CoMix social contact survey: Report for Spain rounds 1 to 9

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Survey dates: 21 December 2020 to 12 May 2021

Introduction & Methods

CoMix is a behavioural survey, first launched on 24 March 2020 in the UK, and launched in Spain on 21 December 2020. The sample is broadly representative of the adult population in Spain. Participants are invited to respond to the survey approximately once every two weeks. This report presents the results from 7 waves of adult data (Wave A1 to Wave A7) and two waves of children data (Wave C1 and Wave C2). In Wave C1 and Wave C2, parents completed the survey on behalf of a child in their household (aged 17 years or less). Participants record direct, face-to-face contacts made on the previous day, specifying certain characteristics for each contact including the age and sex of the contact, whether contact was physical (skin-to-skin contact), and where contact occurred (e.g. at home, work, while undertaking leisure activities, etc). Participants are instructed to report contacts individually, but are also given the opportunity to report aggregated estimates of the contacts made by age group and setting, in case they did not list all contacts individually. Further details have been published elsewhere[1,2]. The contact survey is based on the POLYMOD contact survey[3].

We calculated and plotted the crude mean number of contacts by setting, duration, and participant to contact age groups. We used the settings home, work and school (including all educational establishments, including childcare, nurseries and universities and colleges), and "other" (mostly leisure and social contacts, but includes shopping), and report . We look at the mean contacts by age and survey wave. The mean number of contacts is influenced by a few individuals who report very high numbers of contacts (often in a work context). We show means for all contacts and means number of contacts after truncating the maximum number of contacts recorded at 50 per individual per day.

We calculated the mean contacts for the contact matrices by using the socialmixr R package [4], with 1000 bootstrapped samples. We used the World Population Prospect data from 2015 for country specific population estimates by age and gender, which is the latest available data in the socialmixr package. We constructed age-stratified contact matrices for nine age-groups (0-4, 5-11, 12-17, 18-29, 30-39, 40-49, 50-59, 60-69, and 70+). For contacts, we do not have exact ages and therefore sampled from the reported age-group.

To complete the symmetric contact matrices that capture contacts by both adults and children, we combined each wave of the adult data with
- children who attended school,
- children who did not attend school,
- Wave C1, and
- Wave C2.

The first two scenarios capture contacts that are specific to school attendence status. The result should be interpreted with caution when the number for children who went to school were very low. The latter two scenarios are specific to the data collection periods of Wave C1 and Wave C2.

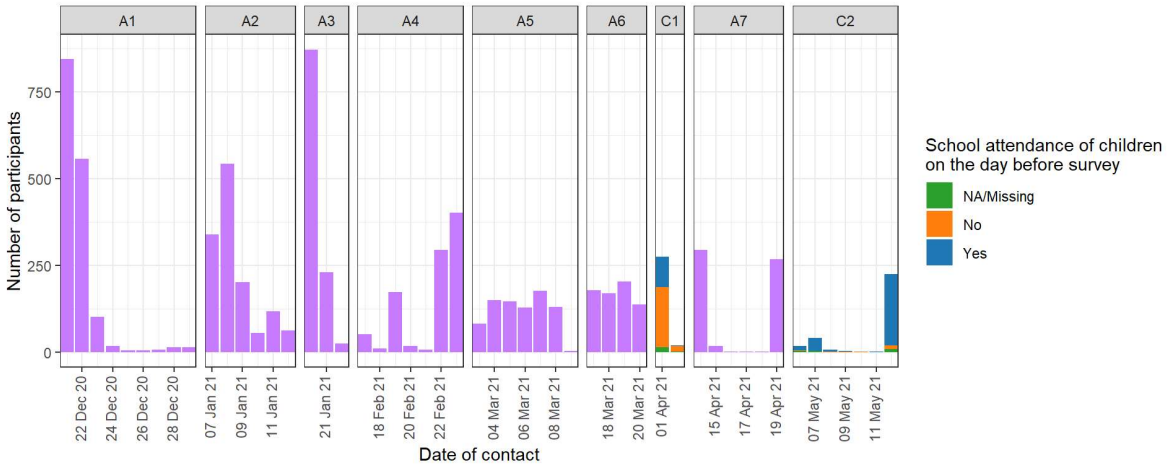
Timeline

The CoMix survey in Spain has had 7 waves of data collection covering the period between 21 December 2020 and 12 May 2021from adults. Figure 1 shows survey response by date

Wave	A1	A2	A3	A4	A5	A6	C1	A7	C2
Start date	21 Dec 2020	07 Jan 2021	20 Jan 2021	17 Feb 2021	03 Mar 2021	17 Mar 2021	01 Apr 2021	14 Apr 2021	06 May 2021
End date	29 Dec 2020	12 Jan 2021	22 Jan 2021	23 Feb 2021	09 Mar 2021	20 Mar 2021	02 Apr 2021	19 Apr 2021	12 May 2021
Participants	1569	1319	1126	956	815	688	294	586	297
Contacts	5314	4701	3393	2662	2661	2408	1822	1468	2915

Table 1. Survey wave summary. Survey wave start and end dates, number of participants, and number of contacts.

Figure 1: Survey responses by date.



Participant demographics

Category	Group	Wave A1	Wave A2	Wave A3	Wave A4	Wave A5	Wave A6	Wave A7	Wave C1	Wave C2
All		1569	1319	1126	956	815	688	586	294	297
Age	0-4	NA	NA	NA	NA	NA	NA	NA	58 (19.7%)	54 (18.2%)
	5-17	NA	NA	NA	NA	NA	NA	NA	236 (80.3%)	240 (80.8%)
	18-29	238 (15.2%)	197 (14.9%)	138 (12.3%)	136 (14.2%)	90 (11.0%)	124 (18.0%)	107 (18.3%)	NA	NA
	30-39	260 (16.6%)	209 (15.8%)	183 (16.3%)	162 (16.9%)	110 (13.5%)	167 (24.3%)	107 (18.3%)	NA	NA
	40-49	328 (20.9%)	275 (20.8%)	232 (20.6%)	219 (22.9%)	185 (22.7%)	210 (30.5%)	135 (23.0%)	NA	NA
	50-59	271 (17.3%)	220 (16.7%)	190 (16.9%)	189 (19.8%)	154 (18.9%)	127 (18.5%)	101 (17.2%)	NA	NA
	60+	472 (30.1%)	418 (31.7%)	383 (34.0%)	250 (26.2%)	276 (33.9%)	60 (8.7%)	136 (23.2%)	NA	NA
	NA/Other/Missing	NA	NA	NA	NA	NA	NA	NA	NA	3 (1.0%)
Gender	Female	760 (48.4%)	635 (48.1%)	559 (49.6%)	466 (48.7%)	428 (52.5%)	361 (52.5%)	287 (49.0%)	205 (69.7%)	193 (65.0%)

Category	Group	Wave A1	Wave A2	Wave A3	Wave A4	Wave A5	Wave A6	Wave A7	Wave C1	Wave C2
	Male	805 (51.3%)	683 (51.8%)	565 (50.2%)	488 (51.0%)	385 (47.2%)	327 (47.5%)	299 (51.0%)	89 (30.3%)	104 (35.0%)
	NA/Other/Missing	4 (0.3%)	1 (0.1%)	2 (0.2%)	2 (0.2%)	2 (0.2%)	NA	NA	NA	NA
Household size	1	164 (10.5%)	147 (11.1%)	130 (11.5%)	111 (11.6%)	100 (12.3%)	61 (8.9%)	60 (10.2%)	NA	NA
	2	521 (33.2%)	458 (34.7%)	416 (36.9%)	323 (33.8%)	295 (36.2%)	198 (28.8%)	195 (33.3%)	10 (3.4%)	6 (2.0%)
	3-5	846 (53.9%)	689 (52.2%)	558 (49.6%)	502 (52.5%)	406 (49.8%)	413 (60.0%)	322 (54.9%)	278 (94.6%)	287 (96.6%)
	6+	38 (2.4%)	25 (1.9%)	22 (2.0%)	20 (2.1%)	14 (1.7%)	16 (2.3%)	9 (1.5%)	6 (2.0%)	4 (1.3%)

Table 2. Participant demographics by wave for age, gender, and household size.

Children sample school attendance

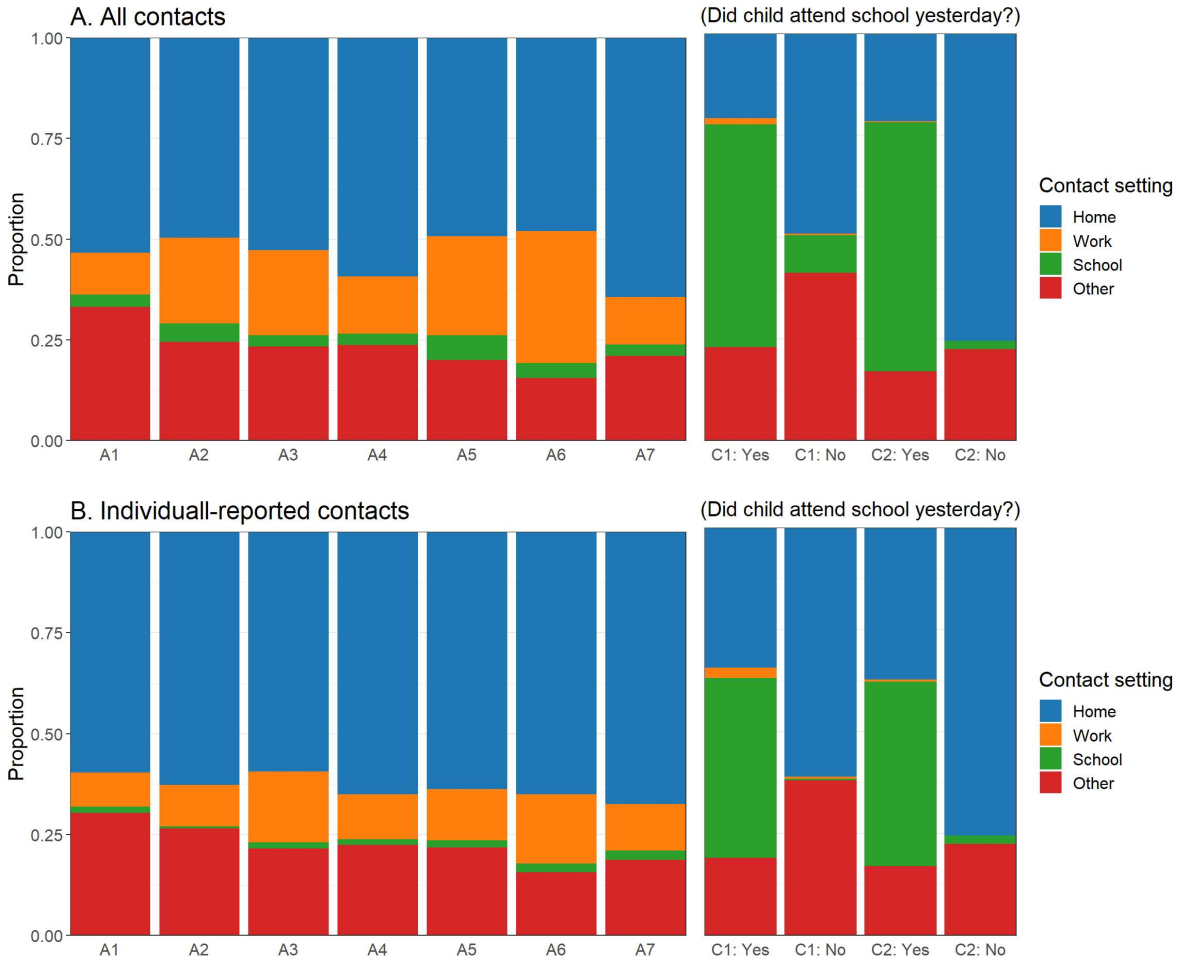
	Wave C1, by age			Wave C2, by age		
School attendance	**(0-17y)**	**(0-4y)**	**(5-17y)**	**(0-17y)**	**(0-4y)**	**(5-17y)**
NA/Missing	**15 (5.1%)**	**13 (22.4%)**	**2 (0.8%)**	**16 (5.4%)**	**10 (18.5%)**	**6 (2.5%)**
No	**190 (64.6%)**	**31 (53.4%)**	**159 (67.4%)**	**18 (6.1%)**	**4 (7.4%)**	**14 (5.8%)**
No, but it was open for my child	13 (4.4%)	4 (6.9%)	9 (3.8%)	11 (3.7%)	1 (1.9%)	10 (4.2%)
No, it was a weekend/holiday/day off	151 (51.4%)	24 (41.4%)	127 (53.8%)	3 (1.0%)	1 (1.9%)	2 (0.8%)
No, it was closed	26 (8.8%)	3 (5.2%)	23 (9.7%)	3 (1.0%)	1 (1.9%)	2 (0.8%)
Yes	**89 (30.3%)**	**14 (24.1%)**	**75 (31.8%)**	**261 (88.8%)**	**41 (75.9%)**	**220 (91.7%)**

Table 3. School attendance of children on the day before survey by age

Contact characteristics

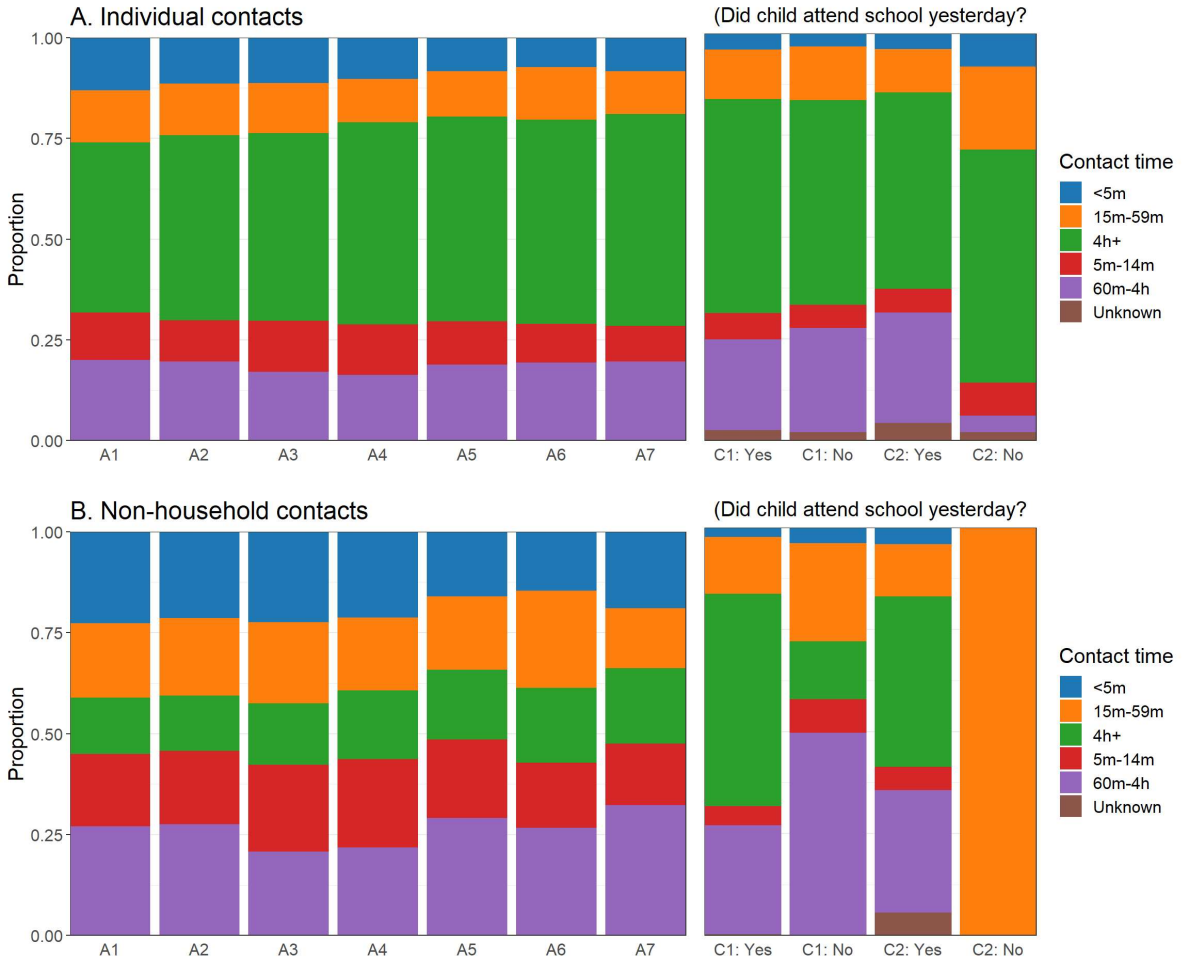
Contact setting

Figure 2. Proportion of contacts by setting and wave.
A. All contacts (both individually-reported and reported in aggregated contact questions);
B. individually-reported contacts only.



Contact duration

Figure 3. Proportion of contacts by duration of contact and wave.
A. All individually-reported contacts;
B. individually-reported contacts, excluding the participant's household members.

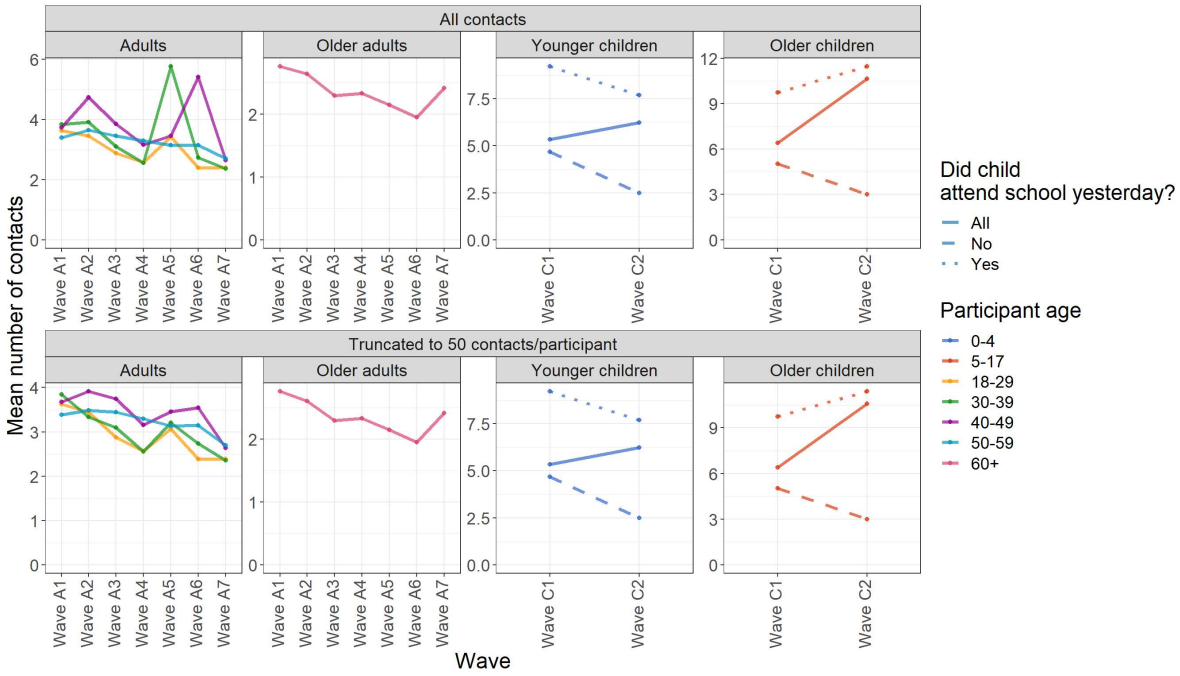


									Did child attend school yesterday?			
Category	**Group**	**Wave A1**	**Wave A2**	**Wave A3**	**Wave A4**	**Wave A5**	**Wave A6**	**Wave A7**	**Wave C1: Yes**	**Wave C1: No**	**Wave C2: Yes**	**Wave C2: No**
Contact setting	Home	2835 (53.3%)	2332 (49.6%)	1791 (52.8%)	1579 (59.3%)	1312 (49.3%)	1155 (48.0%)	946 (64.4%)	175 (20.8%)	459 (49.1%)	607 (21.5%)	37 (75.5%)
	Other	1765 (33.2%)	1149 (24.4%)	794 (23.4%)	632 (23.7%)	534 (20.1%)	375 (15.6%)	308 (21.0%)	193 (23.0%)	385 (41.2%)	481 (17.0%)	11 (22.4%)
	School	162 (3.0%)	221 (4.7%)	94 (2.8%)	74 (2.8%)	161 (6.1%)	88 (3.7%)	42 (2.9%)	459 (54.6%)	86 (9.2%)	1726 (61.1%)	1 (2.0%)
	Work	552 (10.4%)	999 (21.3%)	714 (21.0%)	377 (14.2%)	654 (24.6%)	790 (32.8%)	172 (11.7%)	13 (1.5%)	4 (0.4%)	9 (0.3%)	NA
Contact time	<5m	621 (13.1%)	427 (11.5%)	339 (11.2%)	248 (10.2%)	172 (8.4%)	131 (7.4%)	118 (8.4%)	20 (3.9%)	24 (3.2%)	63 (3.9%)	4 (8.2%)
	15m-59m	619 (13.0%)	475 (12.8%)	378 (12.5%)	264 (10.9%)	231 (11.2%)	232 (13.0%)	148 (10.5%)	62 (12.2%)	99 (13.2%)	172 (10.5%)	10 (20.4%)
	4h+	2004 (42.1%)	1708 (45.9%)	1403 (46.5%)	1216 (50.1%)	1047 (50.9%)	899 (50.6%)	737 (52.5%)	268 (52.5%)	378 (50.3%)	787 (48.3%)	28 (57.1%)
	5m-14m	559 (11.8%)	383 (10.3%)	383 (12.7%)	304 (12.5%)	219 (10.6%)	172 (9.7%)	124 (8.8%)	33 (6.5%)	43 (5.7%)	96 (5.9%)	4 (8.2%)
	60m-4h	954 (20.1%)	728 (19.6%)	515 (17.1%)	397 (16.3%)	389 (18.9%)	344 (19.3%)	276 (19.7%)	114 (22.4%)	192 (25.5%)	442 (27.1%)	2 (4.1%)

Table 4. Contacts by setting and duration of contact and wave. Number and percentage of contacts by category for all contacts (individually-reported and reported in aggregated contact questions).

Contact means

Figure 4. Crude mean contacts by participant age group and wave. Reported by all contacts and contacts truncated to 50 per participant per day.



									Did child attend school yester				
Contacts	**Participant age**	**Wave A1**	**Wave A2**	**Wave A3**	**Wave A4**	**Wave A5**	**Wave A6**	**Wave A7**	**Wave C1: All**	**Wave C1: Yes**	**Wave C1: No**	**Wave C2: All**	**Wa C Y**
All contacts	All	3.39	3.56	3.01	2.78	3.27	3.50	2.51	6.20	9.66	4.97	9.81	10.
	0-4	NA	NA	NA	NA	NA	NA	NA	5.34	9.21	4.67	6.24	7.
	5-17	NA	NA	NA	NA	NA	NA	NA	6.41	9.74	5.03	10.65	11.
	18-29	3.63	3.45	2.88	2.57	3.42	2.39	2.39	NA	NA	NA	NA	N
	30-39	3.84	3.91	3.10	2.56	5.76	2.74	2.36	NA	NA	NA	NA	N
	40-49	3.74	4.73	3.85	3.16	3.46	5.42	2.64	NA	NA	NA	NA	N
	50-59	3.39	3.65	3.45	3.30	3.14	3.15	2.70	NA	NA	NA	NA	N
	60+	2.76	2.64	2.30	2.33	2.15	1.95	2.42	NA	NA	NA	NA	N
Truncated to 50 contacts/participant	All	3.37	3.27	2.99	2.78	2.88	2.93	2.51	6.19	9.66	4.96	9.75	10.
	0-4	NA	NA	NA	NA	NA	NA	NA	5.34	9.21	4.67	6.24	7.
	5-17	NA	NA	NA	NA	NA	NA	NA	6.40	9.74	5.02	10.57	11.
	18-29	3.63	3.45	2.88	2.57	3.07	2.39	2.39	NA	NA	NA	NA	N
	30-39	3.84	3.34	3.10	2.56	3.21	2.74	2.36	NA	NA	NA	NA	N

									Did child attend school yester				
Contacts	Participant age	Wave A1	Wave A2	Wave A3	Wave A4	Wave A5	Wave A6	Wave A7	Wave C1: All	Wave C1: Yes	Wave C1: No	Wave C2: All	Wa C Y
	40-49	3.68	3.91	3.74	3.16	3.46	3.55	2.64	NA	NA	NA	NA	N
	50-59	3.39	3.49	3.45	3.30	3.14	3.15	2.70	NA	NA	NA	NA	N
	60+	2.76	2.61	2.30	2.33	2.15	1.95	2.42	NA	NA	NA	NA	N

Table 5. Crude mean contacts by participant age group for each wave. Children data is disaggregated by school attendance status.

Contact Matrices

All contacts

Figure 5. Contact matrices by wave. Contacts truncated to 50 per participant per day, adjusted for day of week.

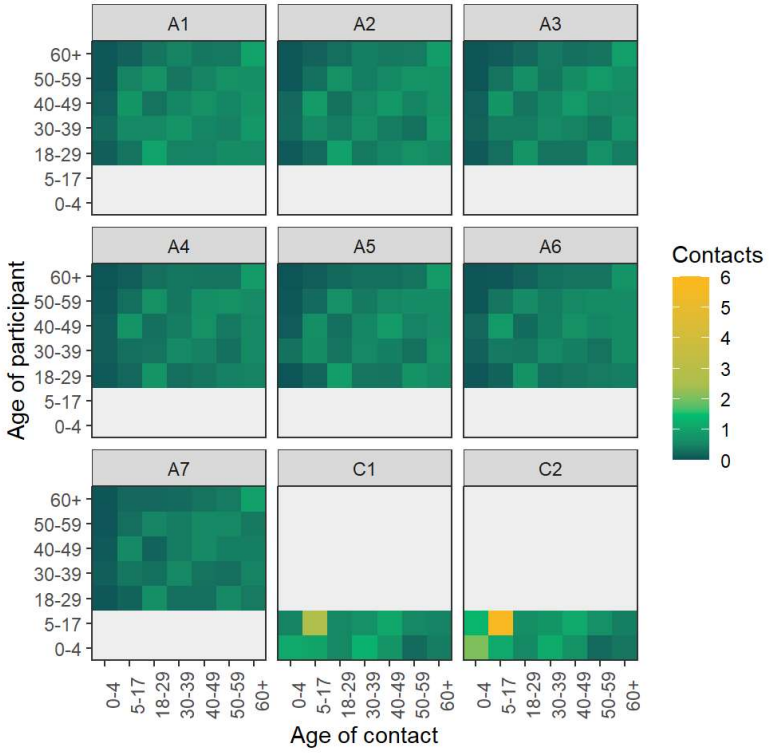
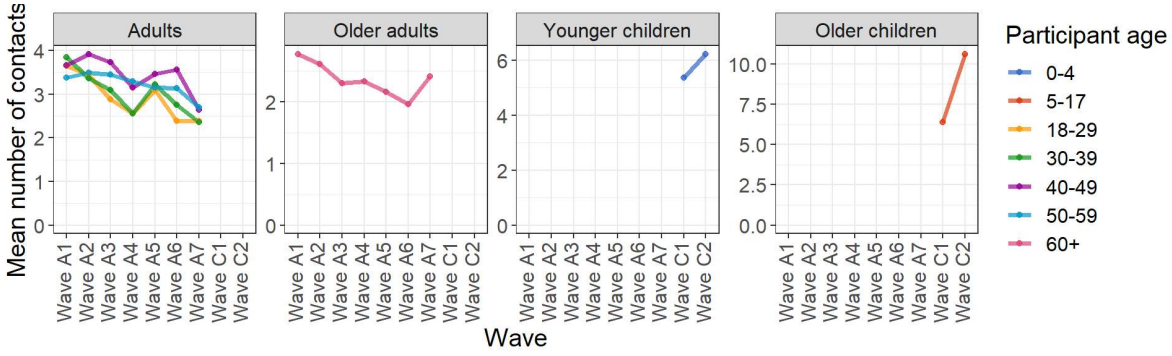


Figure 6. Adjusted contact means by participant age group. Contacts truncated to 50 per participant per day, adjusted for day of week.



Participant age	Wave A1	Wave A2	Wave A3	Wave A4	Wave A5	Wave A6	Wave A7	Wave C1	Wave C2
0-4	NA	NA	NA	NA	NA	NA	NA	5.36	6.21
5-17	NA	NA	NA	NA	NA	NA	NA	6.40	10.59
18-29	3.65	3.44	2.88	2.56	3.10	2.38	2.39	NA	NA
30-39	3.85	3.36	3.10	2.56	3.23	2.75	2.37	NA	NA
40-49	3.67	3.91	3.73	3.16	3.46	3.56	2.64	NA	NA
50-59	3.38	3.50	3.45	3.29	3.16	3.14	2.69	NA	NA
60+	2.76	2.60	2.30	2.32	2.16	1.96	2.41	NA	NA

Table 6. Adjusted contact means by participant age group. Contacts truncated to 50 per participant per day, adjusted for day of week.

Combined contacts

Figure 7. Symmetric combined matrices by wave. Adult survey waves each combined with
A. children who attended school,
B. children who did not attend school to provide an estimate of overall contacts,
C. Wave C1 (Wave C1 data collected between 01 April 2021 and 02 April 2021), and
D. Wave C2 (Wave C2 data collected between 06 May 2021 and 12 May 2021).
Sub-plots A and B are specific to the different contexts of school attendance, and sub-plots C and D are specific to the data collection periods of Wave C1 and Wave C2, respectively.
Contacts truncated to 50 per participant per day, adjusted for day of week and country population by age using the World Population Prospect population data.

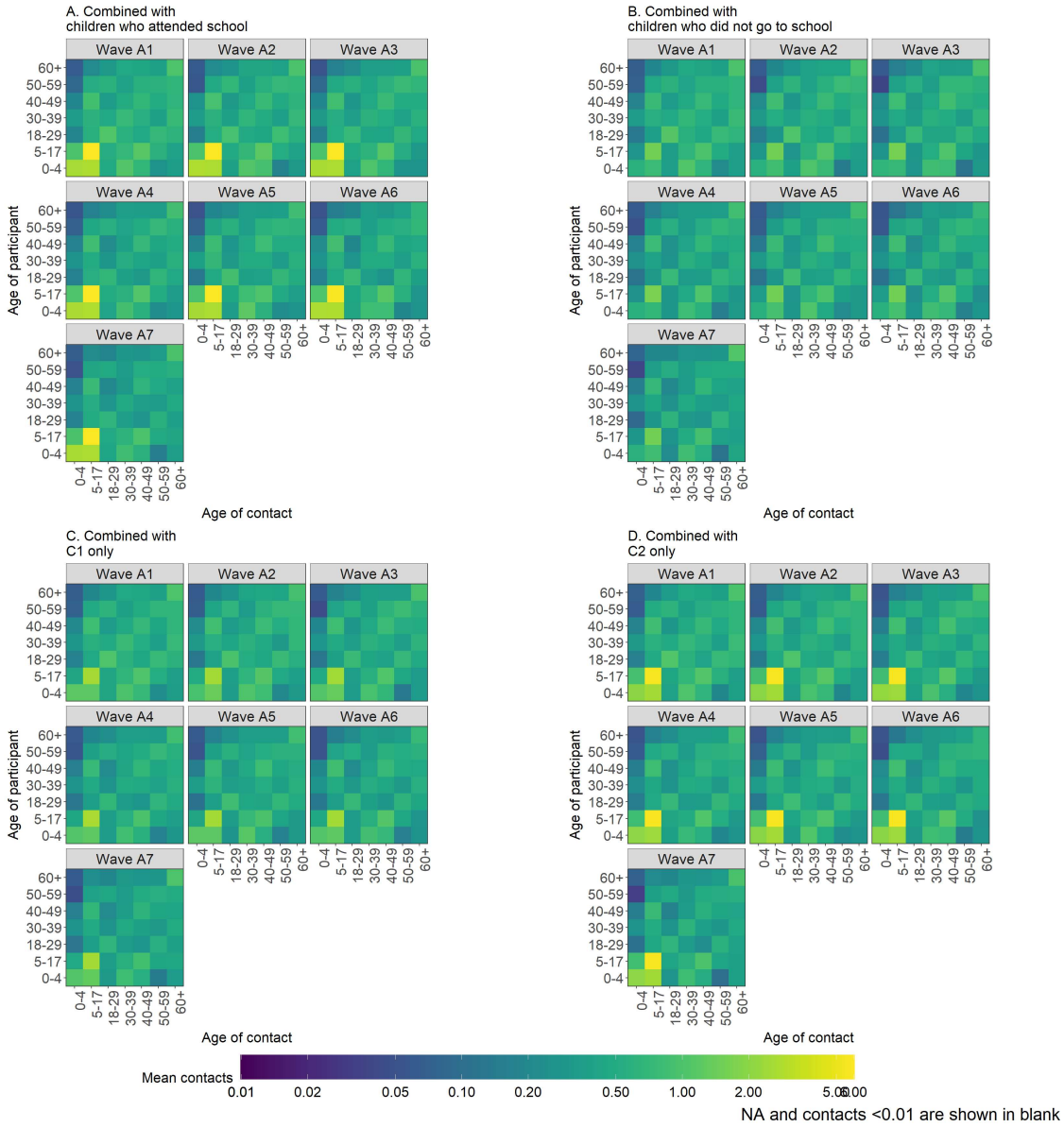
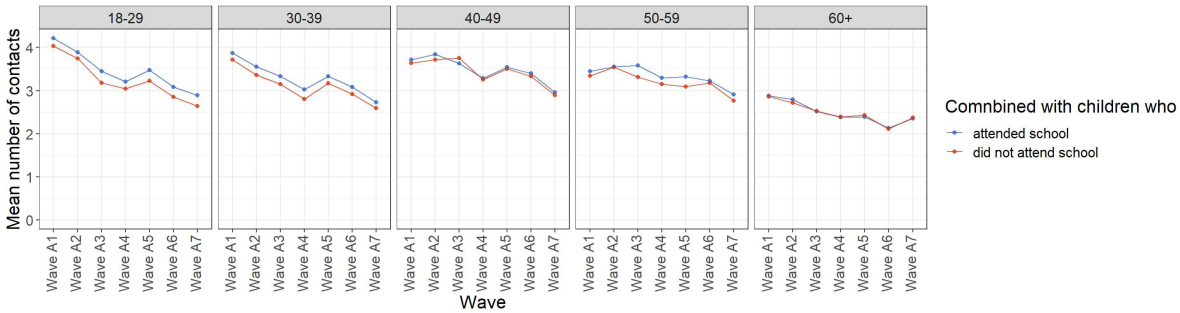


Figure 8. Combined contact means by wave. Contact means as calculated from symmetric, combined symmetric matrices. Adult survey waves each combined with

A. children who attended school, and

B. children who did not attend school.

Contacts truncated to 50 per participant per day, adjusted for day of week and country population by age using the World Population Prospect population data.



A. Combined with children who attended school

B. Combined with chlidren who did not attend school

Participant age	A. Combined with children who attended school							B. Combined with children who did not attend school						
	Wave A1	Wave A2	Wave A3	Wave A4	Wave A5	Wave A6	Wave A7	Wave A1	Wave A2	Wave A3	Wave A4	Wave A5	Wave A6	Wave A7
0-4	8.19	8.41	8.03	7.87	7.95	8.01	7.72	4.00	4.08	3.74	3.40	3.83	3.78	3.60
5-17	10.23	10.11	10.06	9.87	10.01	9.96	9.82	4.69	4.62	4.49	4.42	4.47	4.44	4.83
18-29	4.21	3.89	3.44	3.21	3.48	3.08	2.89	4.03	3.74	3.18	3.05	3.23	2.85	2.64
30-39	3.87	3.55	3.33	3.03	3.33	3.08	2.73	3.71	3.36	3.15	2.81	3.17	2.92	2.59
40-49	3.72	3.84	3.62	3.28	3.54	3.40	2.95	3.64	3.72	3.75	3.25	3.50	3.33	2.89
50-59	3.45	3.55	3.58	3.29	3.32	3.22	2.91	3.34	3.55	3.31	3.15	3.09	3.18	2.76
60+	2.88	2.79	2.51	2.38	2.39	2.13	2.35	2.86	2.72	2.52	2.39	2.43	2.11	2.38

Table 7. Participant contact means by wave. Contact means as calculated from symmetric, participant to contact symmetric matrices. Adult survey waves each combined with
A. children who attended school, and
B. children who did not attend school.
Contacts truncated to 50 per participant per day, adjusted for day of week and country population by age using the World Population Prospect population data.

References

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