Summary of Behavioural Evidence – April 2021

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Introduction

Ireland is undertaking a delicate balancing act. After a protracted period of Level 5 restrictions, the country is trying to reopen more slowly and carefully than following previous waves. New confirmed cases remain relatively high, meaning that there remains a risk that a "fourth wave" emerges before vaccination is widespread. Personal behaviour remains vital to containing the spread of the disease during this period.

This Research Note updates evidence from behavioural studies. Findings are arranged by research question in numbered sections as shown below. Sections are designed to be self-contained, so that readers can easily find evidence relevant to specific questions. *Section 1 is somewhat longer than the other sections, as it contains a new analysis of long-run compliance since mid-2020, which highlights a concern about the present level of compliance with guidelines (see especially Figure 3)*. The research questions are as follows:

1. How does the behavioural response compare to previous stages of the pandemic?
2. What social activities have changed in recent weeks?
3. How has overall social contact changed in recent weeks?
4. What are public expectations for the easing of restrictions?
5. What are public opinions on the current level of restrictions and re-opening?
6. Do the public intend to take the COVID-19 vaccine?

The results are based on two data sources. (1) The Amárach Tracking Survey (hereafter ATS) is a weekly online survey of a representative sample of the adult population commissioned by the Department of Health and undertaken almost every week since the start of the pandemic; (2) The Social Activity Measure (hereafter SAM) is a fortnightly "prompted recall" study, undertaken by the Behavioural Research Unit at the ESRI and commissioned by the Department of the Taoiseach, which records the daily activities of a representative sample of adults using an anonymous online interface. There is a further description of the data sources in a short Appendix.

1. How does the behavioural response compare to previous stages of the pandemic?

The ATS was designed primarily to measure public perceptions and opinions. As such, it does not contain detailed measures of behaviour. Nevertheless, it does provide some useful metrics that allow comparisons to be made across multiple waves of the virus. This is useful for understanding how behaviour now compares to behaviour previously, for which we have a good idea of the impact on the spread of Covid-19.

Figure 1 plots the proportion of the population that has reported staying at home rather than going out as a result of the virus, beginning in March 2020. The three waves of the virus are clearly discernible in the data, suggesting that individual behaviour responded strongly to some combination of public health guidance and/or daily reports of the spread of the virus. The relative

height of the peaks is consistent with the view that the Level 5 "lockdown" in early 2021 never quite involved the same degree of behaviour change as the first (and more restrictive) one in March and April 2020.

According to this metric, which has been measured consistently using the same question and sample frame, people have been steadily leaving their homes more and more since the end of January. People are now leaving their homes more than in the period prior to Christmas and more than they have at any point since the beginning of September.

While this might give some cause for concern in relation to the spread of the virus, it is important to understand that this measure does not indicate what activities people are leaving their homes to undertake. In particular, better weather may mean that much of the increased activity relative to the period prior to Christmas is concentrated outside rather than inside. More detail on the composition of recent activity is provided below.

Figure 1. Proportion of the population that reports staying at home rather than going out as a result of the virus (Amárach Tracking Survey, ATS).

Another useful measure contained in the ATS is self-reported compliance, measured on a simple scale. Respondents are asked to indicate the extent to which they "follow the recommendations from the Department of Health and HSE to prevent spread of coronavirus", on a scale from 1 ("Not at all") to 7 ("Very much so").

Commentators sometimes express scepticism about how meaningful such subjective responses can be – surely people lie? While there is evidence that people tend to exaggerate the extent of their own compliance in response to such direct questions, there is also good evidence that variation in responses to this question is associated with variation in behaviour. For instance, Figure 2 (left panel) plots data from SAM showing the relationship between self-reported compliance on the 7-point scale and the number of people from outside their own household that individuals met up with

during the previous two days. The right panel shows the equivalent relationship between self-reported compliance and the likelihood of having had a close contact the previous day with someone from another household (meeting for more than 15 minutes not maintaining a 2-metre distance, or for over 2 hours indoors in a space that was not well ventilated). Both relationships are very strong: those responding at the upper end of the 7-point scale are substantially more cautious in their behaviour.

Two other points need to be made about this scale before describing additional analyses. First, the distribution is highly skewed. Almost three-quarters of the population score themselves at either the maximum 7 (43%) or at 6 (31%), with just 6% scoring themselves below the midpoint on the scale of 4 (hence the need to pool these categories to generate Figure 2). Second, it is worth noting that Figure 2 reveals that there is even a statistically significant difference in behaviour between those who score themselves at 7 and those who score themselves at 6.

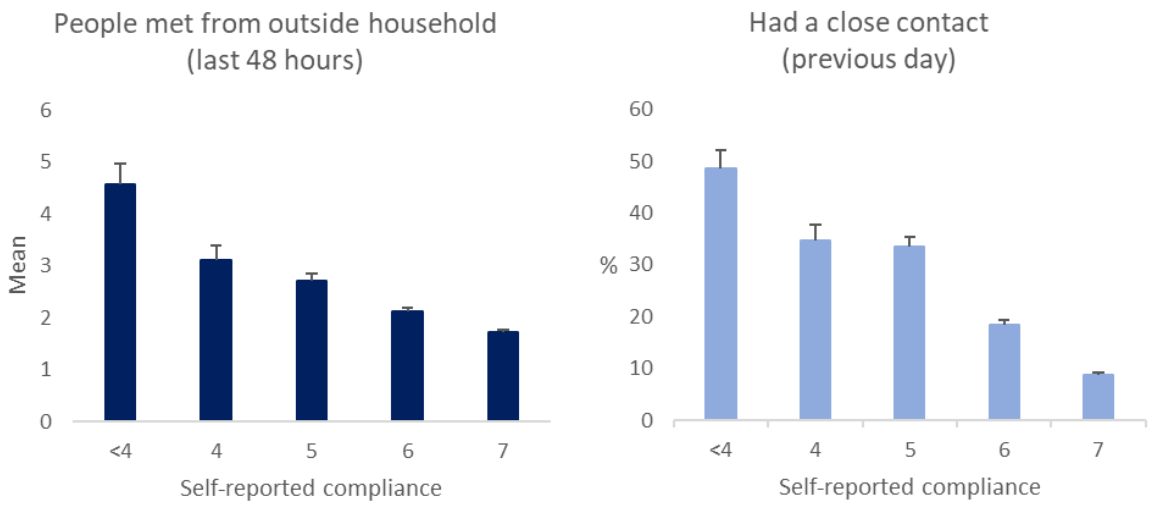

Figure 2. Relationship between self-reported compliance with guidelines and the number of people an individual met up with from outside their household in the previous 48 hours (left) and the likelihood of having had a close contact the previous day (right) (Social Activity Measure, SAM, data pooled from 25th January to 12th April).

Changes in the level of self-reported compliance are therefore associated with behaviour and it is useful to understand what drives them. Another useful measure collected in the ATS survey is people's responses to a question about how worried they are "in general about the coronavirus", given as a simple score ranging from 1 to 10. It is notoriously difficult to establish causal relationships between repeated cross-sectional measures taken over time. However, the ATS data have now been collected for a large enough number of weeks to allow these measures to be standardised and movements in the variables to be compared. Figure 3 compares responses to the worry question with those to the self-reported compliance question, both standardised for the 39-week period from 27th July 2020 to the present and expressed in terms of their standard deviations.

The correspondence between these variables is striking. For present purposes, two aspects are noteworthy. First, this correspondence mirrors findings from statistical models conducted on the

data from SAM, which suggest that people's individual level of worry about the virus is strongly and consistently associated with their behaviour. While one always has to be careful interpreting correlation as causation, both data sources are consistent with the view that behaviour is substantially influenced by anxiety about contracting the virus. Second, the level of worry and self-reported compliance has now fallen to its lowest level since Summer 2020, with a particularly steep fall in recent weeks.

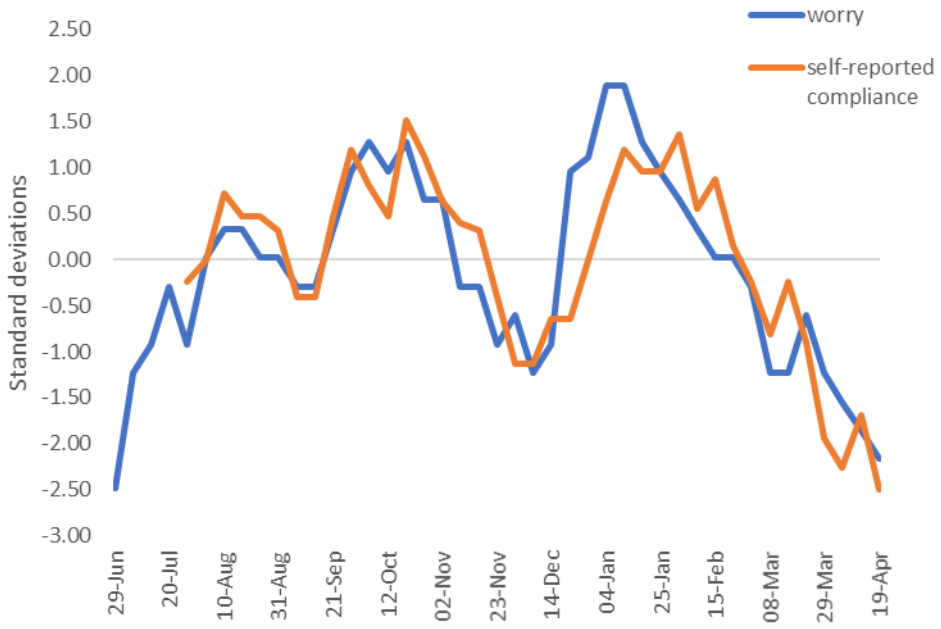

Figure 3. Comparison of responses to questions about an individual's level of worry in general about the coronavirus and their self-reported compliance with public health guidance, standardised for the period 27th July 2020 to 19th April 2021 (ATS).

The data in Figure 3 come only from one source, the ATS. It is not possible to standardise the SAM data to conduct an equivalent analysis, since we have only 6 rounds of data collected since January 2021. Nevertheless, Figure 4 compares the trend in self-reported compliance since January between the ATS and SAM. There is a very close correspondence between the two separate data sources over this period. Both confirm a clear fall in self-reported compliance with public health guidance. Importantly, the decline is not driven by people abandoning the guidelines. Rather, people who were previously responding with a 7-out-of-7 are now more likely to respond with a 6, or even a 5. It remains the case that very few give a lower score. The suggestion is that people are pushing the boundaries of the public health restrictions. But as Figure 2 shows, this is likely to translate into changes in relevant behaviours.

In sum, in comparison to earlier stages of the pandemic, the above trend obviously gives some cause for concern. If it continues, there is a danger that case numbers will begin to rise again. However, it needs to be understood that "compliance" does mean different things during different stages of the pandemic. The responses after January 2021 refer to compliance with Level 5 restrictions, while those from before Christmas refer to compliance with Level 2 or 3 (depending on geographic location), although guidance in relation to behaviours such as handwashing and wearing face coverings remained constant. Furthermore, it is possible that non-compliance takes a different form presently to previously, in relation to the specific behaviours undertaken. The following sections give more detail.

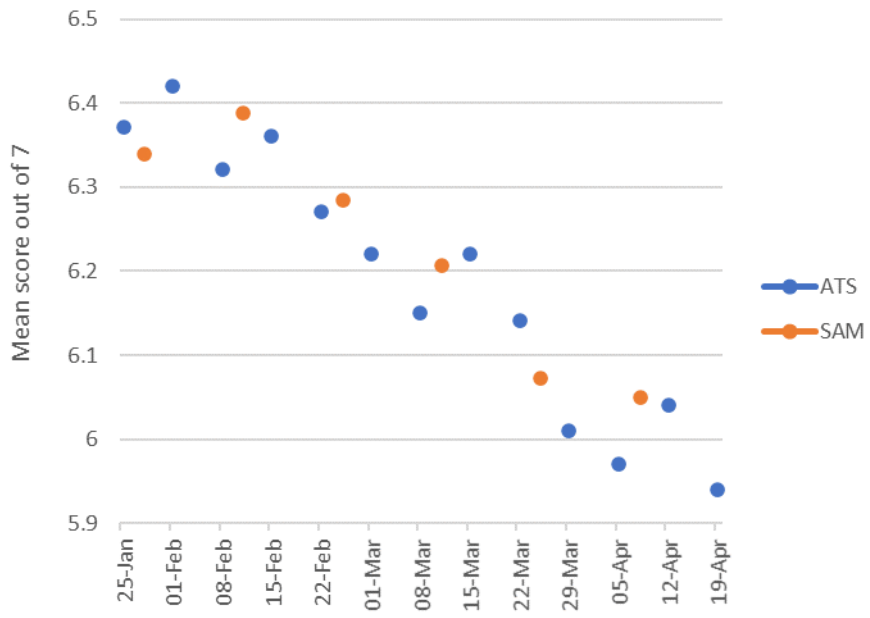

Figure 4. Mean score for self-reported compliance with guidelines since end-January across two separate studies (ATS, SAM)

2. What social activities have changed in recent weeks?

SAM asks participants about all locations they have visited outside their household over the past week, then records greater detail about activities undertaken during the previous two days. Figure 5 summarises the trends in these measures across six rounds of data collection since January.

There are some differences between the trends for locations visited in the past week and the previous day. This is to be expected. For instance, if some people start going to their place of work occasionally, the figure for the proportion of the population that visits a workplace will increase whether measured over the past week or the previous day. However, if those who are already going at least once a week begin going more regularly, perhaps every day, only the proportion who have visited the previous day will rise. In other words, the data for the weekly period capture the spread of the behaviour across the population, while the data for the previous day also indicate the intensity of visits by individuals during a week.

Both charts display shallow upwards trends in most behaviours, indicating that the change in people's behaviour is spread relatively evenly across locations rather than being concentrated in specific activities. As indicated in the chart, data collection for the sixth round of SAM was undertaken after the Taoiseach's 30th March announcement in relation to lifting of restrictions. There is no suggestion in this data that the anticipation of this announcement or the announcement itself generated a step-change in behaviour. It should be borne in mind that multiple changes to restrictions occurred during this period, including phased returns to school, as well as Easter holidays, all of which could have had an impact on activity.

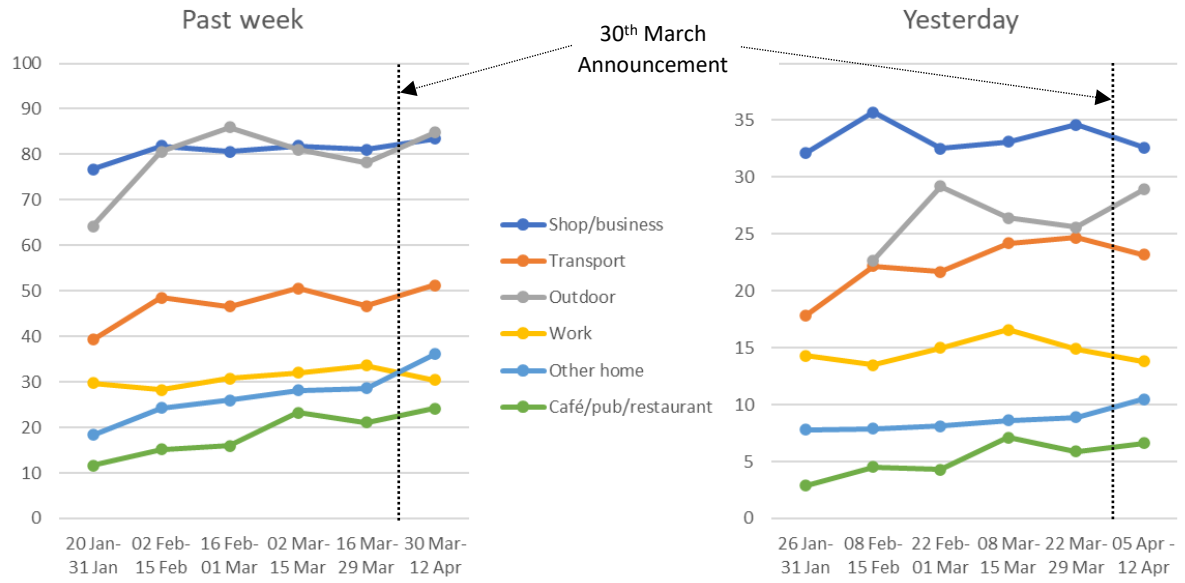

Figure 5. Locations visited outside the household over the past week and the previous day (SAM). Most locations display an upward trend since January. Note that the data for café/pub/restaurant refer in almost all cases to people collecting take-away food.

Provided people are sticking to guidelines regarding social distancing, hygiene and face coverings, most of the trends above are not necessarily concerning. However, the increase in visits to other people's homes (light blue line) is more troubling and so we provide a more detailed analysis. SAM records not only whether the respondent visited someone else's home, but also whether they received any visitors to their own home. The study also asks about the purpose of the visit and behaviour during the visit. Figure 6 breaks this data down by the purpose of the visit and whether the visit resulted in a close contact.

While the overall trend in visits is not steep, it is the increase in social visits that is of concern. At the start of the period the majority of visits to homes were for professional purposes or for reasons associated with caring. However, by the end of the period the majority were social visits. While these numbers may appear quite small in percentage terms, it is important to understand that an increase of just three percentage points translates into more than 100,000 people engaged in a social activity that carries one of the highest risks of transmission.

On a positive note, there appears to have been something of a flattening off in the upward trend since early March. At this time, the risks of social home visits were strongly publicised via NPHET briefings and in the media more generally. While we cannot be sure that this is the reason for the levelling off, it is consistent with the possibility that messaging about social visits to homes had some effect on behaviour.

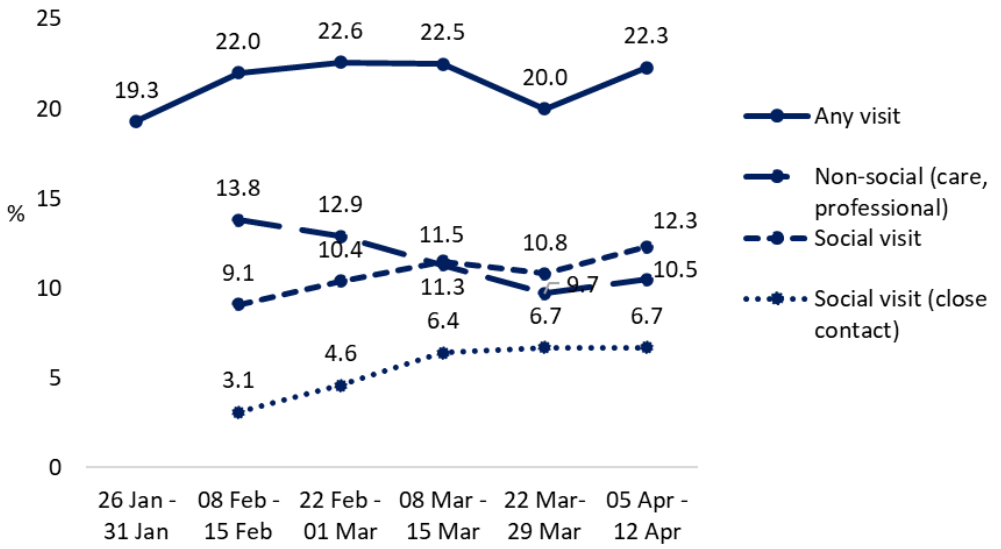

Figure 6. Proportion of the population who had visited someone else's home or received a visitor to their own home the previous day (SAM), by purpose of the visit and whether the visit resulted in a close contact.

SAM also records details of behaviours during home visits, including whether the visit took place indoors or outdoors, whether masks were worn, whether social distancing was maintained, how long the visit lasted, and how good the ventilation was. Figure 7 shows the trends in these behaviours. The data are more noisy, as they are expressed as a percentage of those who were involved in a social visit. Most social visits included time indoors. Facemasks were rarely worn. Many visits lasted more than an hour, involved no social distancing, and poor ventilation. Nevertheless, a discernible upward trend from January to early March again levelled off (or even declined marginally) thereafter.

Overall, there has been a clear increase in multiple kinds of social activity in recent weeks. Of most concern is the increase in social visits to homes, which generally do not involve protective behaviours. However, after this issue was specifically highlighted in early March, the upward trend in risky home visits levelled off.

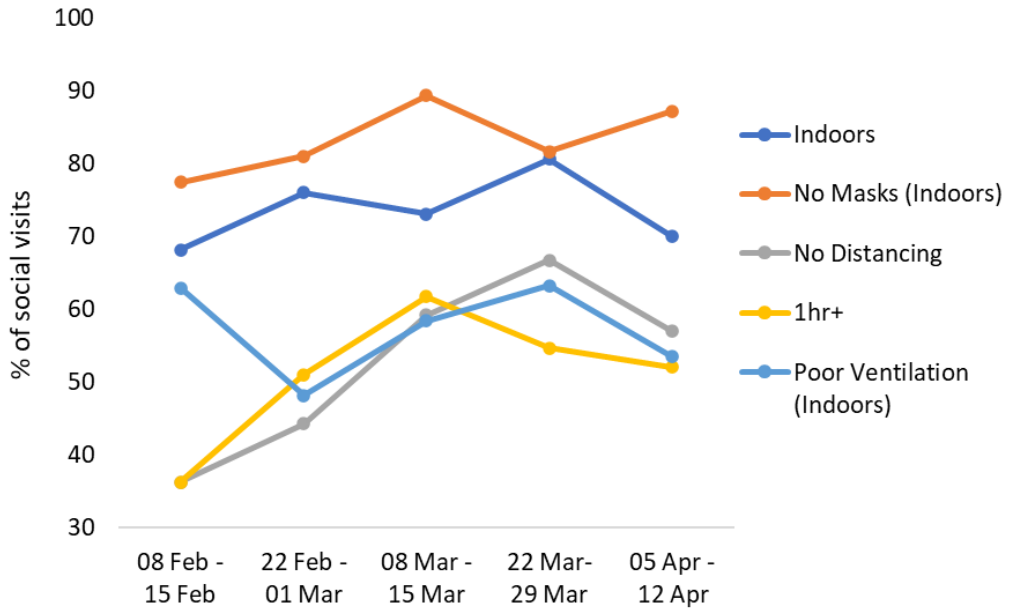

Figure 7. Extent of risky behaviour during home visits (SAM).

3. How has overall social contact changed in recent weeks?

The design of SAM permits the generation of summary variables for the numbers of people from other households that each individual met up with during the previous two days and whether they had a close contact during the previous day. Again, clear trends have emerged since the end of January.

Figure 8 shows the average number of people that individuals met up with during the previous two days, including separate figures supplied for meeting people who fall under the definition of a "social bubble". Throughout this period, more than 45% of the population had met up with no-one from another household during the previous two days. The apparent increase in meeting people from outside the household prior to the 30th March announcement did not continue thereafter.

Figure 9 displays the trends in close contacts for the same time period. The pattern reveals a similar shape: the primary change in behaviour occurred between late January and early March, after which upward trends levelled off or even declined marginally. The only exception to this pattern is for close contacts that took place outdoors, which continued a shallow rise. It is not possible to test whether some people were explicitly deciding to meet outdoors rather than indoors, but the data are consistent with this possibility.

A further important aspect of this data is the much greater likelihood that a close contact takes place without people wearing masks outside of the workplace.

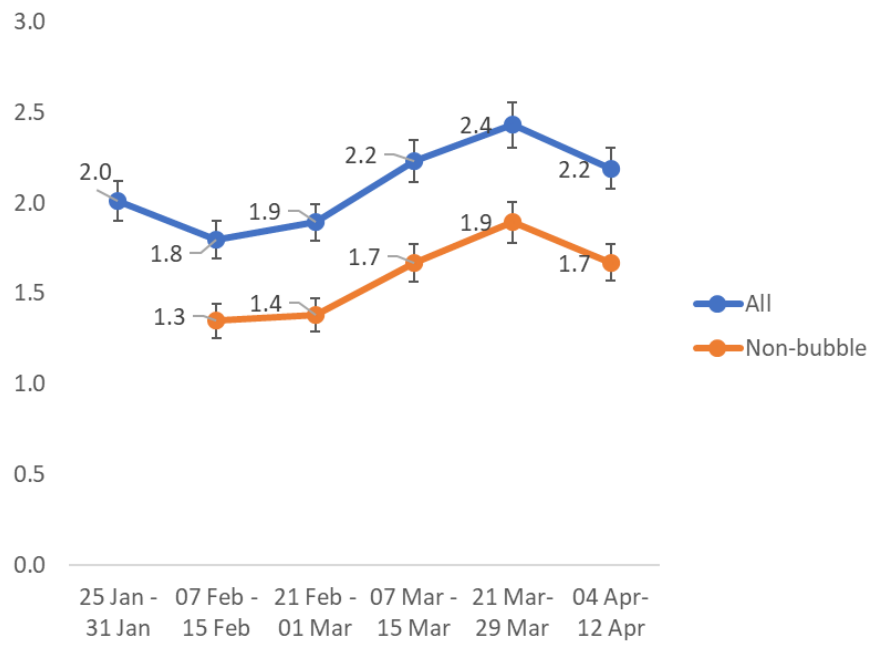

Figure 8. Mean number of people individuals met-up with from other households over the past 48 hours (SAM). The rise between February and March was statistically significant, but did not continue into April.

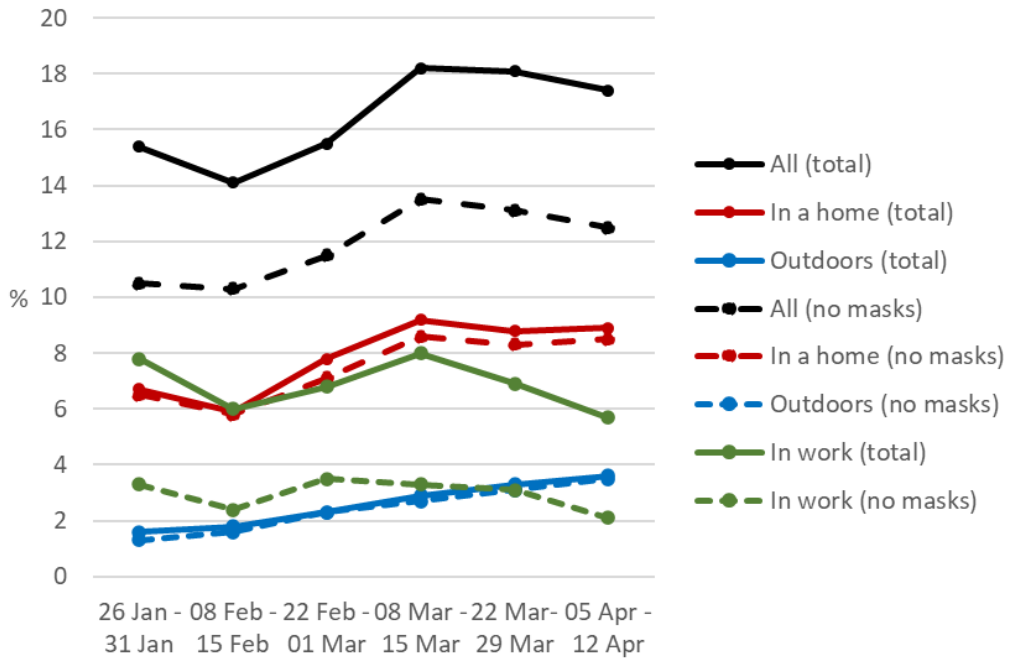

Figure 9. Proportion of the population who had a close contact the previous day (SAM), by location and whether they were wearing a mask.

Looking across the findings in Sections 1 to 3, the picture is mixed. The decline in worry and associated reduction in self-reported compliance described in Section 1 naturally gives rise to concerns that a continuation of these trends might inevitably lead to increased transmission of Covid-19. However, measures of specific risky behaviours and close contacts imply a somewhat

different picture, with increases in risky activity since January having levelled off in recent weeks. It is not immediately obvious what explains these differing patterns. One possibility is that despite the fact that self-reported compliance is, *in general*, strongly associated with risky behaviour, the recent changes in self-reported compliance reflect non-adherence to perhaps less risky aspects of the guidance, such as outdoor behaviour, staying within travel restrictions, meeting in gardens etc., but we have no way to test this directly.

4. What are public expectations for the easing of restrictions?

SAM asks respondents to choose a category that most closely matches their expectation for the level of restrictions in the following month. As shown in Figure 10, more than three quarters of the public now expect a further easing of restrictions in May, comfortably the highest level of expectation since January.

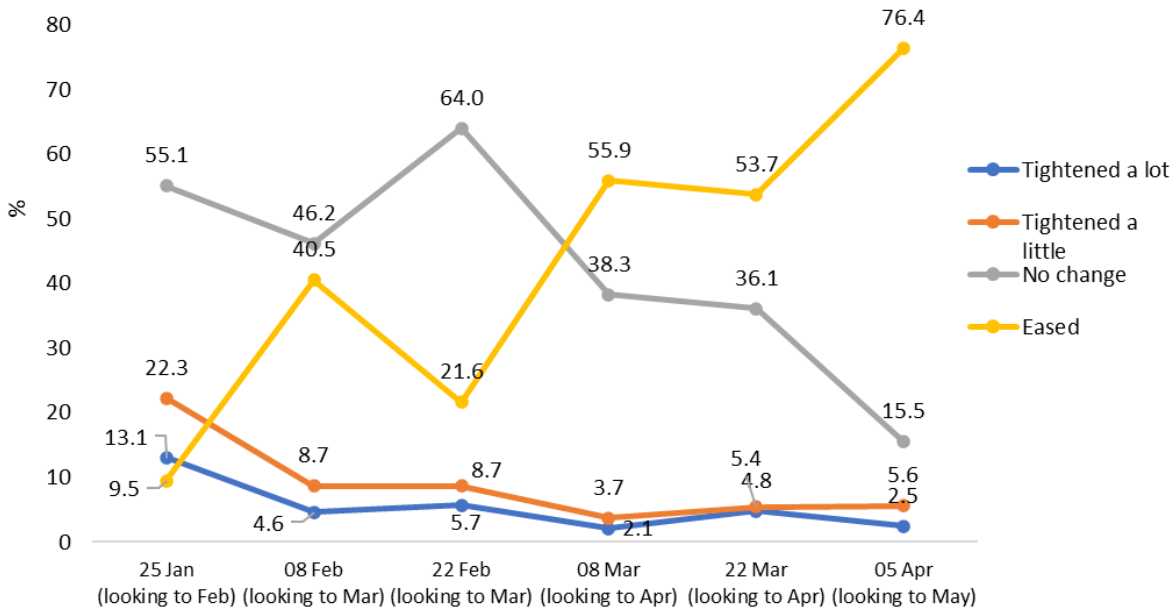

Figure 10. Expectations for easing of restrictions the following month (SAM).

SAM also asks about longer term expectations, including how long respondents expect it will be before restrictions are lifted for good. Responses to this question have changed little since January, with approximately 60% of the public expecting some restrictions to be in place for at least another nine months and 40% expecting restrictions to be lifted entirely before then.

5. What are public opinions on the current level of restrictions and re-opening?

Public opinion about the current level of restrictions is shown in Figure 11, which plots a range of responses from ATS. Since January, there has been a steady increase in the number of people who think that the reaction of the government to the current outbreak is too extreme (top left). This has risen from 7% in January 2021 to 23% in April 2021. There has been a corresponding decline in the percentage of people who think the response is insufficient. However, the most common response to this question is that the reaction is appropriate, given by 53% of the population. The data are

presently almost perfectly balanced between those who regard the response as too extreme and those who regard the response as insufficient.

Similarly, the majority of the population (73%) believe that current measures on social distancing are about right, with just 12% and 15% believing they are too weak or too strong respectively (top right).

A slightly different picture emerges from a question about how quickly Ireland is trying to return to normal. 35% think Ireland is moving too slowly and 20% too quickly, with a larger proportion saying the return is at about the right pace (bottom left). For a period in mid-March to early April, the proportion thinking the return to normality was too slow overtook the proportion thinking the return was appropriate, but this has since reversed. The most common answer on 26th April was that Ireland is returning at about the right pace (44%). It is not straightforward to understand what is driving this data, which contrasts with the picture painted by the top two charts of Figure 11. It may have been influenced by the specific easing of restrictions on 12th April, but it is also possible that responses to this question have been partly influenced by views about the speed of the vaccine roll-out or comparisons with Northern Ireland and the UK. Certainly, most people (65%) presently do not think there should be any more restrictions (bottom right).

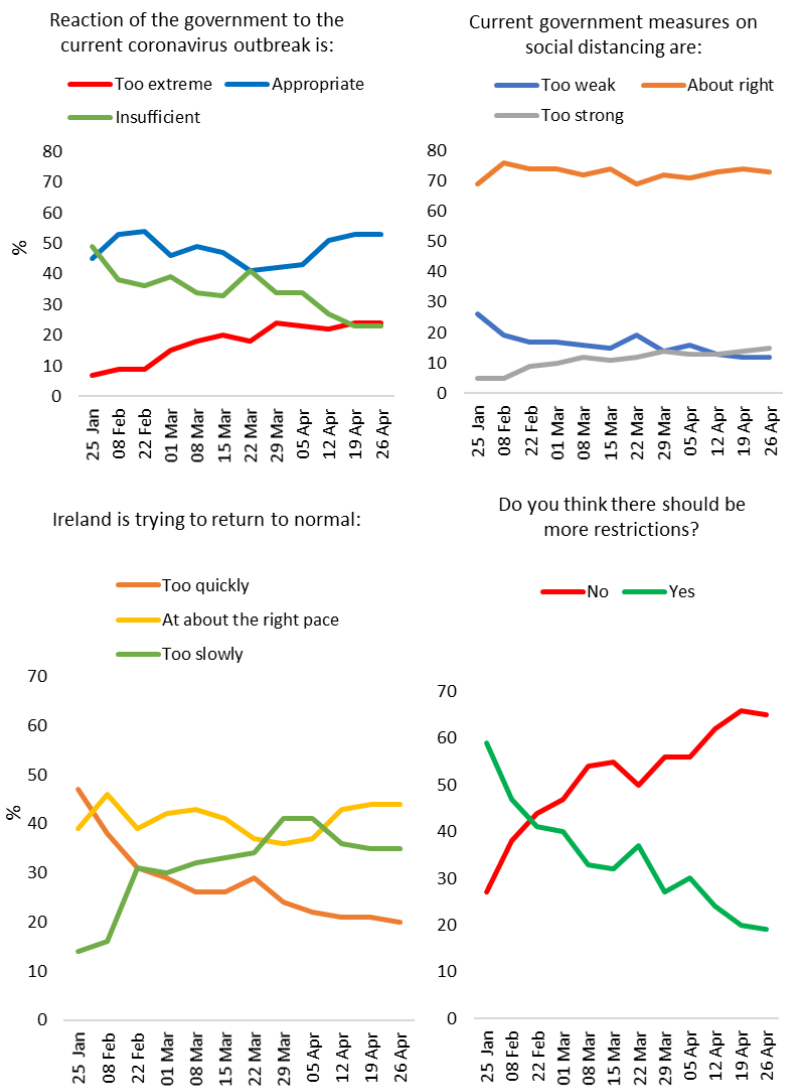

Figure 11. Opinions on the Government response (ATS).

6. Do the public intend to take the COVID-19 vaccine?

The percentage of people who say they will definitely take the COVID-19 vaccine has risen from 45% in November 2020 to 69% in April 2021. Figure 12 (left) shows willingness to take the vaccine by date as measured by the ATS (lines) and SAM (triangles). The latest SAM data shows that over 80% of the population say they will take the vaccine when offered. The SAM estimate is higher than the ATS one due to differences in how the question is asked, with fewer possible responses in SAM, but the trends are closely similar.

Of those who have not yet received the vaccine, approximately 1 in 2 have some concerns about getting the vaccine. Figure 12 (right) shows that concerns about the vaccine mirror intention to take it (data as in the left panel). The percentage who have concerns has risen slightly over March and April. There was a spike in concern and a decrease in those who said they would definitely take the vaccine in the week starting 15th March, which may be related to news about blood clots related to AstraZeneca and the European Medicines Agency's decision to investigate.

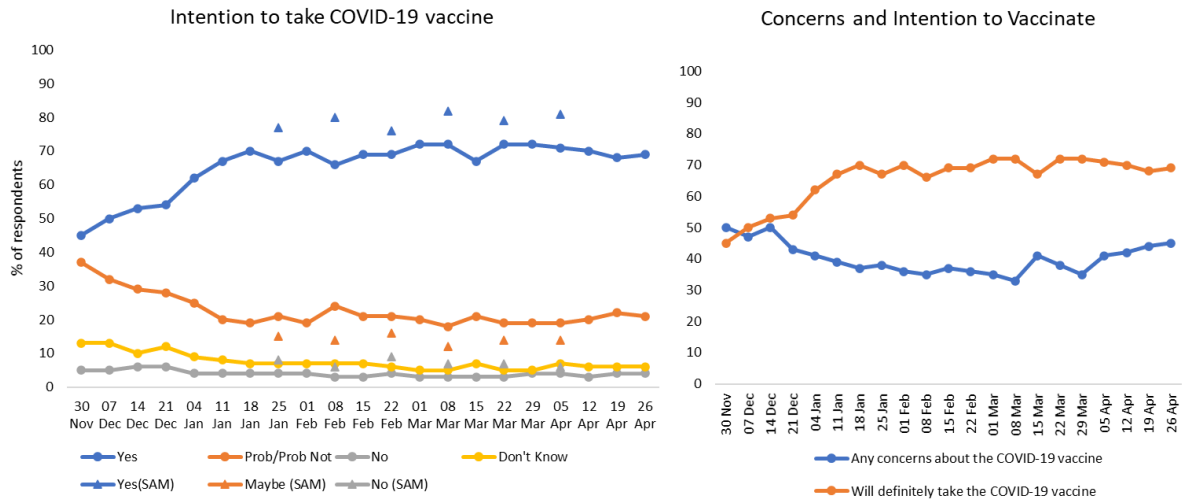

Figure 12. Intention to take the COVID-19 vaccine by date and proportion expressing some concerns about taking the vaccine (ATS, SAM).

Figure 13 shows that the biggest increase in concerns in mid-March was related to side effects. Note data is not available for this measure for 8th March. Taking the data from both Figures 12 and 13 together, there is a clear indication that the recent information and public debates in relation to possible blood clots have had an impact on public perceptions and perhaps intentions, but these effects are for the time being relatively small.

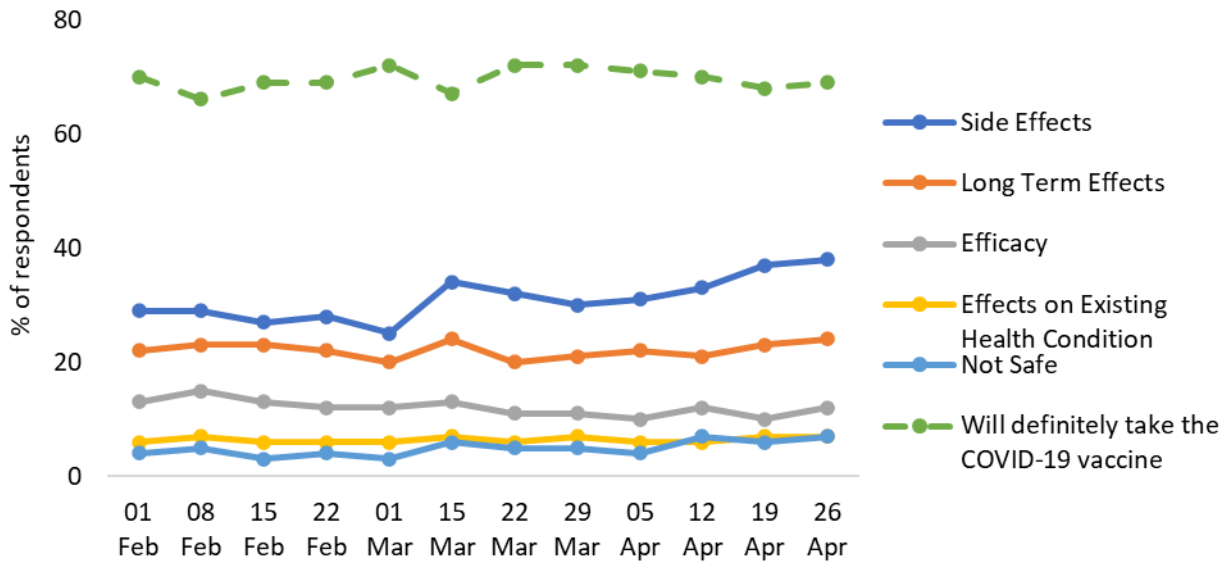

Figure 13. Specific concerns about the COVID-19 vaccine (ATS)

Both the ATS and SAM ask a question about lifting restrictions once COVID-19 vaccination begins. The questions are slightly different but the majority in each survey report that they do not think restrictions should be lifted early in the vaccination programme, but should instead be lifted only when case numbers allow. The questions and percentages for data collected in the week beginning 5th April are shown in Figure 14.

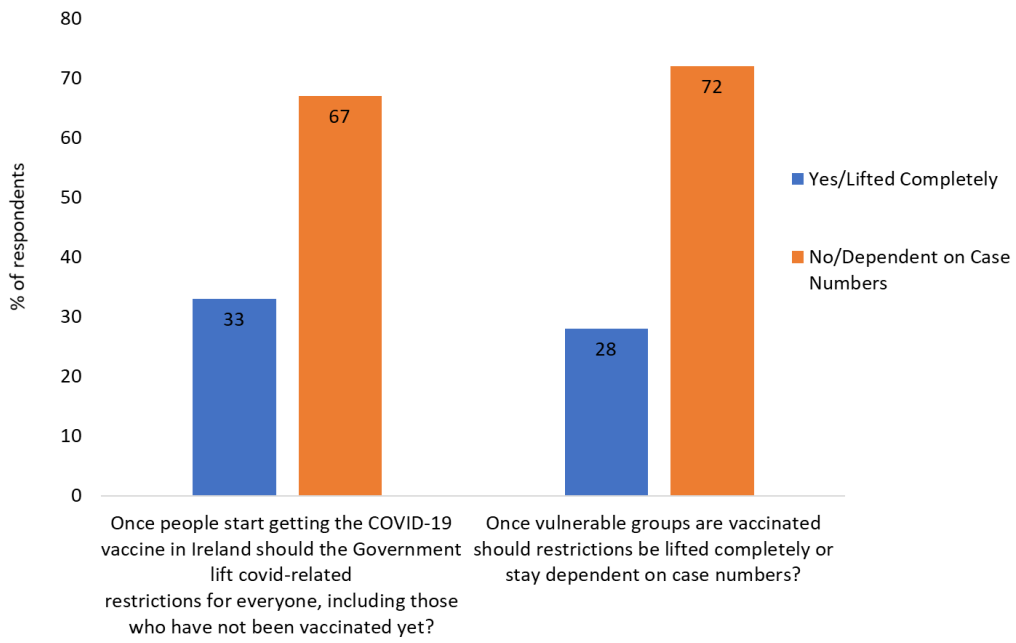

Figure 14. Preferred policy on lifting restrictions as the vaccination programme gets underway (ATS, left; SAM, right).

Discussion and Implications

Comparison of recorded behaviour on a week-to-week basis reveals that there have been substantive increases in social activity since the end of January. The greater activity is spread across multiple locations and includes increases in the extent to which individuals have met up with people from other households and the likelihood that they have had close contacts. However, the increases were concentrated in the earlier part of this period, levelling off during March and April, with a marginal reduction of close contacts since then. We find no evidence, at least to-date, that either anticipation of the announcement made on 30th March or the announcement itself had an impact on the amount of social activity or risky social activity. While it is not possible to make causal inferences based on available data, these behavioural trends may help to explain the resumption of falling case numbers in April.

Although there is an ongoing level of non-compliance with public heath guidance that would ideally be lower, these week-to-week patterns in the behavioural data can be regarded as encouraging, especially in the context of the growing proportion of the population that is now vaccinated and the increased willingness to take the vaccine.

However, a new analysis based on standardised responses across the pandemic as a whole shines a less comfortable light on the current situation. Self-reported compliance has fallen rapidly since a peak in late January, has continued to do so throughout March and April, and is at its lowest level since July 2020. It is strongly associated with people's overall level of worry about the virus, which is similarly back to levels last seen during the middle of 2020.

How large a cause for concern is this? This is not an easy question to answer. On the one hand, it is possible that the fall in these variables is simply the consequence of the more cautious approach being taken to lifting restrictions following this third wave. The extension of Level 5 means that behaviours that were within public health guidelines following previous waves when restrictions were lifted more quickly are not within guidelines this time around. If so, behaviour may be less risky than previously even though self-reported compliance is lower and continuing to fall. Similarly, a combination of the more cautious approach to lifting restrictions and news about the effectiveness and availability of the vaccine may have reduced levels of overall worry. On the other hand, it is possible that comparing week-to-week behaviours is masking a longer-term trend towards more risky activity, the consequences of which are yet to emerge. On previous occasions when self-reported compliance fell to (close to) these levels, the virus began to spread again.

Given how difficult it is to disentangle these contrary explanations, it would seem prudent to proceed cautiously and to continue to monitor behaviour closely. While it is evident that there is a strong expectation among the public that restrictions will be eased further in May, there is also broad public support (on average) for the more cautious approach being adopted following this third wave – much more so than was the case following the first two waves.

One specific and encouraging aspect of the behavioural data is that the increases in social visits to houses and associated risky behaviours have levelled off. While it is not possible to know the cause of this change, its timing is consistent with the possibility that strong public messaging about the dangers and unacceptability of social visits to houses has been effective.

This change happened during a period when outdoor social encounters were increasing. It is therefore also possible that the advice given to make sure that wherever possible meetings are undertaken outdoors has been partially successful too. The consistent prioritisation of lifting restrictions relating to outdoor activity may well have been important too. Previous work

undertaken on the SAM data has shown that the perceived coherence of the restrictions is important for maintaining compliance. While we cannot be sure which effects are causal and which merely correlational, continued focus on prioritising outdoor activity makes sense given the available data.

Finally, recent news in relation to potential side effects from some of the Covid-19 vaccines do appear to have had an impact on both concerns about the vaccine and intentions to take it. However, these effects are small in comparison to the rising trend in willingness to take the vaccine that has occurred since before Christmas.

Appendix – Data Sources

Amárach Tracking Survey (ATS)

Throughout the pandemic, Amárach Research have conducted a weekly Public Opinion Tracking Survey for the Department of Health. The sample is approximately 1,600 each week. A quota-based system is used to match the socio-demographic characteristics of the sample to the national adult population based on Census figures. Data are then weighted to further improve the match. Responses are collected from Amárach's SmartPoll panel, which is an online panel of 6,000 adults throughout Ireland, regularly refreshed through recruitment. Panellists receive text messages and email invitations to complete surveys via phone, tablet, laptop or desktop computer. Results are published at https://www.gov.ie/en/collection/6b4401-view-the-amarach-public-opinion-survey/.

Social Activity Measure (SAM)

The Social Activity Measure (SAM) is a behavioural study that records the public response to the risk of Covid-19 infection over time. The study aims to offer insight into where and how risks of Covid-19 transmission arise. The research was designed by the BRU in consultation with the Department of the Taoiseach, which funds the study. Every two weeks, a nationally representative sample of 1,000 people aged 18 and over is recruited from one of two pre-existing online panels. The data recorded is completely anonymous. Respondents are asked neutral, factual questions about activities outside the home, followed by a series of questions that probes psychological factors associated with behaviour, attitudes and experiences during the pandemic. Results are published at https://www.gov.ie/en/collection/a7ee4-see-the-results-of-the-social-activity-measure-behavioural-study/.