

Additional file 2: Supplementary tables

Week	Model	Brazil	Canada	England	France	Germany	Spain	US (OWID)	US (CDC)	World
07-28-22	1 st ranked	1307.40	90.99	87.36	174.71	40.90	176.55	1876.66	1653.73	1152.49
	2 nd ranked	3228.21	82.70	91.80	172.82	114.07	341.63	2195.80	1941.08	1241.66
	Ensemble (Weighted)	1307.40	90.99	87.36	174.71	40.90	176.55	1876.66	1653.73	1152.49
	Ensemble (Unweighted)	1501.62	86.74	88.42	172.53	29.31	236.46	2119.44	1905.29	1170.79
08-04-22	1 st ranked	513.10	24.25	99.60	204.65	23.44	195.65	5524.23	5600.15	2961.41
	2 nd ranked	483.25	24.47	107.57	162.16	22.90	106.63	1220.59	17132.86	2577.23
	Ensemble (Weighted)	513.10	24.25	99.60	204.65	23.44	195.65	5524.23	5600.15	2961.41
	Ensemble (Unweighted)	485.83	24.76	102.62	184.40	24.12	108.30	2724.37	6737.27	2565.84
08-11-22	1 st ranked	116.98	11.86	48.94	206.31	22.16	48.18	1045.84	838.32	511.33
	2 nd ranked	135.49	13.76	76.46	180.87	73.47	185.03	407.53	700.86	423.42
	Ensemble (Weighted)	116.98	11.86	48.94	206.31	22.16	48.18	1045.84	838.32	511.33
	Ensemble (Unweighted)	102.19	12.95	60.27	196.99	30.02	102.43	742.33	775.69	384.81
08-18-22	1 st ranked	376.04	9.7	11.77	228.39	28.67	60.4	676.85	477.58	645.08
	2 nd ranked	341.39	33.19	30.48	215.18	43.62	399.73	712.06	203.62	885.96
	Ensemble (Weighted)	376.04	9.7	11.77	228.39	28.67	60.4	676.85	477.58	645.08
	Ensemble (Unweighted)	362.89	22.95	14.42	225.5	36.77	364.3	556.96	422.07	746.89
08-25-22	1 st ranked	154.1	7.09	19.13	22.54	31.17	31.84	972.14	377.49	716.45
	2 nd ranked	133.98	15.04	10.83	31.33	54.38	74.27	821.92	292.29	696.84
	Ensemble (Weighted)	154.1	7.09	19.13	22.54	31.17	31.84	972.14	377.49	716.45
	Ensemble (Unweighted)	128.79	9.5	12.95	19.16	39.88	24.53	892.96	331.98	729.9
09-01-22	1 st ranked	226.82	7.22	11.79	37.14	6.22	73.35	776.82	208.93	823.08
	2 nd ranked	244.09	10.55	11.35	34.63	18.85	39.74	256.01	126.26	677.37
	Ensemble (Weighted)	226.82	7.22	11.79	37.14	6.22	73.35	776.82	208.93	823.08
	Ensemble (Unweighted)	237.09	7.99	11.17	16.47	9.70	13.50	621.87	184.41	418.90
09-08-22	1 st ranked	157.48	5.85	11.49	43.49	11.67	12.21	642.87	164.77	1120.58
	2 nd ranked	156.00	7.82	22.72	20.63	6.42	10.95	588.87	149.85	994.90
	Ensemble (Weighted)	157.48	5.85	11.49	43.49	11.67	12.21	642.87	164.77	1120.58
	Ensemble (Unweighted)	110.68	5.83	13.52	22.76	10.37	11.30	618.69	156.78	1054.48
09-15-22	1 st ranked	171.27	4.09	16.82	35.83	6.28	14.54	368.93	36.40	523.75
	2 nd ranked	1272.59	15.74	20.83	23.62	4.55	75.21	938.93	236.66	3730.62
	Ensemble (Weighted)	171.27	4.09	16.82	35.83	6.28	14.54	368.93	36.40	523.75
	Ensemble (Unweighted)	337.08	5.59	15.03	25.13	5.58	8.27	404.45	91.64	1050.04

Table 1s. Mean absolute errors (MAE) metric of the forecasts generated by the sub-epidemic models. The mean absolute errors (MAE) metric of the forecasts generated by the sub-epidemic models over 8 sequential forecasting periods and for each geographical area. Values highlighted in bold correspond to best performing model during the forecasting period for a given area. There may be more than one value bolded for a given forecast period and country. This indicates that the bolded models performed equally well. Only forecast periods in which observed data was available are included.

Week	Model	Brazil	Canada	England	France	Germany	Spain	US (OWID)	US (CDC)	World
7-28-22	1 st ranked	2364049.19	10320.24	11615.61	80048.99	2506.33	39129.18	3841147.07	2778792.34	1597604.21
	2 nd ranked	16925765.93	8276.33	12500.64	70993.28	15632.66	137353.23	5009878.03	3792893.47	1804185.50
	Ensemble (Weighted)	2364049.19	10320.24	11615.61	80048.99	2506.33	39129.18	3841147.07	2778792.34	1597604.21
	Ensemble (Unweighted)	3184897.05	9230.12	11903.15	75643.17	1151.32	71912.88	4739459.68	3648248.53	1617873.05
8-04-22	1 st ranked	322108.04	859.00	12512.59	90471.12	617.31	43823.72	40217736.19	38797623.51	10893647.67
	2 nd ranked	258364.19	850.35	13646.66	60875.53	678.16	16511.82	2313218.19	457651393.86	6650709.10
	Ensemble (Weighted)	322108.04	859.00	12512.59	90471.12	617.31	43823.72	40217736.19	38797623.51	10893647.67
	Ensemble (Unweighted)	265627.4	878.62	12801.13	74574.77	593.18	16328.29	8500892.42	57281239.98	7048019.09
8-11-22	1 st ranked	20771.72	176.02	4983.70	92537.33	742.54	2872.34	1152686.27	711359.42	435608.17
	2 nd ranked	28835.70	262.01	6517.98	77711.78	6589.97	37471.21	203317.81	504943.73	206499.89
	Ensemble (Weighted)	20771.72	176.02	4983.70	92537.33	742.54	2872.34	1152686.27	711359.42	435608.17
	Ensemble (Unweighted)	18051.77	218.02	5119.08	88428.49	1427.14	14396.77	614876.18	609758.03	231478.04
8-18-22	1 st ranked	179673.13	153.26	261.77	95708.70	1128.73	4949.63	736308.70	245904.12	727711.73
	2 nd ranked	148790.82	1195.22	1084.46	88929.44	2369.84	161896.62	770797.59	79446.26	1292512.11
	Ensemble (Weighted)	179673.13	153.26	261.77	95708.70	1128.73	4949.63	736308.70	245904.12	727711.73
	Ensemble (Unweighted)	165001.10	594.81	314.37	94223.70	1754.56	134229.87	598252.85	200615.58	898035.03
8-25-22	1 st ranked	41954.48	98.71	483.35	805.69	1168.14	1574.15	1173259.62	152750.92	813000.99
	2 nd ranked	28943.29	284.95	143.33	1538.58	2987.99	6369.42	888425.7711	94560.05	790633.89
	Ensemble (Weighted)	41954.48	98.71	483.35	805.69	1168.14	1574.15	1173259.62	152750.92	813000.99
	Ensemble (Unweighted)	27364.56	151.04	287.80	403.64	1719.40	1125.78	1015576.84	120862.39	834190.66
9-01-22	1 st ranked	73078.49	61.98	250.16	1792.28	78.89	5876.02	714440.86	56435.89	992196.47
	2 nd ranked	81670.49	144.59	170.67	1772.04	399.19	2015.50	100213.29	21634.49	497612.85
	Ensemble (Weighted)	73078.49	61.98	250.16	1792.28	78.89	5876.02	714440.86	56435.89	992196.47
	Ensemble (Unweighted)	78784.07	80.44	220.81	510.22	143.79	264.46	493508.74	46412.09	326677.47
9-08-22	1 st ranked	35058.06	58.73	182.38	2494.38	146.86	272.99	565025.46	28528.03	1777396.54
	2 nd ranked	25019.09	76.08	725.15	507.58	51.37	144.12	457688.84	23812.47	1383510.77
	Ensemble (Weighted)	35058.06	58.73	182.38	2494.38	146.86	272.99	565025.46	28528.03	1777396.54
	Ensemble (Unweighted)	23324.14	46.95	204.79	998.69	117.86	166.66	519936.15	25883.95	1632965.52
9-15-22	1 st ranked	31512.15	23.23	380.81	1941.18	60.25	278.07	172498.66	1708.39	395043.07
	2 nd ranked	1813357.91	276.42	699.37	664.36	23.13	5720.43	1184513.80	57656.67	15477666.88
	Ensemble (Weighted)	31512.15	23.23	380.81	1941.18	60.25	278.07	172498.66	1708.39	395043.07
	Ensemble (Unweighted)	121858.32	44.39	260.88	1065.67	44.77	76.74	216304.99	8734.33	1467433.58

Table 2s. Mean square errors (MSE) metric of the forecasts generated by the sub-epidemic models. The mean square errors (MSE) metric of the forecasts generated by the sub-epidemic models over 8 sequential forecasting periods and for each geographical area. Values highlighted in bold correspond to best performing model during the forecasting period for a given area. There may be more than one value bolded for a given forecast period and country. This indicates that the bolded models performed equally well. Only forecast periods in which observed data was available are included.

Table 3s. Percent coverage of the 95% PI metric of the forecasts generated by the sub-epidemic models. The percent coverage of the 95% prediction interval (PI) metric of the forecasts generated by the sub-epidemic models over 8 sequential forecasting periods and for each geographical area. Values highlighted in bold correspond to best performing model during the forecasting period for a given area. There may be more than one value bolded for a given forecast period and country. This indicates that the bolded models performed equally well. Only forecast periods in which observed data was available are included.

Week	Model	Brazil	Canada	England	France	Germany	Spain	US (OWID)	US (CDC)	World
07-28-22	1 st ranked	1040.18	79.75	60.75	120.88	24.55	93.64	1107.61	1013.06	628.79
	2 nd ranked	2128.96	69.82	62.24	126.69	70.97	225.15	1835.73	1891.16	720.81
	Ensemble (Weighted)	1040.18	79.75	60.75	120.88	24.55	93.64	1107.61	1013.06	628.79
	Ensemble (Unweighted)	1384.18	74.18	60.48	122.32	29.70	113.98	1376.73	1311.82	676.83
08-04-22	1 st ranked	394.05	16.48	67.01	155.85	13.51	91.93	4414.97	4580.72	1915.62
	2 nd ranked	447.96	15.76	69.17	126.96	13.51	92.72	697.57	9284.33	1610.64
	Ensemble (Weighted)	394.05	16.48	67.01	155.85	13.51	91.93	4414.97	4580.72	1915.62
	Ensemble (Unweighted)	412.27	16.04	68.13	138.94	13.13	81.48	1498.48	5567.13	1637.65
08-11-22	1 st ranked	71.68	6.91	35.46	161.83	14.44	62.34	550.30	712.04	358.12
	2 nd ranked	96.94	8.33	42.90	116.03	43.00	115.02	287.13	479.62	244.81
	Ensemble (Weighted)	71.68	6.91	35.46	161.83	14.44	62.34	550.30	712.04	358.12
	Ensemble (Unweighted)	57.72	7.68	37.68	131.32	24.28	83.68	388.21	580.48	279.50
08-18-22	1 st ranked	255.27	6.69	9.42	177.93	18.41	66.74	386.12	339.92	405.01
	2 nd ranked	217.68	22.41	23.92	147.73	29.29	261.16	621.02	337.29	510.20
	Ensemble (Weighted)	255.27	6.69	9.42	177.93	18.41	66.74	386.12	339.92	405.01
	Ensemble (Unweighted)	234.53	11.95	14.37	161.09	22.95	141.33	430.33	270.76	446.24
08-25-22	1 st ranked	91.88	4.96	10.85	47.33	18.90	51.96	628.12	234.08	441.09
	2 nd ranked	132.93	10.40	8.37	71.68	33.98	44.06	424.17	155.30	433.50
	Ensemble (Weighted)	91.88	4.96	10.85	47.33	18.90	51.96	628.12	234.08	441.09
	Ensemble (Unweighted)	95.80	7.21	8.95	55.93	25.19	45.58	511.04	193.22	435.97
09-01-22	1 st ranked	160.56	4.69	7.77	46.40	7.88	48.60	465.91	127.59	530.15
	2 nd ranked	144.22	7.42	8.54	43.69	15.75	26.65	466.12	127.35	392.40
	Ensemble (Weighted)	160.56	4.69	7.77	46.40	7.88	48.60	465.91	127.59	530.15
	Ensemble (Unweighted)	150.66	5.74	7.77	45.07	10.83	31.94	380.37	115.15	333.79
09-08-22	1 st ranked	100.51	4.12	7.13	41.14	6.31	17.10	399.84	91.87	814.40
	2 nd ranked	122.09	6.25	14.66	49.34	5.13	28.37	329.40	113.29	626.04
	Ensemble (Weighted)	100.51	4.12	7.13	41.14	6.31	17.10	399.84	91.87	814.40
	Ensemble (Unweighted)	89.02	4.77	9.71	45.47	5.15	21.55	363.42	94.89	698.72
09-15-22	1 st ranked	95.61	7.80	13.45	39.02	5.92	14.13	216.45	46.88	329.59
	2 nd ranked	678.89	14.18	29.16	47.79	11.11	47.46	1733.14	162.57	2137.17
	Ensemble (Weighted)	95.61	7.80	13.45	39.02	5.92	14.13	216.45	46.88	329.59
	Ensemble (Unweighted)	272.38	10.66	19.78	42.34	7.96	24.93	722.95	87.13	844.38

Table 4s. Weighted Interval Score (WIS) metric of the forecasts generated by the sub-

epidemic models. The weighted Interval Score (WIS) metric of the forecasts generated by the sub-epidemic models over 8 sequential forecasting periods and for each geographical area.

Values highlighted in bold correspond to best performing model during the forecasting period for a given area. There may be more than one value bolded for a given forecast period and country.

This indicates that the bolded models performed equally well. Only forecast periods in which observed data was available are included.

	Model	Brazil	Canada	England	France	Germany	Spain	US (OWID)	US (CDC)	World
Mean Absolute Error (MAE)	1 st ranked*	37.50	75.00	62.50	0.00	50.00	37.50	25.00	37.50	37.50
	2 nd ranked	25.00	12.50	12.50	62.50	37.50	25.00	62.50	62.50	25.00
	Ensemble* (Weighted)	37.50	75.00	62.50	0.00	50.00	37.50	25.00	37.50	37.50
	Ensemble (Unweighted)	37.50	12.50	25.00	37.50	12.50	37.50	12.50	0.00	37.50
Mean Square Error (MSE)	1 st ranked*	37.50	62.50	62.50	0.00	50.00	37.50	25.00	37.50	37.50
	2 nd ranked	25.00	25.00	25.00	75.00	25.00	12.50	62.50	62.50	50.00
	Ensemble* (Weighted)	37.50	62.50	62.50	0.00	50.00	37.50	25.00	37.50	37.50
	Ensemble (Unweighted)	37.50	12.50	12.50	25.00	25.00	50.00	12.50	0.00	12.50
Percent coverage of the 95% prediction interval (PI)	1 st ranked*	62.50	100.00	87.50	87.50	100.00	100.00	50.00	50.00	62.50
	2 nd ranked	62.50	87.50	100.00	100.00	87.50	75.00	87.50	87.50	87.50
	Ensemble* (Weighted)	62.50	100.00	87.50	87.50	100.00	100.00	50.00	50.00	62.50
	Ensemble (Unweighted)	87.50	100.00	87.50	100.00	87.50	100.00	75.00	87.50	100.00
Weighted Interval Score (WIS)	1 st ranked*	50.00	75.00	75.00	50.00	75.00	62.50	37.50	50.00	37.50
	2 nd ranked	25.00	25.00	12.50	50.00	12.50	25.00	50.00	25.00	50.00
	Ensemble* (Weighted)	50.00	75.00	75.00	50.00	75.00	62.50	37.50	50.00	37.50
	Ensemble (Unweighted)	25.00	0.00	25.00	0.00	12.50	12.50	12.50	25.00	12.50

Table 5s. Frequency a given model ranked the best for a given metric. The frequency a given model ranked the best for a given metric generate for forecasts over the course of 8 sequential forecasting periods (July 28th – September 15th, 2022) for geographic regions included in the study. Frequencies are listed as the percent out of 100. *The 1st ranked, and weighted ensemble forecasts were the exact same for every given metric and geographical region.

	Model	Brazil*	Canada*	England*	France*	Germany*	Spain*	US* (OWID)	US ⁺ (CDC)	World*
Mean Absolute Error (MAE)	Top-ranked	45.52	9.74	22.74	67.98	17.52	111.94	210.74	112.45	270.87
	2 nd ranked	38.25	8.80	21.57	61.85	14.85	82.73	181.08	97.51	236.24
Mean Square Error (MSE)	Ensemble (Weighted)	45.52	9.74	22.74	67.98	17.52	111.94	210.74	112.45	270.87
	Ensemble (Unweighted)	41.21	9.34	21.94	62.67	15.40	97.06	191.19	102.44	250.32
Percent coverage of the 95% prediction interval (PI)	Top-ranked	3833.94	220.99	1215.30	12303.24	615.95	23202.07	93478.23	26323.77	123124.47
	2 nd ranked	2795.90	224.38	1118.59	10393.44	446.15	13740.62	75456.03	20300.88	92214.48
Weighted Interval Score (WIS)	Ensemble (Weighted)	3833.94	220.99	1215.30	12303.24	615.95	23202.07	93478.23	26323.77	123124.47
	Ensemble (Unweighted)	3150.86	221.88	1159.47	11197.14	483.93	17227.40	81207.31	21724.52	99542.69
Percent coverage of the 95% prediction interval (PI)	Top-ranked	100.00	100.00	100.00	97.50	100.00	100.00	100.00	100.00	100.00
	2 nd ranked	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Weighted Interval Score (WIS)	Ensemble (Weighted)	100.00	100.00	100.00	97.50	100.00	100.00	100.00	100.00	100.00
	Ensemble (Unweighted)	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Percent coverage of the 95% prediction interval (PI)	Top-ranked	28.15	6.01	14.95	47.96	11.62	70.21	143.71	72.45	166.61
	2 nd ranked	26.98	6.53	16.11	50.91	10.98	62.26	142.61	70.46	164.27
Weighted Interval Score (WIS)	Ensemble (Weighted)	28.15	6.01	14.95	47.96	11.62	70.21	143.71	72.45	166.61
	Ensemble (Unweighted)	26.67	6.15	15.26	48.42	10.89	63.41	139.32	68.27	159.34

Table 6s. Mean performance metrics quantifying model fit. The mean performance metrics quantifying model fit across 20 sequential 10-week calibration periods (Week of May 26th – October 13th, 2022) using weekly timeseries data from the CDC[†] and OWID^{*} teams for each geographical region. Values highlighted in bold correspond to best performing model during the forecasting period for a given area. There may be more than one value bolded for a given forecast period and country. This indicates that the bolded models performed equally well. Only forecast periods in which observed data was available are included.

Week	Model	Brazil	Canada	England	France	Germany	Spain	US (OWID)	US (CDC)	World
07-28-22	1 st ranked	21.64	6.03	26.54	36.44	22.26	138.62	123.71	138.91	146.21
	2 nd ranked	19.56	4.37	26.95	35.65	13.63	104.59	74.53	20.75	146.53
	Ensemble (Weighted)	21.64	6.03	26.54	36.44	22.26	138.62	123.71	138.91	146.21
	Ensemble (Unweighted)	20.23	5.03	26.62	36.51	17.53	117.97	86.41	55.22	147.68
08-04-22	1 st ranked	32.06	7.54	28.73	42.42	21.80	133.46	162.67	173.45	175.95
	2 nd ranked	13.08	7.39	23.94	30.07	12.21	129.05	128.86	167.53	154.76
	Ensemble (Weighted)	32.06	7.54	28.73	42.42	21.80	133.46	162.67	173.45	175.95
	Ensemble (Unweighted)	19.48	7.57	26.86	35.70	13.65	126.69	148.16	170.89	163.80
08-11-22	1 st ranked	29.97	6.75	27.21	47.67	17.05	131.51	210.55	59.41	269.48
	2 nd ranked	25.05	5.16	22.75	50.76	17.39	106.04	218.29	52.98	214.71
	Ensemble (Weighted)	29.97	6.75	27.21	47.67	17.05	131.51	210.55	59.41	269.48
	Ensemble (Unweighted)	27.27	6.05	25.12	48.81	16.67	115.69	216.37	58.57	250.58
08-18-22	1 st ranked	36.75	7.31	20.09	41.20	17.06	132.46	229.51	79.16	252.74
	2 nd ranked	30.66	6.21	18.82	39.85	13.31	81.08	221.78	76.35	222.85
	Ensemble (Weighted)	36.75	7.31	20.09	41.20	17.06	132.46	229.51	79.16	252.74
	Ensemble (Unweighted)	33.41	6.88	19.74	42.07	14.48	116.62	222.58	77.81	241.85
08-25-22	1 st ranked	47.44	6.29	15.60	101.45	15.21	133.56	229.45	82.96	319.08
	2 nd ranked	44.26	5.12	12.04	94.66	12.28	95.30	221.37	90.28	292.14
	Ensemble (Weighted)	47.44	6.29	15.60	101.45	15.21	133.56	229.45	82.96	319.08
	Ensemble (Unweighted)	44.77	5.58	12.63	95.60	13.34	116.65	221.15	86.33	306.17
09-01-22	1 st ranked	46.08	10.37	10.77	93.91	17.92	116.77	260.35	95.67	340.84
	2 nd ranked	42.81	9.97	11.30	89.97	20.50	42.21	220.45	101.14	289.47
	Ensemble (Weighted)	46.08	10.37	10.77	93.91	17.92	116.77	260.35	95.67	340.84
	Ensemble (Unweighted)	43.42	10.15	10.84	80.17	18.73	77.48	241.06	98.09	296.05
09-08-22	1 st ranked	55.98	8.05	12.05	90.95	6.51	59.83	243.95	138.23	267.55
	2 nd ranked	51.01	7.07	12.00	78.91	6.94	57.48	245.35	142.29	257.11
	Ensemble (Weighted)	55.98	8.05	12.05	90.95	6.51	59.83	243.95	138.23	267.55
	Ensemble (Unweighted)	52.96	7.70	11.73	81.74	6.53	58.32	242.55	140.89	264.78
09-15-22	1 st ranked	94.28	25.60	40.95	89.78	22.38	49.27	225.75	131.85	395.12
	2 nd ranked	79.60	25.08	44.78	74.89	22.51	46.09	118.04	128.79	312.35
	Ensemble (Weighted)	94.28	25.60	40.95	89.78	22.38	49.27	225.75	131.85	395.12
	Ensemble (Unweighted)	88.13	25.78	41.95	80.77	22.30	47.05	151.23	131.69	331.61

Table 7s. Mean absolute error (MAE) metrics quantifying model fit. The mean absolute error (MAE) metrics quantifying model fit across 20 sequential 10-week calibration periods (Week of May 26th – October 13th, 2022) used during forecasting periods for the given geographical regions. Values highlighted in bold correspond to best performing model during the forecasting period for a given area. There may be more than one value bolded for a given forecast period and country. This indicates that the bolded models performed equally well. Only forecast periods in which observed data was available are included.

Week	Model	Brazil	Canada	England	France	Germany	Spain	US (OWID)	US (CDC)	World
07-28-22	1 st ranked	797.18	69.02	1084.19	2964.07	936.01	32577.00	37426.62	41061.16	35401.61
	2 nd ranked	517.01	38.92	1130.97	2396.74	266.33	23107.15	11310.19	993.61	34107.69
	Ensemble (Weighted)	797.18	69.02	1084.19	2964.07	936.01	32577.00	37426.62	41061.16	35401.61
	Ensemble (Unweighted)	638.21	50.24	1097.57	2609.83	460.37	26537.40	16583.00	6469.11	35066.30
08-04-22	1 st ranked	1778.58	89.70	1210.71	2986.61	815.99	31839.75	73858.07	74580.14	52914.01
	2 nd ranked	328.41	87.18	892.64	1377.14	296.36	26130.86	42452.64	63253.40	33827.46
	Ensemble (Weighted)	1778.58	89.70	1210.71	2986.61	815.99	31839.75	73858.07	74580.14	52914.01
	Ensemble (Unweighted)	598.69	90.25	1087.66	2097.18	410.45	28603.31	59515.87	70969.79	41772.18
08-11-22	1 st ranked	2037.12	64.00	1160.27	3400.90	610.48	31954.23	101526.93	6266.19	103584.14
	2 nd ranked	1029.36	45.50	841.49	3673.42	597.38	19598.69	99956.47	6178.18	73762.56
	Ensemble (Weighted)	2037.12	64.00	1160.27	3400.90	610.48	31954.23	101526.93	6266.19	103584.14
	Ensemble (Unweighted)	1415.44	53.21	1026.27	3475.13	566.17	23555.35	102836.07	6335.19	89546.09
08-18-22	1 st ranked	2180.36	74.93	645.32	2746.61	512.74	32008.76	104611.47	10241.78	107034.19
	2 nd ranked	1976.88	62.10	645.74	2753.31	439.24	15225.73	102405.02	10154.03	83580.23
	Ensemble (Weighted)	2180.36	74.93	645.32	2746.61	512.74	32008.76	104611.47	10241.78	107034.19
	Ensemble (Unweighted)	2035.91	67.27	651.19	2789.54	469.14	23514.26	102339.35	9852.72	95498.10
08-25-22	1 st ranked	3629.89	58.78	380.95	22578.97	492.25	29041.11	107625.64	14990.15	145361.68
	2 nd ranked	2632.41	53.06	268.86	17902.65	279.30	14942.30	100406.00	15976.68	116437.94
	Ensemble (Weighted)	3629.89	58.78	380.95	22578.97	492.25	29041.11	107625.64	14990.15	145361.68
	Ensemble (Unweighted)	3001.05	54.66	265.87	20042.38	369.12	20419.05	103700.44	15331.37	133545.45
09-01-22	1 st ranked	3622.06	147.75	245.07	21616.42	740.96	19695.80	116488.17	17498.43	174865.61
	2 nd ranked	2933.55	151.40	257.32	17678.92	838.36	3412.73	110619.95	17271.81	142329.80
	Ensemble (Weighted)	3622.06	147.75	245.07	21616.42	740.96	19695.80	116488.17	17498.43	174865.61
	Ensemble (Unweighted)	3056.94	149.02	251.09	18995.35	770.86	7351.48	108100.31	17604.84	121988.23
09-08-22	1 st ranked	4172.76	101.17	270.48	21313.98	111.68	4612.78	114765.99	24014.42	107287.31
	2 nd ranked	3745.92	96.00	254.58	20296.42	114.99	4316.43	107104.49	26269.55	105033.78
	Ensemble (Weighted)	4172.76	101.17	270.48	21313.98	111.68	4612.78	114765.99	24014.42	107287.31
	Ensemble (Unweighted)	3822.69	98.69	257.00	20353.34	110.65	4413.96	109812.89	25256.66	106099.55
09-15-22	1 st ranked	12453.56	1162.51	4725.45	20818.35	707.49	3887.13	91522.97	21937.91	258547.18
	2 nd ranked	9203.64	1260.88	4657.13	17068.89	737.19	3191.04	29393.45	22309.78	148636.39
	Ensemble (Weighted)	12453.56	1162.51	4725.45	20818.35	707.49	3887.13	91522.97	21937.91	258547.18
	Ensemble (Unweighted)	10637.98	1211.67	4639.07	19214.38	714.72	3424.40	46770.58	21976.45	172825.59

Table 8s. Mean square error (MSE) metrics quantifying model fit. The mean square error (MSE) metrics quantifying model fit across 20 sequential 10-week calibration periods (Week of May 26th – October 13th, 2022) used during forecasting periods for the given geographical regions. Values highlighted in bold correspond to best performing model during the forecasting period for a given area. There may be more than one value bolded for a given forecast period and country. This indicates that the bolded models performed equally well. Only forecast periods in which observed data was available are included.

Table 9s. Percent coverage of the 95% (PI) metrics quantifying model fit. The percent coverage of the 95% prediction interval (PI) metrics quantifying model fit across 20 sequential 10-week calibration periods (Week of May 26th – October 13th, 2022) used during forecasting periods for the given geographical regions. Values highlighted in bold correspond to best performing model during the forecasting period for a given area. There may be more than one value bolded for a given forecast period and country. This indicates that the bolded models performed equally well. Only forecast periods in which observed data was available are included.

Week	Model	Brazil	Canada	England	France	Germany	Spain	US (OWID)	US (CDC)	World
07-28-22	1 st ranked	13.38	4.02	15.72	25.51	14.43	86.47	86.45	90.11	92.74
	2 nd ranked	14.76	3.51	18.65	26.21	9.70	83.34	58.45	18.52	102.60
	Ensemble (Weighted)	13.38	4.02	15.72	25.51	14.43	86.47	86.45	90.11	92.74
	Ensemble (Unweighted)	13.57	3.66	16.96	25.98	11.18	83.17	68.32	39.64	95.85
08-04-22	1 st ranked	19.76	4.78	17.19	26.54	13.84	85.33	122.64	124.34	112.68
	2 nd ranked	11.32	5.22	15.96	20.27	8.50	92.79	105.21	126.40	114.76
	Ensemble (Weighted)	19.76	4.78	17.19	26.54	13.84	85.33	122.64	124.34	112.68
	Ensemble (Unweighted)	13.52	4.93	16.34	22.97	10.24	87.34	112.64	123.26	107.80
08-11-22	1 st ranked	20.97	3.99	16.51	29.12	11.69	86.20	143.87	37.99	159.13
	2 nd ranked	17.14	3.76	16.17	33.54	13.49	79.14	165.48	42.95	148.37
	Ensemble (Weighted)	20.97	3.99	16.51	29.12	11.69	86.20	143.87	37.99	159.13
	Ensemble (Unweighted)	18.08	3.81	16.21	30.74	12.23	80.72	150.92	39.19	148.23
08-18-22	1 st ranked	23.72	4.29	12.52	26.06	11.12	86.47	157.02	49.85	158.50
	2 nd ranked	25.52	4.40	13.82	29.24	11.24	71.47	173.19	56.66	163.29
	Ensemble (Weighted)	23.72	4.29	12.52	26.06	11.12	86.47	157.02	49.85	158.50
	Ensemble (Unweighted)	24.25	4.25	12.95	27.34	10.95	71.97	161.47	51.94	156.79
08-25-22	1 st ranked	29.30	3.80	9.66	71.59	10.82	82.80	157.60	60.34	191.08
	2 nd ranked	29.30	4.17	9.33	73.98	8.55	68.30	171.48	69.97	173.72
	Ensemble (Weighted)	29.30	3.80	9.66	71.59	10.82	82.80	157.60	60.34	191.08
	Ensemble (Unweighted)	28.40	3.91	8.98	71.07	9.35	72.68	162.33	64.31	179.59
09-01-22	1 st ranked	29.73	6.02	7.82	69.77	13.10	69.82	166.63	65.03	206.93
	2 nd ranked	28.80	6.72	9.05	73.95	15.61	33.94	185.35	75.72	214.27
	Ensemble (Weighted)	29.73	6.02	7.82	69.77	13.10	69.82	166.63	65.03	206.93
	Ensemble (Unweighted)	28.92	6.29	8.29	69.98	14.15	45.63	173.94	68.50	191.47
09-08-22	1 st ranked	32.31	4.97	8.19	67.95	5.13	34.11	165.41	77.75	163.05
	2 nd ranked	34.34	5.52	8.89	76.69	5.89	37.05	182.97	88.51	179.88
	Ensemble (Weighted)	32.31	4.97	8.19	67.95	5.13	34.11	165.41	77.75	163.05
	Ensemble (Unweighted)	32.49	5.16	8.46	71.12	5.38	35.04	171.57	81.72	170.66
09-15-22	1 st ranked	56.03	16.20	32.01	67.17	12.84	30.46	150.05	74.15	248.77
	2 nd ranked	54.65	18.92	37.02	73.39	14.84	32.05	98.72	84.95	217.31
	Ensemble (Weighted)	56.03	16.20	32.01	67.17	12.84	30.46	150.05	74.15	248.77
	Ensemble (Unweighted)	54.12	17.21	33.88	68.16	13.67	30.73	113.33	77.60	224.32

Table 10s. Weighted interval score (WIS) metrics quantifying model fit. The weighted interval score (WIS) metrics quantifying model fit across 20 sequential 10-week calibration periods (Week of May 26th – October 13th, 2022) used during forecasting periods for the given geographical regions. Values highlighted in bold correspond to best performing model during the forecasting period for a given area. There may be more than one value bolded for a given forecast period and country. This indicates that the bolded models performed equally well. Only forecast periods in which observed data was available are included.

Second-Ranked Model										
Week		Brazil	Canada	England	France	Germany	Spain	US (OWID)	US (CDC)	World
07-28-22	Median	16102.9	698.1	861.7	935.2	1189.0	3483.8	3448.7	2573.8	20604.8
	LB	6096.9	565.7	186.1	93.8	550.1	1078.3	1679.7	1921.9	13073.0
	UB	39180.3	833.1	2026.9	2350.8	2868.0	6915.3	7389.5	3134.8	30896.7
08-04-22	Median	1295.2	386.4	702.7	795.3	512.5	1835.7	12011.9	72771.3	33511.9
	LB	925.5	177.4	201.7	187.8	180.4	0.0	4640.2	6186.8	19185.0
	UB	1689.7	762.7	1601.6	1529.4	797.9	6369.0	23275.5	159904.1	65275.2
08-11-22	Median	3668.9	263.6	557.5	476.7	651.7	1945.2	8652.7	4803.5	20910.2
	LB	3017.8	125.6	68.4	0.0	145.3	0.0	1790.0	2688.0	15426.7
	UB	4412.5	399.1	1103.9	4121.0	1540.3	5362.3	24943.3	7276.3	27280.5
08-18-22	Median	1770.8	330.8	386.9	261.3	431.2	2516.3	9344.5	5083.5	16790.7
	LB	650.9	196.0	17.4	0.0	97.5	647.2	1288.9	2617.6	10550.5
	UB	3767.3	485.9	2132.6	1210.2	849.1	4402.7	32128.1	11648.3	25842.3
08-25-22	Median	3034.9	222.7	216.5	592.4	362.7	401.5	4296.7	4047.7	15331.8
	LB	1037.6	75.4	15.8	0.0	128.4	0.0	369.0	1682.3	10176.1
	UB	27926.0	1145.7	508.3	12679.9	585.5	2296.1	11480.4	6690.7	21986.0
09-01-22	Median	1615.7	146.5	165.2	305.3	219.0	305.9	7213.8	3184.7	17921.9
	LB	638.5	0.0	0.0	0.0	0.0	0.0	279.2	1740.5	11869.3
	UB	3777.4	384.7	467.5	3053.3	774.3	1179.2	108959.8	4702.4	24638.6
09-08-22	Median	2572.8	108.8	195.2	382.4	90.8	362.6	3592.6	2540.1	9916.2
	LB	765.2	0.0	0.0	0.0	0.0	0.0	0.0	943.9	4243.7
	UB	22643.0	597.8	555.4	2912.5	365.8	1676.5	9732.7	4298.7	21199.2
09-15-22	Median	6784.5	125.7	249.4	304.4	108.8	516.6	7584.4	2502.8	24432.4
	LB	1031.7	0.0	0.0	0.0	0.0	0.0	1426.7	940.1	10430.3
	UB	11736.4	797.4	1759.9	3026.6	793.5	2908.5	283241.3	4173.2	58026.3
09-22-22	Median	1404.9	128.3	121.8	400.8	138.8	159.9	4464.6	2242.4	11317.7
	LB	23.0	0.0	0.0	0.0	0.0	0.0	102.9	411.5	1876.8
	UB	3777.2	1874.2	1363.8	2546.3	956.8	548.2	16090.2	4805.1	1521252.0
09-29-22	Median	942.9	28.7	411.7	271.7	106.6	352.6	5275.8	1759.7	11260.9
	LB	0.0	0.0	0.0	0.0	0.0	0.0	317.9	227.2	1405.9
	UB	4356.1	169.3	1473.2	6776.6	358.0	1031.4	10158.9	3703.1	32533.4
10-06-22	Median	1328.6	55.7	4.4	343.6	126.9	94.6	2005.9	756.3	6075.6
	LB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	84.3	0.0
	UB	6414.1	221.7	599.9	10883.7	638.0	500.0	8133.4	1627.7	15271.4
10-13-22	Median	1044.6	39.5	25.7	70.0	72.5	147.5	1768.7	579.2	3393.7
	LB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	UB	3970.7	232.6	192.3	1686.1	178.7	681.0	6361.3	1652.4	13340.1

Table 11s. Predicted cumulative number of newly forecasted monkeypox cases and 95% PIs for the second-ranked model. Predicted cumulative number of newly forecasted monkeypox cases and 95% PIs for each of the 4-week ahead forecasts during the weeks of 7-28-2022 through 10-13-2022 based on a 10-week calibration period for the second-ranked sub-epidemic model.

Weighted - Ensemble Model										
Week		Brazil	Canada	England	France	Germany	Spain	US (OWID)	US (CDC)	World
07-28-22	Median	8463.7	742.3	773.9	872.4	591.2	1391.2	4838.8	2874.5	20957.3
	LB	6067.5	622.3	322.9	245.6	234.1	0.0	2038.2	1484.1	14263.4
	UB	11783.6	887.6	1384.3	2322.0	972.4	5137.4	17645.5	10437.6	32121.5
08-04-22	Median	1187.2	385.9	660.3	522.6	458.7	966.3	33042.3	35181.3	34936.8
	LB	651.6	215.0	224.7	62.0	167.6	0.0	21005.3	9062.0	24148.0
	UB	2841.9	621.8	1157.7	1316.6	767.2	3435.6	55553.7	149984.9	42706.4
08-11-22	Median	2685.3	254.5	434.9	286.1	420.3	1237.7	6058.4	4442.5	22930.0
	LB	1477.3	143.3	79.0	0.0	162.3	0.0	2242.7	2943.4	15153.2
	UB	5348.1	385.7	848.3	924.7	696.3	3754.3	20689.6	6676.0	32717.9
08-18-22	Median	1631.6	231.2	251.2	152.8	354.1	1158.6	6247.6	4667.2	18643.0
	LB	711.3	120.6	32.6	0.0	114.4	0.0	1816.2	2955.4	12818.4
	UB	3662.6	352.7	515.4	677.8	593.4	3503.7	15853.4	8601.9	25447.7
08-25-22	Median	2312.1	185.7	147.6	609.1	277.7	806.8	3420.0	3871.9	15412.5
	LB	1288.4	97.3	11.7	0.0	57.8	0.0	610.6	1938.8	9456.3
	UB	3903.2	277.4	340.1	2517.0	506.4	2753.8	7594.1	6232.0	22458.5
09-01-22	Median	1593.3	111.7	130.1	503.9	147.1	755.3	3824.4	3175.5	12899.5
	LB	768.7	8.0	9.9	0.0	0.0	0.0	571.0	1698.0	7794.2
	UB	2599.4	240.7	281.3	2252.0	410.0	2166.7	8101.4	4687.9	18540.1
09-08-22	Median	1723.7	75.6	108.4	438.6	56.7	271.0	2978.7	2542.6	9097.0
	LB	866.6	1.9	0.0	0.0	0.0	0.0	223.6	959.7	5279.6
	UB	2648.9	180.9	267.2	1998.6	158.0	933.0	6706.9	4174.2	13323.9
09-15-22	Median	2401.9	66.0	74.0	346.6	51.6	143.9	3826.9	2526.5	11764.0
	LB	844.3	0.0	0.0	0.0	0.0	0.0	690.5	999.4	5704.9
	UB	4116.9	415.6	733.7	1836.3	303.1	739.6	7379.2	4087.7	18545.3
09-22-22	Median	2144.9	41.7	79.9	357.9	12.8	143.3	2958.6	2011.8	10205.4
	LB	875.0	0.0	0.0	0.0	0.0	0.0	265.3	768.4	4305.2
	UB	3452.4	354.2	734.6	1882.9	236.1	663.5	6078.7	3299.8	16332.0
09-29-22	Median	1534.7	29.5	45.0	115.6	7.7	32.3	3365.1	1395.1	8853.4
	LB	320.1	0.0	0.0	0.0	0.0	0.0	326.2	377.7	3312.8
	UB	2898.0	223.8	701.1	1432.3	215.9	437.5	6758.5	2469.3	14514.1
10-06-22	Median	1117.8	13.6	20.0	32.7	4.3	66.1	1017.4	931.4	5297.9
	LB	129.8	0.0	0.0	0.0	0.0	0.0	0.0	330.9	244.2
	UB	2240.8	129.0	574.3	1229.4	131.4	335.6	5154.0	1551.8	11508.3
10-13-22	Median	878.9	14.2	2.7	10.3	1.5	43.0	1806.3	910.1	6231.5
	LB	25.2	0.0	0.0	0.0	0.0	0.0	0.0	245.3	492.8
	UB	1950.5	90.3	342.6	1087.6	125.6	315.5	5542.4	1603.3	12463.1

Table 12s. Predicted cumulative number of newly forecasted monkeypox cases and 95% PIs for the weighted ensemble model. Predicted cumulative number of newly forecasted monkeypox cases and 95% PIs for each 4-week ahead forecasts during the weeks of 7-28-2022 through 10-13-2022 based on a 10-week calibration period for the weighted sub-epidemic ensemble model.

Unweighted - Ensemble Model										
Week		Brazil	Canada	England	France	Germany	Spain	US (OWID)	US (CDC)	World
07-28-22	Median	9453.81	720.35	812.55	892.66	811.35	2501.29	3947.64	2787.79	20769.27
	LB	6136.76	583.03	251.00	154.97	286.08	83.57	1722.17	1467.06	13597.43
	UB	33425.20	866.54	1750.31	2298.95	2179.16	6289.50	14718.29	9995.46	31957.42
08-04-22	Median	1255.12	387.40	675.83	668.80	484.80	1301.58	21959.92	37056.90	33481.53
	LB	644.02	196.25	211.91	94.33	169.67	0.00	5763.36	9169.81	20344.07
	UB	2154.17	655.15	1314.96	1430.76	782.50	5118.04	53110.37	151064.53	61582.74
08-11-22	Median	3465.88	257.71	489.50	360.88	494.27	1556.86	7090.51	4526.81	21736.19
	LB	1630.85	134.47	73.84	0.00	153.42	0.00	2045.94	3008.05	15234.04
	UB	5086.97	390.58	1016.95	2905.87	1317.54	4640.71	23052.82	6832.69	31359.19
08-18-22	Median	1691.65	278.17	302.44	200.16	388.30	1898.78	7120.39	4791.23	17854.07
	LB	691.80	136.15	22.71	0.00	111.59	0.00	1552.00	2937.10	11341.66
	UB	3661.71	459.49	1339.64	1033.44	758.20	4211.14	29838.26	29020.30	25529.89
08-25-22	Median	2576.71	200.15	176.60	609.45	319.26	587.55	3807.32	3919.09	15401.01
	LB	1150.41	85.09	13.61	0.00	77.69	0.00	453.12	1989.57	9839.95
	UB	20773.99	808.69	451.66	4883.46	558.30	2537.73	9944.00	6237.37	22282.28
09-01-22	Median	1602.62	125.83	141.45	432.51	173.88	481.38	4827.79	3399.82	15298.59
	LB	706.05	2.07	1.95	0.00	0.00	0.00	428.49	1447.05	8529.28
	UB	2828.54	331.73	410.76	2643.14	630.89	1931.92	84582.47	16358.72	23416.86
09-08-22	Median	1966.47	89.40	138.00	406.53	70.80	307.24	3204.48	2692.46	9405.82
	LB	832.92	0.00	0.00	0.00	0.00	0.00	46.76	670.41	4754.03
	UB	14835.60	319.38	457.35	2483.85	277.94	1437.07	8769.74	9638.91	16766.10
09-15-22	Median	3133.06	88.63	136.83	332.19	74.15	267.11	5045.99	2832.23	15653.78
	LB	954.99	0.00	0.00	0.00	0.00	0.00	835.58	838.21	6437.87
	UB	11140.29	645.42	1366.06	2374.49	571.20	2121.99	230054.20	7442.24	42965.67

Table 13s. Predicted cumulative number of newly forecasted monkeypox cases and 95% PIs for the unweighted ensemble model. Predicted cumulative number of newly forecasted monkeypox cases and 95% PIs for each of the 4-week ahead forecasts during the weeks of 7-28-2022 through 9-15-2022 based on a 10-week calibration period for the unweighted sub-epidemic ensemble model. Only weeks in which the 4-week ahead forecast have past are included in this table.