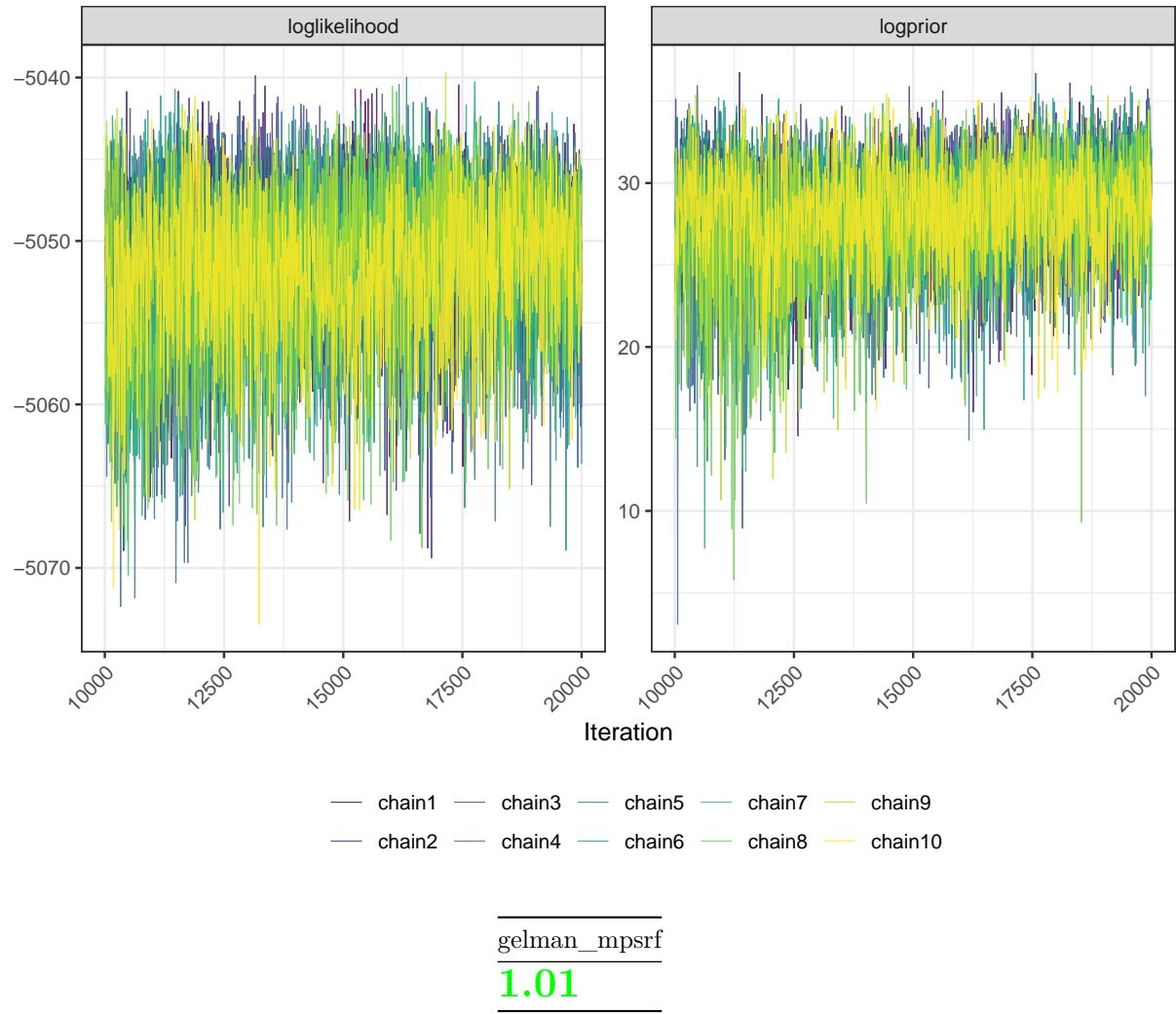


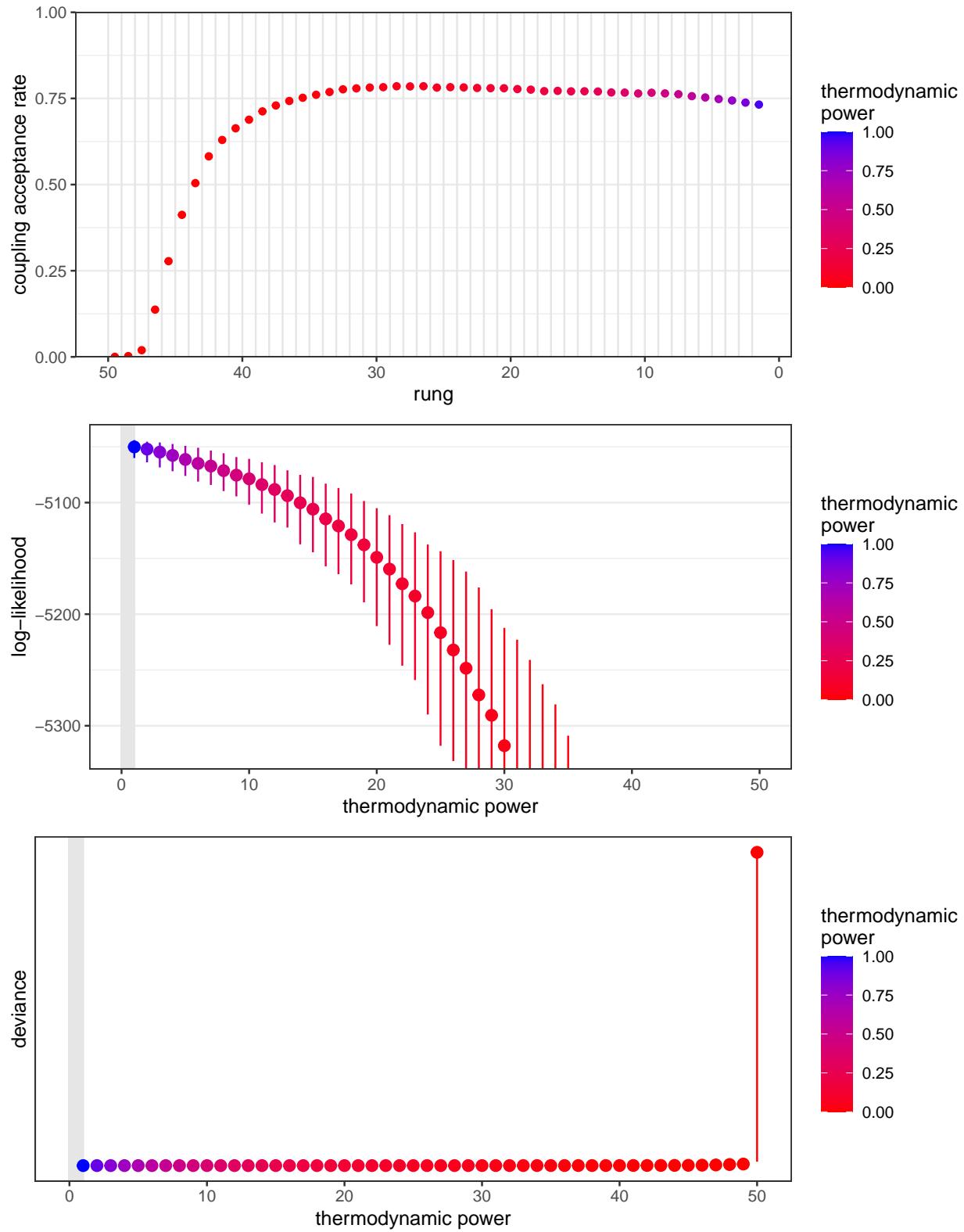
BRA1 with Standard Input

Fit Diagnostics

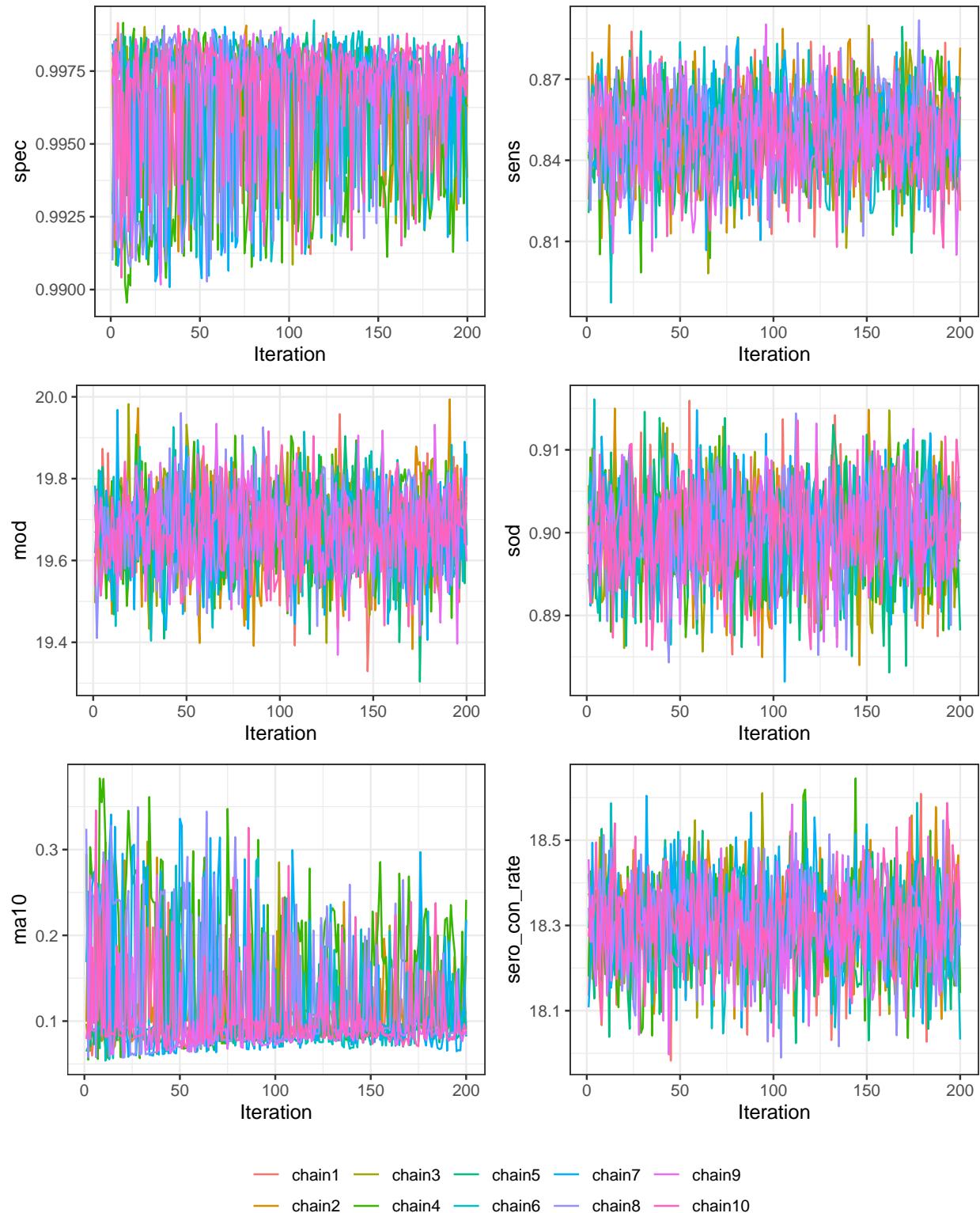
Log Likelihood & Prior Plot



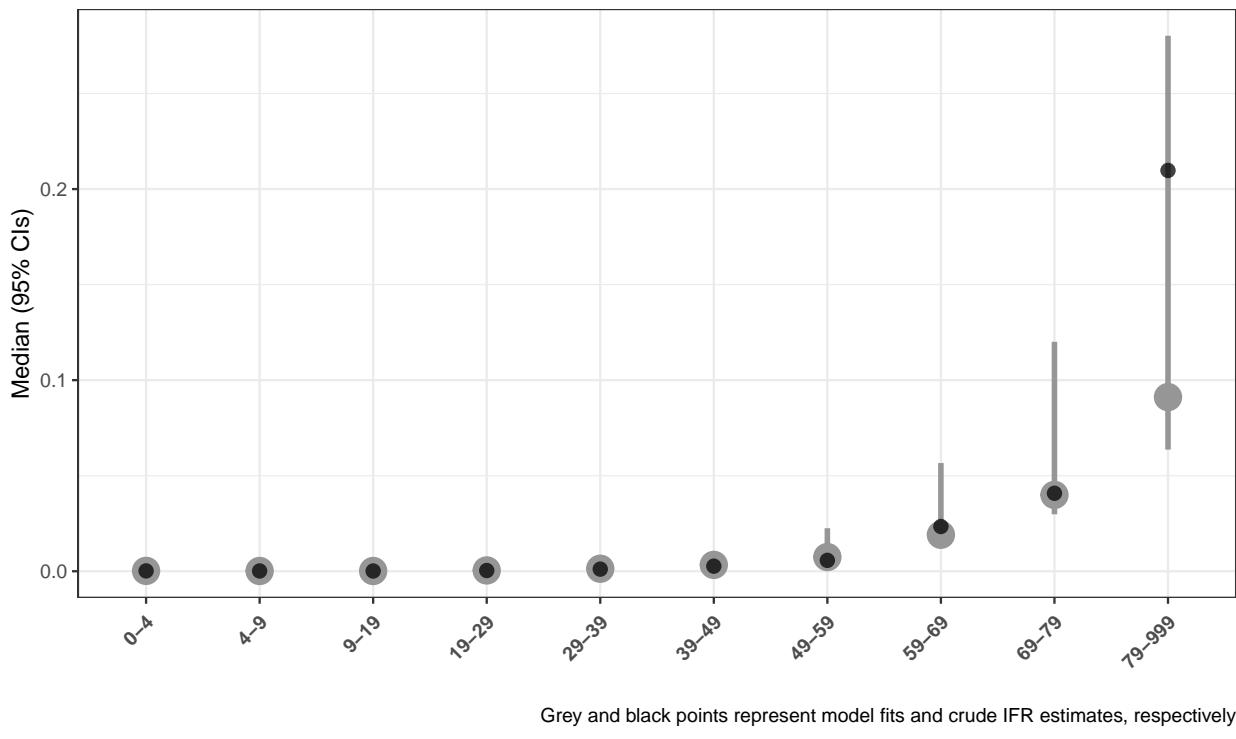
Metropolis Coupling Acceptance Plot



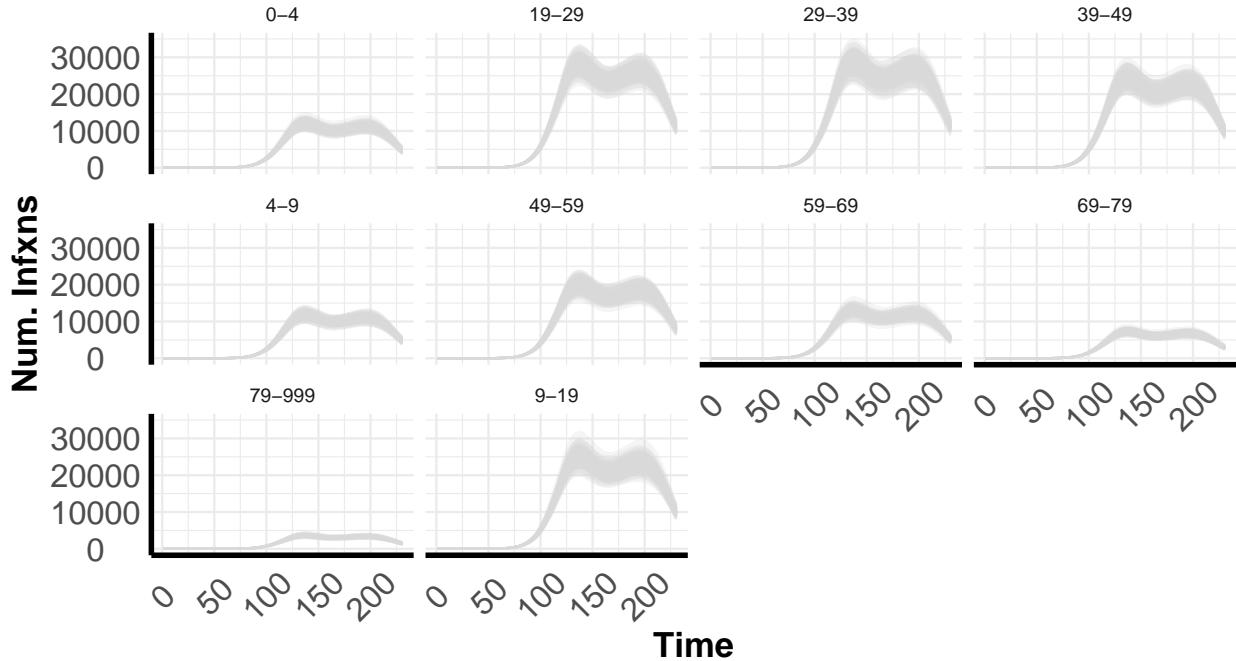
Serological Diagnostics



IFRs & Incidence Curve



Posterior Draws of the Infection Curve



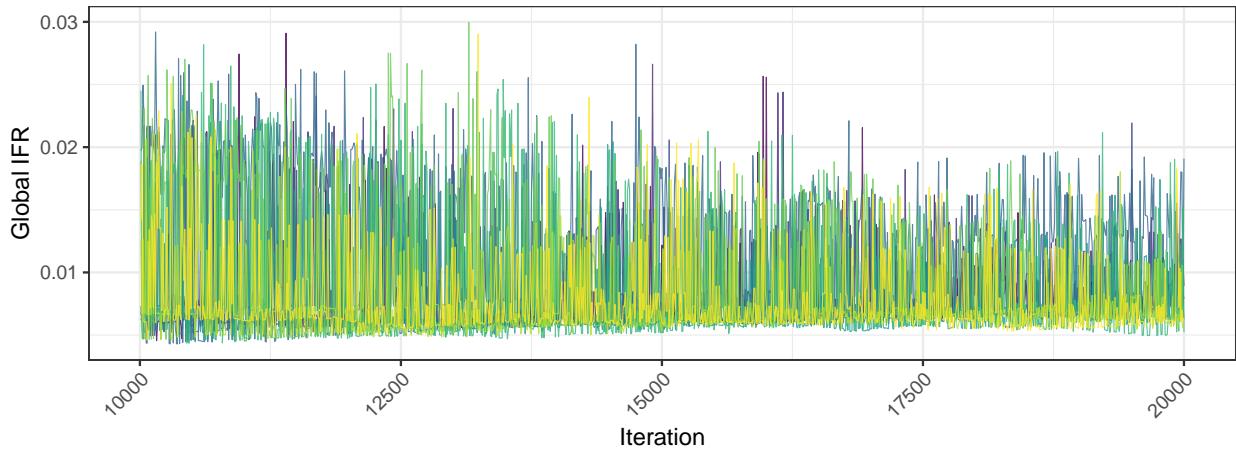
Strata IFR

strata	param	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
0-4	ma1	0.0001	0.0001	0.0002	0.0002	0.0006	0.0010	185.8995	-1.7928	0.0800
4-9	ma2	0.0001	0.0001	0.0001	0.0002	0.0004	0.0007	198.8699	-1.7607	0.0847
9-19	ma3	0.0001	0.0001	0.0001	0.0002	0.0004	0.0006	185.6007	-1.8202	0.0761
19-29	ma4	0.0003	0.0003	0.0004	0.0005	0.0013	0.0019	181.6116	-1.6954	0.0948
29-39	ma5	0.0008	0.0010	0.0013	0.0016	0.0040	0.0064	179.4275	-1.6706	0.0988
39-49	ma6	0.0021	0.0025	0.0033	0.0042	0.0102	0.0152	177.8629	-1.8670	0.0698
49-59	ma7	0.0046	0.0056	0.0074	0.0093	0.0225	0.0366	174.5318	-1.8184	0.0764
59-69	ma8	0.0121	0.0145	0.0191	0.0238	0.0566	0.0863	172.9046	-1.5230	0.1251
69-79	ma9	0.0245	0.0298	0.0400	0.0497	0.1201	0.1801	175.6681	-1.8859	0.0674
79-999	ma10	0.0538	0.0637	0.0911	0.1143	0.2802	0.3981	187.7985	-2.0676	0.0471

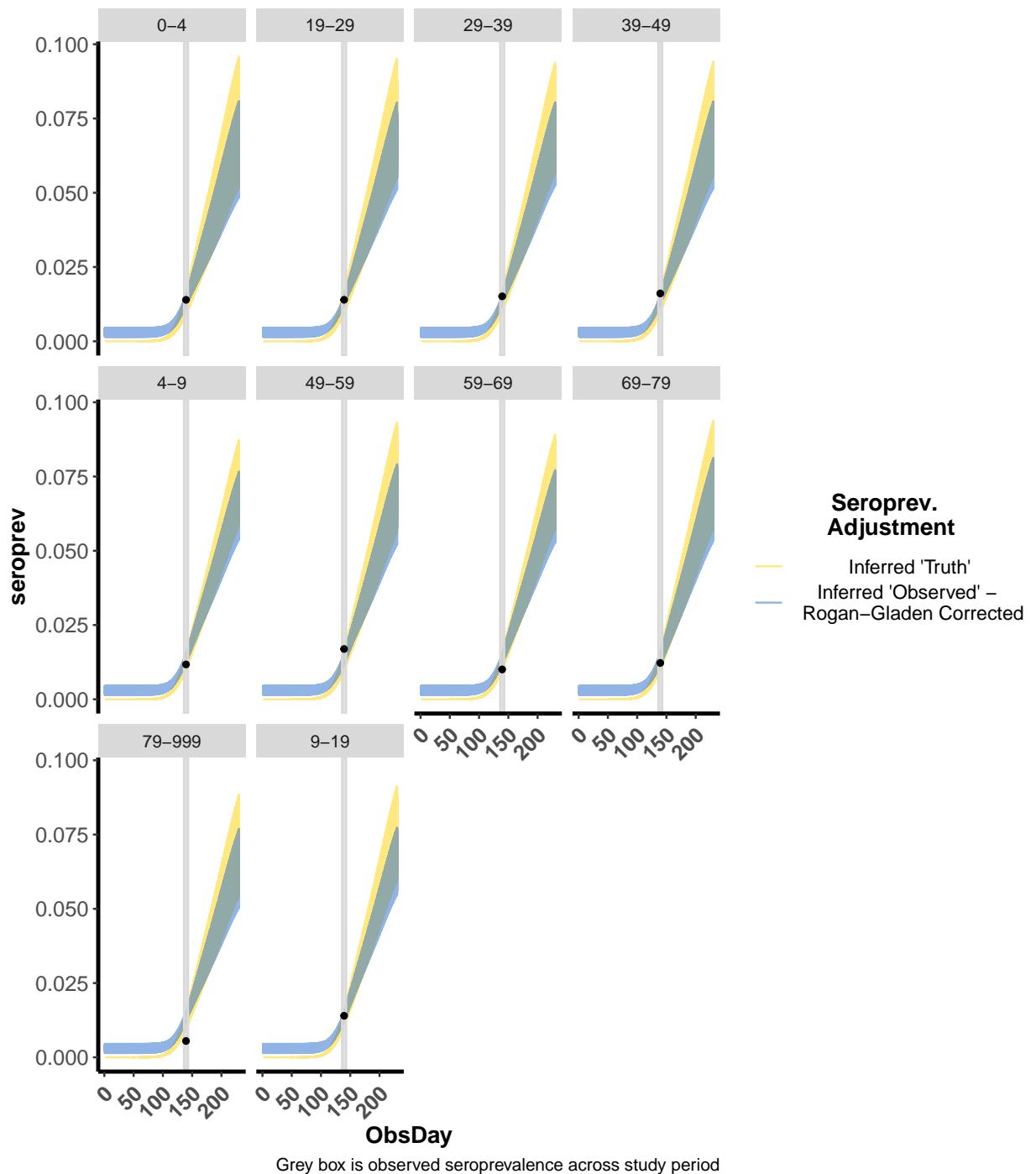
Overall IFR

min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
0.0043	0.0051	0.0066	0.0083	0.02	0.0308	1941.884	11.2132	0

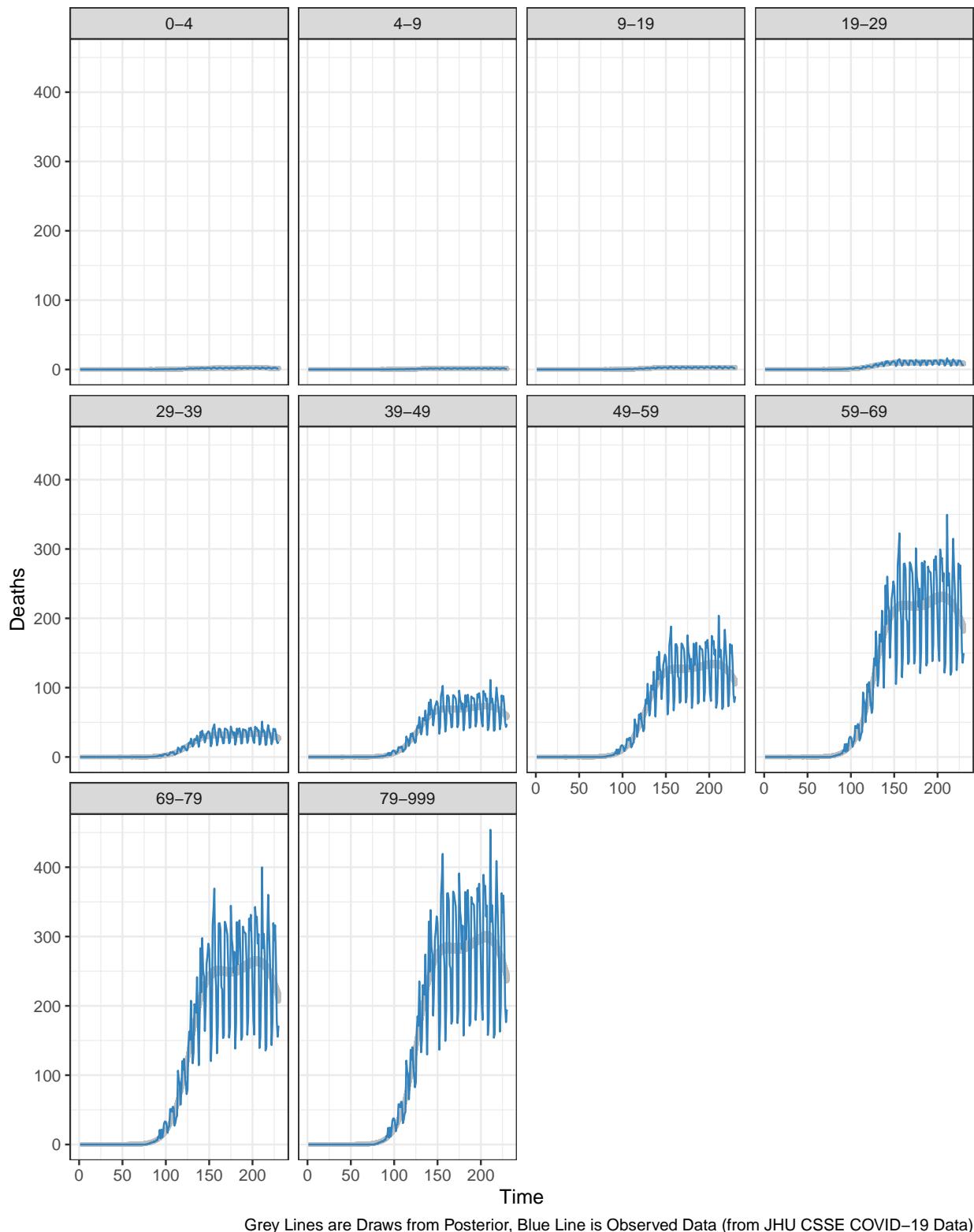
chain	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
chain1	0.0046	0.0057	0.0065	0.0078	0.0179	0.0290	1000.0000	-0.2396	0.3877
chain2	0.0057	0.0059	0.0076	0.0084	0.0182	0.0267	1000.0000	0.6586	0.3212
chain3	0.0050	0.0055	0.0066	0.0069	0.0113	0.0269	377.2814	-1.7608	0.0847
chain4	0.0043	0.0047	0.0127	0.0120	0.0221	0.0284	89.7069	3.6571	0.0005
chain5	0.0046	0.0053	0.0064	0.0068	0.0134	0.0190	1000.0000	-0.3795	0.3712
chain6	0.0046	0.0052	0.0068	0.0080	0.0164	0.0237	258.5678	2.3352	0.0261
chain7	0.0044	0.0049	0.0065	0.0087	0.0221	0.0284	91.9495	5.4709	0.0000
chain8	0.0047	0.0049	0.0066	0.0096	0.0223	0.0308	29.7594	12.2531	0.0000
chain9	0.0047	0.0051	0.0065	0.0073	0.0138	0.0225	236.7488	4.4573	0.0000
chain10	0.0047	0.0054	0.0063	0.0078	0.0175	0.0302	482.3604	3.5675	0.0007



Seroprevalence Observed vs. Inferred True Prev



Death Posterior Predictive Check



Grey Lines are Draws from Posterior, Blue Line is Observed Data (from JHU CSSE COVID-19 Data)

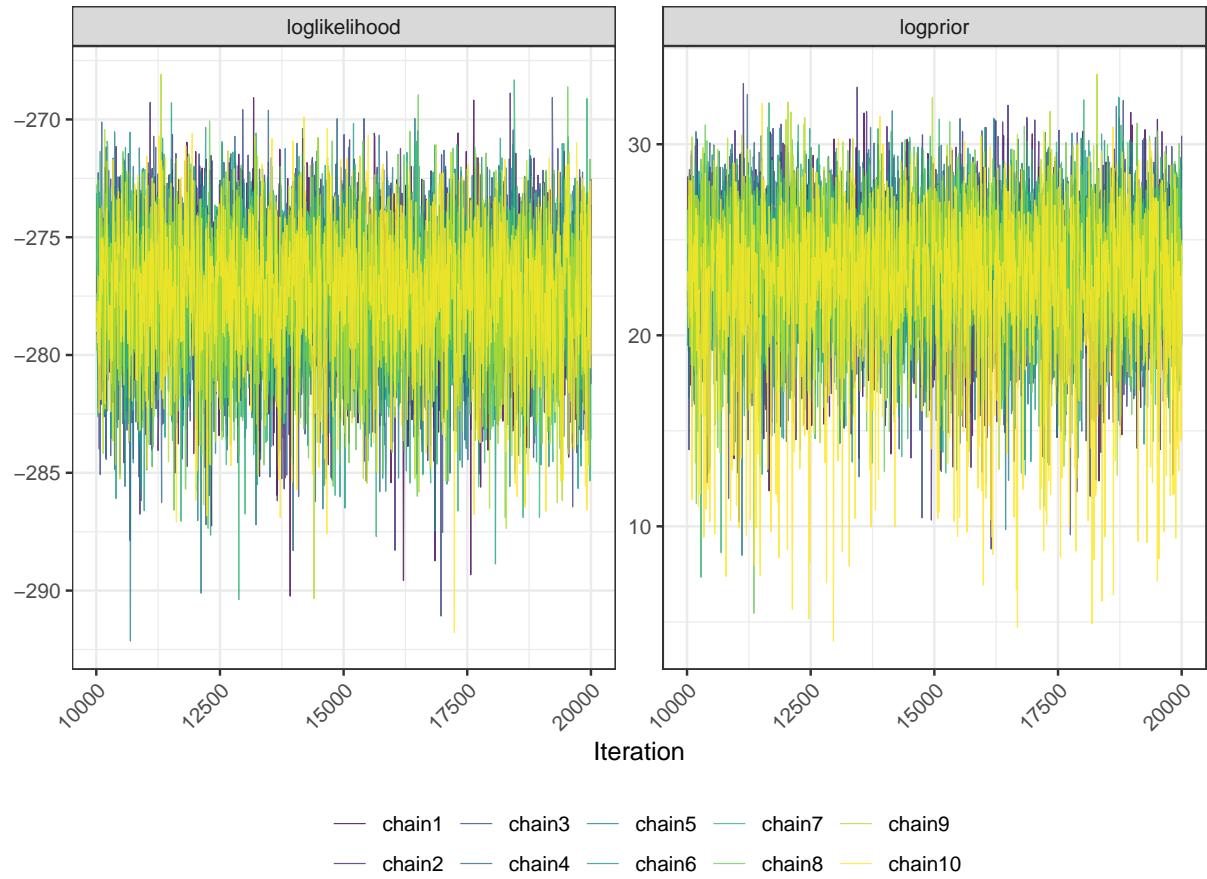
Additional Parameters

param	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
x1	1.5911	4.5463	20.8280	21.5312	43.8023	61.6040	166.7110	1.3945	0.1509
x2	124.6243	125.5569	127.0909	127.7215	133.4206	142.8416	333.4374	-3.2926	0.0018
x3	143.1933	151.4089	157.9861	157.7865	162.8624	166.1030	834.8766	3.3261	0.0016
x4	175.2620	177.3173	179.6541	179.6204	181.7507	183.1658	1294.2792	1.8770	0.0685
y1	0.0000	0.0031	0.0850	0.1219	0.4228	0.9253	2366.1624	1.4028	0.1491
y2	0.1207	0.3394	1.7924	1.9444	4.4866	6.6587	173.2794	1.5735	0.1157
y3	10.4307	10.8882	12.0007	11.8593	12.3033	12.4629	231.5787	0.7899	0.2920
y4	10.4042	10.8319	11.9273	11.7858	12.2057	12.3701	227.3985	1.0784	0.2230
y5	10.4277	10.8641	11.9643	11.8209	12.2302	12.4084	224.7402	1.2177	0.1901
Ne1	0.7878	0.9029	1.0001	1.0001	1.1000	1.2116	7564.4741	-1.1670	0.2019
Ne10	0.8034	0.8927	1.0031	1.0028	1.1077	1.2449	382.0285	0.8118	0.2870
Ne2	0.7894	0.8982	0.9959	0.9959	1.0932	1.1873	7526.8750	0.3157	0.3796
Ne3	0.8101	0.9046	1.0000	1.0001	1.0984	1.2091	4839.1174	-0.4467	0.3611
Ne4	0.8128	0.9031	0.9980	0.9982	1.0916	1.1752	4011.1583	-0.3475	0.3756
Ne5	0.8194	0.9149	1.0075	1.0079	1.1046	1.1850	2172.5592	-1.9947	0.0546
Ne6	0.8236	0.9195	1.0134	1.0138	1.1075	1.1828	2027.1434	1.5235	0.1250
Ne7	0.8097	0.9233	1.0210	1.0202	1.1154	1.2003	1240.3858	0.4715	0.3570
Ne8	0.7942	0.8751	0.9729	0.9723	1.0700	1.1501	762.4987	-1.6130	0.1086
Ne9	0.8337	0.8921	0.9902	0.9907	1.0892	1.1668	611.6760	0.4341	0.3631

CHE1 with Standard Input

Fit Diagnostics

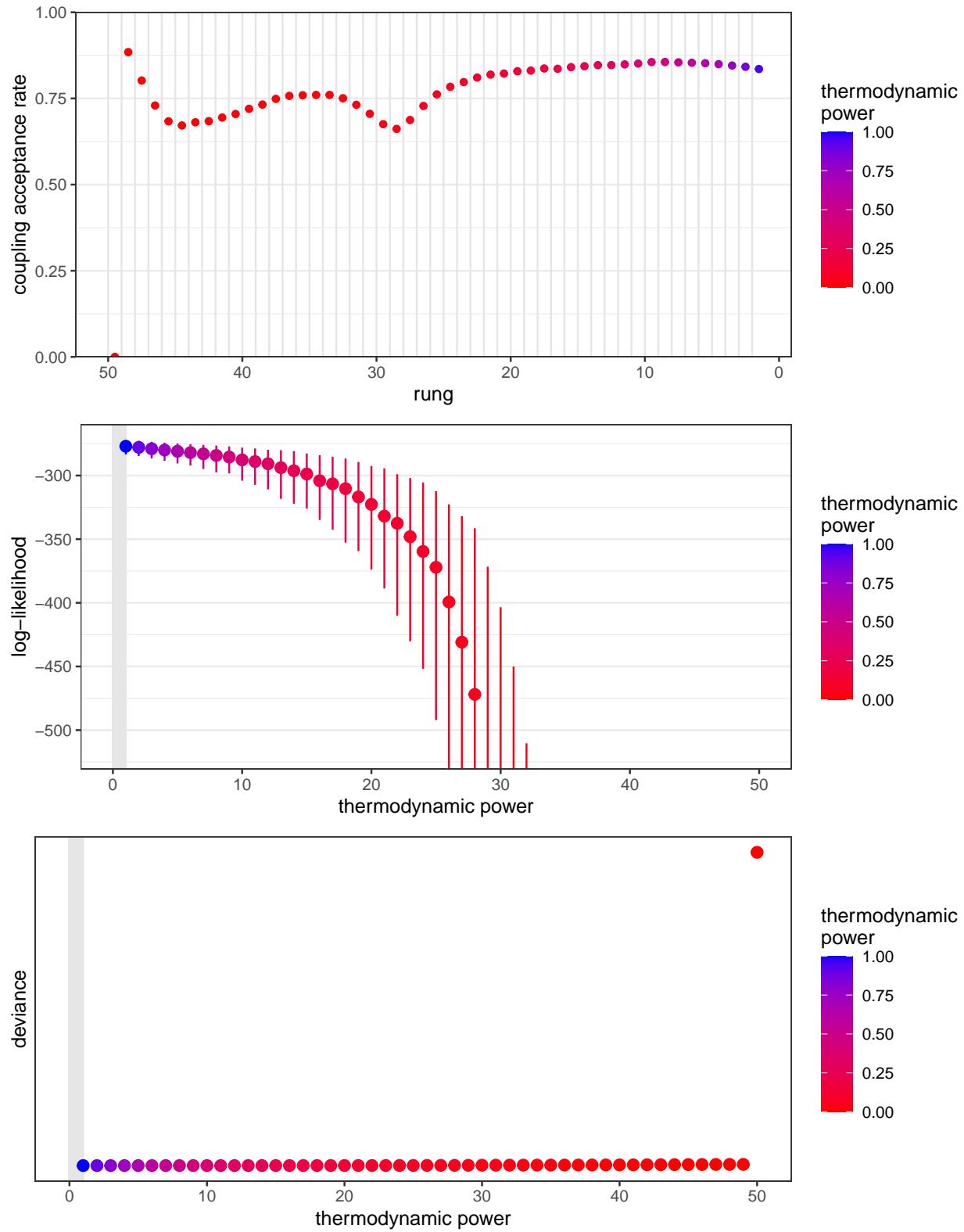
Log Likelihood & Prior Plot



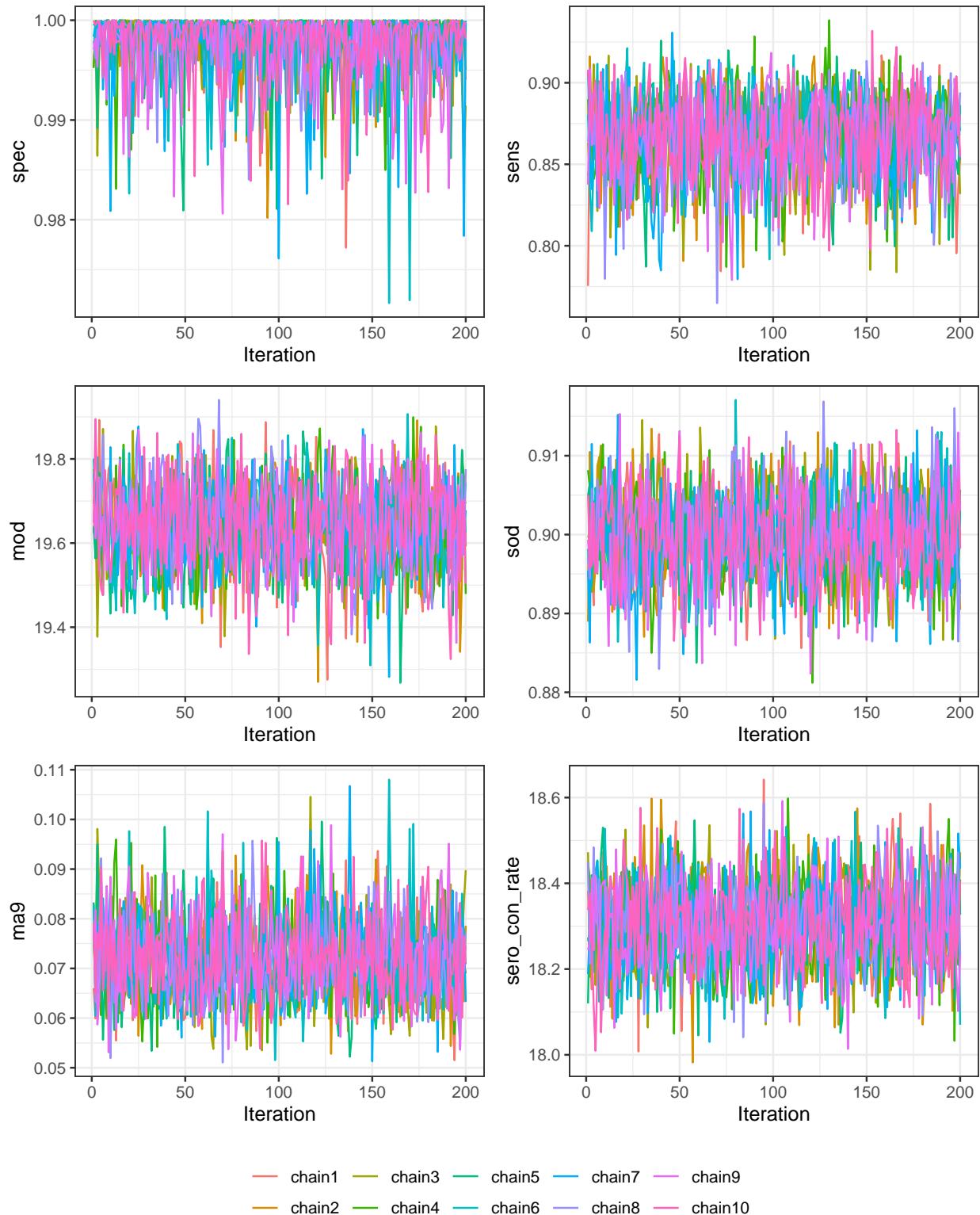
gelman_mpsrf

1

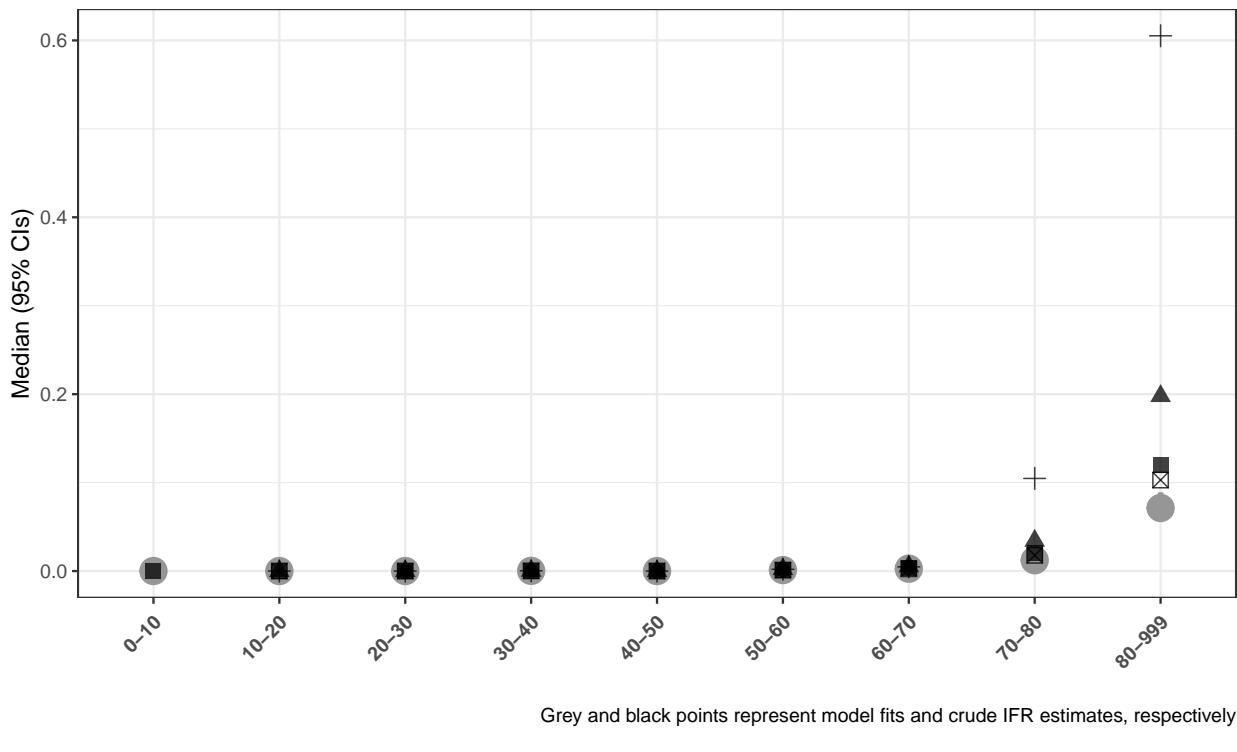
Metropolis Coupling Acceptance Plot



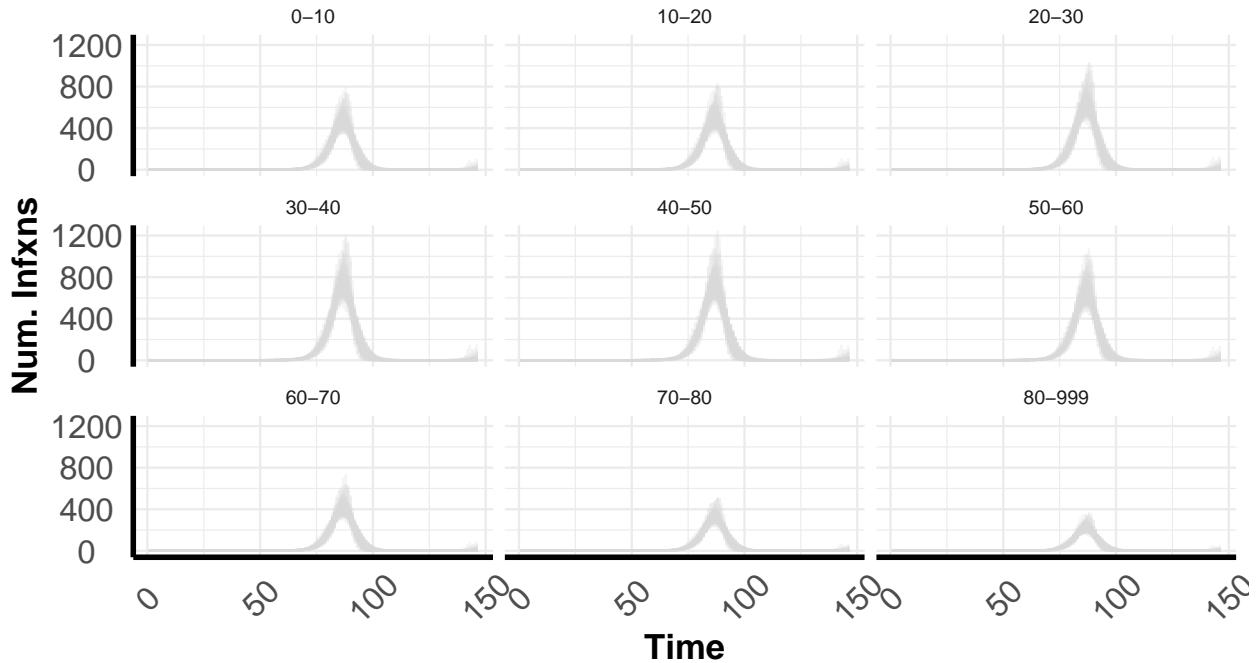
Serological Diagnostics



IFRs & Incidence Curve



Posterior Draws of the Infection Curve



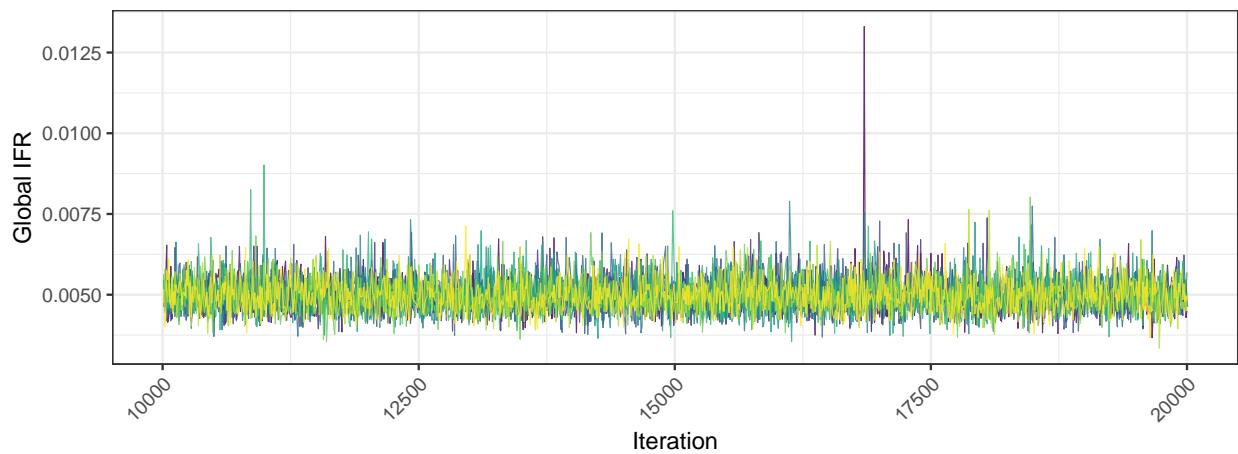
Strata IFR

strata	param	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
0-10	ma1	0.0000	0.0000	0.0000	0.0000	0.0001	0.0001	9269.651	1.7680	0.0836
10-20	ma2	0.0000	0.0000	0.0000	0.0000	0.0001	0.0001	8781.837	-0.7214	0.3075
20-30	ma3	0.0000	0.0000	0.0000	0.0000	0.0001	0.0001	9270.816	-0.5721	0.3387
30-40	ma4	0.0000	0.0000	0.0002	0.0002	0.0006	0.0011	10000.000	0.3262	0.3783
40-50	ma5	0.0000	0.0000	0.0000	0.0000	0.0001	0.0001	9221.145	2.3710	0.0240
50-60	ma6	0.0001	0.0005	0.0011	0.0011	0.0019	0.0049	11107.123	0.4342	0.3631
60-70	ma7	0.0006	0.0014	0.0027	0.0027	0.0042	0.0074	10278.912	-1.1289	0.2110
70-80	ma8	0.0065	0.0091	0.0122	0.0124	0.0162	0.0389	10000.000	0.2487	0.3868
80-999	ma9	0.0473	0.0583	0.0713	0.0719	0.0890	0.1791	8350.134	0.0842	0.3975

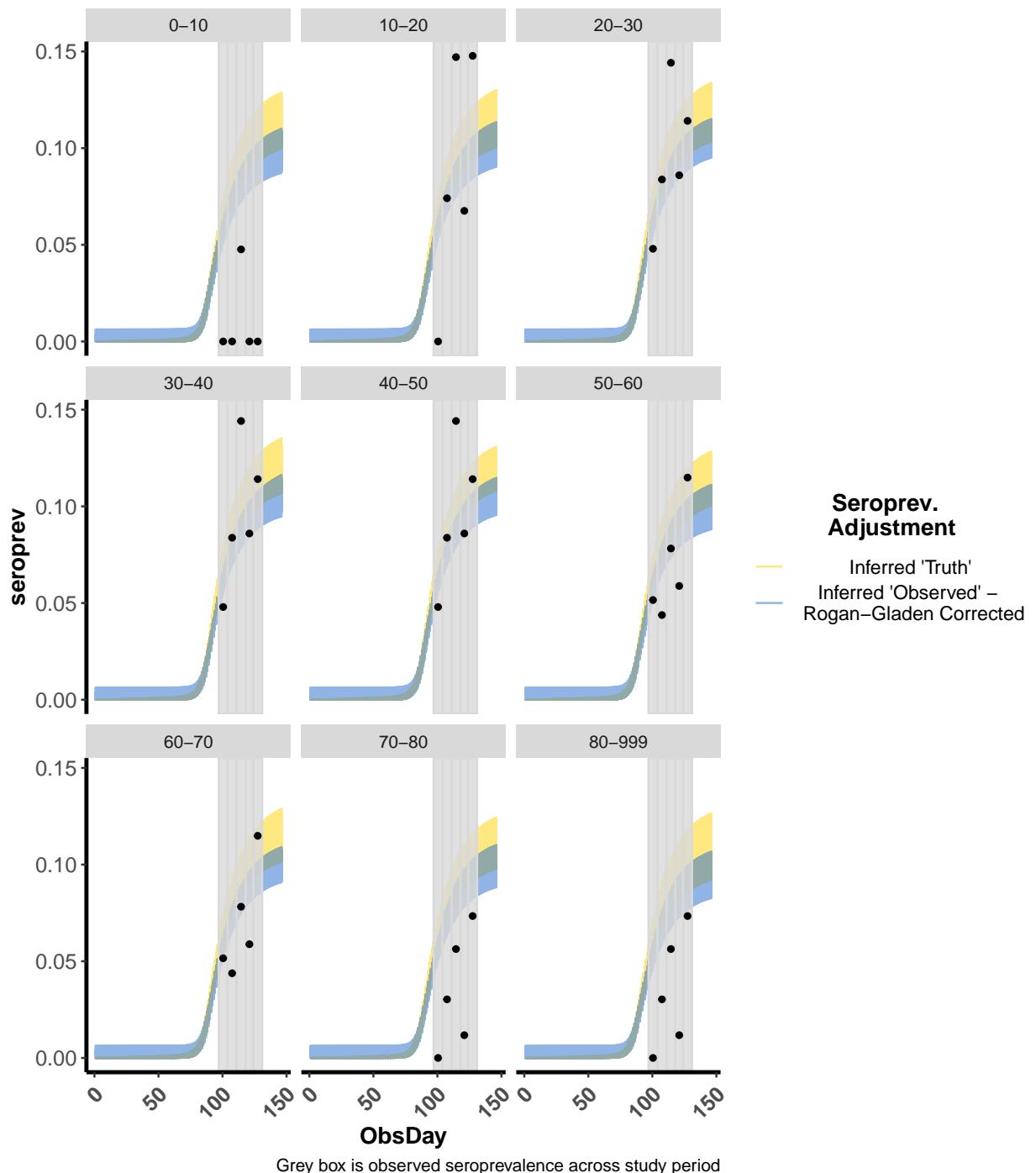
Overall IFR

min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
0.0034	0.004	0.0047	0.0048	0.0057	0.0126	9707.681	0.9351	0.2577

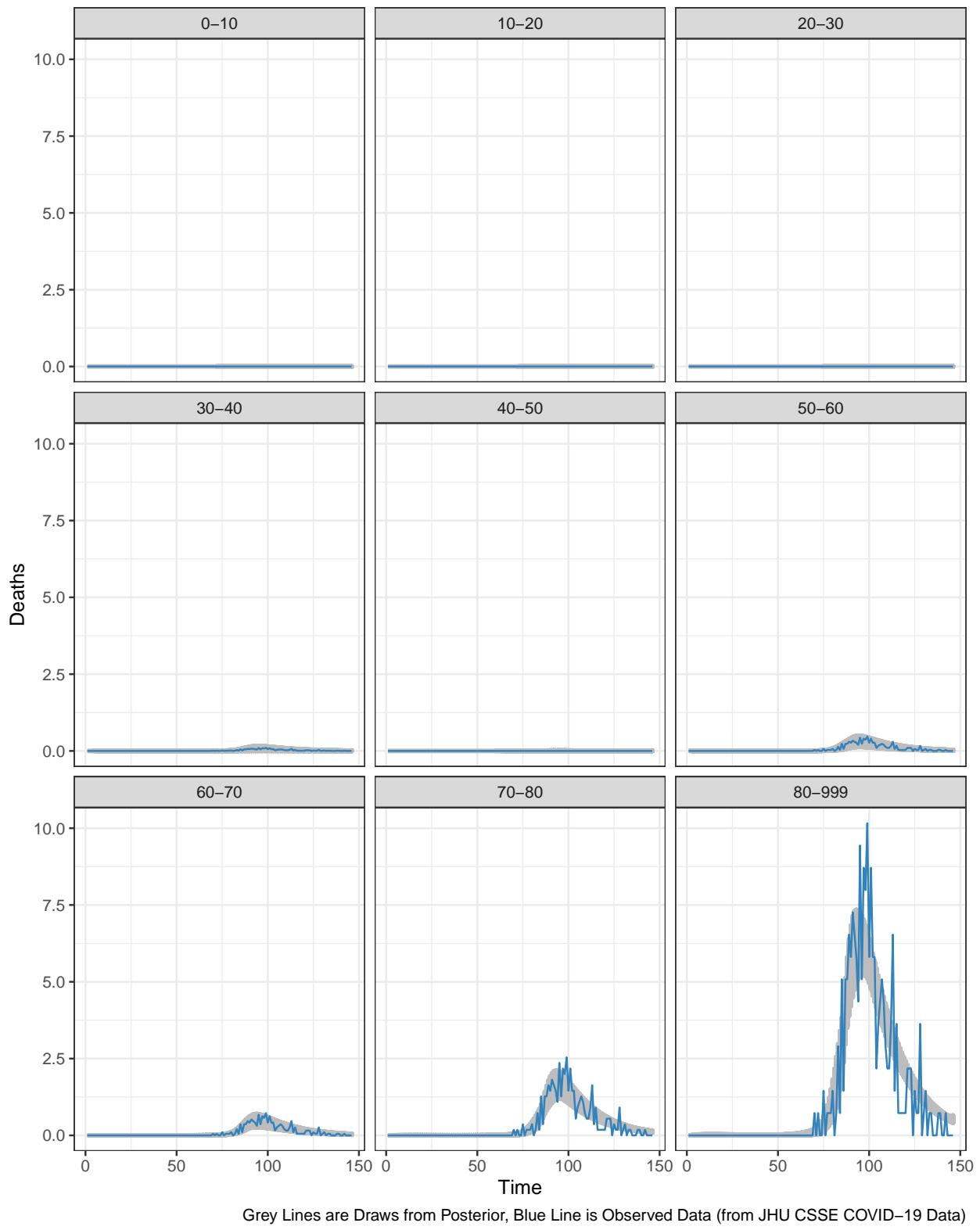
chain	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
chain1	0.0035	0.004	0.0047	0.0048	0.0056	0.0126	906.4756	-0.3407	0.3764
chain2	0.0037	0.004	0.0047	0.0048	0.0057	0.0073	1000.0000	1.6681	0.0992
chain3	0.0036	0.004	0.0047	0.0047	0.0057	0.0076	890.0040	-0.6554	0.3218
chain4	0.0036	0.004	0.0047	0.0047	0.0058	0.0074	1000.0000	-0.2787	0.3837
chain5	0.0037	0.004	0.0047	0.0048	0.0058	0.0074	1000.0000	-0.2251	0.3890
chain6	0.0035	0.004	0.0047	0.0048	0.0057	0.0073	896.5052	-0.3349	0.3772
chain7	0.0035	0.004	0.0047	0.0048	0.0058	0.0086	1000.0000	1.7737	0.0827
chain8	0.0036	0.004	0.0047	0.0047	0.0056	0.0077	860.3847	1.5837	0.1138
chain9	0.0034	0.004	0.0047	0.0047	0.0057	0.0076	764.4800	0.1103	0.3965
chain10	0.0037	0.004	0.0047	0.0048	0.0057	0.0070	1000.0000	-0.8601	0.2756



Seroprevalence Observed vs. Inferred True Prev



Death Posterior Predictive Check



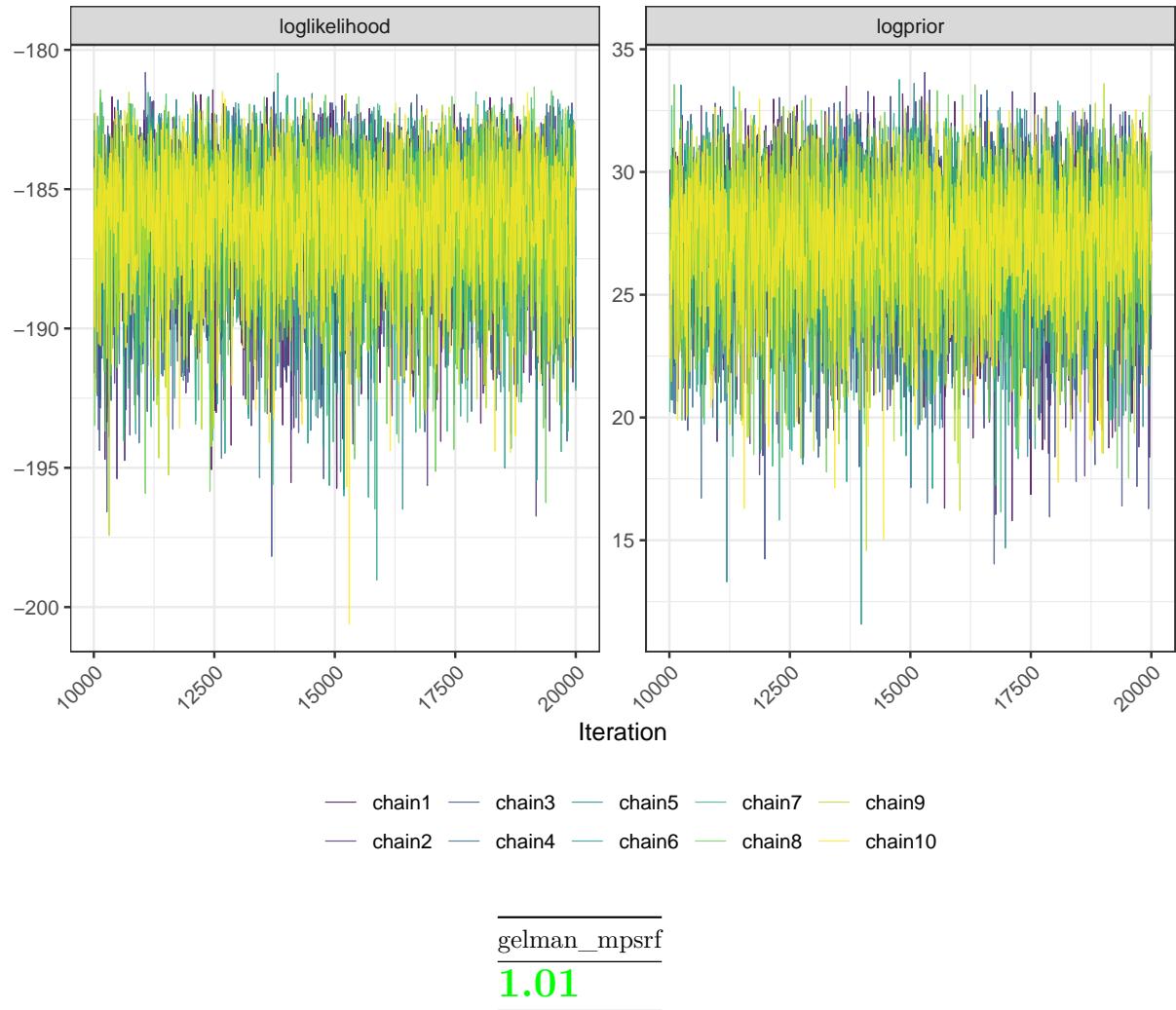
Additional Parameters

param	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
x1	1.0996	48.0734	64.9139	64.4869	81.2588	88.1944	2517.9423	-2.0140	0.0525
x2	67.8037	78.9013	90.4920	90.4425	101.0080	109.8093	1643.9476	-1.5928	0.1122
x3	89.3691	95.9821	107.1878	109.8668	141.1795	145.4567	2282.8835	-0.2946	0.3820
x4	134.0001	134.4634	141.1647	140.7920	145.8189	145.9999	2130.8523	1.5541	0.1192
y1	0.0001	0.0656	1.4524	1.6272	4.0882	5.9909	7761.1864	1.0514	0.2295
y2	0.0002	0.1470	3.4145	3.5396	7.6283	9.1999	2053.8958	-1.0099	0.2396
y3	0.3922	5.0768	7.9590	7.5626	8.6378	9.3349	401.4741	2.7633	0.0088
y4	0.0012	0.0823	1.8710	2.2175	5.9902	7.9844	2867.9991	0.9296	0.2590
y5	0.0008	0.0974	2.0591	2.3038	5.8435	8.1485	5160.6132	1.0279	0.2352
Ne1	0.7911	0.8763	0.9747	0.9749	1.0759	1.1505	9459.3713	-0.0337	0.3987
Ne2	0.8166	0.9156	1.0108	1.0112	1.1069	1.2304	10000.0000	0.0907	0.3973
Ne3	0.8558	0.9494	1.0398	1.0397	1.1296	1.2290	10951.0682	2.8912	0.0061
Ne4	0.8615	0.9532	1.0395	1.0399	1.1289	1.2119	10000.0000	0.9475	0.2547
Ne5	0.8776	0.9515	1.0400	1.0403	1.1300	1.2213	9563.8697	-0.3020	0.3812
Ne6	0.8045	0.8927	0.9847	0.9848	1.0762	1.2054	9517.7893	-0.5624	0.3406
Ne7	0.8189	0.8917	0.9849	0.9850	1.0759	1.1735	10306.6374	0.7699	0.2966
Ne8	0.7443	0.8626	0.9583	0.9583	1.0545	1.1359	10000.0000	-0.3705	0.3725
Ne9	0.7797	0.8625	0.9589	0.9595	1.0571	1.1285	9057.2383	0.1610	0.3938

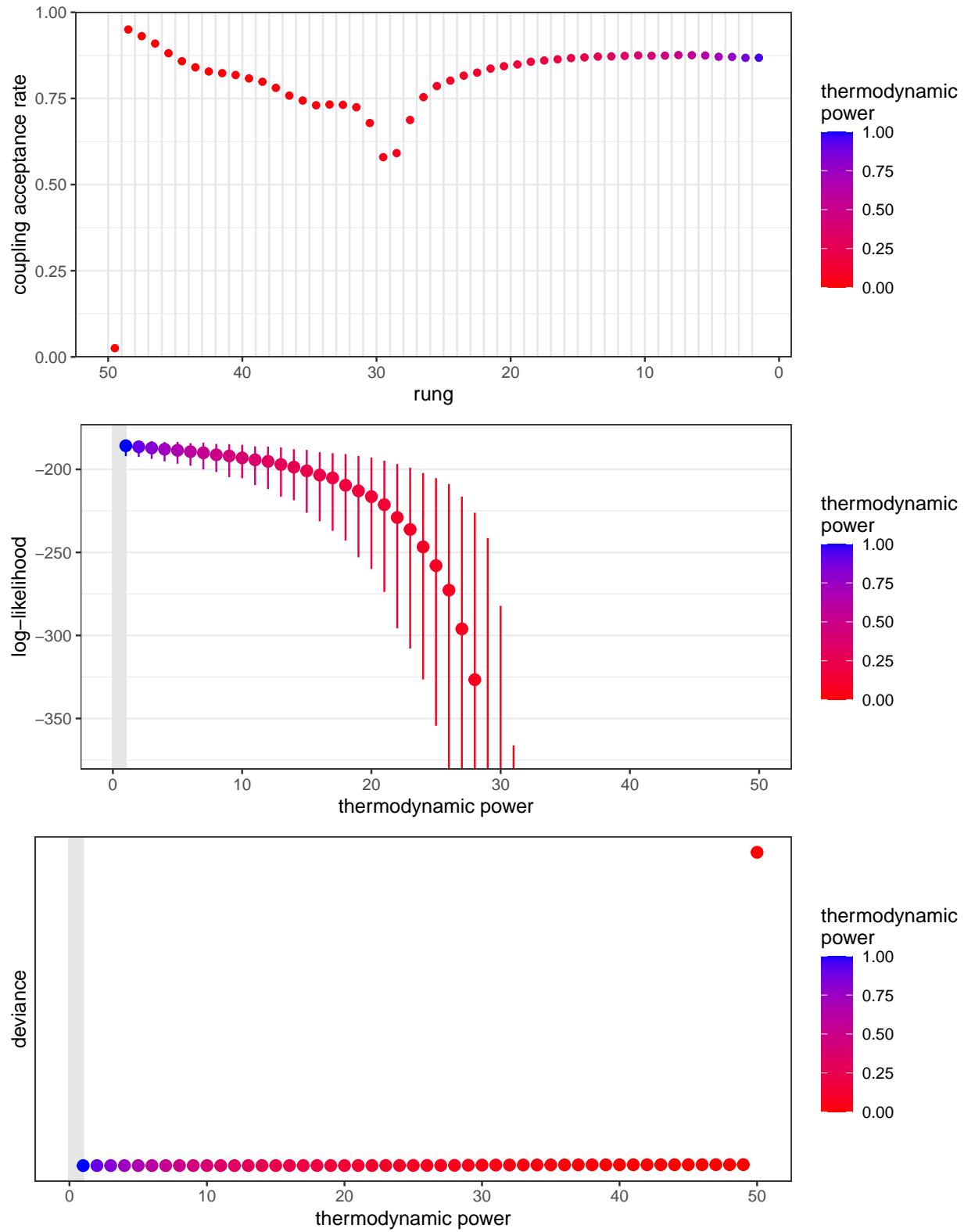
CHE2 with Standard Input

Fit Diagnostics

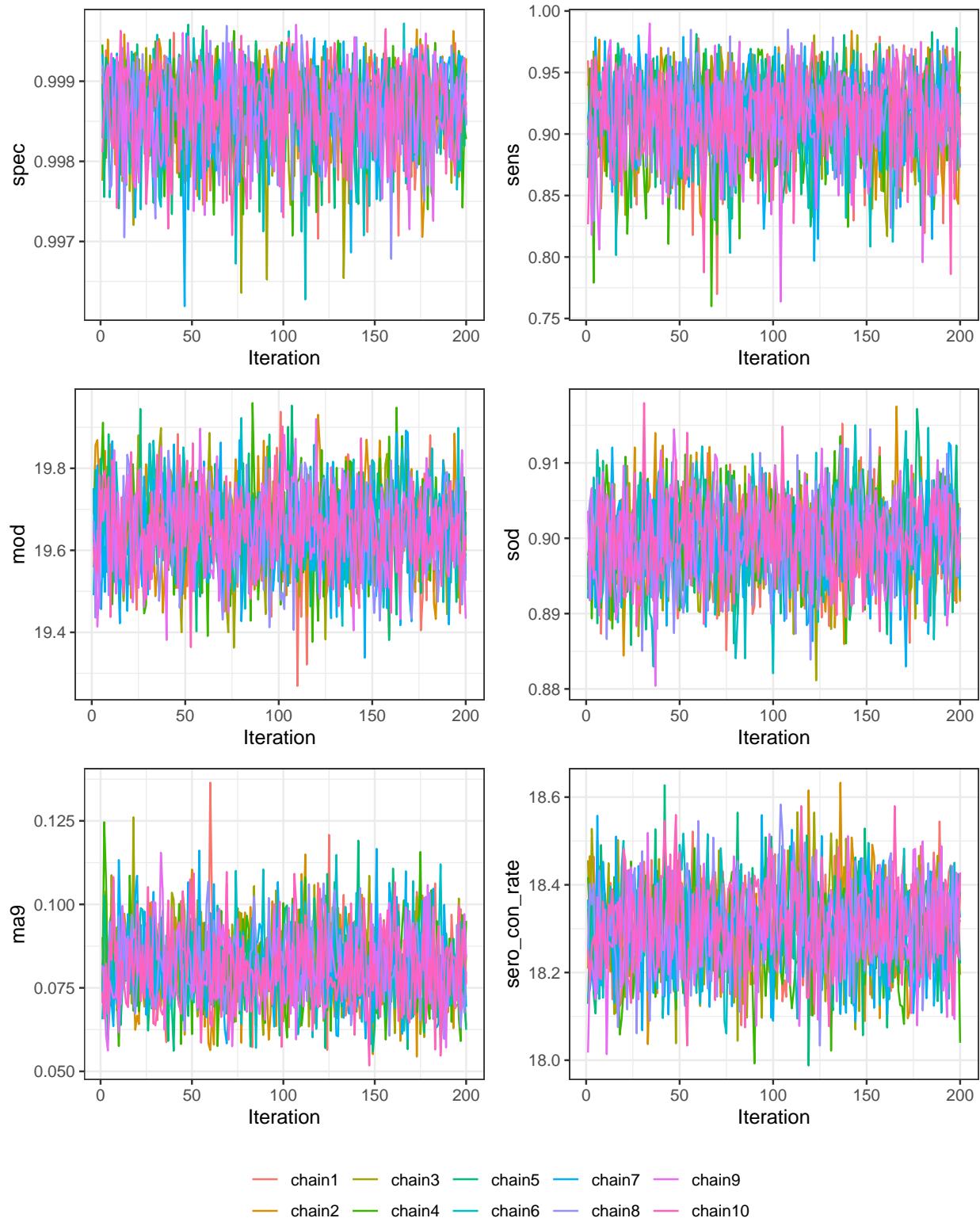
Log Likelihood & Prior Plot



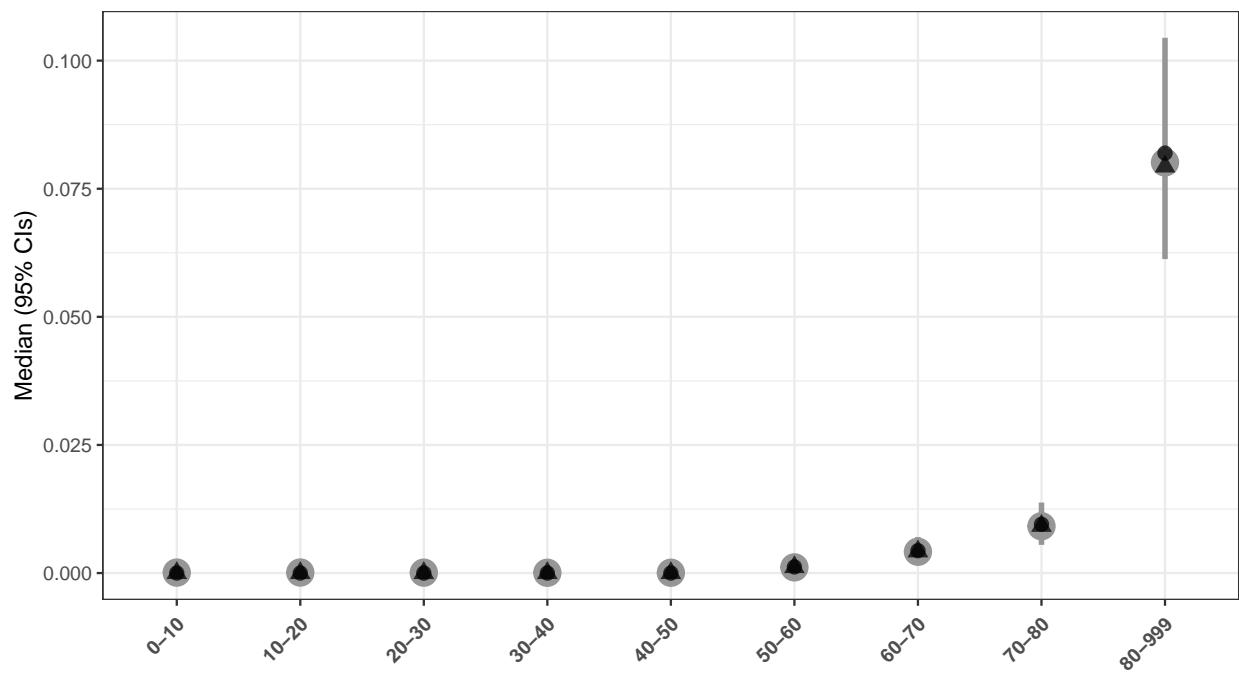
Metropolis Coupling Acceptance Plot



Serological Diagnostics

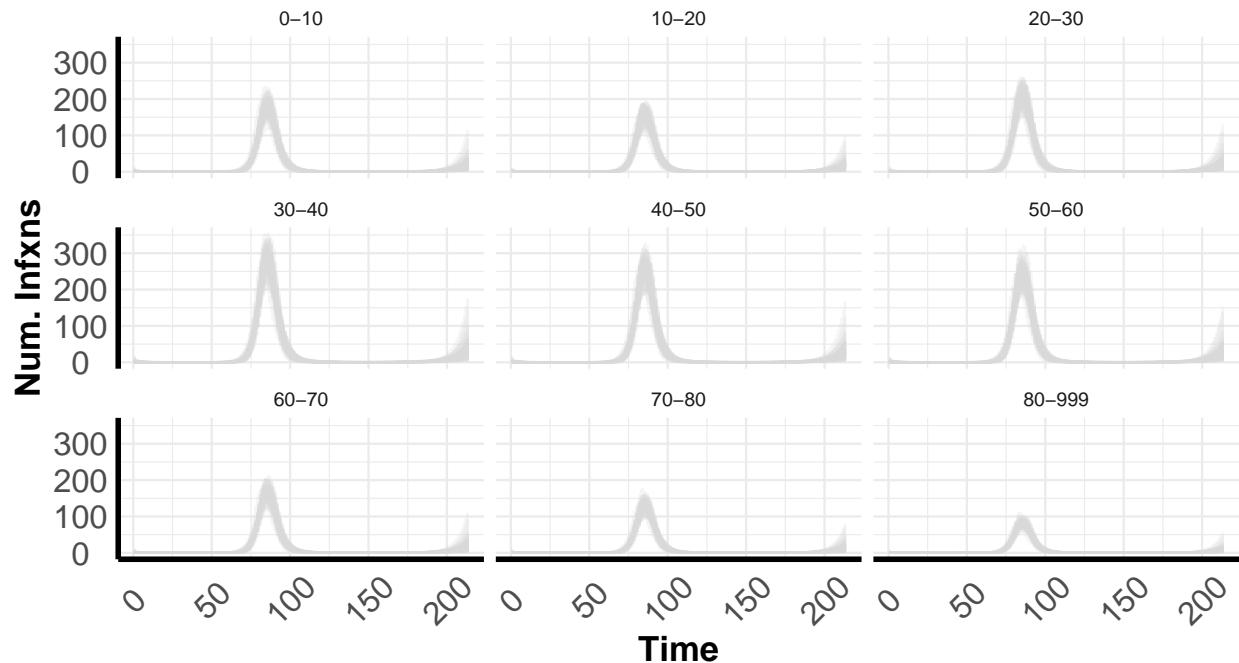


IFRs & Incidence Curve



Grey and black points represent model fits and crude IFR estimates, respectively

Posterior Draws of the Infection Curve



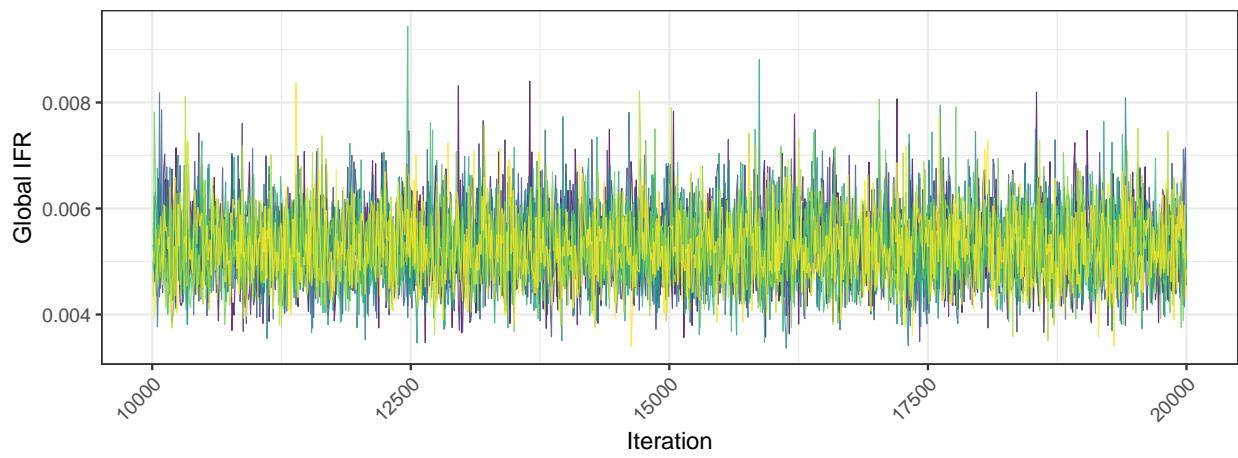
Strata IFR

strata	param	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
0-10	ma1	0.0000	0.0000	0.0001	0.0001	0.0002	0.0003	9487.638	0.6699	0.3188
10-20	ma2	0.0000	0.0000	0.0001	0.0001	0.0002	0.0003	9513.757	1.0932	0.2195
20-30	ma3	0.0000	0.0000	0.0001	0.0001	0.0002	0.0002	9069.492	0.7668	0.2973
30-40	ma4	0.0000	0.0000	0.0001	0.0001	0.0001	0.0002	9474.097	1.1732	0.2005
40-50	ma5	0.0000	0.0000	0.0001	0.0001	0.0001	0.0002	9942.196	-1.5355	0.1227
50-60	ma6	0.0000	0.0002	0.0011	0.0012	0.0024	0.0044	9650.156	-0.7490	0.3014
60-70	ma7	0.0000	0.0020	0.0042	0.0042	0.0070	0.0102	10000.000	1.2534	0.1819
70-80	ma8	0.0025	0.0055	0.0091	0.0093	0.0138	0.0188	9463.633	0.0880	0.3974
80-999	ma9	0.0492	0.0613	0.0801	0.0809	0.1045	0.1435	8314.756	0.7798	0.2944

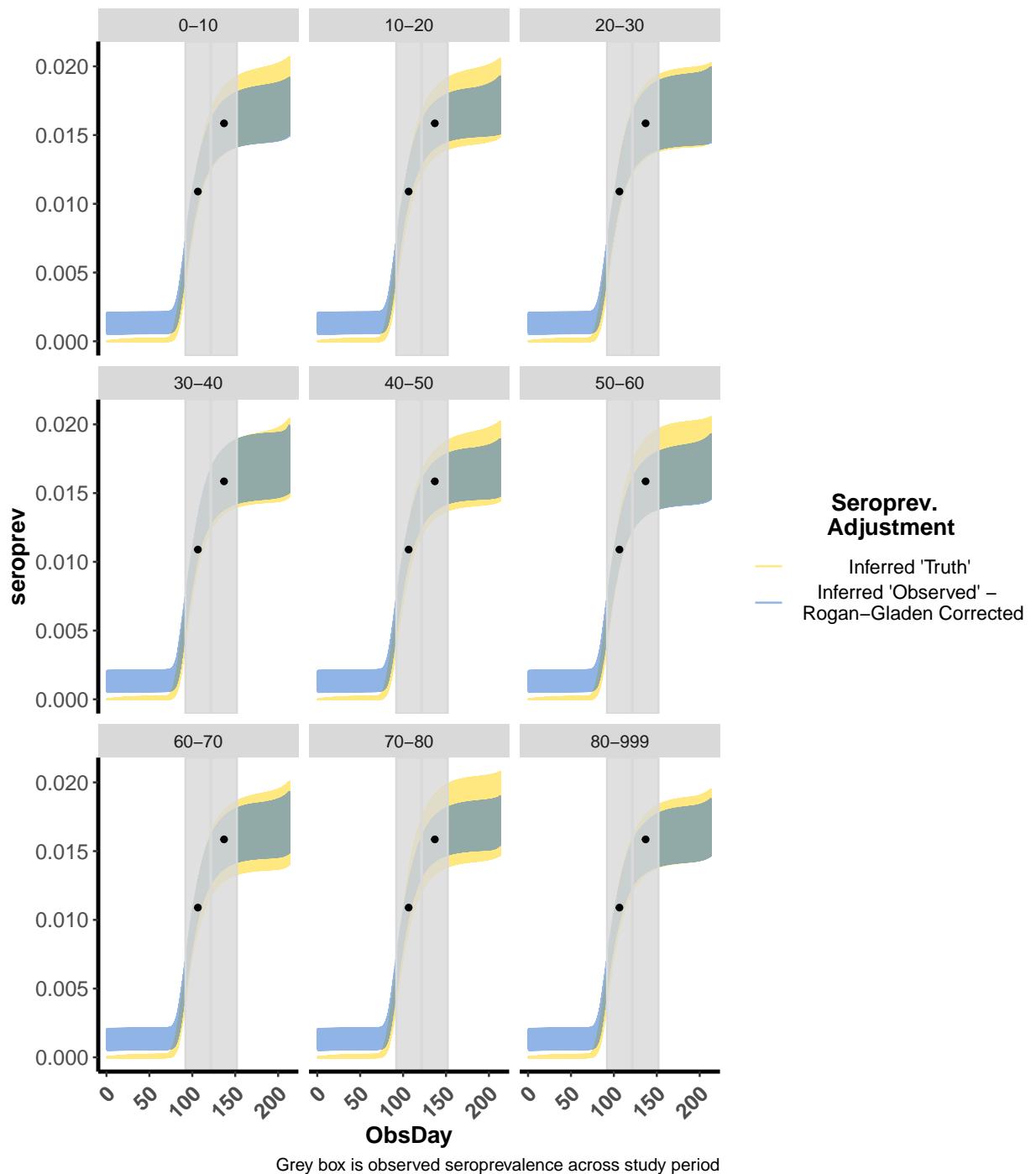
Overall IFR

min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
0.0033	0.0041	0.0052	0.0053	0.0067	0.0095	8344.942	0.7661	0.2975

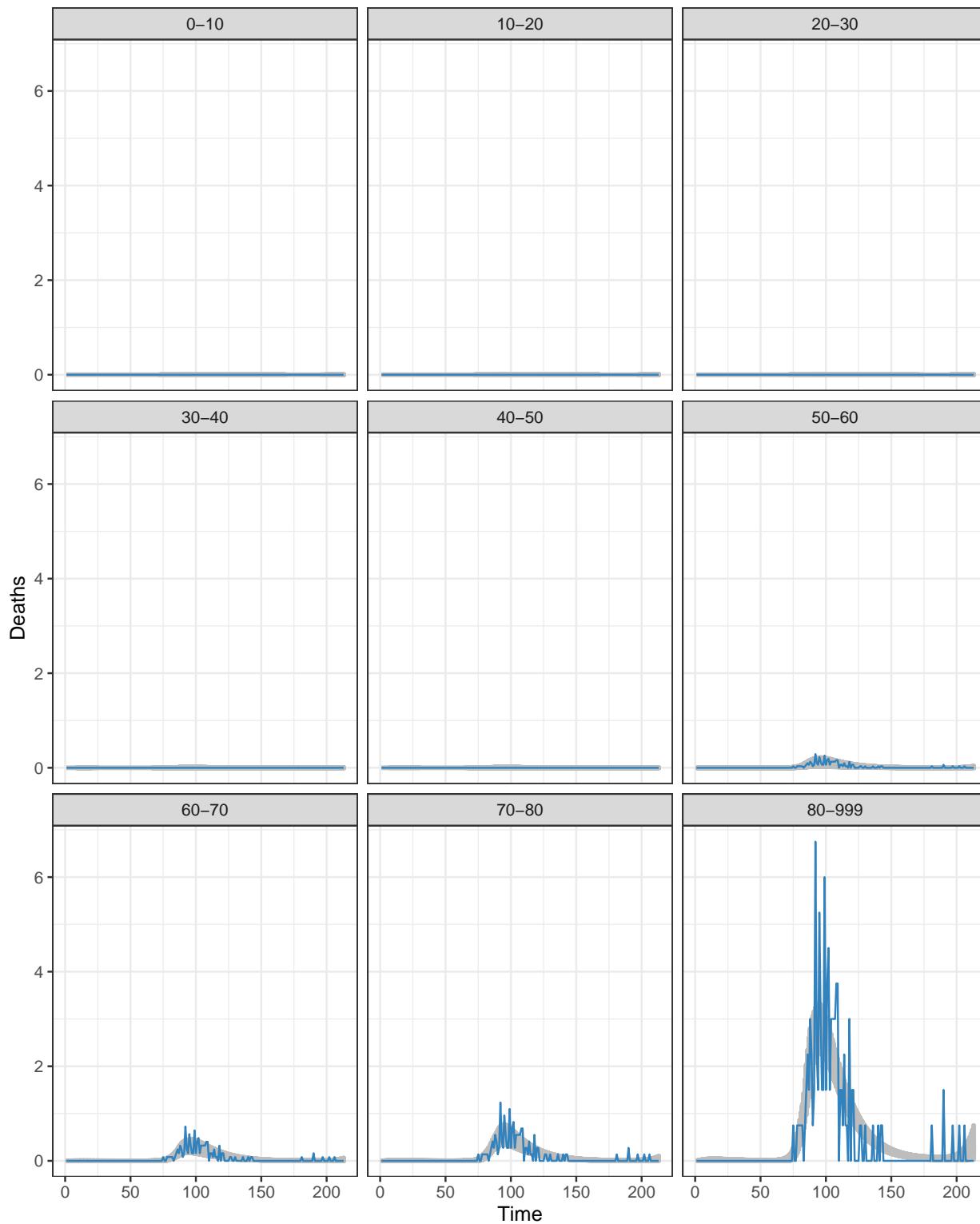
chain	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
chain1	0.0036	0.0041	0.0053	0.0053	0.0067	0.0083	993.4711	0.3136	0.3798
chain2	0.0036	0.0041	0.0053	0.0053	0.0066	0.0078	527.0436	0.9065	0.2645
chain3	0.0036	0.0042	0.0052	0.0053	0.0067	0.0074	875.4619	0.3927	0.3693
chain4	0.0036	0.0041	0.0052	0.0052	0.0066	0.0079	1000.0000	0.5906	0.3351
chain5	0.0033	0.0040	0.0052	0.0052	0.0066	0.0080	1032.0349	-0.6451	0.3240
chain6	0.0035	0.0042	0.0052	0.0053	0.0066	0.0083	823.2912	0.9245	0.2602
chain7	0.0037	0.0041	0.0052	0.0053	0.0066	0.0095	850.8136	-0.0739	0.3979
chain8	0.0037	0.0042	0.0052	0.0053	0.0066	0.0078	813.2267	0.5674	0.3396
chain9	0.0035	0.0041	0.0052	0.0053	0.0068	0.0078	845.3384	-2.3886	0.0230
chain10	0.0033	0.0041	0.0052	0.0052	0.0067	0.0086	826.9959	0.9051	0.2649



Seroprevalence Observed vs. Inferred True Prev



Death Posterior Predictive Check



Grey Lines are Draws from Posterior, Blue Line is Observed Data (from JHU CSSE COVID-19 Data)

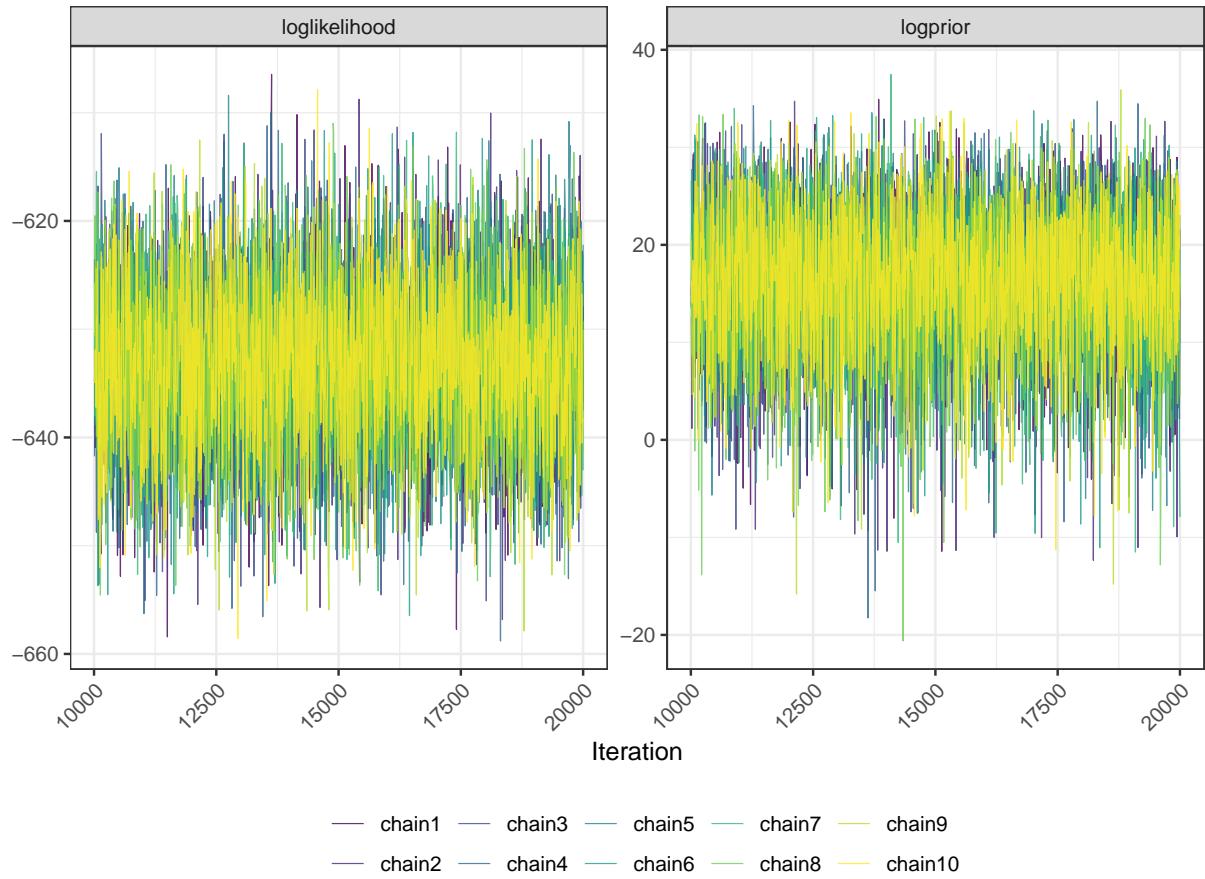
Additional Parameters

param	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
x1	1.0222	2.1838	63.5533	58.9164	75.6438	86.6778	1772.569	1.5510	0.1198
x2	62.3048	72.4396	83.3775	83.5786	96.4737	108.9660	5133.827	-0.7690	0.2968
x3	84.4465	91.4365	104.0813	105.0838	121.5682	211.8764	1372.459	-0.7773	0.2949
x4	199.0025	199.2683	205.3856	205.5693	212.5645	212.9994	7294.078	1.8175	0.0765
y1	0.0018	0.0854	1.7352	1.8929	4.6601	6.5617	8742.850	-0.5096	0.3504
y2	0.0003	0.0794	1.7381	2.0375	5.5217	8.6482	5203.512	0.3902	0.3697
y3	1.1232	4.7156	7.0998	6.8398	7.6812	8.8611	1017.883	-0.7194	0.3080
y4	0.0049	0.4012	4.0377	3.8147	6.5984	7.6373	4373.806	0.7053	0.3111
y5	0.0006	1.2168	4.1424	4.0327	5.9924	7.1641	8809.207	1.9635	0.0580
Ne1	0.8186	0.9058	0.9998	1.0000	1.0964	1.2106	9972.746	0.5310	0.3465
Ne2	0.8335	0.9065	1.0001	1.0001	1.0946	1.2106	10000.000	-0.3348	0.3772
Ne3	0.7968	0.9088	1.0005	1.0008	1.0954	1.2097	10000.000	1.9109	0.0643
Ne4	0.8309	0.9067	1.0000	1.0000	1.0939	1.1784	10000.000	-0.4110	0.3666
Ne5	0.8131	0.9059	1.0006	1.0009	1.0964	1.1740	9693.296	-1.0230	0.2364
Ne6	0.8260	0.9056	1.0006	1.0007	1.0957	1.1934	10000.000	-0.9023	0.2655
Ne7	0.8188	0.9066	0.9994	0.9997	1.0954	1.1971	10000.000	0.8317	0.2823
Ne8	0.7913	0.9047	0.9993	0.9991	1.0913	1.1982	10000.000	-0.0545	0.3984
Ne9	0.8099	0.9054	1.0000	1.0003	1.0942	1.1806	10000.000	0.2313	0.3884

CHN1 with Standard Input

Fit Diagnostics

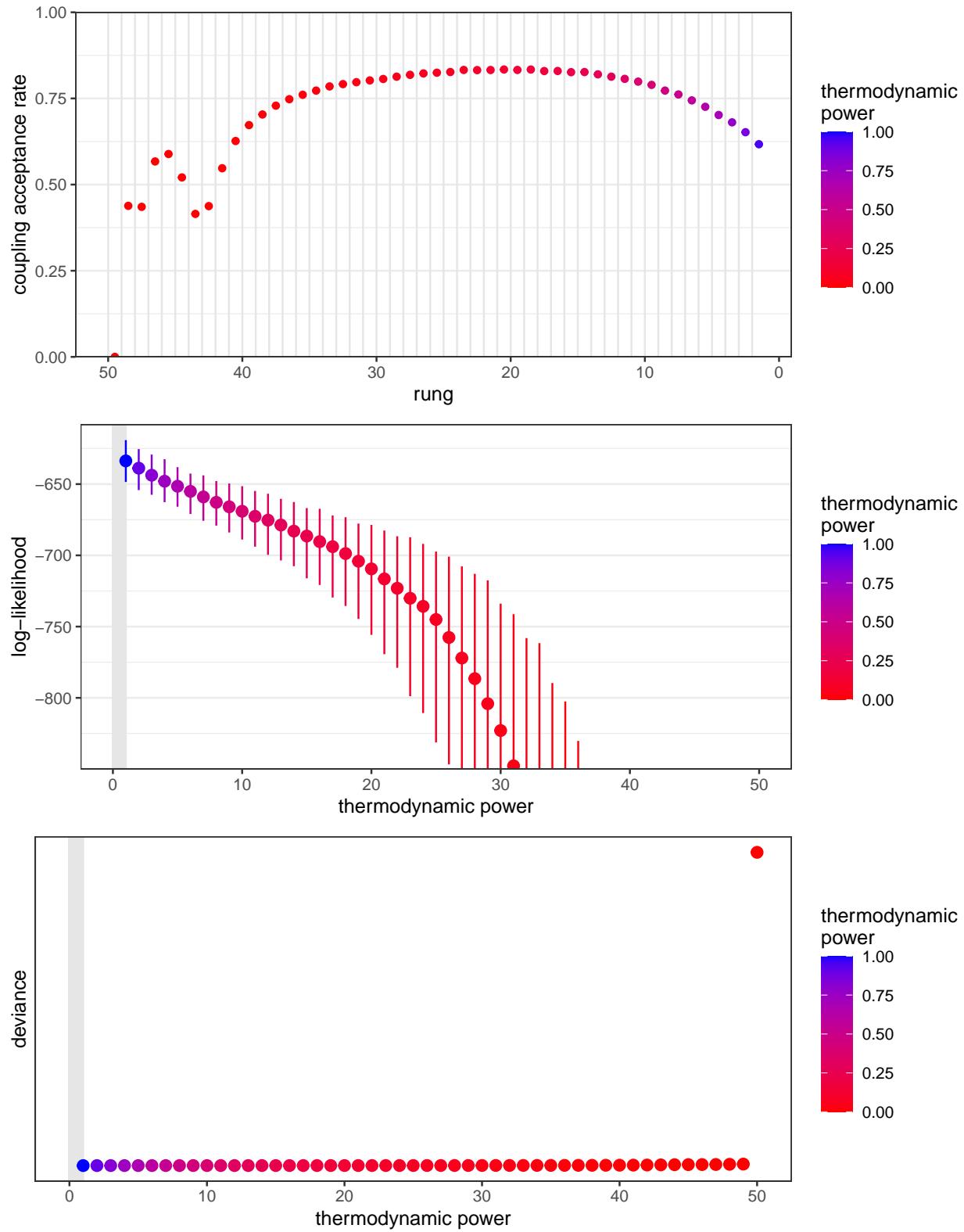
Log Likelihood & Prior Plot



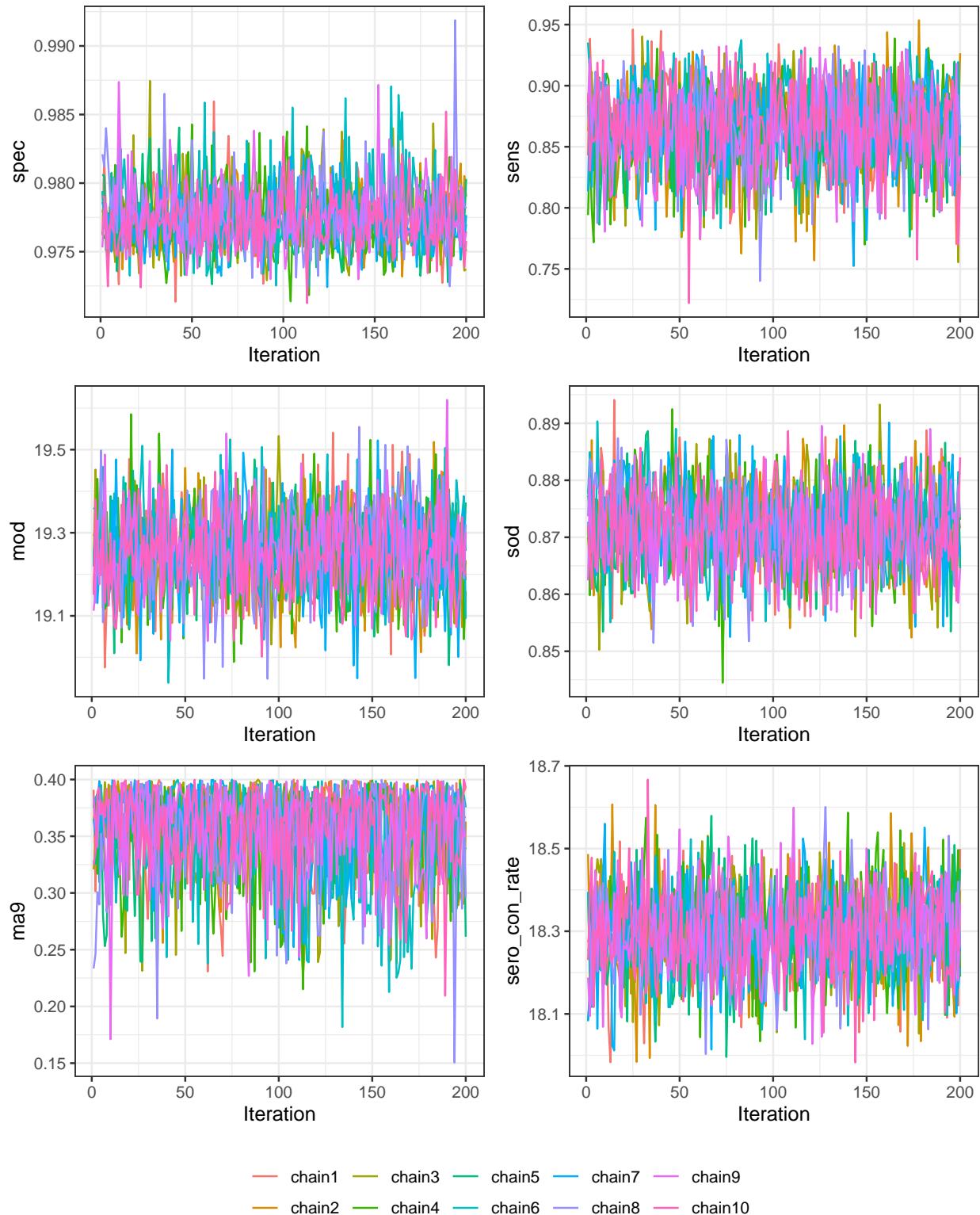
gelman_mpsrf

1

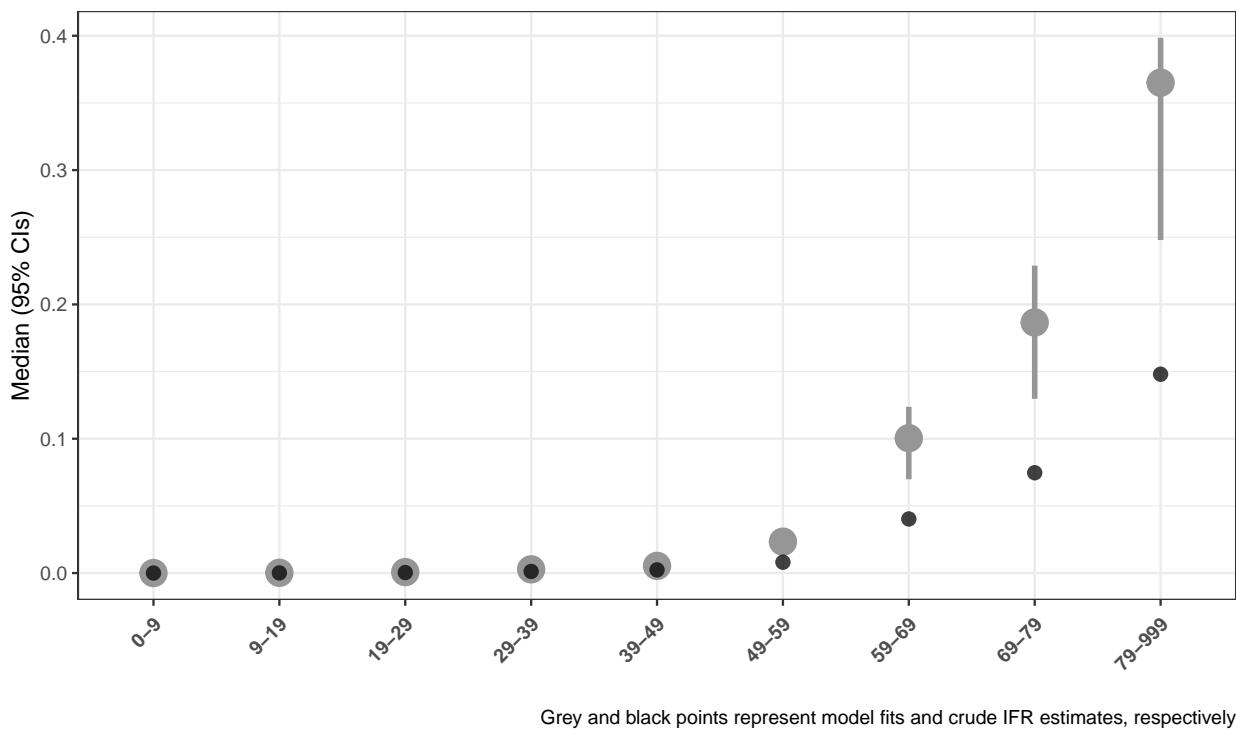
Metropolis Coupling Acceptance Plot



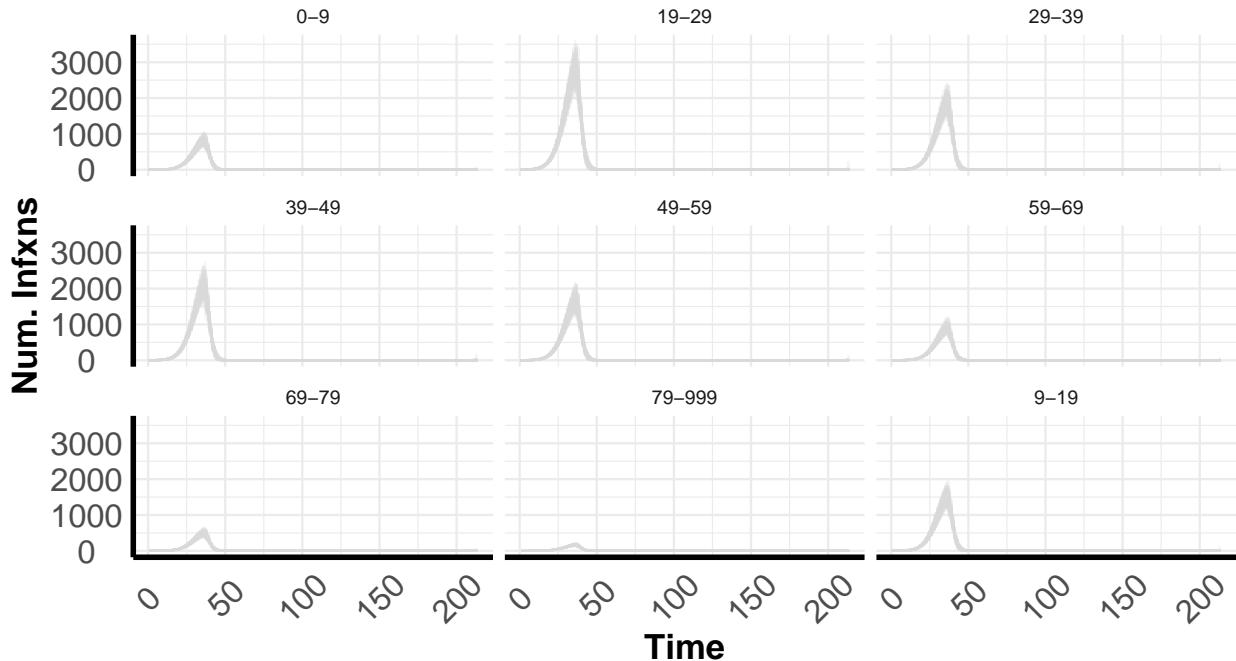
Serological Diagnostics



IFRs & Incidence Curve



Posterior Draws of the Infection Curve



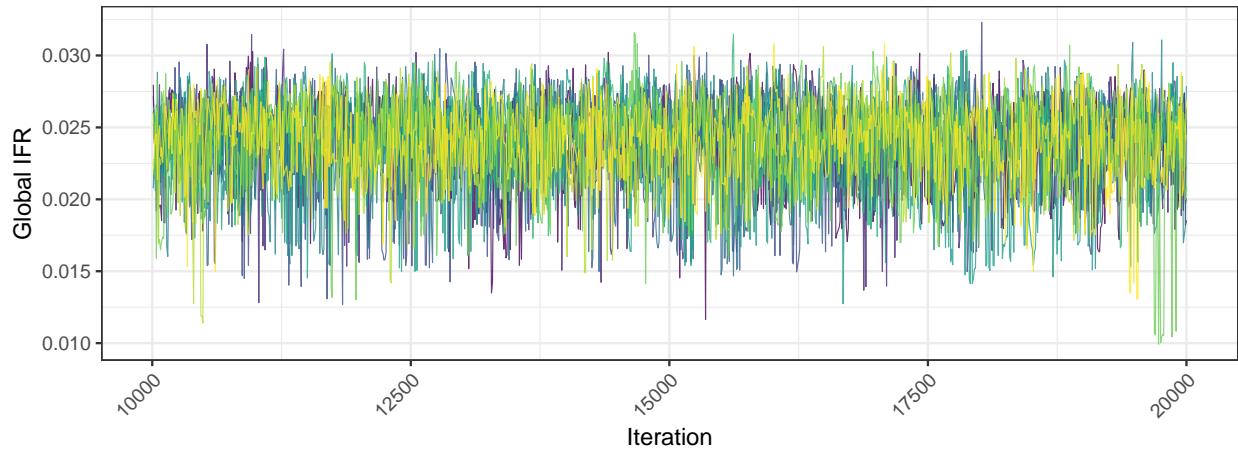
Strata IFR

strata	param	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
0-9	ma1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	7813.226	0.6964	0.3130
9-19	ma2	0.0000	0.0000	0.0002	0.0002	0.0005	0.0008	9168.872	-0.3250	0.3784
19-29	ma3	0.0002	0.0004	0.0007	0.0007	0.0011	0.0014	6137.638	-0.3456	0.3758
29-39	ma4	0.0011	0.0018	0.0028	0.0028	0.0038	0.0050	4321.848	-1.0767	0.2235
39-49	ma5	0.0021	0.0036	0.0053	0.0053	0.0070	0.0086	2854.894	-1.5537	0.1193
49-59	ma6	0.0087	0.0160	0.0234	0.0231	0.0291	0.0347	2440.983	-0.1032	0.3968
59-69	ma7	0.0418	0.0698	0.1004	0.0993	0.1238	0.1484	2305.524	-0.5976	0.3337
69-79	ma8	0.0708	0.1297	0.1866	0.1843	0.2289	0.2617	2275.390	-0.7896	0.2921
79-999	ma9	0.1480	0.2479	0.3651	0.3543	0.3985	0.4000	1735.497	0.1182	0.3962

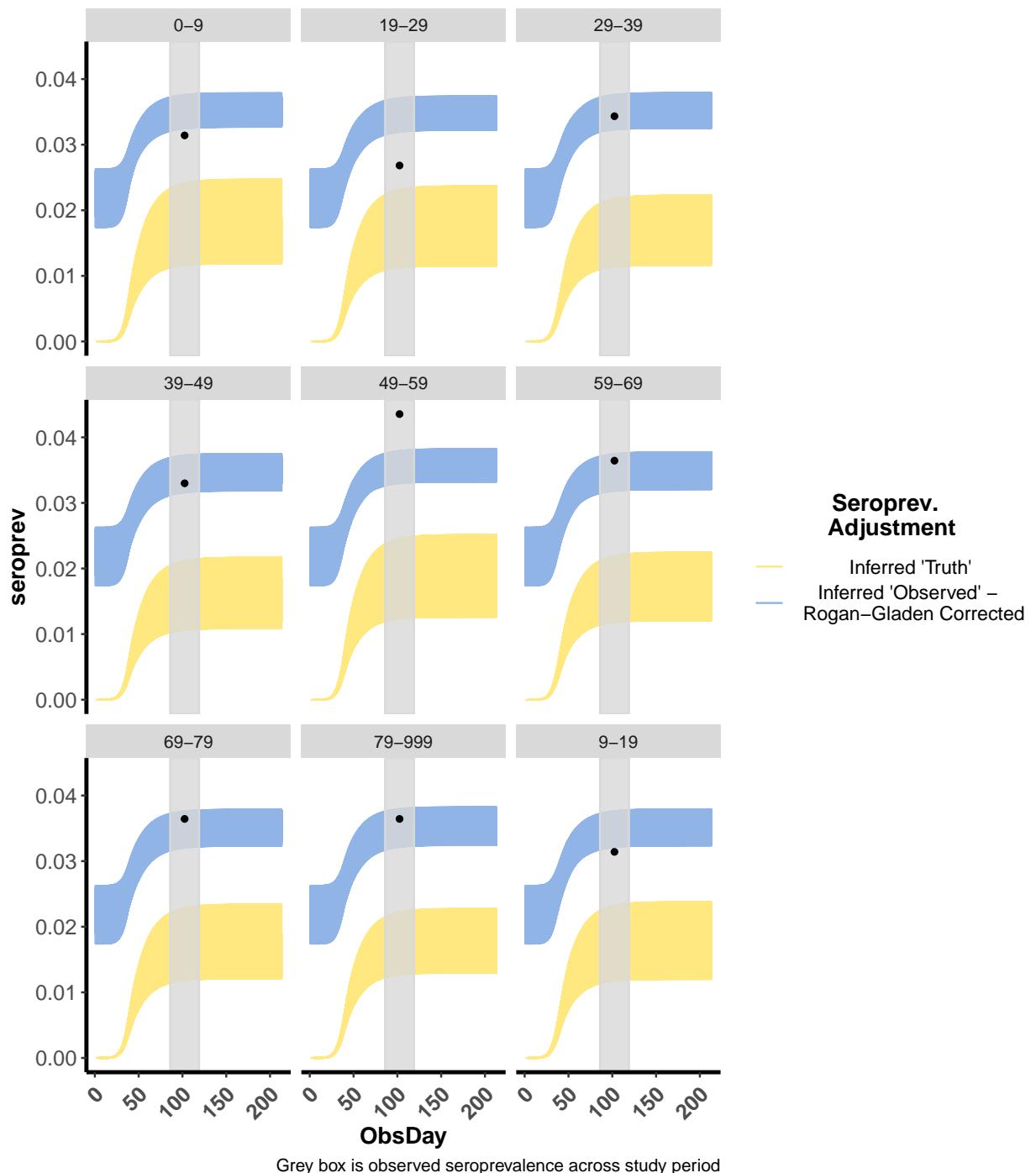
Overall IFR

min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
0.0099	0.0171	0.0246	0.0241	0.029	0.0322	3945.566	0.2758	0.3841

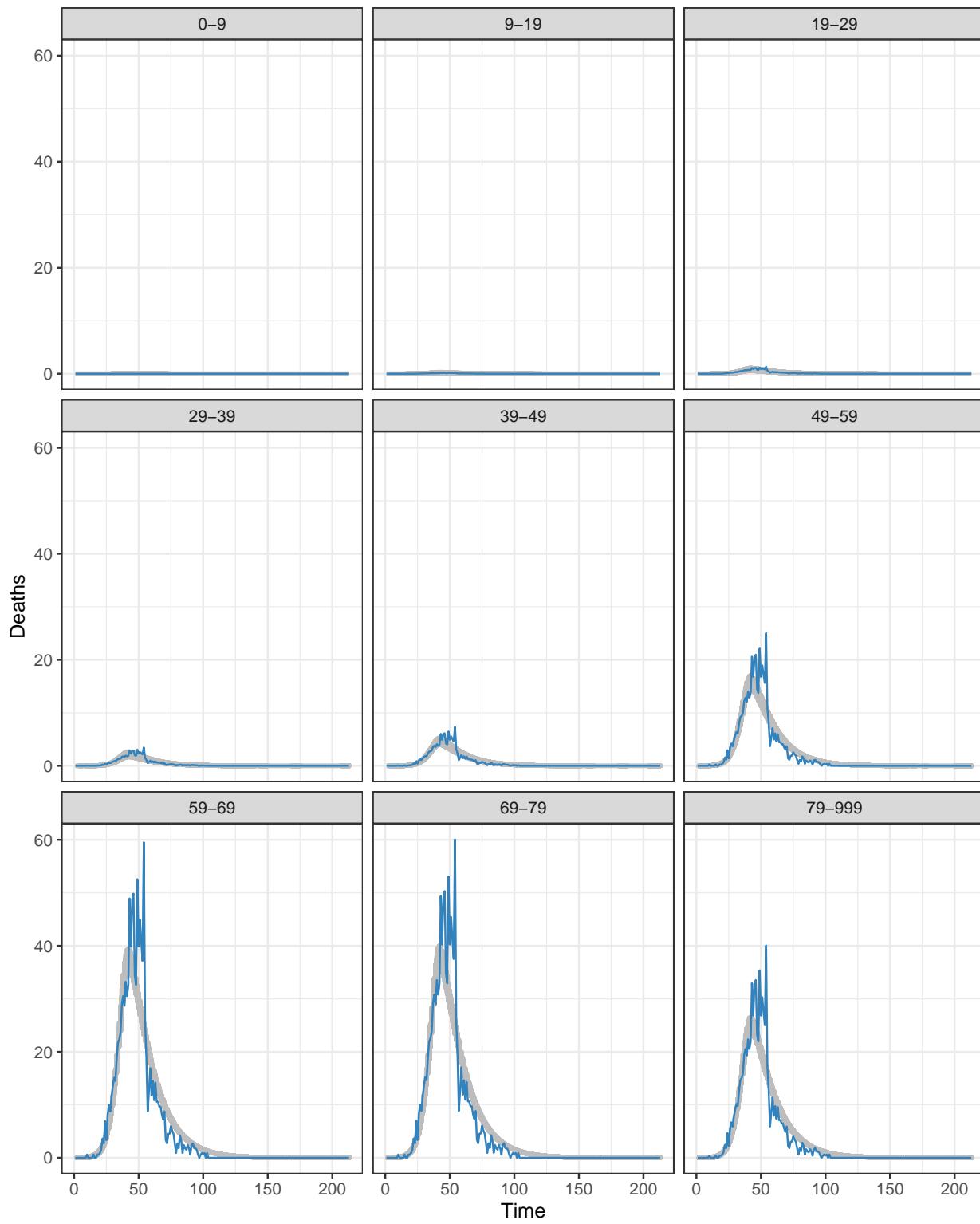
chain	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
chain1	0.0116	0.0178	0.0245	0.0240	0.0288	0.0309	326.5899	3.3524	0.0014
chain2	0.0135	0.0179	0.0244	0.0242	0.0289	0.0315	490.6548	1.7170	0.0914
chain3	0.0130	0.0161	0.0244	0.0238	0.0287	0.0311	399.6424	0.4155	0.3659
chain4	0.0147	0.0169	0.0248	0.0242	0.0288	0.0309	252.4638	-1.5087	0.1278
chain5	0.0151	0.0175	0.0249	0.0244	0.0290	0.0319	242.8552	-3.9123	0.0002
chain6	0.0135	0.0158	0.0244	0.0237	0.0291	0.0310	321.4999	0.6786	0.3169
chain7	0.0157	0.0180	0.0245	0.0243	0.0292	0.0315	191.4783	3.4220	0.0011
chain8	0.0099	0.0173	0.0249	0.0244	0.0294	0.0314	276.2323	-2.4715	0.0188
chain9	0.0118	0.0183	0.0244	0.0241	0.0287	0.0314	629.6344	-1.2611	0.1801
chain10	0.0124	0.0188	0.0244	0.0242	0.0292	0.0322	253.1044	2.5535	0.0153



Seroprevalence Observed vs. Inferred True Prev



Death Posterior Predictive Check



Grey Lines are Draws from Posterior, Blue Line is Observed Data (from JHU CSSE COVID-19 Data)

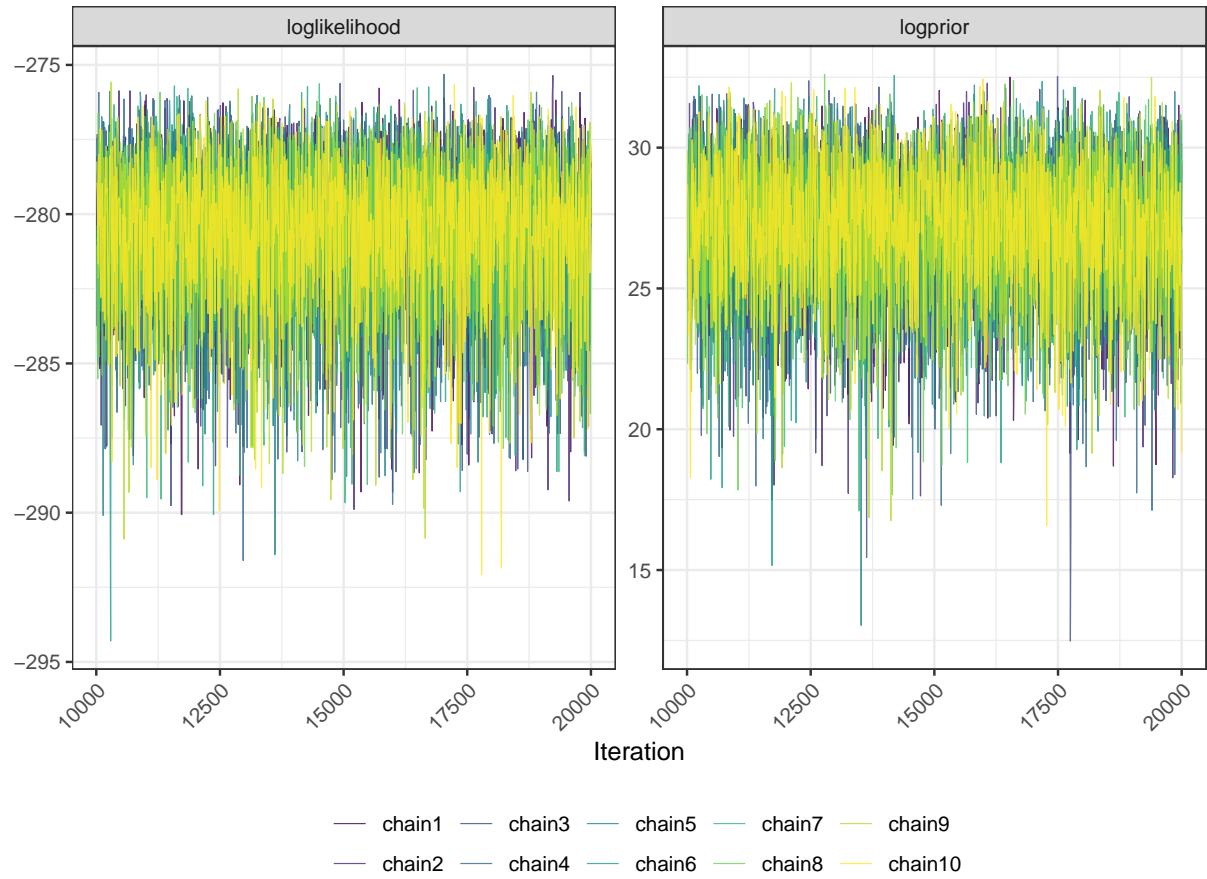
Additional Parameters

param	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
x1	1.0835	2.7024	27.3548	23.8140	36.6710	58.0173	575.6019	-4.0010	0.0001
x2	30.8735	35.2538	38.7152	41.4093	54.0803	212.4779	2981.6156	-0.7418	0.3030
x3	42.3500	46.1247	53.4489	65.1060	212.3670	212.9820	868.9668	-3.6473	0.0005
x4	199.0192	200.6949	209.3596	208.5653	212.8849	212.9990	3218.5899	-1.4996	0.1296
y1	0.0001	0.2647	1.9952	1.9490	3.3470	4.8719	3895.6502	3.0775	0.0035
y2	0.0335	1.2161	8.6109	7.3155	9.5876	9.8459	820.1081	-3.2100	0.0023
y3	0.0402	1.7424	8.9287	8.1503	9.6330	10.0367	1210.2964	-0.3016	0.3812
y4	0.0009	0.0457	1.7304	2.0398	5.4893	7.7434	1813.7756	-0.9695	0.2494
y5	0.0000	0.0505	1.3596	1.5976	4.3614	8.2757	7511.2742	-0.0329	0.3987
Ne1	0.8195	0.8988	0.9960	0.9968	1.0953	1.1784	9646.5303	-0.0803	0.3977
Ne2	0.7833	0.8972	0.9972	0.9971	1.0944	1.1822	10060.3790	0.3618	0.3737
Ne3	0.7983	0.8794	0.9760	0.9766	1.0738	1.1850	9092.4354	1.0128	0.2389
Ne4	0.8237	0.8996	0.9937	0.9944	1.0898	1.1988	9110.7943	1.4242	0.1447
Ne5	0.7865	0.8934	0.9896	0.9897	1.0855	1.1707	8880.9814	0.8898	0.2685
Ne6	0.8359	0.9312	1.0291	1.0287	1.1235	1.1996	8045.5996	-1.2039	0.1933
Ne7	0.7989	0.9020	0.9980	0.9982	1.0962	1.1941	6321.8490	-0.6022	0.3328
Ne8	0.8190	0.9008	0.9974	0.9974	1.0928	1.1826	6483.3057	0.0230	0.3988
Ne9	0.8391	0.9191	1.0176	1.0173	1.1135	1.2138	5044.0449	-1.8267	0.0752

DNK1 with Standard Input

Fit Diagnostics

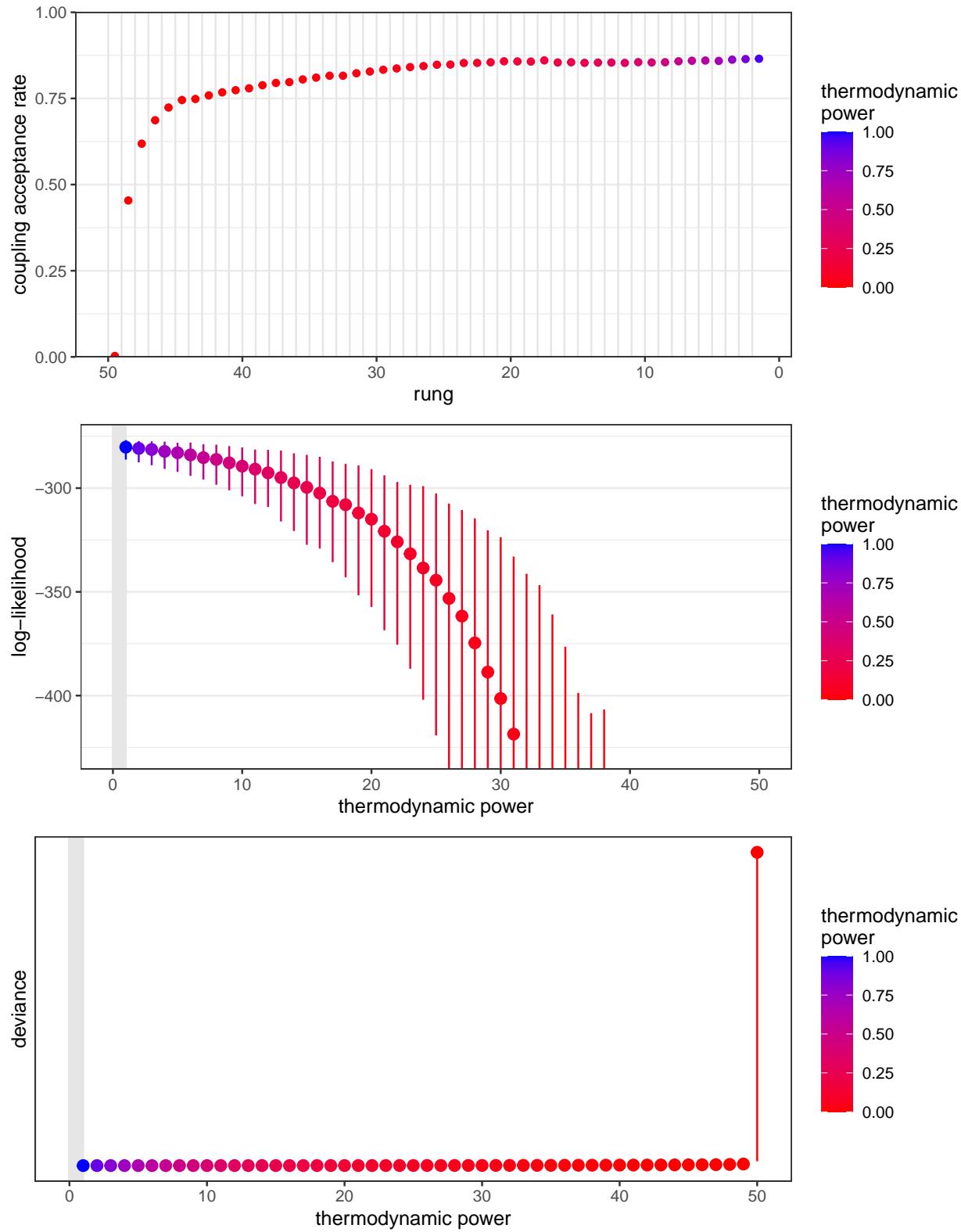
Log Likelihood & Prior Plot



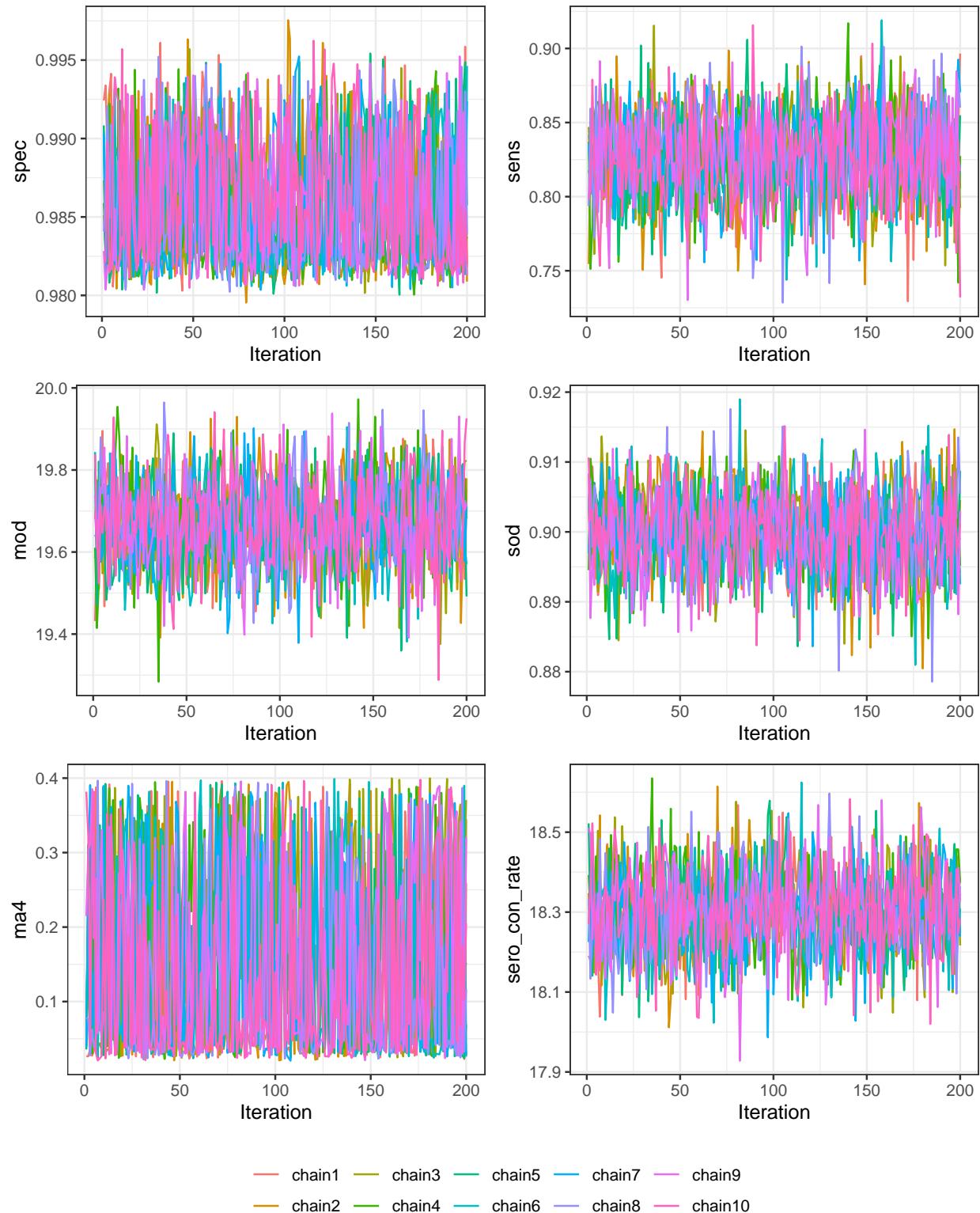
gelman_mpsrf

1

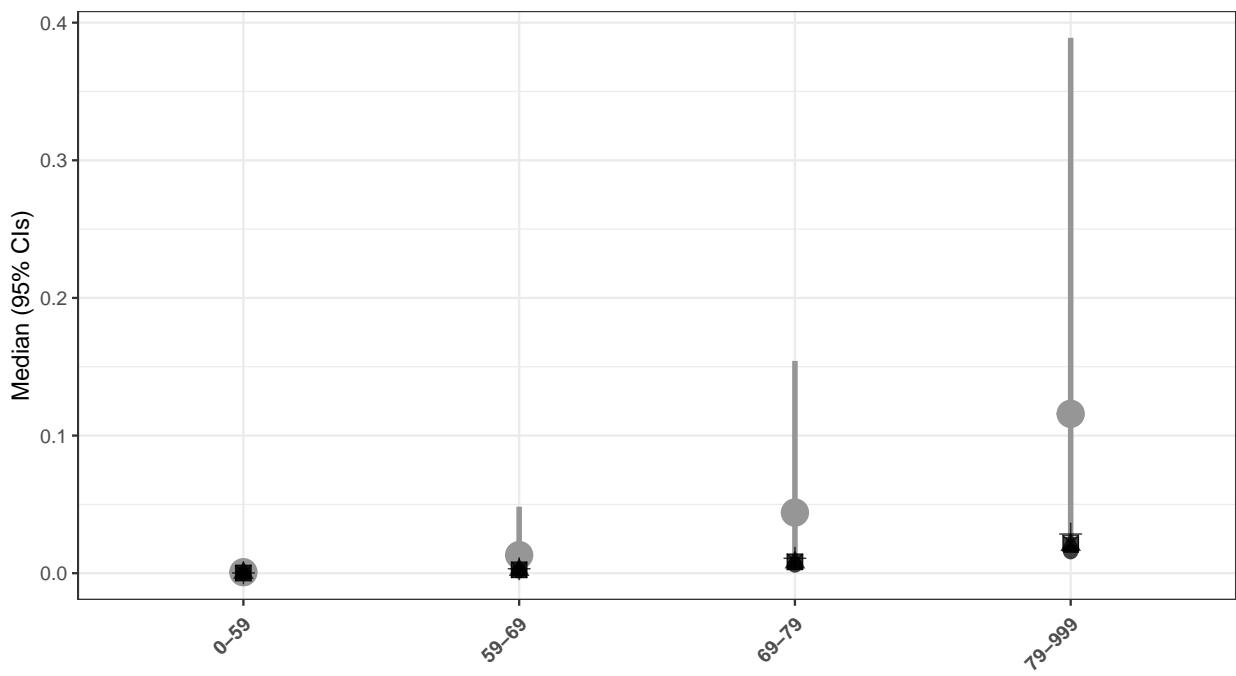
Metropolis Coupling Acceptance Plot



Serological Diagnostics

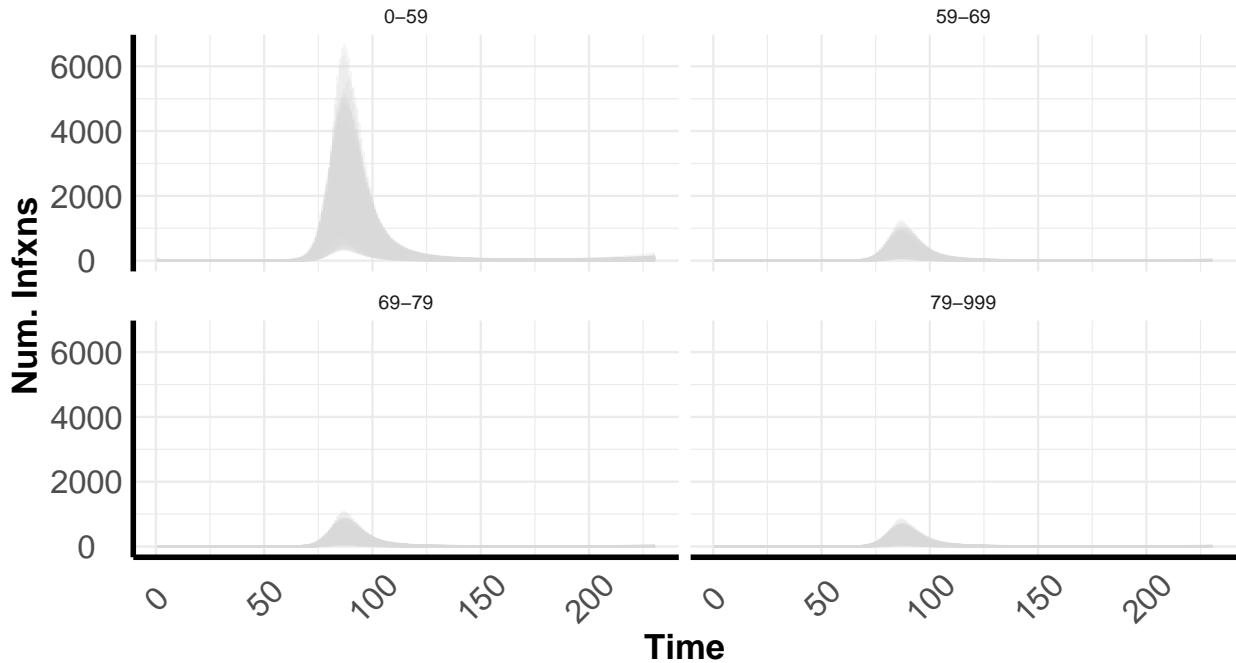


IFRs & Incidence Curve



Grey and black points represent model fits and crude IFR estimates, respectively

Posterior Draws of the Infection Curve



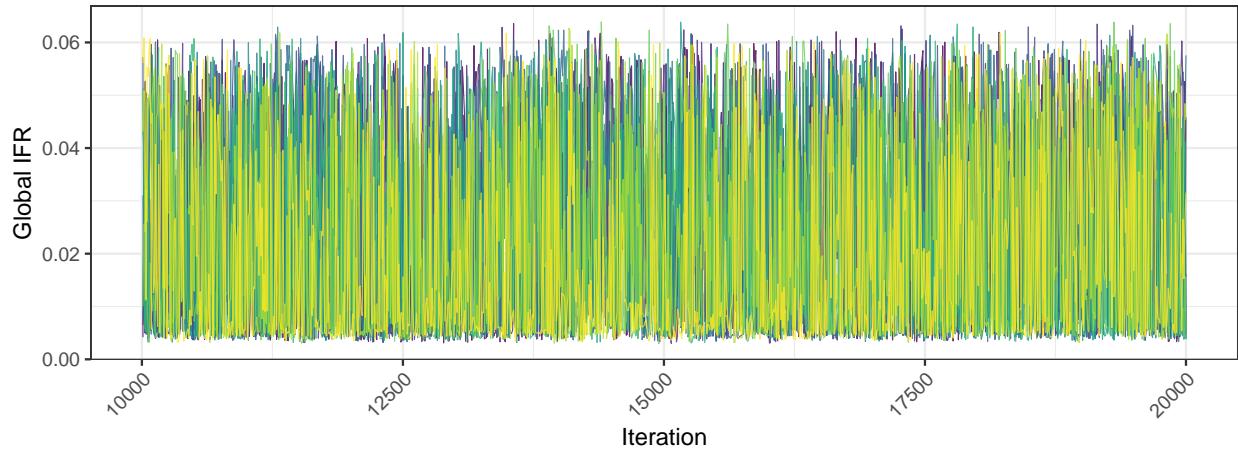
Strata IFR

strata	param	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
0-59	ma1	0.0001	0.0001	0.0007	0.0010	0.0029	0.0054	1778.908	2.3411	0.0258
59-69	ma2	0.0018	0.0028	0.0132	0.0183	0.0483	0.0620	1626.219	3.4104	0.0012
69-79	ma3	0.0072	0.0096	0.0440	0.0610	0.1542	0.1895	1587.716	2.1338	0.0410
79-999	ma4	0.0194	0.0258	0.1158	0.1591	0.3890	0.3999	1494.364	3.2853	0.0018

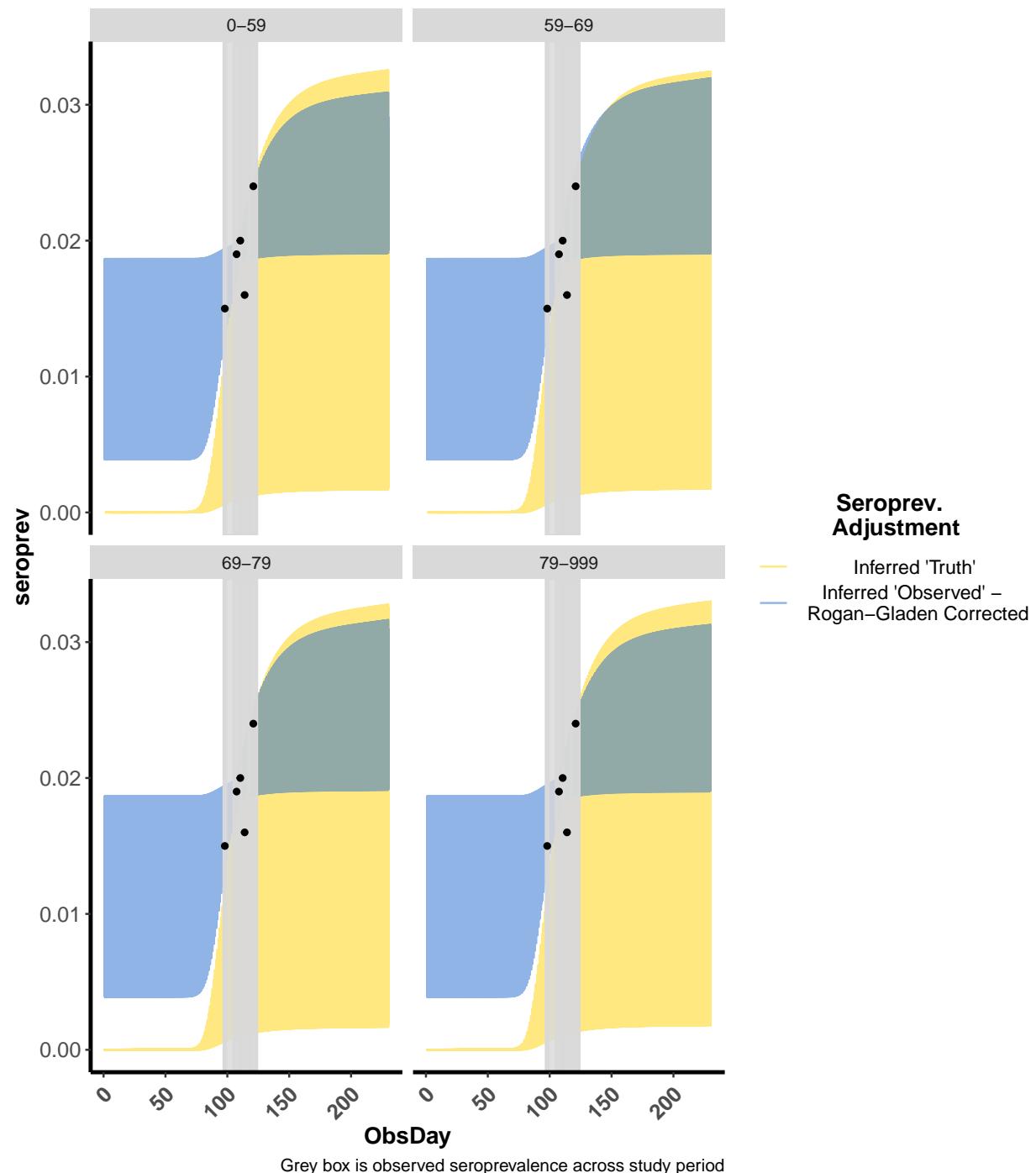
Overall IFR

min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
0.0028	0.0039	0.0174	0.0238	0.0586	0.0694	3984.933	-0.3242	0.3785

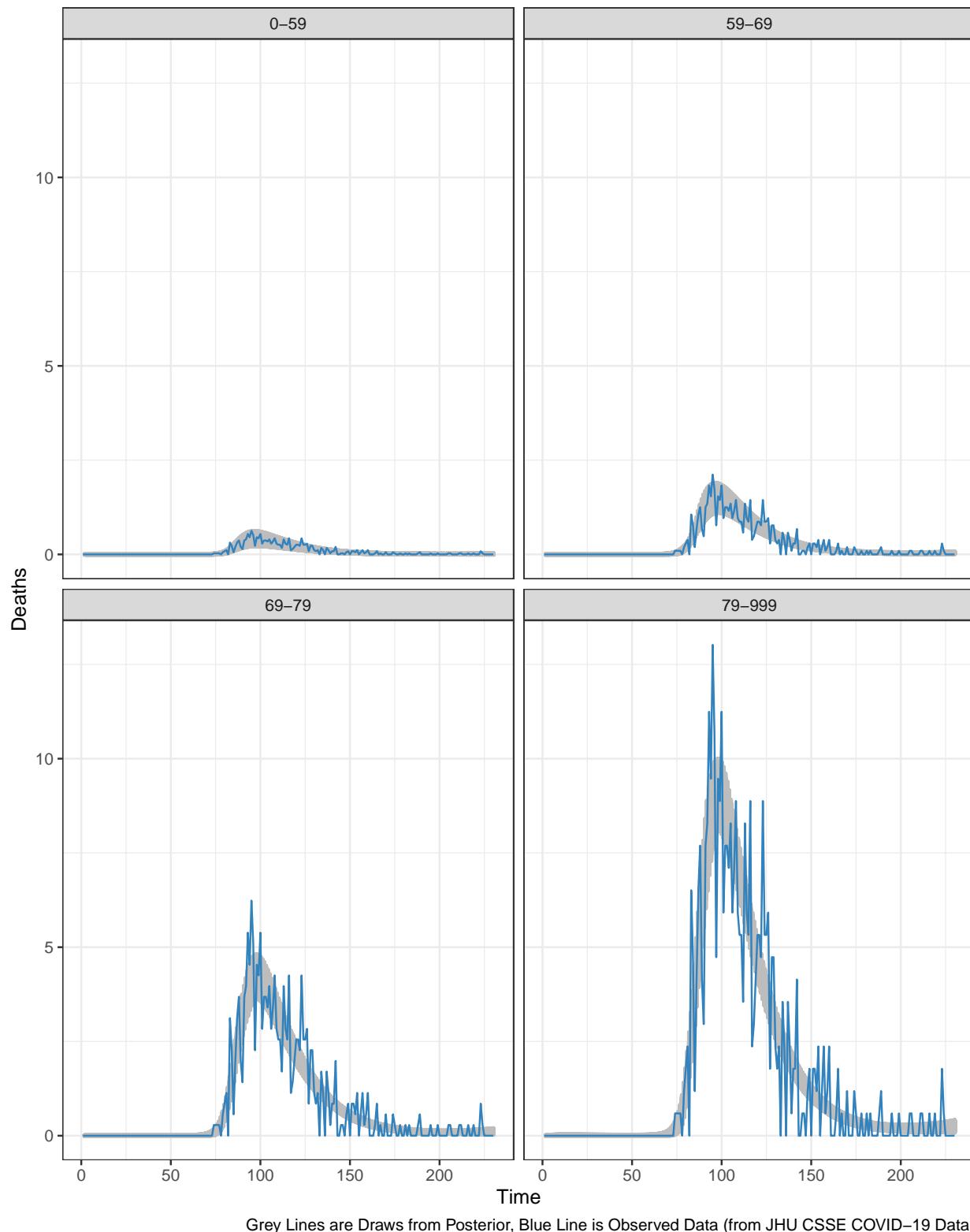
chain	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
chain1	0.0030	0.0036	0.0228	0.0256	0.0591	0.0666	267.1321	-0.3079	0.3805
chain2	0.0029	0.0038	0.0245	0.0260	0.0592	0.0694	224.9357	-1.3182	0.1673
chain3	0.0033	0.0040	0.0238	0.0264	0.0594	0.0668	633.6386	-0.3414	0.3764
chain4	0.0034	0.0039	0.0182	0.0244	0.0590	0.0650	185.7010	-0.1440	0.3948
chain5	0.0033	0.0039	0.0136	0.0220	0.0580	0.0649	371.1878	0.3449	0.3759
chain6	0.0030	0.0039	0.0189	0.0237	0.0576	0.0675	212.1577	-1.0924	0.2197
chain7	0.0032	0.0039	0.0199	0.0244	0.0570	0.0674	712.8635	1.9697	0.0573
chain8	0.0028	0.0038	0.0131	0.0227	0.0597	0.0675	565.3500	-2.3084	0.0278
chain9	0.0030	0.0039	0.0161	0.0226	0.0578	0.0644	546.5988	0.7224	0.3073
chain10	0.0032	0.0038	0.0104	0.0199	0.0579	0.0654	244.6067	1.1888	0.1968



Seroprevalence Observed vs. Inferred True Prev



Death Posterior Predictive Check



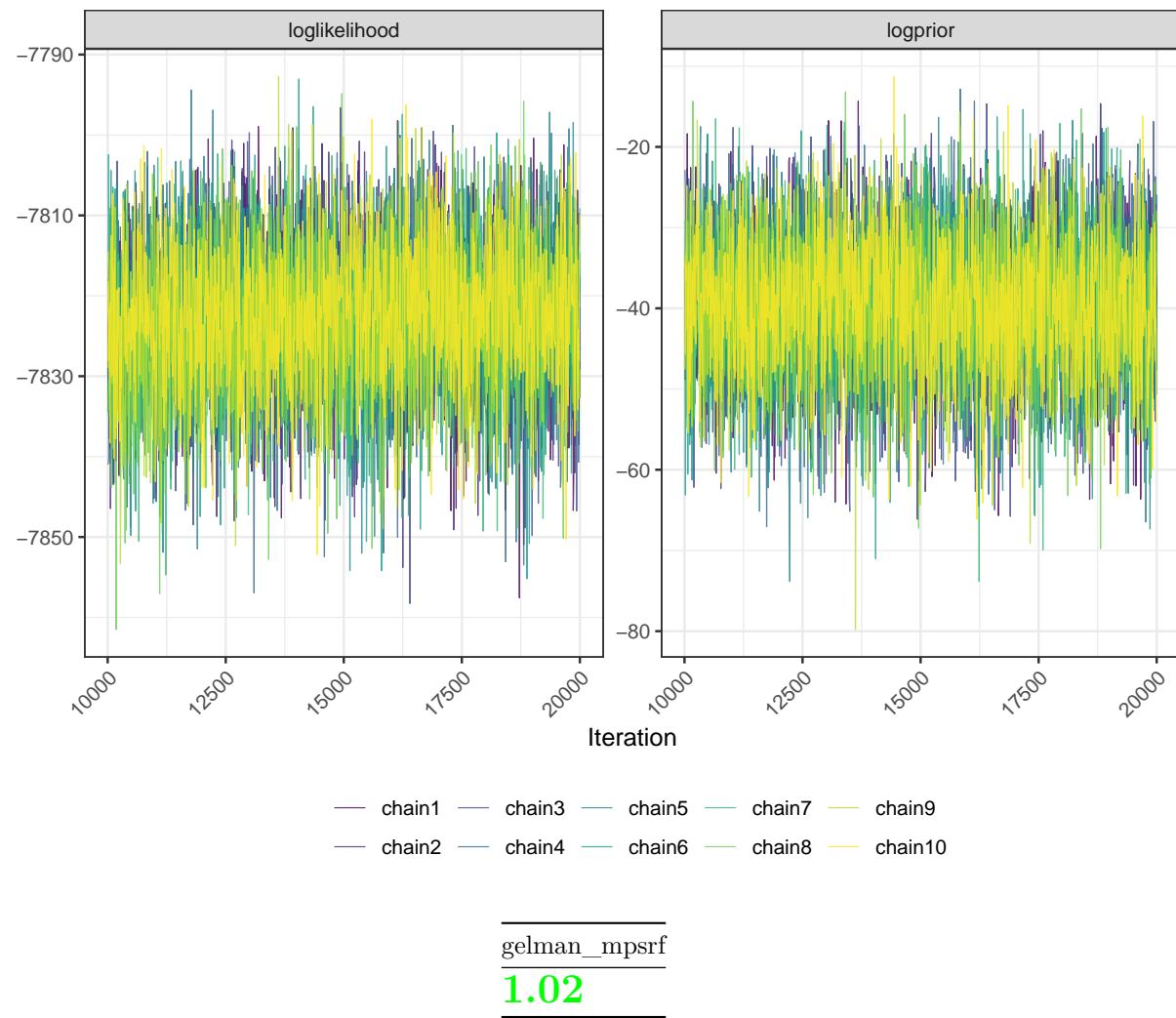
Additional Parameters

param	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
x1	1.0595	1.8688	62.0243	55.4596	72.1985	80.2655	1143.489	-4.3017	0.0000
x2	67.6537	73.5745	81.2225	81.4810	90.1915	97.8953	3520.590	-0.8449	0.2792
x3	85.3908	90.8340	100.5820	101.4070	116.3465	135.9570	3790.660	1.2714	0.1778
x4	219.0000	219.3328	226.2039	226.1173	232.6408	232.9983	5119.154	-0.9203	0.2612
y1	0.0003	0.0458	1.1846	1.4609	4.2490	6.3465	5281.579	2.4394	0.0204
y2	0.0000	0.0520	1.2752	1.5878	4.7997	8.0899	4272.713	-1.7133	0.0919
y3	2.8234	4.8686	6.9275	6.9949	8.8647	9.3051	1716.591	-3.2147	0.0023
y4	0.3897	3.9297	6.1844	6.2393	8.2717	9.0661	1794.546	-3.4052	0.0012
y5	0.0015	1.2196	3.3302	3.3749	5.5126	6.8078	2424.920	-2.4579	0.0195
Ne1	0.8120	0.8986	0.9978	0.9973	1.0956	1.1884	9685.846	2.5651	0.0149
Ne2	0.7691	0.8963	0.9954	0.9948	1.0927	1.2369	10000.000	-0.4520	0.3602
Ne3	0.8145	0.9061	1.0016	1.0023	1.0989	1.1895	9403.064	-0.3948	0.3690
Ne4	0.8285	0.9111	1.0033	1.0038	1.0993	1.1892	9149.674	1.6769	0.0978

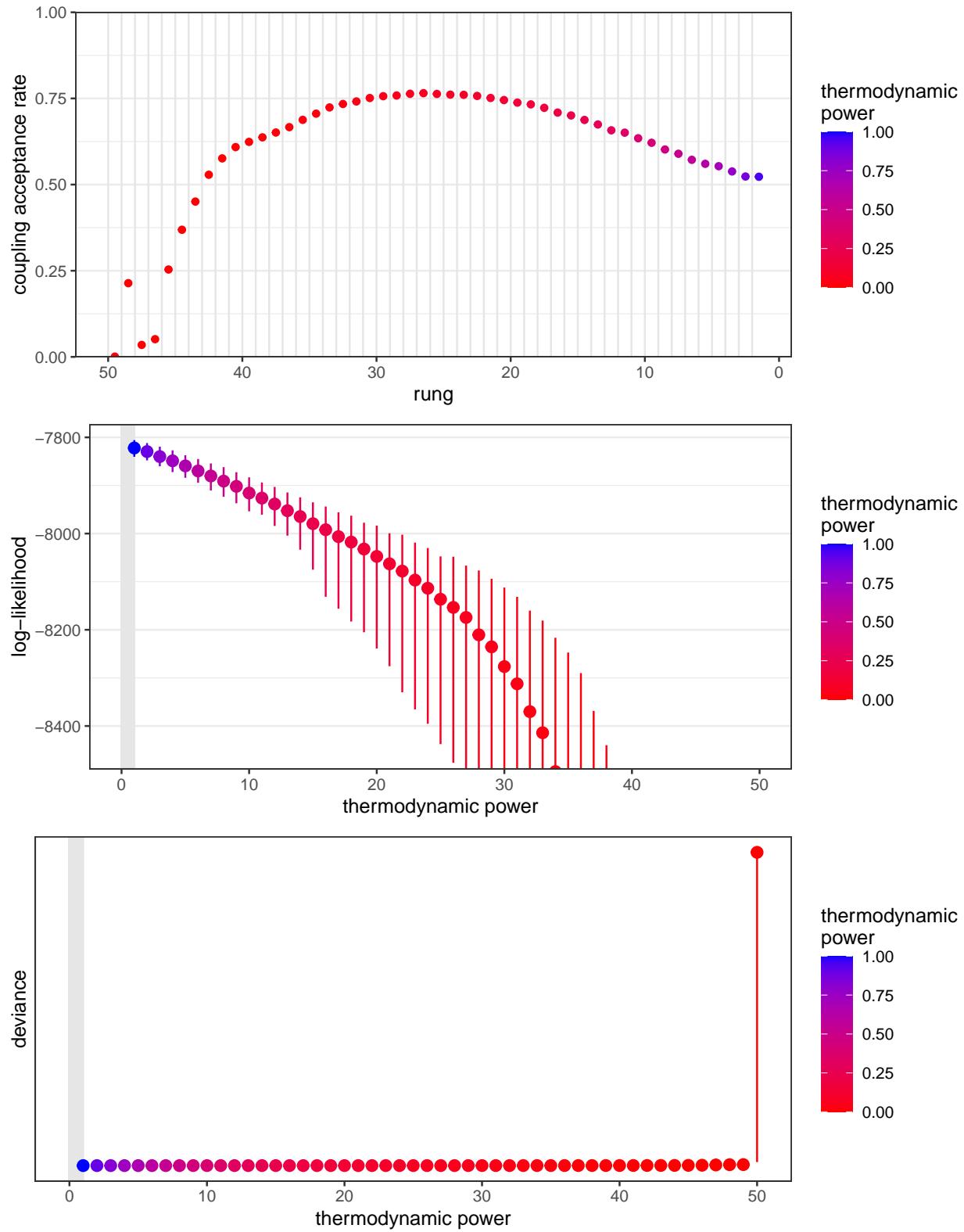
ESP1-2 with Standard Input

Fit Diagnostics

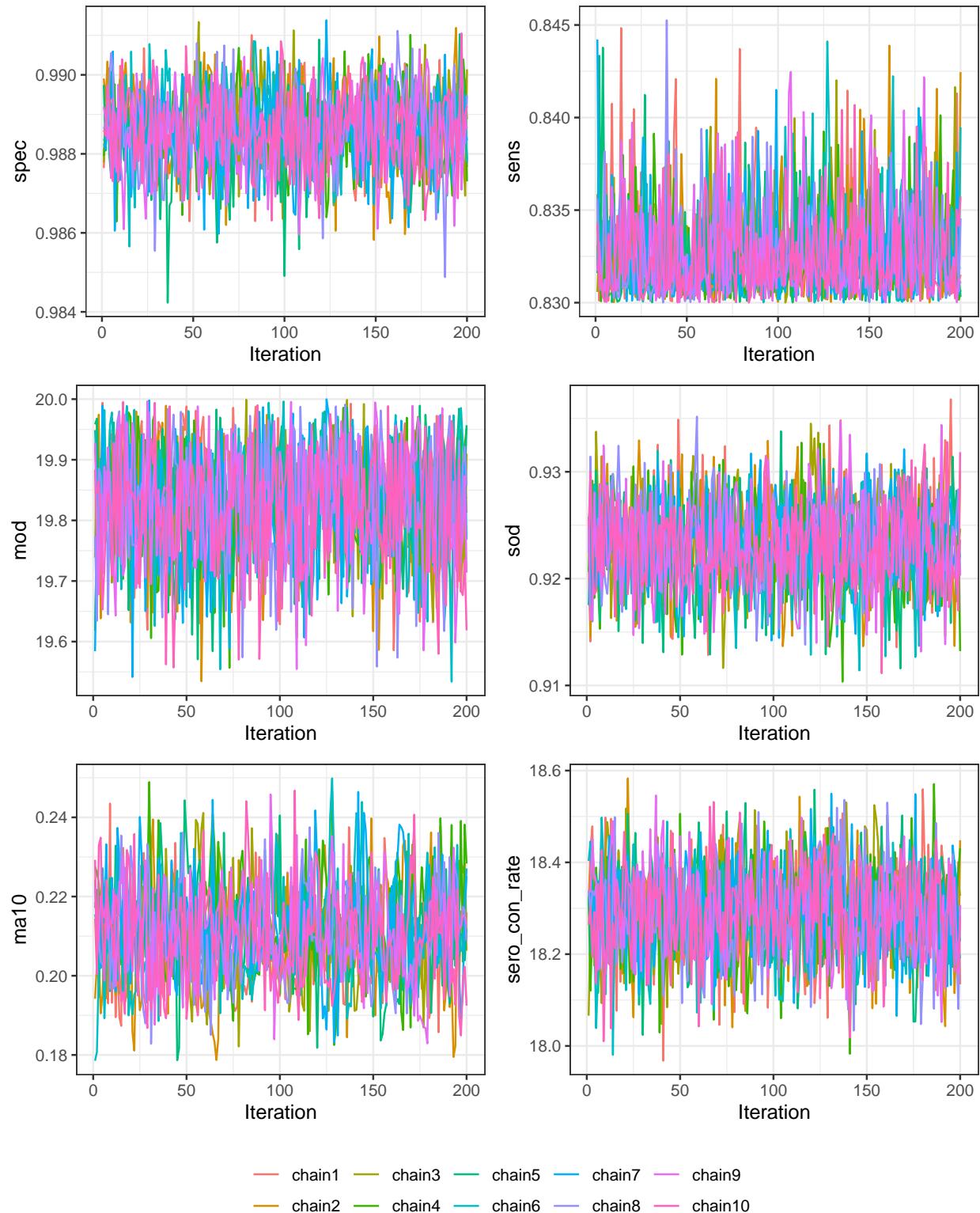
Log Likelihood & Prior Plot



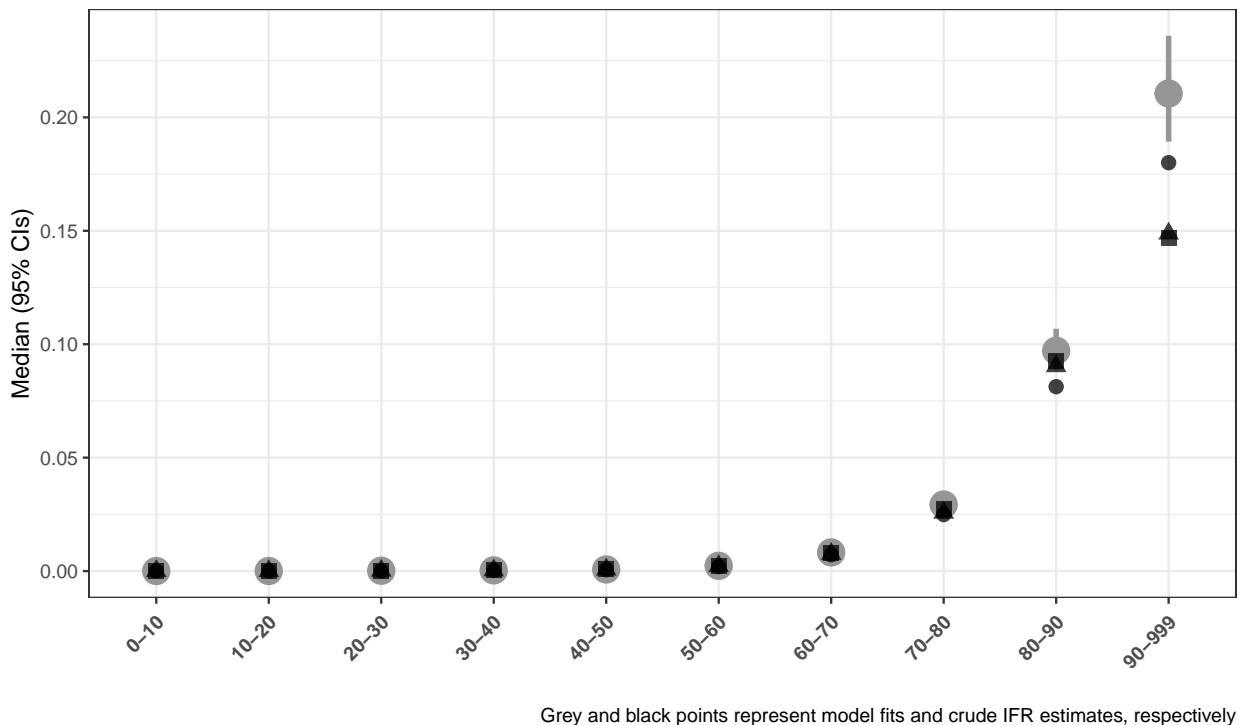
Metropolis Coupling Acceptance Plot



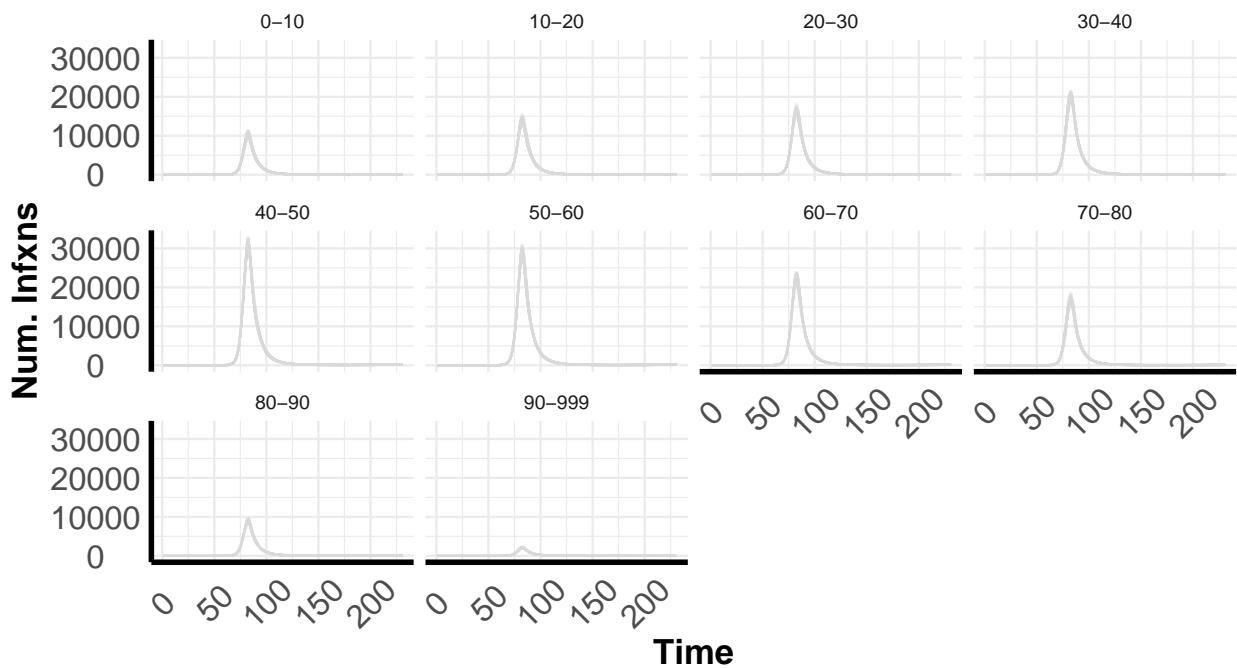
Serological Diagnostics



IFRs & Incidence Curve



Posterior Draws of the Infection Curve



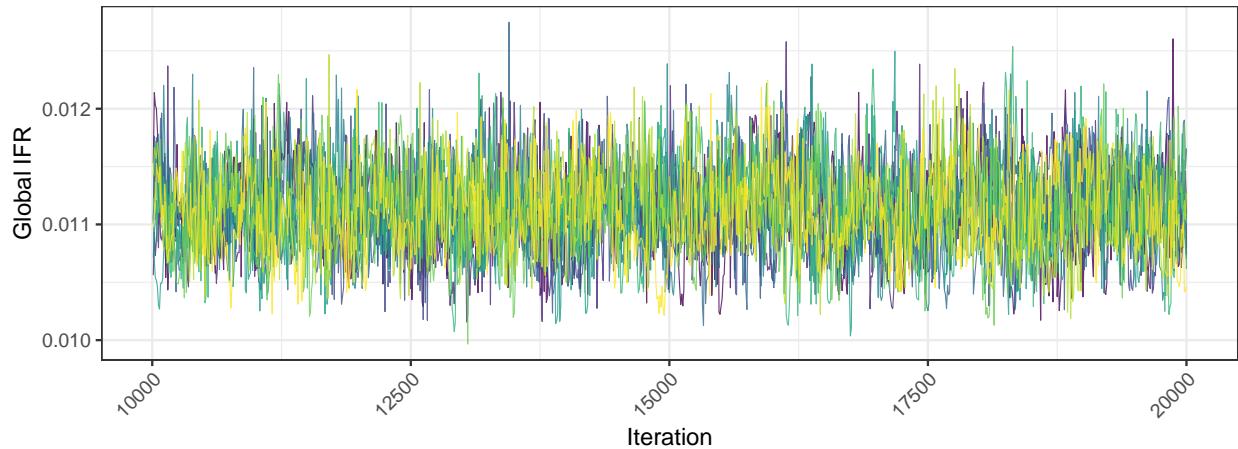
Strata IFR

strata	param	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
0-10	ma1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	9219.2119	0.3656	0.3732
10-20	ma2	0.0000	0.0000	0.0000	0.0000	0.0001	0.0001	9719.7339	-0.2010	0.3910
20-30	ma3	0.0001	0.0001	0.0001	0.0001	0.0002	0.0003	9512.0080	-0.1185	0.3962
30-40	ma4	0.0002	0.0003	0.0003	0.0003	0.0004	0.0005	6425.1071	-1.5104	0.1275
40-50	ma5	0.0005	0.0006	0.0007	0.0007	0.0008	0.0009	7619.2876	-0.9810	0.2466
50-60	ma6	0.0020	0.0021	0.0023	0.0023	0.0025	0.0027	4144.7474	-1.8173	0.0765
60-70	ma7	0.0071	0.0077	0.0082	0.0082	0.0089	0.0097	2663.7678	-1.7978	0.0793
70-80	ma8	0.0259	0.0273	0.0293	0.0294	0.0317	0.0343	2585.0380	-0.0256	0.3988
80-90	ma9	0.0832	0.0888	0.0971	0.0973	0.1068	0.1166	1512.7518	-1.3151	0.1680
90-999	ma10	0.1748	0.1893	0.2105	0.2110	0.2360	0.2550	999.9533	-0.8938	0.2676

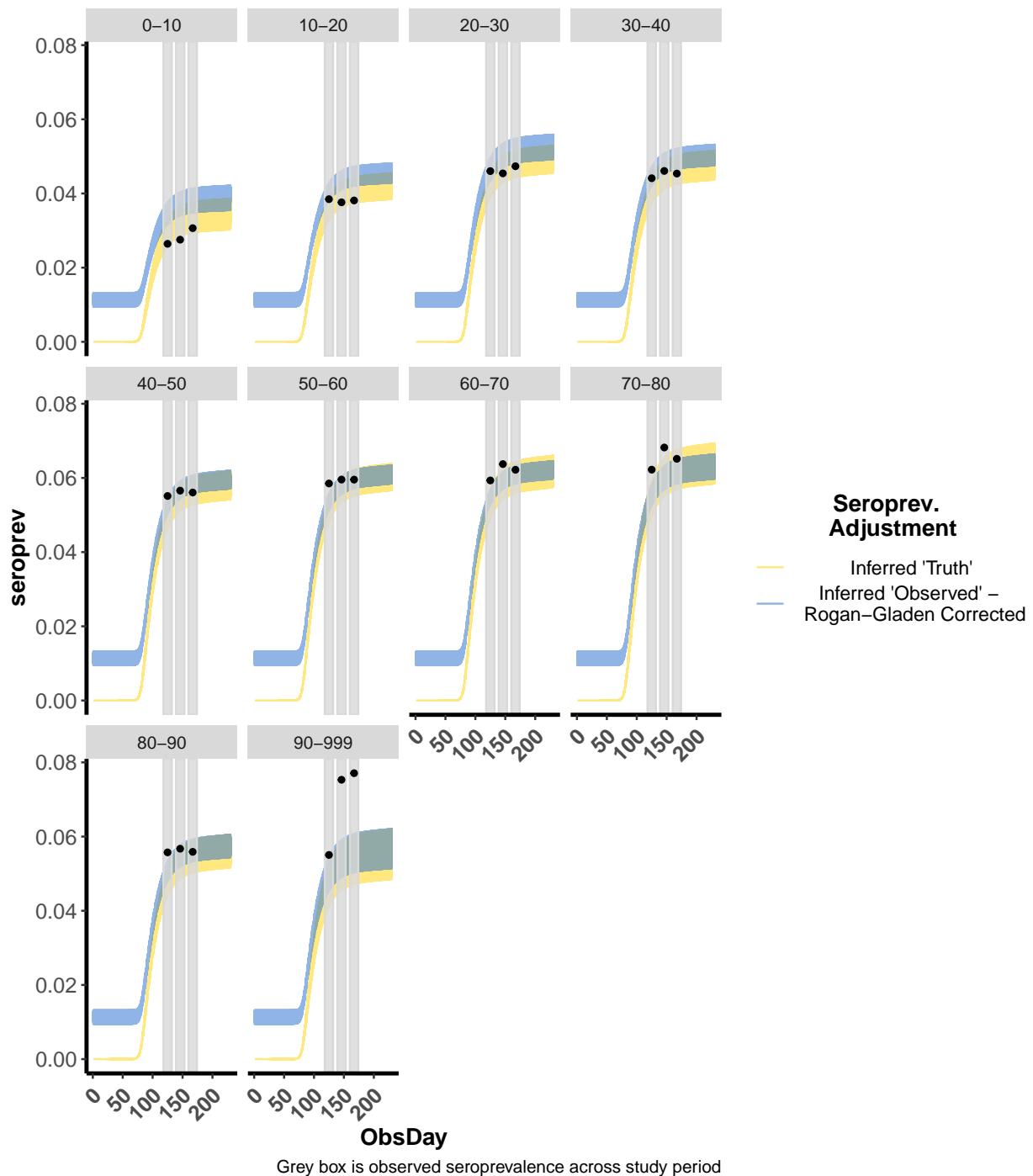
Overall IFR

min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
0.0113	0.0117	0.0122	0.0123	0.0129	0.0136	2076.689	-1.4503	0.1394

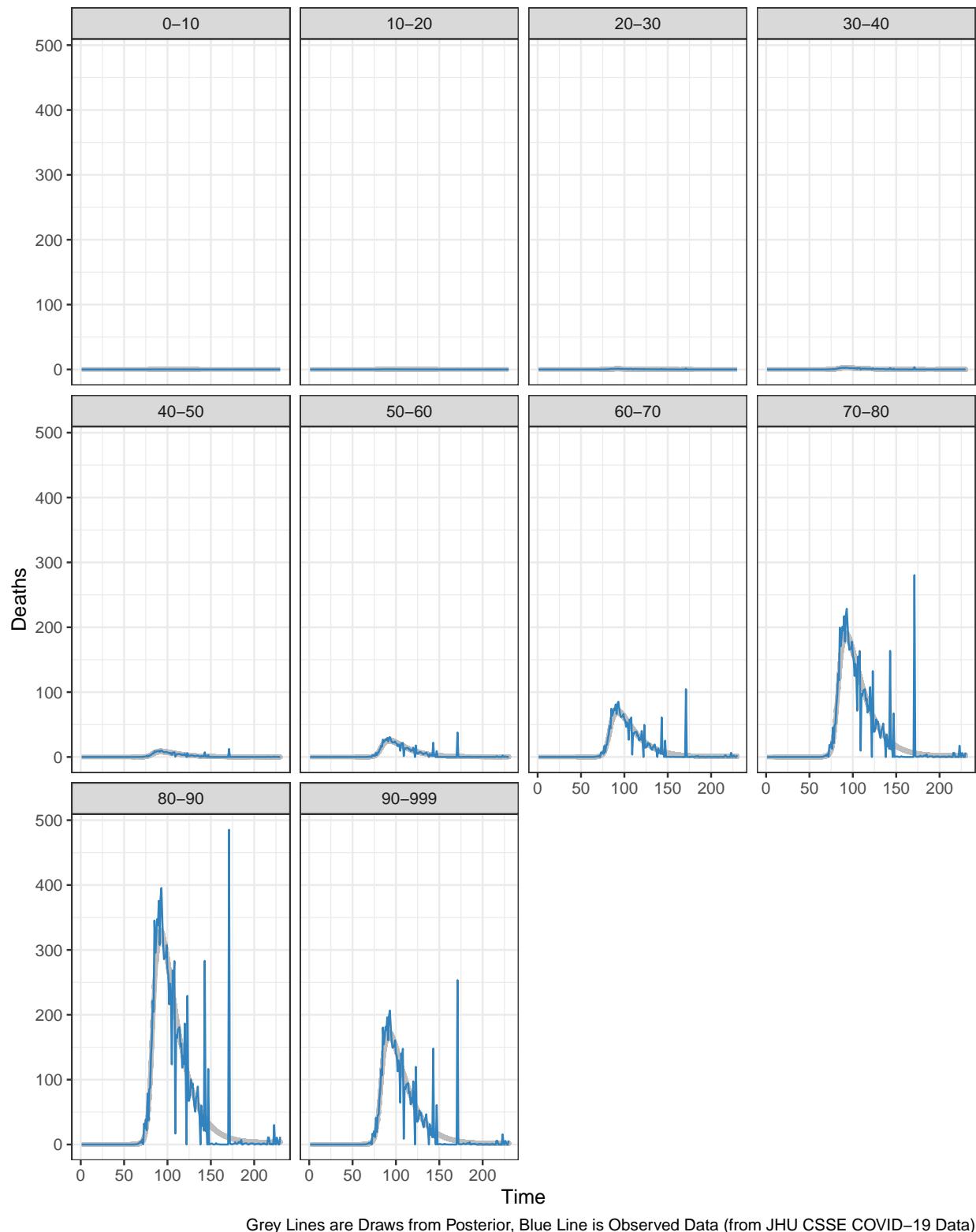
chain	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
chain1	0.0114	0.0116	0.0122	0.0122	0.0129	0.0132	254.1219	0.7078	0.3105
chain2	0.0114	0.0116	0.0122	0.0122	0.0129	0.0133	68.6464	-3.1675	0.0026
chain3	0.0113	0.0117	0.0122	0.0123	0.0130	0.0134	282.8933	-0.0774	0.3978
chain4	0.0115	0.0117	0.0122	0.0123	0.0130	0.0134	174.5850	-0.6092	0.3314
chain5	0.0115	0.0117	0.0122	0.0123	0.0129	0.0136	292.4239	2.9793	0.0047
chain6	0.0114	0.0117	0.0122	0.0122	0.0129	0.0134	129.7956	-1.6717	0.0986
chain7	0.0113	0.0116	0.0123	0.0123	0.0130	0.0135	202.9174	-1.6431	0.1034
chain8	0.0113	0.0117	0.0123	0.0123	0.0129	0.0135	221.2071	-0.8775	0.2715
chain9	0.0113	0.0117	0.0123	0.0123	0.0129	0.0132	247.5822	0.8755	0.2719
chain10	0.0114	0.0117	0.0122	0.0122	0.0129	0.0134	157.9028	-0.8733	0.2725



Seroprevalence Observed vs. Inferred True Prev



Death Posterior Predictive Check



Grey Lines are Draws from Posterior, Blue Line is Observed Data (from JHU CSSE COVID-19 Data)

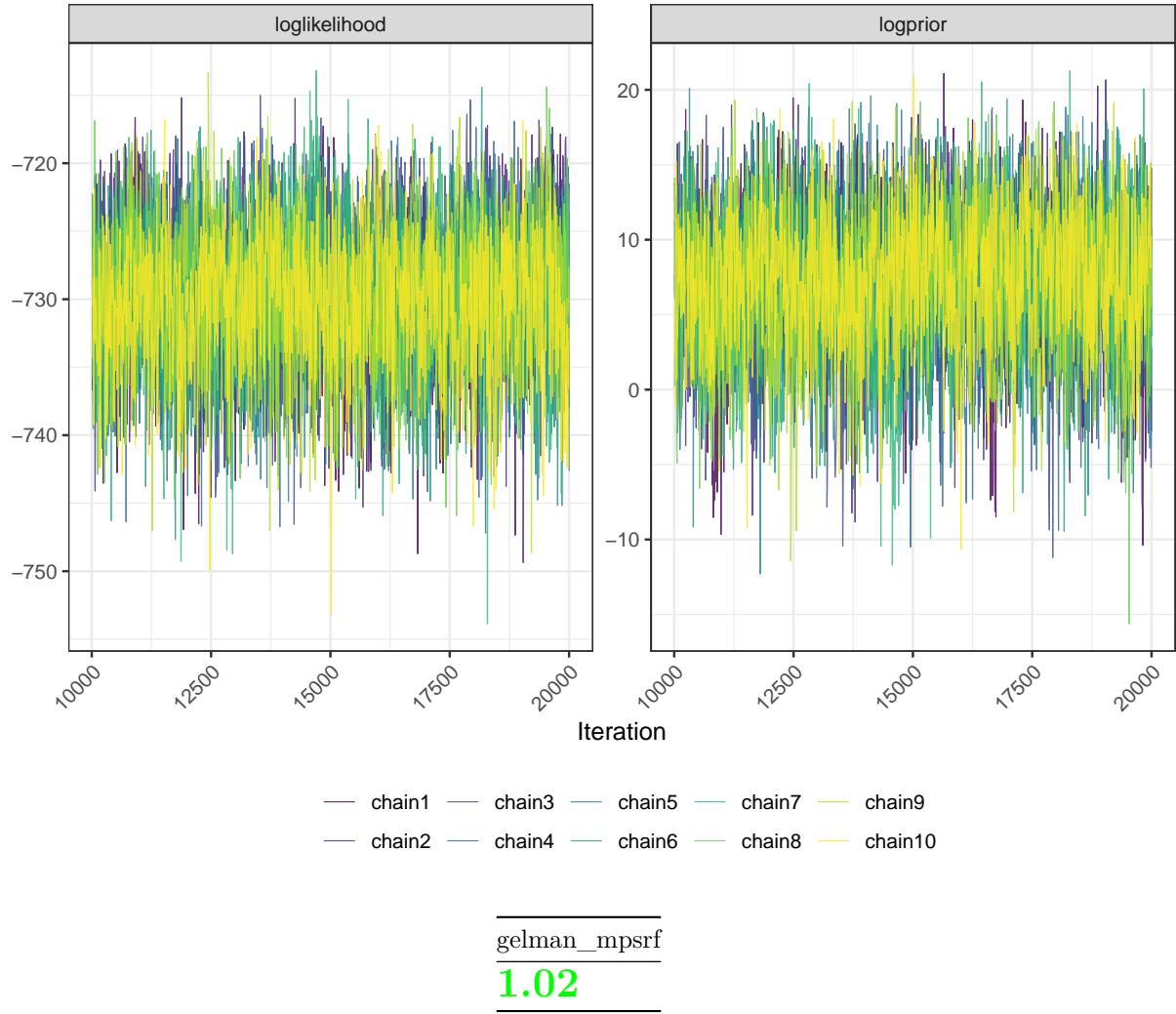
Additional Parameters

param	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
x1	1.0096	53.5684	64.1777	63.6283	70.8812	78.8449	295.0730	1.9903	0.0550
x2	78.9043	82.3327	83.8575	83.8319	85.1001	86.0746	958.2985	-0.3765	0.3716
x3	84.7111	85.3824	86.7259	86.7617	88.3206	89.7948	203.0656	-0.3699	0.3726
x4	219.0002	219.2125	223.8431	224.5497	232.4358	233.0000	573.4592	-3.7181	0.0004
y1	0.0001	0.0399	0.8823	1.0617	2.9900	4.5998	3025.4879	-2.3967	0.0226
y2	0.0030	1.6051	6.6489	6.3245	9.1757	11.6983	277.0049	2.0023	0.0537
y3	11.7528	11.8757	11.9877	11.9853	12.0844	12.1670	971.7983	1.1714	0.2009
y4	11.1945	11.4354	11.6361	11.6292	11.8104	11.9239	189.0485	0.6327	0.3266
y5	6.3163	6.5807	6.8524	6.8714	7.2393	7.5322	971.0629	-3.4873	0.0009
Ne1	0.5115	0.5618	0.6284	0.6292	0.6981	0.7825	7997.8090	0.9732	0.2484
Ne10	0.8775	0.9484	1.0380	1.0395	1.1316	1.2250	1495.5151	0.3954	0.3689
Ne2	0.6445	0.6979	0.7592	0.7593	0.8219	0.8970	7670.0519	0.4072	0.3672
Ne3	0.7759	0.8406	0.9058	0.9062	0.9746	1.0318	7045.6766	1.2021	0.1937
Ne4	0.7606	0.8149	0.8785	0.8785	0.9422	1.0153	7201.4413	0.9210	0.2610
Ne5	0.9424	0.9982	1.0564	1.0567	1.1176	1.1850	5417.9379	0.3654	0.3732
Ne6	0.9967	1.0529	1.1136	1.1131	1.1741	1.2317	5402.9990	0.5901	0.3352
Ne7	0.9999	1.0823	1.1450	1.1454	1.2100	1.2722	4473.6223	0.7854	0.2931
Ne8	1.0420	1.0970	1.1657	1.1662	1.2361	1.3051	3029.4899	-0.9751	0.2480
Ne9	0.8830	0.9540	1.0294	1.0303	1.1110	1.1846	1591.0215	0.9197	0.2613

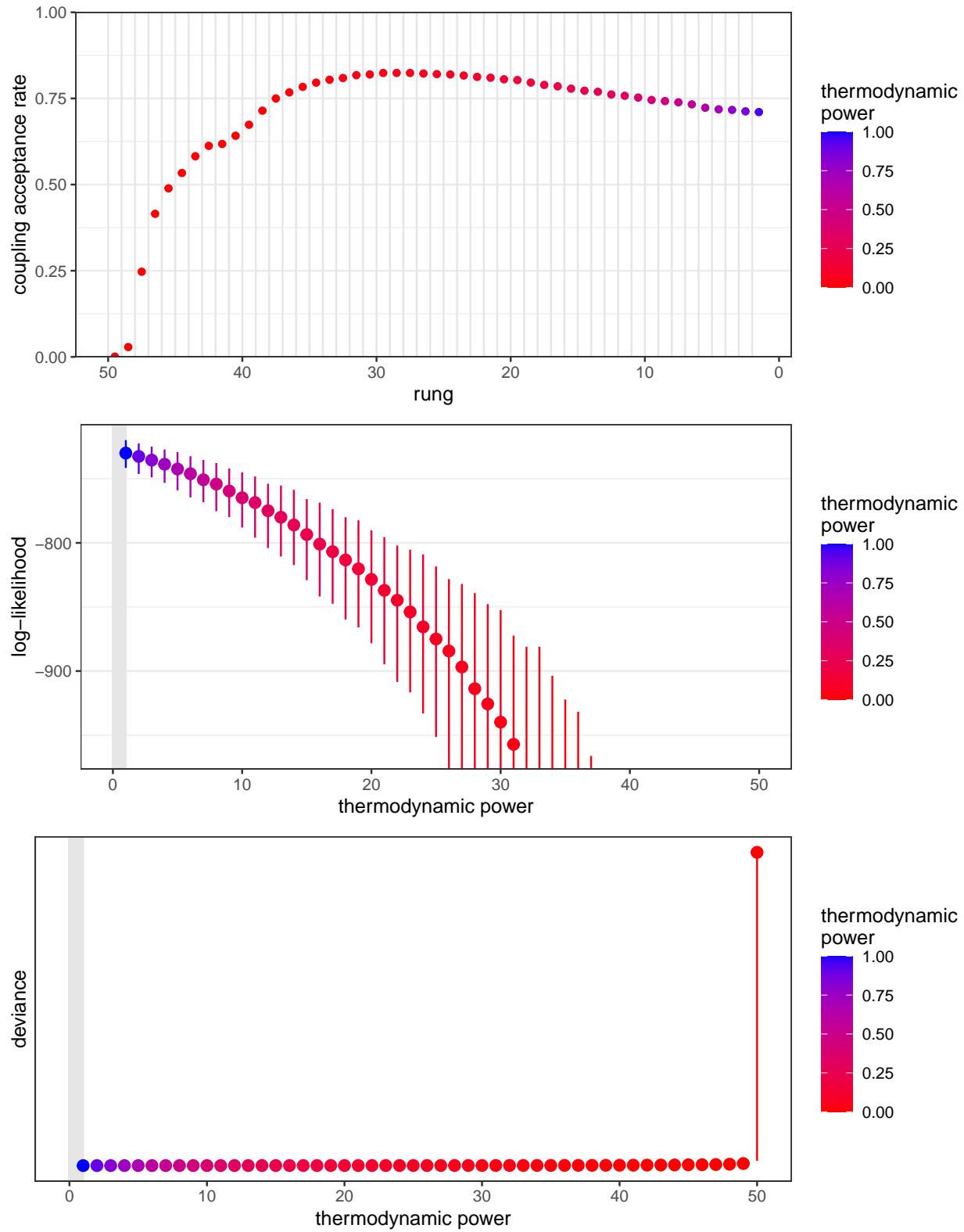
GBR3 with Standard Input

Fit Diagnostics

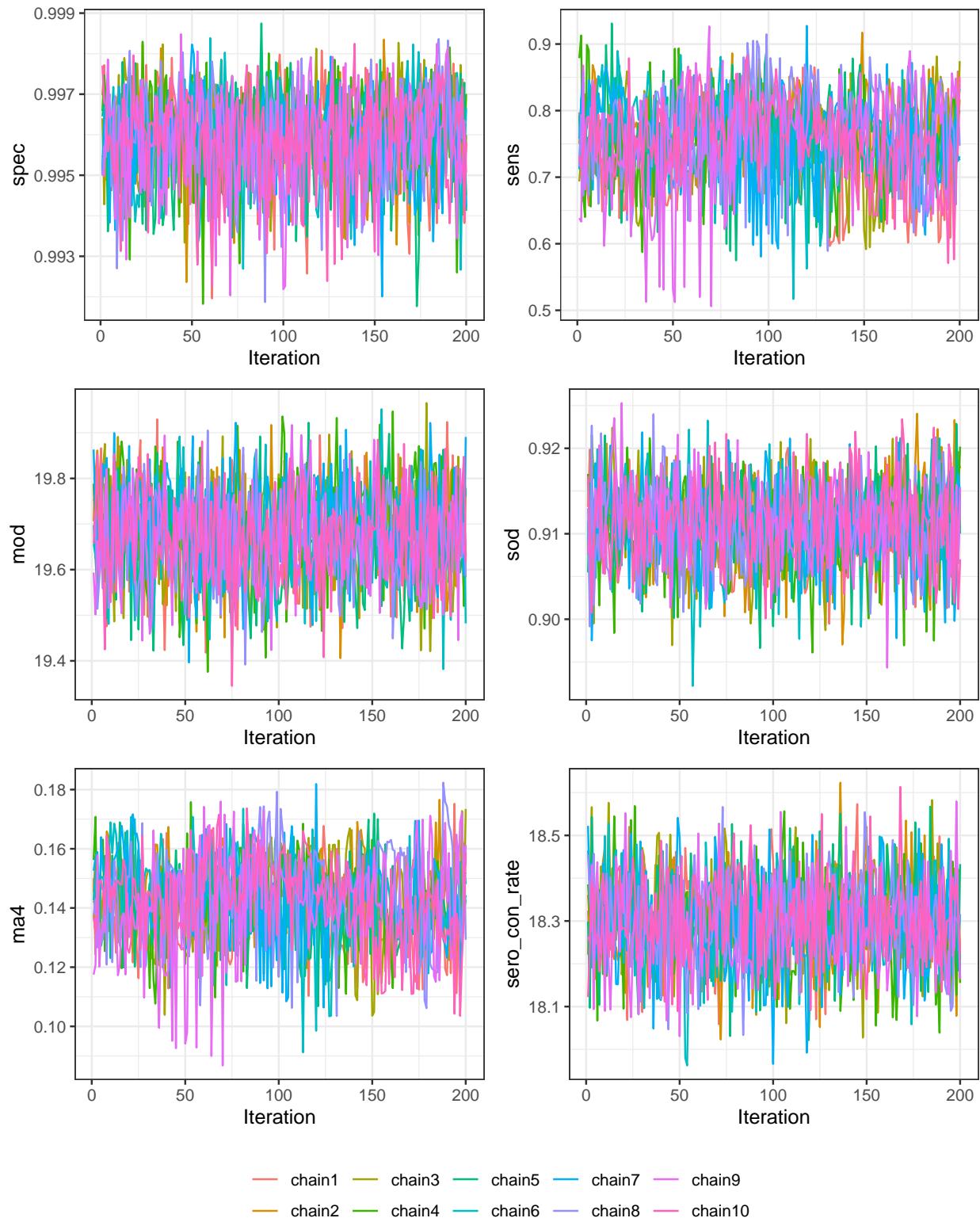
Log Likelihood & Prior Plot



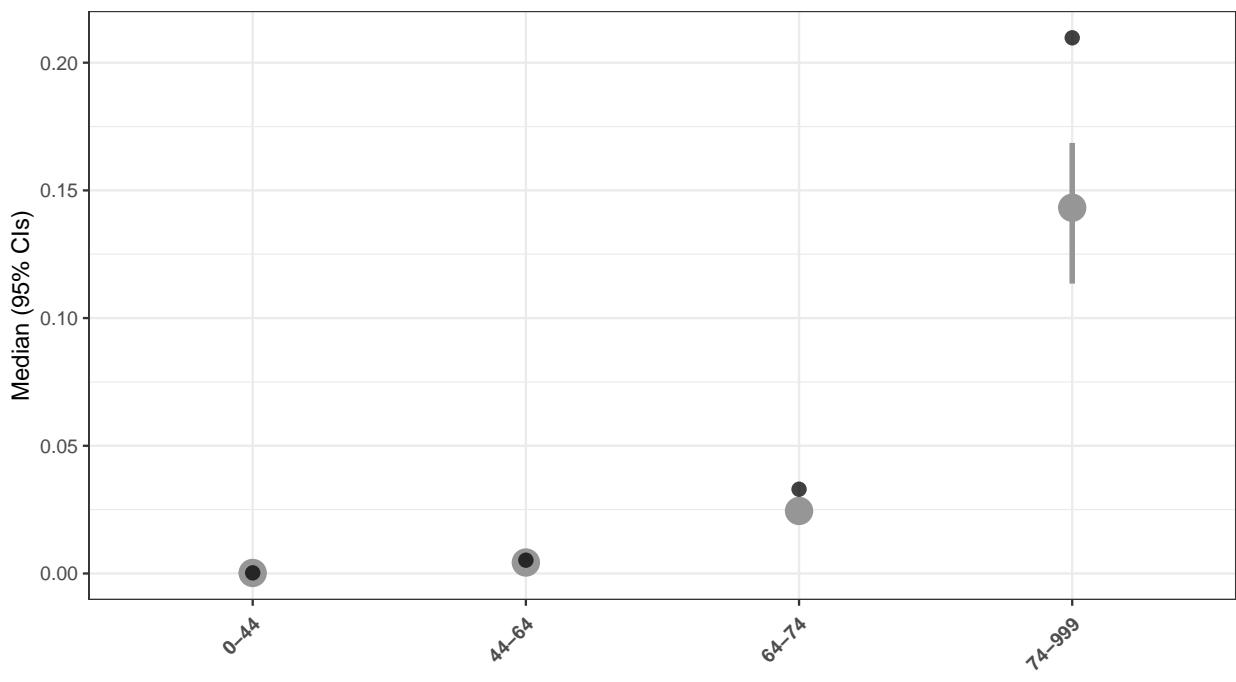
Metropolis Coupling Acceptance Plot



Serological Diagnostics

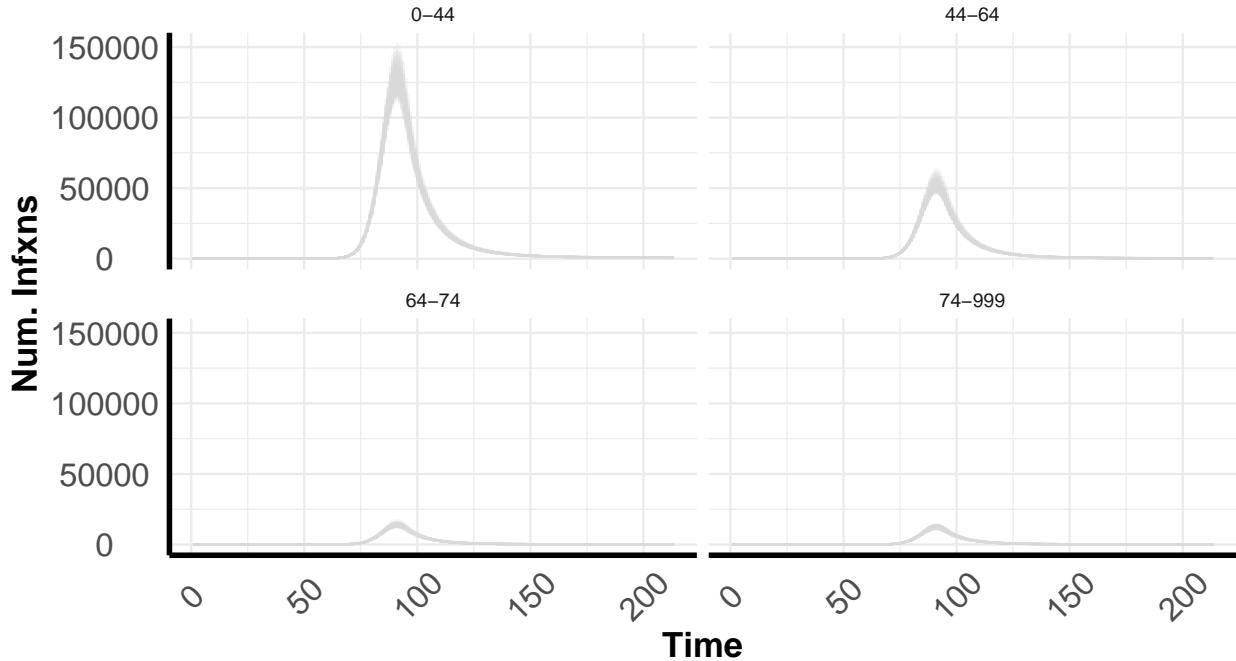


IFRs & Incidence Curve



Grey and black points represent model fits and crude IFR estimates, respectively

Posterior Draws of the Infection Curve



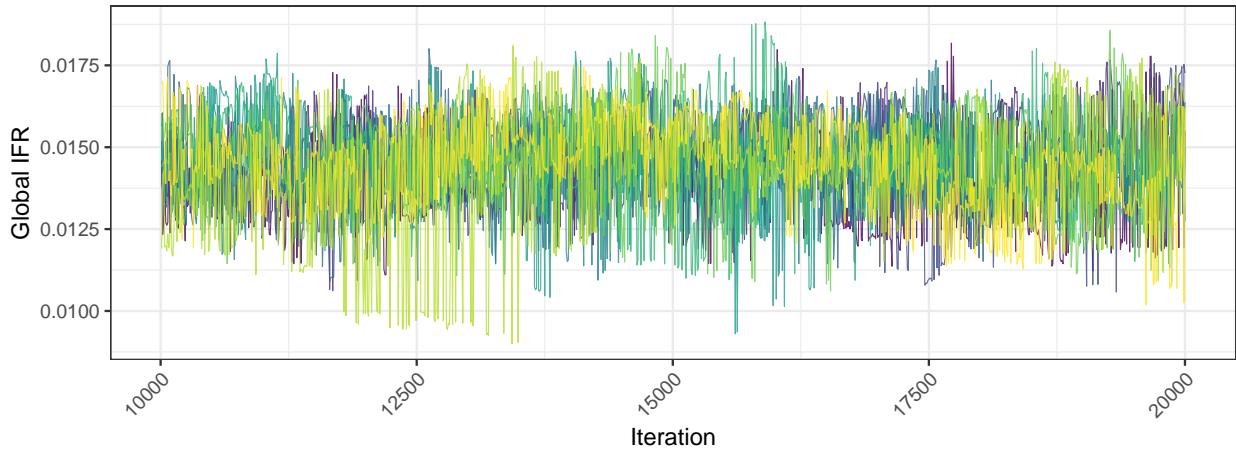
Strata IFR

strata	param	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
0-44	ma1	0.0001	0.0002	0.0002	0.0002	0.0002	0.0003	665.2219	-2.1457	0.0399
44-64	ma2	0.0027	0.0035	0.0043	0.0043	0.0050	0.0055	560.1414	-2.4465	0.0200
64-74	ma3	0.0150	0.0196	0.0245	0.0244	0.0288	0.0321	595.5560	-3.2377	0.0021
74-999	ma4	0.0868	0.1135	0.1432	0.1427	0.1686	0.1896	612.5501	-2.7323	0.0095

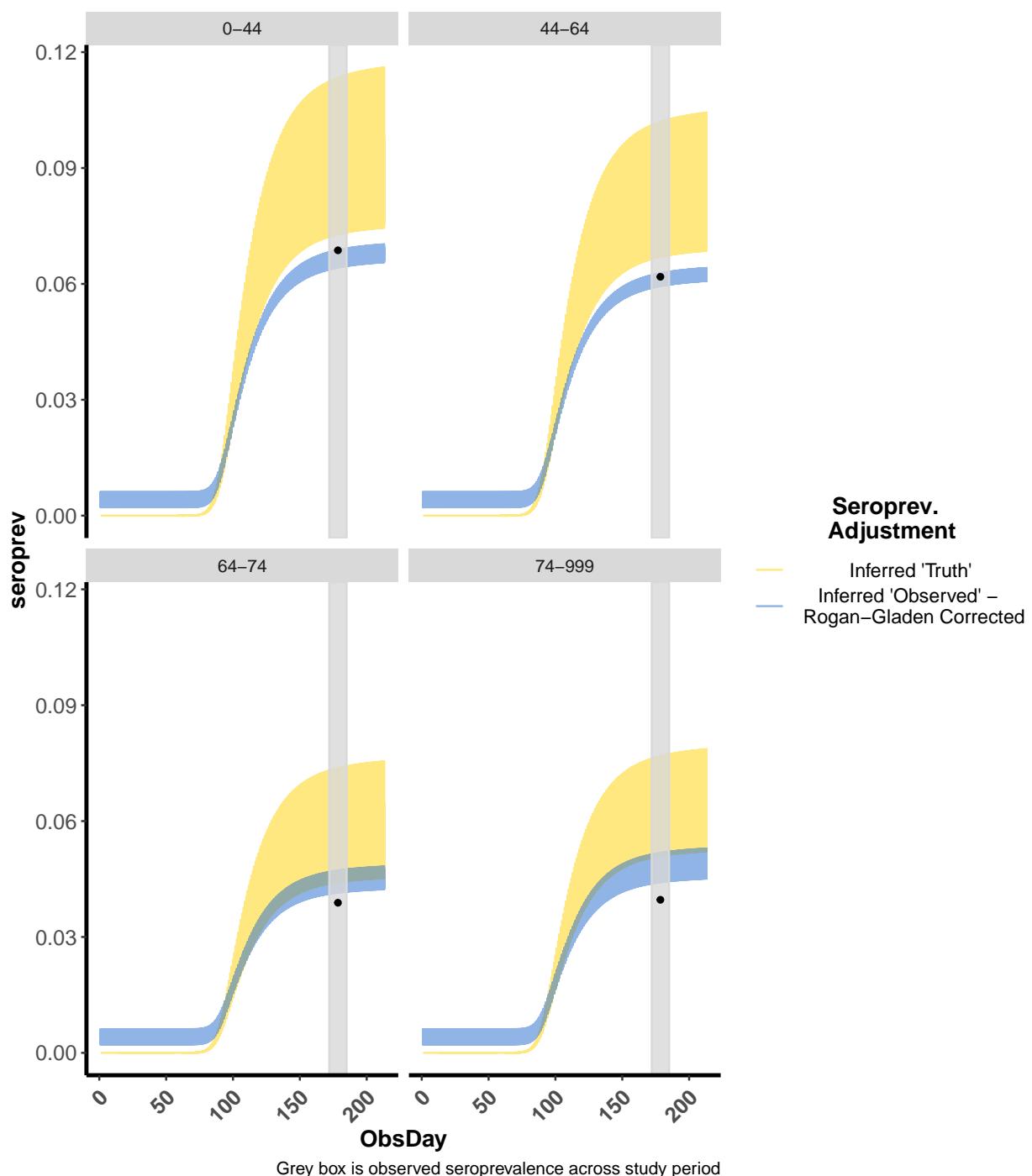
Overall IFR

min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
0.0073	0.0091	0.0113	0.0112	0.013	0.0143	1801.919	0.2881	0.3827

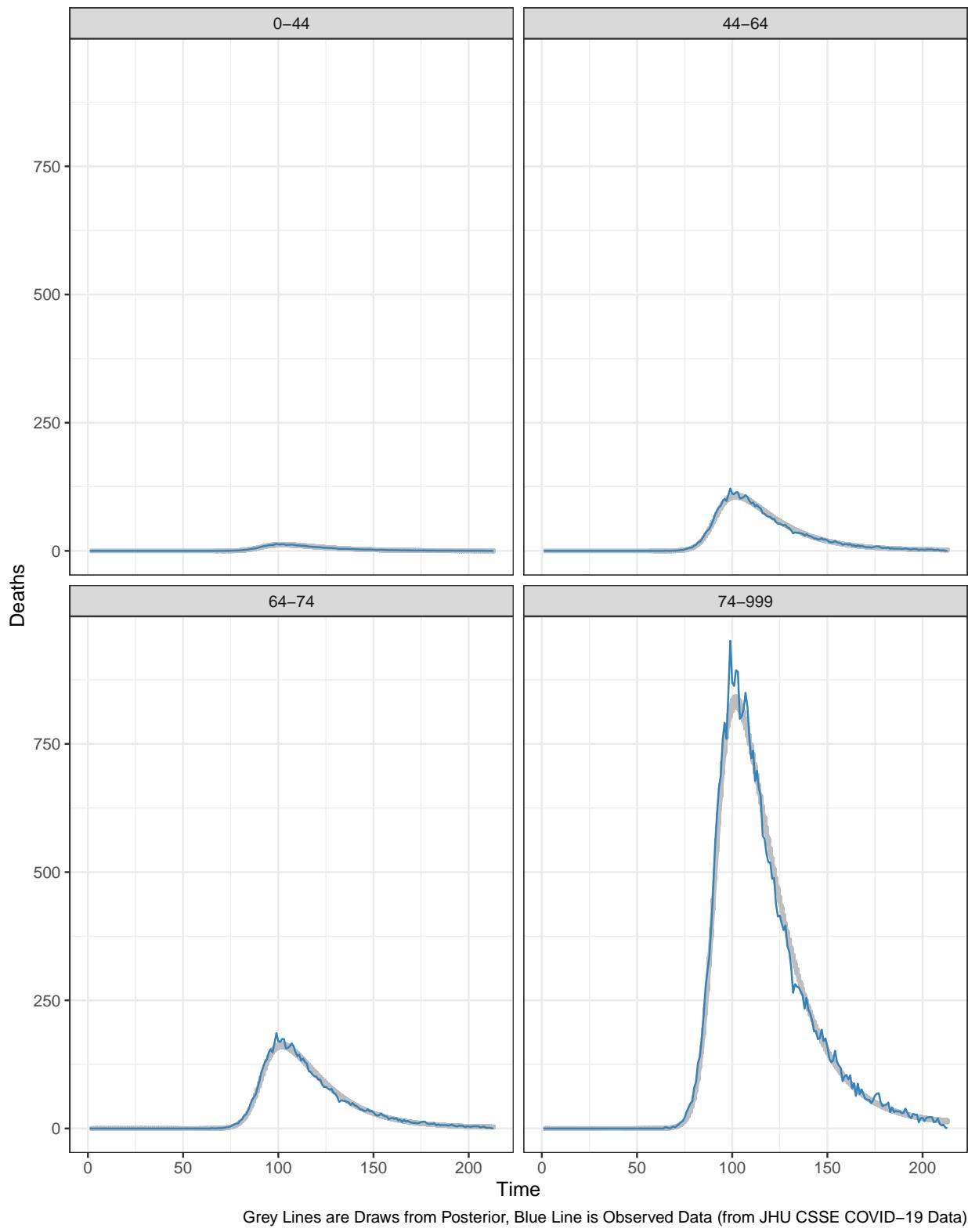
chain	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
chain1	0.0086	0.0090	0.0111	0.0109	0.0129	0.0138	78.8082	-0.7793	0.2945
chain2	0.0085	0.0099	0.0115	0.0115	0.0128	0.0140	132.6496	-2.3250	0.0267
chain3	0.0086	0.0091	0.0112	0.0112	0.0130	0.0138	49.5455	-0.0507	0.3984
chain4	0.0086	0.0094	0.0112	0.0112	0.0131	0.0140	88.6706	-0.5358	0.3456
chain5	0.0082	0.0093	0.0113	0.0113	0.0128	0.0137	181.0451	2.3854	0.0232
chain6	0.0074	0.0096	0.0112	0.0112	0.0131	0.0141	145.4733	8.6547	0.0000
chain7	0.0086	0.0092	0.0114	0.0113	0.0131	0.0142	99.5581	5.8328	0.0000
chain8	0.0082	0.0093	0.0113	0.0113	0.0133	0.0143	76.0853	-2.6301	0.0126
chain9	0.0073	0.0077	0.0114	0.0112	0.0131	0.0139	51.8798	-6.8547	0.0000
chain10	0.0083	0.0092	0.0113	0.0113	0.0129	0.0135	27.4374	1.2786	0.1762



Seroprevalence Observed vs. Inferred True Prev



Death Posterior Predictive Check



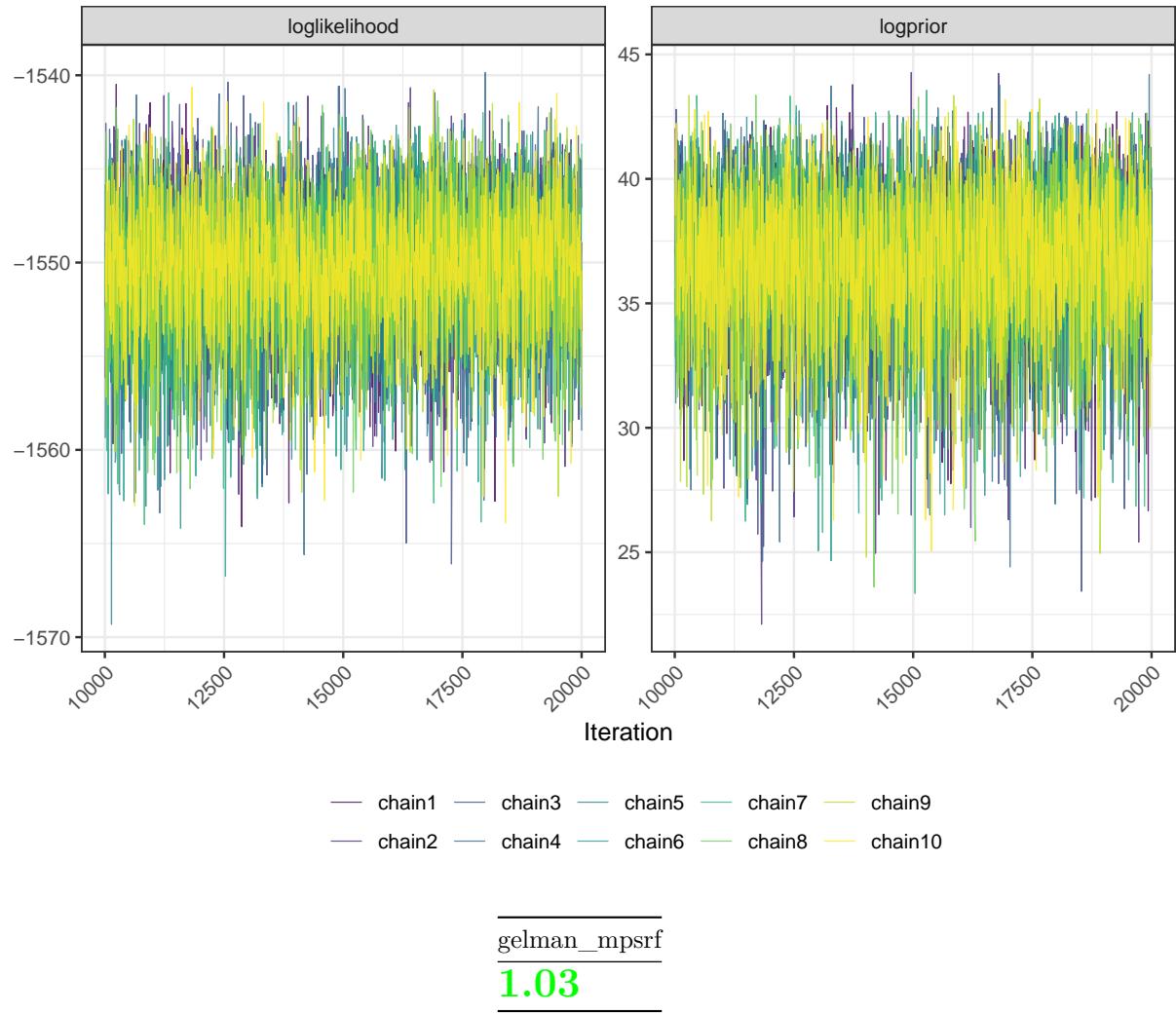
Additional Parameters

param	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
x1	1.1669	3.4675	49.5985	46.7039	60.0300	65.8114	294.0198	2.7725	0.0085
x2	88.8727	91.2382	93.3318	93.2309	94.7211	95.4514	410.1886	0.4110	0.3666
x3	94.6420	95.7477	97.3295	97.3808	99.2167	101.2342	450.3491	-3.3931	0.0013
x4	206.0004	206.0641	207.7462	208.2311	212.4448	212.9989	517.1519	8.1517	0.0000
y1	0.0000	0.0578	1.2081	1.4167	3.9618	5.6028	971.9839	-3.1478	0.0028
y2	0.0012	0.1002	2.0002	2.1911	5.3114	7.0273	388.8205	0.5275	0.3471
y3	11.8390	11.9831	12.1528	12.1611	12.3835	12.5763	501.4380	1.8537	0.0716
y4	11.2906	11.5583	11.7825	11.7882	12.0468	12.3690	411.2509	4.0566	0.0001
y5	6.4372	6.6761	6.9378	6.9428	7.2327	7.5660	1784.8559	0.7934	0.2912
Ne1	1.0586	1.1228	1.1892	1.1899	1.2606	1.3168	1812.9054	-1.5668	0.1169
Ne2	0.9660	1.0228	1.0878	1.0876	1.1542	1.2399	2354.2427	-0.9307	0.2587
Ne3	0.6383	0.6949	0.7586	0.7586	0.8232	0.8918	1630.6179	-0.5120	0.3499
Ne4	0.7109	0.7688	0.8408	0.8421	0.9196	1.0113	874.2777	0.3455	0.3758

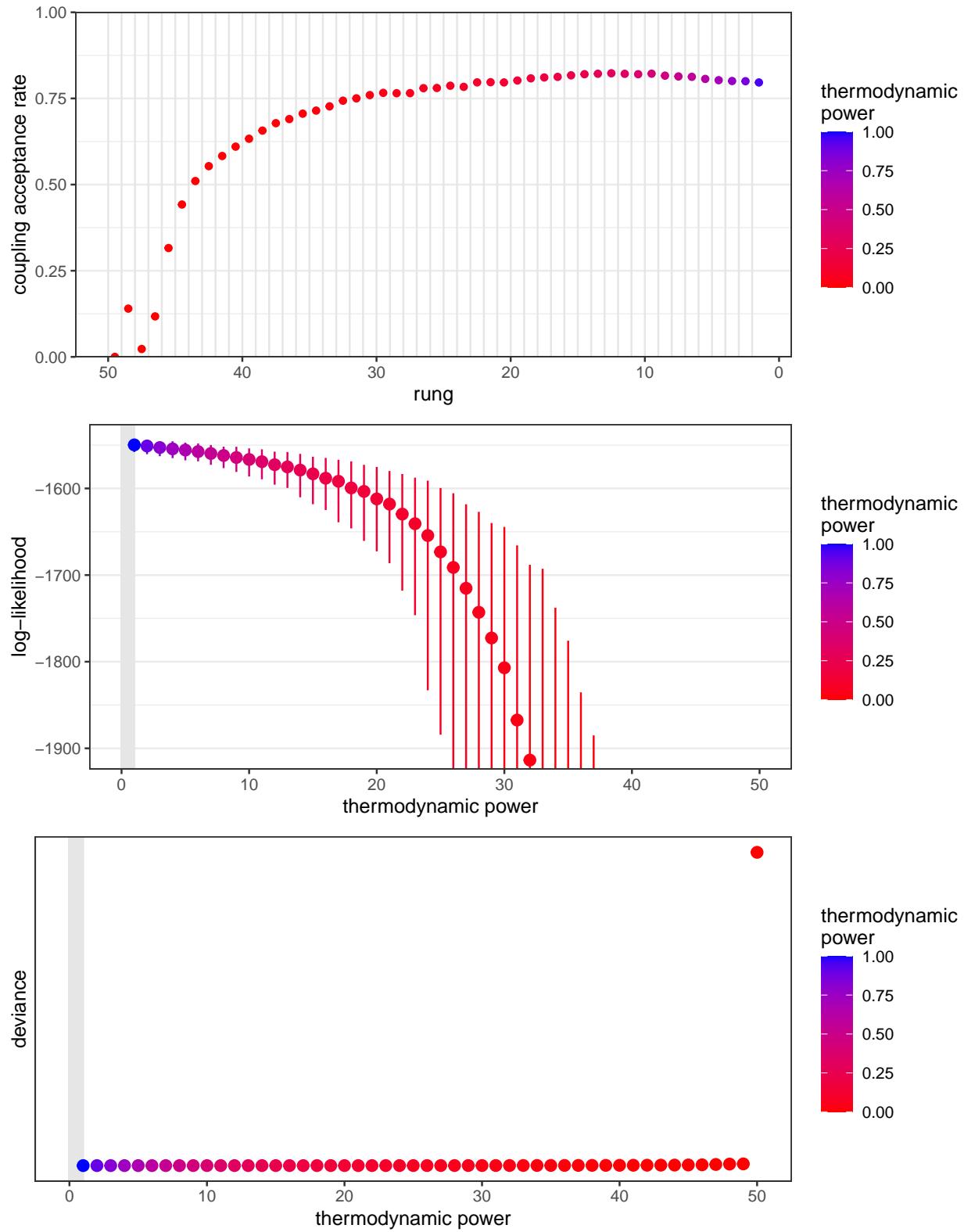
ITA1 with Standard Input

Fit Diagnostics

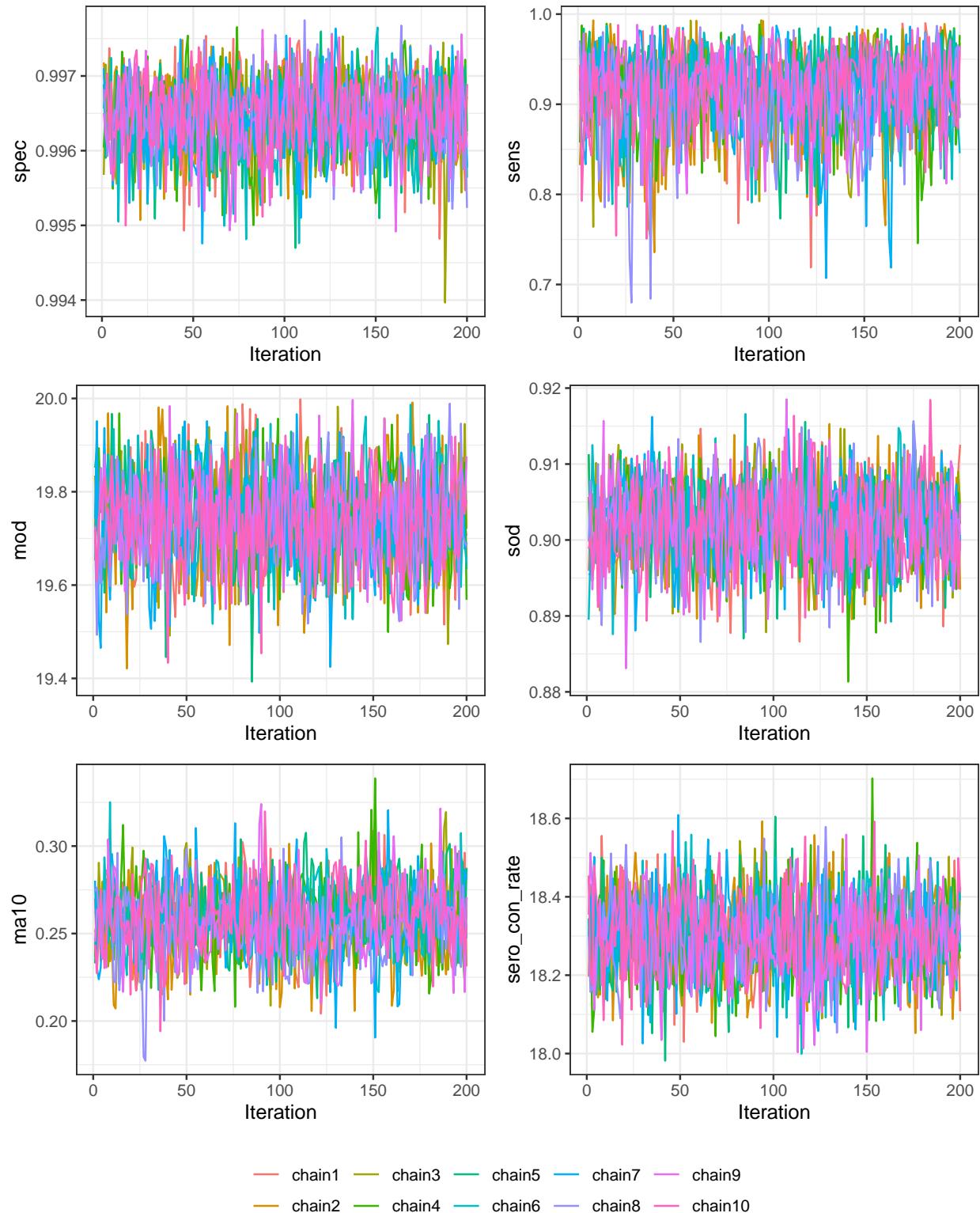
Log Likelihood & Prior Plot



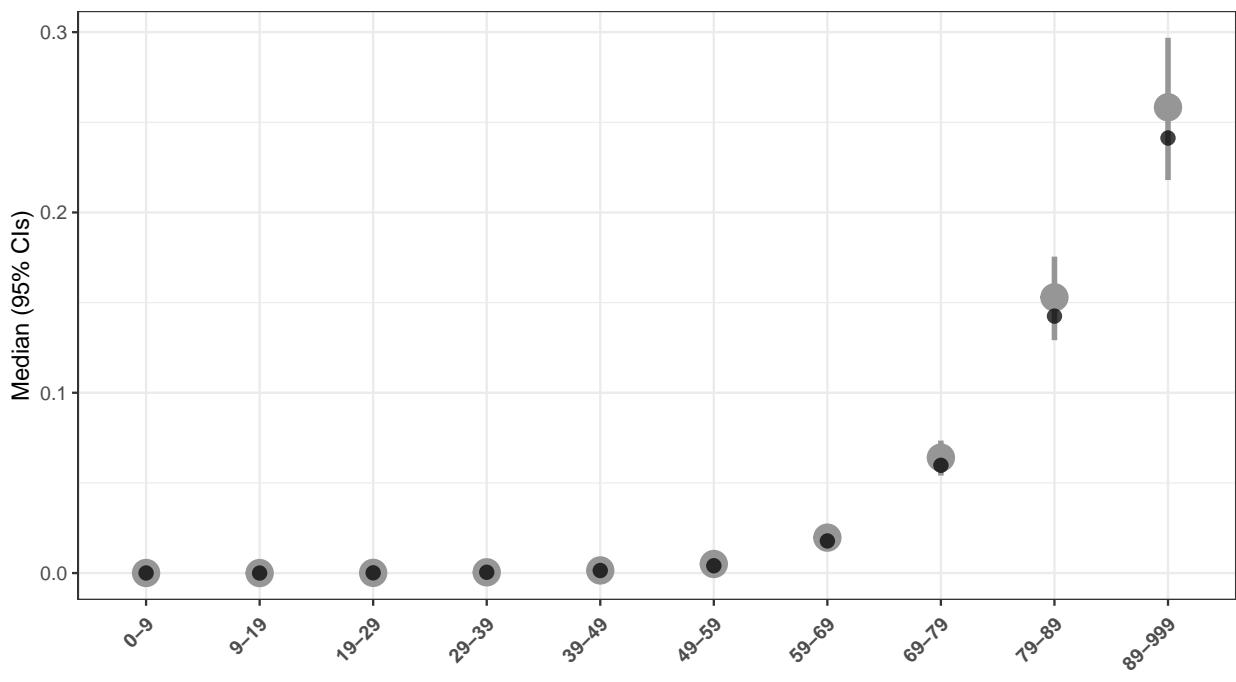
Metropolis Coupling Acceptance Plot



Serological Diagnostics

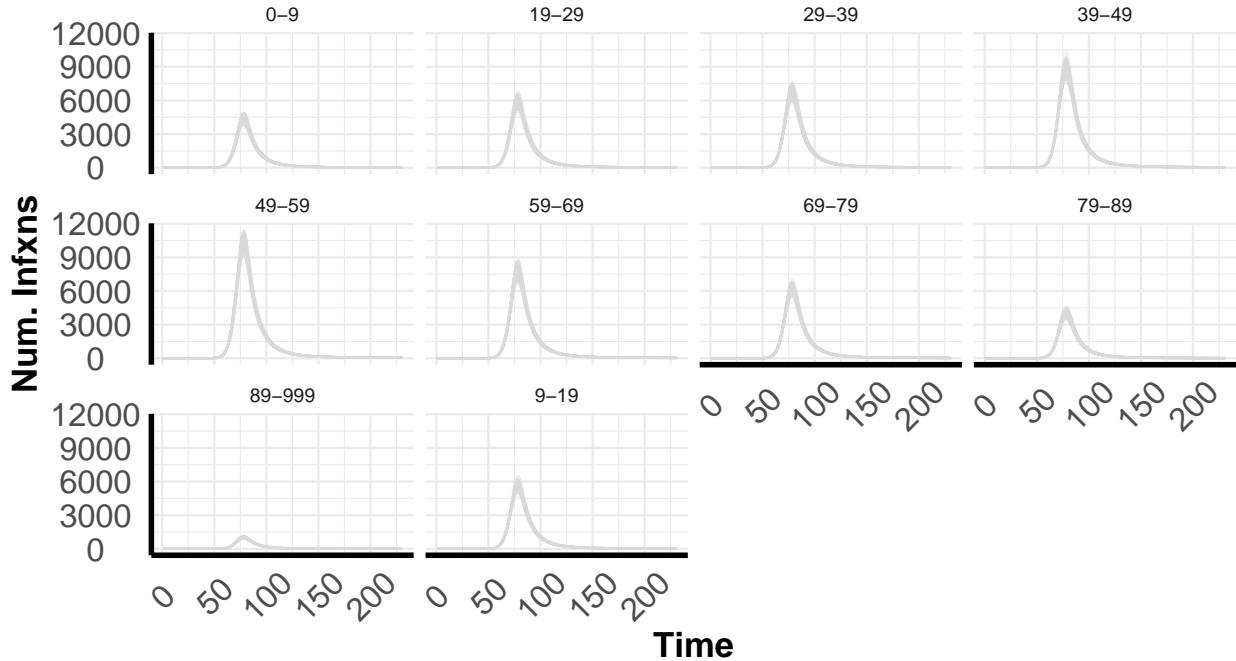


IFRs & Incidence Curve



Grey and black points represent model fits and crude IFR estimates, respectively

Posterior Draws of the Infection Curve



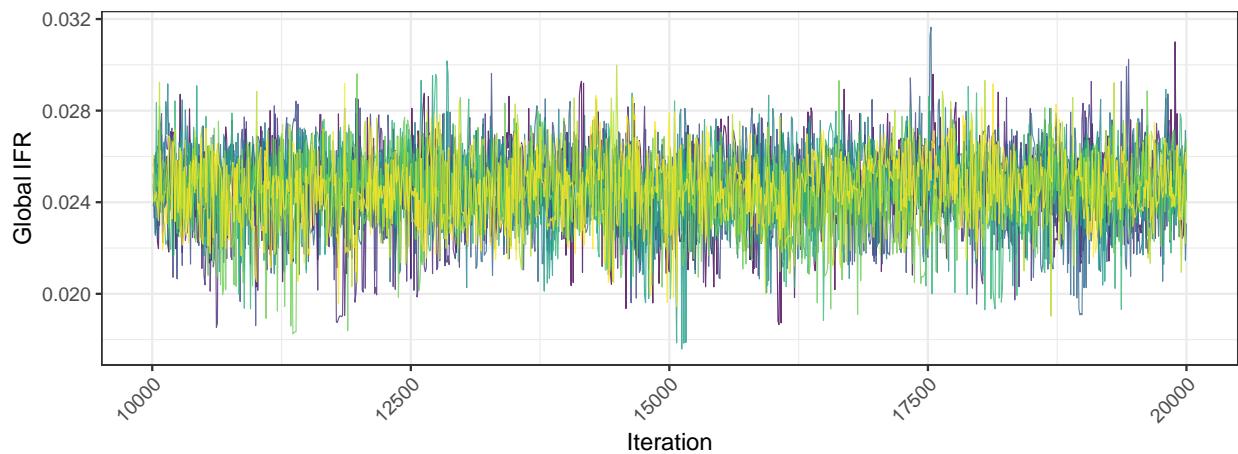
Strata IFR

strata	param	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
0-9	ma1	0.0000	0.0000	0.0000	0.0000	0.0001	0.0001	10000.000	0.9220	0.2608
9-19	ma2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	8345.490	0.5654	0.3400
19-29	ma3	0.0000	0.0001	0.0001	0.0001	0.0002	0.0003	9173.773	-0.8374	0.2810
29-39	ma4	0.0002	0.0003	0.0004	0.0004	0.0006	0.0007	6348.971	0.3971	0.3687
39-49	ma5	0.0009	0.0012	0.0015	0.0015	0.0017	0.0021	2897.966	1.1617	0.2032
49-59	ma6	0.0036	0.0042	0.0050	0.0050	0.0058	0.0067	2051.872	1.2170	0.1902
59-69	ma7	0.0138	0.0165	0.0196	0.0196	0.0226	0.0249	1868.856	0.7112	0.3098
69-79	ma8	0.0459	0.0540	0.0640	0.0640	0.0735	0.0863	1624.710	0.9294	0.2590
79-89	ma9	0.1047	0.1292	0.1529	0.1528	0.1755	0.1987	1742.014	0.2008	0.3910
89-999	ma10	0.1773	0.2180	0.2583	0.2583	0.2969	0.3401	1093.927	0.3837	0.3706

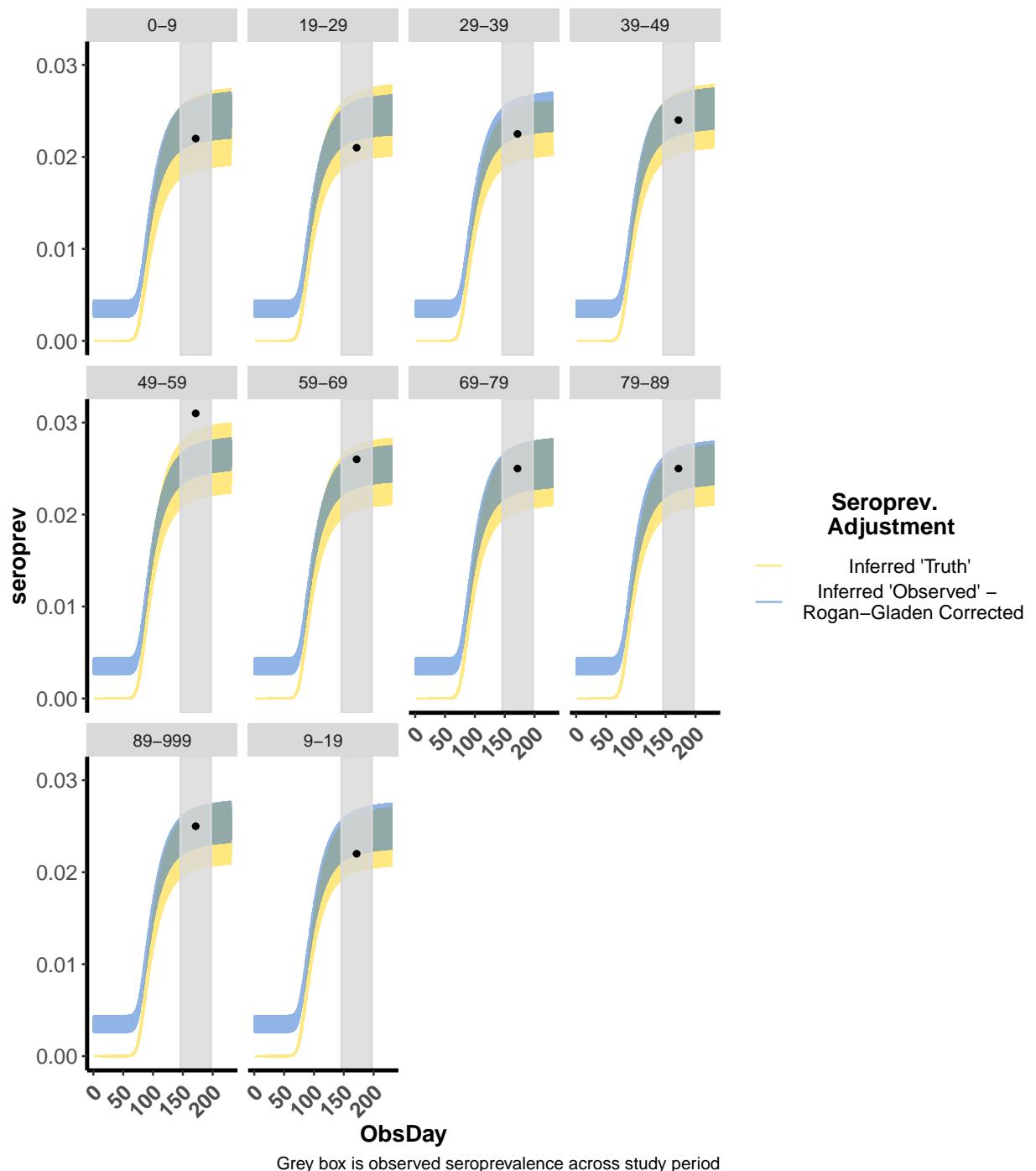
Overall IFR

min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
0.0176	0.0211	0.0246	0.0245	0.0274	0.0309	3173.991	-0.2416	0.3875

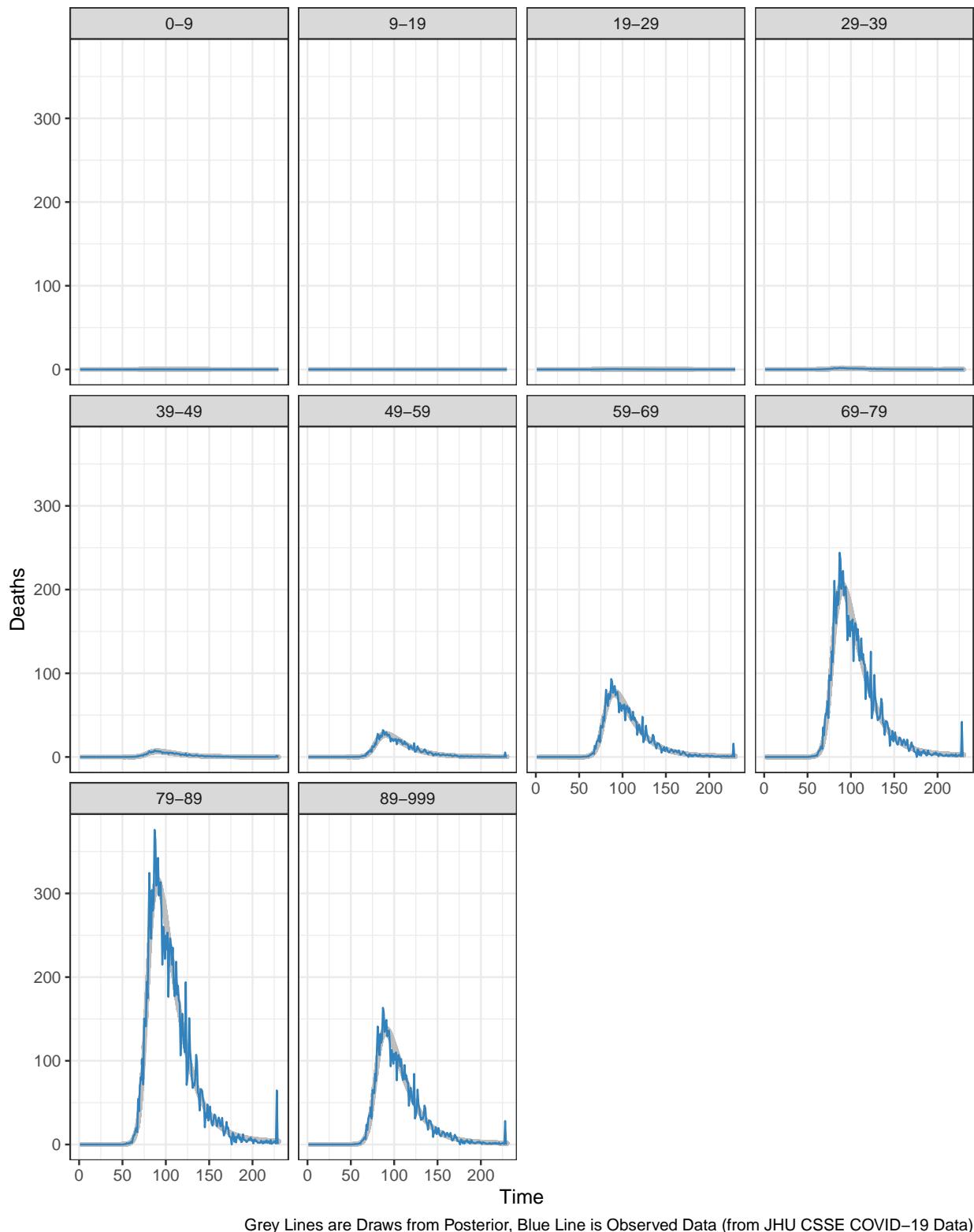
chain	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
chain1	0.0189	0.0211	0.0247	0.0246	0.0276	0.0308	179.6227	0.6552	0.3219
chain2	0.0186	0.0202	0.0246	0.0244	0.0272	0.0284	299.0931	-2.0391	0.0499
chain3	0.0188	0.0213	0.0247	0.0246	0.0275	0.0291	197.7959	-0.7951	0.2908
chain4	0.0191	0.0210	0.0245	0.0244	0.0273	0.0309	177.0641	0.6572	0.3215
chain5	0.0198	0.0217	0.0250	0.0248	0.0272	0.0283	254.0249	3.2903	0.0018
chain6	0.0176	0.0211	0.0247	0.0246	0.0274	0.0292	306.3437	-0.1289	0.3956
chain7	0.0188	0.0213	0.0246	0.0246	0.0276	0.0296	275.3974	-0.2941	0.3821
chain8	0.0183	0.0207	0.0244	0.0243	0.0271	0.0296	217.8944	-0.2243	0.3890
chain9	0.0180	0.0216	0.0246	0.0245	0.0274	0.0302	663.0464	1.4914	0.1312
chain10	0.0193	0.0215	0.0246	0.0246	0.0274	0.0298	264.6204	-2.9914	0.0045



Seroprevalence Observed vs. Inferred True Prev



Death Posterior Predictive Check



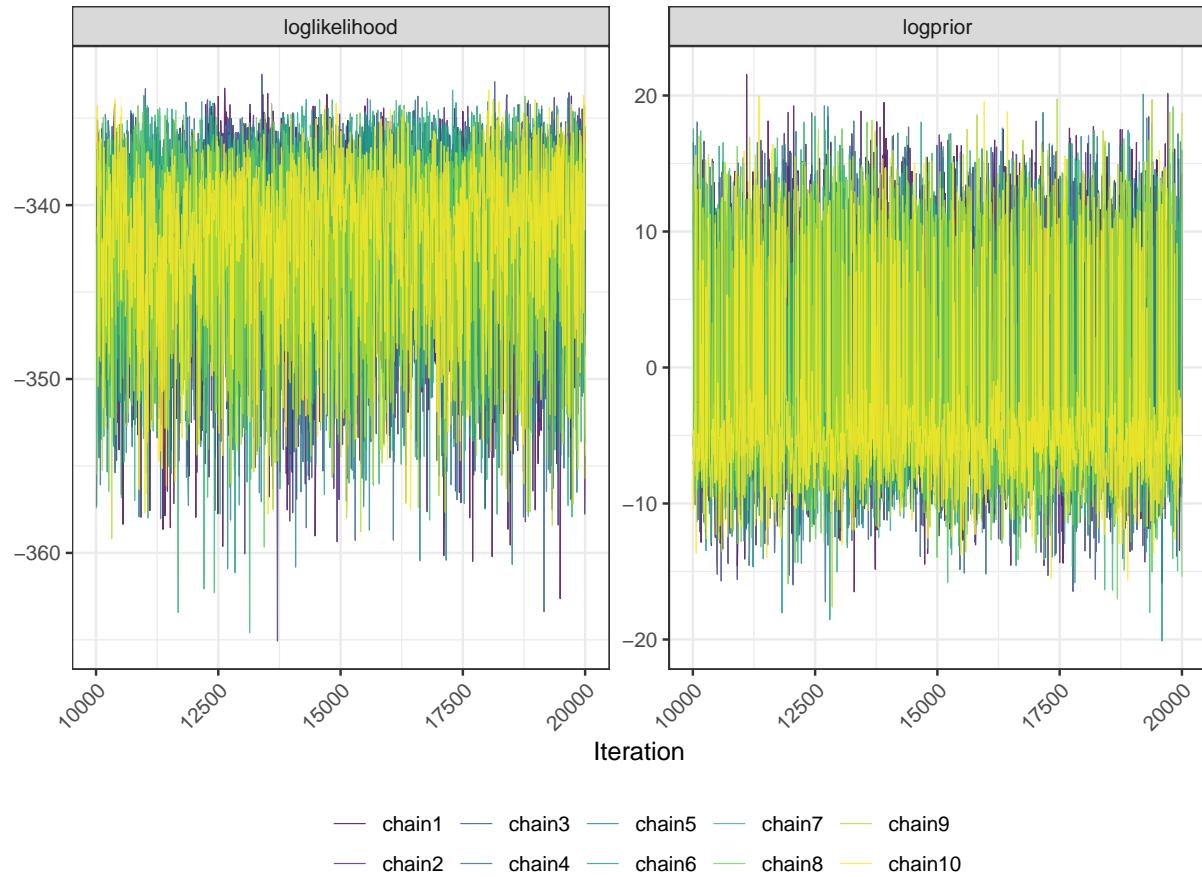
Additional Parameters

param	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
x1	1.2399	1.7236	33.8869	28.6310	44.0441	59.2160	347.2397	-6.0234	0.0000
x2	66.9633	69.5496	76.8647	76.4594	80.9607	82.7672	669.5771	2.0293	0.0509
x3	82.3461	84.0605	87.8654	88.0120	92.4825	95.8285	551.4527	-1.3679	0.1565
x4	193.5888	201.4311	205.1121	204.7200	205.9664	206.0000	2343.1662	-3.6653	0.0005
y1	0.0003	0.0443	1.0883	1.3075	3.5956	4.8075	1172.8045	-0.7110	0.3098
y2	0.0001	0.0256	0.7441	0.9736	3.1722	7.4785	1740.7752	-1.0131	0.2388
y3	9.8049	10.3026	10.9672	10.9180	11.1519	11.3251	999.8215	0.9843	0.2458
y4	9.7547	9.9867	10.3693	10.3661	10.7248	10.9153	596.1011	1.3613	0.1579
y5	5.5175	5.6997	5.8867	5.8883	6.0822	6.3514	2921.1064	-0.2307	0.3885
Ne1	0.7653	0.8898	0.9852	0.9854	1.0794	1.1742	9329.7224	1.0556	0.2285
Ne10	0.8443	0.9165	1.0023	1.0034	1.0936	1.1656	2208.7876	-0.2218	0.3892
Ne2	0.7914	0.8925	0.9844	0.9843	1.0785	1.1544	9088.4582	-0.5286	0.3469
Ne3	0.7926	0.8746	0.9633	0.9631	1.0517	1.1504	9256.6768	0.1788	0.3926
Ne4	0.8055	0.8892	0.9755	0.9760	1.0639	1.1490	9094.5653	0.3966	0.3688
Ne5	0.8265	0.9070	0.9916	0.9920	1.0794	1.1462	7576.8543	-0.3395	0.3766
Ne6	0.9308	0.9907	1.0755	1.0757	1.1590	1.2213	6520.3787	-2.2991	0.0284
Ne7	0.8509	0.9270	1.0137	1.0137	1.1022	1.1850	4966.4047	-1.3173	0.1675
Ne8	0.8306	0.9155	1.0037	1.0030	1.0905	1.1547	2604.2379	-1.1710	0.2010
Ne9	0.8266	0.9126	1.0022	1.0017	1.0901	1.1709	3405.5402	0.1195	0.3961

KEN1 with Standard Input

Fit Diagnostics

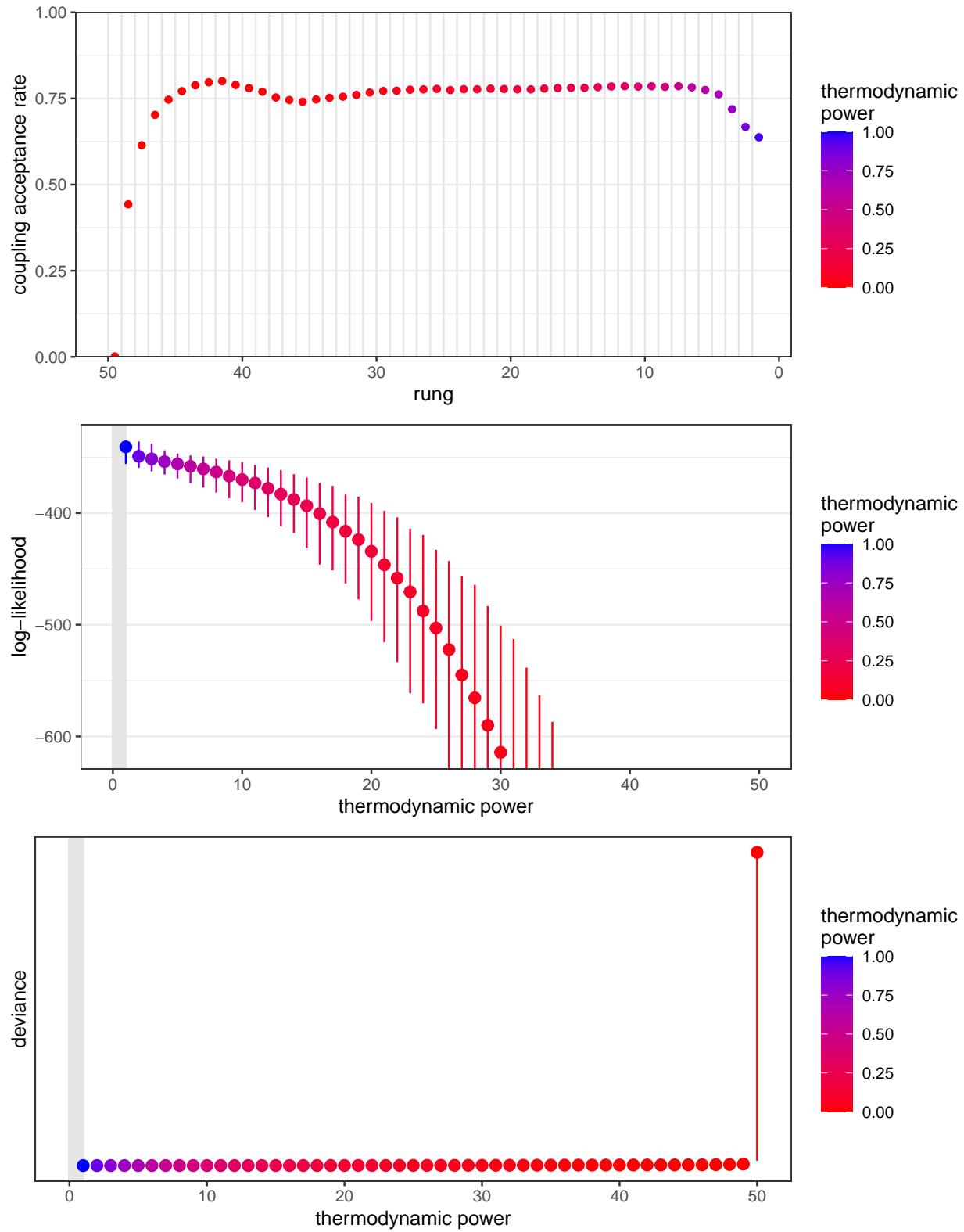
Log Likelihood & Prior Plot



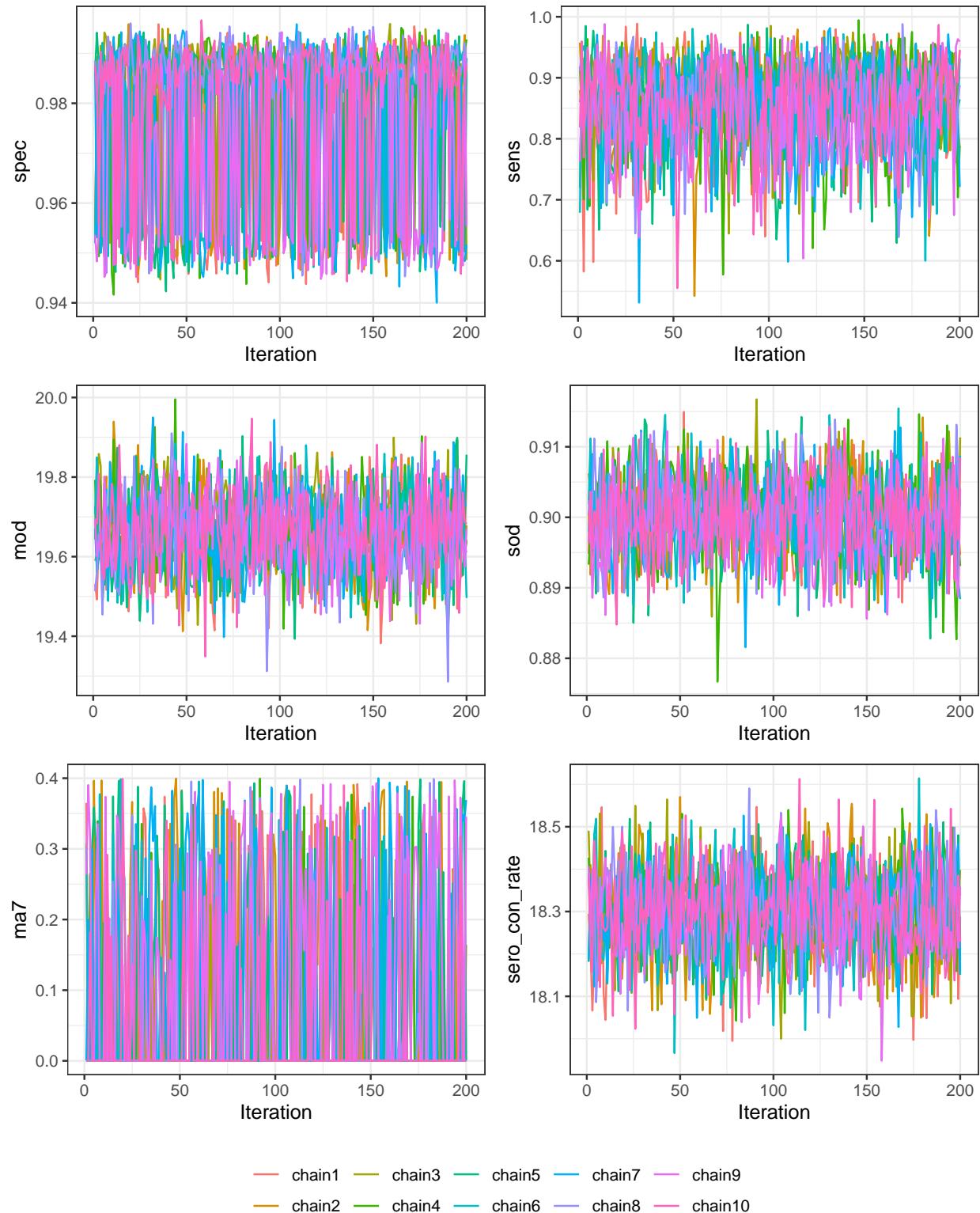
gelman_mpsrf

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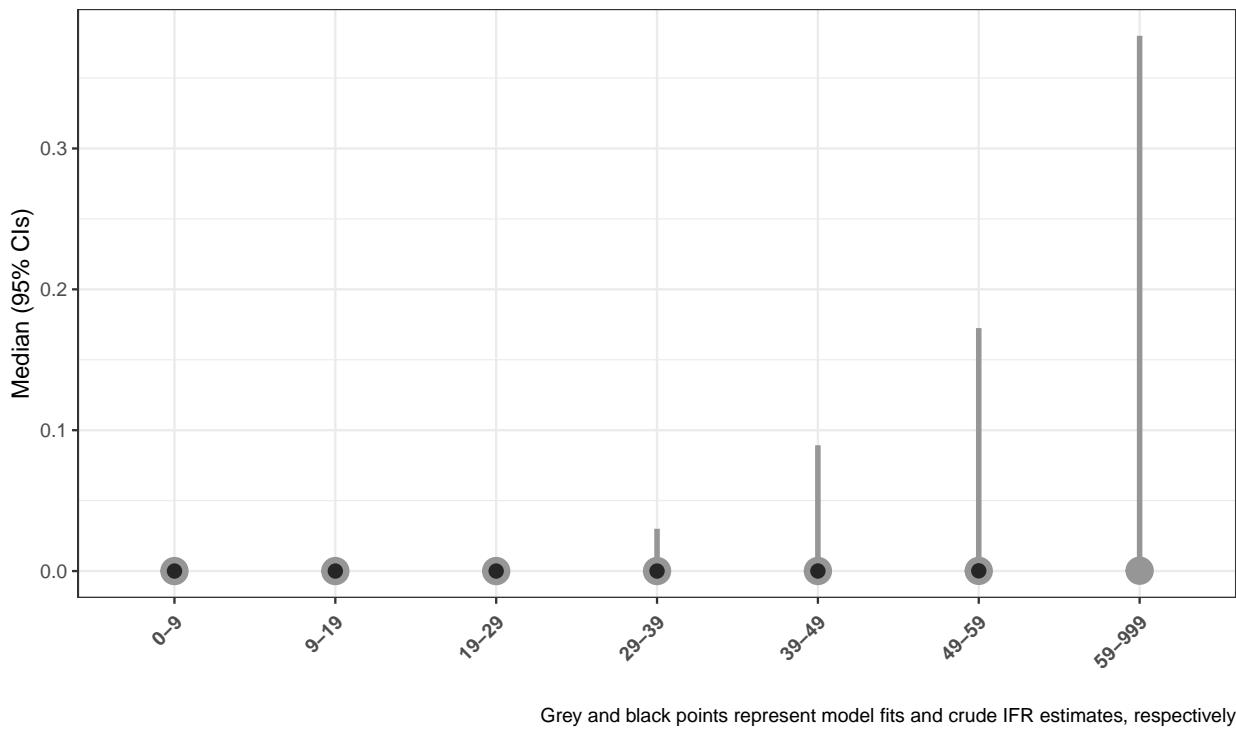
Metropolis Coupling Acceptance Plot



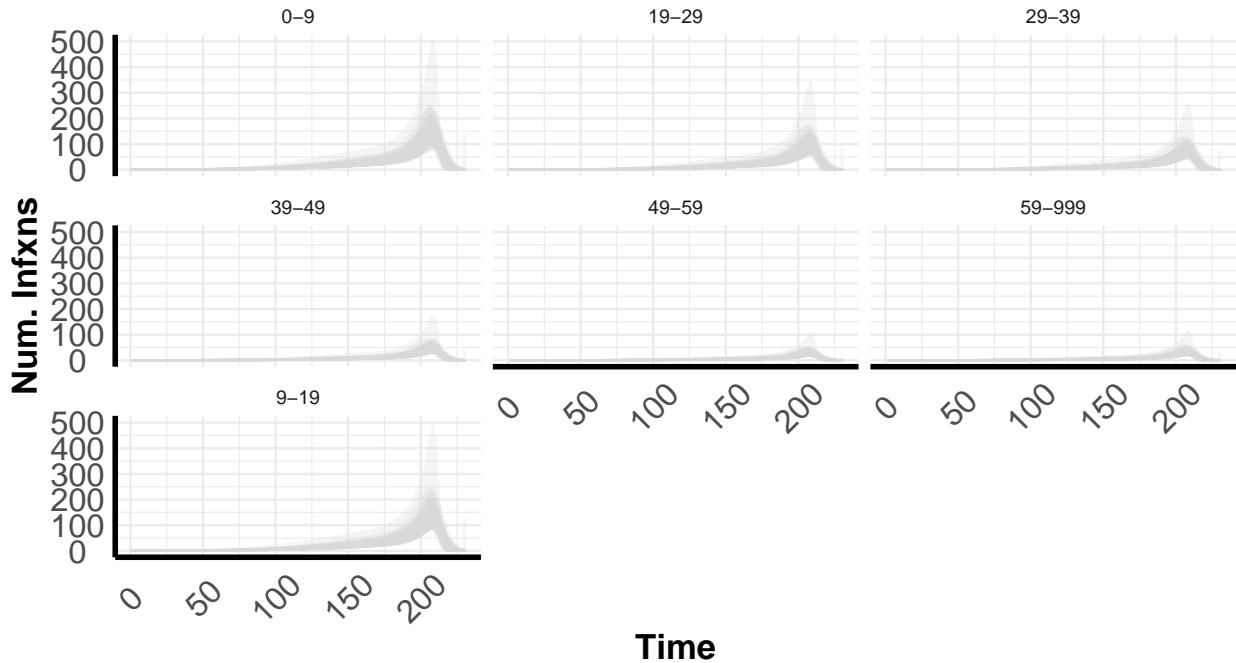
Serological Diagnostics



IFRs & Incidence Curve



Posterior Draws of the Infection Curve



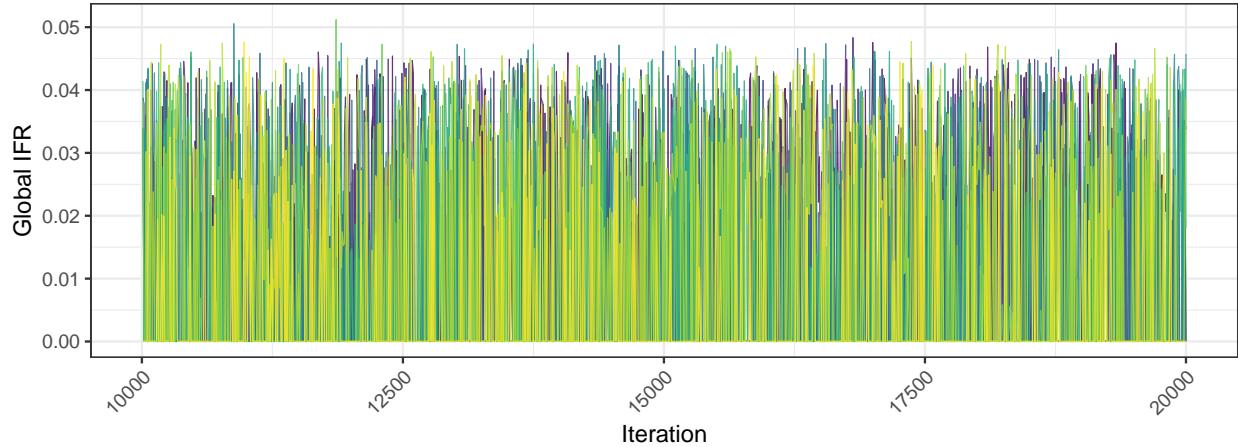
Strata IFR

strata	param	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
0-9	ma1	0e+00	0e+00	0e+00	0.0003	0.0019	0.0041	1061.8483	4.3914	0e+00
9-19	ma2	0e+00	0e+00	0e+00	0.0003	0.0020	0.0044	948.5493	4.1513	1e-04
19-29	ma3	0e+00	0e+00	0e+00	0.0004	0.0027	0.0064	885.1098	5.1592	0e+00
29-39	ma4	0e+00	0e+00	0e+00	0.0051	0.0300	0.0454	704.6003	4.8495	0e+00
39-49	ma5	0e+00	0e+00	1e-04	0.0158	0.0893	0.1288	682.3210	4.8896	0e+00
49-59	ma6	0e+00	1e-04	1e-04	0.0305	0.1725	0.2565	677.8708	5.0113	0e+00
59-999	ma7	1e-04	2e-04	3e-04	0.0693	0.3800	0.3999	678.9307	5.0395	0e+00

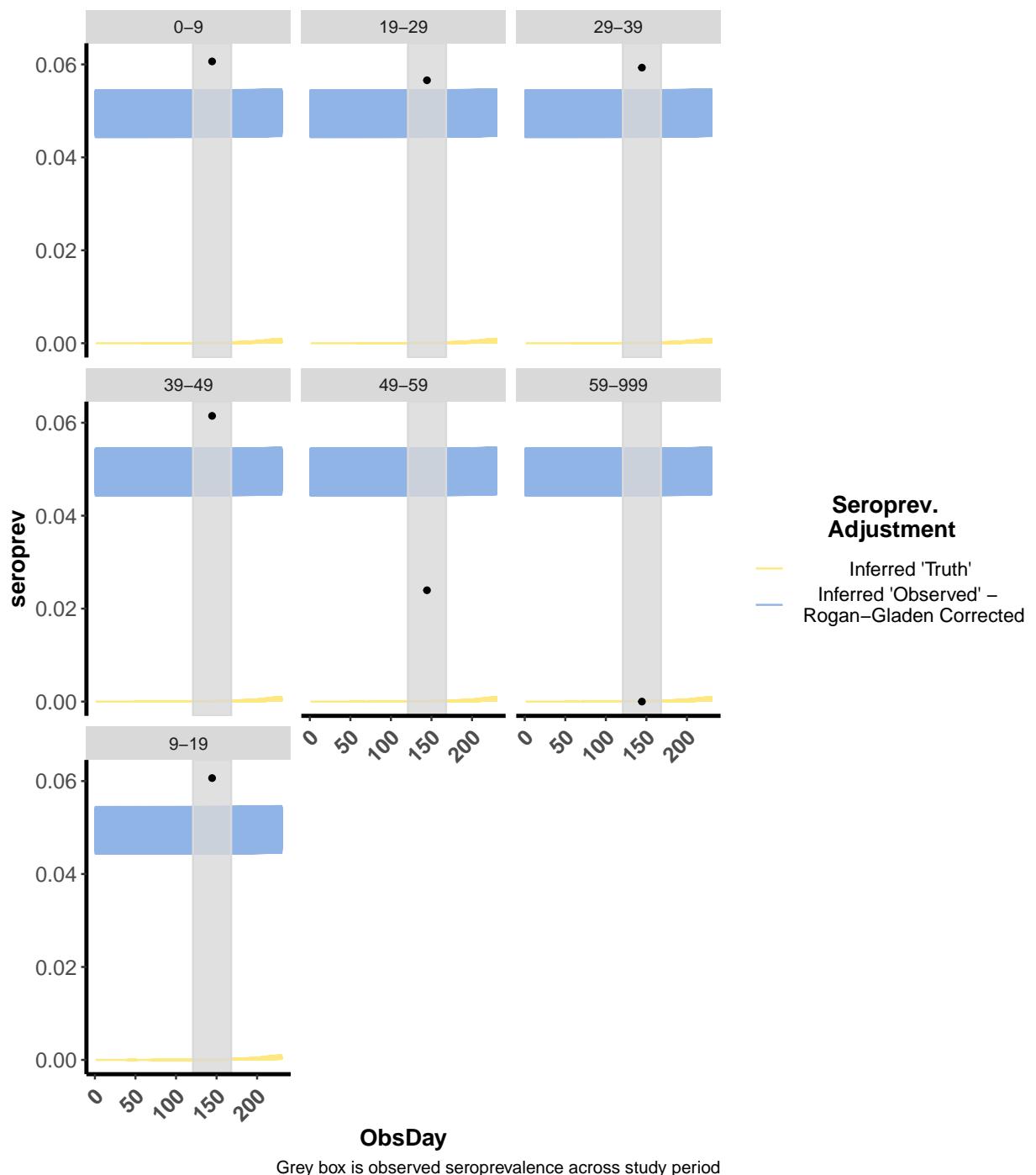
Overall IFR

min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
0	0	0	0.0078	0.0426	0.0514	8614.622	-0.2895	0.3826

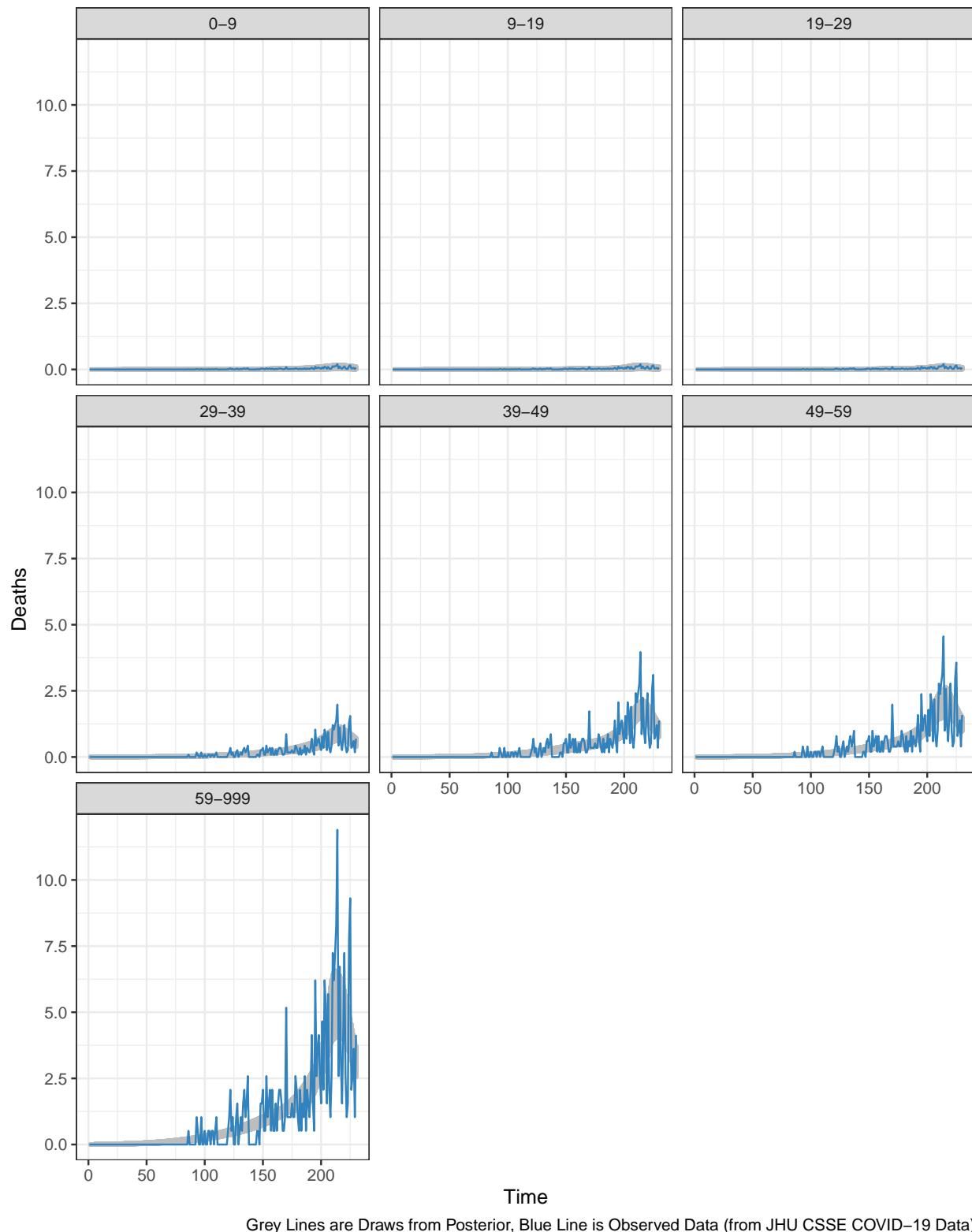
chain	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
chain1	0	0	0	0.0119	0.0433	0.0499	1000.0000	-1.7419	0.0875
chain2	0	0	0	0.0107	0.0436	0.0495	1000.0000	-1.4837	0.1327
chain3	0	0	0	0.0017	0.0297	0.0450	1000.0000	0.2032	0.3908
chain4	0	0	0	0.0042	0.0406	0.0493	1000.0000	-0.5605	0.3410
chain5	0	0	0	0.0109	0.0443	0.0513	1000.0000	0.6927	0.3138
chain6	0	0	0	0.0046	0.0411	0.0494	1000.0000	0.2029	0.3908
chain7	0	0	0	0.0107	0.0434	0.0483	1000.0000	1.0227	0.2365
chain8	0	0	0	0.0039	0.0391	0.0514	1000.0000	0.7365	0.3042
chain9	0	0	0	0.0140	0.0441	0.0487	1000.0000	-0.5689	0.3393
chain10	0	0	0	0.0050	0.0407	0.0483	889.5098	0.1713	0.3931



Seroprevalence Observed vs. Inferred True Prev



Death Posterior Predictive Check



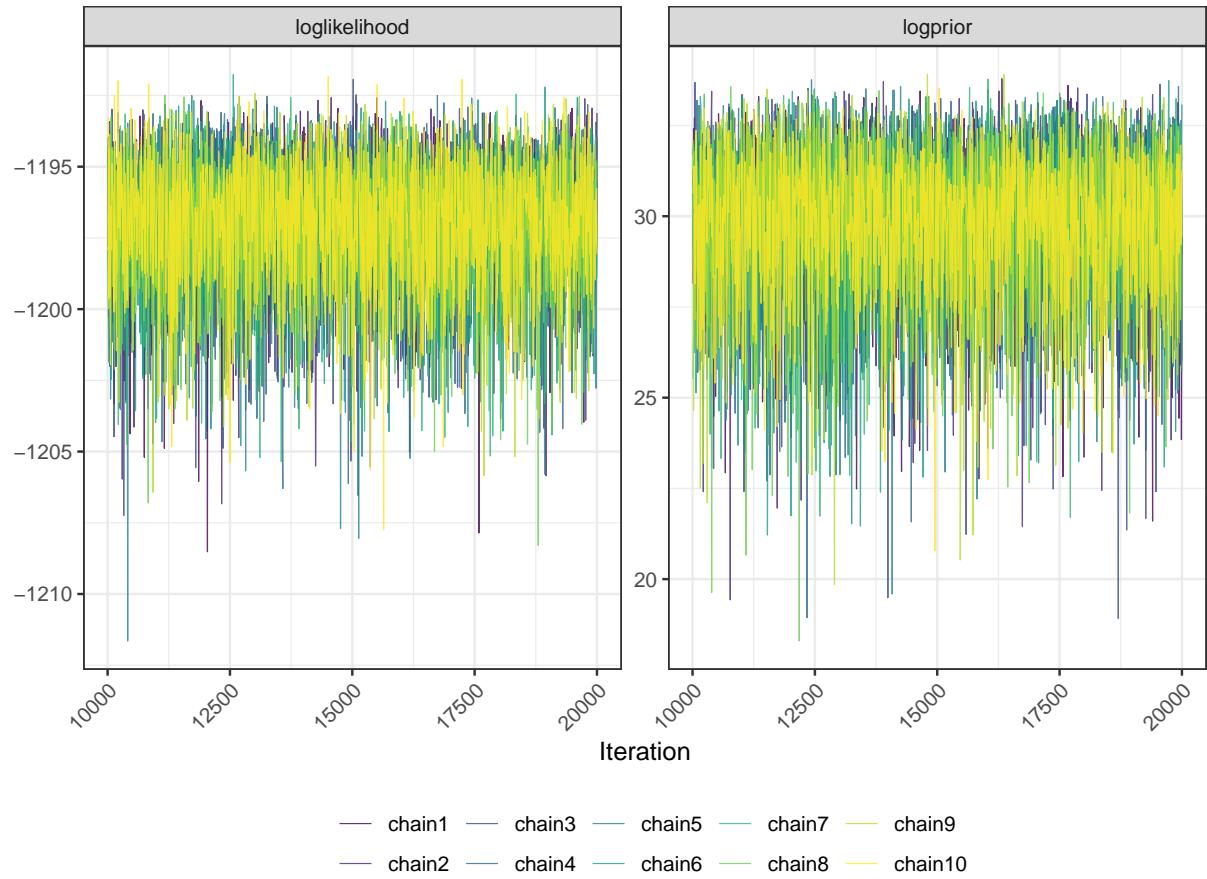
Additional Parameters

param	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
x1	1.6209	1.9022	114.8560	103.3868	177.8627	209.6157	139.5622	8.4471	0.0000
x2	164.1089	183.6273	199.6089	198.5951	208.2322	219.3059	235.9021	0.4517	0.3602
x3	208.3065	211.0007	217.6829	218.5943	229.3473	231.4901	76.2681	-3.3458	0.0015
x4	219.0083	219.7576	227.9172	227.4045	232.8138	232.9998	214.8459	-1.0487	0.2302
y1	0.0000	0.0159	0.8443	1.3020	4.5828	6.7178	746.0714	2.7346	0.0095
y2	0.2449	0.4165	9.7583	7.6371	11.7346	12.1104	136.4947	2.5030	0.0174
y3	4.0746	5.2531	12.8487	11.1941	13.5561	14.0362	613.2819	-4.2317	0.0001
y4	0.5840	3.3402	10.0031	8.8374	13.2489	13.8074	50.9301	0.9402	0.2564
y5	0.0004	0.1161	3.0409	3.8793	9.9072	11.9806	87.2700	-1.3745	0.1551
Ne1	0.8079	0.9083	1.0051	1.0048	1.1006	1.2064	9273.4375	0.6556	0.3218
Ne2	0.8148	0.9090	1.0043	1.0047	1.1001	1.2055	9372.2266	0.1859	0.3921
Ne3	0.8230	0.9056	1.0002	1.0002	1.0958	1.1961	10045.0026	1.5642	0.1174
Ne4	0.8181	0.9091	1.0040	1.0045	1.1025	1.1992	9216.3461	0.1469	0.3947
Ne5	0.8387	0.9038	1.0022	1.0020	1.0992	1.1799	8196.6695	-0.7697	0.2967
Ne6	0.7983	0.8920	0.9899	0.9897	1.0881	1.1687	8829.4654	-0.2174	0.3896
Ne7	0.8089	0.8960	0.9937	0.9938	1.0945	1.1937	5930.0819	-0.6551	0.3219

LA_CA1 with Standard Input

Fit Diagnostics

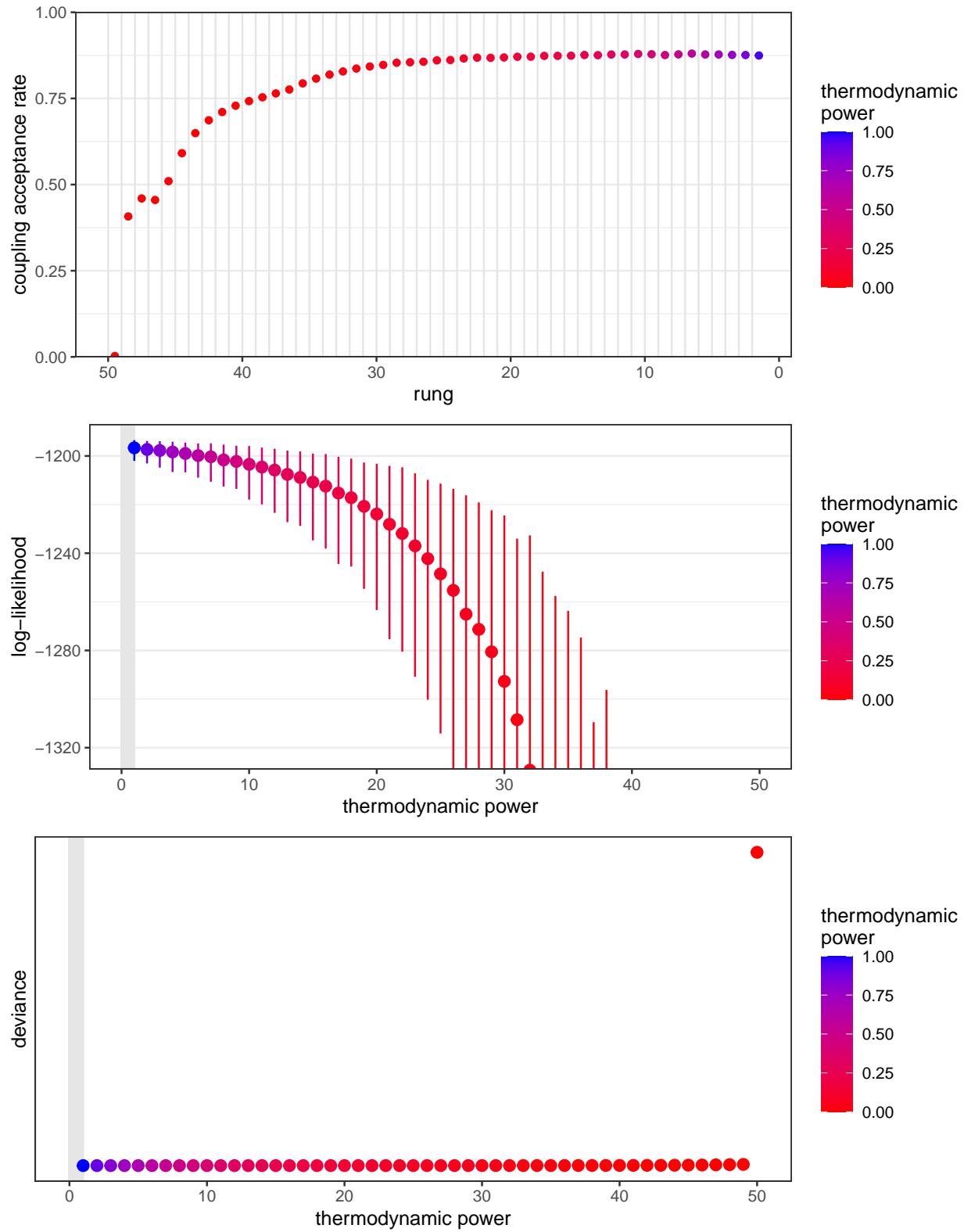
Log Likelihood & Prior Plot



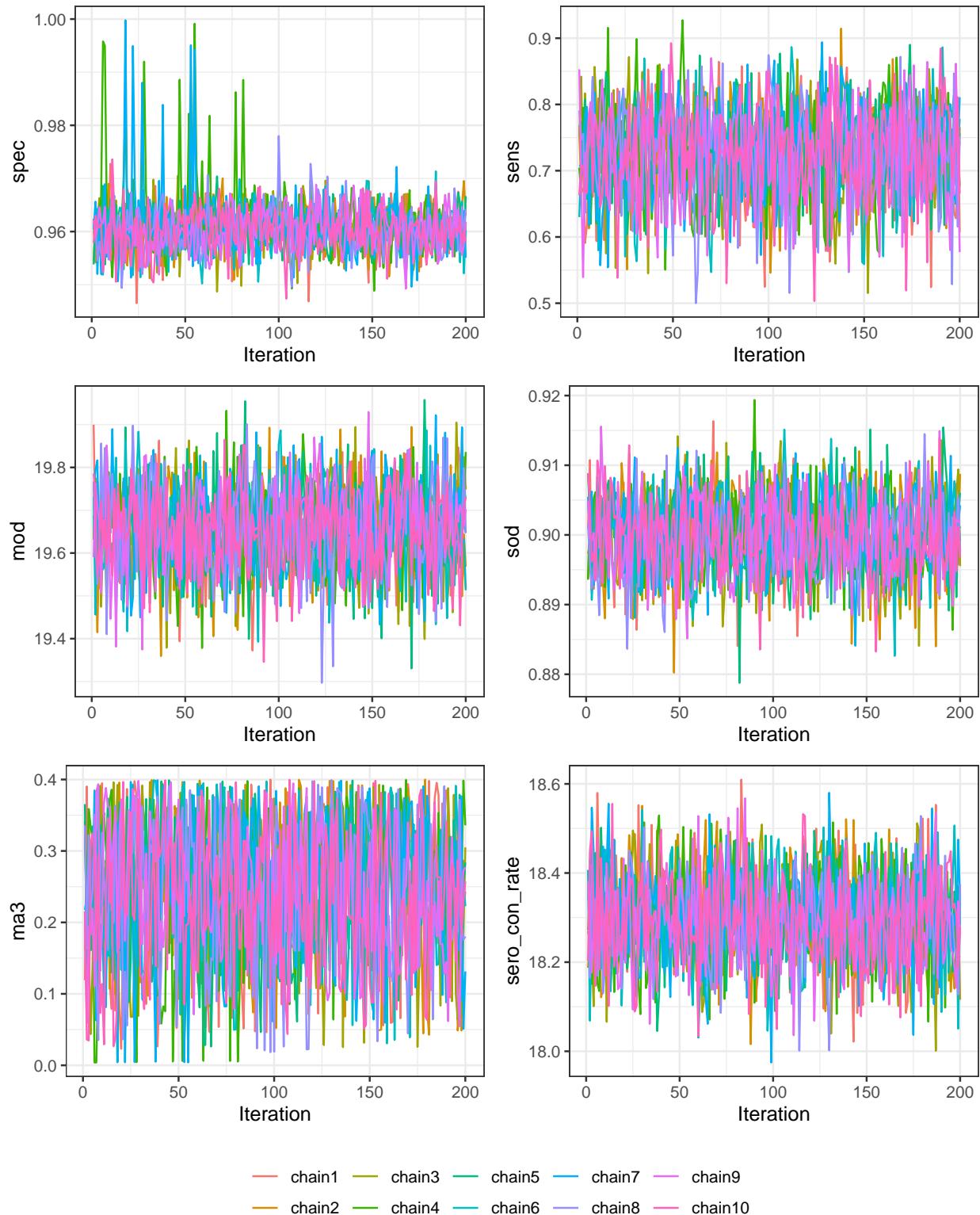
gelman_mpsrf

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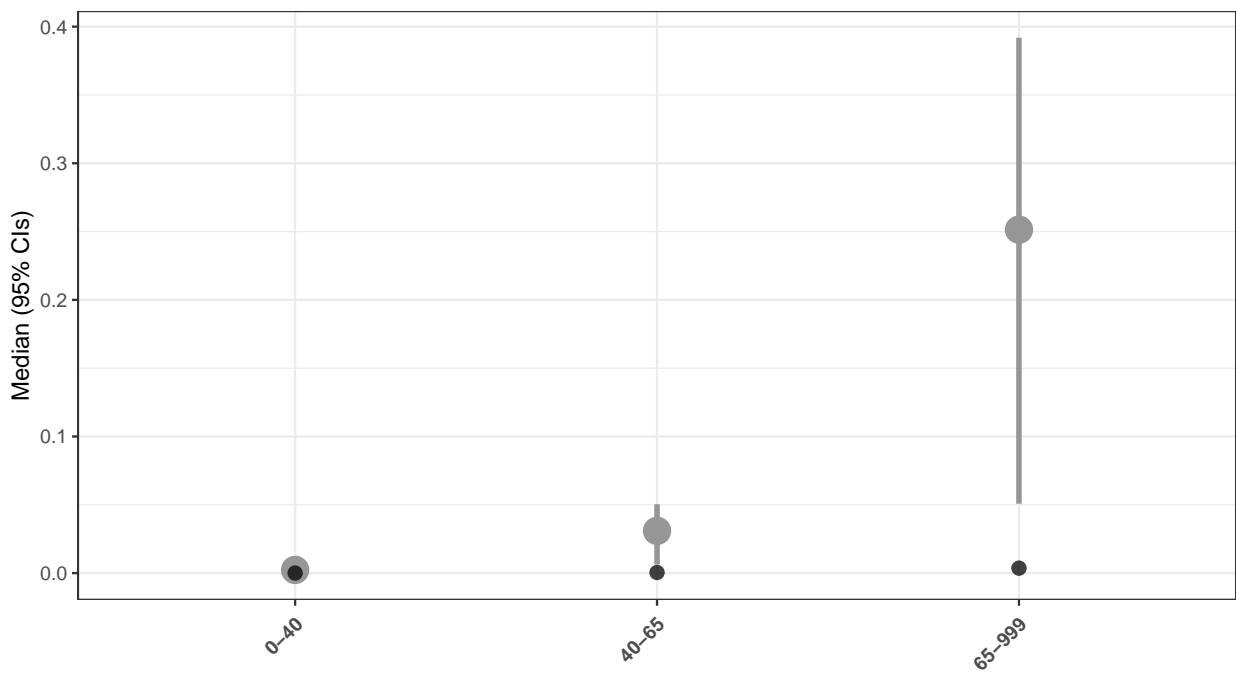
Metropolis Coupling Acceptance Plot



Serological Diagnostics

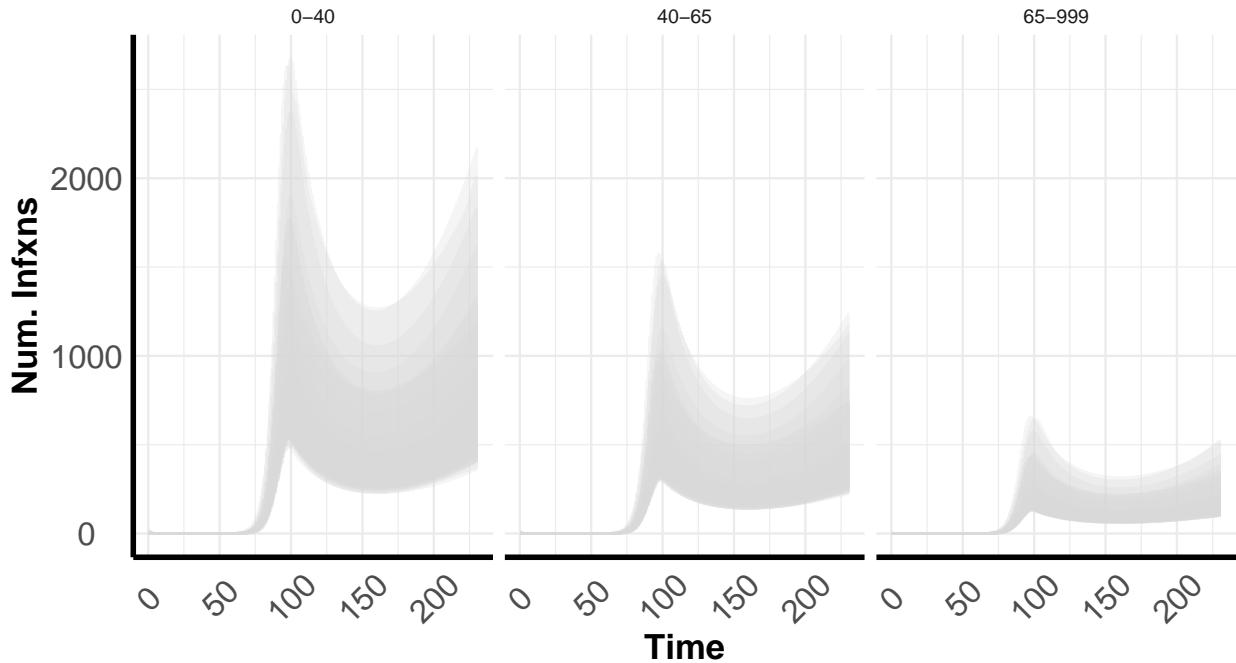


IFRs & Incidence Curve



Grey and black points represent model fits and crude IFR estimates, respectively

Posterior Draws of the Infection Curve



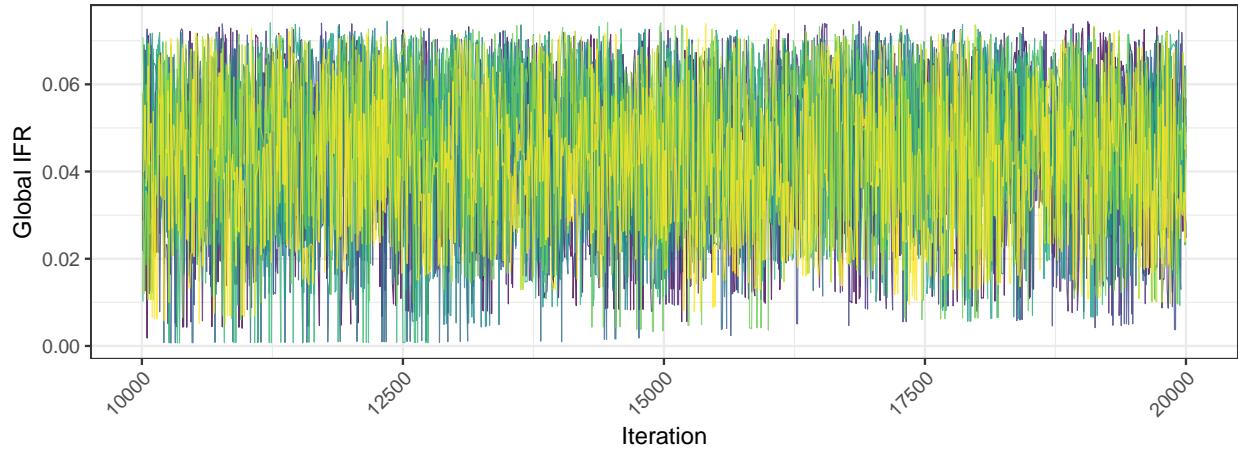
Strata IFR

strata	param	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
0-40	ma1	0.0000	0.0005	0.0023	0.0023	0.0039	0.0053	3074.318	-2.2670	0.0305
40-65	ma2	0.0004	0.0063	0.0309	0.0301	0.0504	0.0603	3063.513	-1.9751	0.0567
65-999	ma3	0.0039	0.0508	0.2514	0.2437	0.3919	0.4000	2994.609	-2.1753	0.0374

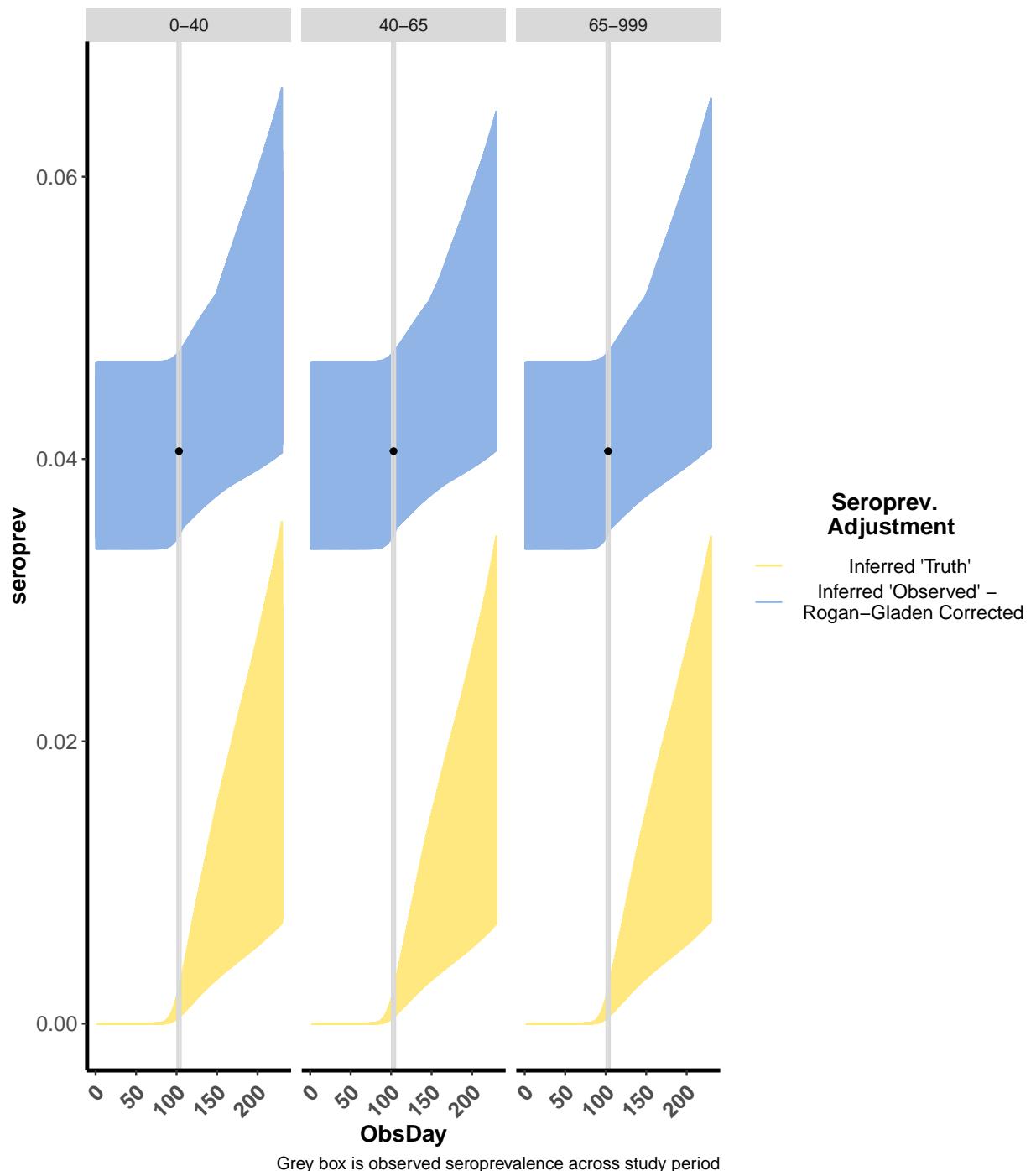
Overall IFR

min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
7e-04	0.0093	0.0454	0.0441	0.0725	0.0819	4935.429	-3.3381	0.0015

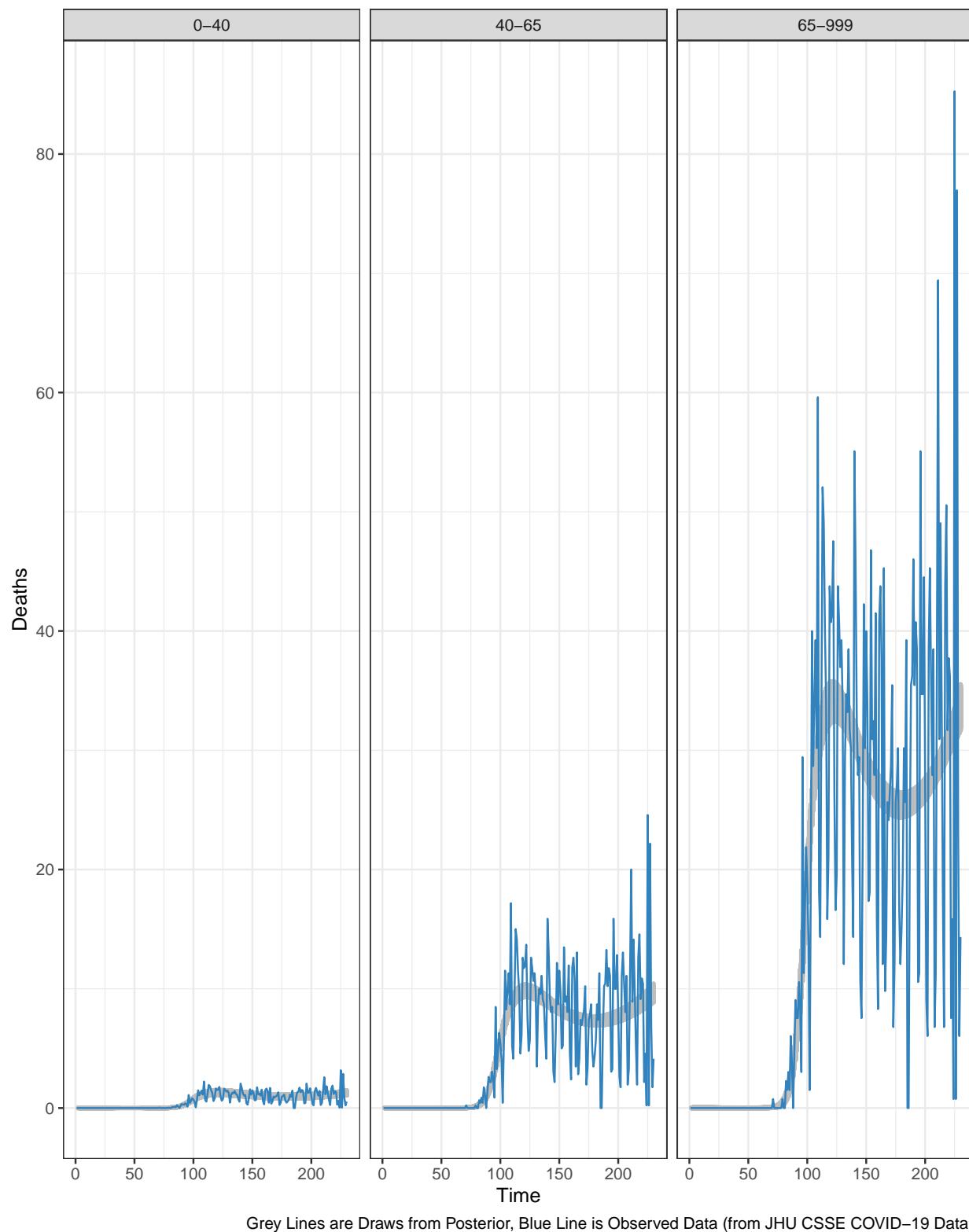
chain	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
chain1	0.0018	0.0078	0.0433	0.0424	0.0726	0.0785	499.1057	-4.2239	0.0001
chain2	0.0049	0.0091	0.0457	0.0431	0.0735	0.0814	384.5560	-0.9548	0.2529
chain3	0.0025	0.0119	0.0461	0.0446	0.0719	0.0790	437.9124	-0.2565	0.3860
chain4	0.0007	0.0010	0.0457	0.0439	0.0708	0.0774	130.5997	0.1997	0.3911
chain5	0.0041	0.0136	0.0456	0.0446	0.0715	0.0799	463.3122	-1.9191	0.0633
chain6	0.0056	0.0099	0.0454	0.0446	0.0735	0.0793	563.8038	-0.6793	0.3167
chain7	0.0007	0.0009	0.0488	0.0458	0.0723	0.0781	542.5016	-3.3216	0.0016
chain8	0.0033	0.0064	0.0488	0.0467	0.0733	0.0819	769.3544	-0.2970	0.3817
chain9	0.0095	0.0154	0.0457	0.0449	0.0723	0.0791	639.5800	1.0266	0.2355
chain10	0.0046	0.0108	0.0407	0.0402	0.0726	0.0787	733.0699	-0.0874	0.3974



Seroprevalence Observed vs. Inferred True Prev



Death Posterior Predictive Check



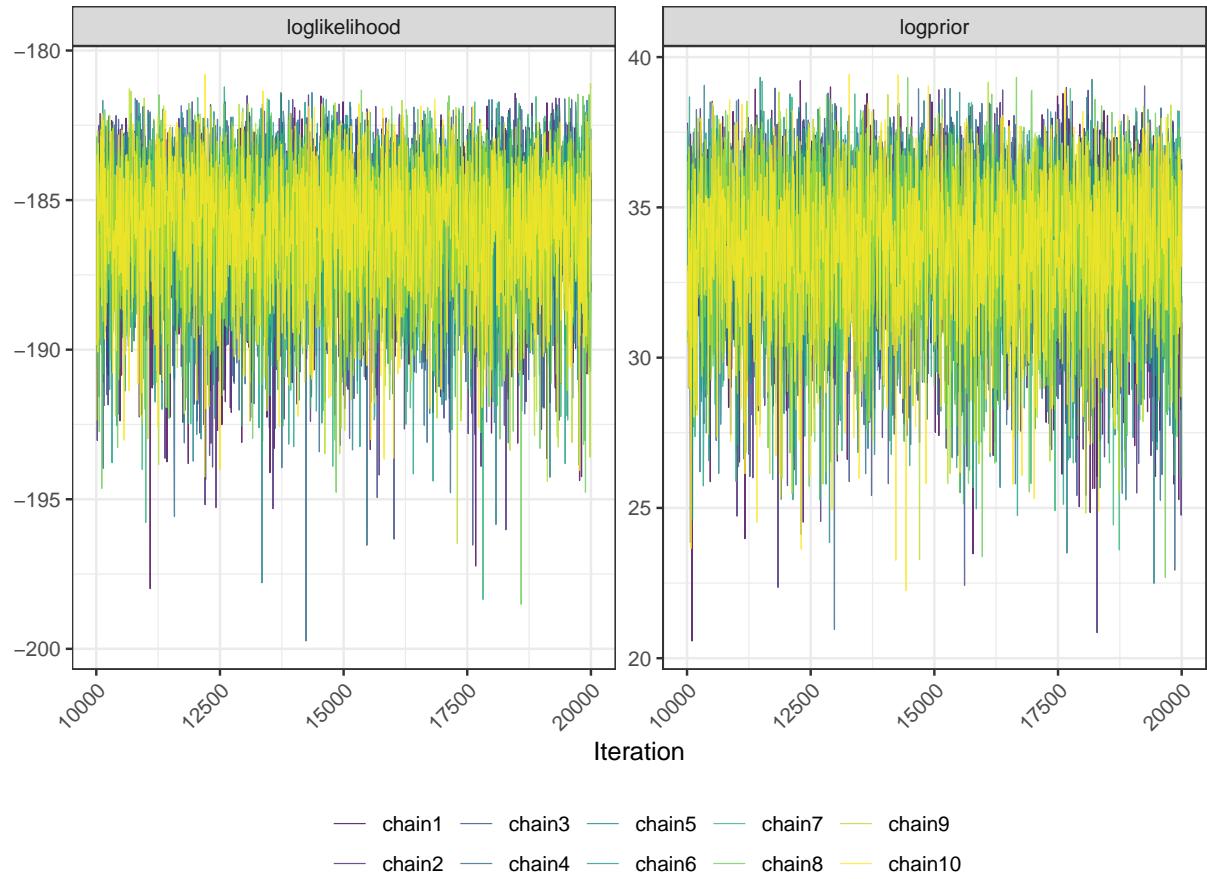
Additional Parameters

param	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
x1	1.0776	1.8295	61.1098	49.5627	72.5599	85.5458	1780.188	0.9664	0.2501
x2	92.8615	94.5827	96.8413	97.1171	100.8976	104.3593	6471.184	0.9754	0.2479
x3	94.9868	99.0341	103.6004	103.6855	108.7472	114.3227	6958.943	-0.8491	0.2782
x4	219.0003	219.2035	223.8740	224.5311	232.3895	232.9974	5356.852	-0.5817	0.3368
y1	0.0002	0.0324	0.8567	1.0978	3.2584	7.4414	3987.090	0.3749	0.3719
y2	0.0000	0.0332	0.8298	1.0532	3.2388	5.8023	3888.755	0.3187	0.3792
y3	6.6234	6.7968	7.2935	7.4449	8.9030	11.5705	1885.343	1.9919	0.0549
y4	6.6063	6.7605	7.2460	7.4007	8.8507	11.5370	1890.480	2.0225	0.0516
y5	6.3011	6.5233	7.0255	7.1769	8.6422	11.3257	1890.135	1.8559	0.0713
Ne1	0.7940	0.9017	0.9989	0.9992	1.0971	1.2088	8077.837	0.6748	0.3177
Ne2	0.7708	0.9005	0.9995	0.9991	1.0979	1.2136	8402.824	-0.2353	0.3880
Ne3	0.8183	0.9051	1.0016	1.0014	1.1003	1.1851	7192.905	0.1298	0.3956

LUX1 with Standard Input

Fit Diagnostics

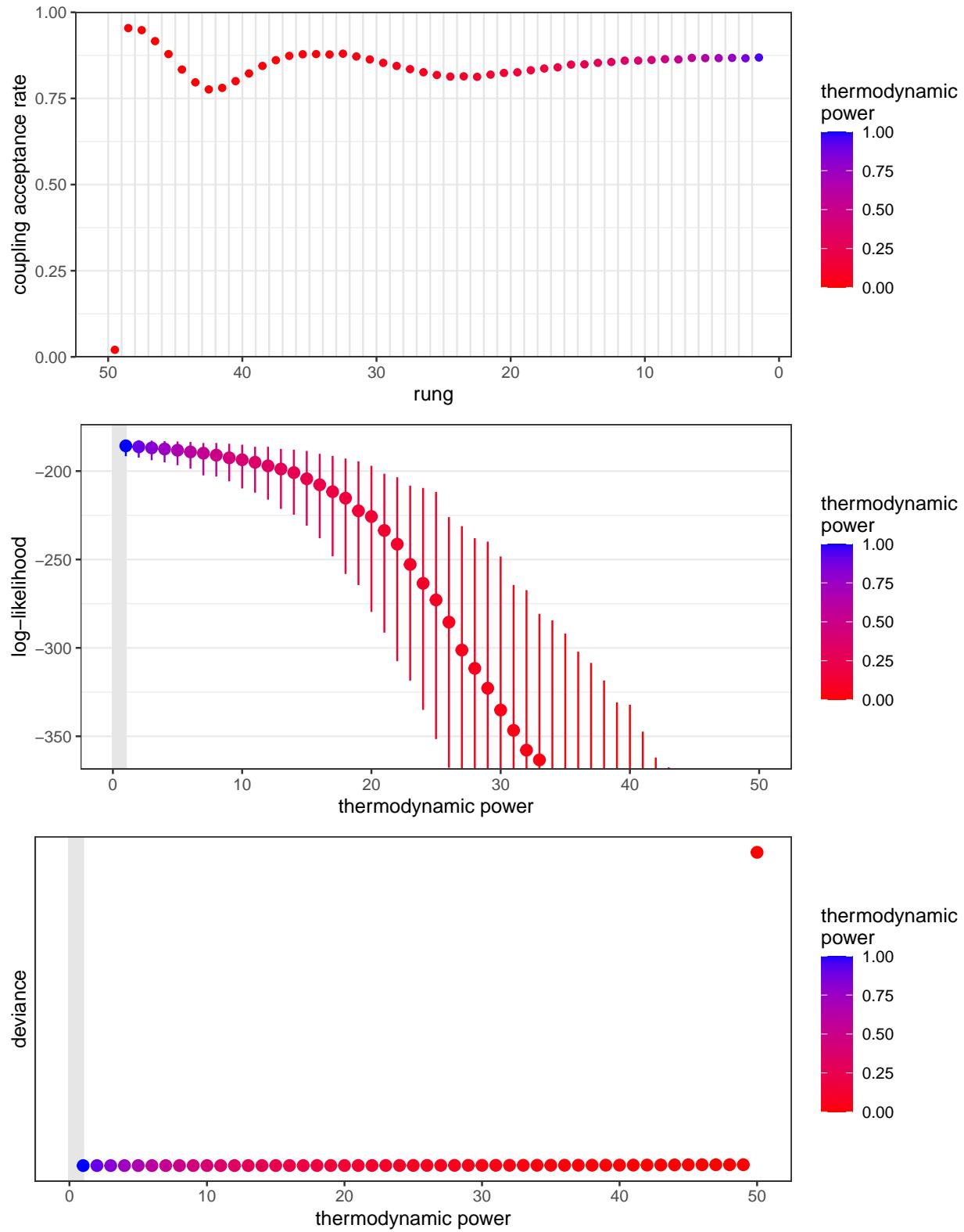
Log Likelihood & Prior Plot



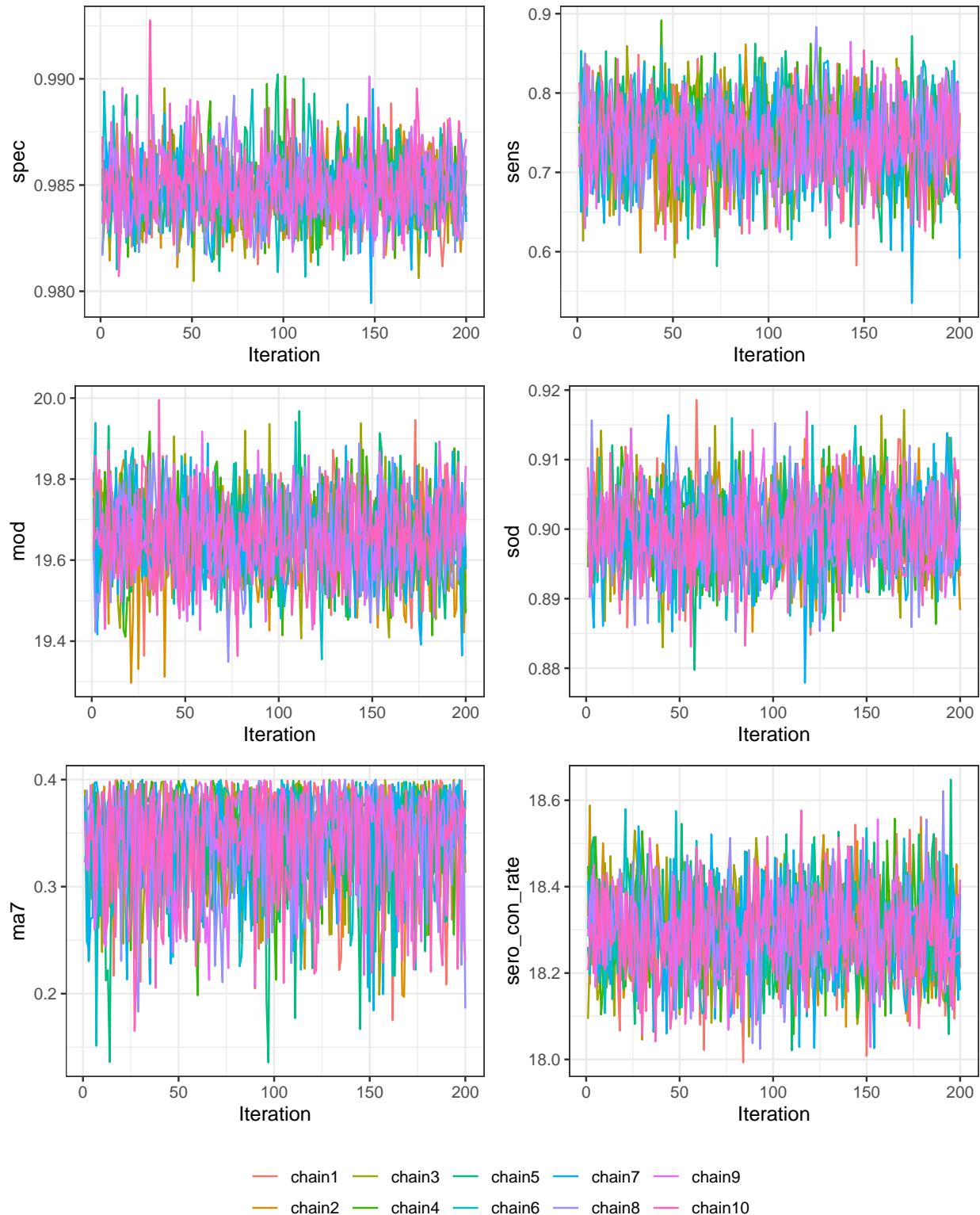
gelman_mpsrf

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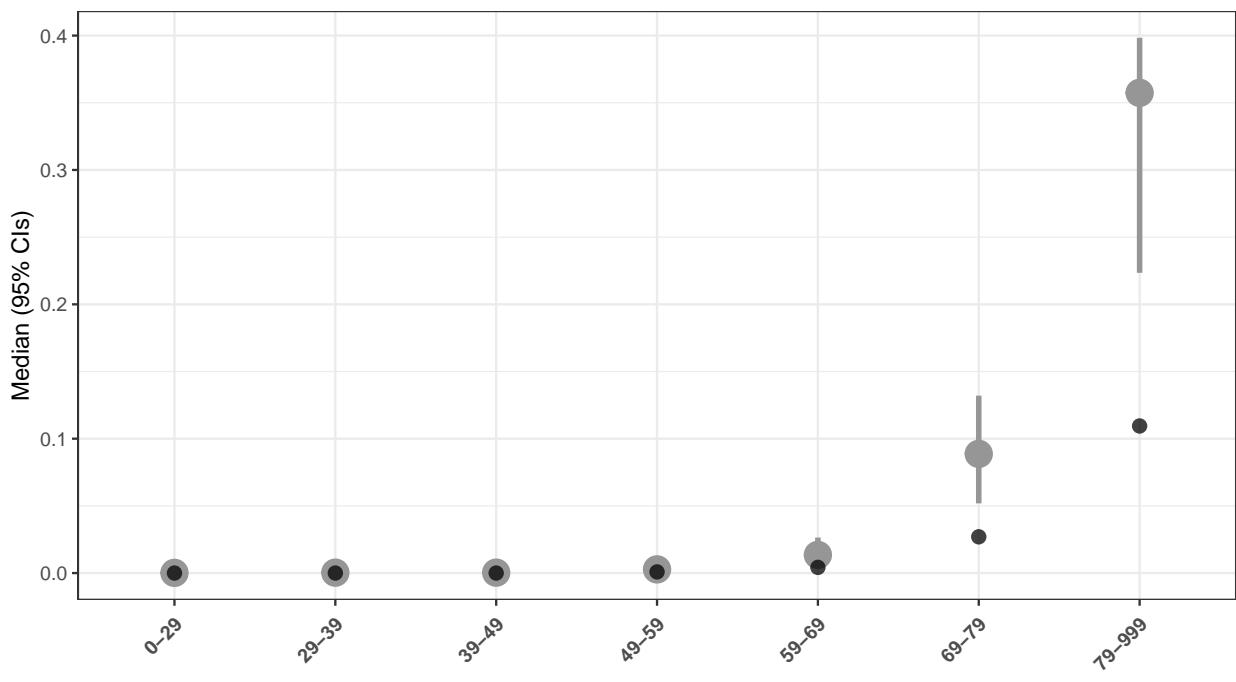
Metropolis Coupling Acceptance Plot



Serological Diagnostics

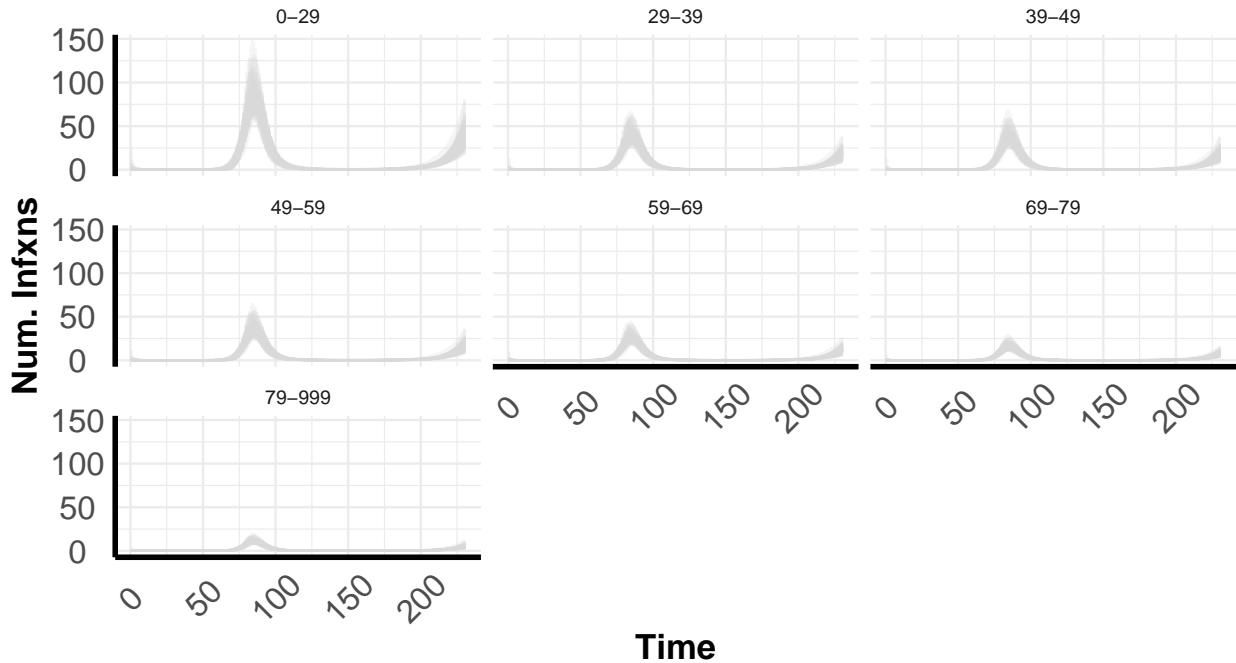


IFRs & Incidence Curve



Grey and black points represent model fits and crude IFR estimates, respectively

Posterior Draws of the Infection Curve



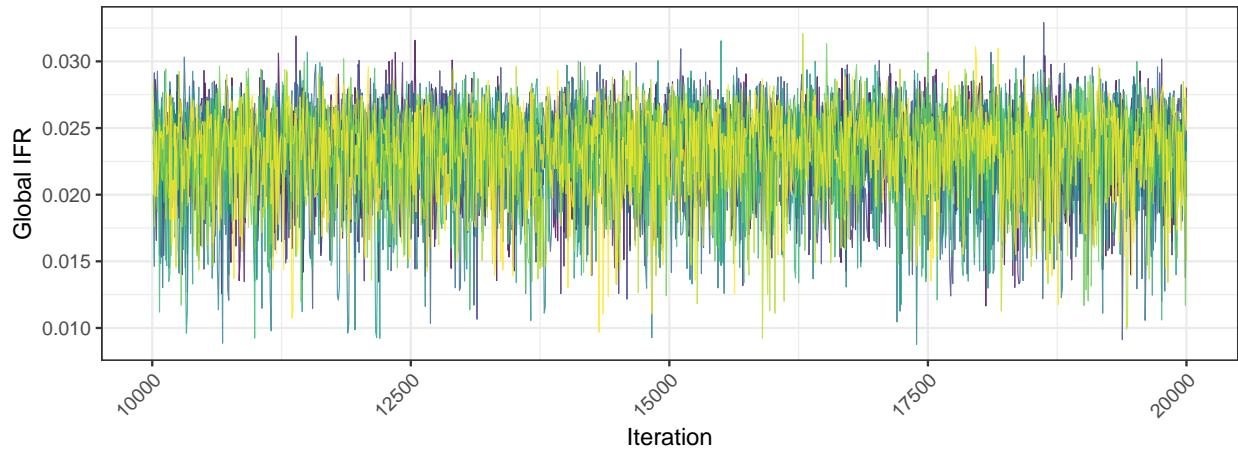
Strata IFR

strata	param	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
0-29	ma1	0.0000	0.0000	0.0001	0.0001	0.0003	0.0005	9193.291	1.5894	0.1128
29-39	ma2	0.0000	0.0000	0.0003	0.0003	0.0007	0.0010	9259.602	1.1958	0.1952
39-49	ma3	0.0000	0.0000	0.0003	0.0003	0.0007	0.0011	9432.724	0.9045	0.2650
49-59	ma4	0.0000	0.0003	0.0027	0.0030	0.0076	0.0153	9496.306	-0.3981	0.3686
59-69	ma5	0.0000	0.0049	0.0135	0.0140	0.0264	0.0423	10000.000	2.0982	0.0441
69-79	ma6	0.0220	0.0519	0.0887	0.0896	0.1320	0.2017	7373.623	2.5359	0.0160
79-999	ma7	0.1218	0.2235	0.3574	0.3445	0.3984	0.4000	6582.377	1.2789	0.1761

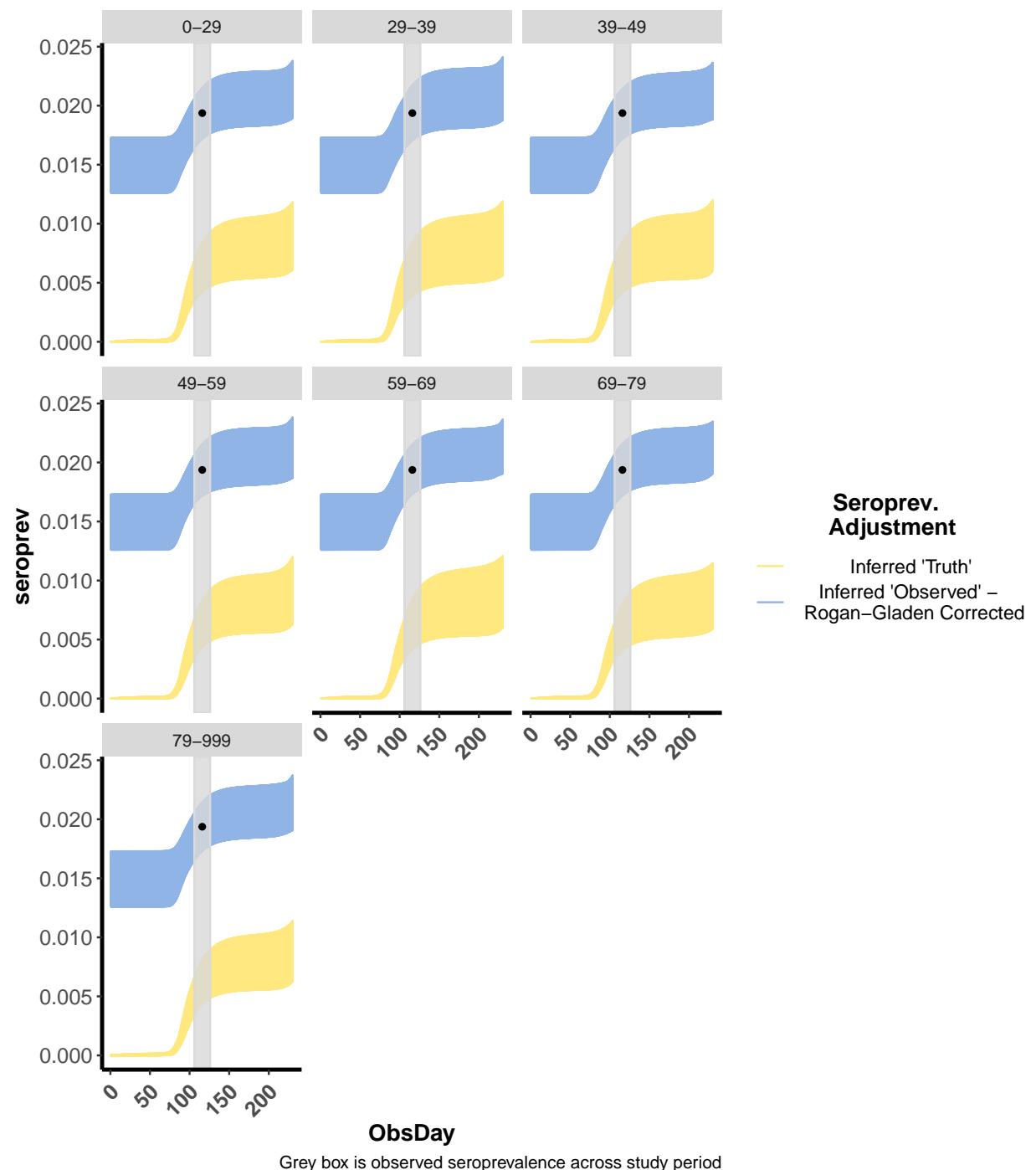
Overall IFR

min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
0.0085	0.0149	0.0238	0.0233	0.0293	0.035	8401.807	-2.0291	0.0509

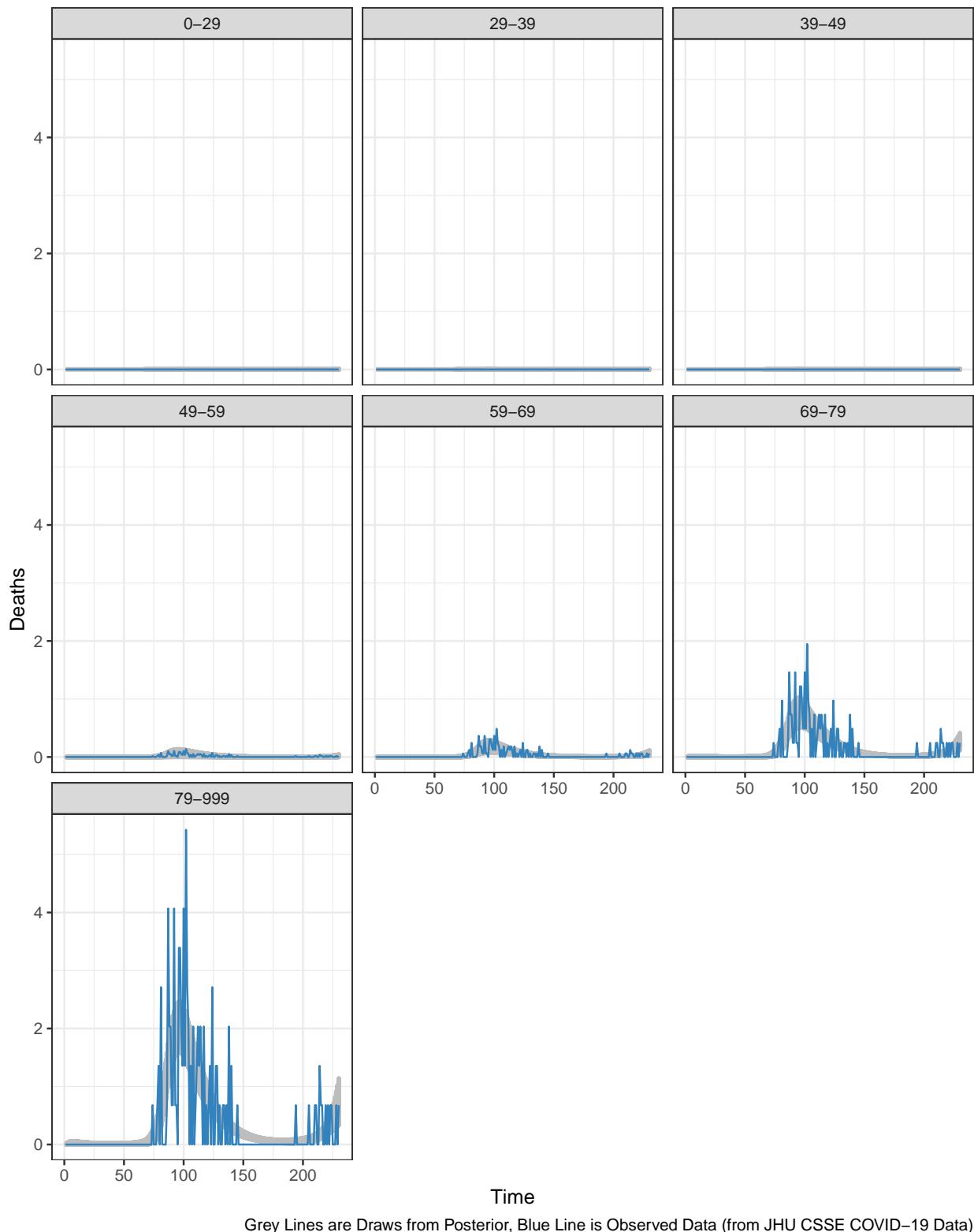
chain	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
chain1	0.0120	0.0162	0.0240	0.0236	0.0295	0.0324	727.5135	0.3262	0.3783
chain2	0.0123	0.0159	0.0239	0.0235	0.0295	0.0323	834.8512	-1.1690	0.2015
chain3	0.0088	0.0157	0.0238	0.0235	0.0293	0.0347	606.8024	0.1336	0.3954
chain4	0.0100	0.0154	0.0238	0.0235	0.0295	0.0318	621.3526	0.4883	0.3541
chain5	0.0085	0.0133	0.0236	0.0229	0.0289	0.0316	788.9200	-0.0095	0.3989
chain6	0.0090	0.0148	0.0237	0.0233	0.0292	0.0350	757.3973	-1.9445	0.0602
chain7	0.0094	0.0153	0.0238	0.0234	0.0292	0.0316	629.1443	-2.0439	0.0494
chain8	0.0114	0.0155	0.0237	0.0233	0.0294	0.0332	699.4556	-2.1107	0.0430
chain9	0.0094	0.0148	0.0240	0.0234	0.0291	0.0329	545.7937	-0.7972	0.2903
chain10	0.0094	0.0147	0.0238	0.0232	0.0291	0.0318	727.9326	0.3123	0.3799



Seroprevalence Observed vs. Inferred True Prev



Death Posterior Predictive Check



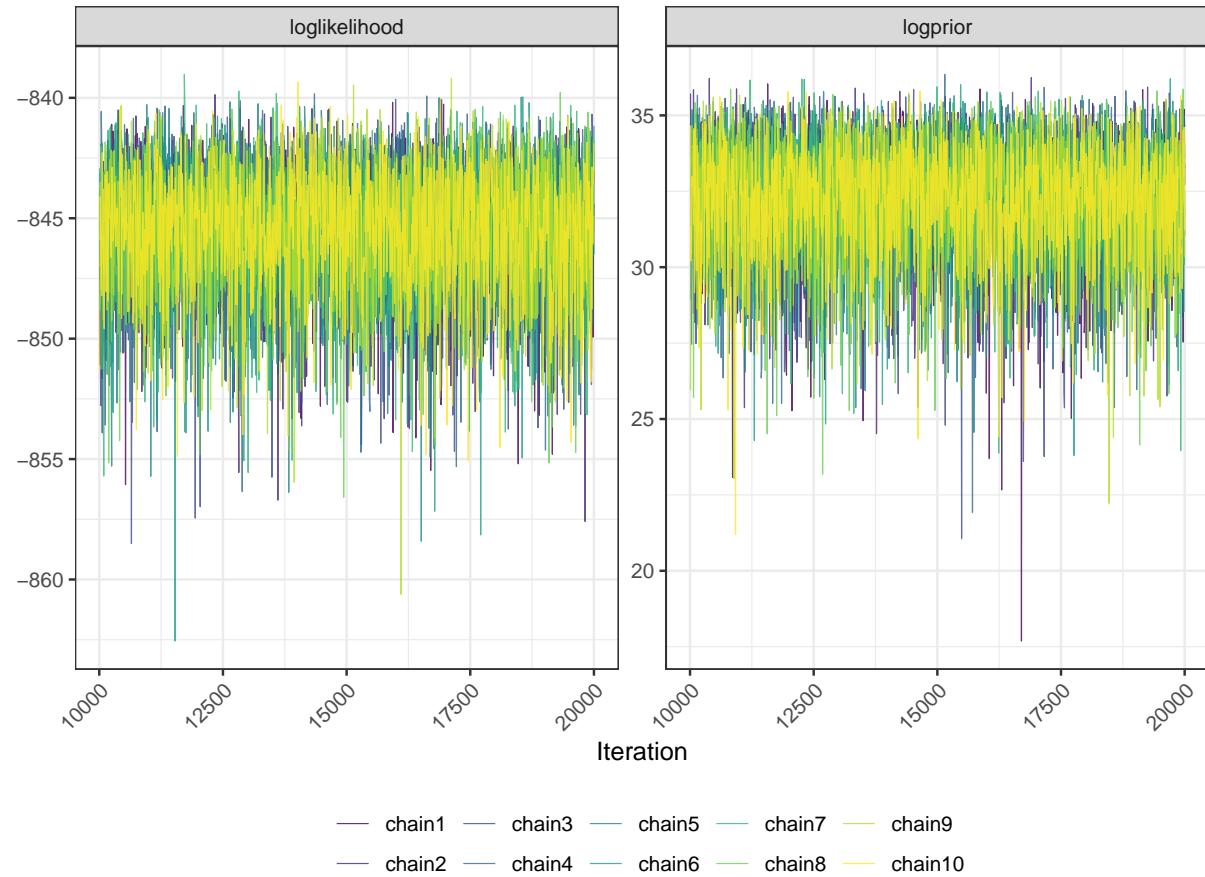
Additional Parameters

param	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
x1	1.0396	1.8743	61.7125	53.7834	73.7313	84.9623	2443.834	-0.9408	0.2563
x2	63.7531	73.1018	81.8439	82.2778	93.3430	105.6562	5716.748	-1.6217	0.1071
x3	79.5714	90.5943	103.5987	104.4522	122.4362	138.1990	4953.194	0.3921	0.3694
x4	219.0003	219.2169	224.1237	224.6139	232.1649	232.9992	7889.348	1.0958	0.2189
y1	0.0001	0.0405	1.0417	1.2541	3.5667	5.6385	4743.416	0.5462	0.3437
y2	0.0003	0.0480	1.0100	1.2350	3.6156	5.4472	6793.766	0.8638	0.2747
y3	3.0342	4.0938	5.2291	5.1620	5.9363	6.7153	4128.905	-0.3746	0.3719
y4	0.0169	0.8957	3.3304	3.2354	4.9996	6.3727	4963.974	-0.7659	0.2975
y5	2.4113	3.2517	4.2417	4.2674	5.3393	6.1320	7461.153	-0.1143	0.3963
Ne1	0.8216	0.9002	0.9985	0.9983	1.0944	1.1875	8951.189	-0.0250	0.3988
Ne2	0.7822	0.9007	0.9989	0.9983	1.0954	1.1742	10000.000	1.2933	0.1729
Ne3	0.8085	0.8994	0.9976	0.9976	1.0972	1.1767	9699.224	1.1953	0.1953
Ne4	0.8127	0.9003	0.9966	0.9971	1.0974	1.1840	10000.000	-1.1047	0.2167
Ne5	0.7974	0.9001	0.9979	0.9978	1.0943	1.2180	10000.000	0.1520	0.3944
Ne6	0.7606	0.8998	0.9980	0.9980	1.0956	1.1754	10000.000	-0.8353	0.2814
Ne7	0.8280	0.9169	1.0126	1.0126	1.1085	1.2194	9204.152	0.5637	0.3403

NLD1 with Standard Input

Fit Diagnostics

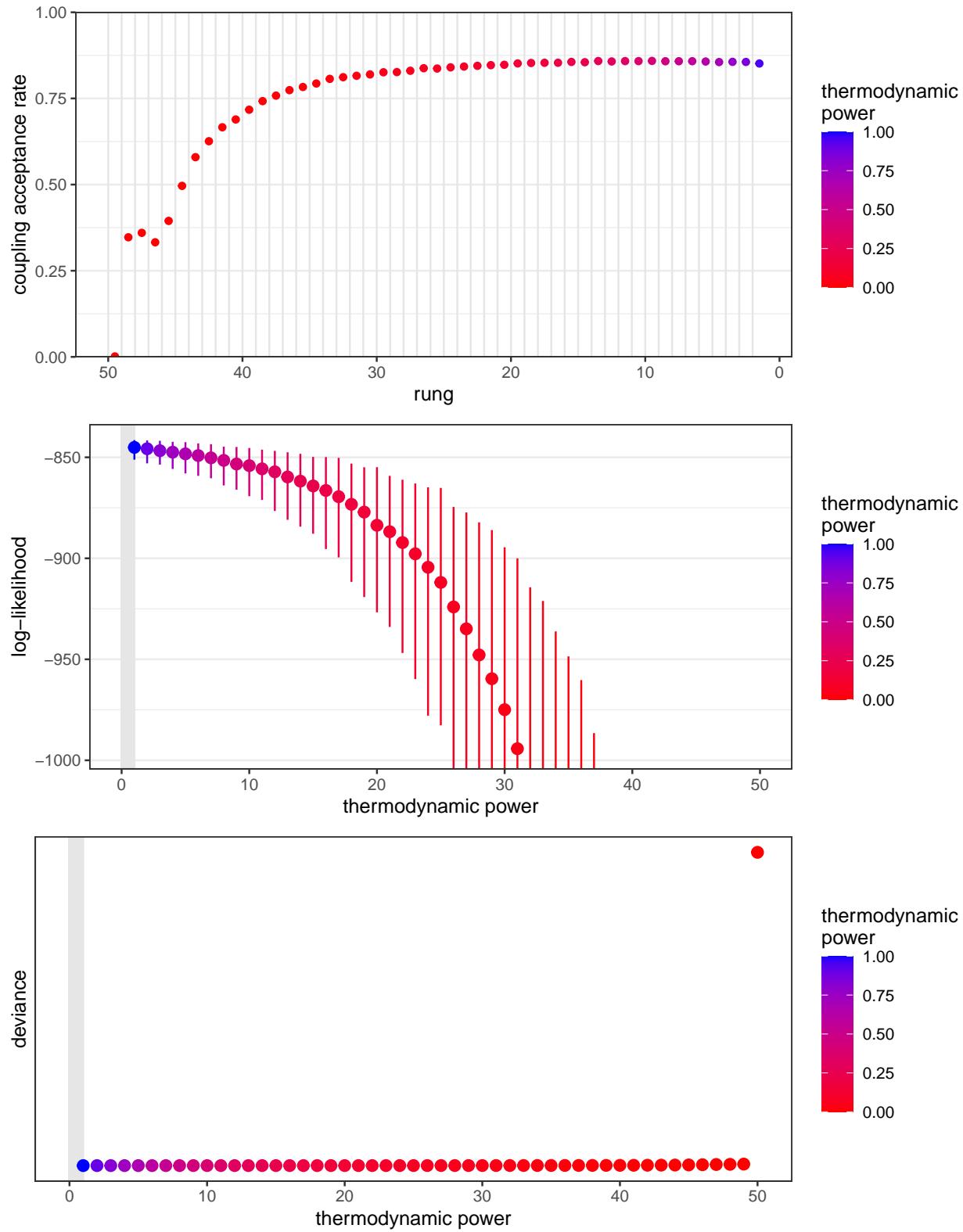
Log Likelihood & Prior Plot



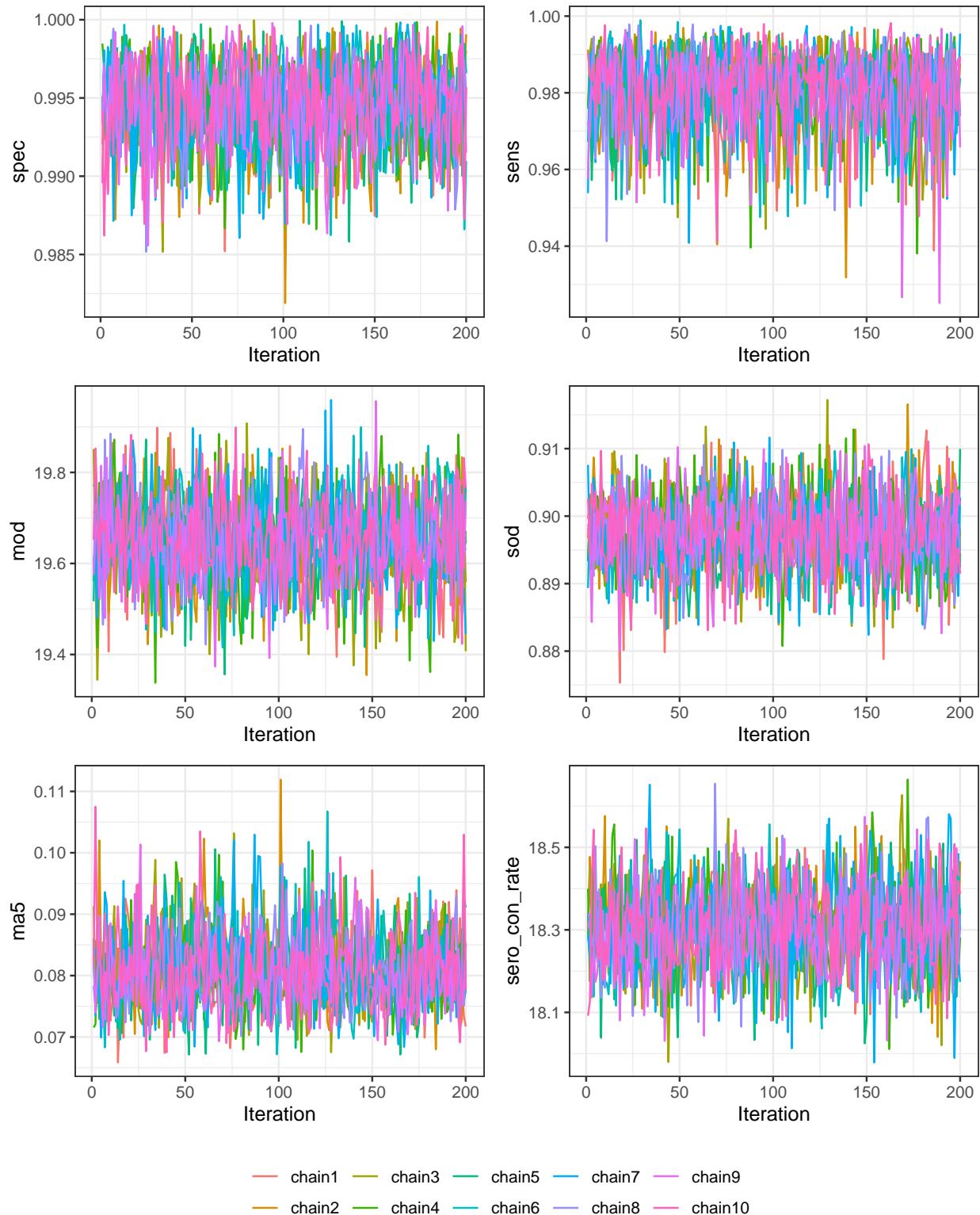
gelman_mpsrf

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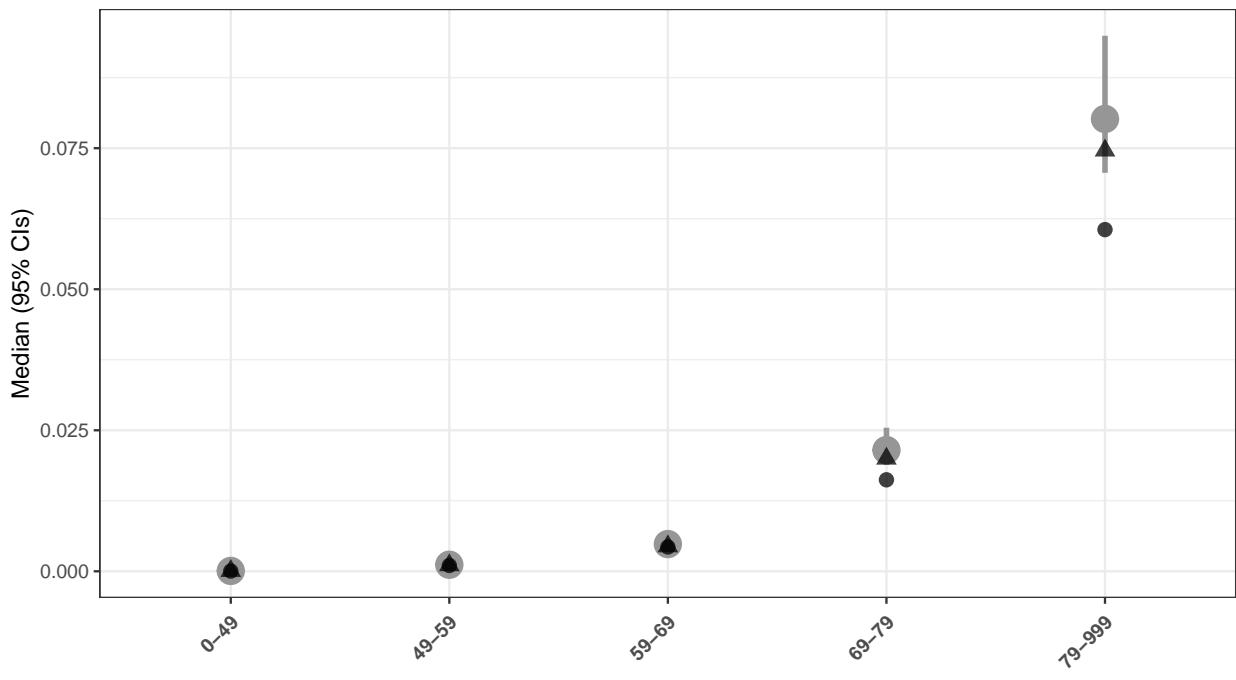
Metropolis Coupling Acceptance Plot



Serological Diagnostics

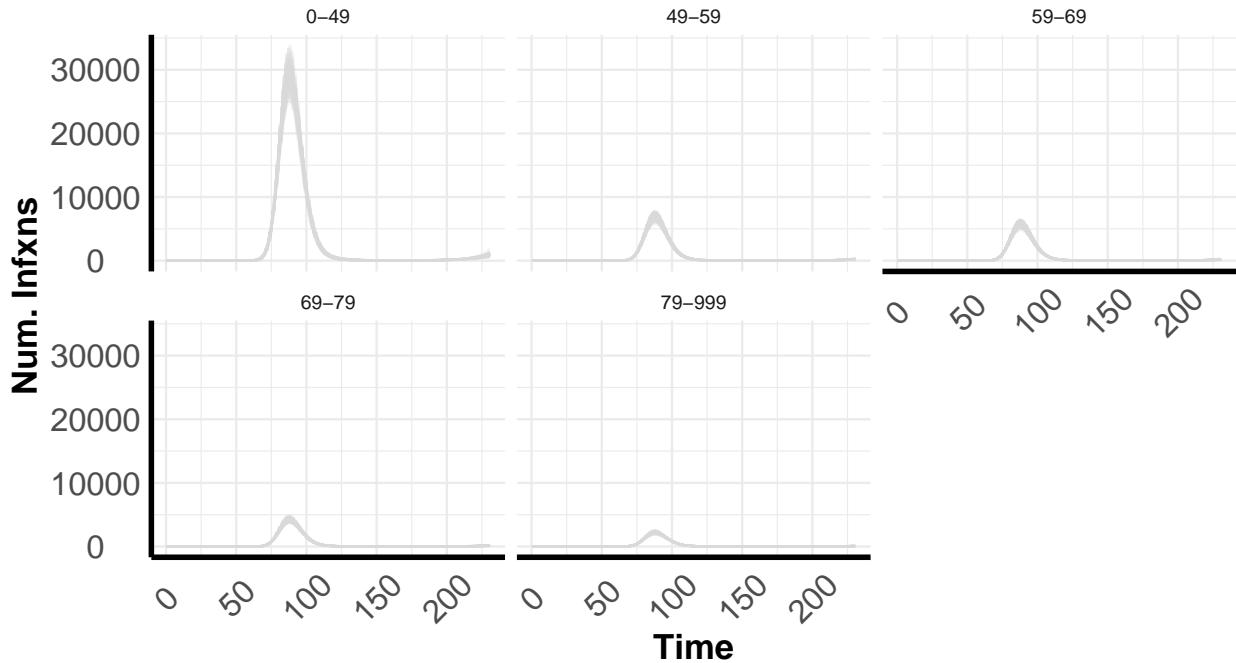


IFRs & Incidence Curve



Grey and black points represent model fits and crude IFR estimates, respectively

Posterior Draws of the Infection Curve



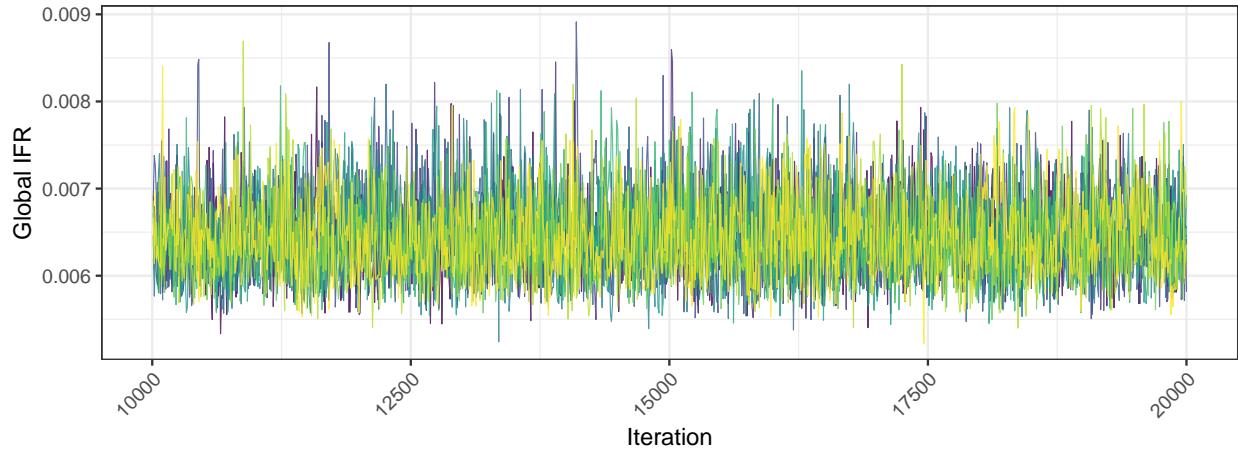
Strata IFR

strata	param	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
0-49	ma1	0.0000	0.0000	0.0001	0.0001	0.0001	0.0001	8946.746	1.2061	0.1928
49-59	ma2	0.0008	0.0009	0.0012	0.0012	0.0014	0.0018	6938.509	0.6094	0.3313
59-69	ma3	0.0036	0.0042	0.0048	0.0049	0.0058	0.0069	6187.039	0.8229	0.2844
69-79	ma4	0.0171	0.0189	0.0215	0.0217	0.0255	0.0300	5053.271	0.5331	0.3461
79-999	ma5	0.0642	0.0706	0.0802	0.0809	0.0949	0.1141	4697.716	-0.1221	0.3960

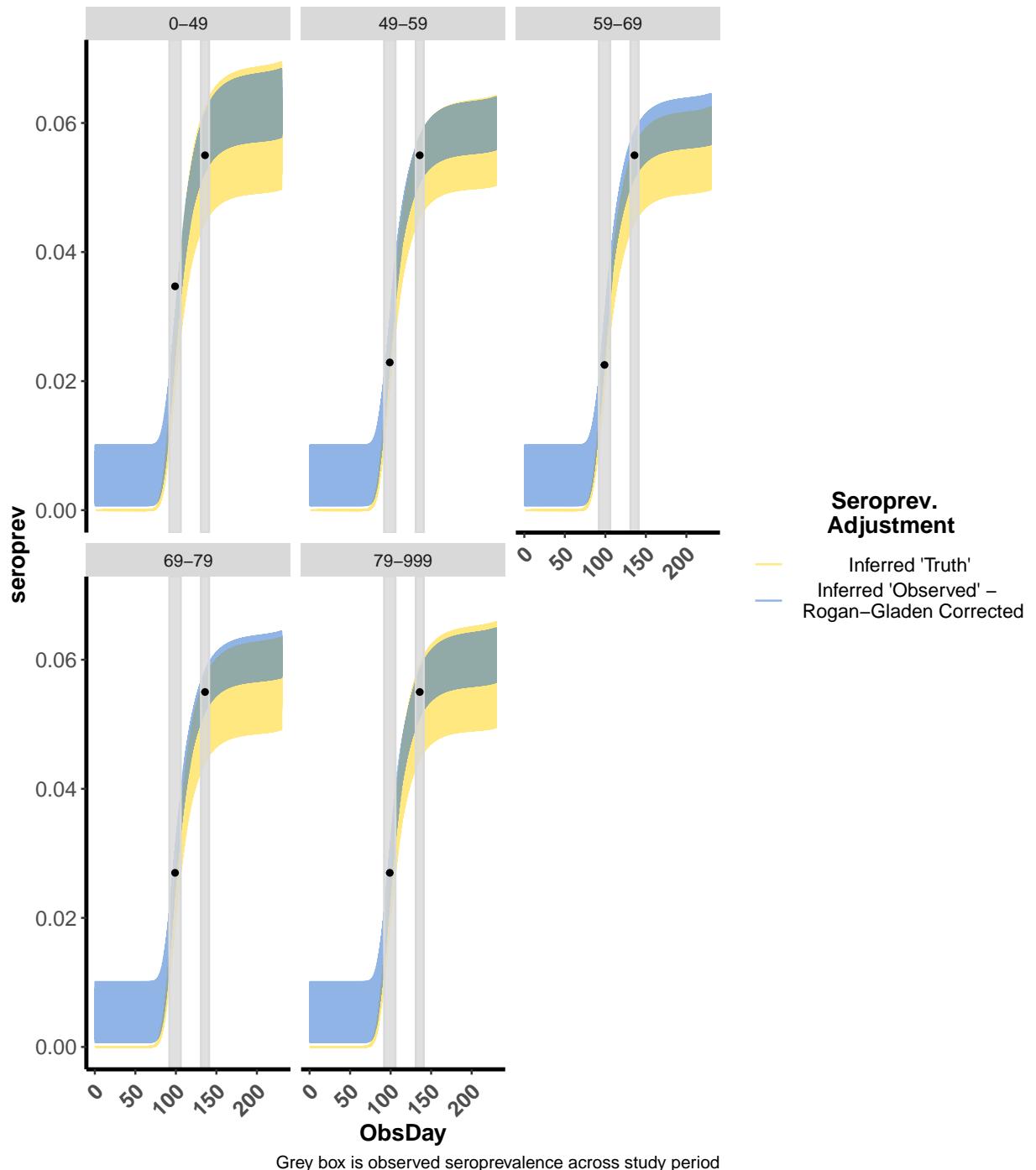
Overall IFR

min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
0.0052	0.0057	0.0063	0.0064	0.0074	0.0087	6702.51	-2.8602	0.0067

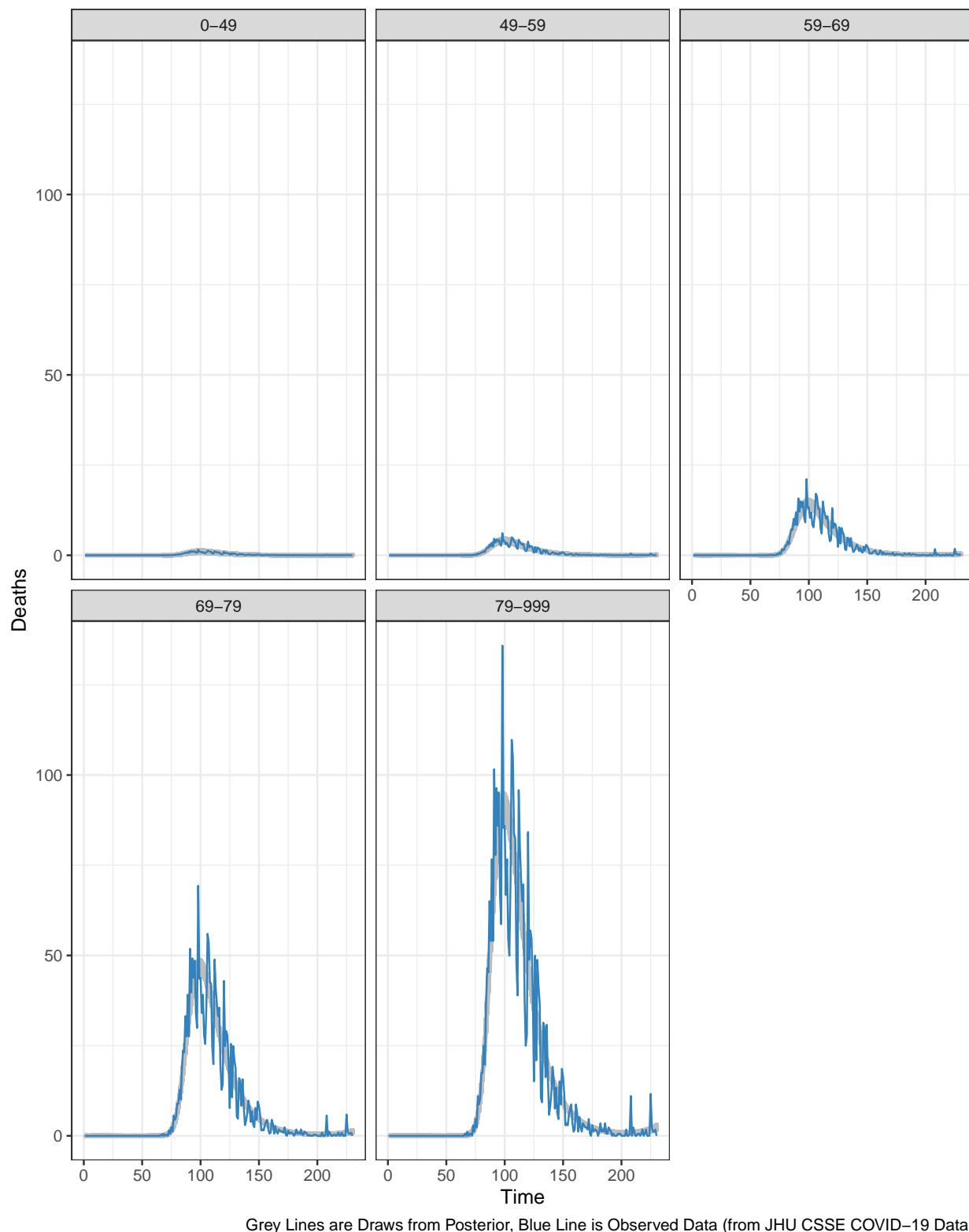
chain	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
chain1	0.0054	0.0057	0.0063	0.0064	0.0073	0.0082	522.1546	-0.1254	0.3958
chain2	0.0052	0.0057	0.0063	0.0064	0.0075	0.0085	747.2616	-2.5138	0.0169
chain3	0.0054	0.0057	0.0063	0.0064	0.0074	0.0087	668.5371	0.5283	0.3470
chain4	0.0054	0.0057	0.0064	0.0064	0.0074	0.0083	640.6066	-1.4161	0.1464
chain5	0.0054	0.0056	0.0063	0.0064	0.0075	0.0084	665.5063	-1.3764	0.1547
chain6	0.0054	0.0056	0.0064	0.0064	0.0074	0.0084	455.6737	-2.9821	0.0047
chain7	0.0054	0.0057	0.0063	0.0064	0.0075	0.0082	457.8476	-0.3813	0.3710
chain8	0.0054	0.0057	0.0063	0.0063	0.0073	0.0080	729.7331	-2.8817	0.0063
chain9	0.0052	0.0056	0.0063	0.0064	0.0074	0.0087	471.5124	-0.4347	0.3630
chain10	0.0052	0.0057	0.0063	0.0064	0.0074	0.0081	535.8087	0.6667	0.3194



Seroprevalence Observed vs. Inferred True Prev



Death Posterior Predictive Check



Grey Lines are Draws from Posterior, Blue Line is Observed Data (from JHU CSSE COVID-19 Data)

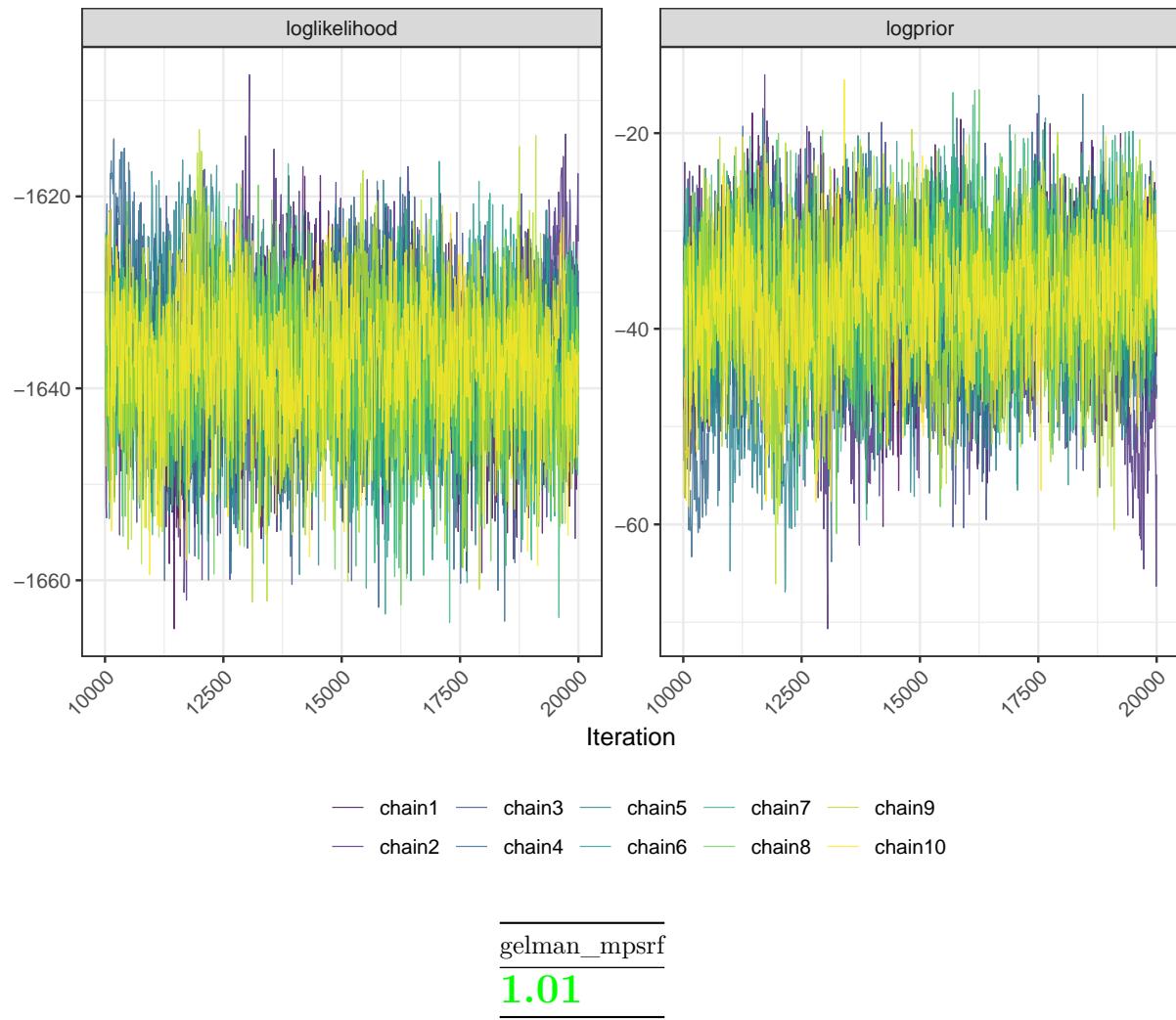
Additional Parameters

param	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
x1	1.3193	2.5446	55.5385	51.4566	66.1691	72.1610	644.4179	0.8072	0.2880
x2	67.6650	70.3060	75.1175	75.3796	81.7132	90.4414	1177.8314	-2.2937	0.0287
x3	101.2370	107.5103	113.7228	113.8009	120.5505	131.0634	2499.5491	2.4317	0.0207
x4	219.0002	219.3057	225.3998	225.5819	232.5561	232.9942	1801.9394	-2.4520	0.0197
y1	0.0006	0.0865	1.6736	1.8753	4.5997	6.4825	2941.5670	0.4686	0.3575
y2	0.0002	0.0663	1.6201	2.0337	5.9381	8.0286	579.7204	-0.1859	0.3921
y3	6.6207	7.5907	9.1160	9.0859	10.4121	10.9885	991.6500	-2.4199	0.0213
y4	4.1545	6.3434	7.5684	7.5405	8.5422	9.5385	2494.4518	-2.2740	0.0301
y5	5.8493	6.3530	6.9835	7.0223	7.8216	8.6857	2778.1296	-1.4952	0.1305
Ne1	0.8645	0.9409	1.0183	1.0183	1.0976	1.1716	7488.2533	0.1062	0.3967
Ne2	0.8631	0.9168	0.9946	0.9952	1.0738	1.1444	9013.8918	0.3616	0.3737
Ne3	0.8424	0.9146	0.9898	0.9903	1.0676	1.1339	8516.2075	0.0572	0.3983
Ne4	0.8500	0.9240	0.9997	1.0002	1.0792	1.1405	8328.2870	-0.9760	0.2478
Ne5	0.8554	0.9245	1.0009	1.0008	1.0781	1.1560	7852.8039	1.0382	0.2327

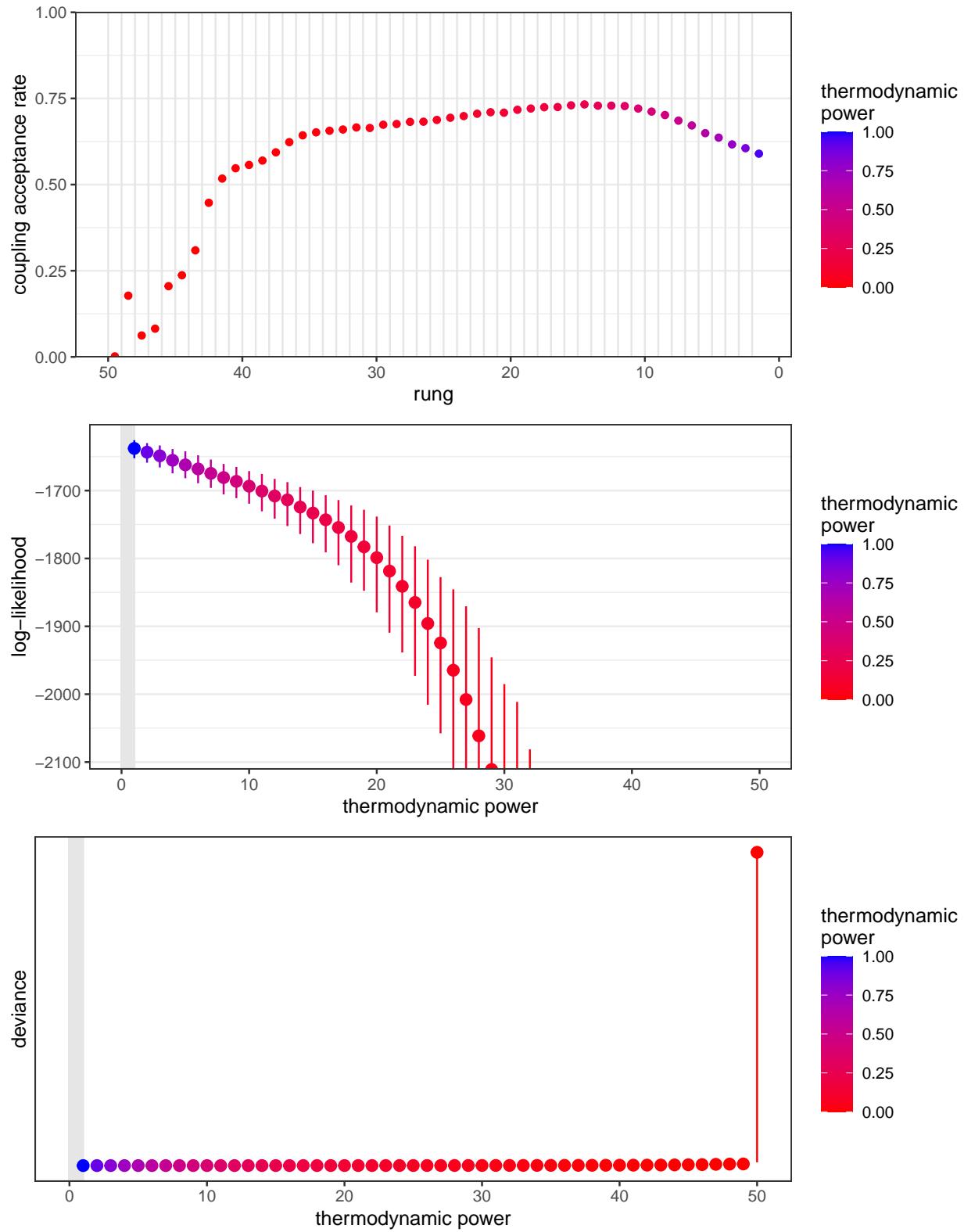
NYS1 with Standard Input

Fit Diagnostics

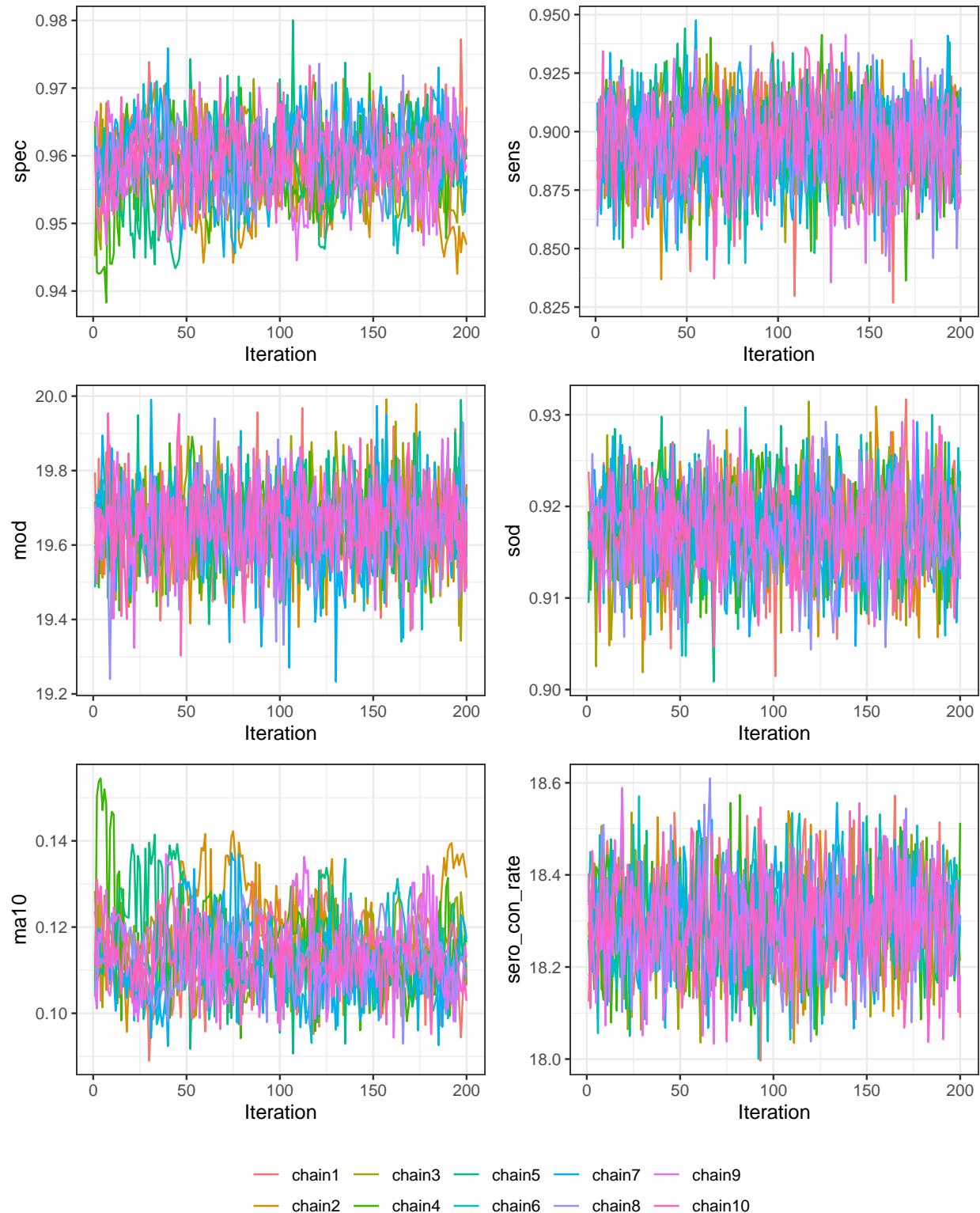
Log Likelihood & Prior Plot



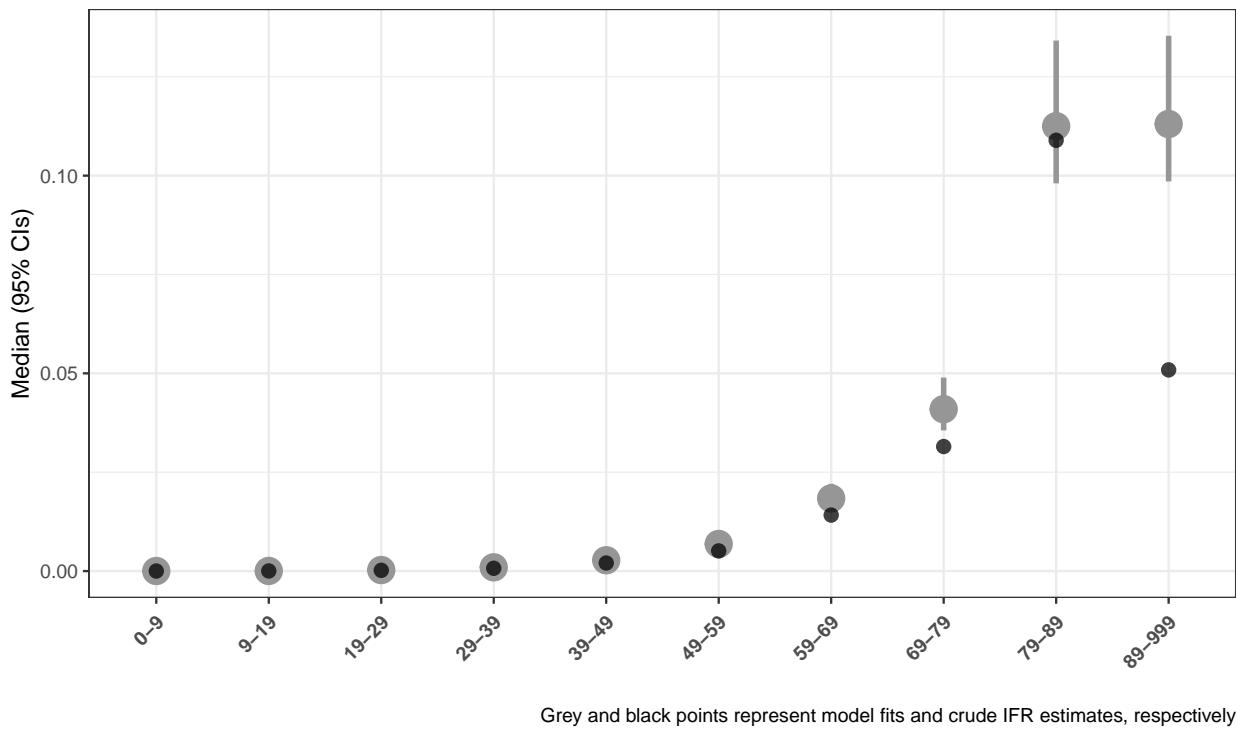
Metropolis Coupling Acceptance Plot



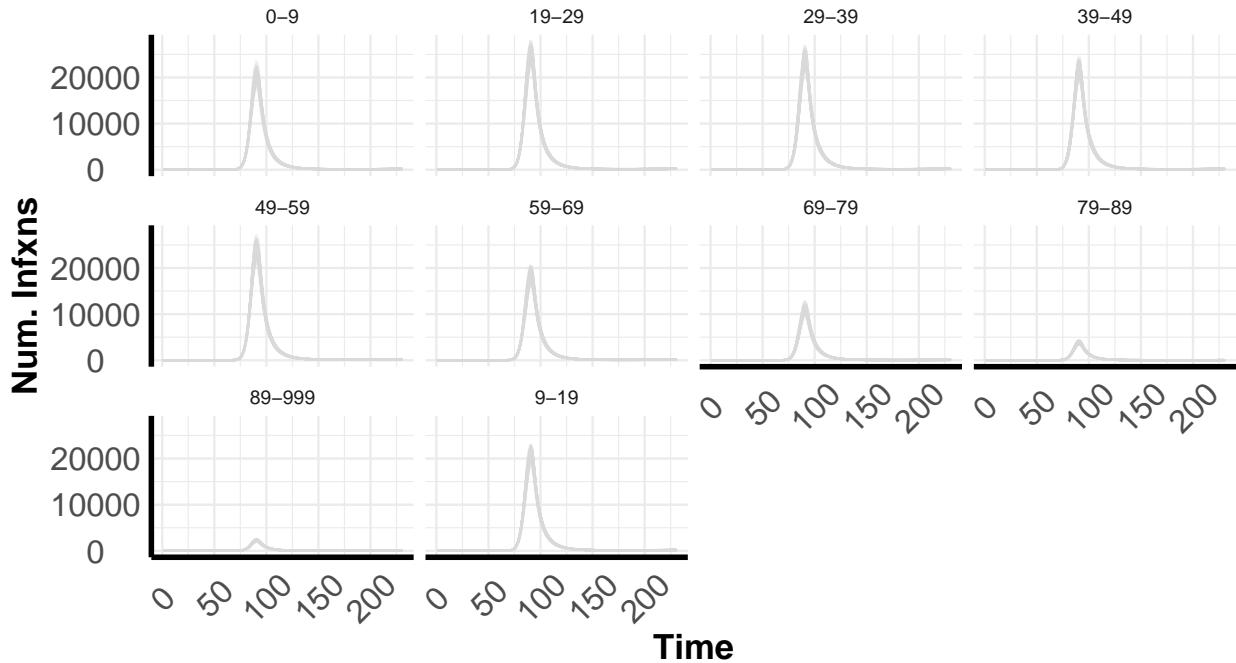
Serological Diagnostics



IFRs & Incidence Curve



Posterior Draws of the Infection Curve



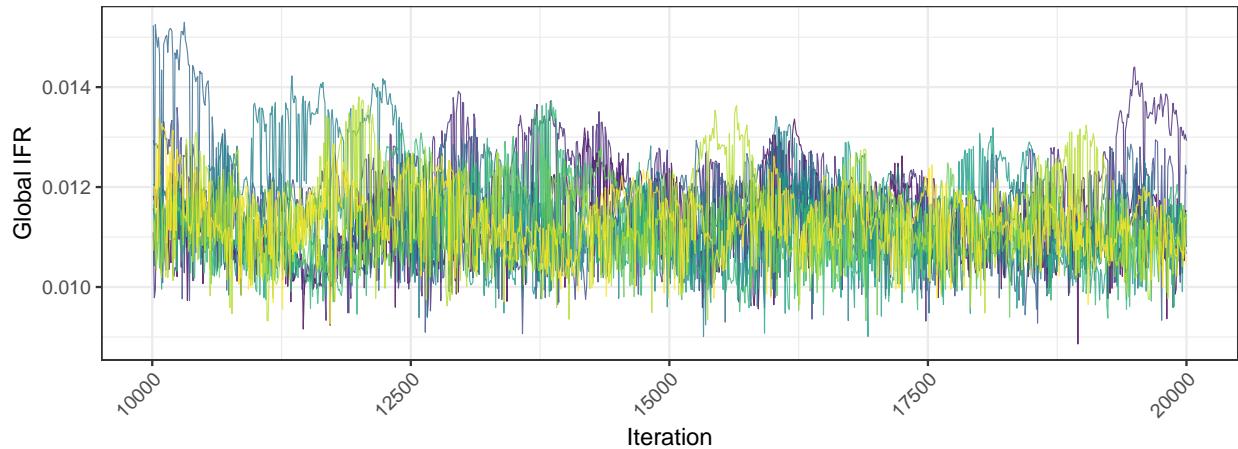
Strata IFR

strata	param	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
0-9	ma1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	6919.6674	-1.4222	0.1451
9-19	ma2	0.0000	0.0000	0.0000	0.0000	0.0001	0.0001	2772.4623	-1.5295	0.1239
19-29	ma3	0.0002	0.0002	0.0003	0.0003	0.0003	0.0004	694.1567	-0.1513	0.3944
29-39	ma4	0.0007	0.0008	0.0009	0.0010	0.0011	0.0015	320.3841	-0.2650	0.3852
39-49	ma5	0.0021	0.0024	0.0027	0.0028	0.0033	0.0039	257.6733	-0.8804	0.2708
49-59	ma6	0.0054	0.0060	0.0069	0.0069	0.0081	0.0095	238.7681	-0.4650	0.3581
59-69	ma7	0.0144	0.0159	0.0184	0.0185	0.0221	0.0251	250.5702	-0.1721	0.3931
69-79	ma8	0.0314	0.0356	0.0409	0.0413	0.0489	0.0582	277.4807	-0.6485	0.3233
79-89	ma9	0.0880	0.0981	0.1125	0.1133	0.1342	0.1554	178.9823	-0.2151	0.3898
89-999	ma10	0.0887	0.0985	0.1131	0.1139	0.1354	0.1563	177.2435	-0.2187	0.3895

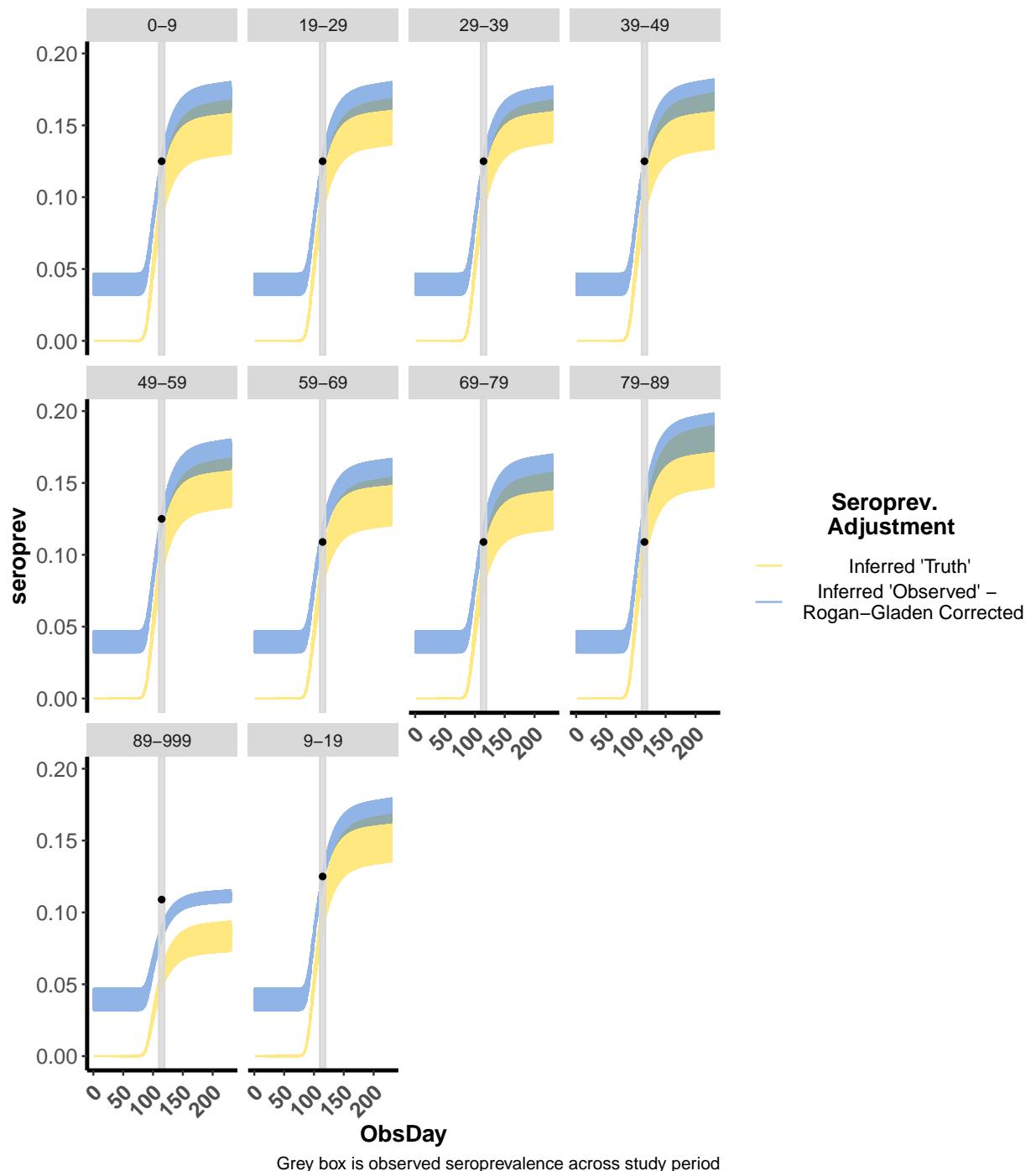
Overall IFR

min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
0.0079	0.0089	0.0101	0.0102	0.0118	0.0136	1033.811	2.4961	0.0177

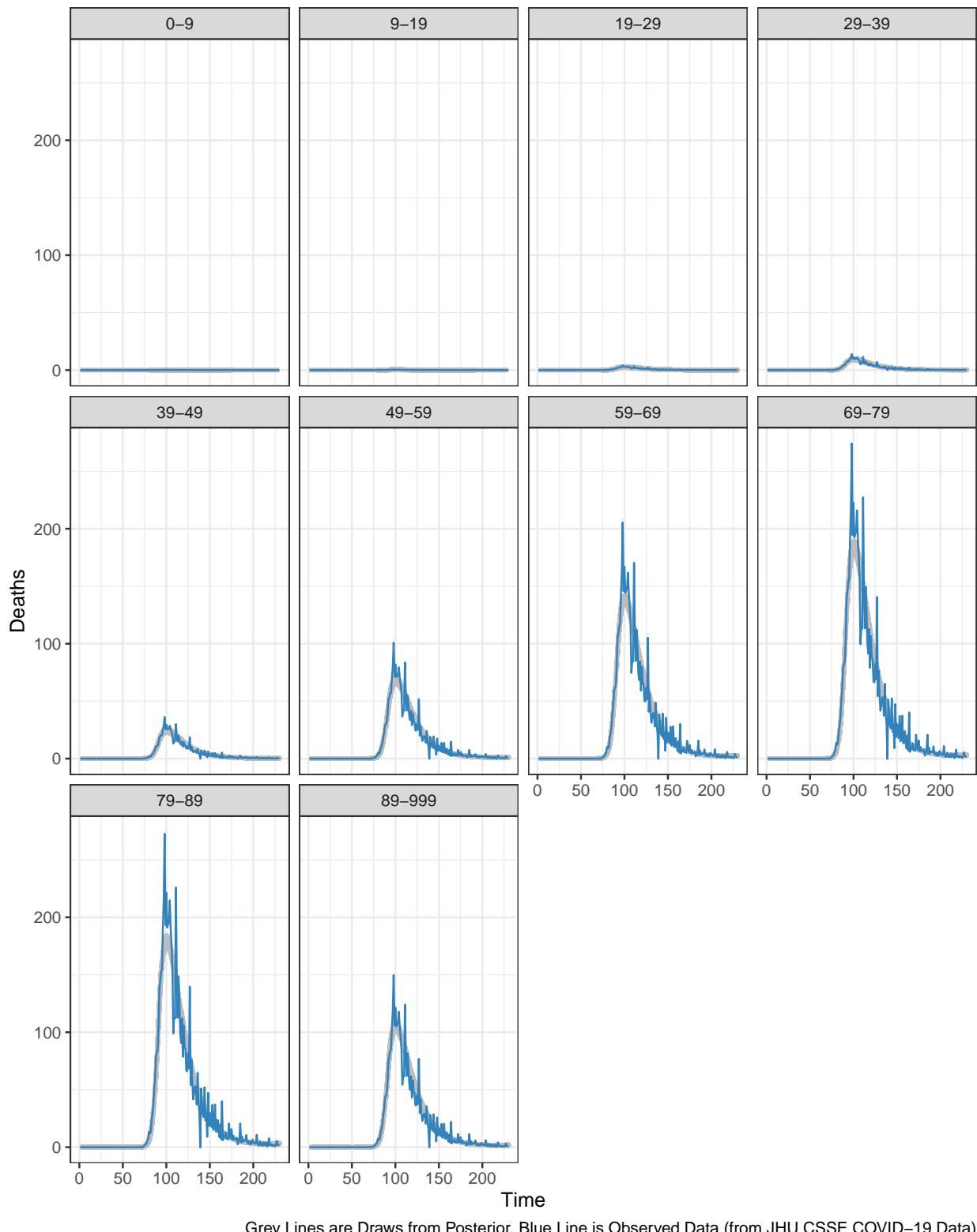
chain	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
chain1	0.0079	0.0089	0.0100	0.0100	0.0115	0.0121	25.1596	-0.2840	0.3832
chain2	0.0084	0.0090	0.0104	0.0105	0.0121	0.0124	19.2055	-2.2323	0.0330
chain3	0.0081	0.0090	0.0102	0.0102	0.0115	0.0120	22.2093	2.3033	0.0281
chain4	0.0083	0.0089	0.0102	0.0103	0.0128	0.0136	11.7049	2.5657	0.0148
chain5	0.0081	0.0089	0.0101	0.0103	0.0123	0.0129	14.9029	3.4572	0.0010
chain6	0.0082	0.0089	0.0100	0.0100	0.0113	0.0121	43.9790	-0.3861	0.3703
chain7	0.0084	0.0087	0.0098	0.0099	0.0115	0.0121	22.0192	0.9177	0.2618
chain8	0.0084	0.0091	0.0101	0.0101	0.0111	0.0114	37.0605	2.4766	0.0186
chain9	0.0085	0.0089	0.0101	0.0102	0.0118	0.0121	44.7369	0.2884	0.3827
chain10	0.0084	0.0090	0.0101	0.0101	0.0113	0.0116	71.2944	2.4124	0.0217



Seroprevalence Observed vs. Inferred True Prev



Death Posterior Predictive Check



Grey Lines are Draws from Posterior, Blue Line is Observed Data (from JHU CSSE COVID-19 Data)

Additional Parameters

param	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
x1	1.0440	2.0104	59.8272	55.9113	67.6178	73.4786	143.6589	1.8938	0.0664
x2	88.7172	90.7519	92.5098	92.4540	93.7902	94.7347	269.0502	-2.0341	0.0504
x3	93.4369	94.4824	95.5498	95.6135	97.0455	98.3141	239.8183	-0.7390	0.3036
x4	219.0000	219.0365	219.9772	220.4846	224.4717	232.3389	211.9759	0.8046	0.2886
y1	0.0009	0.0582	1.3477	1.4996	3.6914	5.7887	2898.7496	-0.7273	0.3062
y2	0.0002	0.0853	2.2338	2.4152	5.6104	7.9164	116.2379	2.2648	0.0307
y3	11.6561	11.7939	11.9541	11.9516	12.0992	12.2094	203.5219	1.1067	0.2162
y4	11.2208	11.3501	11.5904	11.5821	11.7726	11.9402	184.2433	0.5132	0.3497
y5	6.6715	6.8855	7.1321	7.1300	7.3623	7.6365	520.8164	0.5988	0.3335
Ne1	0.9035	0.9655	1.0342	1.0343	1.1047	1.1588	7787.3691	1.8353	0.0740
Ne10	0.5001	0.5265	0.5647	0.5648	0.6034	0.6414	1437.5788	0.0941	0.3972
Ne2	0.9063	0.9656	1.0340	1.0344	1.1046	1.1762	7343.4936	-0.1759	0.3928
Ne3	0.8517	0.9656	1.0346	1.0344	1.1028	1.1681	7210.3476	-0.7329	0.3050
Ne4	0.9027	0.9671	1.0345	1.0346	1.1039	1.1697	6709.6226	1.0208	0.2369
Ne5	0.9007	0.9661	1.0348	1.0348	1.1030	1.1733	5853.8746	1.4528	0.1389
Ne6	0.9002	0.9673	1.0349	1.0351	1.1053	1.1722	4044.5603	1.5621	0.1178
Ne7	0.7932	0.8594	0.9330	0.9331	1.0094	1.0820	1871.5325	-0.3644	0.3733
Ne8	0.8008	0.8575	0.9310	0.9313	1.0055	1.0718	1472.8761	0.7522	0.3006
Ne9	1.0221	1.0840	1.1508	1.1512	1.2205	1.2923	1418.9476	-0.0555	0.3983