

# To wear or not to wear? Factors influencing wearing of face masks in Germany during the Corona pandemics

## *Welche Faktoren beeinflussen die Bereitschaft zum Tragen von Masken während der Corona-Pandemie in Deutschland?*

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Deutsche Zusammenfassung / German summary

In einer Umfrage unter 274 Probanden am 21. und 23. April 2020 messen wir Einstellungen und Verhaltensweisen bzgl. des Tragens von Gesichtsmasken während der laufenden SARS-CoV2-Epidemien, kurz bevor das Tragen solcher Masken in Deutschland beim Einkaufen und bei der Benutzung öffentlicher Verkehrsmittel gesetzlich vorgeschrieben wird. Insgesamt gaben zwischen 50% und 80% der Teilnehmer an, dass sie (wahrscheinlich) eine Maske tragen würden (wenn sie eine hätten), während sie im Supermarkt, im Bus, an der Universität oder im Flugzeug sind. Auf der Straße würden nur 21% eine Maske tragen – wahrscheinlich wird das Infektionsrisiko in dieser Situation als wesentlich geringer eingeschätzt. Bei den meisten demographischen Faktoren (Geschlecht, Alter, Studentenstatus) finden wir keine signifikanten Unterschiede. Ein Universitätsabschluss erhöht jedoch die Wahrscheinlichkeit, eine Maske zu tragen. Überraschenderweise gibt es zwischen einer früheren Umfrage vom 24. bis 25. März 2020 keinen Unterschied in der Einstellung zum Tragen von Masken.

Unseren Ergebnissen zufolge bestimmen im Allgemeinen fünf Gründe die Bereitschaft, eine Maske zu tragen: Angst vor der aktuellen Situation, Selbstschutz, Schutz anderer, das Gefühl, dass das Tragen einer Maske seltsam aussieht, und Angst vor einem schlechten Eindruck auf andere.

Die Bedeutung dieser Faktoren variiert stark zwischen den Altersgruppen: Bei jungen Menschen ( $\leq 25$  Jahre) spielt der Schutz anderer keine Rolle, während bei älteren Menschen ( $>25$  Jahre) weder der Selbstschutz noch der Eindruck auf andere Menschen eine wesentliche Rolle bei der Entscheidung spielen. Bei Frauen spielt der Schutz anderer keine signifikante Rolle, während bei Männern der Eigenschutz keine Rolle spielt. Unter dem Strich führen also bei verschiedenen Gruppen ganz unterschiedliche Gründe zu ähnlichem Verhalten.

Fast alle Testpersonen geben an, eine Maske zu tragen, wenn das Gesetz dies vorschreiben würde, aber die Befolgung wäre geringer, wenn das Tragen einer Maske "auf der Straße" verlangt würde.

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### *Schlussfolgerungen und Politikvorschläge*

Wir konzentrieren uns in unseren Schlussfolgerungen auf politische Vorschläge, wie die Bereitschaft der Menschen zum Tragen von Gesichtsmasken erhöht werden kann. Der schnellste Weg, Menschen zum Tragen von Masken zu bewegen, ist wahrscheinlich eine gesetzliche Regelung. Diese stößt jedoch an ihre Grenzen, wenn sie zu streng ist: Menschen auf der Straße zum Tragen von Masken zu verpflichten, würde (zumindest in den nicht so dicht besiedelten Gebieten Deutschlands) zu geringerer Akzeptanz führen.

Um die Menschen selbst zu motivieren, muss ein maßgeschneiderter Ansatz gewählt werden:

- Junge Menschen neigen dazu, sensibler auf das wahrgenommene Urteil anderer zu reagieren. Populäre Vorbilder, die Masken tragen, könnten in diesem Fall hilfreich sein, und generell alles, was die Angst nimmt, dass andere „seltsam über mich denken“, wenn man eine Maske trägt.
- Für junge Menschen und auch für Frauen ist der Selbstschutz ebenfalls wichtig. Die Betonung dieser Funktion kann dazu beitragen, die Compliance zu erhöhen.
- Für ältere Menschen (in unserer Studie >25 Jahre alt) und für Männer scheint der Aspekt des Schutzes anderer wichtiger zu sein. Auch dies kann betont werden, wenn man diese Gruppe anspricht.

Wir haben keinen Grund zu der Annahme, dass unsere Schlüsselergebnisse nicht auf eine repräsentativere Stichprobe der Bevölkerung und auf andere, vergleichbare Länder übertragbar wären, insbesondere da die Ergebnisse sehr robust zu sein scheinen. Dennoch werden auf jeden Fall weitere Studien erforderlich sein.

## Abstract

In a survey among 274 subjects on April 21–23, 2020, we elicit opinions and behaviour regarding wearing face masks during the ongoing SARS-CoV2 epidemics, briefly before wearing such masks will become law in Germany for shopping and using public transport. Overall, between 50% to 80% stated they would (probably) wear a mask (if they had one) while in the supermarket, on the bus, at university or in an airplane. On the street, only 21% would – probably the infection risk in this situation is seen to be much lower. We find no significant differences of most demographic factors (gender, age, student status). Having a university degree, however, increases the likelihood to wear a mask. Surprisingly, there is no difference in attitudes towards wearing masks between a previous survey from March 24–25, 2020.

According to our results, in general, five reasons determine the willingness to wear a mask: being afraid of the current situation, self-protection, protecting others, thinking that wearing a mask looks strange, and being afraid of others' judgement when wearing a mask.

The importance of these factors varies strongly between the age groups: for young people ( $\leq 25$  years) protecting others does *not* play a role, while for older ( $> 25$  years) neither self-protection nor other people's opinion play a significant role in the decision. For women, protecting others does not play a significant role, while for men self-protection does not play a role. The bottom line is that very different reasons lead to similar behaviour in different groups.

Nearly all subjects state to wear a mask if law would require, but compliance would be lower when wearing a mask "on the street" were required.

## 1 Introduction

The current SARS-CoV2 pandemic is not only a challenge for physicians and medical research, but also for political communication. After at first, many countries and also the WHO did not recommend to use face masks for the general public as a mean to reduce the spread of the virus, this has changed after scientific evidence supported that face masks do indeed reduce the spread. Another reason that has been suspected for the initial advice against using face masks that has been discussed is the lack of supply for them in the initial stages of the pandemic that requested to limit their use for medical personnel.

Wearing face masks in public is extremely unusual in Western countries (whereas it is common practice in East Asia already for a long time to reduce the spread of common cold or influenza). To elicit the acceptability of wearing face masks in the current situation and to determine factors that influence it, we conducted an online survey.

In Germany, wearing face masks in certain situations will become mandatory on April, 27<sup>th</sup>, around five days after our survey. We hope that our results can help to assess the best ways to promote their use among different groups of people. Policy suggestions derived from the study are summarized in the concluding section.

## 2 Methodology

We conducted an online survey on April 20–22, 2020, advertised to students and employees at the University of Trier, Germany. In total, 274 subjects participated. After filtering out incomplete and inconsistent surveys, 206 remained. The participants' age ranged from 18 to 77 years (average age: 28 years), 63% were female, 64% were bachelor or master students,

51% had a university degree. The sample is therefore certainly not representative, but covers a broad range of the population.

Besides standard demographic questions, we asked subjects whether they know personally Covid-19 patients or persons who were tested for SARS-Cov2.

The questions about attitudes and expectations of wearing a mask were as follows:

*It's weird when someone wears a face mask in public.*

*(Disagree, agree partially, agree mostly, totally agree)*

This measures the personal aversion to face masks.

*Would others (friends, colleagues etc.) think strangely about you if you wore a face mask?*

*(Certainly yes, probably yes, probably no, certainly no)*

This proxies whether a person would be afraid of others' judgement when wearing a face mask.

*In your opinion, how well does wearing a face mask protect the wearer from infection by the new corona virus?*

*(Very well, well, medium, little, not at all)*

This measures how effective the person think wearing a mask would be for self-protection.

*How well do you think wearing a face mask prevents others from being infected with the new coronavirus?*

*(Very well, well, medium, little, not at all)*

This measures the felt effectiveness for protecting others.

With the following questions we elicited the likelihood of wearing masks in public, in different situations:

*Would you wear a face mask in the following situations (assuming you had one available)?*

- *On the bus*
- *At the university*
- *In the street*
- *On the plane*

*(No, probably no, probably yes, yes)*

*Suppose it were a legal requirement, would you wear a face mask (assuming you had one available) in the following situations?*

- *On the bus*
- *At the university*
- *In the street*
- *On the plane*

*(No, probably no, probably yes, yes)*

We also asked the subjects whether they think one could learn from how East Asian countries handle epidemics. (Since wearing masks is standard in these countries, we would expect to see a certain positive correlation to the willingness to wear masks.)

Finally, we asked people how much they generally worry about the corona crisis.

The survey also contained other items that are not subject to the current study.

## 3 Results

### 3.1 Descriptive results

The basic results can be summarized as follows: subjects are rather mixed, but slightly positive about wearing masks (Fig. 1). Between 50%–80% states they would “probably”

wear a mask in four out of five situations. Only “in the street” this drops to 20%. The percentages seem to reflect the infection risks reasonably well.

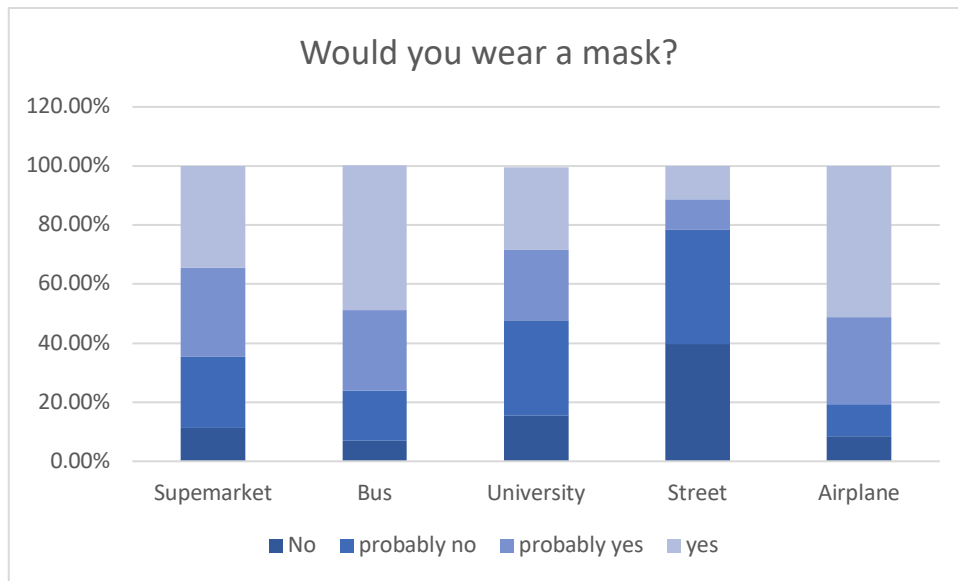


Fig.1: Wearing masks in the public, without a law being enforced.

The picture changes dramatically if wearing a mask would be required (Fig.2). In this case, the overwhelming majority would do so – or at least they say they would, given that it is obviously difficult to avoid that subjects tend to state they would behave according to the law when being asked, even if in reality they might not. There is also a not so small minority (20%) who would probably not wear a face mask in the street, even if it were the law. This suggests that policy makers should be rather cautious about requesting people to do this, as compliance could become a larger issue.

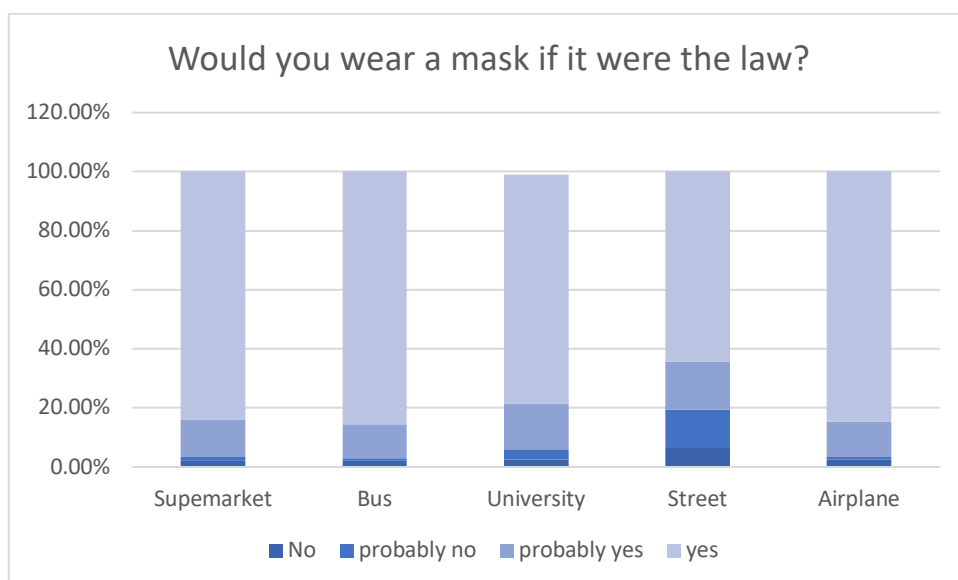


Fig. 2: Wearing face masks when it is prescribed by law.

How about the problems with face masks? 64% of the subjects agree at least partially that it is strange to wear a mask in public (Fig. 3a). Only 25% worry that others will (probably) think

strange about them when wearing one, but 41% do not rule out this possibility either (Fig. 3b).

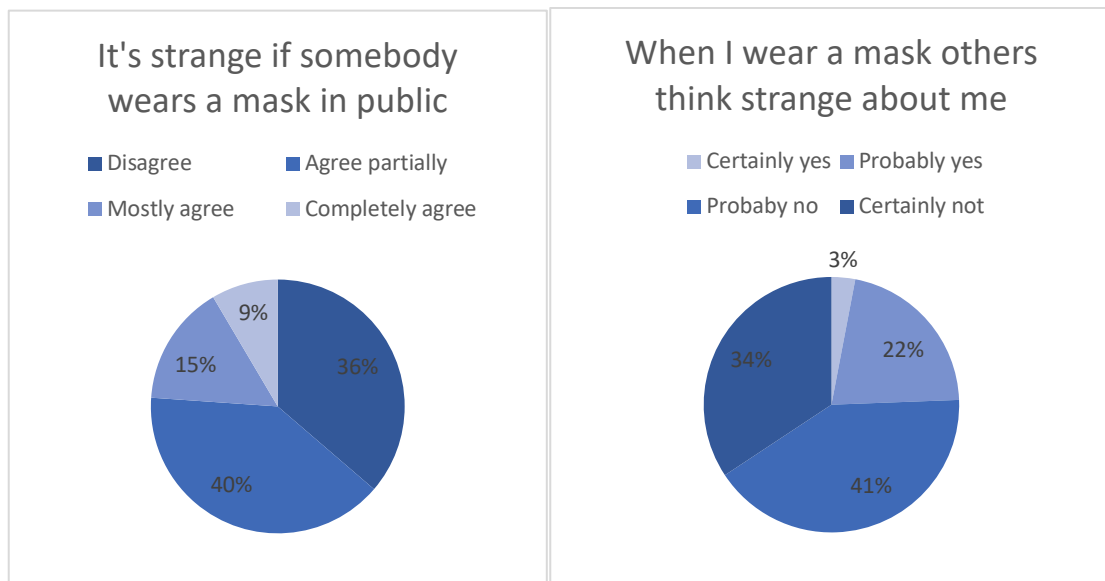


Fig. 3a+b: Psychological and social reasons against wearing a mask.

How about the usefulness of the masks? Here the high heterogeneity of answers reflects the high uncertainty on this matter and the different opinions by experts (Fig. 4). In any case, people trust much more into the ability of masks to protect others than into the self-protection.



Fig. 4: Perceived protection by masks.

Given that masks are a standard way of protecting against the spread of diseases in East Asia, and that the success of most East Asian countries against the pandemics is remarkable and is sometimes commented positive about in German media, but that also some of the measures (in particular those who restrict personal freedom and data privacy) are controversial in Germany, we were curious what subjects think about these measures. Fig. 5 shows the results:

while 78% agree at least partially to this, the percentage of people mostly or totally agreeing is only 31%.

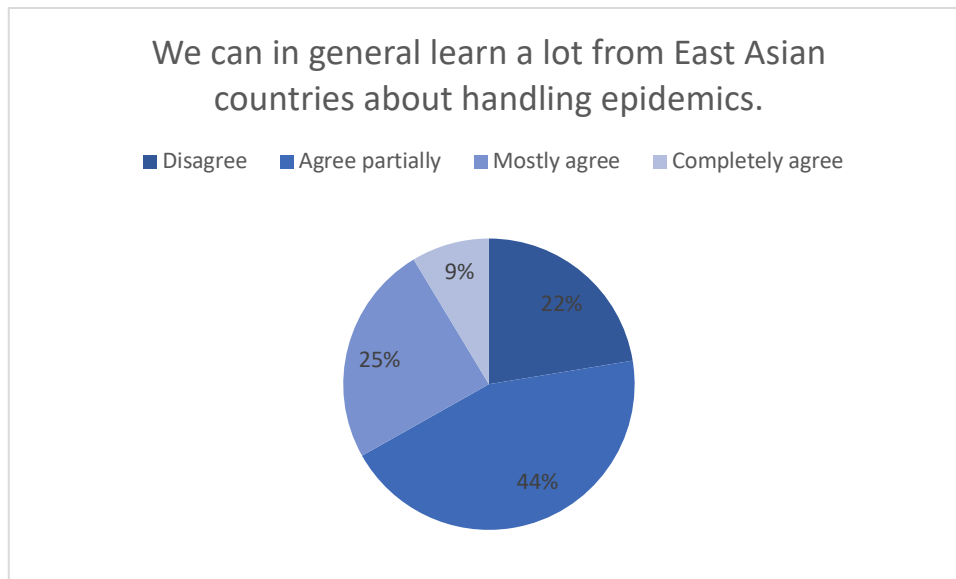


Fig. 5: Handling of epidemics by East Asian countries – something to learn from?

### 3.2 Comparison to previous survey wave

We had asked one question about wearing masks already in an earlier survey (March 24–25), before the lock-down and long before discussions about a law enforcing wearing masks. The subjects sampling and the subsequent demographics of the subject were very similar, thus making it possible to compare directly the results. We were expecting to see a more positive attitude towards masks in the recent survey, but indeed the results are essentially indistinguishable (Fig .6). Statistical tests also revealed absolutely no significant difference in the distribution of answers. It seems that such attitudes can change much slower, while behaviour can probably be changed much faster (but the next week will show this).

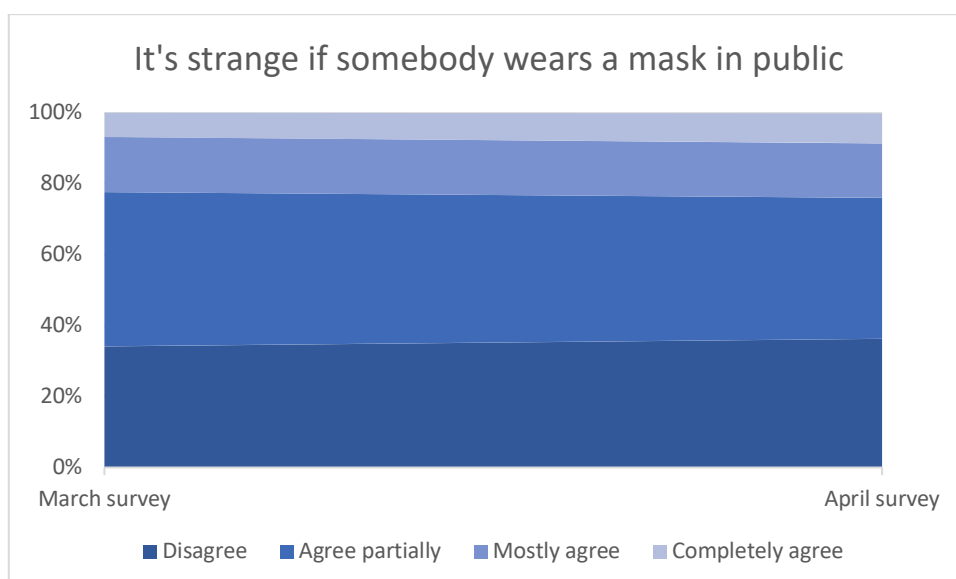


Fig. 6: Attitudes towards wearing masks are time invariant.

### 3.3 Factors influencing wearing a mask, age and gender differences

We have seen already that state interventions in the form of laws are very promising in enforcing the use of masks, at least in situations where a real risk is perceivable (Sec. 3.1). What other factors play a role?

To this aim we conducted a regression analysis to detect factors contributing significantly to wearing a mask (Table 1). As dependent variable we used the sum of all answers to the likelihood of wearing a mask (without law) where the answers to each item were encoded on a 1 to 4 scale.

Significant factors for wearing a mask:	All	≤25 years	>25 years	female	male
worries about the crisis	Dark Blue	Dark Blue	Dark Blue	Dark Blue	Dark Blue
own aversion	Dark Blue	Dark Blue	Dark Blue	Dark Blue	Dark Blue
judgement of others	Blue	Dark Blue	White	Blue	Light Blue
self-protection	Blue	Blue	White	Blue	White
protecting others	Blue	White	Blue	White	Blue

Table 1: Schematic summary of regression results: dark blue: very strong and significant factor, blue: strong and significant factor, light blue: weakly significant factor.

We find that the most significant factor are worries about the current crisis: more worries, more mask wearing, as had to be expected. Other significant factors are the own aversion against wearing a mask, the perception of others' judgements, self-protection and protection of others. Demographic factors (age, gender, university student) did not play a role, besides a university degree which increased the likelihood.

The results become more interesting when focussing on subgroups of the sample. While worries about the crisis and the own aversion to wearing a mask are relevant for all groups, we find striking differences in the other reasons: when looking only on young people (age ≤25 years), judgements on others and self-protection are very important, but protecting others does *not* play a significant role. For others (>25 years), on the other hand, self-protection and judgement of others did not play a role, but protecting others.

This result is surprising, and somehow disconcerting, as young people are typically not affected as severely by the disease, so for them protecting others should be of higher priority, but the opposite seems to be the case.

We also find gender differences: while for men protecting others plays a significant role, for women self-protection does. In that respect, average women are more similar to average young people.

We checked whether behind these differences is a difference in the perception of the usefulness of wearing a mask, but we did not find significant differences of that between women and men or between young subjects and others.

## 4 Conclusions und policy suggestions

We focus in our conclusions on policy suggestions how to increase the willingness of people to wear face masks.

We find that the fastest way to make people wear masks is probably by law. We do see limitations to this, however, if the law is too strict. Requiring people to wear masks on the



street would (at least in the not so densely populated areas of Germany) not lead to high compliance rates.

To self-motivate people, a more tailor-made approach has to be used:

- Young people tend to be more sensitive to the perceived judgement of others. Having popular role models wearing masks might help in this case, and general everything that takes away the worries that others “will think strange about me” when wearing a mask.
- For young people and also for women, self-protection is also important. Stressing this function may help to increase compliance.
- For older people (>25 years old in our study) and for men, the aspect of protecting others seems to be more important. Again, this can be emphasized when addressing this group.

We have no reason to believe that our key results would not carry over to a more representative sample of the population and to other, comparable countries, in particular given that the results seem to be very robust. Nevertheless, further studies will definitely be needed.