https://england.shelter.org.uk/housing_advice/repairs/check_if_your_home_is_overcrowded_by_law (accessed 10 December 2022)

30. Swanlund, D.; Schuurman, N.; Zandbergen, P.; Brussoni, M., Street masking: a network-based geographic mask for easily protecting geoprivacy. *International Journal of Health Geographics* 2020, *19* (1), 26.

31. Sheringham, J.; Solmi, F.; Ariti, C.; et al., The value of theory in programmes to implement clinical guidelines: Insights from a retrospective mixed-methods evaluation of a programme to increase adherence to national guidelines for chronic disease in primary care. *PLoS One* 2017, *12* (3), e0174086

Appendices

Appendix A

Recrutiment email example

Version 1.2 7 June 2023

<u>Email template to invite participants for focus group participation.</u>

The email template below sets out how potential participants will be invited for focus groups. It will be tailored by the researchers, for example, to reflect how participants were identified, their role and any prior knowledge of their involvement with the current project. If no response is received within a week, up to 2 follow up emails will be sent.

Subject: What does household overcrowding mean to you? - Invitation to participate in a discussion

Thank you for agreeing for us to contact you regarding our project on understanding people's lived experience of overcrowding.

As a [*individual who has or have had school-age children and have experience of living in an overcrowded home/ individual who has worked closely with an individual who has or have had school-age children and have experience of living in an overcrowded home*], your involvement and views will be very useful to help us understand the impacts of overcrowding on health and wellbeing.

This study has been approved by UCL Ethics Committee ref: 2037/008.

I have attached an information sheet with more details of the project. This document has been created to help you decide whether you wish to take part a focus group. Please read through this information carefully.

We are seeking to conduct in-person discussions with groups of 4-8 people who share the experience of living in an overcrowded home with their families. Discussions are expected to take place [*DATE, TIME, LOCATION*] and we anticipate interviews will take approximately 1 hour. We also have interpreters available to change spoken words from one language into another to support you describe your experience. Please let us know if you would like us to schedule an interpreter (at least 1 week before the focus group date).

If you agree to take part, a member of the research team will schedule the discussion and email you with a confirmation.

Many thanks in advance and best wishes

[interviewer, role, organisation]

Appendix B

YOU WILL BE GIVEN A COPY OF THIS INFORMATION SHEET

Title of Study: Combining Data to Identify Families at Risk of the Harmful Health Effects of Overcrowded Housing – A Feasibility Study

Short title: What does household overcrowding mean to residents?

_____

Name and Contact Details of the Researcher(s):

Jamie Hertel, (Jamie.hertel@islington.gov.uk), London Borough of Islington
Beth Eveleigh (b.eveleigh@ucl.ac.uk), UCL

_____

Name and Contact Details of the Principal Researcher:

Jessica Sheringham, (j.sheringham@ucl.ac.uk), UCL

Thank you for taking the time to read this information.

You are being invited to take part in a research project focus group. Participation is completely voluntary. Before you decide it is important for you to understand why the research us being done and what participation will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether you wish to take part.

1. What is the project's purpose?

We know that living in overcrowded housing can be difficult and can negatively impact on people's lives. There is, however, no clear definition of what living in overcrowded housing means. In this project we are looking to agree a definition of household overcrowding affecting the health of families with school age children. Learning from people with experience of overcrowding is needed to understand what should be included in such a definition. We'll use this information initially to help Islington Council better identify where families are living in overcrowded housing affecting their health. Several organisations are working together on this project, including: the London Borough of Islington, Healthwatch Islington, Diverse Communities Health Voice partnership (DCHV), UCL.

2. What is a focus group?

Focus groups are an organised discussion with a small, selected group of people to gain information about their views and experiences.

3. Why have I been chosen?

You have been invited to take part because you have worked with individuals or are an individual who has or have had school-age children and have experience of living in an overcrowded home. It is estimated that 4 group focus group discussions will take place for this project, each of 4-8 people. We are also able to provide a professional interpreter to support you during the discussion on request. If you would like an interpreter, please contact Dr Jessica Sheringham, j.sheringham@ucl.ac.uk at least 1 week before the scheduled focus group.

4. Do I have to take part?

It is up to you to decide whether to take part. If you do decide to take part, you will be given this information sheet to keep (and be asked to sign a consent form). You can withdraw at any time without giving a reason and without any consequences to yourself. If you decide to withdraw before your discussion is transcribed, we will seek to redact your contributions but cannot guarantee to remove all content in which you took part. Once transcription takes place and data are anonymised, it will not be possible to withdraw data.

5. What will happen to me if I take part?

If you choose to take part, you will be asked to participate in a focus group discussion with others that have experienced family household overcrowding. In the focus group, we will be asking questions such as, what does household overcrowding mean to you? and how can living in overcrowded housing affect people's lives/activities? We will also ask for your opinions, thoughts, and feelings towards fictional overcrowding situations that might be faced by others in your community. The focus groups are expected to last approximately 1 hour. It is anticipated that these discussions will be held in July-October 2023 and will be scheduled at a time convenient to participants. If you would like to take part but would prefer or are unable to take part in a group, we would be happy to speak to you one-to-one. Taking part in this focus group will not directly impact your own housing situation.

6. Will I be recorded and how will the recorded media be used?

In-person discussions will be audio-recorded using a digitally encrypted recorder and uploaded securely to a UCL-approved transcription service. Recordings will be used for analysis only: to inform the next parts of this project, i.e., recommendations for sizes to be included in a measure of household overcrowding affecting families, to compare experiences and effects on wellbeing across and within groups, and to produce a way of identifying types of families affected by overcrowding. No other use will be made of them without your written permission, and no one outside the project will be allowed access to the original recordings. Discussion recordings will be transcribed (i.e. typed up from the recording) and all identifiable information removed. After the transcript is finalised, the recording of your focus group will be deleted.

7. What are the possible disadvantages and risks of taking part?

There are no anticipated risks or disadvantages to taking part in these groups or interviews. It could cover sensitive issues or be time-consuming. We will be asking for your experience of household overcrowding. You do not have to disclose any information you don't wish to in the discussions. Additionally, you are also able to pause taking part in the discussion for a break at any time or leave if you no longer wish to take part.

8. What are the possible benefits of taking part?

Participation gives an opportunity to influence local and potentially wider policy and to help improve how the council works with families at risk of household overcrowding. Lived experience participants will be compensated for their time in taking part (£25 voucher), with adequate support to cover barriers to participation (e.g., childcare/creche cover, transport for those unable to take public transport).

9. What if something goes wrong?

It is not anticipated that anything will go wrong during participation in this project. However, if you wish to raise a complaint about your experience, please contact the PI of the study: Dr Jessica Sheringham j.sheringham@ucl.ac.uk. If you feel your complaint has not been handled to your satisfaction, you can contact the Chair of the UCL Research Ethics Committee – ethics@ucl.ac.uk

10. Will my taking part in this project be kept confidential?

In focus groups, we will ask the group to keep information shared confidential and you can request during the group that your contributions on specific points are not transcribed. While it is not possible to guarantee confidentiality in group settings, you will not be identified in any reports or publications. Your name and other identifiable data, your consent form and your audio recordings will be accessible to the researchers from the London Borough of Islington,

Healthwatch Islington and UCL who will be carrying out the focus group and interview discussions. These data will be securely stored on password-protected servers. The recording of your interview will be uploaded securely to a UCL-approved transcription service, before being sent back to the researchers and once again securely stored. None of this information will be shared beyond the research team and the approved transcription service. Once your audio recording has been transcribed and checked, the recording will be deleted. The anonymised analysis of the transcripts will be shared with the other researchers working on the project and in the final report.

11. Limits to confidentiality

Confidentiality will be respected unless there are compelling and legitimate reasons for this to be breached. If this was the case, we would inform you of any decisions that might limit your confidentiality. Due to the collaborative nature of focus group discussions, it is very difficult to isolate and delete contributions from individual participants. However, we will make it clear that other focus group members should not recall or discussed any of the information provided by other people during the session.

12. What will happen to the results of the research project?

The results of this project will be shared in numerous places, including on HealthWatch Islington's website and in research publications. If you wish to receive a copy of the research summary. We will send this to you. The research summary will not identify any participants.

Your personal data will be stored for the duration of the project. Anonymised transcripts will be archived for five years after the closure of the project. If you consent, the data collected during this project may be used for later research.

13. Local Data Protection Privacy Notice

The controller for this project will be UCL. The 'local' privacy notice sets out the information that applies to this study. Further information on how UCL uses participant information can be found in our 'general' privacy notice (https://www.ucl.ac.uk/legal-services/privacy/ucl-general-research-participant-privacy-notice)

The information that is required to be provided to participants under data protection legislation (GDPR and DPA 2018) is provided across both the 'local' and 'general' privacy notices.

The categories of personal data used will be as follows:

- Name
- Email address
- Gender
- Ethnicity
- Disability status
- Contact details – telephone number and address

The lawful basis that would be used to process your *personal data* will be performance of a task in the public interest. Your personal data will be processed for the duration of the research project. Where we can anonymise or pseudonymise the personal data you provide we will undertake this and will endeavour to minimise the processing of personal data wherever possible.

If you would prefer to be interviewed remotely, we will ask for your telephone number in order to be able to call you for the interview. We will ask for your address in order to send a physical voucher after your participation. Both your telephone number and address will be deleted after the interview.

If you are concerned about how your personal data is being processed, or if you would like to contact us about your rights, please contact the UCL Data Protection Officer who provides oversight of UCL activities involving the processing of personal data, and can be contacted at data-protection@ucl.ac.uk

14. Why are we collecting your personal data?

Before the session, we will ask you to complete a form (in-person) which asks about your current household, gender, ethnicity, and disability status. We are collecting your name and email address so that the research team can contact you to arrange a suitable time for the focus group and to provide you with useful information and support after the session if you consent to this. We are collecting information on your gender, ethnicity, and disability status so we can investigate if the effects of overcrowding are experienced differently by certain groups in the population.

15. Who is organising and funding the research?

This project is being funded by NIHR Public Health Research programme.

15. Contact for further information

For further information, please contact Dr Jessica Sheringham, j.sheringham@ucl.ac.uk.

Thank you for reading this information sheet and for considering taking part in this research study.

Appendix C

Participant registration form

V1 1st June 2023
Registration form for focus group
University College London (UCL) Research Ethics Committee
Approval ID Number: to add

Short title: What does household overcrowding mean to residents?

Date of group of focus group: [to be completed by the researcher]

University College London (UCL) Research Ethics Committee Approval ID Number: to add

Registration form for focus group or interview

It would be very helpful for the research to know a few details about the people that took part. All the questions are optional so feel free to leave any part blank if you would prefer not to complete it.

Please answer the questions in the spaces provided.

1. How many adults (i.e., over 18 years old) live in your household? _____

2. How many children live in your household? _____

3. For each child in your household, please provide their age and gender in the table below.

	Age	Gender
Child 1		
Child 2		
Child 3		
Child 4		
Child 5		
Child 6		

If you have more than 6 children living in your household, please provide their age and gender in the table at the end of this form.

4. What type of home do you live in? *Please tick one of the options in the boxes below.*
   □ Studio flat/bedsit
   □ Flat
   □ House

5. How many bedrooms do you have? _____

6. Does your home have an outdoor space which you and your family can use? *This might include your own garden or a shared green or play area outside your house.*
   Please tick one of the options in the boxes below.
   □ Yes
   □ No

7. What best describes your gender?
   Please tick one of the options in the boxes below.
   □ Female
   □ Male
   □ Transgender
   □ Nonbinary
   □ Prefer not to say
   □ I describe my gender with another term

   7.1. If you describe your gender by another term, please describe your gender on the line below
   _____

8. What is your age group?
   Please tick one of the options in the boxes below.
   □ 18-24
   □ 25-34
   □ 35-49
   □ 50-64
   □ 65+

9. Do you consider yourself to be disabled or have a long-term illness (e.g., cancer diabetes, mental health condition)?
   Please tick one of the options in the boxes below.
   □ Yes
   □ No
   □ Prefer not to say

   9.1. If you answered yes, what is your disability? _____

   If you have multiple disabilities, please list them the lines below.
   _____
   _____

10. To which ethnic group do you consider you belong?
    Please tick one of the options in the boxes below.

    Asian or Asian British
    □ Indian
    □ Pakistani
    □ Bangladeshi
    □ Chinese
    □ Any other Asian background

    Black, Black British, Caribbean or African
    □ Caribbean
    □ African
    □ Any other Black, Black British, or Caribbean background

    Other ethnic group
    □ Arab   □ Any other ethnic group

    Mixed or multiple ethnic groups
    □ White and Black Caribbean
    □ White and Black African
    □ White and Asian
    □ Any other Mixed or multiple ethnic background

    White
    □ White
    □ English, Welsh, Scottish, Northern Irish or British
    □ Irish
    □ Gypsy or Irish Traveller
    □ Roma
    □ Any other White background
    □ Prefer not to say

Please use the table to provide the age and gender of the other children in your household.

	Age	Gender
Child 7		
Child 8		
Child 9		
Child 10		
Child 11		
Child 12		

This table is only required if you have more than 6 children.
If you have more than 12 children living in your household, please use the blank space below to list their age and gender.

Appendix D

Topic guide

V1.3 24 Aug 2023

How can we define and identify household overcrowding affecting the wellbeing of families, using publicly available and council-held data?

Guide

The guide below describes the subjects which will be explored during group discussions with participants with experiences of living in overcrowded conditions or people working with them. The topic guide will be developed collaboratively with the community researchers involved in the qualitative research, based on the topics described below, and will be piloted with participants meeting the eligibility criteria. The groups will be facilitated by 2 facilitators (University research fellow and community researcher) (1 taking flip chart notes, keeping track of time, 1 facilitating discussion).

Overview
- Planning and set up (prior to sessions)
- Introduction to group and housekeeping
- Initial information
- Topic 1: What does household overcrowding mean to you
- Topic 2: How can living in overcrowded housing affect people's lives/activities?
- Topic 3: Introducing scenarios of overcrowding situations

Planning and set up
- Test equipment (e.g., recorder)
- Print consent and demographics forms
- Purchase/organise lunch/refreshments and any equipment on the list below
- Set up flip chart (is one available at UCL)
- Design signage and directions for participants to locate session
- Organise tables etc. at the community centre
- Organise interpreters' attendance

Equipment
- Pens/pencils
- Consent form (translated)
- Refreshments/ lunch
- Recorder (for transcription)
- Flip chart for noting down opinions
- Post-it notes- if individuals do not wish to provide details verbally
- Vouchers
- Signage for sessions and directions (via email?)
- Soft play area toys
- Note pad for moderators/researchers
- Leaflet/information on housing help and advice

V1.3 24 Aug 2023

Introduction to group and housekeeping

[time: 10 min?]
- Welcome and thank you
- Purpose of research
- Working definition of overcrowding (subjective (i.e. YOUR/your client's) experience of not having enough space for daily living but we'll explore this in more detail)
- Introduce moderator, relevant researchers present, and translators
- State duration of the panel session – check that individuals are ok with this 1.0 (or 2.0 hours to allow for translation)
- Give details of available refreshments and toilets
- Provide details on incentive and expenses
- Provide overview of session (see above)
- Ways of working - Confidentiality and respect for each other, welcome different views – no obligation to share information if you do not wish
- State that this research cannot influence individual housing situations

Question: Any other ways of working you'd like to suggest?

- Recording & flip charts to capture key themes
- How information you've shared will be used – your role going forward if you wish

Question: Anything else you'd like to raise at this stage

Action: □ Sign consent and complete demographics form

Initial information

[time: 5 min?]
Volunteers/Staff:

- Your role/position within the community
- Geography / remit of role and responsibilities
- Extent to which role involves developing an understanding of/representing others' lived experiences of dealing with housing issues

Lived experience:
- Where you live in Islington/ Tower Hamlets (Not address – by transport route/stop or landmark)

Question: Without sharing your home address, could you describe where in [Islington/Tower Hamlets] you currently live?

Prompt: Do you live near [bus/tube stop, school, major landmark, etc.]

- How long individuals have lived in Islington/Tower Hamlets
- Individuals family (ie parent or x children, ages)

Question: Could you tell me a bit about the people who live in your home?

Prompt: So, currently there are [number] of adults and [number] of children living in your home?

Question: How old are the children who live in your home?

Topic 1: What does household overcrowding mean to you (What make a house feel overcrowded)

[time: 18 min?] — Describe that this first topic will be discussing the definitions of overcrowding and what the term overcrowding means to individuals

Volunteers/Staff and Lived experience:

Question: What does household overcrowding mean to you?

Prompt: What are your thoughts on the idea that overcrowding in a household often means that individuals have [to share rooms/space, less opportunities for privacy/ to use space outside of the home, issues that may relate to having too many people in a home e.g., things getting broken or damaged?]?

Topic 2: How can living in overcrowded housing affect people's lives/activities?

[time: 18 min?] **Volunteers/Staff and Lived experience:**
- Introduce the next topic, how can living in overcrowded housing affect people's lives and/or activities using examples of previous research into overcrowding as a prompt if necessary.

Question: We have talked about what the term household overcrowding may mean to different people, can you think of any ways that overcrowding housing may affect people's lives or activities?

Question: Some of the research suggests that living in overcrowded houses may cause or make things worse.

Prompt: Do you think that living in an overcrowded household can have an impact on people's health (e.g., breathing, infections (stomach bugs, COVID), stress/depression/anxiety, food consumption)?

Prompt: Do you think that living in an overcrowded household can have an impact on people's wellbeing (e.g., sleeping difficulties, unable to cook in the home, being able to play or have some privacy, isolation from family, lack of social interaction within the home)?

Prompt: Do you think that living in an overcrowded household can have an impact on people's life chances (e.g., access to work, being able to study or work from home?)

Question: What are your thoughts? Are there any ways overcrowding may affect people's lives or activities that haven't yet been mentioned?

Topic 3: Introducing scenarios of overcrowding situations

[time: 18 min?] **Volunteers/Staff and Lived experience:**
- Introduce 'cards' of overcrowding scenarios
- Explain that we wish to hear individuals' responses on the following typical overcrowding situations
- Ask participants to rank 'cards' that are most influential/important relating to overcrowding (and health)

Question: How familiar does this example of overcrowding seem to you? Do you know of people in similar situations?

Question: What do you think the effects would be for the parents and children?

Prompt: What affect might this situation have on the families [health? Wellbeing? Life chances?] (use cards)

Question: In addition to the number of rooms and people mentioned, what other things could make this experience worse or better? How?

Prompt: What are your thoughts on the idea that [moving to a bigger property, improved access to outdoor space, renting/owning a property, affordable heating, friends, or support nearby, access to storage facilities locally?] could help alleviate some of the effects of household overcrowding we've identified?

Closing group discussion

[time: 5 min?]
- Ask if individuals have any other comments
- Identify the next steps: ei., doing these groups with people with lived experience, voluntary representatives and staff working with people with housing problems –
- Signpost (possibly VCS individual to provide advice)

Appendix E

Gannt chart

	Oct-23	Nov-23	Dec-23	Jan-24	Feb-24	Mar-24	Apr-24	May-24	Jun-24	Jul-24	Aug-24	Sep-24	Oct-24	
SET UP														
WORKSTREAM 1														
Discussion with community researchers														
Training of DCHV community researchers														
Recruitment of participants	■	■	■											
Focus groups (3-4), interviews (<5) with LEP, community representatives & professionals	■	■	■	■	■									
Rapid analysis		■	■	■	■									
Discussion with LBI staff and stakeholders					■									
Indepth analysis								■	■	■				
WORKSTREAM 2														
Inference of bedroom number (for missing households)														
Data assurance of council data to form pop spine	■	■	■	■										
Data linkage of population spine datasets	■	■	■	■										
Construction of a BASIC OVERCROWDING variable	■	■	■	■										
Construction of A REFINED variable INFORMED BY WS1						■	■							
Epidemiological analysis /heat map construction							■	■						
Exploratory correlation analysis with 1 wellbeing indicator							■	■						
Draft guidance for dissemination to collaborators							■	■						
WORKSTREAM 3														
Engagement with wider councils				■			■		■		■			
Pre-event materials circulation						■			■					
Knowledge sharing event									■	x	■			
Post-event survey analysis									■		■			
MANAGEMENT														
Monthly Co-I meetings	x	x	x	x	x	x	x	x	x	x	x	x		
NIHR reporting						PROGRESS			ASTOX				DFR SUBMISSION	
Workstream interim outputs		■		■	■									
Paper and conference abstract submissions		■							■		■			

Version 3.0 30 December 2023