Dectech

The Vaccine Rollout and Life in 2022

Based on recent fieldwork, we forecast vaccine uptake rates over the coming months. Using these forecasts we predict the pace of the rollout and how far restrictions can be relaxed thereafter.

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Executive Summary

As we enter the final stages of the pandemic, this report describes what lies ahead and, specifically, predicts the pace and impact of the vaccine rollout. A key variable is the public's willingness to accept the vaccine. As such, we've conducted fieldwork to understand these acceptance rates and their implications on how the pandemic will play out. Our main findings:

Acceptance is Overstated: People are embarrassed to admit that they'll refuse the vaccine. Asked directly only 24% say they'll reject it, but it's 36% when asked anonymously.

Acceptance is Increasing: Whilst the underlying acceptance rate was 64% in Nov 2020, that had risen to 69% in Jan 2021. The main difference is a shift in women's attitudes.

Driven by our Better Natures: The key uptake driver is a desire to protect the NHS. Media campaigns should focus on that. There is no evidence social media is putting people off.

The Rollout Timetable: The Government will beat its May target of 1st doses for over 50s by two weeks. Indeed, all willing UK adults, about 60%, will have had their 1st dose by May.

But Many Contingencies: Clearly there are many contingencies. Beyond uptake another important unknown is how effective the vaccines are at suppressing transmission.

This report is divided into the five sections above, plus some concluding comments. Across the report we make the following forecasts for the next 12-18 months:

Vaccine Boosters: Covid-19 is endemic and we'll require booster vaccinations into the foreseeable future. These will be new cocktails designed to be effective against the highest threat variants.

Biometric Passports: To boost vaccine uptake, incentives such as requiring proof of vaccination in order to travel, attend large outdoor gatherings and so forth, will be introduced

Forever Restrictions: Even with these steps, there will still need to be ongoing restrictions, such as test and trace, self-isolation and some better targeted social distancing measures.

Travel Hassle: Travel will continue to be awkward as well as increasingly expensive. Travel and hospitality activity will be below 2019 levels well into 2022 and beyond.

Infection Rates: A running battle will involve a trade-off between persuading people to re-vaccinate, enforcing increasingly unpopular restrictions and enduring smaller infection waves.
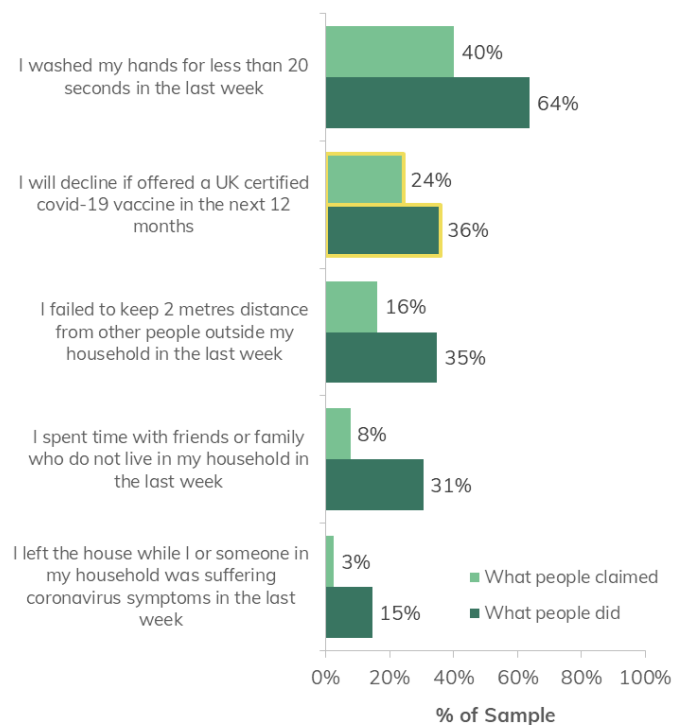
Acceptance is Overstated

People often want to paint themselves in a better light, particularly when discussing a socially desirable behaviour. The ONS has been reporting some encouraging results on people's willingness to accept the Covid vaccine when it's offered to them. Unfortunately, we're sceptical that in practice the programme will reach or convince that many people. We'd like to be wrong. But clearly it's better to plan around realistic, rather than optimistic, forecasts.

So over the past six months we've run several field studies using a technique called Unmatched Count[1] which anonymises individual participant's responses. Figure 1 shows how an average person's claimed likelihood of rejecting the vaccine is 24%, which is similar to the ONS figures. However, the true underlying rejection rate measured with Unmatched Count is in fact higher, at 36%.

Figure 1: Under-Reported Covid Behaviours

I washed my hands for less than 20 seconds in the last week — 40% / 64%

I will decline if offered a UK certified covid-19 vaccine in the next 12 months — 24% / 36%

I failed to keep 2 metres distance from other people outside my household in the last week — 16% / 35%

I spent time with friends or family who do not live in my household in the last week — 8% / 31%

I left the house while I or someone in my household was suffering coronavirus symptoms in the last week — 3% / 15%

■ What people claimed
■ What people did

% of Sample

Source: Dectech Pandemic Research Apr 2020, N = 1,840 and Nov 2020, N = 1,321

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1. Coutts, E., & Jann, B. (2011). *Sensitive Questions in Online Surveys: Experimental Results.* Socio. Methods and Res., 40(1), 169-193.

The Amenable British

Figure 2: National Vaccine Acceptance
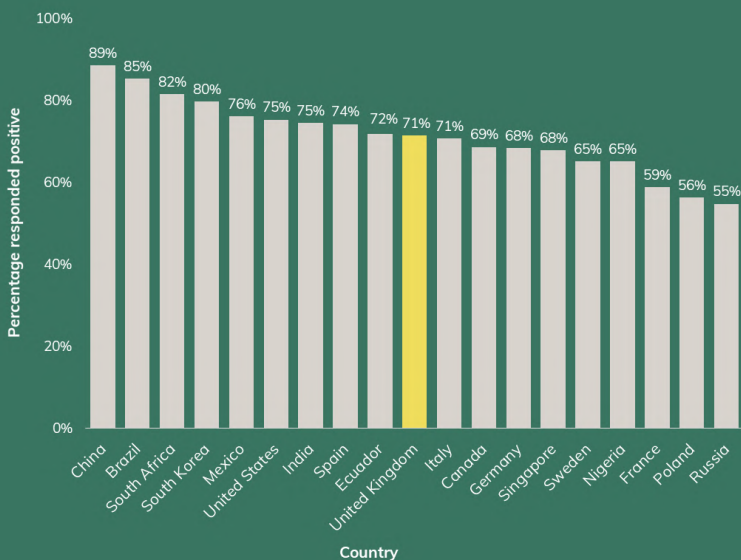
Source: Lazarus, J.V., Ratzan, S.C., Palayew, A. et al. A global survey of potential acceptance of a COVID-19 vaccine. Nature Medicine (2020).

Recent research highlights material national differences in vaccine acceptance rates. Whilst the paper uses a less reliable self-report approach, it shows that the UK is likely to benefit from higher participation rates than other European countries. For example, just 59% of French respondents thought they'd agree to being vaccinated compared to 72% in the UK.

Whilst this is perhaps disappointing, it still compares favourably to other pandemic behaviours we tested during the first lockdown. Back then, for example, three times as many people were breaking the lockdown to see people outside their household as were prepared to admit it to a researcher. Likewise, Figure 2 shows how UK compliance with the vaccine rollout is likely to be relatively high by European standards.
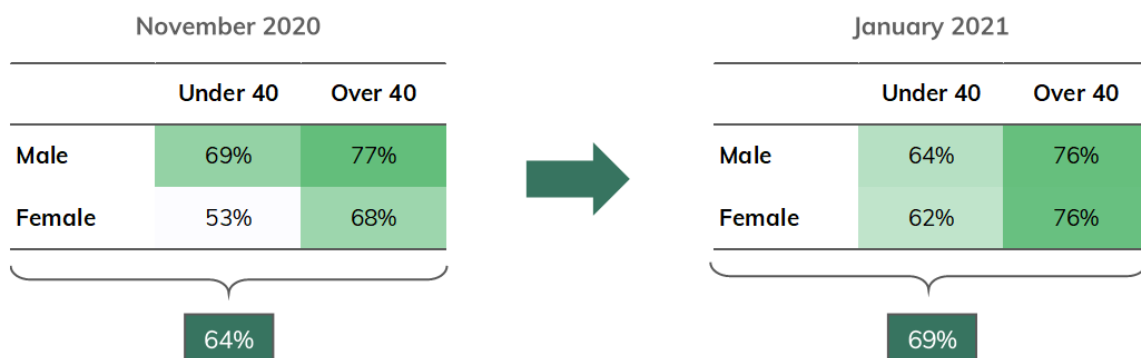
Chapter 02

Acceptance is Increasing

If acceptance rates are lower than we might have hoped, the good news is that they are improving as the vaccine rollout progresses. We've now run two waves of this research and the aggregate results are shown in Figure 3. As discussed, back in Nov 2020, 36% of people revealed that they'd avoid the vaccine, meaning that 64% would accept vaccination. When we re-ran the fieldwork in Jan 2021, this number had risen to 69%.

The figure also provides the statistically significant demographic differences seen in the data. What we saw was that older people and men were more likely to accept the vaccine, in line with Covid's Infection Fatality Rate. But two months later the observed gender effect had disappeared. The increase to a 69% acceptance rate has been entirely driven by changing attitudes amongst women.

Figure 3: Vaccine Acceptance Rate Improvement

November 2020

	Under 40	Over 40
Male	69%	77%
Female	53%	68%

64%

January 2021

	Under 40	Over 40
Male	64%	76%
Female	62%	76%

69%

Source: Dectech Vaccine Acceptance Research (Nov 2020, N = 1,321 ; Jan 2020, N = 1,319)

Driven by Our Better Natures

To understand how to improve vaccine participation we need to understand what's driving that behaviour. As noted earlier, it's generally meaningless to ask people directly. They either won't tell you or, in this case, won't know.
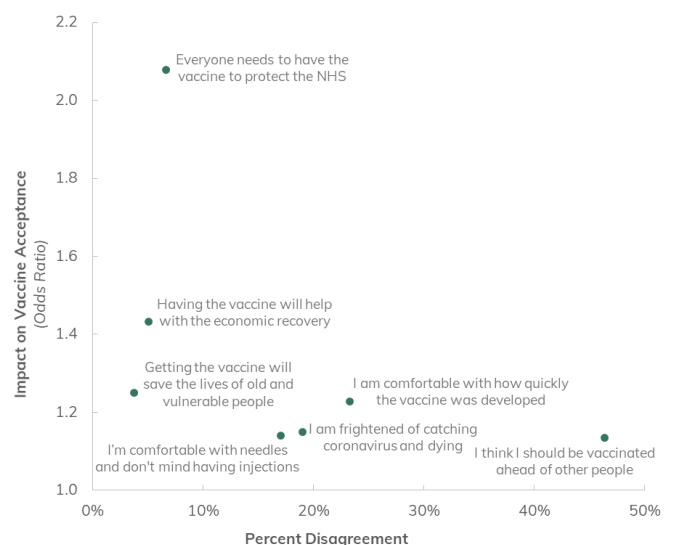
So we used a revealed preference method where we compare people's propensity to agree to vaccination with the extent to which they hold other beliefs. This then shows what role those beliefs play in causing vaccine acceptance.

The vertical axis of Figure 4 measures the impact of holding a particular belief upon your propensity to be vaccinated. If you believe that people should "have the vaccine to protect the NHS" then you are x2.1 more likely to accept the vaccine than if you don't hold that belief.

Whereas being happy with the speed at

which the vaccines were developed raises participation by x1.2 and, by extension, being worried about this, or just generally not liking needles, will reduce participation propensity by about x0.8.

Figure 4: Vaccine Acceptance Motivations

Source: Dectech Vaccine Acceptance Research, Jan 2020, N = 1,319

On the horizontal axis is the proportion of people who disagree with the statement. This measures the size of the opportunity for converting people and extending the roll-out. The further away a belief is from the origin (bottom left), the more leverage it has on the rollout success. Further away means the belief is highly influential, not widely held or both. Hence the main recommendation is to campaign on the importance to the NHS and to reassure people that it really is their turn to get a vaccination.

Twitter Good, London Bad

Our work doesn't find any social media impact on vaccination behaviour, whatever conspiracy theories people might encounter there. Specifically, those people who regularly use Twitter or Facebook are no less likely to accept the vaccine than others. Indeed, Twitter users appear to be more likely to get vaccinated, though this result doesn't quite reach statistical significance.

By contrast, Londoners seem to be less likely to agree to vaccination. But interestingly that effect disappears once you account for regional differences in the motives shown in Figure 4. In other words this finding is explained by Londoners not agreeing as strongly about protecting the NHS, needing to play their part in the economic recovery and so on. People are apparently more community-minded in the shires. Londoners are also a bit more frightened of needles!
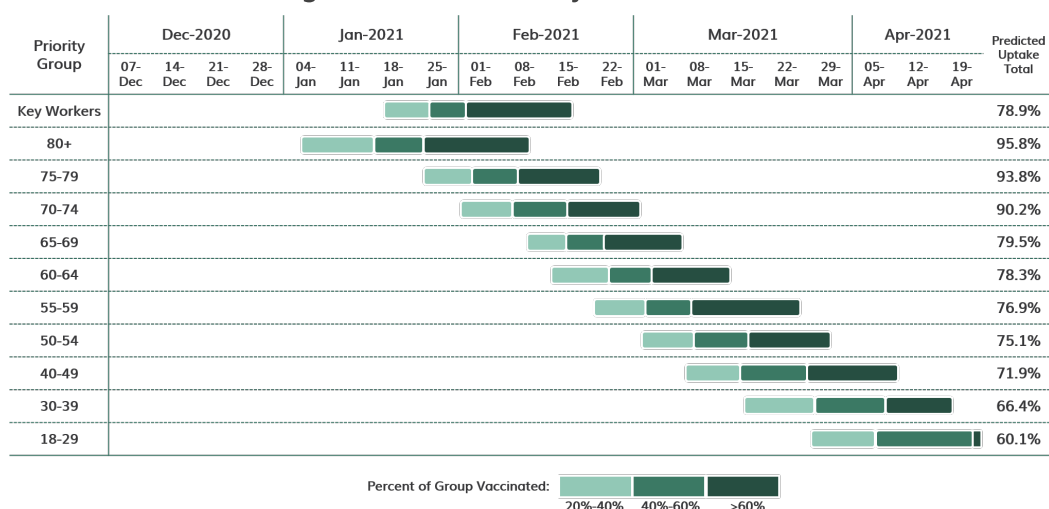
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The Rollout Timetable

The NHS has hit its target for delivering 15 million doses by mid-February and has recently announced a dramatic acceleration of the programme that will see all adults offered their 1st vaccination by the end of July, with the next goal to reach everyone over 50 by mid-April. Understandably, given its potential to bring the pandemic under control and begin lifting lockdown restrictions, there is intense media speculation about whether the NHS can reach this new target.

Of course, much rests on whether the UK can procure and distribute the necessary volumes. But it will also depend on how many of the 32 million people in Groups

Figure 5: First Dose Projected Timetable

Priority Group	Dec-2020				Jan-2021				Feb-2021				Mar-2021					Apr-2021			Predicted Uptake Total
	07-Dec	14-Dec	21-Dec	28-Dec	04-Jan	11-Jan	18-Jan	25-Jan	01-Feb	08-Feb	15-Feb	22-Feb	01-Mar	08-Mar	15-Mar	22-Mar	29-Mar	05-Apr	12-Apr	19-Apr	
Key Workers																					78.9%
80+																					95.8%
75-79																					93.8%
70-74																					90.2%
65-69																					79.5%
60-64																					78.3%
55-59																					76.9%
50-54																					75.1%
40-49																					71.9%
30-39																					66.4%
18-29																					60.1%

Percent of Group Vaccinated: 20%-40% 40%-60% >60%

Source: UK Government Coronavirus (COVID-19) Dashboard. Dectech Vaccine Acceptance Research (November - January 2020, N = 2,640). *The first COVID-19 vaccine was given on 08/12/2020.

Vaccine Preferences

Whilst people have an opinion about whether they will accept vaccination, they don't seem to have a preferred vaccine, even though the vaccines use very different approaches and offer different levels of protection. Two-thirds of respondents either didn't know or didn't care. Of the third that did have a preferred vaccine, the majority wanted Oxford-AstraZeneca rather than Pfizer-BioNTech.

1-9 are actually willing to be vaccinated. Somewhat perversely, the more people that refuse the vaccine, the faster the Government will hit its target and vice versa. Accordingly, Figure 5 shows the distribution pace and predicted final uptake rates across Priority Groups.

As noted, we forecast higher participation rates in older adults. These calculations are consistent with the 90% acceptance rates to date that the NHS has reported for people over 75 years. If the NHS continued to deliver 450k doses per day, we predict that in practice all those over 50 will have been offered their first dose by 30th March, two weeks ahead of schedule, and that 50% of people aged 50-54 years will have been handled by 10th March. However, if the pace continues at the slower pace we are currently seeing, it will delay projections by a week or so.
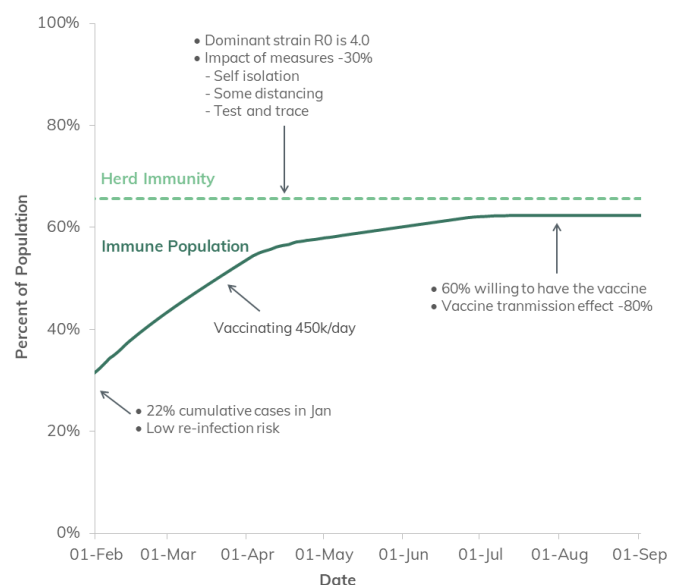
Many Contingencies

The eventual vaccination rollout impact is contingent on overall uptake rates. Given lower acceptance in younger cohorts, we estimate the entire 1st dose rollout will be completed in May, including all willing adults. That will cover about 60% of the UK population. At that stage, the NHS will start to focus on 2nd doses and boosting participation for under 40s. Allowing time for the vaccination to work, the final level of population immunity will begin to show by mid-July, as shown in Figure 6. So the Government roadmap for lifting restrictions, with preliminary plans to end legal limits on social contact from 21st June, may be slightly premature.

The figure shows population immunity depends on several factors beyond vaccine uptake. For example, little is known about how much the vaccines suppress transmission, though plausibly it is closely tied to the main Phase III trial "symptomatic illness and a positive PCR test" outcome variable. Hence, we've assumed a -80% transmission impact, but that could be at least ±20% off the mark and, of course, new virus strains could change these dynamics.

Figure 6: Vaccine Rollout Effectiveness

- Dominant strain R0 is 4.0
- Impact of measures -30%
  - Self isolation
  - Some distancing
  - Test and trace

Herd Immunity

Immune Population

Vaccinating 450k/day

- 60% willing to have the vaccine
- Vaccine tranmission effect -80%

- 22% cumulative cases in Jan
- Low re-infection risk

Source: UK Government Coronavirus (COVID-19) Dashboard, Cambridge MRC Biostatistics Unit, Dectech Vaccine Acceptance Research (Nov 2020, N = 1,321 ; Jan 2020, N = 1,319), Davies, N. G et. al (2020) Association of Tiered Restrictions with Covid-19 Deaths. The Lancet.

Conclusions

The relationship between population immunity and Covid-19's effective reproduction number will determine subsequent Government policy and our lives over the next 12-18 months. There are essentially three main levers that can be used in combination:

Vaccination: There will be an ongoing battle to encourage people to protect the NHS and get re-vaccinated. This will be backed up with either incentives or compulsion. For example, vaccine passports may not be Government policy, but might still be required for air travel.

Restriction: As we've seen, various restrictions can be used to manage the reproduction number. Self-isolation, test and trace and some social distancing will remain in place for the foreseeable future, as will limits on larger social gatherings.

Infection: With vaccination targeted at the higher risk cohorts, the NHS is better placed to withstand Mar '20 or Jan '21 sized waves. There will be an endless debate about what infection rates society should tolerate in order to loosen restrictions or vaccination targets.

Of course, much remains unknown about the future of the pandemic. Forthcoming vaccine data, particularly from Israel, arriving over the next few months will greatly influence those outcomes. But it's clear that Covid-19 is now endemic and measures to control the virus will have to remain in place for some time yet. During 2022 we should anticipate booster shots, wide-spread testing, especially at large events, and ongoing travel restrictions.

However, it is also clear that there are grounds for great optimism. The effectiveness of the vaccine development work and the spectacular success of mRNA technology has been wholly extraordinary. It's reasonable to expect that these remarkable scientific advances will help navigate any future challenges and vastly reduce Covid-19's public health effects. And, of course, as always, a key variable in that future will be how such scientific innovation then leads to changes in people's behaviour.

About Dectech

Dectech strives to provide the most accurate and best value forecasts available on how people will behave in new situations.

Founded in 2002, we've conducted more than 400 studies involving over three million participants. We hold that people make very different decisions depending on their context and often struggle to self-report their beliefs and motives. So we developed Behaviourlab, a randomised controlled trial approach that immerses participants in a replica of the real-world decision environment. Over the years we've shown how Behaviourlab can provide higher accuracy forecasts and more actionable insights.

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