

Public awareness of and opinions on the use of mathematical transmission modelling to inform public health policy in the United Kingdom

Supplementary Material

Ruth McCabe^{1,2,3,*} and Christl A. Donnelly^{1,2,3,4}

¹ Department of Statistics, University of Oxford

² NIHR Health Protection Research Unit in Emerging and Zoonotic Infections

³ Pandemic Sciences Institute, University of Oxford

⁴ MRC Centre for Global Infectious Disease Analysis, Imperial College London

* Corresponding author: ruth.mccabe@linacre.ox.ac.uk

Contents

Participant Information Sheet.....	2
Methods.....	5
Results: Figures, tables and additional analyses.....	6
Awareness of mathematical transmission modelling	6
Were you aware of the use of transmission models in informing public health policy?	6
How were you aware of mathematical transmission modelling?.....	8
How much did you know about how transmission modelling has been used throughout the COVID-19 pandemic?.....	11
Level and means of awareness	13
Reliability of transmission modelling in informing public health policy	15
On a scale of 1 – 10, with 1 being “extremely unreliable” and 10 being “extremely reliable” how did you feel about the use of transmission modelling in informing public health policy?	15
Reliability scores stratified by awareness.....	23
Responsibility of communicating modelling to the public	27
Trust in government advice	30
How much did you trust government advice regarding public health issues?	30
Trust in government advice and awareness.....	35
How do you feel when government advice changes based on new scientific evidence? ...	39
Trust in changing advice and awareness	43
Where do those who develop transmission models work?	46
How would you describe a transmission model?	50

Participant Information Sheet

Department of Statistics
24-29 St Giles'
Oxford
OX1 3LB

Professor Christl Donnelly
University Direct Line: 01865 *****
University e-mail: christl.donnelly@stats.ox.ac.uk



Awareness and opinions on the use of transmission modelling in informing policy

CUREC Approval Reference: R76166/RE001

General Information

We recently wrote an article for a special edition of the *Journal of the Royal Society Interface Focus* themed on COVID-19 in society. We looked at this through the lens of mathematical modelling. We surveyed attendees of the Scientific Advisory Group for Emergencies (SAGE) or the Scientific Pandemic Influenza Group on Modelling (SPI-M), meetings to elicit their experiences of the development and use of transmission modelling in policy throughout the COVID-19 pandemic. We now want to build upon this work by surveying the public on their awareness and opinions of the use of modelling in informing policy throughout the pandemic. Please note that participants are not required to have any prior knowledge of transmission modelling to participate.

We appreciate your interest in participating in this online survey. You have been invited to participate as you are an adult over 18 years of age and residing within the United Kingdom of Great Britain and Northern Ireland.

You may ask any questions by contacting the researcher (details below).

The Principal Researcher is Ruth McCabe, who is attached to the Department of Statistics at the University of Oxford. This project is being completed under the supervision of Professor Christl Donnelly.

You are invited to participate in a survey consisting of 13 multiple choice questions and 8 open-ended questions. At the end of the survey, basic demographic information covering age, gender and occupation are asked for. Participants cannot be identified from this information. This should take about 10 minutes.

The data gathered will be used to write a short commentary in follow up to our original article and will also be incorporated into the corresponding doctoral thesis in statistics. Answers to all questions are anonymous. Only the Principal Researcher and Supervisor will have access to the raw, anonymised data.

Do I have to take part?

No. Please note that participation is voluntary. If you do decide to take part, you may withdraw at any point for any reason before submitting your answers by closing the browser. However, once submitted your data cannot be removed due to their being no identifiable information collected.

How will my data be used?

We will not collect any information that could be used to identify you.

Anonymous research data (including consent records) will be stored for three years after publication or public release.

Your IP address will not be stored. We will take all reasonable measures to ensure that data remain confidential.

The responses you provide will be used in an academic publication.

Who will have access to my data?

The researchers named above will have access to the raw data that you provide, which is anonymised and from which you cannot be identified. The University will process the data you provide for the purpose of the research outlined above. Research is a task that we perform in the public interest. Further information about your rights with respect to your personal data is available from <https://compliance.admin.ox.ac.uk/individual-rights>.

The data you provide may be shared with third parties (researchers at partner universities) for analysis and publication purposes.

This survey will be written up for a doctoral thesis in statistics.

Who has reviewed this study?

This project has been reviewed by, and received ethics clearance through, the Medical Sciences Interdivisional Research Ethics Committee, a subcommittee of the University of Oxford Central University Research Ethics Committee R76166/RE001.

Who do I contact if I have a concern or I wish to complain?

If you have a concern about any aspect of this study, please write to Ruth McCabe at ruth.mccabe@stats.ox.ac.uk or her supervisor Professor Christl Donnelly at christl.donnelly@stats.ox.ac.uk, and we will do our best to answer your query. We will acknowledge your concern within 10 working days and give you an indication of how it will be dealt with. If you remain unhappy or wish to make a formal complaint, please contact the Chair of the Medical Sciences Interdivisional Research Ethics Committee at the University of Oxford who will seek to resolve the matter as soon as possible:

Email: ethics@medsci.ox.ac.uk; Address: Research Services, University of Oxford, Wellington Square, Oxford OX1 2JD

The following two statements form the first two questions of the survey, which you must complete in order to proceed to the rest of the questions.

Please note that you may only participate in this survey if you are 18 years of age or over and residing in the United Kingdom of Great Britain and Northern Ireland (UK).

☐ I certify that I am 18 years of age or over and reside in the UK.

If you have read the information above and agree to participate with the understanding that the data you submit will be processed accordingly, please check the relevant box below to get started.

☐ Yes, I agree to take part

Methods

Supplementary Table 1 presents the details of the accounts who shared the link to the survey, either by tweeting it directly or quote tweeting the link, as of 18 July 2023.

Supplementary Table 1: Details of accounts who directly tweeted or quote tweeted (QT) the link to the survey.

Type of tweet	Account name	Twitter handle	Date tweeted	Link	Number of quote tweets	Number of retweets	Number of likes	Number of replies
Direct	HPRU EZI	@HPRUezi	7 July 2021	¹	3	6	5	4
Direct	Oxford Statistics	@Oxford Stats	July 2021	²	Although we have a link to this Tweet, it is unfortunately no longer available and so specific information on reach is unavailable.			
QT	Liam McCabe	@liamrun	7 July 2021	³	0	0	1	0
QT	Ruth McCabe	@ruth_mccabe	16 July 2021	⁴	3	6	6	1
QT	Jameel Institute	@Imperial_Jameel	16 July 2021	⁵	0	1	6	0
QT	Dr David Telford	@Davie_T	16 July 2021	⁶	0	1	4	0
QT	Marie	@marie clarkg12	16 July 2021	⁷	0	1	3	2
QT	Katharina Hauck	@kdhauck	16 July 2021	⁸	0	0	6	0
QT	Oonagh Gil	@Oonagh Gil	17 July 2021	⁹	0	1	3	0
QT	MRC Centre for Global Infectious Disease Analysis	@MRC_Outbreak	20 July 2021	¹⁰	0	2	3	0
QT	David Spiegelhalter	@d_spiegel	2 August 2021	¹¹	0	9	24	2

¹ <https://twitter.com/HPRUezi/status/1412793471895748608>

² <https://twitter.com/OxfordStats/status/141344681011135753>

³ <https://twitter.com/liamrun/status/1412819957696638976>

⁴ https://twitter.com/ruth_mccabe/status/1415943038900264962

⁵ https://twitter.com/Imperial_Jameel/status/1415984380045152256

⁶ https://twitter.com/Davie_T/status/1415958167687733251

⁷ <https://twitter.com/marieclarkg12/status/1415988394447020033>

⁸ <https://twitter.com/kdhauck/status/1416000017597358080>

⁹ <https://twitter.com/OonaghGil/status/141634757730146306>

¹⁰ https://twitter.com/MRC_Outbreak/status/1417485287932956673

¹¹ https://twitter.com/d_spiegel/status/1422190746787106817

Results: Figures, tables and additional analyses

Awareness of mathematical transmission modelling

Were you aware of the use of transmission models in informing public health policy?

Supplementary Table 2 presents the results of Wilcoxon signed rank tests for differences between awareness of modelling generally and awareness specifically in relation to use in policy, for both samples and in reference to both time periods. Responses in which a respondent stating having no awareness or being unsure were enumerated as 0, with responses stating awareness enumerated as 1.

Supplementary Table 3 presents the results of the linear model regressing responses to the question “Were you aware of the use of transmission models in informing public health policy?” both “Prior to” (reported retrospectively) and “During” the COVID-19 pandemic on age group and gender for each sample. The three responses provided as multiple-choice options, “No”, “Unsure” and “Yes”, were enumerated as -1, 0, 1, respectively.

Supplementary Table 2: Differences between awareness of transmission modelling generally and specifically in relation to use in policy for both samples and in reference to both time periods according to Wilcoxon signed rank tests. p – values < 0.01 are considered statistically significant.

		Number of respondents (n (%))		Wilcoxon signed rank test statistic	n	p – value
		Not aware generally	Not aware or unsure regarding policy			
Prior to the COVID-19 pandemic	Online panel	314 (62%)	365 (72%)	3927	504	<0.001
	Social media	74 (37%)	86 (42%)	581	202	0.065
During the COVID-19 pandemic	Online panel	114 (23%)	122 (24%)	1326	504	0.180
	Social media	6 (3%)	6 (3%)	18	202	1.000

Supplementary Table 3: Coefficient estimates, standard errors and p-values for the linear model regressing responses to the question “Were you aware of the use of transmission models in informing public health policy?” both “Prior to” (reported retrospectively) and “During” the COVID-19 pandemic on age group and gender for each sample. Chi-squared tests for the overall significance of age and gender are also presented. The three responses provided as multiple-choice options, “No”, “Unsure” and “Yes”, were enumerated as -1, 0, 1, respectively. p – values < 0.01 are considered statistically significant.

Sample	Response	Variable	Interpretation	Estimate	Standard Error	p-value	Chi-squared test	
							χ^2	p-value
Online panel	Prior to the COVID-19 pandemic, were you aware of the use of transmission models in informing public health policy?	Intercept	Baseline*	-0.42	0.11	<0.001	3.63 (df=5)	0.432
		Age (years)	26 – 35	0.17	0.14	0.227		
			36 – 45	0.05	0.14	0.725		
			46 – 55	0.20	0.14	0.140		
			56 – 65	0.06	0.13	0.650		
			66+	-0.13	0.17	0.465		
		Gender	Male	0.14	0.08	0.072	3.56 (df=3)	0.189
			Non-binary	-0.75	0.87	0.387		
			Prefer not to say	-0.34	0.50	0.495		
Social media	Prior to the COVID-19 pandemic, were you aware of the use of transmission models in informing public health policy?	Intercept	Baseline*	0.29	0.43	0.501	2.01 (df=5)	0.718
		Age (years)	26 – 35	0.14	0.49	0.774		
			36 – 45	0.07	0.45	0.882		
			46 – 55	-0.19	0.43	0.669		
			56 – 65	-0.13	0.43	0.771		
			66+	-0.10	0.45	0.823		
		Gender	Male	0.28	0.12	0.019	5.30 (df=2)	0.024
			Prefer not to say	0.84	0.50	0.093		
Online panel	During the COVID-19 pandemic, were you aware of the use of transmission models in informing public health policy?	Intercept	Baseline*	0.51	0.01	<0.001	2.11 (df=5)	0.569
		Age (years)	26 – 35	0.01	0.12	0.927		
			36 – 45	0.03	0.12	0.792		
			46 – 55	0.18	0.12	0.140		
			56 – 65	0.13	0.11	0.223		
			66+	0.11	0.15	0.458		
		Gender	Male	0.03	0.07	0.694	0.83 (df=3)	0.679
			Non-binary	0.48	0.74	0.517		
			Prefer not to say	0.43	0.43	0.313		
Social media	During the COVID-19 pandemic, were you aware of the use of transmission models in informing public health policy?	Intercept	Baseline*	0.94	0.12	<0.001	0.38 (df=5)	0.247
		Age (years)	26 – 35	-0.19	0.14	0.185		
			36 – 45	-0.06	0.13	0.623		
			46 – 55	-0.01	0.12	0.940		
			56 – 65	0.01	0.12	0.962		
			66+	-0.01	0.13	0.921		
		Gender	Male	0.08	0.03	0.023	0.30 (df=2)	0.074
			Prefer not to say	0.05	0.14	0.708		

*Baseline comprised of “Female” and “18 – 25” years.

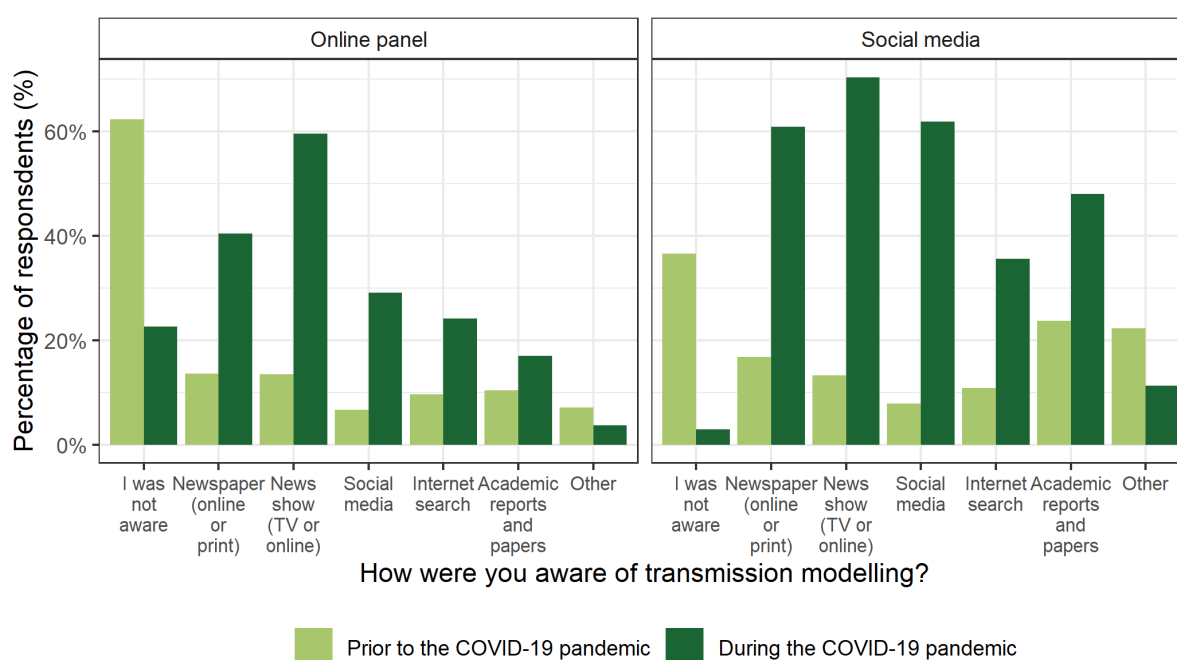
How were you aware of mathematical transmission modelling?

Supplementary Figure 1 presents responses to the question “How were you aware of transmission modelling?” for both samples and in reference to both time points.

Supplementary Table 4 presents the results of Wilcoxon signed rank tests to assess differences in the number of respondents selecting responses to the aforementioned questions in reference to the two time periods. For each multiple-choice answer, data were enumerated to a binary scale with 1 indicating that this answer was selected and 0 indicating that it was not selected.

Supplementary Table 5 present the results of chi-squared tests for differences between the proportions of respondents selecting responses to the aforementioned question across the two samples.

Although not among the most common responses, the percentage of respondents reporting “Internet search” as their source of information on modelling almost doubled and more than tripled in the period during the pandemic compared to the period before, for the online panel (Wilcoxon signed rank test $p - value < 0.001$) and social media (Wilcoxon signed rank test $p - value < 0.001$) respectively, indicating an increased appetite for information on mathematical modelling among both samples. This was verified by individuals commenting that their trust is often highly dependent on transparency of evidence, which was also highlighted in our initial study.



Supplementary Figure 1: Responses to the question “How were you aware of transmission modelling?” either “Prior to” (reported retrospectively) or “During” the COVID-19 pandemic for both the online panel and social media samples. Underlying data are presented in Table 1.

Supplementary Table 4: Differences between the popularity of responses to the question “How were you aware of transmission modelling?” in reference to both time periods within samples, according to Wilcoxon signed rank tests. *p* – values < 0.01 are considered statistically significant.

		Number of respondents (n (%))		Wilcoxon signed rank test statistic	<i>n</i>	<i>p</i> – <i>value</i>
		Prior to the COVID-19 pandemic	During the COVID-19 pandemic			
Online panel	I was not aware	314 (62%)	114 (23%)	21318	504	<0.001
	Newspaper (online or print)	69 (14%)	204 (40%)	288		<0.001
	News show (TV or online)	68 (13%)	300 (60%)	966		<0.001
	Social media	34 (7%)	147 (29%)	180		<0.001
	Internet search	49 (10%)	122 (24%)	588		<0.001
	Academic reports and papers	53 (11%)	86 (17%)	684		<0.001
	Other	36 (7%)	19 (4%)			0.005
Social media	I was not aware	74 (37%)	6 (3%)	2450	202	<0.001
	Newspaper (online or print)	34 (17%)	123 (61%)	144		<0.001
	News show (TV or online)	27 (13%)	142 (70%)	183		<0.001
	Social media	16 (8%)	125 (62%)	56		<0.001
	Internet search	22 (11%)	72 (36%)	189		<0.001
	Academic reports and papers	48 (24%)	97 (48%)	244		<0.001
	Other	45 (22%)	23 (11%)	446		<0.001

Supplementary Table 5: Differences between the popularity of responses to the question “How were you aware of transmission modelling?” across samples within time periods, according to chi-squared tests. *p* – values < 0.01 are considered statistically significant.

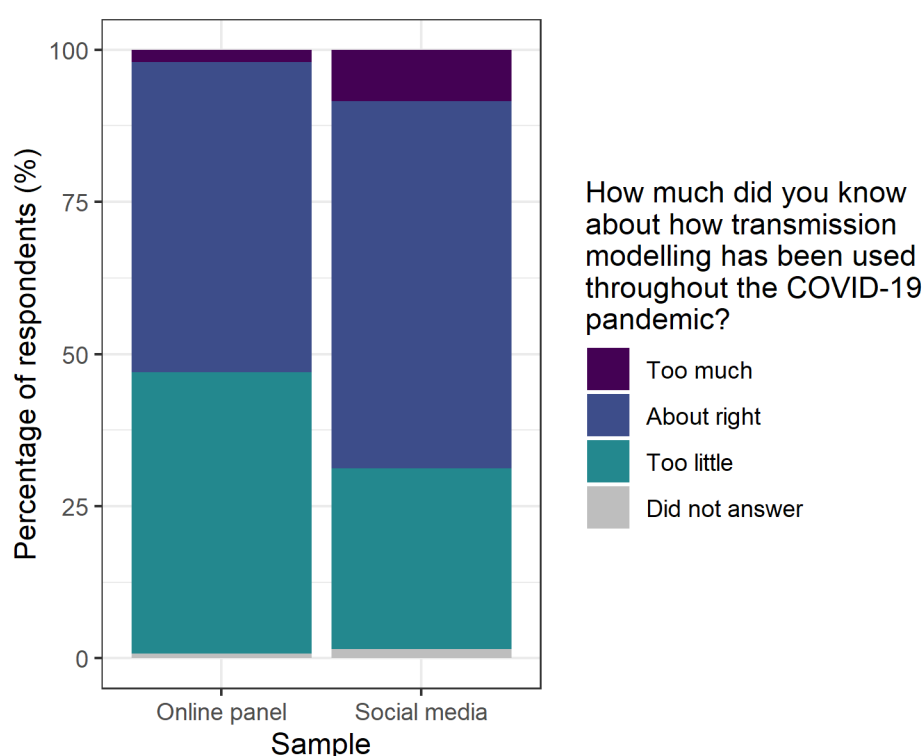
		Number of respondents (n (%))		$\chi^2_{df=1}$	<i>n</i>	<i>p</i> – value
		Online panel	Social media			
Prior to the COVID-19 pandemic	I was not aware	314 (62%)	74 (37%)	37.35	706	<0.001
	Newspaper (online or print)	69 (14%)	34 (17%)	0.90		0.342
	News show (TV or online)	68 (13%)	27 (13%)	<0.001		1.000
	Social media	34 (7%)	16 (8%)	0.15		0.698
	Internet search	49 (10%)	22 (11%)	0.11		0.743
	Academic reports and papers	53 (11%)	48 (24%)	19.57		<0.001
	Other	36 (7%)	45 (22%)	31.05		<0.001
During the COVID-19 pandemic	I was not aware	114 (23%)	6 (3%)	38.09	706	<0.001
	Newspaper (online or print)	204 (40%)	123 (61%)	23.36		<0.001
	News show (TV or online)	300 (60%)	142 (70%)	6.70		0.010
	Social media	147 (29%)	125 (62%)	63.79		<0.001
	Internet search	122 (24%)	72 (36%)	8.90		0.003
	Academic reports and papers	86 (17%)	97 (48%)	70.37		<0.001
	Other	19 (4%)	23 (11%)	13.62		<0.001

How much did you know about how transmission modelling has been used throughout the COVID-19 pandemic?

Supplementary Figure 2 presents responses to the question “How much did you know about how transmission modelling has been used throughout the COVID-19 pandemic?” under both the online panel and social media samples.

Supplementary Table 6 presents the results of the linear regression model regressing the answers to this question on age group and gender. The three responses provided as multiple-choice options, “Too little”, “About right” and “Too much”, were enumerated as -1, 0, 1, respectively.

Large numbers of respondents from both samples (46% from the online panel and 30% from social media) reported having “Too little” information about the use of transmission modelling during the pandemic, although this was significantly greater among the online panel (chi-squared test: $\chi^2_{df=1} = 15.55$; $n = 706$; $p - value < 0.001$). By comparison, social media respondents (8%) were significantly more likely to report having “Too much” information than the online panel (2%) ($\chi^2_{df=1} = 14.52$; $n = 706$; $p - value < 0.001$). However, it is important to remember that most of the social media sample recorded being aware of transmission modelling, either generally or specifically in policy, during the pandemic period. As mentioned in the main text, these differences could be driven by a combination of a significantly greater percentage of social respondents working in the “Education” and “Research” sectors and by their relationship to the accounts used to share the survey (Supplementary Table 1).



Supplementary Figure 2: Responses to the question “How much did you know about how transmission modelling has been used throughout the COVID-19 pandemic?” for the online panel and social media samples. Underlying data are presented in Table 1.

Supplementary Table 6: Coefficient estimates, standard errors and p-values for the linear model regressing awareness of the use of transmission modelling during COVID-19 pandemic on age group (years) and gender within each model for each sample. Chi-squared tests for the overall significance of age and gender are also presented. The three responses provided as multiple-choice options, “Too little”, “About right” and “Too much”, were enumerated as -1, 0, 1, respectively. *p* – values < 0.01 are considered statistically significant.

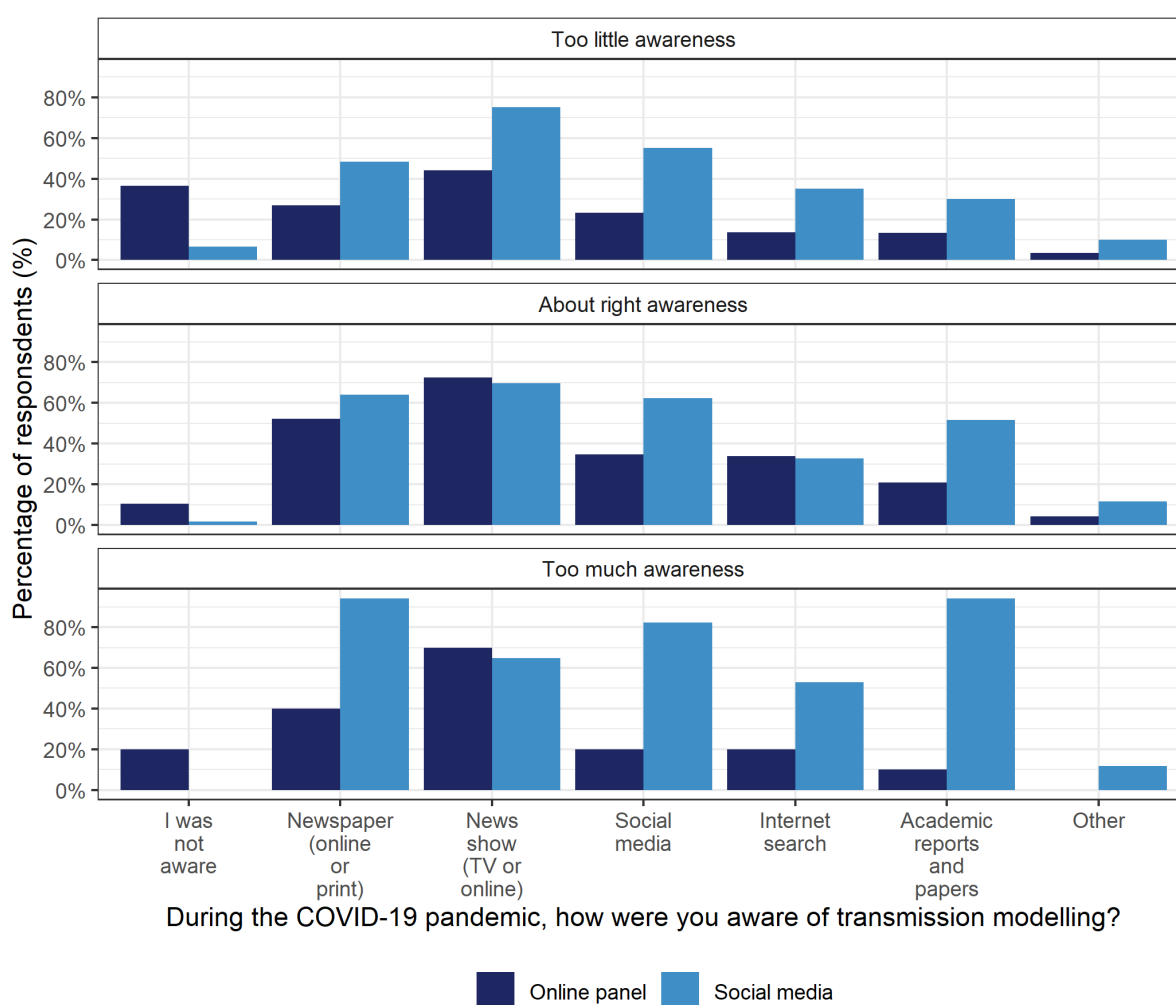
Sample	Response	Variable	Interpretation	Estimate	Standard Error	p-value	Chi-squared test	
							χ^2	p-value
Online panel	How much do you know about how transmission modelling has been used throughout the COVID-19 pandemic?	Intercept	Baseline*	-0.52	0.07	<0.001		
		Age (years)	26 – 35	-0.00	0.09	0.999	1.20 (df=5)	0.530
			36 – 45	0.06	0.09	0.508		
			46 – 55	0.15	0.09	0.094		
			56 – 65	0.04	0.08	0.655		
			66+	0.08	0.11	0.444		
		Gender	Male	0.05	0.05	0.340	0.63 (df=3)	0.535
			Non-binary	0.52	0.54	0.338		
			Prefer not to say	-0.18	0.31	0.567		
Social media	How much do you know about how transmission modelling has been used throughout the COVID-19 pandemic?	Intercept	Baseline*	-0.04	0.29	0.901		
		Age (years)	26 – 35	0.41	0.34	0.232	4.63 (df=5)	0.018
			36 – 45	-0.25	0.31	0.433		
			46 – 55	-0.17	0.30	0.560		
			56 – 65	-0.28	0.30	0.341		
			66+	-0.25	0.31	0.414		
		Gender	Male	0.05	0.08	0.555	0.12 (df=2)	0.834
			Prefer not to say	-0.01	0.34	0.966		

*Baseline comprised of “Female” and “18 – 25” years.

Level and means of awareness

Supplementary Figure 3 presents the results of “During the COVID-19 pandemic, how were you aware of transmission modelling?” stratified by responses to the question “How much do you know about how transmission modelling has been used throughout the COVID-19 pandemic?”. The underlying data are presented in Supplementary Table 7.

Almost all social media respondents selecting having “Too much” information on modelling during the pandemic, selected “Newspapers (online or print)” and “Academic reports and papers” as means of their awareness, with “Social media” also being a common response (Supplementary Table 7; Supplementary Figure 3). Within the online panel, those with “Too much” information were primarily aware through “News shows” (Supplementary Table 7; Supplementary Figure 3).



Supplementary Figure 3: Responses to the question “During the COVID-19 pandemic, how were you aware of transmission modelling?” stratified by responses to the question “How much did you know about how transmission modelling has been used throughout the COVID-19 pandemic?” for both the online panel and social media samples. Percentages are taken with respect to sample platform and level of awareness. Underlying data are presented in Supplementary Table 7.

Supplementary Table 7: Number and percentage of responses under each category of the question “During the COVID-19 pandemic, how were you aware of transmission modelling?” stratified by responses to the question “How much did you know about how transmission modelling has been used throughout the COVID-19 pandemic?” for both the online panel and social media samples. As this question was open-ended, participants often provided more than one answer and so percentages do not represent mutually exclusive responses. Percentages taken with respect to the number selecting each awareness category within each sample as in Table 1.

	Online panel			Social media		
	Too little awareness	About right awareness	Too much awareness	Too little awareness	About right awareness	Too much awareness
I was not aware	85 (36%)	27 (11%)	2 (20%)	4 (7%)	2 (2%)	0 (0%)
Newspaper (online or print)	63 (27%)	134 (52%)	4 (40%)	29 (48%)	78 (64%)	16 (94%)
News show (TV or online)	103 (44%)	186 (72%)	7 (70%)	45 (75%)	85 (70%)	11 (65%)
Social media	54 (23%)	89 (35%)	2 (20%)	33 (55%)	76 (62%)	14 (82%)
Internet search	32 (14%)	87 (34%)	2 (20%)	21 (35%)	40 (33%)	9 (53%)
Academic reports and papers	31 (13%)	54 (21%)	1 (10%)	18 (30%)	63 (52%)	16 (94%)
Other	8 (3%)	11 (4%)	0 (0%)	6 (10%)	14 (11%)	2 (12%)

On a scale of 1 – 10, with 1 being “extremely unreliable” and 10 being “extremely reliable” how did you feel about the use of transmission modelling in informing public health policy?

Supplementary Figure 4 presents boxplots of the reliability scores within each sample in reference to both time periods.

Supplementary Figure 5 is analogous to Figure 3A but presents each of the 10 possible reliability scores individually rather than collapsing into 5 categories of 2.

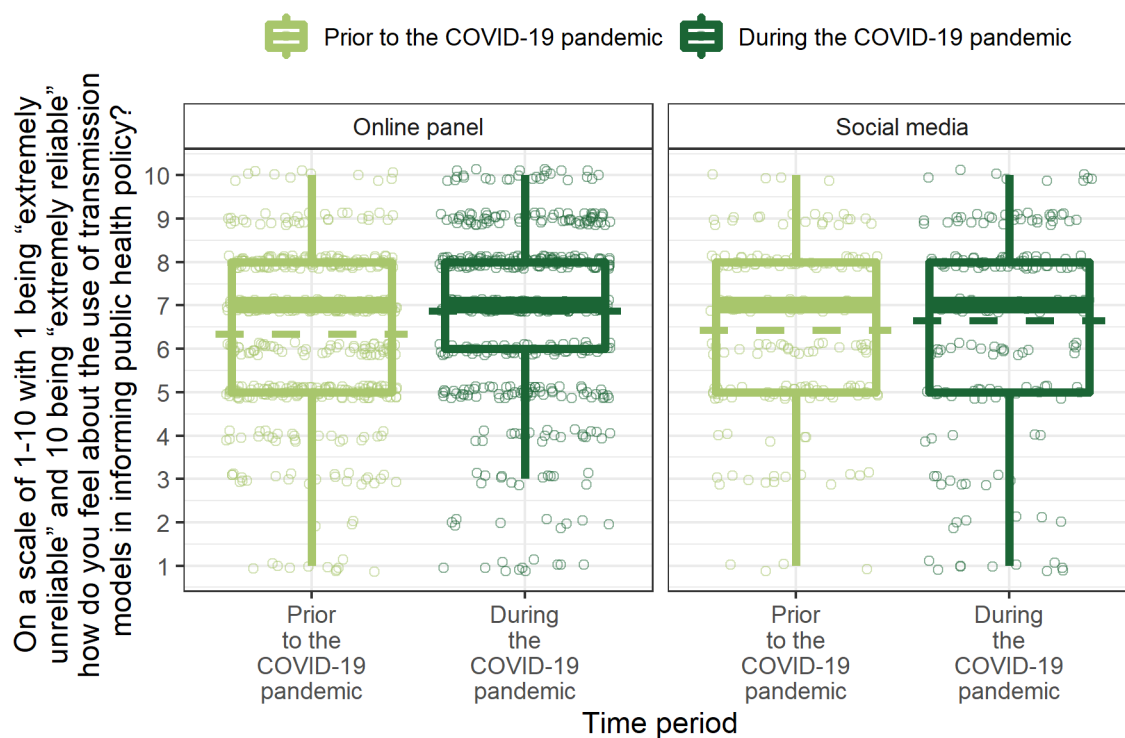
Supplementary Table 8 presents the number and percentage of respondents within each sample changing reliability score in the period of the pandemic compared to the period prior (reported retrospectively).

Supplementary Table 9 presents the results of the linear models regressing reliability score on age and gender, per sample and in reference to each time period.

Supplementary Table 10 presents the results of the linear models regressing reliability score on age, gender, and awareness of the use of modelling in informing public health policy per sample and in reference to each time period.

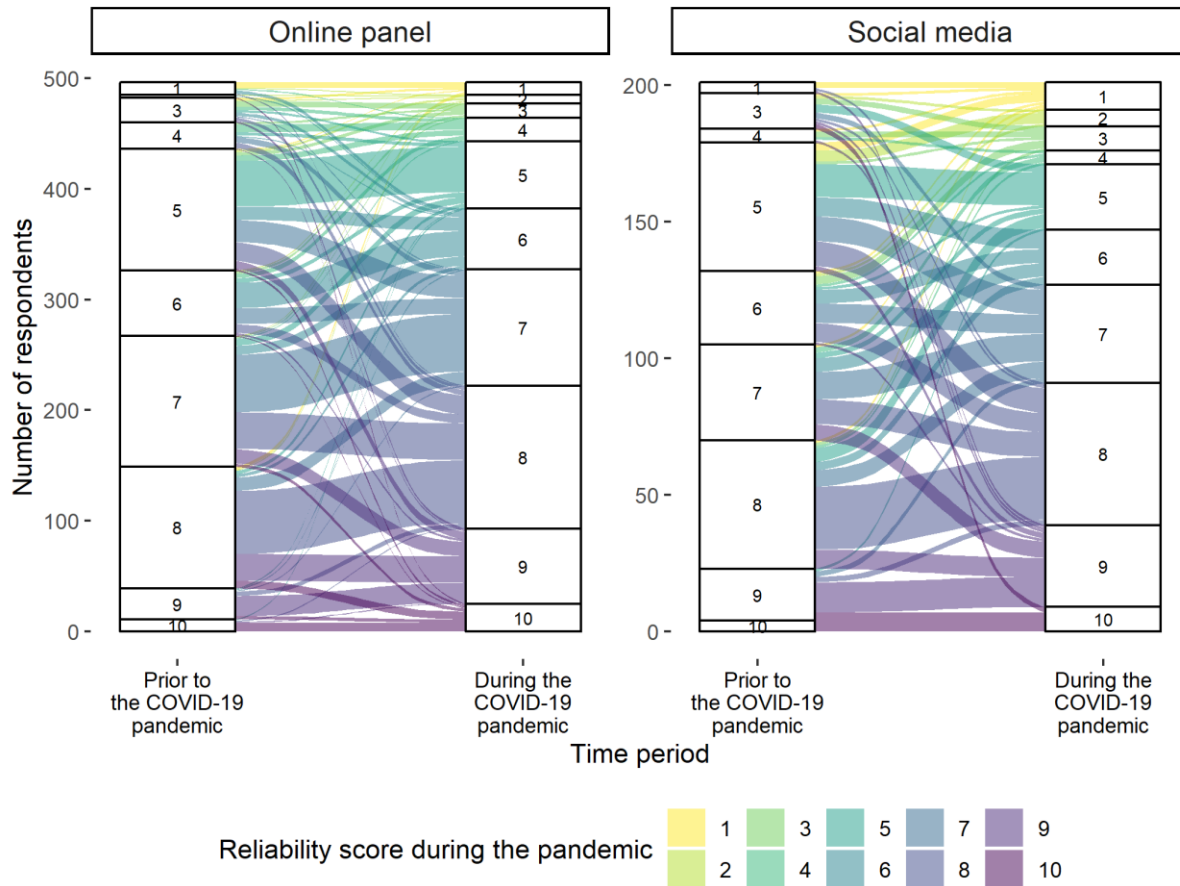
Supplementary Figure 6 and Supplementary Table 11 present the relationship between reliability scores prior to (reported retrospectively) and during the COVID-19 pandemic under each sample.

Supplementary Table 12 presents a linear model regressing the difference in reliability scores on age group and gender. Difference in reliability score is defined as the score given during the pandemic minus the score given prior (reported retrospectively).



Supplementary Figure 4: Reliability of using transmission modelling to inform public health policy. (A) Responses to the question “On a scale of 1 – 10 with 1 being “extremely unreliable” and 10 being “extremely reliable” how do you feel about the use of transmission modelling in informing public health policy?” both “Prior to” and “During” the COVID19 pandemic, for both the online panel and social media samples. From bottom to top, the solid lines on the boxplot indicate: 1.5 times the interquartile range (IQR) less than the first quartile, first quartile, median, third quartile and 1.5 times the IQR greater than the third quartile. The dashed line corresponds to the mean. All responses are shown by the points, and so outliers, defined as any point outside the lower and upper bounds described, have been removed from the boxplots as they are shown in the presentation of the data. Points represent each reliability score and have been jittered to aid visual presentation. Underlying data are presented in Table 1.

On a scale of 1-10 with 1 being “extremely unreliable” and 10 being “extremely reliable” how do you feel about the use of transmission models in informing public health policy?



Supplementary Figure 5: Responses to the question “On a scale of 1 – 10 with 1 being “extremely unreliable” and 10 being “extremely reliable” how do you feel about the use of transmission modelling in informing public health policy?” both “Prior to” (reported retrospectively) and “During” the COVID-19 pandemic, for both the online panel and social media samples. Observations corresponding to a respondent which did not answer the question for at least one time point were removed from the figure to aid visual presentation (n=8 online panel; n=1 social media). Due to small numbers of respondents from the online panel selecting a score of “2”, this is unable to be labelled, but appears in numeric order. Underlying data are presented in Table 1.

Supplementary Table 8: Number and percentage of respondents within each sample classified according to differences in reliability scores prior to and during the pandemic.

		Online panel	Social media
Number of respondents (n (%))	Reliability score increased	203 (40%)	79 (39%)
	Reliability score unchanged	217 (43%)	70 (35%)
	Reliability score decreased	76 (15%)	52 (26%)
	At least one score was missing	8 (2%)	1 (0%)

Supplementary Table 9: Coefficient estimates, standard errors and p-values for the linear regression models with age group and gender as predictors of reliability scores during each period and for each sample. Chi-squared tests for the overall significance of age and gender are also presented. *p* – values < 0.01 are considered statistically significant.

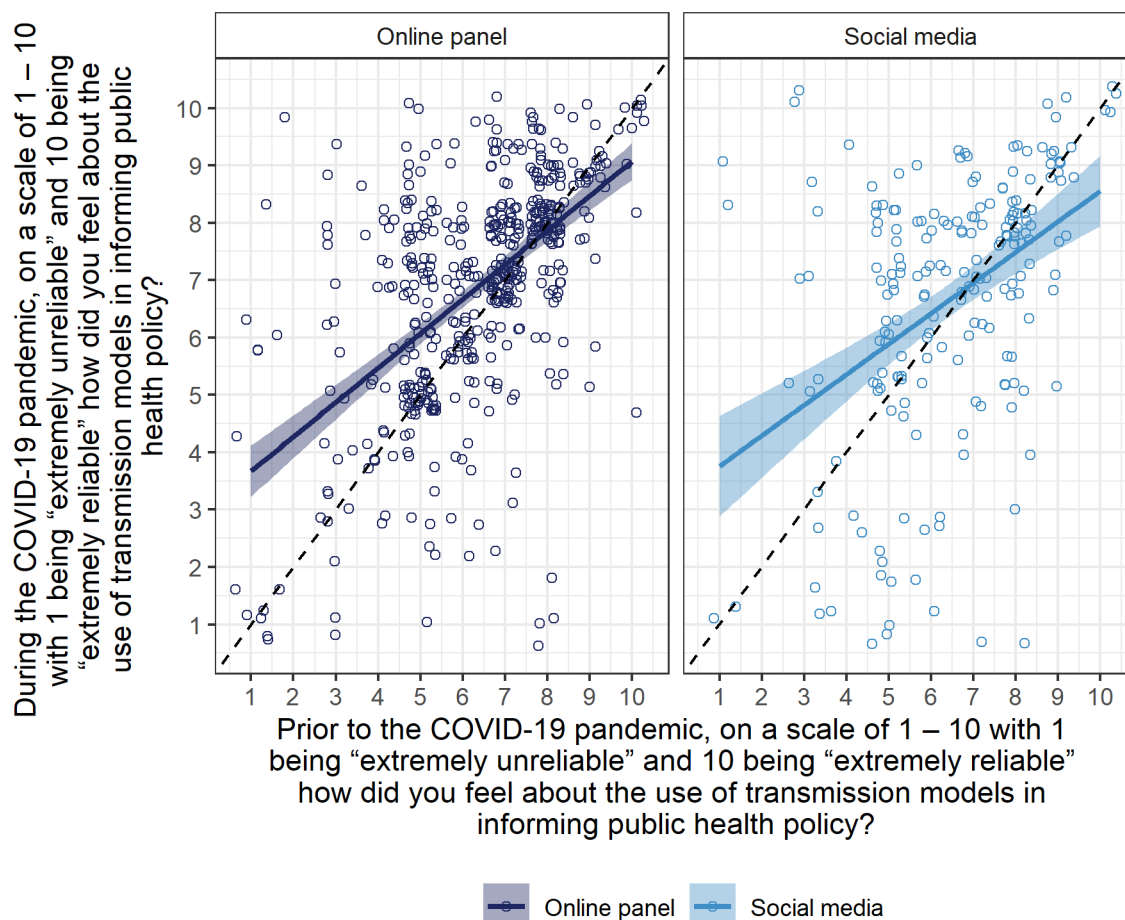
Sample	Response	Variable	Interpretation	Estimate	Standard Error	p-value	Chi-squared test	
							χ^2	p-value
Online panel	Reliability score prior to the COVID-19 pandemic	Intercept	Baseline*	6.66	0.24	<0.001		
		Age (years)	26 – 35	-0.07	0.29	0.815	12.99 (df=5)	0.567
			36 – 45	-0.27	0.29	0.351		
			46 – 55	-0.48	0.29	0.106		
			56 – 65	-0.33	0.27	0.225		
			66+	-0.08	0.36	0.816		
		Gender	Male	-0.20	0.17	0.234	10.19 (df=3)	0.386
			Non-binary	0.41	1.84	0.824		
			Prefer not to say	1.23	1.06	0.247		
Social media	Reliability score prior to the COVID-19 pandemic	Intercept	Baseline*	6.95	0.96	<0.001		
		Age (years)	26 – 35	-0.89	1.12	0.426	4.66 (df=5)	0.933
			36 – 45	-0.36	1.03	0.728		
			46 – 55	-0.39	0.98	0.692		
			56 – 65	-0.24	0.97	0.807		
			66+	-0.60	1.02	0.554		
		Gender	Male	-0.27	0.27	0.319	14.09 (df=2)	0.141
			Prefer not to say	-2.05	1.12	0.069		
		Online panel	Reliability score during the COVID-19 pandemic	Intercept	Baseline*	7.12	0.25	<0.001
Age (years)	26 – 35			-0.13	0.32	0.674	24.22 (df=5)	0.290
	36 – 45			-0.26	0.31	0.400		
	46 – 55			-0.63	0.32	0.049		
	56 – 65			-0.00	0.30	0.994		
	66+			-0.18	0.39	0.643		
Gender	Male			-0.11	0.18	0.526	3.18 (df=3)	0.846
	Non-binary			0.01	1.99	0.994		
	Prefer not to say			0.68	1.15	0.554		
Social media	Reliability score during the COVID-19 pandemic	Intercept	Baseline*	7.84	1.11	<0.001		
		Age (years)	26 – 35	-2.87	1.29	0.027	59.66 (df=5)	0.031
			36 – 45	-1.28	1.18	0.281		
			46 – 55	-0.53	1.13	0.637		
			56 – 65	-0.58	1.12	0.607		
			66+	-0.62	1.17	0.598		
		Gender	Male	-0.78	0.31	0.013	65.70 (df=2)	0.001
			Prefer not to say	-3.93	1.29	0.003		

*Baseline comprised of “Female” and “18 – 25” years.

Supplementary Table 10: Coefficient estimates, standard errors and p-values for the linear regression models with age group, gender and awareness of the use of modelling in policy as predictors of reliability scores during each period and for each sample. The responses to the question “Were you aware of transmission modelling in informing public health policy?” used as an explanatory variable, “No”, “Unsure” and “Yes” were enumerated as -1, 0, 1, respectively. Chi-squared tests for the overall significance of age and gender are also presented. p – values < 0.01 are considered statistically significant.

Sample	Response	Variable	Interpretation	Estimate	Standard Error	p-value	Chi-squared test	
							χ^2	p-value
Online panel	Reliability score prior to the COVID-19 pandemic	Intercept	Baseline*	6.95	0.23	<0.001		
		Age (years)	26 – 35	-0.18	0.28	0.505	12.66 (df=5)	0.520
			36 – 45	-0.29	0.28	0.287		
			46 – 55	-0.62	0.28	0.028		
			56 – 65	-0.36	0.26	0.164		
			66+	0.00	0.35	0.995		
		Gender	Male	-0.31	0.16	0.050	10.65 (df=3)	0.316
			Non-binary	-0.92	1.75	0.597		
			Prefer not to say	1.45	1.01	0.150		
		Awareness	Transmission modelling used in policy	0.69	0.09	<0.001	174.06 (df=1)	<0.001
Social media	Reliability score prior to the COVID-19 pandemic	Intercept	Baseline*	6.85	0.96	<0.001		
		Age (years)	26 – 35	-0.94	1.10	0.394	4.66 (df=5)	0.930
			36 – 45	-0.38	1.01	0.706		
			46 – 55	-0.32	0.97	0.740		
			56 – 65	-0.19	0.96	0.841		
			66+	-0.59	1.01	0.558		
		Gender	Male	-0.38	0.27	0.163	14.09 (df=2)	0.135
			Prefer not to say	-2.36	1.11	0.036		
		Awareness	Transmission modelling used in policy	0.37	0.16	0.024	17.99 (df=1)	0.024
Online panel	Reliability score during the COVID-19 pandemic	Intercept	Baseline*	6.67	0.25	<0.001		
		Age (years)	26 – 35	-0.15	0.30	0.608	26.09 (df=5)	0.192
			36 – 45	-0.24	0.30	0.432		
			46 – 55	-0.83	0.30	0.007		
			56 – 65	-0.12	0.28	0.680		
			66+	-0.31	0.38	0.409		
		Gender	Male	-0.14	0.17	0.424	3.07 (df=3)	0.832
			Non-binary	-0.40	1.89	0.832		
			Prefer not to say	0.28	1.09	0.796		
		Awareness	Transmission modelling used in policy	0.88	0.12	<0.001	205.75 (df=1)	<0.001
Social media	Reliability score during the COVID-19 pandemic	Intercept	Baseline*	7.93	1.26	<0.001		
		Age (years)	26 – 35	-2.89	1.28	0.026	55.94 (df=5)	0.039
			36 – 45	-1.05	1.18	0.374		
			46 – 55	-0.52	1.12	0.646		
			56 – 65	-0.56	1.11	0.613		
			66+	-0.60	1.16	0.605		
		Gender	Male	-0.71	0.31	0.025	61.25 (df=2)	0.002
			Prefer not to say	-3.89	1.28	0.003		
		Awareness	Transmission modelling used in policy	-0.15	0.65	0.817	0.25 (df=1)	0.817

*Baseline comprised of “Female” and “18 – 25” years.



Supplementary Figure 6: Relationship between reliability scores given “Prior to” and “During” the COVID-19 pandemic for both the online panel and social media samples. Reliability scores obtained via the question: “On a scale of 1 – 10 with 1 being “extremely unreliable” and 10 being “extremely reliable” how did you feel about the use of transmission models in informing public health policy?”. Points represent each reliability score and have been jittered to aid visual presentation. Coloured lines show the linear model presented in Supplementary Table 11, with shaded areas representing 95% confidence intervals. Black dashed line indicates where reliability scores during the pandemic equal those prior to the pandemic.

Supplementary Table 11: Coefficient estimates, standard errors and p-values for the linear regression models with reliability score prior to the COVID-19 pandemic as the predictor of reliability score during the COVID-19 pandemic for each sample.

Sample	Response	Variable	Estimate	Standard Error	p-value
Online panel	Reliability score during the COVID-19 pandemic	Intercept	3.07	0.27	<0.001
		Reliability score prior to the COVID-19 pandemic	0.60	0.04	<0.001
Social media	Reliability score during the COVID-19 pandemic	Intercept	3.22	0.52	<0.001
		Reliability score prior to the COVID-19 pandemic	0.53	0.08	<0.001

Supplementary Table 12: Coefficient estimates, standard errors and p-values for the linear regression models with age group and gender as predictors of the difference between reliability scores for each sample. Difference in reliability score is defined as the score given during the pandemic minus the score given prior. Chi-squared tests for the overall significance of age and gender are also presented. $p - \text{values} < 0.01$ are considered statistically significant.

Sample	Response	Variable	Interpretation	Estimate	Standard Error	p-value	Chi-squared test	
							χ^2	p-value
Online panel	Difference in reliability score	Intercept	Baseline*	0.46	0.23	0.049		
		Age (years)	26 – 35	-0.06	0.29	0.824	15.97 (df=5)	0.420
			36 – 45	0.02	0.28	0.936		
			46 – 55	-0.19	0.29	0.520		
			56 – 65	0.33	0.27	0.222		
			66+	-0.10	0.36	0.784		
		Gender	Male	0.09	0.16	0.576	2.24 (df=3)	0.874
			Non-binary	-0.39	1.80	0.828		
			Prefer not to say	-0.55	1.04	0.596		
Social media	Difference in reliability score	Intercept	Baseline*	0.90	1.13	0.426		
		Age (years)	26 – 35	-1.98	1.30	0.130	40.61 (df=5)	0.142
			36 – 45	-0.93	1.20	0.439		
			46 – 55	-0.15	1.14	0.895		
			56 – 65	-0.34	1.13	0.762		
			66+	-0.09	1.19	0.943		
		Gender	Male	-0.53	0.32	0.095	21.16 (df=2)	0.115
			Prefer not to say	-1.89	1.31	0.150		

*Baseline comprised of “Female” and “18 – 25” years.

Reliability scores stratified by awareness

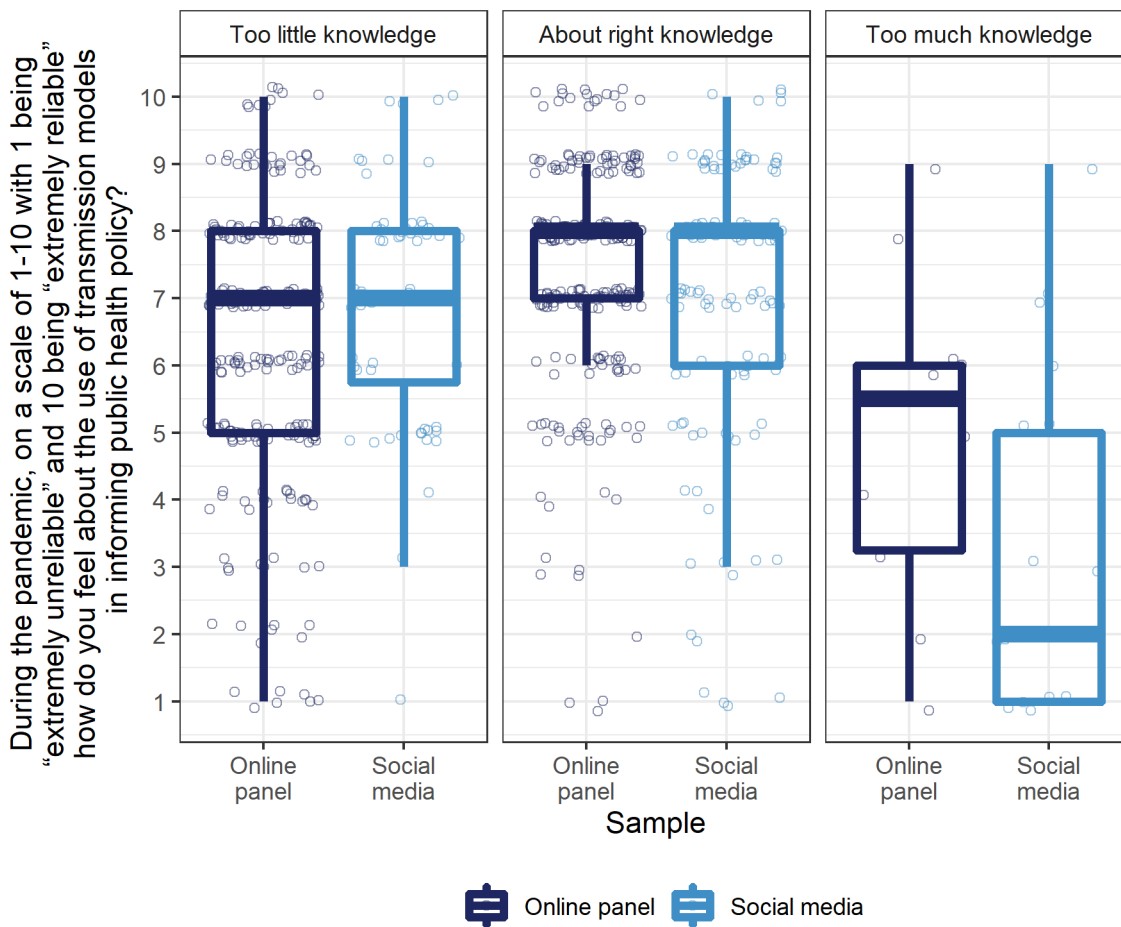
Supplementary Figure 7 presents reliability scores for both samples and in reference to both time periods, stratified by responses to the question “Were you aware of transmission modelling being used in informing public health policy?”. There were statistically significant differences in reliability scores among those with awareness compared to those with no awareness among online panel respondents, holding time period constant, (Mann-Whitney U test: online panel and prior $p - value < 0.001$; online panel and during $p - value < 0.001$), but not among social media respondents (Mann-Whitney U test: social media and prior $p - value = 0.197$; social media and during $p - value = 0.148$).

Supplementary Figure 8 presents reliability scores according to responses to the question “How much do you know about how transmission modelling has been used throughout the COVID-19 pandemic?” for both samples. Online panel respondents who recorded an “About right” level of knowledge on the use of transmission modelling during the pandemic had significantly higher reliability scores than those stating they had “Too little” knowledge (Mann-Whitney U test: $p - value < 0.001$), but this was not a significant factor among social media respondents (Mann-Whitney U test: $p - value = 0.396$) (Supplementary Figure 8). The few respondents recording they had “Too much” knowledge had significantly lower reliability scores than those with “About right” knowledge within both samples (Mann-Whitney U test: Online panel $p - value = 0.002$; social media $p - value < 0.001$).

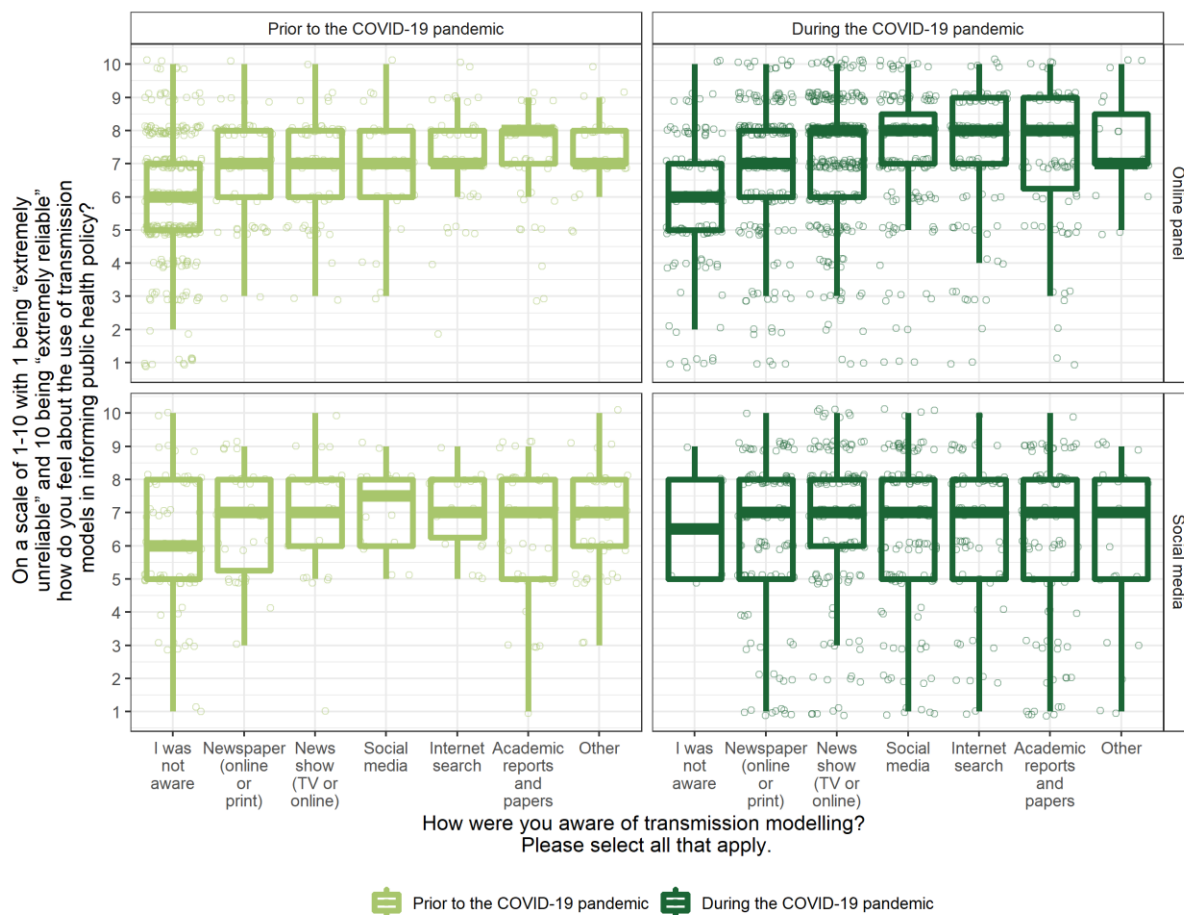
Supplementary Figure 9 presents reliability scores according to responses to the question “How were you aware of transmission modelling?” both “Prior to” and “During” the COVID-19 pandemic, for both samples. There was little distinction in reliability scores according to the means by which respondents were aware of modelling, with scores distributed across the entire scale under each option within each sample.



Supplementary Figure 7: Responses to the question “On a scale of 1 – 10 with 1 being “extremely unreliable” and 10 being “extremely reliable” how do you feel about the use of transmission modelling in informing public health policy?” both “Prior to” and “During” the COVID-19 pandemic, for both the online panel and social media samples, stratified by self-reported level of awareness according to the question “Were you aware of the use of transmission models in informing public health policy?” both “Prior to” and “During” the COVID-19 pandemic. From bottom to top, the solid lines on the boxplot indicate: 1.5 times the interquartile range (IQR) less than the first quartile, first quartile, median, third quartile and 1.5 times the IQR greater than the third quartile. All responses are shown by the points, and so outliers, defined as any point outside the lower and upper bounds described, have been removed from the boxplots as they are shown in the presentation of the data. Points represent each reliability score and have been jittered to aid visual presentation.



Supplementary Figure 8: Responses to the question “During the COVID-19 pandemic, on a scale of 1 – 10 with 1 being “extremely unreliable” and 10 being “extremely reliable” how do you feel about the use of transmission modelling in informing public health policy?” for both the online panel and social media samples, stratified by self-reported level of awareness according to the question “How much do you know about how transmission modelling has been used throughout the COVID-19 pandemic?”. From bottom to top, the solid lines on the boxplot indicate: 1.5 times the interquartile range (IQR) less than the first quartile, first quartile, median, third quartile and 1.5 times the IQR greater than the third quartile. The dashed line corresponds to the mean. All responses are shown by the points, and so outliers, defined as any point outside the lower and upper bounds described, have been removed from the boxplots as they are shown in the presentation of the data. Points represent each reliability score and have been jittered to aid visual presentation.



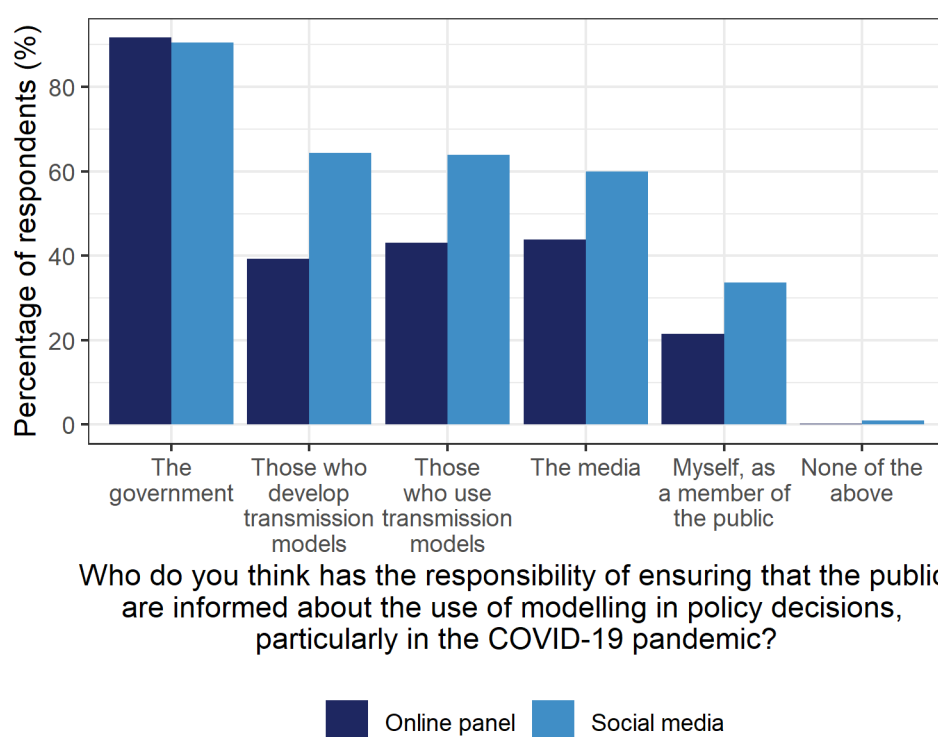
Supplementary Figure 9: Responses to the question "On a scale of 1 – 10 with 1 being "extremely unreliable" and 10 being "extremely reliable" how do you feel about the use of transmission modelling in informing public health policy?" both "Prior to" and "During" the COVID-19 pandemic, for both the online panel and social media samples, stratified by responses to the question "How were you aware of transmission modelling?" both "Prior to" and "During" the COVID-19 pandemic. From bottom to top, the solid lines on the boxplot indicate: 1.5 times the interquartile range (IQR) less than the first quartile, first quartile, median, third quartile and 1.5 times the IQR greater than the third quartile. The dashed line corresponds to the mean. All responses are shown by the points, and so outliers, defined as any point outside the lower and upper bounds described, have been removed from the boxplots as they are shown in the presentation of the data. Points represent each reliability score and have been jittered to aid visual presentation.

Supplementary Figure 10 presents the responses to the question “Who do you think has the responsibility of ensuring that the public are informed about the use of modelling in policy decisions, particularly in the COVID-19 pandemic?” for both samples.

Supplementary Table 13 presents the results of chi-squared tests for differences in the proportion of respondents selecting multiple-choice answers to the question “Who do you think has the responsibility of ensuring that the public are informed about the use of modelling in policy decisions, particularly in the COVID-19 pandemic?” between the two samples.

Supplementary Figure 11 presents the results to the aforementioned question stratified by answers to the question “How much did you know about how transmission modelling has been used throughout the COVID-19 pandemic?”. The robustness of these results to awareness suggests that this is not an influencing factor.

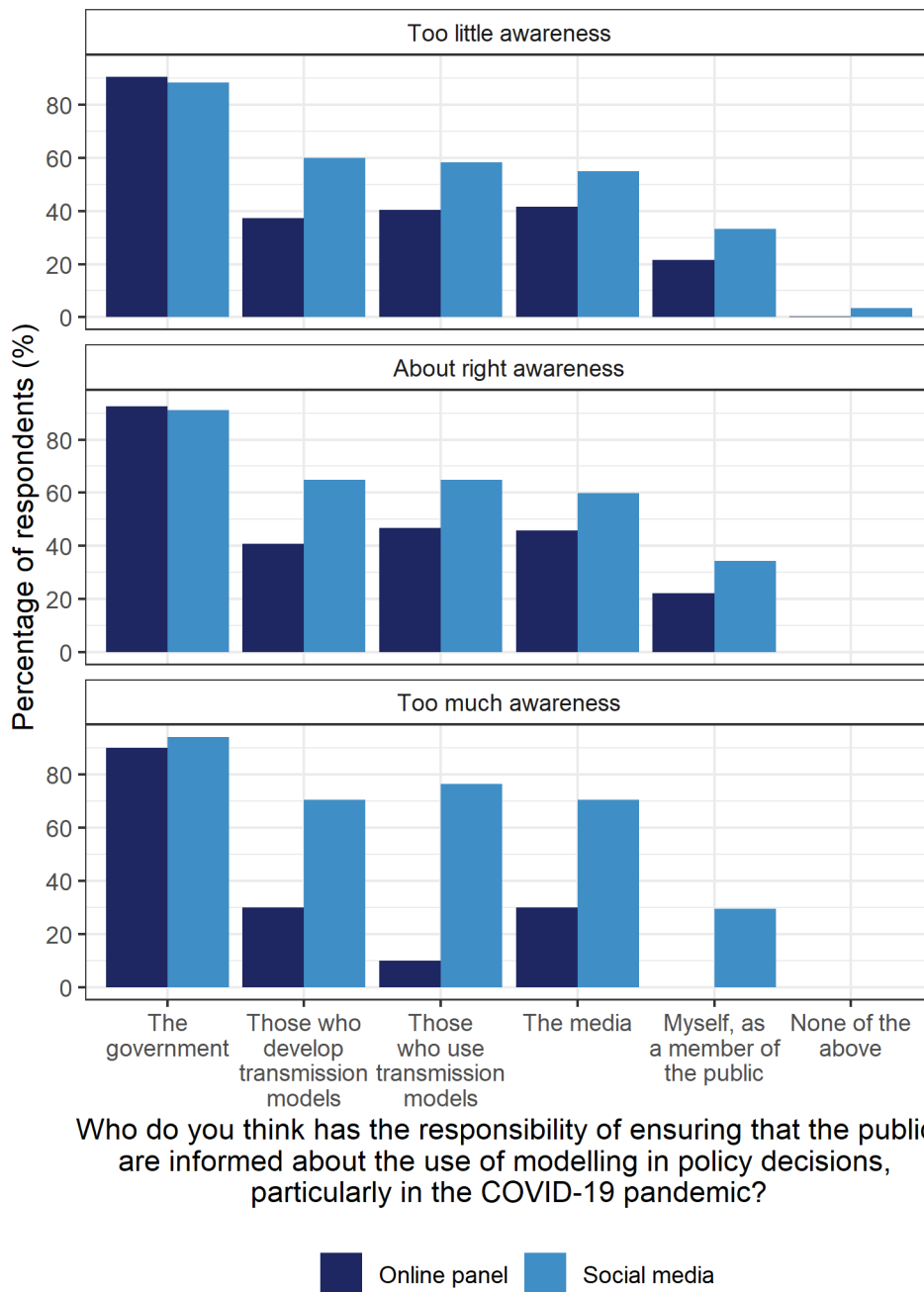
Of the few who selected “None of the above” to the aforementioned question, of which there were 1 from the online panel and 2 from the social media sample, respondents were either unsure (online panel), believed in a “collaborative” (social media) approach or the “NHS” (social media).



Supplementary Figure 10: Responses to the question “Who do you think has the responsibility of ensuring that the public are informed about the use of modelling in policy decisions, particularly in the COVID-19 pandemic? Please select all that apply.” for both samples. Underlying data are presented in Table 1.

Supplementary Table 13: Results of chi-squared tests for statistically significant differences in the proportion of respondents selecting multiple-choice answers to the question “Who do you think has the responsibility of ensuring that the public are informed about the use of modelling in policy decisions, particularly in the COVID-19 pandemic?” between the online panel and social media samples. Note that respondents could select multiple responses for this question. p – values < 0.01 are considered statistically significant.

	Number of respondents (n (%))		χ^2	n	p – value
	Online panel	Social media			
The government	462 (92%)	183 (91%)	0.10	706	0.756
Those who develop transmission models	198 (39%)	130 (64%)	35.44		<0.001
Those who use transmission models	217 (43%)	129 (64%)	24.15		<0.001
The media	221 (44%)	121 (60%)	14.24		<0.001
Myself, as a member of the public	108 (21%)	68 (34%)	10.89		<0.001
None of the above	1 (0%)	2 (1%)	0.67		0.411



Supplementary Figure 11: Responses to the question “Who do you think has the responsibility of ensuring that the public are informed about the use of modelling in policy decisions, particularly in the COVID-19 pandemic? Please select all that apply.” for both the online panel and social media samples, stratified by answers to the question “How much do you know about how transmission modelling has been used throughout the COVID-19 pandemic?”.

Trust in government advice

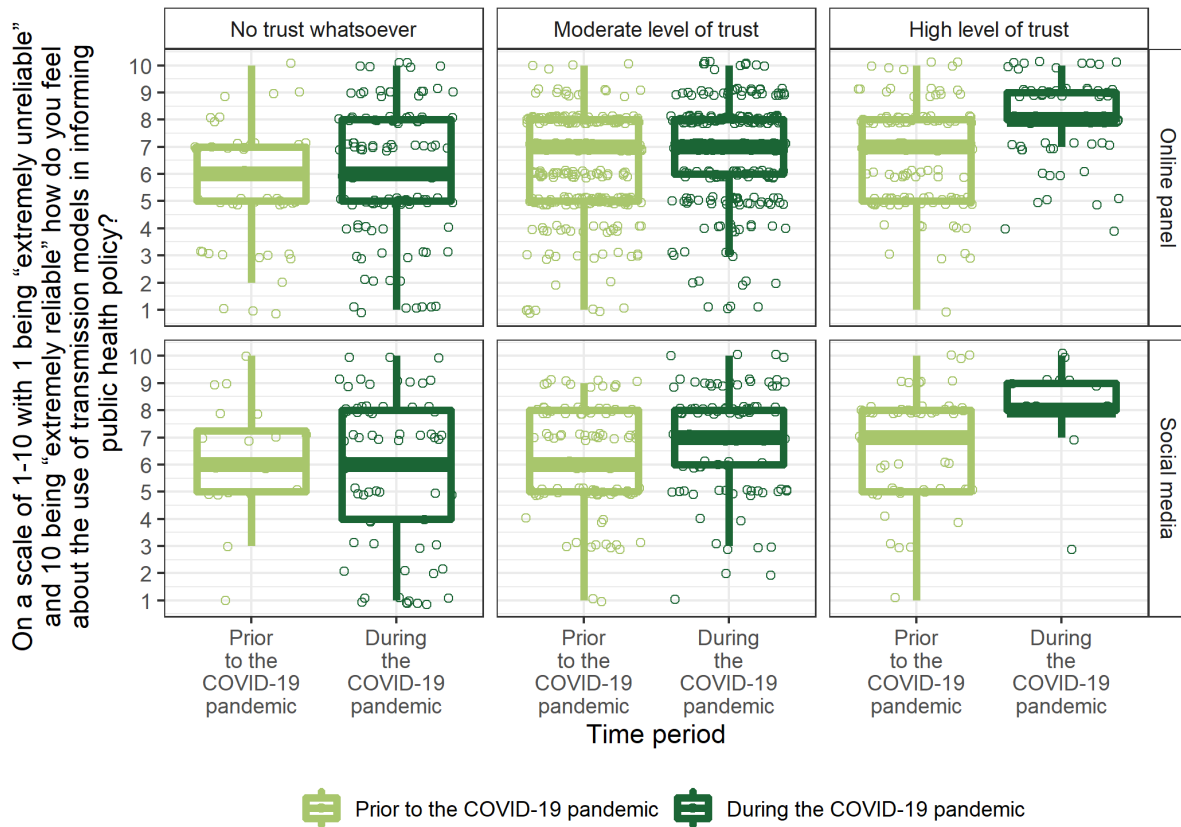
How much did you trust government advice regarding public health issues?

Supplementary Figure 12 presents reliability scores stratified by answers to question “How much did you trust government advice regarding public health issues?” both “Prior to” and “During” the COVID-19 pandemic for both samples. Supplementary Table 14 present the median and variances of the reliability scores for the same stratifications.

Supplementary Table 15 presents the number and percentage of respondents within each sample classified according to differences in responses to the aforementioned question across time periods.

Supplementary Table 16 presents the results of the corresponding linear model regressing the responses to the question “How much did you trust government advice regarding public health issues?” both “Prior to” and “During” the COVID-19 pandemic on age group and gender of respondents within each sample. The three levels of trust provided in the multiple-choice options “No level of trust whatsoever”, “Moderate level of trust” and “High level of trust” were enumerated as -1, 0, 1 respectively.

Supplementary Table 17 presents the results of the linear model regressing changes in responses to the question “How much did you trust government advice regarding public health issues?” in the period of the pandemic compared to the period prior, on age group and gender within each sample. The three responses provided in the multiple-choice options, “No trust whatsoever”, “Moderate level of trust” and “High level of trust”, were enumerated as -1, 0, 1, respectively, and so the differences (response) could take values of -2, -1, 0, 1, 2.



Supplementary Figure 12: Responses to the question “On a scale of 1 – 10 with 1 being “extremely unreliable” and 10 being “extremely reliable” how do you feel about the use of transmission modelling in informing public health policy?” both “Prior to” and “During” the COVID-19 pandemic, for both the online panel and social media samples, stratified by responses to the question “How much did you trust government advice regarding public health issues?” both “Prior to” and “During” the COVID-19 pandemic. From bottom to top, the solid lines on the boxplot indicate: 1.5 times the interquartile range (IQR) less than the first quartile, first quartile, median, third quartile and 1.5 times the IQR greater than the third quartile. The dashed line corresponds to the mean. All responses are shown by the points, and so outliers, defined as any point outside the lower and upper bounds described, have been removed from the boxplots as they are shown in the presentation of the data. Points represent each reliability score and have been jittered to aid visual presentation.

Supplementary Table 14: Median and variances of the responses to the question “On a scale of 1 – 10 with 1 being “extremely unreliable” and 10 being “extremely reliable” how do you feel about the use of transmission modelling in informing public health policy?” for both the online panel and social media samples stratified by responses to the question “How much did you trust government advice regarding public health issues?” both “Prior to” and “During” the COVID-19 pandemic.

		No trust whatsoever		Moderate level of trust		High level of trust	
		Median	Variance	Median	Variance	Median	Variance
Online panel	Prior to the COVID-19 pandemic	6.00	4.61	7.00	3.06	7.00	3.21
	During the COVID-19 pandemic	6.00	5.35	7.00	3.21	8.00	1.83
Social media	Prior to the COVID-19 pandemic	6.00	4.41	6.00	3.35	7.00	3.47
	During the COVID-19 pandemic	6.00	7.09	7.00	3.50	8.00	2.26

Supplementary Table 15: Number and percentage of respondents within each sample classified according to differences in responses to the question “How much did you trust government advice regarding public health issues?” both “Prior to” and “During” the COVID-19 pandemic.

		Online panel	Social media
Number of respondents (n (%))	Trust in government advice increased	40 (8%)	12 (6%)
	Trust in government advice unchanged	328 (65%)	92 (46%)
	Trust in government advice decreased	135 (27%)	98 (49%)
	At least one score was missing	1 (0%)	0 (0%)

Supplementary Table 16: Coefficient estimates, standard errors and p-values for the linear model regressing responses to the question “How much did you trust government advice regarding public health issues?” on age group and gender during each period and for each sample. The three responses provided in the multiple-choice options, “No trust whatsoever”, “Moderate level of trust” and “High level of trust”, were enumerated as -1, 0, 1, respectively. Chi-squared tests for the overall significance of age and gender are also presented. $p - \text{values} < 0.01$ are considered statistically significant.

Sample	Response	Variable	Interpretation	Estimate	Standard Error	p-value	Chi-squared test	
							χ^2	p-value
Online panel	Trust in government prior to the COVID-19 pandemic	Intercept	Baseline*	0.11	0.07	0.136	0.13 (df=5)	0.995
		Age (years)	26 – 35	0.02	0.09	0.831		
			36 – 45	0.01	0.09	0.953		
			46 – 55	-0.01	0.09	0.933		
			56 – 65	-0.02	0.09	0.795		
			66+	-0.02	0.12	0.886		
		Gender	Male	0.10	0.05	0.047	1.46 (df=3)	0.230
			Non-binary	-0.13	0.59	0.822		
			Prefer not to say	0.22	0.34	0.515		
Social media	Trust in government prior to the COVID-19 pandemic	Intercept	Baseline*	0.23	0.31	0.461	2.25 (df=5)	0.312
		Age (years)	26 – 35	0.25	0.36	0.485		
			36 – 45	-0.07	0.33	0.838		
			46 – 55	-0.00	0.32	0.998		
			56 – 65	0.01	0.31	0.969		
			66+	-0.24	0.33	0.465		
		Gender	Male	0.02	0.09	0.776	0.05 (df=2)	0.939
			Prefer not to say	0.09	0.36	0.805		
Online panel	Trust in government during the COVID-19 pandemic	Intercept	Baseline*	-0.17	0.08	0.039	1.96 (df=5)	0.455
		Age (years)	26 – 35	-0.02	0.10	0.864		
			36 – 45	0.11	0.10	0.279		
			46 – 55	0.05	0.10	0.664		
			56 – 65	0.12	0.10	0.233		
			66+	0.15	0.13	0.238		
		Gender	Male	0.08	0.06	0.167	1.71 (df=3)	0.251
			Non-binary	-0.81	0.65	0.213		
			Prefer not to say	-0.23	0.38	0.539		
Social media	Trust in government during the COVID-19 pandemic	Intercept	Baseline*	-0.48	0.31	0.122	2.90 (df=5)	0.175
		Age (years)	26 – 35	-0.00	0.36	0.993		
			36 – 45	0.02	0.33	0.964		
			46 – 55	0.18	0.32	0.564		
			56 – 65	0.37	0.31	0.243		
			66+	0.15	0.33	0.656		
		Gender	Male	-0.02	0.09	0.811	2.22 (df=2)	0.053
			Prefer not to say	-0.88	0.36	0.016		

*Baseline comprised of “Female” and “18 – 25” years.

Supplementary Table 17: Coefficient estimates, standard errors and p-values for the linear model regressing changes in responses to the question “How much did you trust government advice regarding public health issues?” in the period of the pandemic compared to the period prior, on age group and gender within each sample. The three responses provided in the multiple-choice options, “No trust whatsoever”, “Moderate level of trust” and “High level of trust”, were enumerated as -1, 0, 1, respectively, and so the differences (response) could take integer values between -2 and 2. Chi-squared tests for the overall significance of age and gender are also presented. p – values < 0.01 are considered statistically significant.

Sample	Response	Variable	Interpretation	Estimate	Standard Error	p-value	Chi-squared test	
							χ^2	p-value
Online panel	Change in trust in government regarding public health issues	Intercept	Baseline*	-0.30	0.09	<0.001		
		Age (years)	26 – 35	-0.02	0.11	0.845	2.81 (df=5)	0.269
			36 – 45	0.12	0.10	0.242		
			46 – 55	0.07	0.11	0.511		
			56 – 65	0.15	0.10	0.118		
			66+	0.19	0.13	0.158		
		Gender	Male	-0.03	0.06	0.634	1.11 (df=3)	0.469
			Non-binary	-0.68	0.67	0.307		
			Prefer not to say	-0.45	0.38	0.239		
Social media	Change in trust in government regarding public health issues	Intercept	Baseline*	-0.72	0.37	0.054		
		Age (years)	26 – 35	-0.26	0.43	0.549	4.56 (df=5)	0.126
			36 – 45	0.08	0.39	0.832		
			46 – 55	0.18	0.37	0.625		
			56 – 65	0.35	0.37	0.341		
			66+	0.39	0.38	0.319		
		Gender	Male	-0.05	0.10	0.657	2.70 (df=2)	0.078
			Prefer not to say	-0.97	0.43	0.024		

*Baseline comprised of “Female” and “18 – 25” years.

Trust in government advice and awareness

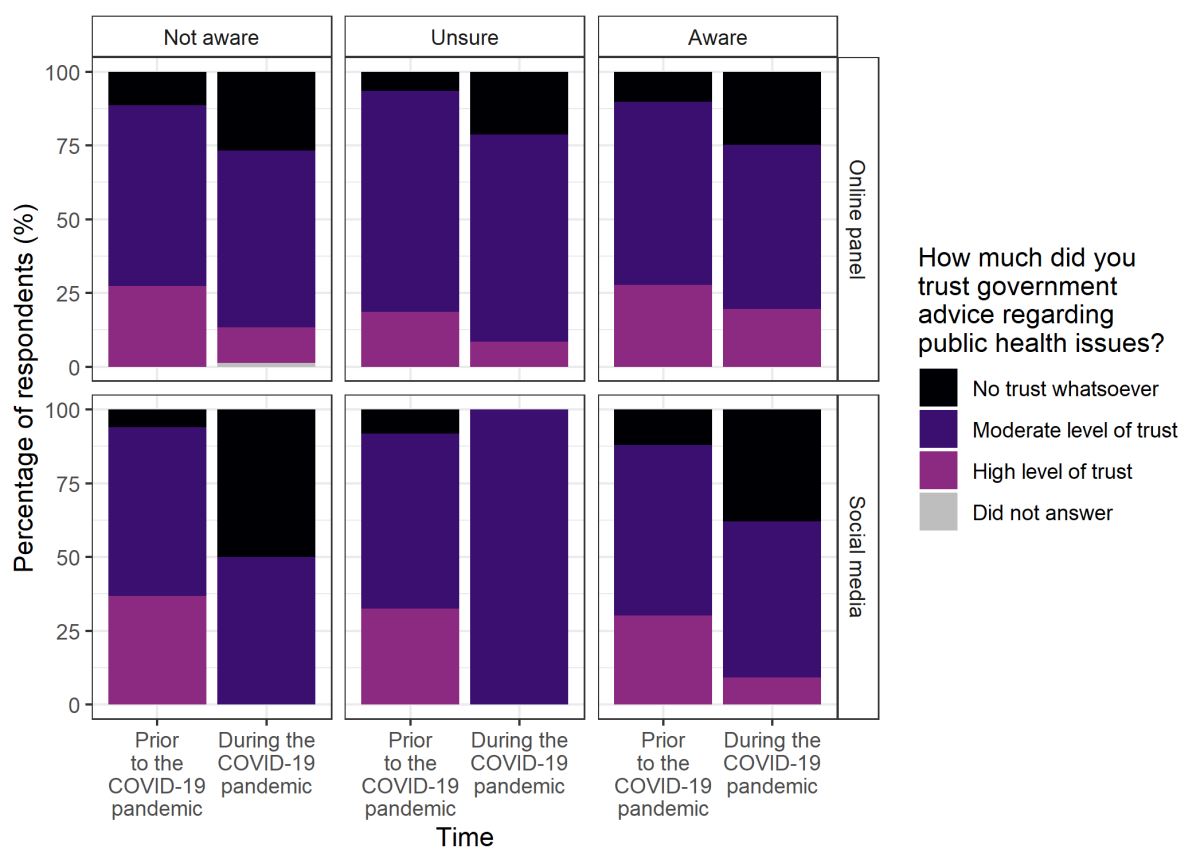
Supplementary Table 18 presents the results of the linear model regressing responses to the question “How much did you trust government advice regarding public health issues?” on age group, gender and awareness of the use of modelling in policy during each period and for each sample. The three responses provided in the multiple-choice options for the response, “No trust whatsoever”, “Moderate level of trust” and “High level of trust”, were enumerated as -1, 0, 1, respectively.

Similarly, the responses to the question “Were you aware of transmission modelling in informing public health policy?” used as an explanatory variable, “No”, “Unsure” and “Yes” were enumerated as -1, 0, 1, respectively. Data to the response question stratified by awareness are presented in Supplementary Figure 13, with the percentages underlying this figure set out in Supplementary Table 19.

Supplementary Table 18: Coefficient estimates, standard errors and p-values for the linear model regressing responses to the question “How much did you trust government advice regarding public health issues?” on age group, gender and awareness of the use of modelling in policy during each period and for each sample. The three responses provided in the multiple-choice options for the response, “No trust whatsoever”, “Moderate level of trust” and “High level of trust”, were enumerated as -1, 0, 1, respectively. Similarly, the responses to the question “Were you aware of transmission modelling in informing public health policy?” used as an explanatory variable, “No”, “Unsure” and “Yes” were enumerated as -1, 0, 1, respectively. Chi-squared tests for the overall significance of explanatory variables are also presented. p – values < 0.01 are considered statistically significant.

Sample	Response	Variable	Interpretation	Estimate	Standard Error	p-value	Chi-squared test	
							χ^2	p-value
Online panel	Trust in government prior to the COVID-19 pandemic	Intercept	Baseline*	0.11	0.08	0.149	0.18 (df=5)	0.991
		Age (years)	26 – 35	0.02	0.09	0.828		
			36 – 45	0.01	0.09	0.942		
			46 – 55	-0.01	0.09	0.937		
			56 – 65	-0.03	0.09	0.734		
			66+	-0.02	0.12	0.886		
		Gender	Male	0.11	0.05	0.042	1.53 (df=3)	0.212
			Non-binary	-0.13	0.59	0.824		
			Prefer not to say	0.22	0.34	0.510		
		Awareness	Transmission modelling used in policy	-0.00	0.03	0.979	0 (df=1)	0.979
Social media	Trust in government prior to the COVID-19 pandemic	Intercept	Baseline*	0.25	0.31	0.420	2.45 (df=5)	0.309
		Age (years)	26 – 35	0.26	0.36	0.466		
			36 – 45	-0.06	0.33	0.849		
			46 – 55	-0.01	0.32	0.964		
			56 – 65	0.00	0.31	0.992		
			66+	-0.25	0.33	0.450		
		Gender	Male	0.05	0.09	0.605	0.05 (df=2)	0.938
			Prefer not to say	0.15	0.36	0.678		
		Awareness	Transmission modelling used in policy	-0.07	0.05	0.159	0.75 (df=1)	0.159
Online panel	Trust in government during the COVID-19 pandemic	Intercept	Baseline*	-0.20	0.09	0.022	1.66 (df=5)	0.551
		Age (years)	26 – 35	-0.01	0.10	0.938		
			36 – 45	0.11	0.10	0.294		
			46 – 55	0.02	0.10	0.829		
			56 – 65	0.11	0.10	0.258		
			66+	0.12	0.13	0.344		
		Gender	Male	0.08	0.06	0.185	1.70 (df=3)	0.254
			Non-binary	-0.84	0.65	0.195		
			Prefer not to say	-0.26	0.38	0.497		
		Awareness	Transmission modelling used in policy	0.05	0.04	0.209	0.66 (df=1)	0.209
Social media	Trust in government during the COVID-19 pandemic	Intercept	Baseline*	-0.41	0.36	0.256	2.67 (df=5)	0.217
		Age (years)	26 – 35	-0.02	0.36	0.960		
			36 – 45	0.03	0.33	0.917		
			46 – 55	0.18	0.32	0.563		
			56 – 65	0.37	0.31	0.242		
			66+	0.15	0.33	0.654		
		Gender	Male	-0.01	0.09	0.929	2.21 (df=2)	0.055
			Prefer not to say	-0.87	0.36	0.017		
		Awareness	Transmission modelling used in policy	-0.09	0.18	0.641	0.08 (df=1)	0.641

*Baseline comprised of “Female” and “18 – 25” years.



Supplementary Figure 13: The percentage of observations from both the online panel and social samples according to time period and answer to the question “How much did you trust government advice regarding public health issues?” both “Prior to” and “During” the COVID-19 pandemic, stratified by responses to the question “Were you aware of the use of transmission models in informing public health policy?” both “Prior to” and “During” the COVID-19 pandemic. Underlying data are presented in Supplementary Table 19.

Supplementary Table 19: The percentage of observations from both the online panel and social media samples according to time period and answer to the question “How much did you trust government advice regarding public health issues?” both “Prior to” and “During” the COVID-19 pandemic, stratified by responses to the question “Were you aware of the use of transmission models in informing public health policy?” both “Prior to” and “During” the COVID-19 pandemic.

Platform	Time	Were you aware of the use of transmission models in informing public health policy?	How much did you trust government advice regarding public health issues?			
			High level of trust	Moderate level of trust	No trust whatsoever	Did not answer
Online panel	Prior to the COVID-19 pandemic	Yes	38 (28%)	85 (62%)	14 (10%)	0 (0%)
		Unsure	17 (19%)	68 (75%)	6 (7%)	0 (0%)
		No	74 (27%)	168 (61%)	31 (11%)	0 (0%)
	During the COVID-19 pandemic	Yes	73 (20%)	208 (56%)	93 (25%)	0 (0%)
		Unsure	4 (9%)	33 (70%)	10 (21%)	0 (0%)
		No	9 (12%)	45 (60%)	20 (27%)	1 (1%)
Social media	Prior to the COVID-19 pandemic	Yes	35 (30%)	67 (58%)	14 (12%)	0 (0%)
		Unsure	12 (32%)	22 (59%)	3 (8%)	0 (0%)
		No	18 (37%)	28 (57%)	3 (6%)	0 (0%)
	During the COVID-19 pandemic	Yes	18 (9%)	103 (53%)	74 (38%)	0 (0%)
		Unsure	0 (0%)	4 (100%)	0 (0%)	0 (0%)
		No	0 (0%)	1 (50%)	1 (50%)	0 (0%)

How do you feel when government advice changes based on new scientific evidence?

Supplementary Table 20 presents the results of the corresponding linear model regressing the responses to the question “How do you feel when government advice changes based on new scientific evidence?” on gender and age group of respondents within each sample. The three levels of trust provided in the multiple-choice options “I have less trust in the advice”, “My level of trust remains unchanged” and “I have more trust in the advice” were enumerated as -1, 0, and 1, respectively.

Supplementary Table 21 expands the regression presented in Supplementary Table 20 but also controls for responses to the question “Were you aware of the use of transmission models in informing public health policy?” both “Prior to” and “During” the COVID-19 pandemic. Responses to this question, “Yes”, “Unsure” and “No” were enumerated as 1, 0, and -1, respectively.

Analogously to Supplementary Table 21, Supplementary Table 22 expands the regression in Supplementary Table 20 but also controls for responses to the question “How much did you trust government scientific advice regarding public health policy?” both “Prior to” and “During” the COVID-19 pandemic. Responses to this question, “High level of trust”, “Moderate level of trust” and “No trust whatsoever” were enumerated as 1, 0, and -1, respectively.

Supplementary Table 20: Coefficient estimates, standard errors and p-values for the linear model regressing responses to the question “How do you feel when government advice changes based on new scientific evidence?” on age group and gender for each sample. The three responses provided in the multiple-choice options for the response, “I have less trust in the advice”, “My level of trust remains unchanged” and “I have more trust in the advice”, were enumerated as -1, 0, 1, respectively. Chi-squared tests for the overall significance of age and gender are also presented. *p* – values < 0.01 are considered statistically significant.

Sample	Response	Variable	Interpretation	Estimate	Standard Error	p-value	Chi-squared test	
							χ^2	p-value
Online panel	Feeling regarding government changing advice based on new scientific evidence	Intercept	Baseline*	0.43	0.09	<0.001		
		Age (years)	26 – 35	-0.06	0.11	0.560	2.91 (df=5)	0.304
			36 – 45	-0.12	0.11	0.255		
			46 – 55	-0.24	0.11	0.033		
			56 – 65	-0.16	0.10	0.126		
			66+	-0.21	0.14	0.137		
		Gender	Male	0.01	0.06	0.898	0.50 (df=3)	0.790
			Non-binary	-0.37	0.70	0.599		
			Prefer not to say	0.35	0.40	0.386		
Social media	Feeling regarding government changing advice based on new scientific evidence	Intercept	Baseline*	0.60	0.34	0.075		
		Age (years)	26 – 35	0.08	0.39	0.839	1.39 (df=5)	0.669
			36 – 45	-0.18	0.36	0.611		
			46 – 55	0.02	0.34	0.957		
			56 – 65	-0.07	0.34	0.834		
			66+	-0.20	0.36	0.576		
		Gender	Male	-0.14	0.09	0.147	2.75 (df=2)	0.045
			Prefer not to say	-0.87	0.39	0.028		

*Baseline comprised of “Female” and “18 – 25” years.

Supplementary Table 21: Coefficient estimates, standard errors and p-values for the generalised linear model regressing responses to the question “How do you feel when government advice changes based on new scientific evidence?” on age group and gender for each sample. The three responses provided in the multiple-choice options for the response, “I have less trust in the advice”, “My level of trust remains unchanged” and “I have more trust in the advice”, were enumerated as -1, 0, 1, respectively. Responses to the explanatory variable regarding awareness, “Yes”, “Unsure” and “No”, were enumerated as 1, 0, -1, respectively. Chi-squared tests for the overall significance of explanatory are also presented. *p* – values < 0.01 are considered statistically significant.

Sample	Response	Variable	Interpretation	Estimate	Standard Error	p-value	Chi-squared test	
							χ^2	p-value
Online panel	Feeling regarding government changing advice based on new scientific evidence	Intercept	Baseline*	0.41	0.09	<0.001		
		Age (years)	26 – 35	-0.08	0.11	0.470	2.55 (df=5)	0.372
			36 – 45	-0.14	0.11	0.208		
			46 – 55	-0.26	0.11	0.020		
			56 – 65	-0.16	0.10	0.118		
			66+	-0.18	0.14	0.202		
		Gender	Male	0.01	0.06	0.932	0.52 (df=3)	0.776
			Non-binary	-0.36	0.70	0.604		
			Prefer not to say	0.34	0.40	0.403		
		Awareness	Transmission modelling used in policy prior to the pandemic	0.05	0.04	0.187	1.85 (df=1)	0.049
			Transmission modelling used in policy during the pandemic	0.08	0.04	0.061	1.68 (df=1)	0.060
Social media	Feeling regarding government changing advice based on new scientific evidence	Intercept	Baseline*	0.57	0.39	0.142		
		Age (years)	26 – 35	0.08	0.39	0.840	1.20 (df=5)	0.734
			36 – 45	-0.12	0.36	0.747		
			46 – 55	0.03	0.34	0.929		
			56 – 65	-0.06	0.34	0.853		
			66+	-0.19	0.35	0.593		
		Gender	Male	-0.13	0.10	0.173	2.53 (df=2)	0.056
			Prefer not to say	-0.89	0.39	0.025		
		Awareness	Transmission modelling used in policy prior to the pandemic	0.04	0.06	0.534	0.18 (df=1)	0.515
			Transmission modelling used in policy during the pandemic	0.01	0.20	0.945	0.00 (df=1)	0.945

*Baseline comprised of “Female” and “18 – 25” years.

Supplementary Table 22: Coefficient estimates, standard errors and p-values for the generalised linear model regressing responses to the question “How do you feel when government advice changes based on new scientific evidence?” on age group and gender for each sample. The three responses provided in the multiple-choice options for the response, “I have less trust in the advice”, “My level of trust remains unchanged” and “I have more trust in the advice”, were enumerated as -1, 0, 1, respectively. Responses to the explanatory variable regarding government trust, “High level of trust”, “Moderate level of trust” and “No trust whatsoever”, were enumerated as 1, 0, -1, respectively. Chi-squared tests for the overall significance of age and gender are also presented. *p* – values < 0.01 are considered statistically significant.

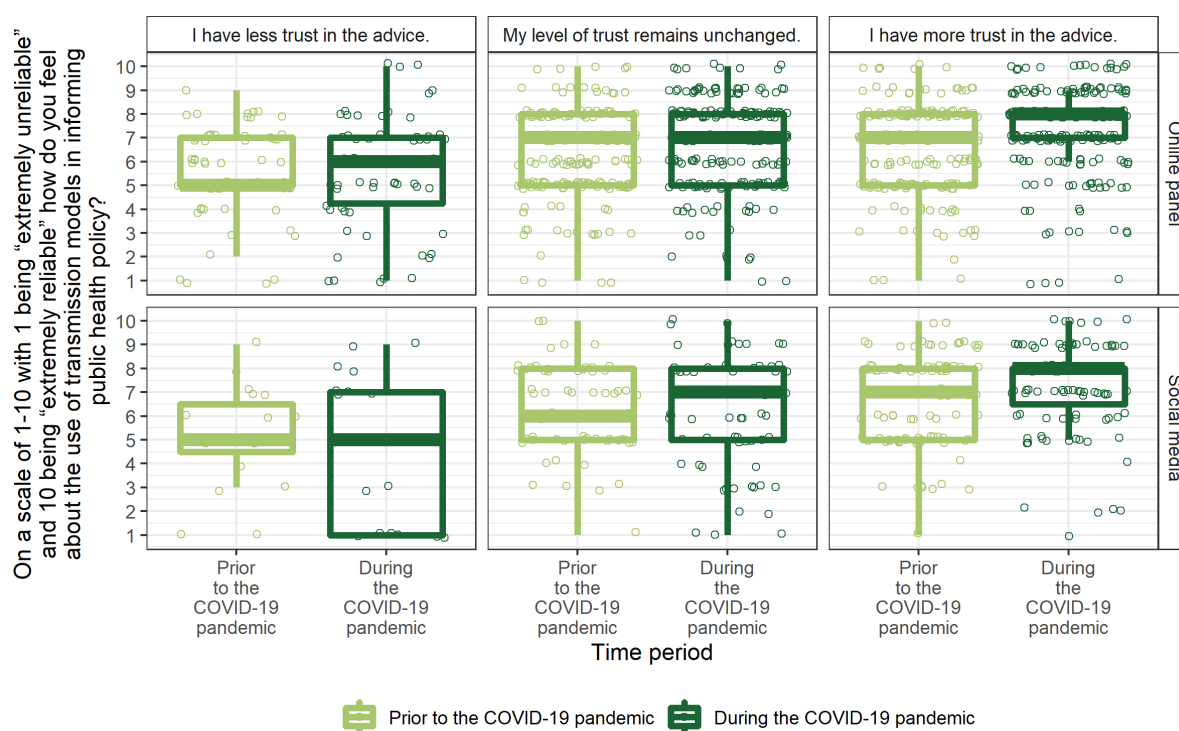
Sample	Response	Variable	Interpretation	Estimate	Standard Error	p-value	Chi-squared test	
							χ^2	p-value
Online panel	Feeling regarding government changing advice based on new scientific evidence	Intercept	Baseline*	0.44	0.09	<0.001		
		Age (years)	26 – 35	-0.05	0.11	0.624	2.74 (df=5)	0.323
			36 – 45	-0.13	0.11	0.237		
			46 – 55	-0.23	0.11	0.036		
			56 – 65	-0.16	0.10	0.116		
			66+	-0.21	0.14	0.121		
		Gender	Male	-0.01	0.06	0.889	0.50 (df=3)	0.788
			Non-binary	-0.27	0.70	0.702		
			Prefer not to say	0.37	0.40	0.362		
		Government trust	Trust in advice prior to the pandemic	0.05	0.06	0.446	1.70 (df=1)	0.059
			Trust in advice during the pandemic	0.12	0.05	0.024	2.42 (df=1)	0.024
Social media	Feeling regarding government changing advice based on new scientific evidence	Intercept	Baseline*	0.65	0.34	0.057		
		Age (years)	26 – 35	0.06	0.39	0.877	1.39 (df=5)	0.662
			36 – 45	-0.18	0.36	0.620		
			46 – 55	-0.01	0.34	0.984		
			56 – 65	-0.12	0.34	0.723		
			66+	-0.20	0.35	0.574		
		Gender	Male	-0.14	0.09	0.152	2.75 (df=2)	0.043
			Prefer not to say	-0.76	0.40	0.057		
		Government trust	Trust in advice prior to the pandemic	0.08	0.08	0.340	0.99 (df=1)	0.131
			Trust in advice during the pandemic	0.13	0.08	0.108	1.12 (df=1)	0.108

*Baseline comprised of “Female” and “18 – 25” years.

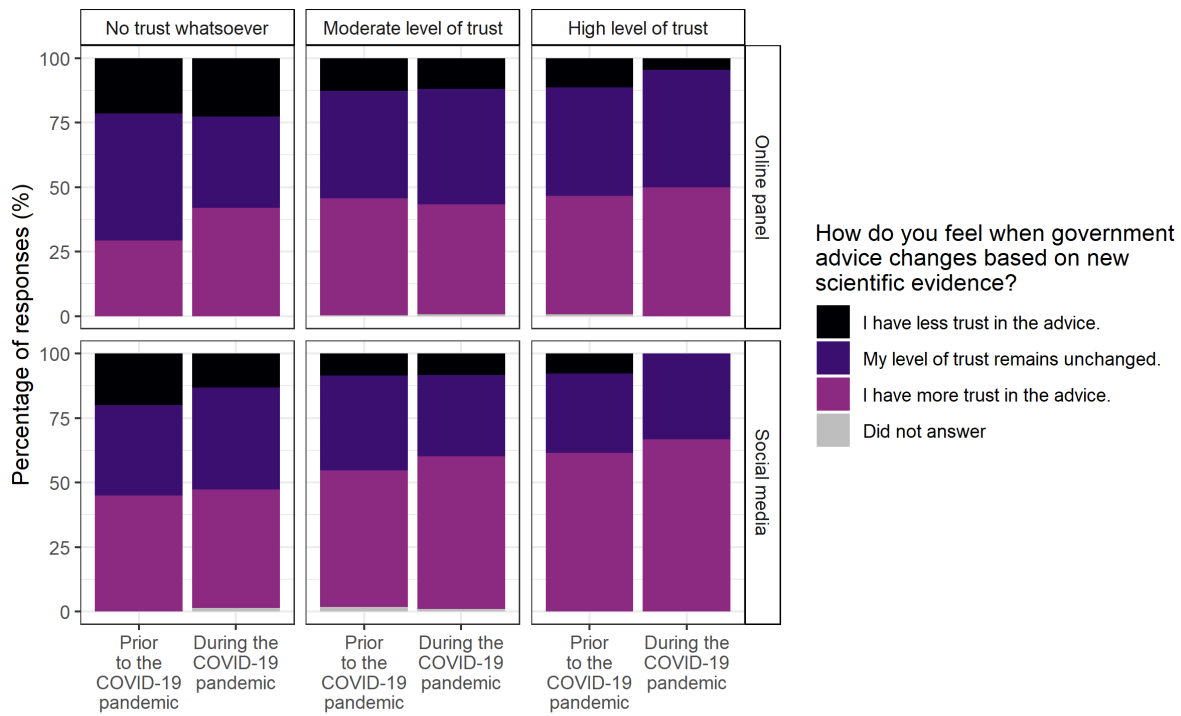
Trust in changing advice and awareness

Supplementary Figure 14 presents reliability scores for both samples and in reference to both time periods stratified by responses to the question “How do you feel when government advice changes based on new scientific evidence?”.

Supplementary Figure 15 presents the results of the question “How do you feel when government advice changes based on new scientific evidence?” stratified by response to the question “How much did you trust government advice regarding public health issues?” both “Prior to” and “During” the COVID-19 pandemic and under both samples. Supplementary Table 23 presents the data underlying this figure.



Supplementary Figure 14: Responses to the question “On a scale of 1 – 10 with 1 being “extremely unreliable” and 10 being “extremely reliable” how do you feel about the use of transmission modelling in informing public health policy?” both “Prior to” and “During” the COVID-19 pandemic, for both the online panel and social media samples, stratified by responses to the question “How much do you feel when government advice changes based on new scientific evidence?”. From bottom to top, the solid lines on the boxplot indicate: 1.5 times the interquartile range (IQR) less than the first quartile, first quartile, median, third quartile and 1.5 times the IQR greater than the third quartile. The dashed line corresponds to the mean. All responses are shown by the points, and so outliers, defined as any point outside the lower and upper bounds described, have been removed from the boxplots as they are shown in the presentation of the data. Points represent each reliability score and have been jittered to aid visual presentation.



Supplementary Figure 15: Responses to the question “How do you feel when government advice changes based on new scientific evidence?” for both the online panel and social media samples, stratified by answers to the question “How much did you trust government advice regarding public health policy?” in reference to time periods “Prior to” and “During” the COVID-19 pandemic. Underlying data are presented in Supplementary Table 23.

Supplementary Table 23: The percentage of observations from both the online panel and social media samples in reference to time period and according to answers to the question “How do you feel when government advice changes based on new scientific evidence?”, stratified by responses to the question “Were you aware of the use of transmission models in informing public health policy?” both “Prior to” and “During” the COVID-19 pandemic.

Platform	Time	How much did you trust government advice regarding public health policy?	How do you feel when government advice changes based on new scientific evidence?			
			I have more trust in the advice.	My level of trust remains unchanged.	I have less trust in the advice.	Did not answer
Online panel	Prior to the COVID-19 pandemic	High level of trust	60 (46%)	55 (42%)	15 (11%)	1 (1%)
		Moderate level of trust	146 (45%)	134 (42%)	41 (13%)	1 (0%)
		No trust whatsoever	15 (29%)	25 (49%)	11 (22%)	0 (0%)
	During the COVID-19 pandemic	High level of trust	44 (50%)	40 (45%)	4 (5%)	0 (0%)
		Moderate level of trust	124 (43%)	130 (45%)	35 (12%)	2 (1%)
		No trust whatsoever	52 (42%)	44 (35%)	28 (23%)	0 (0%)
Social media	Prior to the COVID-19 pandemic	High level of trust	40 (62%)	20 (31%)	5 (8%)	0 (0%)
		Moderate level of trust	62 (53%)	43 (37%)	10 (9%)	2 (2%)
		No trust whatsoever	9 (45%)	7 (35%)	4 (20%)	0 (0%)
	During the COVID-19 pandemic	High level of trust	12 (67%)	6 (33%)	0 (0%)	0 (0%)
		Moderate level of trust	64 (59%)	34 (31%)	9 (8%)	1 (1%)
		No trust whatsoever	35 (46%)	30 (39%)	10 (13%)	1 (1%)

Where do those who develop transmission models work?

Supplementary Figure 16 presents responses to the question “Where do you think those who developed and used transmission models work?” both “Prior to” and “During” the COVID-19 pandemic for both samples. The underlying data and with Wilcoxon signed rank tests for significant differences across time periods are presented in Supplementary Table 24. For each category, data were enumerated to a binary scale with 1 indicating that this category was referred to and 0 indicating that it was not. Supplementary Table 25 presents the results of chi-squared tests for differences in the proportion of individual selecting each option across samples.

Many respondents from the online panel stated that they considered those who developed transmission models worked either within unspecified research institutions (35%) or within academia specifically (33%) prior to the COVID-19 pandemic. “Research”-related answers remained the most common responses in the period of the pandemic within this sample. Approximately the same percentage of online panel respondents referred to “Academia” specifically (36%; $p - value = 0.027$; Supplementary Table 24) and to research within unspecified institutions (30%; $p - value = 0.021$; Supplementary Table 24). The number of respondents who believed that modellers worked within “Government” during the pandemic rose significantly (29% during up from 18% prior; Supplementary Table 24), as did “Healthcare services” (14% during up from 8% prior; Supplementary Table 24). In particular, direct mention of the NHS doubled during (6%) compared to prior (3%) to the pandemic (Supplementary Table 24).

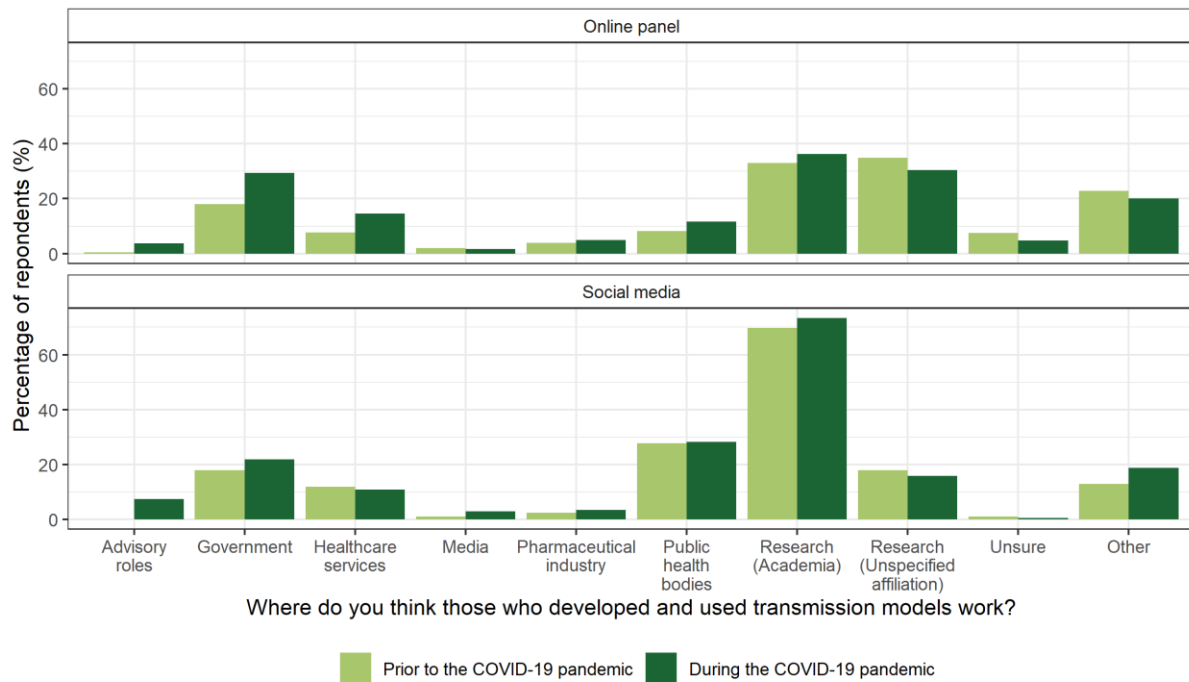
Within the social media sample, there were few categories with statistically significant differences in the percentage of respondents selecting them in reference to the two time periods (Supplementary Table 24). “Research (Academia)” was the most common response under both time periods (70% prior and 73% during; Supplementary Table 24). The second most common response was “Public health bodies” (28% in both time periods), which was similarly popular among this cohort as it was among online panel respondents in each time period. However, “Research (unspecified affiliations)” was a significantly less common response among social media respondents in both time periods compared to the online panel sample (Supplementary Table 25). “Healthcare services” was also a comparatively less popular choice among this cohort than online panel respondents among both time periods, as was explicit mention of the NHS in the period of the pandemic but not in the period prior (Supplementary Table 25).

In both samples, respondents referred to “Advisory roles” specifically in the period during the pandemic (4% online panel and 7% social media, respectively; Supplementary Table 25), but not at all in the period prior. Respondents from both samples were equally likely to report this option (Supplementary Table 25). Furthermore, “SAGE” was explicitly mentioned in the period of the pandemic, with approximately equal percentages of respondents selecting this option under both samples.

In reference to both period, social media respondents were equally likely as online panel respondents to record an answer related to “Government” (Supplementary Table 25). Although “Research (Academia)” was (borderline) significantly more common among both samples than “Government” in the period of the pandemic (Wilcoxon signed rank tests: online panel: $p - value = 0.016$; social media: $p - value < 0.001$), the magnitude of the differences was substantially different (online panel: 36% “Research (Academia)” vs. 29% “Government”; social media: 73% “Research (Academia)” vs. 22% “Government”).

The percentage of respondents answering “Pharmaceutical companies” was relatively small and remained constant across samples and in reference to both time periods. This was similar when considering “Media”. As observed with other questions, (borderline) significantly more respondents in

the online panel sample answered “Unsure” in reference to both time periods compared to the social sample (online panel: 8% prior and 5% during; social media: 1% prior and 0% during; Supplementary Figure 16; Supplementary Table 24).



Supplementary Figure 16: Responses to the question “Where do you think those who developed and used transmission models work?” either “Prior to” or “During” the COVID-19 pandemic for both the online panel and social media respondents.

Supplementary Table 24: Responses to the question “Where do you think those who developed and used transmission models work?” either “Prior to” or “During” the COVID-19 pandemic for both the online panel and social media samples. Percentages are taken with respect to the sample size of the platform (504 for the online panel and 202 for social media). As this question was open-ended, participants often provided more than one answer and so percentages do not represent mutually exclusive responses. Differences within samples are assessed with Wilcoxon signed rank tests. p – values < 0.01 are considered statistically significant.

		Number of respondents (n (%))		Wilcoxon signed rank test statistic	n	p – value
		Prior to the COVID-19 pandemic	During the COVID-19 pandemic			
Online panel	Advisory roles	2 (0%)	19 (4%)	22	504	<0.001
	[SAGE specifically]	[0 (0%)]	[11 (2%)]	0		[0.001]
	Government	91 (18%)	148 (29%)	1196		<0.001
	Healthcare services	40 (8%)	73 (14%)	313.5		<0.001
	[NHS specifically]	[13 (3%)]	[32 (6%)]	119		[0.001]
	Media	10 (2%)	8 (2%)	7.5		0.424
	Pharmaceutical industry	20 (4%)	25 (5%)	88		0.284
	Public health bodies	41 (8%)	59 (12%)	367.5		0.010
	Research (Academia)	166 (33%)	183 (36%)	630		0.027
	Research (Unspecified affiliation)	176 (35%)	153 (30%)	3050		0.021
	Unsure	38 (8%)	24 (5%)	304.5		0.008
	Other	115 (23%)	102 (20%)	2464.5		0.145
Social media	Advisory roles	0 (0%)	15 (7%)	0	202	<0.001
	[SAGE specifically]	[0 (0%)]	[6 (3%)]	0		[0.020]
	Government	38 (19%)	44 (22%)	405		0.230
	Healthcare services	24 (12%)	22 (11%)	138		0.683
	[NHS specifically]	[11 (5%)]	[10 (5%)]	25		[0.790]
	Media	2 (1%)	6 (3%)	0		0.072
	Pharmaceutical industry	5 (2%)	7 (3%)	22		0.565
	Public health bodies	56 (28%)	57 (28%)	380		0.879
	Research (Academia)	141 (70%)	148 (73%)	320		0.266
	Research (Unspecified affiliation)	36 (18%)	32 (16%)	126		0.383
	Unsure	2 (1%)	1 (0%)	1		1.000
	Other	26 (13%)	38 (19%)	399.5		0.078

Supplementary Table 25: Responses to the question “Where do you think those who developed and used transmission models work?” either “Prior to” or “During” the COVID-19 pandemic for both the online panel and social media samples. Percentages are taken with respect to the sample size of the platform (504 for the online panel and 202 for social media). As this question was open-ended, participants often provided more than one answer and so percentages do not represent mutually exclusive responses. Differences with reference to both time periods, are assessed with Chi-squared tests. p – values < 0.01 are considered statistically significant.

		Number of respondents (n (%))		χ^2	n	p – value
		Online panel	Social media			
Prior to the COVID-19 pandemic	Advisory roles	2 (0%)	0 (0%)	0.01	706	0.910
	[SAGE specifically]	[0 (0%)]	[0 (0%)]	[NA]		[NA]
	Government	91 (18%)	38 (19%)	0.02		0.899
	Healthcare services	40 (8%)	24 (12%)	2.26		0.132
	[NHS specifically]	[13 (3%)]	[11 (5%)]	[2.88]		[0.095]
	Media	10 (2%)	2 (1%)	0.36		0.548
	Pharmaceutical industry	20 (4%)	5 (2%)	0.55		0.456
	Public health bodies	41 (8%)	56 (28%)	45.05		<0.001
	Research (Academia)	166 (33%)	141 (70%)	78.25		<0.001
	Research (Unspecified affiliation)	176 (35%)	36 (18%)	19.26		<0.001
	Unsure	38 (8%)	2 (1%)	10.38		0.001
	Other	115 (23%)	26 (13%)	8.31		0.004
During the COVID-19 pandemic	Advisory roles	19 (4%)	15 (7%)	3.44		0.063
	[SAGE specifically]	[11 (2%)]	[6 (3%)]	[0.12]		[0.730]
	Government	148 (29%)	44 (22%)	3.81		0.051
	Healthcare services	73 (14%)	22 (11%)	1.31		0.253
	[NHS specifically]	[32 (6%)]	[10 (5%)]	[0.29]		[0.593]
	Media	8 (2%)	6 (3%)	0.80		0.372
	Pharmaceutical industry	25 (5%)	7 (3%)	0.44		0.507
	Public health bodies	59 (12%)	57 (28%)	27.44		<0.001
	Research (Academia)	183 (36%)	148 (73%)	77.62		<0.001
	Research (Unspecified affiliation)	153 (30%)	32 (16%)	14.97		<0.001
	Unsure	24 (5%)	1 (0%)	6.49		0.011
	Other	102 (20%)	38 (19%)	0.11		0.745

How would you describe a transmission model?

Descriptions of transmission models varied widely both within and across samples. Approximately 49% of the responses from online panel were deemed as relevant to the context of the research as defined in Methods in the main text, compared to 84% of social media respondents (Supplementary Figure 17; chi-squared test: $\chi^2 = 72.24$; $n = 706$; $p - value < 0.001$). In general, social media participants were more likely to use technical language such as “confidence interval” or to refer directly to mathematical model structures, such as “Susceptible, Infected, Recovered” than their online panel counterparts, highlighting potential differences in the experience and backgrounds of participants across samples. Nonetheless, the more relevant explanations of individuals were clear, regardless of sample, including:

“Theories that explain how diseases can be transmitted.” (online panel respondent)

and

“A mathematical model which replicates the true transmission of the virus in the real world.” (social media respondent).

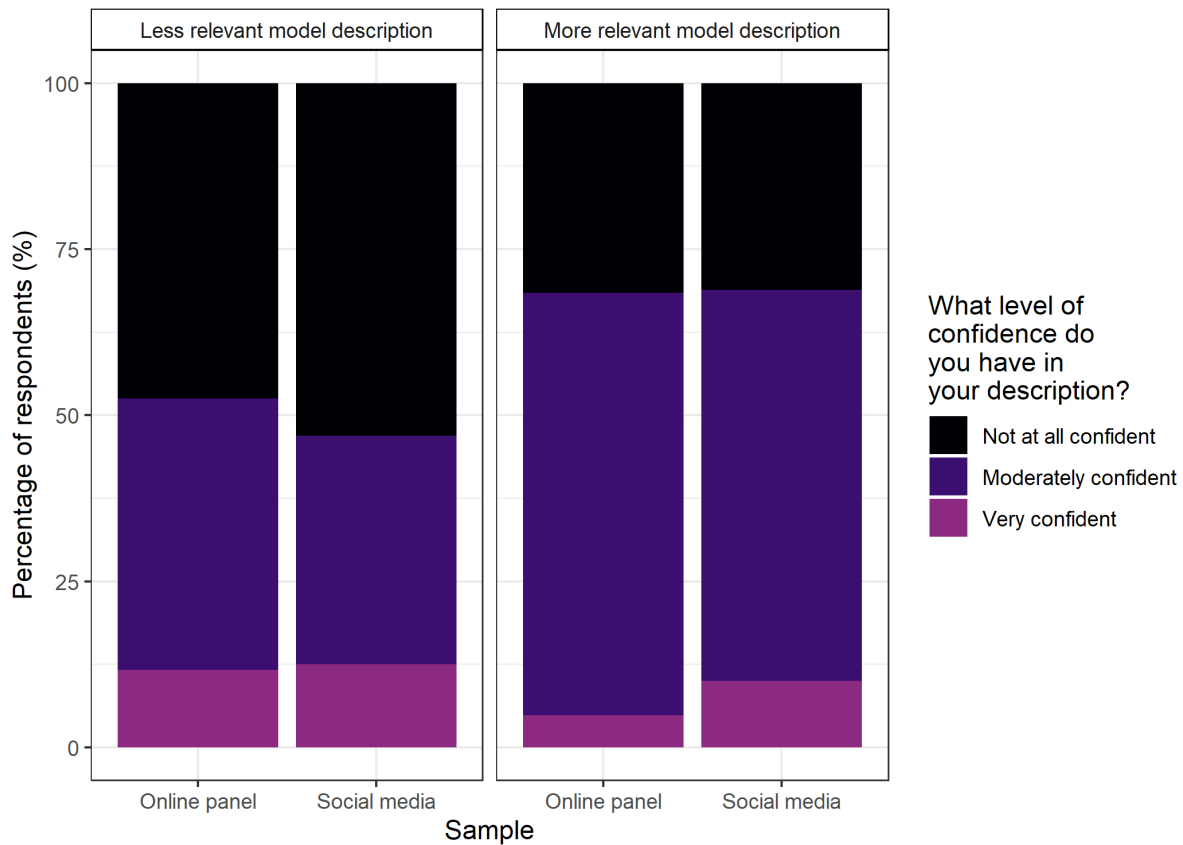
The latter also highlights common occurrence across responses: the use of the term “the virus”, or more generally, direct reference to COVID-19, despite this not being mentioned in the survey title or question. There were other interesting and common occurrences across both samples. For example, the “R number” was explicitly mentioned on multiple occasions, perhaps highlighting the continued use of this term at government COVID-19 press conferences and within the media more widely. Many participants also made use of the words akin to “graphic” in their model description, which could similarly be explained by considering that this was a common method of sharing the results of modelling with the public. The word “predict” or “prediction” was also commonly used by participants, which is particularly interesting given that experts have tried to emphasise the difference between scenario-based and predictive models.^{3,5}

Approximately 20% of responses from the online panel were related to communication, for example: “A means to communicate information to someone, people or system.”, compared to 3% of responses from social media. However, recall that social media respondents were likely to have accessed the survey directly from an account related to public health or mathematical modelling (Supplementary Table 1), and so the topic of the survey is likely to appear less “random” to this group, compared to the online panel respondents who saw this survey without any context. The other most common topics among online panel respondents included transmission modelling in the context of transmitting information (e.g., “A model whereby a message is sent from a source to a transmitter where they are then received and read.”) and the sharing of information (e.g., “A guide to on how to disseminate information.”). Social media respondents were as likely to give an “opinion” as an answer, such as “production of false statistics” or “guess work erring massively over-cautious”, as online panel respondents (3% and 1%, respectively; chi-squared test: $\chi^2 = 3.46$; $n = 706$; $p - value = 0.063$).

Most respondents from both samples selected being “moderately” or “very” confident in their model description (65% and 60%, respectively; chi-squared test: $\chi^2 = 1.34$; $n = 706$; $p - value = 0.247$), with “moderately confident” accounting for a majority of responses overall (Table 1). In both samples, being male was significantly associated with a higher level of confidence compared to being female, while within the online panel sample only the older age groups were associated with increased levels of confidence compared to the youngest age group (Supplementary Table 26).

A different and complex picture of confidence levels emerged when data were stratified by the relevance of the model description (Supplementary Figure 17). Although those with “more relevant” descriptions continued to primarily state being “Moderately confident” in their response, more respondents with less relevant model descriptions fell into one of the extremist categories of “Very”

or “Not at all” confident (Supplementary Table 27). Among the “very confident” respondents, social media respondents were significantly more likely to have written a “more relevant” response than their online panel counterparts (81% and 29%, respectively; chi-squared test: $\chi^2 = 13.43$; $n = 706$; $p - value < 0.001$).



Supplementary Figure 17: The percentage of respondents from online panel and social media samples according to relevance of and confidence in answer provided to the question “How would you describe a transmission model?”. Underlying data presented in Supplementary Table 27.

Supplementary Table 26: Coefficient estimates, standard errors and p-values for the linear regression models with gender and age group as predictors of level of confidence within each model for each sample. The three levels of confidence provided in the multiple-choice options, “Not at all confident”, “Moderately confident” and “Very confident”, were enumerated as -1, 0, 1, respectively. p – values < 0.01 are considered statistically significant.

Sample	Response	Variable	Interpretation	Estimate	Standard Error	p-value	Chi-squared test	
							χ^2	p-value
Online panel	What level of confidence do you have in your description?	Intercept	Baseline*	-0.68	0.08	<0.001		
		Age (years)	26 – 35	0.15	0.10	0.107	7.29 (df=5)	0.001
			36 – 45	0.37	0.09	<0.001		
			46 – 55	0.35	0.10	<0.001		
			56 – 65	0.28	0.09	0.002		
			66+	0.32	0.12	0.009		
		Gender	Male	0.23	0.05	<0.001	6.92 (df=3)	<0.001
			Non-binary	0.52	0.60	0.389		
			Prefer not to say	0.41	0.35	0.245		
Social media	What level of confidence do you have in your description?	Intercept	Baseline*	-0.24	0.31	0.445		
		Age (years)	26 – 35	0.25	0.36	0.492	2.58 (df=5)	0.225
			36 – 45	-0.20	0.33	0.536		
			46 – 55	-0.14	0.31	0.656		
			56 – 65	-0.19	0.31	0.534		
			66+	-0.24	0.33	0.459		
		Gender	Male	0.32	0.09	<0.001	5.10 (df=2)	0.001
			Prefer not to say	0.43	0.36	0.232		

*Baseline comprised of “Female” and “18 – 25” years.

Supplementary Table 27: Number and percentage of respondents under each of the three confidence levels depending on the relevance of their description and their sample. Percentages calculated with respect to each column.

What level of confidence do you have in your description?	Description less relevant		Description more relevant	
	Online panel respondents	Social media respondents	Online panel respondents	Social media respondents
Not at all confident	122 (48%)	17 (53%)	78 (32%)	53 (31%)
Moderately confident	105 (41%)	11 (34%)	157 (64%)	100 (59%)
Very confident	30 (12%)	4 (13%)	12 (5%)	17 (10%)
Total	257 (51%)	32 (16%)	247 (49%)	170 (84%)