**Supplementary material**

[Materials and methods 28](#_Toc67478941)

[Data collection overview 28](#_Toc67478942)

[Population and sample characteristics 29](#_Toc67478943)

[Vaccine attributes and values 30](#_Toc67478944)

[Example of a random vaccine profile 31](#_Toc67478945)

[Psychological variables, measurements 32](#_Toc67478946)

[Supporting results 34](#_Toc67478947)

[Supporting figures 34](#_Toc67478948)

[Average effect of the vaccine context 34](#_Toc67478949)

[Sensitivity analyses: average attribute effects 35](#_Toc67478950)

[Effect heterogeneity 37](#_Toc67478951)

[Supporting regression tables 53](#_Toc67478952)

[Average attribute effects 53](#_Toc67478953)

[Attribute effects, by psychological dispositions 54](#_Toc67478954)

# Materials and methods

## **Data collection overview**

Table S.1. Overview of data collection process (in round 1)

|  |  |
| --- | --- |
| **Invitation/reminder** | **Date** |
| Letter of invitation (E-Boks) | November 27 |
| Reminder 1 (E-Boks) | November 29 |
| Text message | December 1 |
| Telephone | November 30 – December 3 |

## **Population and sample characteristics**

Table S.2. Population margins, sample margins, and weighted-sample margins

|  |  |  |  |
| --- | --- | --- | --- |
|  | Sample | Weighted sample | Population |
| **Education** |  |  |  |
| Low | 40 % | 45 % | 45 % |
| High | 60 % | 55 % | 55 % |
| **Sex** x **age** |  |  |  |
| Female 18-34 years | 10 % | 13 % | 13 % |
| Female 35-50 years | 13 % | 12 % | 12 % |
| Female 51-65 years | 18 % | 12 % | 12 % |
| Female 65+ years | 13 % | 13 % | 13 % |
| Male 18-34 years | 8 % | 14 % | 14 % |
| Male 35-50 years | 11 % | 12 % | 12 % |
| Male 51-65 years | 14 % | 12 % | 12 % |
| Male 65+ years | 13 % | 11 % | 11 % |
| **Region** |  |  |  |
| Capitol | 32 % | 32 % | 32 % |
| Midtjylland | 22 % | 23 % | 23 % |
| Nordjylland | 10 % | 10 % | 10 % |
| Sjælland | 15 % | 14 % | 14 % |
| Syddanmark | 21 % | 21 % | 21 % |

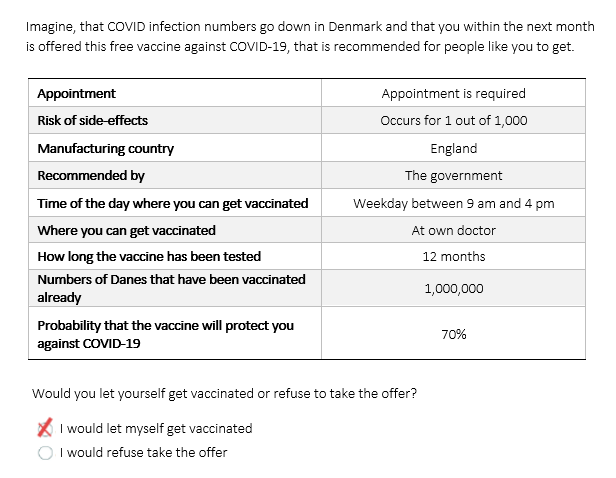
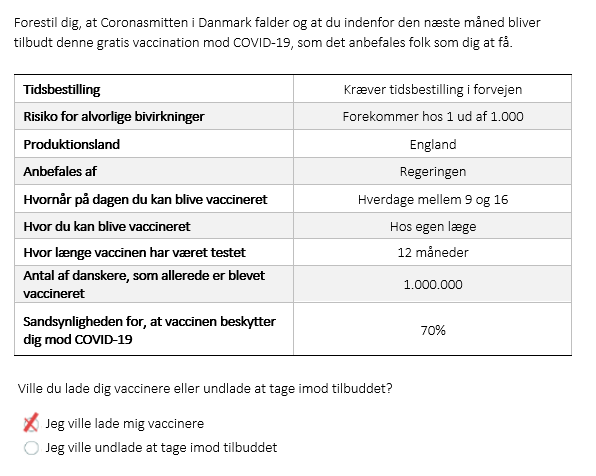
## **Vaccine attributes and values**

Table S.3. Overview of attributes and values

|  |  |
| --- | --- |
| Attributes | Values |
| Probability that the vaccine protects you against COVID-19 | * 50 % * 70 % * 90 % |
| Risk of serious side-effects, e.g., allergic reaction with swelling and breathlessness | * 1 in 1,000 * 1 in 10,000 * 1 in 100,000 |
| Number of Danes who have already been vaccinated | * 10,000 * 100,000 * 1,000,000 |
| For how long has the vaccine been tested | * 3 months * 6 months * 12 months |
| Country of production | * Denmark * United Kingdom * United States of America |
| Recommended by | * Health authorities * Own doctor * The government * Researcher |
| Where can you get vaccinated | * A place nearby [regional hospital] * With your own doctor * At the pharmacy |
| When during the day can you get vaccinated | * Weekdays between 6 and 22 * Weekdays between 9 and 16 * Weekdays and weekends between 9 and 16 |
| Appointment | * Health authorities assigns you an appointment * You show up without having an appointment * You need to make an appointment |

## **Example of a random vaccine profile**

Figure S.1. Random vaccine profile



## **Psychological variables, measurements**

Table S.4. Measurement of psychological variables

|  |  |  |
| --- | --- | --- |
| Concept | Question wordings | Values |
| Institutional trust | * On a scale from 0 to 10, where 10 is full trust, how much do you personally trust the Danish authorities? | 0 – No trust at all in the authorities  1  2  3  4  5  6  7  8  9  10 – full trust in the authorities |
| Covid worry | * I am very worried about being infected with COVID-19? | 1 – Completely disagree  2  3  4 – Neither agree nor disagree  5  6  7 – Completely agree |
| Vaccine motivation  An exploratory PCA shows that the items clearly load on one component. The eigenvalue for the first component is thus 2.85 while the eigenvalue for the second component is .52.  Similarly, there is a high alpha of .86. | * I believe that a vaccine can stop the spread of COVID-19 in Denmark * Even if you have already been infected, it is still necessary to be vaccinated against COVID-19 * Even if most others are vaccinated against COVID-19, it is still important that I am also vaccinated * I feel that it is my duty towards the Danish society that I get vaccinated against COVID-19 | 1 – Completely disagree  2  3  4 – Neither agree nor disagree  5  6  7 – Completely agree |
| Vaccine worry  There is a pearson’s r correlation between the two items of .77. | * I am worried that a vaccine against COVID-19 will have serious side-effects that are yet unknown, when the vaccine is rolled out * I am very worried that there has been too short time for developing and testing vaccines against COVID-19 | 1 – Completely disagree  2  3  4 – Neither agree nor disagree  5  6  7 – Completely agree |

# Supporting results

## **Supporting figures**

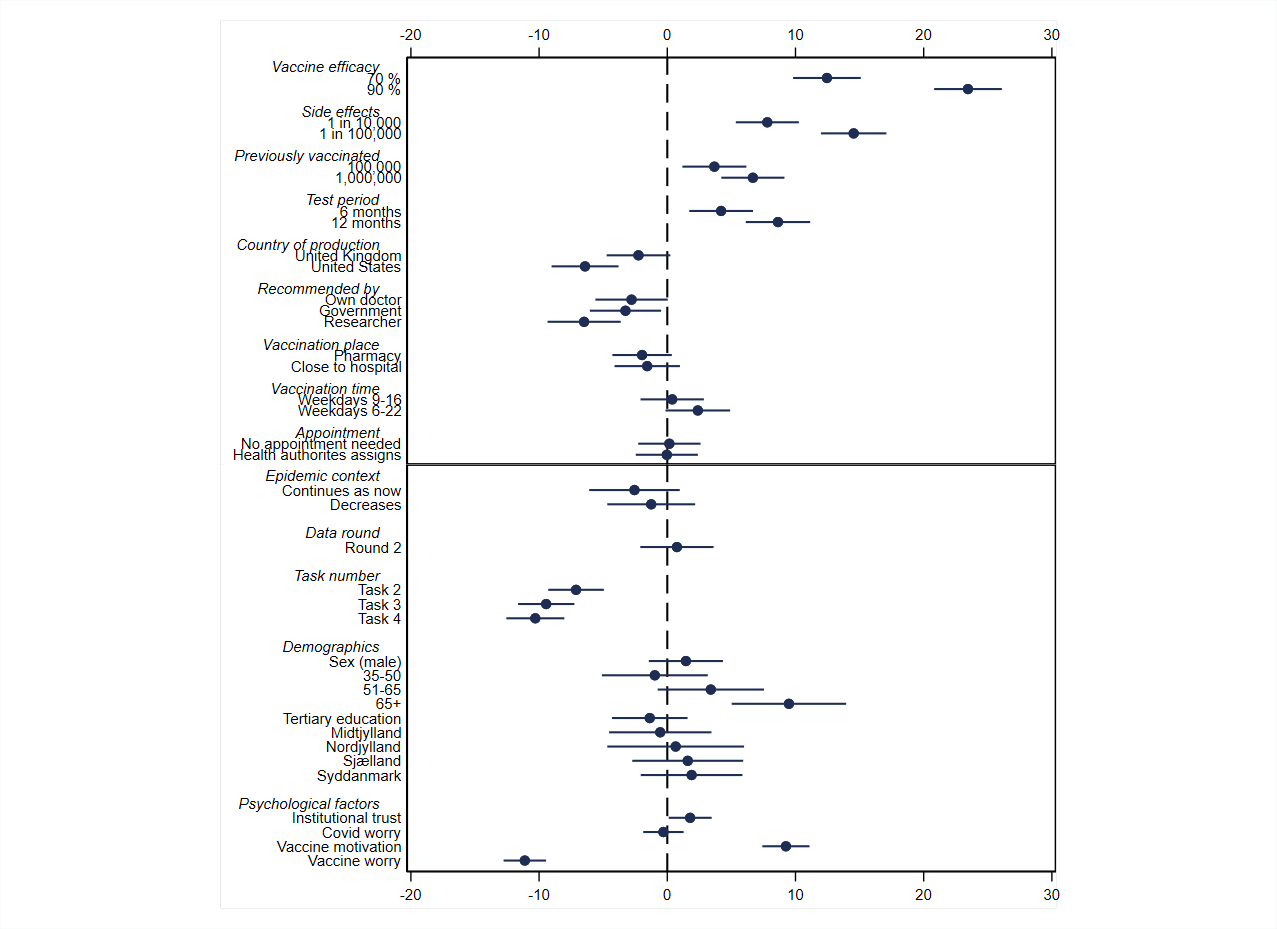
### **Average effect of the vaccine context**

Figure S.2. Probability of vaccine acceptance across epidemic contexts

 Note: predicted acceptance rates with cluster-robust 95% CI from linear (weighted) least square regression.

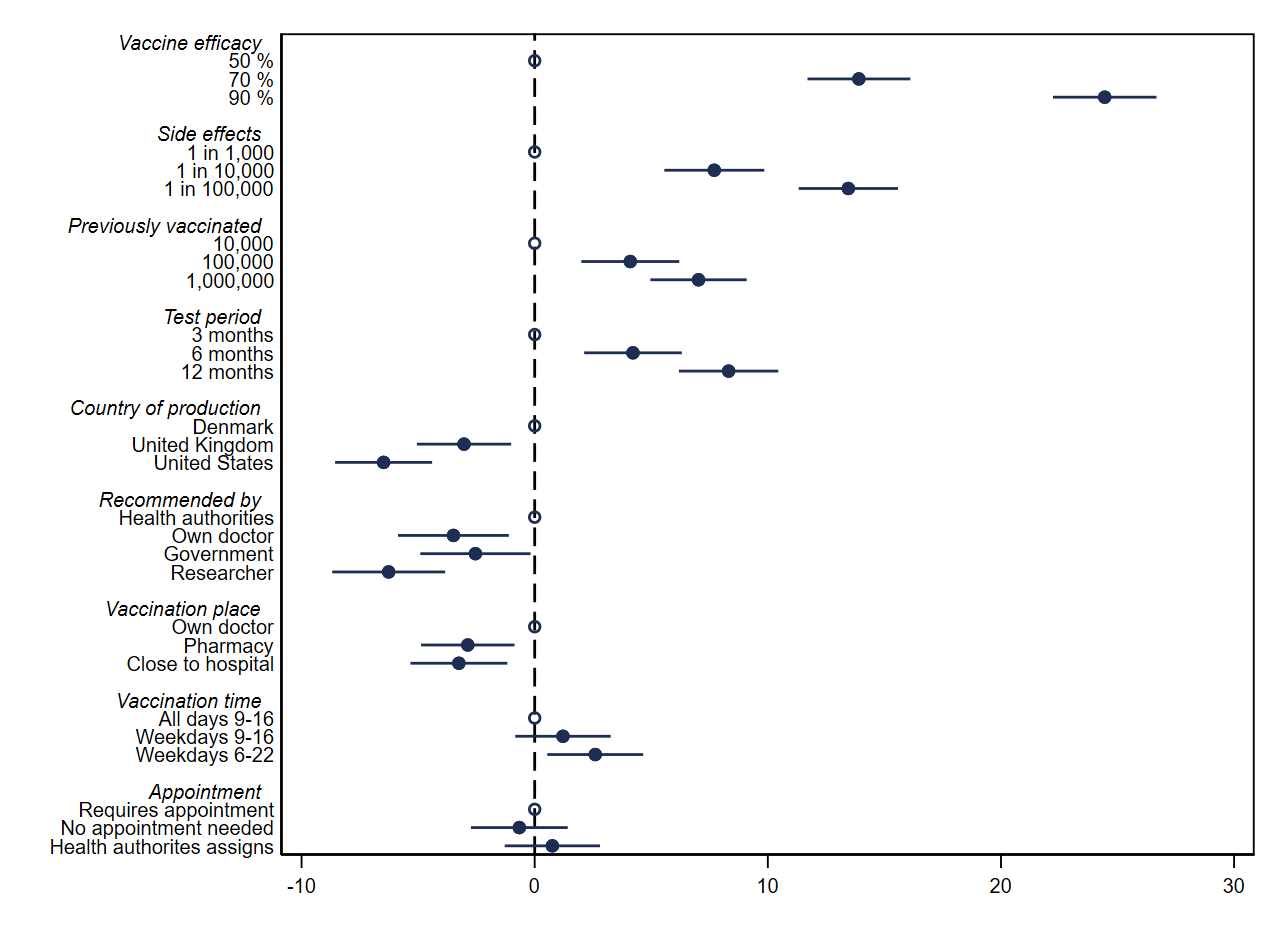
### **Sensitivity analyses: average attribute effects**

Figure S.3. Average attribute effects, including covariates



Note: filled circles with horizontal lines indicate point estimates with cluster-robust 95% CI from linear (weighted) least square regression). Upper panel displays the attribute effects. Lower panel displays the correlations between vaccine acceptance and the covariates. For the psychological factors that are continuous variables, the estimated coefficients correspond to a one standard deviation change in each psychological variable.

Figure S.4. Average attribute effects, no post-stratification weights

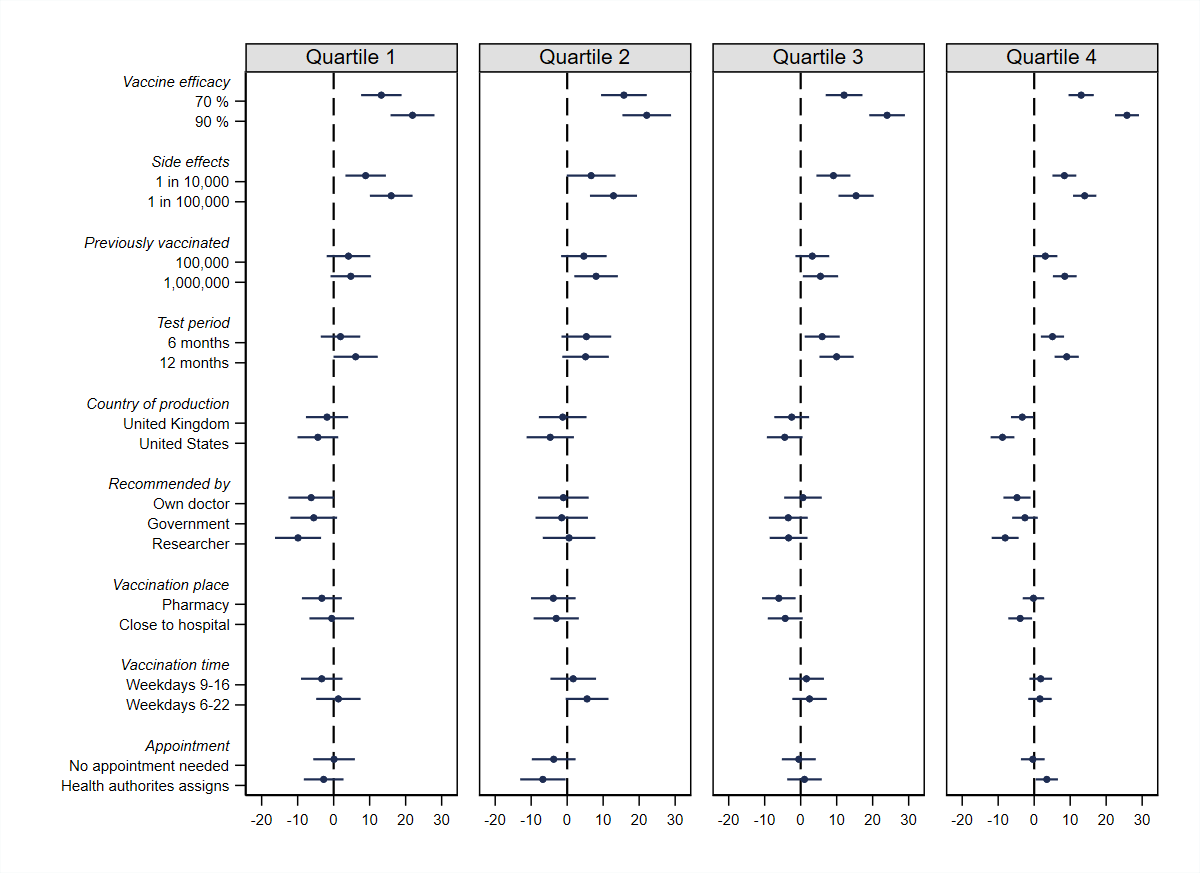


Note: filled circles with horizontal lines indicate point estimates with cluster-robust 95% CI from linear least square regression). No post-stratification weights applied

### **Effect heterogeneity**

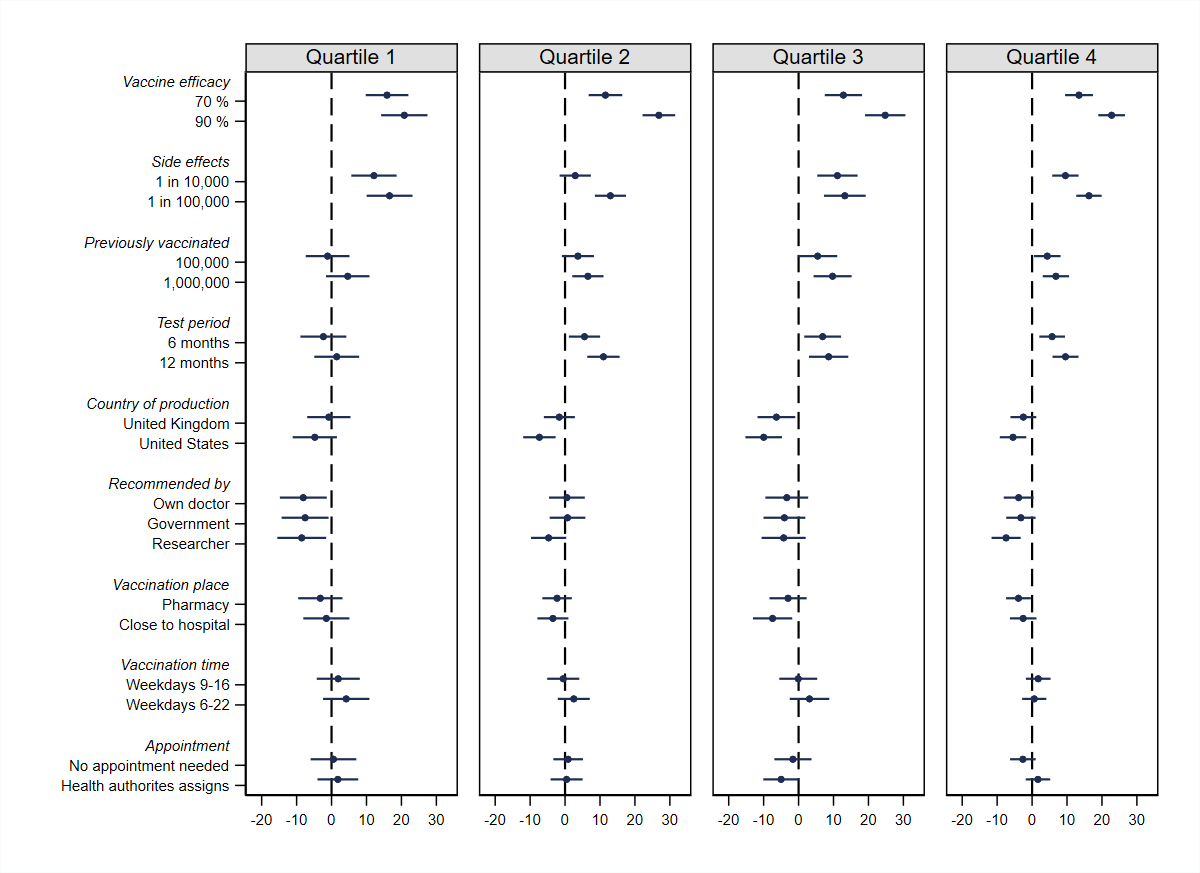
#### **More fine-grained interaction analyses**

Figure S.5. Effects of vaccine attributes across institutional trust subgroups



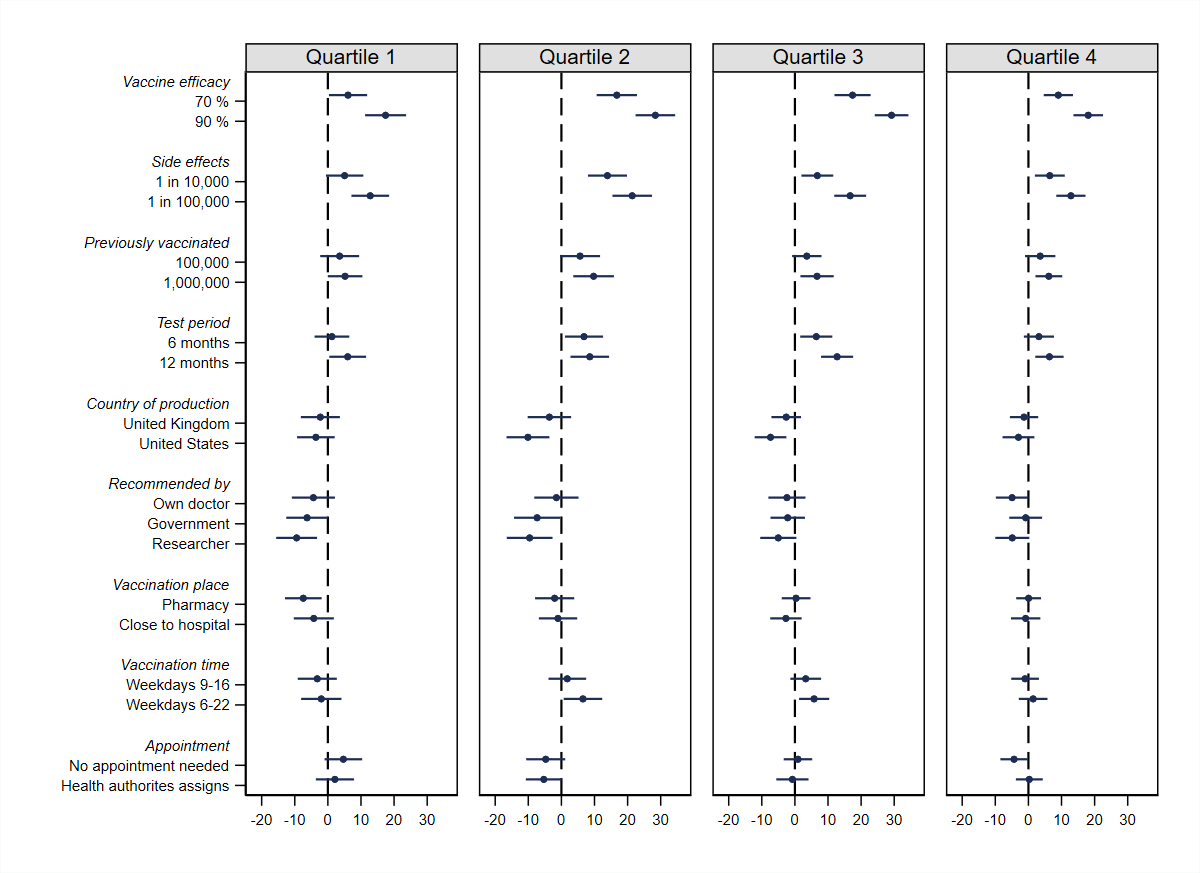
Note: filled circles with horizontal lines indicate point estimates with cluster-robust 95% CI from linear (weighted) least square regression).

Figure S.6. Effects of vaccine attributes across personal COVID worry subgroups



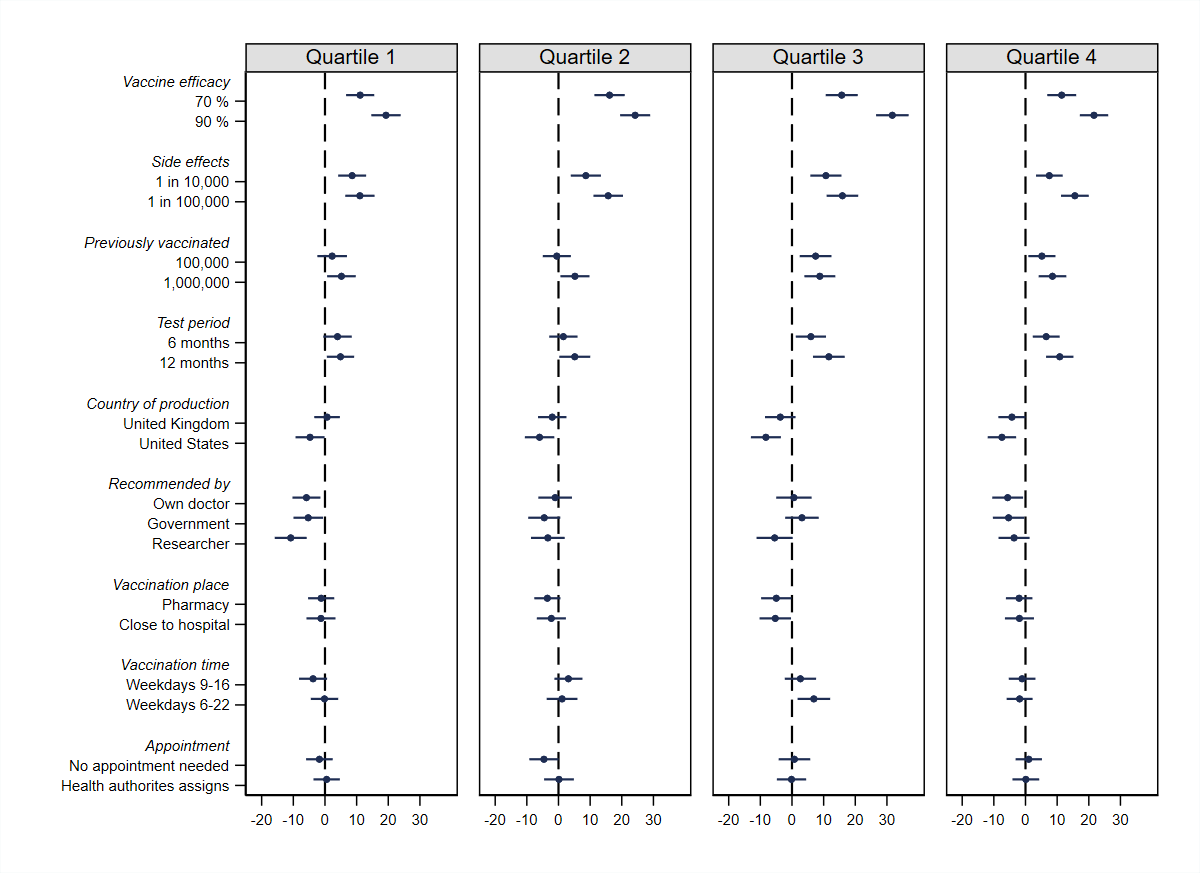
Note: filled circles with horizontal lines indicate point estimates with cluster-robust 95% CI from linear (weighted) least square regression).

Figure S.7. Effects of vaccine attributes across vaccine trust subgroups



Note: filled circles with horizontal lines indicate point estimates with cluster-robust 95% CI from linear (weighted) least square regression).

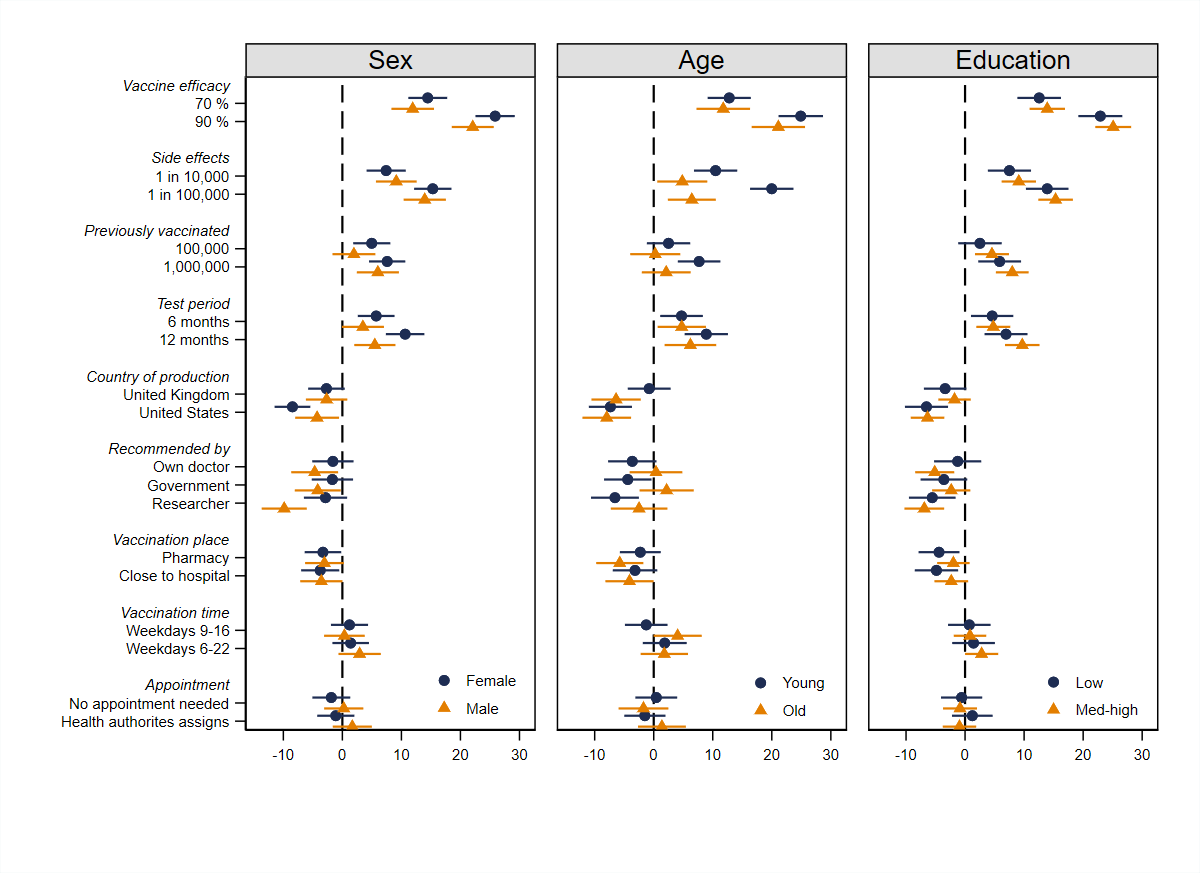
Figure S.8. Effects of vaccine attributes across vaccine worry subgroups



Note: filled circles with horizontal lines indicate point estimates with cluster-robust 95% CI from linear (weighted) least square regression).

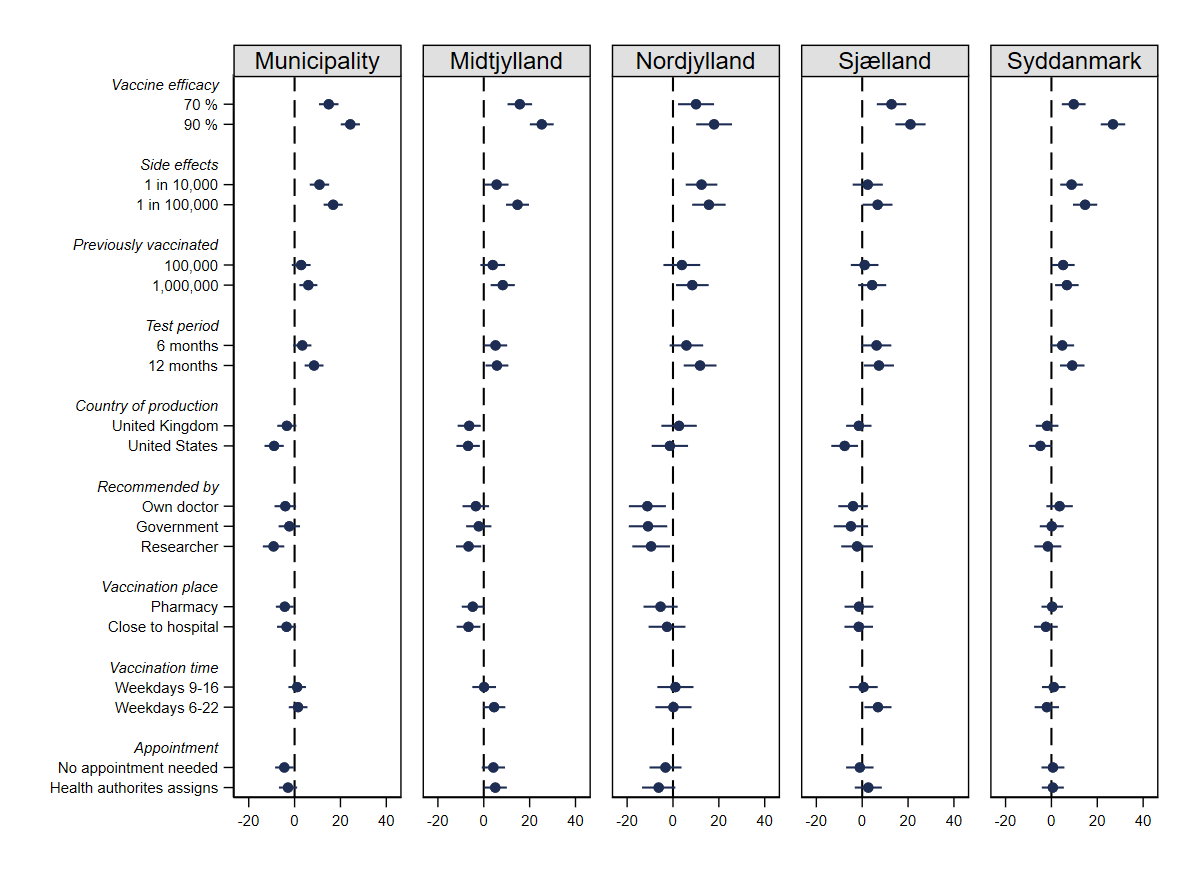
#### **Heterogeneity across demographic subgroups**

Figure S.9. Effects of vaccine attributes on the probability of vaccine acceptance, by sex, age, and education



Note: filled circles and triangles with horizontal lines indicate point estimates with cluster-robust 95% CI from linear (weighted) least square regression).

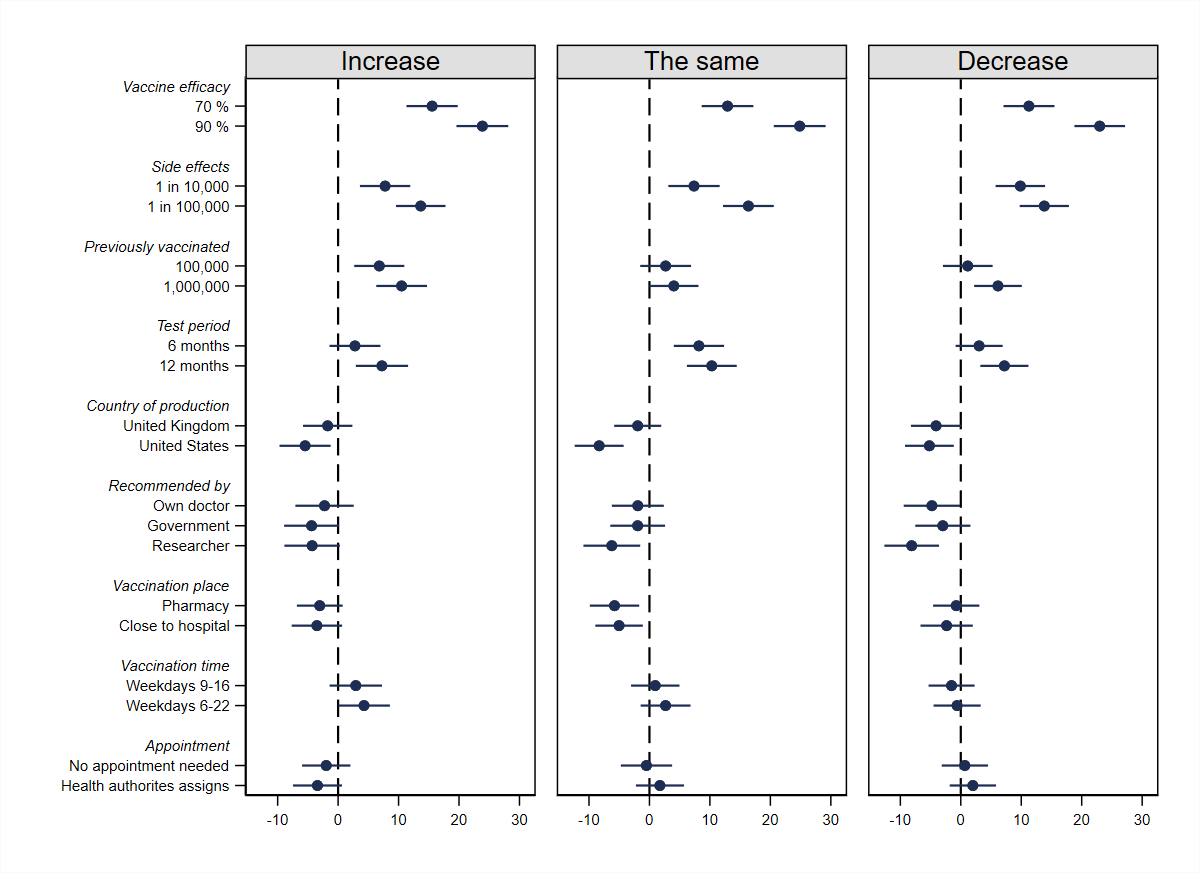
Figure S.10. Effects of vaccine attributes on the probability of vaccine acceptance across regions



Note: filled circles with horizontal lines indicate point estimates with cluster-robust 95% CI from linear (weighted) least square regression).

#### **Heterogeneity across epidemic contexts**

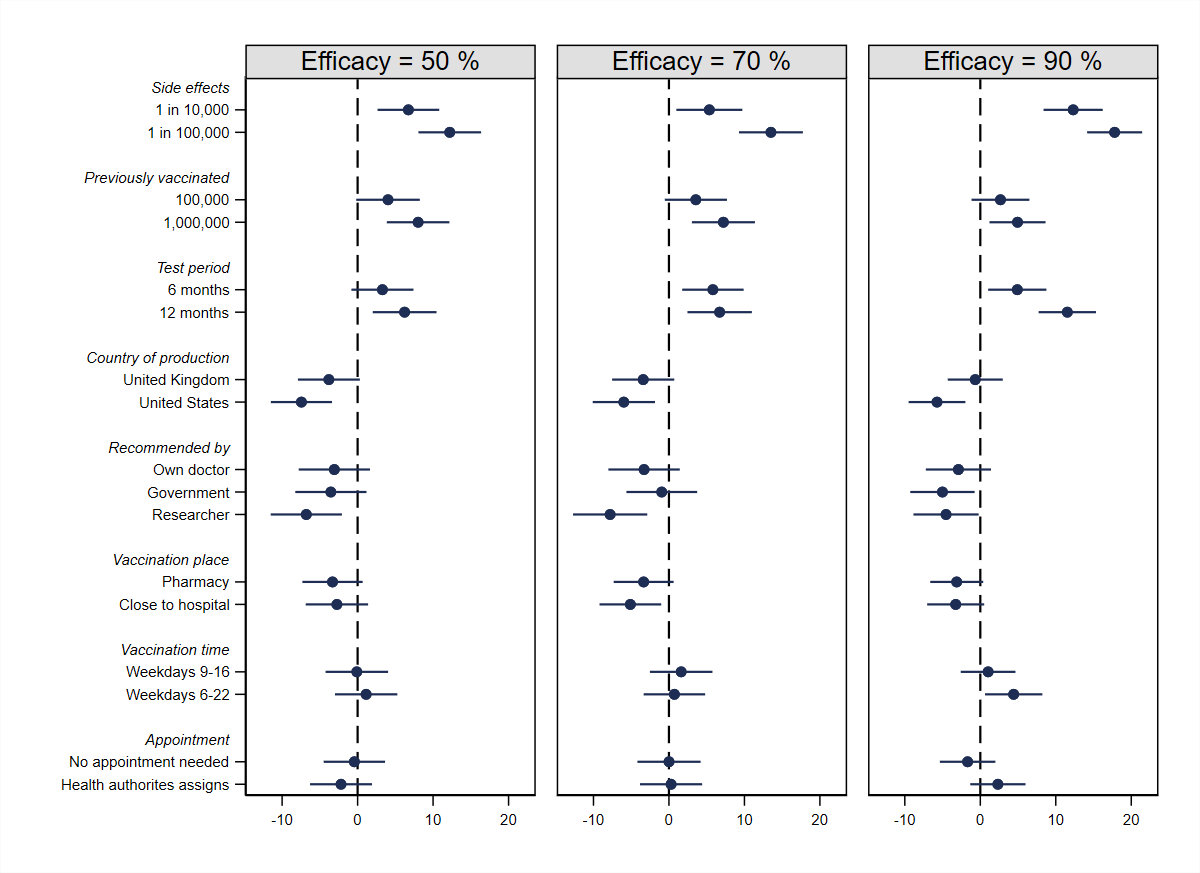
Figure S.11. Effects of vaccine attributes on the probability of vaccine acceptance across varying epidemic contexts



Note: filled circles with horizontal lines indicate point estimates with cluster-robust 95% CI from linear (weighted) least square regression). We varied whether the individual was told to imagine that the epidemic increased, stayed the same, or decreased over the next month and can hence split the sample accordingly.

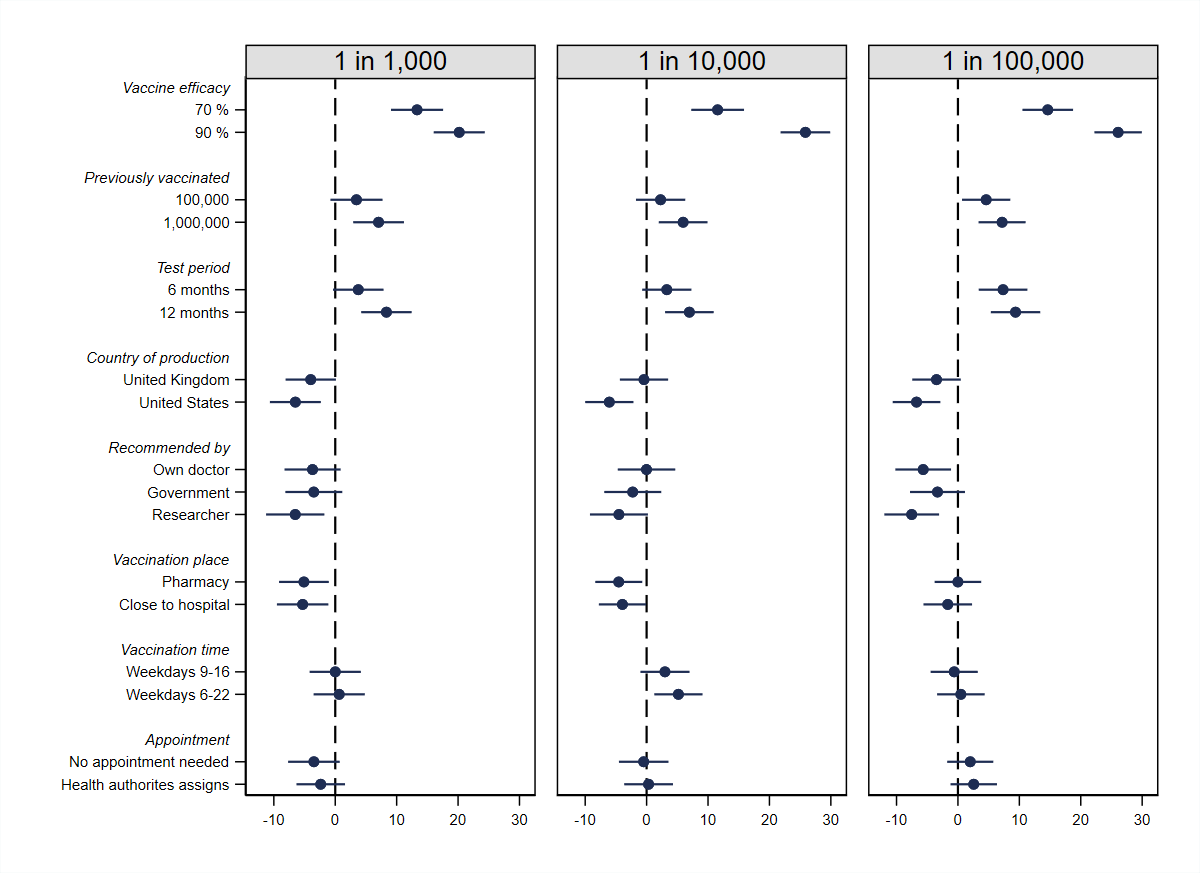
#### **Interaction between attributes across**

Figure S.12. Effects of vaccine attributes on the probability of vaccine acceptance across varying levels of vaccine efficacy



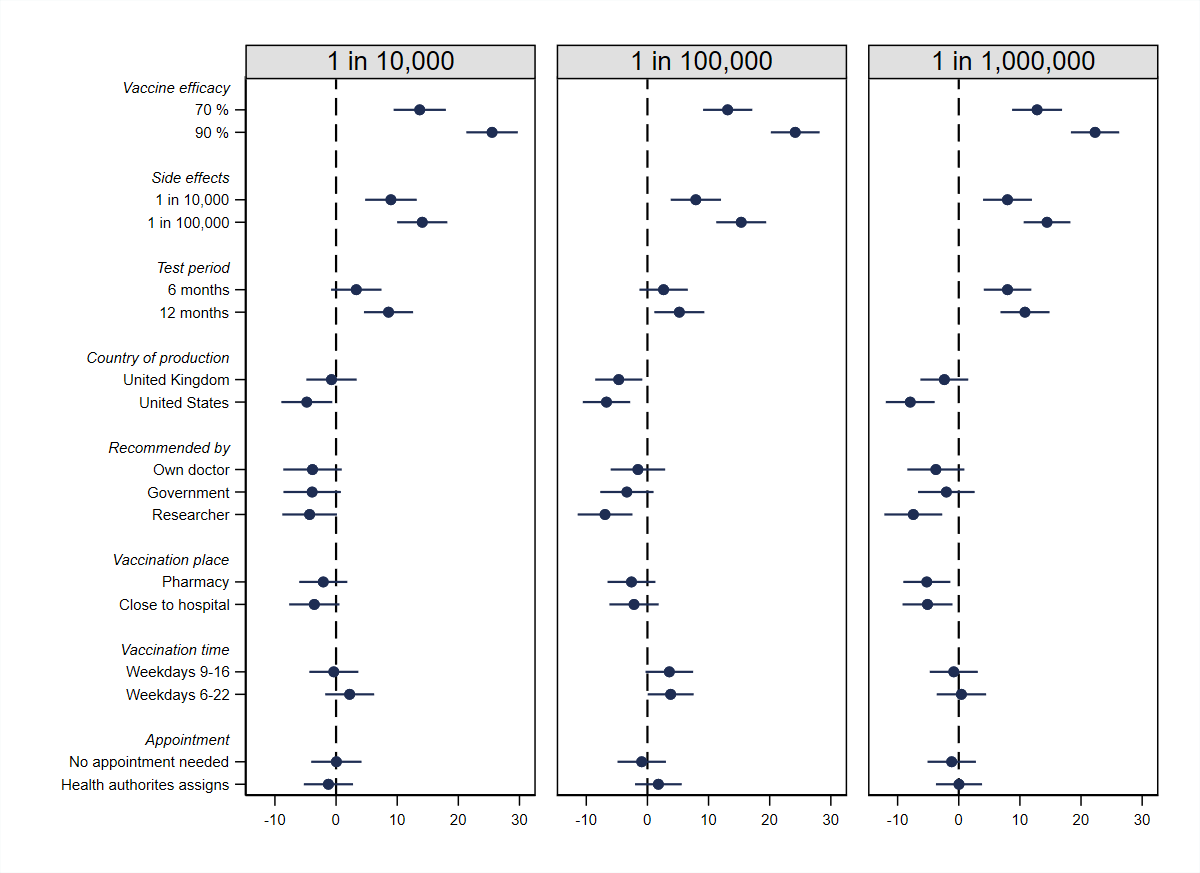
Note: filled circles with horizontal lines indicate point estimates with cluster-robust 95% CI from linear (weighted) least square regression).

Figure S.13. Effects of vaccine attributes on the probability of vaccine acceptance across varying levels of expected side-effects



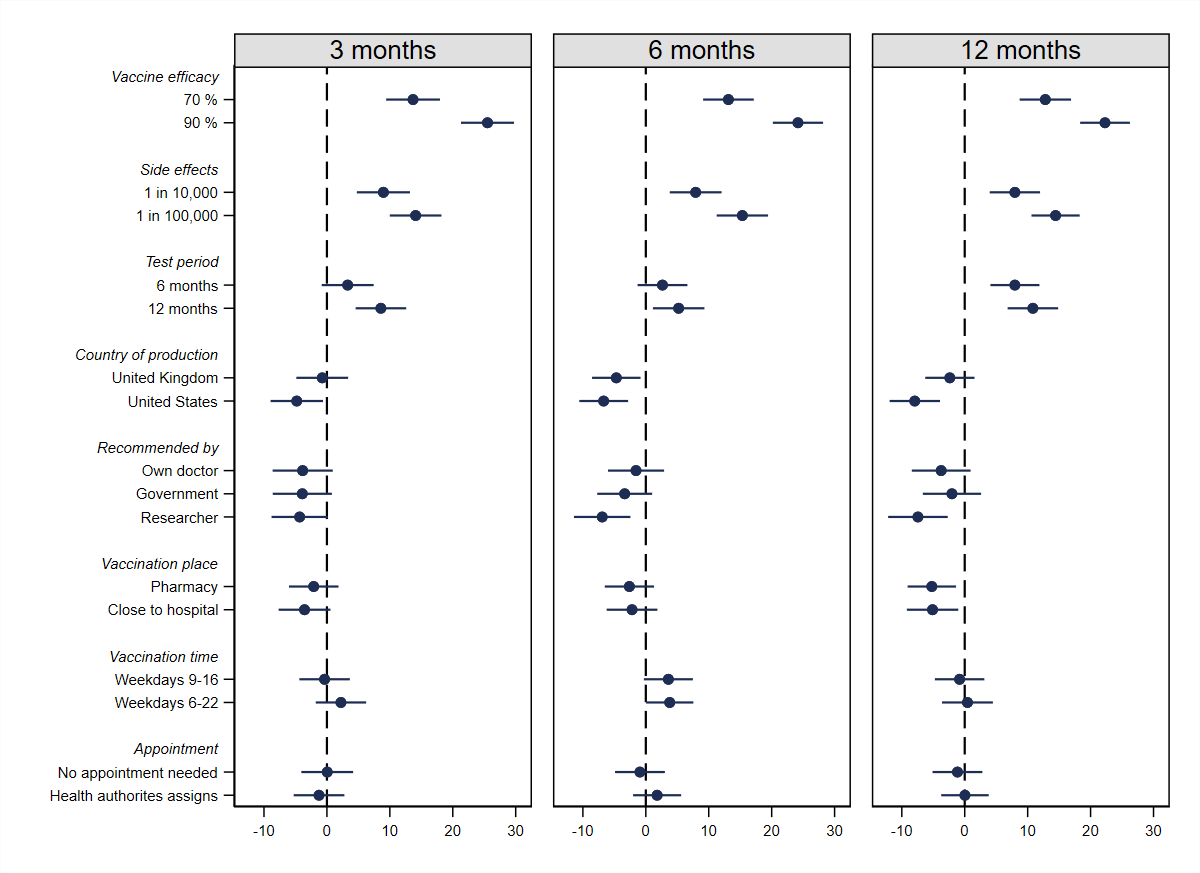
Note: filled circles with horizontal lines indicate point estimates with cluster-robust 95% CI from linear (weighted) least square regression).

Figure S.14. Effects of vaccine attributes on the probability of vaccine acceptance across varying numbers of previously vaccinated



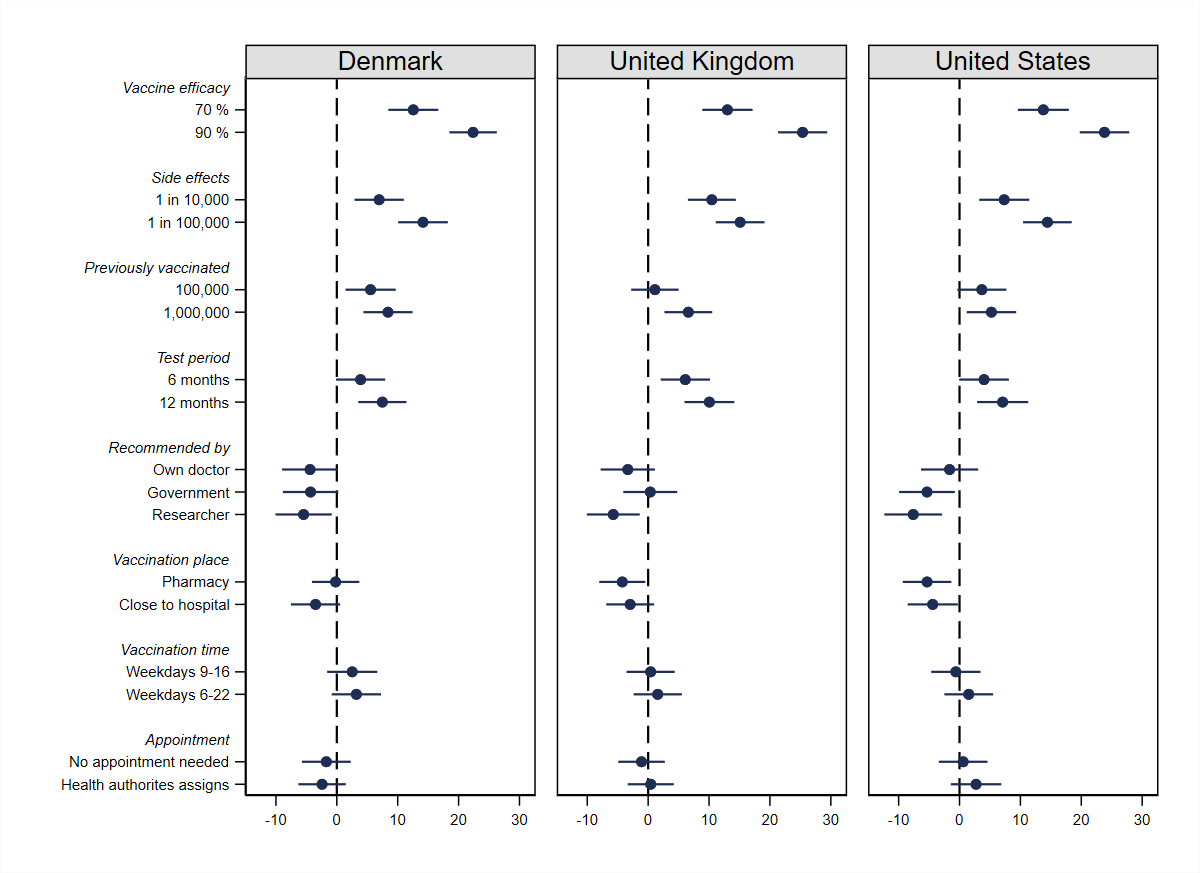
Note: filled circles with horizontal lines indicate point estimates with cluster-robust 95% CI from linear (weighted) least square regression).

Figure S.15. Effects of vaccine attributes on the probability of vaccine acceptance across varying test periods



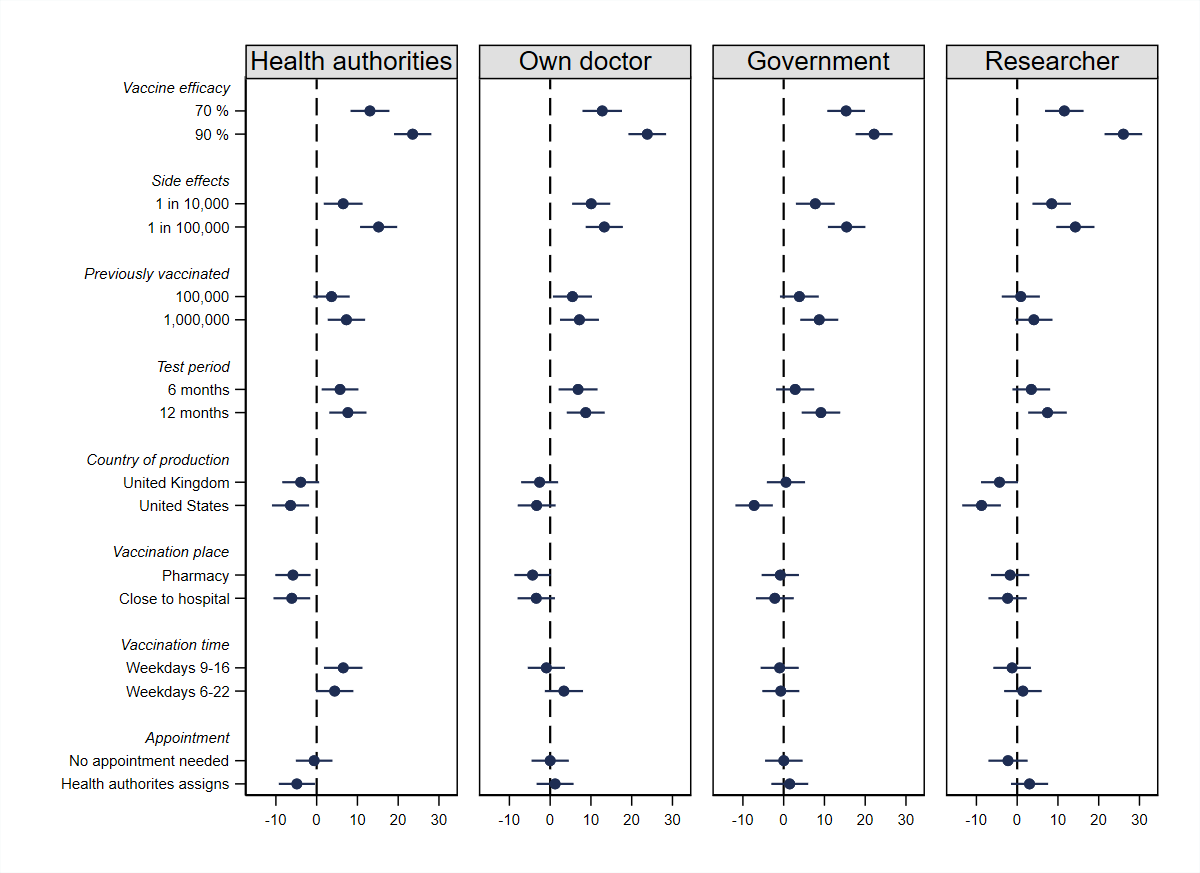
Note: filled circles with horizontal lines indicate point estimates with cluster-robust 95% CI from linear (weighted) least square regression).

Figure S.16. Effects of vaccine attributes on the probability of vaccine acceptance across production countries



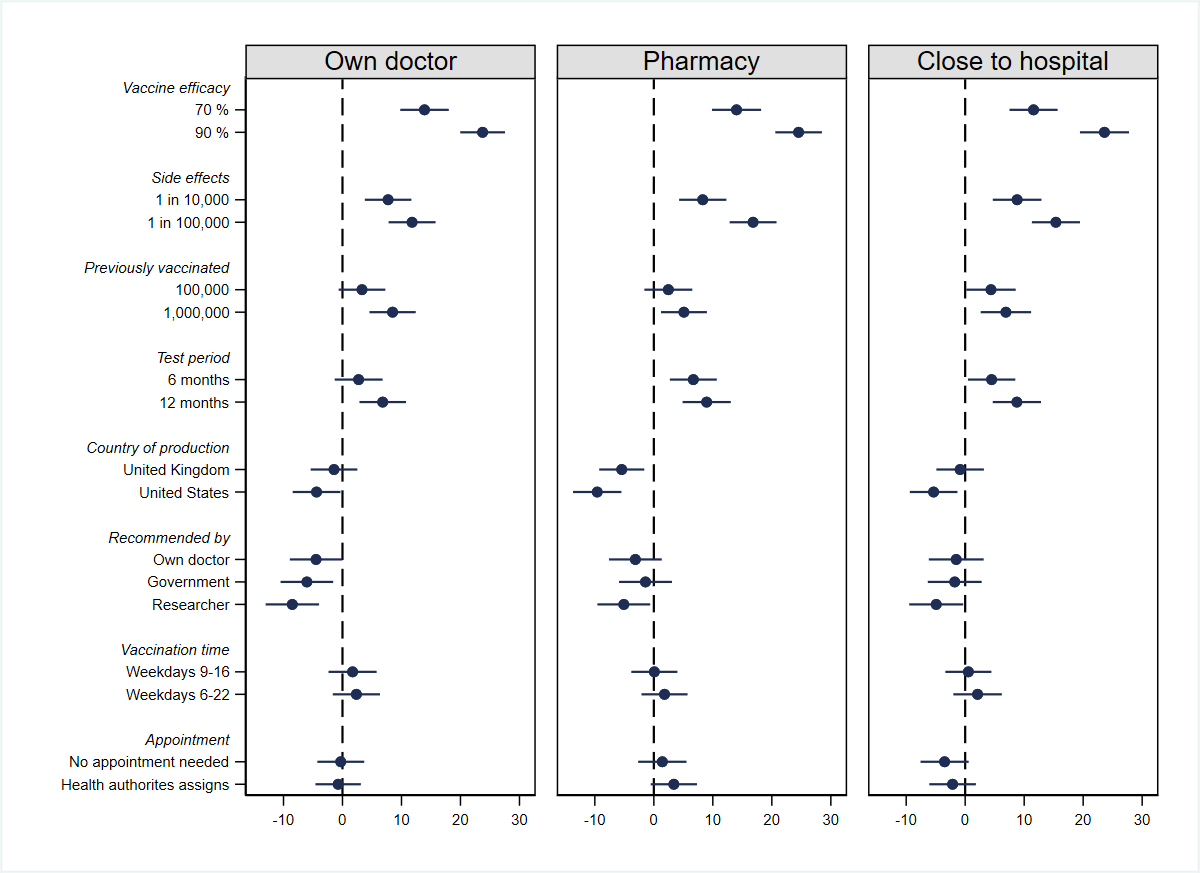
Note: filled circles with horizontal lines indicate point estimates with cluster-robust 95% CI from linear (weighted) least square regression).

Figure S.17. Effects of vaccine attributes on the probability of vaccine acceptance across recommendations



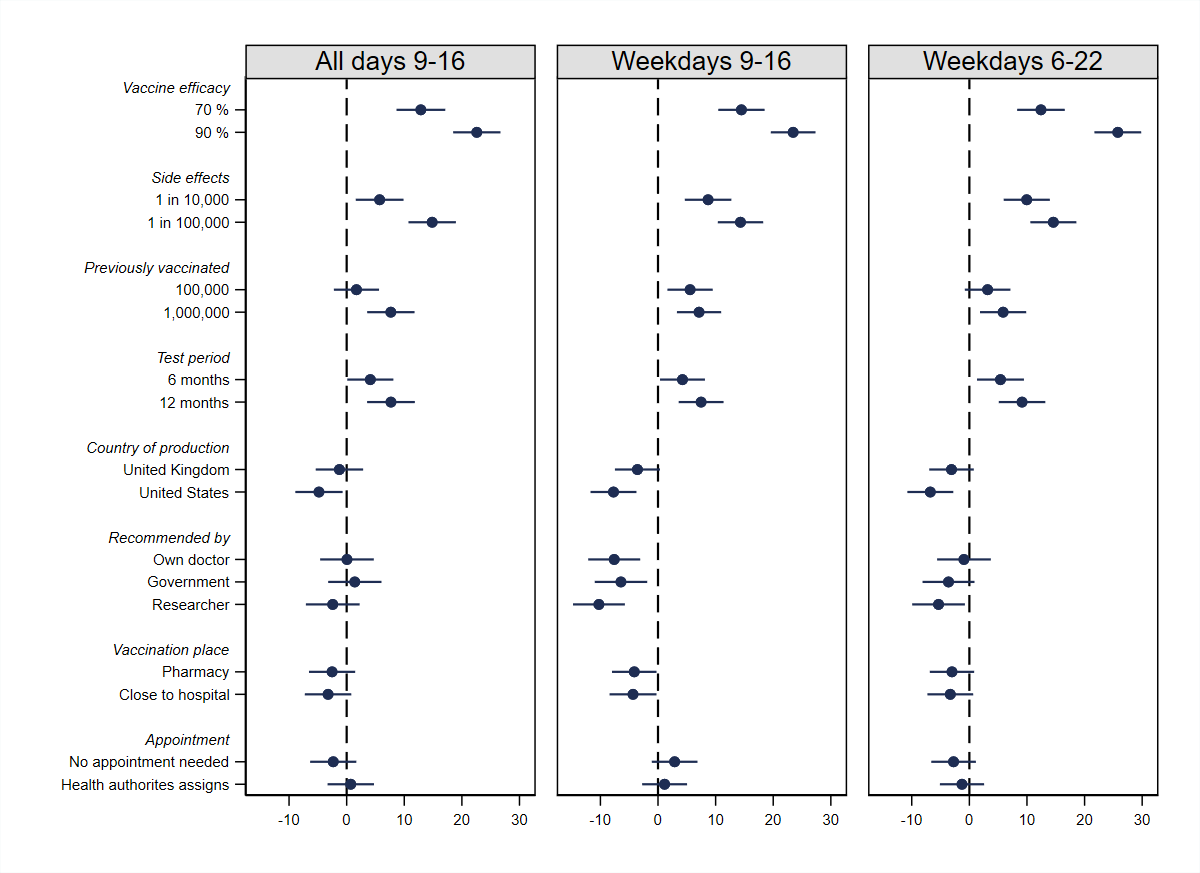
Note: filled circles with horizontal lines indicate point estimates with cluster-robust 95% CI from linear (weighted) least square regression).

Figure S.18. Effects of vaccine attributes on the probability of vaccine acceptance across varying vaccination places



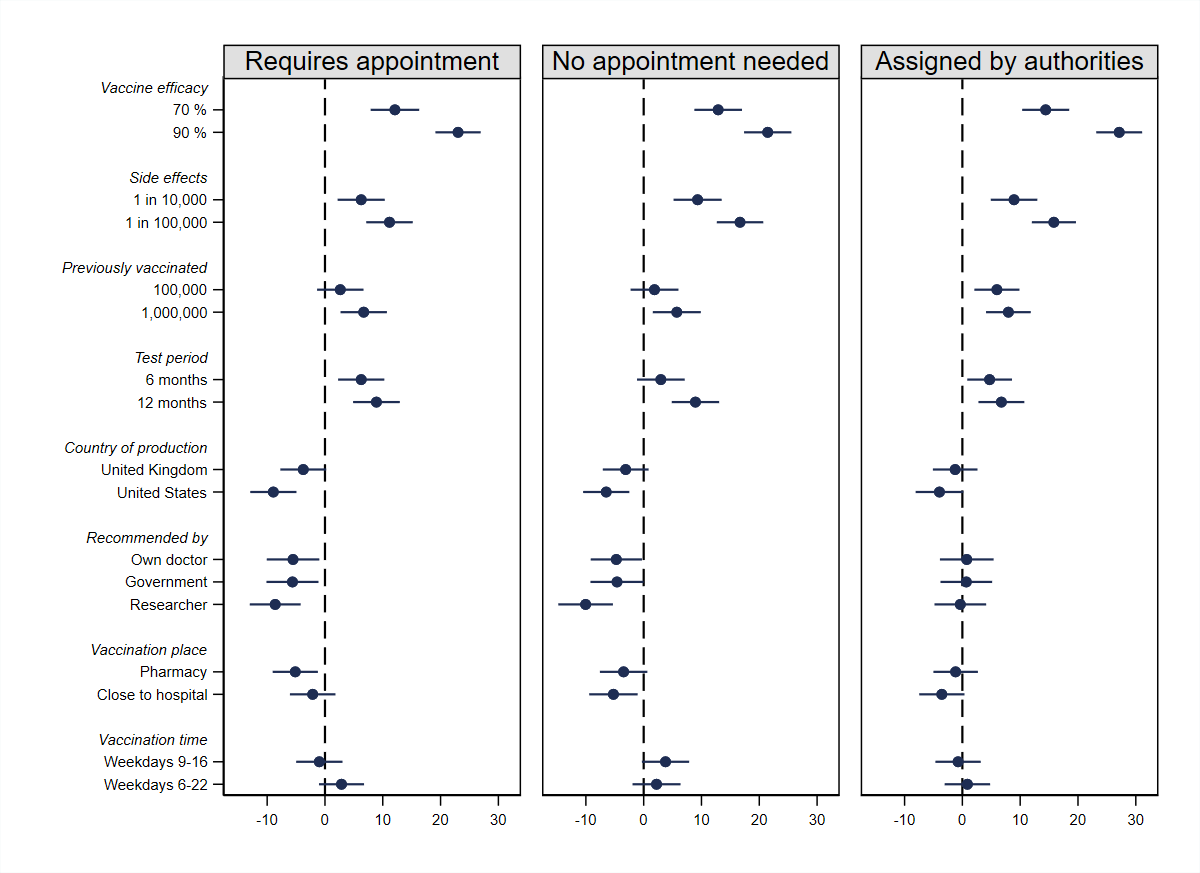
Note: filled circles with horizontal lines indicate point estimates with cluster-robust 95% CI from linear (weighted) least square regression).

Figure S.19. Effects of vaccine attributes on the probability of vaccine acceptance across varying vaccination times



Note: filled circles with horizontal lines indicate point estimates with cluster-robust 95% CI from linear (weighted) least square regression).

Figure S.20. Effects of vaccine attributes on the probability of vaccine acceptance across varying appointment schemes



Note: filled circles with horizontal lines indicate point estimates with cluster-robust 95% CI from linear (weighted) least square regression).

## **Supporting regression tables**

### **Average attribute effects**

Table S.5. Effects of vaccine attributes on the probability of vaccine acceptance

|  |  |
| --- | --- |
| *Vaccine efficacy* |  |
| 70 % | 13.19\*\*\* |
|  | (1.25) |
| 90 % | 23.95\*\*\* |
|  | (1.25) |
| *Side effects* |  |
| 1 in 10,000 | 8.21\*\*\* |
|  | (1.22) |
| 1 in 100,000 | 14.57\*\*\* |
|  | (1.22) |
| *Previously vaccinated* |  |
| 100,000 | 3.46\*\* |
|  | (1.22) |
| 1,000,000 | 6.80\*\*\* |
|  | (1.20) |
| *Test period* |  |
| 6 months | 4.66\*\*\* |
|  | (1.20) |
| 12 months | 8.18\*\*\* |
|  | (1.22) |
| *Production country* |  |
| United Kingdom | -2.65\* |
|  | (1.19) |
| United States | -6.45\*\*\* |
|  | (1.21) |
| *Recommended by* |  |
| Own doctor | -3.04\* |
|  | (1.36) |
| Government | -3.03\* |
|  | (1.34) |
| Researcher | -6.14\*\*\* |
|  | (1.36) |
| *Vaccination place* |  |
| Pharmacy | -3.22\*\* |
|  | (1.15) |
| Close to hospital | -3.64\*\* |
|  | (1.23) |
| *Vaccination time* |  |
| Weekdays 9-16 | 0.75 |
|  | (1.19) |
| Weekdays 6-22 | 2.09 |
|  | (1.20) |
| *Appointment* |  |
| No appointment needed | -0.69 |
|  | (1.19) |
| Health authorites assigns | 0.20 |
|  | (1.16) |
| Intercept | 39.71\*\*\* |
|  | (2.35) |
| Observations | 12,395 |
| *R*2 | 0.068 |
| Adjusted *R*2 | 0.067 |

\* *p* < 0.05, \*\* *p* < 0.01, \*\*\* *p* < 0.001.

### **Attribute effects, by psychological dispositions**

Table S.6. Vaccine attribute effects, by psychological dispositions

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Institutional trust | | Covid worry | | Vaccine motivations | | Vaccine worry | |
|  | Below median | Above median | Below median | Above median | Below median | Above median | Below median | Above median |
| *Efficacy* |  |  |  |  |  |  |  |  |
| 70 % | 13.48\*\*\* | 13.05\*\*\* | 13.04\*\*\* | 13.35\*\*\* | 12.02\*\*\* | 12.10\*\*\* | 13.42\*\*\* | 12.60\*\*\* |
|  | (1.68) | (1.79) | (1.94) | (1.63) | (1.98) | (1.92) | (1.61) | (1.85) |
| 90 % | 22.58\*\*\* | 25.78\*\*\* | 24.84\*\*\* | 23.41\*\*\* | 23.83\*\*\* | 22.06\*\*\* | 22.68\*\*\* | 25.08\*\*\* |
|  | (1.73) | (1.70) | (1.95) | (1.63) | (2.02) | (1.89) | (1.61) | (1.90) |
| *Side effects* |  |  |  |  |  |  |  |  |
| 1 in 10,000 | 8.27\*\*\* | 8.39\*\*\* | 5.92\*\* | 10.09\*\*\* | 8.99\*\*\* | 6.75\*\*\* | 9.03\*\*\* | 8.20\*\*\* |
|  | (1.66) | (1.69) | (1.89) | (1.61) | (1.94) | (1.86) | (1.57) | (1.80) |
| 1 in 100,000 | 14.82\*\*\* | 14.03\*\*\* | 14.17\*\*\* | 15.24\*\*\* | 16.65\*\*\* | 14.27\*\*\* | 14.61\*\*\* | 14.90\*\*\* |
|  | (1.68) | (1.65) | (1.89) | (1.60) | (1.93) | (1.80) | (1.59) | (1.82) |
| *Previously vaccinated* |  |  |  |  |  |  |  |  |
| 100,000 | 3.92\* | 3.09 | 1.89 | 4.73\*\* | 4.84\* | 3.98\* | 1.34 | 6.56\*\*\* |
|  | (1.66) | (1.71) | (1.91) | (1.60) | (1.99) | (1.80) | (1.59) | (1.79) |
| 1,000,000 |  |  |  |  |  |  |  |  |
|  | 5.50\*\*\* | 8.50\*\*\* | 5.83\*\* | 7.80\*\*\* | 7.79\*\*\* | 6.45\*\*\* | 5.52\*\*\* | 8.88\*\*\* |
| *Test period* | (1.63) | (1.68) | (1.86) | (1.57) | (1.95) | (1.72) | (1.55) | (1.78) |
| 6 months |  |  |  |  |  |  |  |  |
|  | 4.30\*\* | 5.08\*\* | 2.99 | 6.17\*\*\* | 4.61\* | 3.79\* | 3.56\* | 6.52\*\*\* |
| 12 months | (1.65) | (1.64) | (1.90) | (1.54) | (1.89) | (1.84) | (1.54) | (1.80) |
|  | 7.28\*\*\* | 9.03\*\*\* | 7.66\*\*\* | 9.29\*\*\* | 9.91\*\*\* | 7.27\*\*\* | 6.03\*\*\* | 12.08\*\*\* |
| *Production country* | (1.69) | (1.71) | (1.91) | (1.58) | (1.95) | (1.78) | (1.56) | (1.85) |
| United Kingdom |  |  |  |  |  |  |  |  |
|  | -2.14 | -3.31\* | -1.29 | -3.67\* | -3.81 | -1.41 | -2.40 | -2.86 |
| United States | (1.66) | (1.60) | (1.85) | (1.56) | (2.01) | (1.68) | (1.49) | (1.78) |
|  | -4.65\*\* | -8.80\*\*\* | -6.04\*\* | -6.84\*\*\* | -6.59\*\*\* | -5.37\*\* | -6.30\*\*\* | -6.40\*\*\* |
| *Recommended by* | (1.67) | (1.68) | (1.91) | (1.57) | (1.98) | (1.92) | (1.56) | (1.83) |
| Own doctor |  |  |  |  |  |  |  |  |
|  | -2.55 | -4.77\* | -2.47 | -3.48 | -3.00 | -4.21\* | -3.31 | -3.38 |
|  | (1.83) | (1.92) | (2.09) | (1.79) | (2.22) | (2.05) | (1.70) | (2.08) |
| Government | -3.90\* | -2.56 | -2.21 | -3.37 | -6.21\*\* | -1.87 | -3.74\* | -2.30 |
|  | (1.85) | (1.82) | (2.09) | (1.75) | (2.17) | (2.00) | (1.69) | (2.04) |
| Researcher | -5.09\*\* | -8.06\*\*\* | -6.12\*\* | -6.34\*\*\* | -8.58\*\*\* | -5.25\* | -6.56\*\*\* | -4.43\* |
|  | (1.84) | (1.91) | (2.10) | (1.78) | (2.19) | (2.05) | (1.78) | (2.02) |
| *Vaccination place* |  |  |  |  |  |  |  |  |
| Pharmacy | -5.17\*\* | -0.20 | -2.72 | -3.46\* | -4.11\* | 0.08 | -2.69 | -3.36 |
|  | (1.59) | (1.52) | (1.80) | (1.50) | (1.92) | (1.58) | (1.43) | (1.78) |
| Close to hospital | -3.08 | -3.89\* | -3.13 | -3.96\* | -3.21 | -1.52 | -1.78 | -3.27 |
|  | (1.70) | (1.69) | (1.89) | (1.61) | (2.02) | (1.85) | (1.58) | (1.87) |
| *Vaccination time* |  |  |  |  |  |  |  |  |
| Weekdays 9-16 | -0.23 | 1.82 | 0.17 | 1.12 | 0.21 | -0.51 | -0.69 | 0.61 |
|  | (1.65) | (1.61) | (1.89) | (1.51) | (1.92) | (1.73) | (1.53) | (1.78) |
| Weekdays 6-22 | 2.94 | 1.61 | 2.77 | 1.44 | 1.95 | 2.67 | 1.28 | 0.78 |
|  | (1.66) | (1.66) | (1.94) | (1.51) | (1.98) | (1.73) | (1.59) | (1.77) |
| *Appointment* |  |  |  |  |  |  |  |  |
| No appointment needed | -0.95 | -0.39 | 0.87 | -2.28 | 0.93 | -1.60 | -2.39 | 0.59 |
|  | (1.61) | (1.68) | (1.83) | (1.54) | (1.92) | (1.66) | (1.51) | (1.79) |
| Health authorites assigns | -1.95 | 3.51\* | 1.11 | -0.50 | -0.46 | -0.24 | 0.47 | 0.27 |
|  | (1.62) | (1.57) | (1.84) | (1.49) | (1.90) | (1.77) | (1.52) | (1.75) |
| Intercept | 35.39\*\*\* | 45.90\*\*\* | 37.63\*\*\* | 41.06\*\*\* | 31.92\*\*\* | 53.11\*\*\* | 55.48\*\*\* | 19.96\*\*\* |
|  | (3.24) | (3.22) | (3.65) | (3.07) | (3.58) | (3.68) | (3.03) | (3.41) |
| Observations | 6903 | 5492 | 5316 | 6975 | 4980 | 4451 | 6184 | 5415 |
| *R*2 | 0.060 | 0.092 | 0.067 | 0.074 | 0.076 | 0.073 | 0.075 | 0.077 |
| Adjusted *R*2 | 0.057 | 0.089 | 0.064 | 0.071 | 0.073 | 0.069 | 0.073 | 0.074 |

\* *p* < 0.05, \*\* *p* < 0.01, \*\*\* *p* < 0.001