…And What Distinguishes those Who Are Willing To Get Vaccinated from Those Who Are Hesitant?

Our representative survey is available

I was interested in why people in Germany get vaccinated, what their most important motives are, and also why people do not get vaccinated. In addition, I am of course interested in the question: what exactly distinguishes these two groups?

For readers in a hurry: The most important reason for getting vaccinated is fear of the Covid-19 disease (for 60%). The second most important reason is the desire to lead a normal life again (for 30%). The most important reason not to be vaccinated is that they did not want to be treated with substances whose long-term effects are unclear (for 40%), and the second most important reason is fear of side effects (for almost 40%). The two groups can be separated very well with a logistic regression model. Those who are willing to be vaccinated differ from the reluctant: they score higher on an „orthodoxy scale“ that I developed specifically for such purposes and validated in our immunologist survey. They tend to not read the original scientific literature and rather follow conventional media. This model has a relatively good accuracy and is able to correctly match 78% of people.

The study has been available on Springer-Verlag's preprint server, Research Square, as preprint [1] for a few days and has been submitted for publication. My colleague Michael Ofner, a sports doctor, emergency medicine physician and immunology specialist with whom I have done many a study [2-6], set up a foundation that funded it. Our coauthor Markus Herbig from Debaro GmbH in Munich organized and conducted the survey, and my colleague Rainer Klement, a good statistician, calculated the model.

Debaro GmbH is a market research institute and has a panel of 30,000 people who routinely answer market research questions. For this survey, the institute drew a roughly representative sample that can be compared with the German population as a whole, mainly on the basis of the important demographic variables (age, gender, household size, income, level of education). In our case, that was 1032 people, about as many as in an election poll. Because the survey was programmed online, there were no missing values. After the Ethics Committee gave us the green light, we collected the data in the last week of November and the first week of December 2021. Before Christmas, we evaluated, wrote and submitted. Now the data is available.

The tables are self-explanatory and largely understandable even for readers with no specific knowledge.

The most important thing: About 83% of the respondents had been vaccinated (whether once or several times did not interest us). This is slightly more than what the German public health institutions RKI and Paul-Ehrlich-Institut stated at that time. Which may be because the official data is lagging, that it is wrong, or that our sample had a small bias towards the vaccinated.

We asked about the reasons hierarchically (most important, second most important, third most important reason). The most important reason, as mentioned, was fear of the health consequences of infection for 60%. The second most important reason overall was the desire to lead a normal life. This includes travel, which we asked about separately and which was important for 17%. A strong altruistic motive is also apparent: the desire to help eradicate the virus (30%). Social pressure was mentioned as a motive by 9%.

The reasons for not getting vaccinated were mainly the fact that the long-term effects of vaccinations are unknown (40%), fear of side effects (33%) and information about bad post-vaccination-courses (36%). A minority also said they thought the vaccination was not needed (about 10%) or that they were immune because they had already had the disease (about 8%).

After all, just under 10% of those vaccinated had tested positive for Covid-19 since vaccination. A total of 16% of those vaccinated said they had experienced serious side effects (thrombosis, embolism, fatigue, immunological, psychological or vascular problems). A total of 30% said that they had felt better since then, mainly because they were relieved and better integrated socially. 4% said they had better health since vaccination, 5.8% that they had worse health overall.

71% believed vaccination helped protect others from infection and 35% believed it protected them from infection themselves, both misconceptions by the way, as I explained in the previous blog post.

We used attitude questions to determine a so-called *Corona Orthodoxy Score – COS*. I developed this score as part of our immunologist survey [7]. It is a representation of the mainstream narrative („*The Coronavirus is more infectious, causes more deaths, burdens the disease system more than seasonal influenza; the virus is more important than the immune system and vaccination is necessary and should be pursued without regard to past processes*„). We replicated internal consistency (alpha = .76) and item intercorrelation (r_{it} = .32). The scale is unidimensional and captures 42% of the variance. It is therefore usable. This means that the individual items can be added up to a sum score. Those with a high

score are close to the mainstream narrative, those with a low score tend to deny it. Overall, the sum score is normally distributed.

We used this COS value, together with the socio-demographic data and information on the main sources of information of our respondents, to see how those who are willing to vaccinate differ from those who are hesitant, or those who are already vaccinated from those who are not. This is done with a dichotomous characteristic (vaccinated – not vaccinated, vaccine-ready – vaccine-delayed) with a logistic regression. This has the advantage that one can use all possible types of variables for prediction. [The two groups are, of course, partially overlapping, because we also included a question about whether someone is willing to be vaccinated in the near future. These, together with those already vaccinated, make up those willing to be vaccinated. Those who have not been vaccinated and do not plan to be vaccinated versus those who have been vaccinated make up the two groups of those who have been vaccinated and those who have not been vaccinated]

Rainer Klement has chosen a very elegant regression procedure. It is called LASSO (least absolute shrinkage and selection operator), which is used when one wants to select as sparingly as possible only those variables that can actually make a predictive contribution and does not want to generate statistical artefacts [8]. Predictors with a small contribution are set to zero, the important ones are selected and then the model is recalculated only with the important ones. In this way, one can get clearer results and does not unnecessarily inflate a predictive model.

These two regression models are highly significant. The variables predicting vaccination status are, in order of importance:

- The orthodoxy score – the higher, the more likely to be vaccinated (odds ratio = 1.39)
- Income – the more, the more likely to be vaccinated (OR = 1.27)
- Alternative media used – the less, the more likely to be vaccinated (OR = 0.44)
- Original scientific publications used – the less, the more likely to be vaccinated (OR = 0. 42)
- Household size – the smaller, the more likely to be vaccinated (OR = 0.82)
- Age – the older, the more likely to be vaccinated (OR = 1.01)
- Use of public TV and radio channels – the more, the more likely to be vaccinated (OR = 1.16)

It must be said here that even though this model is the best of all the fitted models in terms of parsimony compared to richness and predictive power, the last two predictors are not individually significant. Fact-checkers will be quick to note this. They should be told that what matters in modelling linear and non-linear models is not just the significance of the

individual predictors, but how well a set of predictors can predict the criterion, in this case vaccination status, and how parsimonious the model is compared to all others possible. This fact is represented by the so-called Akaike information criterion, which we used to select the models. The first model explains a total of 21% of the total variance, which is relatively good for such models, but shows that we have by far not captured all relevant variables.

The odds ratios are statistical parameters that can be interpreted as percentages. So those who have a higher orthodoxy score are 39% more likely to be among the vaccinated. Those who use alternative media are 56 % more likely to have the status of not being vaccinated (with ORs smaller than zero, one must therefore reverse the calculation). Those who use original scientific publications are 58% more likely to be unvaccinated than vaccinated, etc. So these values indicate the relative importance of a predictor, the significance, the importance and the order within the regression equation.

So with these variables, we can correctly match 75% of all people in this sample.

When it comes to predicting willingness to vaccinate, it is even easier. For this, we only need three variables, and with a much more parsimonious model we can correctly match 84% of people and resolve 25% of the variance. These variables are

- The orthodoxiscore – the higher, the more willing (OR = 1.50)
- The use of original scientific publication – the more, the less willing (OR = 0.55)
- The use of public TV and radio – the more, the more willing (OR = 1.67)

Thus, those who have a higher orthodoxy score and thus are more likely to agree with the mainstream narrative and use public television and radio as sources of information are more willing to be vaccinated, and those who use original scientific publications are, by the same token, less willing to be vaccinated.

So it turns out that willingness to be vaccinated or to be vaccinated depends mainly on how one positions oneself to the mainstream narrative. Education plays no role, age hardly any, income and household size even less so. If one agrees with the mainstream narrative, one is more willing to be vaccinated. Those who do, use public broadcasters as a source of information to about the same extent as they do not read original scientific literature.

In my view, this reveals an important fact: the public broadcasters do not fairly represent scientific discourse. They overemphasize the benefits of vaccinations and conceal possible harms and problems. These are more likely to be discussed in alternative media, which are therefore improperly contextualized by the mainstream media with great regularity. This in turn highlights a major dilemma of the Corona crisis: the breakdown of social discourse. This has led to „disagreeable“ information being hushed up or trivialized by the public and

quality media, and those spreading it being labelled „crackpots“, „corona deniers“, „muddlers“, „contrarians“, or „Nazis“. Thus polarizing the field into the faithful and the heretics.

In the past, heretics were burnt for real. Today they are burnt medially. In the past, believers received sacrament and affection. Today they receive injection and reintegration. We can see how important this motive is in our data.

One other thing we see: The number of serious side effects is very high at 16%. The Paul Ehrlich Institute reports 0.2 serious suspected cases per 1,000 vaccinations, or 1.6 per 1,000 vaccinations in total. So we see about a factor of 100 more side effects in an active survey – which is still very crude and superficial. This confirms the empirical studies I cited in my previous blog post, which assume that 75% to 99% of true suspected cases *do not* show up in the adverse event databases. This means: most likely, we have to multiply the PEI figures by 100 if we want to know the true extent of side effects. Resulting in 1.7 deaths per 1,000 vaccinations, a mortality rate almost as high as the Infection Fatality Rate, which Ioannidis estimates at 2.5 per thousand as a result of Corona infections across all countries and studies [9]. If the data from the Dutch Lareb database were used as a basis [10], the figure would be as high as 4 per thousand. Now these are number games, which should make it clear that the side effect rate we get reported in this survey is very high. This makes it understandable why people are hesitant to get vaccinated. And that is unlikely to change.

If politicians and authorities are in all seriousness expecting the rest of the population to undergo this intervention, then there is only one way to go: a clean, long-term, large-scale safety and effectiveness study with active monitoring and careful follow-up that clearly documents the side effect and death rates of vaccinations and their benefits and can show that they are safe. So far, the claim of safety is a mere assertion that has yet to be proven.

It is unacceptable that the media and political shouters are reversing the burden of proof. It is not those who doubt who must prove they are right. It is those who claim certainty who must show they are right. Our data suggests that the doubt is justified. I showed in my last blog that the claim of vaccine safety is on weak legs. All those who rely on the registration studies and say that they have shown that vaccines are safe need to know: These registration studies did not even have the chance to show safety because a) they were too small to do so, because b) by definition they did not even count all the side effects immediately after the first vaccination and certainly not the deaths after the first vaccination. Therefore, these registration studies are worthless to prove safety. And this is not an isolated opinion of mine, but is published exactly like this by perhaps the most knowledgeable observer of the scene, Peter Doshi, the associate editor of the British Medical Journal [11, 12].

Those who are hesitant are obviously well-informed. For they align themselves with the scientific literature rather than the leading media. More propaganda will do little good. Neither will more pressure. The only thing that will help is good data. But I have my doubts that this data will be friendly towards vaccination. Because with every vaccination, the risk multiplies. If someone needs not just two, but three, four or five vaccinations to keep their antibody titre high, then the risk of suffering side effects is also three, four or five times higher, assuming a linear increase. But what if the increase is not linear but different, higher, for example? All these are thought games. The point is that we don't know because we don't have the data.

There is therefore, in my view, one main consequence: stop vaccinating or provide solid data.

We also see a clear relief effect in our study: 30% of those who get vaccinated feel better afterwards. This is mainly due to psychological relief and social integration. In psychology, this is called „negative reinforcement": you take away a punishment and thus reward the behaviour. People's ongoing lockdowns, measures and lockouts from social participation and the stress that comes with it are at least partially alleviated.

Is this a reason to get vaccinated? For many it certainly will be. But I ask myself in all seriousness: what is the point of fuelling an intervention whose potential danger we are only guessing at, and which is disproportionately high where it is beginning to show, in order to prevent an infection that will lead to serious consequences in a few people at most?

This supposed threat reminds me of a picture sent to me by the head of Asanger Publishing, Dr Wenninger, for the New Year, showing his Highland bull that he kept on his farm. I publish the picture here with the kind permission of Dr Wenninger.

I passed an enclosure with such highland cattle on a hike in Brandenburg today. It said: They have become so popular in recent years because they are robust, long-lived and sociable. You wouldn't believe it when you see the shaggy guys with their pointed horns. It's much the same with SARS-CoV-2: looks more dangerous than it really is.

That the collapse of the health system is to be prevented is, after all, also claimed everywhere and since the beginning of the crisis. This assertion is also false, as I learned yesterday in a book worth reading and thought-provoking [13]. We will come to that in one of the next blogs. It is becoming increasingly clear to me that this period is exceptional. It is characterized above all by the degree of large-scale, systematic distortion of facts. This is called lying, propaganda or nudging, depending on one's persuasion. That it has worked is also a result of our survey, one that gives me food for thought.

Sources, literature and footnotes

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