Update on COVID-19 Behavioural Science Data

10 November 2021

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This brief note provides analysis of recent behavioural data, mainly focused on the Social Activity Measure (hereafter SAM) conducted by the ESRI’s Behavioural Research Unit (BRU) for the Department of the Taoiseach and the Amárach Tracking Survey (hereafter ATS) undertaken for the Department of Health.

Note that this is not a peer-reviewed ESRI research output, but a rapid examination of data in response to a specific request. The findings are organised by research question (RQ).

The overall framework for this paper is based on two aspects of current policy. First, while some public health restrictions remain in place, Ireland’s approach to the pandemic in recent months has moved beyond a model that relies primarily on government setting the rules, moving instead towards a model based more on “personal responsibility”. The idea is that members of the public will judge and decide for themselves how much risk to take. This policy approach therefore rests on the public being able to respond to increased levels of infection risk and to assess and adjust their behaviour to the level of risk in different settings. Second, following a highly successful initial vaccination campaign, additional booster vaccinations are being rolled out and vaccination of younger children is being considered.

Given these two current aspects of policy, the specific research questions addressed in this paper are:

RQ1: Has the recent rise in cases prompted a behavioural response from the public?

RQ2: To what extent has the public registered the recent rise in cases?

RQ3: What are the current drivers of behaviour?

RQ4: How accurately do people judge relative risk across settings?

RQ5: Are people likely to take a booster vaccine?

RQ6: Are parents likely to get younger children vaccinated?

At the end of each section is a brief summary answer to the research question posed, based on the evidence covered.

A final section highlights some issues that arise when considering the findings as a whole and discusses some potential policy implications.
RQ1: Has the recent rise in cases prompted a behavioural response from the public?

The daily number of confirmed cases of COVID-19 rose quite sharply at the end of the first week of October and has continued to rise since, albeit with a much more modest increase in hospitalisations than seen with previous waves. Earlier in the pandemic, increasing daily case numbers led to higher levels of worry among the public and to more cautious behaviour. Will we observe the same again?

Figure 1 plots standardised time-series data for the number of daily cases, the mean level of self-reported worry (on a 10-point response scale) and the proportion of individuals stating that they are staying at home rather than going out – one of the few self-reported measures of behaviour available from the beginning of the pandemic. The chart reveals that starting in Spring of this year, there was a marked change in the previously close relationship between the daily case numbers, worry and behaviour. While the level of worry continued to be closely associated with behaviour, the rise in case numbers in the second half of 2021 did not result in higher worry. The obvious reason for this change is the vaccination programme. Only in the last 2-3 weeks has there been any indication that the recent rise in case numbers has caused worry to increase, although there has been no indication yet of an accompanying change in behaviour.

Fig 1. Standardised time-series data for daily case numbers, the mean level of overall public “worry” about the virus and the proportion of people stating that they are staying at home rather than going out. The association between the case numbers, worry and behaviour, which was strong during 2020, changed dramatically as the vaccine programme was rolled out. (Source: ATS).
This behavioural measure of staying at home used in the ATS is very general. SAM asks more specific questions about every activity undertaken outside the household during the previous week and gathers detailed information about activities during the previous 24-48 hours. This allows calculations of the proportion of the population who have had a close contact and of the average number of people from outside the household that individuals met up with. The most recent SAM data cover 19-26 October, approximately 2-3 weeks after the number of daily cases began to rise.

Figure 2 shows the increase in these behavioural measures across 2021. It also reveals no statistically significant change in behaviour in the most recent round of data collection. Consistent with the ATS data shown in Figure 1, this implies that there has not been a behavioural response to the increased number of cases – at least not so far.

It is sensible to distinguish two types of decision in relation to how much risk of infection individuals are willing to take. First, people make decisions about whether to leave home to go to other locations, attend specific events, or experience particular settings. These are generally once-off decisions taken in advance, based on people’s understanding of the planned activity. Second, there are decisions people make when out-and-about in relation to mitigation behaviour: whether to wear a mask, how much effort to put into maintaining a 2m distance from others, whether to clean hands.
One possibility, therefore, is that while individuals have not responded to the increase in case numbers by altering where they go and who they meet, they may have become more careful in their mitigation behaviour. However, Figure 3 finds no evidence for this response. The chart on the left shows trends in how often in different locations individuals wear a mask, keep 2m distance from others and use available hand sanitiser. These trends have not changed significantly in October. The chart on the right looks specifically at workplaces, which is where the highest number of close contacts occurs outside of homes. Downward trends in mitigation behaviours continued in the most recent rounds of data collected in October.

**Fig 3.** Trends in mitigation behaviours across all locations outside the household (left) and in workplaces (right). Over the course of 2021, people have become less likely to wear a mask, maintain 2m distance and sanitise their hands. This trend is stronger in workplaces. (Source: SAM).

**Summary:** To date, there is no evidence of any behavioural response to the increase in daily case numbers that has been ongoing since early October, whether in relation to the amount of social activity or mitigative behaviour undertaken when visiting locations outside the home.
RQ2: To what extent has the public registered the recent rise in cases?

One possibility is that the public has failed to pay much attention to the increase, or is perhaps waiting to see whether it genuinely marks a substantive change in the level of infection risk that they must contend with on an ongoing basis. Alternatively, the large majority may hold the view that unless there is a similar jump in the likelihood of hospitalisation due to COVID-19, there is no reason to change behaviour.

One way to test these possibilities is to examine whether the increase in case numbers has resulted in changes to attitudes and opinions, if not yet to behaviour. From Figure 4 it is apparent that at least a significant minority of the public has not only paid attention to the increase in case numbers, but considers it a matter of concern. While personal behaviour may not have changed, there have been sharp changes in opinions about the appropriate policy response, both in views gathered by the ATS and by SAM.

Fig. 4. Following months in which opinion about the speed of lifting restrictions was evenly divided, during October, more people began to think that Ireland was trying to return to normal too quickly (left) and that the Government response was insufficient (right). The changes coincide with the recent increase in case numbers. (Sources: left, ATS; right, SAM)

Figure 5 presents a similar analysis of expectations for the lifting of remaining restrictions. The most recent round of SAM displays a sharp change in responses, such that the majority who previously thought that restrictions were likely to be eased further the following month became a minority. Hence, although this latest SAM data is from late October, 2-3 weeks after the recent rise in daily began, this timeframe was apparently sufficient for a
substantial proportion of the public to change their mind about the desirable policy response or the likely policy response. The message that there has been a change in infection risk has, therefore, sunk in.

Fig. 5. Expectations for further lifting of restrictions the following month. In October there was an abrupt change in expectations, coinciding with the increase in case numbers. (Source: SAM).

Summary: There is clear evidence that a substantial proportion of the public has registered the rise in daily cases sufficiently to change their opinions or expectations about policy regarding restrictions. Combining these findings with those in relation to RQ1 suggests that many members of the public do not view the response to rising cases as a matter of personal responsibility, at least to the extent that they have changed their own behaviour, but rather as a matter of government responsibility.

RQ3: What are the current drivers of behaviour?

Greater insight into the behavioural response (or lack of it) might be had from investigating the psychological variables that are most strongly associated with current behaviour.

One possibility is that there is a proportion of the population that has given up trying to protect themselves through controlling their own behaviour, perhaps because they have decided that vaccination is sufficient defence, or because they have decided that the reward is no longer worth the effort. Figure 6 suggests otherwise, however. It displays self-reported
levels of compliance with public health guidance and perceptions of others’ compliance with guidance. While on both measures compliance has fallen back since January 2021, it is notable that the largest change occurred in the early part of the year, when case numbers were falling. Furthermore, there remain few responses at the very low end of the scale, suggesting that while some people reduced their compliance to a degree, the overwhelming majority of the public are still making some effort to comply with guidance, even if they are not doing so as thoroughly as they were towards the start of the year when both case numbers and hospitalisations were high.

![Graph showing compliance with public health guidance for self and others over time.](image)

**Fig 6.** Self-reported compliance with public health guidance and reported compliance of others. Very few people have ceased following guidance altogether. The larger change in both variables occurred in the first half of 2021. (Source: SAM).

There have nevertheless been changes in the drivers of people’s behaviour across the course of the year. Figure 7 shows the results of statistical models that relate people’s levels of social activity and mitigation behaviours to a range of psychological variables gathered by SAM. The models refer only to the October data.

Two variables that have been significant throughout the year continue to matter for people’s social activity: how worried they are in general about the virus and how coherent they perceive the restrictions to be. Those who are more worried and those who perceive restrictions to be coherent (rather than contradictory) are less likely to be highly socially active. Earlier in the year, despite many commentators assuming that the public was “tired”, we observed no significant relationship. Those people who stated that they found continuing to follow restrictions to be “tiresome” were no more likely to be socially active.
than those who did not. Now, this has changed and fatigue has emerged as a strong and significant factor. One possibility is that while people were sufficiently patient to delay re-engaging with much of their social lives until after being vaccinated, that landmark represented the limit of such patience (though we have no way to test this).

![Figure 7: Statistical models relating psychological variables to the likelihood of engaging in a high level of social activity (top) and regular mitigation behaviour in locations outside the home (bottom). Data from October 2021. Overall worry and fatigue with following guidelines predict both types of behaviour. People who see contradictions in restrictions are more likely to have high social activity. Those who think others keep to guidance and who follow the news are more likely to engage in mitigation behaviour (wear masks, keep 2m, hand hygiene). (Source: SAM).](image)

Fatigue is also associated with mitigation behaviour. The lower chart in Figure 7 shows that, in addition to those who are most worried by the virus, people who are more inclined to think that others are sticking to the public health guidance and people who follow the news
about the pandemic are more likely to engage in mitigation behaviours. Nevertheless, the stated level of tiredness with restrictions again features as a strong factor.

Summary: Most people are continuing to try to follow the public health guidance, even if less so than at earlier stages of the pandemic. However, fatigue has emerged as a factor where previously it was not. This may help to explain the failure to observe a behavioural response to this latest surge in cases. Some people may be struggling to summon up the energy to respond yet again, especially having waited to be vaccinated in the hope that this would bring freedom from the need for continual social restraint and day-to-day caution.

RQ4: How accurately do people judge relative risk across settings?

For a given amount of effort, the benefits in terms of reduced risk of infection will be greater if people have accurate perceptions of when risk is higher and when it is lower. The SAM survey offers two ways to investigate which locations and behaviours people regard as more or less risky. First, after asking people about their specific experience of a given location, SAM asks them to provide a rating for how safe they felt in that setting and how risky they thought the environment was compared to other places. Second, SAM asks people to make a general assessment of how much risk they have taken during the previous 48 hours. This is then linked to places they have visited and to behaviours that they have undertaken, to uncover what drives their perception of overall risk.

Using the first of these approaches, Figure 8 charts how safe people feel in different locations and how risky they thought those locations were relative to other locations. Some aspects of the data imply accurate perceptions. For instance, high feelings of safety and low assessment of risk are associated with outdoor locations, e.g. parks, beaches, neighbourhood walks, etc. Larger events such as weddings, parties and funerals are viewed as relatively unsafe and less risky, as are visits to pubs. Attendance at college (and schools for the small number of schoolchildren in the 18+ sample) is felt to be particularly unsafe.

There are anomalies in the responses, however. Being on public transport emerges as the location with the highest perceived risk, higher than going to pubs, restaurants or events. Since people tend to be on public transport for shorter periods of time and adherence to mask wearing is generally high, this is difficult to square with transmission risk.

Figure 9 shows the output of a statistical model that relates locations people have visited to their overall perceptions of how much risk they have taken during the previous 48 hours. The model controls for a full range of socio-demographic background characteristics, including gender, age and socio-economic status. In this case, events, public transport, hotels and colleges are all associated with high risk, while shops, outdoor locations, private transport, churches and even restaurants are associated with low risk. Visits to medical facilities are associated with as much risk as going to work. One interpretation of these findings is that people may be placing particular weight in their risk assessments of the likelihood of meeting strangers.
Fig. 8. How safe people felt personally at different locations (left) and how much risk people perceive relative to other locations (right).

Fig. 9. Locations/settings associated with having taken high risk. Model based on data from September and October 2021. (Source: SAM)
This interpretation is further supported by the analysis of Figure 10, which reports a similar model not for locations, but for levels of social activity and mitigation. The largest differences in relative risk are associated with the number of different people met during the previous 48 hours. The number of different locations visited also features strongly in determining overall perceived risk. Both differences are substantially greater than the difference in perceived risk taken by an individual who has had a close contact the previous day and an individual who has not. Moreover, these factors all have a greater influence on an individual’s perceived risk than the extent to which they have themselves engaged in mitigation behaviours in the locations that they have visited. Lastly, the chart shows no differences in perceived risk across the different rounds of data collection, despite the fact that daily positive cases had almost doubled during the final period (19-26 October).

![Figure 10](image-url)

**Fig. 10.** Output from a statistical model of perceived risk associated with different behaviours during the previous 48 hours. Variation in the steepness of the relationships reveals that the number of people met and number of locations visited are much stronger influences on people’s perceived risk than their mitigation behaviour (how often they wear a mask, keep 2m from others and sanitise hands when outside of their house). The data-points on the right show no change in perceived risk during October as case numbers increased. (Source: SAM).

**Summary:** It is hard to square people’s perceptions of risk with known facts of transmission. Perceptions seem to be biased by the likelihood of being around strangers, do not seem to take the time spent in a location properly into account, place little weight on mitigation...
behaviour (including managing to keep 2m for others) and have not been influenced by the large increase in the incidence of the disease.

**RQ5: Are people likely to take a booster vaccine?**

Figure 11 shows the proportion of adults willing to take a booster vaccine if it is offered to them. A high proportion (81%) already say that they are willing to take a booster vaccine. However, one-in-ten adults falls into a category of individuals who have taken the vaccine initially, but are now saying that they will not be willing to take a booster when it is offered to them. This proportion is not dissimilar from the proportion that began 2021 being unsure about whether they would take a vaccine at all. Further analysis shows that hesitancy about a booster is greater among younger adults, especially those in their 30s.

![Fig. 11. Proportion of the population stating that they are willing to take a booster vaccine if recommended. Data for October only. (Source: SAM).](image)

**Summary:** Support for a booster vaccine is high, but approximately 10% of adults is hesitant, in addition to those who did not take the vaccine in the first place.

**RQ6: Are parents likely to get younger children vaccinated?**

Figure 12 shows the proportion of parents with children under 12 who say that they are willing to vaccinate their children if the vaccine is offered to them. The largest proportion (40%) is willing to vaccinate their children, but the data are notable for the large number of “don’t knows”, at 30%. The remaining 30% say that they will not willing to vaccinate their children.
Further analysis of these responses reveals that willingness to vaccinate children is higher among fathers than mothers and higher among respondents with higher levels of educational attainment. A larger sample of parents of under-12s is required to quantify these effects.

![Proportion of adults stating that they are willing to vaccinate their child(ren) aged under 12. Data for October only. (Source: SAM).](image)

**Fig. 12.** Proportion of adults stating that they are willing to vaccinate their child(ren) aged under 12. Data for October only. (Source: SAM).

**Summary:** While a large minority of relevant parents say that they will vaccinate children under the age of 12, opinion is split, with almost one-third unsure.

**Discussion**

Looking across the patterns of results above, the evidence presents challenges to the likely effectiveness of a strategy that relies on “personal responsibility”, at least to the extent that this term refers to attempts to control infection risk through changes in individual decision-making and behaviour. At the time of writing, there is no evidence that the public has produced any kind of behavioural response to the increased risk of infection associated with rising daily cases of COVID-19, either with respect to how much social activity they choose to undertake or how they behave while going about it. This is true despite the fact that many people have absorbed that a meaningful increase in risk has occurred, since they have adjusted their views about appropriate policy and/or their expectations about future changes to restrictions.

This is not to say that a strategy based on personal responsibility will necessarily be ineffective. In the past we have seen evidence of “behavioural lag”, whereby it takes some weeks for changes in the epidemiology to feed through into changes in behaviour. It is
possible that the data in November will reveal a belated adjustment in the level of risk people are taking. There is also some evidence of an increase in worry which, previously, has fed through to behaviour. However, the most recent behavioural data suggest that there is now a greater impact of some form of pandemic fatigue. This factor has been exaggerated in the past, when expressions of tiredness with restrictions were common but not significantly associated with behaviour. Now this has changed: people who say they are tired are indeed less likely to hold back on socialising or to engage in mitigation behaviours.

More positively, very few people have given up on their efforts to follow public health advice, with most still trying to do so to a substantial degree, even if not as assiduously as in the earlier waves of the pandemic. The findings suggest that there may be considerable scope to improve people’s perceptions of risk in ways that would allow them to judge the relative risks associated with different settings and behaviours more accurately – potentially taking less risk without the need for additional sacrifice or effort. Communications might directly address the issue of catching the virus from a stranger versus catching it from someone you know. Narrative examples of where transmission is currently most likely to occur (and why) might also be beneficial for improving risk perceptions.

Turning to the vaccine, the present data demonstrate that despite Ireland’s exceptional rate of vaccine uptake, continued support for ongoing vaccination cannot be taken for granted. Previous investigations of vaccine hesitancy suggested that failing to understand the positive benefits of vaccination was a stronger predictor of hesitancy than exposure to misinformation. Strong communication of the benefits of taking a booster are therefore likely to be important and providing the public with tangible evidence of this is likely to help to persuade the undecideds. Similarly, the benefits of giving vaccines to children will need to be articulated to the large proportion of parents who are unsure, especially mothers.