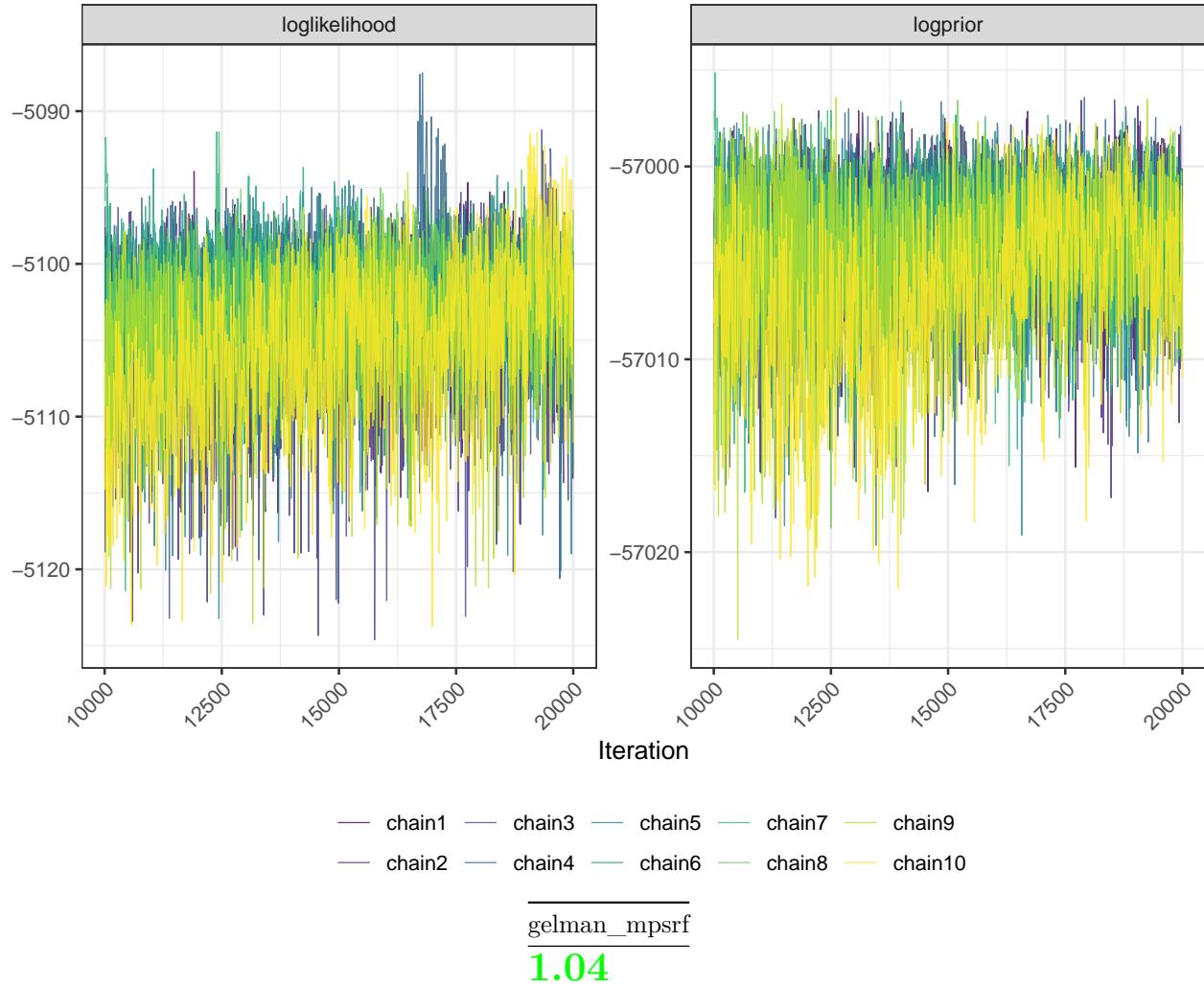


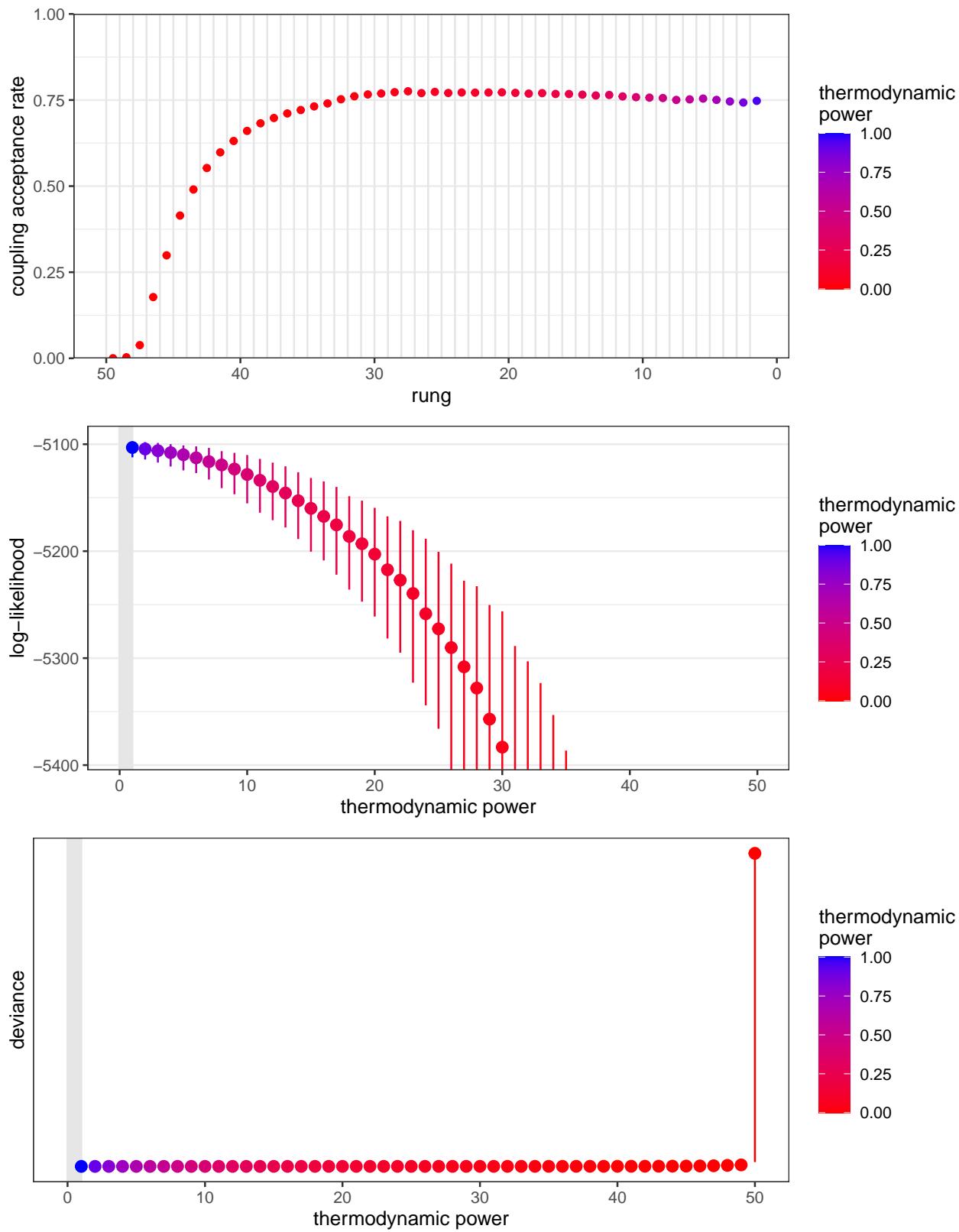
# BRA1 with the Potential for Seroreversion Included

## Fit Diagnostics

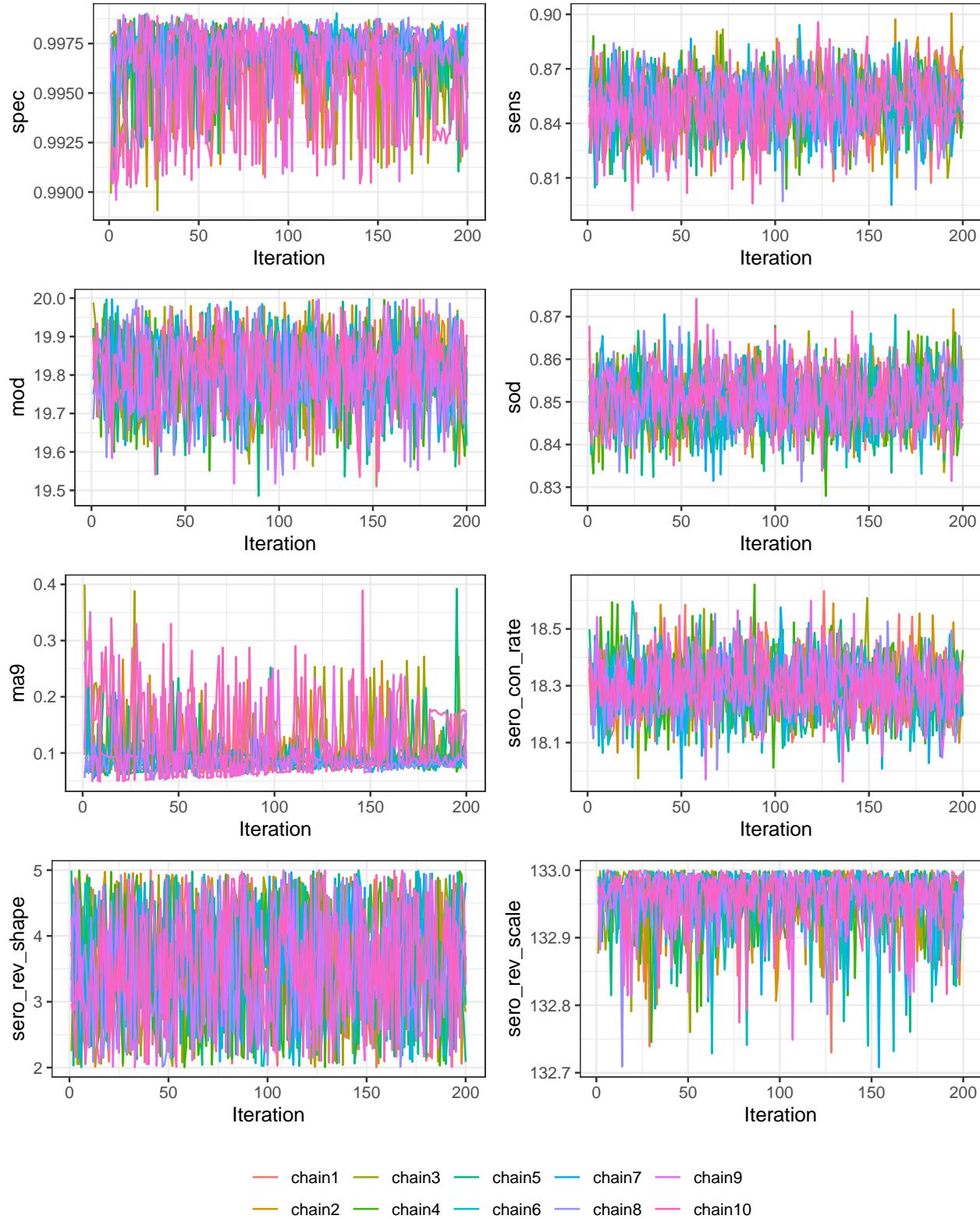
### Log Likelihood & Prior Plot



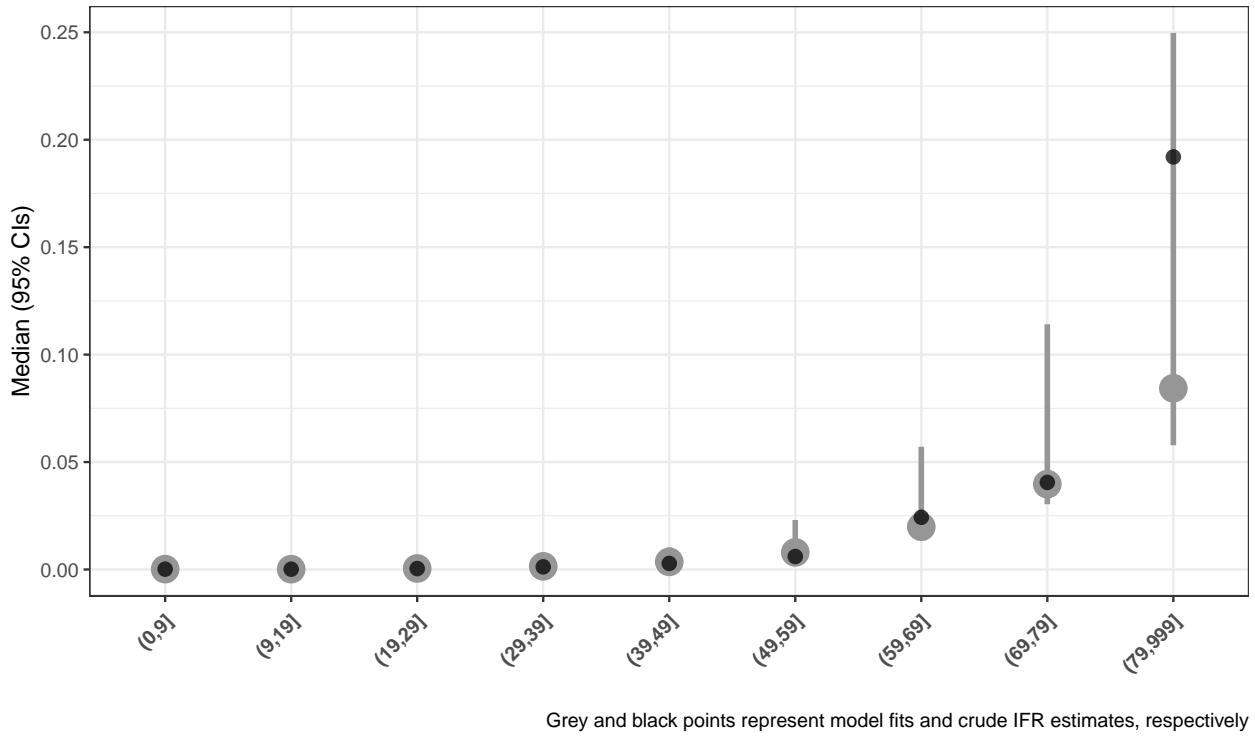
### Metropolis Coupling Acceptance Plot



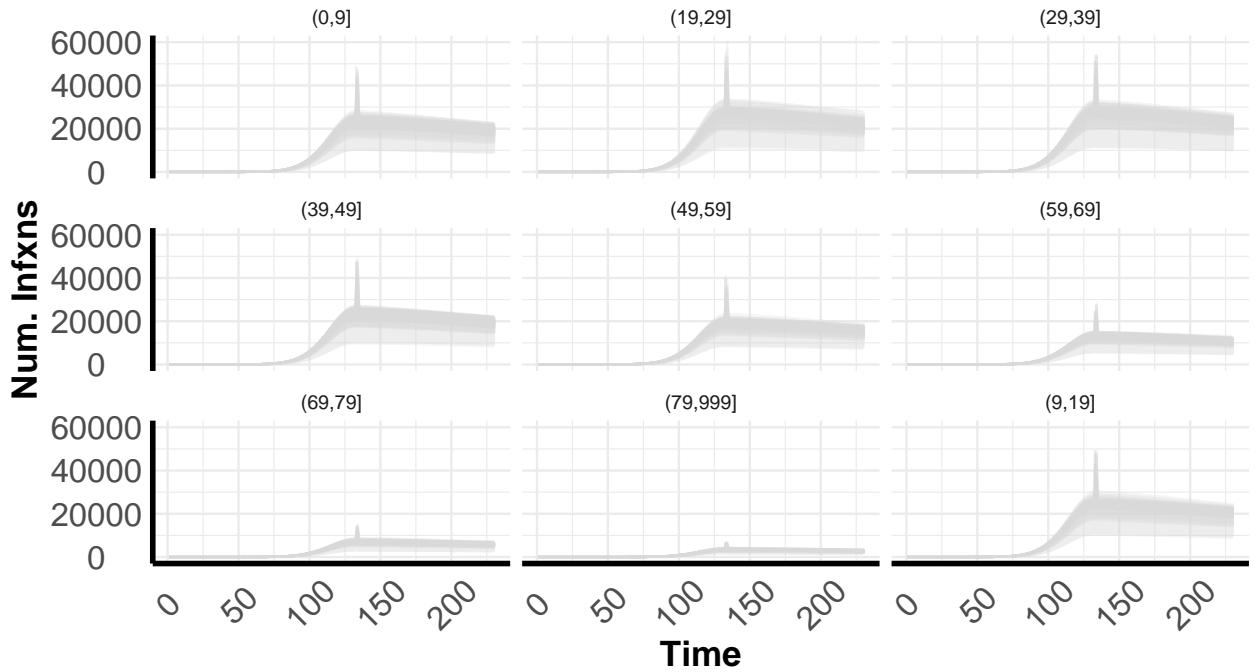
## Serological Diagnostics



## IFRs & Incidence Curve



## Posterior Draws of the Infection Curve



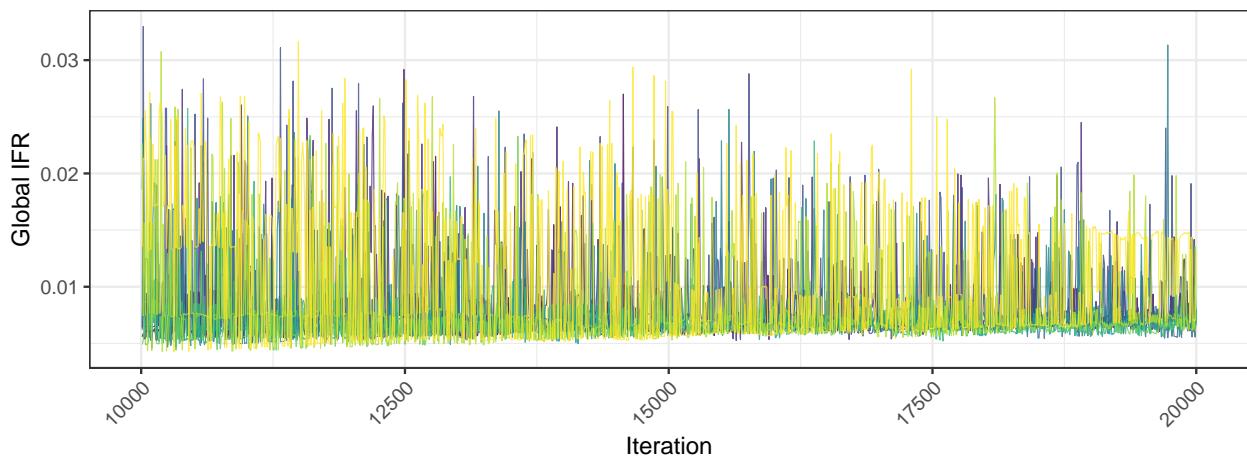
### Strata IFR

strata	param	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
(0,9]	ma1	0.0001	0.0001	0.0002	0.0002	0.0005	0.0009	252.1606	-2.1643	0.0384
(9,19]	ma2	0.0001	0.0001	0.0001	0.0002	0.0004	0.0007	229.0366	-2.2212	0.0338
(19,29]	ma3	0.0003	0.0004	0.0005	0.0006	0.0013	0.0022	225.2892	-2.2882	0.0291
(29,39]	ma4	0.0009	0.0011	0.0015	0.0017	0.0043	0.0071	227.0730	-2.2083	0.0348
(39,49]	ma5	0.0022	0.0027	0.0036	0.0042	0.0102	0.0180	220.5209	-2.3371	0.0260
(49,59]	ma6	0.0048	0.0061	0.0079	0.0094	0.0230	0.0404	218.1013	-2.3259	0.0267
(59,69]	ma7	0.0120	0.0156	0.0199	0.0234	0.0571	0.1016	208.0663	-2.2682	0.0305
(69,79]	ma8	0.0251	0.0304	0.0397	0.0468	0.1141	0.1924	210.5467	-2.1679	0.0380
(79,999]	ma9	0.0483	0.0578	0.0843	0.0992	0.2497	0.3998	241.1411	-2.3807	0.0235

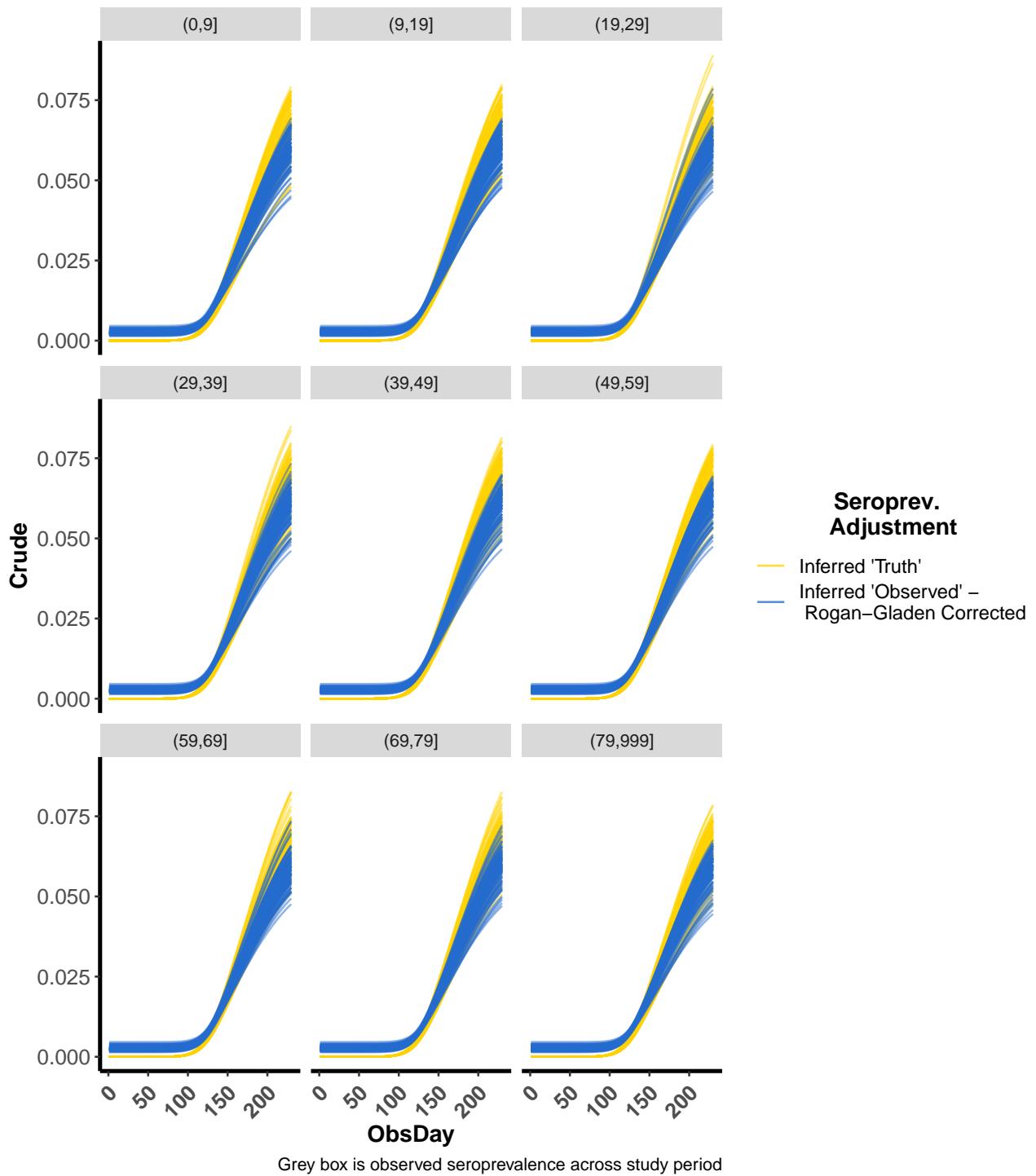
### Overall IFR

min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
0.0043	0.0052	0.0067	0.0079	0.0193	0.032	4044.715	8.1734	0

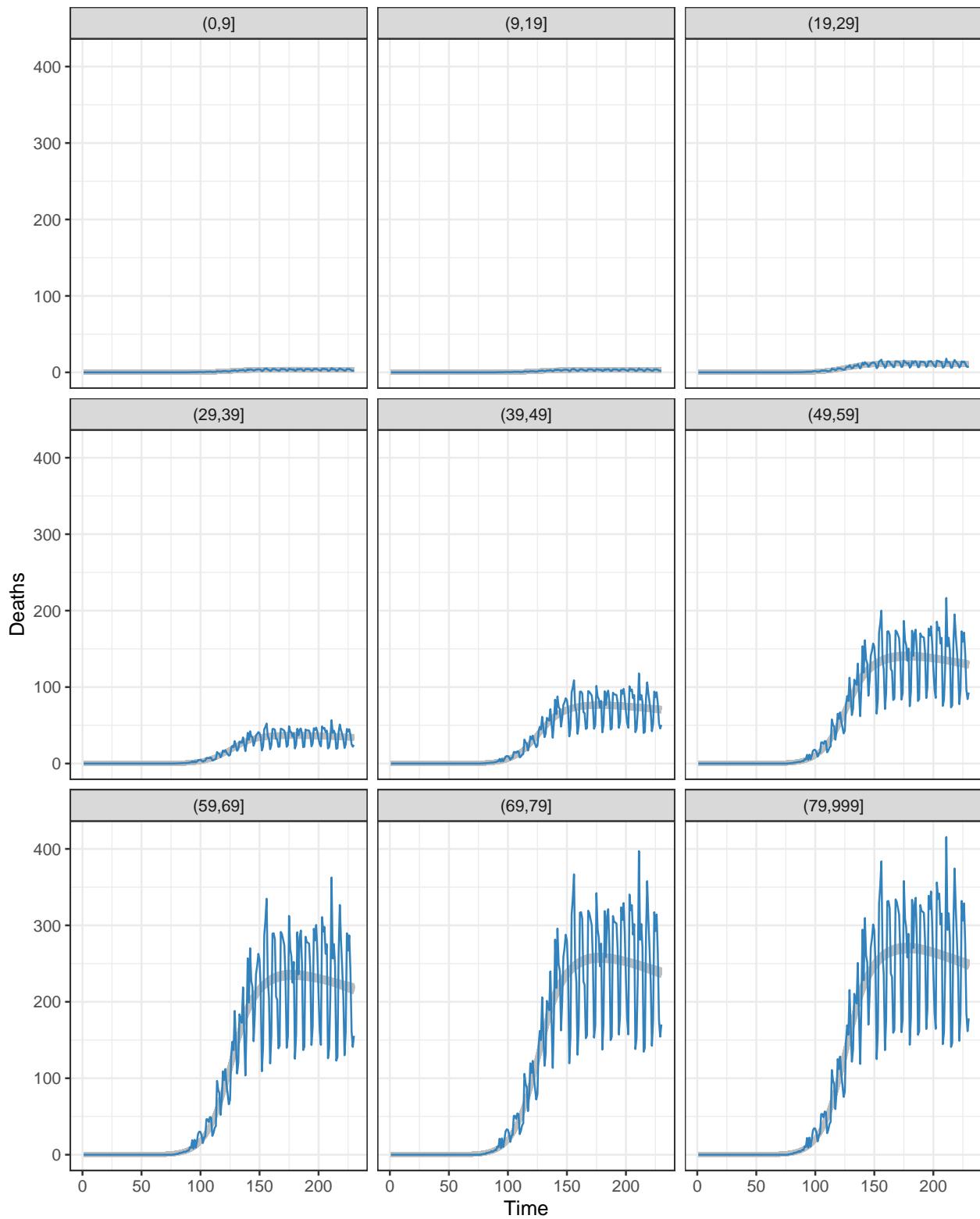
chain	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
chain1	0.0049	0.0054	0.0066	0.0070	0.0109	0.0269	722.2335	-0.3611	0.3738
chain2	0.0051	0.0062	0.0073	0.0086	0.0207	0.0291	209.1735	2.4594	0.0194
chain3	0.0053	0.0057	0.0067	0.0083	0.0210	0.0318	1000.0000	1.6978	0.0944
chain4	0.0047	0.0055	0.0066	0.0069	0.0089	0.0141	503.9131	0.6597	0.3209
chain5	0.0047	0.0051	0.0066	0.0080	0.0180	0.0315	658.4150	2.5908	0.0139
chain6	0.0049	0.0054	0.0065	0.0066	0.0082	0.0151	204.9183	0.0899	0.3973
chain7	0.0051	0.0054	0.0065	0.0071	0.0107	0.0259	868.9213	1.9850	0.0556
chain8	0.0045	0.0050	0.0063	0.0065	0.0093	0.0234	498.6550	1.6669	0.0994
chain9	0.0044	0.0048	0.0070	0.0087	0.0207	0.0309	1000.0000	3.6600	0.0005
chain10	0.0043	0.0048	0.0090	0.0111	0.0247	0.0320	105.6705	9.3175	0.0000



### 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)

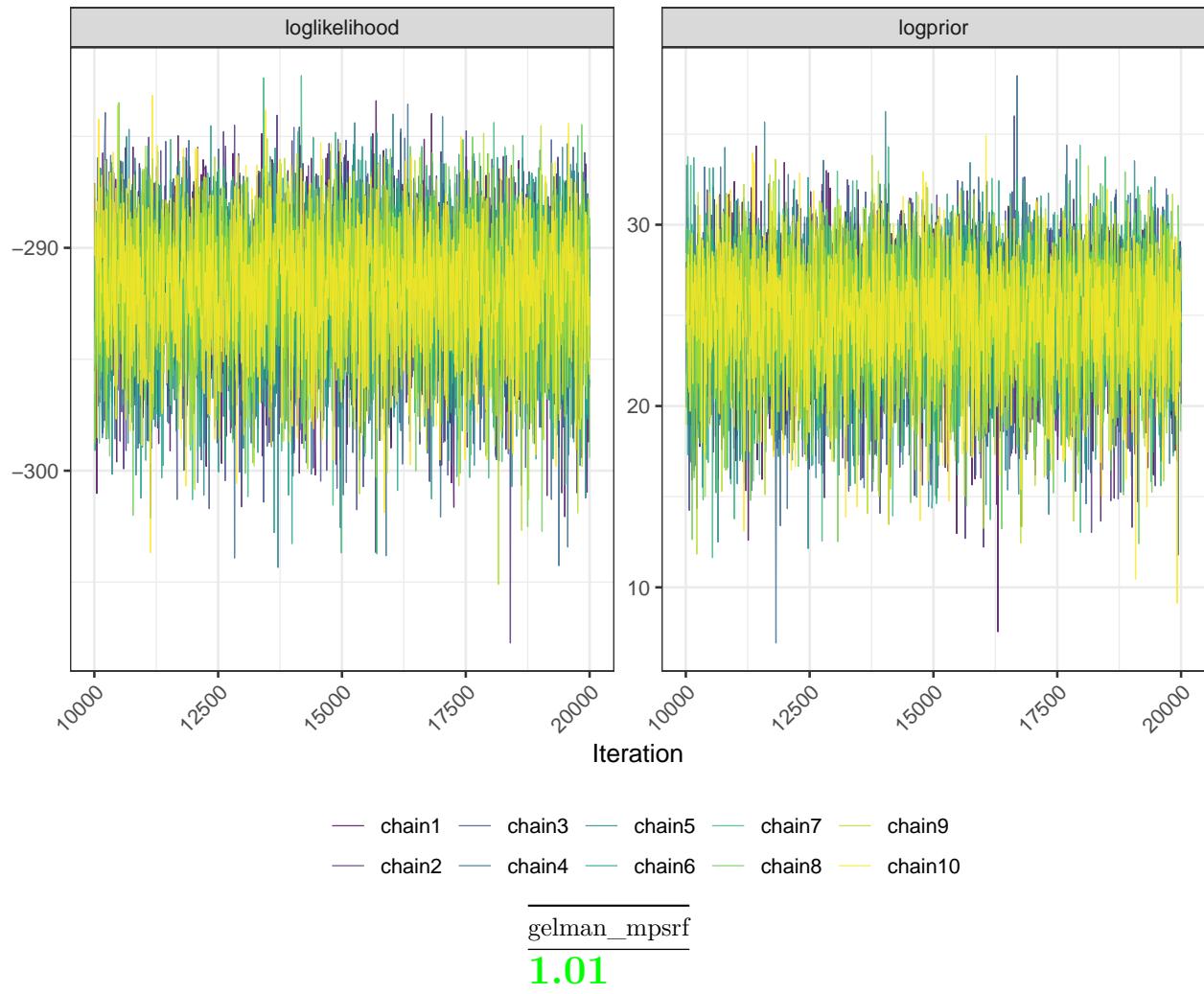
## Additional Parameters

param	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
x1	1.6301	4.1151	15.0248	16.5919	36.8872	68.4407	314.0537	5.2960	0.0000
x2	130.0252	130.8429	131.9364	131.9614	133.2806	135.5431	3426.2541	-1.5088	0.1278
x3	130.5936	131.5311	133.5018	133.5952	136.1373	138.9728	2314.1603	-0.8165	0.2859
x4	216.0013	216.5022	223.9648	223.6486	229.7970	229.9999	229.1001	2.9942	0.0045
y1	0.0000	0.0038	0.1025	0.1546	0.6427	2.3950	429.2436	4.9682	0.0000
y2	0.0711	0.2789	1.2077	1.4159	3.5851	7.5636	275.6467	4.6805	0.0000
y3	10.4623	10.9737	12.0298	11.9269	12.2772	12.4639	242.2783	2.0439	0.0494
y4	10.4610	10.9736	12.0288	11.9262	12.2764	12.4635	242.2609	2.0448	0.0493
y5	10.2627	10.7870	11.8466	11.7457	12.0933	12.2679	246.4669	1.9788	0.0563
Ne1	0.8118	0.9029	0.9977	0.9974	1.0932	1.1976	5159.4781	-1.2019	0.1937
Ne2	0.7981	0.9032	1.0023	1.0012	1.0984	1.2102	4564.9957	-0.7208	0.3077
Ne3	0.8318	0.9058	1.0004	1.0006	1.0959	1.1937	3622.0829	-0.4319	0.3634
Ne4	0.8056	0.9135	1.0080	1.0074	1.1025	1.2239	2744.4533	-0.6583	0.3212
Ne5	0.8564	0.9198	1.0130	1.0144	1.1129	1.1954	2201.2499	1.9112	0.0642
Ne6	0.8590	0.9210	1.0177	1.0183	1.1161	1.2324	1070.1804	1.1363	0.2092
Ne7	0.8089	0.8761	0.9711	0.9723	1.0745	1.1429	761.7392	0.4111	0.3666
Ne8	0.8145	0.8903	0.9899	0.9892	1.0881	1.1677	635.7121	-1.0363	0.2332
Ne9	0.7219	0.8836	0.9980	0.9985	1.1218	1.2220	236.7705	0.3600	0.3739

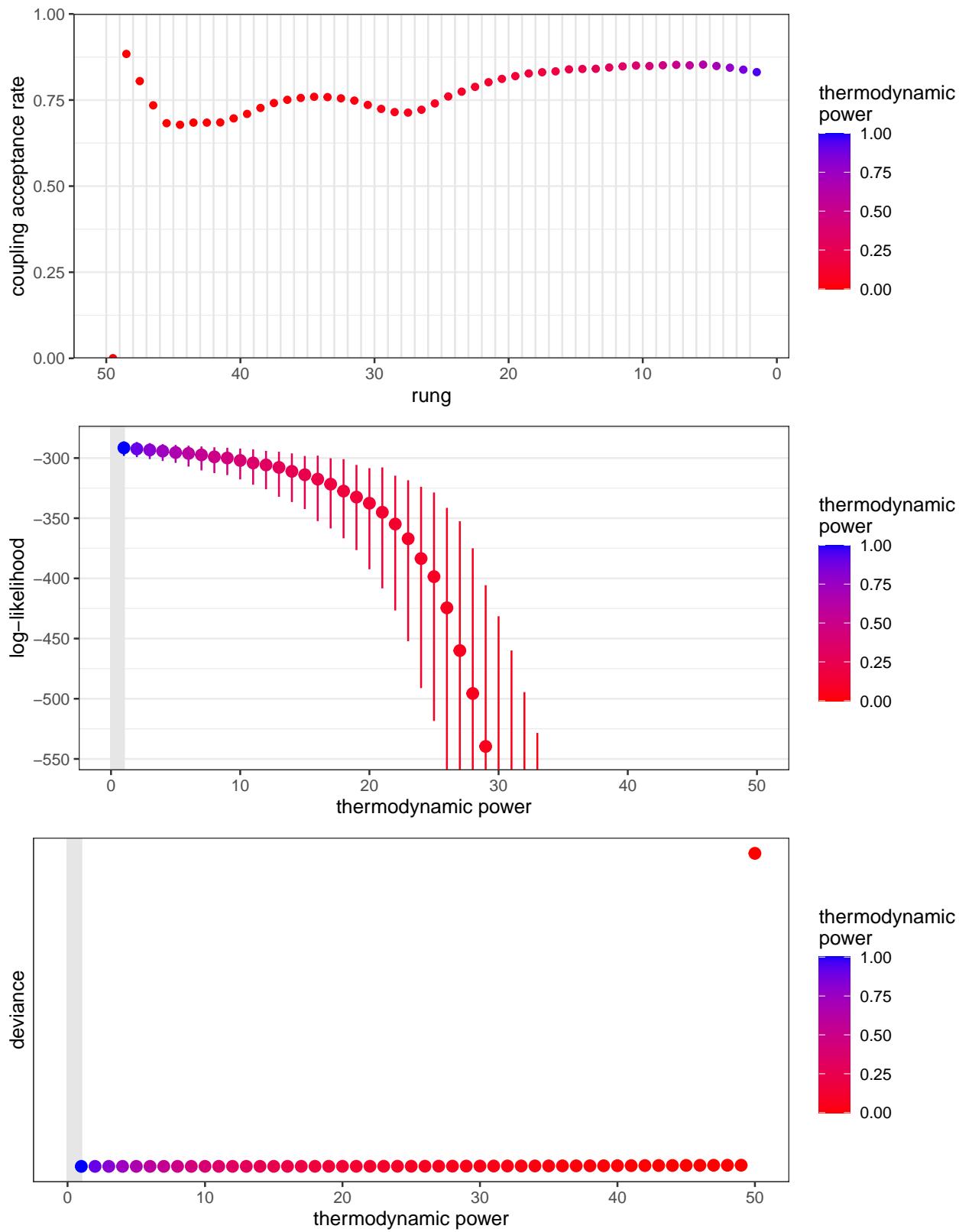
# CHE1 with the Potential for Seroreversion Included

## Fit Diagnostics

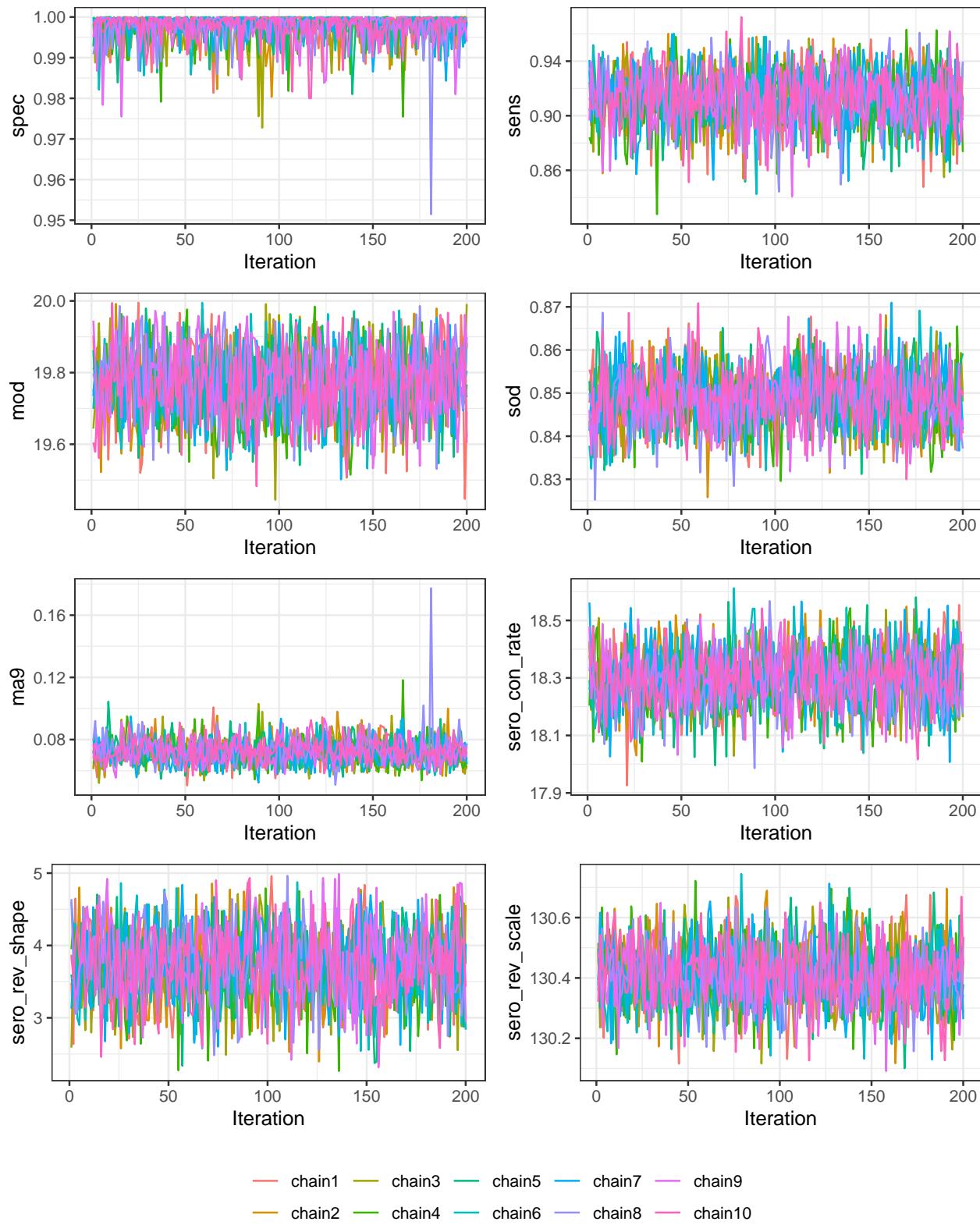
### Log Likelihood & Prior Plot



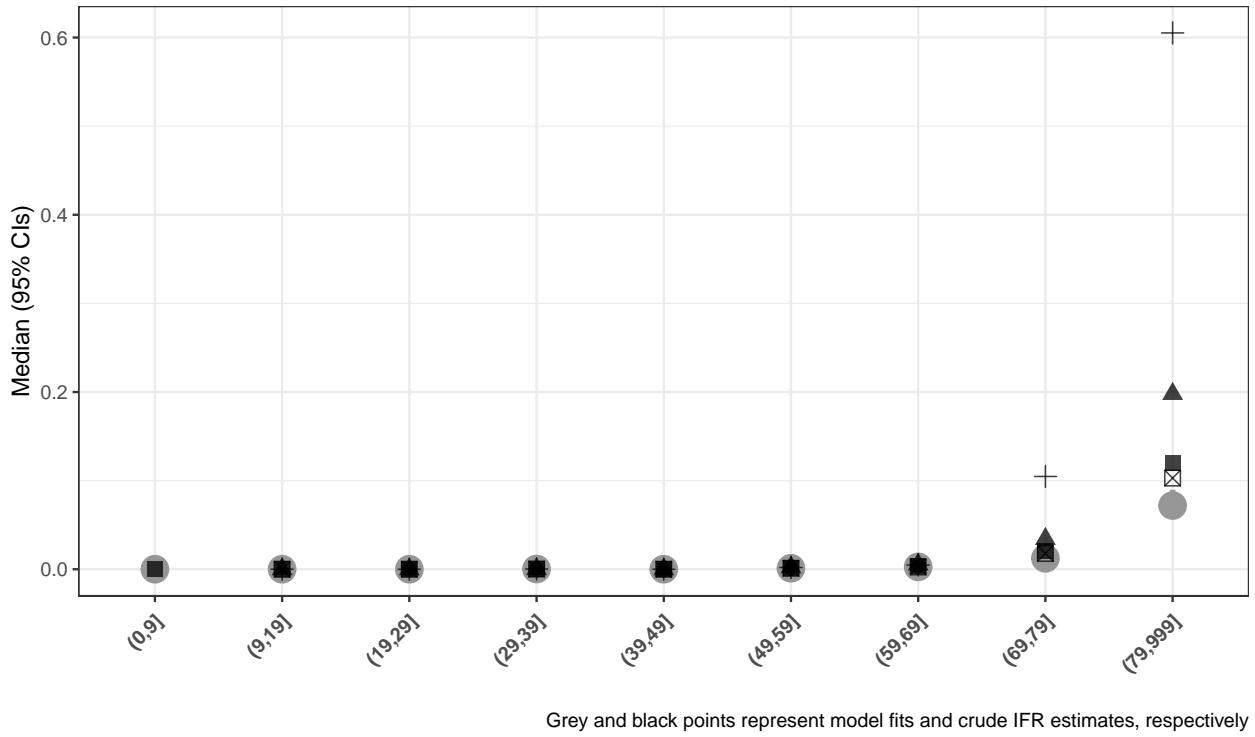
### Metropolis Coupling Acceptance Plot



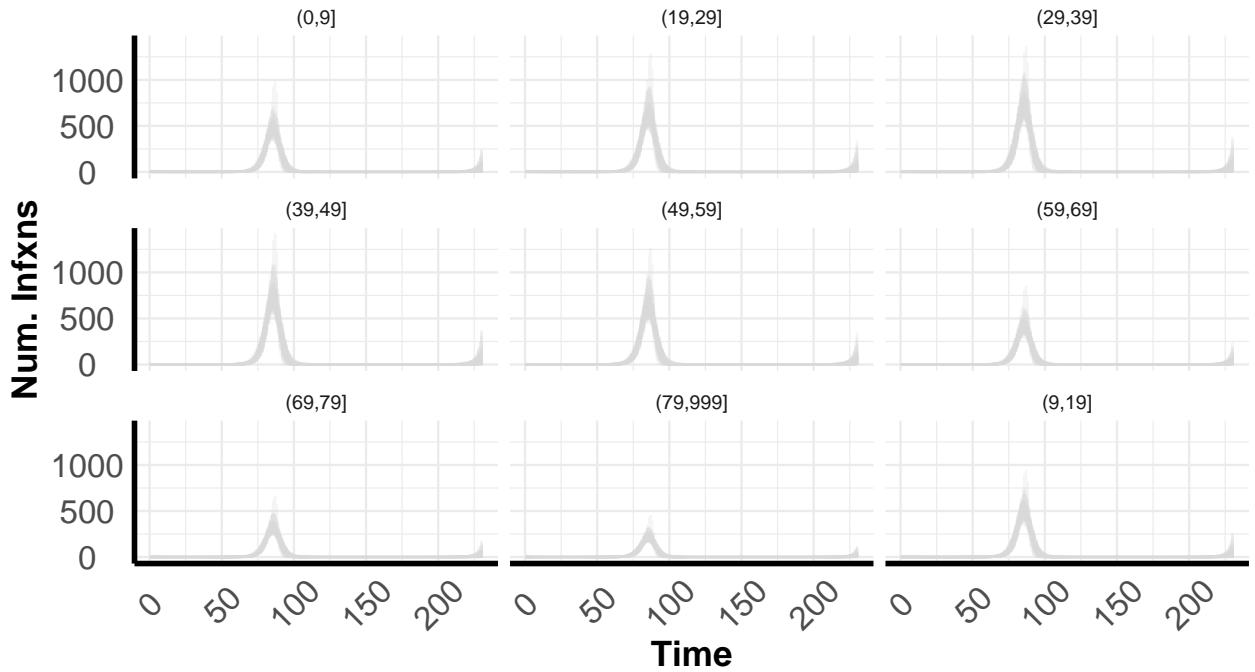
## Serological Diagnostics



## IFRs & Incidence Curve



## Posterior Draws of the Infection Curve



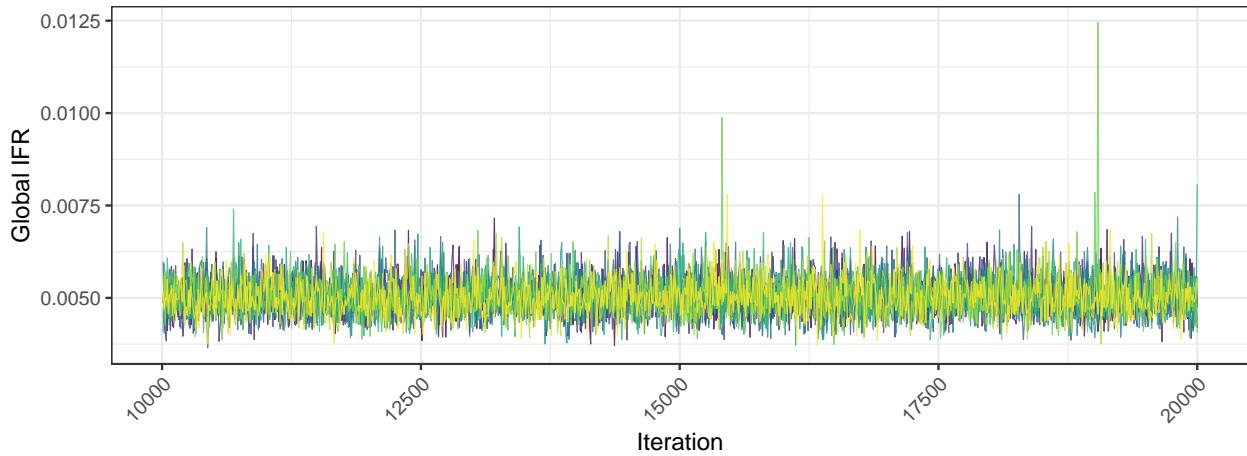
### Strata IFR

strata	param	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
(0,9]	ma1	0.0000	0.0000	0.0000	0.0000	0.0001	0.0002	8882.001	-0.2890	0.3826
(9,19]	ma2	0.0000	0.0000	0.0000	0.0000	0.0001	0.0002	9468.341	0.0888	0.3974
(19,29]	ma3	0.0000	0.0000	0.0000	0.0000	0.0001	0.0001	9268.378	-0.4514	0.3603
(29,39]	ma4	0.0000	0.0000	0.0002	0.0002	0.0006	0.0013	10000.000	1.7676	0.0836
(39,49]	ma5	0.0000	0.0000	0.0000	0.0000	0.0001	0.0001	9423.969	-0.0888	0.3974
(49,59]	ma6	0.0001	0.0005	0.0011	0.0011	0.0020	0.0029	9698.362	-2.0868	0.0452
(59,69]	ma7	0.0004	0.0014	0.0027	0.0028	0.0044	0.0072	10000.000	0.2330	0.3883
(69,79]	ma8	0.0063	0.0088	0.0124	0.0125	0.0170	0.0336	9447.888	-0.3923	0.3694
(79,999]	ma9	0.0499	0.0586	0.0719	0.0725	0.0897	0.1773	7670.126	-0.1214	0.3960

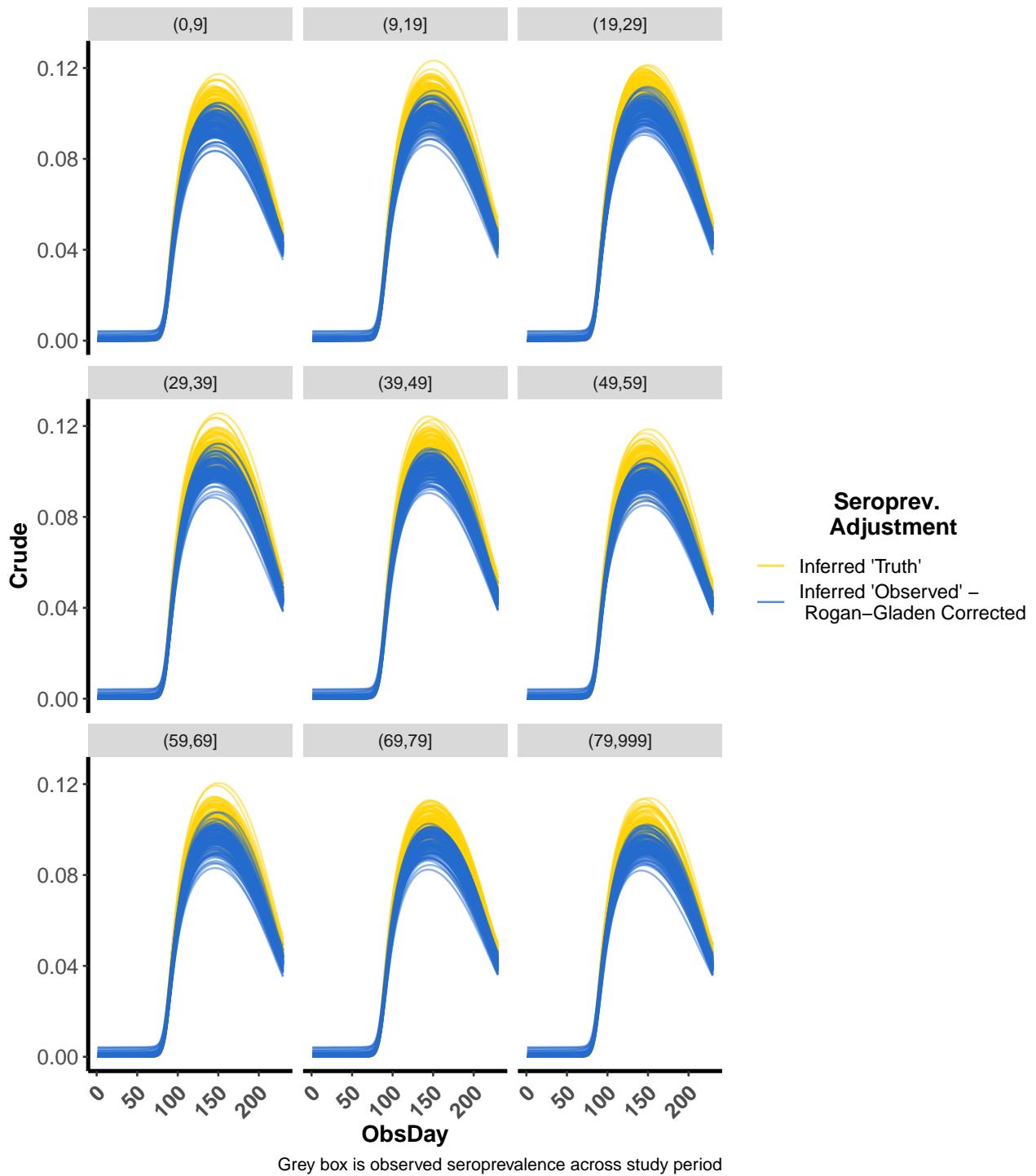
### Overall IFR

min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
0.0036	0.004	0.0048	0.0048	0.0057	0.0128	9656.964	-1.4041	0.1489

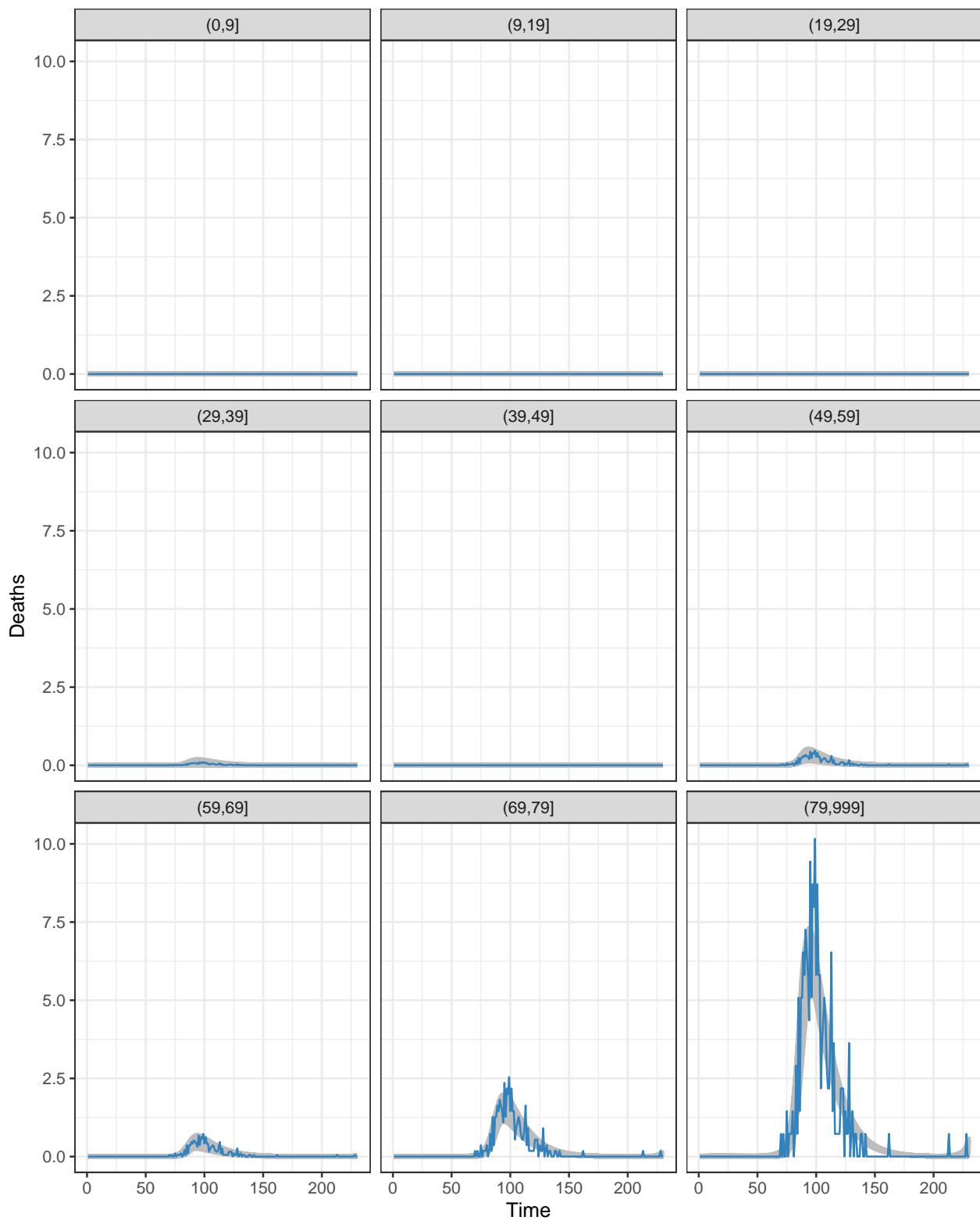
chain	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
chain1	0.0036	0.0040	0.0047	0.0048	0.0057	0.0071	670.4519	-0.9115	0.2633
chain2	0.0036	0.0041	0.0048	0.0048	0.0059	0.0067	882.5888	-0.4790	0.3557
chain3	0.0036	0.0040	0.0047	0.0048	0.0057	0.0067	1000.0000	-1.5537	0.1193
chain4	0.0037	0.0041	0.0048	0.0048	0.0058	0.0072	902.9351	-1.7677	0.0836
chain5	0.0037	0.0040	0.0048	0.0048	0.0057	0.0066	1000.0000	0.1786	0.3926
chain6	0.0036	0.0041	0.0047	0.0048	0.0058	0.0077	864.0548	1.8919	0.0666
chain7	0.0038	0.0041	0.0048	0.0048	0.0057	0.0070	823.2732	0.3620	0.3736
chain8	0.0036	0.0040	0.0047	0.0048	0.0057	0.0128	872.5046	-0.4636	0.3583
chain9	0.0037	0.0041	0.0048	0.0048	0.0058	0.0065	691.4965	-0.8118	0.2869
chain10	0.0036	0.0040	0.0048	0.0048	0.0056	0.0075	900.7785	-0.5562	0.3418



### Seroprevalence Observed vs. Inferred True Prev



## Death Posterior Predictive Check



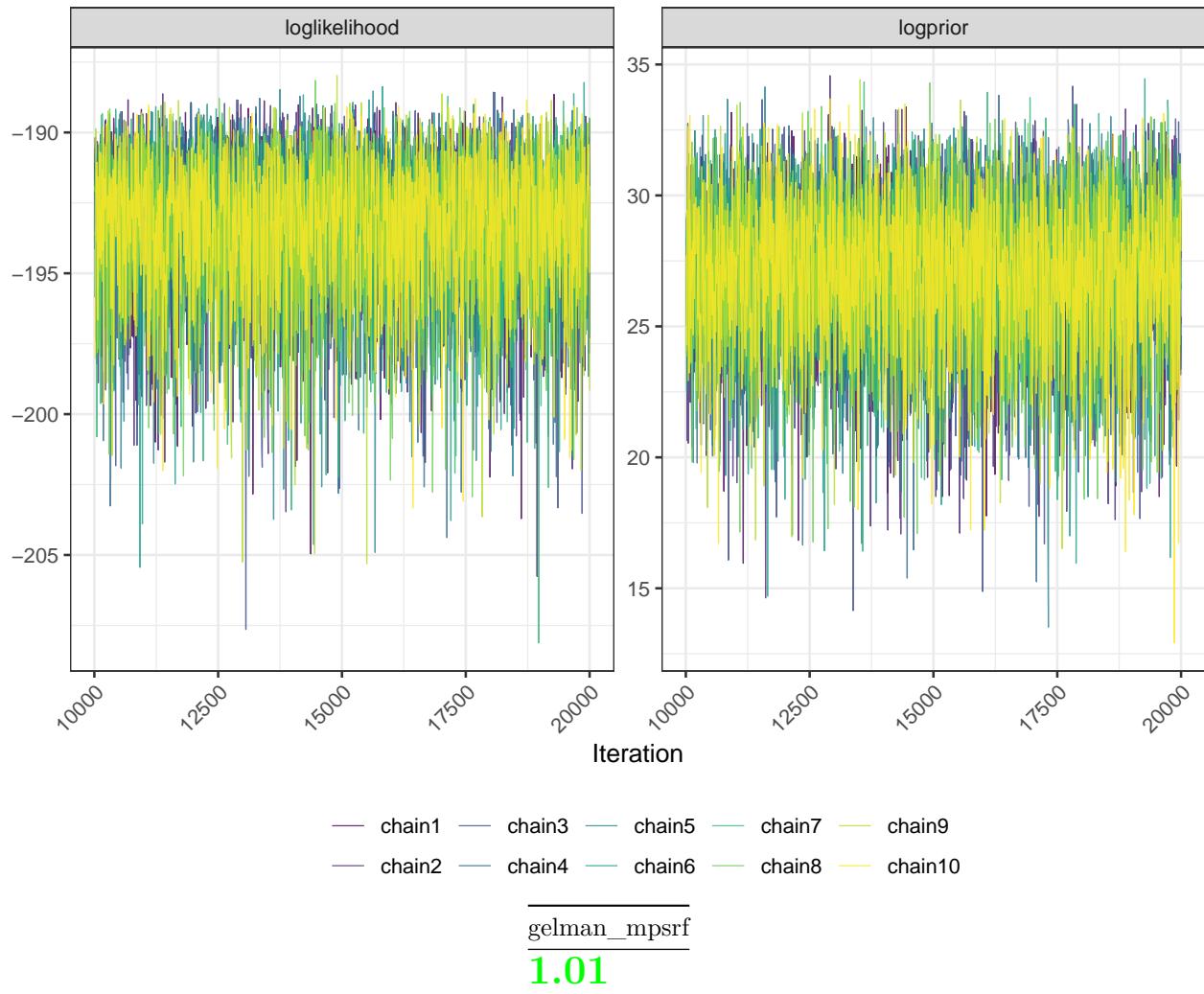
## Additional Parameters

param	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
x1	1.2841	4.9078	64.7704	63.8566	81.2996	86.5476	1338.9999	-2.2996	0.0284
x2	64.7057	77.7494	88.5177	88.3953	98.2619	103.5548	1562.9866	-1.2775	0.1764
x3	88.6689	93.2441	103.4413	103.6343	114.9679	229.0589	2174.8654	-0.1092	0.3966
x4	214.0005	214.5249	222.6283	222.3954	229.6677	229.9986	4094.1458	0.3482	0.3755
y1	0.0003	0.0598	1.5040	1.6919	4.3804	6.6404	8000.4479	2.3632	0.0244
y2	0.0004	0.1427	3.4519	3.6145	7.8069	8.9199	1478.7085	-0.6629	0.3202
y3	2.4131	5.3972	8.0782	7.7932	8.6918	9.2515	683.2331	2.3165	0.0273
y4	0.0010	0.1187	2.6189	2.8090	6.5424	7.9838	2911.6141	2.3555	0.0249
y5	0.0004	0.5079	3.6167	3.5904	6.3919	8.0542	6098.2646	2.5278	0.0163
Ne1	0.7924	0.8784	0.9752	0.9754	1.0752	1.1644	10000.0000	0.3523	0.3749
Ne2	0.8259	0.9164	1.0111	1.0113	1.1064	1.1935	10000.0000	0.6582	0.3212
Ne3	0.8592	0.9514	1.0390	1.0394	1.1286	1.1992	9613.6423	0.7153	0.3089
Ne4	0.8662	0.9528	1.0402	1.0403	1.1300	1.2127	9389.8899	0.6143	0.3303
Ne5	0.8458	0.9498	1.0394	1.0392	1.1290	1.2187	10000.0000	0.2649	0.3852
Ne6	0.7723	0.8932	0.9836	0.9842	1.0775	1.1446	9659.5096	-0.5952	0.3342
Ne7	0.7941	0.8909	0.9862	0.9853	1.0766	1.1676	10000.0000	-1.7237	0.0903
Ne8	0.7869	0.8630	0.9582	0.9588	1.0569	1.1641	10000.0000	-0.9014	0.2657
Ne9	0.7687	0.8606	0.9581	0.9584	1.0549	1.1521	10000.0000	-1.7945	0.0797

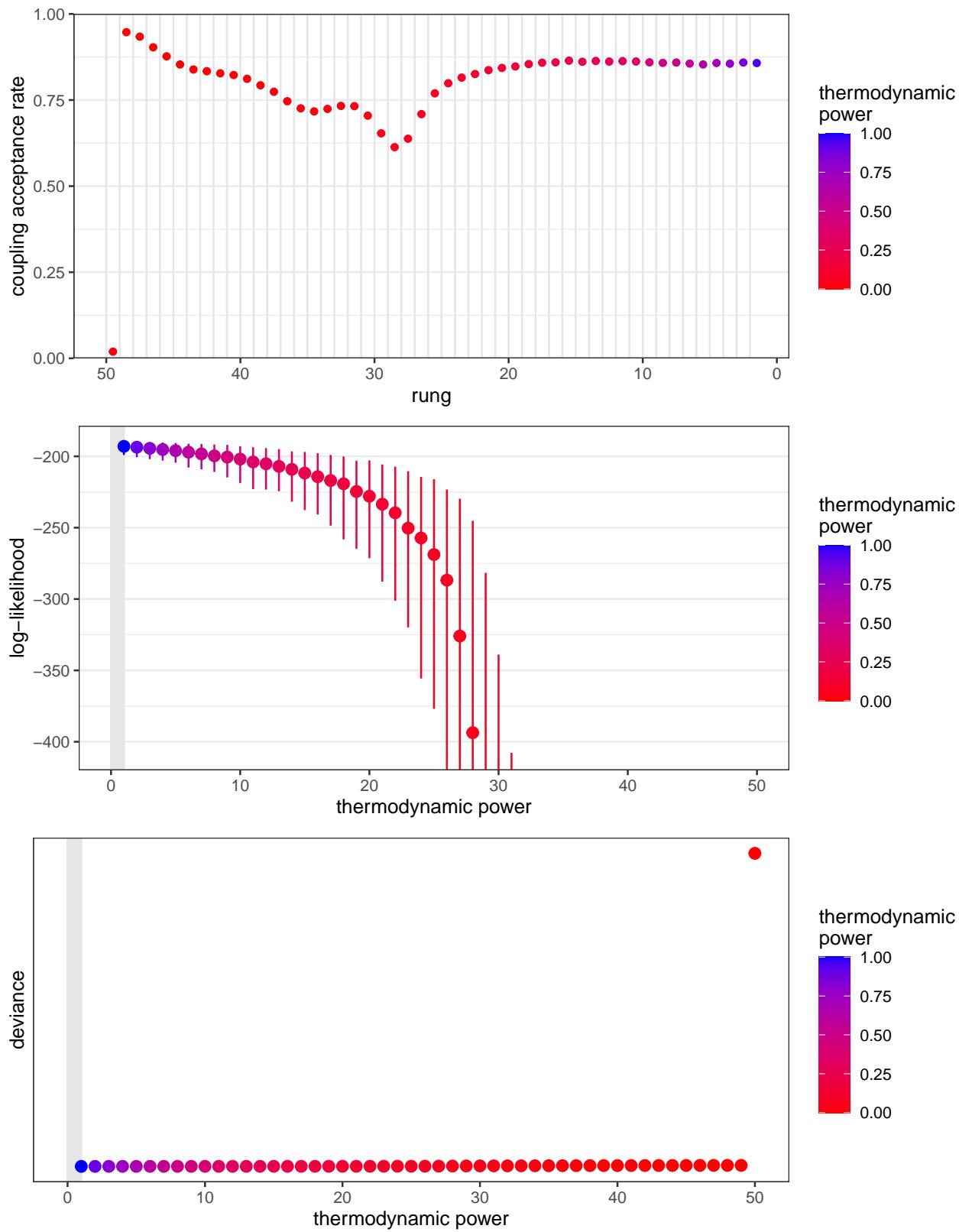
## CHE2 with the Potential for Seroreversion Included

### Fit Diagnostics

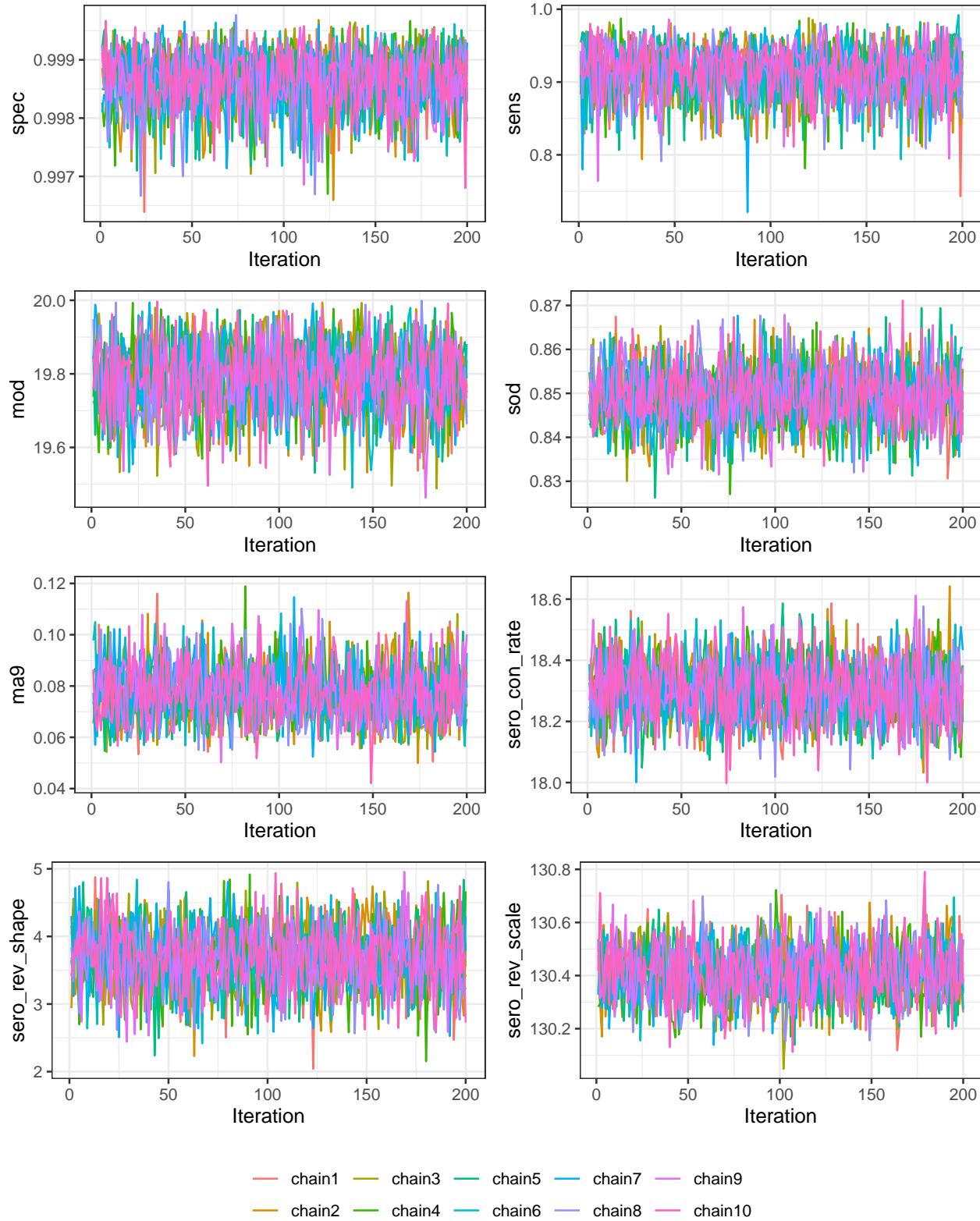
#### Log Likelihood & Prior Plot



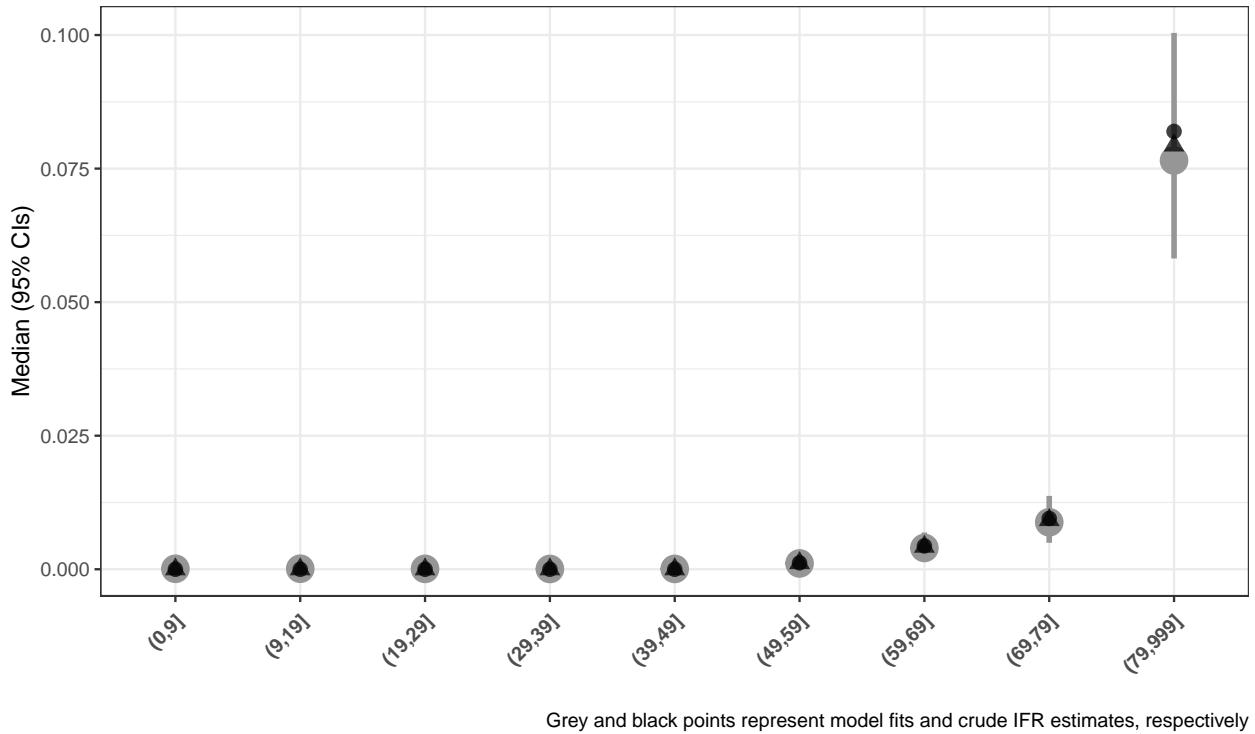
### Metropolis Coupling Acceptance Plot



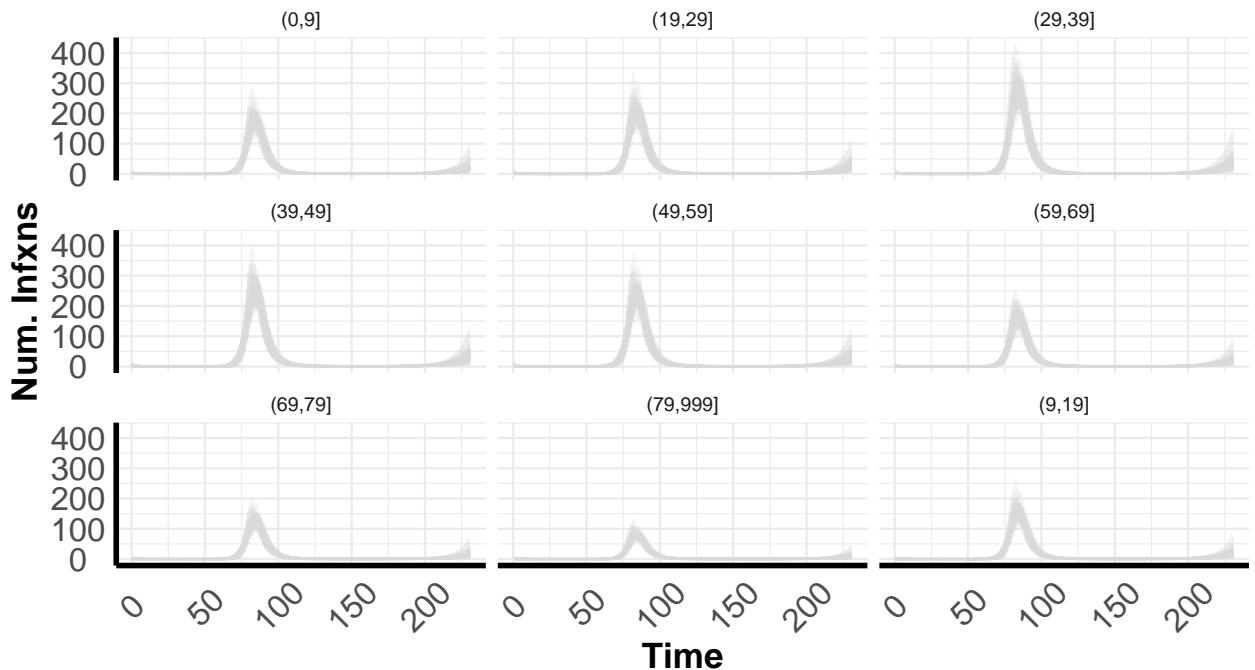
## Serological Diagnostics



## IFRs & Incidence Curve



## Posterior Draws of the Infection Curve



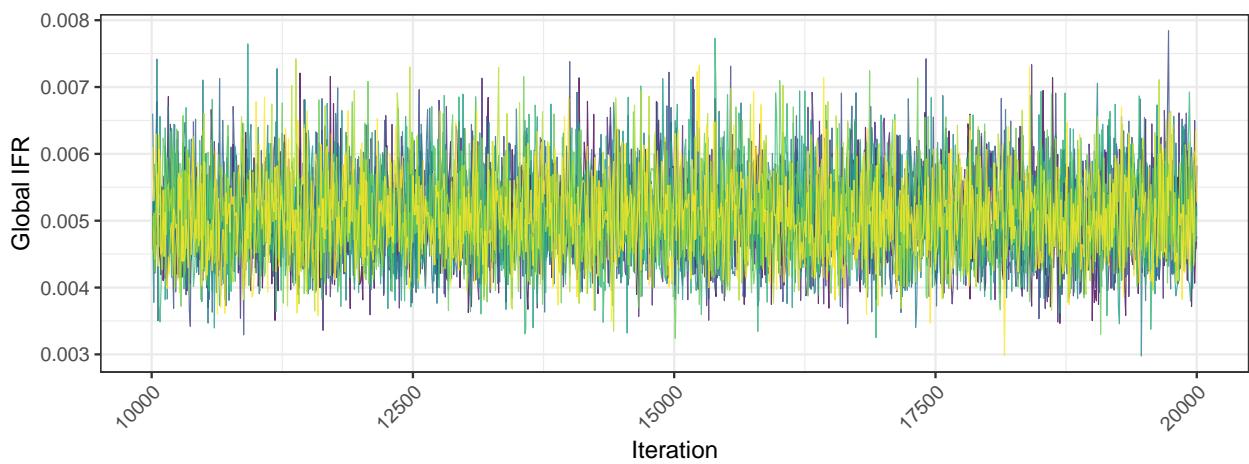
### Strata IFR

strata	param	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
(0,9]	ma1	0.0000	0.0000	0.0001	0.0001	0.0002	0.0002	9320.158	0.4714	0.3570
(9,19]	ma2	0.0000	0.0000	0.0001	0.0001	0.0002	0.0003	9099.982	-2.0555	0.0482
(19,29]	ma3	0.0000	0.0000	0.0001	0.0001	0.0002	0.0002	9579.138	-3.2924	0.0018
(29,39]	ma4	0.0000	0.0000	0.0001	0.0001	0.0001	0.0001	8809.314	2.2434	0.0322
(39,49]	ma5	0.0000	0.0000	0.0001	0.0001	0.0001	0.0002	9426.926	-1.4448	0.1405
(49,59]	ma6	0.0000	0.0002	0.0011	0.0011	0.0024	0.0041	9684.121	1.4190	0.1458
(59,69]	ma7	0.0003	0.0018	0.0040	0.0041	0.0069	0.0101	10000.000	-0.9883	0.2448
(69,79]	ma8	0.0023	0.0050	0.0088	0.0090	0.0137	0.0206	9608.916	-0.8004	0.2896
(79,999]	ma9	0.0405	0.0582	0.0765	0.0773	0.1004	0.1251	7742.069	-2.2295	0.0332

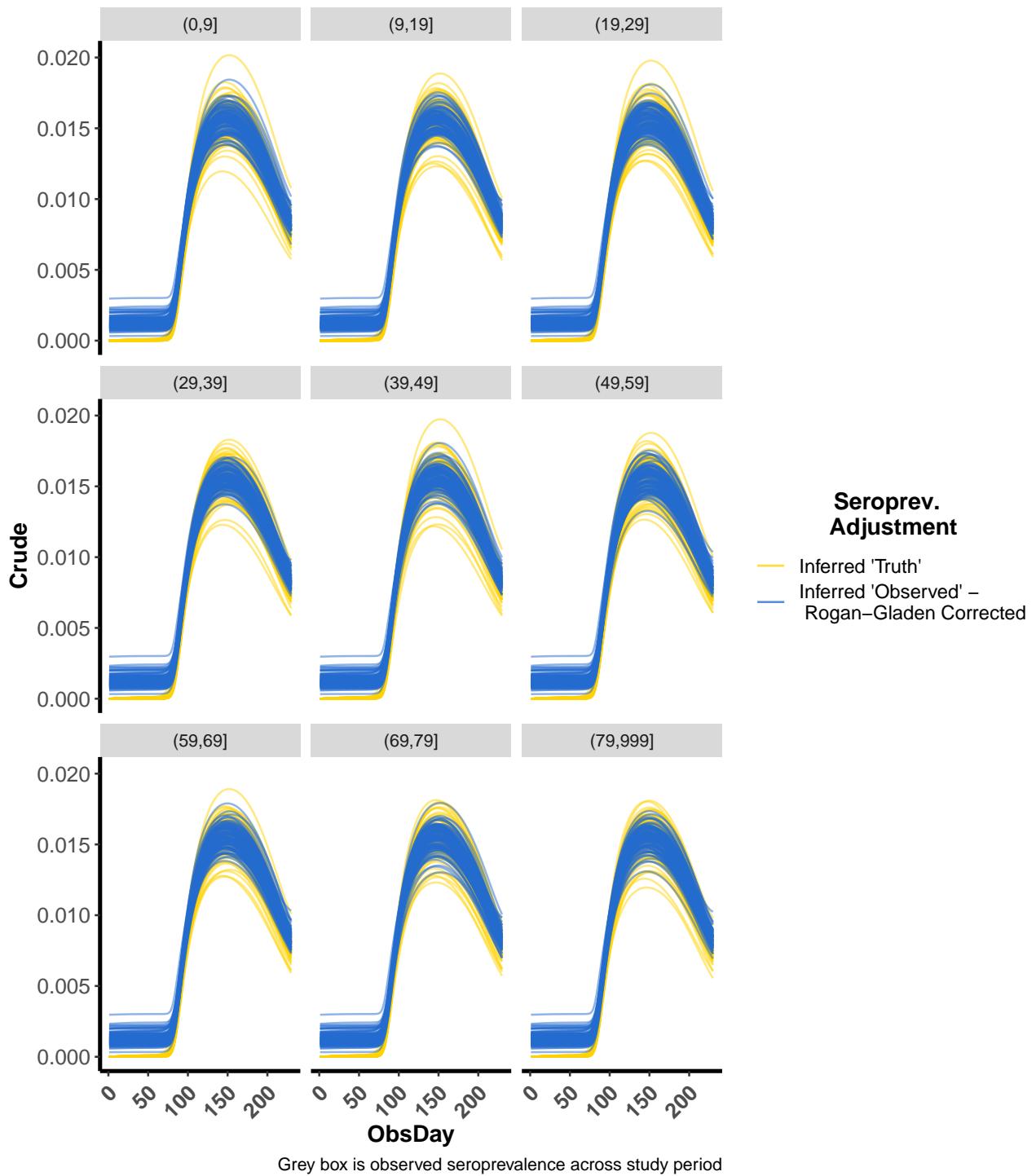
### Overall IFR

min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
0.0032	0.0039	0.005	0.005	0.0064	0.0078	9383.606	-1.182	0.1984

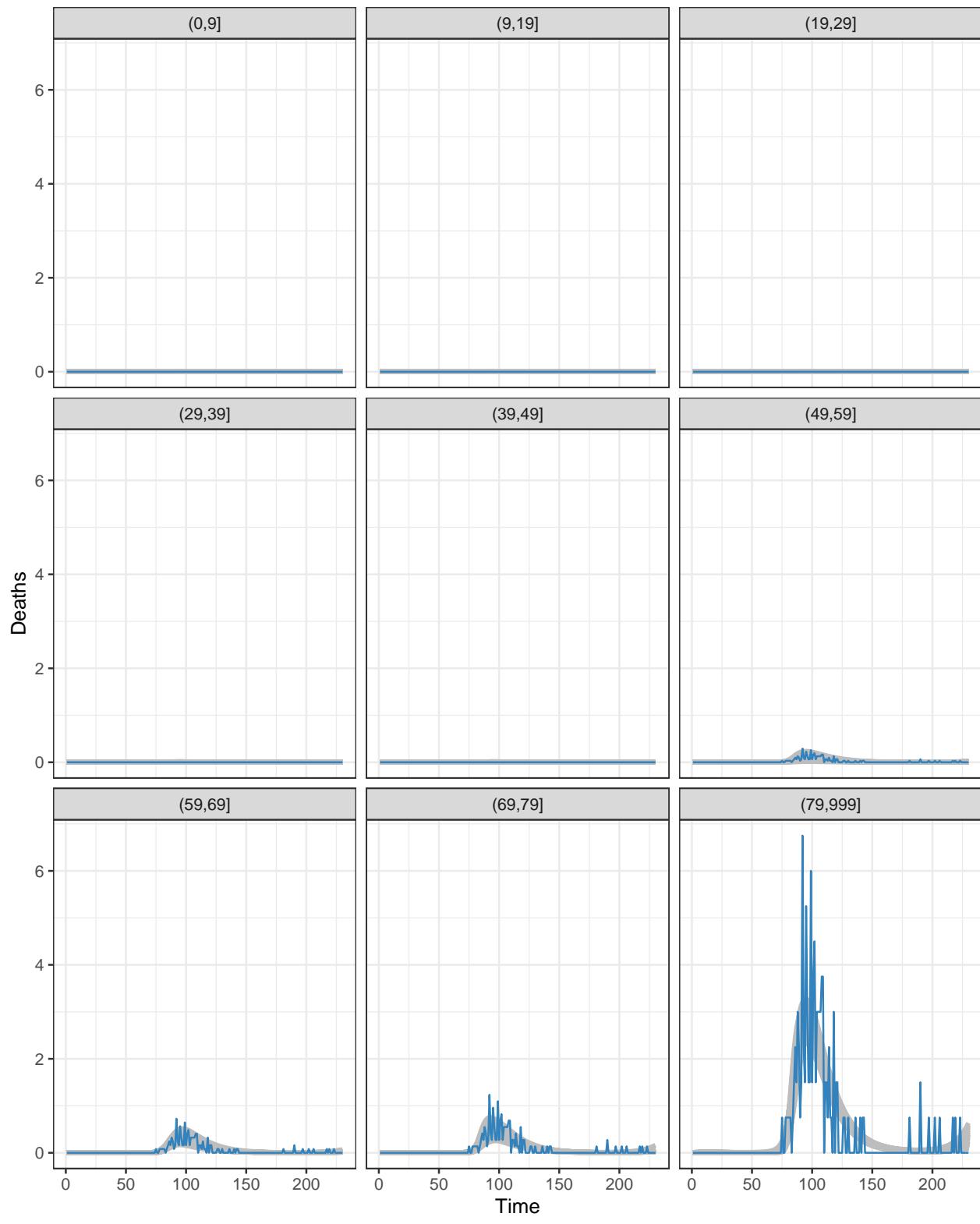
chain	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
chain1	0.0034	0.0039	0.005	0.0050	0.0063	0.0072	866.0216	-0.7133	0.3093
chain2	0.0035	0.0039	0.005	0.0050	0.0063	0.0075	886.4018	-0.8893	0.2686
chain3	0.0034	0.0040	0.005	0.0051	0.0063	0.0078	1000.0000	-0.2054	0.3906
chain4	0.0036	0.0040	0.005	0.0050	0.0063	0.0071	891.6041	1.1736	0.2004
chain5	0.0032	0.0040	0.005	0.0051	0.0063	0.0072	1000.0000	-0.2837	0.3832
chain6	0.0033	0.0039	0.005	0.0050	0.0063	0.0072	1000.0000	0.5494	0.3431
chain7	0.0032	0.0039	0.005	0.0050	0.0066	0.0077	887.2569	-1.4807	0.1333
chain8	0.0035	0.0039	0.005	0.0050	0.0064	0.0071	1000.0000	0.2622	0.3855
chain9	0.0035	0.0040	0.005	0.0051	0.0065	0.0073	684.9517	-0.9274	0.2595
chain10	0.0033	0.0039	0.005	0.0050	0.0063	0.0070	842.5751	-0.9401	0.2565



### Seroprevalence Observed vs. Inferred True Prev



## Death Posterior Predictive Check



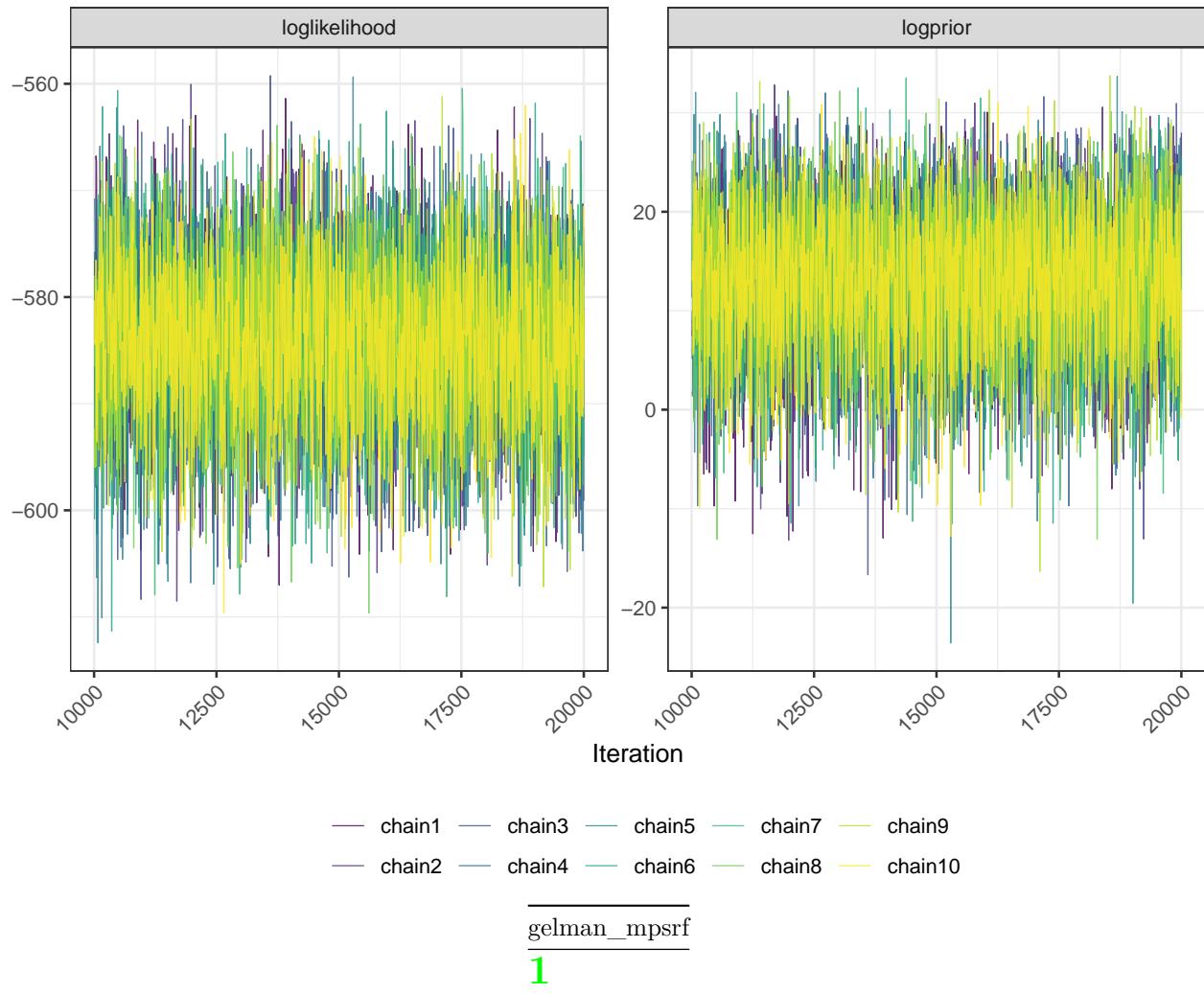
## Additional Parameters

param	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
x1	1.0757	2.1209	62.9484	57.6474	74.2935	81.8907	2552.713	1.9786	0.0563
x2	61.8865	72.0757	80.7701	80.9815	90.9822	103.6619	3983.004	-1.1756	0.1999
x3	80.7825	87.7635	98.1882	98.9245	114.6092	132.2569	4307.771	-0.5305	0.3466
x4	214.0013	214.3038	220.9114	221.2905	229.4537	229.9995	5502.525	0.7403	0.3033
y1	0.0000	0.0853	1.7570	1.9252	4.8212	7.0187	6577.611	0.0887	0.3974
y2	0.0005	0.0791	1.7407	2.0345	5.3700	7.2781	4377.311	0.4560	0.3596
y3	3.7616	5.4004	7.1128	6.9408	7.6774	8.2009	2507.923	-0.5165	0.3491
y4	0.0646	2.6609	5.5845	5.4047	7.0536	7.8331	4703.629	0.4376	0.3625
y5	0.7517	3.0205	4.4935	4.4975	5.9629	7.1061	8535.177	-0.1821	0.3924
Ne1	0.7996	0.9059	1.0002	1.0000	1.0954	1.1714	10000.000	-0.6725	0.3182
Ne2	0.8029	0.9058	0.9993	0.9995	1.0931	1.1735	10000.000	-1.1520	0.2055
Ne3	0.8198	0.9057	0.9989	0.9995	1.0942	1.1875	10000.000	0.5518	0.3426
Ne4	0.7839	0.9037	0.9991	0.9990	1.0925	1.1721	10065.744	-0.1036	0.3968
Ne5	0.8241	0.9049	1.0002	1.0006	1.0960	1.1705	9597.186	-1.0711	0.2248
Ne6	0.7833	0.9032	1.0003	1.0002	1.0958	1.1980	10000.000	-0.0431	0.3986
Ne7	0.8172	0.9068	1.0006	1.0009	1.0959	1.1931	10000.000	-1.1663	0.2021
Ne8	0.7922	0.9063	1.0006	1.0004	1.0953	1.1846	10000.000	-1.3443	0.1616
Ne9	0.7829	0.9053	0.9994	0.9997	1.0930	1.1887	9416.867	-0.6138	0.3304

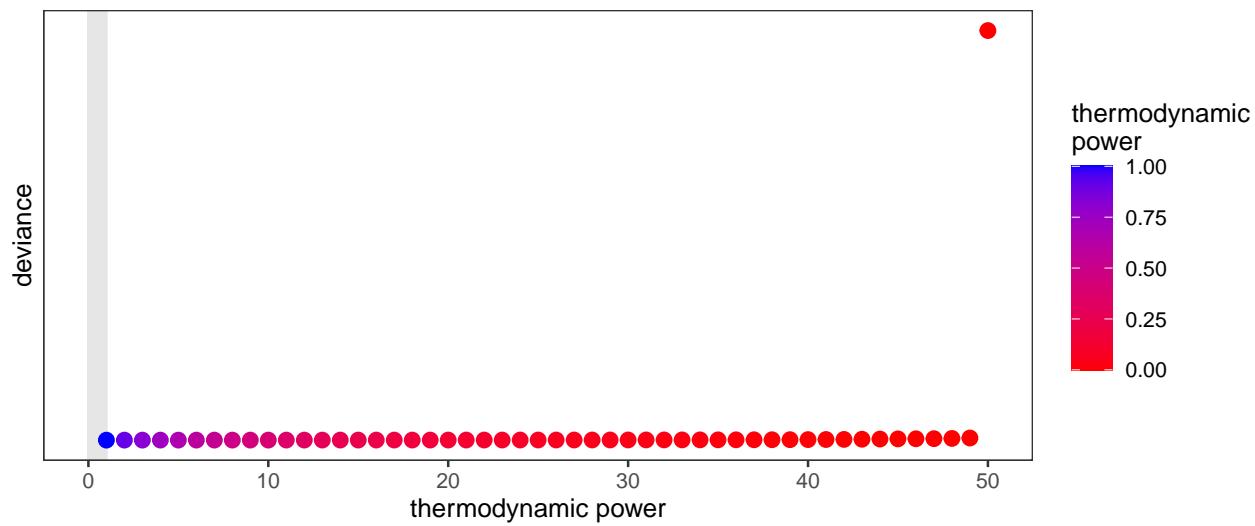
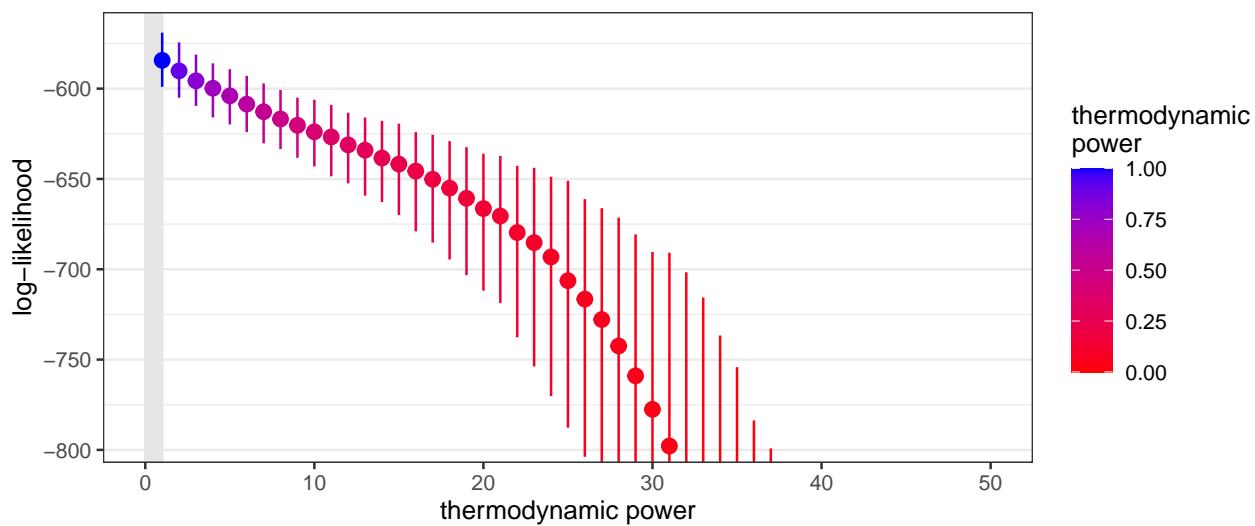
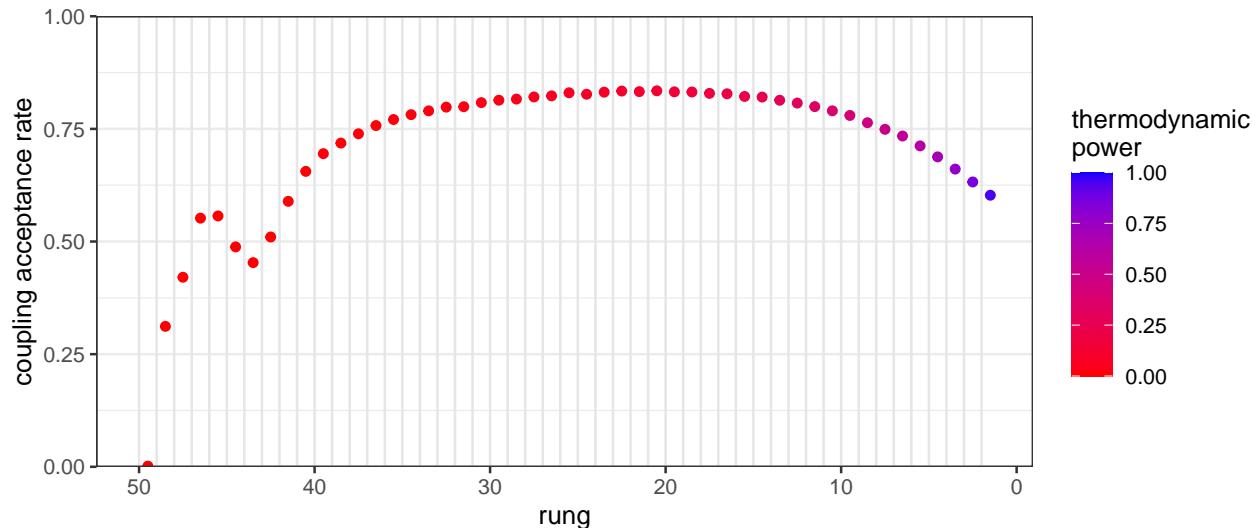
# CHN1 with the Potential for Seroreversion Included

## Fit Diagnostics

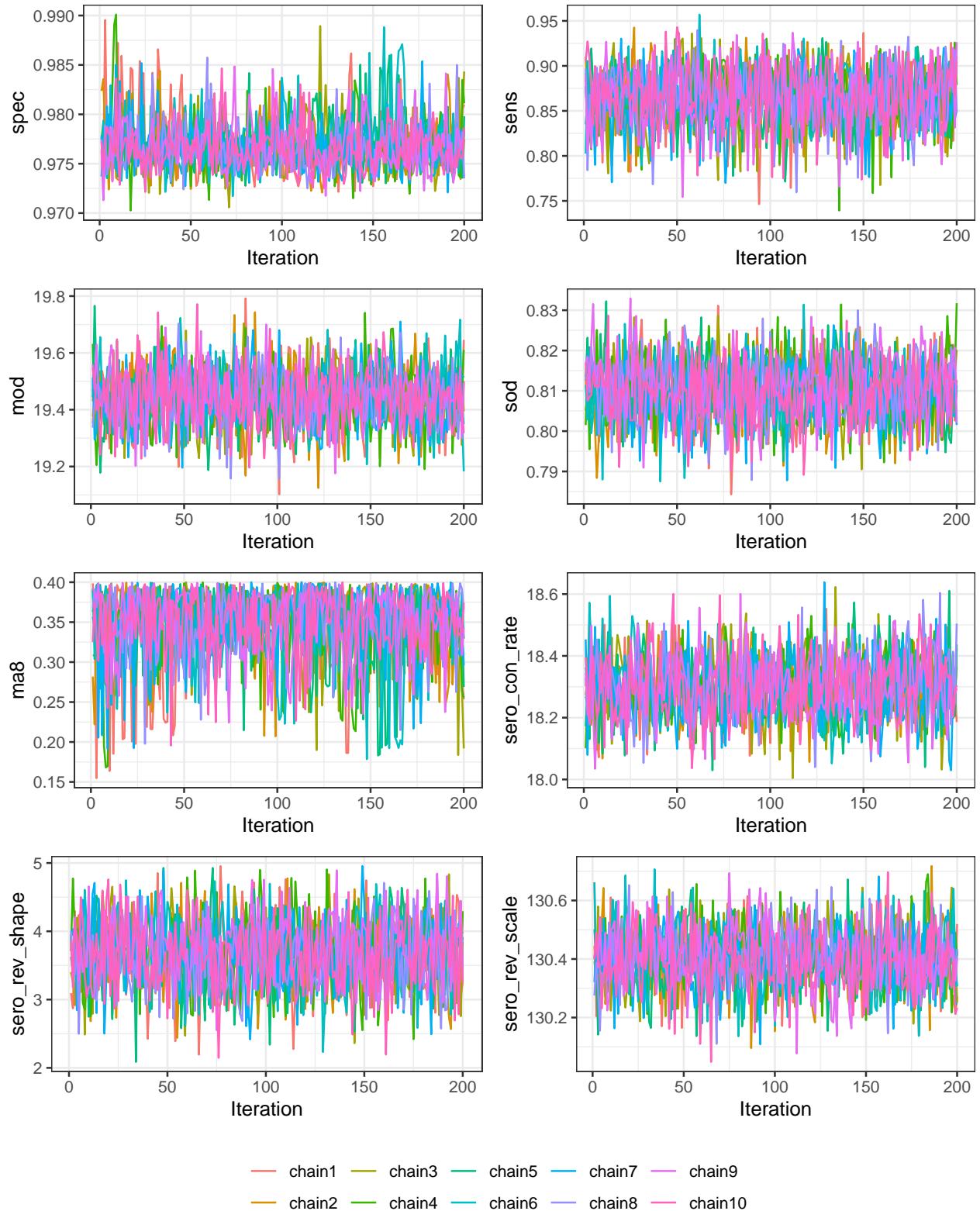
### Log Likelihood & Prior Plot



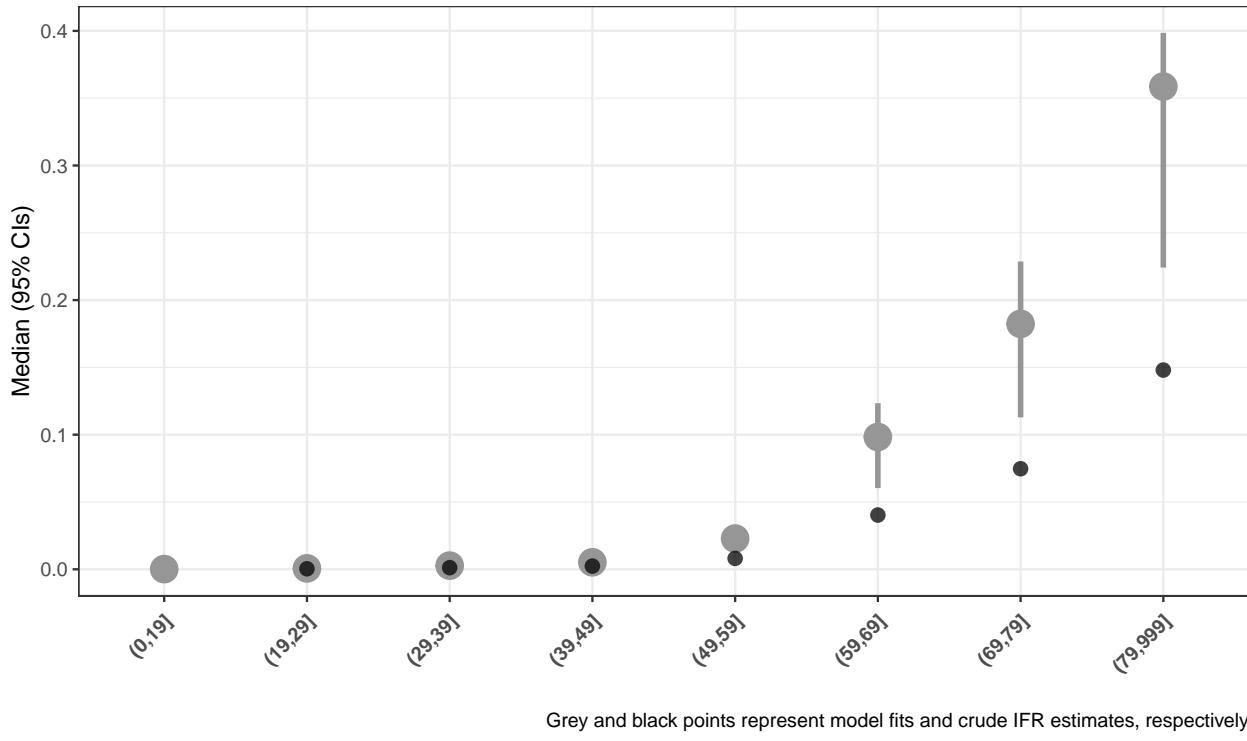
### Metropolis Coupling Acceptance Plot



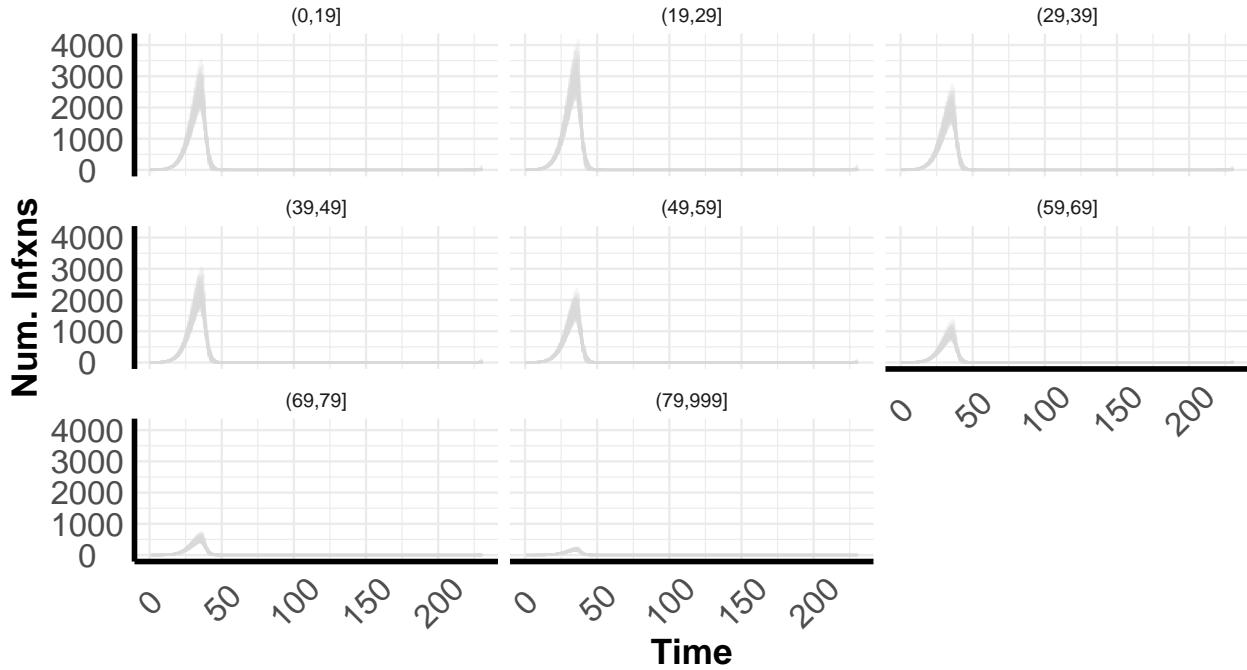
## Serological Diagnostics



## IFRs & Incidence Curve



## Posterior Draws of the Infection Curve



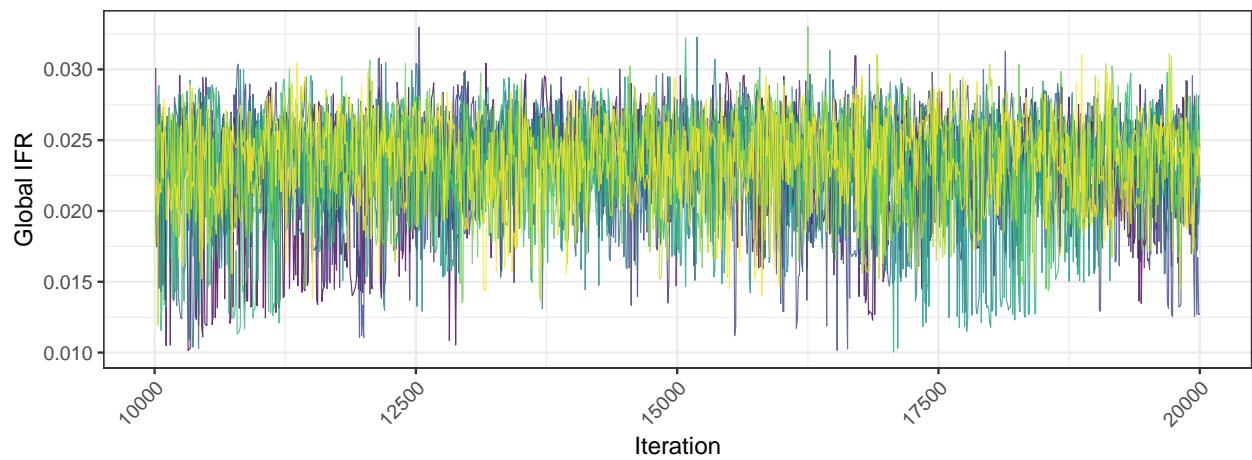
### Strata IFR

strata	param	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
(0,19]	ma1	0.0000	0.0000	0.0001	0.0001	0.0003	0.0005	8580.3775	-1.0664	0.2259
(19,29]	ma2	0.0002	0.0004	0.0007	0.0007	0.0011	0.0015	2942.7697	-1.2789	0.1761
(29,39]	ma3	0.0010	0.0016	0.0027	0.0027	0.0038	0.0047	1999.8909	-1.7722	0.0830
(39,49]	ma4	0.0019	0.0032	0.0052	0.0052	0.0068	0.0085	1660.4209	-1.5304	0.1237
(49,59]	ma5	0.0089	0.0140	0.0228	0.0225	0.0289	0.0348	1398.2329	-1.3105	0.1690
(59,69]	ma6	0.0393	0.0603	0.0983	0.0968	0.1234	0.1576	1349.5304	-1.1701	0.2012
(69,79]	ma7	0.0763	0.1129	0.1823	0.1794	0.2287	0.2776	1387.2746	-1.2631	0.1797
(79,999]	ma8	0.1523	0.2241	0.3587	0.3459	0.3985	0.4000	759.8851	-1.9001	0.0656

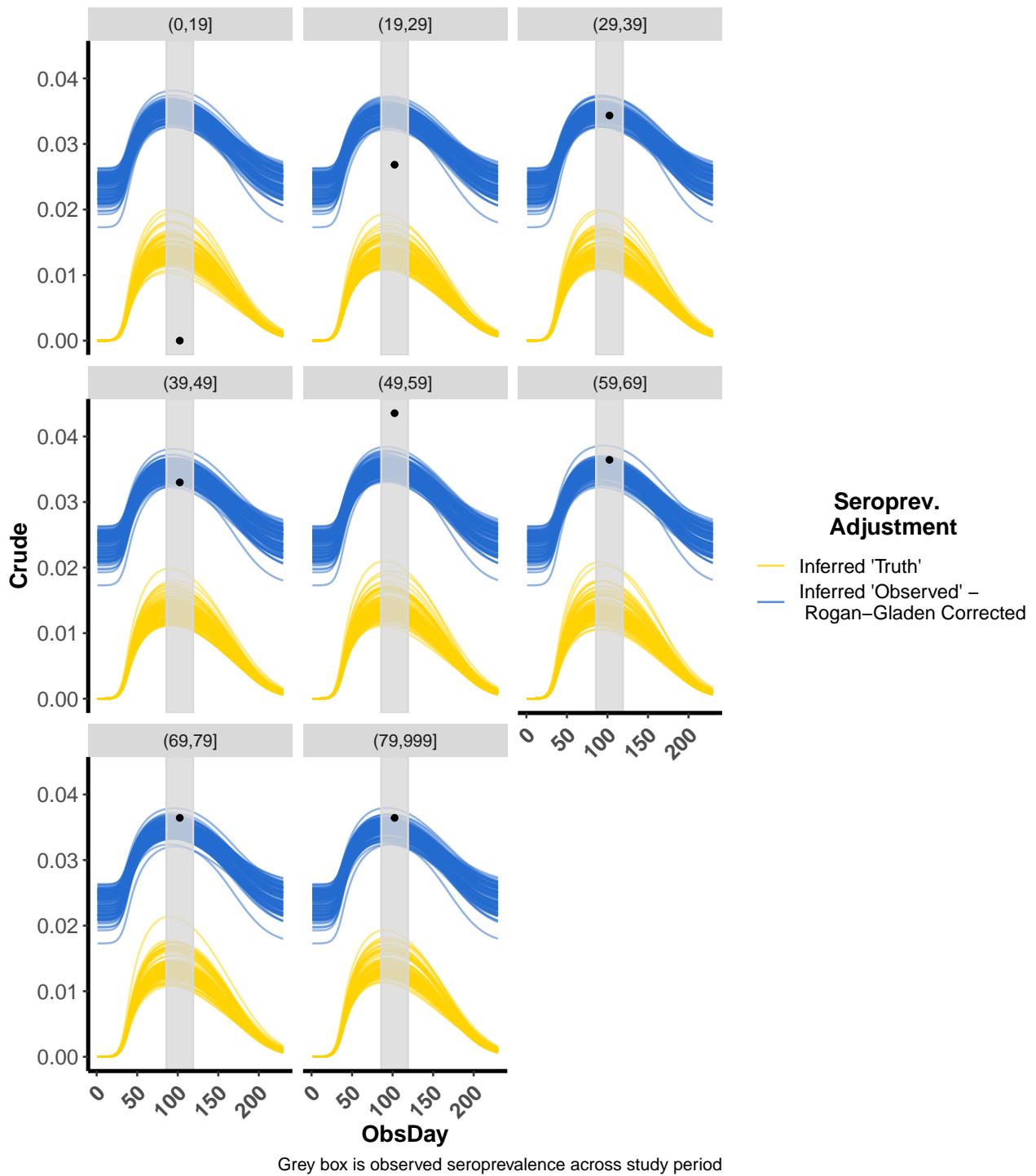
### Overall IFR

min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
0.0099	0.0149	0.024	0.0235	0.0289	0.0342	3297.75	-4.6365	0

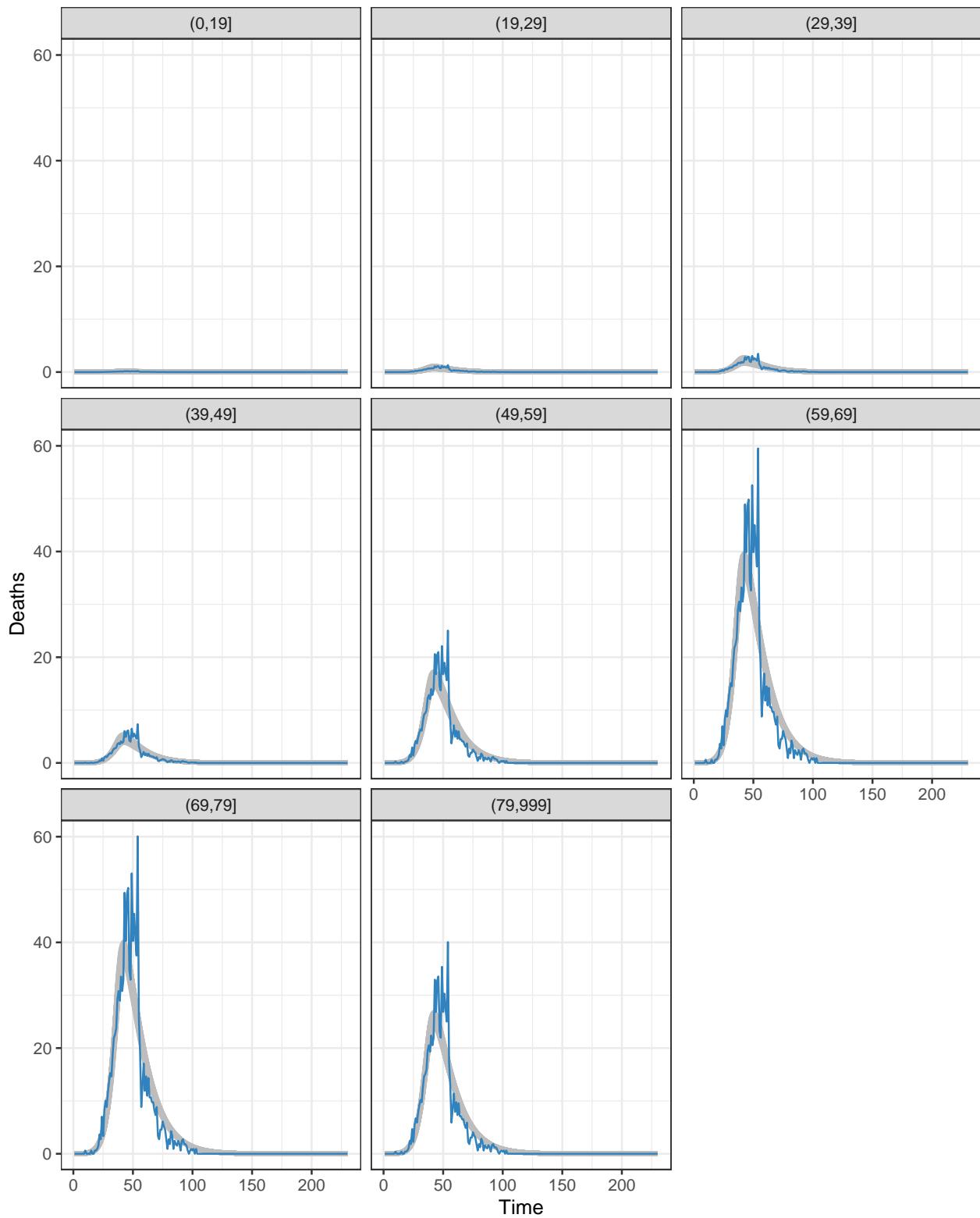
chain	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
chain1	0.0103	0.0131	0.0239	0.0230	0.0288	0.0322	93.8030	-2.4062	0.0221
chain2	0.0133	0.0159	0.0242	0.0237	0.0288	0.0302	393.3995	0.6426	0.3245
chain3	0.0099	0.0139	0.0247	0.0238	0.0291	0.0327	169.5197	-0.4733	0.3567
chain4	0.0102	0.0160	0.0238	0.0234	0.0287	0.0313	95.5207	-1.5071	0.1281
chain5	0.0122	0.0149	0.0238	0.0233	0.0288	0.0312	138.8971	1.1541	0.2050
chain6	0.0101	0.0133	0.0236	0.0230	0.0287	0.0317	118.1852	1.7162	0.0915
chain7	0.0112	0.0136	0.0239	0.0233	0.0287	0.0322	214.9197	-4.9008	0.0000
chain8	0.0139	0.0175	0.0242	0.0239	0.0290	0.0342	430.9565	-1.6418	0.1037
chain9	0.0118	0.0166	0.0240	0.0236	0.0287	0.0314	173.3480	-1.0868	0.2210
chain10	0.0140	0.0168	0.0239	0.0237	0.0292	0.0313	327.2329	-1.3572	0.1588



### 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)

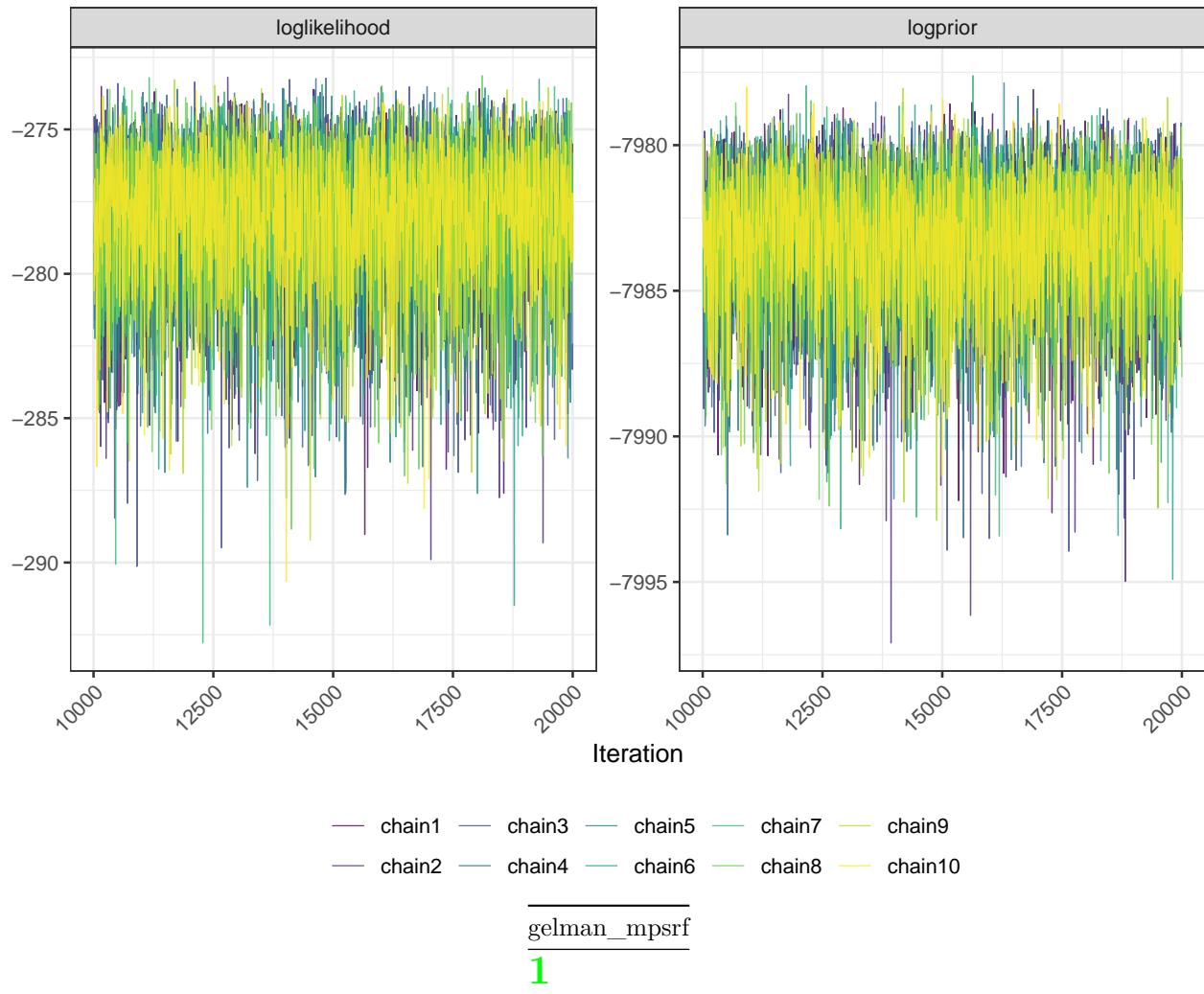
## Additional Parameters

param	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
x1	1.1956	5.0892	28.9549	24.9523	35.8332	38.4090	992.0626	-2.0930	0.0446
x2	29.7719	34.2120	36.8939	38.4674	46.3786	52.8878	1114.8039	2.3644	0.0244
x3	40.3174	43.9546	50.8673	51.8594	56.9796	229.7809	1233.1344	2.8100	0.0077
x4	214.0377	216.5705	225.8417	225.0712	229.8082	229.9971	3518.4674	0.4499	0.3605
y1	0.0041	0.7963	2.2161	2.1897	3.4975	4.8456	3939.2551	1.2671	0.1788
y2	1.1842	3.1051	9.0110	7.8831	9.7427	10.2115	1086.7614	-2.3824	0.0234
y3	2.3577	5.6147	9.1984	8.6667	9.8118	10.4108	1200.8914	-2.0504	0.0487
y4	0.0005	0.0929	2.0581	2.3548	6.0671	7.8557	1802.9615	-0.1710	0.3932
y5	0.0002	0.0617	1.3641	1.6079	4.4454	8.2633	7303.4781	0.9597	0.2517
Ne1	0.8081	0.8982	0.9962	0.9967	1.0955	1.1734	9539.9430	0.7843	0.2933
Ne2	0.7996	0.8815	0.9783	0.9780	1.0744	1.2037	9251.7546	-2.1379	0.0406
Ne3	0.7875	0.9008	0.9959	0.9956	1.0901	1.1724	10000.0000	-1.6761	0.0979
Ne4	0.7930	0.8963	0.9918	0.9914	1.0857	1.1882	8763.9016	0.8976	0.2667
Ne5	0.8465	0.9297	1.0284	1.0285	1.1254	1.2067	8389.0296	1.6813	0.0971
Ne6	0.8094	0.8990	0.9983	0.9985	1.0959	1.1876	6362.1275	-0.3345	0.3772
Ne7	0.8308	0.8993	0.9983	0.9983	1.0974	1.1854	6561.6827	0.1231	0.3959
Ne8	0.8116	0.9164	1.0130	1.0132	1.1101	1.2069	5015.1386	1.7486	0.0865

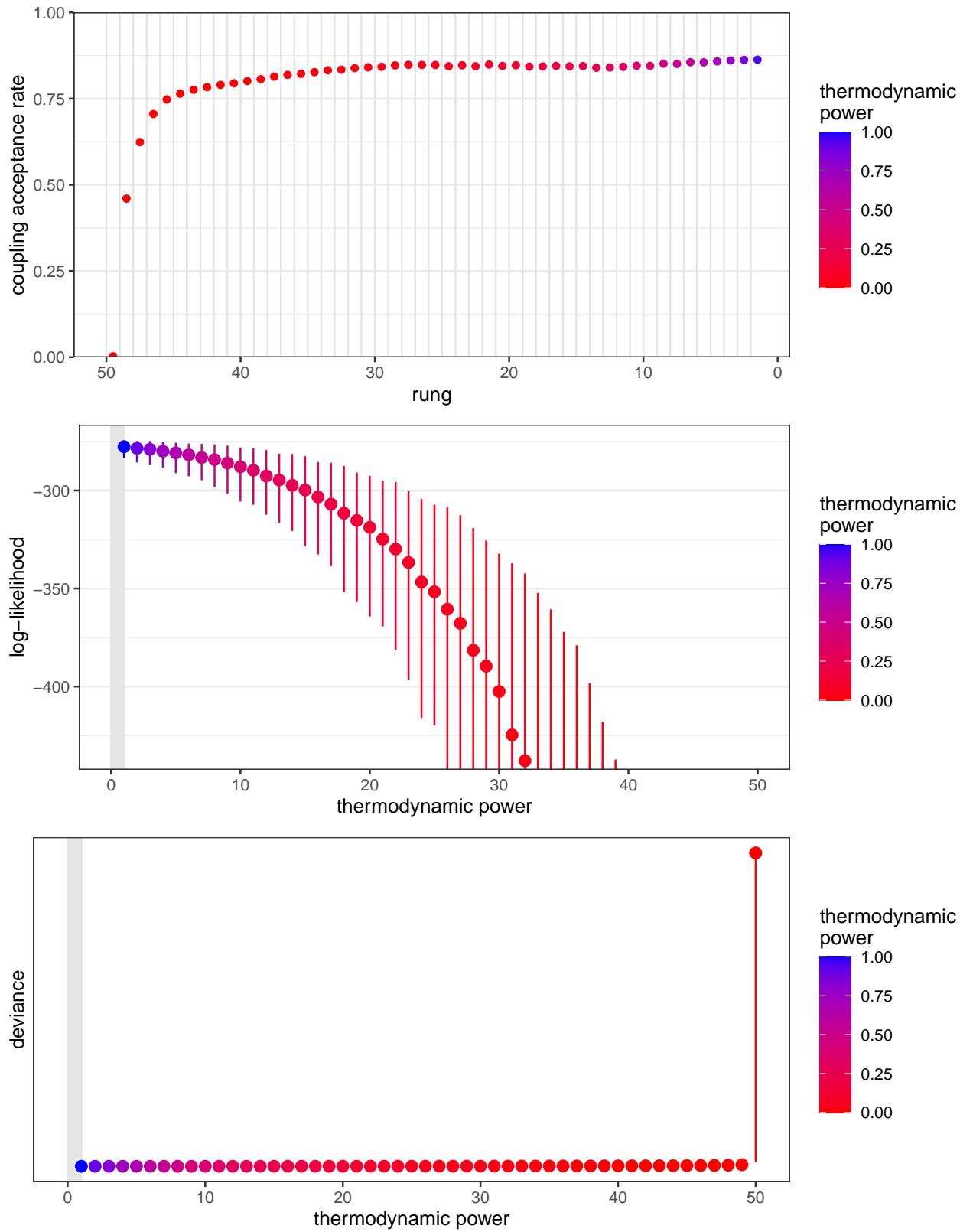
# DNK1 with the Potential for Seroreversion Included

## Fit Diagnostics

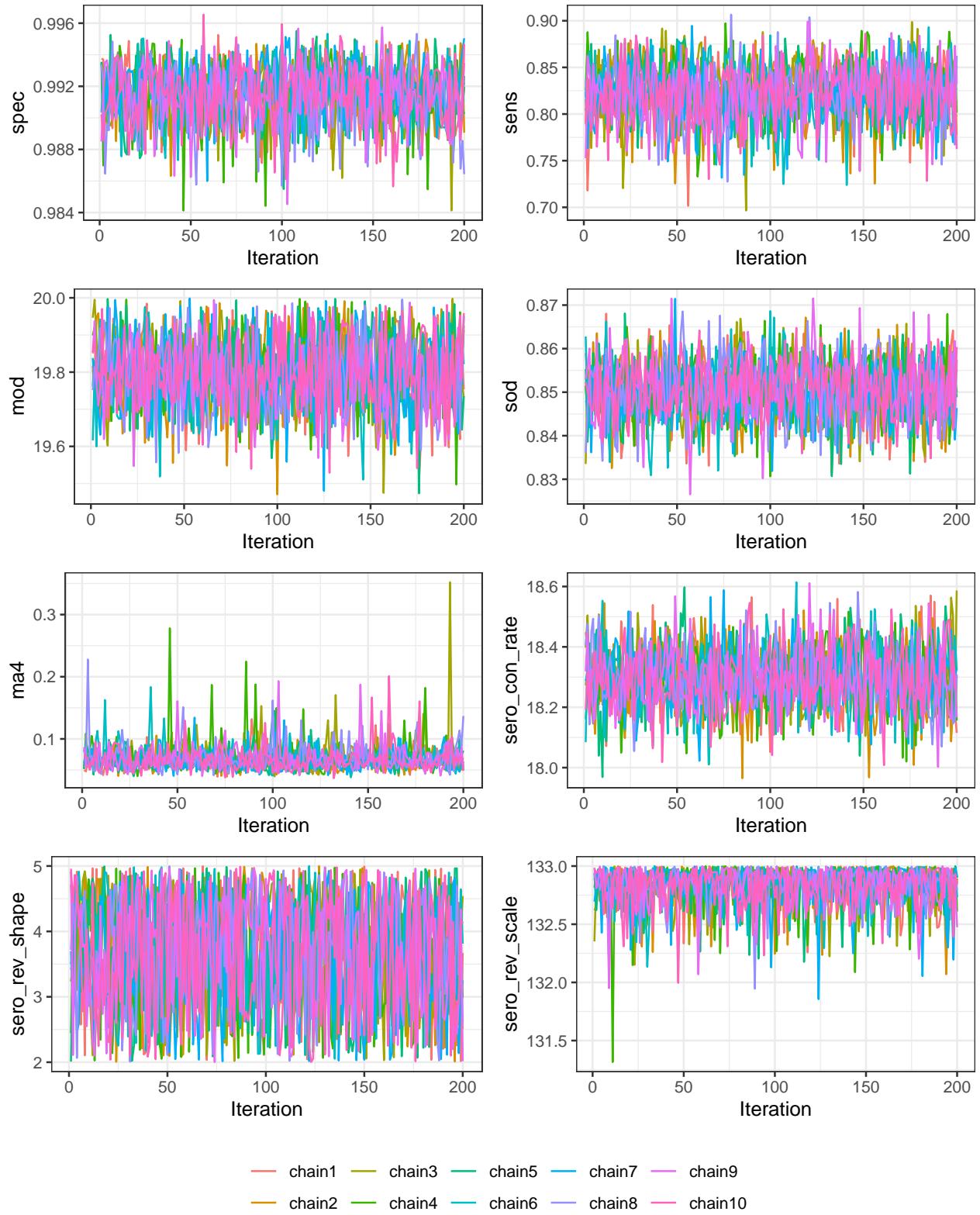
### Log Likelihood & Prior Plot



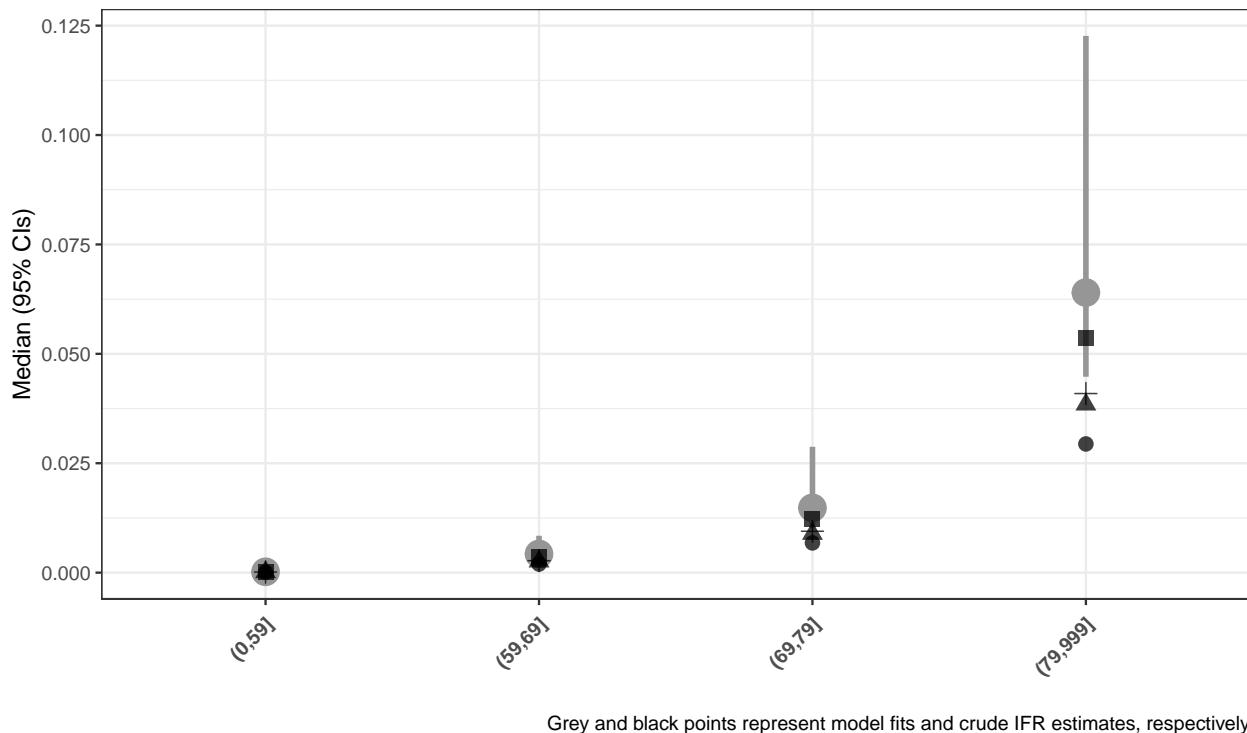
### Metropolis Coupling Acceptance Plot



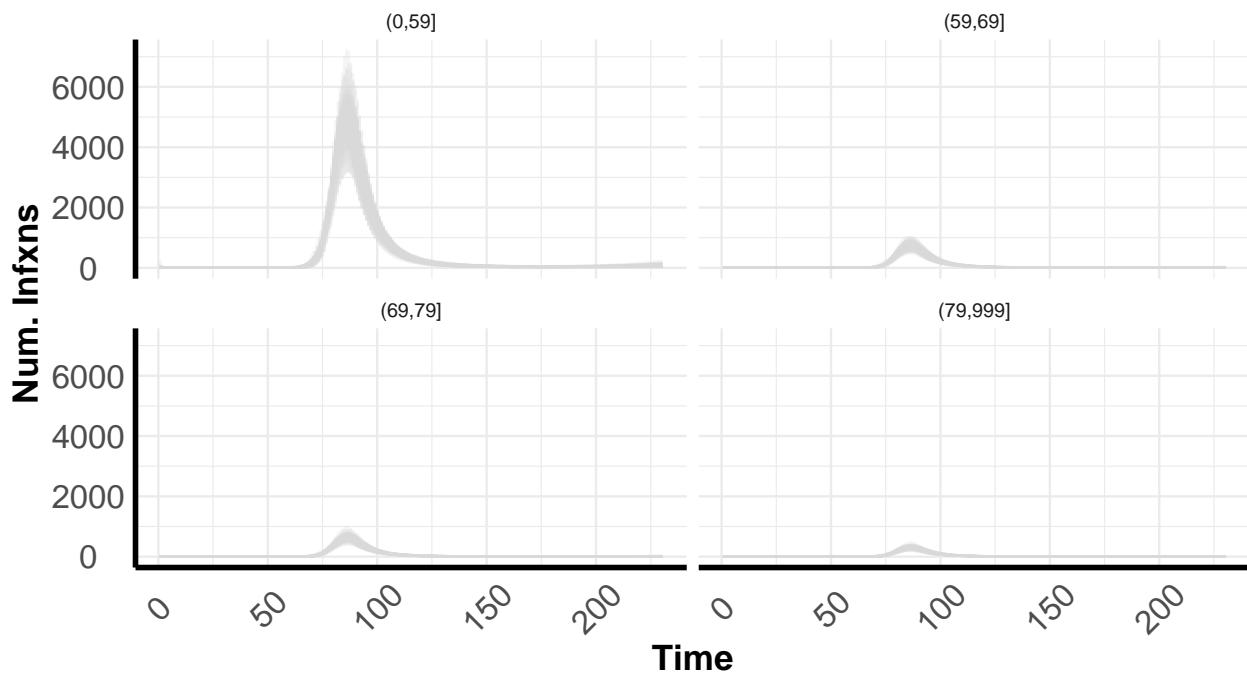
## Serological Diagnostics



## IFRs & Incidence Curve



## Posterior Draws of the Infection Curve



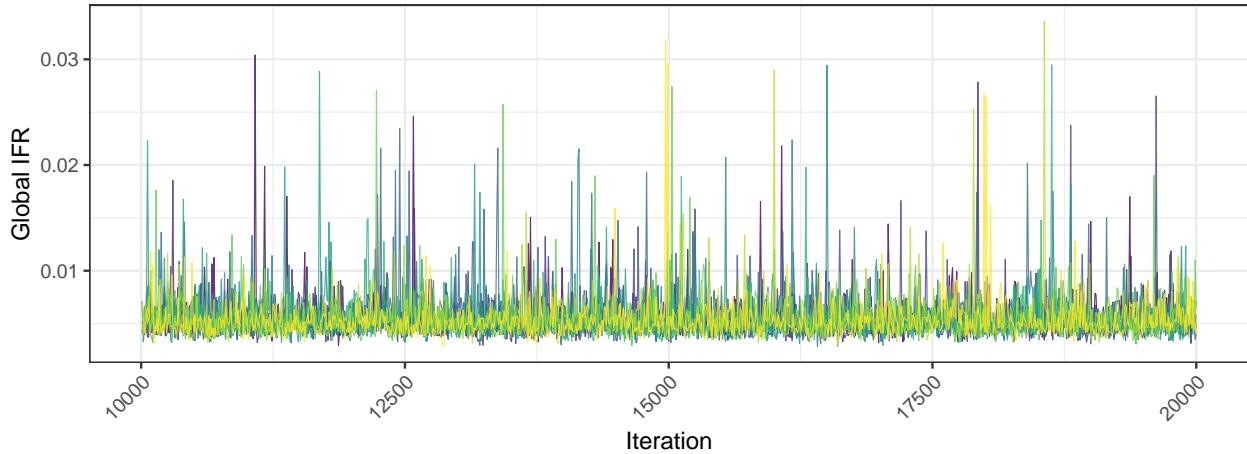
### Strata IFR

strata	param	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
(0,59]	ma1	0.0000	0.0001	0.0002	0.0002	0.0004	0.0017	6170.303	0.6968	0.3130
(59,69]	ma2	0.0016	0.0027	0.0043	0.0046	0.0084	0.0378	5679.071	2.0457	0.0492
(69,79]	ma3	0.0079	0.0101	0.0148	0.0160	0.0288	0.1055	5680.033	1.9736	0.0569
(79,999]	ma4	0.0357	0.0448	0.0640	0.0692	0.1227	0.3991	5216.864	1.4926	0.1310

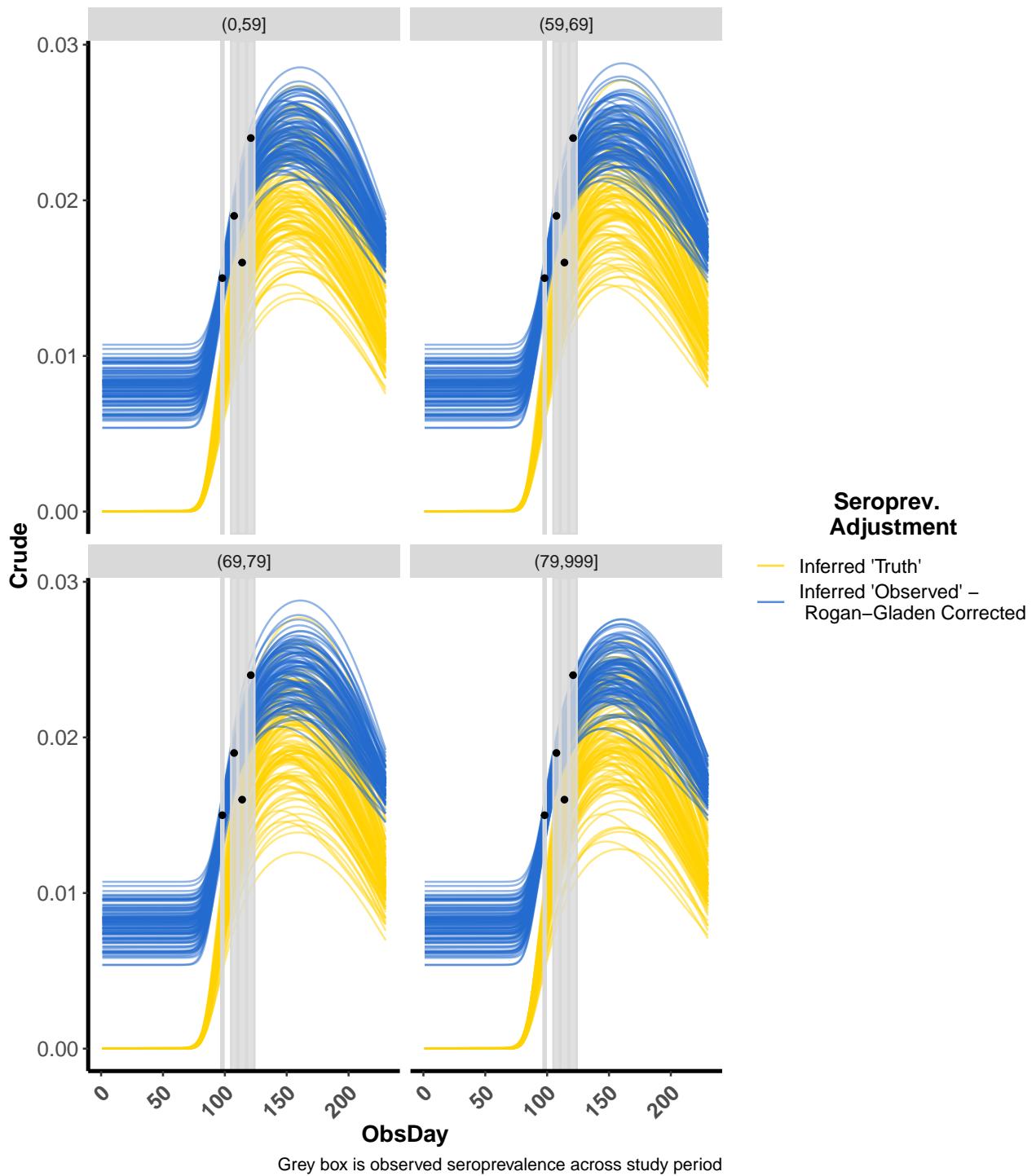
### Overall IFR

min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
0.0027	0.0036	0.005	0.0055	0.0097	0.0337	6683.982	1.0012	0.2417

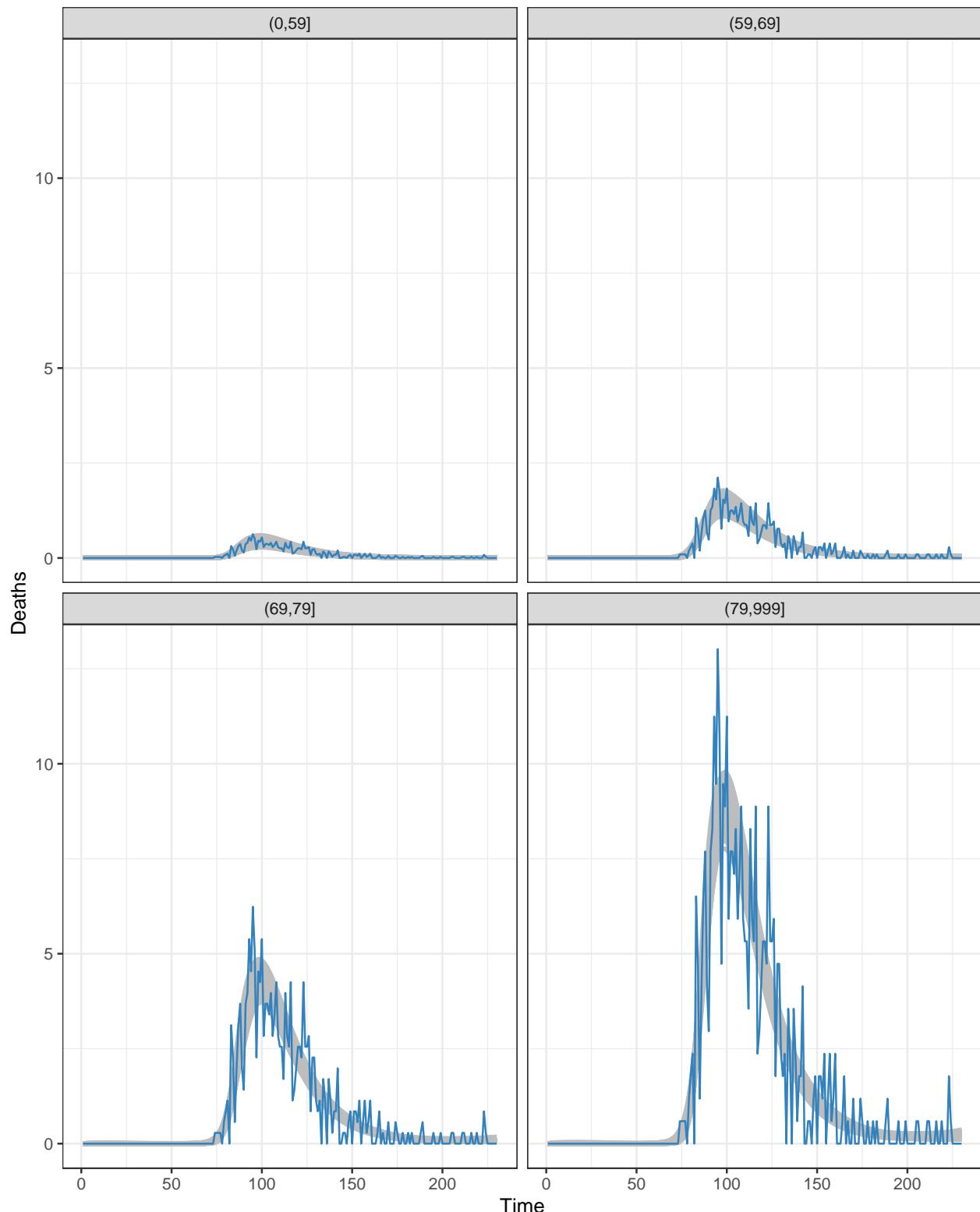
chain	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
chain1	0.0029	0.0036	0.0051	0.0056	0.0103	0.0297	770.4163	1.4314	0.1432
chain2	0.0032	0.0035	0.0049	0.0053	0.0089	0.0272	723.2248	0.6252	0.3281
chain3	0.0030	0.0036	0.0051	0.0055	0.0096	0.0252	831.5453	-0.4018	0.3680
chain4	0.0028	0.0036	0.0051	0.0057	0.0116	0.0225	410.9516	-0.0257	0.3988
chain5	0.0031	0.0036	0.0051	0.0054	0.0094	0.0305	765.5040	0.4561	0.3595
chain6	0.0029	0.0035	0.0051	0.0055	0.0096	0.0297	356.5504	2.6808	0.0110
chain7	0.0027	0.0035	0.0049	0.0053	0.0090	0.0279	730.5646	0.3057	0.3807
chain8	0.0033	0.0036	0.0051	0.0055	0.0102	0.0276	1000.0000	-0.0226	0.3988
chain9	0.0031	0.0036	0.0051	0.0055	0.0097	0.0337	1000.0000	-2.6694	0.0113
chain10	0.0030	0.0036	0.0050	0.0054	0.0091	0.0310	543.9873	-0.2557	0.3861



### 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)

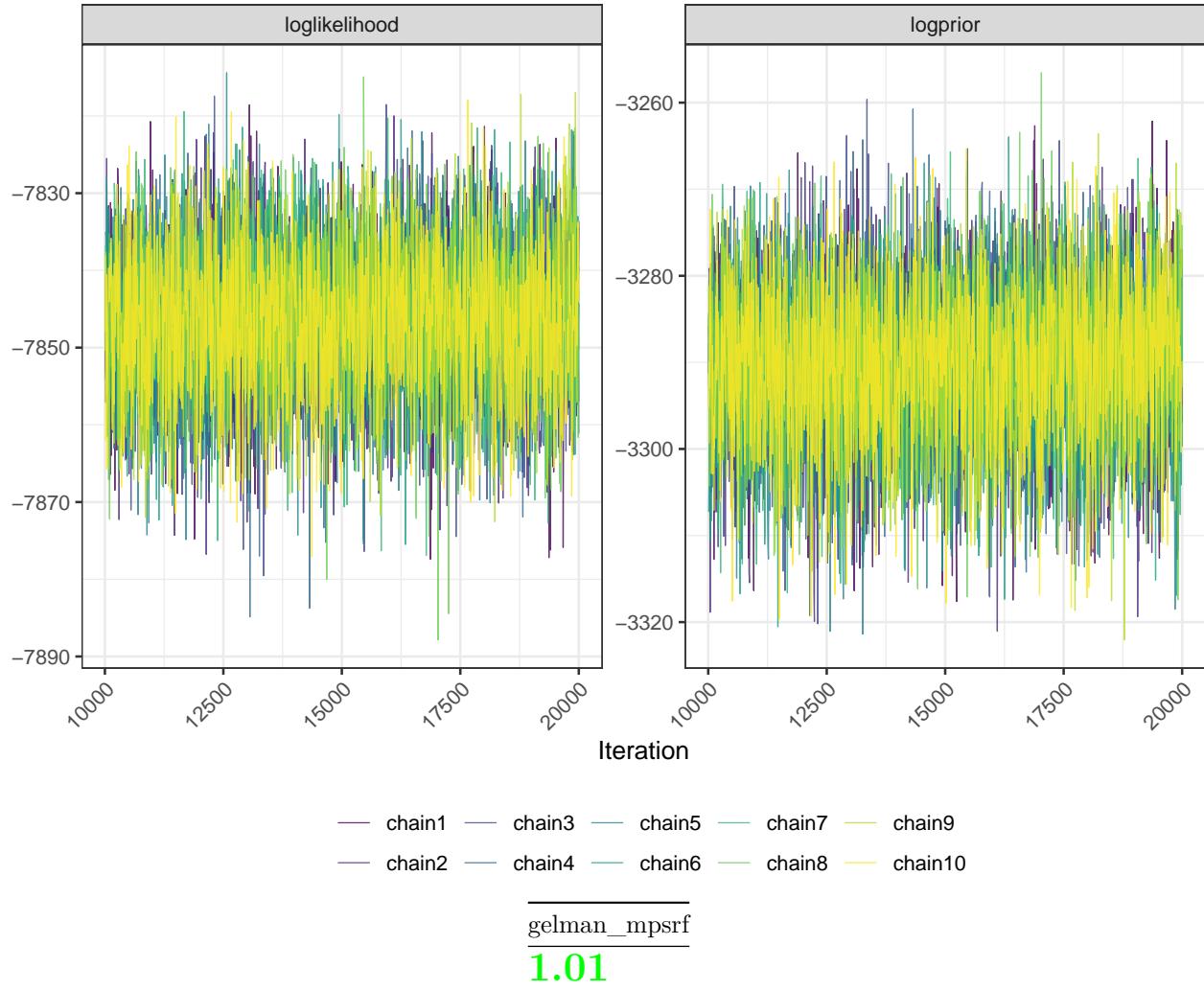
## Additional Parameters

param	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
x1	1.0925	2.1313	59.3004	53.5326	71.2105	79.8113	945.4971	-3.1833	0.0025
x2	67.4105	74.2403	81.3291	81.5323	89.6349	97.4369	2536.7268	-2.7681	0.0087
x3	83.0586	89.3559	98.5252	99.0799	112.4069	132.7398	2860.6323	3.2480	0.0020
x4	214.0018	214.4051	222.0665	222.0306	229.5757	229.9981	3633.5877	0.9149	0.2625
y1	0.0006	0.0839	1.7322	1.9386	4.8874	6.5569	4696.0264	0.8097	0.2874
y2	0.0002	0.0738	1.6207	1.9665	5.5917	8.1161	3822.7461	-1.5292	0.1239
y3	4.6240	6.8505	8.3466	8.2264	9.0073	9.4474	2097.5626	-3.2049	0.0023
y4	2.2975	5.9898	7.6553	7.5644	8.5797	9.2004	2794.0314	-2.8329	0.0072
y5	0.9973	2.9704	4.3744	4.3373	5.4908	6.5650	8093.5606	0.6309	0.3270
Ne1	0.8160	0.9055	1.0008	1.0010	1.0960	1.2067	9640.6273	-0.1071	0.3967
Ne2	0.8102	0.9034	1.0012	1.0009	1.0969	1.1935	10000.0000	-0.7645	0.2979
Ne3	0.8201	0.9042	0.9997	0.9998	1.0962	1.1994	9550.9112	-0.4698	0.3573
Ne4	0.8347	0.9052	0.9995	0.9995	1.0961	1.1697	7750.3549	-0.2942	0.3820

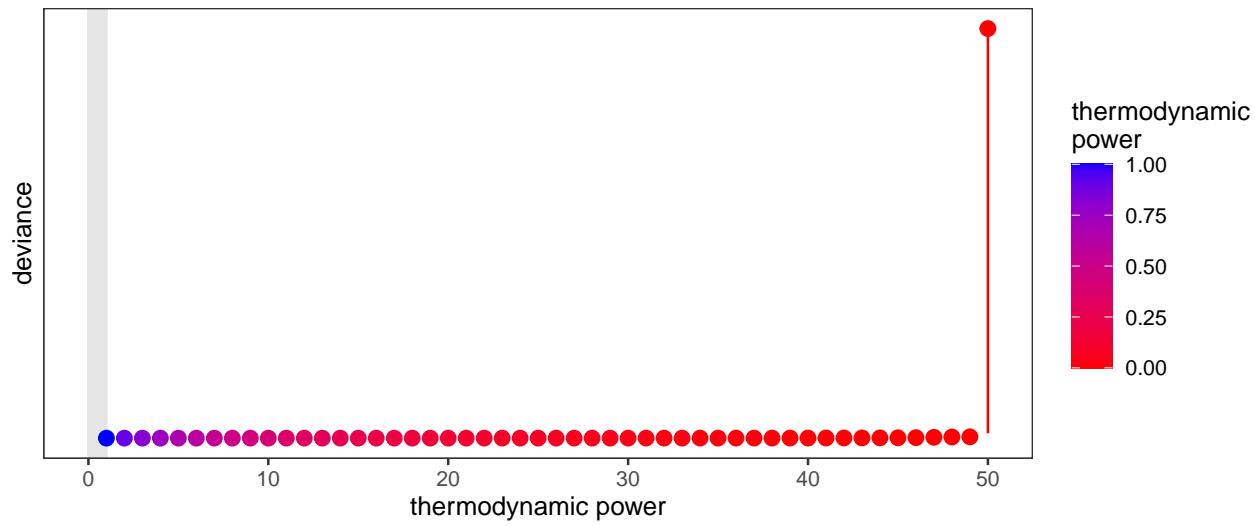
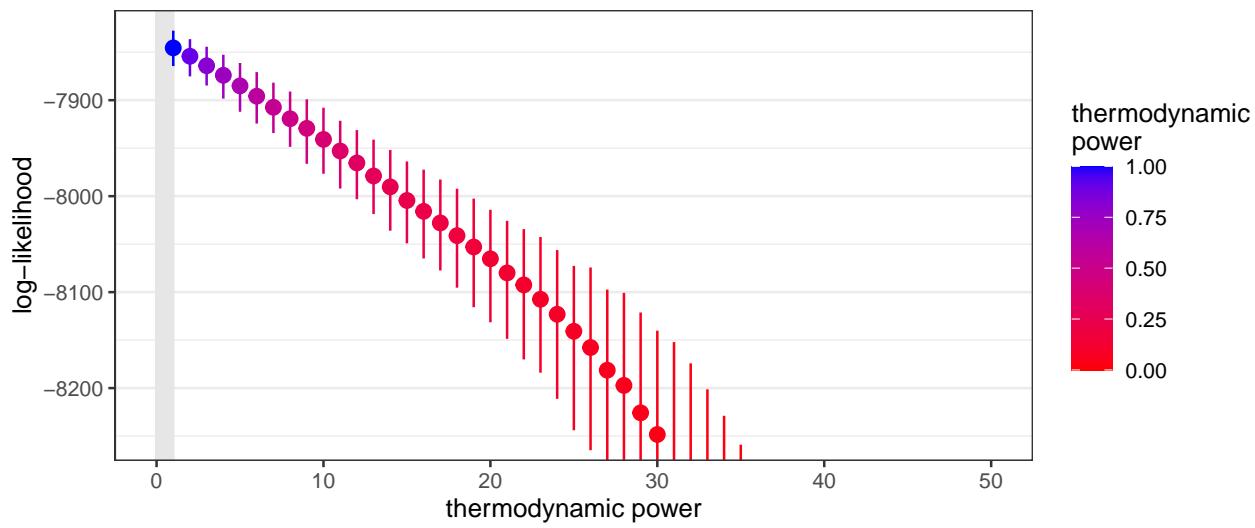
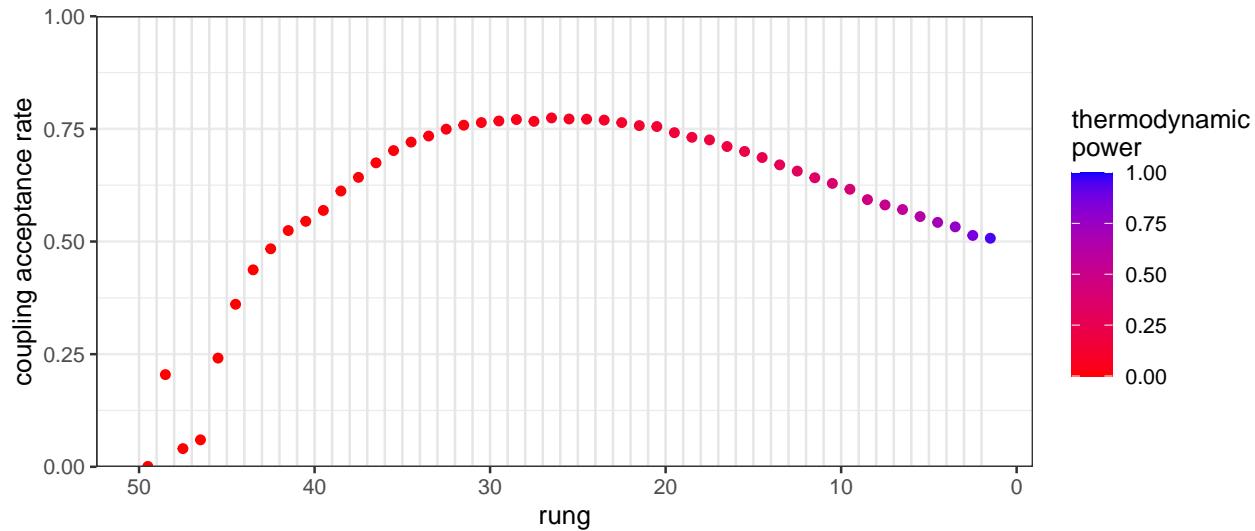
# ESP1-2 with the Potential for Seroreversion Included

## Fit Diagnostics

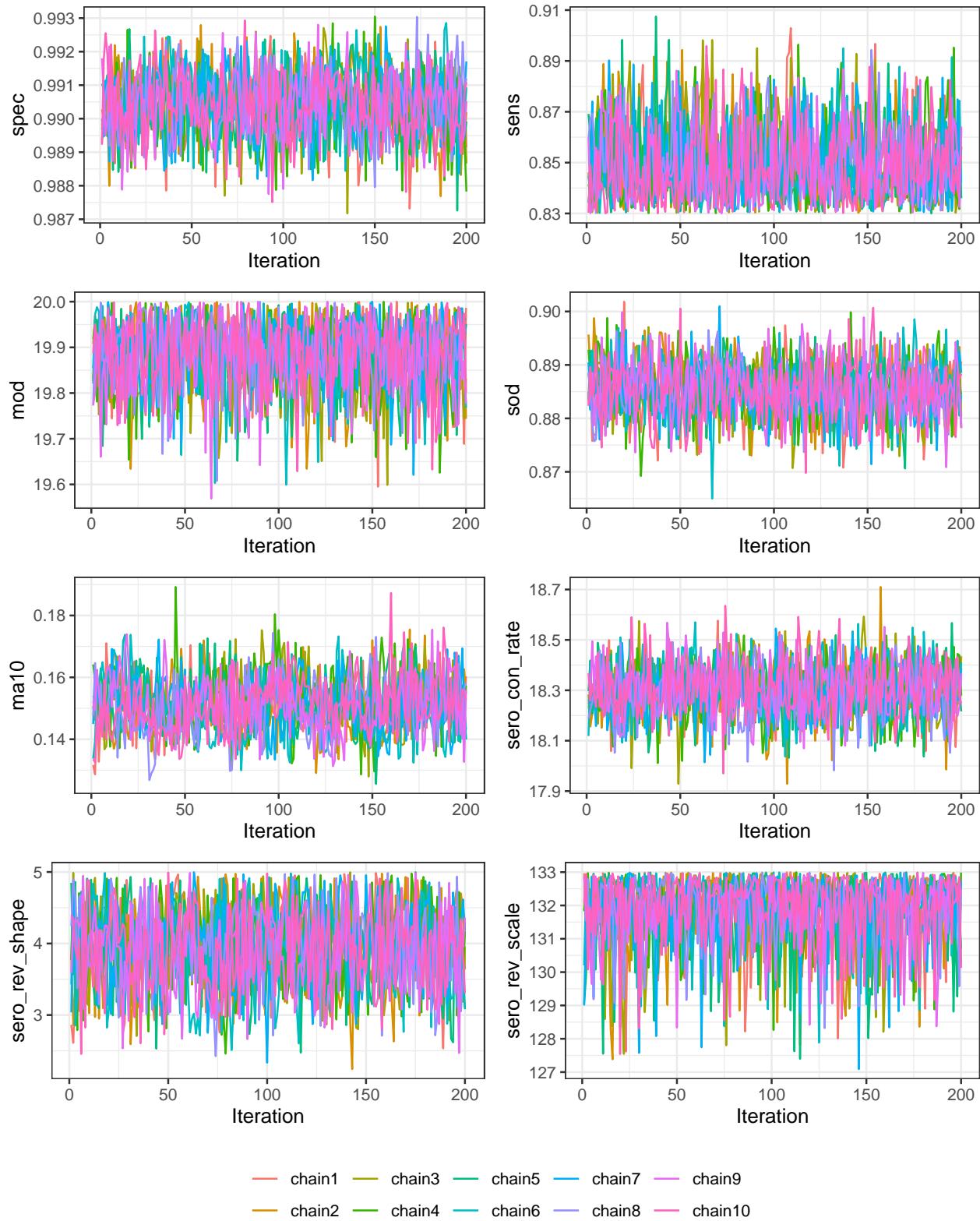
### Log Likelihood & Prior Plot



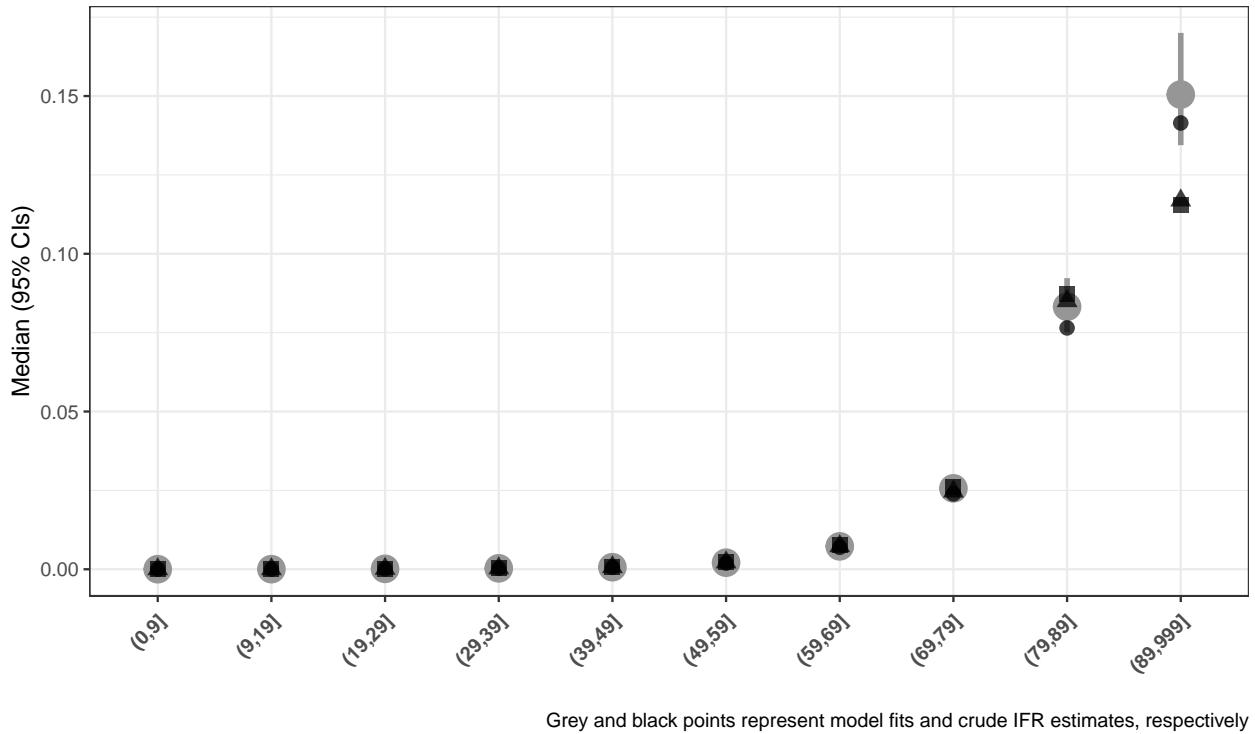
### Metropolis Coupling Acceptance Plot



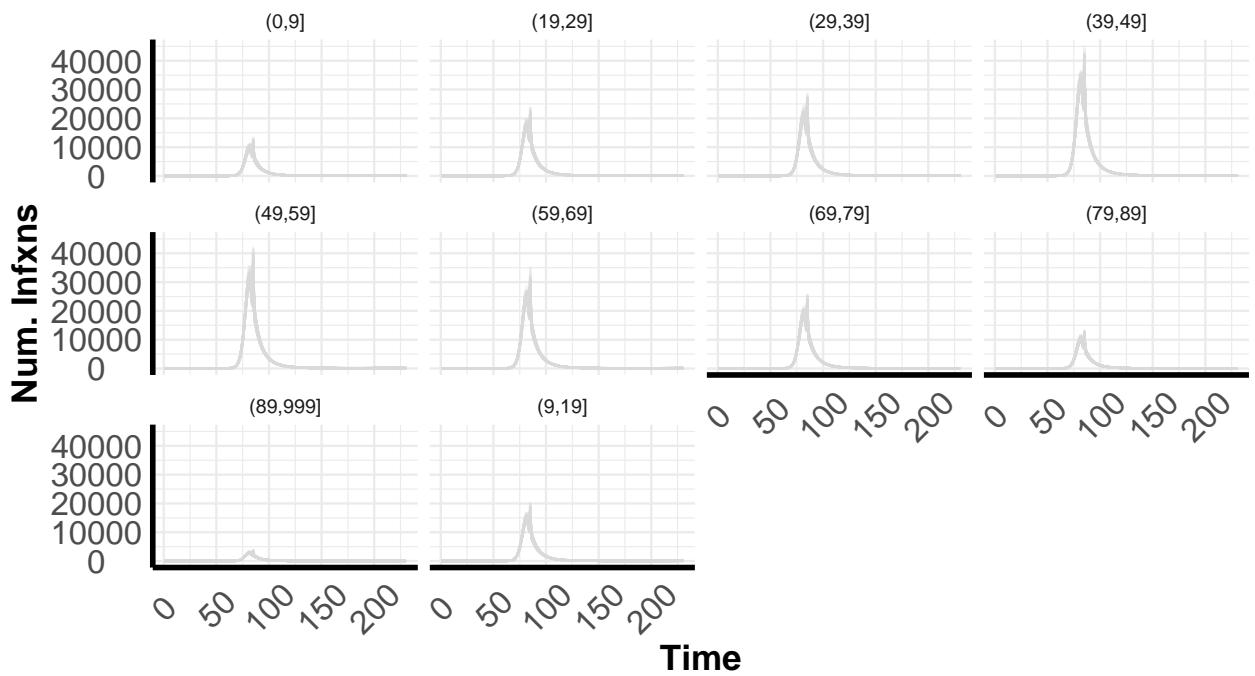
## Serological Diagnostics



## IFRs & Incidence Curve



## Posterior Draws of the Infection Curve



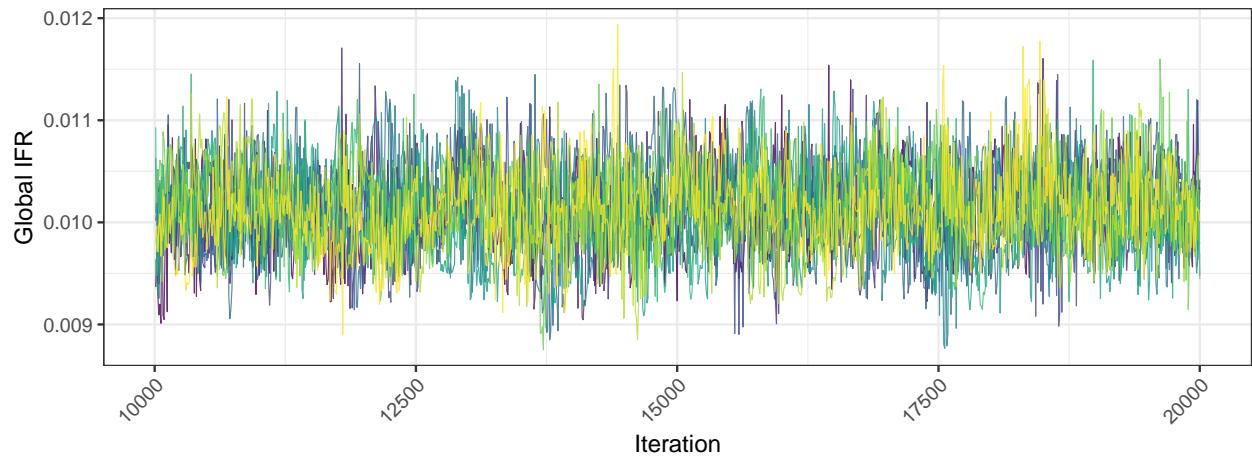
### Strata IFR

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	9337.7471	0.0072	0.3989
(9,19]	ma2	0.0000	0.0000	0.0000	0.0000	0.0001	0.0001	9211.3224	0.9059	0.2647
(19,29]	ma3	0.0000	0.0001	0.0001	0.0001	0.0002	0.0002	7962.1875	-1.0494	0.2300
(29,39]	ma4	0.0002	0.0002	0.0003	0.0003	0.0004	0.0004	6088.2223	-0.1293	0.3956
(39,49]	ma5	0.0005	0.0006	0.0007	0.0007	0.0007	0.0008	3178.2185	0.2342	0.3882
(49,59]	ma6	0.0017	0.0019	0.0021	0.0021	0.0023	0.0025	2761.3867	-1.5523	0.1196
(59,69]	ma7	0.0063	0.0067	0.0073	0.0073	0.0079	0.0087	2101.0318	-0.6526	0.3224
(69,79]	ma8	0.0222	0.0236	0.0257	0.0257	0.0280	0.0315	1810.8161	-0.0206	0.3989
(79,89]	ma9	0.0687	0.0752	0.0832	0.0833	0.0923	0.1023	1350.2143	-0.2821	0.3834
(89,999]	ma10	0.1253	0.1344	0.1505	0.1510	0.1700	0.1932	779.0939	0.2753	0.3841

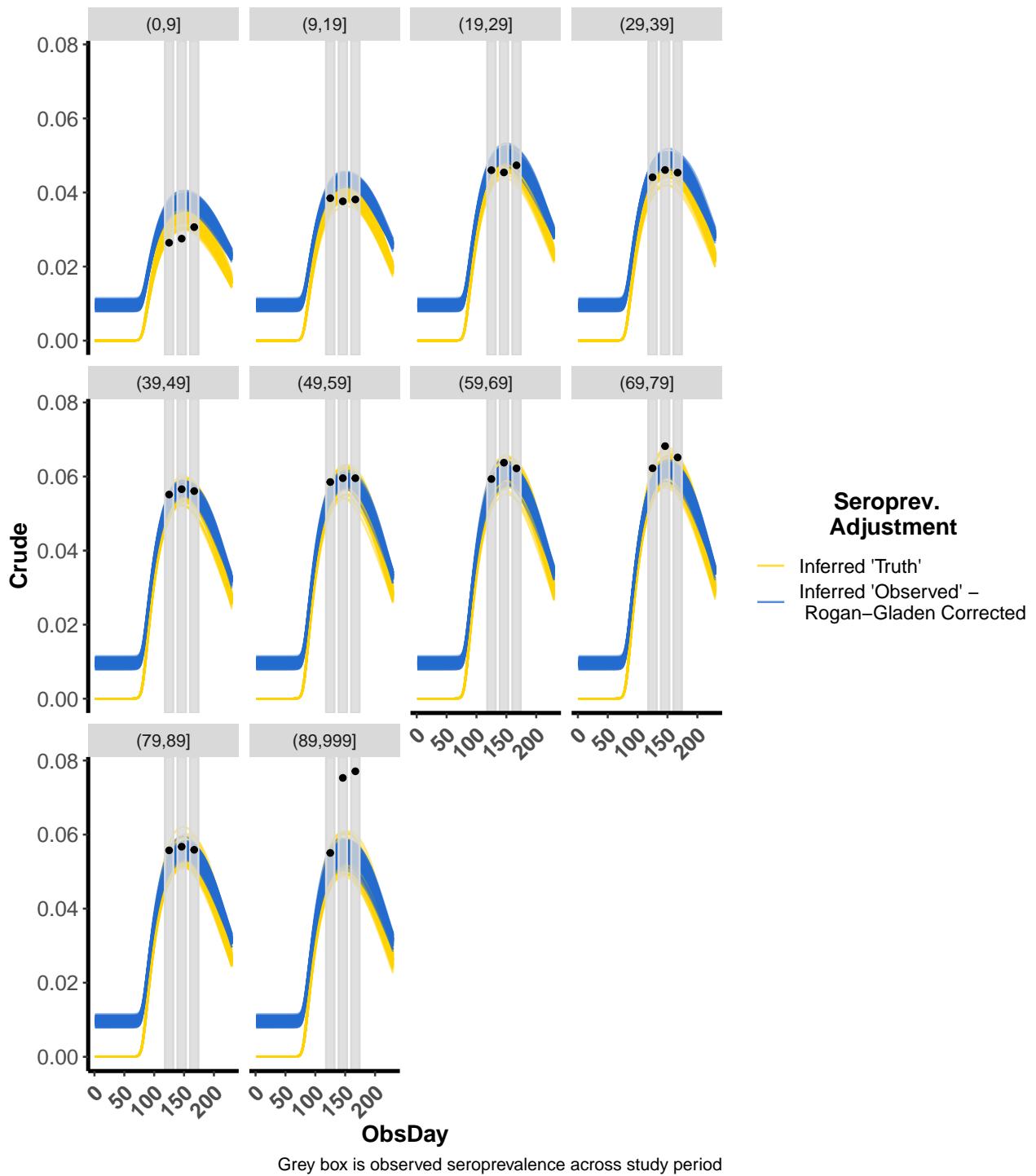
### Overall IFR

min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
0.0098	0.0104	0.0111	0.0111	0.0119	0.0128	2079.033	0.013	0.3989

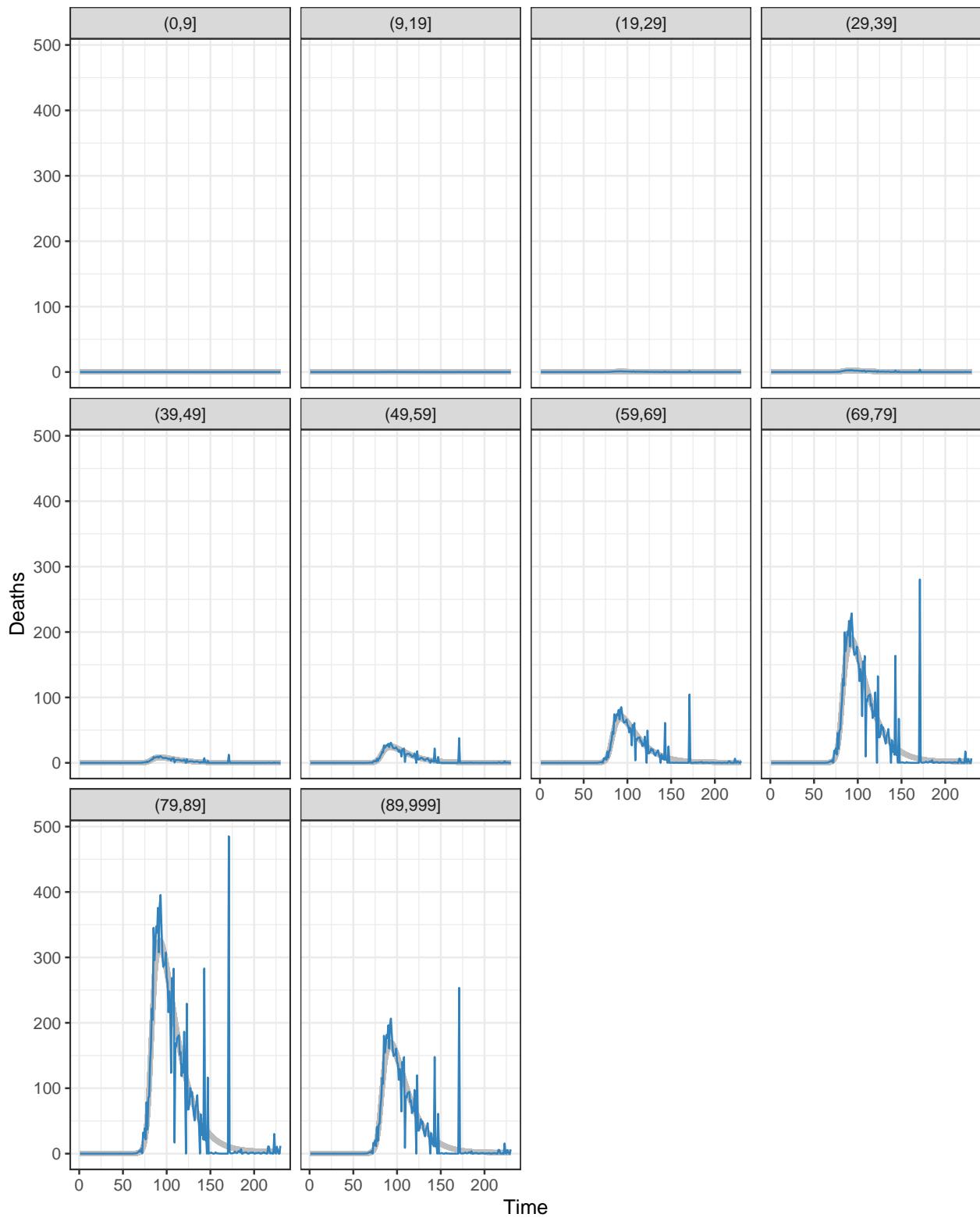
chain	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
chain1	0.0101	0.0104	0.0110	0.0111	0.0118	0.0123	199.9771	-1.6688	0.0991
chain2	0.0100	0.0104	0.0110	0.0111	0.0118	0.0124	142.4806	0.1187	0.3961
chain3	0.0100	0.0104	0.0111	0.0111	0.0120	0.0125	152.7188	2.2760	0.0299
chain4	0.0098	0.0103	0.0111	0.0111	0.0120	0.0125	106.5784	-3.3855	0.0013
chain5	0.0100	0.0104	0.0111	0.0111	0.0119	0.0123	176.3323	-0.7263	0.3065
chain6	0.0100	0.0103	0.0110	0.0110	0.0118	0.0122	137.2988	1.0986	0.2182
chain7	0.0101	0.0105	0.0111	0.0111	0.0119	0.0124	162.4238	0.7896	0.2921
chain8	0.0100	0.0105	0.0111	0.0111	0.0119	0.0126	125.0085	0.0776	0.3977
chain9	0.0098	0.0103	0.0111	0.0111	0.0119	0.0123	153.8505	2.5772	0.0144
chain10	0.0100	0.0103	0.0111	0.0111	0.0119	0.0128	194.3301	-2.7782	0.0084



### 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)

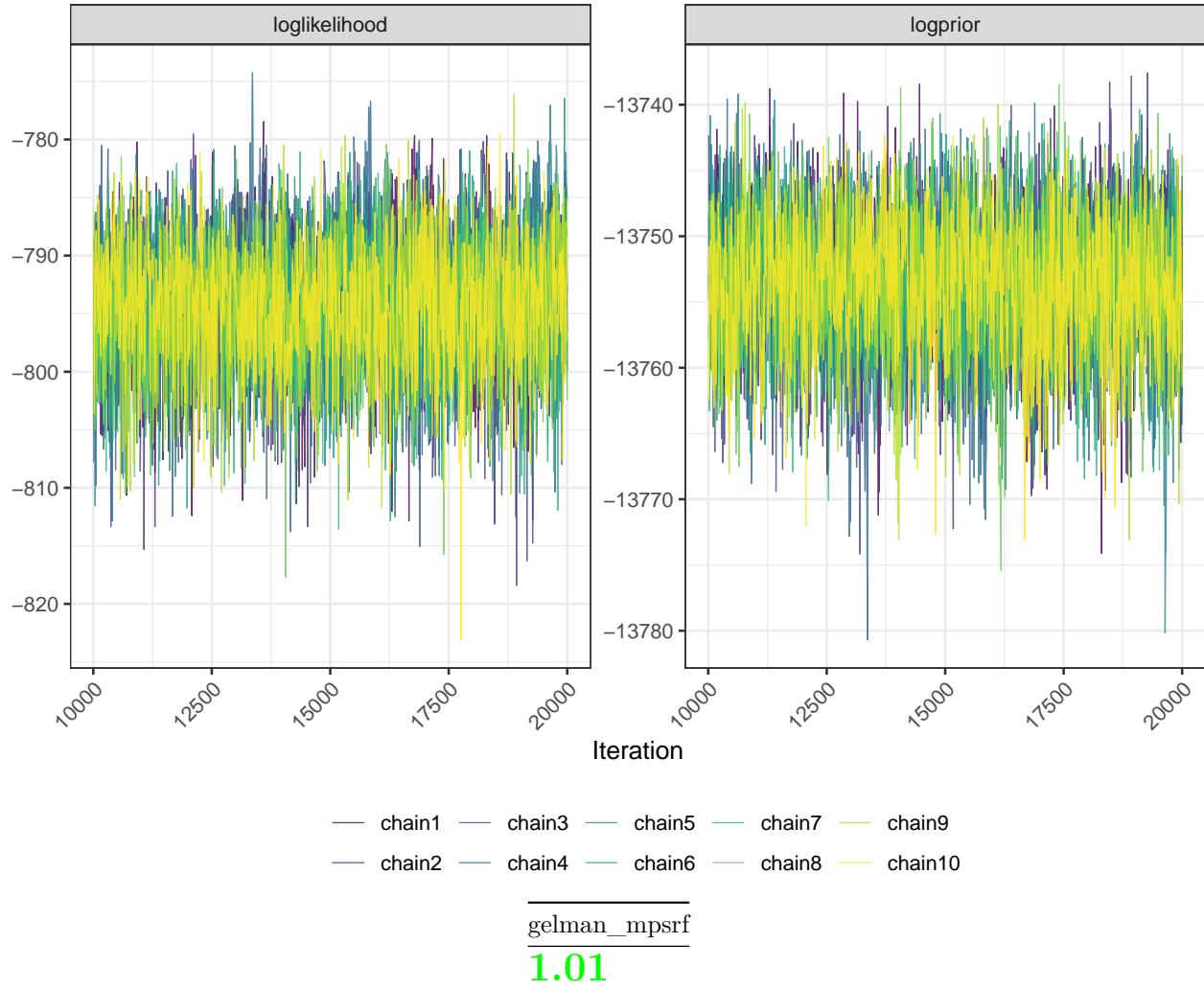
## Additional Parameters

param	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
x1	49.7758	54.8372	65.8074	65.1348	71.6976	78.8746	661.8253	-0.7014	0.3119
x2	78.5572	81.3195	82.8142	82.7951	84.1659	85.0228	830.3111	1.4465	0.1401
x3	82.4016	84.1493	85.3936	85.4128	86.7489	88.1488	281.7257	-0.1343	0.3954
x4	214.0003	214.2041	218.0389	219.1838	228.6030	229.9999	471.8322	-2.2297	0.0332
y1	0.0000	0.0357	0.8582	1.0422	3.0000	4.6340	4230.5773	1.0841	0.2217
y2	0.0250	2.2723	7.4774	7.0780	9.6593	11.8891	655.3117	-0.5747	0.3382
y3	11.8650	11.9763	12.0972	12.0947	12.2072	12.2877	804.7420	-0.0116	0.3989
y4	11.4706	11.6224	11.8017	11.7983	11.9594	12.1582	287.3864	0.4618	0.3586
y5	6.3558	6.5609	6.7930	6.8069	7.1254	7.3614	1281.6557	-2.4186	0.0214
Ne1	0.5068	0.5657	0.6306	0.6310	0.6987	0.7589	8882.2854	-0.5316	0.3464
Ne10	0.8649	0.9517	1.0396	1.0400	1.1291	1.2160	1189.0671	-1.3635	0.1575
Ne2	0.6377	0.7041	0.7632	0.7636	0.8244	0.8864	8066.9600	-1.1944	0.1955
Ne3	0.7814	0.8432	0.9065	0.9069	0.9722	1.0385	8326.1650	-0.7292	0.3058
Ne4	0.7638	0.8186	0.8801	0.8804	0.9426	1.0104	7804.4150	0.3477	0.3755
Ne5	0.9409	0.9975	1.0559	1.0561	1.1166	1.1815	6602.9772	-0.2375	0.3878
Ne6	0.9952	1.0521	1.1106	1.1109	1.1711	1.2441	5772.9037	0.6500	0.3230
Ne7	1.0258	1.0824	1.1430	1.1437	1.2084	1.2660	5680.2582	-0.3023	0.3811
Ne8	1.0449	1.0980	1.1656	1.1657	1.2343	1.2925	3742.2202	-1.0645	0.2264
Ne9	0.9068	0.9572	1.0302	1.0311	1.1098	1.1994	2054.7116	-0.5140	0.3496

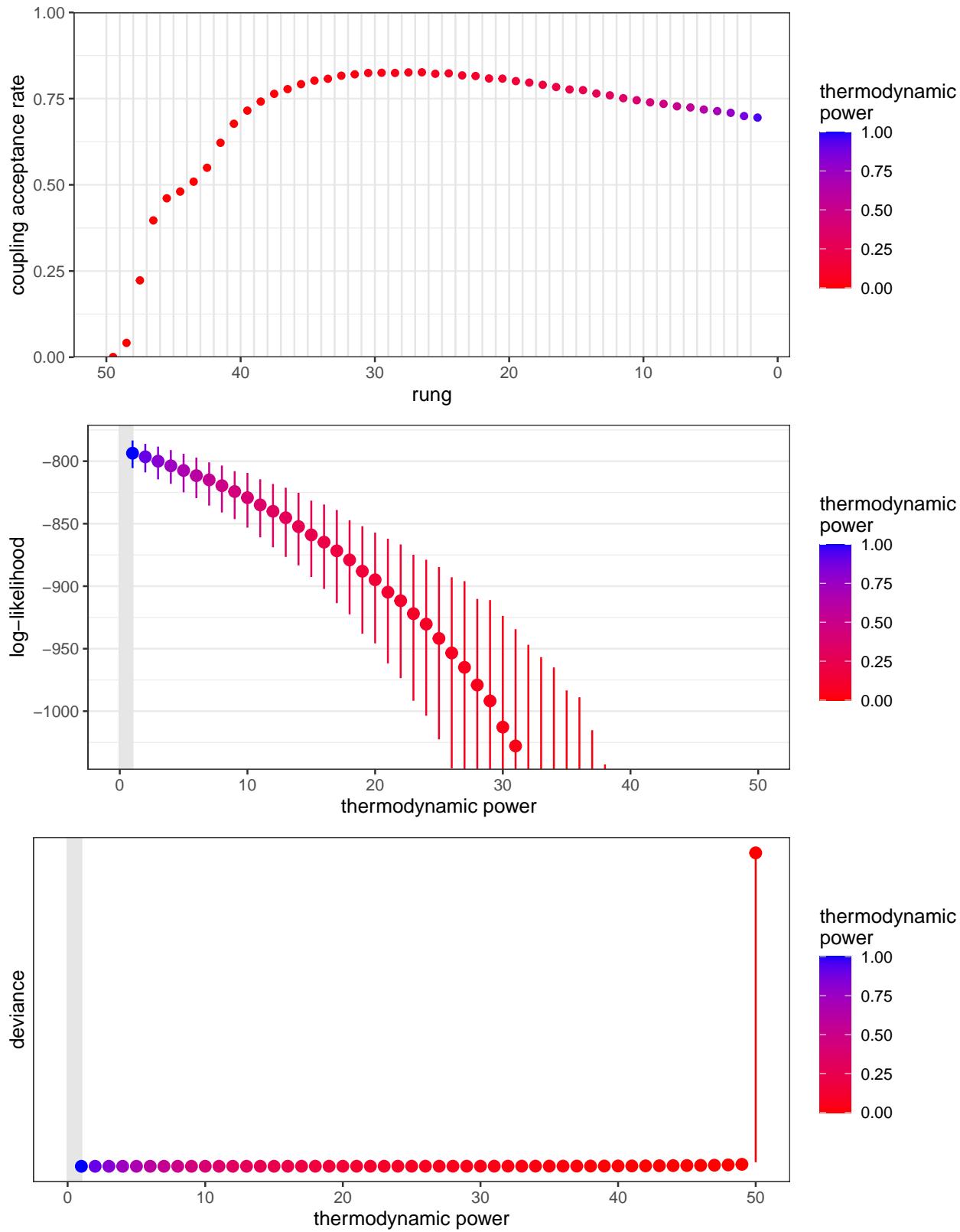
# GBR3 with the Potential for Seroreversion Included

## Fit Diagnostics

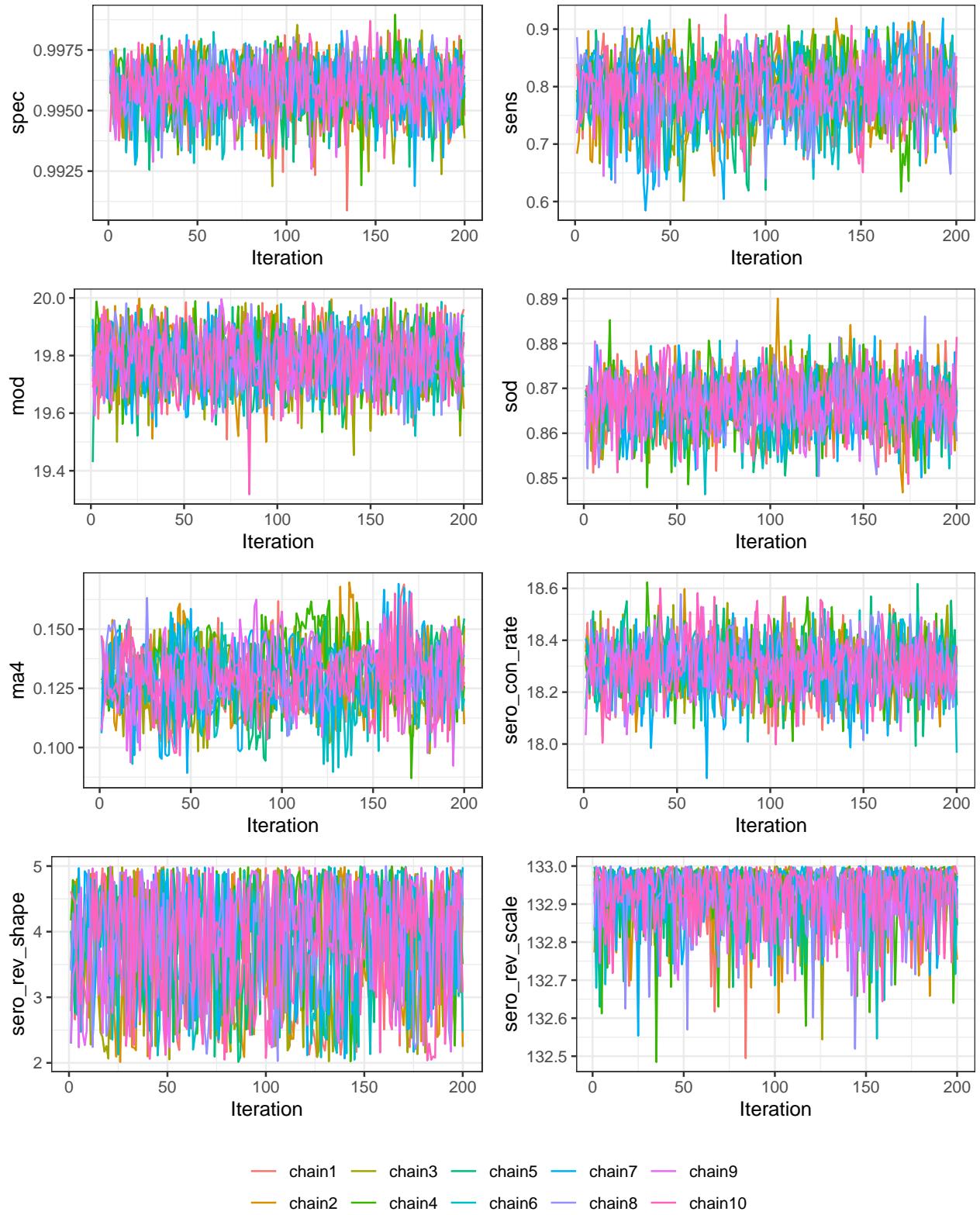
### Log Likelihood & Prior Plot



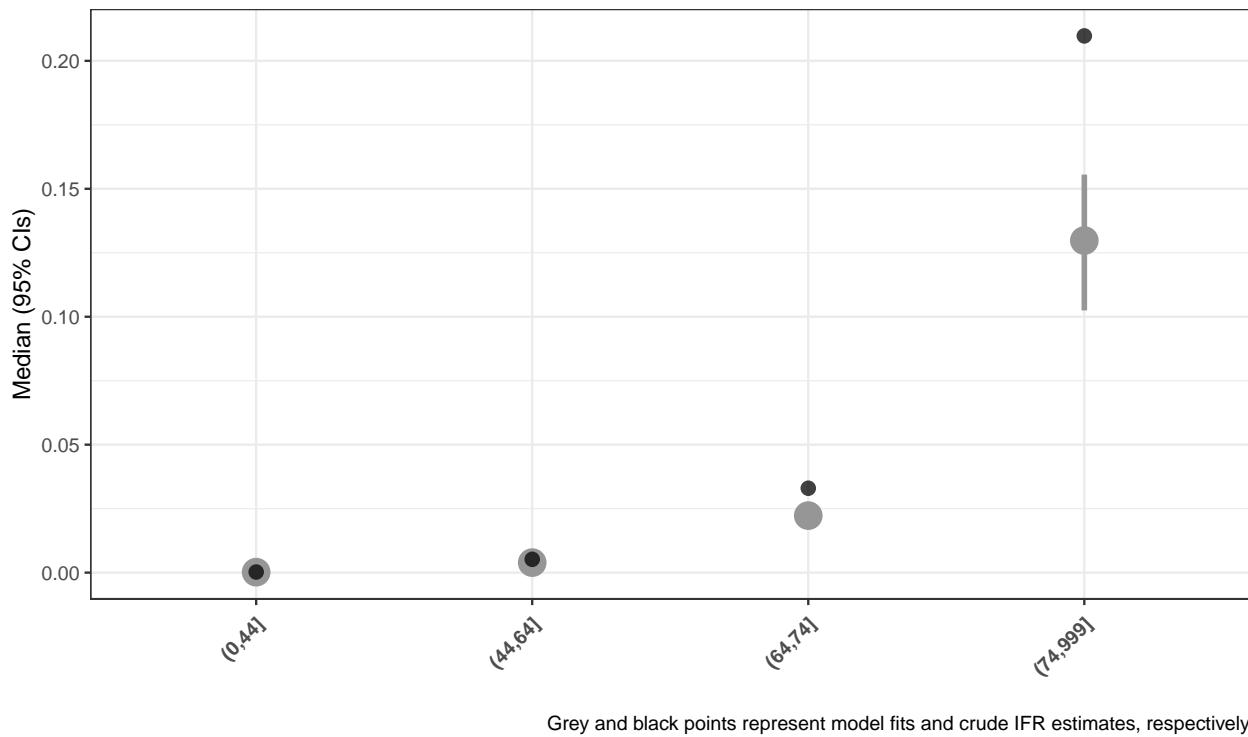
### Metropolis Coupling Acceptance Plot



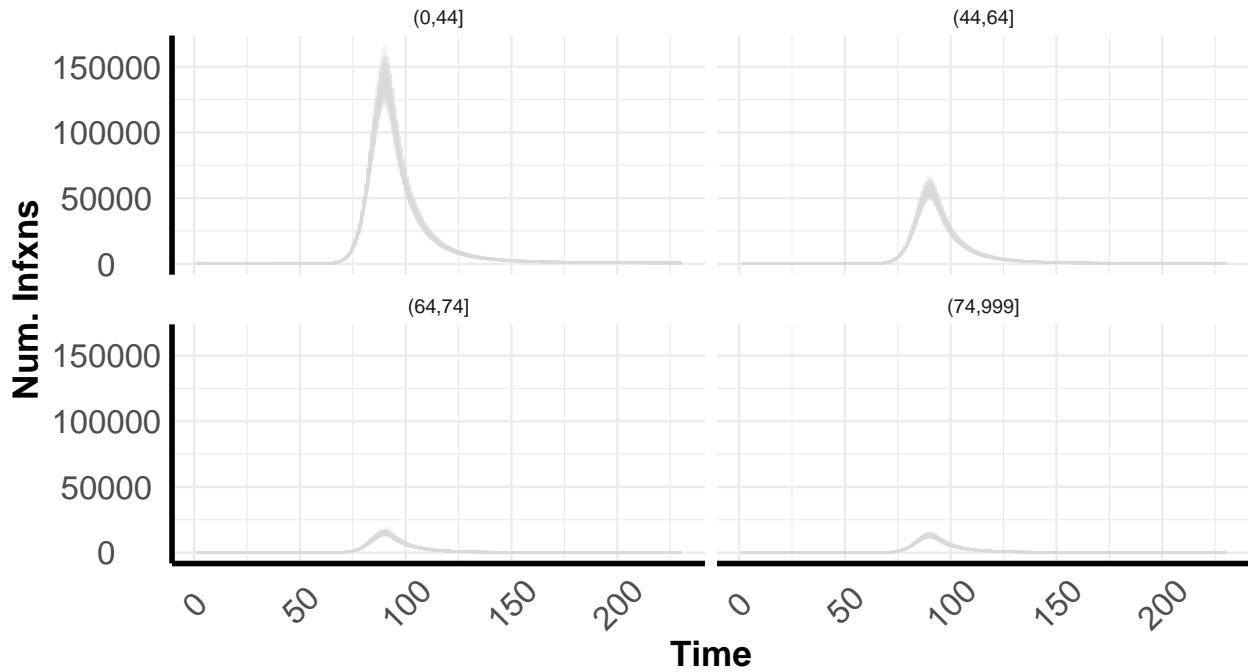
## Serological Diagnostics



## IFRs & Incidence Curve



## Posterior Draws of the Infection Curve



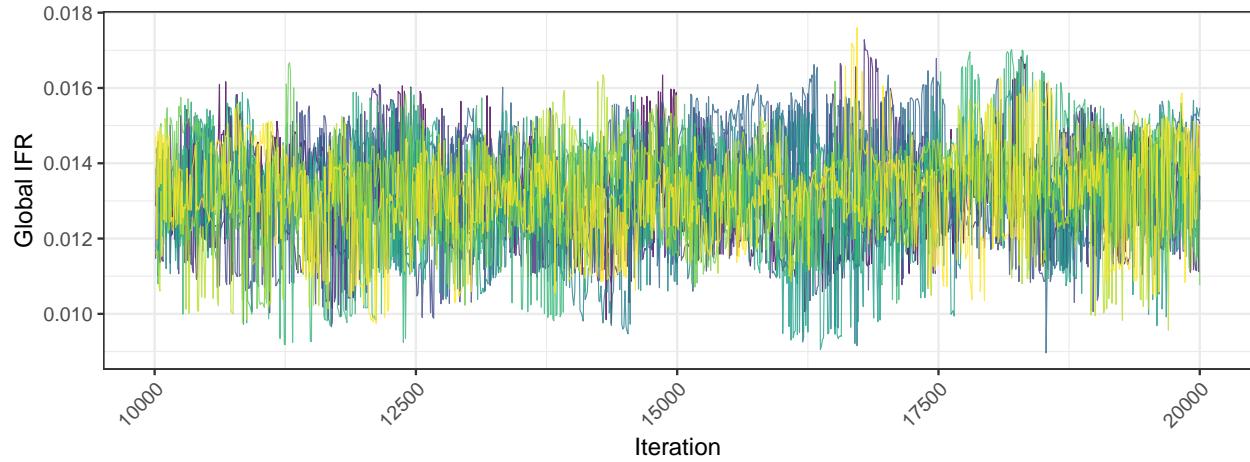
### Strata IFR

strata	param	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
(0,44]	ma1	0.0001	0.0001	0.0002	0.0002	0.0002	0.0002	711.9192	-0.0384	0.3986
(44,64]	ma2	0.0027	0.0031	0.0039	0.0039	0.0046	0.0050	585.8289	-0.1628	0.3937
(64,74]	ma3	0.0145	0.0177	0.0223	0.0222	0.0265	0.0302	680.5115	-0.2492	0.3867
(74,999]	ma4	0.0870	0.1025	0.1298	0.1299	0.1556	0.1739	476.7541	0.0320	0.3987

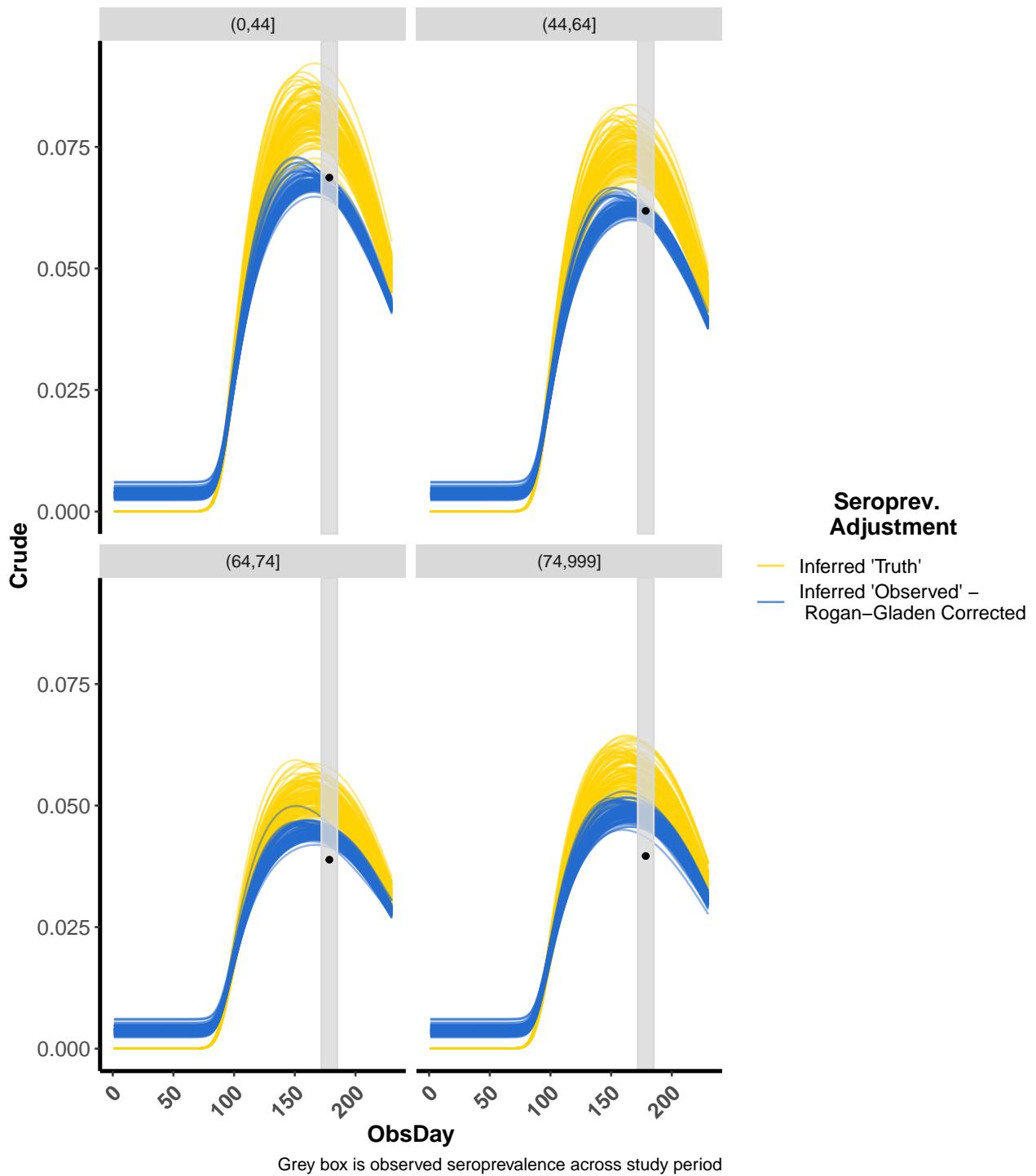
### Overall IFR

min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
0.0072	0.0082	0.0103	0.0102	0.0119	0.013	1705.617	-0.9761	0.2478

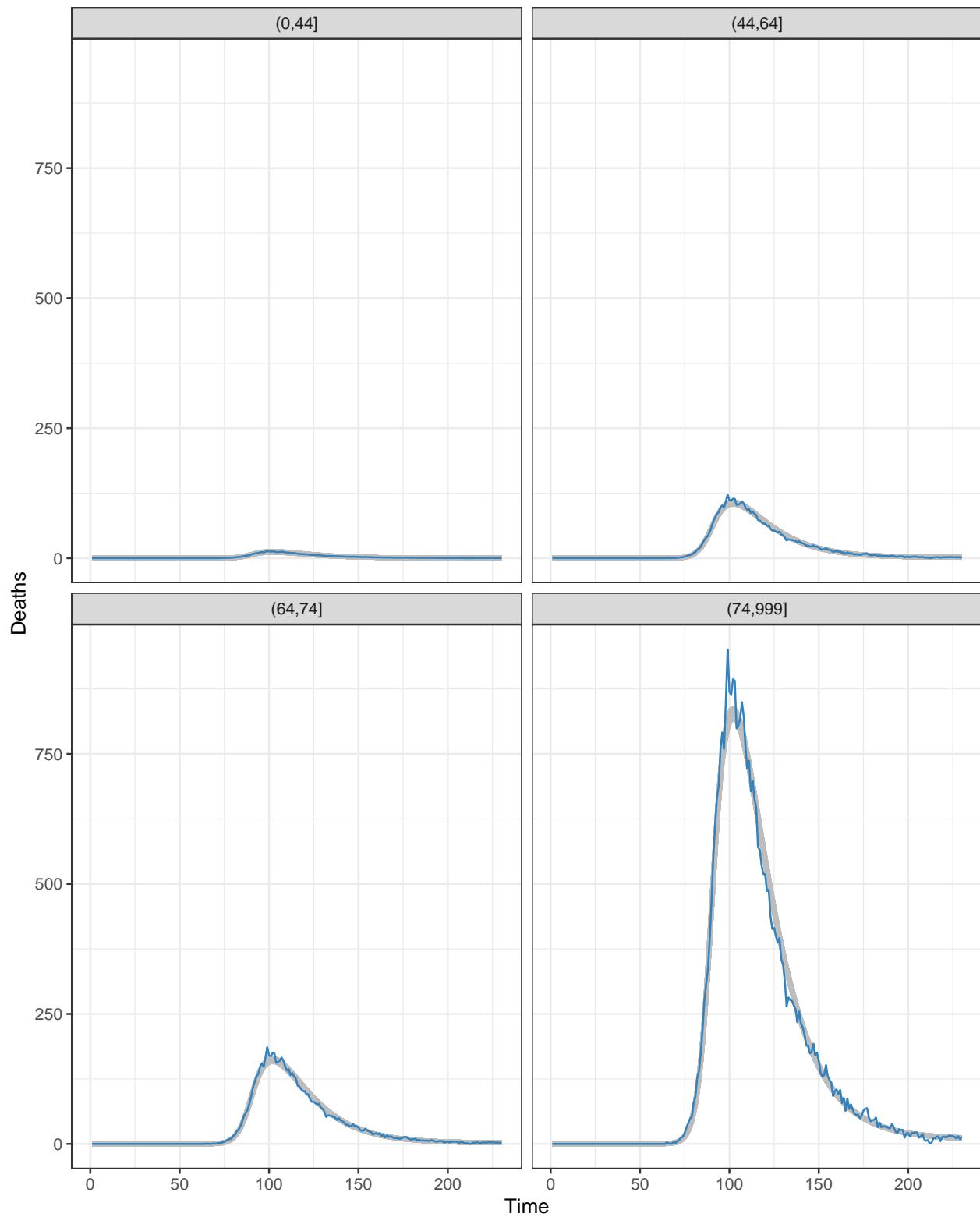
chain	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
chain1	0.0080	0.0085	0.0103	0.0102	0.0120	0.0125	21.6443	2.5513	0.0154
chain2	0.0080	0.0083	0.0102	0.0101	0.0118	0.0127	98.7747	-2.1358	0.0408
chain3	0.0074	0.0082	0.0101	0.0101	0.0118	0.0125	118.3475	-5.4531	0.0000
chain4	0.0074	0.0089	0.0105	0.0105	0.0122	0.0127	80.7397	-1.5759	0.1153
chain5	0.0074	0.0080	0.0103	0.0102	0.0118	0.0124	29.2141	-0.5132	0.3497
chain6	0.0072	0.0078	0.0102	0.0101	0.0118	0.0123	95.9403	3.6514	0.0005
chain7	0.0072	0.0076	0.0101	0.0102	0.0123	0.0130	46.4194	-2.0243	0.0514
chain8	0.0077	0.0086	0.0103	0.0102	0.0117	0.0128	81.8027	1.0504	0.2298
chain9	0.0076	0.0083	0.0105	0.0104	0.0118	0.0124	83.8397	-3.6368	0.0005
chain10	0.0077	0.0084	0.0103	0.0102	0.0116	0.0128	125.7753	1.9181	0.0634



### 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)

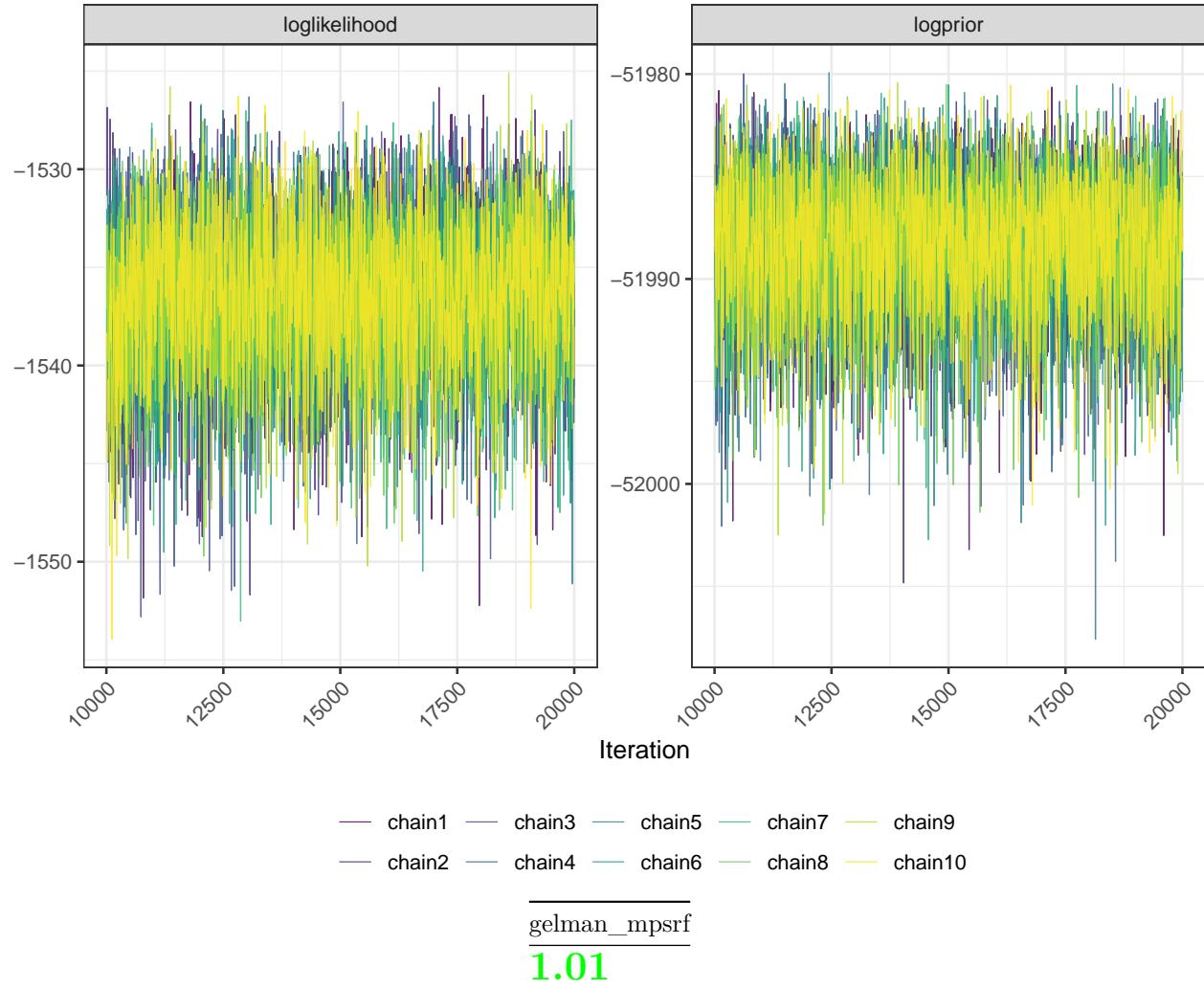
## Additional Parameters

param	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
x1	1.0692	2.9645	52.0539	50.1047	62.6923	67.9901	309.4655	1.4625	0.1369
x2	88.1685	90.2948	92.1754	92.0973	93.4810	94.3658	783.0156	0.0405	0.3986
x3	93.3023	94.3505	95.7594	95.7928	97.4969	99.5666	598.2805	-0.1083	0.3966
x4	214.0004	214.0945	216.2629	217.2340	226.2197	229.9478	479.8540	-0.4729	0.3567
y1	0.0001	0.0549	1.2037	1.3514	3.4807	5.3600	2681.4396	-0.6598	0.3209
y2	0.0005	0.1931	2.7461	2.8166	6.2863	7.6463	491.8717	-0.0032	0.3989
y3	11.9526	12.0888	12.2535	12.2622	12.4813	12.6313	532.2930	0.2208	0.3893
y4	11.4110	11.7077	11.9385	11.9449	12.1907	12.3636	579.2147	0.1001	0.3969
y5	6.7286	6.9229	7.1388	7.1432	7.3936	7.6336	869.5393	0.0044	0.3989
Ne1	1.0725	1.1230	1.1886	1.1893	1.2579	1.3184	2362.6122	0.5122	0.3499
Ne2	0.9571	1.0240	1.0862	1.0866	1.1509	1.2086	2747.1578	1.8247	0.0755
Ne3	0.6451	0.6930	0.7588	0.7586	0.8235	0.8929	2645.1425	0.8785	0.2712
Ne4	0.7008	0.7636	0.8416	0.8419	0.9192	1.0162	549.3151	-0.5203	0.3484

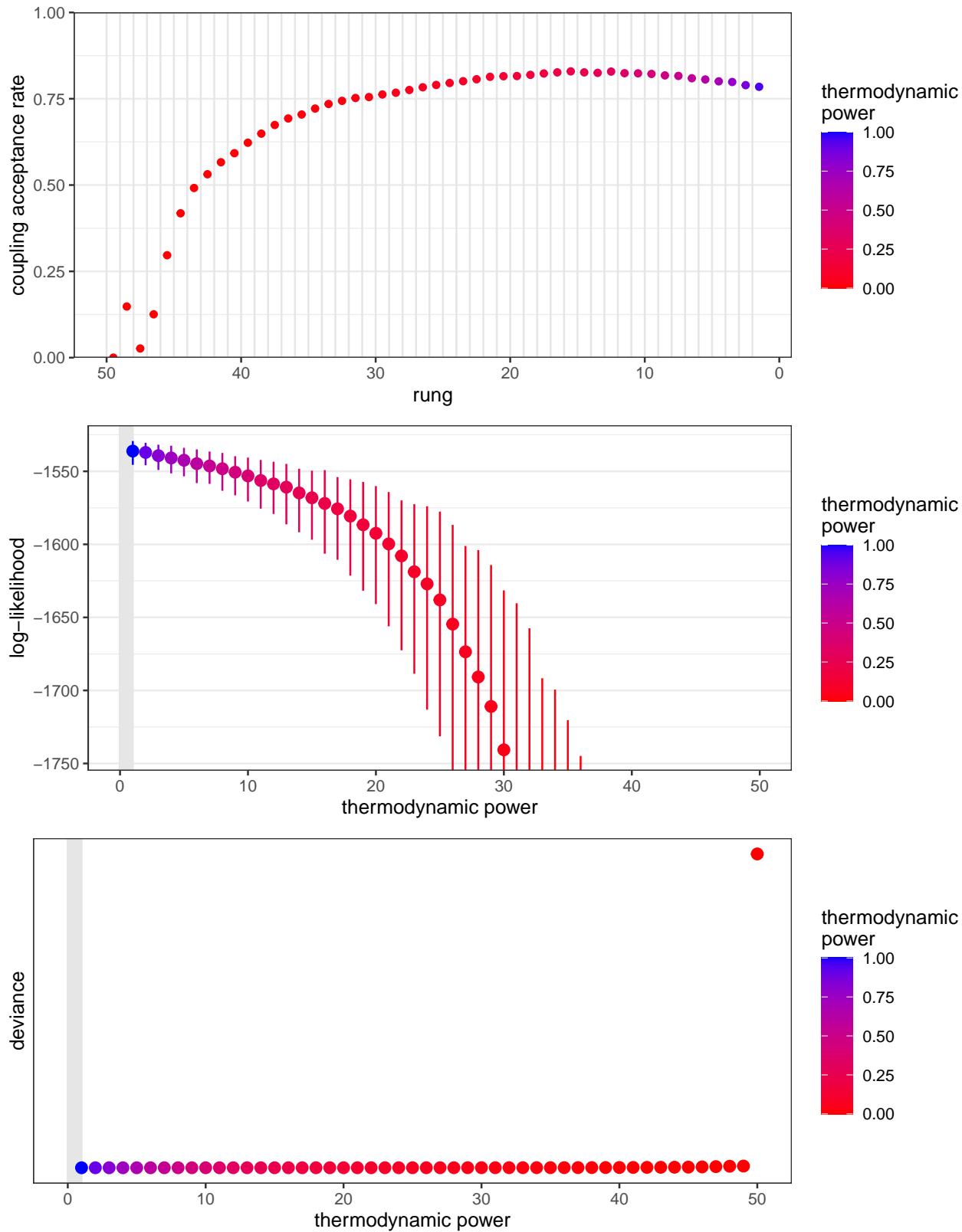
# ITA1 with the Potential for Seroreversion Included

## Fit Diagnostics

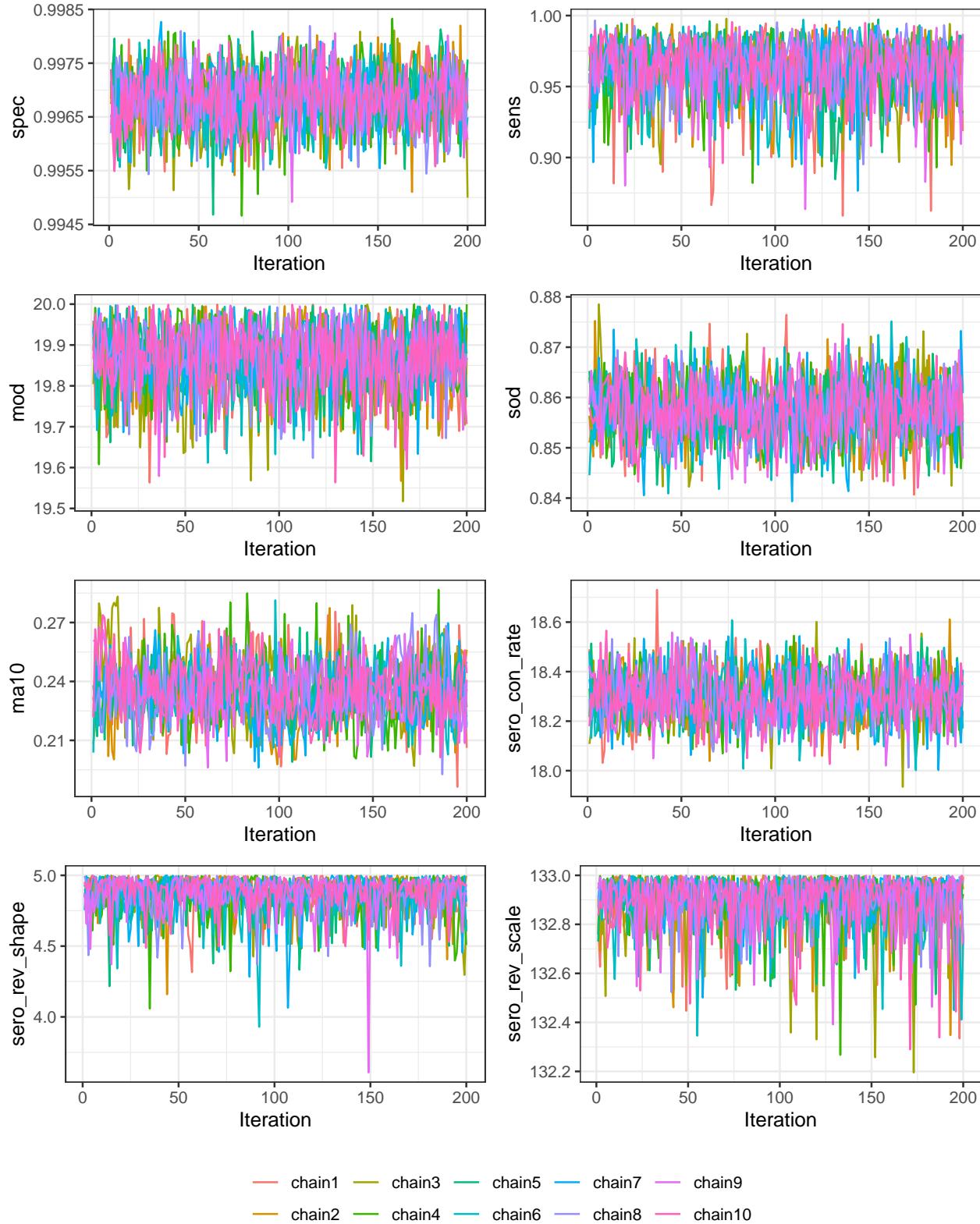
### Log Likelihood & Prior Plot



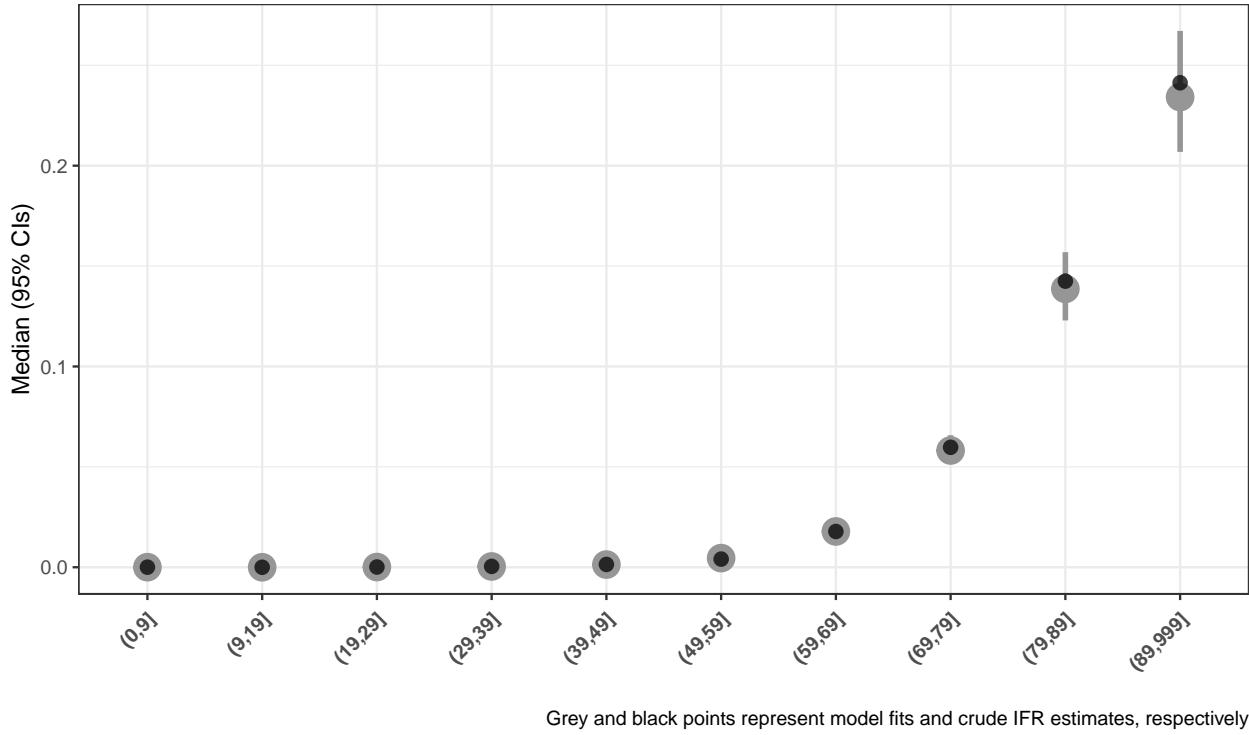
### Metropolis Coupling Acceptance Plot



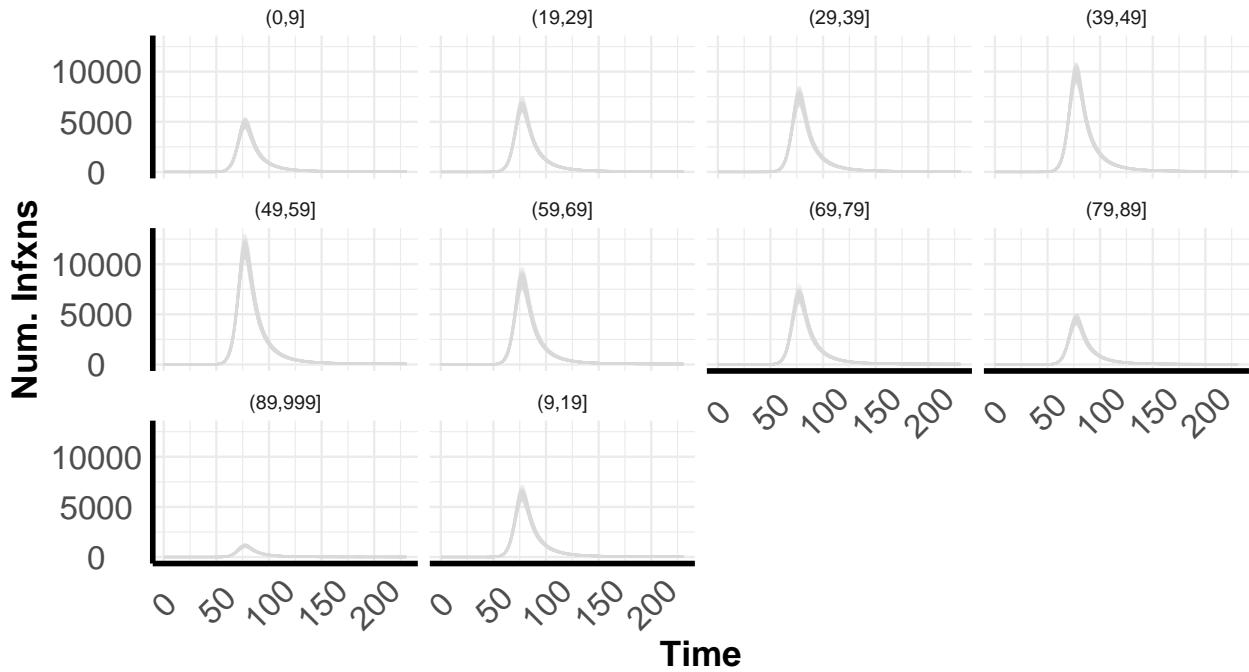
## Serological Diagnostics



## IFRs & Incidence Curve



## Posterior Draws of the Infection Curve



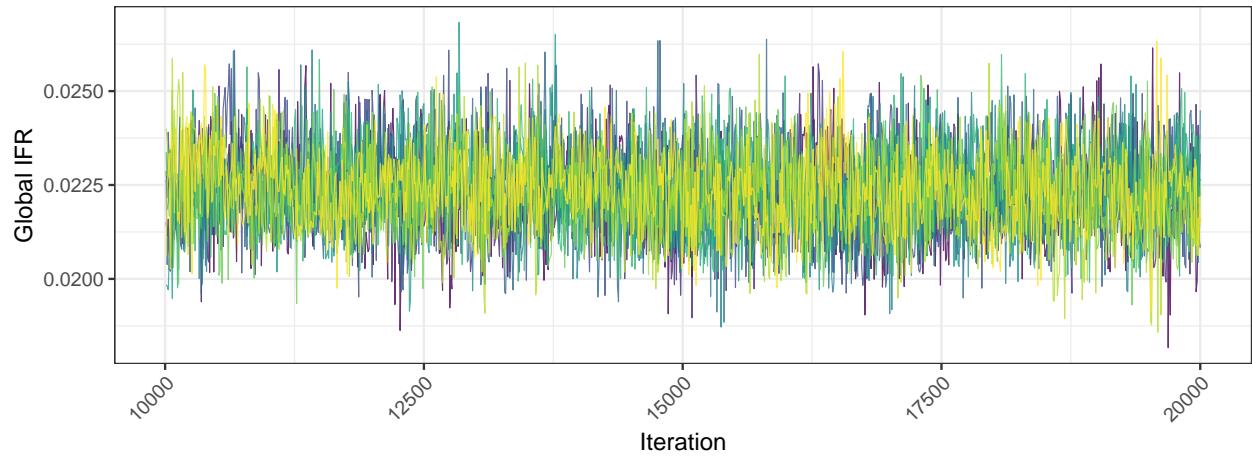
### Strata IFR

strata	param	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
(0,9]	ma1	0.0000	0.0000	0.0000	0.0000	0.0001	0.0001	10000.000	-0.8389	0.2806
(9,19]	ma2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	8306.209	-0.7082	0.3105
(19,29]	ma3	0.0000	0.0001	0.0001	0.0001	0.0002	0.0002	9530.514	-0.2265	0.3888
(29,39]	ma4	0.0002	0.0003	0.0004	0.0004	0.0005	0.0006	9352.852	-1.6442	0.1032
(39,49]	ma5	0.0010	0.0011	0.0013	0.0013	0.0016	0.0018	5289.399	-0.1914	0.3917
(49,59]	ma6	0.0035	0.0040	0.0046	0.0046	0.0052	0.0057	3849.662	-1.8679	0.0697
(59,69]	ma7	0.0138	0.0157	0.0178	0.0179	0.0202	0.0233	2995.625	0.0531	0.3984
(69,79]	ma8	0.0461	0.0515	0.0582	0.0583	0.0658	0.0749	2718.653	-1.5658	0.1171
(79,89]	ma9	0.1077	0.1229	0.1386	0.1389	0.1569	0.1772	2708.738	-1.9720	0.0571
(89,999]	ma10	0.1784	0.2069	0.2342	0.2351	0.2671	0.3006	1823.730	0.9409	0.2563

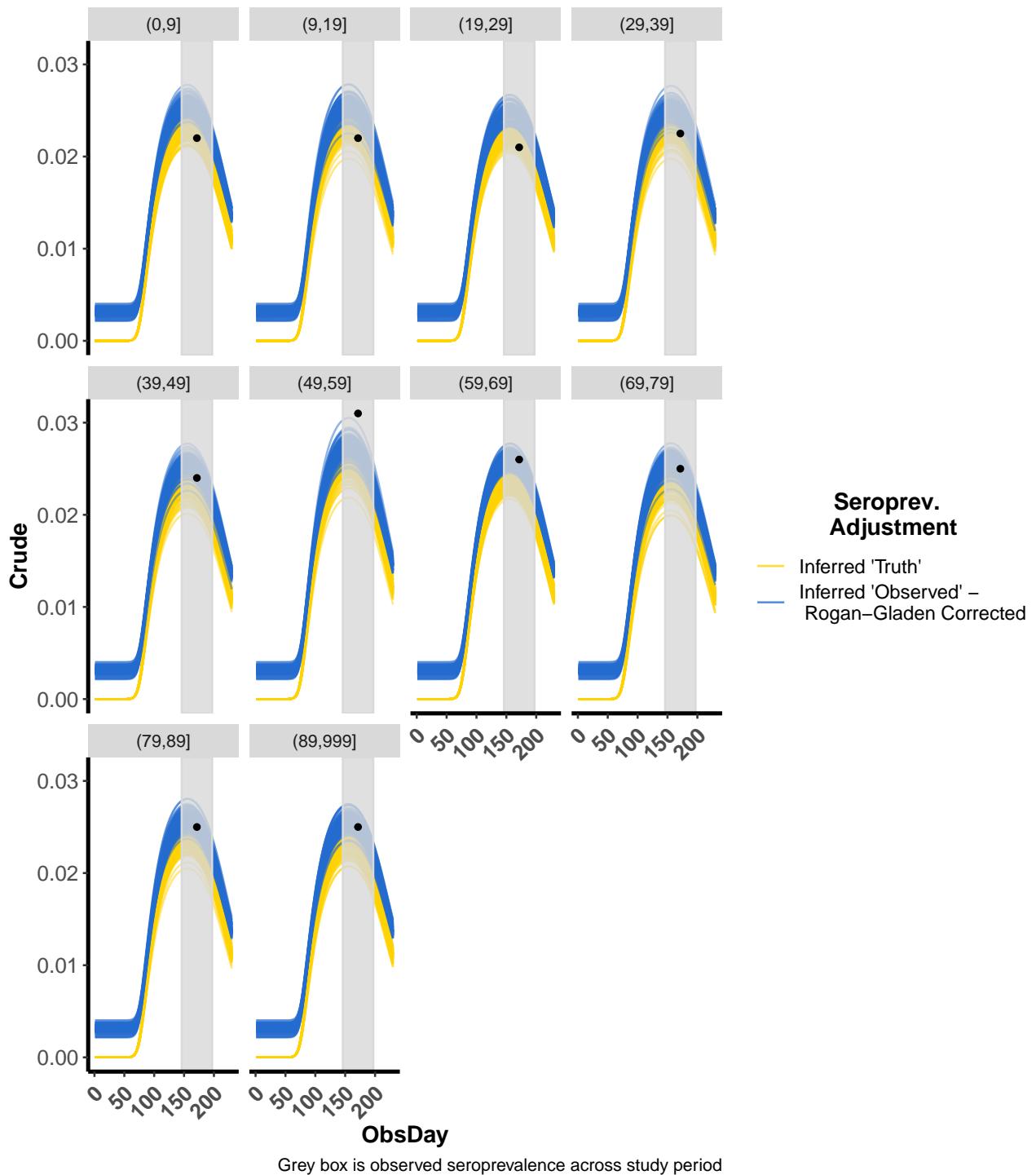
### Overall IFR

min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
0.0185	0.0204	0.0223	0.0223	0.0244	0.0264	3915.081	4.4347	0

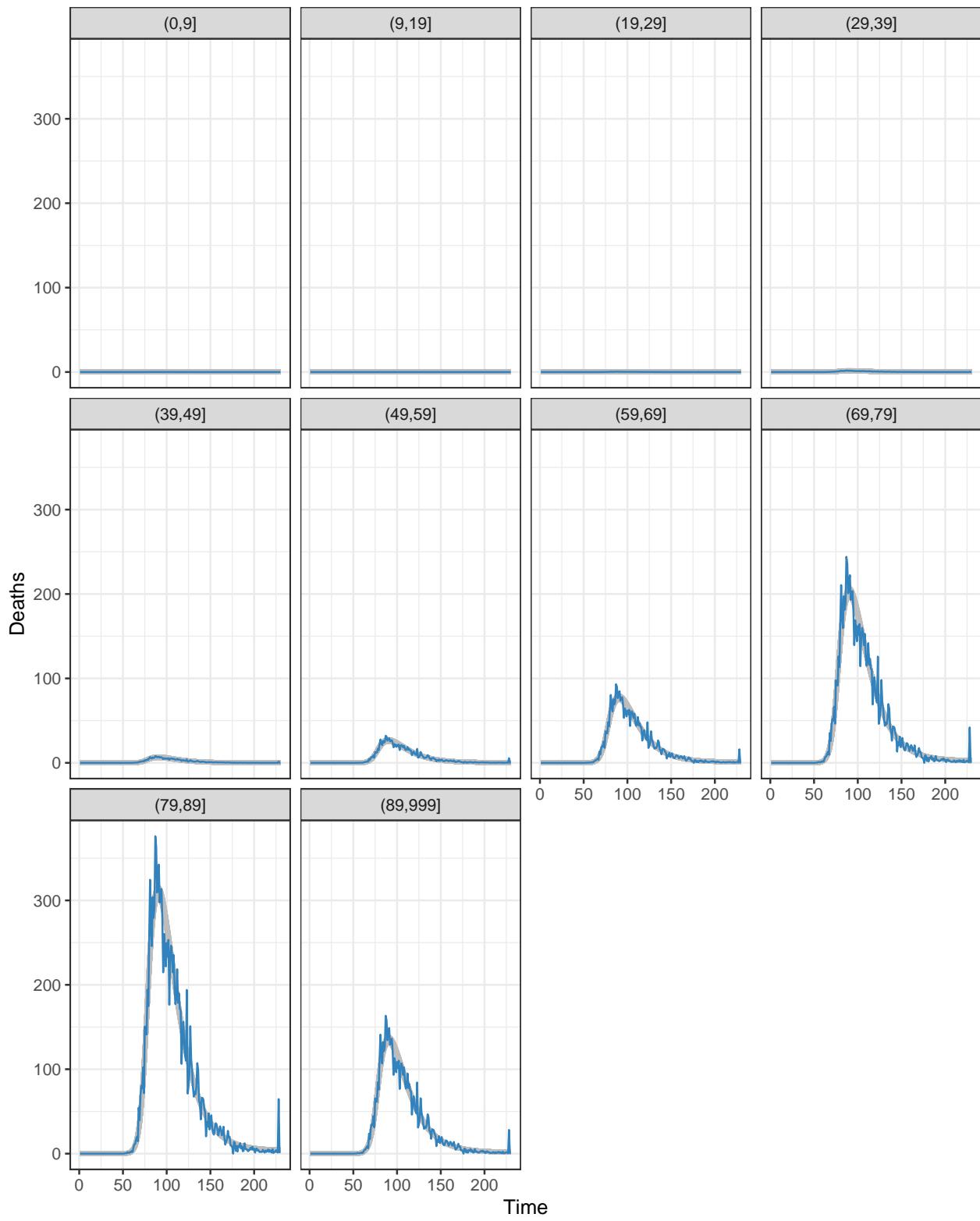
chain	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
chain1	0.0185	0.0203	0.0222	0.0223	0.0244	0.0256	481.7109	2.0711	0.0467
chain2	0.0187	0.0204	0.0222	0.0222	0.0242	0.0258	447.6966	0.1142	0.3963
chain3	0.0193	0.0203	0.0223	0.0224	0.0248	0.0264	156.2236	3.7450	0.0004
chain4	0.0192	0.0204	0.0223	0.0223	0.0245	0.0261	426.8042	-1.3941	0.1510
chain5	0.0187	0.0204	0.0224	0.0224	0.0244	0.0254	437.0508	-0.6789	0.3168
chain6	0.0193	0.0205	0.0223	0.0224	0.0244	0.0262	221.5977	-1.0070	0.2403
chain7	0.0196	0.0204	0.0223	0.0224	0.0244	0.0255	374.2857	1.7084	0.0927
chain8	0.0196	0.0204	0.0223	0.0223	0.0243	0.0254	231.8167	-0.5298	0.3467
chain9	0.0186	0.0200	0.0222	0.0222	0.0243	0.0256	220.6584	6.3607	0.0000
chain10	0.0197	0.0205	0.0224	0.0224	0.0244	0.0256	342.3040	4.0003	0.0001



### 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)

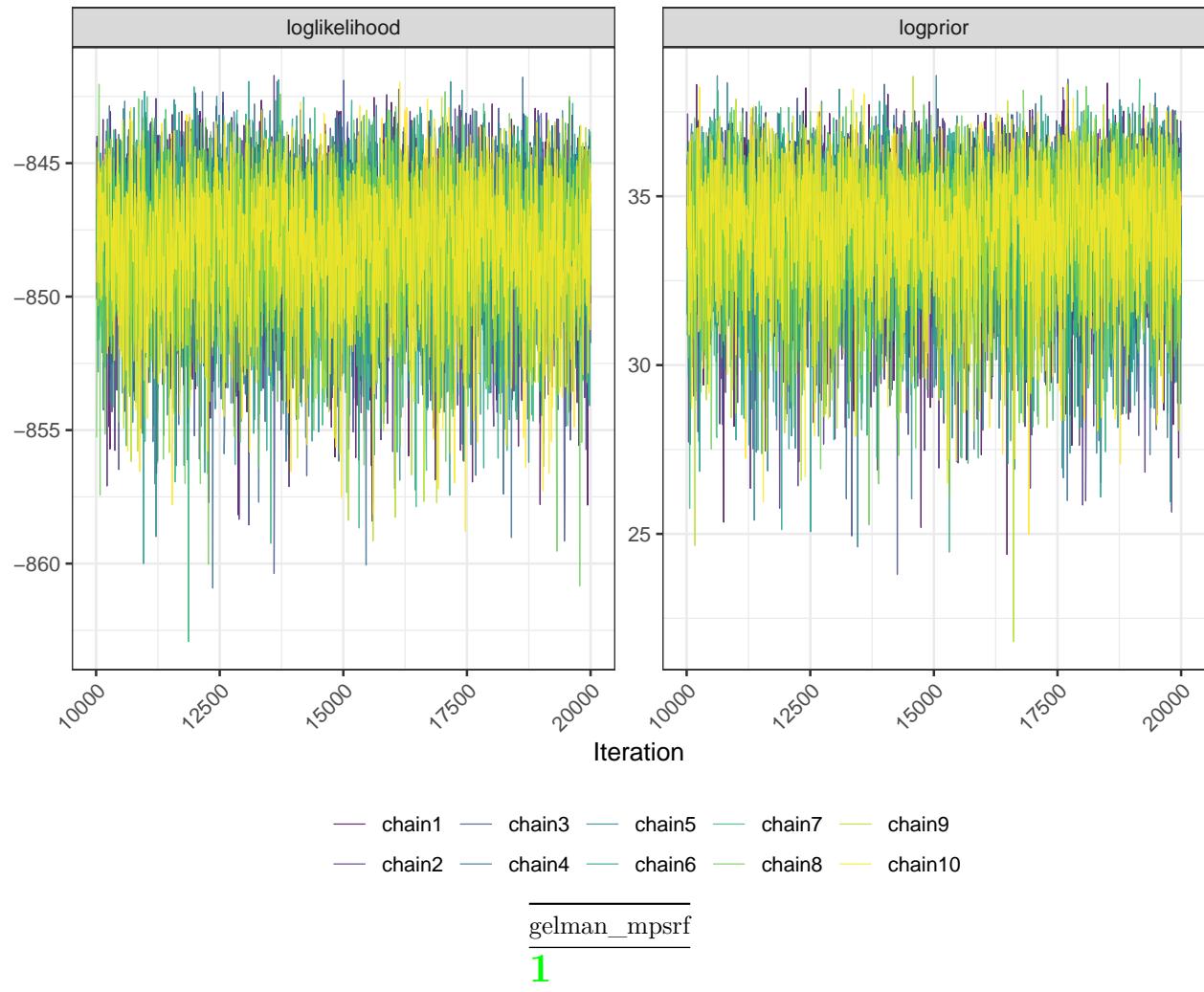
## Additional Parameters

param	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
x1	1.7309	3.0744	34.2412	28.7139	44.2087	53.7356	307.8403	-1.2231	0.1888
x2	67.4958	70.8253	77.0186	76.6635	79.9721	81.4266	429.9133	1.2661	0.1790
x3	80.4842	82.0993	85.1162	85.2067	89.1993	91.7685	451.9884	-1.1517	0.2055
x4	214.0764	220.6649	228.2078	227.4462	229.9365	229.9994	1813.2394	-2.0220	0.0517
y1	0.0001	0.0519	1.2300	1.4429	3.6942	5.0672	906.2785	2.7298	0.0096
y2	0.0001	0.0344	0.8549	1.1239	3.4357	6.2696	1040.5930	-0.4355	0.3628
y3	10.1110	10.6657	11.0815	11.0543	11.1904	11.2959	583.9399	-0.7971	0.2904
y4	10.0971	10.3009	10.6283	10.6216	10.8885	11.0675	454.9906	1.6740	0.0983
y5	5.5339	5.7216	5.9506	5.9494	6.1741	6.3798	5335.9250	-0.1365	0.3952
Ne1	0.7900	0.8906	0.9851	0.9846	1.0774	1.1841	9192.5555	-0.0895	0.3973
Ne10	0.8489	0.9166	1.0021	1.0029	1.0909	1.1792	2066.8549	-2.5322	0.0162
Ne2	0.8110	0.8916	0.9854	0.9852	1.0787	1.1664	9627.1759	-1.2099	0.1919
Ne3	0.7544	0.8726	0.9617	0.9620	1.0523	1.1297	9369.2285	-0.3141	0.3797
Ne4	0.8010	0.8882	0.9757	0.9755	1.0656	1.1763	9301.1987	-1.2505	0.1825
Ne5	0.8265	0.9041	0.9905	0.9908	1.0781	1.1563	7835.9444	-0.1375	0.3952
Ne6	0.9066	0.9937	1.0767	1.0769	1.1614	1.2662	7674.8118	0.7963	0.2905
Ne7	0.8593	0.9249	1.0123	1.0129	1.1029	1.2253	5148.9873	-1.3225	0.1664
Ne8	0.8416	0.9134	1.0017	1.0018	1.0903	1.1797	3809.8415	1.5566	0.1188
Ne9	0.8385	0.9148	1.0022	1.0023	1.0918	1.1635	2839.3260	1.5597	0.1182

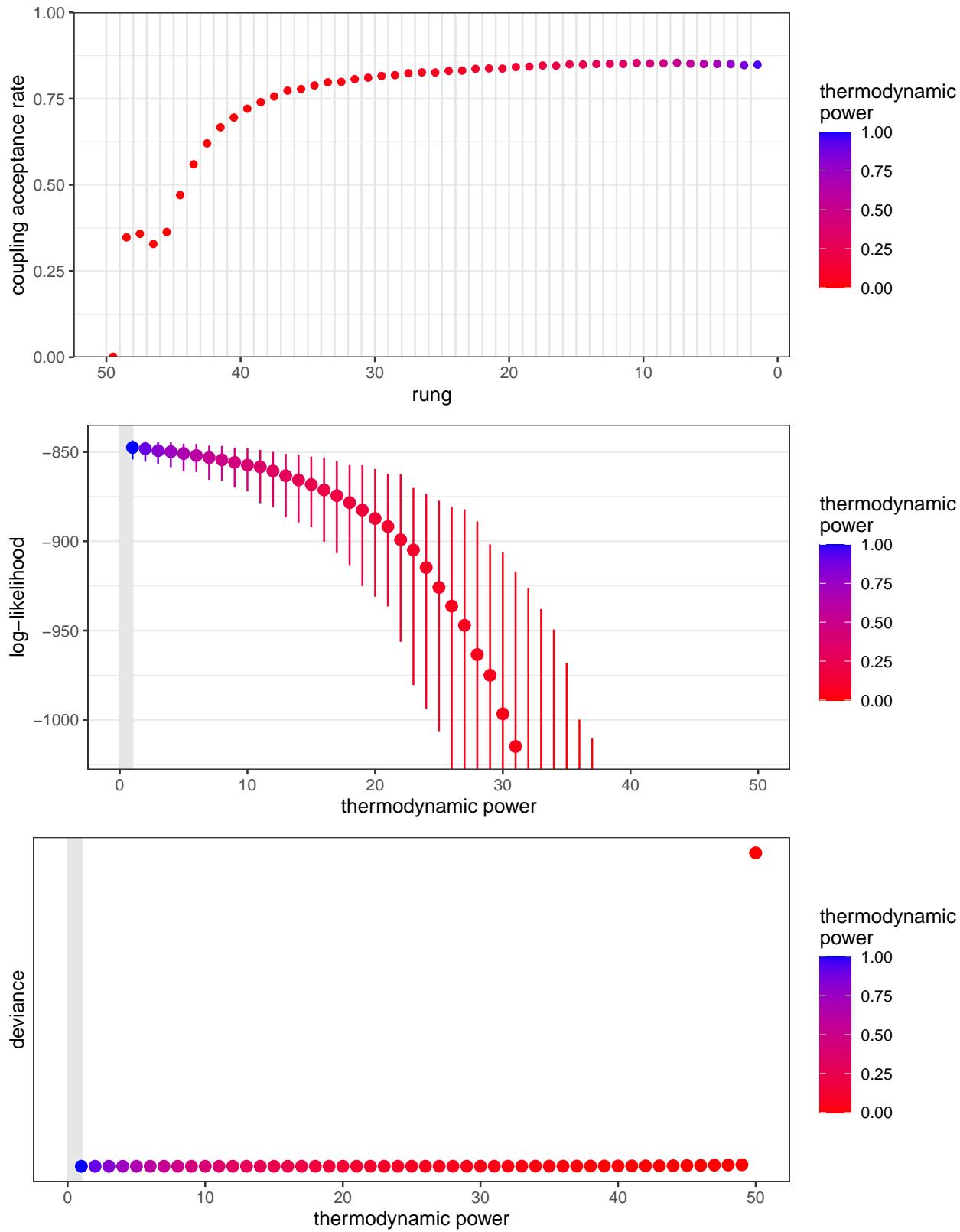
# NLD1 with the Potential for Seroreversion Included

## Fit Diagnostics

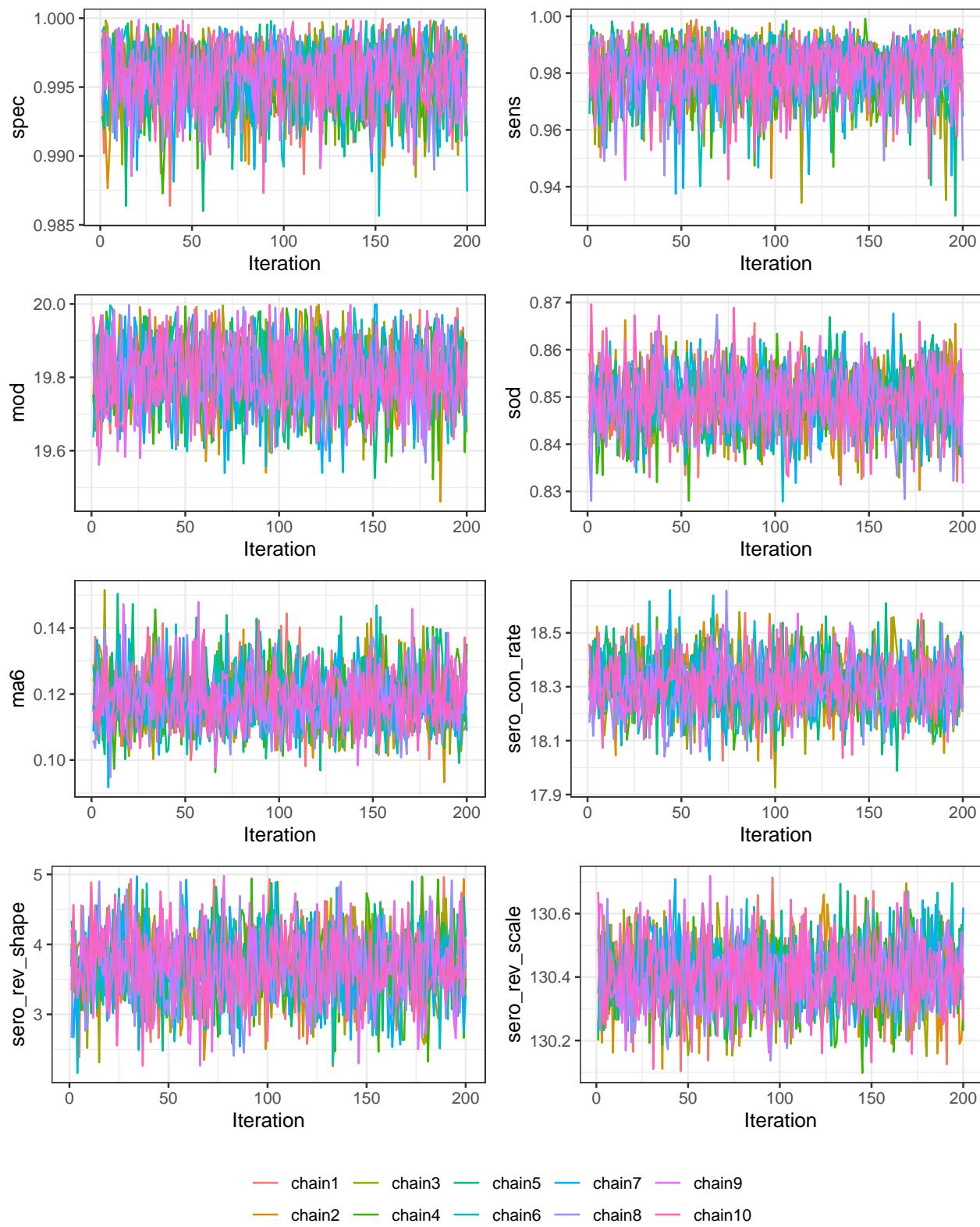
### Log Likelihood & Prior Plot



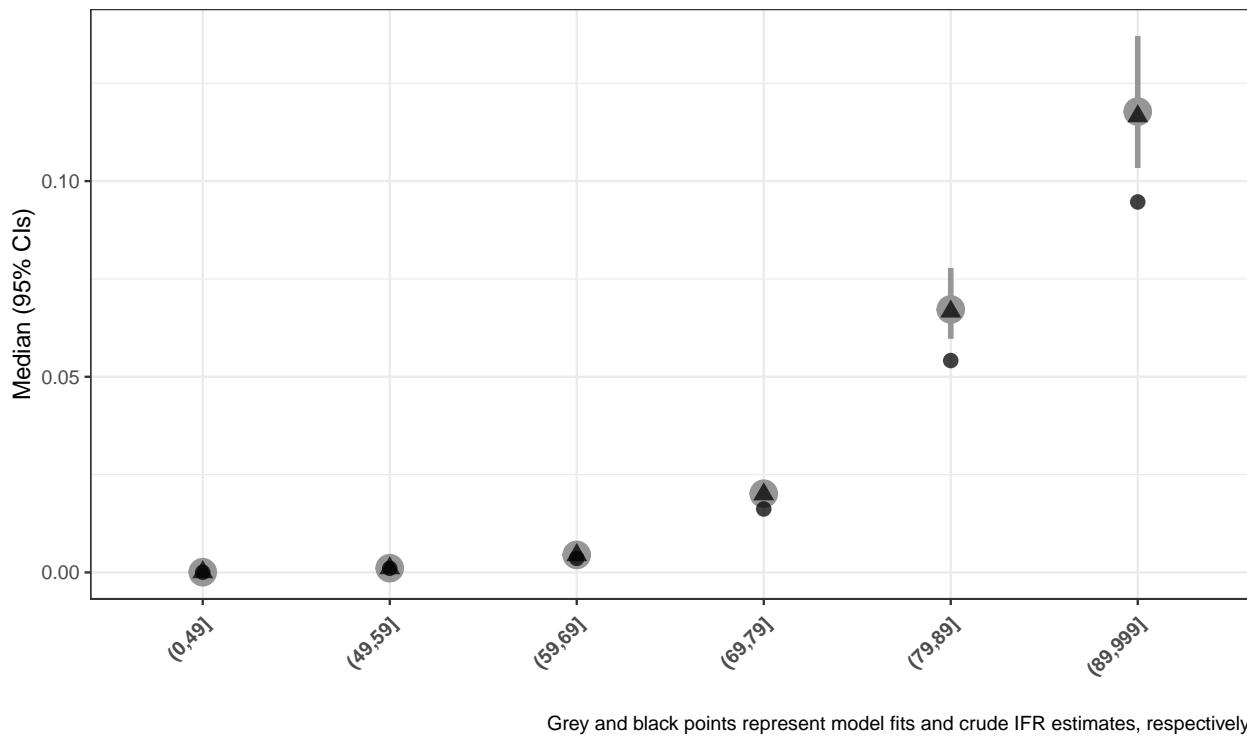
### Metropolis Coupling Acceptance Plot



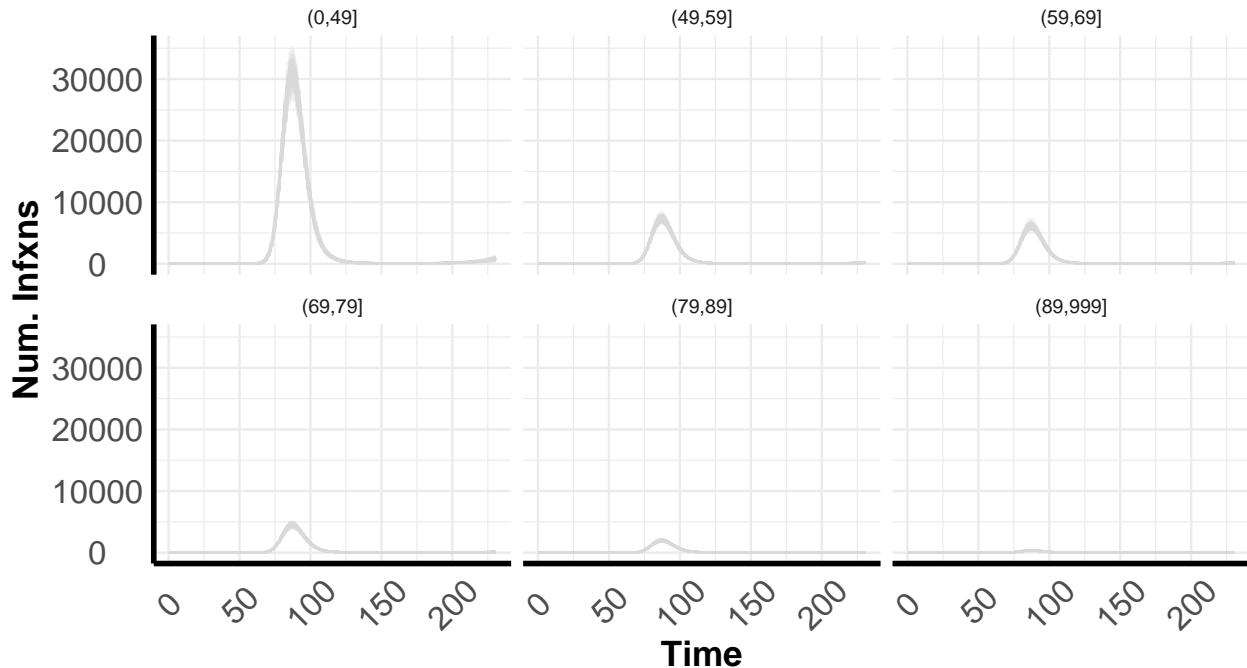
## Serological Diagnostics



## IFRs & Incidence Curve



## Posterior Draws of the Infection Curve



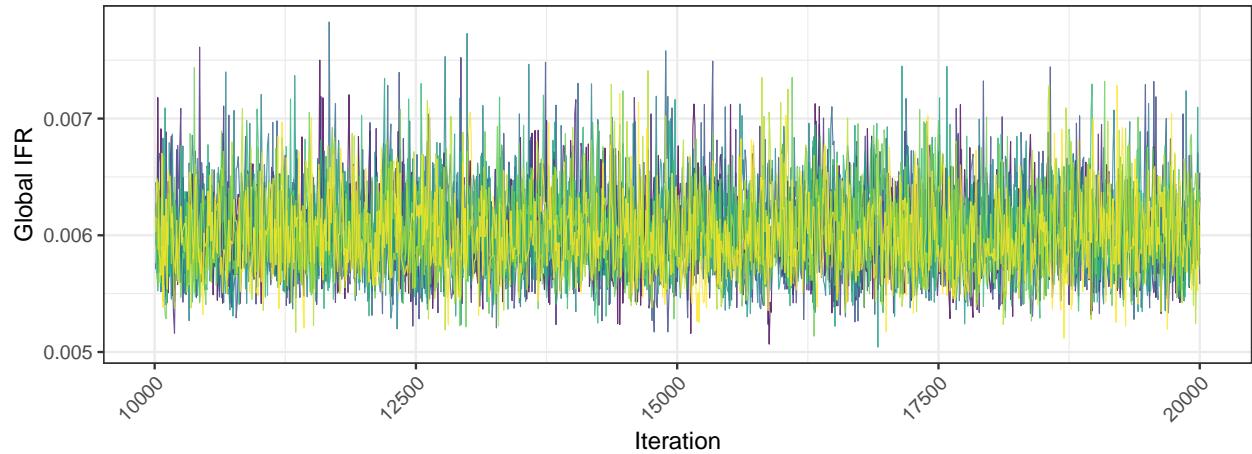
## Strata IFR

strata	param	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
(0,49]	ma1	0.0000	0.0000	0.0001	0.0001	0.0001	0.0001	8929.905	0.8103	0.2873
(49,59]	ma2	0.0008	0.0009	0.0011	0.0011	0.0013	0.0018	9477.608	-0.4464	0.3611
(59,69]	ma3	0.0035	0.0039	0.0045	0.0045	0.0053	0.0062	7432.853	-0.2184	0.3895
(69,79]	ma4	0.0162	0.0179	0.0201	0.0203	0.0234	0.0272	6608.581	0.0924	0.3972
(79,89]	ma5	0.0549	0.0597	0.0672	0.0676	0.0778	0.0913	7150.062	-0.6966	0.3130
(89,999]	ma6	0.0917	0.1033	0.1178	0.1184	0.1371	0.1553	5721.009	-1.5018	0.1292

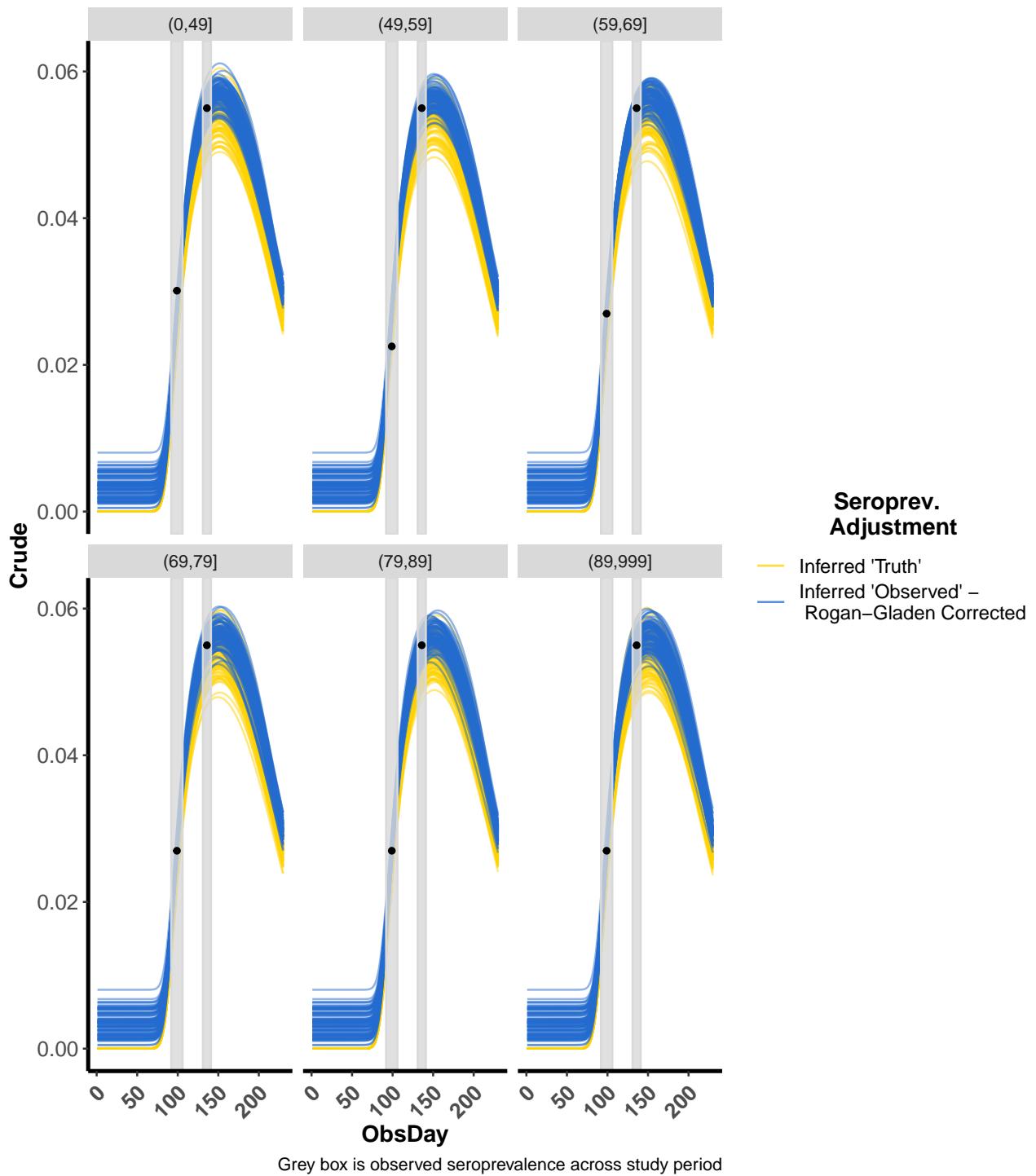
## Overall IFR

min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
0.005	0.0054	0.0059	0.006	0.0068	0.0078	5885.913	-0.0825	0.3976

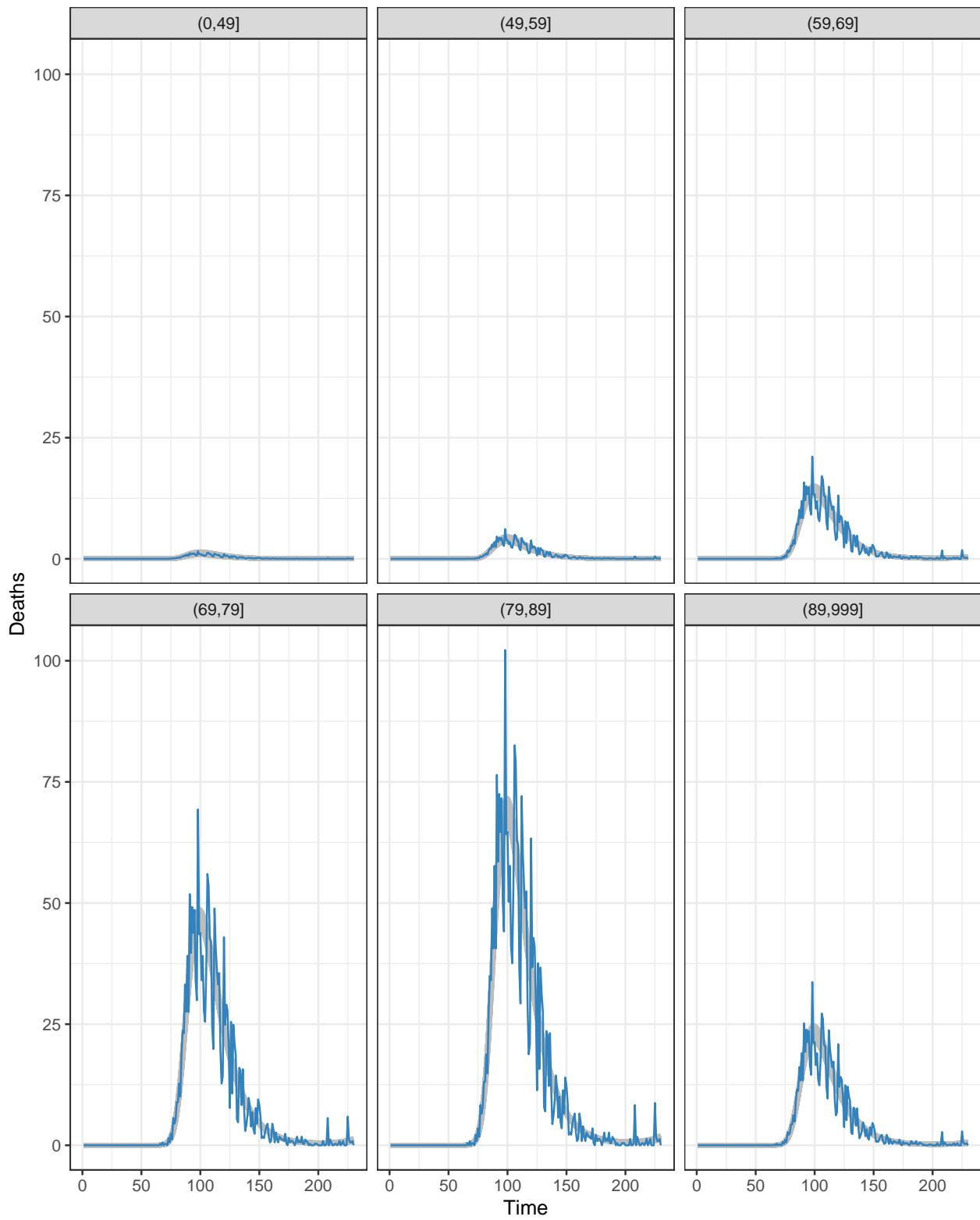
chain	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
chain1	0.0051	0.0054	0.0059	0.006	0.0068	0.0075	676.5532	0.8181	0.2855
chain2	0.0051	0.0054	0.0059	0.006	0.0068	0.0073	590.2313	1.9106	0.0643
chain3	0.0052	0.0054	0.0059	0.006	0.0068	0.0075	519.3472	0.1575	0.3940
chain4	0.0051	0.0054	0.0060	0.006	0.0068	0.0076	684.4681	-0.7715	0.2963
chain5	0.0050	0.0054	0.0060	0.006	0.0068	0.0078	709.4757	1.1124	0.2149
chain6	0.0050	0.0054	0.0060	0.006	0.0068	0.0073	815.9281	-2.6031	0.0135
chain7	0.0051	0.0054	0.0060	0.006	0.0069	0.0073	743.7928	1.0595	0.2276
chain8	0.0052	0.0054	0.0059	0.006	0.0067	0.0072	584.3453	-0.2976	0.3817
chain9	0.0051	0.0054	0.0059	0.006	0.0069	0.0076	746.9145	-1.3364	0.1633
chain10	0.0051	0.0053	0.0059	0.006	0.0068	0.0072	805.2831	-0.0619	0.3982



### 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)

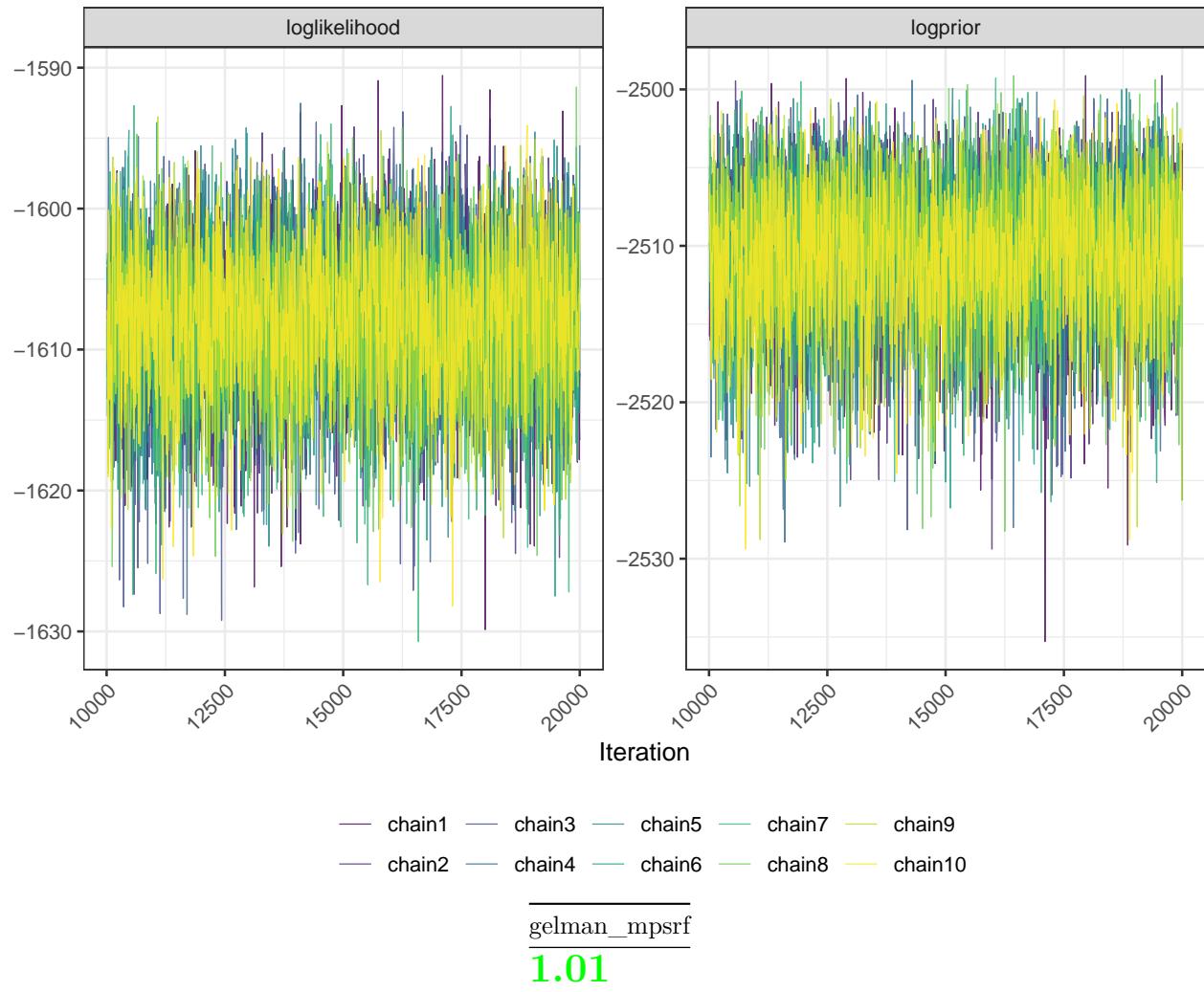
## Additional Parameters

param	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
x1	1.4111	2.2148	55.3805	51.6157	65.8868	71.8916	911.7901	1.0332	0.2339
x2	67.5734	70.6997	75.8515	75.9632	82.2275	94.5842	1938.6601	-2.3694	0.0241
x3	94.6092	103.3507	109.4466	109.5049	115.8681	121.5828	3453.3013	0.9674	0.2498
x4	214.0003	214.4223	222.1272	222.0999	229.5743	229.9951	1556.7249	-1.0253	0.2358
y1	0.0008	0.0694	1.6467	1.8618	4.7746	6.6211	3600.3985	0.9831	0.2461
y2	0.0001	0.0769	1.8246	2.1964	6.1393	7.9679	830.5142	-2.6401	0.0122
y3	6.9361	7.9768	9.5058	9.4345	10.6284	11.0328	1356.9997	-2.2439	0.0322
y4	6.1962	7.2502	8.2921	8.2668	9.1372	10.2577	3360.7936	-0.6698	0.3188
y5	5.7199	6.1165	6.7051	6.7349	7.4629	7.9251	2753.6990	-1.5499	0.1200
Ne1	0.8834	0.9397	1.0114	1.0119	1.0864	1.1548	8321.4289	-0.4538	0.3599
Ne2	0.8471	0.9171	0.9905	0.9912	1.0693	1.1262	10000.0000	-0.0057	0.3989
Ne3	0.8503	0.9256	1.0008	1.0008	1.0767	1.1413	9341.2003	-0.2582	0.3859
Ne4	0.8573	0.9243	1.0013	1.0011	1.0763	1.1492	8650.2723	-0.1049	0.3968
Ne5	0.8573	0.9261	1.0005	1.0010	1.0784	1.1684	7946.3659	0.5596	0.3411
Ne6	0.8548	0.9258	0.9999	1.0003	1.0770	1.1572	6940.3317	1.7846	0.0812

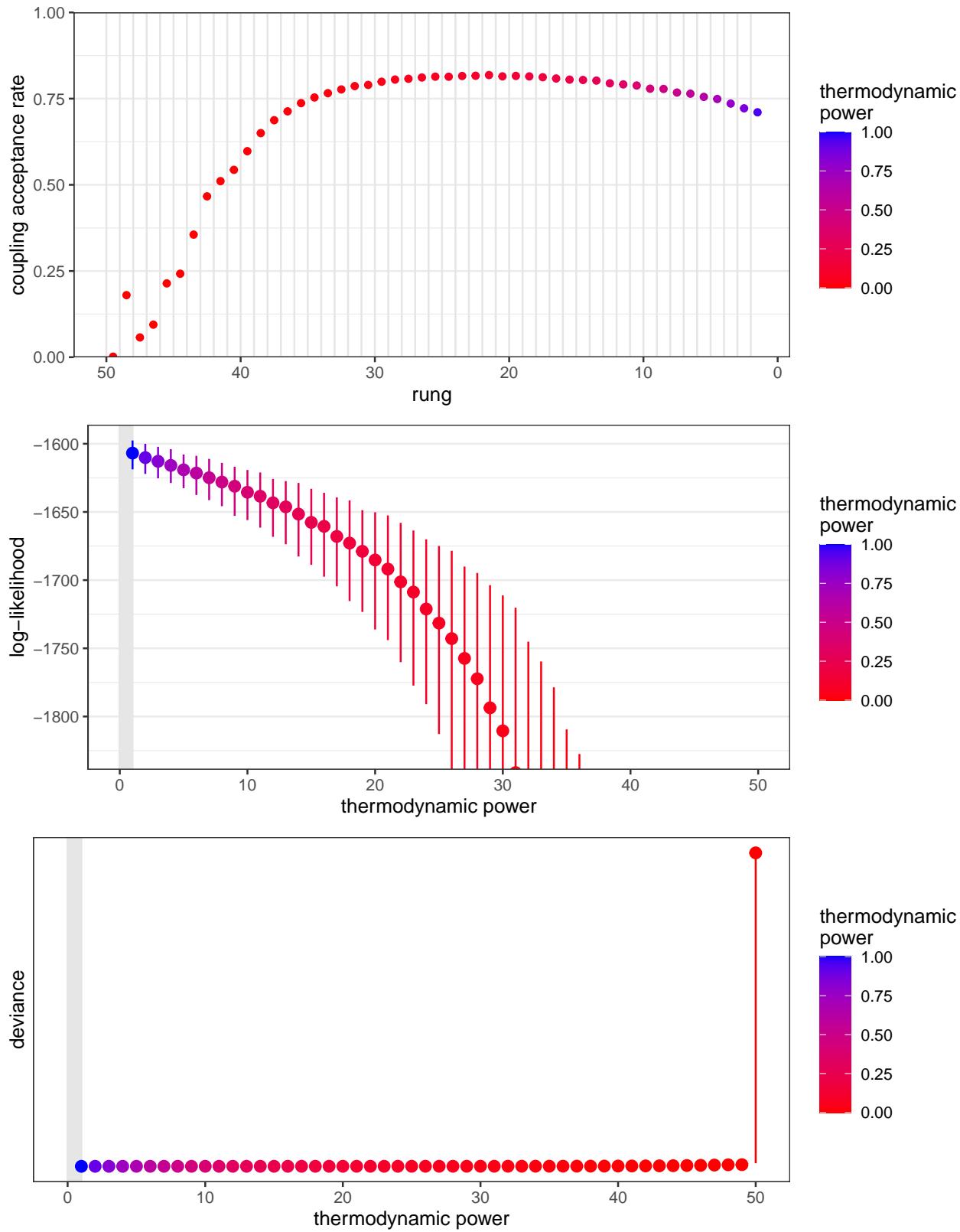
# NYS1 with the Potential for Seroreversion Included

## Fit Diagnostics

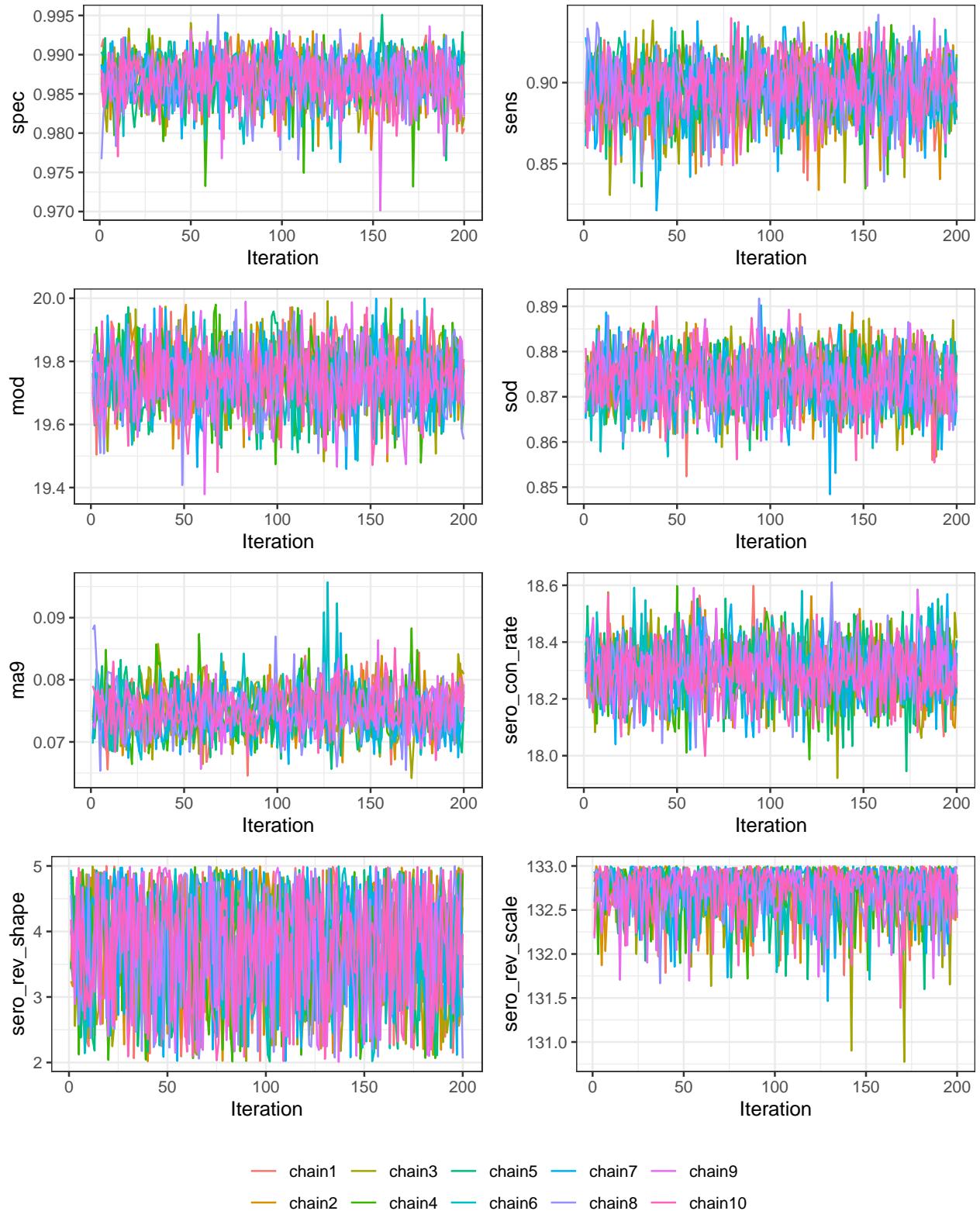
### Log Likelihood & Prior Plot



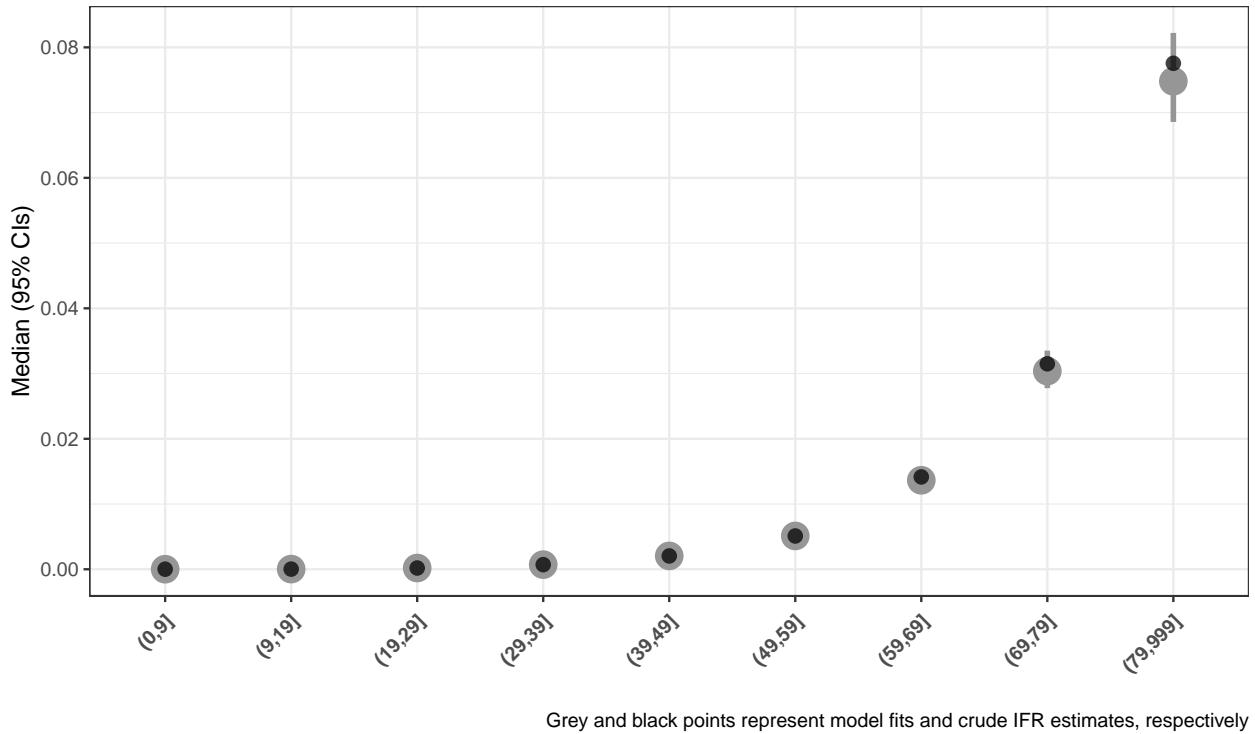
### Metropolis Coupling Acceptance Plot



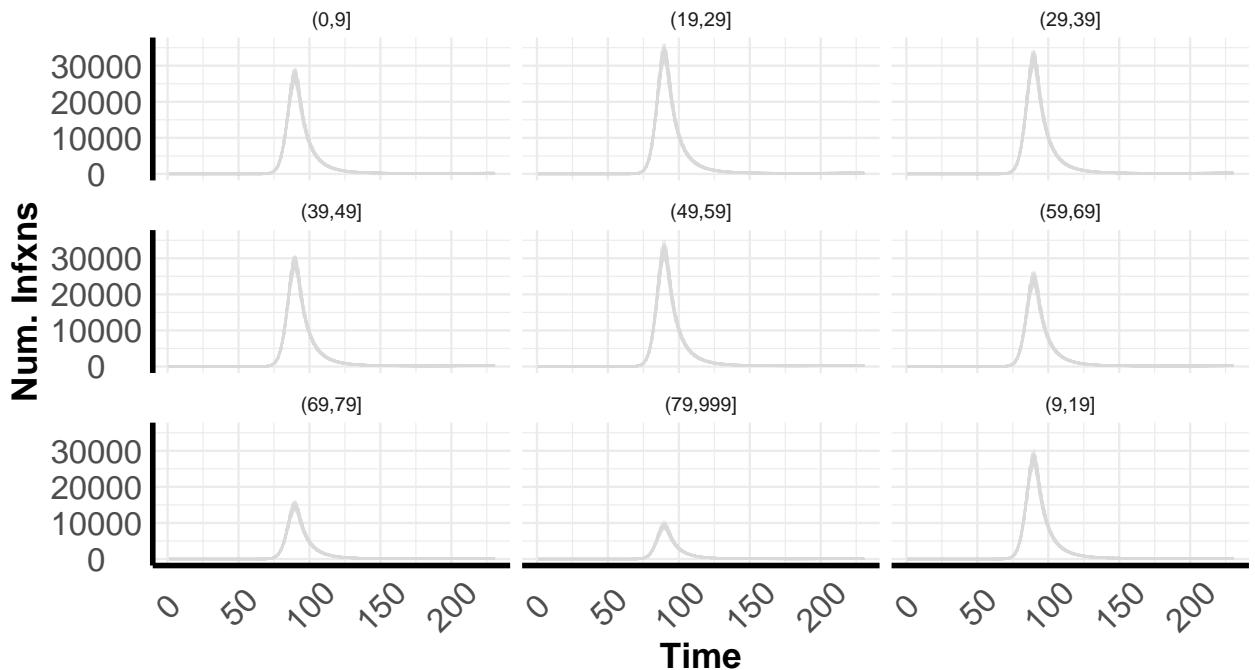
## Serological Diagnostics



## IFRs & Incidence Curve



## Posterior Draws of the Infection Curve



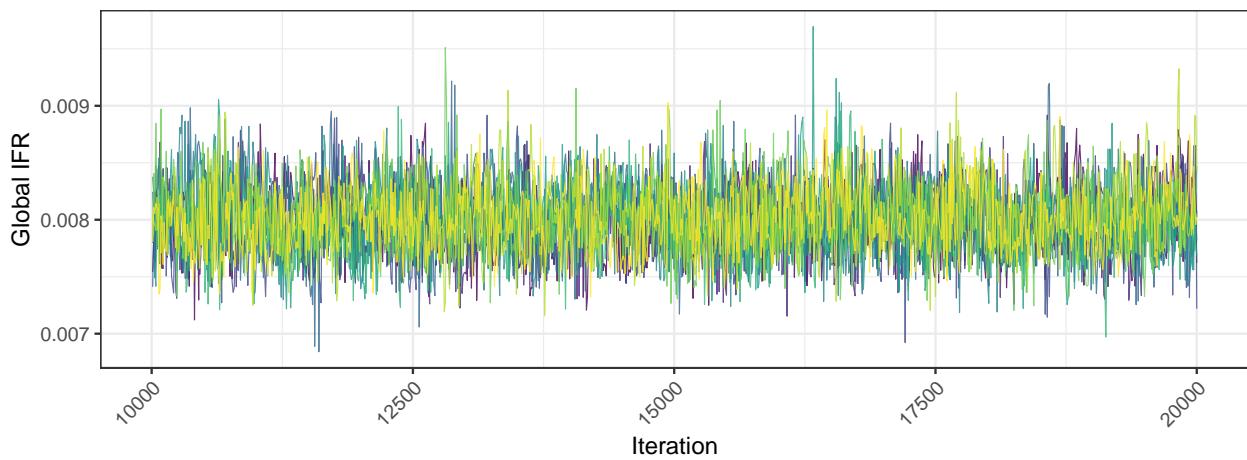
### Strata IFR

strata	param	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
(0,9]	ma1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	10000.000	-0.4764	0.3561
(9,19]	ma2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	9146.575	0.3612	0.3737
(19,29]	ma3	0.0001	0.0002	0.0002	0.0002	0.0002	0.0003	8255.854	0.2446	0.3872
(29,39]	ma4	0.0006	0.0006	0.0007	0.0007	0.0008	0.0009	5846.665	-0.5038	0.3514
(39,49]	ma5	0.0016	0.0018	0.0020	0.0020	0.0023	0.0026	3948.629	-1.1774	0.1995
(49,59]	ma6	0.0042	0.0047	0.0051	0.0051	0.0056	0.0060	3903.006	-3.4139	0.0012
(59,69]	ma7	0.0112	0.0124	0.0136	0.0137	0.0150	0.0167	3604.273	-1.5460	0.1207
(69,79]	ma8	0.0258	0.0278	0.0304	0.0304	0.0335	0.0375	2964.980	-0.7497	0.3012
(79,999]	ma9	0.0625	0.0686	0.0748	0.0750	0.0822	0.0957	1821.770	-0.1823	0.3924

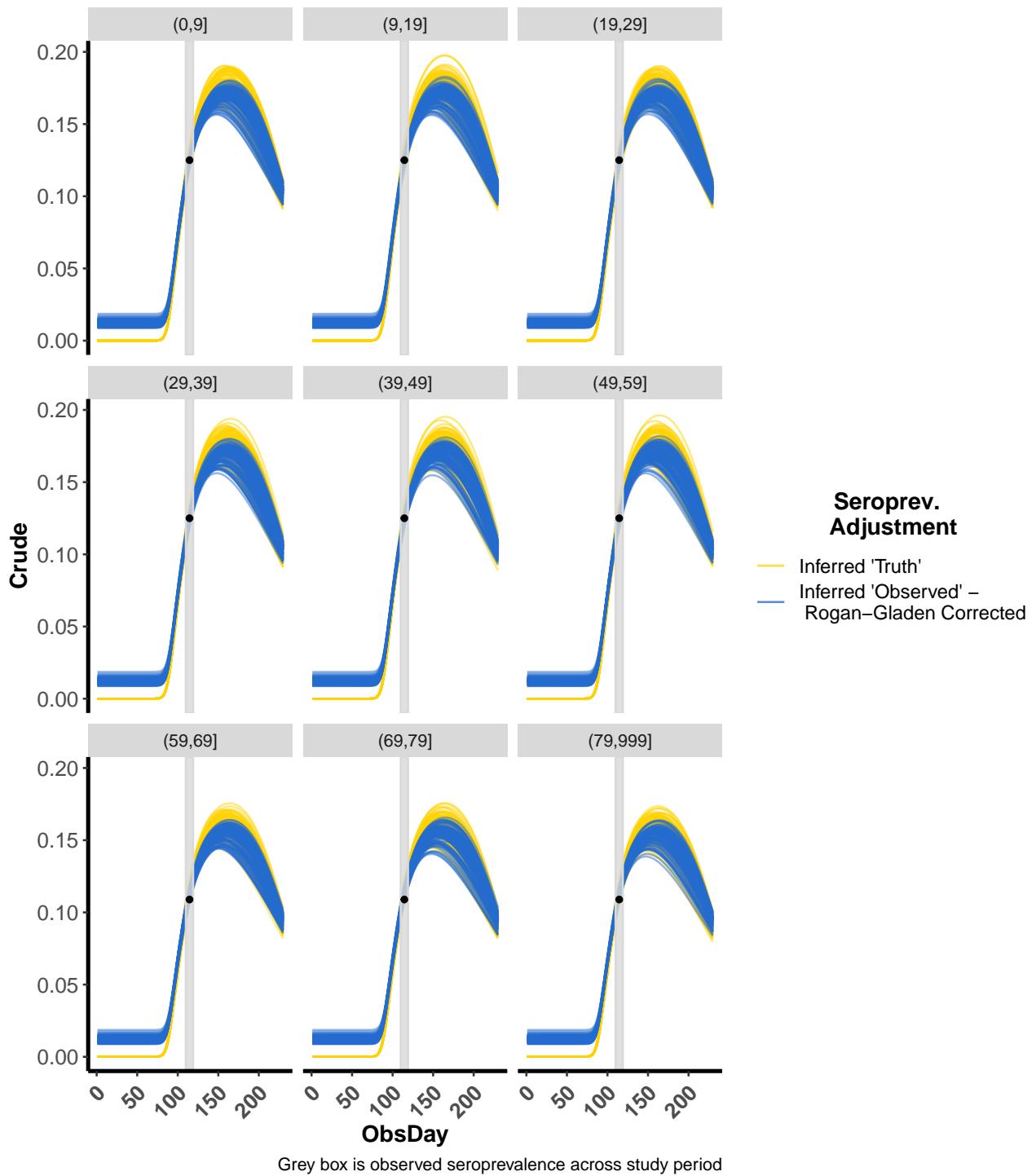
### Overall IFR

min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
0.0064	0.007	0.0075	0.0075	0.008	0.0087	3582.735	1.0174	0.2378

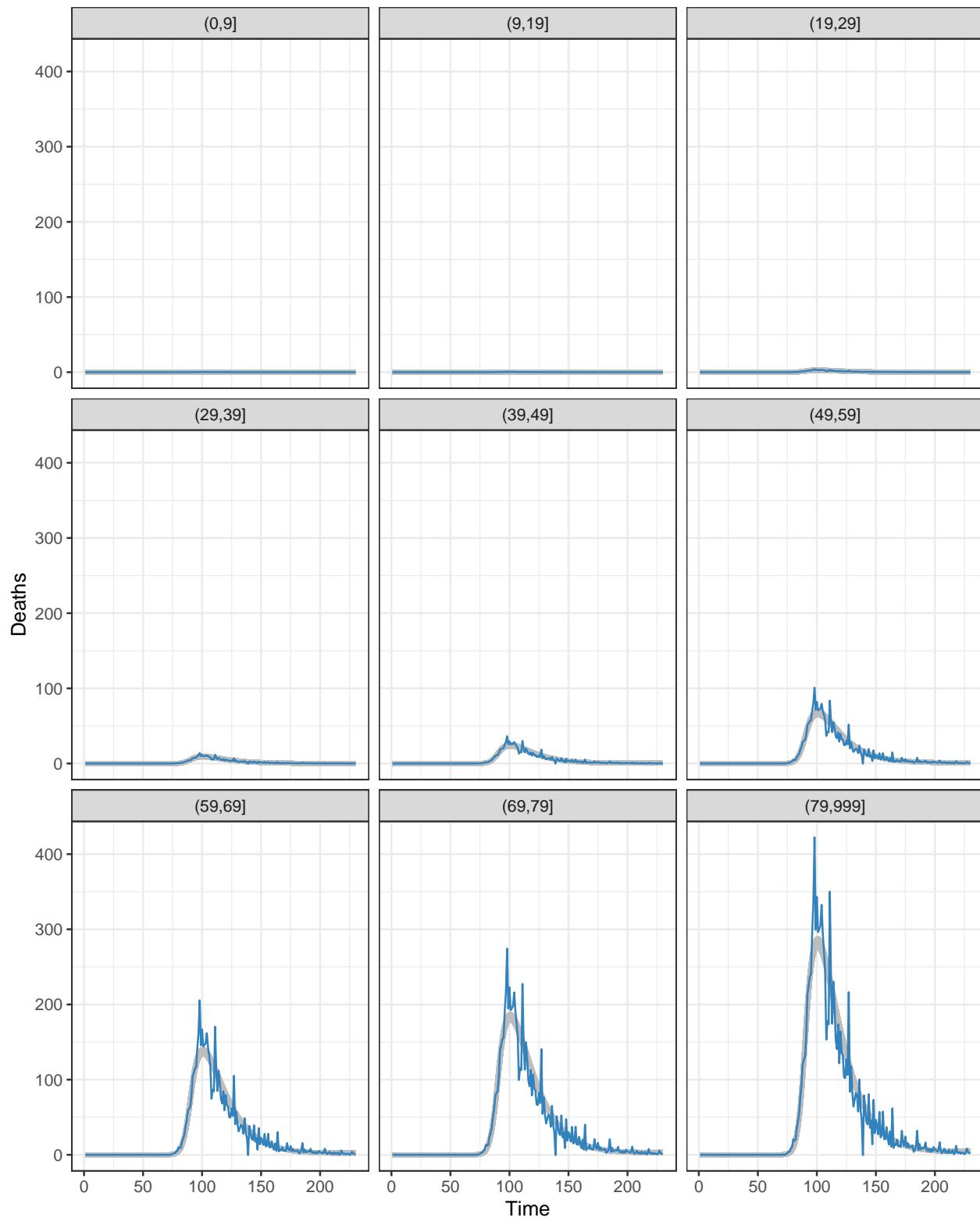
chain	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
chain1	0.0068	0.0070	0.0075	0.0075	0.0080	0.0084	248.8293	-2.4848	0.0182
chain2	0.0067	0.0070	0.0075	0.0075	0.0080	0.0082	346.3652	1.5216	0.1254
chain3	0.0067	0.0070	0.0075	0.0075	0.0079	0.0083	206.8204	-2.2358	0.0328
chain4	0.0064	0.0070	0.0075	0.0075	0.0080	0.0087	335.7686	0.9971	0.2427
chain5	0.0068	0.0070	0.0075	0.0075	0.0080	0.0083	302.6821	5.2567	0.0000
chain6	0.0068	0.0070	0.0075	0.0075	0.0080	0.0085	434.9949	1.5228	0.1251
chain7	0.0068	0.0070	0.0075	0.0075	0.0079	0.0085	371.2454	-1.1848	0.1977
chain8	0.0068	0.0071	0.0075	0.0075	0.0081	0.0085	349.6533	3.4052	0.0012
chain9	0.0068	0.0070	0.0075	0.0075	0.0081	0.0086	350.5075	0.3806	0.3711
chain10	0.0069	0.0071	0.0075	0.0075	0.0080	0.0085	246.3388	-3.7417	0.0004



### 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)

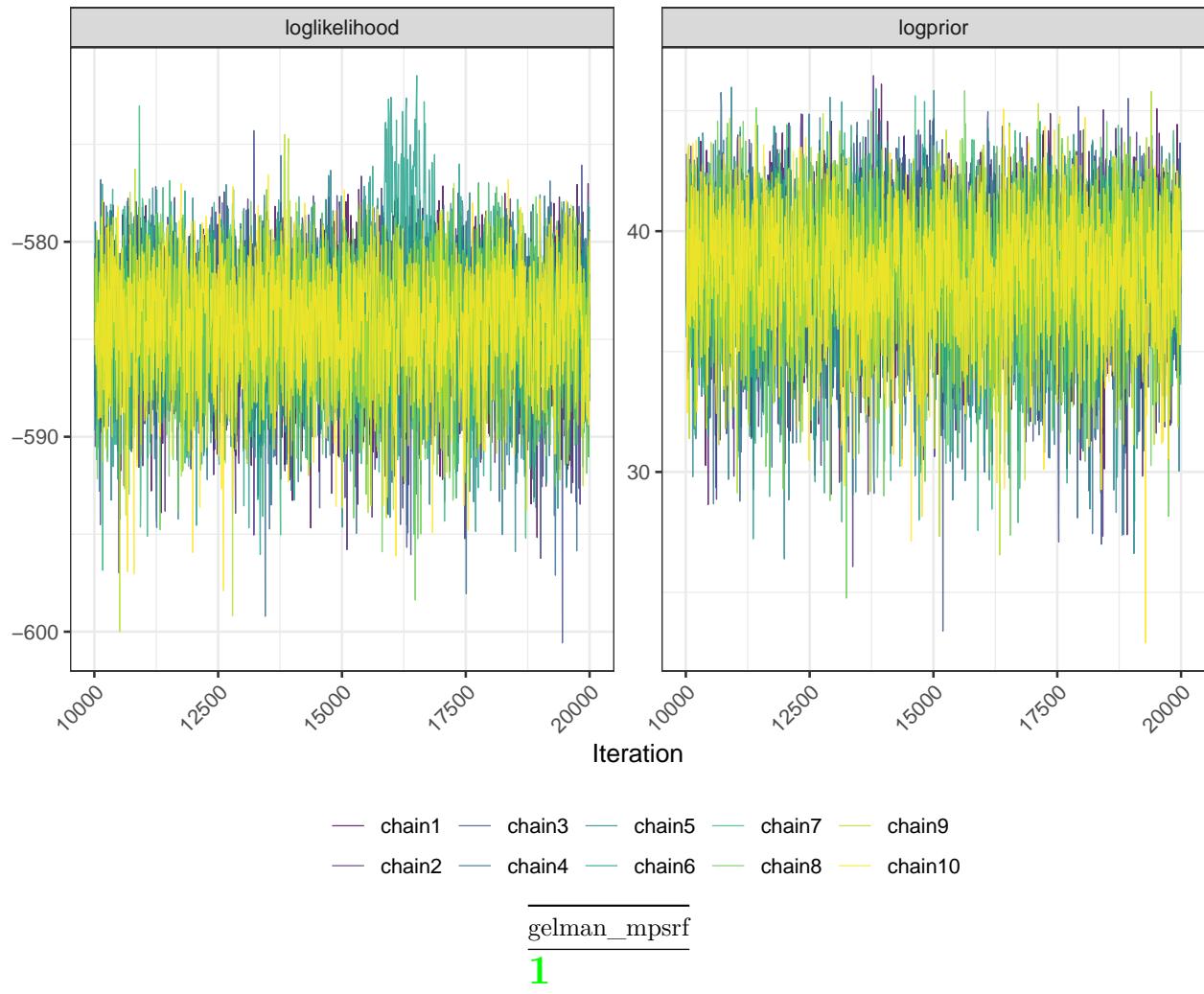
## Additional Parameters

param	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
x1	1.0155	1.9601	60.8450	55.7807	69.2832	76.1538	491.1551	4.0855	0.0001
x2	87.0486	89.5194	91.3111	91.2353	92.6769	93.9921	525.5831	0.1129	0.3964
x3	91.9291	92.9377	94.2090	94.2277	95.6967	97.4435	604.8070	1.5036	0.1288
x4	214.0001	214.0340	214.9330	215.3381	218.8818	227.9670	1749.4129	-3.6343	0.0005
y1	0.0006	0.0706	1.5459	1.7198	4.1943	6.0837	2106.3328	-1.9249	0.0626
y2	0.0003	0.1328	2.8524	2.9574	6.6083	9.0731	624.2133	-1.7332	0.0888
y3	12.0454	12.1549	12.2740	12.2700	12.3659	12.4496	925.5175	1.6284	0.1060
y4	11.5416	11.7577	11.9449	11.9412	12.0968	12.2085	508.2766	-0.5314	0.3464
y5	7.0310	7.2066	7.3802	7.3802	7.5502	7.7647	6980.1003	0.4907	0.3537
Ne1	0.9257	0.9717	1.0320	1.0321	1.0931	1.1547	8353.6993	-0.2539	0.3863
Ne2	0.9094	0.9728	1.0310	1.0316	1.0918	1.1769	7551.1837	-0.2454	0.3871
Ne3	0.9244	0.9717	1.0321	1.0324	1.0933	1.1526	8371.0853	-1.1256	0.2117
Ne4	0.9310	0.9730	1.0317	1.0320	1.0919	1.1452	8590.7770	-1.9011	0.0655
Ne5	0.8962	0.9711	1.0318	1.0316	1.0930	1.1573	7274.5213	-1.5698	0.1164
Ne6	0.9061	0.9720	1.0320	1.0323	1.0944	1.1510	6416.6863	1.1252	0.2118
Ne7	0.8181	0.8711	0.9340	0.9344	1.0003	1.0558	4877.6991	0.3588	0.3741
Ne8	0.8148	0.8665	0.9343	0.9339	0.9986	1.0693	3410.4511	-1.0305	0.2346
Ne9	0.8146	0.8685	0.9329	0.9333	1.0001	1.0754	2796.3958	-1.5766	0.1151

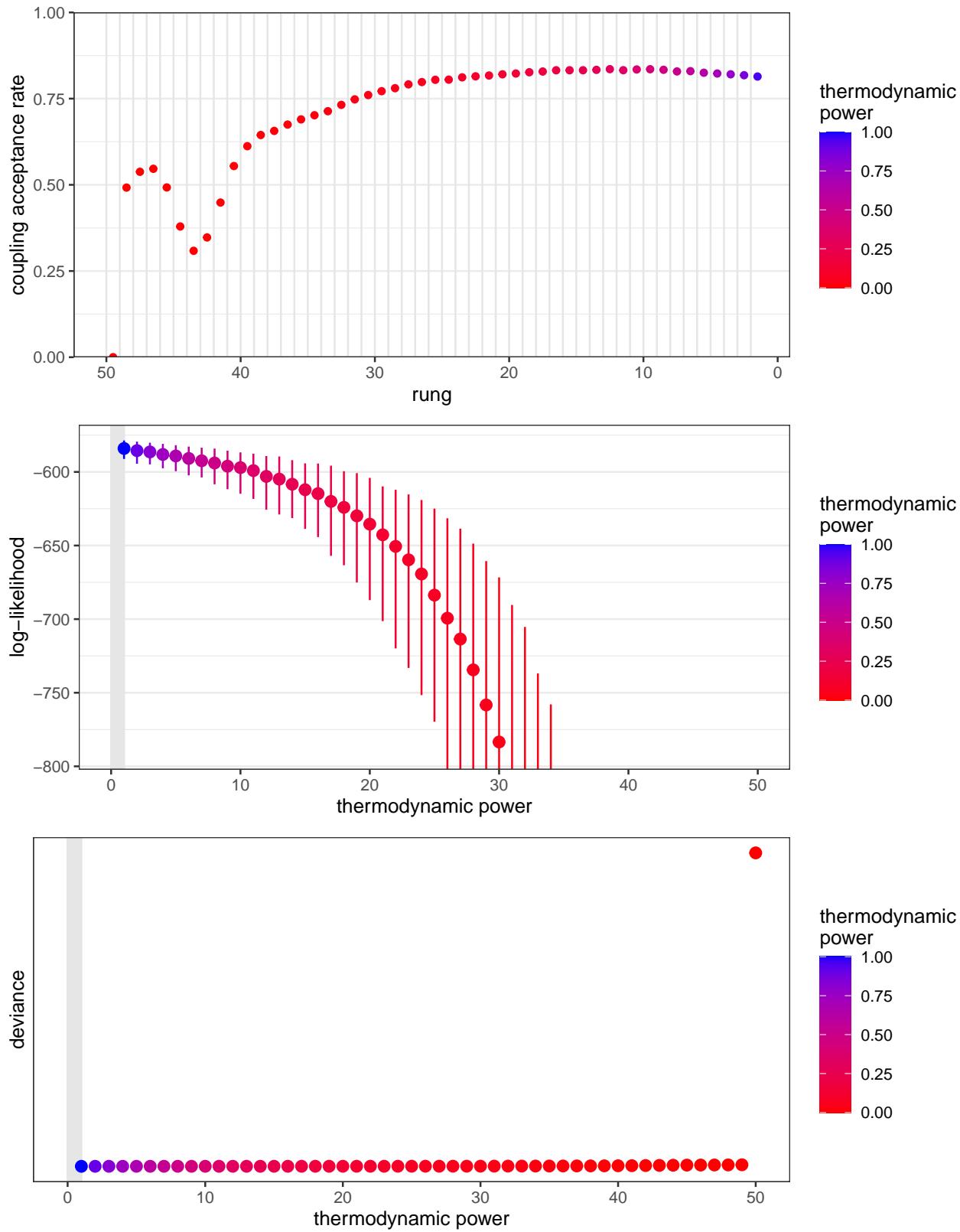
# SWE1 with the Potential for Seroreversion Included

## Fit Diagnostics

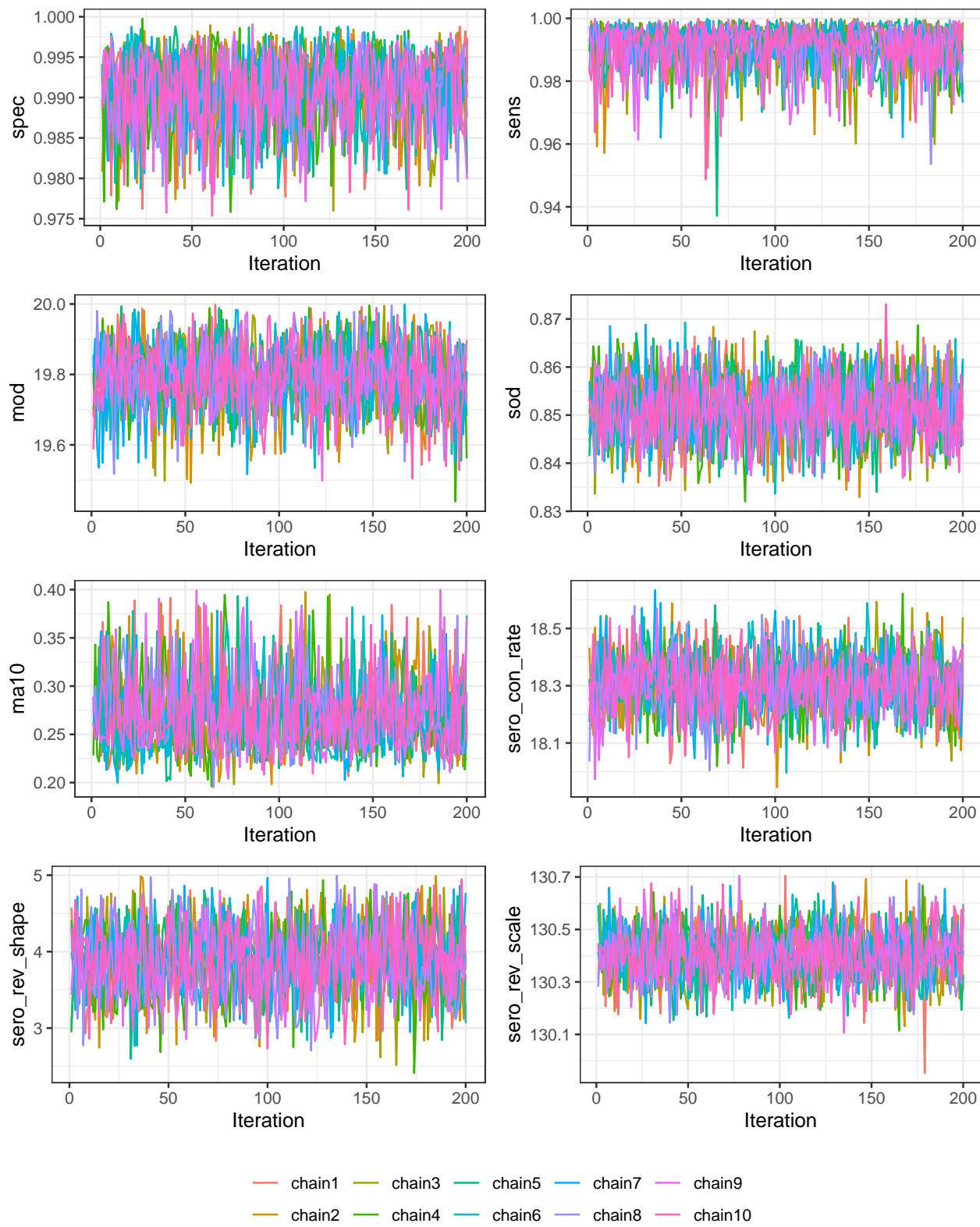
### Log Likelihood & Prior Plot



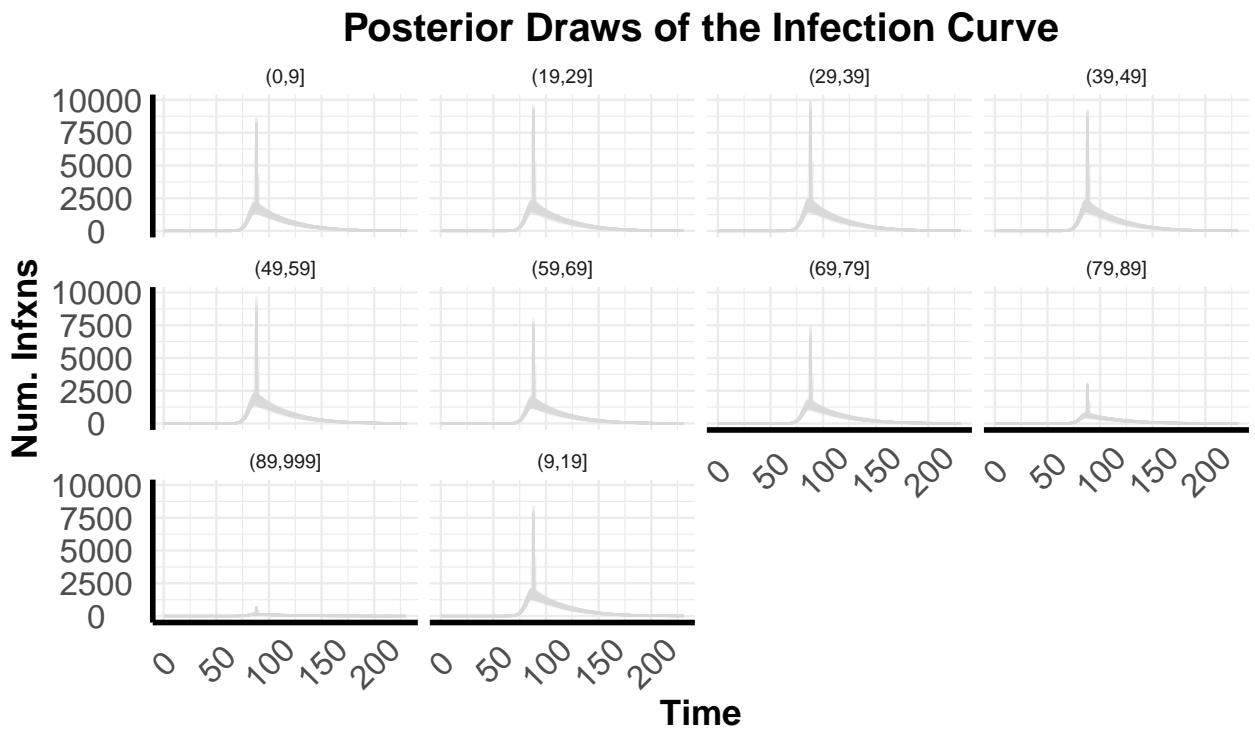
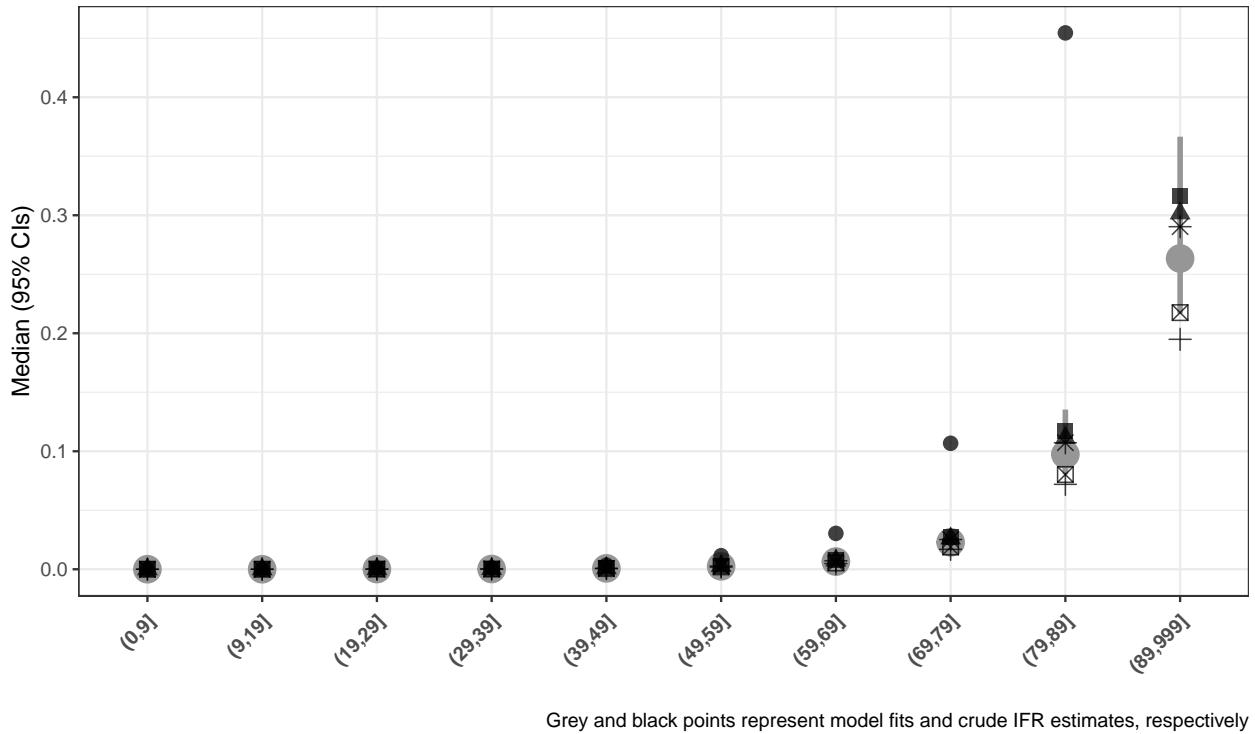
### Metropolis Coupling Acceptance Plot



## Serological Diagnostics



## IFRs & Incidence Curve



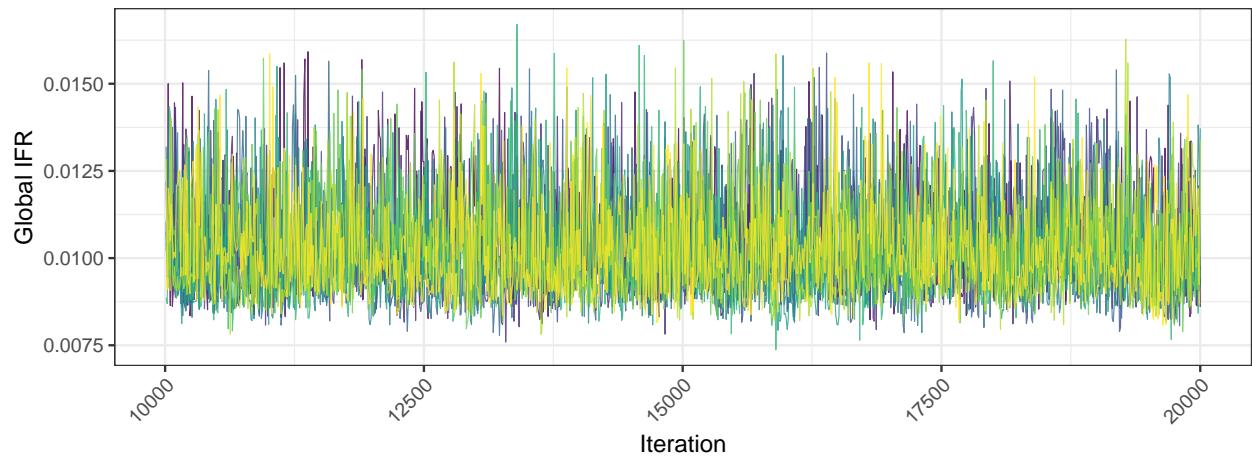
### Strata IFR

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	9550.517	-0.0286	0.3988
(9,19]	ma2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	9028.174	-0.4911	0.3536
(19,29]	ma3	0.0000	0.0001	0.0001	0.0002	0.0003	0.0005	6541.971	0.9060	0.2646
(29,39]	ma4	0.0000	0.0001	0.0002	0.0002	0.0004	0.0006	6458.162	0.3490	0.3754
(39,49]	ma5	0.0004	0.0005	0.0007	0.0008	0.0011	0.0016	3527.858	2.6558	0.0117
(49,59]	ma6	0.0016	0.0019	0.0025	0.0025	0.0035	0.0047	3028.604	0.7384	0.3038
(59,69]	ma7	0.0045	0.0052	0.0065	0.0067	0.0091	0.0116	2542.451	1.6979	0.0944
(69,79]	ma8	0.0166	0.0187	0.0228	0.0235	0.0318	0.0405	2546.409	1.3928	0.1512
(79,89]	ma9	0.0693	0.0805	0.0973	0.1001	0.1353	0.1812	2545.271	2.3857	0.0232
(89,999]	ma10	0.1883	0.2168	0.2634	0.2708	0.3666	0.3999	2056.089	1.6783	0.0976

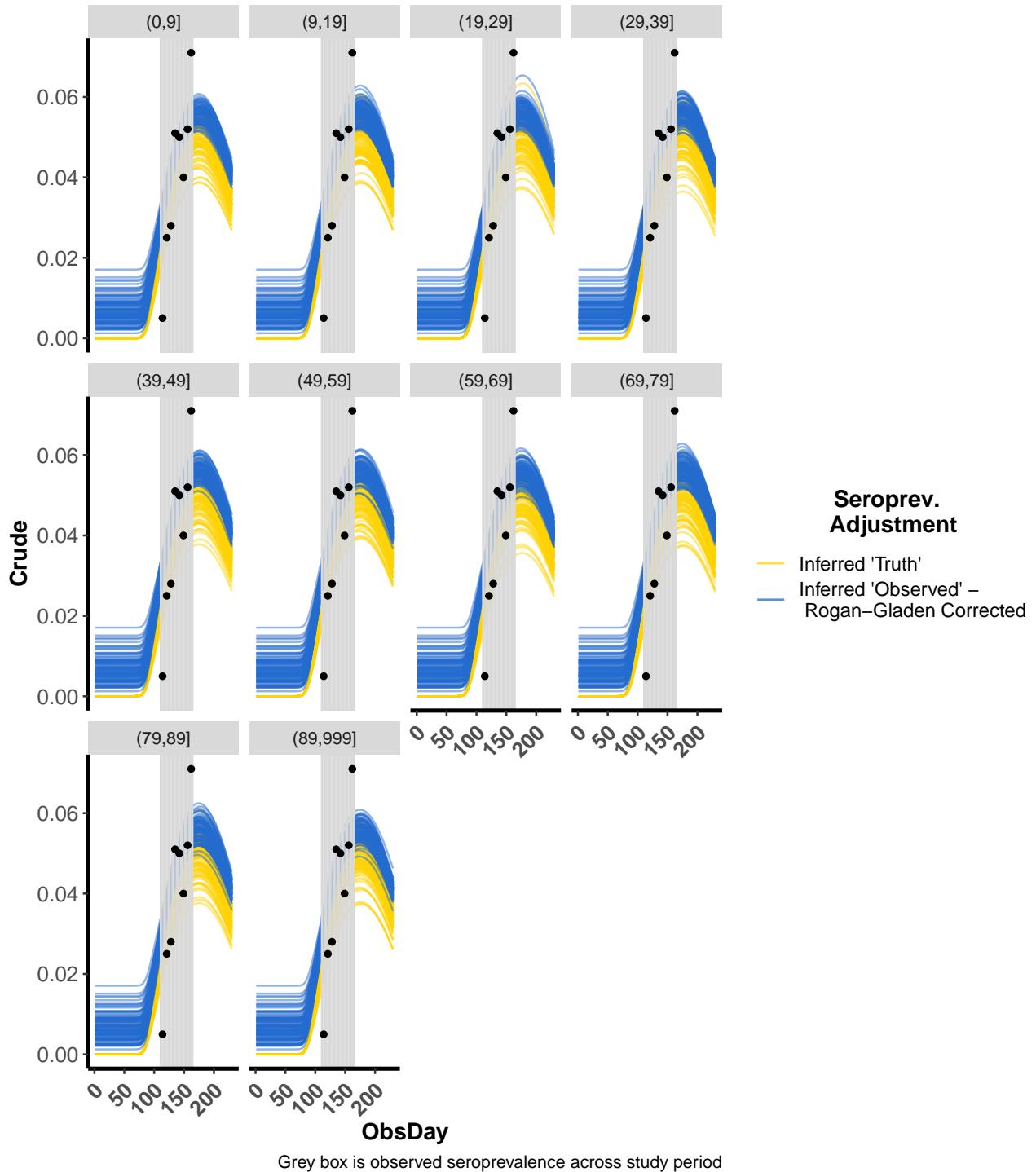
### Overall IFR

min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
0.0076	0.0085	0.01	0.0102	0.0138	0.0164	5067.104	0.9136	0.2628

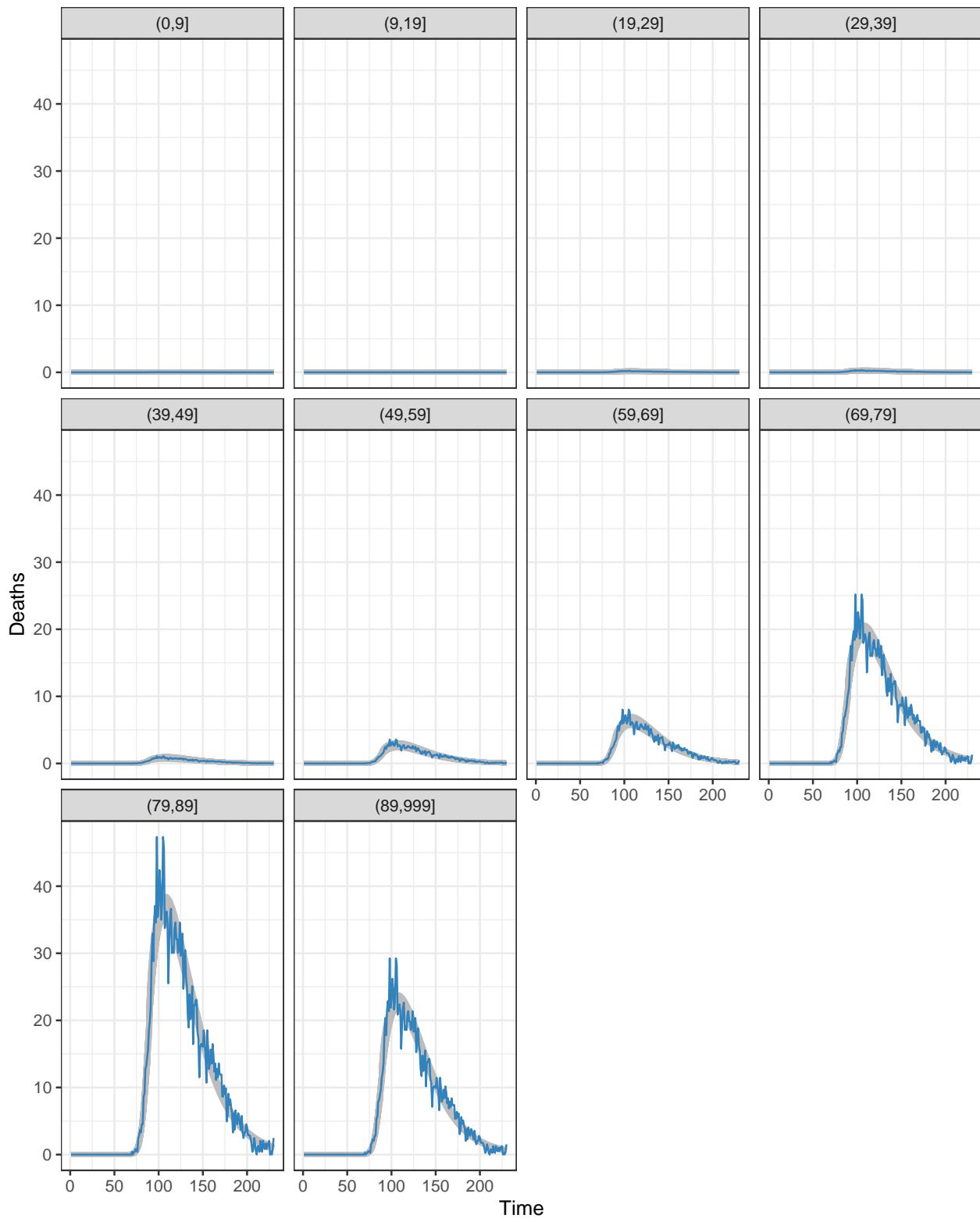
chain	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
chain1	0.0082	0.0086	0.0100	0.0104	0.0140	0.0158	392.6043	-1.3133	0.1684
chain2	0.0076	0.0084	0.0099	0.0102	0.0138	0.0154	668.4363	2.4822	0.0183
chain3	0.0081	0.0085	0.0100	0.0103	0.0137	0.0160	239.8384	-1.8003	0.0789
chain4	0.0078	0.0084	0.0097	0.0101	0.0139	0.0158	250.7111	1.4924	0.1310
chain5	0.0080	0.0084	0.0098	0.0101	0.0136	0.0164	650.6658	3.1748	0.0026
chain6	0.0078	0.0084	0.0100	0.0102	0.0137	0.0154	129.1810	-2.3909	0.0229
chain7	0.0076	0.0084	0.0100	0.0102	0.0139	0.0162	741.6965	-1.9115	0.0642
chain8	0.0079	0.0085	0.0101	0.0104	0.0138	0.0163	278.3282	5.9232	0.0000
chain9	0.0078	0.0084	0.0100	0.0103	0.0139	0.0163	303.7847	-2.8059	0.0078
chain10	0.0080	0.0085	0.0099	0.0102	0.0135	0.0160	720.3222	2.5410	0.0158



### Seroprevalence Observed vs. Inferred True Prev



## Death Posterior Predictive Check



## Additional Parameters

param	min	LCI	median	mean	UCI	max	ESS	GewekeZ	GewekeP
x1	1.0656	1.9746	58.2219	53.9384	69.5808	80.0798	626.6876	-1.2086	0.1922
x2	82.5020	84.0972	85.6156	85.7207	87.9643	89.7007	3598.9914	-0.5788	0.3374
x3	83.6843	85.8198	88.8171	88.8674	92.1333	97.2102	3273.0275	1.7757	0.0825
x4	214.0020	214.4784	222.9225	222.5924	229.7377	229.9995	1831.7019	0.6843	0.3157
y1	0.0001	0.0552	1.3742	1.5665	4.0559	6.0753	4029.3346	1.4194	0.1457
y2	0.0001	0.0637	1.6409	1.9742	5.6678	8.7410	1935.2107	0.1027	0.3968
y3	9.0818	9.2875	9.6147	9.5945	9.7960	9.8915	1736.6631	-0.9276	0.2595
y4	9.0604	9.2636	9.5918	9.5712	9.7680	9.8661	1721.2665	-0.9830	0.2461
y5	3.4386	4.0397	4.6583	4.6458	5.1849	5.5894	2169.7566	-0.9655	0.2503
Ne1	0.8412	0.9093	1.0000	1.0001	1.0914	1.1618	10000.0000	-0.6839	0.3158
Ne10	0.8156	0.9093	0.9990	0.9995	1.0924	1.1692	4940.3878	-1.6402	0.1039
Ne2	0.8316	0.9085	1.0007	1.0007	1.0933	1.1930	9434.4306	0.0127	0.3989
Ne3	0.8223	0.9076	1.0009	1.0008	1.0939	1.1874	10182.4037	0.5360	0.3456
Ne4	0.8318	0.9109	1.0006	1.0010	1.0924	1.1924	10000.0000	0.3348	0.3772
Ne5	0.8499	0.9107	1.0005	1.0007	1.0927	1.1604	9373.9707	0.3285	0.3780
Ne6	0.8249	0.9095	1.0002	1.0005	1.0930	1.1922	9071.2876	1.1651	0.2024
Ne7	0.8144	0.9084	1.0002	1.0005	1.0916	1.1879	8622.0766	-0.9545	0.2530
Ne8	0.8349	0.9098	1.0004	1.0009	1.0927	1.1984	7099.5389	0.0252	0.3988
Ne9	0.8256	0.9083	0.9996	0.9996	1.0910	1.1957	6756.1961	-1.7354	0.0885