SPI-B: Well-being and Household Connection: the behavioural considerations of 'Bubbles'

Executive summary

Bubbles should be introduced to support household networks of care, ONLY when epidemiological and other supporting conditions are right. In all situations, messaging and guidance need to be very clear and include an emphasis on care, responsibility, public health and hygiene.

Behavioural considerations (see Annex A for full paper)

1. 'Bubbles' or the creation of household connections should be approached with a high degree of caution and only phased in very gradually starting with the smallest size of connections. They can only help with the provision of social support to the most disadvantaged and vulnerable groups in UK society if certain conditions around infection rates and monitoring are put in place prior to bubbling. These are essential for household connections to not produce negative impacts. If these important conditions are in place, bubbles would help households who are: (1) having practical difficulties (e.g. childcare, shopping, household tasks, repairs); (2) suffering from stress (due to financial difficulties or lack of connectedness – e.g. digitally disenfranchised); (3) socioeconomically disadvantaged and minority households; and (4) households with mental and physical health or disability issues. They should be presented to the public as being focussed on the provision of practical help, care and support.
2. Bubbles have been used in various forms in other countries such as New Zealand and Belgium. Bubble policies from other countries are not directly comparable to the UK situation. Rates of transmission and mortality are higher in the UK and we do not yet have the same supportive infrastructures of tracking, testing and isolating cases, nor protective work environments and safe transport modes for keyworkers. Therefore, we need to consider carefully the details of the UK situation and to model this in order to identify the UK conditions that will enable 'bubbles' to be safe and effective.
3. In presenting bubble policies that only link individuals or households of a small size, particular consideration should be given to how this policy may be perceived by members of BAME communities, the socioeconomically disadvantaged and post-industrial communities who are disproportionately impacted by COVID-19 and largely employed as keyworkers (so at work) but who may also live in larger households.
4. We suggest a phased introduction of 'bubbles' assuming the current levels of social distancing are in place. This preference for a phased introduction takes into account the various structural types and community forms of households in the UK. Any changes to the social distancing regime will alter our recommendations and should lead to new behavioural, modelling and policy considerations.
5. Our suggestions for a phased introduction of bubbles includes:

Phase 1 = (Option 1 in the attached paper**)**

Two households, each consisting of only one individual member, joining together

Two households, the first with only one individual member and the second with any number of household members, joining together.

(plus continuation of currently permitted links between ex-partners for childcare)

This MUST be preceded by safe working environments for key workers, effective contact tracing technology & extensive testing. It should be accompanied by guidance on how to negotiate bubbles, emphasis on the use of bubbles for responsible care , strong public health communications about hygiene and risk, and small groups in outside spaces.

If no epidemiological adverse effects then move to:

Phase 2 = (Option 2 in attached paper)

Two households joining together regardless of number of members

Accompanied by continuing messaging as per Phase 1.

If no epidemiological adverse effects then move to:

Phase 3 = Option 3, allowing households who had added lone members to also add a third larger size household

6. We advise **caution and proper preparation for** all moves even in Phase 1. Further modelling and policy development are needed to understand the unique dynamics and impacts for key workers, socio-economically disadvantaged groups and BAME communities. We also need to address the problems of safeguarding the clinically vulnerable and elderly households for whom bubbles of any kind will be risky. Alongside this a careful, considered communications and public health hygiene campaign would need to be developed to specifically support any of the changes to social distancing. Additional thought must be given to the need or ability to enforce (as in the Belgium case) social distancing and hygiene practices within domestic spaces. This would potentially assist in the more general messaging around public hygiene which needs to be emphasised as social distancing eases. In addition, messaging should be considered about people meeting bubble members in outside spaces including gardens.

7. Policies other than larger 'bubbles' to provide support networks to the vulnerable and disadvantaged should be further considered. For example, to prevent growing inequality, the provision of subsidised or free local childcare centres (similar to Sure Start programmes) in deprived areas and for keyworkers should be considered, if and when epidemiologically justified. Current regulations create an inequality as upper middle-class families are now permitted to have nannies in their households.

8. Other options should also be considered which may support wellbeing outside of the context of bubbles. For example, the ability to meet small groups outdoors may provide benefit for people unable or unwilling to create a formal bubble arrangement, if (and only if) modelling suggests the risks associated with this are sufficiently low.

Behavioural Evidence in Light of SPI-M Modelling Scenarios

1. SPI-M have considered the following situations:

1+1 (two households of size 1 joining, to become household of size 2)
1+n (household of size 1 joins another household)
2+2 (two households of size 2 joining, to become household of size 4)
2+n (household of size 2 joins another household)

in the current context (eg. schools remaining closed).

They did not specify other sensitivities (eg. exclusivity, households with children, increasing connectivity etc)

2. Our advice of a phased introduction starting with Option 1 would be supported by the modellers finding that 1+1, and 1 + n did not raise the R rate above 1. If this was the finding, then lone individuals could pair with other lone individuals or a household of any size if supported in the other ways we suggest.

3. None of our options correspond with 2+2, because we were considering care and childcare needs at the centre of our model of social support. This option, if advised by the government might be perceived to be arbitrary, even unfair, confusing and may be difficult for many households to implement. The size does not relate to the structure of households in a way that can be easily mapped onto practices of care. Whereas 1+1 and 1+n do relate to the needs of lone individuals and households who are concerned about them.

   2+2 would most likely help childless couples and/or young people who are friends. Or it could help a small section of lone parent families with a single child who might want to link up to another lone parent with a single child or to grandparents (they can already link up to ex-partners for childcare). However, the arbitrariness of who could link up might be difficult to explain and it would potentially make the extension of bubbles allow greater liberty for some without any clear reasoning for this.

4. Option 2 in our argument would correspond to some extent with option 2 +n in the models. It is a more restricted version of our second phase of bubbling. This would permit two households to link in ways that would be compatible with the care and kinship structures of UK families. It would enable grandparents, or couples, or a lone parent and child to link up with a larger household for various kinds of support. Therefore, if this did not increase R above 1, we would recommend it as a specification for Phase 2 of our plan. So instead of allowing two households of any size to join, there would be specification of the size of one of the households to be at 2.

9. Therefore, we recommend that if the models show 1+1, 1+n, and 2+n as not raising R above 1 then the phased options we recommended could potentially be gradually introduced. However, we still maintain that further modelling, policy design and plans for public health communication would be necessary **before** the final decisions are made. In addition, a more robust workplace safety regime for keyworkers and manual workers would need to be in place along with testing, tracking tracing and isolating on an extensive scale.

10. Additional collaboration with SPI-M is needed to develop models that specify more closely the epidemiological effects of networks between keyworker, socioeconomically disadvantaged and BAME households. Additional work is needed to develop models capable of factoring in the household structures of the UK population in other ways. Additional effort should also be put into modelling alternative kinds of connection such as the same people meeting every two weeks with each other, so as to stagger interactions in time or of forming two household connections between households connected in other ways such as having children in the same primary school classes.

Annex A: SPI-B: Well-being and household connection: the behavioural considerations of 'Bubbles'

I. Introduction: Bubbles around the world

The lockdown has helped to reduce levels of COVID-19 transmission within the UK and has saved lives.[1] Inevitably, this has come at a cost. Quantifying the cost is currently beyond us, but even restricting ourselves to the psychological level, an impact on wellbeing is both expected and evident.[2] Polling data from YouGov suggest that loneliness has risen in the UK, from 10% of adults in March, to 24% in early April.[3] ONS data suggest that nearly half of adults are experiencing anxiety.[4] Household finances are suffering, mental health is suffering, and children are suffering.[5]

Within the UK, conversations about how to maintain the epidemiological benefits of the lockdown while mitigating some of the social and psychological impact are starting to focus on the possibility of using 'bubbles' as an intermediate step to a new normal. The idea is to form closed links between households **before** schools and workplaces fully open with the current level of restrictions on social interaction (as of 13/05/20) in place. This paper considers the applicability of 'bubbles' to the UK at the present level of transmission and with current measures of social distancing.

Across the world experiments with the policy of 'bubbles' have only recently been introduced. They have been used in a few countries and regions (New Zealand, Belgium, Guernsey and two provinces of Canada) with much lower levels of incidence of COVID-19 transmission than in the UK. This makes these examples not directly comparable to the situation in the UK, where the risks of an increase in R and excess deaths is much greater. In addition the place where this policy has been in existence longest, New Zealand, has more testing and an extensive track and trace network. So, where experiments with bubbles have been tried the epidemiological situation and infrastructures for controlling resurgence and monitoring behaviour are entirely different from in the UK. Therefore, we strongly recommend that the UK situation is thought through on its own terms.

However, it is valuable to look across these other experiments with bubbles to understand different policies, public health messaging and the ways in which people have responded. In New Zealand the concept of a 'bubble' was used as a simple message to emphasise the need to reduce contact during lockdown. Initially, your bubble was your own physical household. Messages emphasised that interacting with people outside of your household put your bubble and everyone within it at risk. As New Zealand's lockdown started to lift, people have been allowed to slightly extend their bubbles. A household could merge with one other household. Advice on any limits on numbers of people you could connect with has been ambiguous, with official guidance saying it could only be with one or two people. However, in speeches Jacinda Arden has indicated that people could connect with de facto partners who are caring for others. Emphasis has been placed on the fact that any connection is not for social visitors. This allowed households to interact with caregivers, partners, elderly parents, or provide companionship to isolated single people. The core message guiding people in how to merge their bubbles was to keep it local, small and exclusive. This has been accompanied by clear advice on hygiene within and outside the bubble and social distancing practices beyond it. Many other parts of lockdown are still in effect.

Similar measures are in effect in two rural provinces of Canada (New Brunswick and Newfoundland and Labrador). Guidance from the Government of Newfoundland and Labrador allows any two households, of any size, to pair up, though with extra caution being recommended where people are working and out in public.

Closer to home, Guernsey is also allowing two households to merge their bubbles. This can include households with over 65yr olds "as long as they are aware of the risks."[6]

In Belgium a different model is in use which combines elements of bubbles and social distancing within the home. People can invite up to four people from another household into their home, as long as they stay 1.5 metres apart and maintain hygienic practices. The recommendation is that they spend time outside on a terrace or in a garden while visiting. The maximum size permitted is a household of 4 joining up with another household of 4.

In this report, we outline some issues that policy makers will need to consider as they plan potentially applying the bubble strategy to the unique UK situation. We begin with some general considerations of how household connections relate to social support networks and inter and intra groups relations, and therefore what impact 'bubbles' might have in general.

II. Which households would benefit most from increased social support?

Social support can take different forms, including practical, emotional, and informational support (in which cases one relatively able person helps someone less able), and cooperation (where two or people of equal ability coordinate their actions to achieve a shared goal).[7] Practical social support and cooperation enable people to achieve tasks that an individual can't do alone. Social support in general reduces stress and enables people to cope with difficult working conditions.[8] Emotional support (i.e., displaying care) enables people to endure difficult but necessary public health interventions,[9] and helps in reducing psychiatric symptoms after disasters.[10] Overall, practical and emotional support from others can be protective for health.[11] Research on disaster recovery shows that it is the perception or expectation of social support, more than actual social support itself, which has these beneficial effects.[12] Expected social support has positive effects on wellbeing via self-efficacy and joint activity.[13]

As well as these general effects, vulnerable groups in the population rely most on informal networks of care, information and support that have direct effects on physical and mental wellbeing[14]. Households share kinwork, carework and flows of resources beyond the boundaries of nuclear, shared or lone households.[15] Kinwork involves the emotional and physical work of caring for individuals who culturally count as intrinsically part of your family and community.[16] Sociocultural norms about who these people are, why they matter to you and what obligations you have to them are a crucial part of self and group identity. To be disconnected from your kin severs you from what are perceived to be essential connections underpinned by ethical values, although there is ambivalence about these relations.[17] These social infrastructures also directly enable people to survive economic and other forms of disadvantage through unpaid carework and sharing of resources.[18] Single parent families, minority communities and socioeconomically disadvantaged groups rely on pooled childcare to go out to work.[19] Post-industrial working class communities build networks of information, resources and support.[20] Disabled people and their carers fare better if connected to the wider community and are currently in the UK more worried about the effects of social isolation due to Covid-19 than other groups.[21] The vulnerabilities of elderly households and their isolation depends on the density of social networks, often leaving rural elderly particularly disadvantaged.[22] In fact in the UK elderly people and households now rely predominantly on help from family members in their 50-60s to provide care.[23] When social networks break-down as result of choice, force or a public health emergency, people are at greater risk of deepening economic disadvantage and homelessness.[24] People with pre-existing mental health disorder are also

particularly likely to suffer as a result of lockdown.[25] Isolation and loneliness in general, and quarantine specifically, are linked to poorer mental health and greater distress.[26]

Therefore, it seems reasonable to conclude that in general the **households** most likely to benefit most from policies that enable ties across households would be those (1) having practical difficulties (e.g. childcare, shopping, household tasks, repairs) (2) suffering from stress (due to financial difficulties or lack of connectedness – e.g. digitally disenfranchised) (3) socioeconomically disadvantaged and minority households (3) with mental and physical health or disability issues.

III. Which individuals might be disadvantaged by being connected to other households in a bubble?

Social networks are a key predictor of well-being[27] and recovery from disasters.[28] Social networks range from interpersonal relationships (e.g., the neighbour next door) to the wider group (my community). Many are based on category memberships – seeing those in the network as a group or 'us'. The mechanism by which social groups and networks provide well-being benefits is via expected/perceived and received social support and trust.[29] Shared identity (with a group, neighbourhood or community) increases supportive behaviour towards ingroup members. This has been found in numerous contexts including in social dilemmas[30], bystander intervention,[31] and in the recovery phase after flooding.[32]

However if we consider differences of gender and age within households, and inequalities within them, the evidence of the benefits for individuals are more mixed. Gendered differences in care-work mean that women bear the greatest burden for provision of care both paid and unpaid, a burden that is reported to be increasing in the COVID-19 pandemic especially for BAME women.[33] The extension of networks might bring even more work of this kind to women as they care for elderly relatives or other people's children. In addition household decision making in general and specifically on physical and mental health practices does not always follow a model of consensual negotiation.[34] Therefore within families particular individuals may push for their needs to be met through social networks at the cost of other individuals.[35] This is likely to disadvantage women, children and young adults. On the other hand, there is contrary evidence that an extension of social networks may help women and children in acutely abusive situations.[36] In addition there are clear benefits for children, teenagers and young adults in extending networks for play and friendship.[37]

Therefore, at the **individual** level extending social networks will have mixed outcomes on well-being. These outcomes will depend on the gender and age profile of households, how care-work is organised within them, how their decision-making processes are negotiated and the nature of the relationships within them.

IV. What difficulties and inequalities might the restricted formation of household networks or 'bubbles' generate?

Building restricted household connections that are in line with the outcomes of modelling of transmission rates and subsequent government policies may be problematic. Restricted numbers will lead to some potentially very conflictual and possibly irresolvable decision making within households. People who are left out in this process may experience mental health and well-being issues due to processes similar to ostracism.[38] The rule that you can only join 2 plus 2 member households or 1 plus 1 could lead to low numbers of uptake and higher levels of difficult decision making. As we can see from table 1, although two people households are most numerous in the UK, around half of them (households with members over 65, 4023) are likely to want to join up with other larger sized 3 and 4 person households in order to connect with children and grandchildren.[39]

Number of households *(thousands)*	**2019**	
	Estimate	**CI+/-**
One person	8,197	166
Two people	9,609	131
Three people	4,287	99
Four people	3,881	87
Five people	1,254	55
Six or more people	597	38
All households	27,824	109

Average household size (number of people)	2.37	0.01

These problems could be avoided by building models and policy that reflected both epidemiological concerns and the structural composition of households in the UK. These policies and models would also need to factor in the most likely pairings that would be sought by people in order to provide social support, childcare and cross-generational ties.

In the absence of this research (which would involve very complex modelling), the safest option in terms of avoiding conflictual decision-making would be pairings of any household size with lone households. People could reach out to the most isolated individuals in society through forms of mutual care to support them. If this was the stated goal of first measures of bubbling then it would potentially lead to less fraught decision making through clear messaging. In general conflict could also be ameliorated by direct messaging in any future bubbling policies about who the household pairings were designed to most benefit—for example lone parents.

V. What type of household networks or 'bubble' arrangement would work best?

We have been presented with the following possible options for household connections:

Assumptions:

A 'bubble' would function as a single household. If a member of the 'bubble' developed symptoms, every individual in every household, e.g. all other members of the 'bubble', would have to begin 14-day household quarantine.

Whatever option is taken up would not apply to "shielded" group – they remain shielded.

Options for definition of a 'bubble' : with a suboption in all cases to limit bubbles to 10 participants

1. New Zealand model: separated parents can 'bubble' to allow children to move between households (included in current government guidance) and individuals living alone can bubble with another household to combat isolation.

2. 2 household model: allowing 2 households of whatever size to 'bubble', i.e. 2 families or parts of families, or groups of friends.

3. 3 household model: allowing 3 households of whatever size to 'bubble'

4. Integrated model: allowing either 2 or 3 households to 'bubble', and a further household could join the 'bubble' to allow separated parents each to bubble with one other household separately, which could link 3 or 4 households together.

Although option number 4 has been presented to us as a possibility, we do not think this should be pursued as it is **too complex** to message. In addition, it applies to a very **specific situation** that is covered by the more general option 3. So, we will disregard this option. Potentially of course being part of wider network increases the risk of infection by Covid-19, but being part of a closed group is less risky than an open group. SPI-M will be modelling the effects of various possibilities on R. We will provide a further note in tandem with this modelling. In this paper we are considering the behavioural, public health and sociological issues with these potential models, in particular for vulnerable and households and communities who most need social support and networks.

VI. Assessing the Options According to Different Household Structural Types

Household Structural Types

We will explore the potential well-being effects and potential risks of the three bubble types for different structural types of households, including the decision-making structures within them. Particular attention will be paid to issues of **vulnerability** and **potential inequality both between and within households**.

- **Single Occupancy**

The number of people living alone in the UK, predominantly single men aged 45-64 in rented accommodation, is around 8.2 million.[40] Option 1 or 3 would be most likely to benefit this group. Option 1 would actively guide other households towards pairing (as a continuation of existing online and distanced mutual aid efforts) with lone people in their communities or networks in order to provide them with physical and emotional support. Option 2 is less likely to produce outreach to lone individuals. With the restricted choice of pairing with only one household, people are likely to choose another multi-member household that could meet a broad range of needs of kinwork, carework and flows of information and resources. However, option 3 might lead to single person households being included given a wider arena of choice. In option 1 the subclause of limiting the number of participants in a bubble would have little effect on whether lone households would be included. However, in all the other options limiting the bubble to 10 people will probably act against the inclusion of lone individuals. Given a choice, and given the benefits of dense social networks to multiple forms of care-work, kin-work and well-being people will be likely to exclude lone individuals from their 10 people. On balance Option 1 seems best for lone households, especially if further scaling up of bubbles were intended for later phases of reduced social distancing. If lone households were included early on in household networks they would more likely to be included as bubbles expand.

- **Lone Parent**

Lone parents represent 14.9% of UK households. Given the centrality of shared care and kinwork for lone parents, especially socio-economically disadvantaged ones, all of the Options from 1 to 3 would support these families. Especially as upper middle class families that employ nannies are now permitted to bring them into their households, which creates an active relative disadvantage for this group in terms of returning to work and well-being. Option 3 is best suited to the complex collective and individual needs in these households containing different genders and ages. These would allow

parents and children to negotiate between them connections to care, kin and friendship networks. However, any extension of bubbles might also risk women within lone female headed households taking on more care-work in their broader community. This is because it extends, but also limits the commitments and connections to others, and does not specify who to connect to. The sub-option of 10 people would be fairly neutral in its impact.

- **Nuclear family with children**

In the UK married, cohabiting and civil partnership-based families represent two thirds of the total households. Families with dependent children stand around 8 million, while families with non-dependent children are around 2.9 million out of a population of 27.8 million.[41] One in four young adults aged 24-30 live with their parents.[42] For similar reasons to lone parent families all options from 1 to 3 would benefit these households to some extent. Option 1 would allow the inclusion of solo grandparents, uncles and aunts or single friends that these households are concerned about. Options 2-3 would allow negotiations between different members on which networks to reactivate or which might be newly forged. They would also assist with return to work after maternity leave or more generally with the care of children if childcare is shared. Overall option 3 would appear to be best for this household, although options 1 and 2 would be an improvement on current conditions. Limiting to 10 people once again would be fairly neutral.

- **Extended Multifamily**

Multifamily households including multigenerational households are the fastest growing household type in the UK, but represent 1 percent of the population.[43] All options would potentially improve the situation of these households expanding their networks. In particular multigenerational households could benefit from additional care networks to relieve the burdens of women who provide the majority of care for elderly relatives and children within them. The limit of 10 participants would not be workable with these households, which have larger numbers within them. It would in effect create a situation where these households could only create connections with lone households, perhaps adding to their burden if those lone people need further care or the potential for exploitation of these lone people if their sole reason for inclusion was to provide carework.

- **Shared adults**

One or more adults who are friends or siblings sharing, usually rented accommodation, represent 2.8 percent of the population. Option 2 and any application of the sub-option would be very difficult to negotiate potentially causing intra-household tension, especially when it is unrelated friends who are sharing who may not agree on who to connect with. Option 1 would be easier to negotiate because it is more specific. Overall option 3 would most enable support and psychological well-being, especially when sharing a household may not translate into a closeness of relationships of friendship and care. The limit of ten people would be likely to cause conflict within these households.

- **Disabled people and carers**

There are 13.7 million disabled people in the UK distributed between different kinds of households. All options would benefit them, increasing support to them and their carers and allowing them to report neglect. A maximum benefit would probably be reached for them and the people connecting with them at Options 3. An upper limit of 10 would be likely to affect how other households might act in relation to them. It might lead to avoidance of pairing with disabled friends and family.

- **Elderly**

Elderly people over 65 currently represent around 18 percent of the UK population.[44] It is not clear to what extent any of these options would benefit elderly households, many of whom have been advised to shield because of age or medical conditions. Early research on bubbling practices from New Zealand suggests that people avoid pairing with elderly relatives as they do not want to transmit illness to them.[45] Whether this would occur in the UK would depend on the sequencing of these measure in relation to other easing initiatives. Once children had returned to school or family members had returned to work then links to elderly households should not be made, and the current models under consideration do not include this scenario. However, if bubbles were introduced before this broader loosening then options 1 and 2 with limits of 10 people would be most likely to lead to households pairing with elderly relatives and friends. This could be seen as a safer, more restricted option that met responsibilities to keep elderly people safe and well by restricting connections to broader groups.

- **Foster families**

There are around 44,450 fostering households in the UK.[46] Options 2 and 3 would most help this group extending social networks to aid in care and allow the reporting of rare cases of neglect or mental health issues. Given that these households are often large the limit of 10 participants in a bubble would not most help them.

- **Socioeconomically Disadvantaged**

Socioeconomically disadvantaged households are concentrated in particular regions and are more adversely affected by mortality from Covid-19.[47] Twenty-eight of the towns and cities with the highest percentage of deprived areas were in the North or Midlands of England and the ten most deprived local authority boroughs are in London.[48] Options 1-3 would all support the well-being needs of these households. Given the higher mortality rates from Covid-19 in such households any moves towards bubbles would help to ameliorate the grieving process and trauma currently being experienced.[49] Although we would **strongly recommend** thorough modelling and full policy consideration of the risky epidemiological effects of permitting bubbling in groups that currently have a higher incidence of COVID-19. Option 1 could be difficult to navigate, as would the limit of 10 participants, as generally households are of a large size, but any support networks would be better than none.

- **Keyworkers**

Households who are providing essential medical, social care, educational and logistical services would face very difficult decisions if any of the options were to be introduced. They would need to balance the social network and care needs of their families with the risk that connecting with other households might pose to others. Early evidence from New Zealand suggests that such households actively seek not to connect with others in order to not potentially spread the Covid-19 virus.[50] In addition they might be stigmatized by other households, who might not want to connect with them. This is a disadvantage that it is difficult to prevent. It requires further research, and policy, around how stigmas to do with Covid-19 might intensify vulnerability, create new exclusions and how this stigma could be ameliorated. In addition **we very strongly advise** that before bubbling is introduced the risks for keyworker networks need to be separately modelled and specific policy developed to protect them. In the shorter term, as a priority the government and employers need to provide the best protection possible for keyworkers, ensuring that it is enforced across all sectors with a robust legal regime. This should be introduced as a priority **before** any bubbling occurs.

Household Structural Types Interim Conclusion:

We recommend, if given a choice, we should adopt the options that most benefit vulnerable households who are already disadvantaged by the economic, social and epidemiological effects of Covid-19. A survey of structural types suggests that **first** workplace protection needs to be in place and enforced for keyworkers and other people who have returned to work, and in public environments such as transport, before any extensive household connection is created. Then since all of the options have advantages and disadvantages for various social groups there could be a gradual loosening staged in time as a sequence (assuming current social distancing measures in place).

> **Phase 1** = Option 1, adding lone individuals to single person households or larger households
>
> **(**signalling bubbles are primarily for mutual help and drawing lone households into networks)
>
> **If no adverse epidemiological effects occur**
>
> **Phase 2** = Option 2, household adoption of any size
>
> **If no adverse epidemiological effects occur**
>
> **Phase 3** = Option 3 allowing households who had added lone members to also add a larger size household

On balance, the limit of bubble groups to **ten participants** seems to **actively disadvantage** most of the household types potentially causing internal conflict in decision making, and creating the risk of exclusion. It also negatively affects more socioeconomically vulnerable households that rely on extensive networks of kin and care. However, if it or an even smaller number of participants (say 2 or 4) are **epidemiologically** necessary and are confirmed by modelling to be necessary such limits should be introduced. In addition no steps should be taken without considering the particular challenges faced by key worker and socio-economically disadvantaged households and their current higher rate of mortality from COVID-19. Crucially too bubbles may not be the best or most socially just solution to the problem of pooled childcare on which a very great many of UK households rely. Instead to solve the problem of childcare the government should implement public, subsidised or no cost childcare facilities in the most disadvantaged neighbourhoods and for keyworkers. The current government policy of permitting nannies to go into upper middle class households is highly discriminatory against socio-economically disadvantaged groups. These environments would be safer as public health regimes could be implemented and they would support people most disadvantaged by the COVID-19 pandemic.

VII. Assessing the Options According to Different Household Community Types

We will now explore the different well-being effects and potential risks of the four options for different communities in the UK. It is important to note that many of the groups listed below are likely to be key workers in medical, care and logistics work, so potentially disproportionately affected by Covid-19 illness and mortality. In addition, several of these groups involve transnational networks of care that have been curtailed by travel restrictions. Therefore, their support, kin and care networks have been severed in culturally, economically and socially significant ways.

- **Hindu**

Families in the Hindu community are joint in concept - though they do not necessarily live together, lifestyle and household organisation centres around the idea of a joint family as opposed to a nuclear one.[51] Care responsibilities are shared within the households in all generations, although women take on most of the care work. Grandparents are actively involved in childcare, often taking a few days a week to ease the financial burden of nursery costs. The elderly tend to be cared for at home rather than nursing homes, unless seriously ill. Networks of care are transnational to places such as India, East Africa and Malaysia. All options would help these families, although 2 and 3 with no restrictions on the numbers of people in a bubble would be of most help.

- **Muslim**

There is a great diversity of Muslim families, but generally they are also joint within neighbourhoods, usually quite large in size, multigenerational and networked into transnational practices of care.[52] Care responsibilities are pooled within households and across them with all generations providing help. Young unmarried adults may not share their parent's religious, cultural and social practices and friendship groups outside the household are very important.[53] These are particularly important for young women within the broad community.[54] All options would help these families, although once again 2 and 3 with no restrictions on the numbers of people in a bubble would be of greatest help.

- **Sikh**

One of the key considerations here is also the vernacular concept of a 'household' as a network of members not necessarily resident with each other. Although many families might not physically live together, they live close by or visit each other on a regular basis and so would consider that as their household. Grandparents also are a significant part of childcare. Households are usually multigenerational with ties stretching to other groups defined by whether they are related to an in-marrying wife or to a husband.[55] All options would help these families, although 2 and 3 with no restrictions on numbers in a bubble would be of particular help.

- **Orthodox Jewish**

Hasidic communities live in concentrated neigbourhoods with dense networks of interconnection. [56] Options 2 and 3 would most help these families with no restriction on numbers.

- **Christian**

Christian households are too diverse to characterise as a single group.

- **Non-religious**

There are particular issues faced by non-religious people, particularly young adults and children who live in religious households, who may not share the values of those households. Options 2 and 3 with no restrictions on numbers would best support their mental well-being, particularly if they are apostates.[57]

- **BME/African-Caribbean Communities**

Households tend to be female-headed. They involve kinwork and carework that is collaborative and fluid cutting across kinship links of descent and alliance to include as essential a wide range of people.[58] Households are multigenerational and are conceptually assumed to encompass neighbours and friends as close, essential participants.[59] Within and across households, the labour of care is shared by different people at different times according to need and availability. Social distancing has

made it very hard to perform care duties for children, the elderly and the vulnerable both within and outside specific households along with the maintenance of transnational networks.[60] Options 2 and 3 with no limits on numbers would enable the kind of fluid arrangements that provide support networks.

- **Post-Industrial Working Class**

Similar to the previous group households are female-headed, crossing several physical spaces of residence and are cooperative and shifting.[61] There is a process of inclusion that enfolds a range of adopted members, as well as people related by marriage and descent. Options 2 and 3 with no limits on numbers would be best here too.

- **LGBTQ+**

The household types, kinship and care networks of LGBTQ groups are very diverse and could include variants of all the structural and community networks described so far.[62] Therefore all options could potentially be supportive. Although teenagers and young adults living with their families who do not accept their identity would be most supported by option 3 with no limit on numbers.

Household Community Types: Interim Conclusion

Across all community types options 2 and 3 with no limits on numbers would most support networks of care and the ability of various members of these households to rebuild. Both the socio-cultural practice of being a household, and the vital networks that sustain communities within these groups have been particularly ruptured by social distancing measures and they have been disproportionately affected by Covid-19. So recovery and renewal among these groups needs to include an expansion of social networks. But this should be carried out very gradually and in the case of BAME communities only after modelling and policy development specifically for these groups in which death rates and transmission of COVID-19 due to occupation and other factors may be high. In addition some of the childcare needs of these groups such as the post-industrial working class will be best met by investment in local, subsidised or free public nursery provision .

On balance, a survey of **household community types** combined with the discussion of **household structural types above** would suggest that the greatest benefit to all groups would come from the following sequencing in time of bubble expansion--with if not epidemiologically necessary--no restriction on the numbers of people in a bubble to 10. Although options 2 and 3 would most benefit household community types, the risks of these policies are too great at this time.

Phase 1 = Option 1

Phase 2 = Option 2

Phase 3 = Option 3

VIII. How Would Linking Households Affect Compliance to Social Distancing and Recovery from it?

Research on the effects of being part of a psychological group suggest there are clear challenges that arise from linking households. First, it is well established that people can shift from seeing themselves as ‘me’ to seeing themselves as ‘us’ on the basis of even trivial indicators,[63] and the ‘bubble’ concept is a clear invitation to categorize oneself as part of a group in all contexts where the

bubble is salient. Second, one reliable effect of shared psychological group memberships is that it leads people to not only be more comfortable with proximity[64] but to seek it out[65] and even to feel safer[66] in situations of proximity with ingroup members. Therefore, without mitigations, a clear prediction is that within each bubble there will be greater proximity behaviours but between bubbles there will be attempts to maintain distance. If there is a requirement to maintain distance within bubbles, this will need to be facilitated through strong identity-related norms (e.g., 'we keep the 2m rule because we care about others'). These could draw on kinship and mutuality concepts that are intrinsic to the norms of family and friendship connection.[67] These are crucially socio-cultural concepts that are focussed on enforcing a mutuality of care, and therefore, if connected to distancing and hygiene regulations could be very powerful. From the early data from New Zealand this does appear to have worked where messaging has focussed on 'loving your bubble' and using them to reach out to people who matter to you and are potentially vulnerable.[68] In the Ebola epidemic these kin and community connections were crucial to care and recovery.[69] This emphasis would be more likely to also ensure that bubbles don't burst and reform, risking the widening of circles, as the original bubble would be built on core values.

The decision over which bubble to join (if any) may have the potential to create friction and fragmentation in community, family and friendship circles. For example, what if:

- An individual or a household wishes to bubble with another individual or household but cannot proceed because the other individual/household formed another bubble?
- Individuals or households feel forced to bubble with family members who cannot offer the same support (e.g. childcare, social) as non-family groups?
- Bubbling with older family groups removes opportunities for children to play/develop social skills with their peer groups?
- Bubbles have significant variations in power and access to resources?
- Bubble membership is not completely voluntary?
- The exit costs are too high?
- A family with older/younger children can only bubble with the friends of one of the children?
- People do not want to bubble with families containing younger children or keyworkers because of the risk of symptoms shutting both bubbles down?
- Individuals do not have access to bubbles or do not desire bubbles?

These negotiations are always part of the ambivalences of kinship and friendship networks which rarely live up to ideal social concepts (although their norms are informed by them), but will become intensified in the situation of options 1 and 2, although less so in option 3. They could be ameliorated by guidance in the media about the dilemmas of bubbling, how to negotiate and reach out to people, and an emphasis on prioritising particular types of care—such as for lone people and children/grandparents.

Complexity may become an issue in some bubble configurations, although is unlikely in the options 1 or 2. More people in a household or more households in a bubble risks more chance of bubbles accidentally overlapping. It may also be that the more complicated the rules for bubbling the more chance of people slipping up in following the rules may occur. Although in the New Zealand case there may have been a productive ambiguity in the introduction of option 1 with conflicting

instructions (to join with 2 people or partners who care for others) as it led to people assuming minimum forms of connection were the best, self-policing each other, while also allowing for a minimum degree of flexibility when really needed for childcare and other kinwork.[70]

Difficulties of enforcement are also present. The government and police would not be involved in enforcing the practices of bubbles. However, they are not involved either in enforcing general hygiene rules and other kinds of safe practices such as safe sex. Different people will always have different risk perceptions of susceptibility to illness, but these could be overcome by clear messaging about the risks of over-extending your bubble. This issue could also be better dealt with in a situation where there are effective contact tracing practices, as people will feel that their practices will become visible to others through these mechanisms. In places where option 1 has been introduced so far there is little sign of lack of compliance as a result of widespread fear of Covid-19. Therefore, there would need to be alongside the introduction of any of the options a very strong hygiene and disease prevention communications strategy, along with the infrastructures of contact tracing.

In conclusion it is clear that bubble options need to be introduced at a particular phase of the Covid 19 epidemological curve and in tandem with other measures. They cannot be thought of as a single policy, but must be sequenced in relation to other government interventions, epidemiological spread and R rates. They need to be supported by clear public hygiene and other forms of messaging.

IX. What Other Measures Might Interact with Bubble Policies?

- **Potential Negative Policy Impact on Bubble Polices**

Lack of safe working environments could increase the negative epidemiological effects of, conflicts and stigma around bubble formation, particularly currently for key workers and their families.

Return to schools and work. This might result in reticence to form a bubble with particular households with children and workers in environments perceived as ‘risky’ for contagion.

- **Potential Positive Supports for Bubble Policies**

Firm legally enforced provision of safe working environments.

Effective contact tracing technologies and practices will make it more likely that people will police their own bubbles. In addition a wide availability of testing will make it easier to form bubble as people would not to have to worry about lengthy quarantining of their co-bubble if they admit to being symptomatic.

The availability of congregating in small groups outside. There is evidence that some lonely and isolated people may find it difficult to identify and join groups, and more casual social interactions may be especially important to them.[71] As described at the start of this review, social support provides essential benefits for mental health and therefore in order to ensure that long term social distancing can be maintained it is vital to ensure that members of the population who cannot or do not want to bubble are offered alternative means of accessing some emotional social support. A safe way to do this would be to permit meetings of small numbers of people in open spaces, provided that social distancing and other protective behaviour is maintained. This policy would increase access to social support and perceived equity for those unable to bubble or not benefiting from their bubble. This policy also has the advantage that it is visible and can be monitored and if necessary policed.

X. Household Connection and Models for Further Research

We would be interested in exploring further options for collaborations with SPI-M in developing models that specify more closely the epidemiological effects of networks between Keyworker, Socioeconomically Disadvantaged and BAME households. Or in models that try to factor in the household structures of the UK population in other ways. Or others that look at potential compliance rates.

We also think there could be some modelling of alternative kinds of household connection such as the same people meeting every two weeks with each other, so staggering interactions in time. Or of forming two household connections between households connected in other ways such as having children in the same primary school classes.

Some aspects of social support and recovery from COVID may also be best served by policies that go beyond 'bubbles.' In particular to prevent social unfairness and growing inequality the provision of subsidised or free, public funded local childcare centres (similar to Sure Start programmes) in deprived regions and for key workers should be considered as a priority.

XI. Conclusion: Which Bubble Type Would Have the Most Benefit for UK Households (especially vulnerable ones)?

From our analysis it is likely that under the current conditions of social distancing, the following sequencing of measures with other policy support would create the most beneficial outcome for UK Households:

> **Phase 1** = Option 1 Lone Individuals joining with Lone Individuals or Any Size Household (plus continuing of links between ex-partners for childcare)
>
> (Preceded by safe working environments for key workers, effective contact tracing technology & extensive testing. Accompanied by guidance on how to negotiate bubbles, mutuality messaging, strong public health communications about hygiene and risk, and small groups in outside spaces)
>
> **If no epidemiological adverse effects then move to:**
>
> **Phase 2** = Option 2, household adoption of any size (with no size limit to 10 if not epidemiologically risky)
>
> (Accompanied by continuing messaging as above)
>
> **If no epidemiological adverse effects then move to:**
>
> **Phase 3** = Option 3 (if no epidemiological issues arise), allowing households who had added lone members to also add a larger size household

The advantage of this gradual phasing is also that it could be stepped back to zero or partially stepped back if rates of Covid-19 increase in a region and/or country-wide in a second wave. We advise **caution** at present even in introducing even phase 1. We need further modelling and policy development for the specific situation of key workers, socio-economically disadvantaged groups and BAME communities. Alongside this we would need to develop a careful communications and public health hygiene campaign to specifically support any of these changes to social distancing.

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