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# COVID-19 vaccination rate monitoring in Germany as an immigrant society (COVIMO focus survey)

Robert Koch Institute  
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## Report 9

(Data collection 04/11/2021 – 18/12/2021)

In this focus survey, the German survey was supplemented by interviews in five other languages. Thus, this survey also reached groups of people who could not be reached in previous surveys due to a language barrier. Overall, this survey thus provides results that are better able to reflect the population in Germany.

Vaccination gaps currently exist in various population groups. One example is the population of the eastern German states, which have significantly lower vaccination rates compared to the rest of Germany ([Digital vaccination rate monitoring for COVID-19 vaccination, 2022](#)). However, the vaccination rate of the older population is also insufficient in relation to its risk of disease. In order to identify the need for action, population groups have to be compared with each other. This focus survey concentrates on the immigrant population group and their direct descendants, i.e. persons with a migration background, and compares them with persons without a migration background.

## Summary

Are there differences in vaccination behaviour and intention between people with and without a migration background?

- People without a migration background have a slightly higher vaccination rate than people with a migration background.
- The willingness to vaccinate among those who are currently unvaccinated is higher among people with a migration background.

How can the different vaccination rates be explained?

- Socio-economic characteristics (education and income) and age may partly explain the lower vaccination rate among people with a migration background.
- Experience of discrimination in the health and care sector also contributes to a lesser extent to the explanation of the difference.
- Language barriers can explain much of the vaccination rate differences between people with and without a migration background.
- In fact, there is a greater difference in vaccination rates by language than by migration background: the better the self-assessed German language skills, the higher the vaccination rate.

## What else influences vaccination behaviour?

- The following applies to all respondents: the likelihood of being vaccinated increases with increasing confidence in the safety of vaccination and in the German health system.
- The greater the conviction that vaccination will enable freedom to be regained, the greater the likelihood of being vaccinated.
- The more a person with a migration background views vaccination as a community measure to prevent the spread of COVID-19, the more likely that person is to be vaccinated.
- Knowledge: False knowledge and especially uncertainties about the COVID-19 vaccine are widespread. There is significantly more uncertainty and false knowledge among people with a migration background than among people without a migration background.

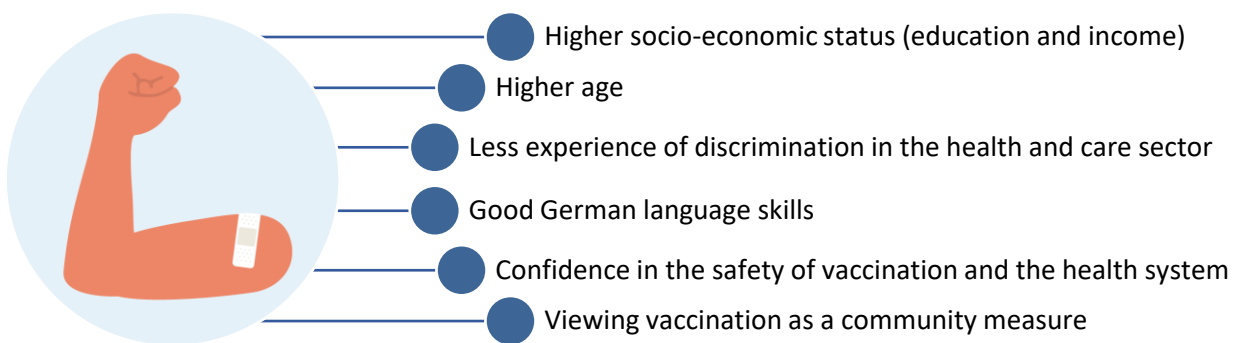


Fig. 1: Vaccination-related behavioural characteristics in persons with a migration background

## Overview and methodology

The aim of the monitoring of COVID-19 vaccination is to record the willingness to get vaccinated and vaccine acceptance of various population groups in Germany, and to identify possible barriers to vaccination use in a timely manner. For this purpose, monthly telephone surveys are conducted among members of the population aged 18 and over, which can be supplemented by questions on current aspects, such as certain knowledge with respect to the COVID-19 vaccination, or have a thematic focus. The participants are selected as a random sample from the sampling system of the ADM (Arbeitskreis Deutscher Markt- und Sozialforschungsinstitute e. V.). The sample includes randomly generated mobile and landline numbers (dual-frame approach). This approach enables each survey to be conducted so that it is representative of the target group in Germany.

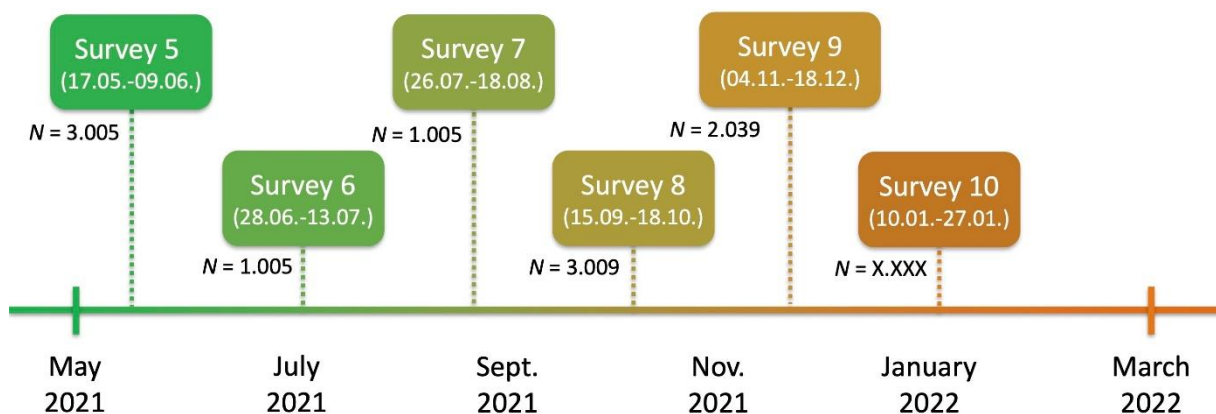


Fig. 2: COVIMO survey waves 5 to 10 over time

The 9th survey focused on Germany as an immigrant society. For this survey, 2 samples were drawn, each with about N=1000 people. Sample A includes immigrants and their direct descendants, hereinafter referred to as persons with (own or family) migration background<sup>1</sup>. This includes persons who have themselves immigrated to Germany as well as persons who have at least one parent who has immigrated to Germany. The respondents of this sample had the opportunity for the interview to be conducted in **German, Arabic, Turkish, Russian, Polish** or **English**. Sample B includes people without a migration background. Their interviews were in German. The data is weighted for region, age, gender, migration background and education.

### **Status of vaccination activities**

During the survey period (04/11/ - 18/12/2021), the mRNA vaccines from BioNTech/Pfizer and Moderna as well as the vector vaccines from AstraZeneca and Janssen-Cilag International were available in Germany. The AstraZeneca Vaccine and the COVID-19 Vaccine Janssen are only recommended for people over 60 years of age. STIKO (Standing Committee on Vaccination) recommends vaccinating people under the age of 30 only with the BioNTech/Pfizer (Comirnaty) mRNA vaccine. On 18 November 2021, STIKO announced that it was recommending a booster vaccination with one of the mRNA-based vaccines for all adults.

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Disclaimer: All data and conclusions reported here are to be regarded as preliminary and may only be used if the source is acknowledged. If you have any questions about the study, please contact [covimo@rki.de](mailto:covimo@rki.de).

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<sup>1</sup> The migration background term was chosen for the purposes of comprehensibility and legibility. The authors are aware of the recommendation of the Expert Commission on the framework conditions for integration capability ([Expert Commission on the framework conditions for integration capability, 2020](#)).

## Description of the samples

2039 people were interviewed in total (52% female, average age 55 years, SD = 17). This total consisted of 1015 people with a migration background and 1017 people without a migration background. The 2 samples are described in more detail in Table 1. The further descriptive analyses were performed with weighted data based on this sample composition.

Tab. 1: Characteristics of the samples

	Respondents with a migration background		Respondents without a migration background	
	Unweighted	Weighted	Unweighted	Weighted
<b>Age in years</b>				
Average (SD)	55 (18)	50 (19)	56 (17)	52 (18)
<b>Gender, n (%)</b>				
Male	477 (47)	263 (51)	504 (50)	733 (48)
Female	538 (53)	257 (49)	513 (50)	783 (52)
<b>Region, n (%)</b>				
Northern German states	178 (18)	90 (17)	175 (17)	278 (18)
Eastern German states	180 (18)	72 (14)	232 (23)	287 (19)
Southern German states	297 (29)	162 (31)	261 (26)	429 (28)
Western German states	360 (35)	195 (38)	348 (34)	521 (34)
<b>Educational level, n (%)</b>				
Low	147 (15)	70 (14)	44 (4)	87 (6)
Moderate	329 (33)	176 (34)	445 (44)	682 (45)
High	533 (53)	270 (52)	523 (52)	739 (49)
<b>Net monthly equivalent income in €</b>				
Average (SD)	1782 (1268)	1750 (1280)	2526 (1440)	2457 (1502)
<b>Migration background, n (%)</b>				
Immigrated oneself	792 (78)	403 (78)		
Direct descendant of immigrant parents	223 (22)	116 (22)		
<b>Length of stay in years</b>				
Average (SD)	25 (15)	22 (16)		
<b>Native language, n (%)</b>				
German	306 (30)	155 (30)		
Not German	704 (70)	362 (70)		
<b>Interview language, n (%)</b>				
German	572 (56)	297 (57)		
Arabic	57 (6)	35 (7)		
English	47 (5)	34 (6)		
Polish	23 (2)	10 (2)		
Russian	211 (21)	97 (19)		
Turkish	105 (10)	46 (9)		

## Vaccination rate estimates

Participants were asked if they had been vaccinated against COVID-19 and how many doses of vaccine they had received. The vaccination rate is based on weighted data and can only be given as an estimate. This is particularly suitable for group comparisons. The limitations of vaccination rate estimation are discussed in detail in COVIMO Report 7 ([COVIMO, 2021](#)).

### Vaccination rate estimate for the general population

Of all respondents (with and without migration background,  $n = 2039$ ), about 90% (95% CI: 89; 91) stated that they were vaccinated against COVID-19 at least once. About 85% stated that they were vaccinated at least twice (95% CI: 83; 86).

### Vaccination rate estimate by migration background and language

The estimated vaccination rate differs significantly between respondents with and without a migration background (see Fig. 3).

- Of the people with a migration background, about 84% stated that they had been vaccinated at least once (95% CI: 81; 87).
- The vaccination rate for the population group without a migration background is about 92% (95% CI: 91; 94).
- Differences between people with and without a migration background can be seen in both genders and in all age groups, except for the group of 18 to 29-year-olds, where the vaccination rate is about the same for people with and without a migration background and is just under 93%.

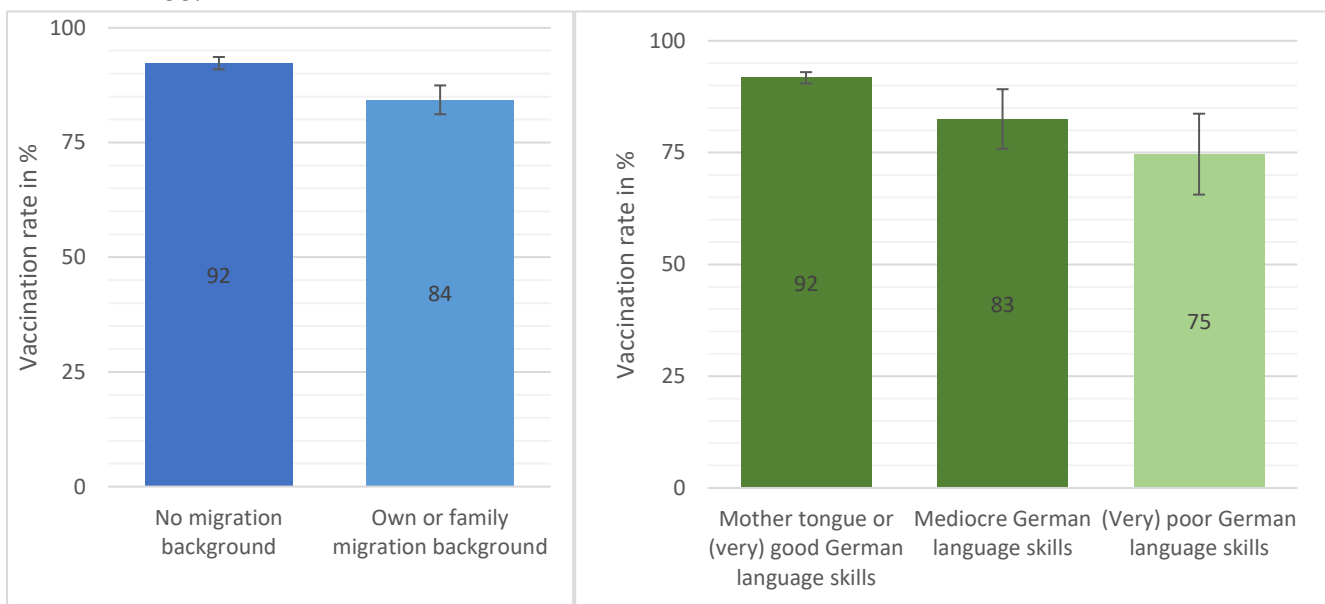


Fig. 3: Vaccination rate (stated by 95% CI) of the group without a migration background ( $n_{\text{weighted}} = 1517$ ;  $n_{\text{unweighted}} = 1017$ ) and the group with a migration background ( $n_{\text{weighted}} = 518$ ;  $n_{\text{unweighted}} = 1015$ )

Fig. 4: Vaccination rate (stated by 95% CI) by German language skills (mother tongue or (very) good ( $n_{\text{weighted}} = 1816$ ;  $n_{\text{unweighted}} = 1648$ ); mediocre ( $n_{\text{weighted}} = 128$ ;  $n_{\text{unweighted}} = 247$ ); (very) poor ( $n_{\text{weighted}} = 92$ ;  $n_{\text{unweighted}} = 142$ ))

The vaccination rate also differs according to the self-assessed German language skills (see Fig. 4).

- Of the respondents with German as their mother tongue or self-assessed (very) good German language skills, about 92% stated that they had been vaccinated at least once (95% CI: 90; 93).
- The vaccination rate for the respondents whose German language skills are mediocre according to their own statements is about 83% (95% CI: 76; 89).
- Respondents who rate their German language skills as (very) poor have a vaccination rate of 75% (95% CI: 66; 84).

## Willingness to get vaccinated

### Willingness of the general population to get vaccinated

The vaccination rate of those vaccinated at least once (with and without migration background) in this sample is about 90%. Thus, the proportion of unvaccinated people is low. Of 209 unvaccinated respondents, about 47% said they were unlikely to be vaccinated or would not be vaccinated under any circumstances, and about 30% remain undecided about their vaccination decision.

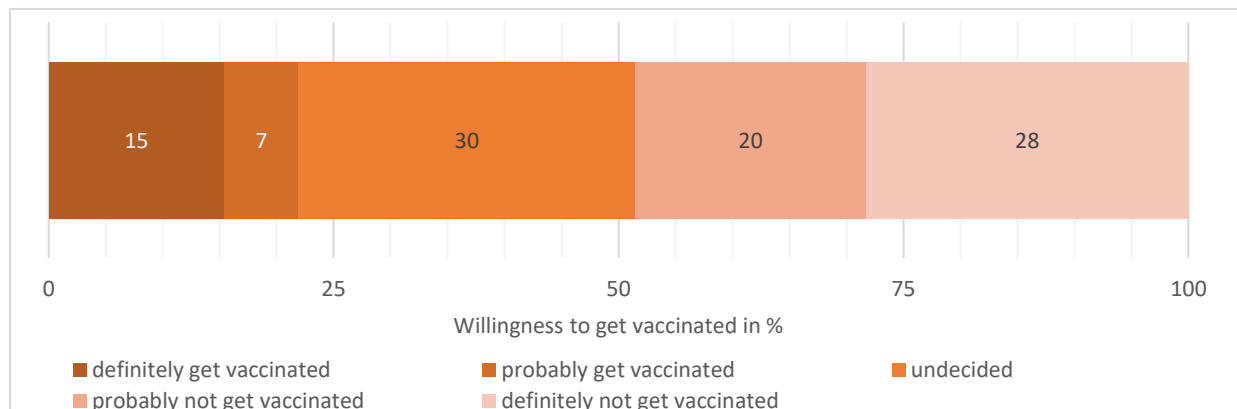


Fig. 5: Willingness to get vaccinated (weighted) of unvaccinated respondents ( $n_{\text{weighted}} = 198$ ;  $n_{\text{unweighted}} = 209$ )

### Willingness to get vaccinated by migration background

The average willingness to get vaccinated of the unvaccinated is significantly higher among respondents with a migration background ( $n_{\text{weighted}} = 116$ ;  $n_{\text{unweighted}} = 137$ ) than in the group without a migration background ( $n_{\text{weighted}} = 80$ ;  $n_{\text{unweighted}} = 71$ ). This result is also interesting in light of the lower vaccination rate among people with a migration background.

## Possible explanations for the differences in vaccination behaviour by migration background

The link between migration and health has been studied many times. There is a consensus in the literature that this link can be explained by socio-economic inequalities as well as barriers to access to and use of health services ([Paradies et al., 2015](#)). The focus survey on immigrant society examines the relationship between migration background and vaccination behaviour in relation to COVID-19 vaccination.

Analyses (step-by-step logistic regressions) were performed to check the effect of migration background on the probability (likelihood) of being vaccinated. The analyses included the following variables:

- Vaccination behaviour, having been vaccinated at least once (does not apply/applies)
- Migration background (not applicable/applicable)
- Net monthly equivalent income
- Education (low, moderate, high in the groups)
- Age
- Self-assessed German language skills (interval scale from 1 [mother tongue] via 2 [very good German language skills] to 6 [very poor German language skills])
- Experiences of discrimination in the health or care sector (interval scale from 1 [never] to 5 [very often]); see side note Experience of discrimination

### Results of the analyses

- People without a migration background have a higher likelihood of being vaccinated than people with a migration background.
- After adding **income, education and age**, there is still an effect of migration background on vaccination behaviour, but it is smaller.
- There are thus indications that the difference in vaccination behaviour according to migration background can be partly explained by socio-economic and socio-demographic characteristics.
- Socio-economic and socio-demographic characteristics also have an effect on vaccination behaviour:
  - The likelihood of having received at least one vaccination increases with increasing income.
  - People who belong to the high education group are more likely to be vaccinated than people who belong to the low education group.
  - The older a person is, the higher the likelihood that they are vaccinated.

**Poorer German language skills** can be a central barrier to access to information and health services. Thus, in addition to migration background, socio-economic and socio-demographic variables, a language variable is also included:

- Although a large proportion of respondents (with a migration background) do not perceive language barriers as an obstacle to obtaining a vaccination, these analyses indicate a correlation between language and vaccination behaviour:
- When the characteristics of education, income, age and language as an additional variable are controlled, the likelihood of being vaccinated does not differ between people with and without a migration background.

- The worse German language skills are assessed, the more likely people are to be unvaccinated.

In addition, **discrimination experienced in the health or care sector** can lead to less use of health services.

- Regardless of income, education, age and experience of discrimination, people without a migration background have a higher likelihood of being vaccinated than people with a migration background.
- The more often discrimination has been experienced in the health or care sector, the more likely people are to be unvaccinated.

### Side note: Experience of discrimination

In this focus survey, participants were asked whether and how often they experienced discrimination in health care (5-point Likert scale from 1 [never] to 5 [very often]). The question was as follows:

How often have you been treated unfairly or worse than other people in the health or care sector (e.g. doctor, hospital, assisted living, nursing home)? This means, for example: you received worse service or you were treated with less respect.

A majority of respondents stated that they had never experienced discrimination in the health or care sector (76%). Respondents with a migration background were significantly more likely to have experienced discrimination than respondents without a migration background.

Respondents who stated that they had already experienced discrimination (rarely or more frequently) were asked about the possible reasons for this experience of discrimination according to their **subjective assessment**<sup>2</sup>. Age as well as having a chronic illness or physical impairment were often cited as a possible reason by all respondents. Origin, accent, language, appearance and name were most often cited as the reason (49%) by respondents with a migration background.

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<sup>2</sup> The authors are aware that the reasons for discrimination do not lie with those who experience discrimination.



## Psychological determinants of vaccination

Various models have been developed worldwide to explain vaccination behaviour and to be able to record the reasons for vaccination and non-vaccination. The “5C model” is probably the most comprehensive model and includes the five aspects of the vaccination decision shown here. In the current survey wave, special attention was paid to the perceived barriers (constraints), so that items on specific constraints were included:

- It is difficult for me to get a vaccination appointment.
- It is difficult for me to get to the vaccination location.
- I don't have enough time to organise getting a vaccination.

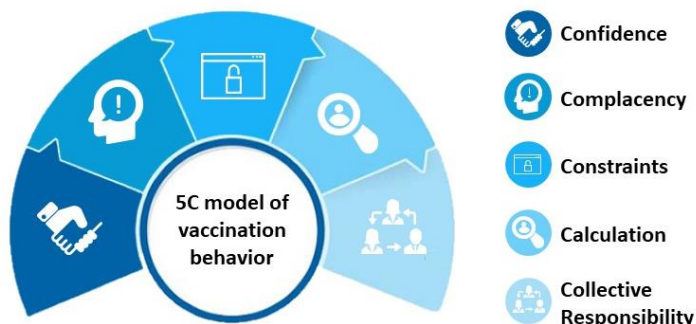


Fig. 6: 5C model ([Betsch et al., 2018](#))

Since the beginning of the COVIMO study, the participants have also been asked about their reasons for vaccination and non-vaccination using an open response category. The participants' answers were coded, converted into precodes and adapted from survey to survey. In surveys 6 and 7, the most common precodes could finally be used as new items and supplements to the 5C model. Two of these items were included in the focus survey:

- I feel pressurised to get vaccinated against COVID-19.
- I will get vaccinated to regain my freedom.

Respondents gave their personal assessment of the statements on a scale from 1 (does not apply at all) to 5 (applies completely).

A comparison of psychological determinants between respondents with and without a migration background (see Fig. 7) shows that respondents with a migration background have significantly less confidence in vaccination and the health system. They also have a significantly lower risk perception and weigh up less benefits and risk of vaccination. In both groups, vaccination is strongly perceived as a community measure, and slightly less so among respondents with a migration background. Perceived barriers play a minor role in both groups, but respondents with a migration background find it harder to reach the vaccination location and more often perceive lack of time as an obstacle to vaccination. They feel more often pressurised to get vaccinated.

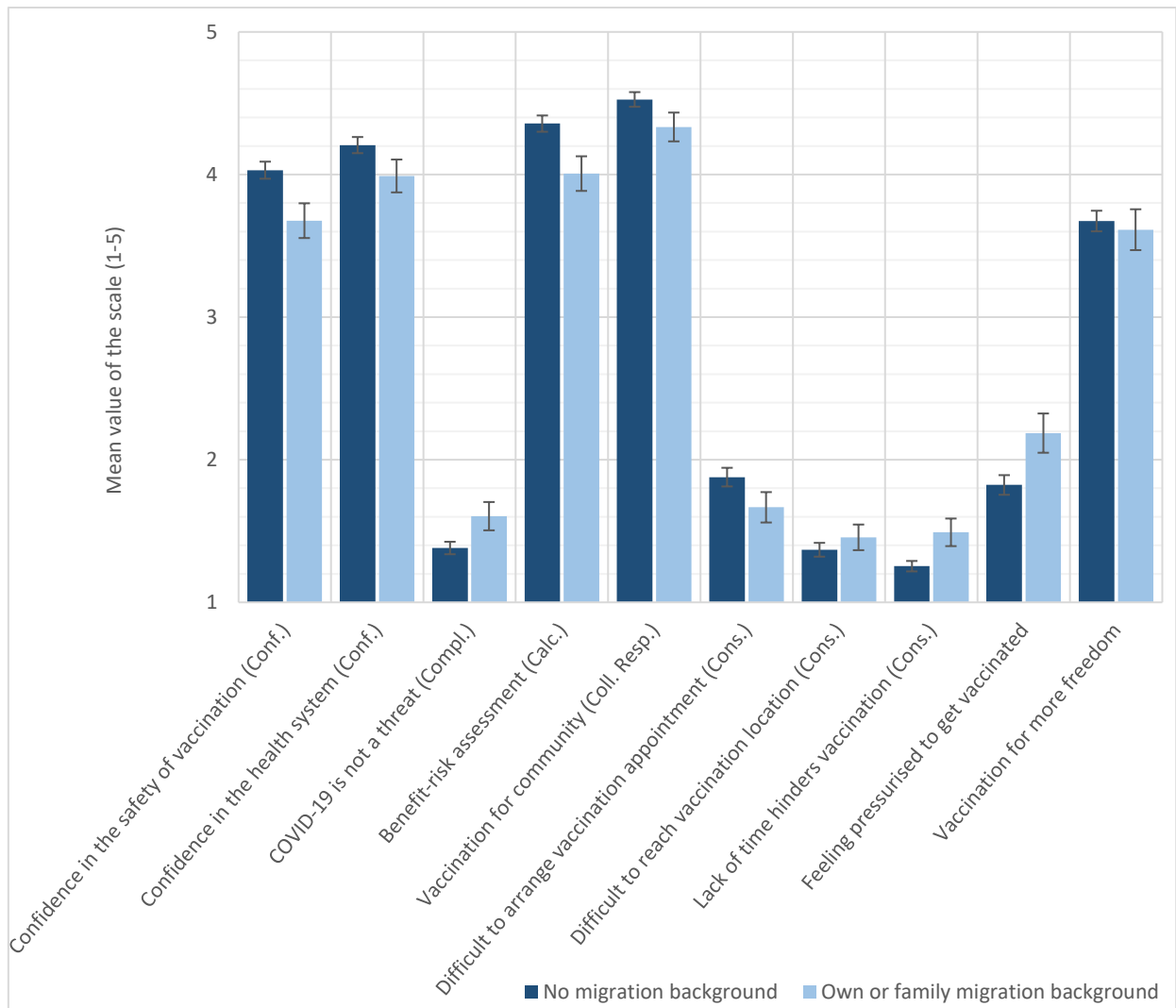


Fig. 7: Mean values (weighted, stated by 95% CI) of the 5C items for the respondents without a migration background (weighted:  $n_{\min} = 1492$ ;  $n_{\max} = 1513$ ; unweighted:  $n_{\min} = 1005$ ;  $n_{\max} = 1015$ ) and for the respondents with a migration background (weighted:  $n_{\min} = 473$ ;  $n_{\max} = 516$ ; unweighted:  $n_{\min} = 992$ ;  $n_{\max} = 1009$ )

### **Psychological determinants for explaining current vaccination behaviour**

The effect of the 5C items and the other vaccination acceptance items on vaccination behaviour was examined. For this purpose, analyses (logistic regressions) were performed separately for the groups with and without a migration background. The following variables were included in both models:

- Vaccination behaviour, vaccinated at least once
- 5C items
- Other vaccine acceptance items
- Net monthly equivalent income
- Education (low, moderate, high in the groups)
- Age

At this point in time of the pandemic, effects of the psychological determinants of confidence, vaccination pressure and freedom through vaccination on vaccination behaviour can be observed for both groups of people. This means:

- With increasing trust in the vaccination and in the German health system, the probability of having received at least one vaccination increases.
- The greater the conviction that vaccination will enable freedom to be regained, the greater the likelihood of being vaccinated.
- The more a person agrees that they feel pressurised to get vaccinated, the more likely the person is to be unvaccinated.

For the group of people with a migration background, it was also possible to determine an effect of the 5C item collective responsibility, which currently has no effect on vaccination behaviour for people without a migration background. This means:

- The more a person with a migration background views vaccination as a community measure to prevent the spread of COVID-19, the more likely that person is to be vaccinated at least once.

## Knowledge

The awareness or knowledge of people, together with a variety of other factors, can influence vaccination behaviour and also have an effect on psychological determinants, such as confidence in the safety of vaccination (confidence), but also risk perception (complacency). Knowledge, on the other hand, is influenced, among other things, by the available information services. The participants answered knowledge-based questions about vaccination (efficacy, transmission, safety, etc.).

Overall, false knowledge and uncertainty with respect to knowledge about COVID-19 vaccination is high among all respondents. There is a need for action, which mainly concerns the knowledge items shown in Fig. 8.

Among people with a migration background, it is noticeable that there are greater uncertainties in relation to all knowledge items than among respondents without a migration background.

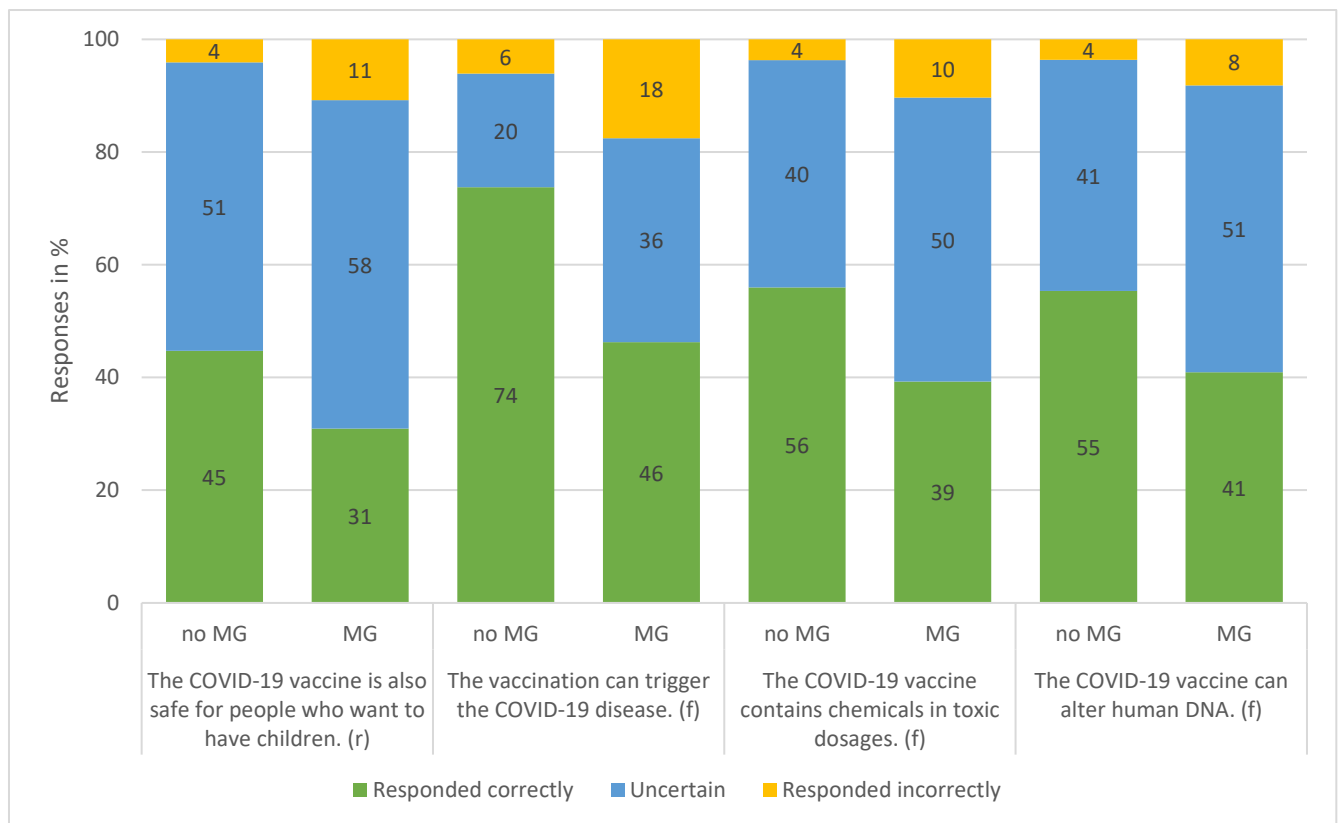


Fig. 8: Proportion of correct, incorrect and uncertain responses with respect to selected knowledge items by migration background (MB)

Tab 2: Response to the knowledge items not shown in Fig. 8 by migration background, data in %

	Respondents without a migration background			Respondents with a migration background		
	Responded correctly	Responded incorrectly	Unsure	Responded correctly	Responded incorrectly	Unsure
The COVID-19 vaccine reliably protects against severe COVID-19 disease. (r)	74	12	14	59	13	28
In some cases, vaccinated people can still become infected by others and then transmit the virus. (r)	91	1	7	80	2	18
The COVID-19 vaccination is free of charge for everyone. (r)	96	2	2	87	1	11
Even people without health insurance in Germany can get vaccinated against COVID-19. (r)	62	1	37	45	4	51

## Limitations of the study

- The size of the 2 samples (n~1,000 each) enables many analyses. However, the number of respondents is too small for certain subgroup analyses, so that statements about differentiated characteristics are limited or not possible. The authors are aware that both the population group without a migration background and the population group with a migration background are very heterogeneous.

- These are self-reported statements of the respondents, which were made in a telephone survey. They are known to be subject to various methodological limitations, such as selection bias and socially desirable response behaviour. A comparison of different population groups - instead of the absolute level of vaccination rates - in terms of vaccination behaviour is nevertheless useful and possible.
- Respondents report subjective perceptions. Other important components of the vaccination activities, such as the processes of vaccinating centres and information offers, cannot be recorded with this study design and can only be taken into account to a limited extent in the interpretation.
- This survey may not be able to reach specific population groups which are particularly vulnerable. This does not mean that these population groups are not relevant; in particularly vulnerable groups, for example, it is conceivable that there are certain barriers to vaccination use (e.g. homelessness) that cannot be uncovered with this study.

## Acknowledgement

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