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Research article

Epidemiology of coronavirus disease 2019 (COVID-19) in Japan during the first and second waves

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Supplementary

Table S1. COVID-19 cases by age group (in decades) during the first and second waves in Japan.

Age group	1st wave (Jan-May 2020)		2nd wave (Jun-Oct 2020)	
0	281	1.5%	2141	2.4%
10	387	2.0%	4827	5.5%
20	2693	14.2%	24189	27.5%
30	2478	13.1%	14482	16.5%
40	2614	13.8%	11515	13.1%
50	2741	14.5%	9759	11.1%
60	1869	9.9%	5938	6.8%
70	1670	8.8%	4842	5.5%
< 80	1775	9.4%	4278	4.9%
NA	2444	12.9%	5895	6.7%
Total	18946		87866	

NA, not available.

Table S2. R_t in Hokkaido and all of Japan by calendar period.

Hokkaido	R_t	Lower 95% CI	Upper 95% CI
1/19-2/7	1.65	0.84	2.86
2/8-2/27	1.23	1.02	1.46
2/28-3/18	0.70	0.52	0.91
3/19-4/7	1.86	1.66	2.13
Entire Japan			
3/8-4/6	1.29	1.26	1.31
4/7-5/6	0.68	0.66	0.70
5/7-6/5	0.95	0.90	1.00
6/6-7/5	1.35	1.31	1.38

CI, confidence interval

Table S3. Risks of severe symptoms or death by age group (in decades) during the first and second waves in Japan.
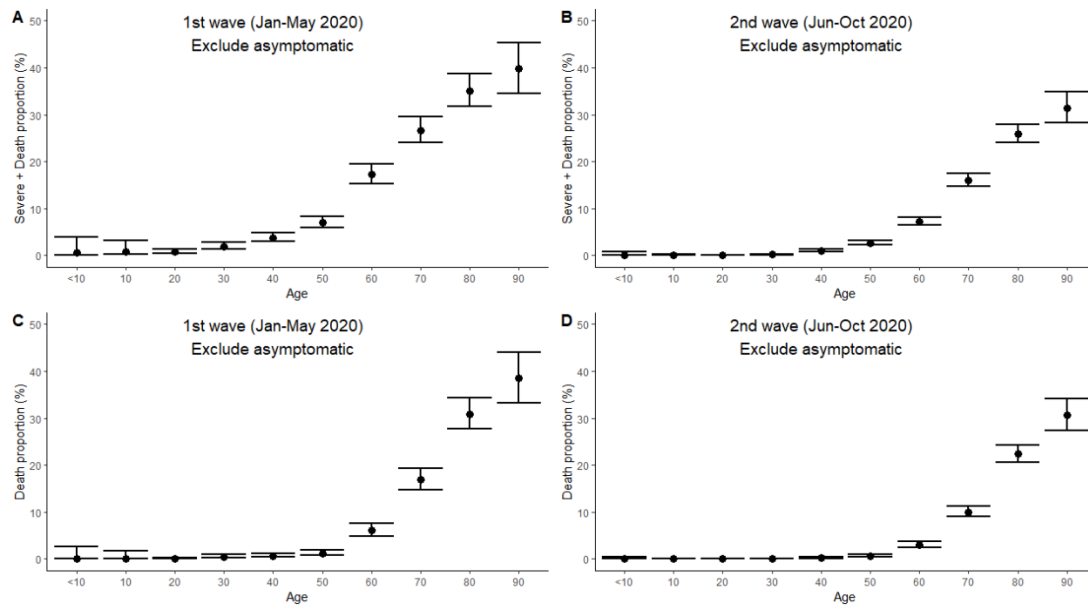
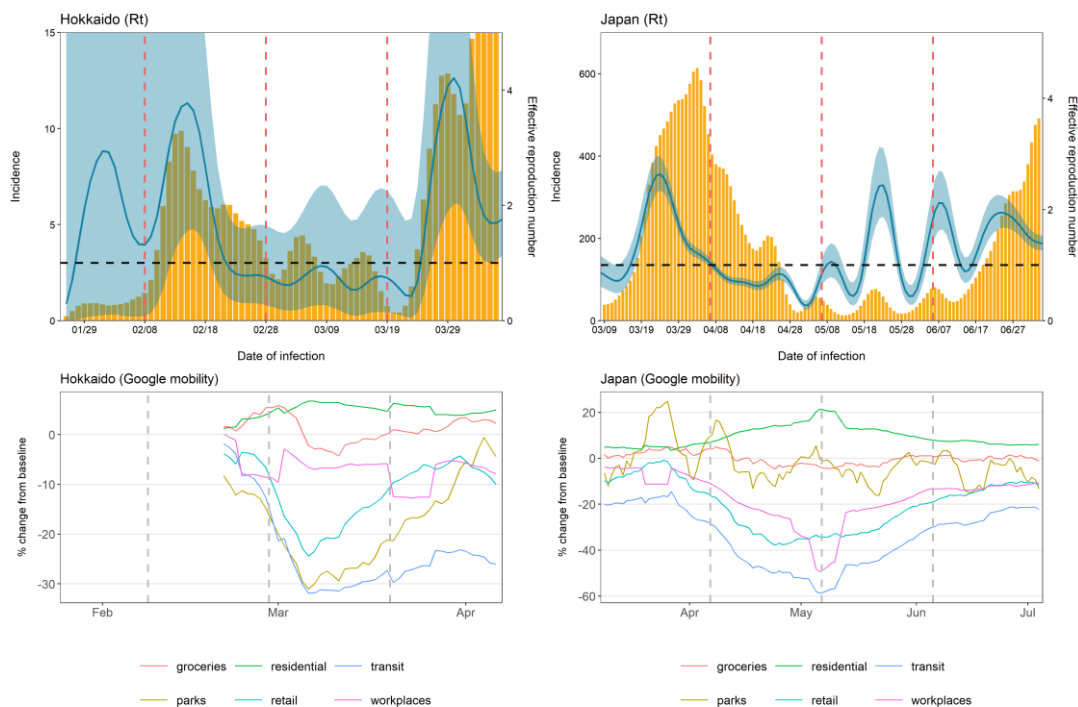|		Severe + Death					
First wave		Include asymptomatic			Exclude asymptomatic		
	Age decade	Point estimate (%)	Lower 95% CI (%)	Upper 95% CI (%)	Point estimate (%)	Lower 95% CI (%)	Upper 95% CI (%)
	< 10	0.45	0.02	2.53	0.70	0.04	3.88
	10	0.63	0.17	2.26	0.90	0.25	3.21
	20	0.66	0.38	1.15	0.83	0.47	1.44
	30	1.56	1.06	2.30	1.93	1.31	2.83
	40	3.19	2.48	4.09	3.81	2.97	4.89
	50	5.96	4.99	7.09	6.99	5.86	8.31
	60	15.04	13.23	17.05	17.29	15.23	19.57
	70	23.48	21.12	26.01	26.71	24.07	29.52
	80	31.09	28.04	34.32	35.14	31.78	38.66
	90	36.07	31.15	41.30	39.81	34.51	45.36
Second wave	< 10	0.05	0.00	0.26	0.13	0.01	0.73
	10	0.02	0.00	0.12	0.04	0.00	0.21
	20	0.03	0.01	0.06	0.06	0.03	0.12
	30	0.09	0.05	0.15	0.19	0.11	0.33
	40	0.50	0.39	0.65	1.02	0.79	1.31
	50	1.43	1.22	1.68	2.66	2.27	3.12
	60	3.97	3.51	4.48	7.30	6.47	8.23
	70	9.36	8.59	10.19	16.10	14.82	17.47
	80	15.66	14.47	16.94	25.96	24.09	27.91
	90	19.02	16.91	21.31	31.48	28.23	34.92

CI, confidence interval.

Table S4. Case fatality risk (cCFR) by age group (in decades) during the first and second waves in Japan.

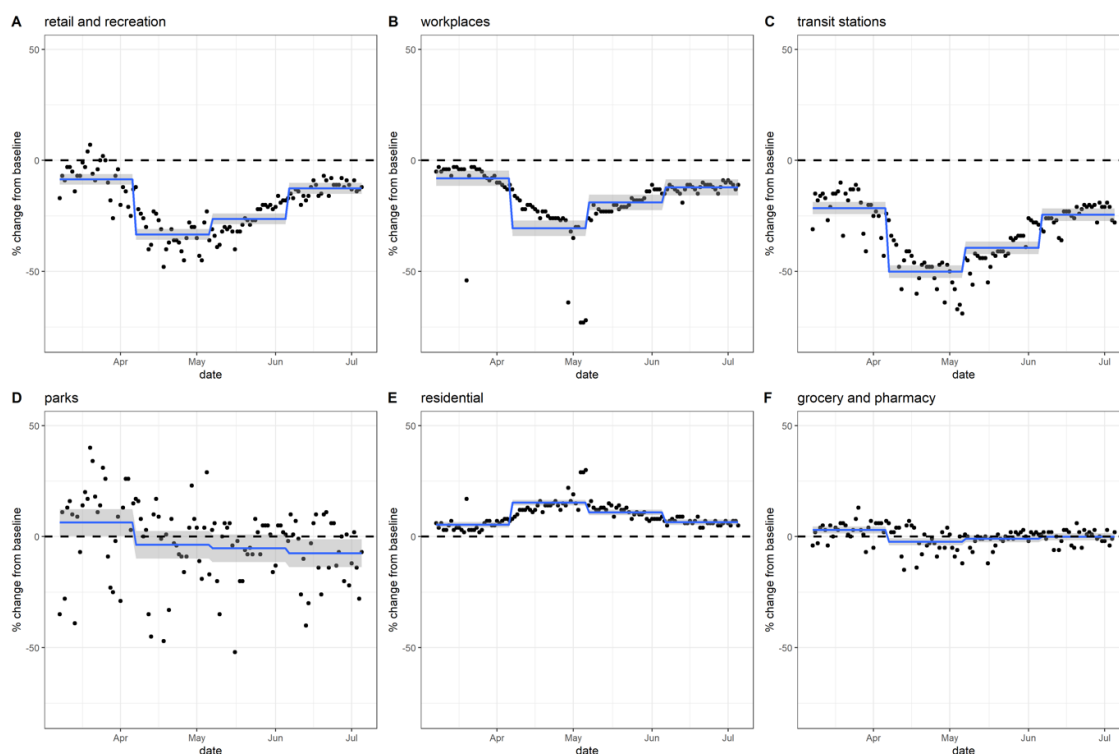|		cCFR (Death)					
First wave		Include asymptomatic			Exclude asymptomatic		
	Age decade	Point estimate (%)	Lower 95% CI (%)	Upper 95% CI (%)	Point estimate (%)	Lower 95% CI (%)	Upper 95% CI (%)
	< 10	0.00	0.00	1.72	0.00	0.00	2.63
	10	0.00	0.00	1.19	0.00	0.00	1.69
	20	0.00	0.00	0.21	0.00	0.00	0.26
	30	0.38	0.17	0.82	0.46	0.21	1.01
	40	0.59	0.33	1.06	0.71	0.40	1.27
	50	1.02	0.66	1.57	1.19	0.77	1.84
	60	5.29	4.21	6.62	6.08	4.85	7.60
	70	14.87	12.93	17.04	16.91	14.73	19.35
	80	27.37	24.45	30.50	30.94	27.71	34.37
	90	34.90	30.03	40.10	38.51	33.26	44.05
Second wave	< 10	0.00	0.00	0.18	0.00	0.00	0.49
	10	0.00	0.00	0.08	0.00	0.00	0.14
	20	0.01	0.00	0.03	0.02	0.00	0.06
	30	0.01	0.00	0.05	0.03	0.01	0.11
	40	0.12	0.07	0.20	0.24	0.14	0.40
	50	0.37	0.27	0.51	0.69	0.50	0.95
	60	1.66	1.37	2.01	3.06	2.53	3.70
	70	5.84	5.23	6.52	10.05	9.01	11.18
	80	13.51	12.39	14.71	22.38	20.62	24.25
	90	18.52	16.44	20.80	30.66	27.44	34.09

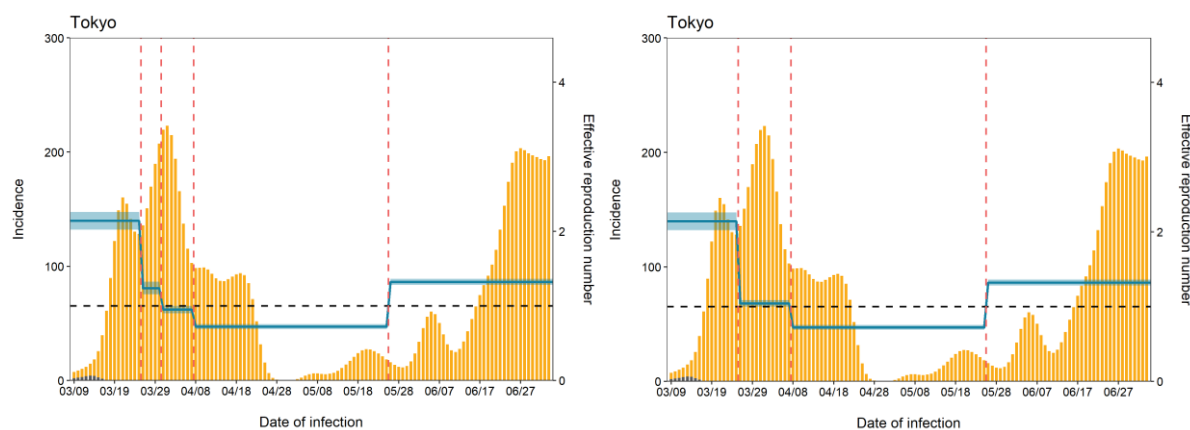CFR, case fatality risk; CI, confidence interval.

Figure S1. Proportions of severe disease and death by age group, excluding asymptomatic individuals from the denominator. (A, B) Risk of severe symptoms and death during the first wave (A) and the second wave (B). (C, D) Risk of death (*cCFR*) during the first wave (C) and the second wave (D). 95% CIs were calculated using the Wilson score intervals. Age was categorized in decades.

Figure S2. The effective reproduction number for COVID-19 in Japan based on Google mobility datasets. A 7-day moving average was taken. The vertical dotted lines represent the same periods as described in main text Figure 5. Note: groceries = groceries and pharmacies, residential = residential areas, transit = transit station, and retail = retail and recreational areas.

Figure S3. Google mobility data in Japan. A piecewise constant regression was taken over the same time periods as in main text Figure 5.

Figure S4. Event-based estimation of R_t in Tokyo. The vertical dotted line represents each event. 2020-03-25: The Tokyo governor requested residents to self-restrict going out on weekends. 2020-03-30: The Tokyo governor requested residents to self-restrict going to bars at night. 2020-04-07: A state of emergency was announced by the prime minister of Japan. 2020-05-25: The state of emergency was lifted.

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