ANNEX B: Four harms assessment of potential options to suppress the virus back down to very low levels.

Introduction

The purpose of this annex is to bring together scores and commentary to contribute to decision making about a package of measures to be implemented to reduce transmission, R and prevalence.

The paper looks at an initial package of options **Package A** aimed at reducing R to 0.9. It then looks at further option, **Package B** which could bring about further reduction in R, potentially to around 0.7. The final part of the paper offers some initial thoughts on a circuit breaker and geographical differentiation, both elements will need to be further developed.

The context within which this assessment is being undertaken is one where the current value of **R is 1.1 to 1.5** and rising and cases are rising. It is also the government's ambition to keep schools open.

At the point in mid-July (15th) when impacts from moving to **phase two** of the route map were reflected in modelling, R was 0.5 – 0.9, by the 9th of September it was 1.1 to 1.5. This implies that a range of options close to taking us back to phase two may be needed as well as allowing for the impact of opening schools. However there are some mitigations in place now that were not present earlier that would reduce transmission and hence the R number. For example the use of face coverings, the use of screens in shops and improved hand hygiene, the Test & Protect system and app, which may alleviate the restrictions required to deliver the required reduction in the R number.

Summary conclusion

Despite the wealth of commentary on the options in this paper the overall message is that we need to reduce transmission and the way to reduce transmission is for people to limit their interactions as much as possible.

We need to do this in a way that is mindful of wider public health, societal and economic harms. We also need to keep equality considerations in mind and to protect the most vulnerable.

The best approach will be one that results in very high and sustained levels of compliance across the population with carefully designed opportunities for interaction in the least harmful environments. We may need to consider special arrangements to protect the interests of all members of the public

Package A as set out in this paper is likely borderline in terms of being able to deliver the reduction in R needed (to 0.9). A number of additional options may be necessary to deliver R =0.7 but at significant wider harm options.

This consists of a package of measures which include interventions to change behaviours and interventions to restrict activities.

- Strengthen FACTS and other public health messaging including work from home, limit unnecessary domestic and foreign travel
- Decisive action by all relevant agencies on compliance inc incentives and enforcement. That includes enforcing 1m plus distancing in remaining hospitality with enhanced support from EHOs and police.

- Reduce indoor interaction to within extended household only (optional exemption for under 12s)
- Outdoor interaction still 6/2 but only 2 households a day
- All household members of known contacts to self-isolate
- 10pm curfew on all 'wet pubs' OR 'early lock in' options Or full shut down
- Restrict car sharing to essential journeys

Interventions to change behaviour

i. Strengthen FACTS and other public health messaging including work from home, limit unnecessary domestic and foreign travel
ii. Decisive action by all relevant agencies on compliance inc incentives and enforcement. That includes enforcing 1m plus distancing in remaining hospitality with enhanced support from EHOs and police.

These two options are about changing behaviours across society amongst the public and the business community rather than introducing further restrictions.

Measures i. is aimed at the general public. Increases in compliance and more cautious behaviour resulting in reduced societal and family interaction have the potential to reduce transmission risk significantly thus impacting on R and prevalence rates.

This may not be easily achievable. Our latest polling data shows that

- Almost a quarter agree that they are finding it hard to always follow the guidelines
- 20% agree they have been adapting the guidance as they don't think everything is necessary
- 13% disagree that they are happy to do what's needed – in relation to the new restrictions

For that reason we should be cautious of assuming that there will be both an immediate and sustained impact on transmission from any intervention aimed at increasing general public compliance.

Measure i. splits into three categories of interventions, public health messages, e.g. FACTS, working from home and travel.

Concerning FACTS, polling data shows that people are struggling most with maintaining a 2m distance. We have not asked about self-isolation but we believe that this is not being consistently followed. Evidence from SAGE indicates that:

Around 20% of those reporting symptoms of COVID-19 in England report fully self-isolating by staying at home . Rates of self-isolation from other members of a household is likely to be lower due to physical and other practical constraints . These rates may be even lower in those who are asymptomatic who receive a test positive result on mass testing given likely lower perceived risk of being infected[1].

This suggests that there is scope to reduce transmission through better compliance with 2m and with self-isolation. Whether this can be done by influencing behaviour alone or whether it requires other environmental/physical changes is unclear. Arguably we may need both.

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1 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/916896/tfms-mass-testing-behavioural-considerations-s0724-200827.pdf

While clear messaging of the importance of protecting the NHS may help with compliance, we also know that some people still agree or tend to agree that they would avoid health services (over a quarter) for other immediate medical concerns, so messaging about accessing health service for other medical concerns needs to be clear.

Working from home is still the norm for 35% of those still in employment[2]. Whether this can be increased will partially depend on what activities and businesses are allowed to remain open. Many service industries, manufacturing industries and the hospitality industry have to have their workers in situ.

An alternative business survey shows that in early September[3]

- 27% of people were working remotely
- 55% of people back at their normal work
- 15% still on furlough

The percentage working from home had hardly changed from June when 28% were working from home and 35% were at their normal work. The change in people at work have come about from people coming off furlough.

Travel restrictions have very mixed impacts. Keeping people close to home may increase local transmission but reduce transmission into other lower prevalence regions. This may also facilitate local lockdowns and enable local outbreaks to be quickly suppressed. While forsaking foreign holidays will, in the main, have a low health and societal impact, any restrictions on travelling to visit family and friends will have a negative impact on many people's mental wellbeing and (for some) will exacerbate isolation and loneliness.

From a public health and societal perspective any interventions that influence individuals to increase compliance with existing restrictions rather than introducing further restrictions could, in general be positive. It depends on how such interventions are implemented and the extent to which the public perceive them to be 'fair'.

Measure ii. is mainly aimed at the business community. Ensuring that the 1m rule in hospitality and proper sectoral mitigations are effectively put in place, monitored and enforced will have an impact on transmission reducing the likelihood of people spending time in close contact and/or in unsuitable premises. This will have a positive impact on transmission rates by reducing the level of close personal contact occurring.

Employees will be protected enabling them to continue to work in a safer environment and supporting the functioning of the economy. That should be positive for employees' mental wellbeing too. Given that outbreaks have been associated with specific employment settings, for example, food and meat processing plants, greater compliance will reduce the risk for employees, their families and the surrounding community. It will bring about reassurance and wellbeing gains for those working in hospitality and other higher risk working environments. This should have a positive impact in particular for those in lower socio economic groups and from the BAME community regarding transmission risks, income and poverty and isolation.

Supporting some level of social life through hospitality, important for those who live alone or away from family and need some degree of personal interaction, for their mental wellbeing, will have a positive societal impact if customers feel safe. Outbreaks have been traced to

[2] Yougov poll 15-16 Sept

[3] ONS Business Impact of Coronavirus Survey

indoor hospitality, indicating that better enforcement is needed and, if compliance can be achieved should have an impact on transmission.

Any intervention that brings about more compliance with general distancing and protective rules will reduce the risk attached to any other activity proposed.

Interventions to restrict activity

- Reduce indoor interaction to within extended household only (possible <12 exemption) and consider an extended bubble
- Outdoor interaction still 6/2 but only 2 households a day
- All household members of known contacts to self-isolate
- 10pm curfew on all 'wet pubs' OR 'early lock in' options.
- Restrict non-essential car sharing.

Restrictions on **household meetings indoors** will have a significant impact on reducing transmission, R and prevalence. Current outbreaks have highlighted the key role played by household meetings in private houses. Polling data has shown that the public find it hard to understand and apply household restrictions such as the numbers meeting and the need for distancing. For example[4]:

- In the last week, 19% met up with more than 6 people or more than 2 households in their home / someone else's home
- 14% met up with more than 6 people or more than 2 households indoors in a bar, pub, café or restaurant
- 10% met up with more than 6 people or more than 2 households outdoors in a bar, pub, café or restaurant
- 16% met up with more than 6 people or more than 2 households outdoors (e.g. garden or park)
- Overall, 30% did not comply with the new restrictions on meeting in the last week

From the perceptive of simplicity this new message may increase compliance and hence reduce transmission.

From a public health and societal impact further restriction on households meetings will have a negative impact on general wellbeing, isolation and loneliness and be particularly difficult for those living alone. Scotland has a high rate of households that live alone. Over one third of Scottish Households and over 900,000 people live alone[5]. If opportunities for meeting in public venues are also restricted and we are moving into colder weather (limiting opportunities for outdoor activity) we are compelling a large number of people to live a very lonely existence. We already know that many people have reported a deterioration in their mental health since the start of the pandemic.

Simple, consistent rules will achieve the best result if we wish to increase compliance and reduce virus transmission. Research suggests that some people have some difficulty identifying a household and may interpret close friends as being part of their household. Given the many varieties of households that exist in Scotland we need to ensure we do not simply create rules for a traditional parent and child household.

[4] Yougov poll 15-16 Sept

[5] https://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/households/household-estimates/2019

The **optional exemption for children under 12** may be appropriate from a transmission risk and a child wellbeing perspective. However children under 12 generally are accompanied by adults which may cause some confusion and transmission risk.

Introducing an **extended bubble** is another option for indoors mixing. Currently a single adult with or without children under 18 can form an extended household with another family. A couple who do not live together can also form an extended household. An option would be to simply allow any two families to form an extended household or bubble. They could meet indoors without physical distancing. The societal and wellbeing advantages are clear but it would also lead to more hard choices (which set of grandparents, whose friends) and more importantly introduce more adults who will be mixing with each other without distancing and then mixing with other adults in the workplace or during social or physical activities. From the Harm 1 perspective this is not an action to take if trying to reduce transmission through limiting interaction.

Restricting **mixing outdoors** will have many of the same negative public health and societal effects as indoors. However, as outdoors meetings will reduce as the weather gets colder, the overall public health and societal impacts are lower. From a transmission risk perspective meeting outdoors is generally considered low risk if distancing is maintained so it may be an unnecessary restriction if compliance with distancing can be increased. An interesting observation in France is that people in the street were taking off their face masks to kiss on greeting each other. Anecdotally this sort of behaviour is being seen in Scotland with people hugging and kissing when meeting each other. It seems that individuals find it hard to perceive a friend or family member as a source of infection.

Both indoor and outdoor options have an equalities aspect as we are reducing the opportunities for people to meet in a way that is cost free. Banning meetings in your home or limiting them in the outdoors limits the opportunities for people who cannot afford to pay for hospitality.

Requiring all household members of known contacts to **self-isolate** should have a very positive impact on reducing spread. Further, given that this will be among those who don't live alone and is for a relatively short and defined period this should have a relatively low impact on health. However evidence seems to indicate that levels of self-isolation are low already, 20% according to SAGE so there is no guarantee that this would be complied with.

This could be a very difficult ask for any family. Family income and job security can be affected, children will miss school, difficulties may be experienced accessing groceries, medicines etc. Depending on the make-up of the family, if it contains key workers, for example, a family could be made isolate on a number of occasions. This will increase absences from workplace for those not able to work from home and causes increased uncertainty for individuals and business.

Current guidance that requires individual family members to self-isolate from others in the household will be extremely difficult for many families who live in smaller and more crowded accommodation so it may reduce the worry and stress within the family if all are isolating together.

Introducing **a curfew on "wet houses"** (which would need to be defined) is an option that has been introduced by many other countries in various ways. It appears to have a positive impact on transmission although it can be difficult to attribute given that many countries introduced this sort of restriction along with other interventions.

From a public health and societal perspective it should have a relatively low negative impact as it is a modest restriction on hours of opening. Problems will arise if the public choose to

respond by moving socialisation into private houses either because of, or after, curfew. Compliance with distancing will be lower and more difficult to enforce in private houses. Examples from outbreaks and police breaking up groups suggest that this is a real possibility.

While this restriction will reduce hours of opening and potentially have an economic impact it should be noted that many pubs and restaurants are already keeping early closing hours so both the transmission and economic impacts may be more limited than expected.

If a **'lock in'** were to be introduced, it would restrict new customers entering the premises after a certain time but would increase the likelihood that existing customers remain for longer, drink more and are more likely not to distance. Currently many pubs and restaurants are limiting the amount of time a table can be occupied by one group, this may be a better option to extend.

Closing all indoor hospitality will have a range of impacts. It is rather a blunt tool as indoor hospitality covers quite a range of establishments with different clientele and different abilities to distance and conform with other mitigations. It should reduce transmission and there is evidence from outbreaks both in Scotland and elsewhere that indoor hospitality features in many outbreaks. However it will not have the same impact as earlier in the pandemic where establishments were open with no mitigations.

Hospitality reopening in phase three of the route map undoubtedly had an impact on R. While difficult to quantify exactly**, it is likely to have raised R above 1 on a national basis.** The general explanation for this is that physical distancing is not maintained in an environment where people are drinking. This may be due to the behaviour of individuals, lack of enforcement by the establishment or, most likely, a mix of both.

From a societal impact this will have a more negative impact coming into the winter as it takes away key locations for people to meet. Coupled with bans on meeting in private houses it will leave many people very isolated. Moreover, without strong compliance with the no household visiting restriction there is a risk that drinking in a controlled environment (or one capable of being controlled) will be displaced with unauthorised and uncontrolled home drinking.

Depending on the length of closure (beyond 3 weeks) it will lead to immediate closure of many hospitality businesses (with closure for winter season), a rise in unemployment as with furlough ending and employer contribution rising this won't be a viable option. Overall, this would have a significant negative economic impact for this sector. Hospitality is a diverse sector and is also linked directly to tourism/visitor economy. Within hospitality, many indoor functions have just re-opened whilst the main parts of the sector (restaurants, bars, café) have been operating but to different levels of capacity and profitability. (Not all have re-opened since the initial lockdown). It is also important to distinguish hospitality in urban and rural areas both in terms of risk and economic impact given their importance in these communities.

In theory excluding residential hospitality such as hotels would enable some tourism to take place but combined with the general closure of hospitality and potential travel limits this would be a very unattractive option and will still have a massive economic impact.

The impact of a complete closure is significant for the economy, the wider supply chain and related visitor economy. For example, at 6th September it is estimated that 15 per cent of workers were still on furlough across Scotland. This was over one third for those employed in Accommodation and Food services which link directly to hospitality related activity. We know from the earlier lockdown, the closure of hospitality hit the viability of many food

suppliers in Scotland despite the increase in demand from the retail sector. Finally the wider knock-on effects to other support services, the impact on footfall and confidence will be significant.

Car sharing has been identified as a potential source of transmission related to workplaces, particularly those involving lower paid workers. Restricting car sharing may reduce transmission risk and prevalence but it may impact disproportionately on poorer households both for accessing work and for social reasons. Those without access to their own vehicle or someone in their household to drive could become more lonely and isolated, affecting mental wellbeing and could lose employment affecting income. We would need to consider whether any restriction was in guidance or in regulation. It would presumably be challenging to enforce.

A **5 mile travel restriction (or less severe 30 mile restriction)** on all but essential travel will impact tourism and hospitality sector significantly. A five mile restriction will essentially close the visitor economy and have a significant impacts on bookings for the upcoming mid-term holidays which typically marks the end of the main summer tourism season. This will have a significant negative impact on that sector of the economy. A less severe restriction (30 mile) will have a lesser (but still significant) impact for businesses within a catchment area of many urban conurbations It is however likely to have a more significant impact on rural areas of Scotland, which are also more reliant on the visitor economy.

From a societal basis it could have a significant impact on wellbeing. For people whose family and social groups are not all close by, this may increase isolation. Coupled with darker days and poorer weather this may have quite a negative impact on mental health. If it is perceived as lasting a long time people will start to become very anxious about Christmas so clear messaging around this will be necessary

As noted by Edmunds, estimating the transmission risk from travel within the country needs an understanding of travel patterns and existing levels of seeding to ascertain if it will prevent seeding from one region to another. This is most relevant when there are very differential levels between different parts of the country and it is possible to enforce a travel ban. Higher prevalence areas can thus be 'quarantined' and local options considered to reduce transmission within a defined area. This is the approach used for the Aberdeen outbreak. Island borders are naturally easier to control and at least one small island, Eigg has requested visitors not to come to prevent importation. This approach becomes less relevant if prevalence rates across the country are similar and if there is strong compliance with mitigations throughout.

Work by NR suggest that foreign travel is not hugely significant, however this view is contested. It may hold between countries with similar prevalence, however with differential incidence the situation may be different.

Both positions are relevant for considering travel restrictions as a means of transmission control both within Scotland and to Scotland from higher prevalence areas of England.

A further consideration is movement around holidays, half-terms, HE/FE term ends and Christmas in particular. When there are significant movement around the country it raises the potential for transmission and reduces the effectiveness of tracking and testing..

Overall impact of Package A

Assessing the impact of **Package A** across all four harms will highlight some difficult judgements that need to be made. Drawing on the SAGE paper by John Edmunds and our own assessments we can look at the potential value of the package.

A reduction from stopping all household mixing would give a reduction in R of 0.1-0.2 according to Edmunds. Edmunds also suggest that a reduction of 0.1- 0.2 would be achieved by closing all bars and restaurants, our most severe proposal. While work from home can have a more significant impact of 0.2 to 0.4 according to Edmunds, this arises where there is still scope to move many workers home. Evidence suggests this is not the case in Scotland where working from home remains the default position. Finally Edmunds notes that travel within the country has limited impact if the virus is widespread but travel between the different parts of the UK could play more of a role, he does not quantify.

On that basis the estimated reduction in R from **Package 1 would be limited and may struggle to reach a 0.5 reduction without very strong compliance, in which case further measures might be needed to give more confidence of reaching R = 0.9.**

Public Health and social impacts overlap in looking at this package of measures so we are commenting on them together. Overall restrictions on households meeting, travel and socialising in hospitality settings come together to create fewer opportunities for people living alone to interact particularly at winter draws in and outdoor activities are less attractive. There are some positive benefits in the package for lower paid workers if business compliance is improved but also some negative impacts arising from household isolation and a ban on car sharing, both of which will impact most on poorer households.

Package B – Reduce R from 1.4 to 0.7

Package B consists of all the options in Package A above plus a range of other options to arrive at a R of 0.7. Package A is estimated to give an reduction in R of at most 0.5 so at least an additional 0.2 would be needed to achieve R = 0.7.

The options considered below can be divided into four categories.

Entertainment

- Close entertainment venues: bingo, cinema, snooker, casinos, amusement arcades, funfairs.
- No visitor attractions (consistent with 5 mile rule etc).
- No outdoor live events (indoor & high risk outdoor already out)
- No spectators in stadia (note: only piloting anyway)

Physical activity

- No indoor (group) physical activity (age options)
- No unregulated children's activities
- No outdoor contact sports (any age or 12+) except professional

Personal activities/services

- Avoid using public transport where possible message
- No personal retail services (hairdressers, beauticians, driving lessons etc)
- Places of worship for private worship and reflection only.

Health and care

- Restrictions on care home and hospital visiting.

One approach would be to look at the list above and consider what it is essential to keep open and why, using a 4 harms assessment approach, and assume all other options can be implemented.

Looking in more detail at those items in the entertainment category, **visitor attractions and outdoor live events** will be restricted by any travel ban and any restriction on using public transport. Well managed outdoors visitor attractions are likely to be low risk. **Stadia** are still in the piloting stage so have no current impact. That leaves **close entertainment venues** to consider. The transmission risk from each of these varies depending on the nature of the venue, seated or moving around, the demographic of the clientele - older people may be more at risk but more likely to comply with restrictions, for example compare bingo halls to snooker halls and the overall footfall in such venues. From the list above none are mass entertainment with the exception potentially of **cinemas**. Overall however the quantifiable impact of each individual item on R is likely to be small. From the context of Harm 1 **most or all of the above will need to be implemented if we are to get close to reducing R to 0.7**. A precise quantification is extremely difficult but looking back across the route map journey we would be looking to move back to something resembling Phase 2 which kept R below 1.

From a public health and societal impact the options in the entertainment category have low overall positive benefits compared to other categories listed above. **Cinema and stadia** are regarded as the most beneficial in terms of popularity and promoting wellbeing amongst the public

They will all have some minor economic impact, apart from **live events and cinema** which are deemed to have a higher economic value.

Items in the **physical activity category** are higher risk for adults and will require strict mitigations and high levels of compliance. Transmission risk is deemed high indoors and the environment and ventilation will vary very widely. That said, a range of mitigation is possible and environment can be controlled with details taken to enable track and trace.

Indoor activities for adults such as exercise classes and outdoor contact sports are both high risk activities and substantial numbers could be impacted with potential for sizeable outbreak. On that basis these facilities along with gyms need careful monitoring and enforcement of mitigations. We have some evidence of outbreaks featuring gyms and sports courts. We also have examples of outbreaks amongst adults playing contact sports leading to come doubt about the level of compliance that can be achieved. These risks must lead to a **Harm 1 moderate to high risk** assessment and the possibility of achieving reductions in R over time although this is not easily quantifiable.

From a public health perspective physical activity is essential. Coming into the winter allowing indoor provision may encourage wider or sustained participation.

Clear and significant physical and mental health benefits arise from participation in sports and activities from a wide range of age groups There is a population health impact with physical and mental wellbeing benefits from return to physical activity and as an opportunity for social interaction. Different activities for different ages may have different risk scores Sport and gyms tends to be engaged with by younger people who are at lower risk. .. Children's classes (gymnastics, dance) are lower risk than adult squash courts or elderly people's dance events. There will be an important health benefit to the physical and mental health of people of all ages who take part regularly in swimming. This affects large numbers of people of all ages.

There will be a very high negative impact on physical and mental health and wellbeing of large numbers of people who engage in sports and activities if restrictions are re-introduced. The impact on those playing outdoor activities may be less severe e, particularly in the winter.

For a societal view indoor closing indoor provision will have a moderate impact overall. This will differ across different groups in society depending on their use of such facilities. Football, snooker, walking and swimming are the most popular activities amongst those from lower socio-economic groups and swimming and exercise and dance classes are most popular amongst women. In general across all indoor sporting activities those from least deprived areas are more likely to participate[6].

The economic impact of such activities is regarded as moderate.

Children's unregulated activities play an important role in the lives of many children. They can be sources of fun, social interaction, physical activity, supervised spaces and vital provision to enable families to work while children are cared for. For vulnerable children these sorts of activities go beyond simply being fun, they are a vital part of their wellbeing, development and even safety. Evidence from the OECD points out that the ramifications of the COVID-19 pandemic are more severe for certain groups of vulnerable children, with potential for some far-reaching effects.

The outbreak challenges the resilience of vulnerable children as it increases in children's environments the number of already existing risks (e.g. reduced access to healthy food, high family stress, and absence of contact with supportive adults) and reduces the number of protective factors (e.g. school placements, access to play spaces and extra-circular activities, and strong child protection systems)[7]

The COVID-19 Advisory sub-group on Education and Children's Issues commented on the need for children to interact:

the psychological literature unequivocally shows that children rely on social interaction with their peers to meet their broad developmental needs including learning, well-being and positive mental health outcomes. There are particular impacts for children with additional support needs, for whom opportunities to interact regularly with their peers are especially important to facilitate social skills development and personal wellbeing.

Activities that have some direct provision or wellbeing impact on more vulnerable children should be prioritised. For vulnerable children these activities score highly in societal benefits with a moderate benefit score for other children. From a public health perspective there is a very high negative impact on the physical and mental health and wellbeing and loss of interactions and engagement for large numbers of children and families.

From a Harm 1 perspective the wide range of activity, indoor and outdoor, booked and turn up, different age groups etc contained under the heading of unregulated children's activities make it difficult to assess the impact on R. Activities involving younger children are unlikely to have an impact as long as the adults involved practice distancing. Those involving older children will be higher risk and could have some impact as indicated by outbreaks occurring in secondary schools amongst pupils interacting outwith school.

In general options that reduce the possibility for **children to interact and play** are also considered to be harmful for children's wellbeing and development. The extent to which this

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[6] *Sports participation in Scotland: tends and future prospects. Nicholas Rowe, Commissioned by the Observatory for Sport in Scotland June 2019*

[7] http://www.oecd.org/coronavirus/policy-responses/combatting-covid-19-s-effect-on-children-2e1f3b2f/

can be ameliorated through activities organised in schools may need to be further investigated.

Overall across this category of activities if the desire is to privilege all children's activities this may need some reduction in options for adults. More granular analysis would be needed to look at the individual activities proposed.

The third category of personal services and activities are a mixed group with differential impacts on the 4 harms.

Avoiding using public transport is likely to be a message that many people are already following. For example figures from Transport Scotland for 7-13 Sept show that

- Concessionary bus journeys down by 50%
- Rail journeys down by 70%
- Ferry journeys down by 35%

Renewed messaging may farther discourage travel but it may be that those currently travelling are required to do so for work. It would also make it difficult for those who do not own a car to travel of work, physical activity or social interaction.

Places of worship for private worship and reflection only moving back from communal acts of worship would make **little difference to transmission or R**. While other countries have experiences outbreaks associated with places of worship this has not been replicated in Scotland and compliance with high standards of mitigating activity have been noted.

The mental health benefits of communal worship are potentially very significant for faith communities. Reducing isolation and loneliness has a positive impact on mental and potentially physical health. Overall this option has a moderate negative impact on public health.

Equalities and human rights considerations are particularly significant when considering this option. Communal worship has particular benefits for members of some faith groups (Sikhs, Muslims and Hindus) and older people. For people of faith it strengthens/re-establishes a sense of community and support. It would have a moderate negative impact on society as a whole but a high negative impact on faith communities.

No personal retail services (hairdressers, beauticians, driving lessons etc) would be a psychological and wellbeing blow for most of the population who queued outside hairdressers and barbers when they reopened. As one to one close contact services they are high risk and there are some examples of such services being named in outbreaks. They encompass such a range of services it is difficult to attribute quantifiable R reductions to each. Hairdressers and barbers will be the most frequented and, in theory, could have a moderate to high positive impact on transmission but there is no evidence of a lack of mitigation or compliance that would justify closing.

From a public health and societal perspective such services play a valuable role in maintaining self-esteem, mental wellbeing and confidence. Their closure would disproportionately affect women who would be expected to go to work while not able to maintain a standard of grooming. Closing such services would have a low to moderate negative impact.

Such personal services are often small businesses run by self-employed owners many of whom are women. It is unlikely that many could survive closure for long although business did quickly when they were previously reopened.

Restrictions on care home and hospital visiting is the final option to consider and the most troubling. Residents in care homes are suffering from a lack of family engagement. While excellent care can compensate to some extent it is not a replacement for the close engagement and involvement of the resident's family in their care. Already this is an issue that is causing great distress even with the limited visiting rights that are in place. Reducing such rights would have a very high negative impact on the mental and physical health of patients, residents and their families. It would also increase societal harms of loneliness and isolation for residents and worry and stress for relatives.

Care homes cannot experience another outbreak, They are very high risk environments with vulnerable residents. Already we can see that cases in care homes in England are going up. As prevalence in the community rises it is more likely to be brought into care homes by staff and visitors. Restricting access to care homes and hospitals will have an impact on controlling the virus, reducing R and probably reducing deaths but at a very high cost.

Overall there is no obvious list of options that could be put together to create **Package B** They all involve difficult decisions but it is likely that without a significant improvement in compliance, self-isolation and excellent tracing and testing activity most, if not all, will be required if we are to **keep R below 1** and keep schools and HE/FE open..

Introducing a circuit break

The idea of a circuit break is to introduce a mini lockdown during school holidays. It could consist of

- **a fixed, standardised 2-week period across Scotland**
- **a 'rolling circuit break' reflecting existing half-term holiday dates across Scotland.**

Modelling the epidemic suggests that the best option is early intervention rather than waiting for October. The purpose of a mini lockdown is to shift the timing of the curve to avoid a winter peak but it does not bring about a lasting downward decline. If all the options describe so far in this paper were adopted that possibly could be achieved by closing schools. The most important other intervention, if not already in place, would be to limit travel to reduce families going abroad and students moving around the country.

Geographical differentiation

The logic behind geographical differentiation is to try an implement the best package of measures for each area depending on its circumstances. A corollary of this approach is the need to limit travel between areas to stop high prevalence areas seeding low prevalence areas. This is an approach that has been adopted by many other countries. It has the advantage of not closing down completely sectors of society or the economy.

There is risk that the country could become divided but polling with residents in the West of Scotland suggests that they understood and accepted the reason for local differentiation.

These last two sections of the paper will be worked on tomorrow.

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