

Appendix A

Table S1: Transmission rates using a constant and time-dependent case detection rate (CDR) estimated from the transmission probability in Table 1 (maximum posterior as the point estimate and 95% credible intervals) and contact rates [1,2] adjusted to the Alberta population

Transmission Rates		Constant CDR			Time-Dependent CDR		
		<19	19 to 64	65+	<19	19 to 64	65+
2016-2017	<19	3.95e-07 (3.26e-07 to 4.70e-07)	3.01e-07 (2.48e-07 to 3.58e-07)	2.58e-08 (2.12e-08 to 3.06e-08)	3.21e-07 (2.89e-07 to 3.58e-07)	2.44e-07 (2.20e-07 to 2.72e-07)	2.09e-08 (1.88e-08 to 2.33e-08)
	19,64	1.23e-07 (1.19e-07 to 1.27e-07)	4.45e-07 (4.30e-07 to 4.58e-07)	4.88e-08 (4.71e-08 to 5.02e-08)	9.88e-08 (9.65e-08 to 1.04e-07)	3.57e-07 (3.48e-07 to 3.75e-07)	3.91e-08 (3.82e-08 to 4.10e-08)
	65+	2.00e-07 (1.60e-07 to 2.57e-07)	9.23e-07 (7.37e-07 to 1.19e-06)	3.75e-07 (2.99e-07 to 4.82e-07)	2.01e-07 (1.80e-07 to 3.11e-07)	9.29e-07 (8.31e-07 to 1.44e-06)	3.77e-07 (3.37e-07 to 5.83e-07)
2017-2018	<19	3.61e-07 (3.16e-07,4.16e-07)	2.74e-07 (2.40e-07,3.16e-07)	2.37e-08 (2.07e-08,2.73e-08)	3.28e-07 (3.04e-07,3.62e-07)	2.49e-07 (2.30e-07,2.74e-07)	2.15e-08 (1.99e-08,2.37e-08)
	19,64	1.15e-07 (1.13e-07,1.19e-07)	4.14e-07 (4.06e-07,4.26e-07)	4.61e-08 (4.52e-08,4.75e-08)	1.04e-07 (1.02e-07,1.07e-07)	3.76e-07 (3.68e-07,3.85e-07)	4.18e-08 (4.10e-08,4.29e-08)
	65+	2.12e-07 (1.65e-07,2.50e-07)	9.82e-07 (7.66e-07,1.16e-06)	4.08e-07 (3.18e-07,4.81e-07)	2.26e-07 (1.72e-07,2.49e-07)	1.05e-06 (7.96e-07,1.15e-06)	4.35e-07 (3.31e-07,4.79e-07)
2018-2019	<19	7.35e-07 (6.44e-07 to 8.65e-07)	5.41e-07 (4.75e-07 to 6.37e-07)	4.83e-08 (4.23e-08 to 5.68e-08)	6.56e-07 (5.85e-07 to 8.00e-07)	4.83e-07 (4.31e-07 to 5.89e-07)	4.31e-08 (3.84e-08 to 5.25e-08)
	19,64	1.33e-07 (1.25e-07 to 1.38e-07)	4.69e-07 (4.41e-07 to 4.85e-07)	5.35e-08 (5.03e-08 to 5.53e-08)	1.19e-07 (1.11e-07 to 1.25e-07)	4.19e-07 (3.92e-07 to 4.41e-07)	4.78e-08 (4.48e-08 to 5.03e-08)
	65+	3.69e-08 (3.19e-08 to 4.43e-08)	1.66e-07 (1.44e-07 to 2.00e-07)	7.14e-08 (6.18e-08 to 8.58e-08)	4.63e-08 (3.86e-08 to 5.25e-08)	2.09e-07 (1.74e-07 to 2.37e-07)	8.96e-08 (7.47e-08 to 1.02e-07)

Table S2: **The Alberta 2015-2016 influenza season estimates for $\tilde{\rho}(t)$** , the ratio of laboratory cases (numerator) and people who received antivirals and/or had at least one physician visit related to influenza (denominator) averaged across influenza seasons from 2011-2012. Note: This data was used to make forecasts for the 2016-2017 influenza season.

Weeks (from the Start of the Influenza Season)	Influenza Week	0 to 18 Years	19 to 64 Years	≥ 65 Years
1	35	3.86E-03	3.96E-03	3.28E-03
2	36	8.51E-03	4.93E-03	3.28E-03
3	37	9.29E-03	2.40E-03	3.28E-03
4	38	3.86E-03	4.77E-03	3.28E-03
5	39	8.12E-03	6.92E-03	7.28E-03
6	40	8.79E-03	4.75E-03	3.42E-02
7	41	1.66E-02	4.81E-03	3.17E-02
8	42	2.29E-02	3.23E-03	1.20E-02
9	43	1.78E-02	4.38E-03	2.83E-02
10	44	2.75E-02	6.22E-03	5.95E-02
11	45	4.88E-02	1.29E-02	3.95E-02
12	46	5.82E-02	2.18E-02	2.42E-02
13	47	6.23E-02	2.16E-02	7.59E-02
14	48	7.89E-02	4.34E-02	1.27E-01
15	49	1.27E-01	5.41E-02	1.16E-01
16	50	1.25E-01	7.55E-02	1.64E-01
17	51	1.29E-01	9.41E-02	1.67E-01
18	52	2.26E-01	1.47E-01	3.36E-01
19	1	9.69E-02	1.02E-01	1.56E-01
20	2	1.37E-01	7.67E-02	2.02E-01
21	3	1.32E-01	9.15E-02	1.03E-01
22	4	1.28E-01	8.82E-02	1.33E-01
23	5	1.24E-01	8.98E-02	1.27E-01
24	6	1.23E-01	8.43E-02	2.12E-01
25	7	1.05E-01	6.69E-02	1.48E-01
26	8	1.50E-01	8.69E-02	1.83E-01
27	9	1.27E-01	8.40E-02	1.88E-01
28	10	1.24E-01	7.66E-02	1.44E-01
29	11	1.41E-01	1.06E-01	2.42E-01
30	12	1.53E-01	7.61E-02	1.66E-01
31	13	1.66E-01	7.99E-02	2.06E-01
32	14	1.22E-01	7.52E-02	1.59E-01
33	15	1.07E-01	7.26E-02	2.34E-01
34	16	1.21E-01	6.45E-02	2.36E-01
35	17	1.17E-01	5.65E-02	2.49E-01
36	18	8.09E-02	4.90E-02	2.33E-01
37	19	7.49E-02	4.33E-02	1.55E-01
38	20	7.23E-02	4.30E-02	1.74E-01
39	21	7.21E-02	3.57E-02	2.69E-01
40	22	4.21E-02	3.06E-02	6.24E-02
41	23	3.20E-02	2.17E-02	1.04E-01
42	24	1.76E-02	1.61E-02	6.09E-02
43	25	2.76E-02	1.76E-02	1.08E-01
44	26	3.86E-03	6.40E-03	7.76E-02
45	27	9.33E-03	1.32E-02	2.38E-02
46	28	3.86E-03	3.78E-03	1.25E-02
47	29	7.83E-03	6.84E-03	2.38E-02
48	30	3.86E-03	1.72E-03	4.96E-02
49	31	1.22E-02	1.87E-03	3.28E-03
50	32	7.41E-03	1.96E-03	4.58E-02
51	33	5.71E-03	9.74E-03	3.28E-03
52	34	5.00E-02	1.19E-02	5.71E-02

Table S3: **The Alberta 2016-2017 influenza season estimates for $\tilde{\rho}(t)$** , the ratio of laboratory cases (numerator) and people who received antivirals and/or had at least one physician visit related to influenza (denominator) averaged across influenza seasons from 2011-2012.

Weeks (from the Start of the Influenza Season)	Influenza Week	0 to 18 Years	19 to 64 Years	>=65 Years
1	35	4.76E-03	4.48E-03	8.68E-03
2	36	9.97E-03	8.98E-03	8.68E-03
3	37	7.74E-03	2.00E-03	9.03E-03
4	38	5.44E-03	5.53E-03	8.68E-03
5	39	8.31E-03	9.00E-03	2.32E-02
6	40	1.57E-02	5.57E-03	3.66E-02
7	41	1.81E-02	6.02E-03	2.91E-02
8	42	2.08E-02	7.85E-03	1.42E-02
9	43	2.72E-02	5.58E-03	2.90E-02
10	44	2.83E-02	1.02E-02	6.44E-02
11	45	5.89E-02	1.80E-02	4.92E-02
12	46	5.80E-02	2.48E-02	5.41E-02
13	47	6.67E-02	2.75E-02	8.49E-02
14	48	8.43E-02	5.50E-02	1.35E-01
15	49	1.33E-01	6.14E-02	1.44E-01
16	50	1.29E-01	7.97E-02	1.59E-01
17	51	1.31E-01	9.72E-02	1.80E-01
18	52	2.22E-01	1.51E-01	3.63E-01
19	1	1.09E-01	1.05E-01	1.70E-01
20	2	1.39E-01	8.12E-02	1.97E-01
21	3	1.29E-01	9.33E-02	9.96E-02
22	4	1.31E-01	8.91E-02	1.39E-01
23	5	1.30E-01	9.30E-02	1.52E-01
24	6	1.29E-01	8.84E-02	2.02E-01
25	7	1.07E-01	6.88E-02	1.46E-01
26	8	1.47E-01	8.78E-02	1.93E-01
27	9	1.28E-01	7.82E-02	1.76E-01
28	10	1.15E-01	7.25E-02	1.41E-01
29	11	1.38E-01	9.96E-02	2.27E-01
30	12	1.51E-01	8.02E-02	1.55E-01
31	13	1.59E-01	8.49E-02	2.02E-01
32	14	1.27E-01	8.00E-02	1.44E-01
33	15	1.06E-01	7.66E-02	2.39E-01
34	16	1.29E-01	6.98E-02	2.27E-01
35	17	1.26E-01	6.25E-02	2.66E-01
36	18	1.07E-01	6.06E-02	2.16E-01
37	19	9.95E-02	4.95E-02	1.54E-01
38	20	7.82E-02	5.20E-02	2.20E-01
39	21	8.20E-02	4.00E-02	3.00E-01
40	22	5.32E-02	3.18E-02	9.88E-02
41	23	4.52E-02	2.78E-02	1.31E-01
42	24	2.66E-02	1.99E-02	7.85E-02
43	25	3.43E-02	1.62E-02	1.50E-01
44	26	4.76E-03	1.84E-02	1.40E-01
45	27	7.78E-03	1.10E-02	1.98E-02
46	28	4.76E-03	3.15E-03	1.04E-02
47	29	6.52E-03	5.70E-03	1.98E-02
48	30	4.76E-03	1.44E-03	4.13E-02
49	31	1.01E-02	1.56E-03	8.68E-03
50	32	6.17E-03	1.63E-03	3.81E-02
51	33	4.76E-03	8.12E-03	8.68E-03
52	34	4.17E-02	9.94E-03	4.76E-02

Table S4: **The Alberta 2017-2018 influenza season estimates for $\tilde{\rho}(t)$** , the ratio of laboratory cases (numerator) and people who received antivirals and/or had at least one physician visit related to influenza (denominator) averaged across influenza seasons from 2011-2012.

Weeks (from the Start of the Influenza Season)	Influenza Week	0 to 18 Years	19 to 64 Years	≥ 65 Years
1	35	2.13E-02	6.08E-03	4.08E-02
2	36	1.61E-02	1.24E-02	3.13E-02
3	37	6.64E-03	6.32E-03	1.87E-02
4	38	1.09E-02	9.74E-03	2.53E-02
5	39	1.50E-02	1.16E-02	4.42E-02
6	40	1.83E-02	8.69E-03	4.41E-02
7	41	2.50E-02	1.09E-02	3.55E-02
8	42	3.06E-02	1.09E-02	3.72E-02
9	43	3.32E-02	9.86E-03	4.89E-02
10	44	4.06E-02	2.03E-02	7.39E-02
11	45	7.01E-02	2.70E-02	8.98E-02
12	46	7.83E-02	3.95E-02	8.83E-02
13	47	8.94E-02	4.61E-02	1.22E-01
14	48	1.06E-01	7.37E-02	1.56E-01
15	49	1.46E-01	8.10E-02	1.73E-01
16	50	1.42E-01	9.16E-02	1.65E-01
17	51	1.43E-01	1.05E-01	1.85E-01
18	52	2.23E-01	1.56E-01	3.46E-01
19	1	1.24E-01	1.10E-01	1.71E-01
20	2	1.49E-01	8.52E-02	1.91E-01
21	3	1.33E-01	9.46E-02	9.89E-02
22	4	1.37E-01	9.09E-02	1.38E-01
23	5	1.31E-01	9.47E-02	1.56E-01
24	6	1.34E-01	9.01E-02	1.94E-01
25	7	1.12E-01	7.48E-02	1.53E-01
26	8	1.51E-01	8.85E-02	1.96E-01
27	9	1.27E-01	8.39E-02	1.70E-01
28	10	1.16E-01	7.94E-02	1.47E-01
29	11	1.38E-01	1.02E-01	2.20E-01
30	12	1.48E-01	8.59E-02	1.58E-01
31	13	1.59E-01	8.78E-02	1.89E-01
32	14	1.34E-01	8.14E-02	1.34E-01
33	15	1.02E-01	8.13E-02	2.30E-01
34	16	1.21E-01	6.97E-02	2.42E-01
35	17	1.21E-01	6.84E-02	2.62E-01
36	18	1.08E-01	6.11E-02	2.03E-01
37	19	9.64E-02	4.68E-02	1.45E-01
38	20	8.88E-02	5.12E-02	1.98E-01
39	21	7.81E-02	4.06E-02	2.77E-01
40	22	4.94E-02	2.93E-02	9.15E-02
41	23	3.88E-02	2.77E-02	1.19E-01
42	24	2.28E-02	2.13E-02	6.73E-02
43	25	2.94E-02	1.82E-02	1.28E-01
44	26	4.93E-03	2.00E-02	1.82E-01
45	27	6.66E-03	1.25E-02	2.80E-02
46	28	1.30E-02	2.70E-03	1.61E-02
47	29	2.06E-02	6.38E-03	2.49E-02
48	30	4.08E-03	2.93E-03	3.54E-02
49	31	8.69E-03	2.92E-03	5.71E-03
50	32	1.72E-02	3.21E-03	3.27E-02
51	33	4.08E-03	8.62E-03	5.71E-03
52	34	3.57E-02	1.03E-02	4.08E-02

Table S5: **The Alberta 2018-2019 influenza season estimates for $\tilde{\rho}(t)$** , the ratio of laboratory cases (numerator) and people who received antivirals and/or had at least one physician visit related to influenza (denominator) averaged across influenza seasons from 2011-2012.

Weeks (from the Start of the Influenza Season)	Influenza Week	0 to 18 Years	19 to 64 Years	>=65 Years
1	35	1.86E-02	5.32E-03	3.57E-02
2	36	1.41E-02	1.26E-02	2.73E-02
3	37	5.81E-03	8.08E-03	1.64E-02
4	38	1.15E-02	9.08E-03	2.21E-02
5	39	1.48E-02	1.27E-02	3.87E-02
6	40	2.75E-02	1.37E-02	4.06E-02
7	41	3.38E-02	1.49E-02	3.66E-02
8	42	4.54E-02	1.56E-02	3.75E-02
9	43	5.83E-02	2.48E-02	5.33E-02
10	44	6.60E-02	4.08E-02	9.00E-02
11	45	9.48E-02	4.99E-02	1.08E-01
12	46	1.06E-01	5.92E-02	1.11E-01
13	47	1.15E-01	6.71E-02	1.32E-01
14	48	1.34E-01	9.17E-02	1.62E-01
15	49	1.69E-01	9.55E-02	1.86E-01
16	50	1.69E-01	1.06E-01	1.79E-01
17	51	1.56E-01	1.10E-01	1.86E-01
18	52	2.31E-01	1.61E-01	3.40E-01
19	1	1.37E-01	1.11E-01	1.68E-01
20	2	1.50E-01	8.59E-02	1.78E-01
21	3	1.32E-01	9.10E-02	1.05E-01
22	4	1.30E-01	9.06E-02	1.30E-01
23	5	1.33E-01	9.12E-02	1.55E-01
24	6	1.30E-01	8.69E-02	1.80E-01
25	7	1.11E-01	7.59E-02	1.49E-01
26	8	1.51E-01	8.94E-02	2.09E-01
27	9	1.31E-01	8.41E-02	1.70E-01
28	10	1.32E-01	8.19E-02	1.55E-01
29	11	1.54E-01	1.05E-01	2.19E-01
30	12	1.56E-01	9.31E-02	2.01E-01
31	13	1.73E-01	9.59E-02	2.03E-01
32	14	1.46E-01	9.16E-02	1.66E-01
33	15	1.23E-01	8.61E-02	2.27E-01
34	16	1.43E-01	7.67E-02	2.31E-01
35	17	1.36E-01	7.58E-02	2.42E-01
36	18	1.31E-01	6.65E-02	2.02E-01
37	19	1.15E-01	5.67E-02	1.57E-01
38	20	1.01E-01	6.00E-02	2.20E-01
39	21	8.52E-02	4.84E-02	2.73E-01
40	22	6.58E-02	3.69E-02	9.64E-02
41	23	5.74E-02	3.21E-02	1.17E-01
42	24	3.38E-02	2.41E-02	1.10E-01
43	25	3.87E-02	2.08E-02	1.33E-01
44	26	7.36E-03	2.12E-02	1.87E-01
45	27	1.13E-02	1.46E-02	4.37E-02
46	28	2.64E-02	5.14E-03	3.04E-02
47	29	2.56E-02	8.06E-03	4.33E-02
48	30	9.62E-03	4.99E-03	4.11E-02
49	31	1.15E-02	5.91E-03	6.25E-03
50	32	1.50E-02	4.06E-03	3.31E-02
51	33	3.57E-03	7.54E-03	5.00E-03
52	34	3.13E-02	1.09E-02	3.96E-02

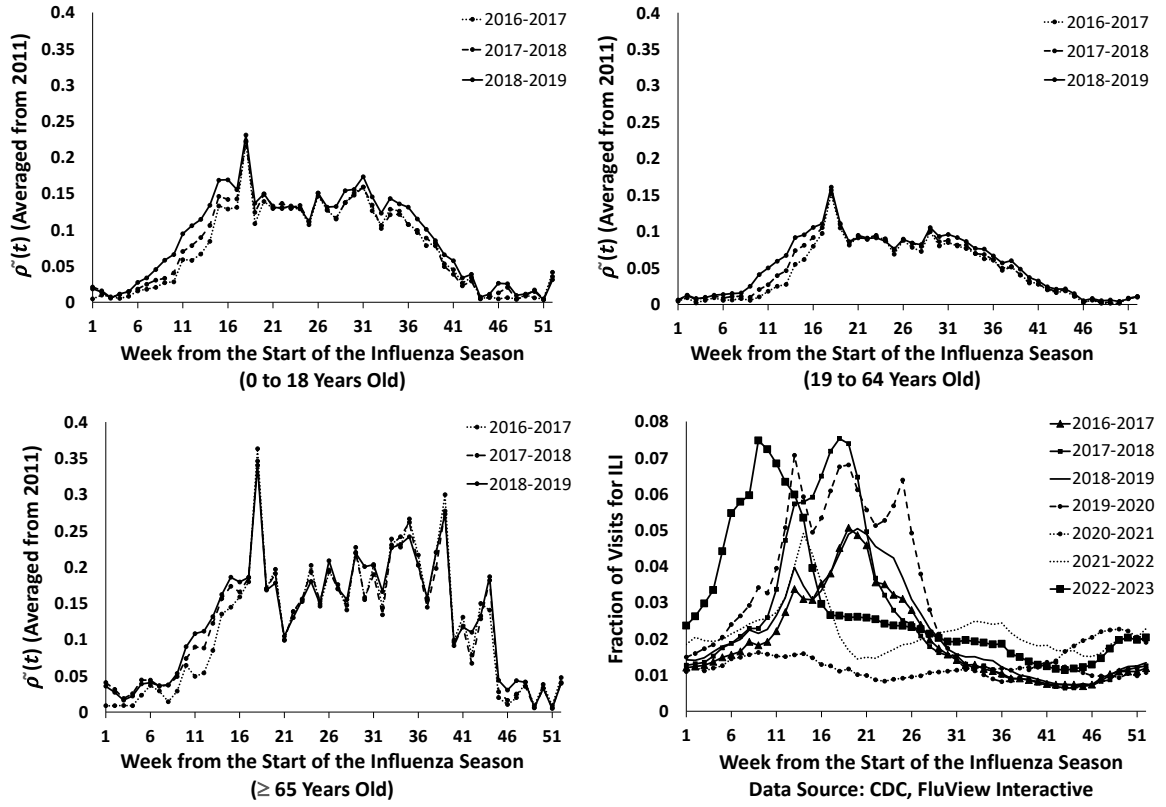


Figure S1: Crude case detection rate ($\tilde{\rho}(t)$) averaged weekly from the 2011-2012 to 2016-2017, 2017-2018, and 2018-2019 influenza seasons in Alberta over time. The x-axis represents the weeks from the start of the influenza season by age groups, 0 to 18 years old, 19 to 64 years old, and 65 years and older. The parameter $\tilde{\rho}(t)$ is defined as the ratio of the number of laboratory confirmed cases (numerator) and the number of people who received antivirals and/or had at least one physician visit related to influenza (denominator). The bottom right corner highlights analogous trends from the US Centers of Disease Control and Prevention (CDC).[3]

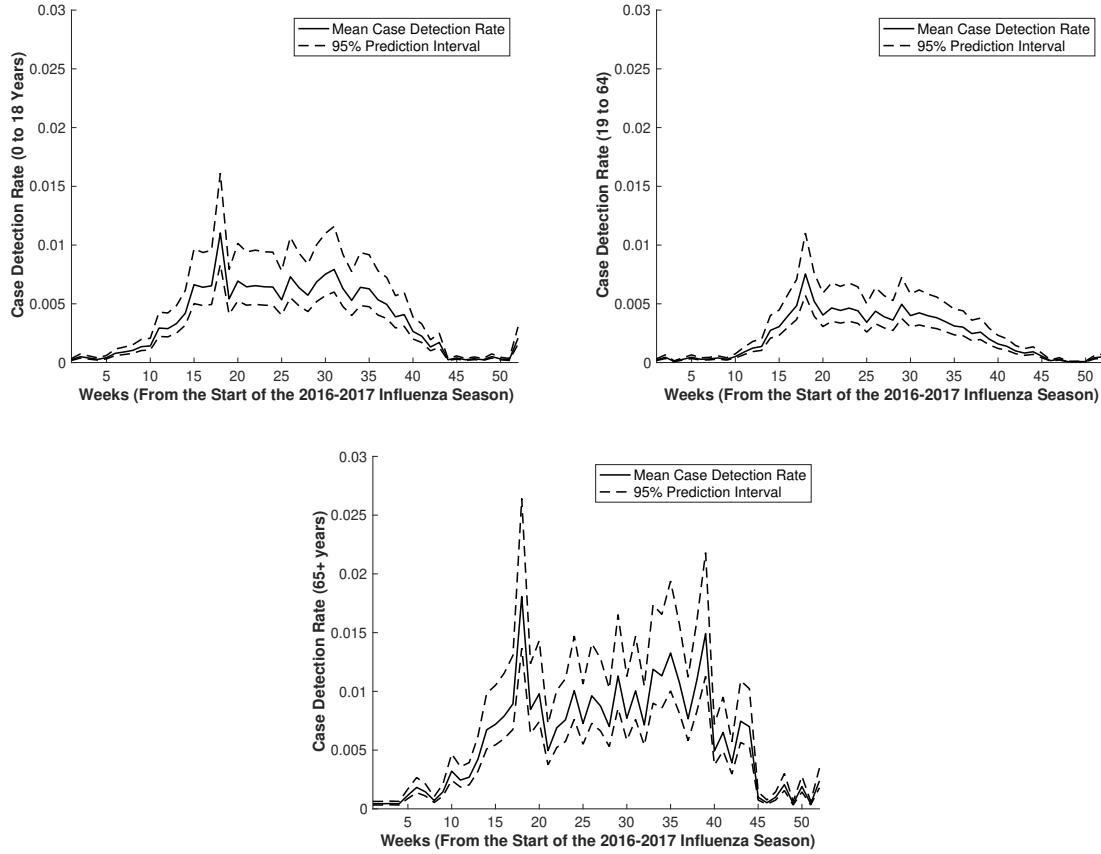


Figure S2: **The case detection rate, $\rho(t)$ (mean and 95% credible intervals) for the 2016-2017 influenza season over time.** The x-axis represents the weeks from the start of the influenza season by age groups, 0 to 18 years old (left), 19 to 64 years old (right), and 65 years and older (bottom).

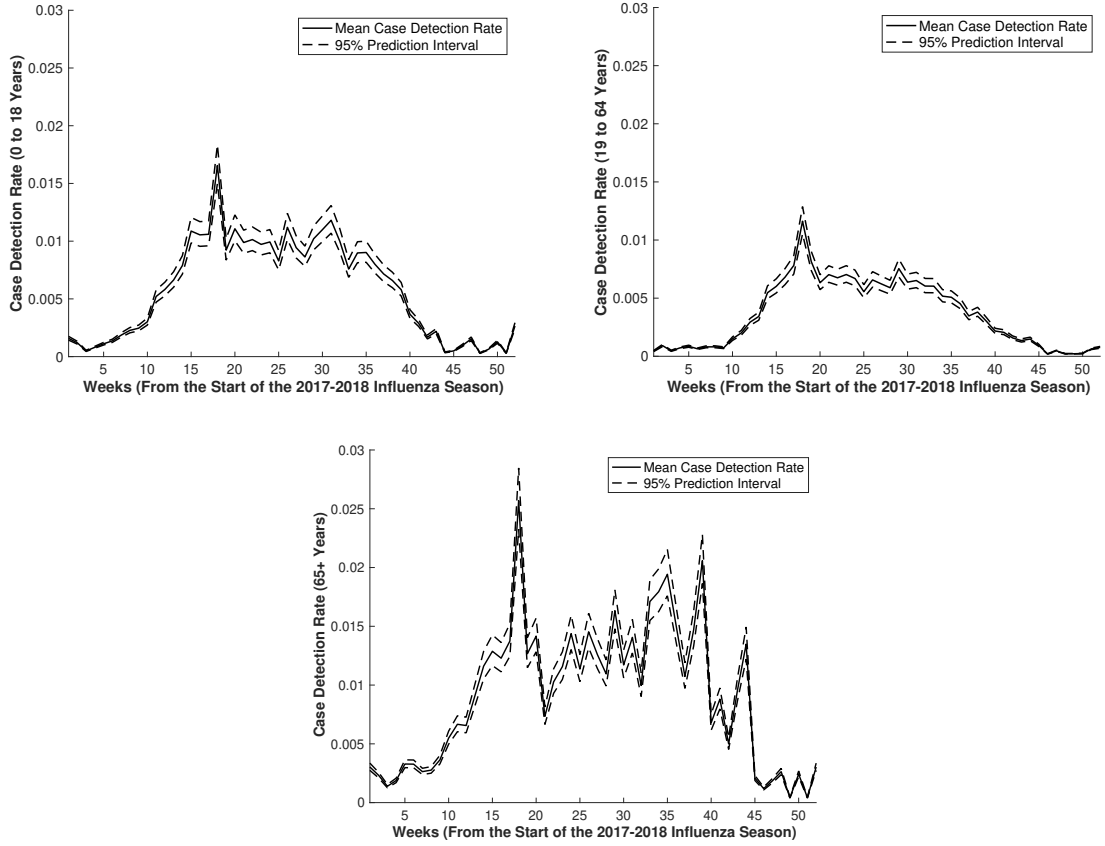


Figure S3: **The case detection rate, $\rho(t)$ (mean and 95% credible intervals) for the 2017-2018 influenza season over time.** The x-axis represents the weeks from the start of the influenza season by age groups, 0 to 18 years old (left), 19 to 64 years old (right), and 65 years and older (bottom).

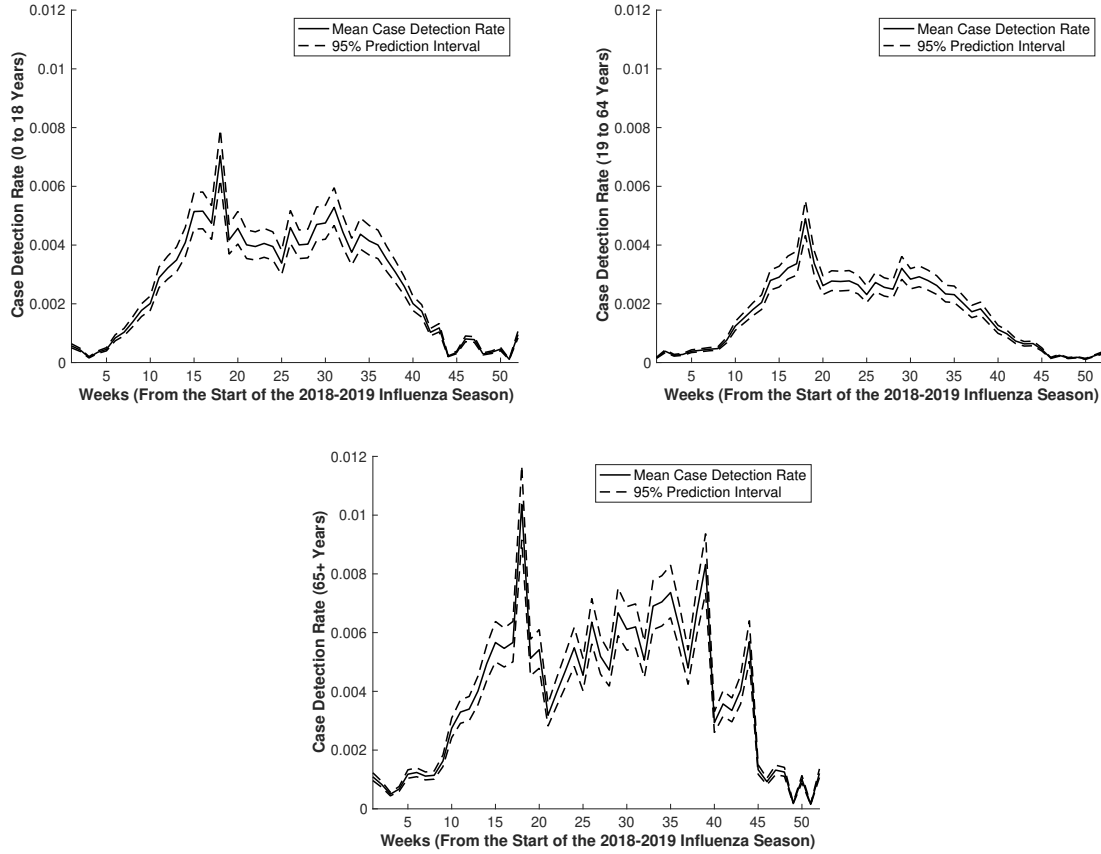


Figure S4: **The case detection rate, $\rho(t)$ (mean and 95% credible intervals) for the 2018-2019 influenza season over time.** The x-axis represents the weeks from the start of the influenza season by age groups, 0 to 18 years old (left), 19 to 64 years old (right), and 65 years and older (bottom).

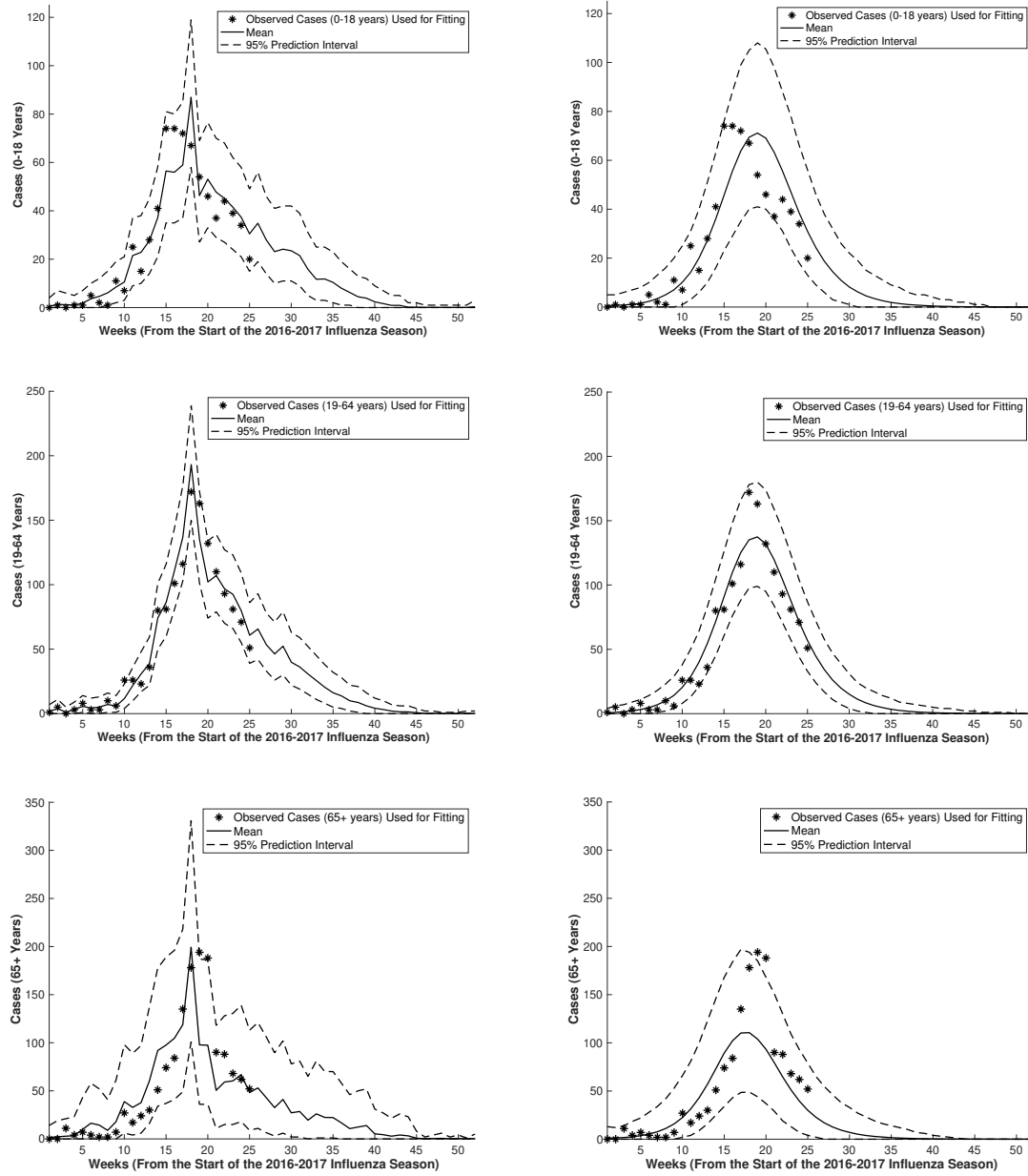


Figure S5: **Results of model fitting to case data by age group, 2016-2017 influenza season.** The means and 95% prediction intervals of laboratory confirmed cases detected through surveillance systems by age group in Alberta, using the time-dependent (left) and constant (right) case detection assumption for the 2016-2017 influenza season.

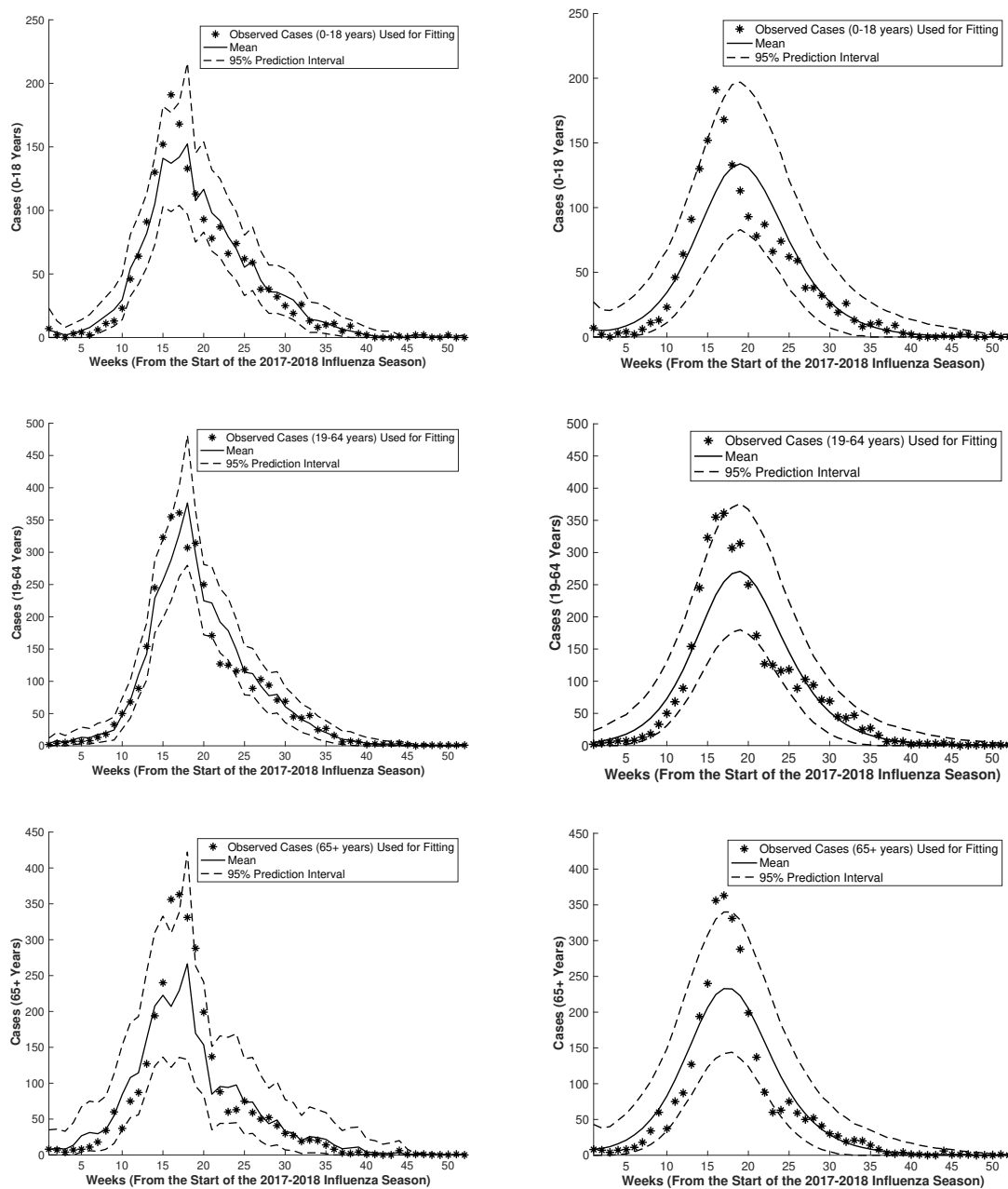


Figure S6: Results of model fitting to case data by age group, 2017-2018 influenza season. The means and 95% prediction intervals of laboratory confirmed cases detected through surveillance systems by age group in Alberta, using the time-dependent (left) and constant (right) case detection assumption for the 2017-2018 influenza season.

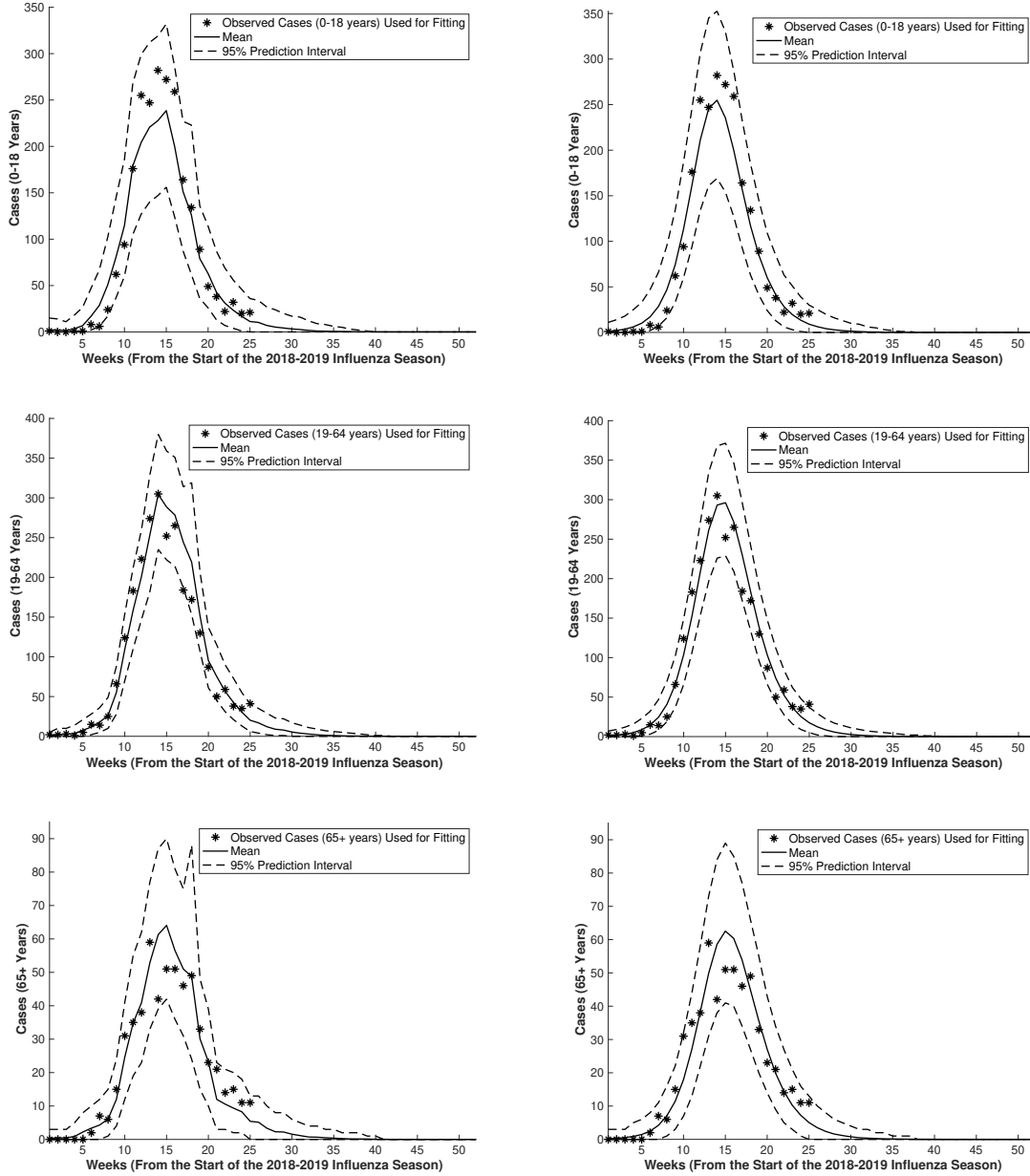


Figure S7: **Results of model fitting to case data by age group, 2018-2019 influenza season.** The means and 95% prediction intervals of laboratory confirmed cases detected through surveillance systems by age group in Alberta, using the time-dependent (left) and constant (right) case detection assumption for the 2018-2019 influenza season.

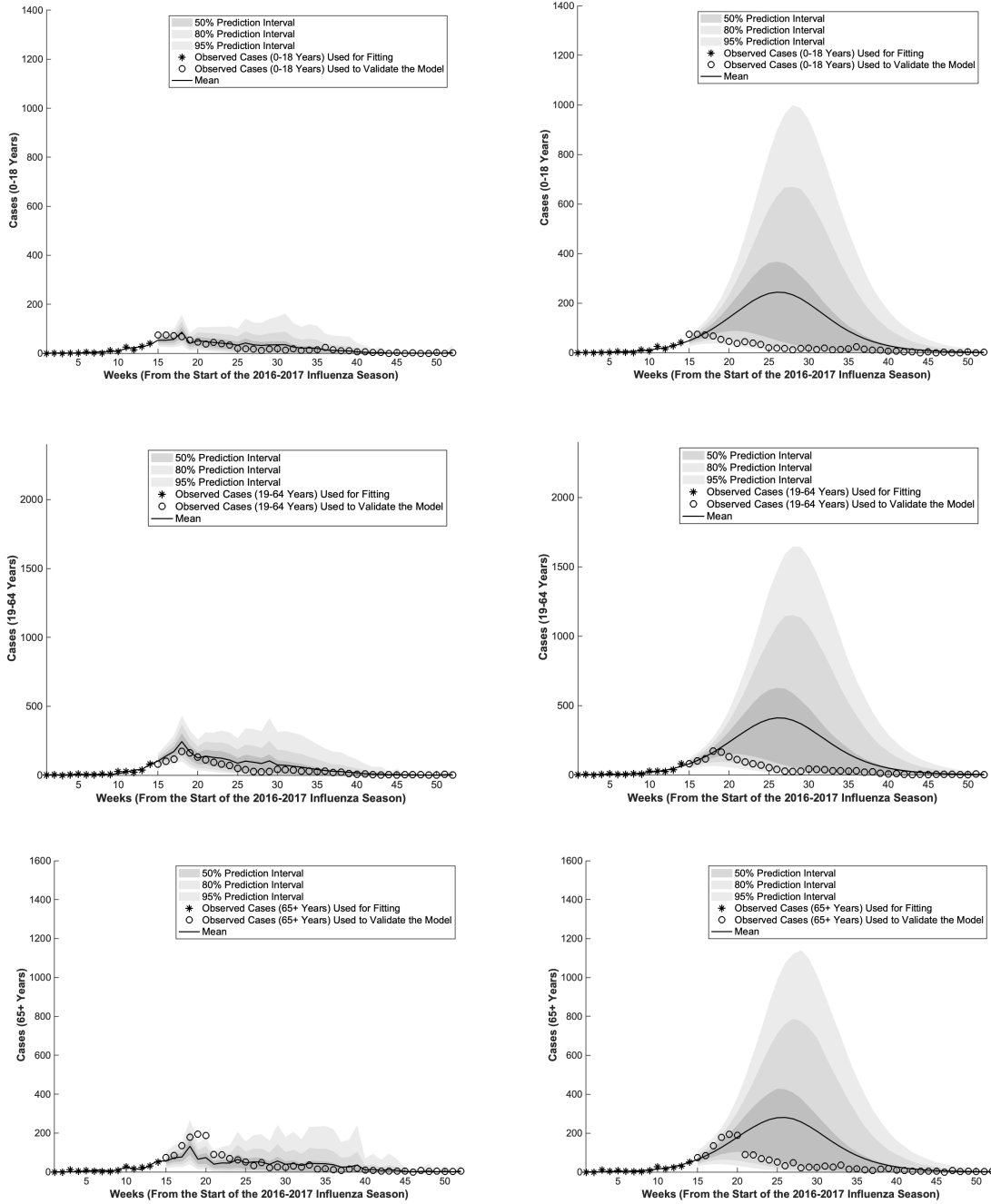


Figure S8: Results of model forecasting by age group using new case data up to four weeks prior to the peak for training, 2016-2017 influenza season. The predictive means and prediction intervals (95%, 80%, and 50%) by age group are shown. Models are trained using new laboratory confirmed cases (detected through surveillance systems) up to four weeks prior to the peak for Alberta using the time-dependent (left) and constant (right) case detection assumption, for age groups: 0 to 18 years old (top), 19 to 64 years old (middle), and 65 years and older (bottom) for the 2016-2017 influenza season.

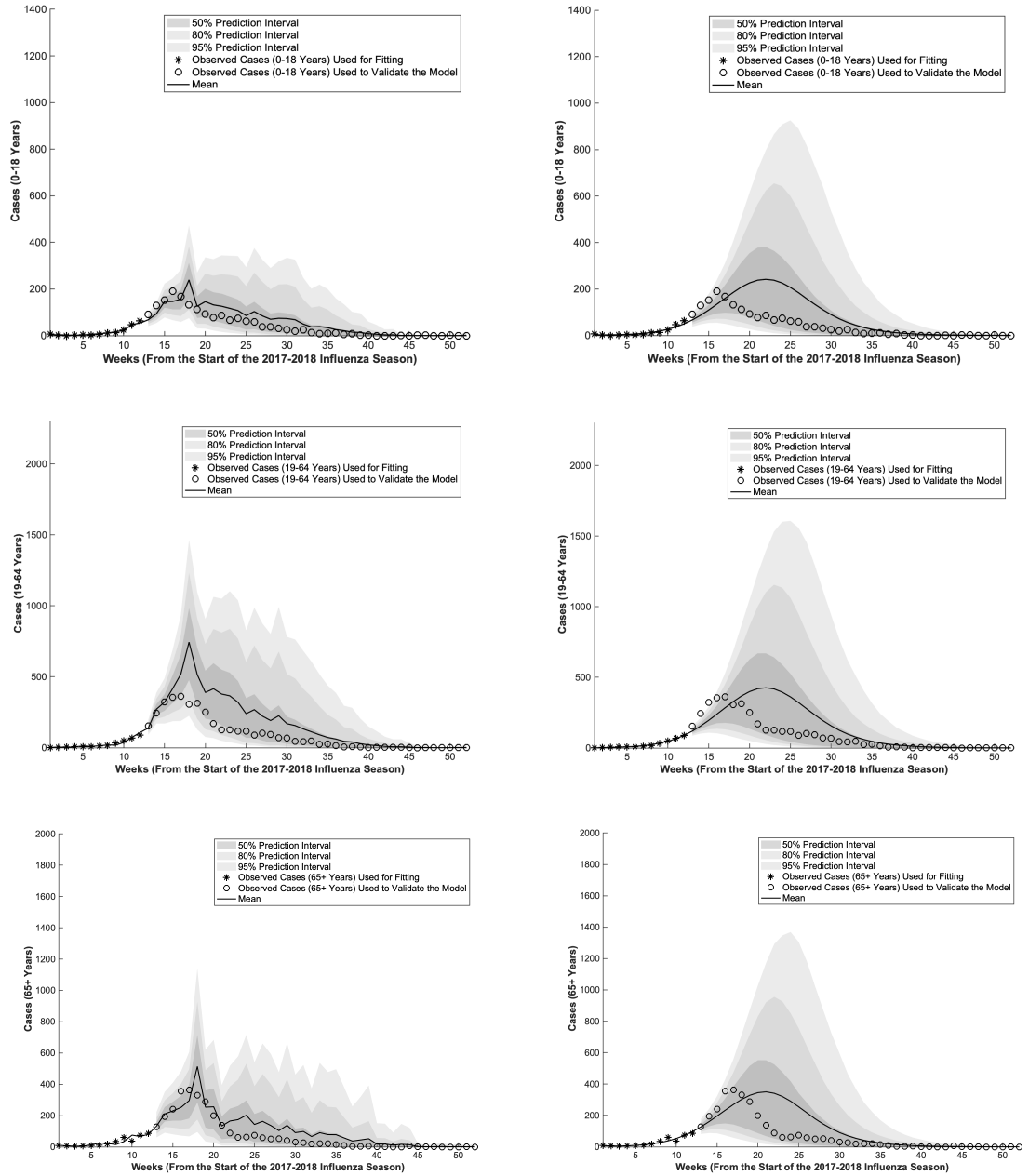


Figure S9: Results of model forecasting by age group using new case data up to four weeks prior to the peak for training, 2017-2018 influenza season. The predictive means and prediction intervals (95%, 80%, and 50%) by age group are shown. Models are trained using new laboratory confirmed cases (detected through surveillance systems) up to four weeks prior to the peak for Alberta using the time-dependent (left) and constant (right) case detection assumption, for age groups: 0 to 18 years old (top), 19 to 64 years old (middle), and 65 years and older (bottom) for the 2017-2018 influenza season.

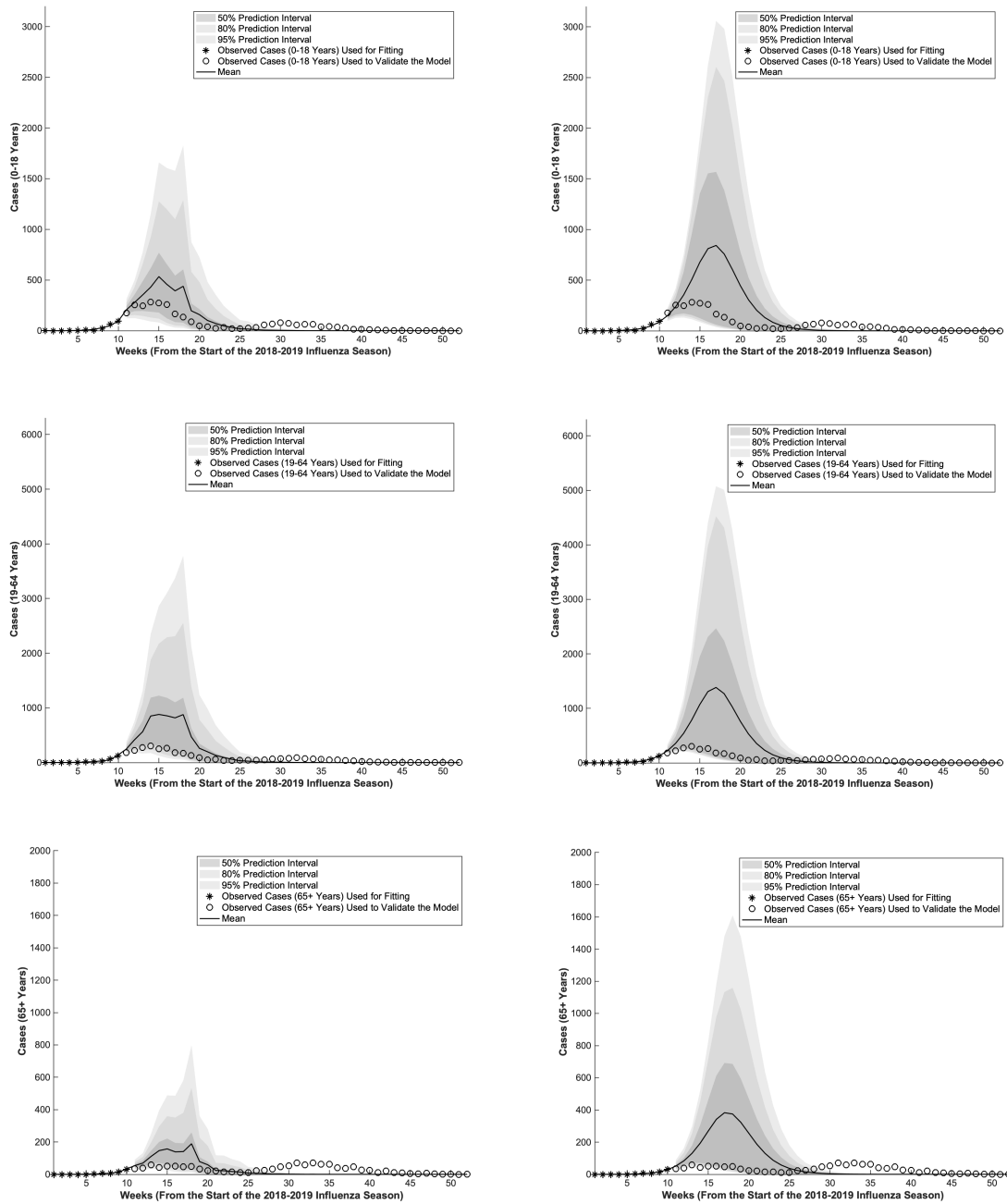


Figure S10: **Results of model forecasting by age group using new case data up to four weeks prior to the peak for training, 2018-2019 influenza season.** The predictive means and prediction intervals (95%, 80%, and 50%) by age group are shown. Models are trained using new laboratory confirmed cases (detected through surveillance systems) up to four weeks prior to the peak for Alberta using the time-dependent (left) and constant (right) case detection assumption, for age groups: 0 to 18 years old (top), 19 to 64 years old (middle), and 65 years and older (bottom) for the 2018-2019 influenza season.

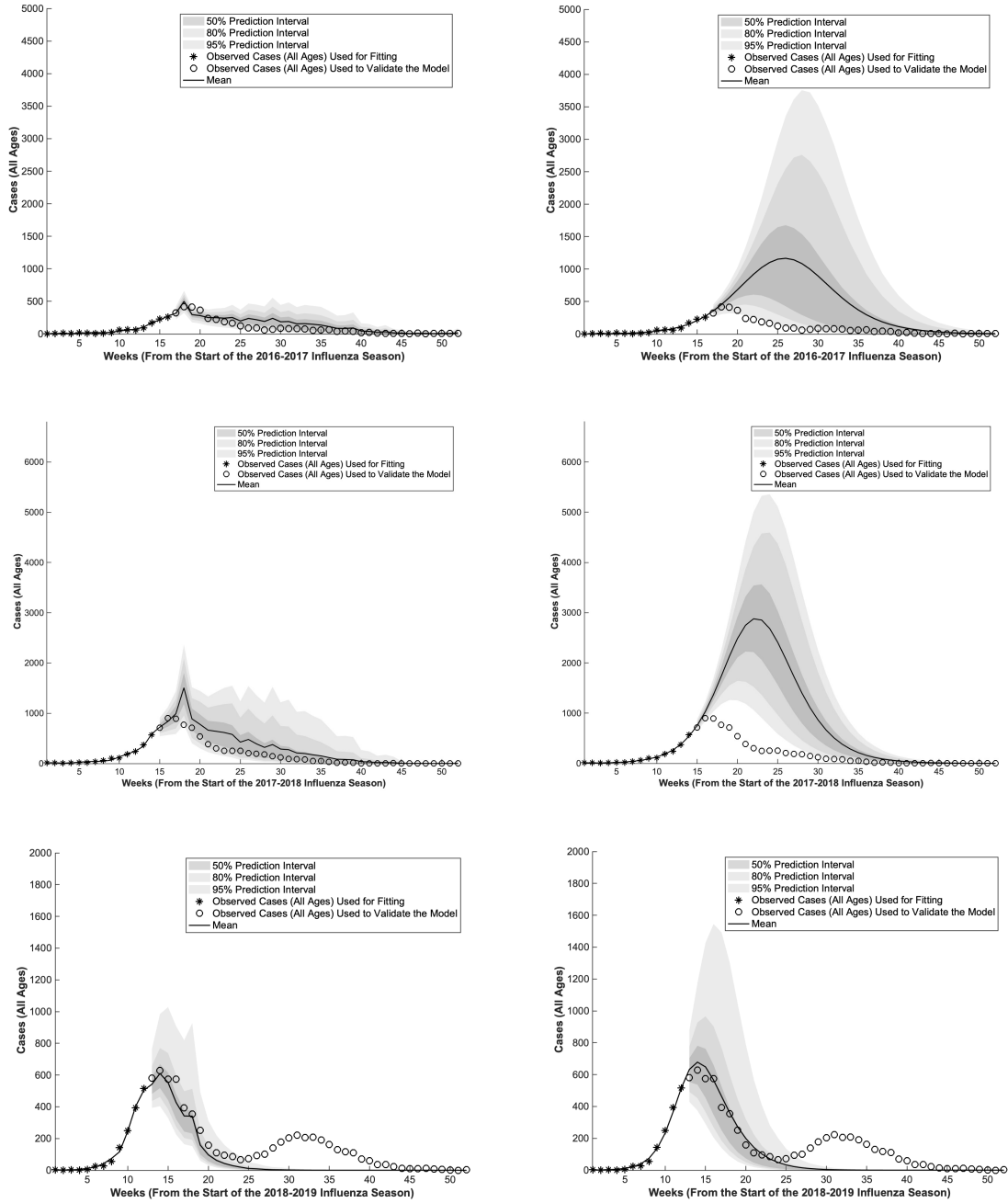


Figure S11: **Results of model forecasting using new case data up to two weeks prior to the peak for training, 2016-2019 influenza seasons.** The predictive means and prediction intervals (95%, 80%, and 50%) by age group are shown. Models are trained using new laboratory confirmed cases (detected through surveillance systems) up to two weeks prior to the peak for Alberta using the time-dependent (left) and constant (right) case detection assumption, for the 2016-2017 (top), 2017-2018 (middle), and 2018-2019 (bottom) influenza seasons.

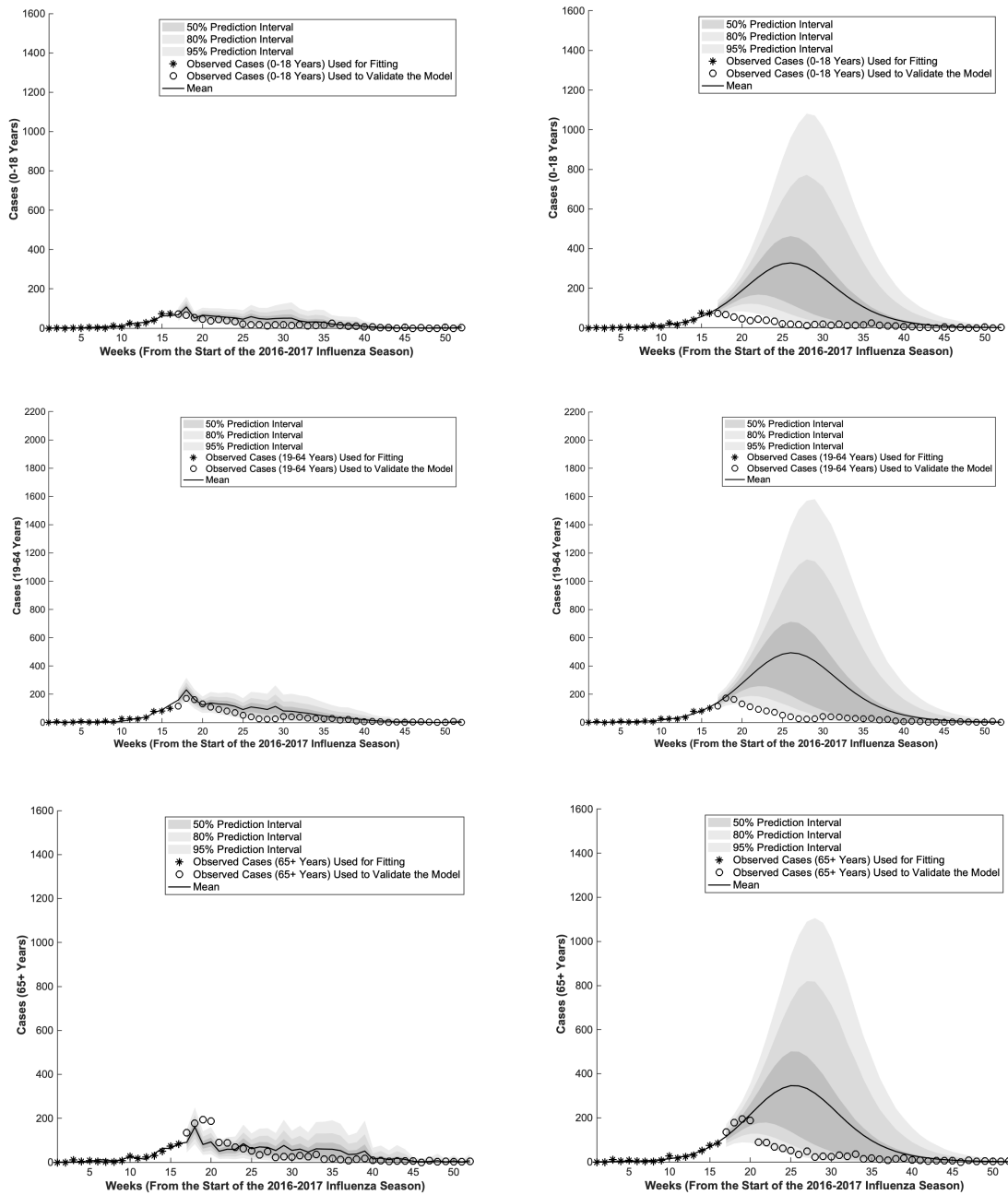


Figure S12: **Results of model forecasting by age group using new case data up to two weeks prior to the peak for training, 2016-2017 influenza season.** The predictive means and prediction intervals (95%, 80%, and 50%) by age group are shown. Models are trained using new laboratory confirmed cases detected through surveillance systems up to two weeks prior to the peak for Alberta using the time-dependent (left) and constant (right) case detection assumption, for age groups: 0 to 18 years old (top), 19 to 64 years old (middle), and 65 years and older (bottom) for the 2016-2017 influenza season.

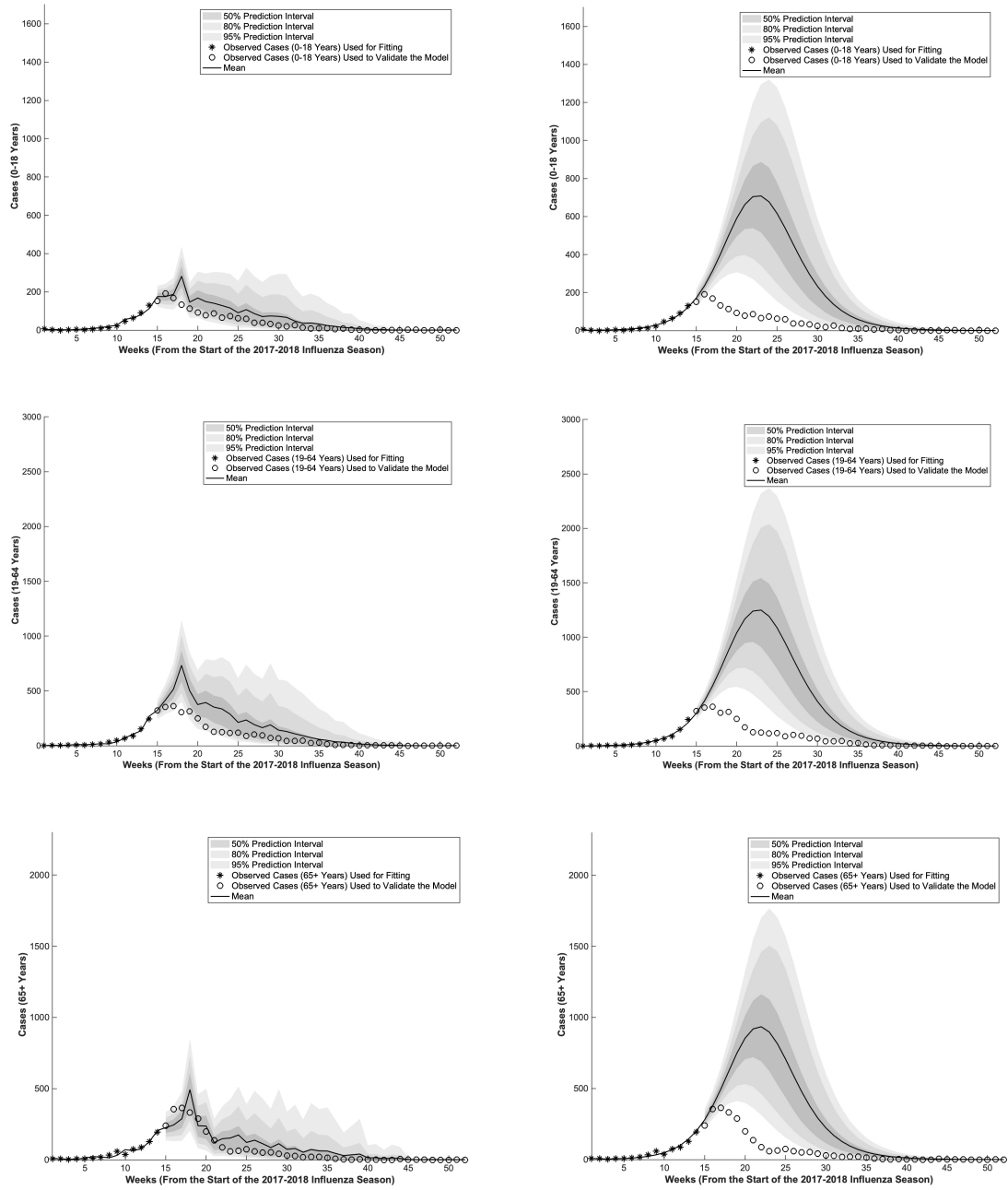


Figure S13: **Results of model forecasting by age group using new case data up to two weeks prior to the peak for training, 2017-2018 influenza season.** The predictive means and prediction intervals (95%, 80%, and 50%) by age group are shown. Models are trained using new laboratory confirmed cases detected through surveillance systems up to two weeks prior to the peak for Alberta using the time-dependent (left) and constant (right) case detection assumption, for age groups: 0 to 18 years old (top), 19 to 64 years old (middle), and 65 years and older (bottom) for the 2017-2018 influenza season.

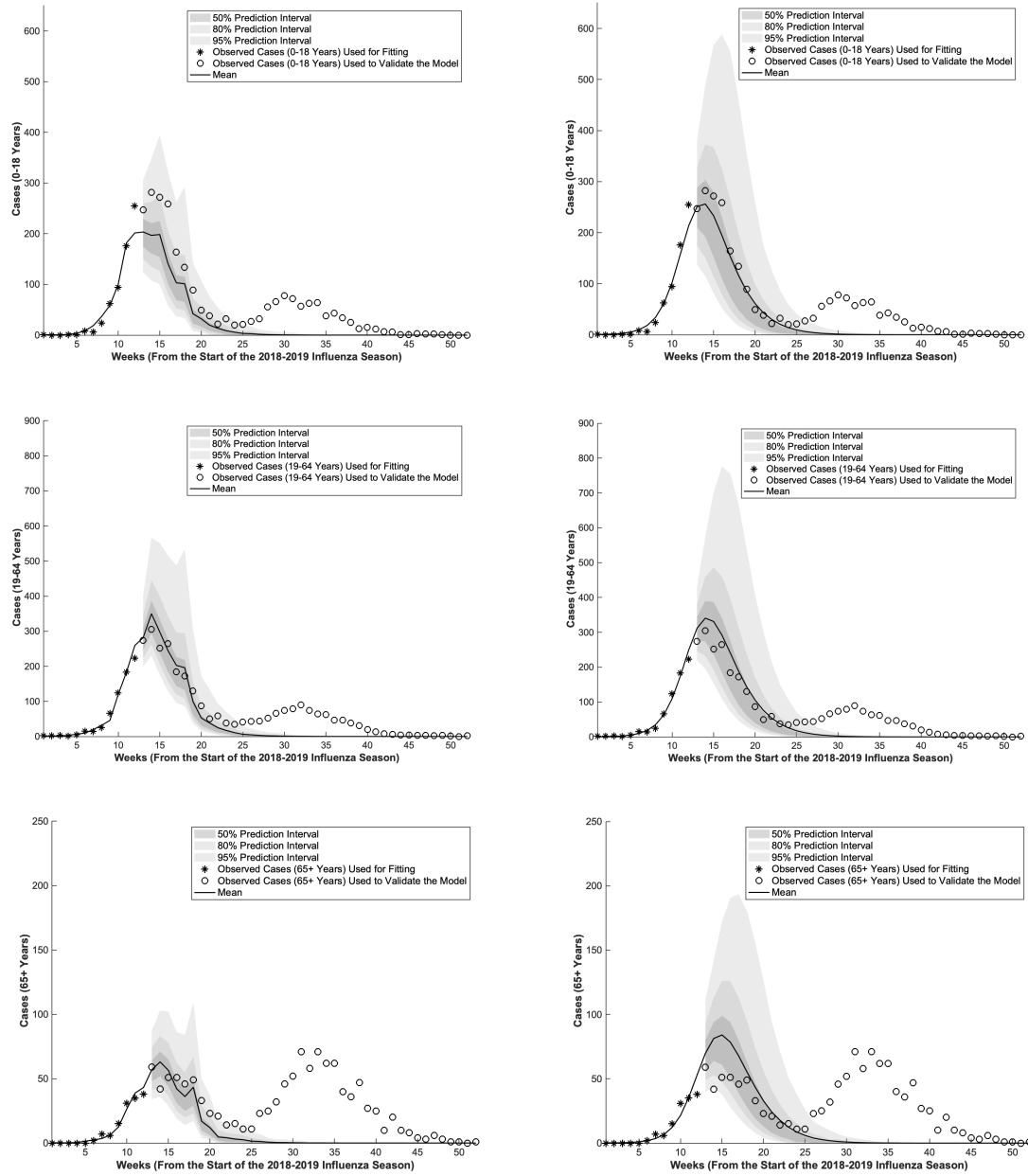


Figure S14: **Results of model forecasting by age group using new case data up to two weeks prior to the peak for training, 2018-2019 influenza season.** The predictive means and prediction intervals (95%, 80%, and 50%) by age group are shown. Models are trained using new laboratory confirmed cases detected through surveillance systems up to two weeks prior to the peak for Alberta using the time-dependent (left) and constant (right) case detection assumption, for age groups: 0 to 18 years old (top), 19 to 64 years old (middle), and 65 years and older (bottom) for the 2018-2019 influenza season.

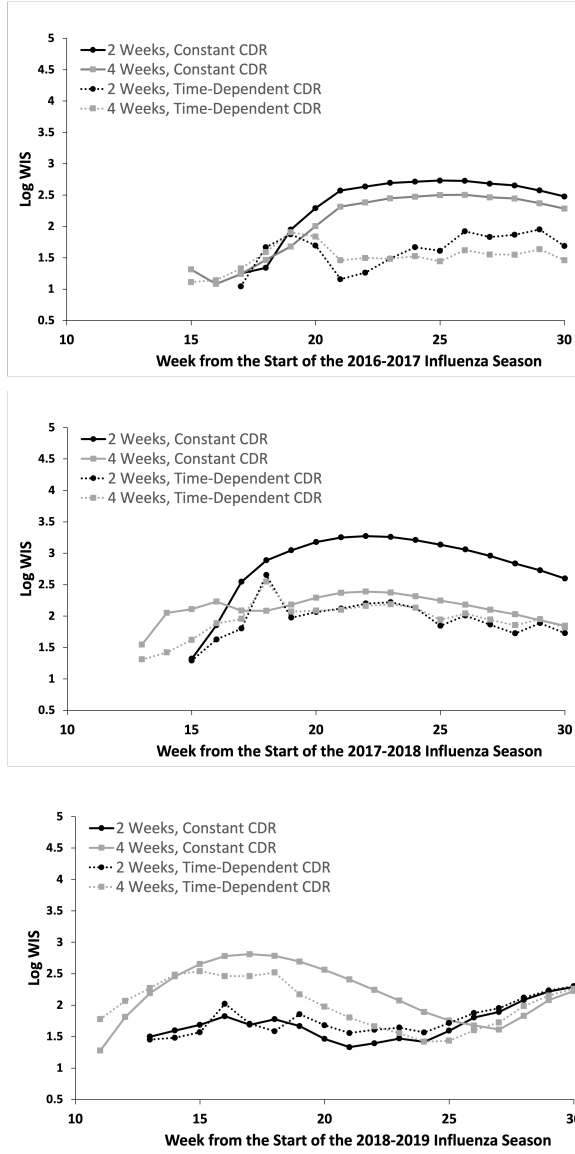


Figure S15: **Weighted Interval Score (WIS) by forecasting characteristics.** The log-transformed absolute WIS for two and four weeks prior to the actual peak and case detection rate (CDR) assumption for influenza seasons 2016-2019

Laboratory-confirmed seasonal influenza cases in Alberta since the 2009-2010 season

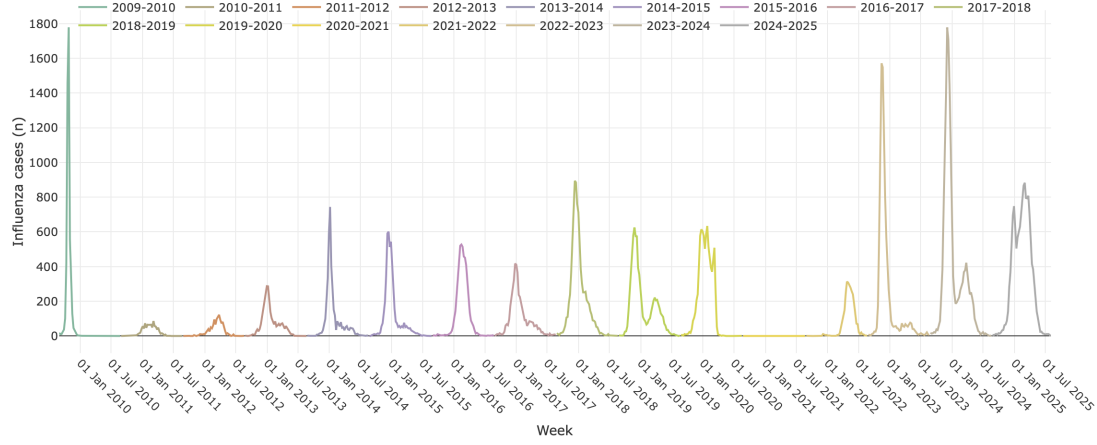


Figure S16: Laboratory confirmed seasonal influenza cases in Alberta since 2009. Note: Image directly copied from [4].

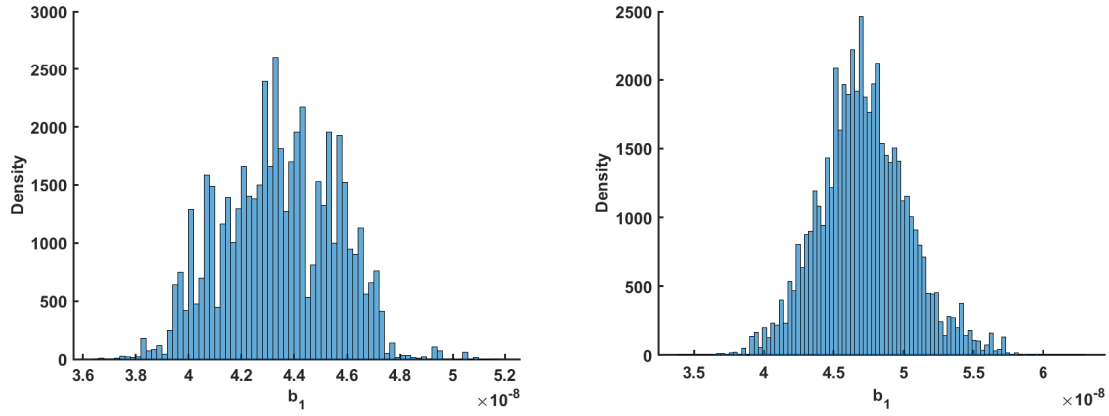


Figure S17: Marginal posterior distribution for the b_1 parameter for the retrospective 2017-2018 influenza season fitting using the time-dependent (left) and constant (right) case detection assumption.

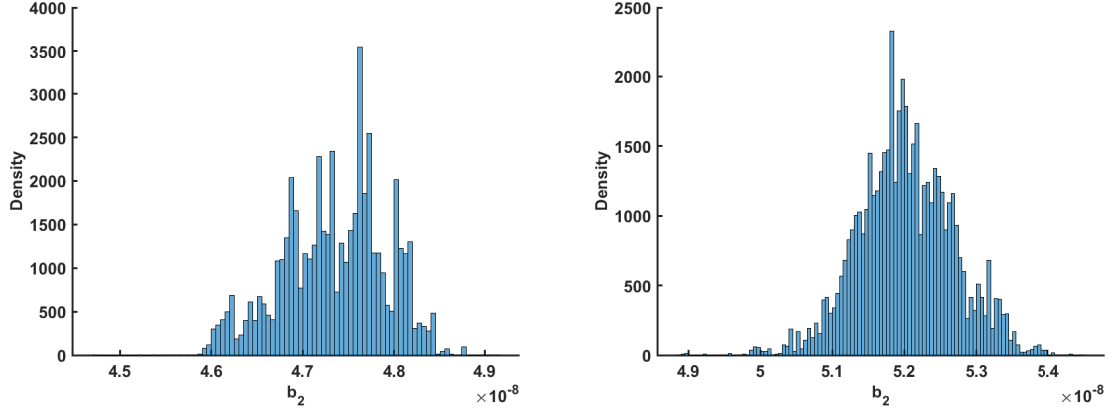


Figure S18: Marginal posterior distribution for the b_2 parameter for the retrospective 2017-2018 influenza season fitting using the time-dependent (left) and constant (right) case detection assumption.

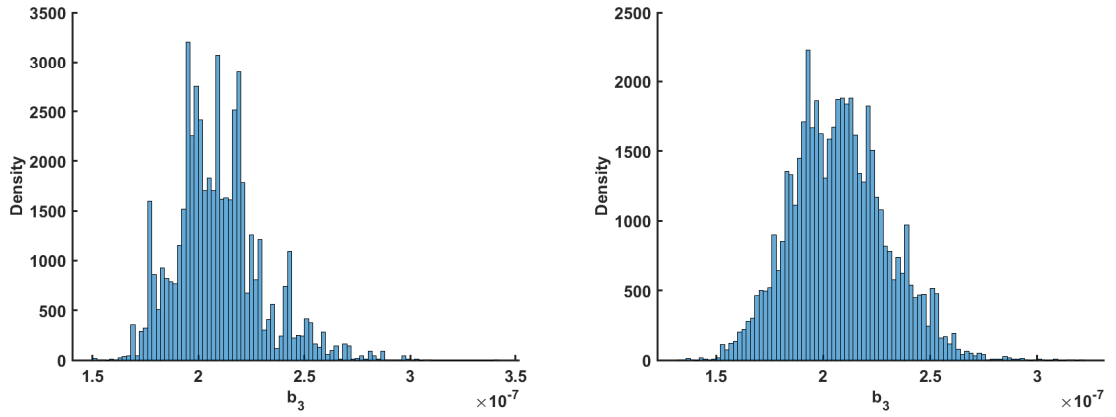


Figure S19: Marginal posterior distribution for the b_3 parameter for the retrospective 2017-2018 influenza season fitting using the time-dependent (left) and constant (right) case detection assumption.

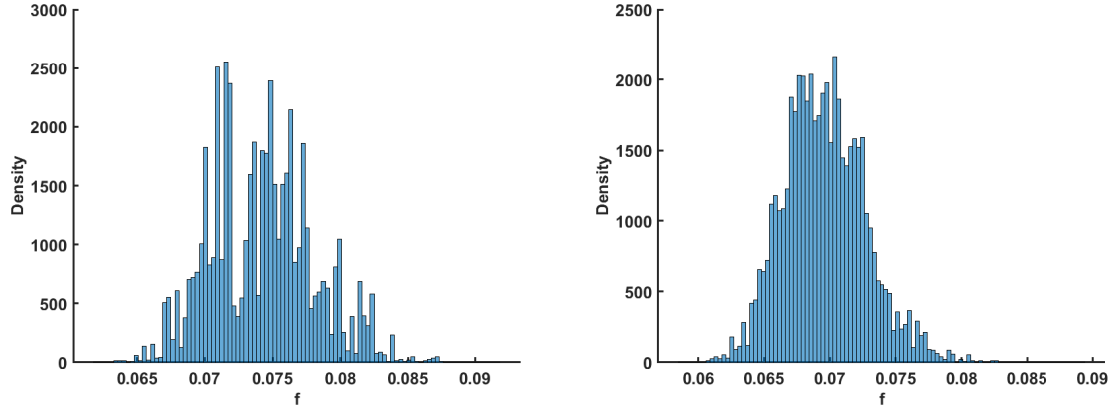


Figure S20: Marginal posterior distribution for the f parameter for the retrospective 2017-2018 influenza season fitting using the time-dependent (left) and constant (right) case detection assumption.

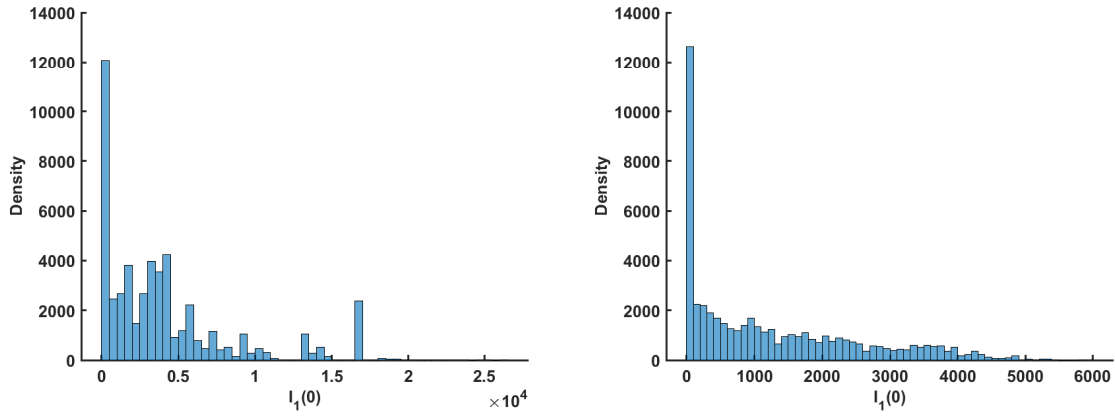


Figure S21: Marginal posterior distribution for the $I_1(0)$ parameter for the retrospective 2017-2018 influenza season fitting using the time-dependent (left) and constant (right) case detection assumption.

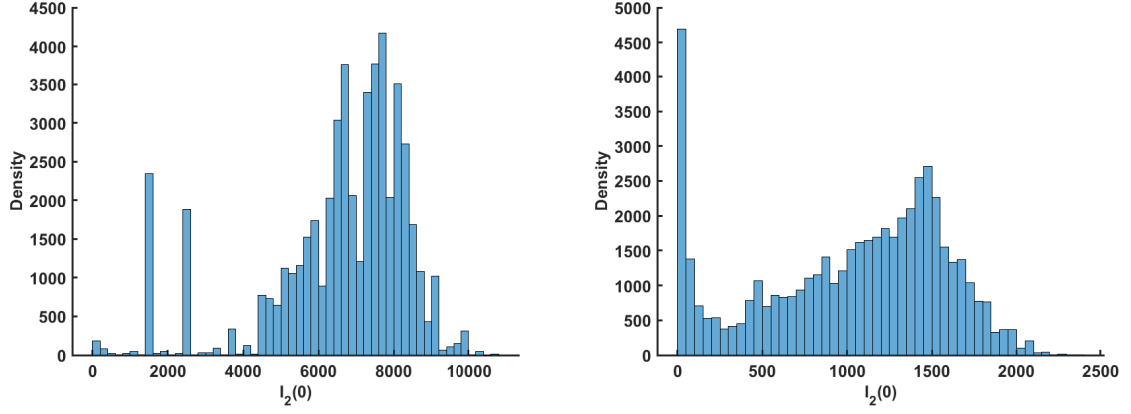


Figure S22: Marginal posterior distribution for the $I_2(0)$ parameter for the retrospective 2017-2018 influenza season fitting using the time-dependent (left) and constant (right) case detection assumption.

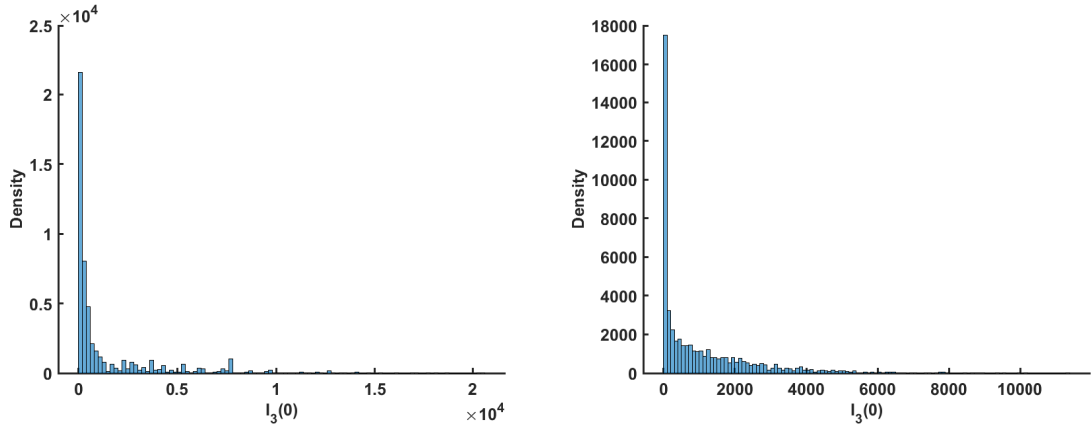


Figure S23: Marginal posterior distribution for the $I_3(0)$ parameter for the retrospective 2017-2018 influenza season fitting using the time-dependent (left) and constant (right) case detection assumption.

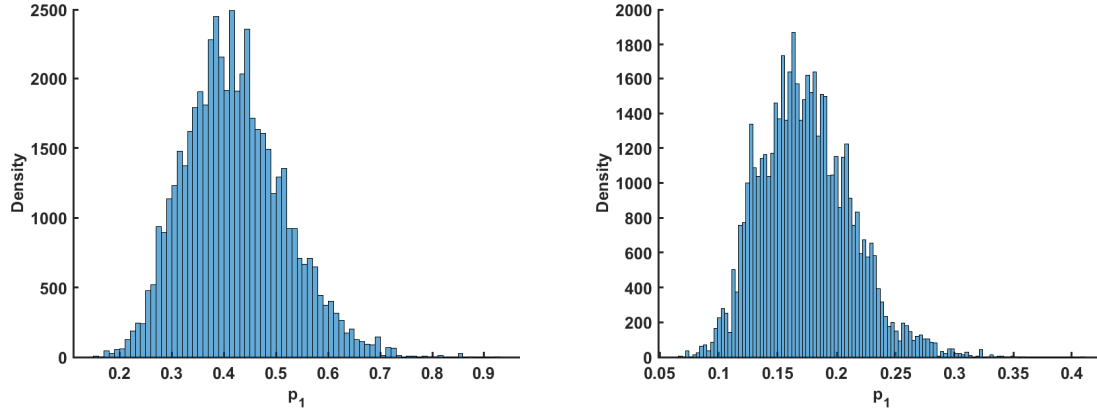


Figure S24: Marginal posterior distribution for the p_1 parameter for the retrospective 2017-2018 influenza season fitting using the time-dependent (left) and constant (right) case detection assumption.

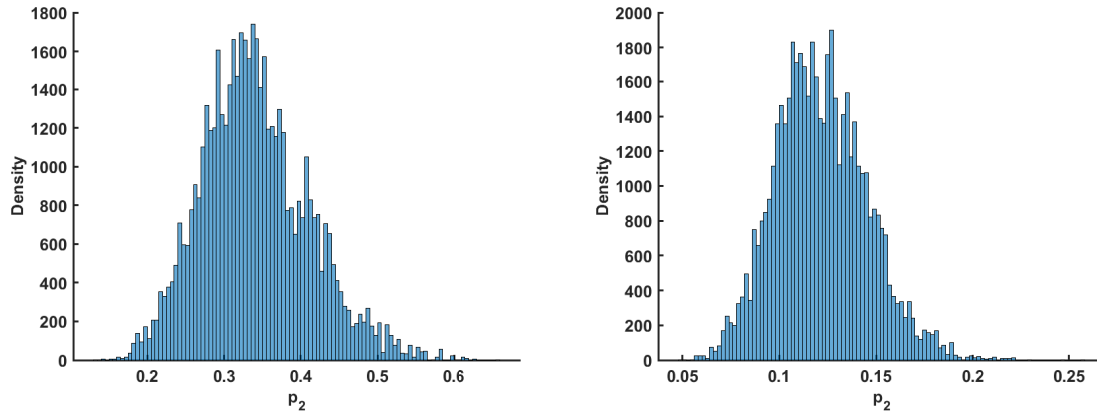


Figure S25: Marginal posterior distribution for the p_2 parameter for the retrospective 2017-2018 influenza season fitting using the time-dependent (left) and constant (right) case detection assumption.

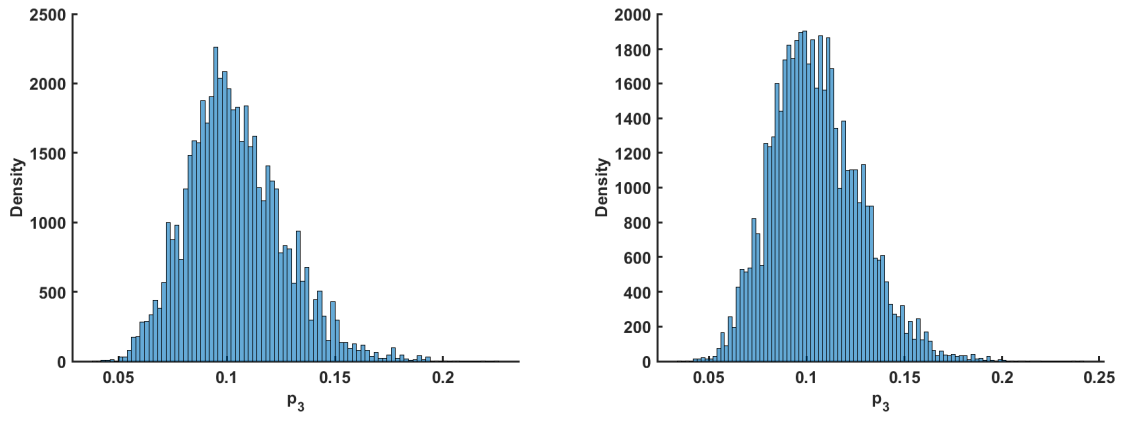


Figure S26: Marginal posterior distribution for the p_3 parameter for the retrospective 2017-2018 influenza season fitting using the time-dependent (left) and constant (right) case detection assumption.

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- [4] Government of Alberta, Laboratory-confirmed seasonal influenza cases in Alberta since the 2009-2010 season, 2025, <https://www.alberta.ca/stats/dashboard/respiratory-virus-dashboard.htm?data=summary#summary>, Accessed: 2025-08-19