

# **VACCINE HESITANCY AND POLITICAL TRUST IN THE UK**

**LSE HEALTH POLICY SEMINAR**

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# OUTLINE

1. MOTIVATION & EXPECTATIONS

2. SURVEY DESIGN

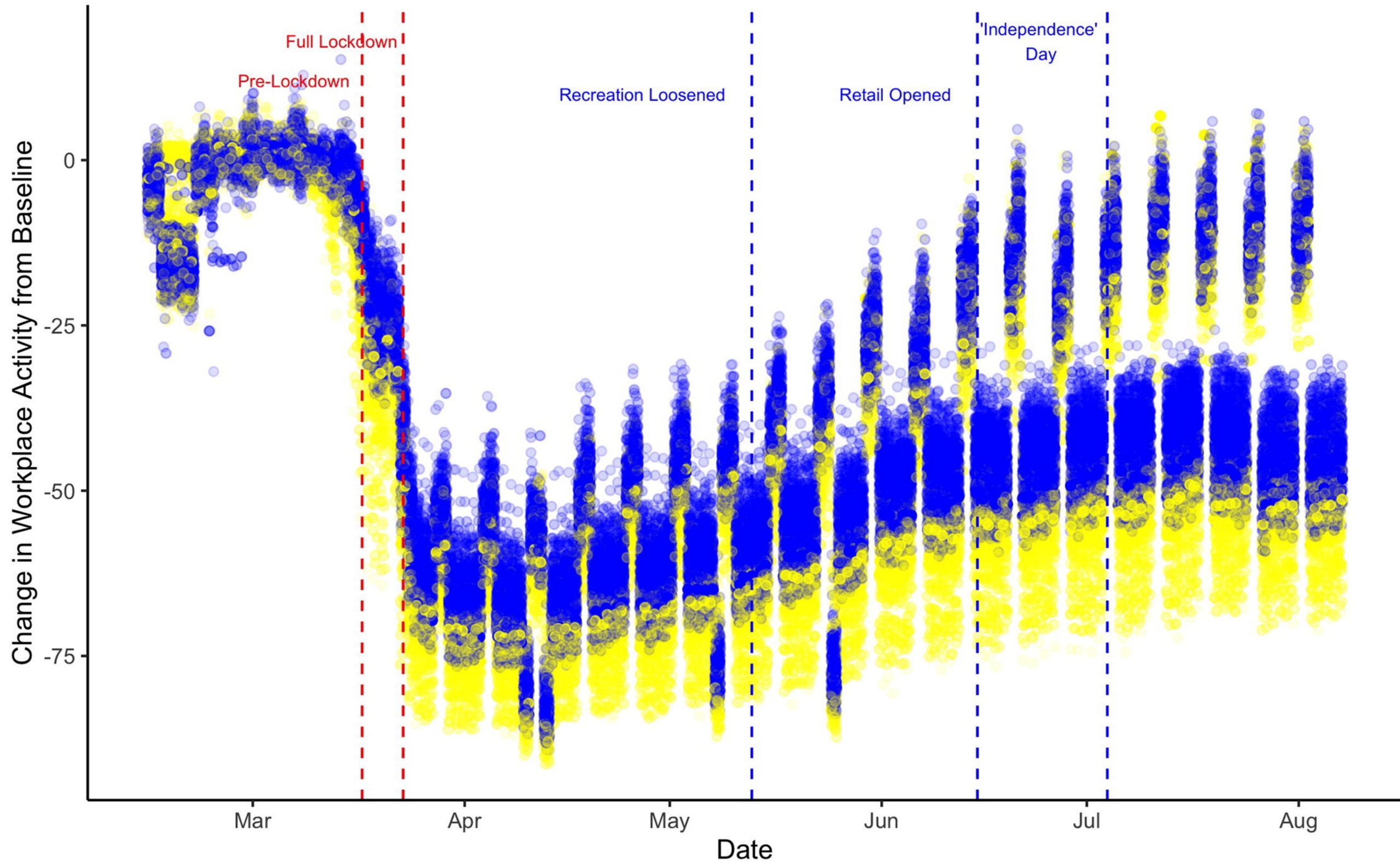
3. DESCRIPTIVE RESULTS

4. REGRESSION ANALYSES

5. EXPERIMENTAL FINDINGS

6. MISCELLANY

**MOTIVATION**



# COVID AND POLITICS

- Gadarian, Goodman, and Pepinsky (PNAS, 2020) show in survey that social distancing behaviours were associated with partisanship in US.
- Allcott et al ( J Pub Econ, 2020) using mobility data show Republican areas engaged in less social distancing.
- Ansell, Cansunar, Elkjaer (WEP, 2021) also using mobility data show in UK local authorities voting for Brexit had lower social distancing, with similar patterns for Denmark, Sweden, and across European NUTS3 regions.
- BUT... the act of voting for populist parties or causes might not itself cause any changed behaviour. Presumably it reflects underlying attitudes.

# POLITICAL TRUST

- Political science literature on support for populism demonstrates that lack of trust in politicians and ‘the system’ is core to explaining vote choice (Mudde, 2010; Eberl et al, 2021; Guiro et al 2017)
- So political trust may be driving differences in COVID-related behaviour - social distancing, following COVID rules etc, not the actual vote itself.
- Though... it’s also possible that voting for populist causes can become self-reinforcing as an identity (Dinas, 2014). In this case we might expect underlying attitudes and voting behaviour to exert independent effects.

# VACCINE HESITANCY

- Very long history of anti-vaccination movements. Johannes Lindvall and I in *Inward Conquest* (2021) show that compulsory smallpox vaccine (from early 1800s) was associated with anti-vaccination riots in Montreal, Milwaukee, and elsewhere.
- Antivaccination movements often associated with religious minorities concerned about majority groups in charge of compulsory vaccination.
- In early 20th century America, anti vaccination strong among recent immigrants and African-Americans
- In England, compulsory vaccination, begun in 1853 was reversed in 1898. Working class English citizens were the base of anti-vaccination sentiment.
- Anti-vaccination often more popular among less privileged groups

# VACCINE HESITANCY TODAY

- Is that still true today? Media sometimes suggest antivax sentiment is more widely held among 'extreme' high education groups (Greens, libertarians)
- But history shows that groups with little trust in state (often for very good reason) were traditionally most antivax.
- Who are those people in the UK?
  - (a) people with low trust in political system and attracted to populist causes
  - (b) people in more marginal positions - ethnic minorities, poorer citizens, lower education, younger
  - (c) people with low trust in science and scientists
- Have to consider flip side - who might want vaccine most? Those most at risk of disease. It's not all about attitudes in a pandemic!

# **SURVEY DESIGN**

# SURVEY DESIGN

- TWO-WAVE Panel survey conducted with YouGov over Delta wave in England, Scotland, and Wales. YG use panel quotas to make sure survey is representative of GB.
- First wave: 1642 respondents Oct 31st / Nov 1st 2020
- Second wave: 1219 respondents Jan 31st / Feb 1st 2021.
- Only around 1/4 attrition.
- Second wave included survey experiment attempting to prime for vaccine nationalism.

# VACCINE ACCEPTANCE VARIABLE

- In first wave we asked “If a COVID-19 vaccine is made available in the next six months, how likely are you to take it?” Answers: Very likely, likely, unlikely, very unlikely.
- In second wave, vaccine existed! We randomly varied our vaccine acceptance question with equal probabilities. Also allowed people to answer they had already had the vaccine.
  1. “How likely would you be to take a vaccine against COVID-19 if you were offered one?”
  2. “On the 2nd of December last year, Britain became the first country in the world to approve a vaccine against COVID-19 - the BioTech/Pfizer vaccine developed by German scientists and the US pharmaceutical company. How likely would you be to take a vaccine against COVID-19 if you were offered one?”
  3. “On the 30th of December last year, Britain became the first country in the world to approve the Oxford / AstraZeneca vaccine against COVID-19 - developed by British scientists at the University of Oxford and the British company AstraZeneca. How likely would you be to take a vaccine against COVID-19 if you were offered one?”

# DEMOGRAPHICS

- Age
- Gender
- Education (five point scale)
- Household Income (15 point scale)
- Ethnicity
- Region
- Local authority COVID prevalence at time of survey

# ATTITUDES: POLITICAL

- Voting in 2016 EU Referendum
- Voting in 2019 General Election
- Vote choice in election tomorrow (2nd wave only)
- Six social attitudes questions for authoritarian / populist scales
  - (a) Death penalty
  - (b) Children should respect elders
  - (c) Importance of respect for British values
  - (d) One law for rich, one for poor
  - (e) Ordinary people get their fair share of nation's wealth
  - (f) The people, not politicians, should make our most important policy decisions

# ATTITUDES TO SCIENCE

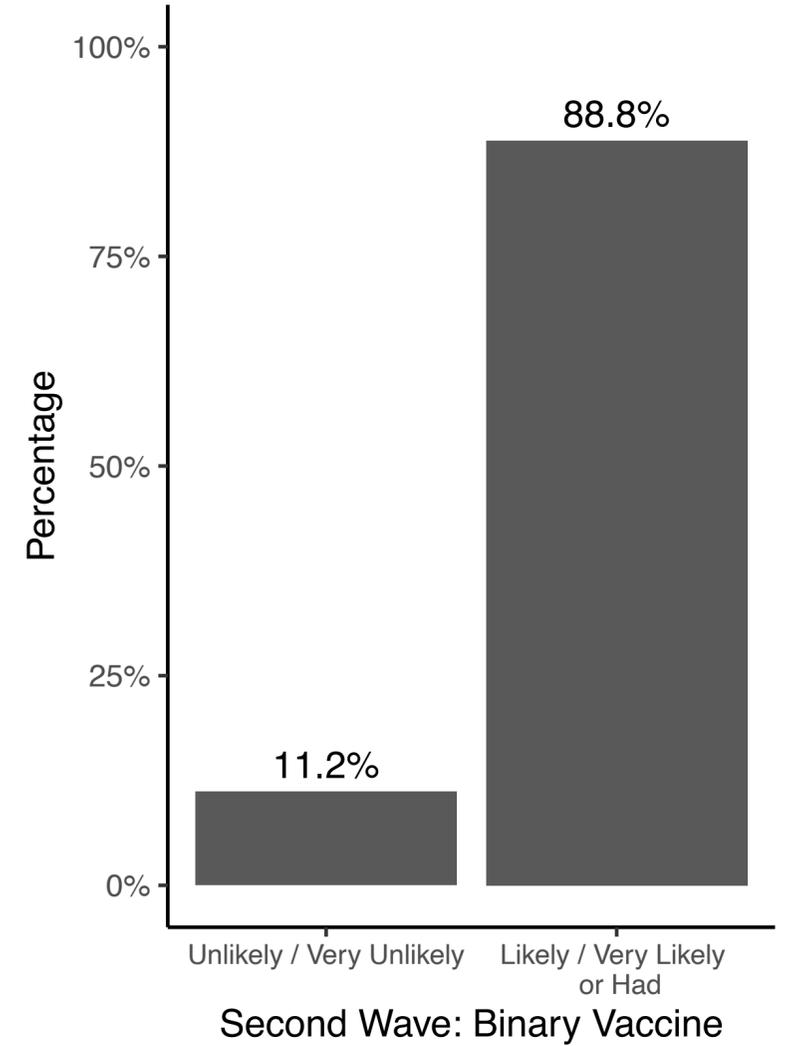
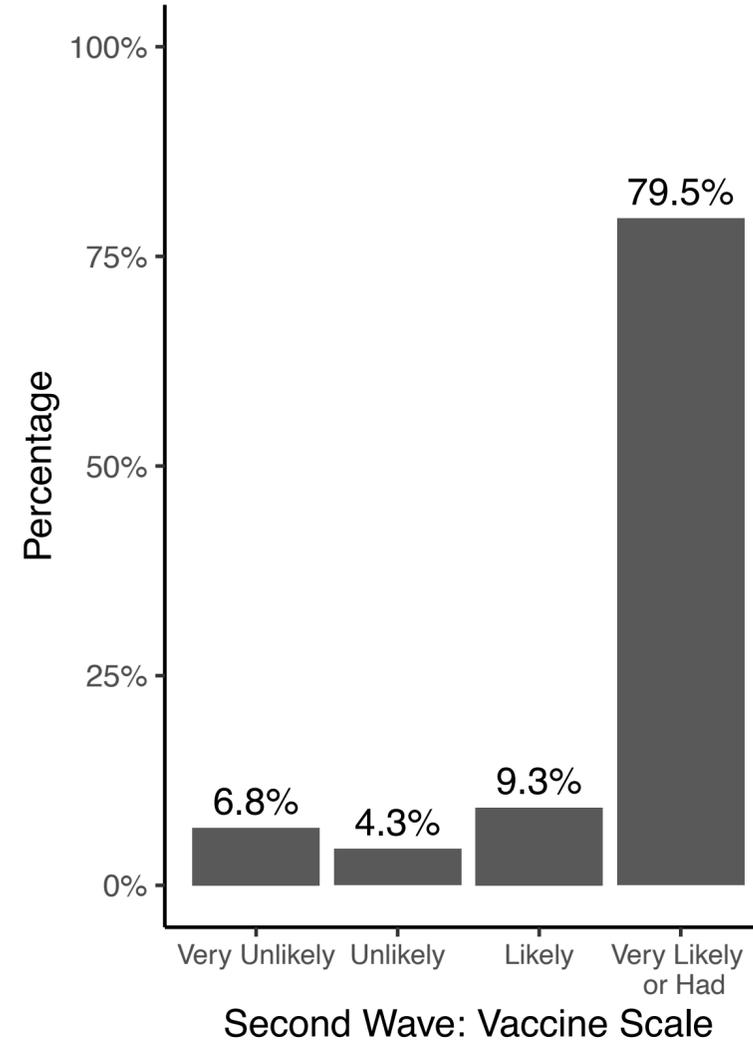
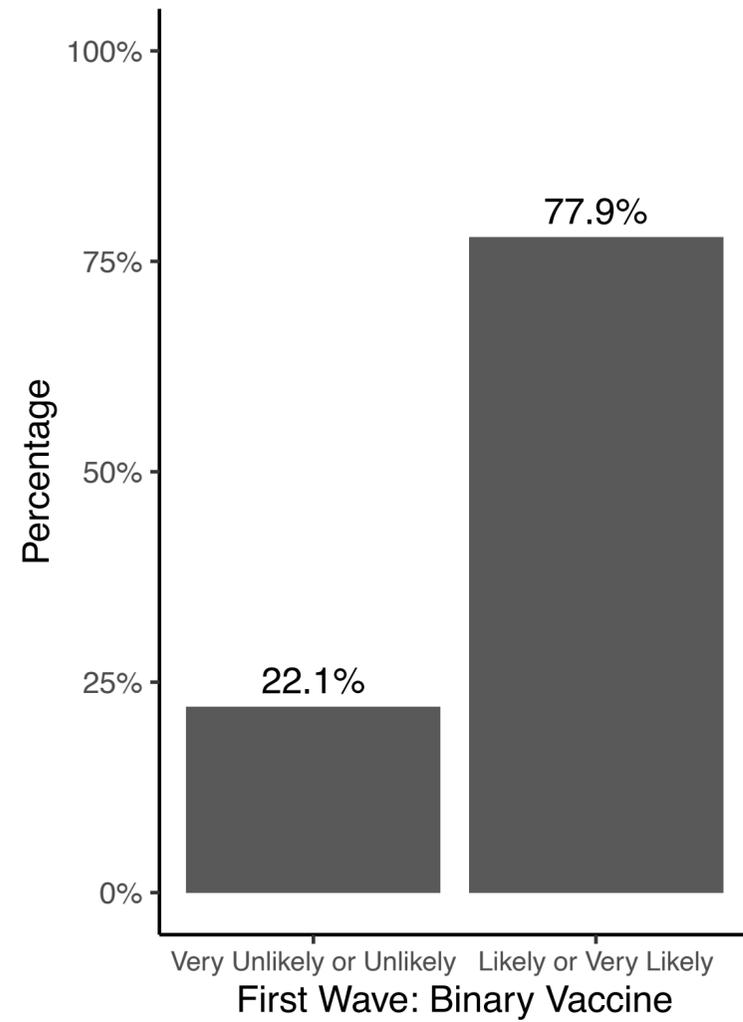
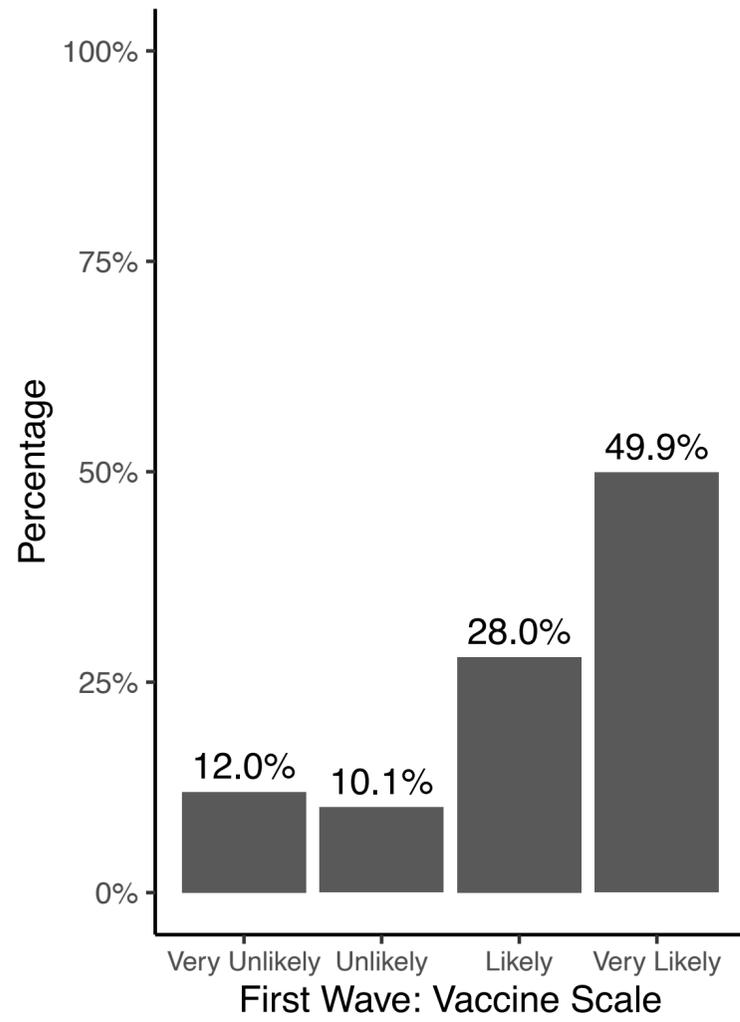
- We included a number of questions on attitudes to science and scientists
- DEFERENCE
  - (a) Scientists know what is best for the public
  - (b) We have no option but to trust those governing science
  - (c) Public consultation on science is just PR exercise
- COMMUNICATION
  - (a) I would like scientists to discuss ethics more
  - (b) We ought to hear about new science before it happens
  - (c) Those who regulate science need to communicate with the public

# OTHER QUESTIONS

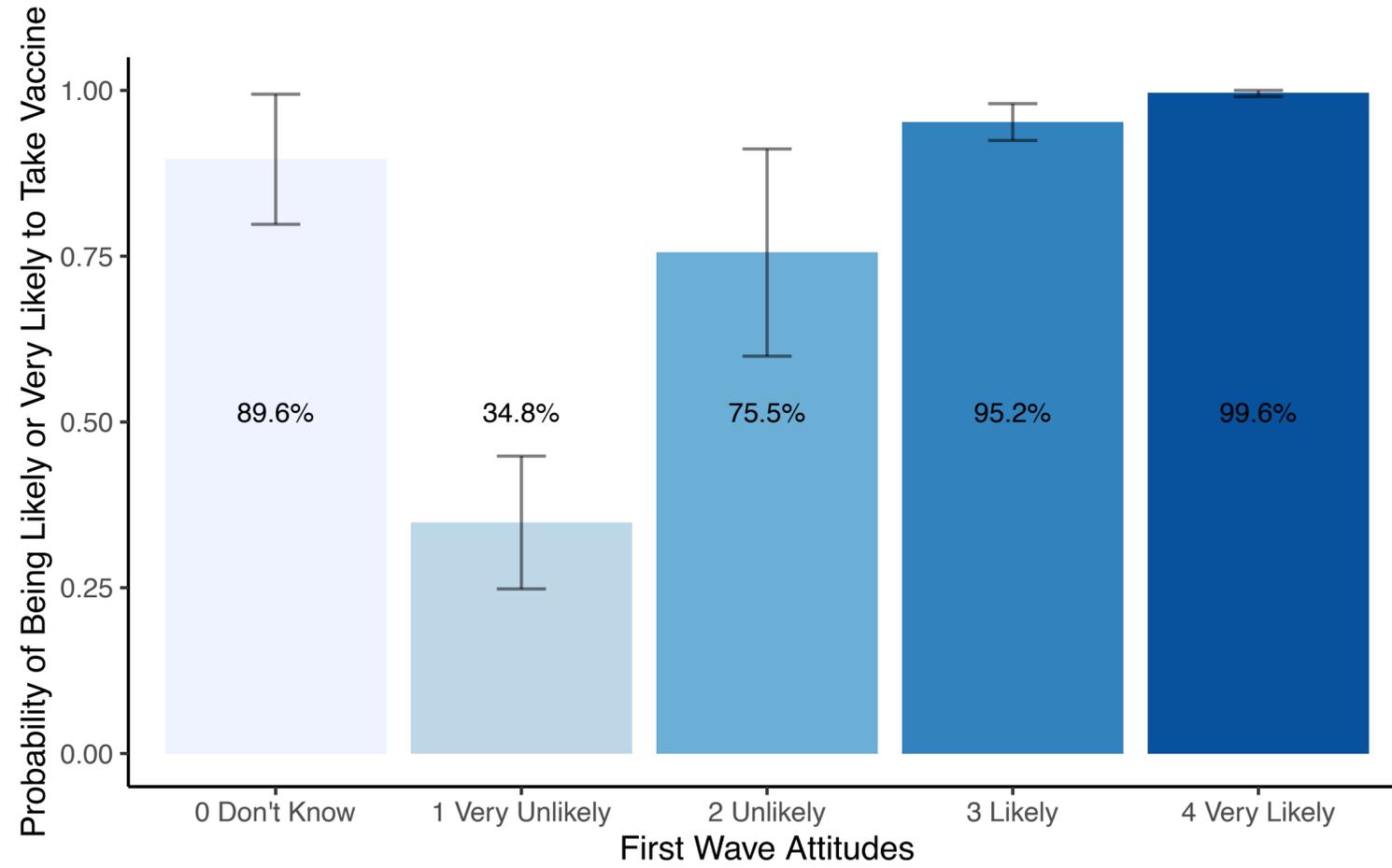
- Subjective health perception: how concerned are you about contracting COVID-19 in the next six months?
- Have you, family or friends had COVID-19?
- How many social distancing activities have you engaged in (list of nine)?
- How much trust do you have of the following in terms of handling COVID-19? Johnson, Sunak, Hancock, the government, chief scientific/medical advisors, the public?
- And much more... We will only cover some of this ground today.

**DESCRIPTIVES**

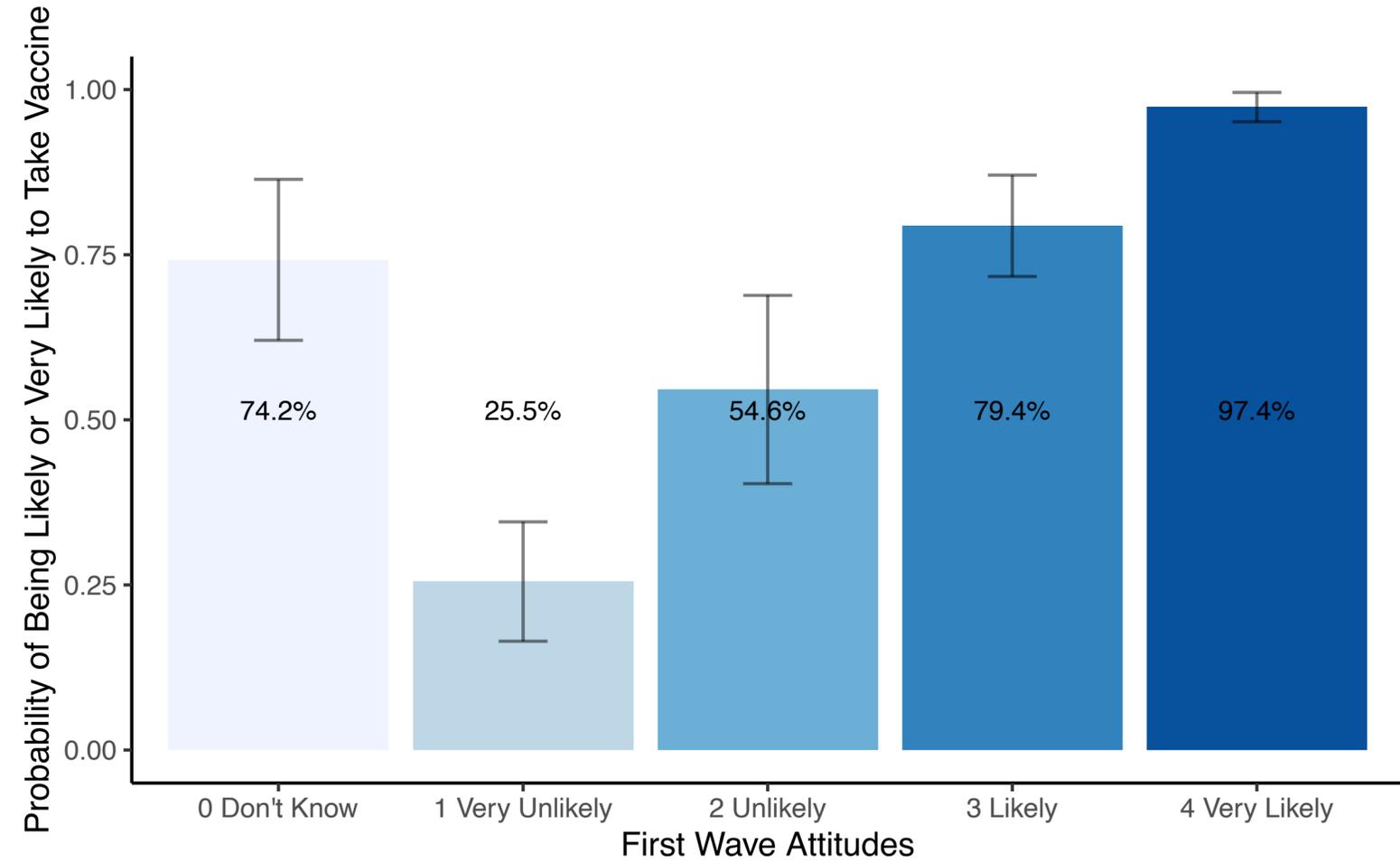
|                          | 1st Wave (1st weights) | 2nd Wave (1st weights) | 2nd Wave (2nd weights) |                          |      |      |      |
|--------------------------|------------------------|------------------------|------------------------|--------------------------|------|------|------|
| Characteristic           | N = 1,642 <sup>1</sup> | N = 1,204 <sup>1</sup> | N = 1,219 <sup>1</sup> |                          |      |      |      |
| Age                      | 48.66, (16.93)         | 51.14, (16.33)         | 48.59, (16.81)         |                          |      |      |      |
| Gender                   |                        |                        |                        | Ethnicity                |      |      |      |
| Female                   | 51%                    | 51%                    | 51%                    | Ethnic Minority          | 6.1% | 5.2% | 6.9% |
| Male                     | 49%                    | 49%                    | 49%                    | Other White              | 4.4% | 4.4% | 4.8% |
| Household Income (scale) | 7.2, (3.7)             | 7.1, (3.6)             | 7.0, (3.6)             | White British            | 89%  | 90%  | 88%  |
| EURef                    |                        |                        |                        | First Wave Vaccine Views |      |      |      |
| Can't Remember           | 2.2%                   | 1.9%                   | 1.9%                   | 1 Very Unlikely          | 11%  | 10%  | 11%  |
| Did Not Vote             | 21%                    | 19%                    | 22%                    | 2 Unlikely               | 9.2% | 9.5% | 10%  |
| Leave                    | 40%                    | 41%                    | 39%                    | 3 Likely                 | 25%  | 25%  | 26%  |
| Remain                   | 37%                    | 38%                    | 37%                    | 4 Very Likely            | 45%  | 47%  | 45%  |
| GE 2019                  |                        |                        |                        | 5 Don't Know             | 8.9% | 7.8% | 7.9% |
| Brexit Party             | 2.1%                   | 2.1%                   | 2.1%                   |                          |      |      |      |
| Conservative             | 45%                    | 46%                    | 45%                    |                          |      |      |      |
| Green                    | 2.5%                   | 2.6%                   | 2.4%                   |                          |      |      |      |
| Labour                   | 33%                    | 31%                    | 33%                    |                          |      |      |      |
| Liberal Democrat         | 12%                    | 12%                    | 12%                    |                          |      |      |      |
| Other                    | 1.9%                   | 1.6%                   | 1.7%                   |                          |      |      |      |
| Plaid Cymru              | 0.5%                   | 0.5%                   | 0.5%                   |                          |      |      |      |
| SNP                      | 3.9%                   | 4.0%                   | 4.0%                   |                          |      |      |      |
| Education (scale)        |                        |                        |                        |                          |      |      |      |
| 1                        | 6.6%                   | 7.2%                   | 6.4%                   |                          |      |      |      |
| 2                        | 28%                    | 29%                    | 30%                    |                          |      |      |      |
| 3                        | 21%                    | 20%                    | 21%                    |                          |      |      |      |
| 4                        | 35%                    | 35%                    | 34%                    |                          |      |      |      |
| 5                        | 8.8%                   | 8.9%                   | 8.7%                   |                          |      |      |      |

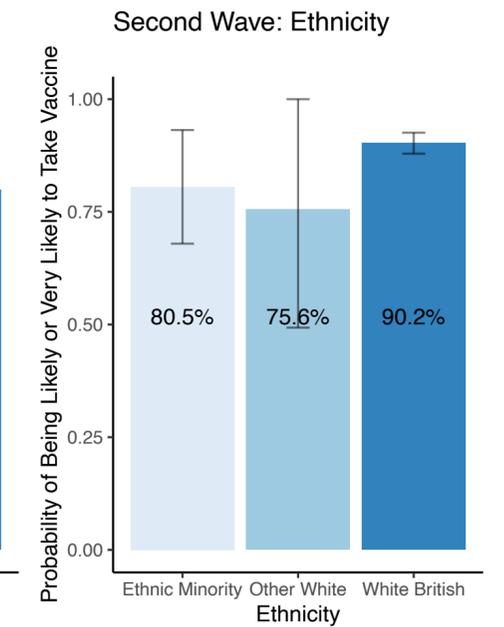
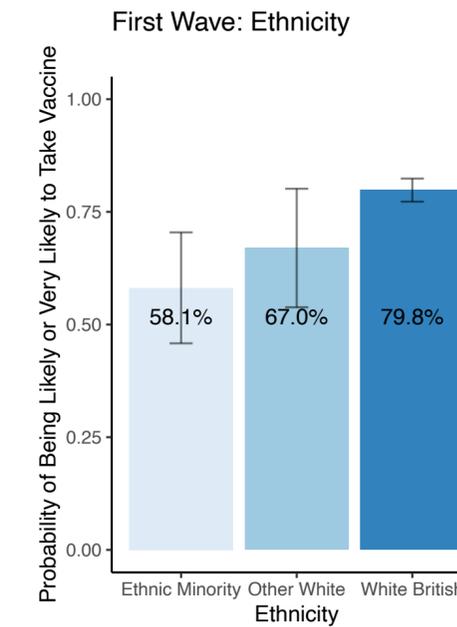
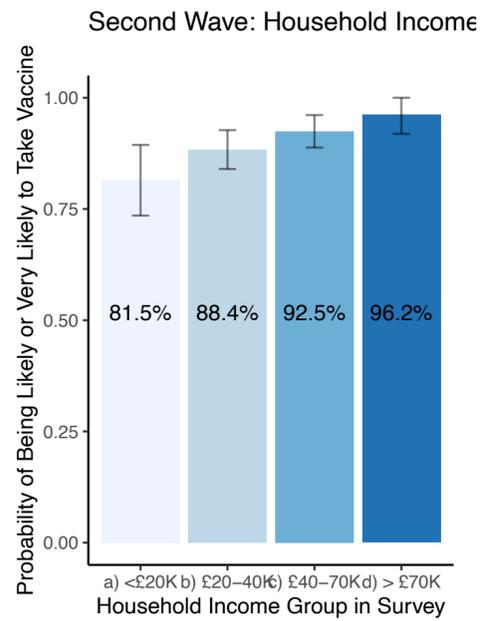
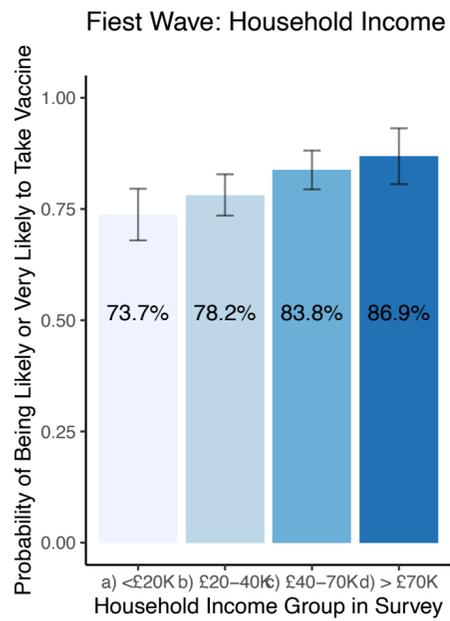
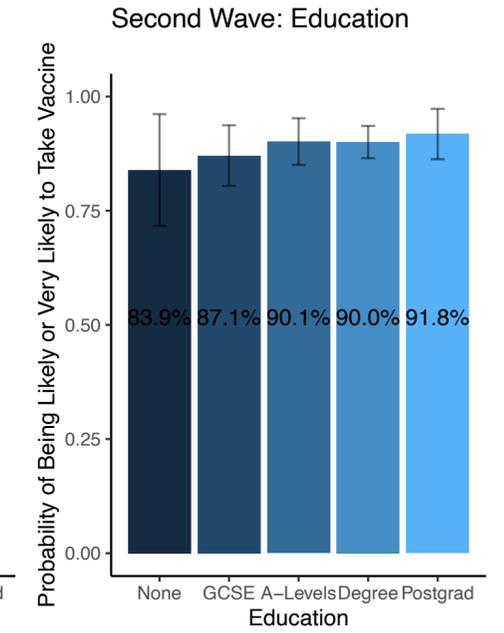
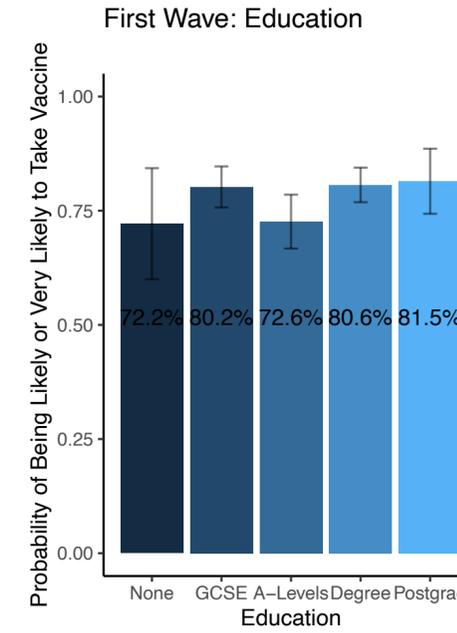
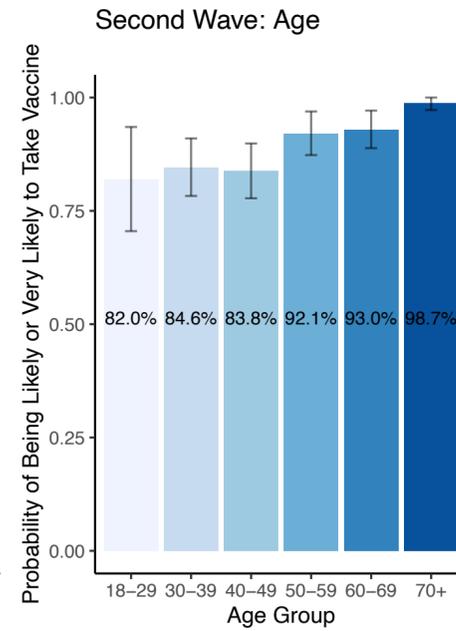
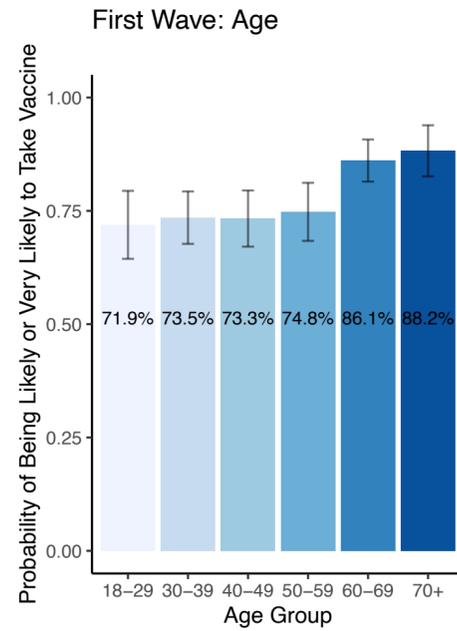
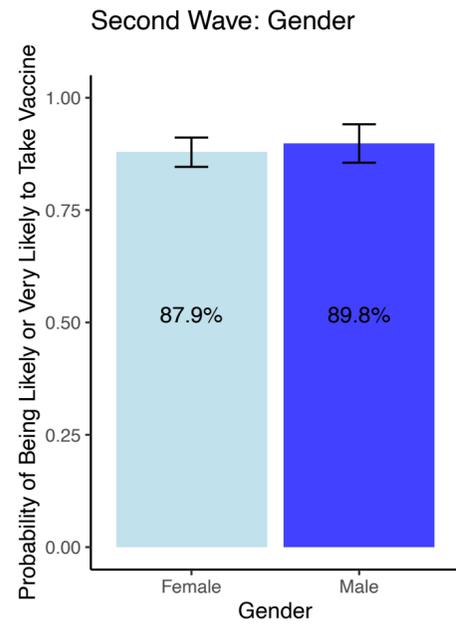
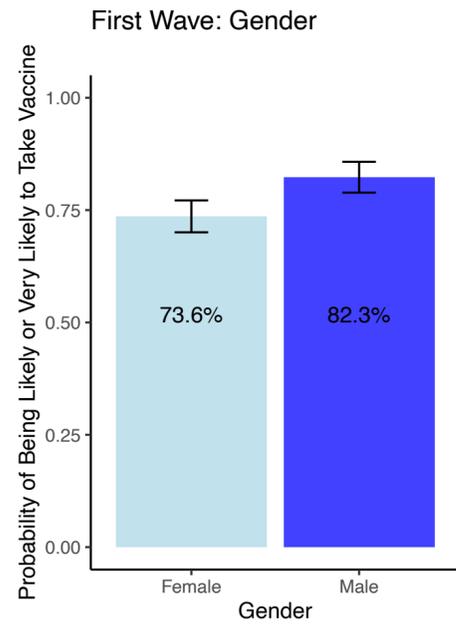


Second Wave Probability of Being Likely or Very Likely to Take Vaccine by First Wave Vaccine Attitudes

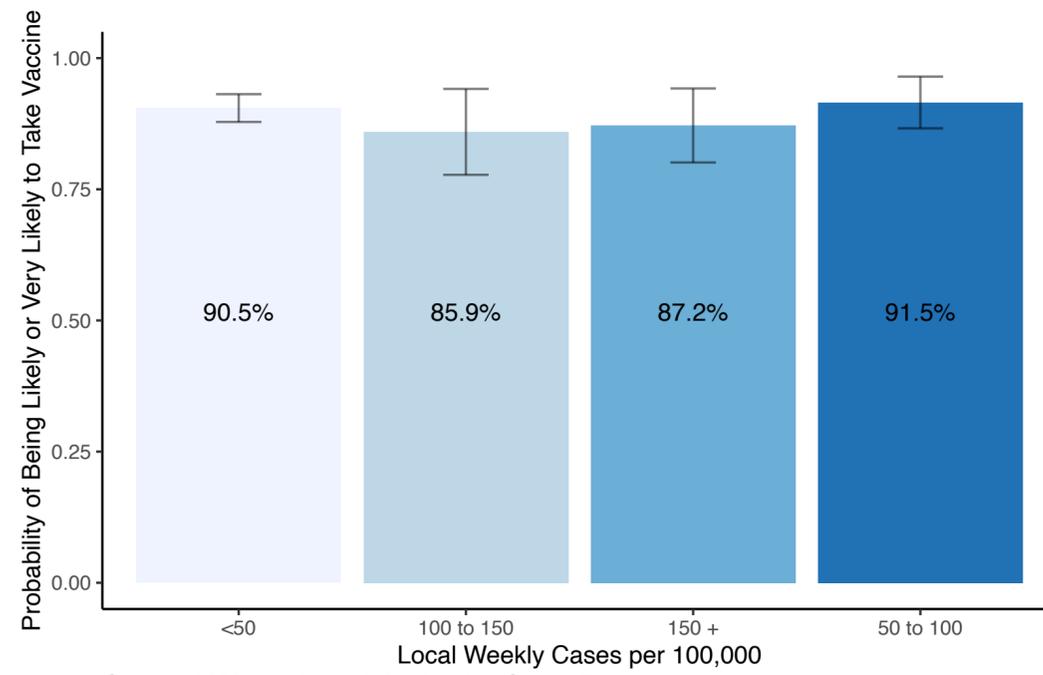


Second Wave Probability of Being Very Likely to Take Vaccine by First Wave Vaccine Attitudes

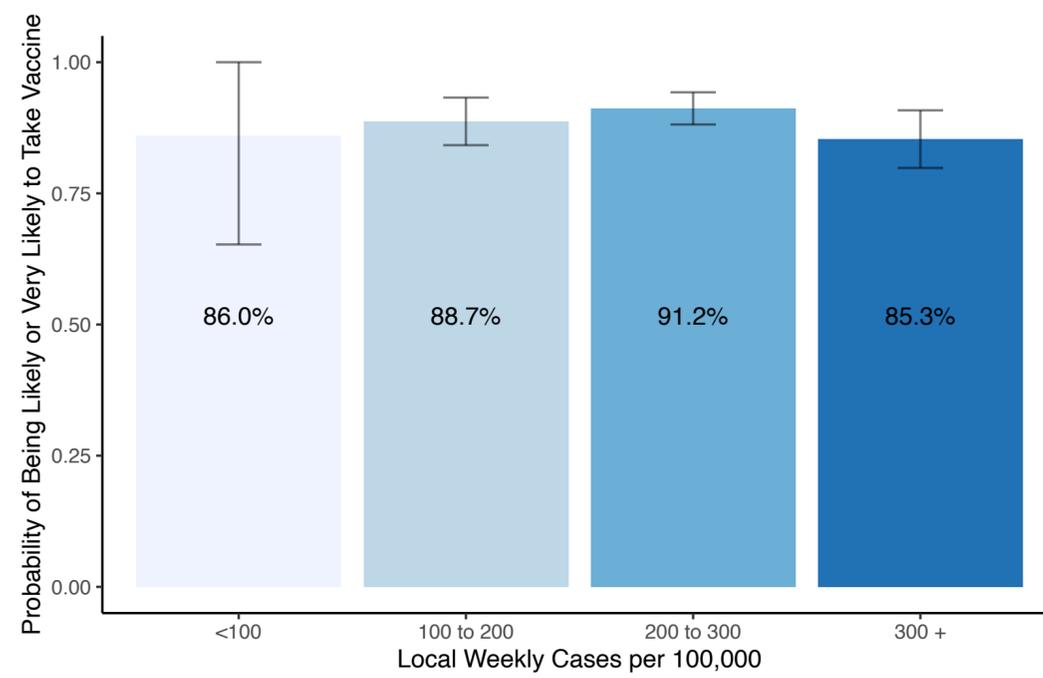


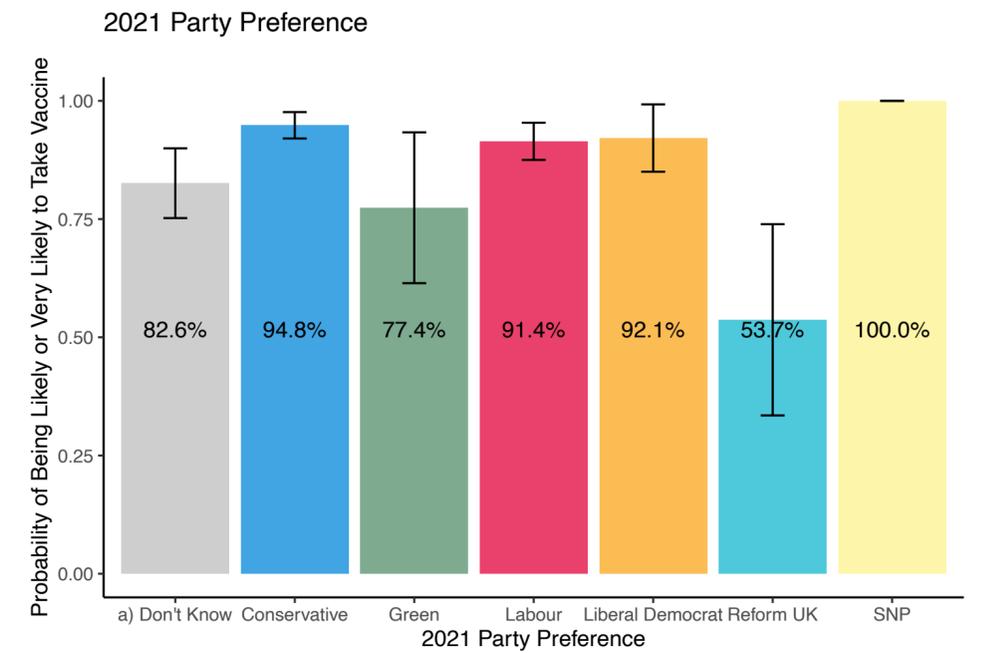
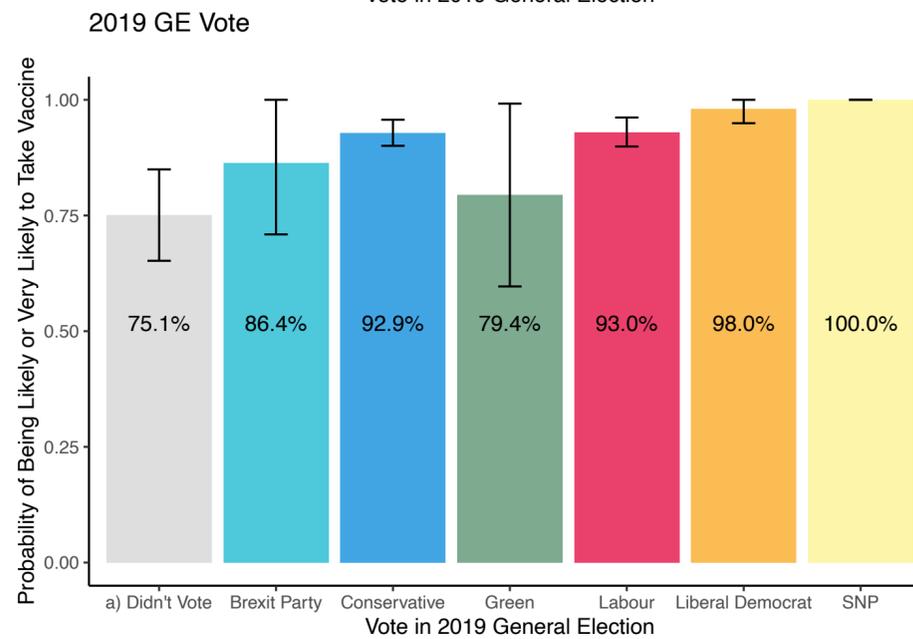
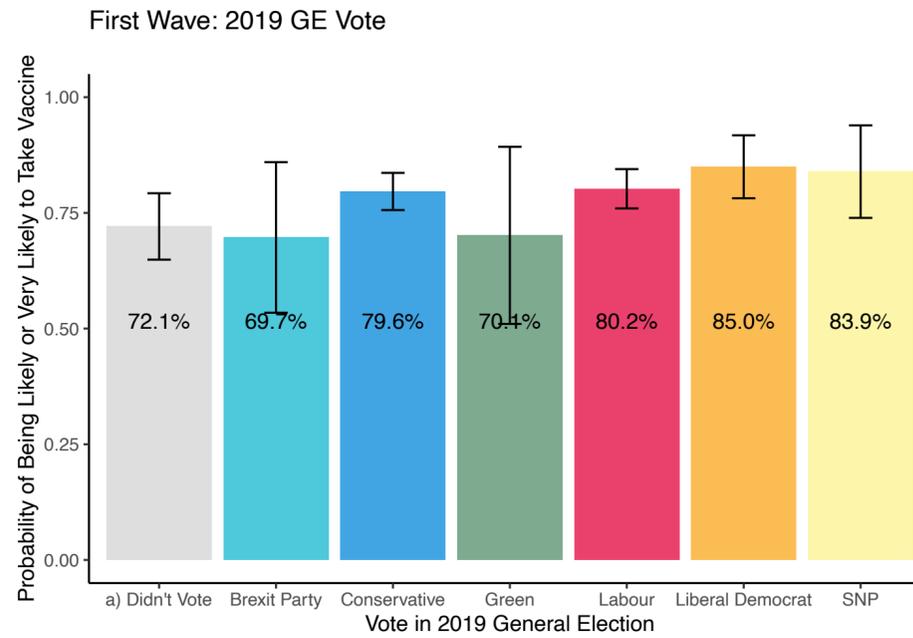
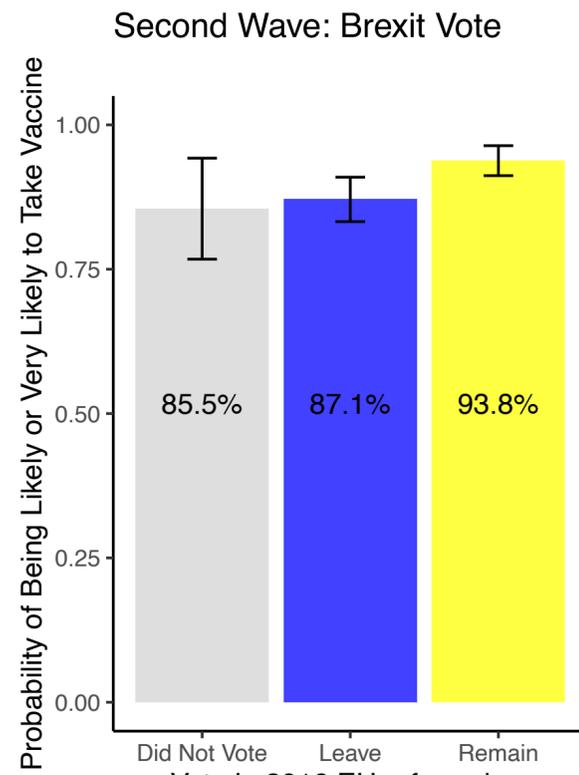
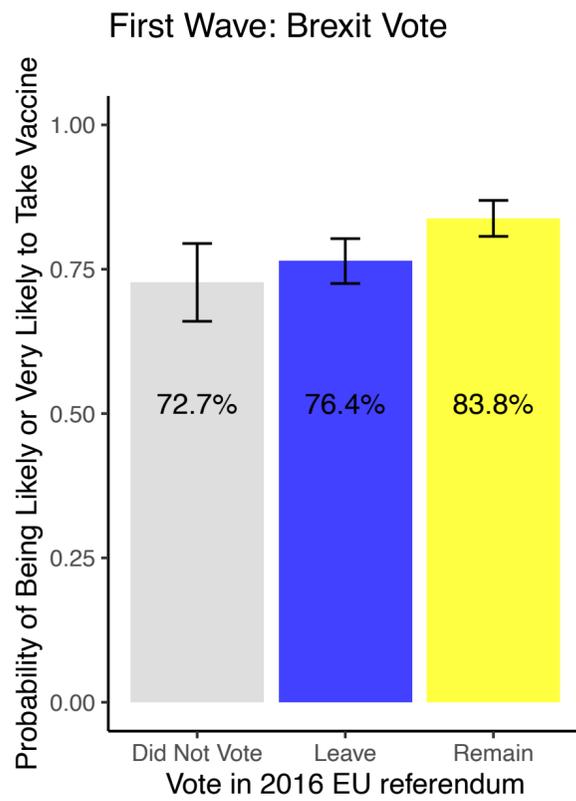


First Wave: Local Authority Case Rate



Second Wave: Local Authority Case Rate

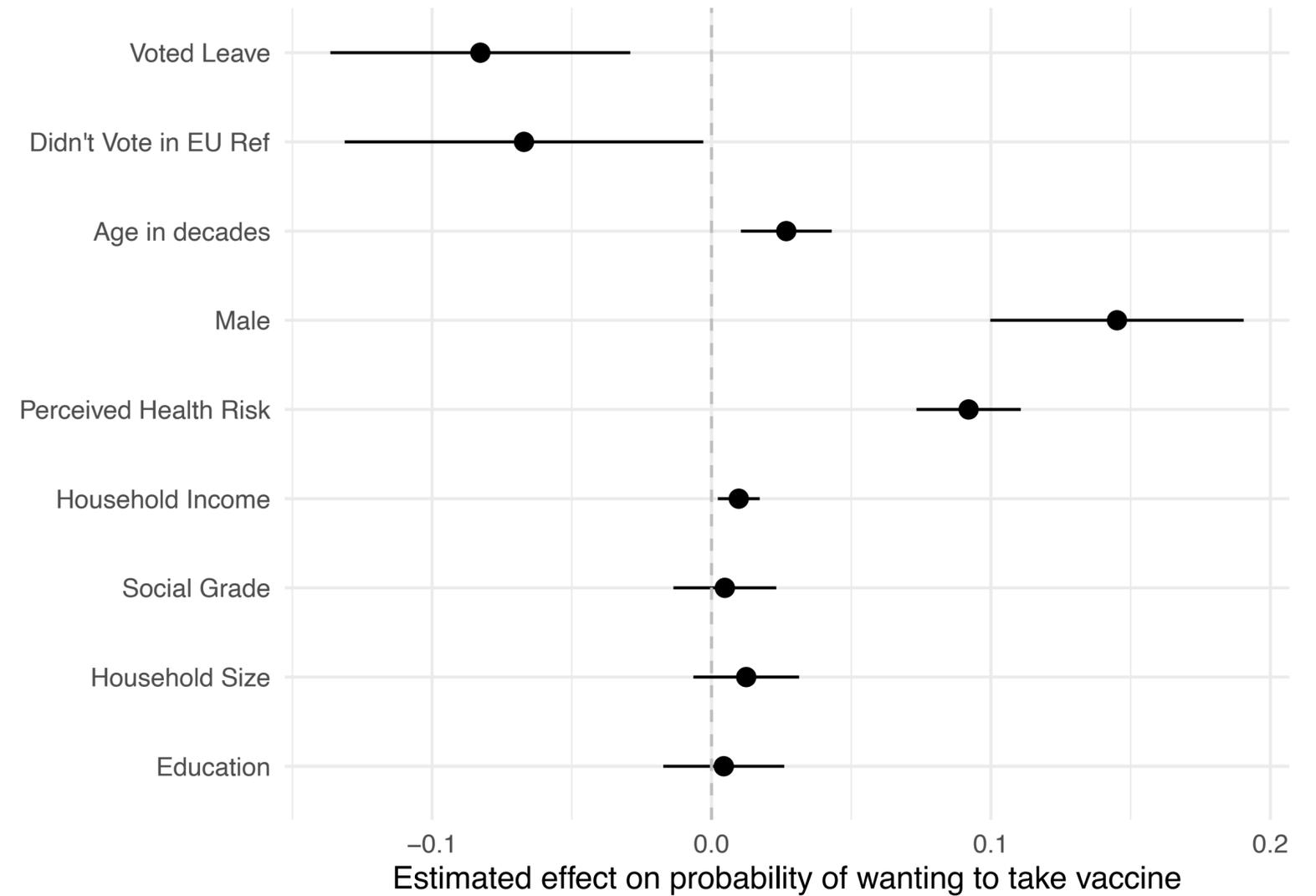


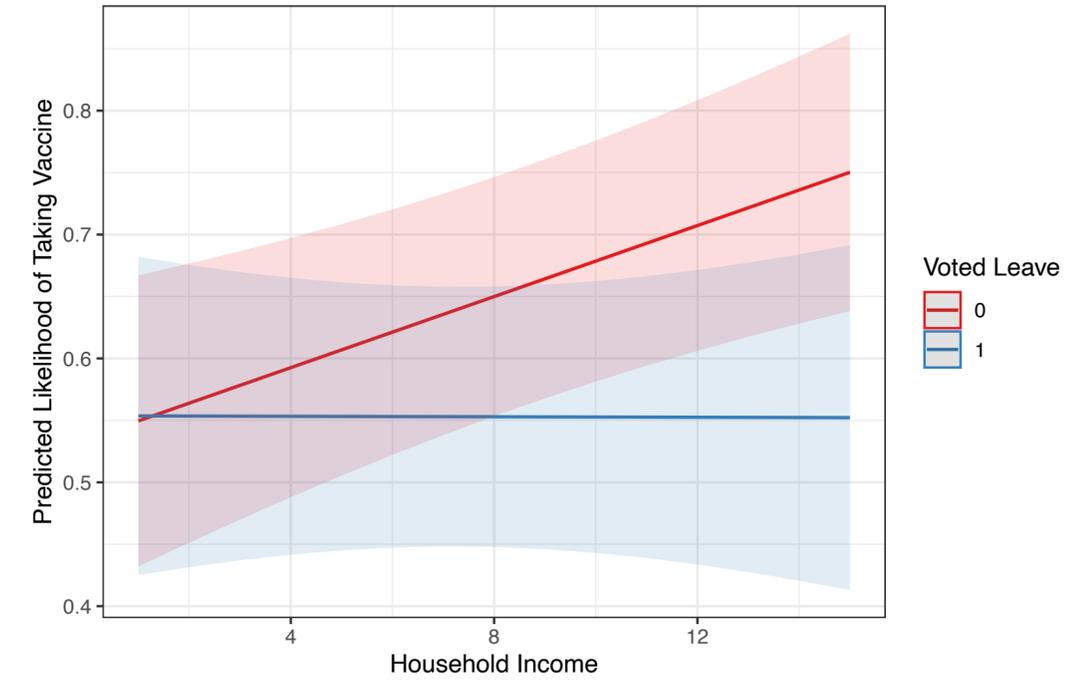
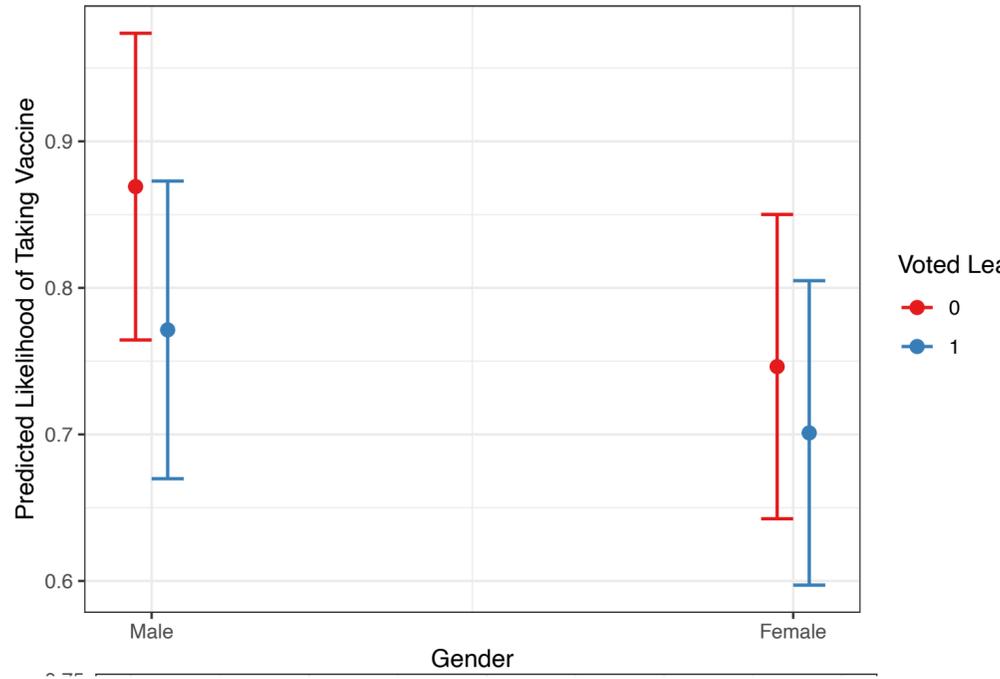
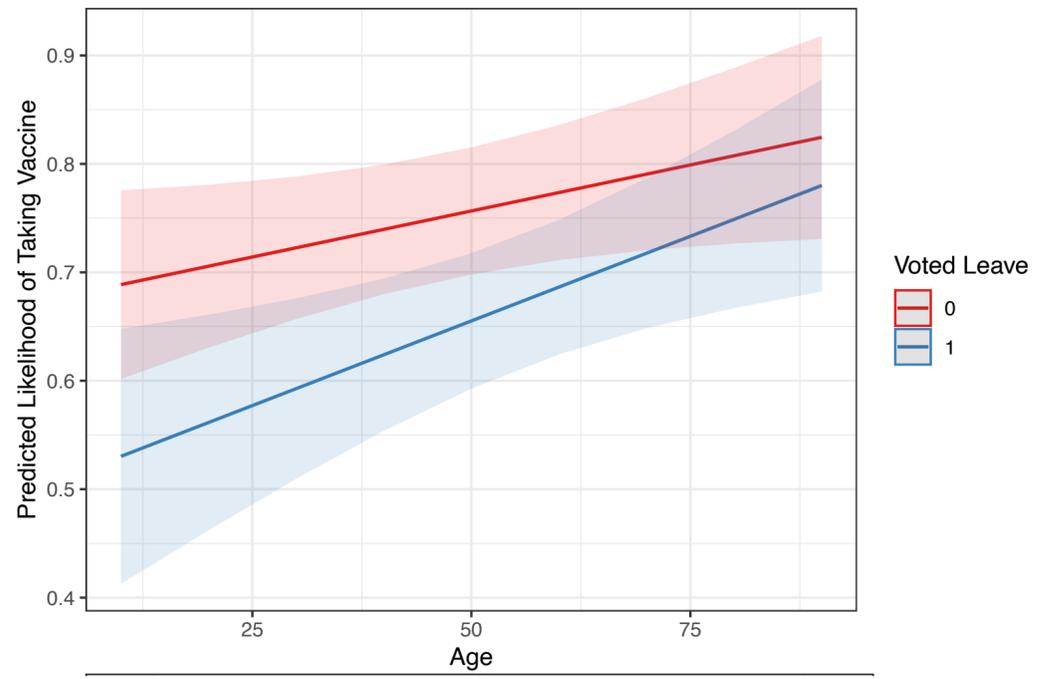
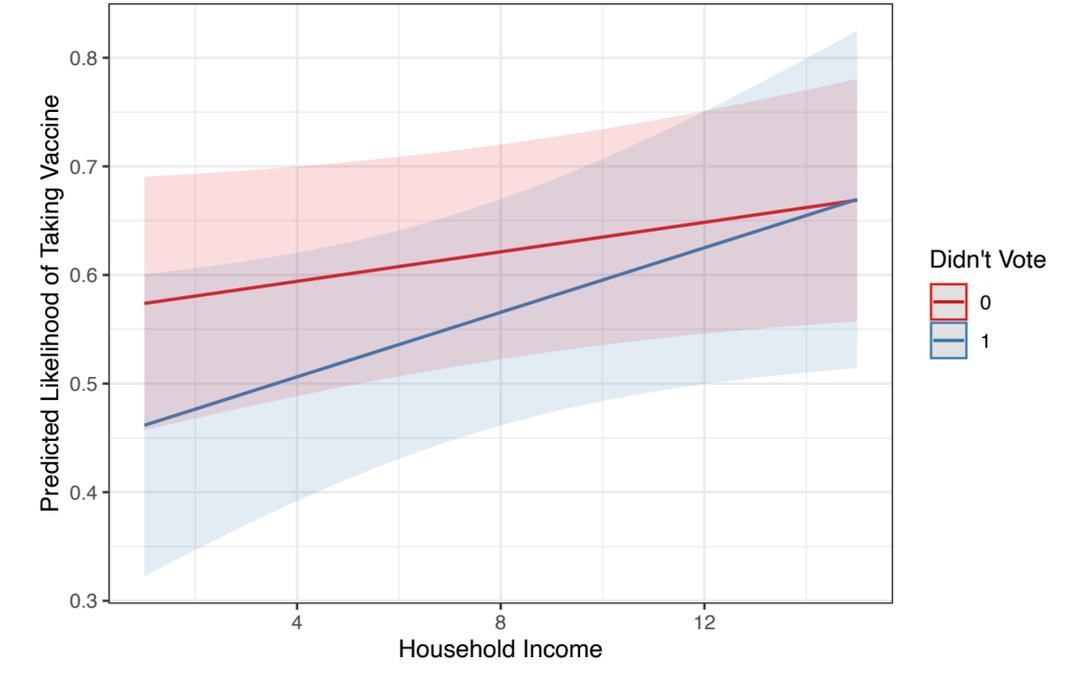
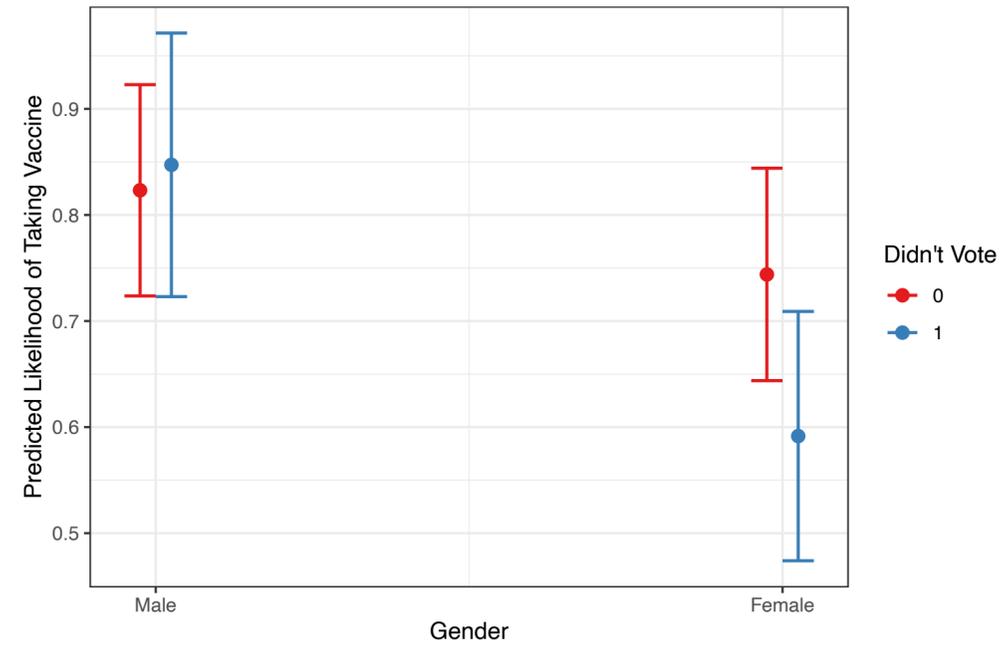
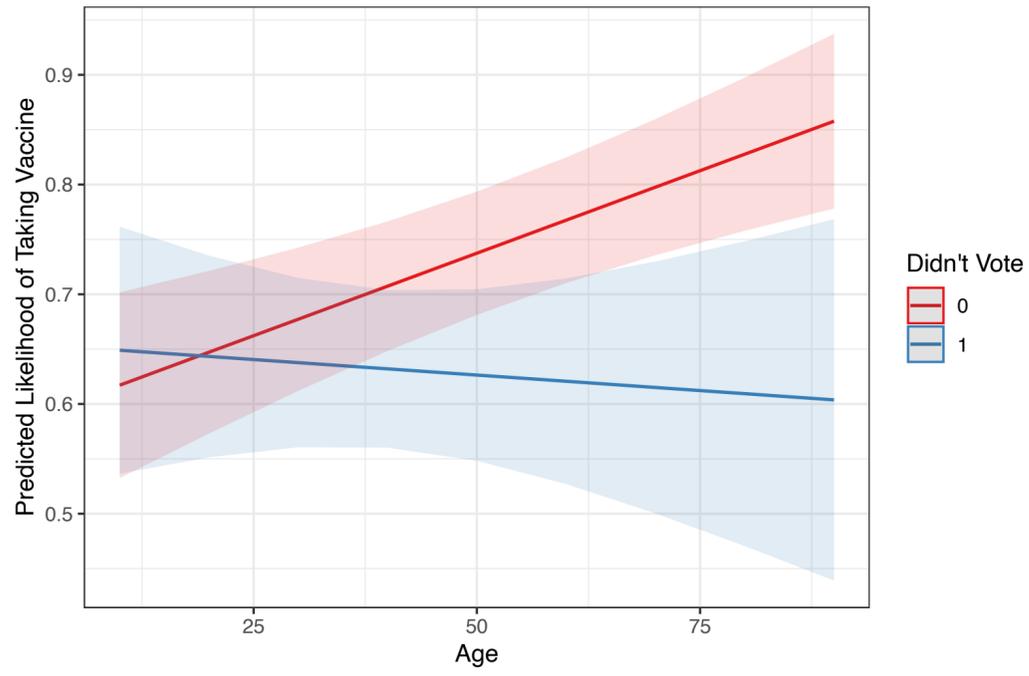


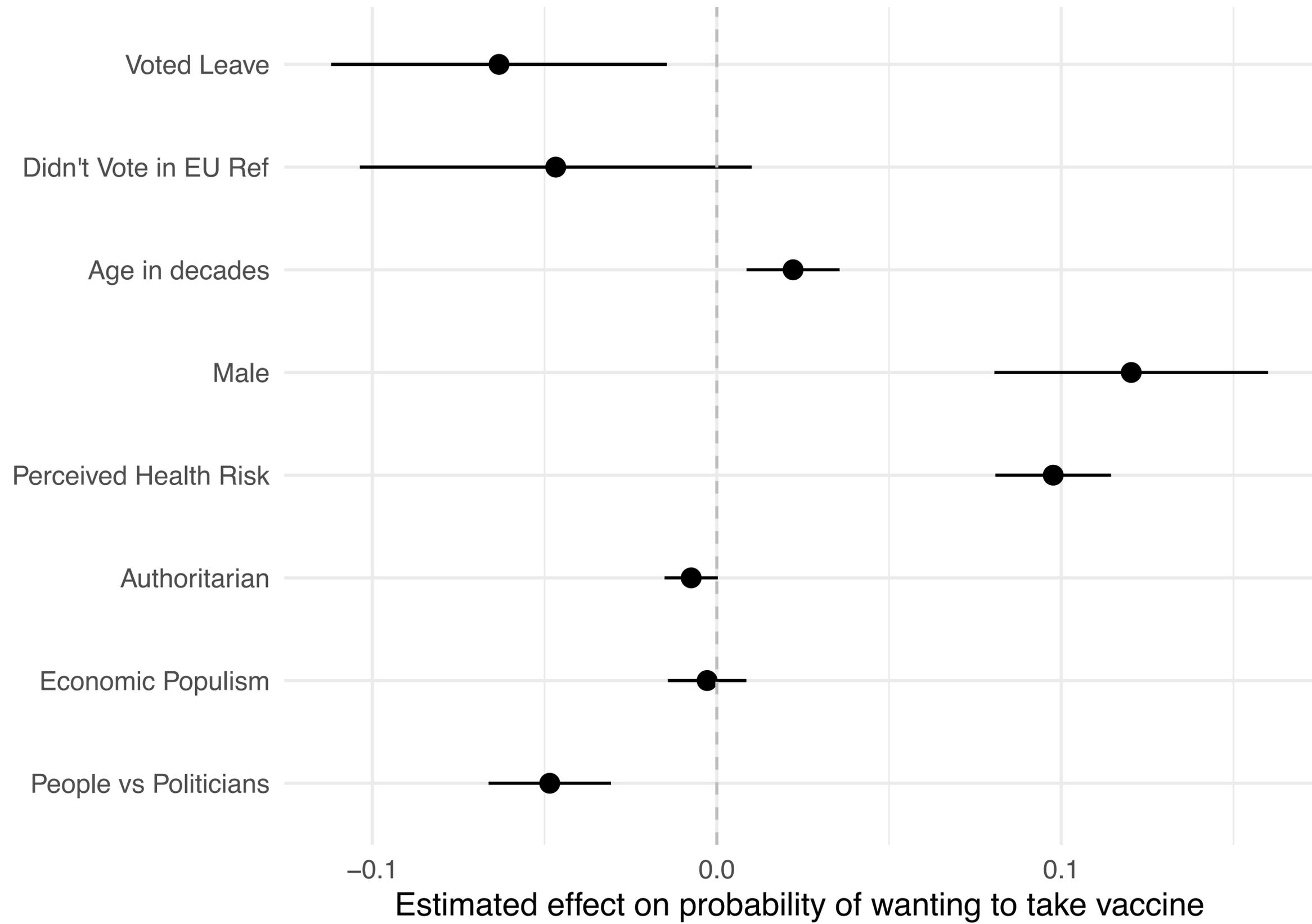
# STATISTICAL ANALYSES

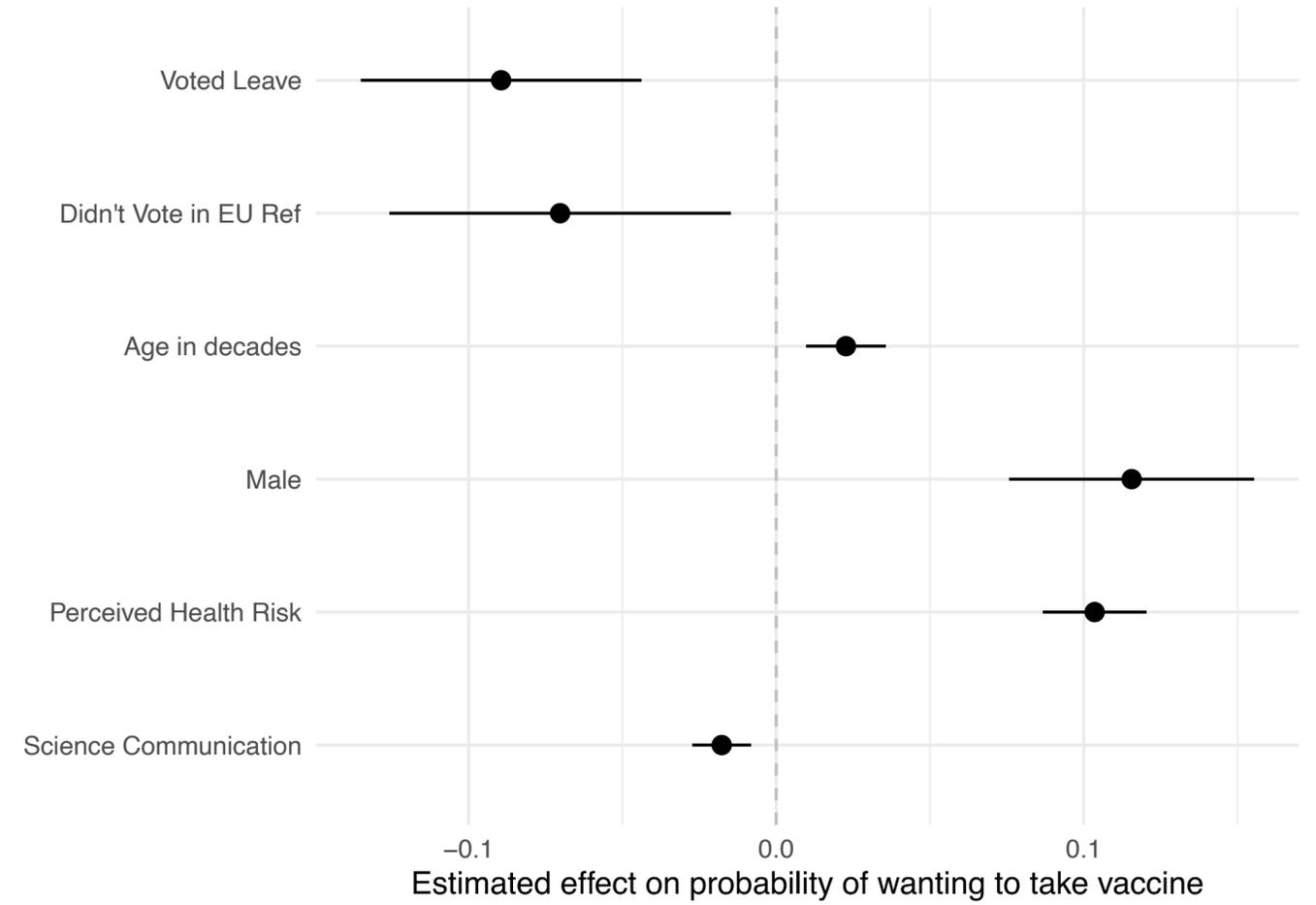
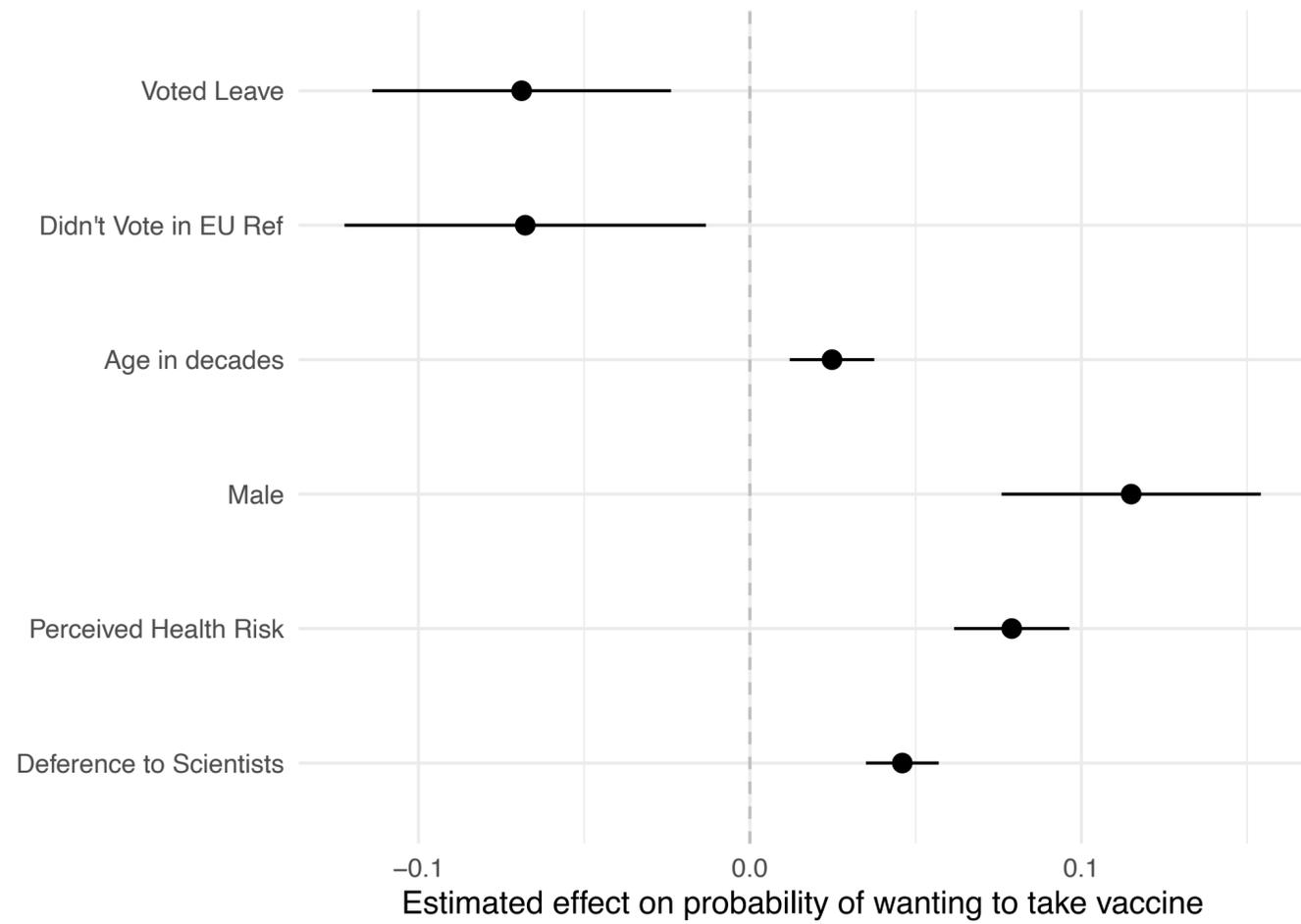
**WAVE ONE: OCT 31**

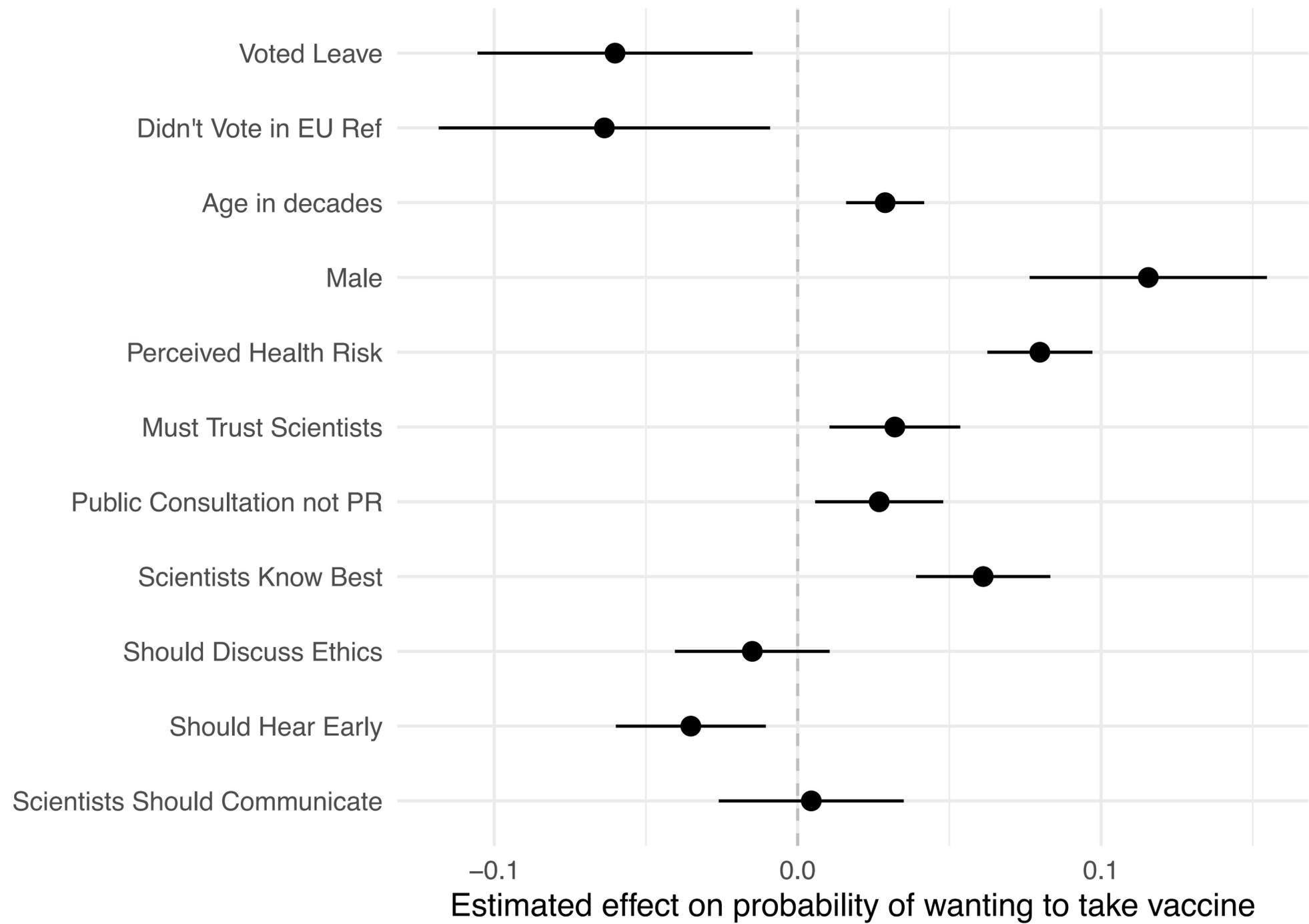
|                       | Model 1           | Model 2           | Model 3           | Model 4           | Model 5           | Model 6           |
|-----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Voted Leave           | -0.079<br>(0.024) | -0.109<br>(0.024) | -0.089<br>(0.023) | -0.076<br>(0.028) | -0.083<br>(0.027) | -0.098<br>(0.033) |
| Didn't Vote in EU Ref | -0.116<br>(0.029) | -0.079<br>(0.030) | -0.069<br>(0.028) | -0.073<br>(0.037) | -0.067<br>(0.033) | -0.065<br>(0.042) |
| Age in decades        |                   | 0.033<br>(0.007)  | 0.021<br>(0.007)  | 0.017<br>(0.007)  | 0.027<br>(0.008)  | 0.012<br>(0.009)  |
| Male                  |                   | 0.086<br>(0.021)  | 0.119<br>(0.020)  | 0.099<br>(0.022)  | 0.145<br>(0.023)  | 0.108<br>(0.024)  |
| Perceived Health Risk |                   |                   | 0.101<br>(0.009)  | 0.089<br>(0.009)  | 0.092<br>(0.010)  | 0.082<br>(0.010)  |
| Household Income      |                   |                   |                   |                   | 0.010<br>(0.004)  | 0.006<br>(0.004)  |
| Social Grade          |                   |                   |                   |                   | 0.005<br>(0.009)  | 0.004<br>(0.010)  |
| Household Size        |                   |                   |                   |                   | 0.012<br>(0.010)  | 0.002<br>(0.010)  |
| Education             |                   |                   |                   |                   | 0.004<br>(0.011)  | 0.000<br>(0.012)  |
| Num.Obs.              | 1489              | 1489              | 1489              | 1273              | 1147              | 989               |
| R2                    | 0.023             | 0.048             | 0.130             | 0.110             | 0.144             | 0.116             |
| R2 Adj.               | 0.015             | 0.039             | 0.121             | 0.094             | 0.129             | 0.092             |
| AIC                   | 1719.5            | 1685.1            | 1553.1            | 1251.1            | 1141.1            | 925.1             |
| BIC                   | 1793.8            | 1770.0            | 1643.3            | 1374.6            | 1247.0            | 1062.2            |
| Log.Lik.              | -845.753          | -826.558          | -759.554          | -601.530          | -549.534          | -434.556          |
| F                     | 2.888             | 5.286             | 14.643            | 7.021             | 9.964             | 4.838             |
| Region Dummies        | Y                 | Y                 | Y                 | Y                 | Y                 | Y                 |
| Party Dummies         | N                 | N                 | N                 | Y                 | N                 | Y                 |







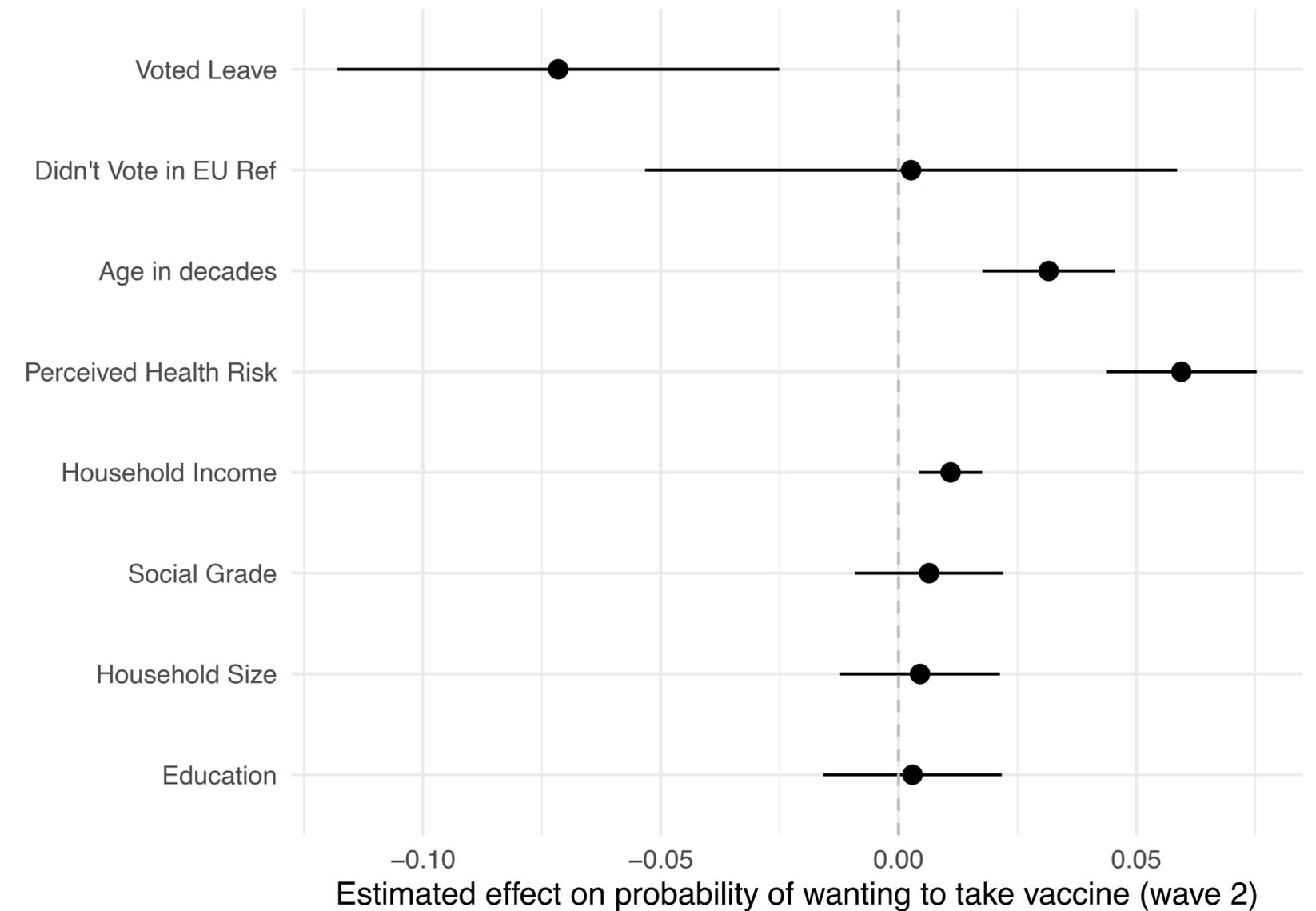




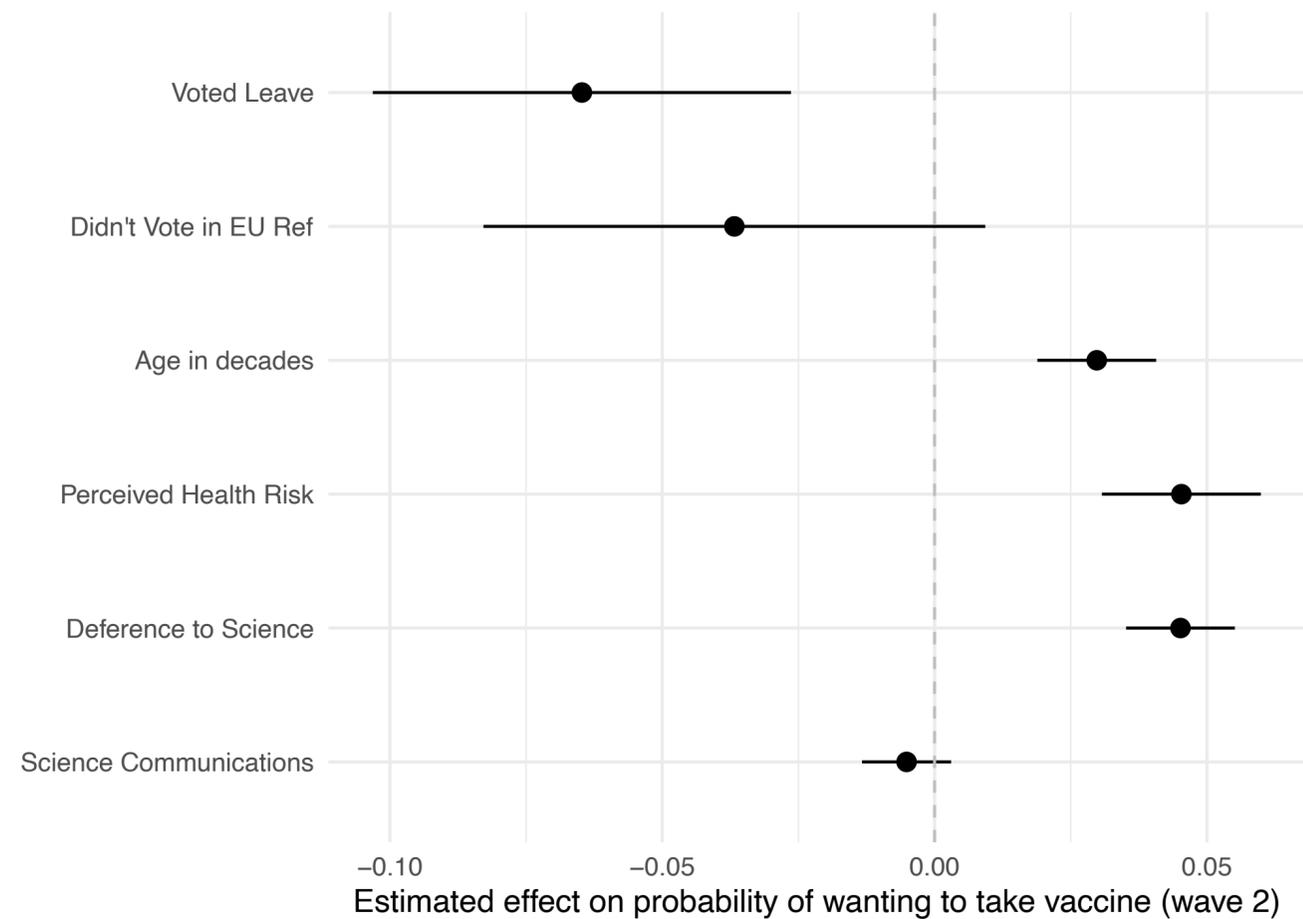
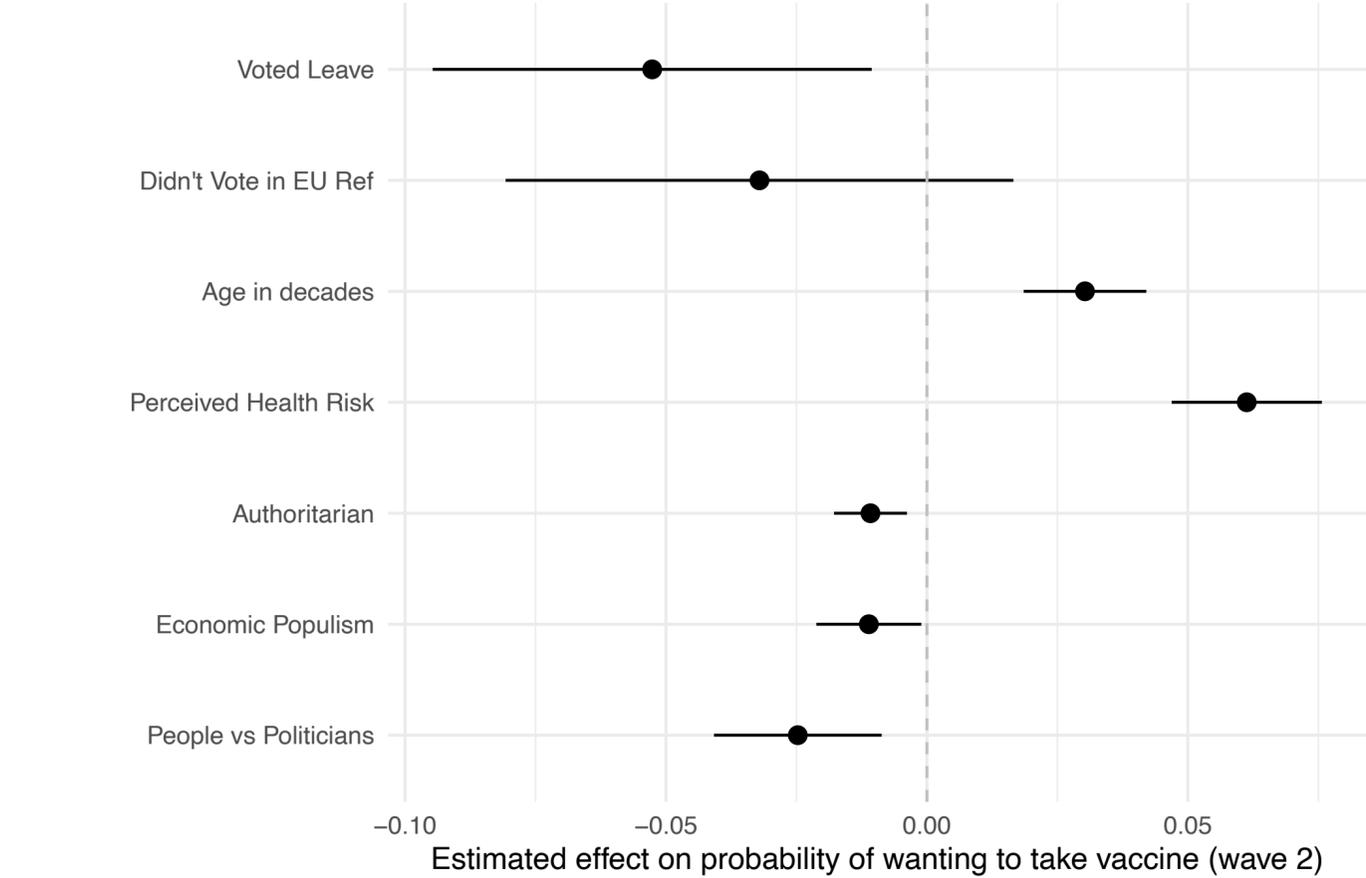
**WAVE TWO: JAN 31**

|                       | Model 1  | Model 2  | Model 3  | Model 4 | Model 5  | Model 6 |
|-----------------------|----------|----------|----------|---------|----------|---------|
| Voted Leave           | -0.063   | -0.090   | -0.079   | -0.039  | -0.072   | -0.037  |
|                       | (0.021)  | (0.021)  | (0.020)  | (0.020) | (0.024)  | (0.024) |
| Didn't Vote in EU Ref | -0.086   | -0.053   | -0.050   | 0.047   | 0.003    | 0.063   |
|                       | (0.025)  | (0.025)  | (0.024)  | (0.028) | (0.028)  | (0.034) |
| Age in decades        |          | 0.035    | 0.027    | 0.018   | 0.032    | 0.027   |
|                       |          | (0.006)  | (0.006)  | (0.006) | (0.007)  | (0.007) |
| Perceived Health Risk |          |          | 0.064    | 0.043   | 0.059    | 0.038   |
|                       |          |          | (0.007)  | (0.007) | (0.008)  | (0.008) |
| Household Income      |          |          |          |         | 0.011    | 0.007   |
|                       |          |          |          |         | (0.003)  | (0.003) |
| Social Grade          |          |          |          |         | 0.006    | -0.002  |
|                       |          |          |          |         | (0.008)  | (0.007) |
| Household Size        |          |          |          |         | 0.005    | -0.002  |
|                       |          |          |          |         | (0.009)  | (0.008) |
| Education             |          |          |          |         | 0.003    | -0.006  |
|                       |          |          |          |         | (0.010)  | (0.009) |
| Num.Obs.              | 1163     | 1163     | 1163     | 1008    | 914      | 800     |
| R2                    | 0.028    | 0.057    | 0.115    | 0.094   | 0.136    | 0.105   |
| R2 Adj.               | 0.017    | 0.045    | 0.103    | 0.074   | 0.118    | 0.075   |
| AIC                   | 736.3    | 704.9    | 633.1    | 138.4   | 461.6    | 170.7   |
| BIC                   | 807.1    | 785.8    | 719.0    | 256.3   | 562.8    | 301.8   |
| Log.Lik.              | -354.135 | -336.429 | -299.526 | -45.179 | -209.796 | -57.340 |
| F                     | 2.714    | 4.929    | 9.907    | 4.660   | 7.422    | 3.489   |
| Region Dummies        | Y        | Y        | Y        | Y       | Y        | Y       |
| Party Dummies         | N        | N        | N        | Y       | N        | Y       |

### Vaccine Hesitancy (Wave Two)

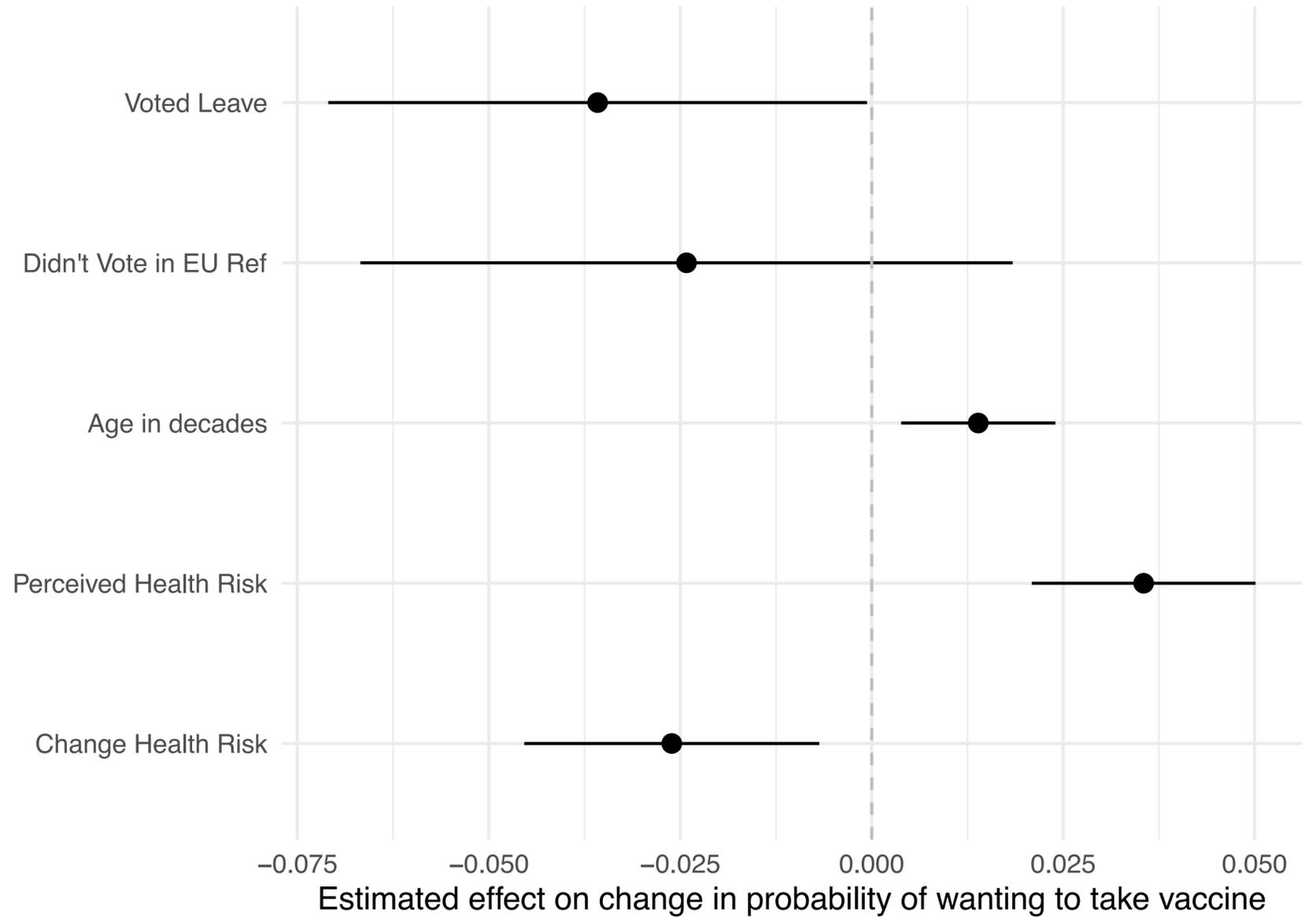


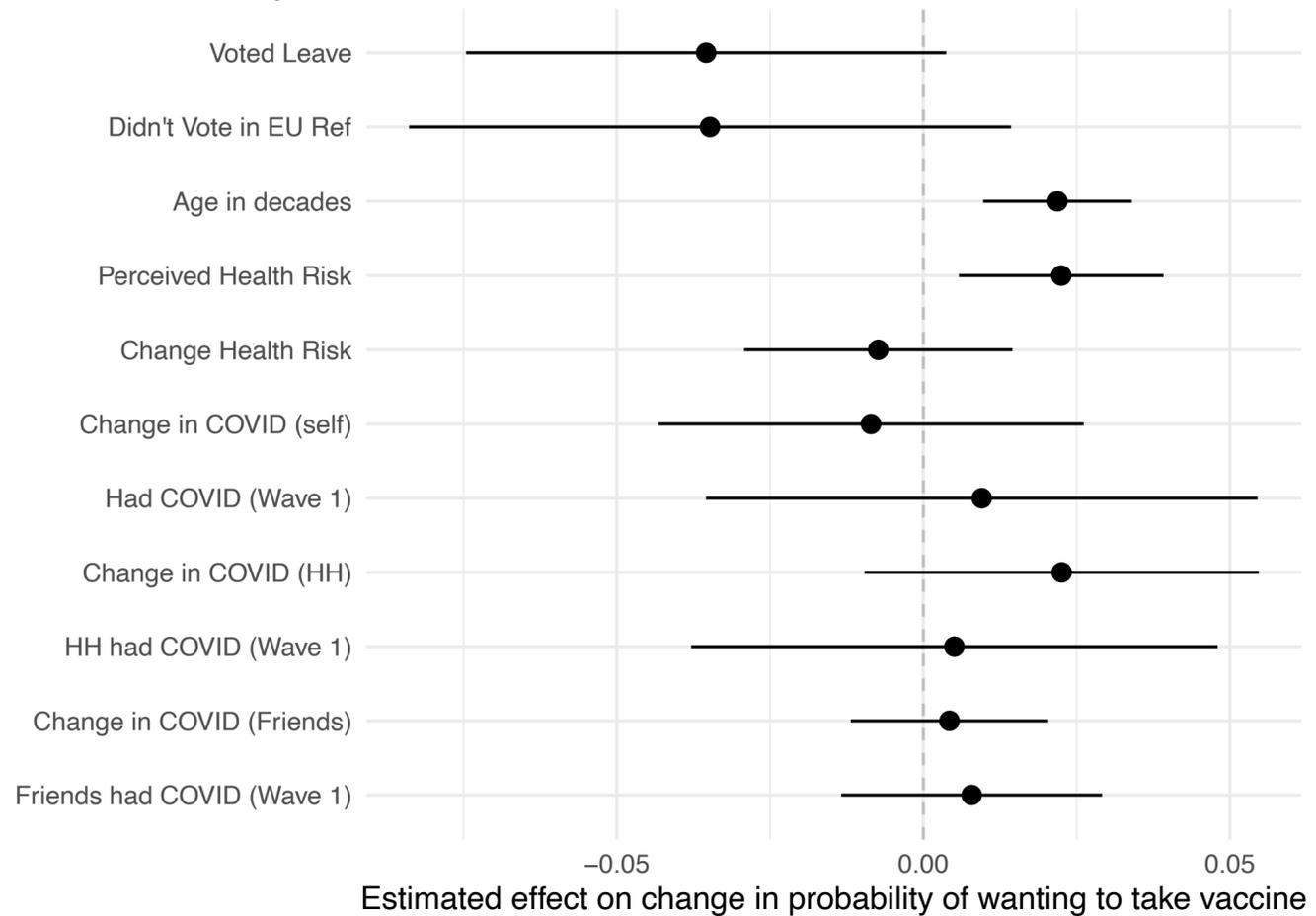
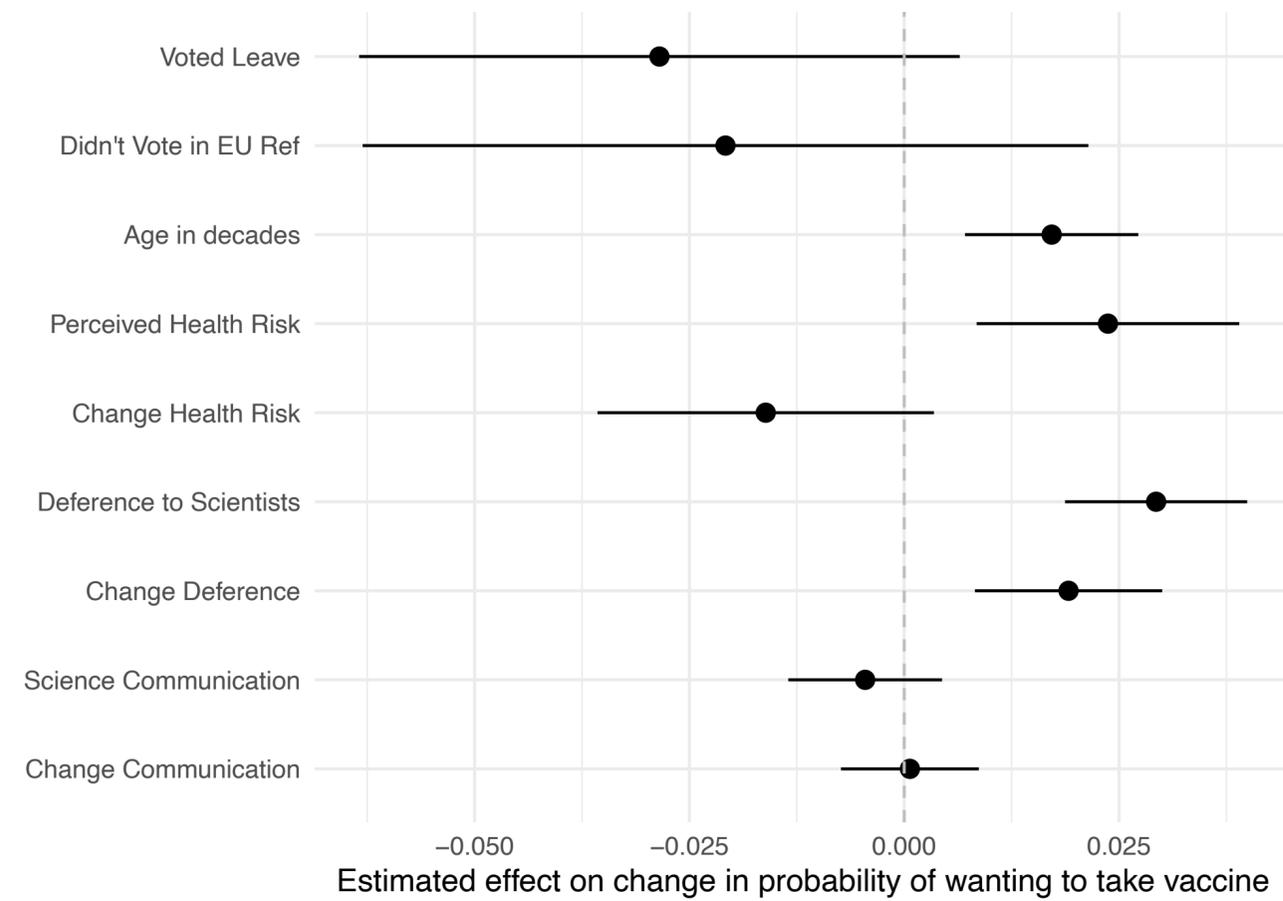
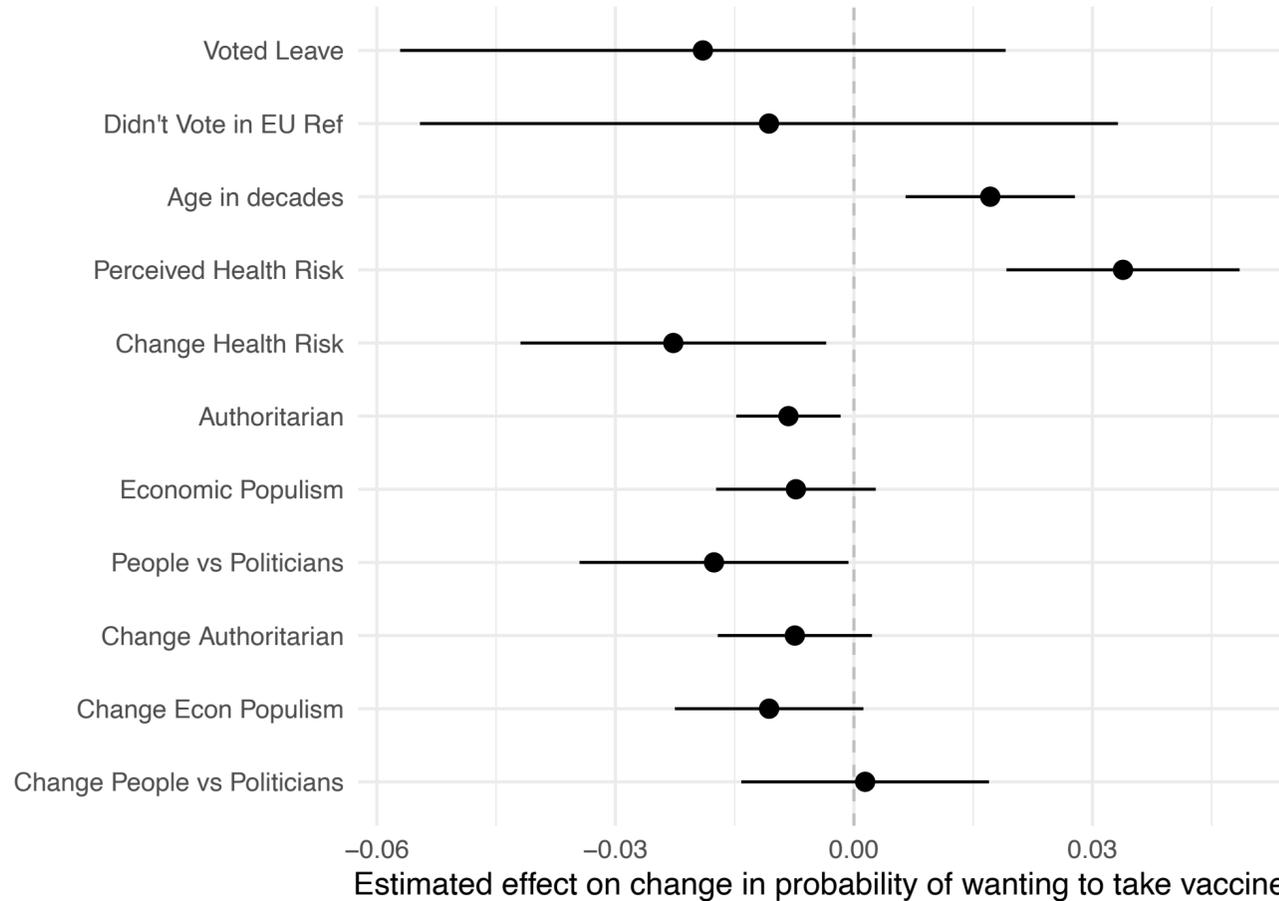
|                        | Model 1  | Model 2  | Model 3  |
|------------------------|----------|----------|----------|
| Voted Leave            | -0.069   | -0.053   | -0.065   |
|                        | (0.021)  | (0.021)  | (0.020)  |
| Didn't Vote in EU Ref  | -0.051   | -0.032   | -0.037   |
|                        | (0.025)  | (0.025)  | (0.023)  |
| Age in decades         | 0.028    | 0.030    | 0.030    |
|                        | (0.006)  | (0.006)  | (0.006)  |
| Perceived Health Risk  | 0.056    | 0.061    | 0.045    |
|                        | (0.008)  | (0.007)  | (0.007)  |
| Had Covid              | -0.013   |          |          |
|                        | (0.017)  |          |          |
| Covid in Household     | 0.028    |          |          |
|                        | (0.016)  |          |          |
| Covid among Friends    | 0.006    |          |          |
|                        | (0.008)  |          |          |
| Authoritarian          |          | -0.011   |          |
|                        |          | (0.004)  |          |
| Economic Populism      |          | -0.011   |          |
|                        |          | (0.005)  |          |
| People vs Politicians  |          | -0.025   |          |
|                        |          | (0.008)  |          |
| Deference to Science   |          |          | 0.045    |
|                        |          |          | (0.005)  |
| Science Communications |          |          | -0.005   |
|                        |          |          | (0.004)  |
| Num.Obs.               | 985      | 1163     | 1163     |
| R2                     | 0.104    | 0.136    | 0.175    |
| R2 Adj.                | 0.087    | 0.122    | 0.163    |
| AIC                    | 417.8    | 611.2    | 555.1    |
| BIC                    | 515.7    | 712.4    | 651.2    |
| Log.Lik.               | -188.915 | -285.624 | -258.549 |
| F                      | 6.236    | 9.972    | 14.281   |



**CHANGE BETWEEN WAVES**

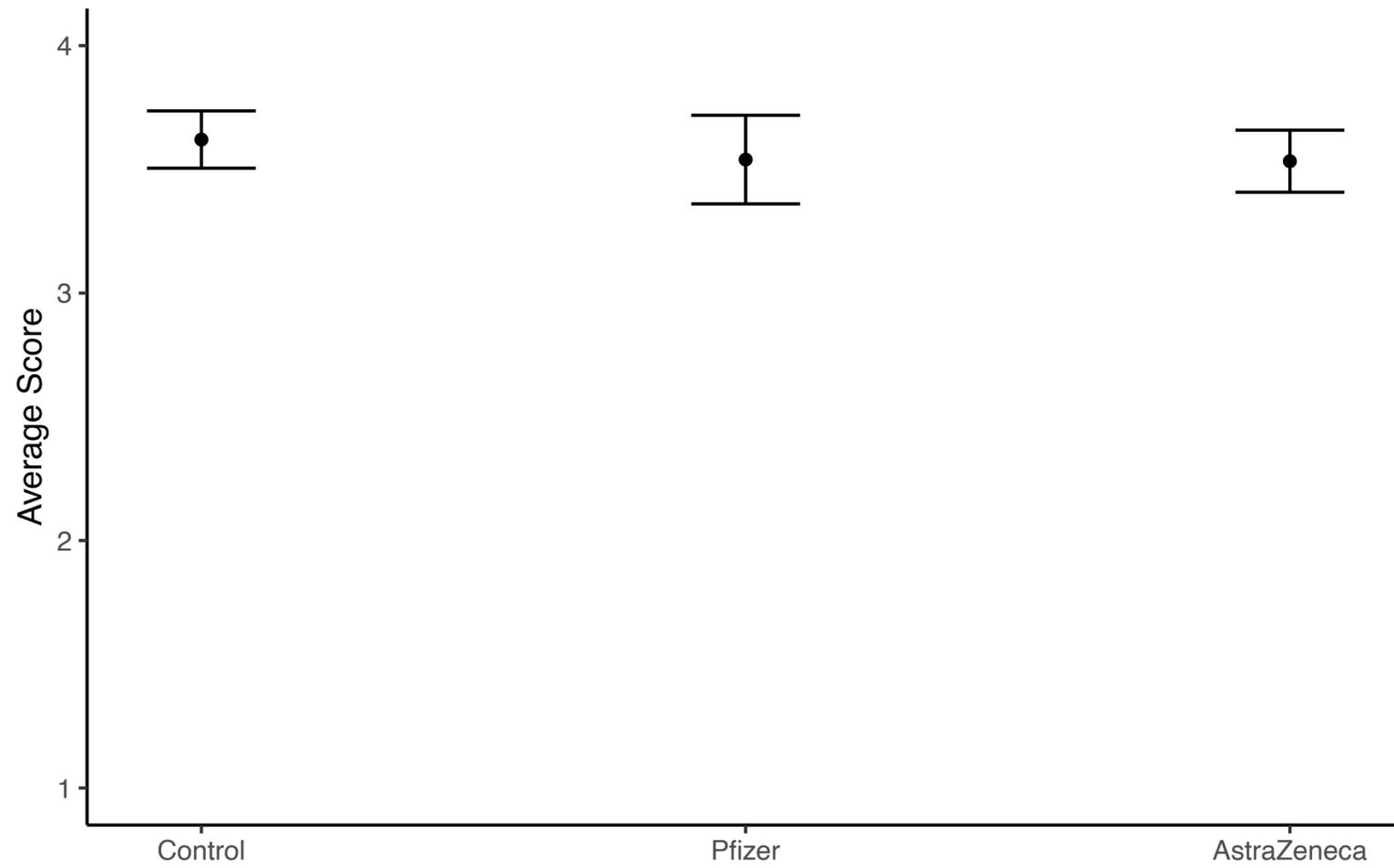
|                       | Model 1           | Model 2           | Model 3           | Model 4           |
|-----------------------|-------------------|-------------------|-------------------|-------------------|
| Voted Leave           | -0.038<br>(0.018) | -0.035<br>(0.018) | -0.036<br>(0.018) | -0.024<br>(0.021) |
| Didn't Vote in EU Ref | -0.021<br>(0.022) | -0.021<br>(0.022) | -0.024<br>(0.022) | 0.011<br>(0.026)  |
| Age in decades        | 0.016<br>(0.005)  | 0.013<br>(0.005)  | 0.014<br>(0.005)  | 0.014<br>(0.006)  |
| Perceived Health Risk |                   | 0.027<br>(0.007)  | 0.036<br>(0.007)  | 0.039<br>(0.008)  |
| Change Health Risk    |                   |                   | -0.026<br>(0.010) | -0.035<br>(0.011) |
| Household Income      |                   |                   |                   | 0.007<br>(0.003)  |
| Social Grade          |                   |                   |                   | 0.009<br>(0.007)  |
| Household Size        |                   |                   |                   | -0.007<br>(0.008) |
| Education             |                   |                   |                   | 0.007<br>(0.009)  |
| Num.Obs.              | 1084              | 1084              | 1084              | 857               |
| R2                    | 0.462             | 0.470             | 0.474             | 0.479             |
| R2 Adj.               | 0.460             | 0.467             | 0.470             | 0.473             |
| AIC                   | 284.2             | 270.2             | 265.1             | 201.0             |
| BIC                   | 319.2             | 310.1             | 310.0             | 262.8             |
| Log.Lik.              | -135.124          | -127.080          | -123.529          | -87.498           |
| F                     | 185.381           | 159.333           | 138.351           | 70.750            |
| Region Dummies        | Y                 | Y                 | Y                 | Y                 |



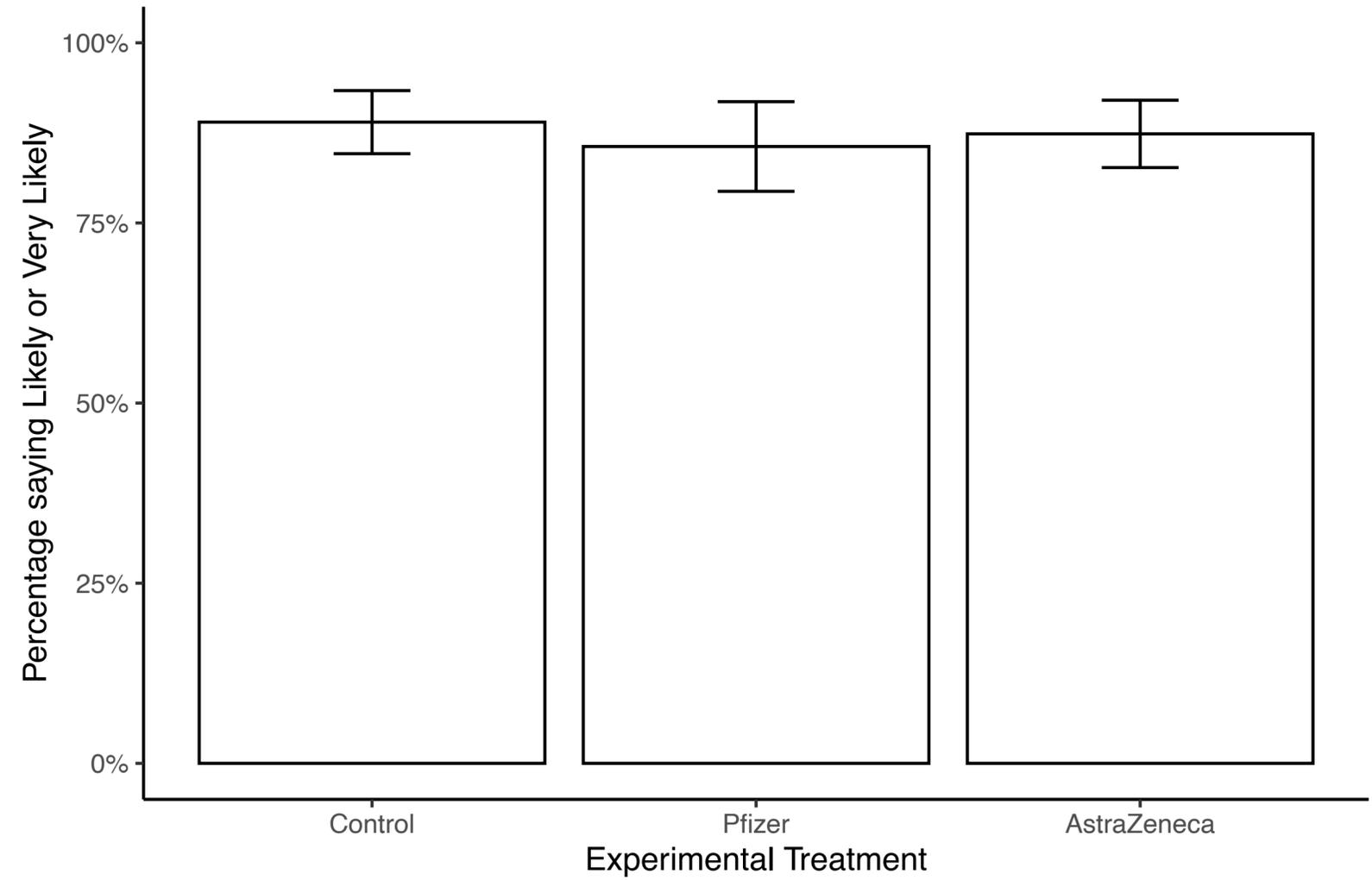


# **EXPERIMENTAL FINDINGS**

Average Score on Vaccine Attitudes



Likely or Very Likely

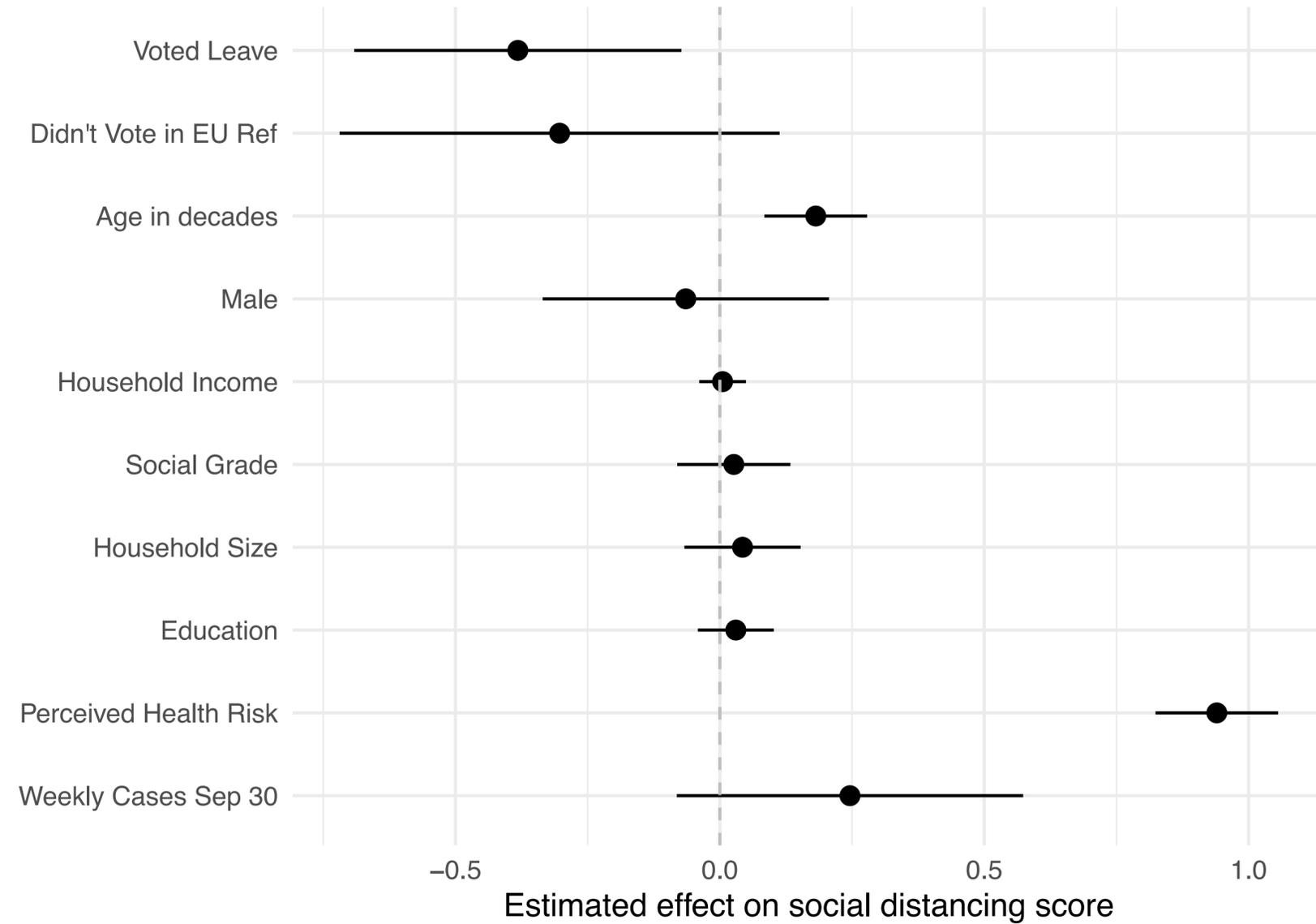


|                       | Model 1           | Model 2           | Model 3           | Model 4           |
|-----------------------|-------------------|-------------------|-------------------|-------------------|
| Pfizer                | -0.034<br>(0.023) | -0.029<br>(0.022) | -0.008<br>(0.024) | -0.026<br>(0.022) |
| Astra                 | -0.021<br>(0.023) | -0.022<br>(0.021) | -0.032<br>(0.023) | -0.028<br>(0.022) |
| Voted Leave           |                   | -0.080<br>(0.020) | -0.071<br>(0.024) | -0.036<br>(0.024) |
| Didn't Vote in EU Ref |                   | -0.050<br>(0.024) | 0.002<br>(0.029)  | 0.064<br>(0.034)  |
| Age in decades        |                   | 0.027<br>(0.006)  | 0.031<br>(0.007)  | 0.026<br>(0.007)  |
| Male                  |                   | 0.044<br>(0.018)  | 0.058<br>(0.020)  | 0.041<br>(0.019)  |
| Perceived Health Risk |                   | 0.064<br>(0.007)  | 0.060<br>(0.008)  | 0.039<br>(0.008)  |
| Household Income      |                   |                   | 0.011<br>(0.003)  | 0.007<br>(0.003)  |
| Social Grade          |                   |                   | 0.006<br>(0.008)  | -0.001<br>(0.007) |
| Household Size        |                   |                   | 0.005<br>(0.009)  | -0.002<br>(0.008) |
| Education             |                   |                   | 0.003<br>(0.010)  | -0.006<br>(0.009) |
| Num.Obs.              | 1177              | 1163              | 914               | 800               |

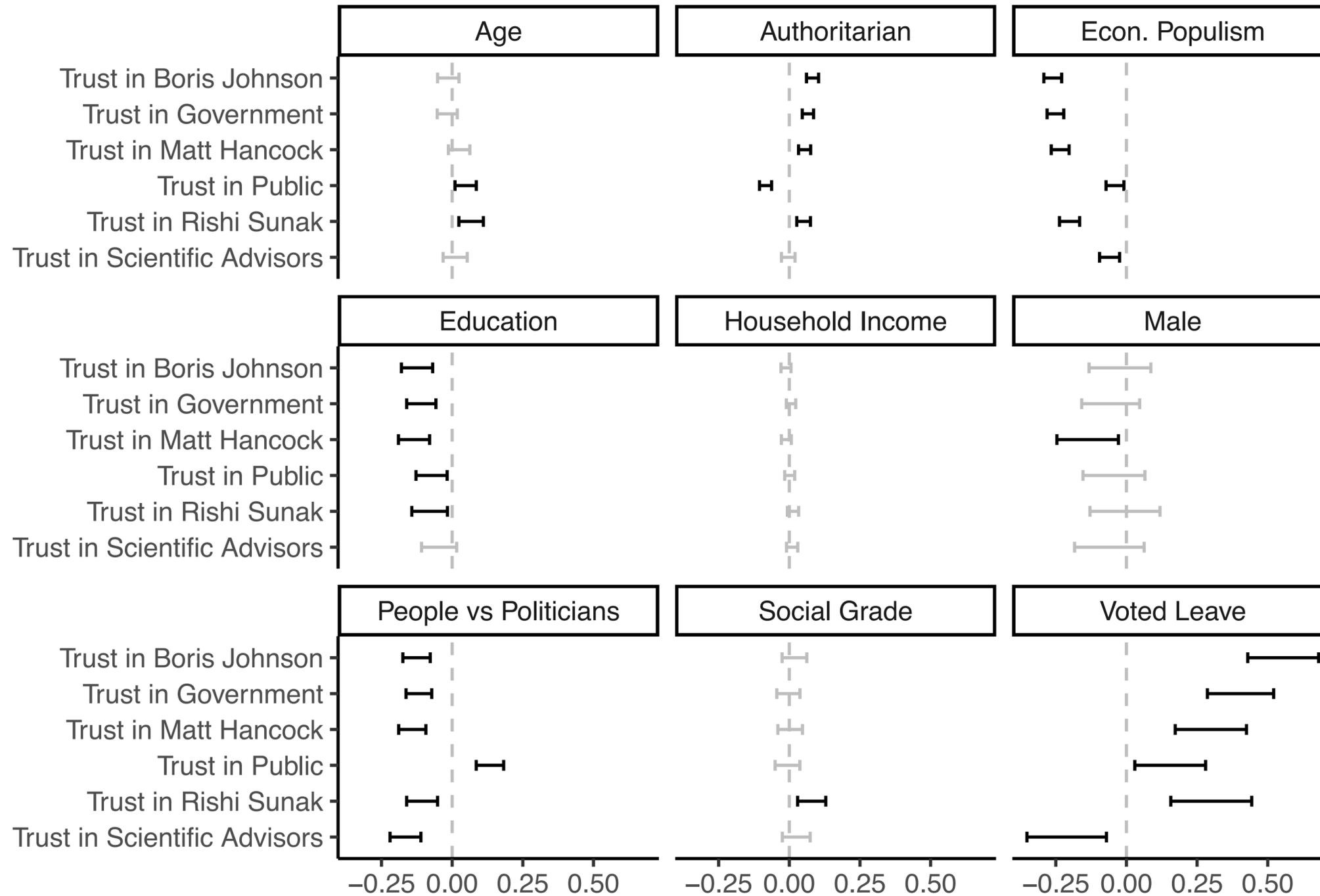
**SOME RELATED STUFF**

# SOCIAL DISTANCING SCORE

|                       | Model 1           | Model 2           | Model 3           | Model 4           | Model 5           | Model 6           |
|-----------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Voted Leave           | -0.216<br>(0.143) | -0.463<br>(0.145) | -0.477<br>(0.145) | -0.585<br>(0.173) | -0.385<br>(0.158) | -0.382<br>(0.158) |
| Didn't Vote in EU Ref | -0.722<br>(0.195) | -0.404<br>(0.197) | -0.416<br>(0.198) | -0.407<br>(0.233) | -0.306<br>(0.212) | -0.303<br>(0.212) |
| Age in decades        |                   | 0.320<br>(0.042)  | 0.322<br>(0.042)  | 0.285<br>(0.054)  | 0.175<br>(0.049)  | 0.181<br>(0.050)  |
| Male                  |                   | -0.462<br>(0.130) | -0.480<br>(0.131) | -0.336<br>(0.150) | -0.046<br>(0.138) | -0.064<br>(0.138) |
| Household Income      |                   |                   |                   | -0.008<br>(0.025) | 0.005<br>(0.023)  | 0.005<br>(0.023)  |
| Social Grade          |                   |                   |                   | 0.070<br>(0.060)  | 0.027<br>(0.055)  | 0.026<br>(0.055)  |
| Household Size        |                   |                   |                   | 0.080<br>(0.062)  | 0.043<br>(0.056)  | 0.043<br>(0.056)  |
| Education             |                   |                   |                   | -0.006<br>(0.040) | 0.030<br>(0.037)  | 0.030<br>(0.037)  |
| Perceived Health Risk |                   |                   |                   |                   | 0.943<br>(0.059)  | 0.940<br>(0.059)  |
| Weekly Cases Sep 30   |                   |                   |                   |                   |                   | 0.246<br>(0.167)  |
| Num.Obs.              | 1619              | 1619              | 1619              | 1235              | 1235              | 1235              |
| R2                    | 0.008             | 0.049             | 0.058             | 0.046             | 0.211             | 0.213             |
| R2 Adj.               | 0.007             | 0.046             | 0.050             | 0.032             | 0.199             | 0.200             |
| AIC                   | 7749.1            | 7685.9            | 7689.5            | 5846.7            | 5613.7            | 5613.5            |
| BIC                   | 7770.6            | 7718.3            | 7775.7            | 5949.1            | 5721.2            | 5726.1            |
| Log.Lik.              | -3870.533         | -3836.962         | -3828.751         | -2903.344         | -2785.851         | -2784.746         |
| F                     | 6.875             | 20.664            | 7.095             | 3.271             | 17.147            | 16.414            |



# TRUST IN POLITICIANS, PUBLIC AND SCIENTIFIC ADVISORS



# TRUST IN SCIENTISTS

