State-by-State COVID Testing, R0

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26 April 2020

Testing Data

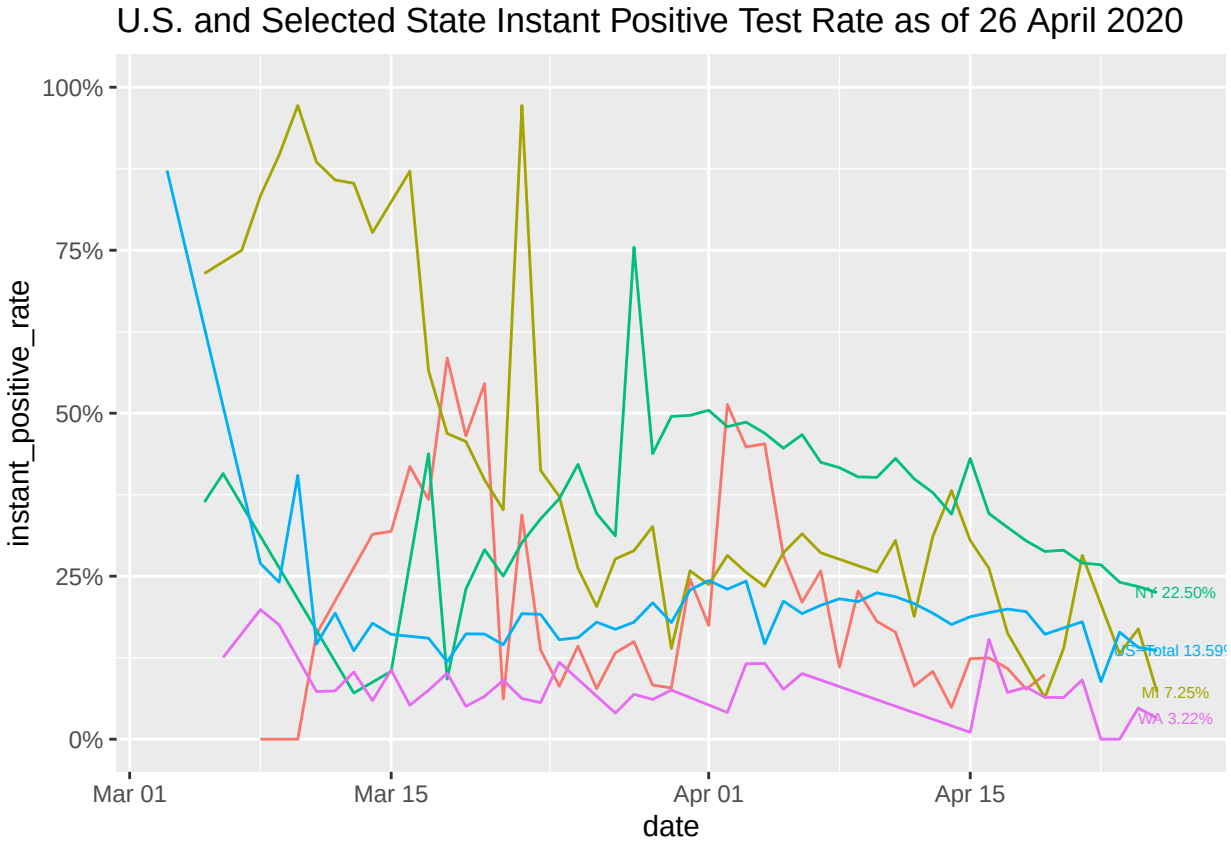
State-by-State Testing Summary

States are sorted descending by total tested. Cum Pos Rate is the cumulative positive rate since the pandemic began; instant positive rate is the current daily testing rate. Instant positive trend is instant positive rate / cumulative positive rate.

Table 1: State-by-State Testing Summary

State	Pos	Cum Tested	Cum Pos Rate	Pos Increase	Tested Increase	Instant Pos Rate	Instant Pos Trend
NY	282,143	777,568	36.3%	10,553	46,912	22.5%	-38.0%
CA	41,137	506,035	8.1%	1,883	11,862	15.9%	95.3%
FL	30,839	333,099	9.3%	665	16,140	4.1%	-55.5%
TX	23,773	262,816	9.0%	967	20,269	4.8%	-47.3%
MA	53,348	226,845	23.5%	7,325	31,769	23.1%	-2.0%
NJ	105,523	213,686	49.4%	3,327	7,724	43.1%	-12.8%
IL	41,777	201,617	20.7%	2,119	11,985	17.7%	-14.7%
PA	40,049	192,935	20.8%	1,397	6,792	20.6%	-0.9%
WA	12,977	160,324	8.1%	224	6,948	3.2%	-60.2%
MI	37,203	144,044	25.8%	562	7,748	7.3%	-71.9%
TN	9,189	141,406	6.5%	463	10,078	4.6%	-29.3%
LA	26,512	139,002	19.1%	372	-4,714	-7.9%	-141.4%
GA	22,695	119,014	19.1%	548	11,838	4.6%	-75.7%
OH	14,983	111,379	13.5%	402	4,270	9.4%	-30.0%
NC	8,623	105,265	8.2%	571	4,681	12.2%	48.9%
UT	3,948	90,206	4.4%	166	5,509	3.0%	-31.2%
MD	17,766	89,123	19.9%	1,150	4,407	26.1%	30.9%
IN	14,395	79,774	18.0%	715	4,221	16.9%	-6.1%
CT	24,582	77,602	31.7%	661	3,564	18.5%	-41.5%
VA	11,902	72,178	16.5%	733	3,163	23.2%	40.5%
AL	6,137	71,344	8.6%	305	18,649	1.6%	-81.0%
MO	6,826	67,218	10.2%	201	2,011	10.0%	-1.6%
WI	5,687	62,825	9.1%	331	2,896	11.4%	26.3%
AZ	6,280	62,508	10.0%	235	1,794	13.1%	30.4%
MN	3,446	59,699	5.8%	261	5,912	4.4%	-23.5%
MS	5,718	58,957	9.7%	284	3,287	8.6%	-10.9%
CO	12,256	56,789	21.6%	994	4,465	22.3%	3.2%
OK	3,193	53,084	6.0%	72	6,944	1.0%	-82.8%
NM	2,521	51,510	4.9%	142	4,947	2.9%	-41.4%
RI	7,129	50,891	14.0%	430	3,634	11.8%	-15.5%
SC	5,253	49,014	10.7%	336	4,551	7.4%	-31.1%
OR	2,253	47,377	4.8%	76	1,885	4.0%	-15.2%
KY	3,779	44,962	8.4%	298	2,118	14.1%	67.4%
AR	2,829	38,053	7.4%	88	2,475	3.6%	-52.2%
NV	4,539	37,208	12.2%	141	1,016	13.9%	13.8%
IA	5,092	34,350	14.8%	647	2,377	27.2%	83.6%

State	Pos	Cum Tested	Cum Pos Rate	Pos Increase	Tested Increase	Instant Pos Rate	Instant Pos Trend
WV	1,020	32,966	3.1%	32	3,155	1.0%	-67.2%
HI	601	28,040	2.1%	5	1,153	0.4%	-79.8%
KS	3,056	25,199	12.1%	279	1,611	17.3%	42.8%
NE	2,421	19,973	12.1%	297	1,361	21.8%	80.0%
ID	1,870	19,361	9.7%	34	270	12.6%	30.4%
ND	803	19,350	4.1%	55	1,901	2.9%	-30.3%
ME	990	17,774	5.6%	25	25	100.0%	1 695.4%
NH	1,720	17,727	9.7%	50	918	5.4%	-43.9%
DE	3,576	17,698	20.2%	134	319	42.0%	107.9%
DC	3,699	17,302	21.4%	171	769	22.2%	4.0%
AK	339	15,732	2.2%	0	3,451	0.0%	-100.0%
SD	2,147	15,596	13.8%	107	772	13.9%	0.7%
VT	843	14,682	5.7%	16	372	4.3%	-25.1%
MT	445	12,497	3.6%	1	370	0.3%	-92.4%
PR	1,307	10,620	12.3%	31	31	100.0%	712.5%
WY	349	8,146	4.3%	0	101	0.0%	-100.0%
GU	141	1,449	9.7%	0	75	0.0%	-100.0%
VI	55	748	7.4%	1	52	1.9%	-73.8%
MP	14	65	21.5%	0	0	NaN%	NaN%
AS	0	3	0.0%	0	0	NaN%	NaN%



Hospitalization Summary

State-by-state hospitalization data are still VERY spotty as of April 5th. Most states are not reporting.

Table 2: State-by-State Hospitalization and ICU Data

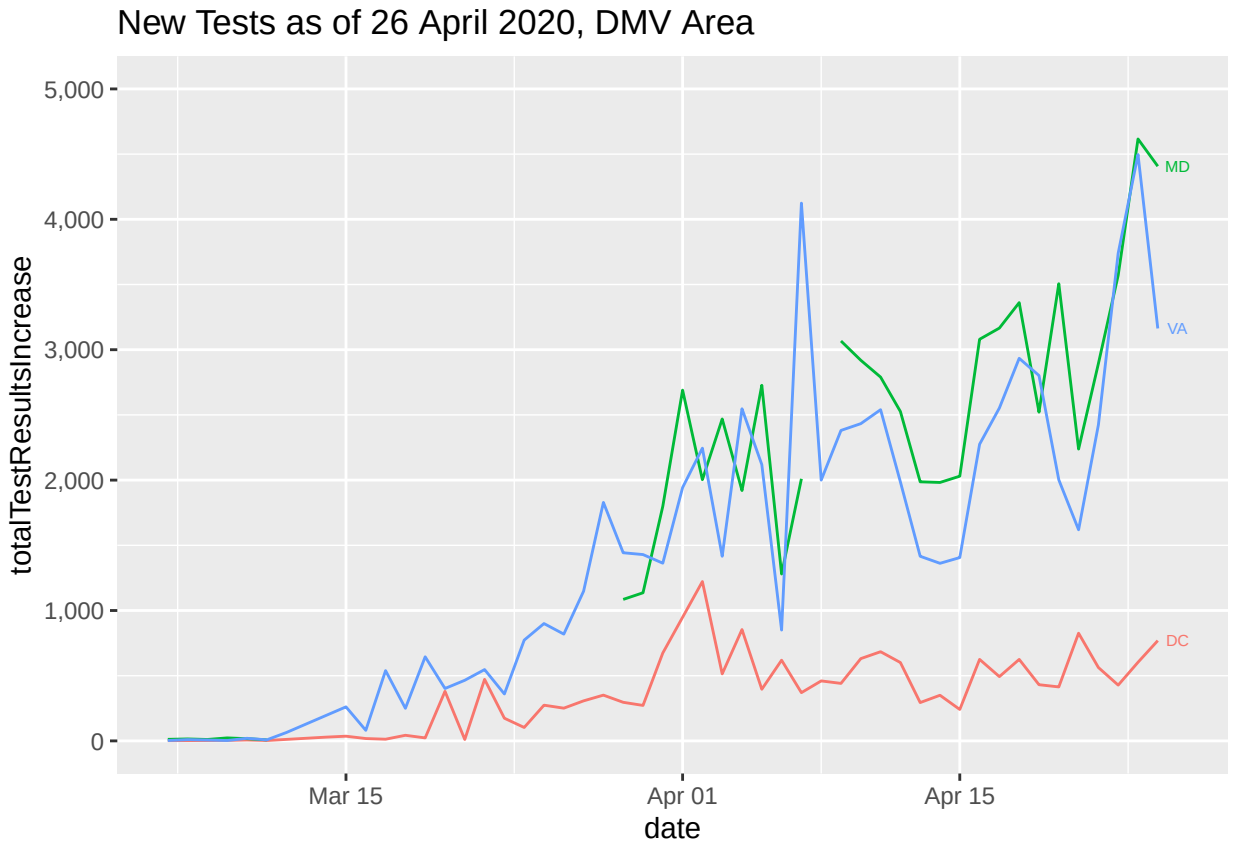
State	Positive	Hospitalized	In ICU	Recovered	Dead	% Hospitalized	% ICU (of Hospitalized)	% Recovered
NY	282,143	13,524	5,016	23,887	16,599	4.8%	37.1%	8.5%
NJ	105,523	6,722	1,971	NA	5,863	6.4%	29.3%	NA%
CA	41,137	4,847	1,458	NA	1,651	11.8%	30.1%	NA%
IL	41,777	4,699	1,244	NA	1,874	11.2%	26.5%	NA%
MA	53,348	3,847	1,058	NA	2,730	7.2%	27.5%	NA%
MI	37,203	2,889	1,164	8,342	3,274	7.8%	40.3%	22.4%
PA	40,049	2,748	NA	NA	1,537	6.9%	NA%	NA%
CT	24,582	1,810	NA	NA	1,862	7.4%	NA%	NA%
LA	26,512	1,700	NA	14,927	1,644	6.4%	NA%	56.3%
TX	23,773	1,597	NA	9,986	623	6.7%	NA%	42.0%
IN	14,395	1,515	598	NA	785	10.5%	39.5%	NA%
MD	17,766	1,408	538	1,165	875	7.9%	38.2%	6.6%
VA	11,902	1,405	357	1,717	436	11.8%	25.4%	14.4%
CO	12,256	1,084	NA	2,086	674	8.8%	NA%	17.0%
MO	6,826	850	NA	NA	273	12.5%	NA%	NA%
AZ	6,280	697	313	1,345	266	11.1%	44.9%	21.4%
MS	5,718	649	152	NA	221	11.4%	23.4%	NA%
NC	8,623	456	NA	NA	289	5.3%	NA%	NA%
WA	12,977	455	174	NA	723	3.5%	38.2%	NA%
DC	3,699	402	120	652	165	10.9%	29.9%	17.6%
WI	5,687	337	136	NA	266	5.9%	40.4%	NA%
OK	3,193	306	150	2,080	194	9.6%	49.0%	65.1%
KY	3,779	303	164	1,341	200	8.0%	54.1%	35.5%
DE	3,576	300	NA	809	112	8.4%	NA%	22.6%
IA	5,092	293	108	1,723	112	5.8%	36.9%	33.8%
MN	3,446	288	109	1,654	244	8.4%	37.8%	48.0%
RI	7,129	263	77	410	215	3.7%	29.3%	5.8%
OR	2,253	261	60	NA	87	11.6%	23.0%	NA%
NM	2,521	152	NA	614	84	6.0%	NA%	24.4%
AR	2,829	104	NA	964	47	3.7%	NA%	34.1%
WV	1,020	97	36	439	32	9.5%	37.1%	43.0%
NH	1,720	89	NA	578	53	5.2%	NA%	33.6%
SD	2,147	61	NA	1,223	10	2.8%	NA%	57.0%
ME	990	39	17	519	50	3.9%	43.6%	52.4%
VT	843	37	NA	1,710	46	4.4%	NA%	202.8%
AK	339	32	NA	217	9	9.4%	NA%	64.0%
ND	803	17	NA	310	16	2.1%	NA%	38.6%
WY	349	16	NA	321	7	4.6%	NA%	92.0%
MT	445	11	NA	339	14	2.5%	NA%	76.2%
GU	141	2	NA	128	5	1.4%	NA%	90.8%
AL	6,137	NA	NA	NA	212	NA%	NA%	NA%
FL	30,839	NA	NA	NA	1,075	NA%	NA%	NA%
GA	22,695	NA	NA	NA	904	NA%	NA%	NA%
HI	601	NA	NA	463	13	NA%	NA%	77.0%
ID	1,870	NA	NA	867	54	NA%	NA%	46.4%
KS	3,056	NA	NA	NA	117	NA%	NA%	NA%
NE	2,421	NA	NA	NA	50	NA%	NA%	NA%
NV	4,539	NA	NA	NA	204	NA%	NA%	NA%
OH	14,983	NA	NA	NA	711	NA%	NA%	NA%
SC	5,253	NA	NA	3,701	166	NA%	NA%	70.5%

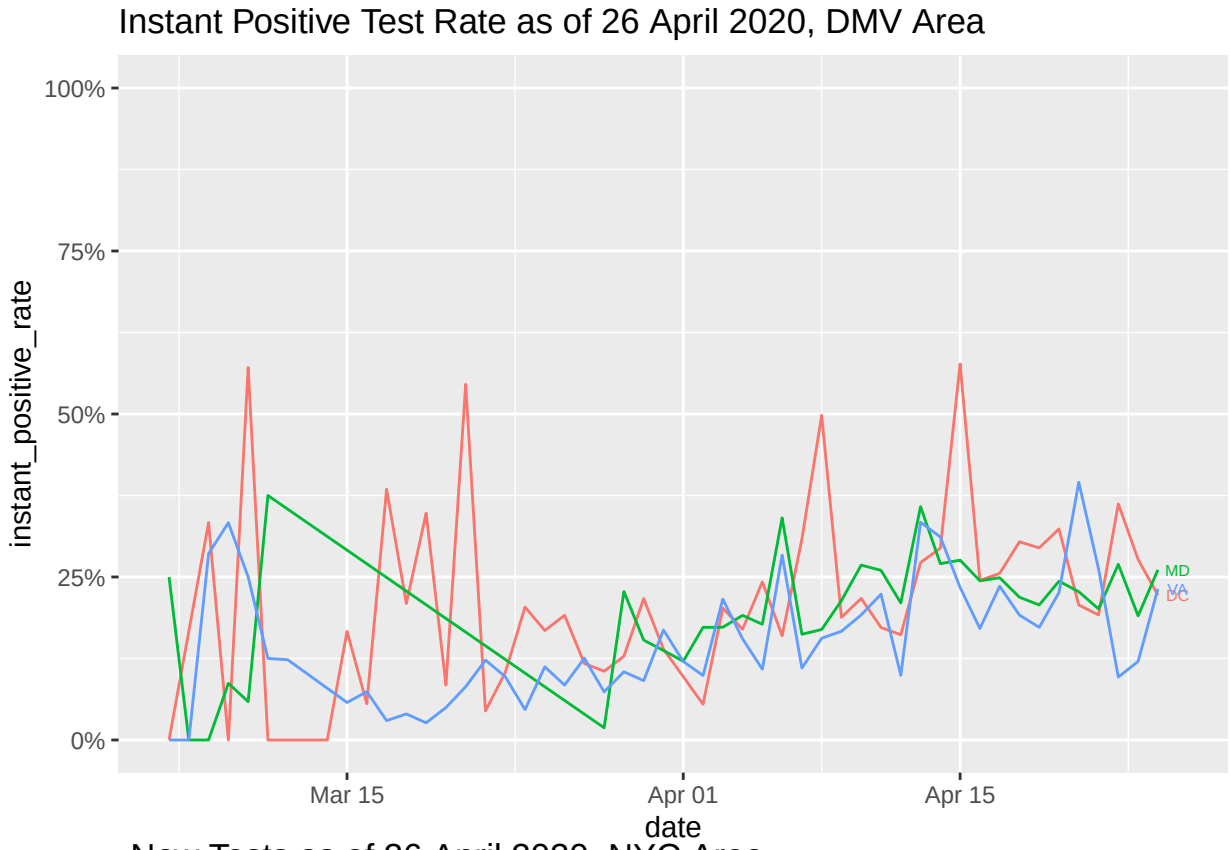
State	Positive	Hospitalized	In ICU	Recovered	Dead	% Hospitalized	% ICU (of Hospitalized)	% Recovered
TN	9,189	NA	NA	4,467	178	NA%	NA%	48.6%
UT	3,948	NA	NA	1,399	41	NA%	NA%	35.4%
PR	1,307	NA	NA	NA	83	NA%	NA%	NA%
AS	0	NA	NA	NA	0	NA%	NA%	NA%
MP	14	NA	NA	11	2	NA%	NA%	78.6%
VI	55	NA	NA	51	3	NA%	NA%	92.7%

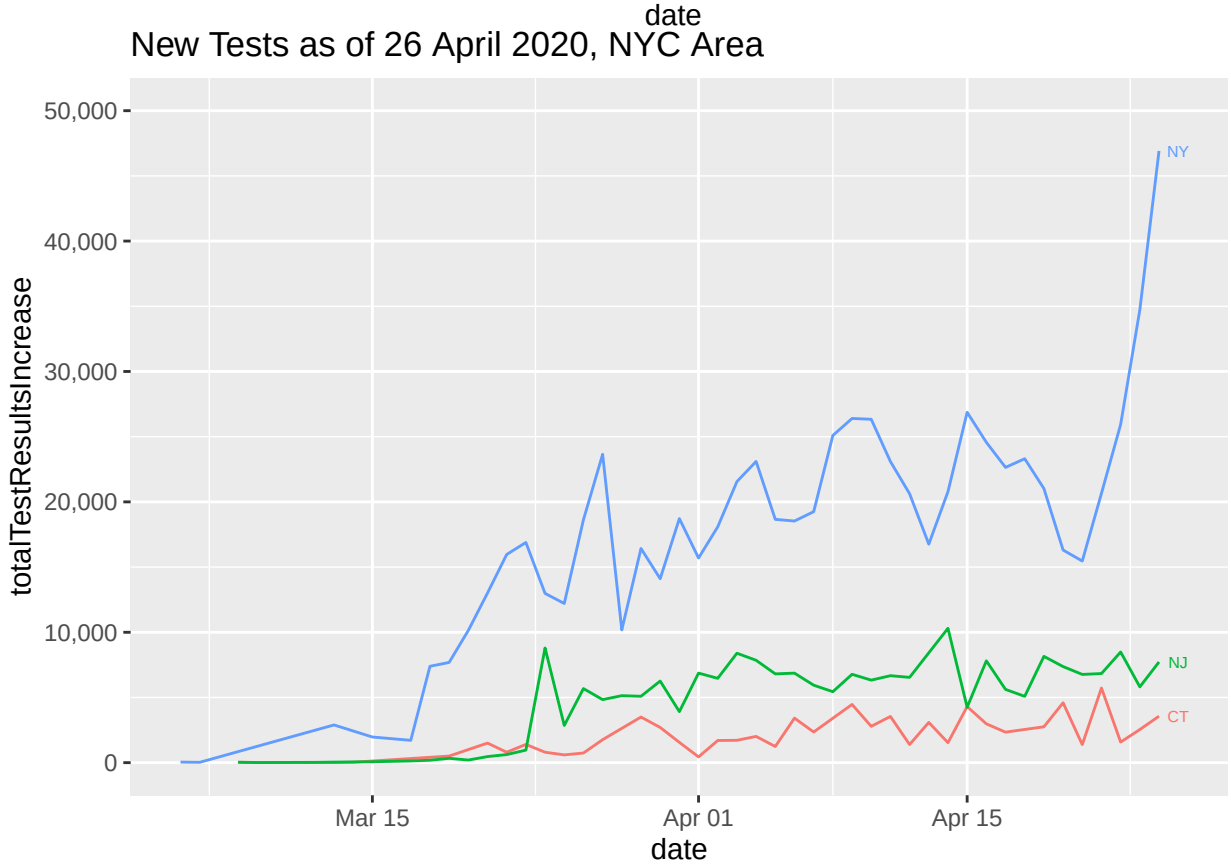
Selected States Drill-Down

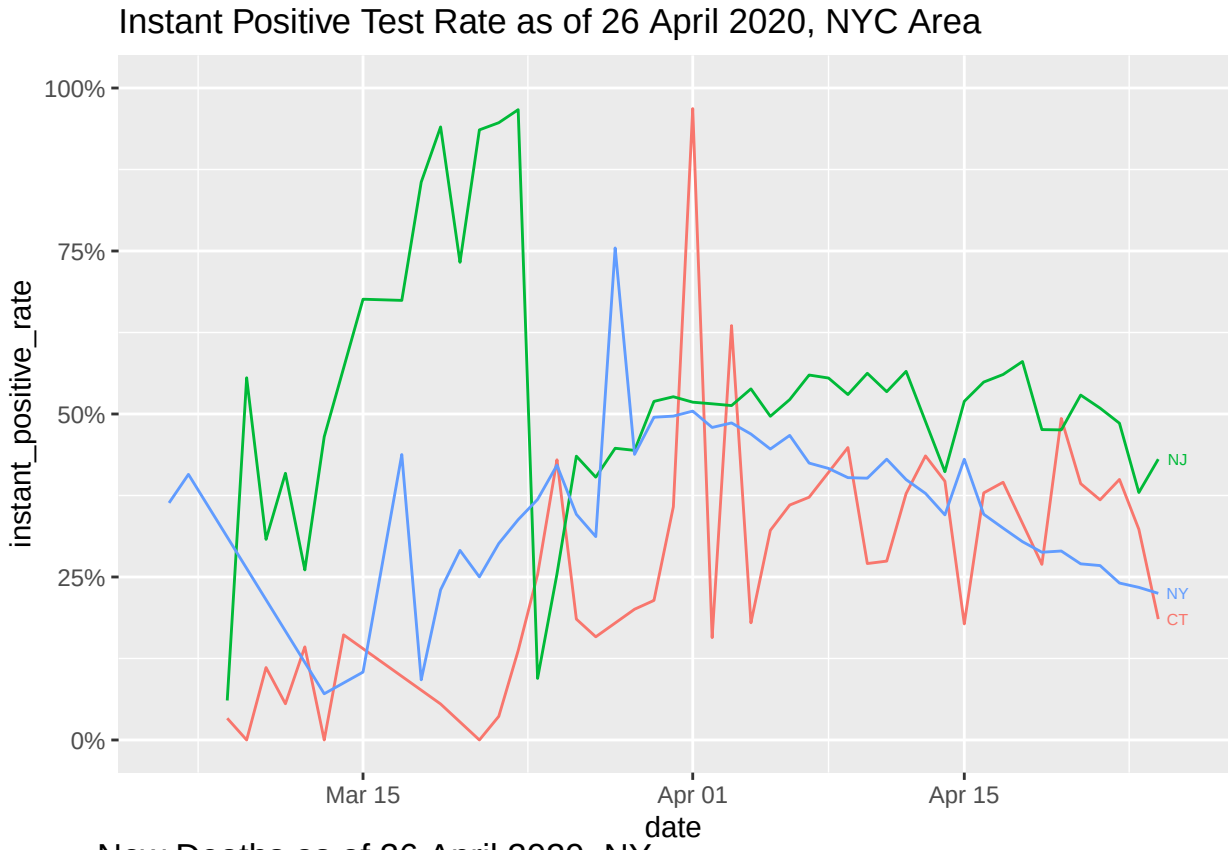
New York State has been the U.S. epicenter so far. New York is also testing much more than most states, but at the same time, its positive rate is very high (around 50% as of early March), indicating that people being tested are high-likelihood cases; as such it should be assumed that there remain a very large population of untested positive patients.

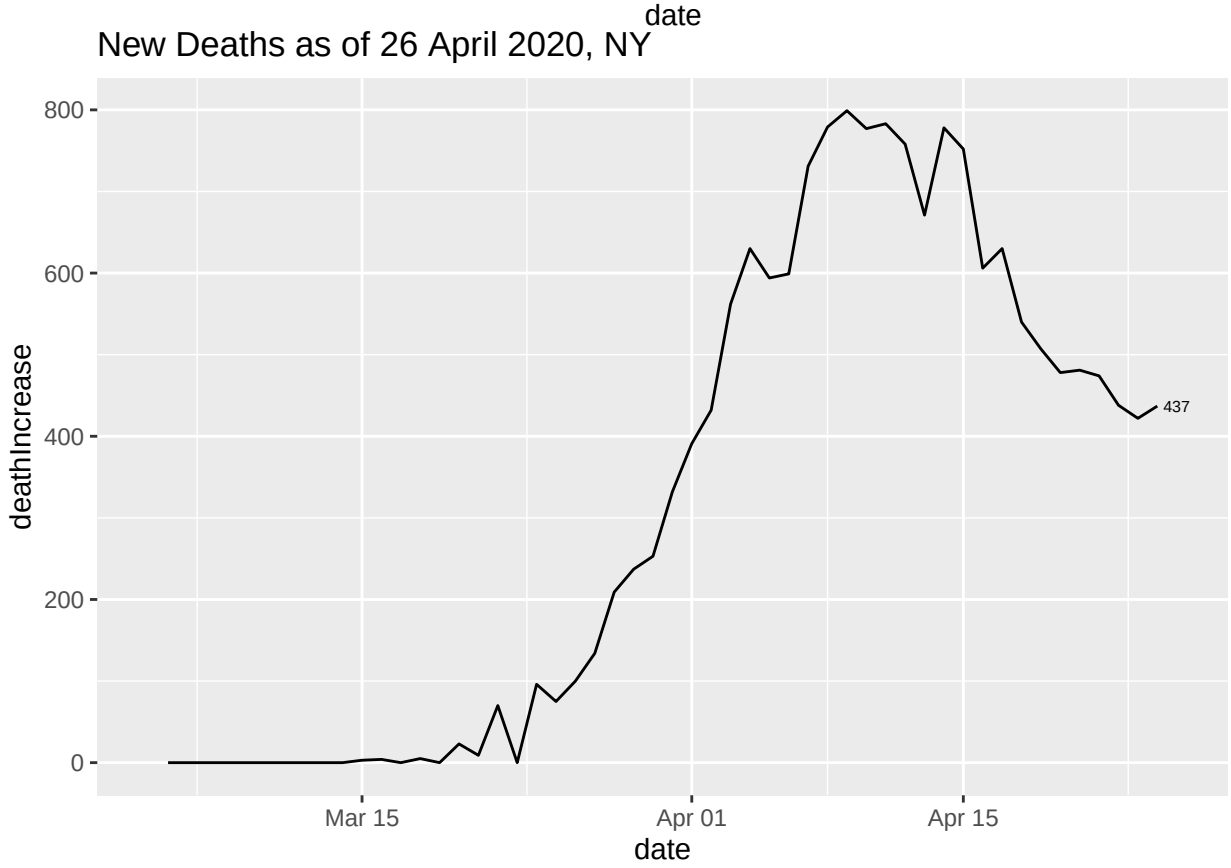
The DMV (D.C., Maryland, Virginia) might be a coming hotspot. Watching instant positive test rates will be a key leading indicator of hospitalizations and ICU beds in the coming week.

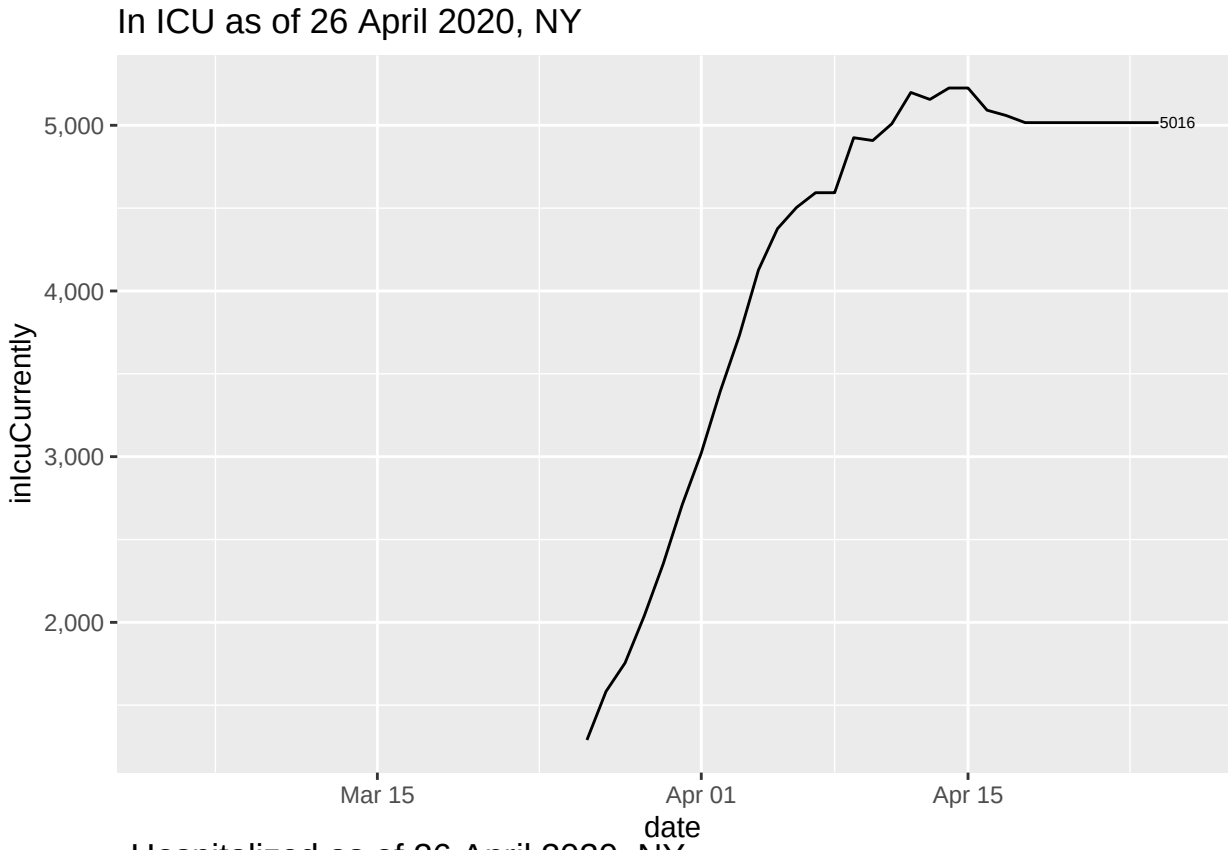


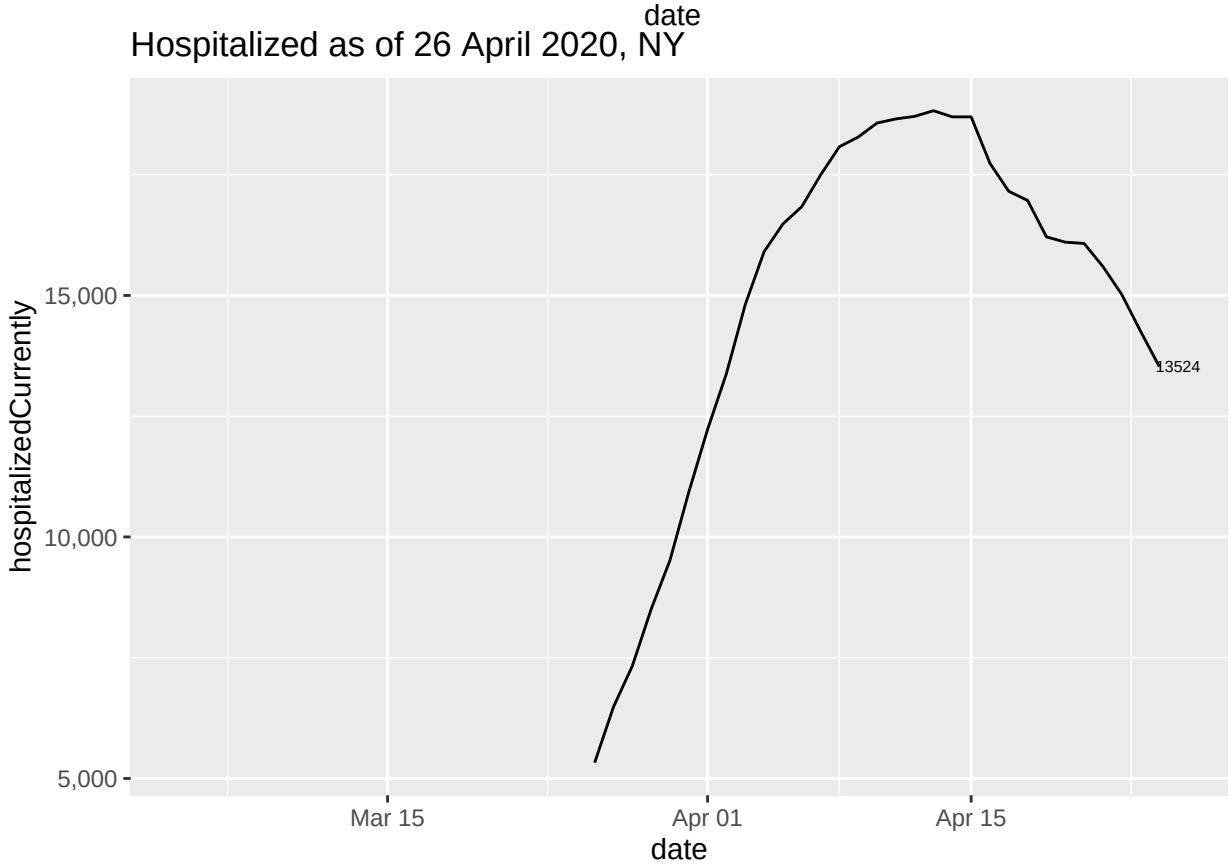

Instant Positive Test Rate as of 26 April 2020, DMV Area
100%
75%
50%
25%
0%
instant_positive_rate
Mar 15
Apr 01
Apr 15
date
MD
VA
DC


New Tests as of 26 April 2020, NYC Area
50,000
40,000
30,000
20,000
10,000
0
totalTestResultsIncrease
Mar 15
Apr 01
Apr 15
date
NY
NJ
CT


Instant Positive Test Rate as of 26 April 2020, NYC Area
100%
75%
50%
25%
0%
instant_positive_rate
Mar 15
Apr 01
Apr 15
date
NJ
NY
CT


New Deaths as of 26 April 2020, NY
800
600
400
200
0
deathIncrease
Mar 15
Apr 01
Apr 15
date
437


In ICU as of 26 April 2020, NY
inIcuCurrently
5,000
4,000
3,000
2,000
5016
Mar 15
Apr 01
Apr 15
date


Hospitalized as of 26 April 2020, NY
hospitalizedCurrently
15,000
10,000
5,000
13524
Mar 15
Apr 01
Apr 15
date

R0 by State

Table 3: State-by-State R0 Estimates and Growth Sorted by R0_7

State	New Cases	Tot Cases	Tot Deaths	R0_7	R0_7 Lag 7	R0_7 1-Wk Grwth	R0_14	R0_14 Lag 7	R0_1
AR	88	38,053	47	3.25	0.75	332%	2.45	1.82	
NE	297	19,973	50	2.95	1.31	125%	3.86	5.17	
KS	279	25,199	117	2.85	1.33	114%	3.81	1.64	
PR	31	12,560	83	2.72	0.86	218%	2.33	3.43	
IA	647	34,350	112	2.59	1.42	83%	3.68	2.39	
TN	463	141,406	178	1.97	0.91	117%	1.79	1.28	
KY	298	44,962	200	1.88	0.57	228%	1.08	3.75	
MN	261	59,699	244	1.79	1.48	21%	2.66	1.77	
WI	331	63,066	266	1.76	1.05	68%	1.84	1.13	
CO	994	56,789	674	1.64	1.02	60%	1.67	1.32	
MA	7,325	226,845	2,730	1.61	1.06	52%	1.71	2.51	
NH	50	18,125	53	1.55	1.53	1%	2.36	1.23	
WY	0	8,146	7	1.50	0.45	233%	0.68	1.05	
NM	142	51,510	84	1.48	1.02	44%	1.51	3.26	
IL	2,119	201,617	1,874	1.46	1.11	31%	1.63	2.52	
NC	571	105,265	289	1.38	1.15	20%	1.58	2.06	
MS	284	58,957	221	1.34	0.96	40%	1.29	2.23	
RI	430	50,891	215	1.34	1.07	25%	1.43	8.40	
MD	1,150	89,123	875	1.31	1.05	25%	1.38	3.80	
UT	166	90,206	41	1.29	1.08	20%	1.40	1.41	
CA	1,883	506,035	1,651	1.26	1.80	-30%	2.28	1.10	
AL	305	71,344	212	1.24	0.66	88%	0.82	1.99	
DE	134	17,698	112	1.22	0.56	117%	0.68	5.57	
MI	562	144,044	3,274	1.18	0.80	48%	0.95	1.53	
IN	715	79,774	785	1.16	1.13	3%	1.31	1.98	
MO	201	67,218	273	1.11	0.89	24%	0.99	1.45	
NV	141	37,208	204	1.10	1.09	2%	1.20	1.27	
PA	1,397	192,935	1,537	1.09	0.85	29%	0.92	3.33	
NY	10,553	777,568	16,599	1.09	0.74	47%	0.80	1.45	
AZ	235	62,508	266	1.08	1.13	-4%	1.23	1.58	
ME	25	17,774	50	1.08	0.97	11%	1.05	1.27	
OR	76	47,377	87	1.07	1.37	-22%	1.47	0.49	
VA	733	73,583	436	1.05	1.08	-3%	1.14	4.11	
DC	171	17,302	165	1.05	1.39	-24%	1.46	2.79	
CT	661	77,602	1,862	1.03	0.55	87%	0.57	8.96	
TX	967	262,816	623	0.98	0.86	13%	0.84	2.98	
WV	32	32,966	32	0.98	0.72	35%	0.70	2.02	
OK	72	53,084	194	0.97	0.89	9%	0.87	1.62	
NJ	3,327	213,686	5,863	0.93	0.97	-4%	0.90	1.59	
FL	665	334,391	1,075	0.92	0.91	1%	0.83	1.46	
SC	336	49,014	166	0.83	0.90	-7%	0.75	5.70	
SD	107	15,596	10	0.77	1.61	-52%	1.24	8.63	
LA	372	139,002	1,644	0.77	0.55	41%	0.42	1.96	
ND	55	19,350	16	0.76	3.88	-80%	2.95	0.95	
GA	548	119,014	904	0.73	1.19	-39%	0.87	2.02	
OH	402	111,379	711	0.64	2.07	-69%	1.32	1.48	
WA	224	160,324	723	0.62	0.82	-25%	0.51	0.68	
ID	34	19,361	54	0.54	1.03	-47%	0.56	1.18	
HI	5	28,040	13	0.53	0.65	-19%	0.35	1.83	

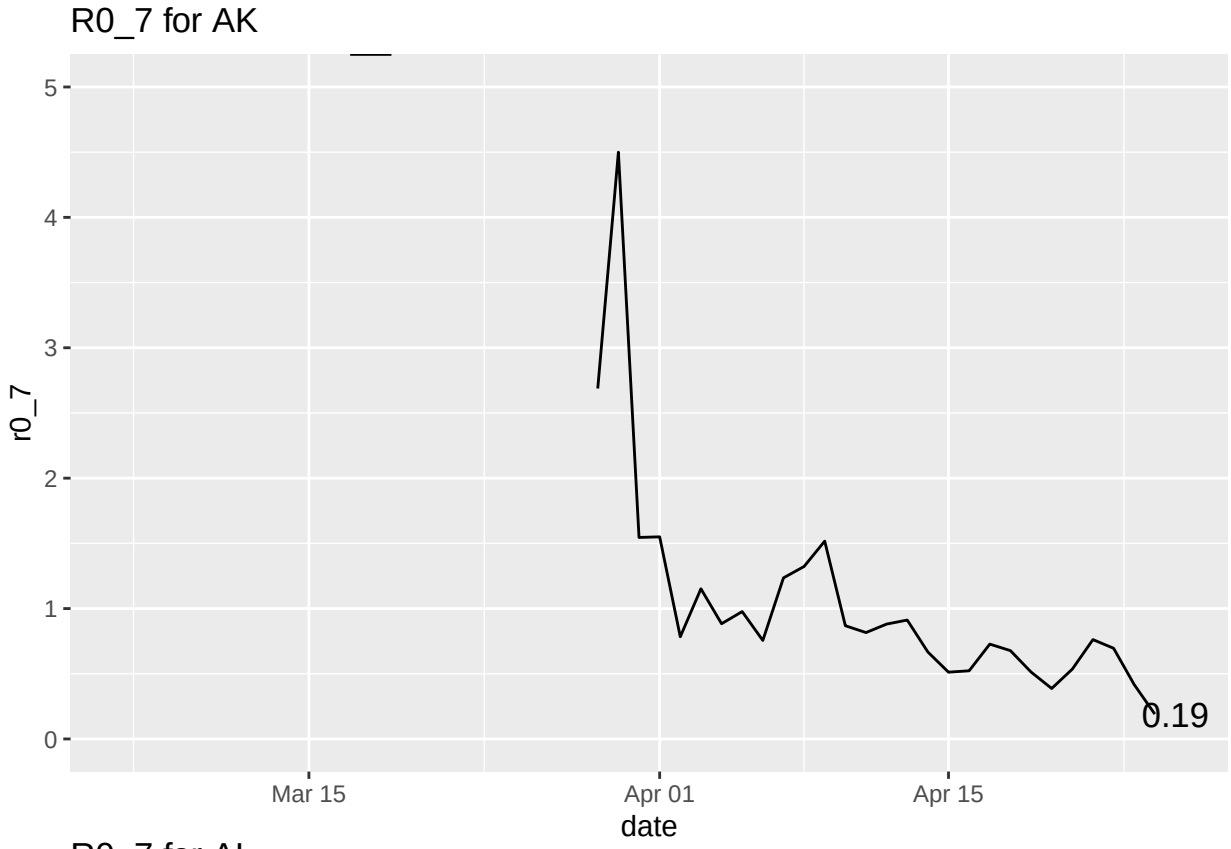
State	New Cases	Tot Cases	Tot Deaths	R0_7	R0_7 Lag 7	R0_7 1-Wk Grwth	R0_14	R0_14 Lag 7	R0_1
VT	16	14,682	46	0.45	0.42	10%	0.19	1.20	
MT	1	12,497	14	0.27	0.49	-44%	0.13	0.59	
AK	0	15,732	9	0.19	0.68	-72%	0.13	0.72	

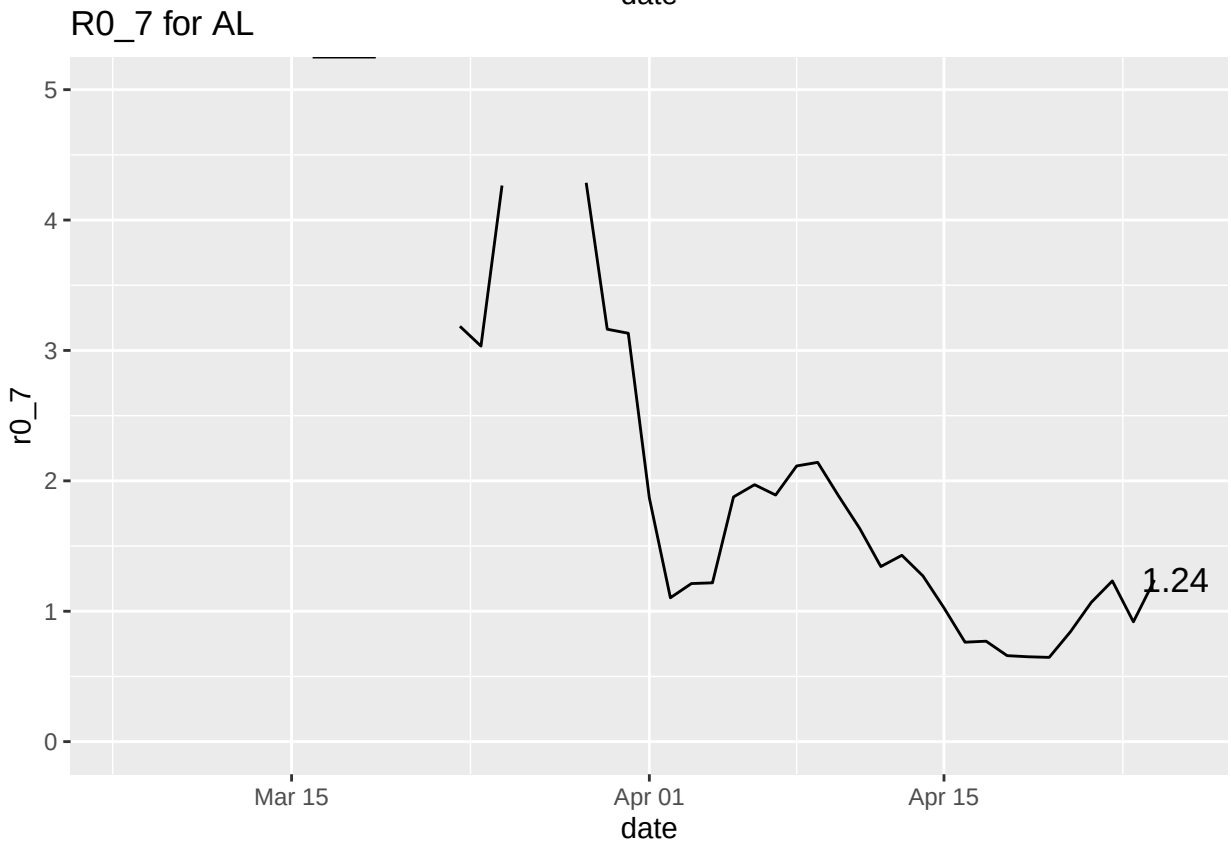
Table 4: State-by-State R0 Estimates Adjusted for Testing Volumes
Sorted by R0_7

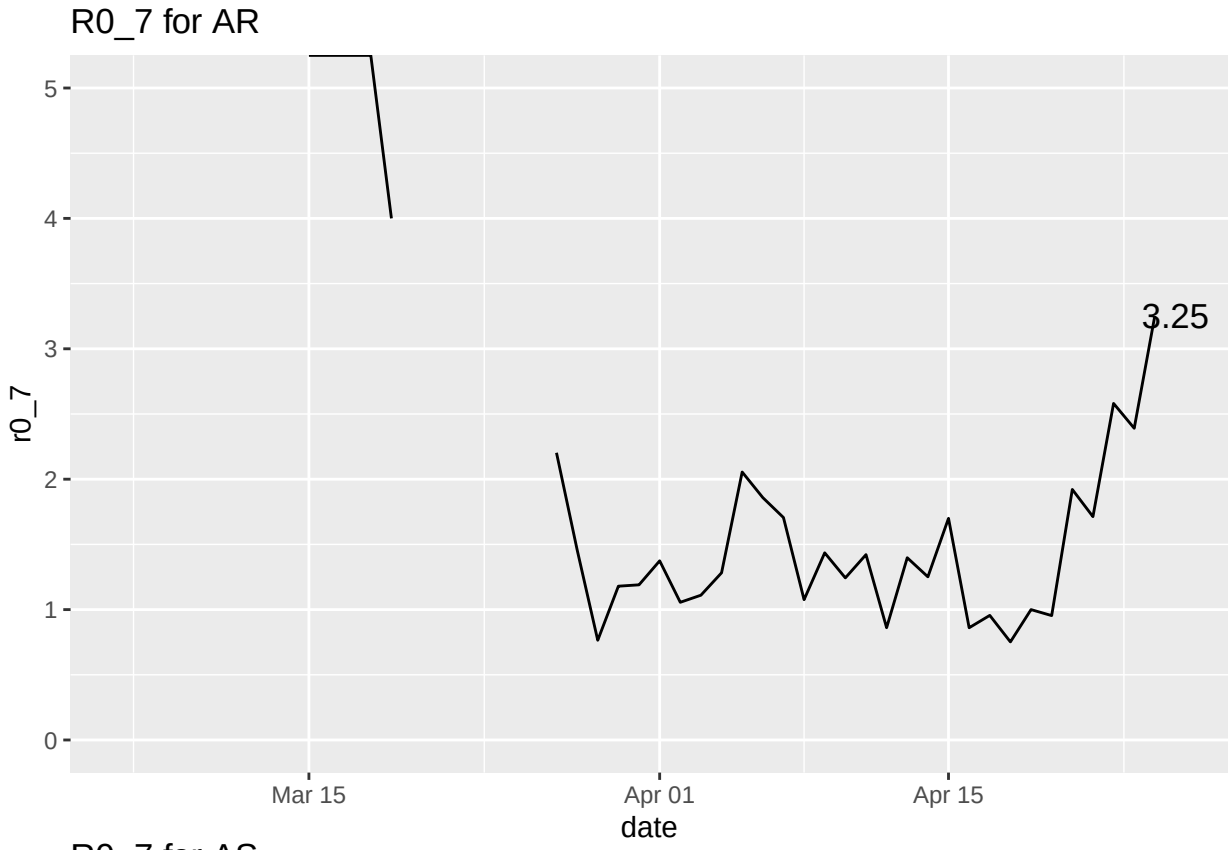
State	New Cases	Tot Cases	T0t Death	New Tests	NT L7	R0_7	R0_7 Lag 7	R0_7 1-Wk Grwth	R0_14
PR	31	12,560	83	288	458	4.33	0.86	406%	4.02
NE	297	19,973	50	1,098	649	1.74	1.31	33%	2.37
KS	279	25,199	117	1,665	1,003	1.72	1.33	29%	1.65
CA	1,883	506,035	1,651	13,569	14,393	1.34	1.80	-26%	1.56
IA	647	34,350	112	2,035	1,026	1.31	1.42	-8%	1.91
UT	166	90,206	41	4,582	4,110	1.16	1.08	7%	0.65
WI	331	63,066	266	2,826	1,705	1.06	1.05	2%	1.09
AZ	235	62,508	266	1,969	1,912	1.05	1.13	-7%	1.24
NV	141	37,208	204	1,107	1,032	1.03	1.09	-5%	1.09
DC	171	17,302	165	600	581	1.02	1.39	-27%	1.42
RI	430	50,891	215	3,056	2,310	1.01	1.07	-5%	0.95
MD	1,150	89,123	875	4,198	3,202	1.00	1.05	-5%	0.96
ME	25	17,774	50	28	26	1.00	0.97	3%	1.00
DE	134	17,698	112	382	305	0.97	0.56	73%	1.52
IN	715	79,774	785	3,435	2,826	0.95	1.13	-15%	1.06
AR	88	38,053	47	2,780	769	0.90	0.75	20%	1.19
MA	7,325	226,845	2,730	15,461	8,261	0.86	1.06	-19%	0.79
OK	72	53,084	194	2,390	2,106	0.86	0.89	-4%	1.13
PA	1,397	192,935	1,537	7,206	5,460	0.83	0.85	-2%	0.92
IL	2,119	201,617	1,874	12,424	6,825	0.80	1.11	-28%	0.75
NJ	3,327	213,686	5,863	7,342	6,172	0.78	0.97	-19%	0.81
NC	571	105,265	289	4,976	2,795	0.77	1.15	-33%	1.85
CO	994	56,789	674	2,695	1,242	0.75	1.02	-26%	0.94
OR	76	47,377	87	2,064	1,411	0.73	1.37	-47%	0.63
TN	463	141,406	178	8,809	3,230	0.72	0.91	-20%	0.69
VA	733	73,583	436	3,800	2,587	0.72	1.08	-34%	0.74
CT	661	77,602	1,862	2,561	1,773	0.71	0.55	29%	0.80
NY	10,553	777,568	16,599	35,862	23,507	0.71	0.74	-3%	0.56
MN	261	59,699	244	3,452	1,342	0.70	1.48	-53%	1.19
FL	665	334,391	1,075	14,824	11,006	0.68	0.91	-25%	0.56
SD	107	15,596	10	717	600	0.65	1.61	-60%	0.72
MO	201	67,218	273	3,021	1,582	0.58	0.89	-35%	0.99
SC	336	49,014	166	1,968	1,367	0.58	0.90	-36%	0.69
WY	0	8,146	7	174	64	0.55	0.45	23%	1.80
VT	16	14,682	46	407	495	0.55	0.42	33%	0.23
TX	967	262,816	623	15,344	8,143	0.52	0.86	-40%	0.44
HI	5	28,040	13	899	847	0.50	0.65	-24%	0.30
KY	298	44,962	200	3,878	966	0.47	0.57	-18%	0.25
AL	305	71,344	212	7,528	2,820	0.46	0.66	-30%	0.08
MI	562	144,044	3,274	8,606	3,343	0.46	0.80	-43%	0.36
ID	34	19,361	54	544	404	0.40	1.03	-61%	0.64
NH	50	18,125	53	895	229	0.40	1.53	-74%	1.16
NM	142	51,510	84	3,544	921	0.38	1.02	-63%	0.69

State	New Cases	Tot Cases	T0t Death	New Tests	NT L7	R0_7	R0_7 Lag 7	R0_7 1-Wk Grwth	R0_14
WA	224	160,324	723	5,027	2,934	0.36	0.82	-56%	0.03
OH	402	111,379	711	4,460	2,402	0.34	2.07	-83%	0.70
ND	55	19,350	16	1,254	549	0.33	3.88	-91%	1.20
GA	548	119,014	904	8,314	3,373	0.30	1.19	-75%	0.45
MT	1	12,497	14	305	329	0.29	0.49	-40%	0.17
WV	32	32,966	32	2,377	595	0.24	0.72	-66%	0.29
MS	284	58,957	221	1,707	205	0.16	0.96	-83%	0.16
AK	0	15,732	9	1,191	330	0.05	0.68	-92%	0.02

State-by-State RO Estimates



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3
2
1
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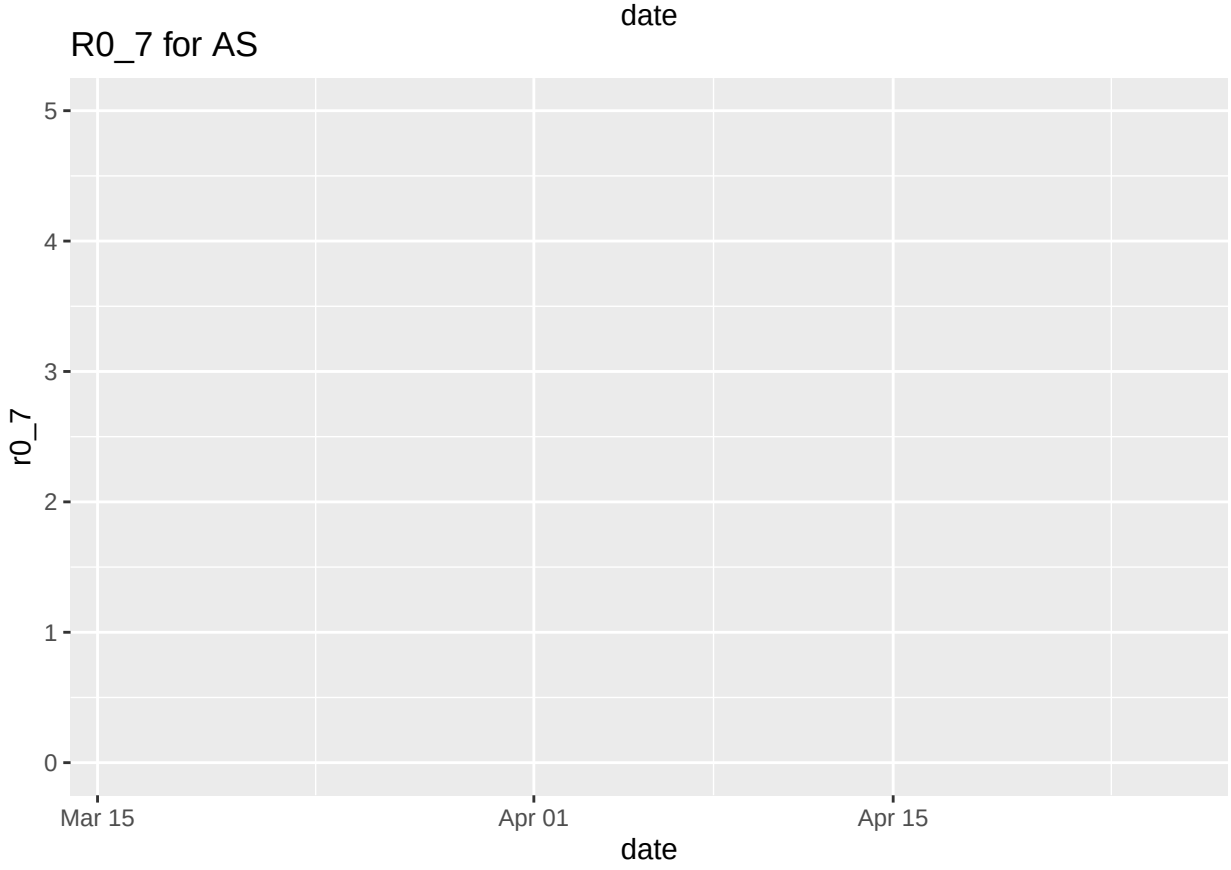
3.25
Mar 15
Apr 01
Apr 15
date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Apr 01
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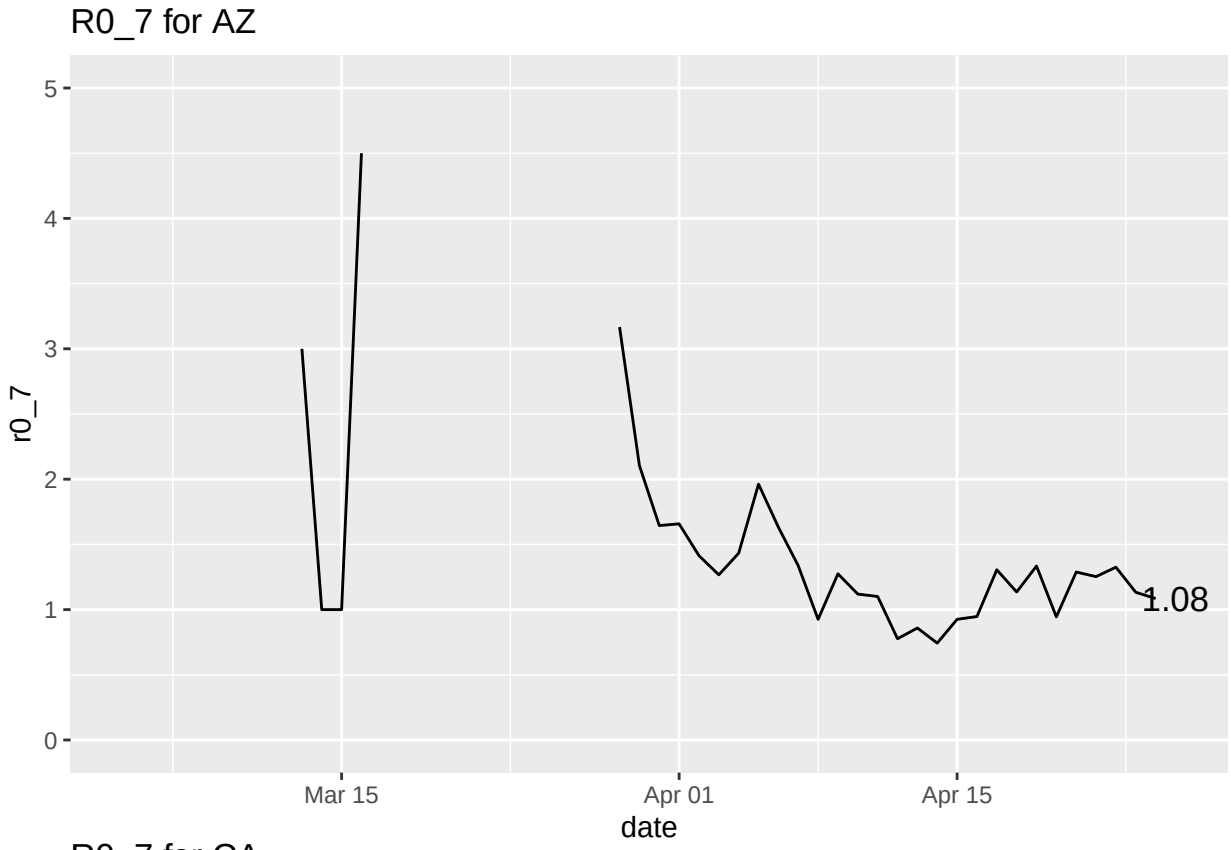
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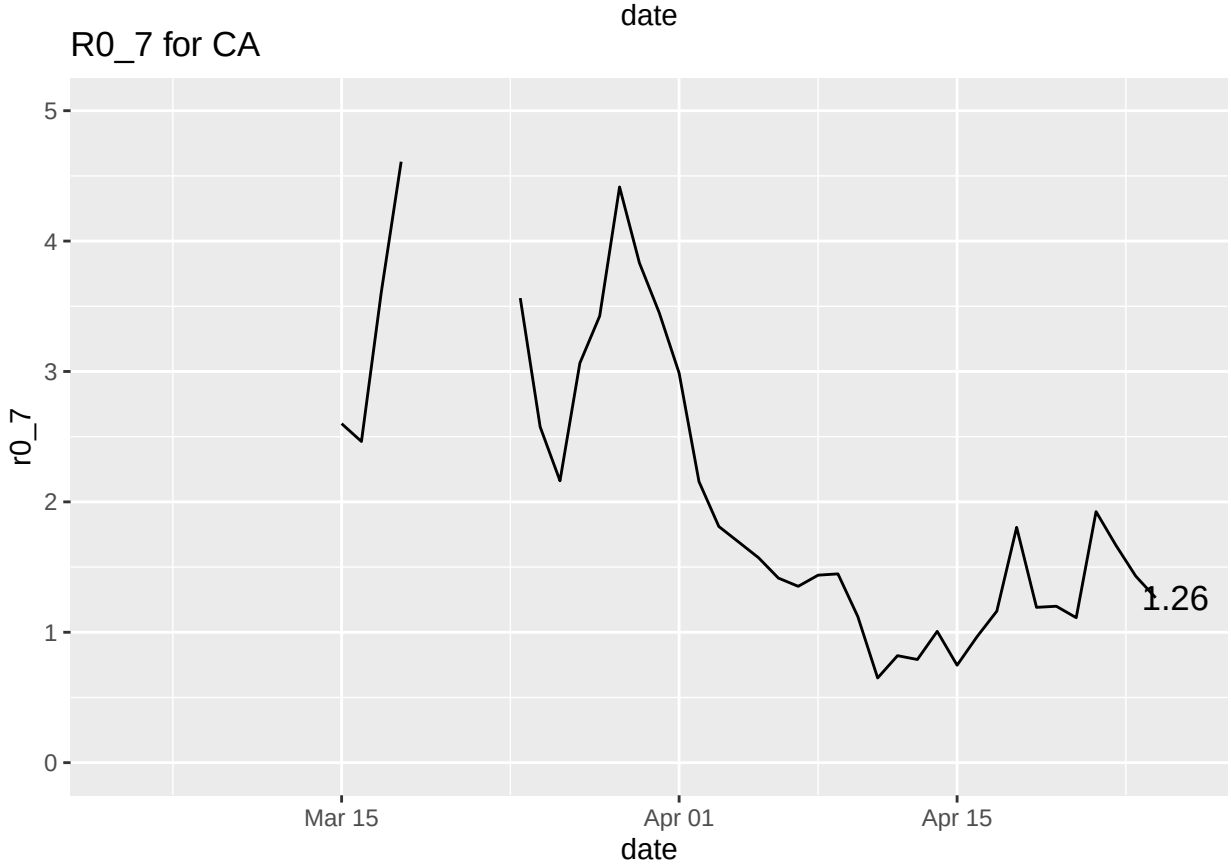
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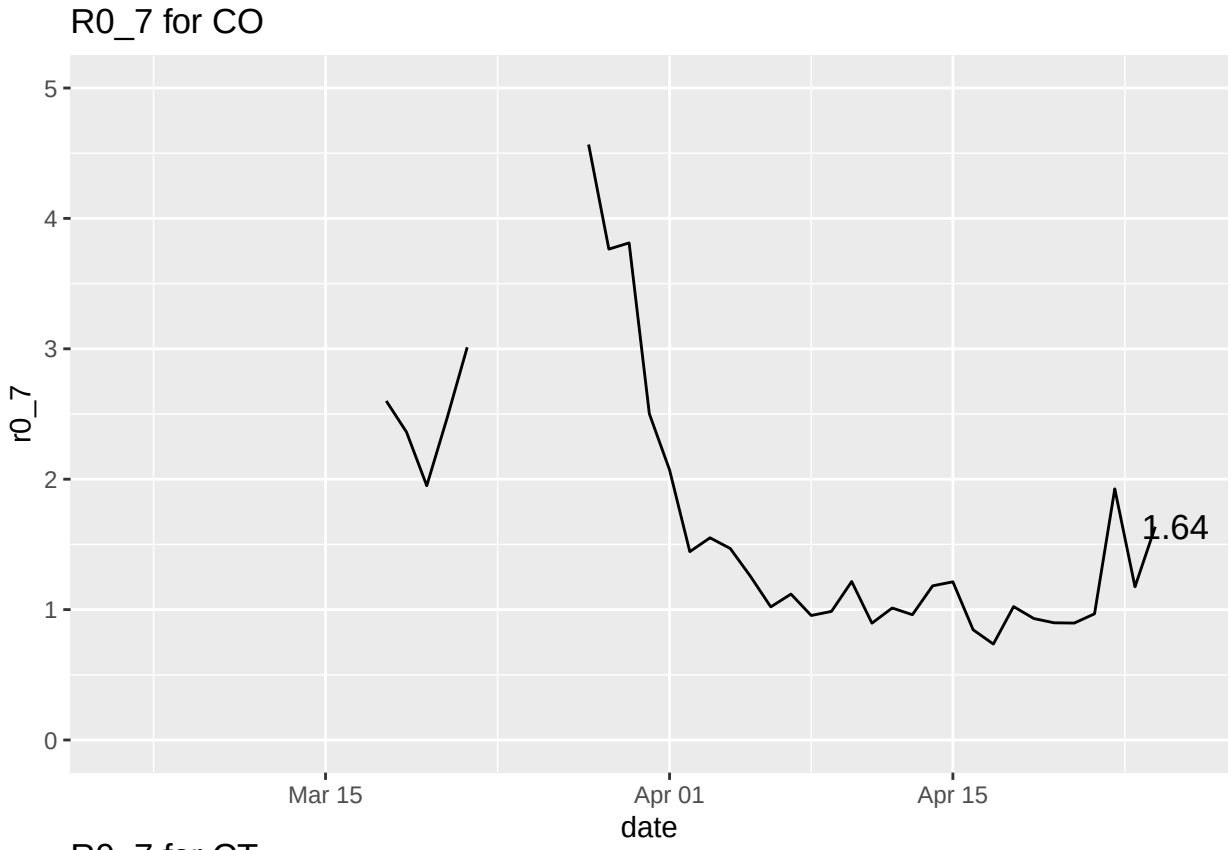
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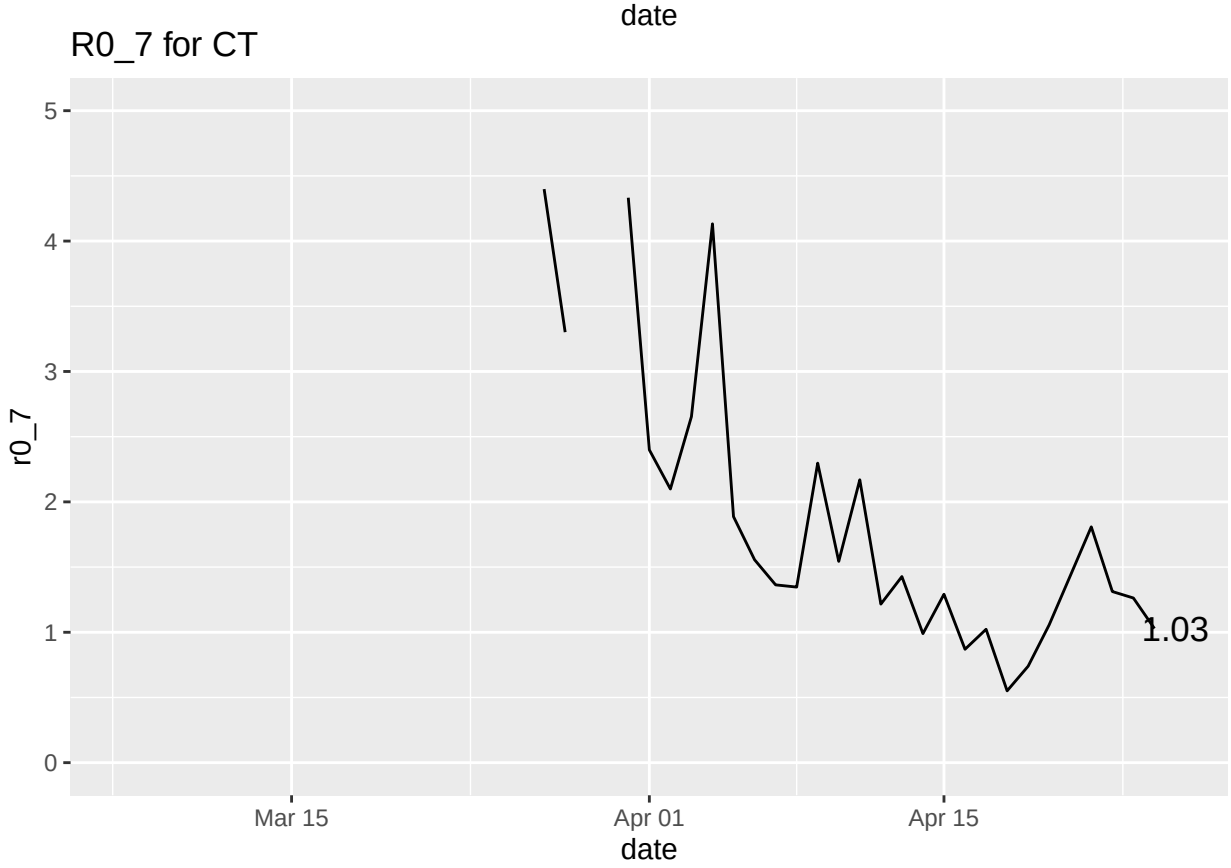
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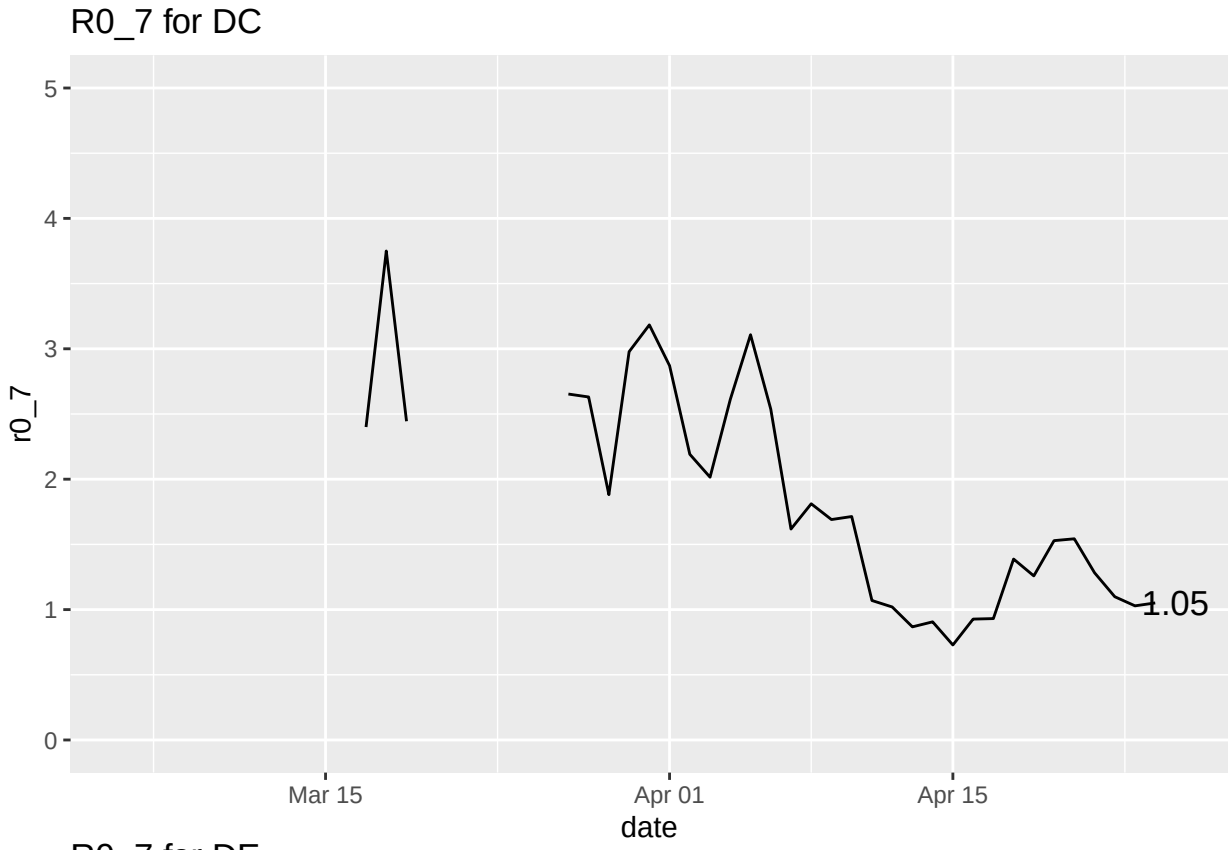
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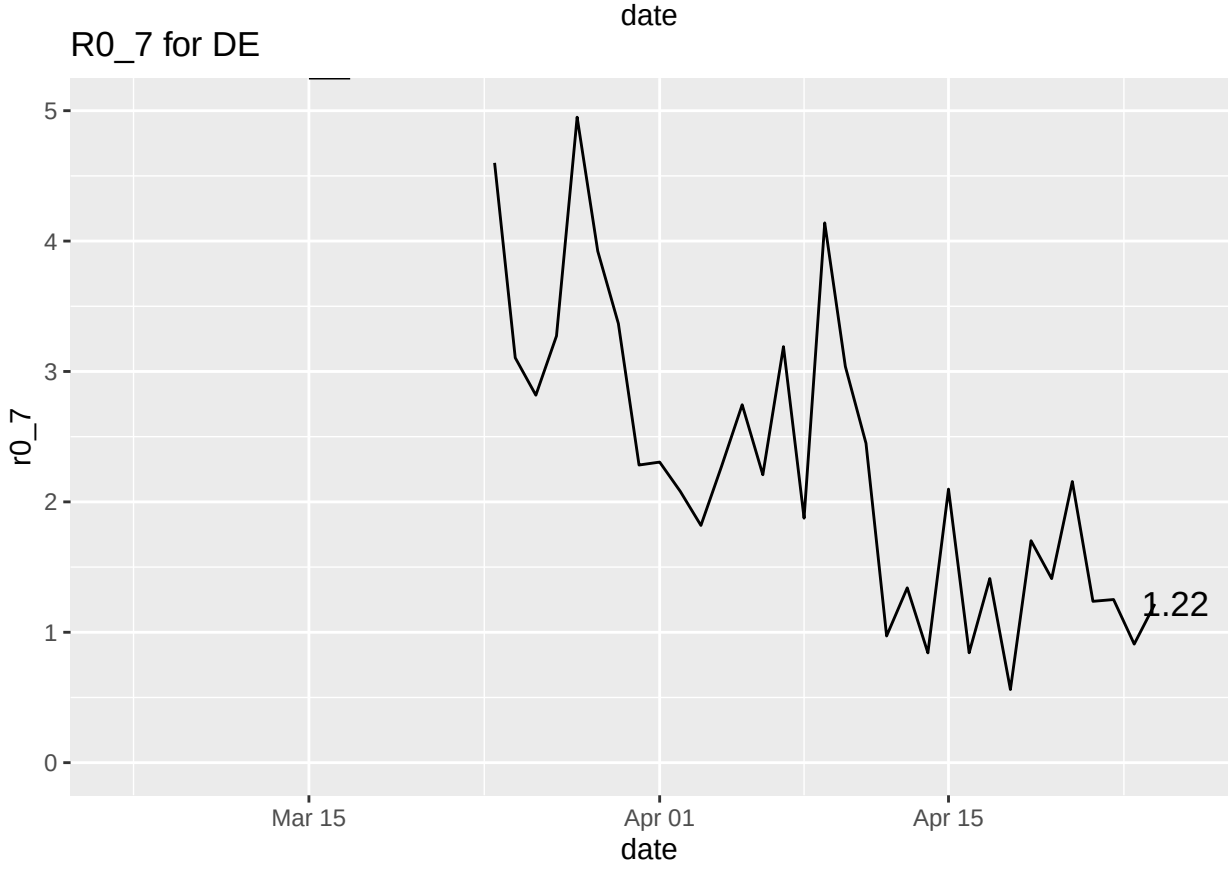
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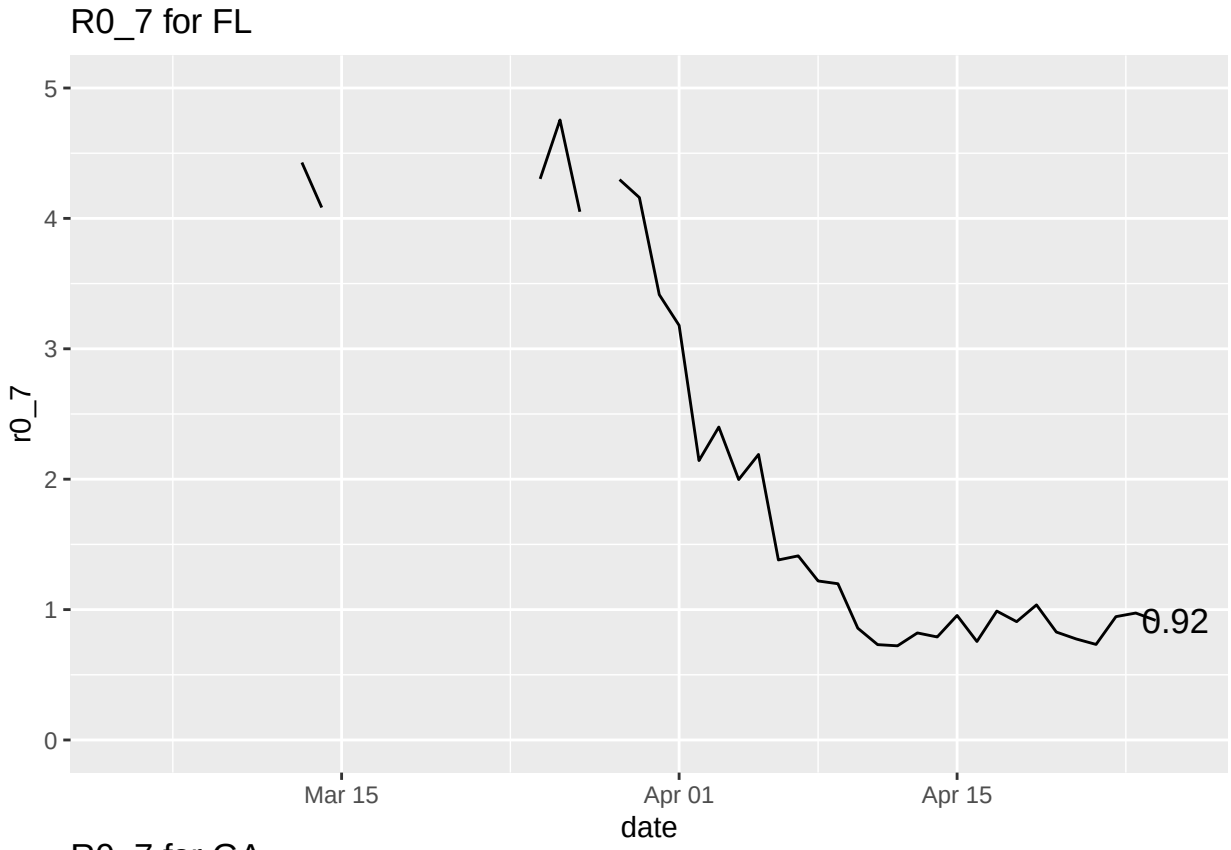
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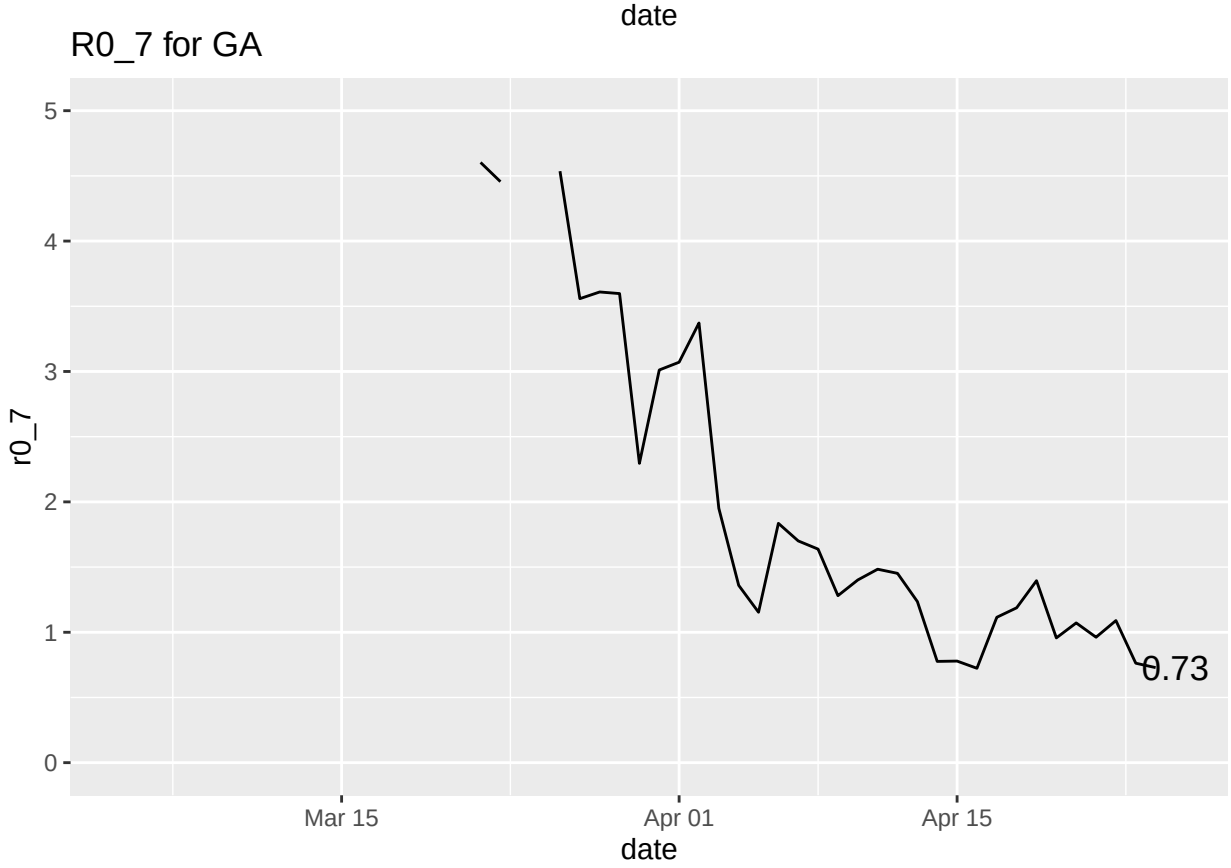
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Mar 15
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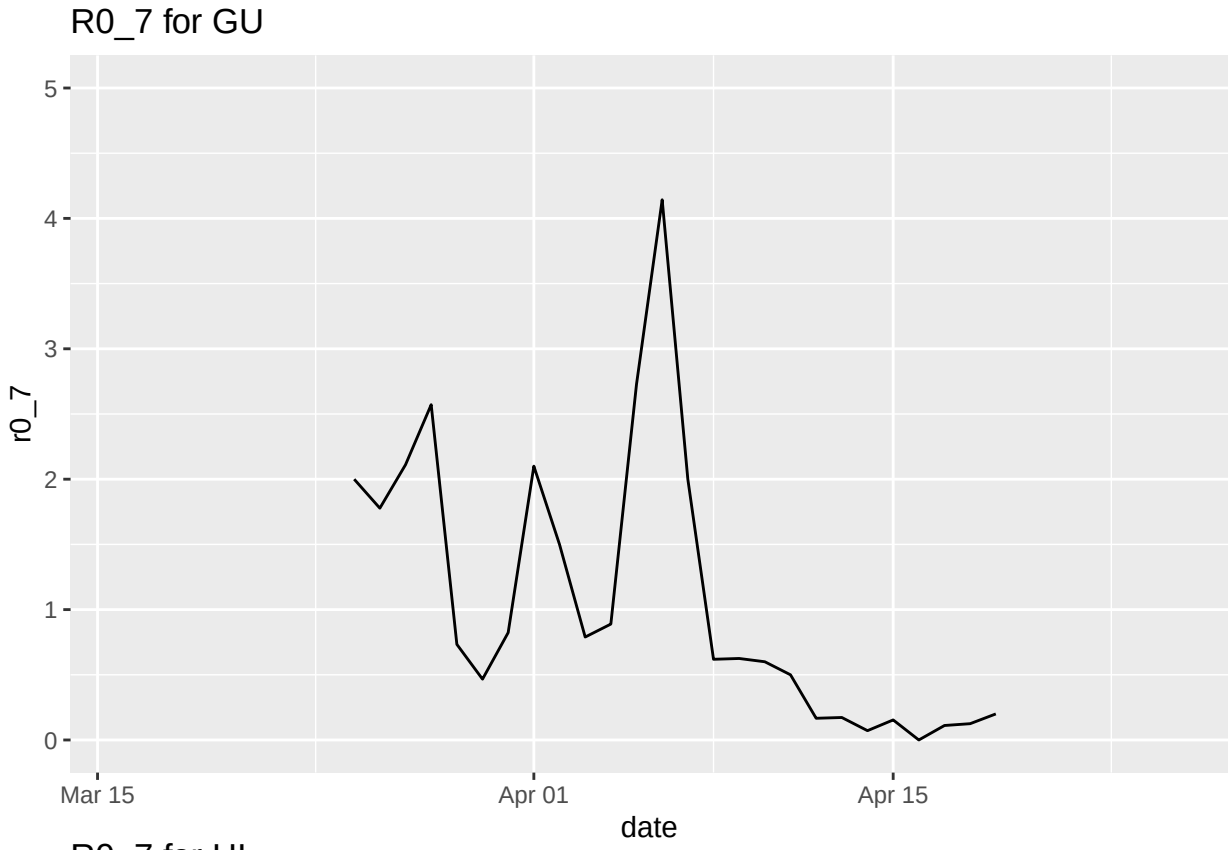
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Mar 15
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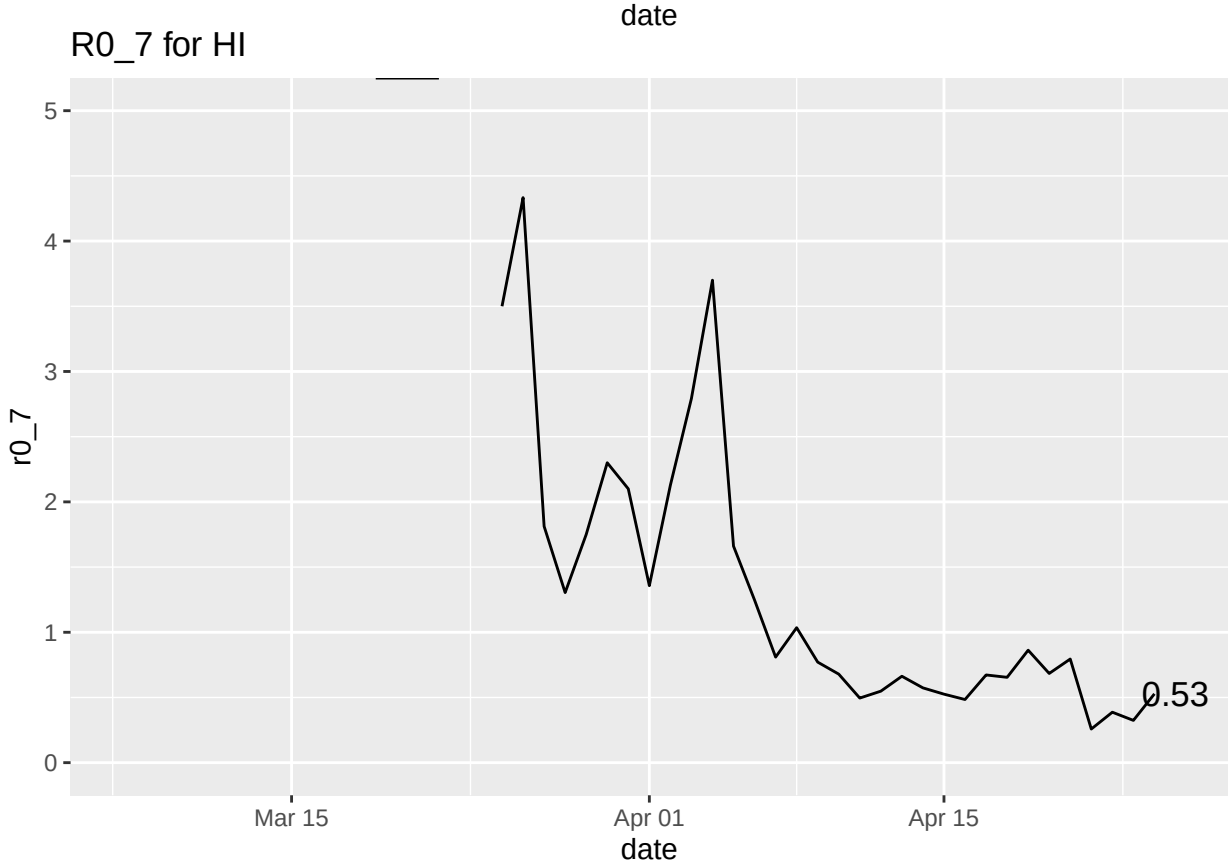
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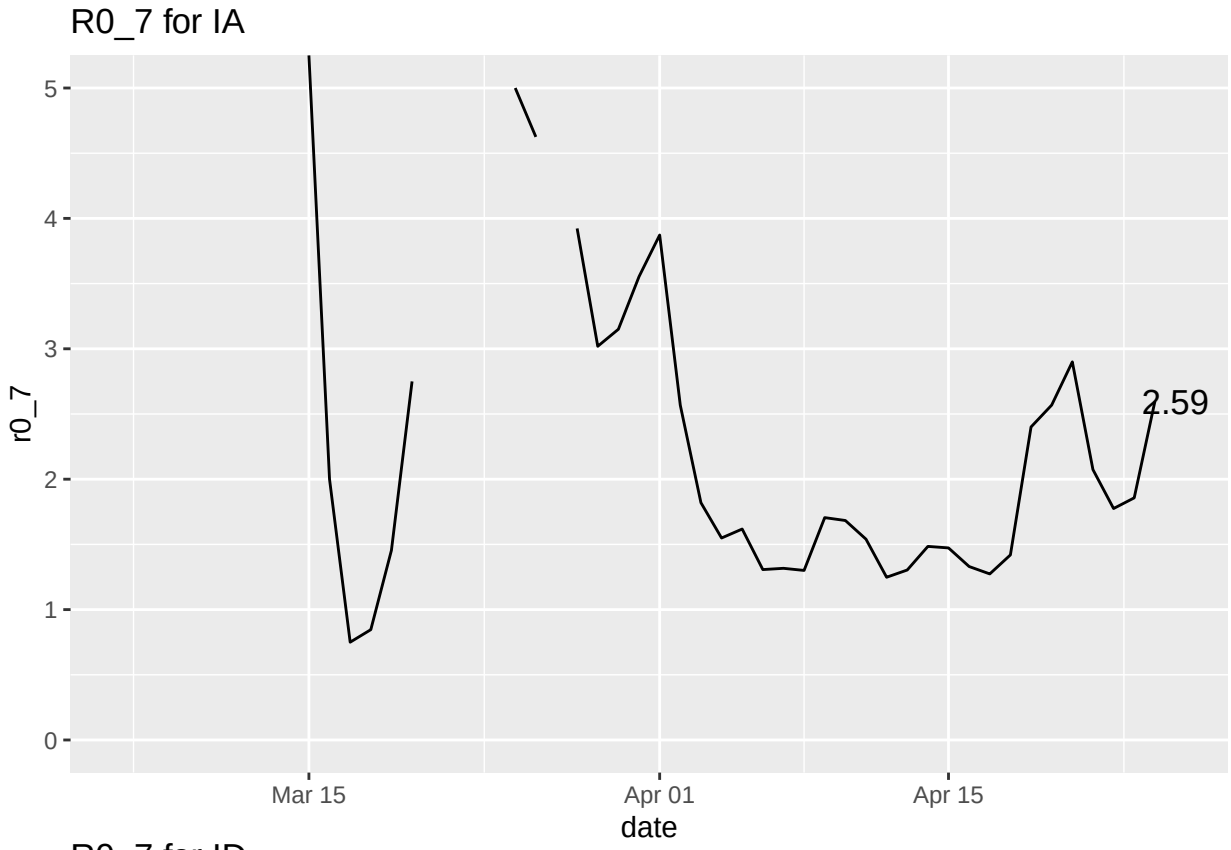
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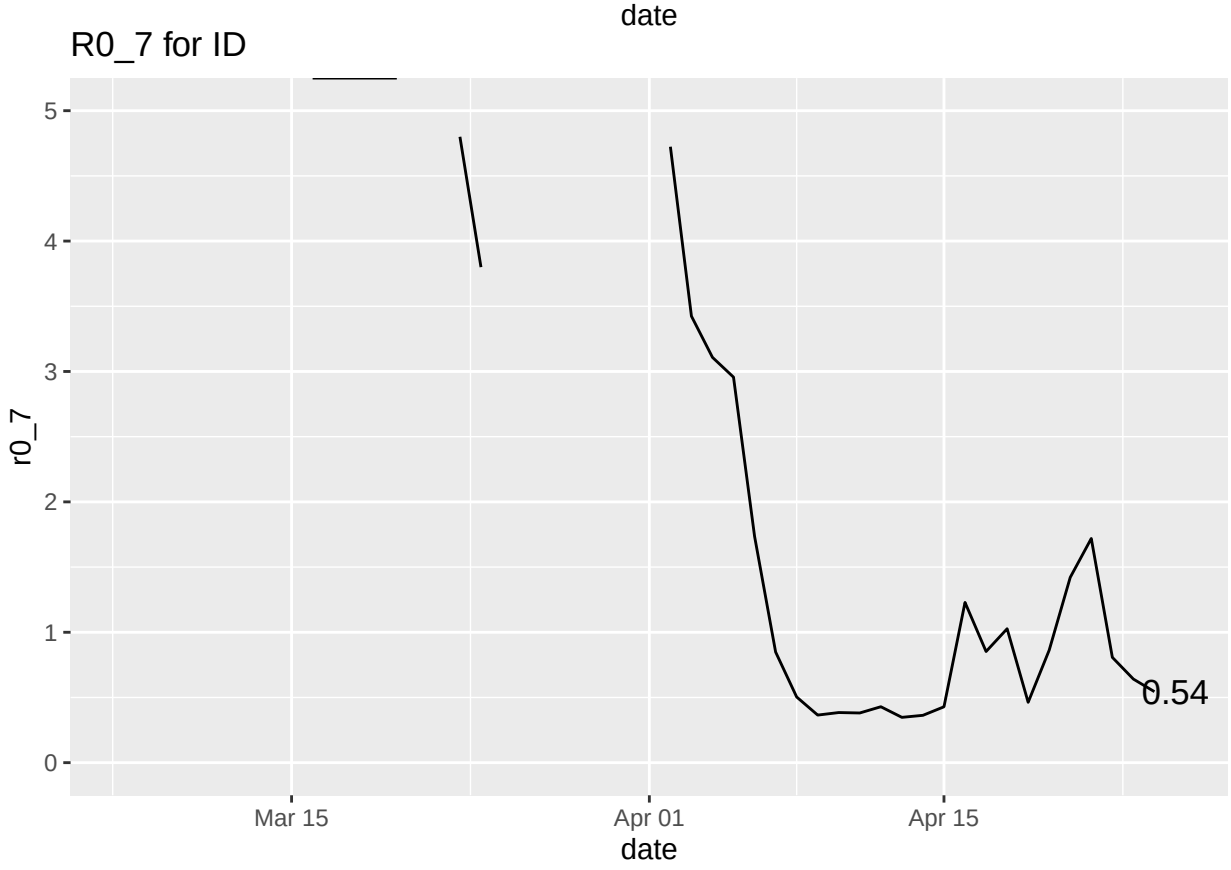
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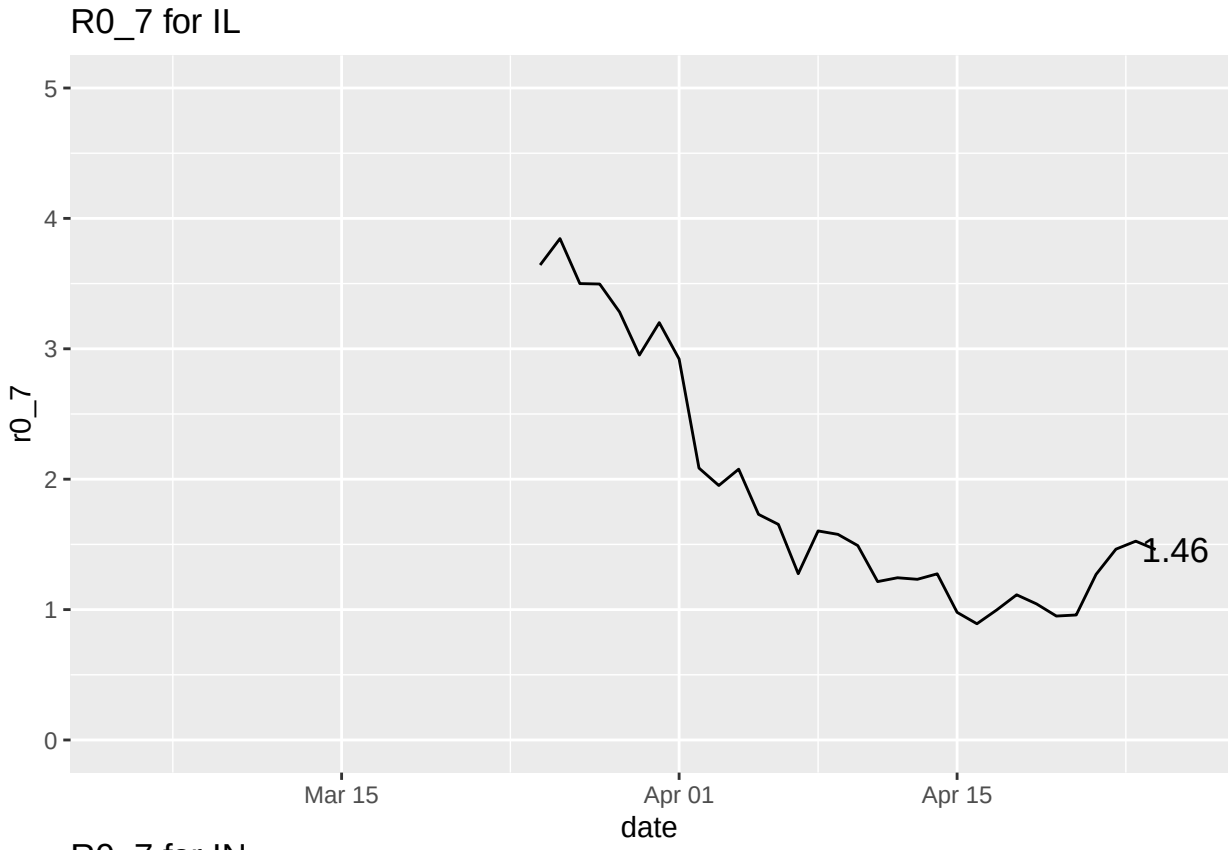
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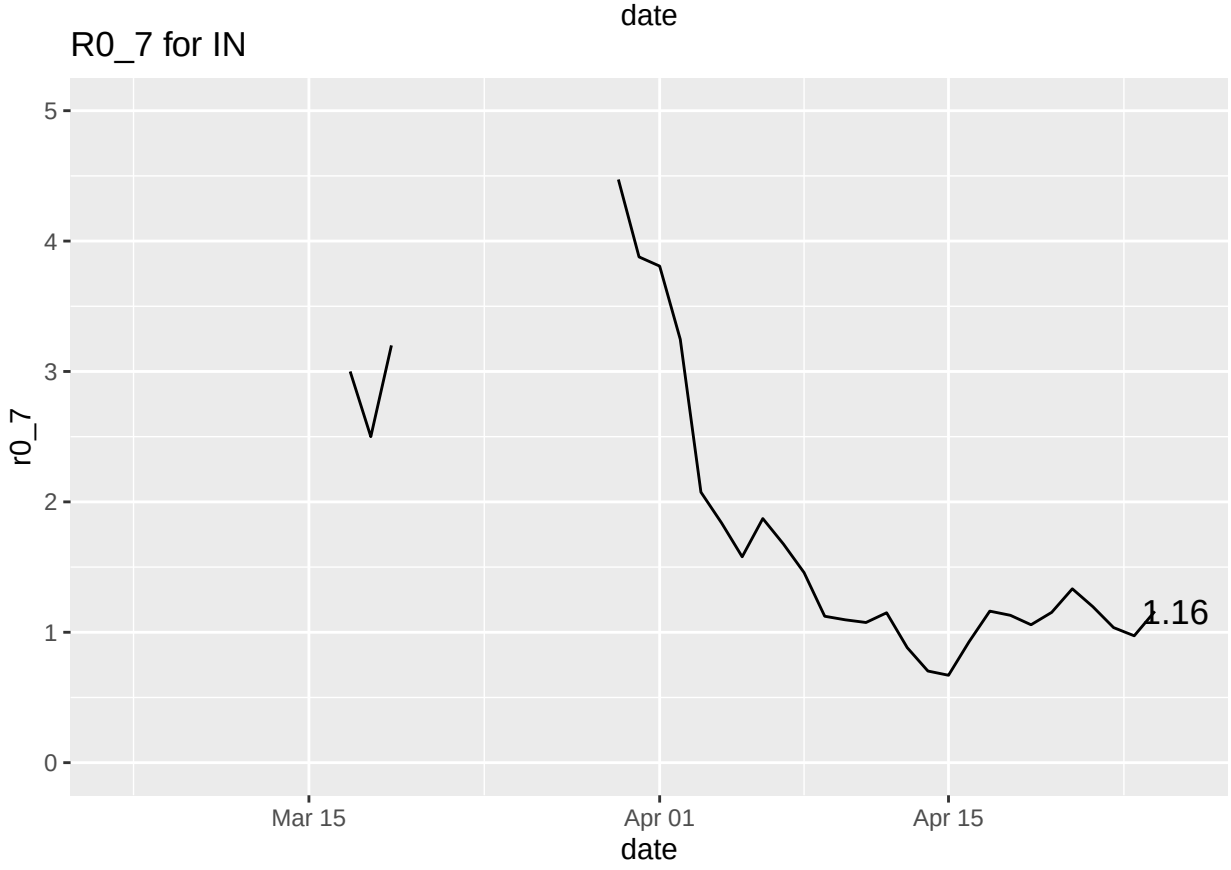
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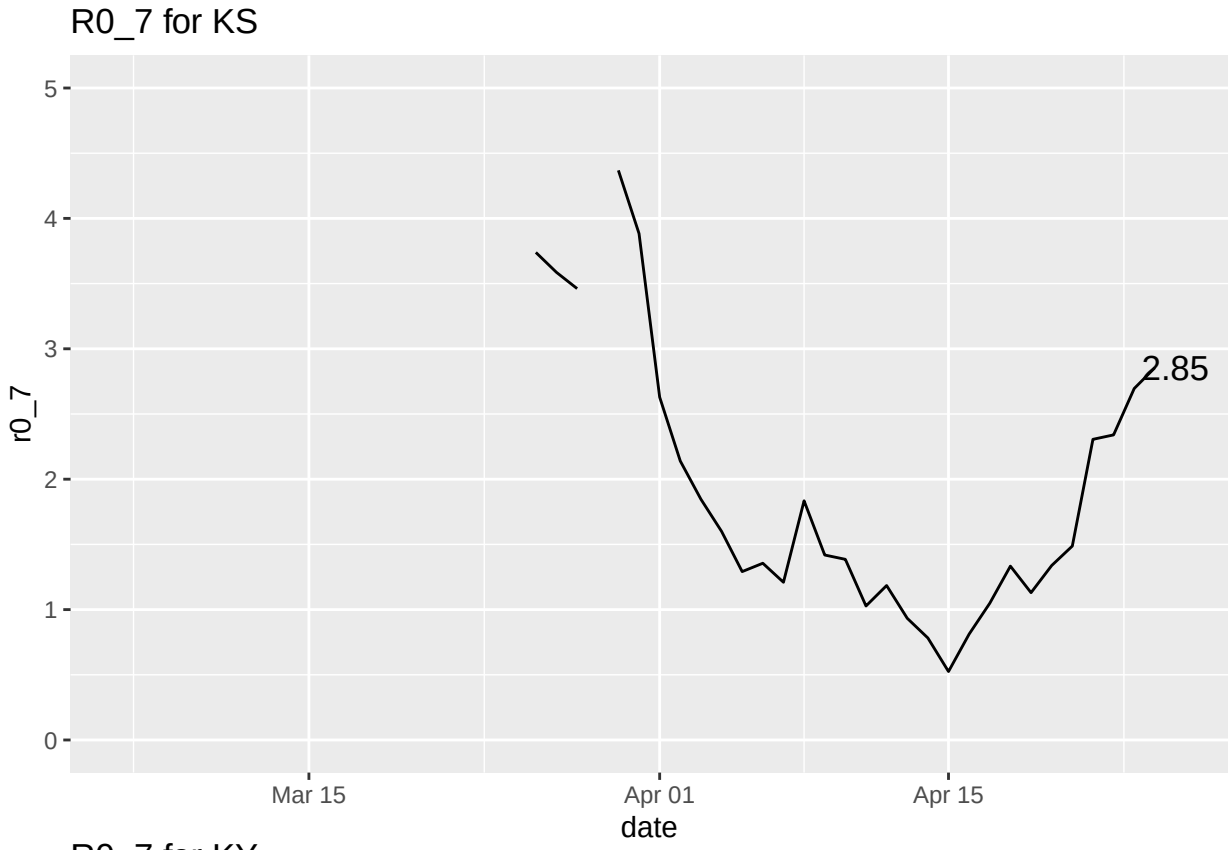
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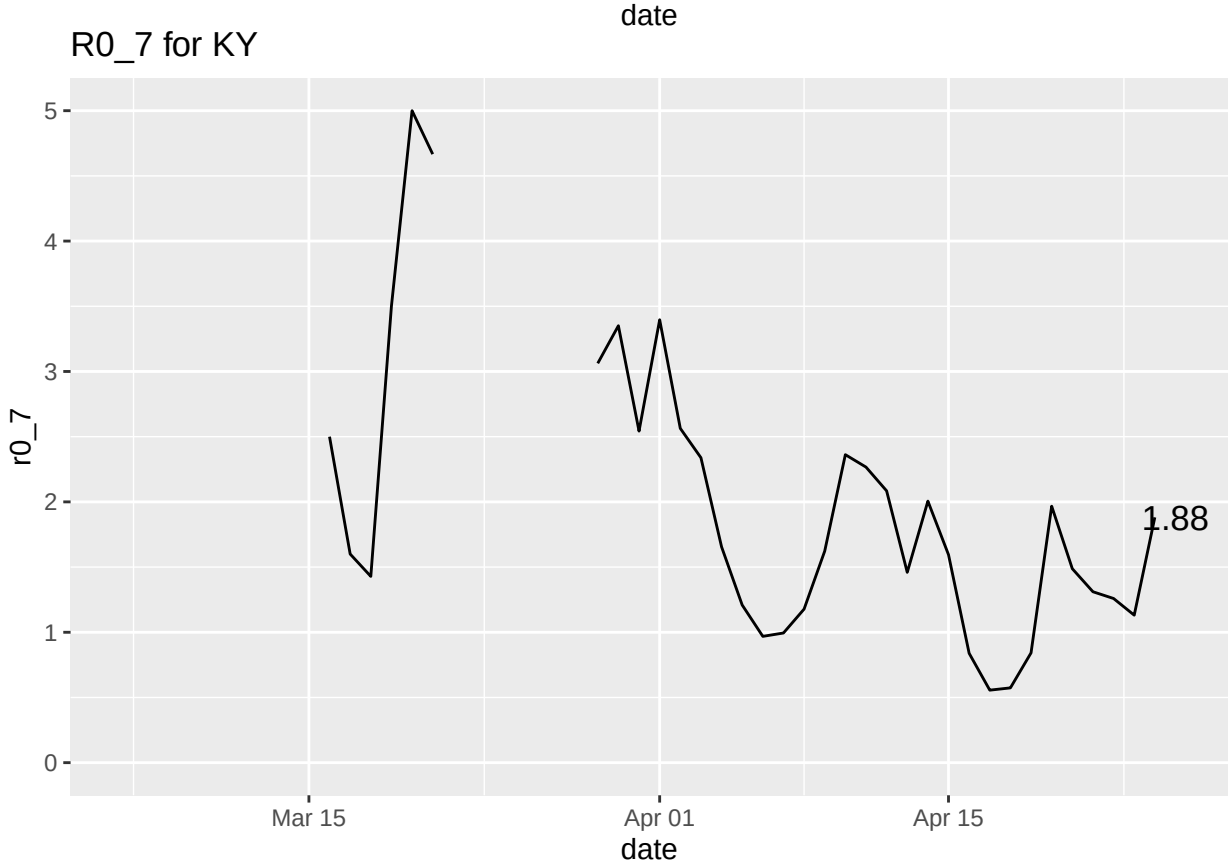
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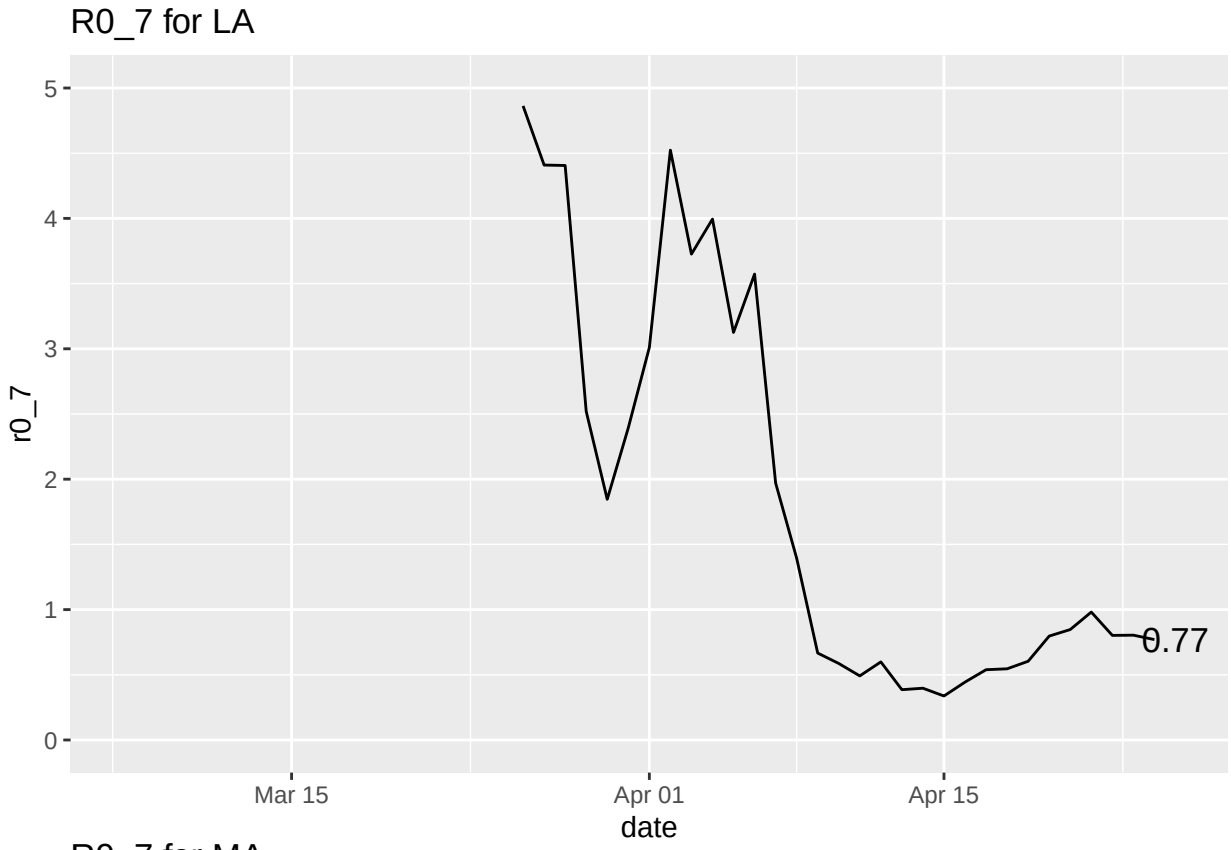
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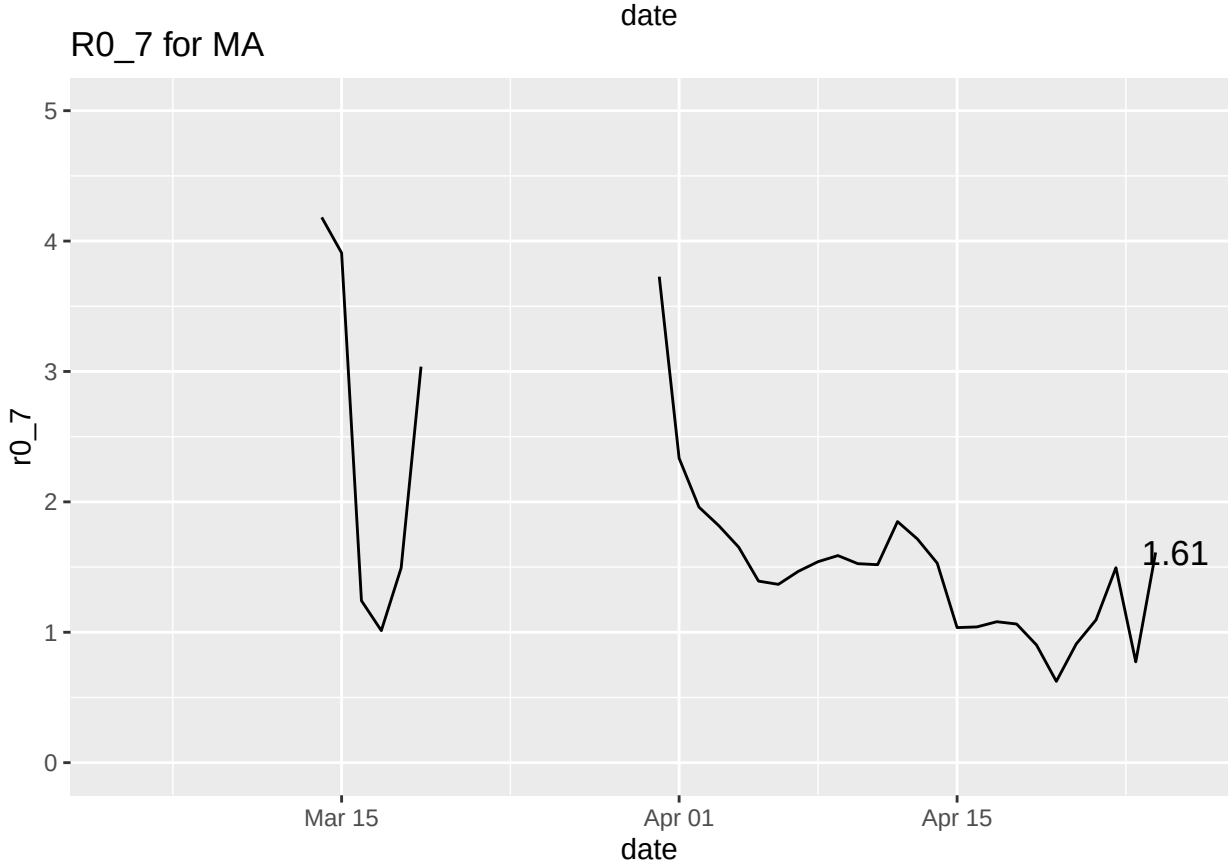
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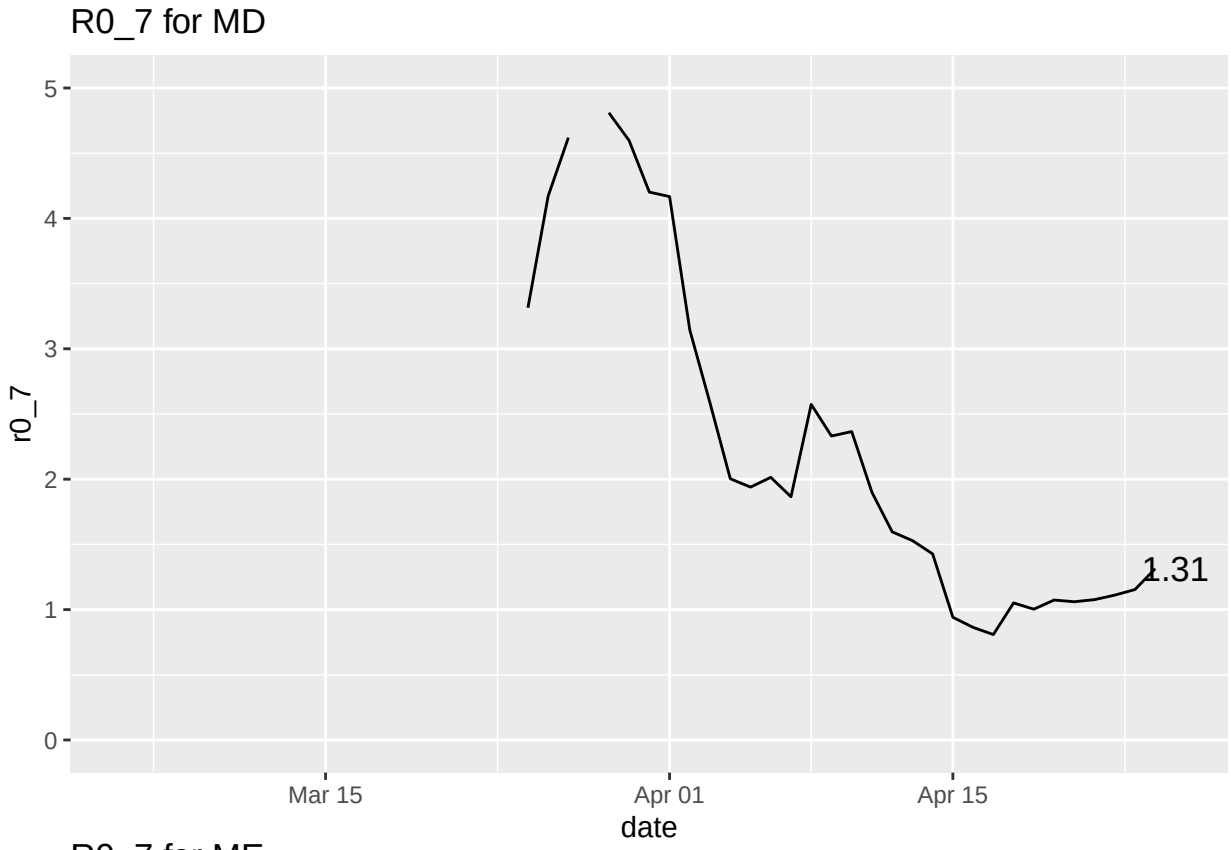
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Apr 15
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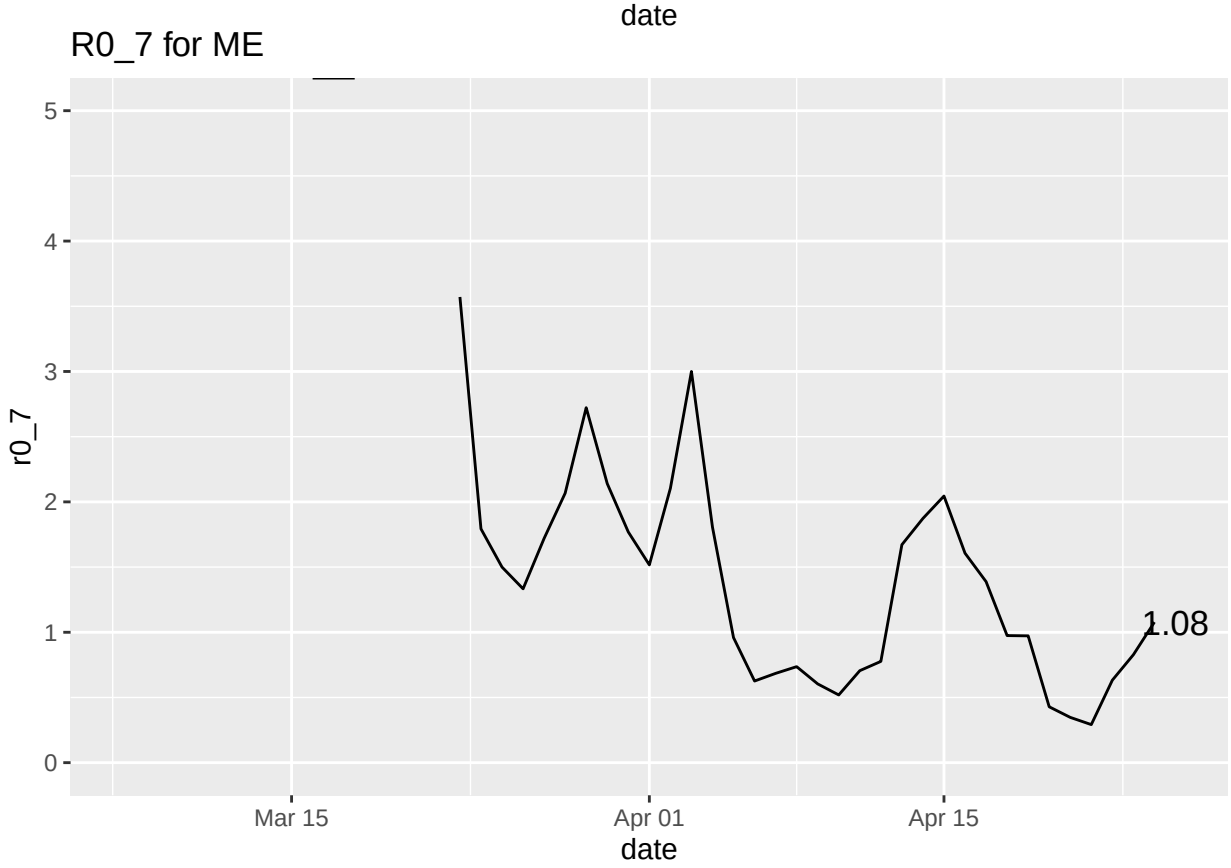
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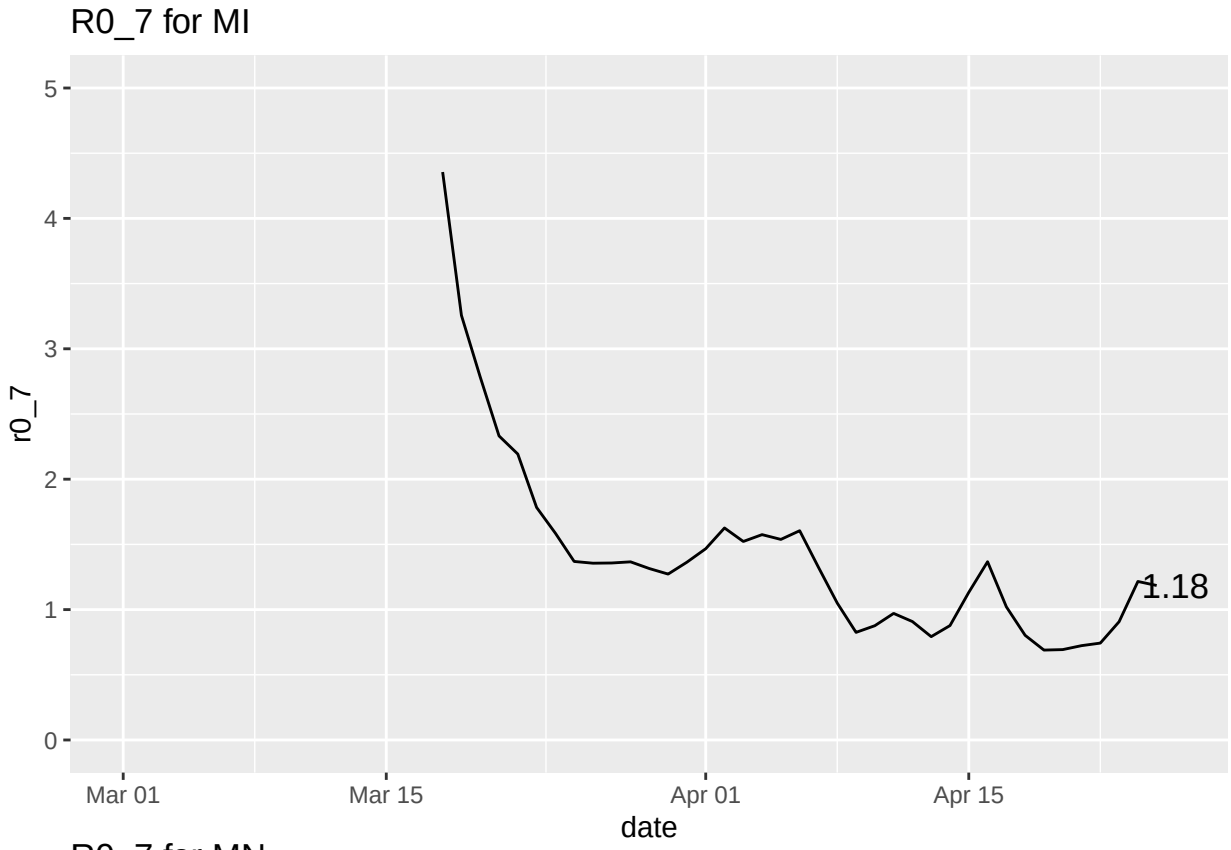
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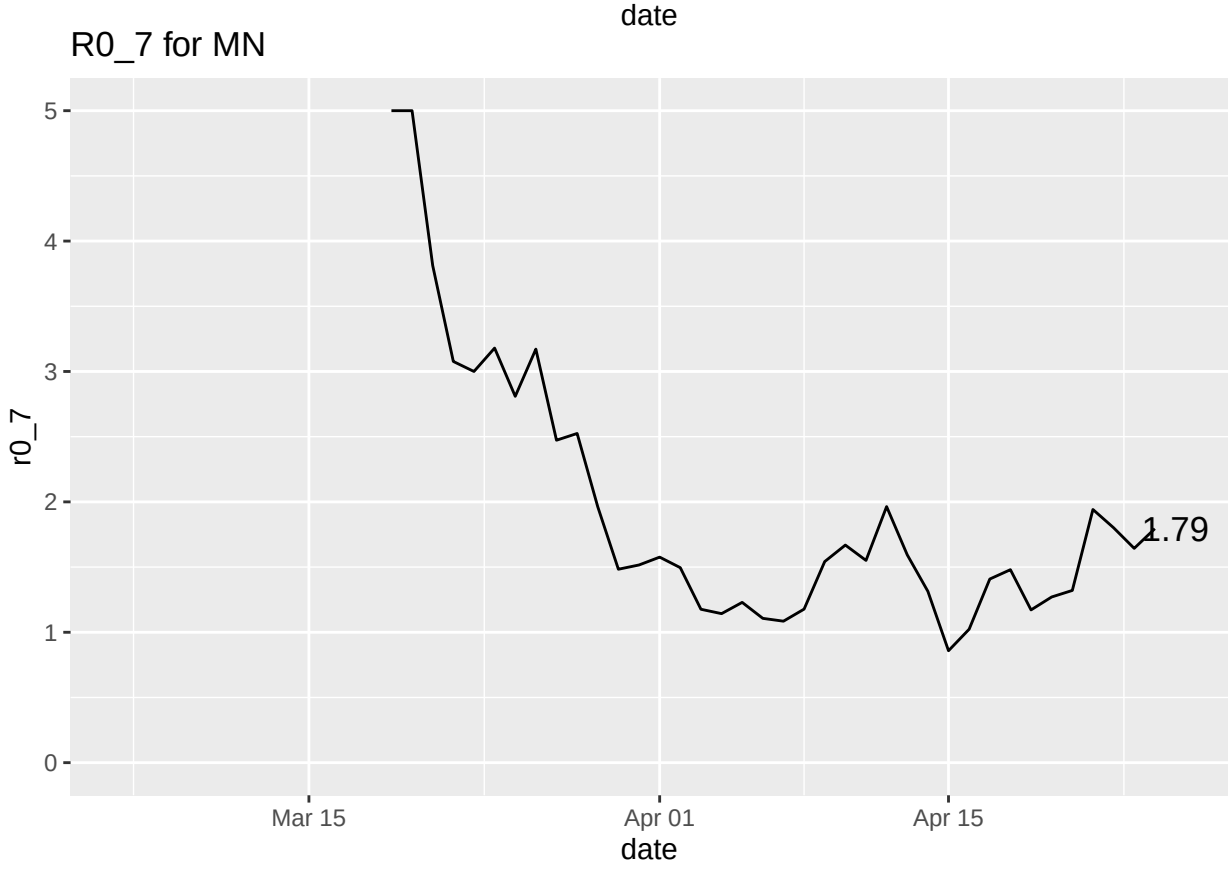
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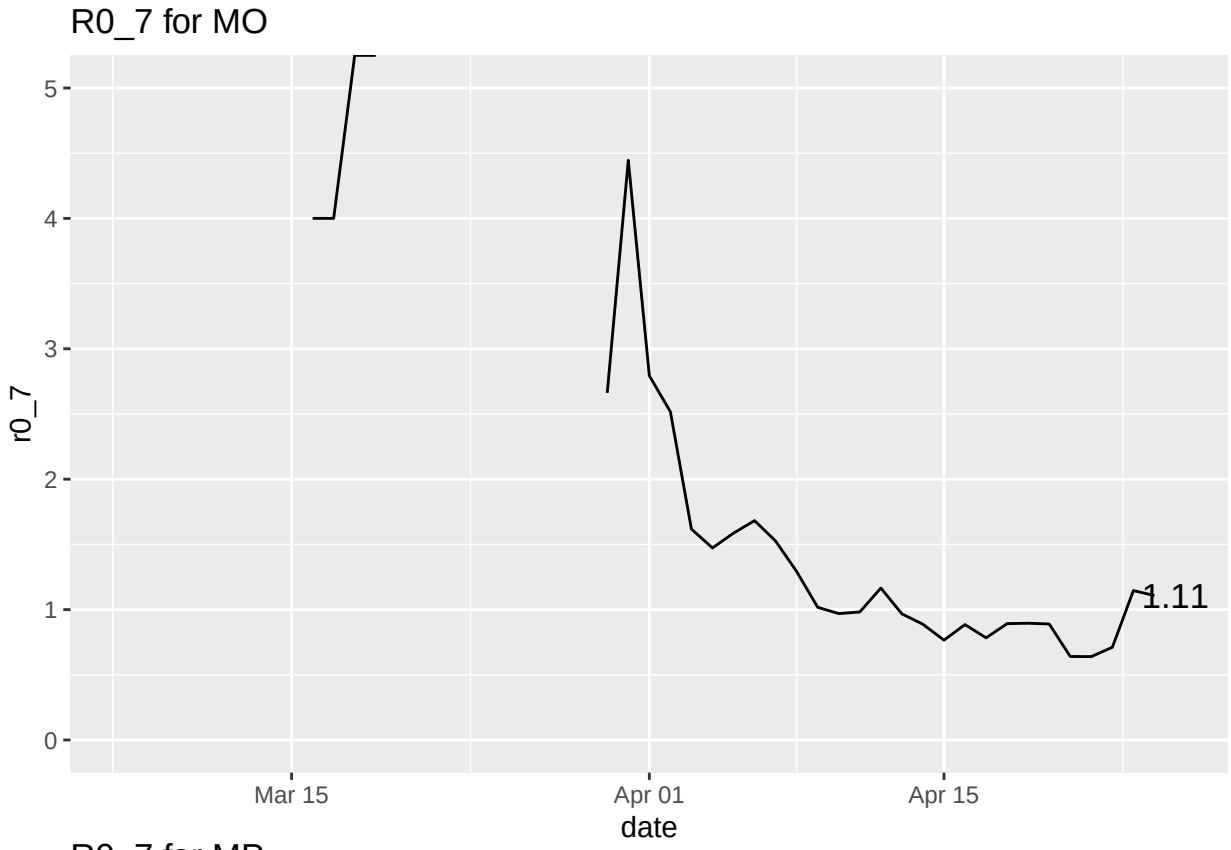
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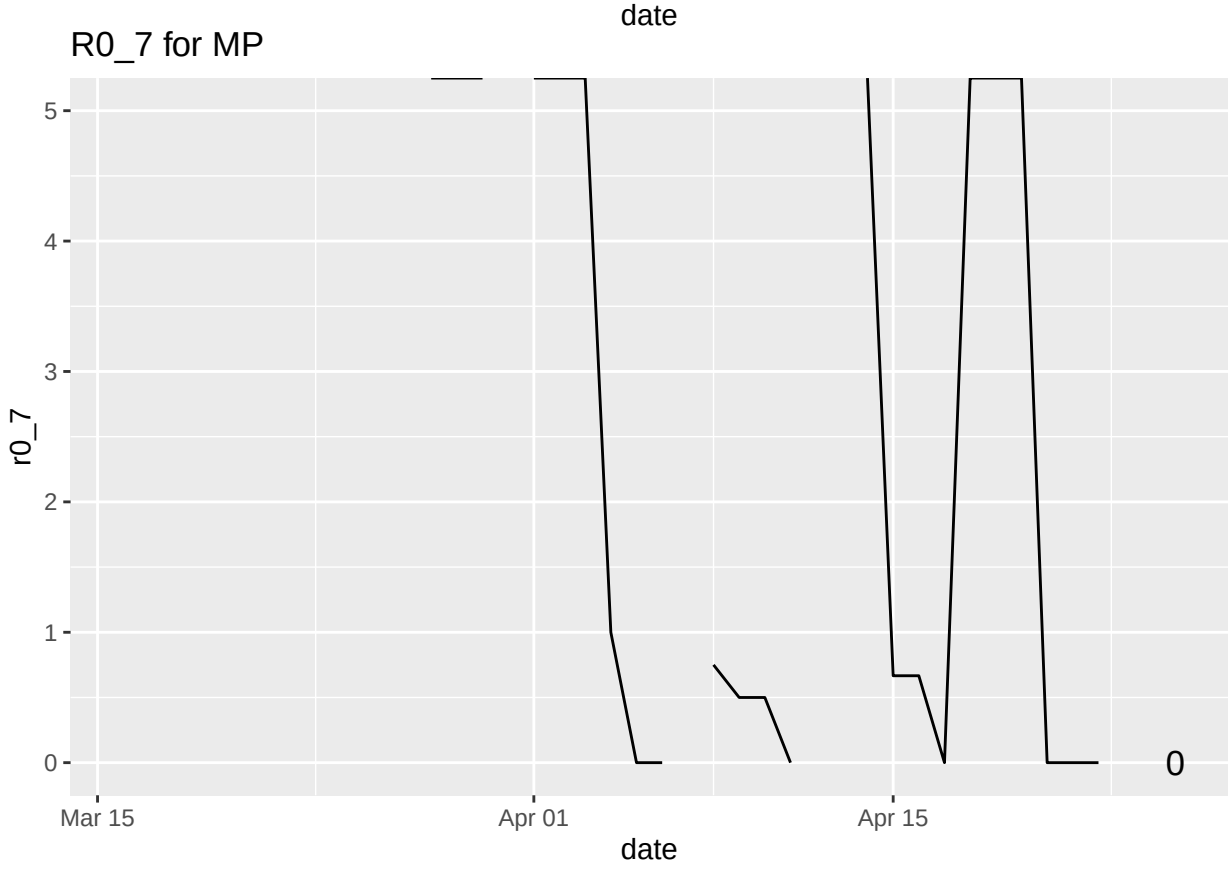
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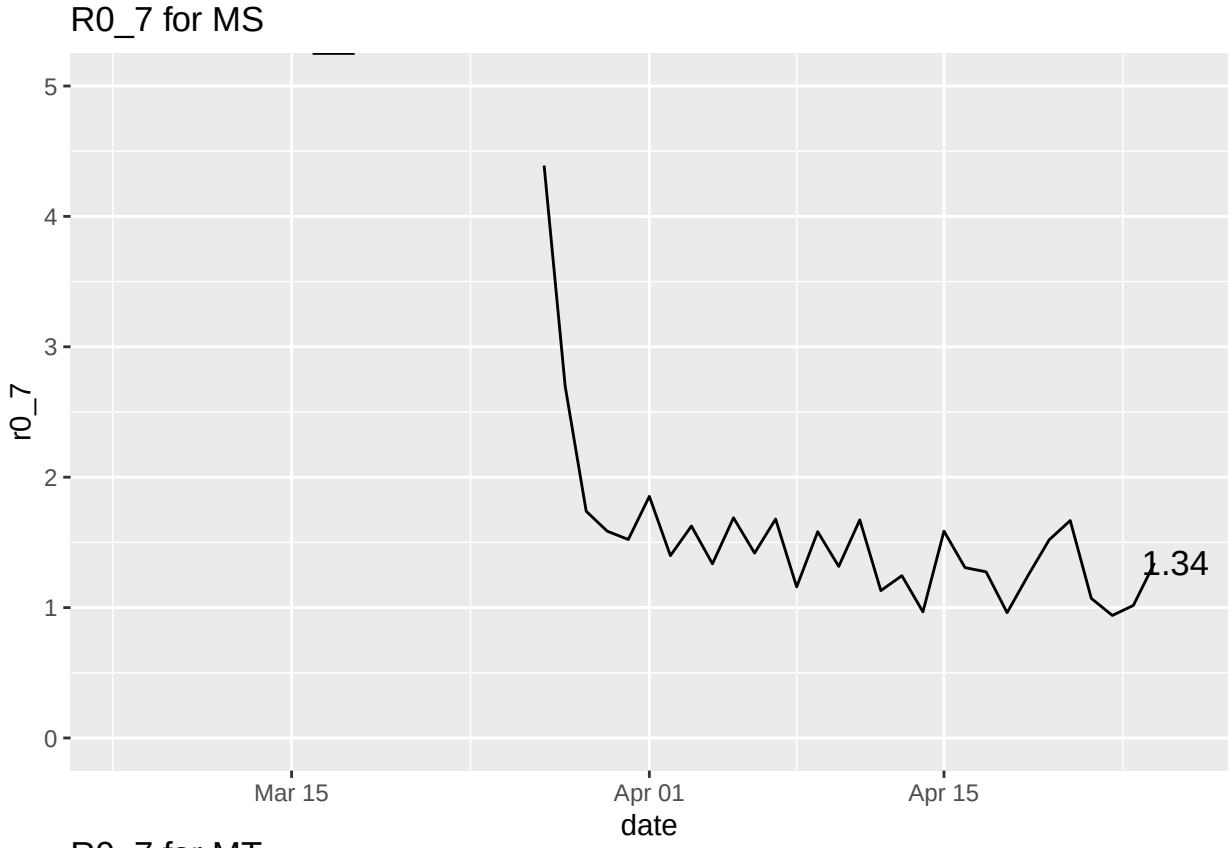
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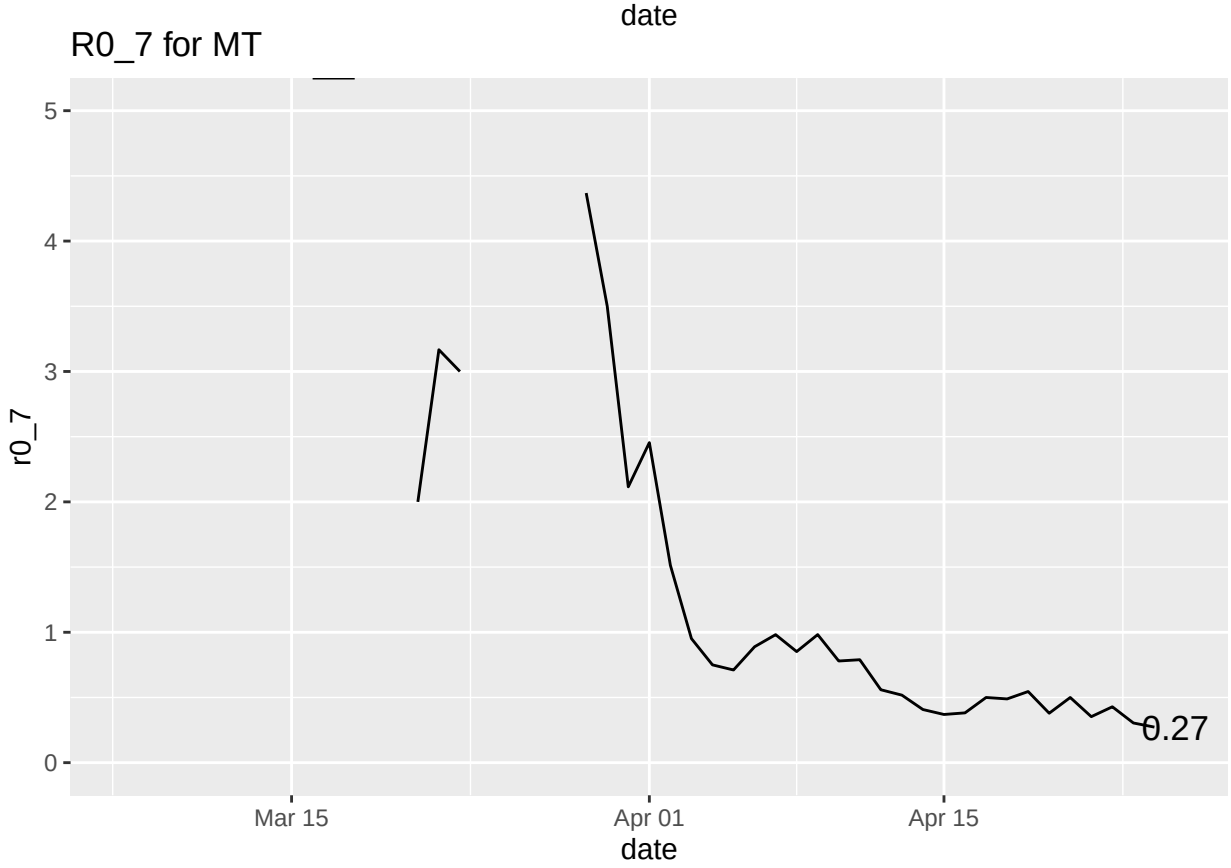
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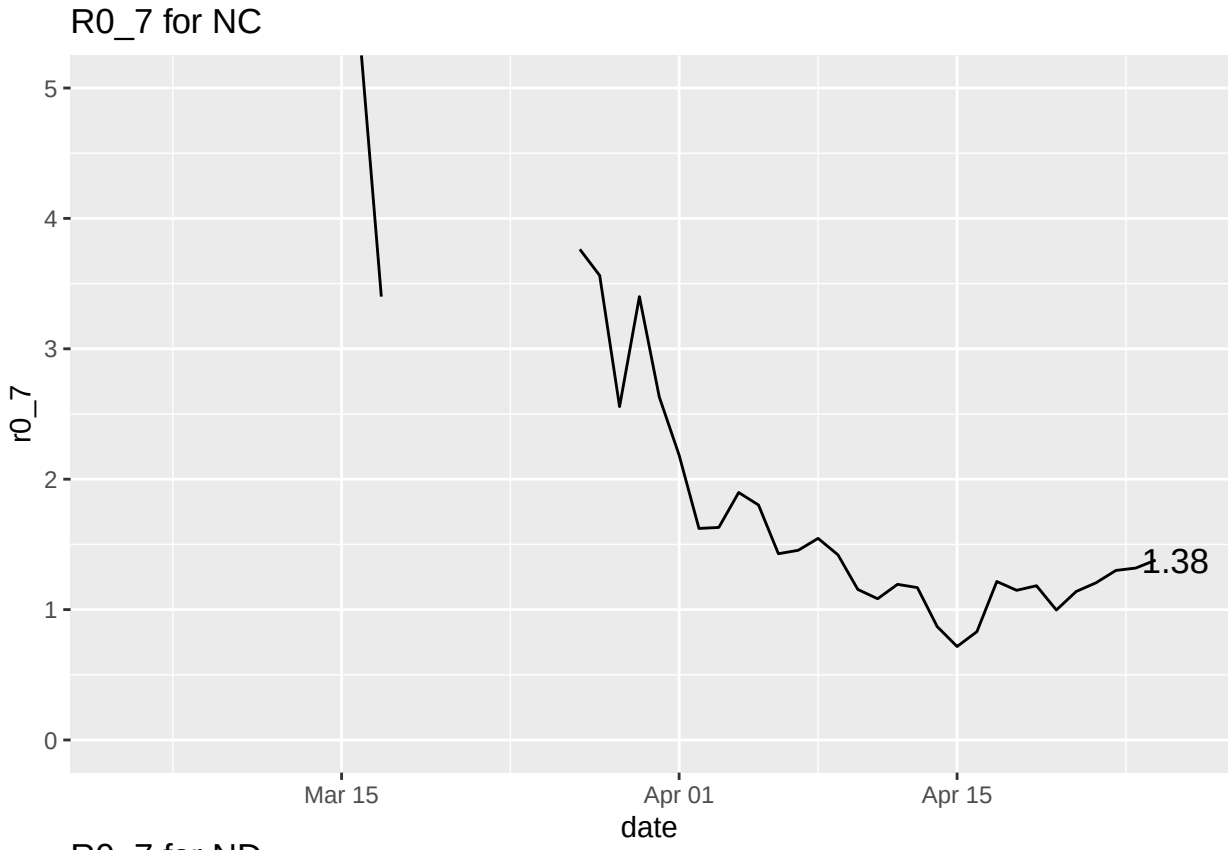
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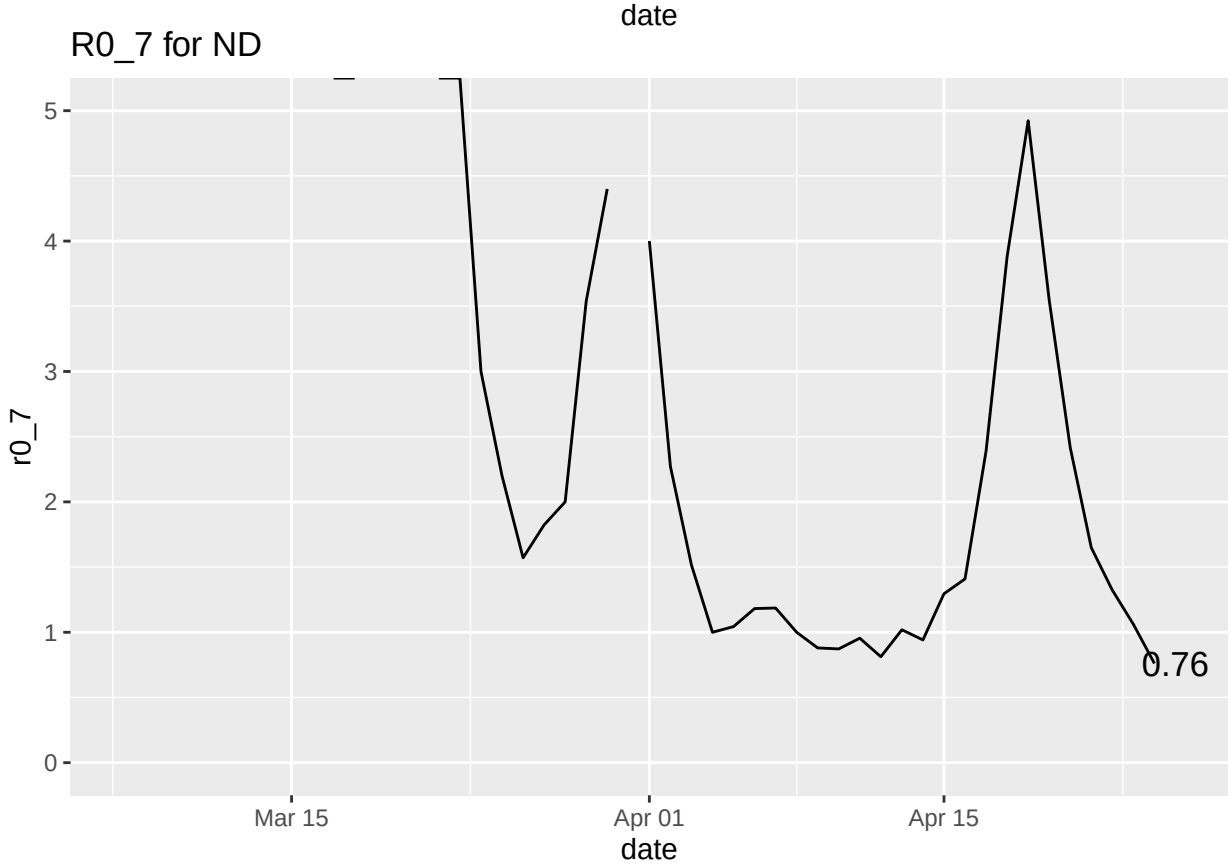
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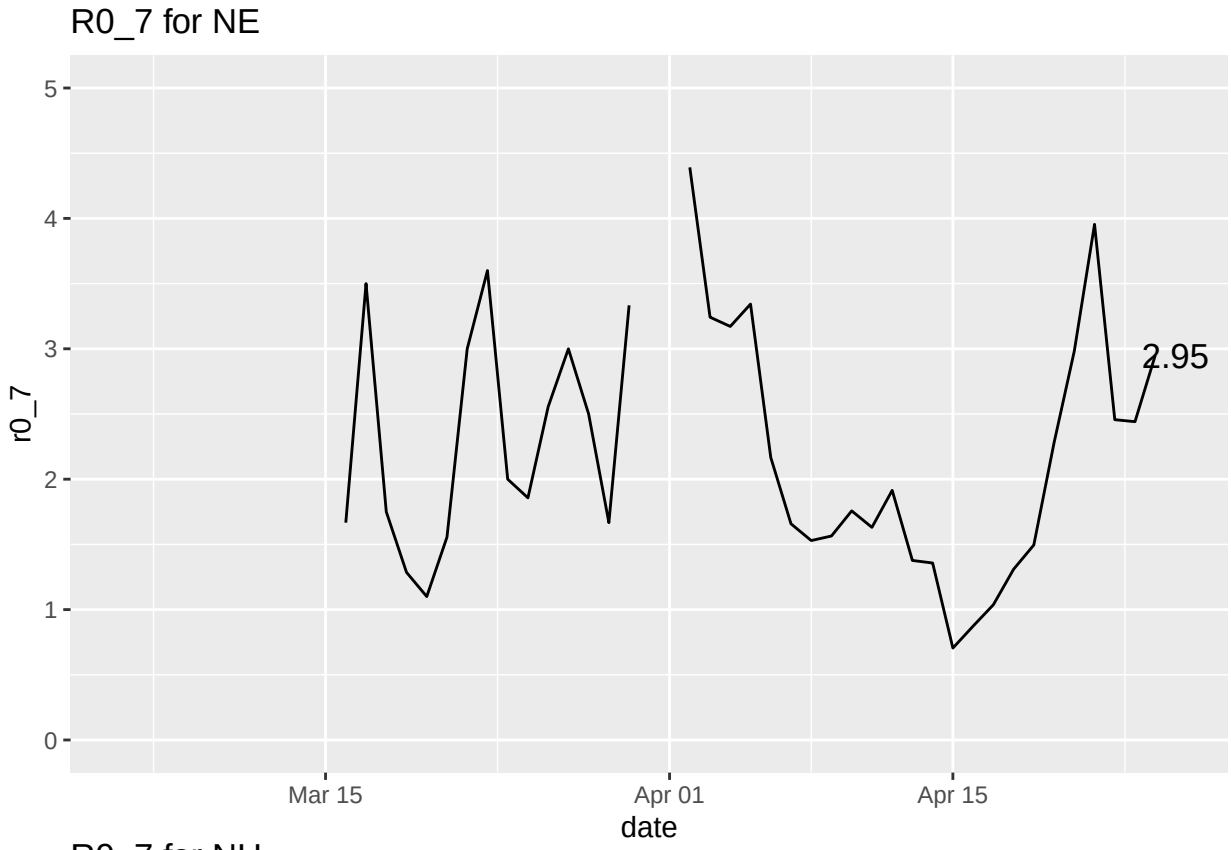
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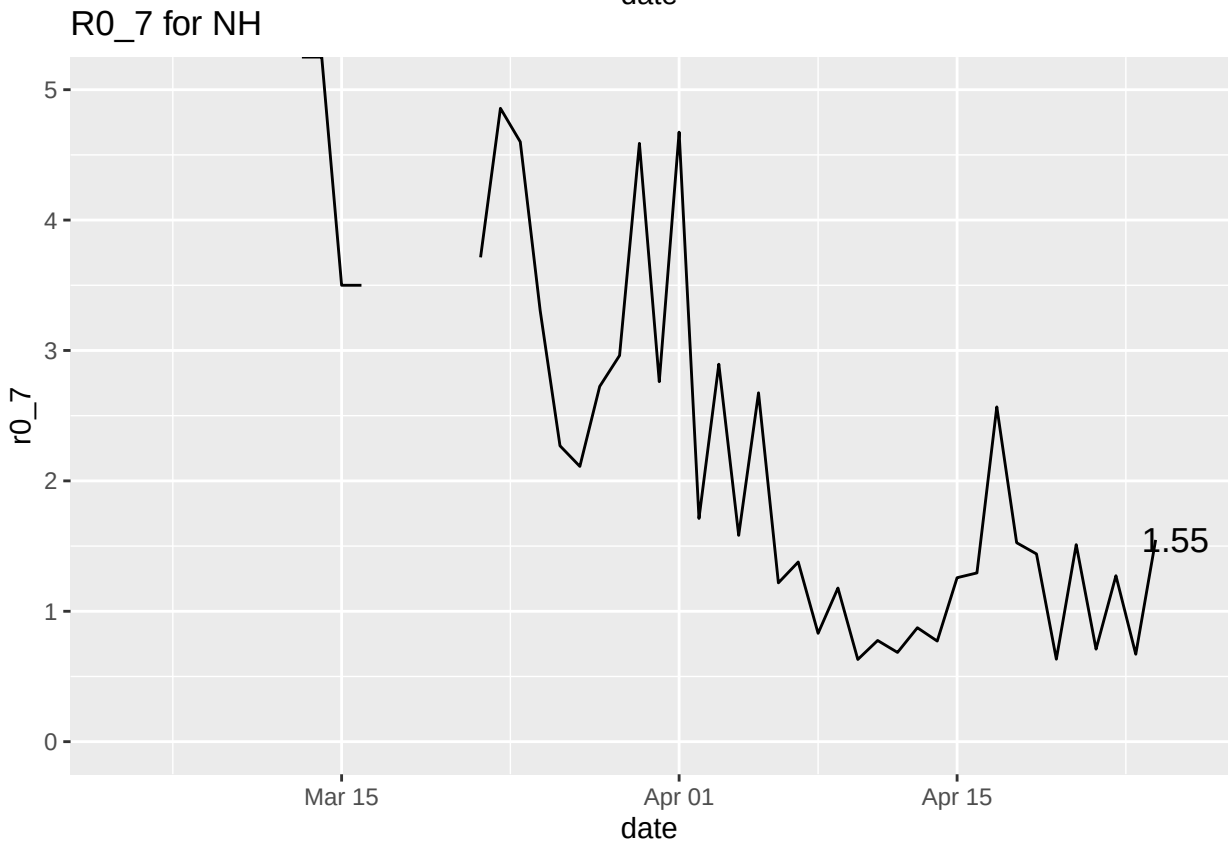
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Mar 15
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Apr 15
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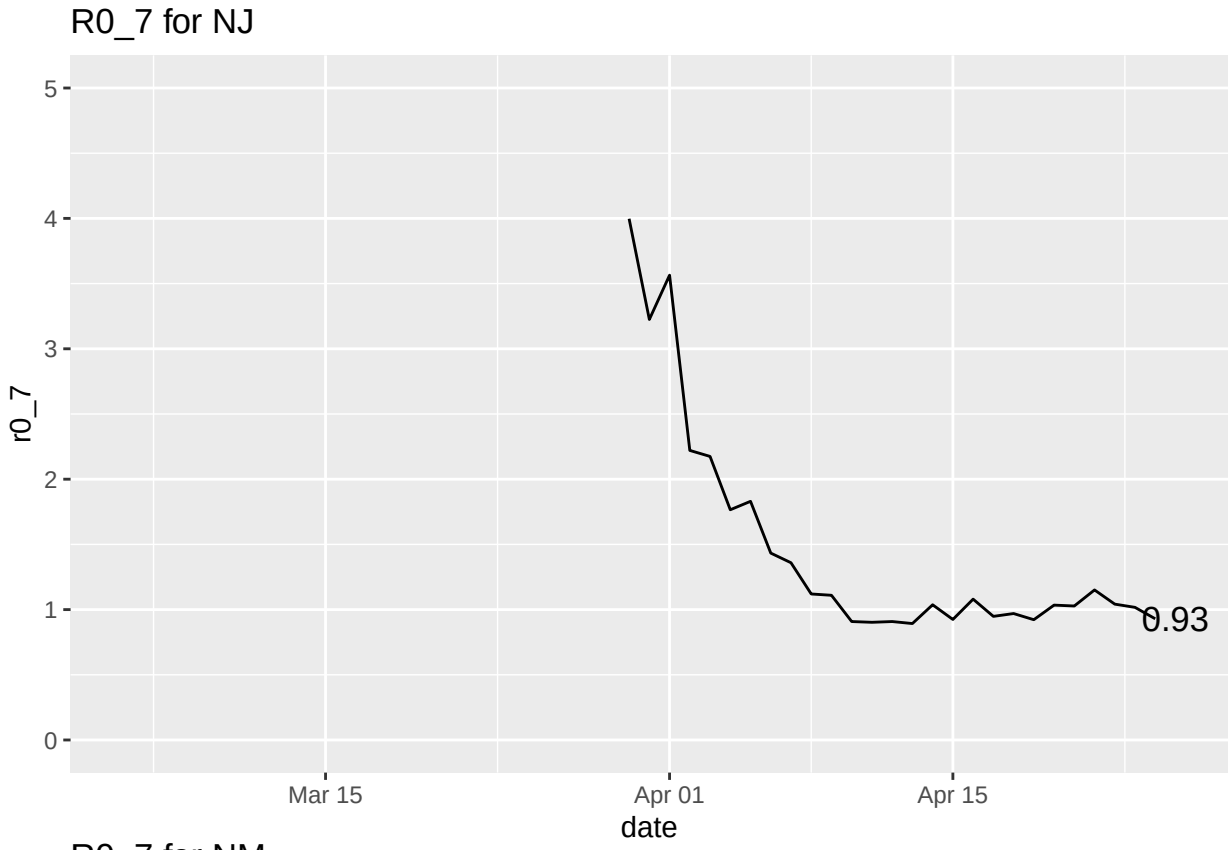
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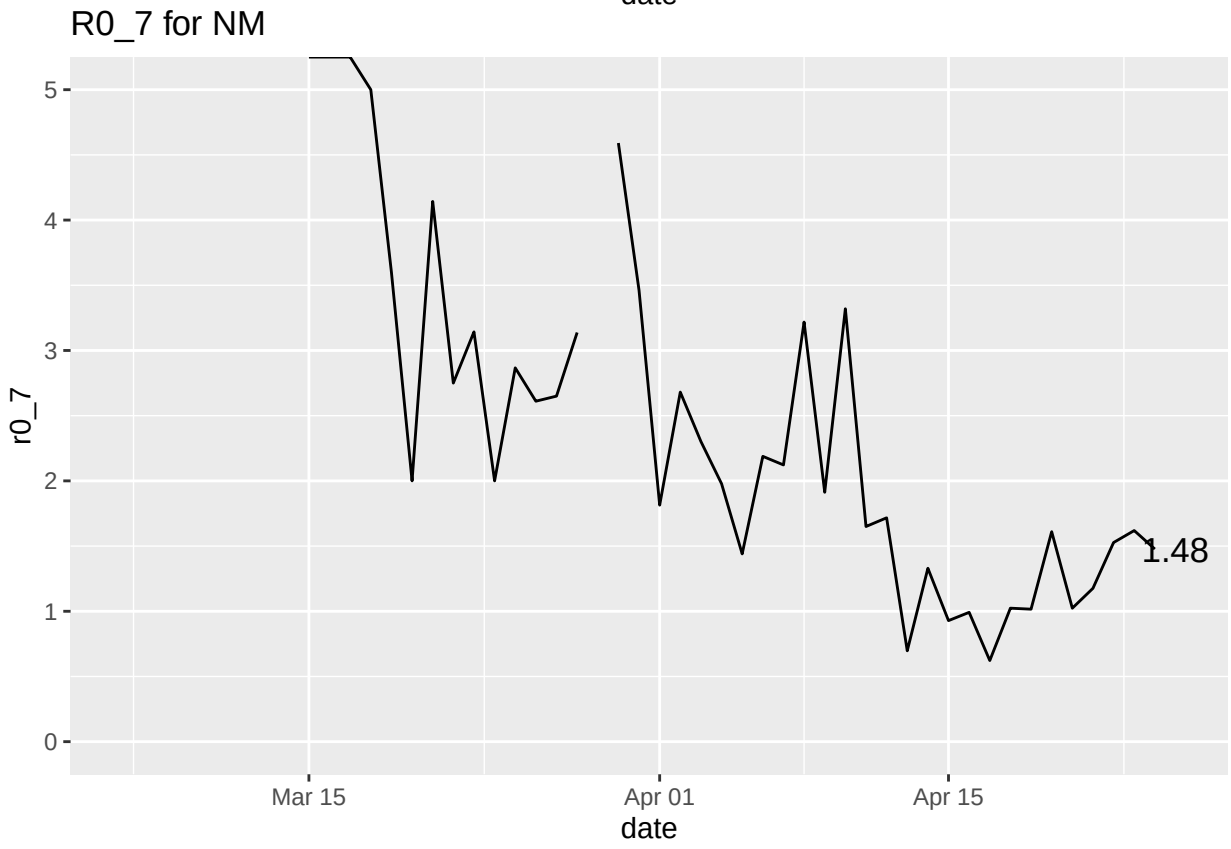
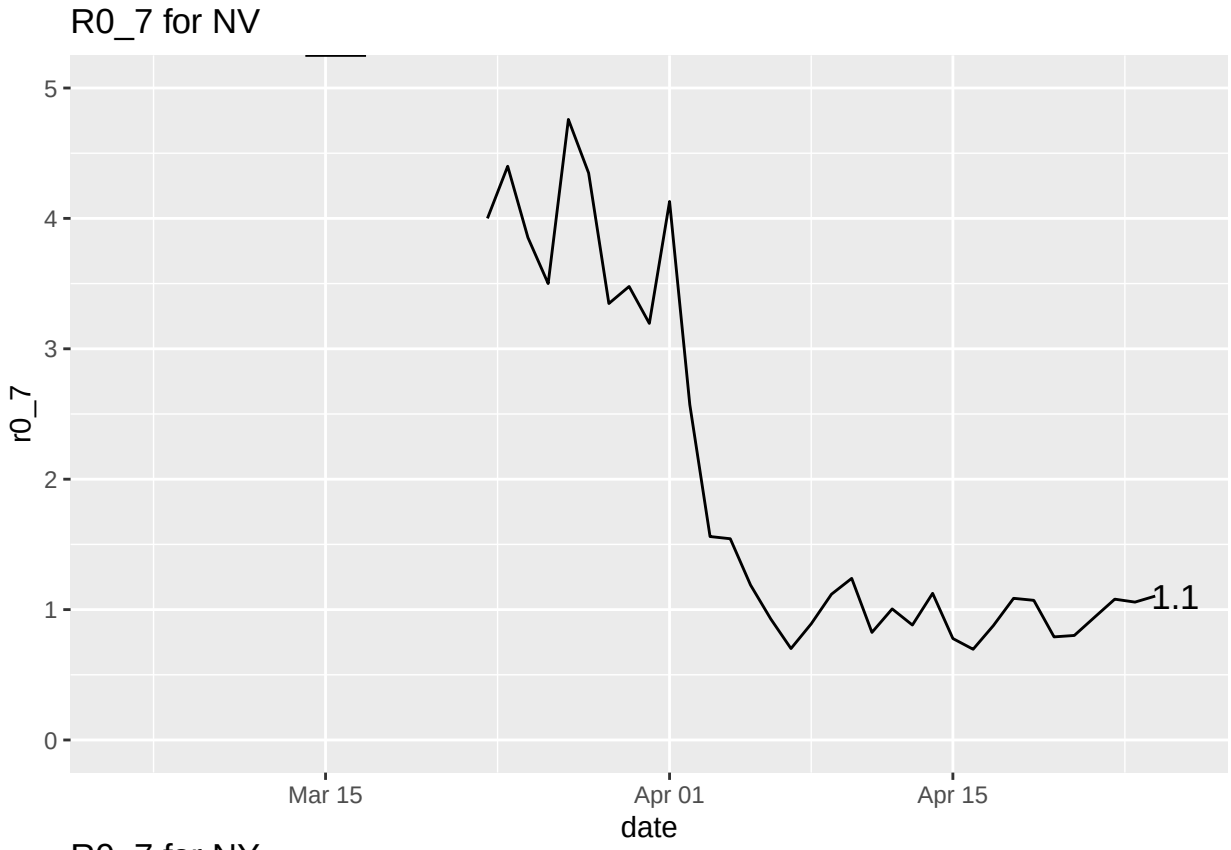
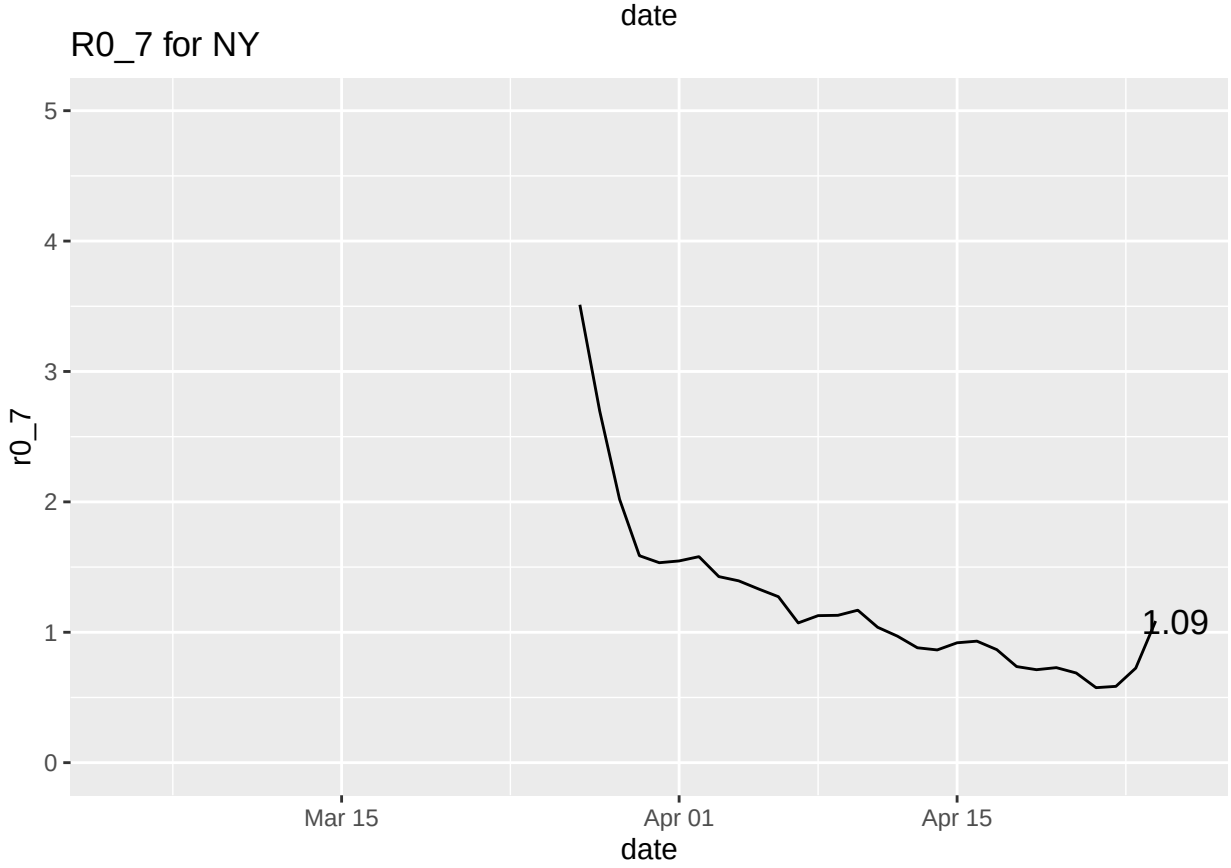
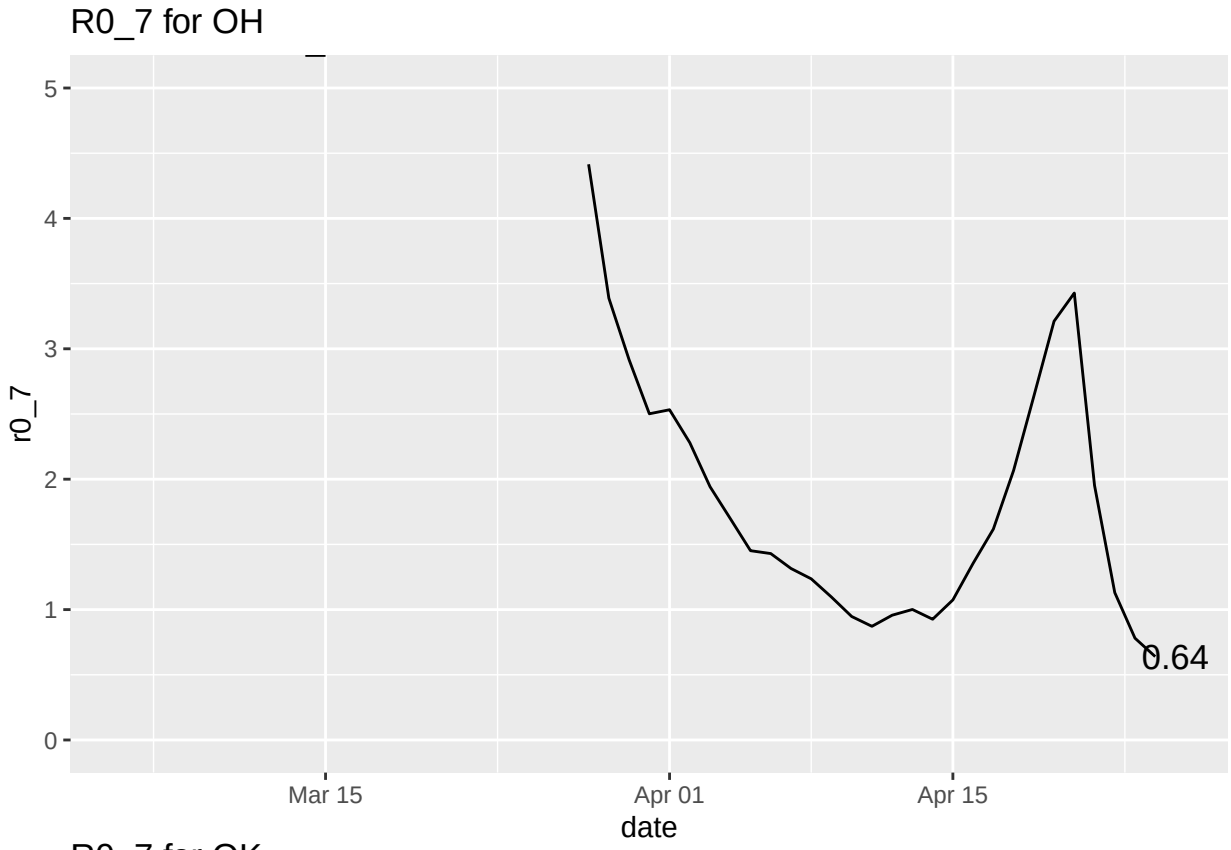
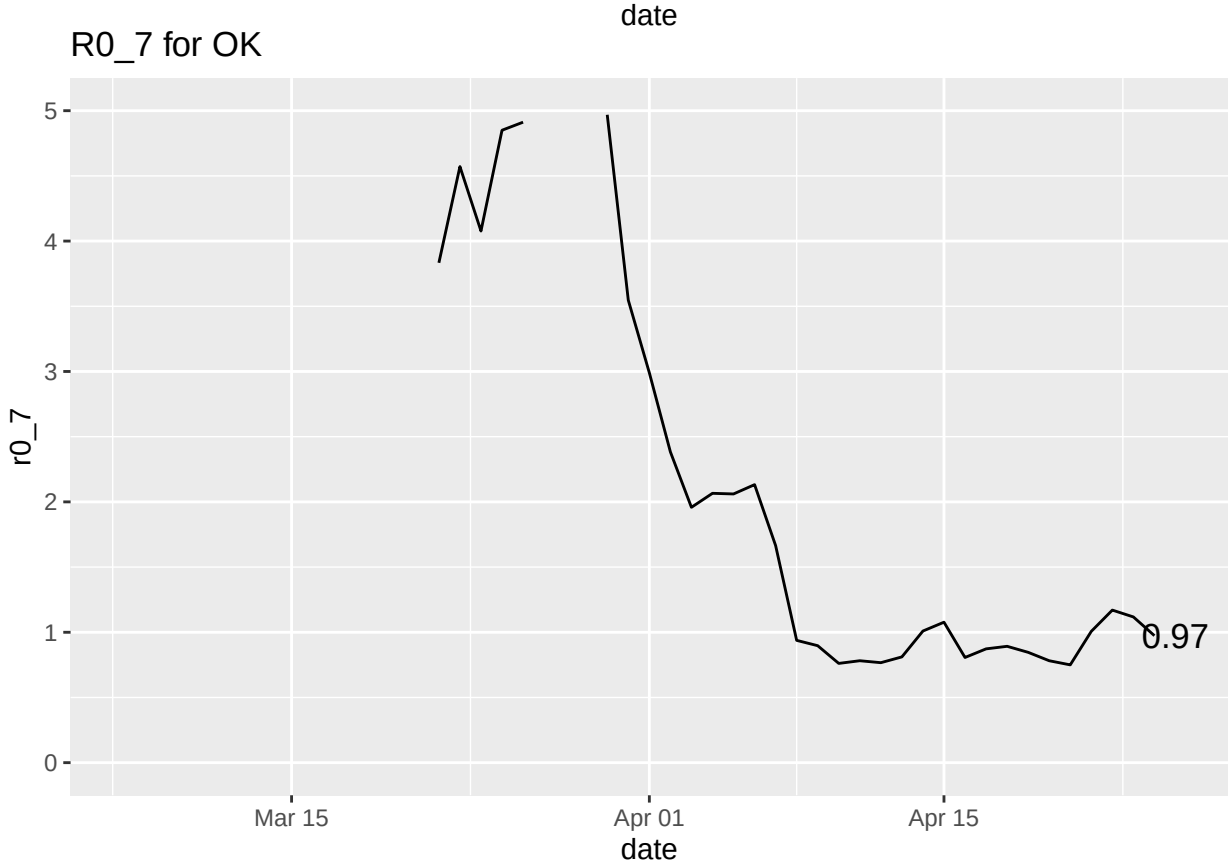
Mar 15
Apr 01
Apr 15
date

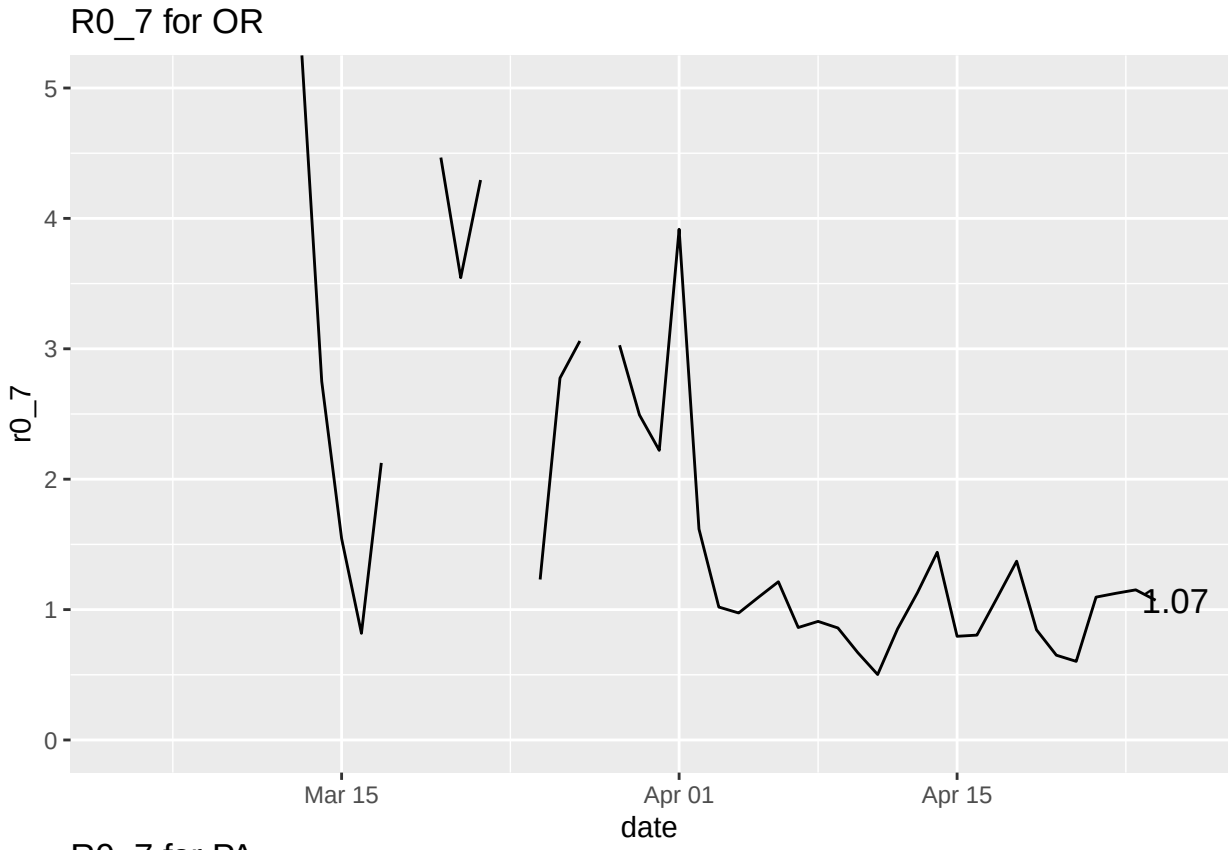

R0_7 for NM
r0_7
5
4
3
2
1
0
1.48
Mar 15
Apr 01
Apr 15
date

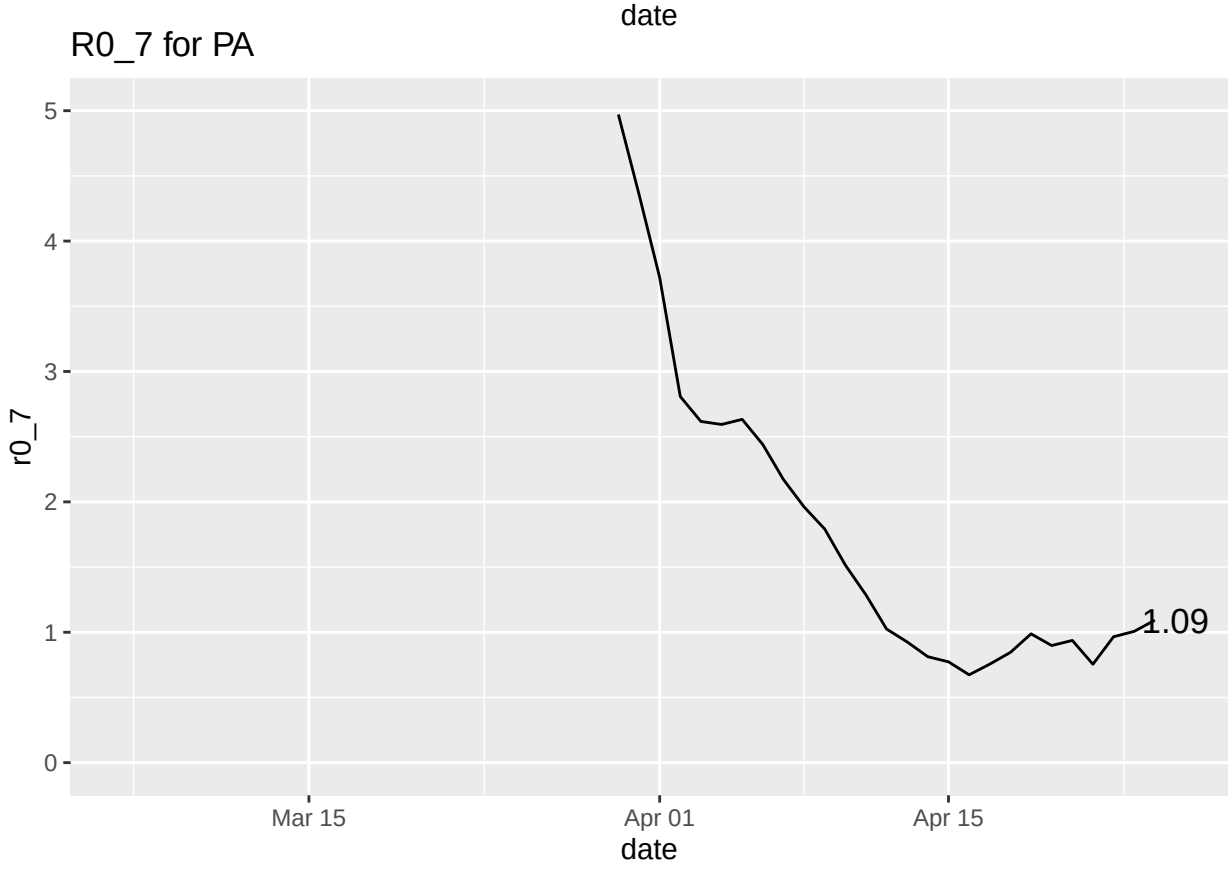

R0_7 for NV
r0_7
5
4
3
2
1
0
Mar 15
Apr 01
Apr 15
date
1.1

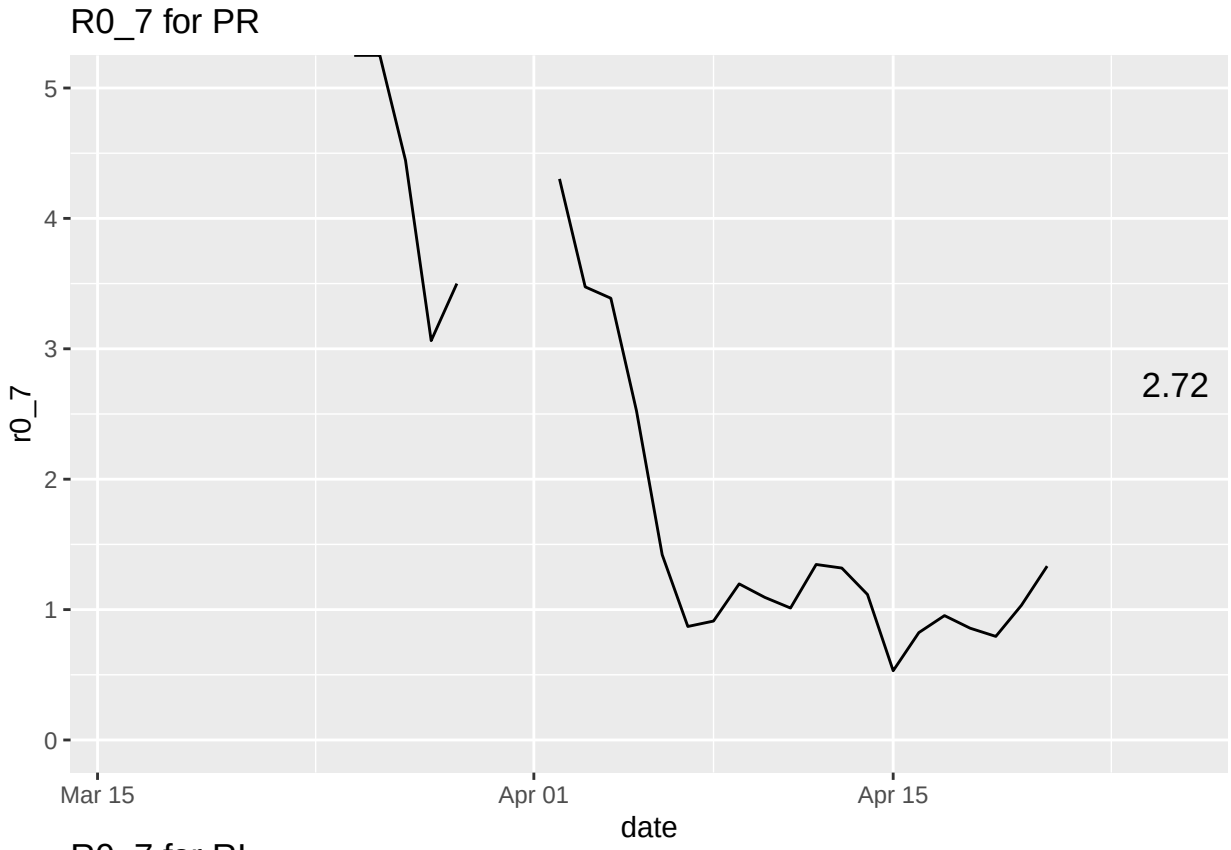

R0_7 for NY
r0_7
5
4
3
2
1
0
Mar 15
Apr 01
Apr 15
date
1.09

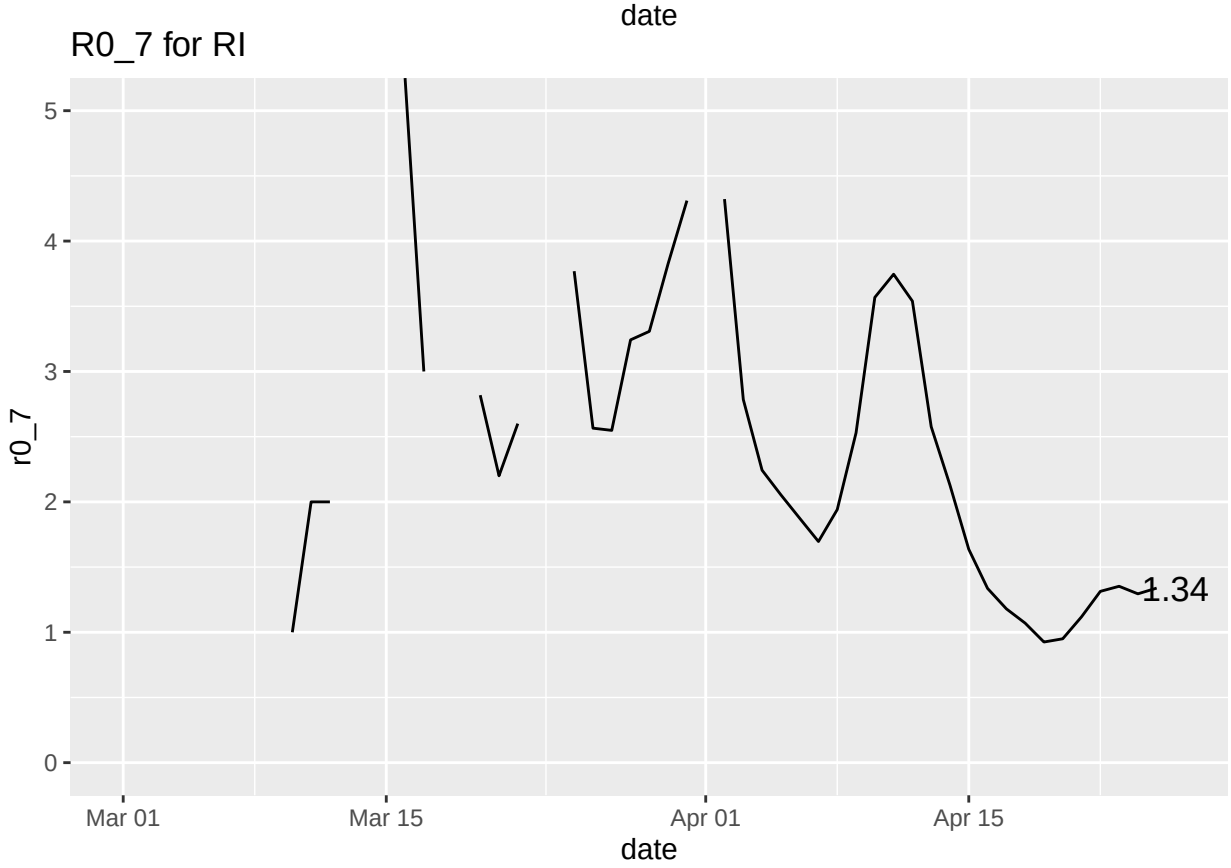

R0_7 for OH
r0_7
5
4
3
2
1
0
0.64
Mar 15
Apr 01
Apr 15
date

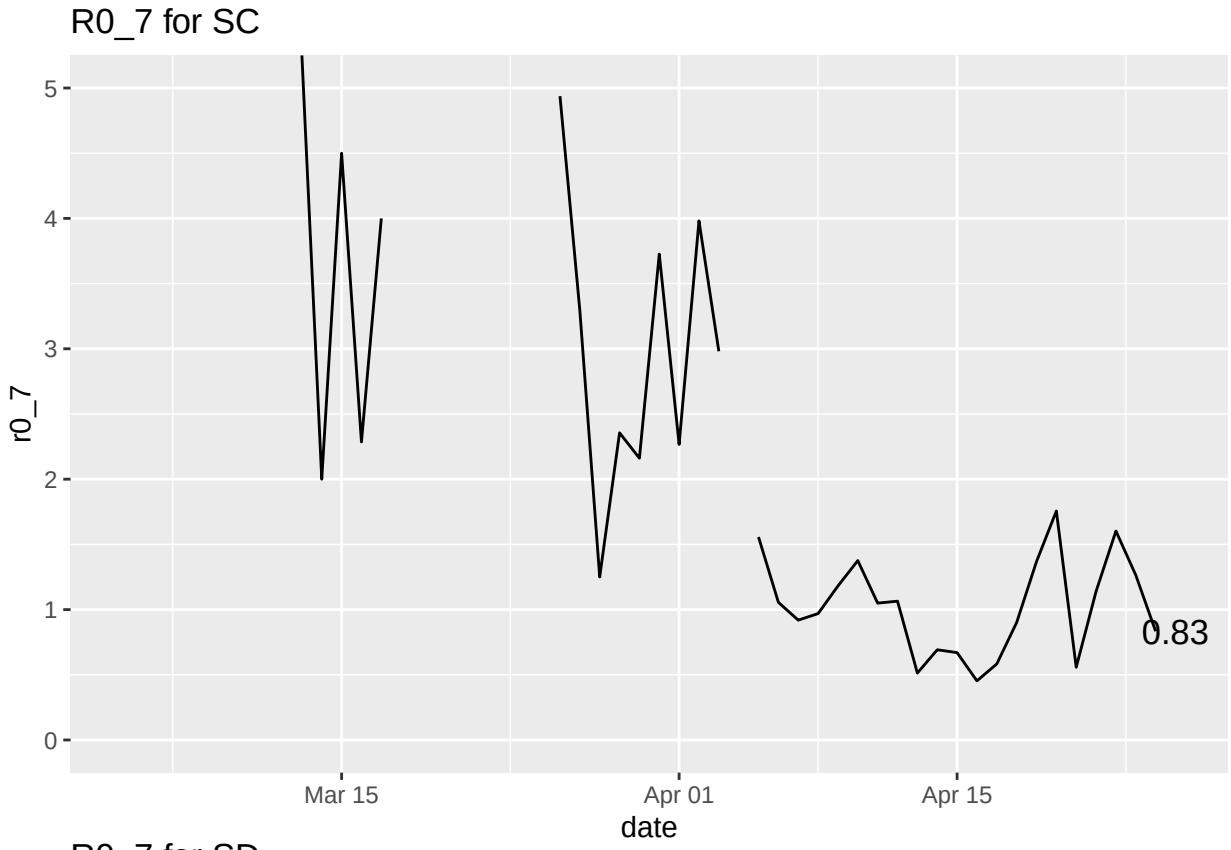

R0_7 for OK
r0_7
5
4
3
2
1
0
0.97
Mar 15
Apr 01
Apr 15
date

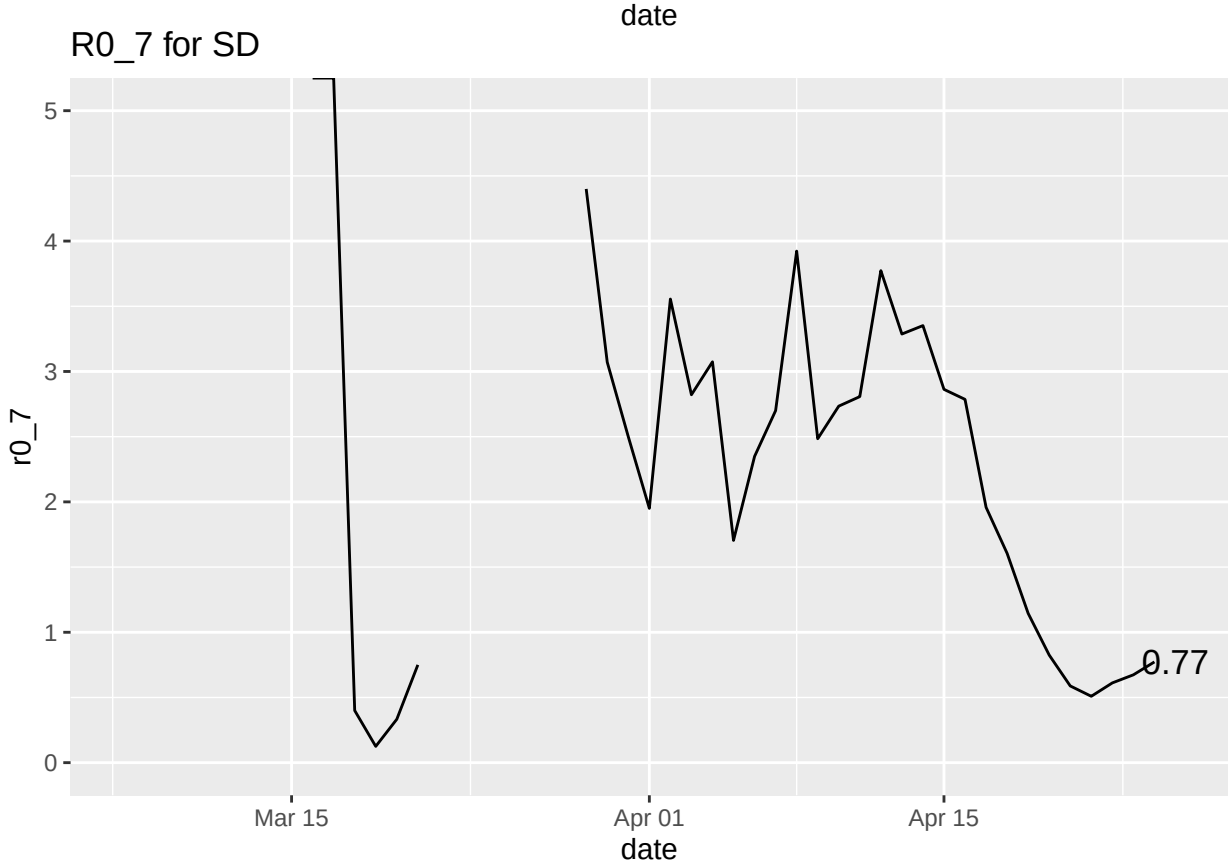

R0_7 for OR
r0_7
5
4
3
2
1
0
1.07
Mar 15
Apr 01
Apr 15
date

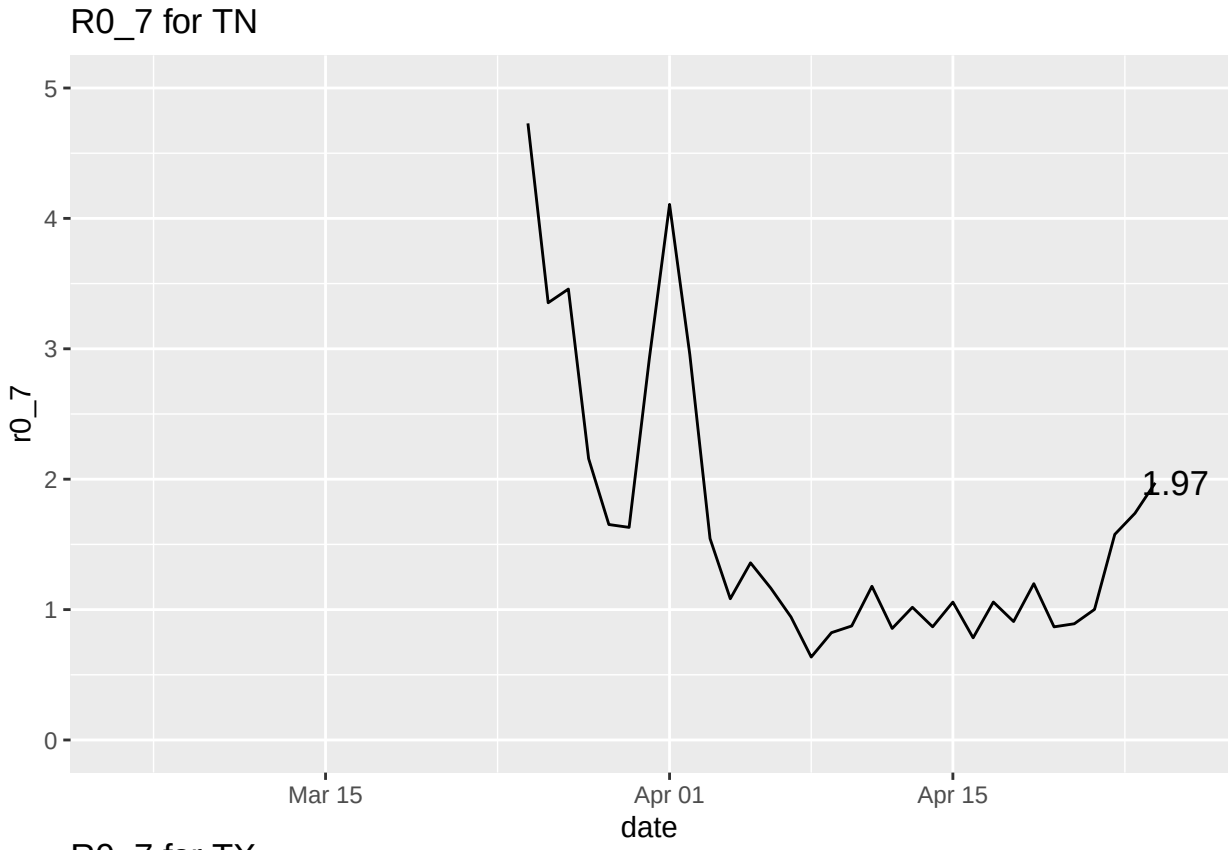

R0_7 for PA
r0_7
5
4
3
2
1
0
1.09
Mar 15
Apr 01
Apr 15
date

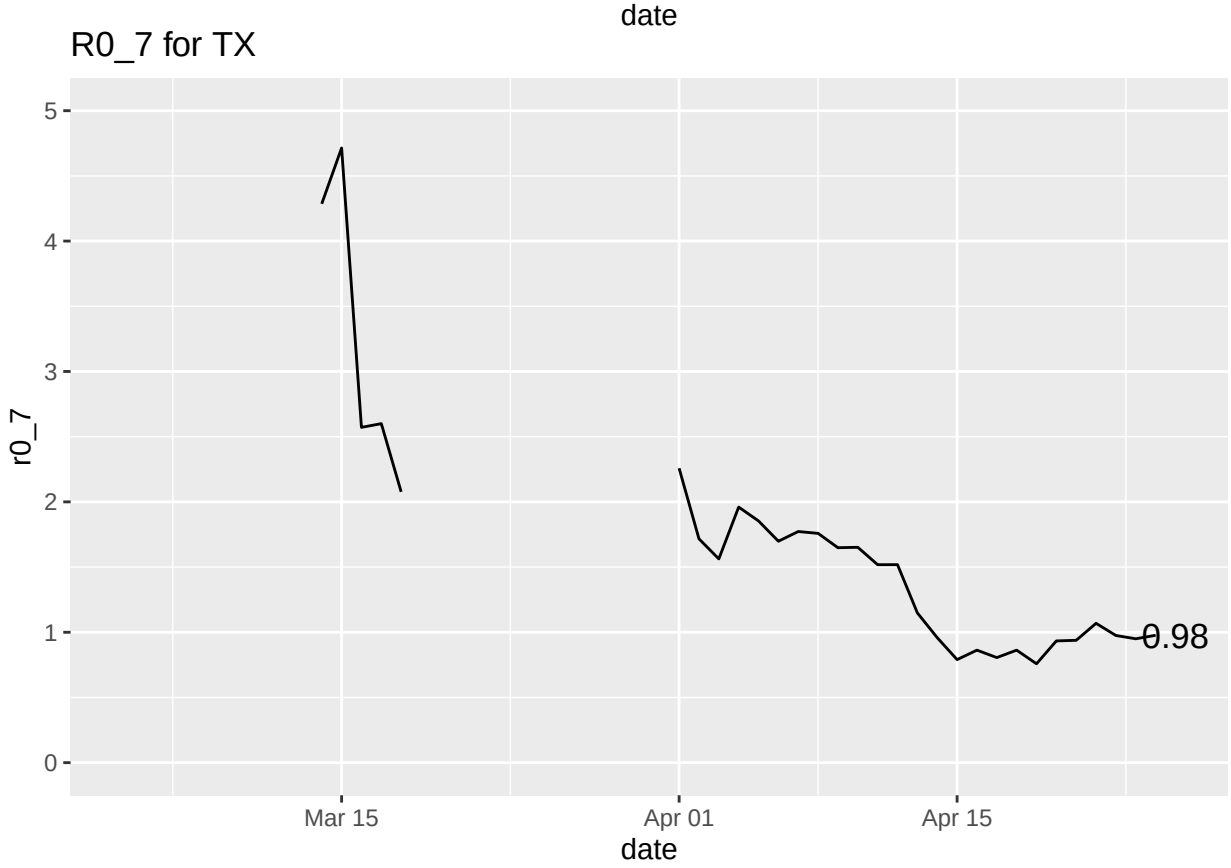

R0_7 for PR
r0_7
5
4
3
2
1
0
2.72
Mar 15
Apr 01
Apr 15
date

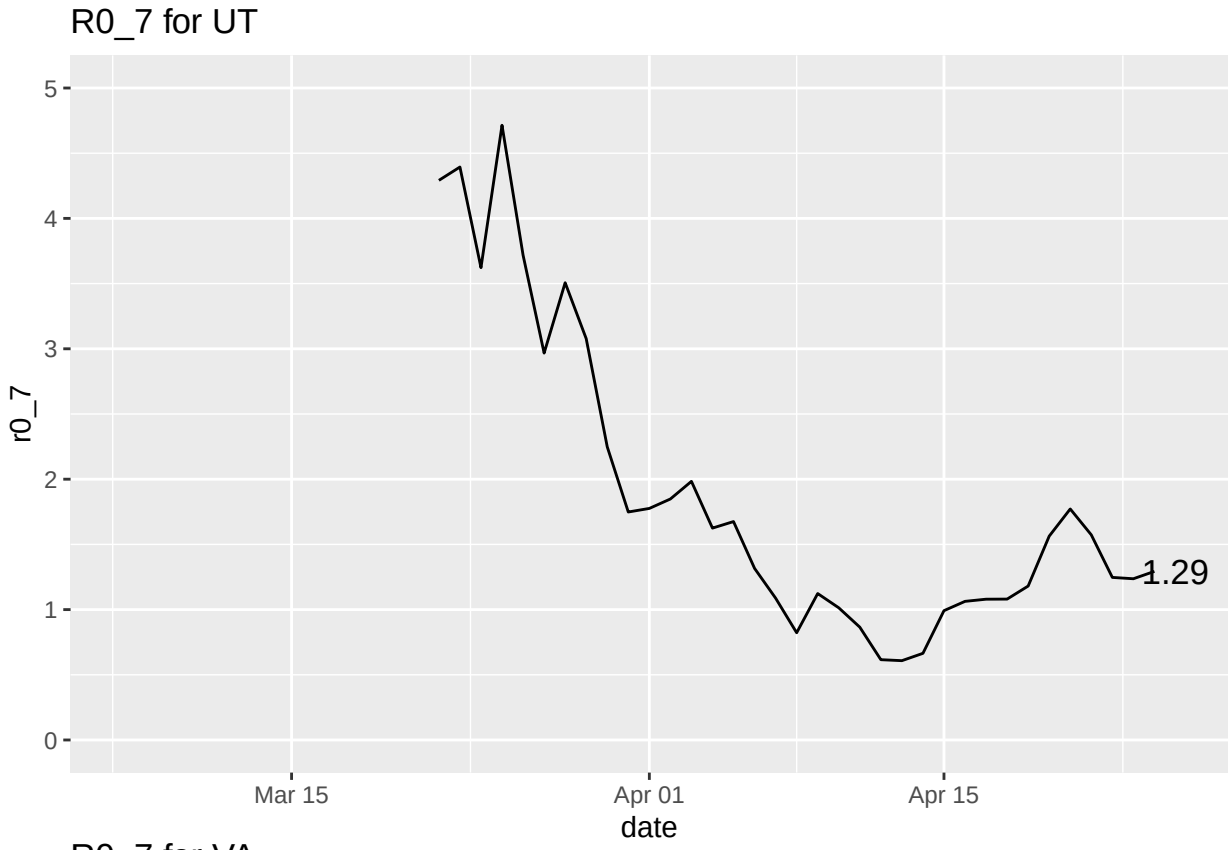

R0_7 for RI
r0_7
5
4
3
2
1
0
1.34
Mar 01
Mar 15
Apr 01
Apr 15
date

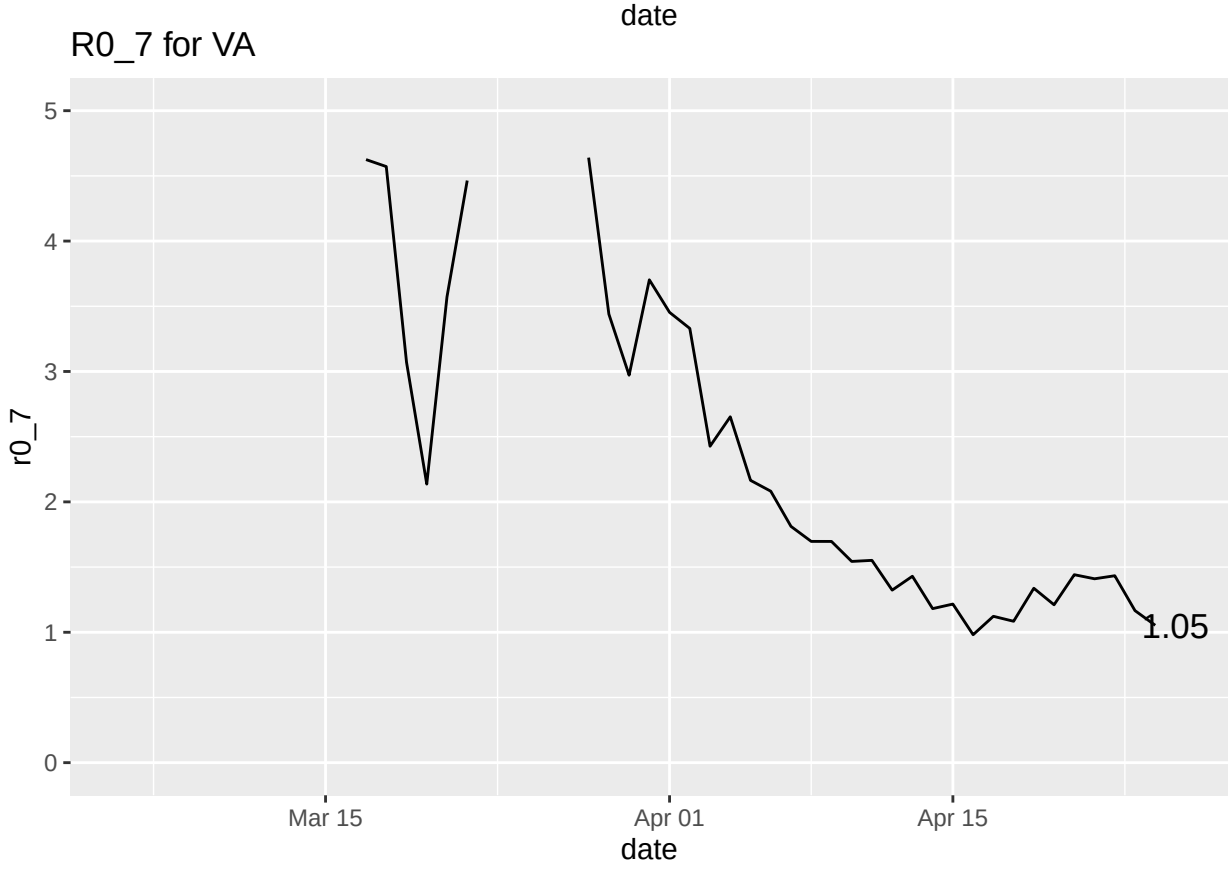

R0_7 for SC
r0_7
5
4
3
2
1
0
0.83
Mar 15
Apr 01
Apr 15
date

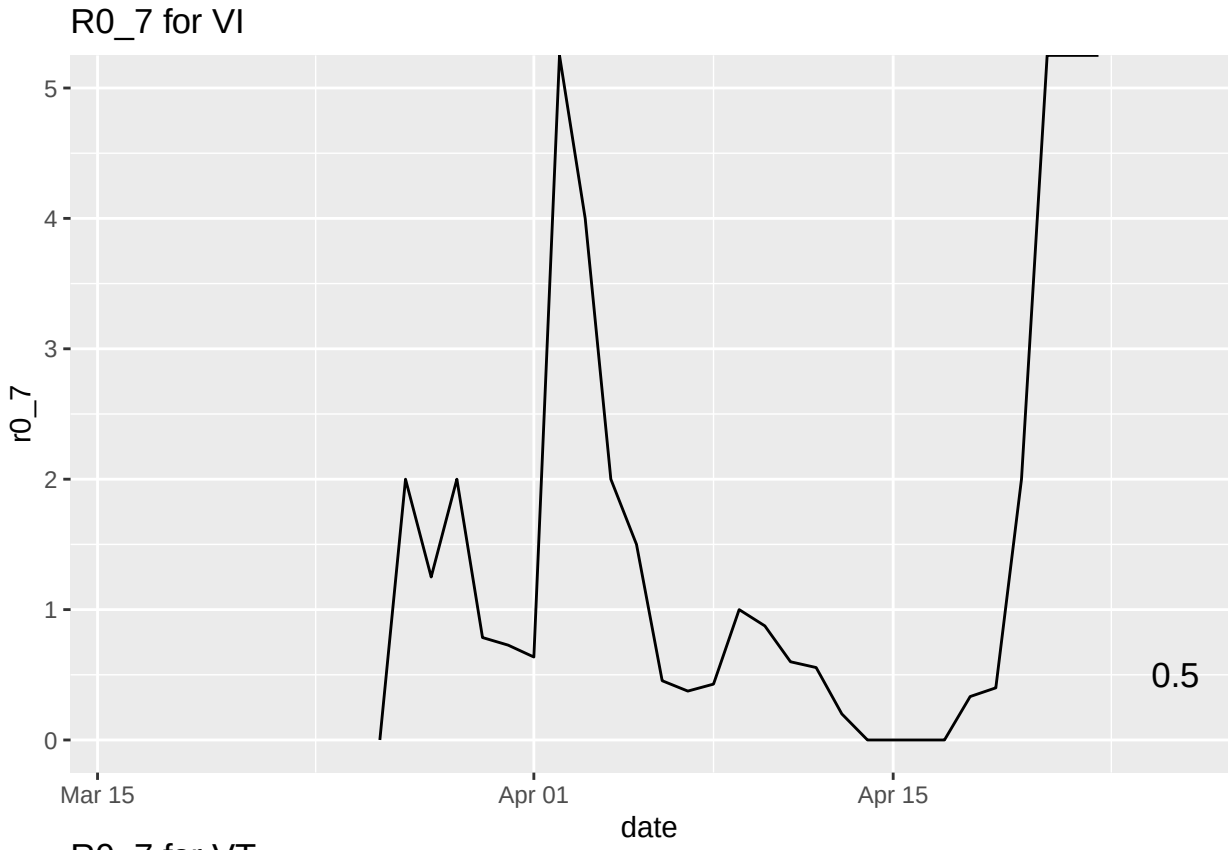

R0_7 for SD
r0_7
5
4
3
2
1
0
0.77
Mar 15
Apr 01
Apr 15
date

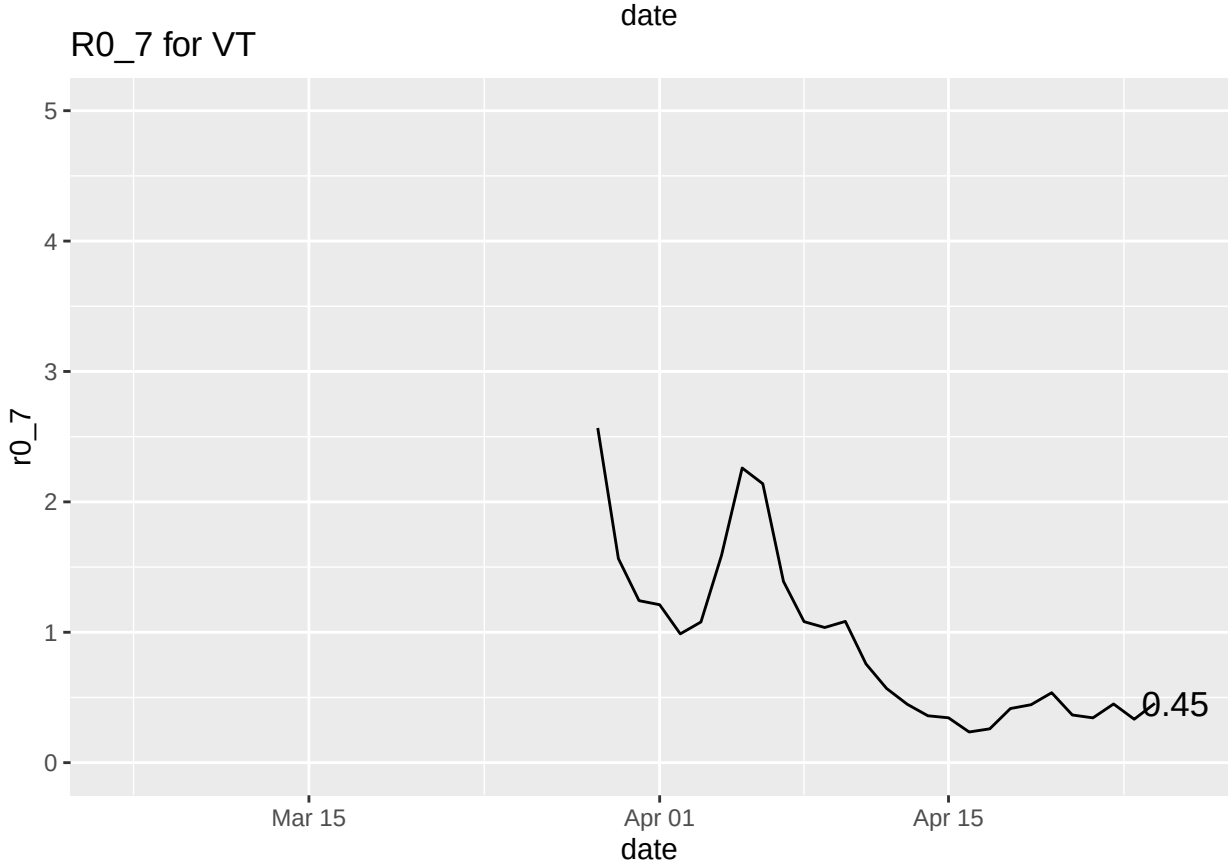

R0_7 for TN
r0_7
5
4
3
2
1
0
1.97
Mar 15
Apr 01
Apr 15
date

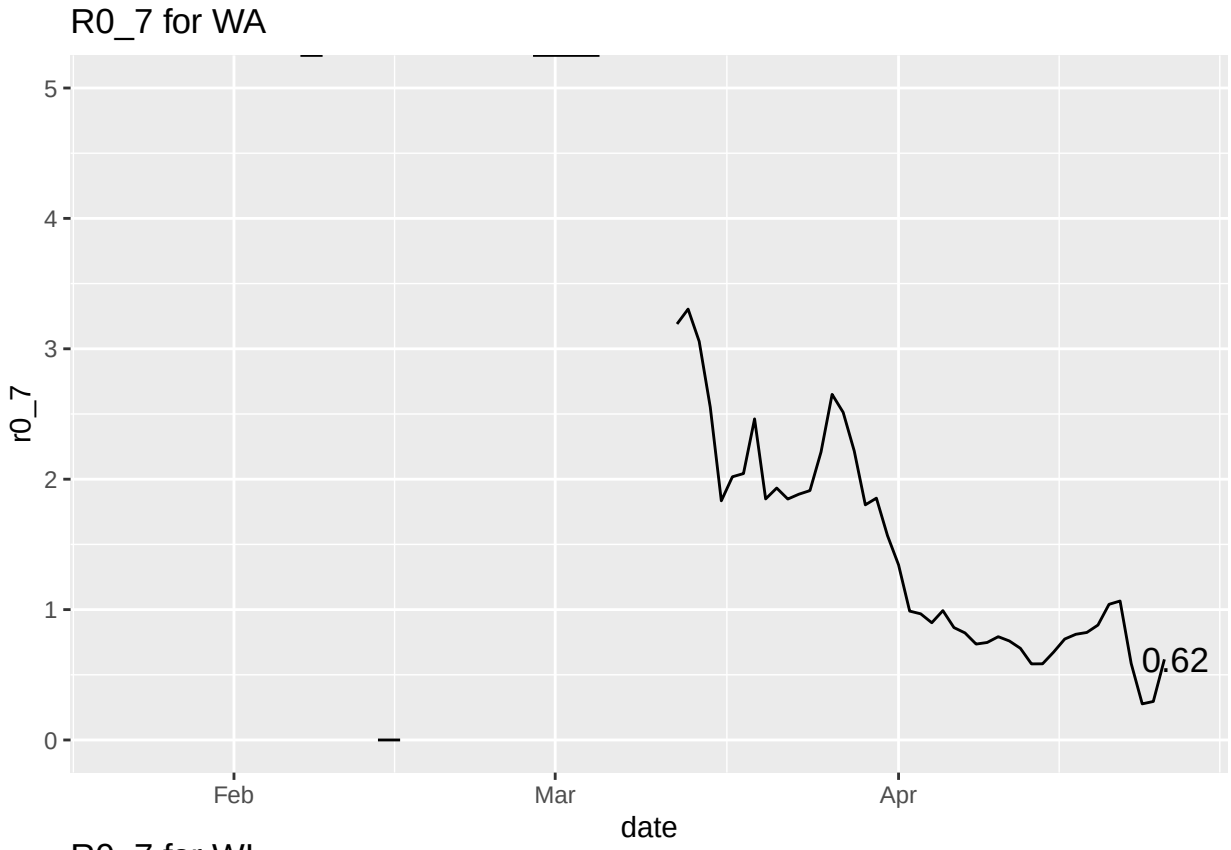

R0_7 for TX
r0_7
5
4
3
2
1
0
0.98
Mar 15
Apr 01
Apr 15
date

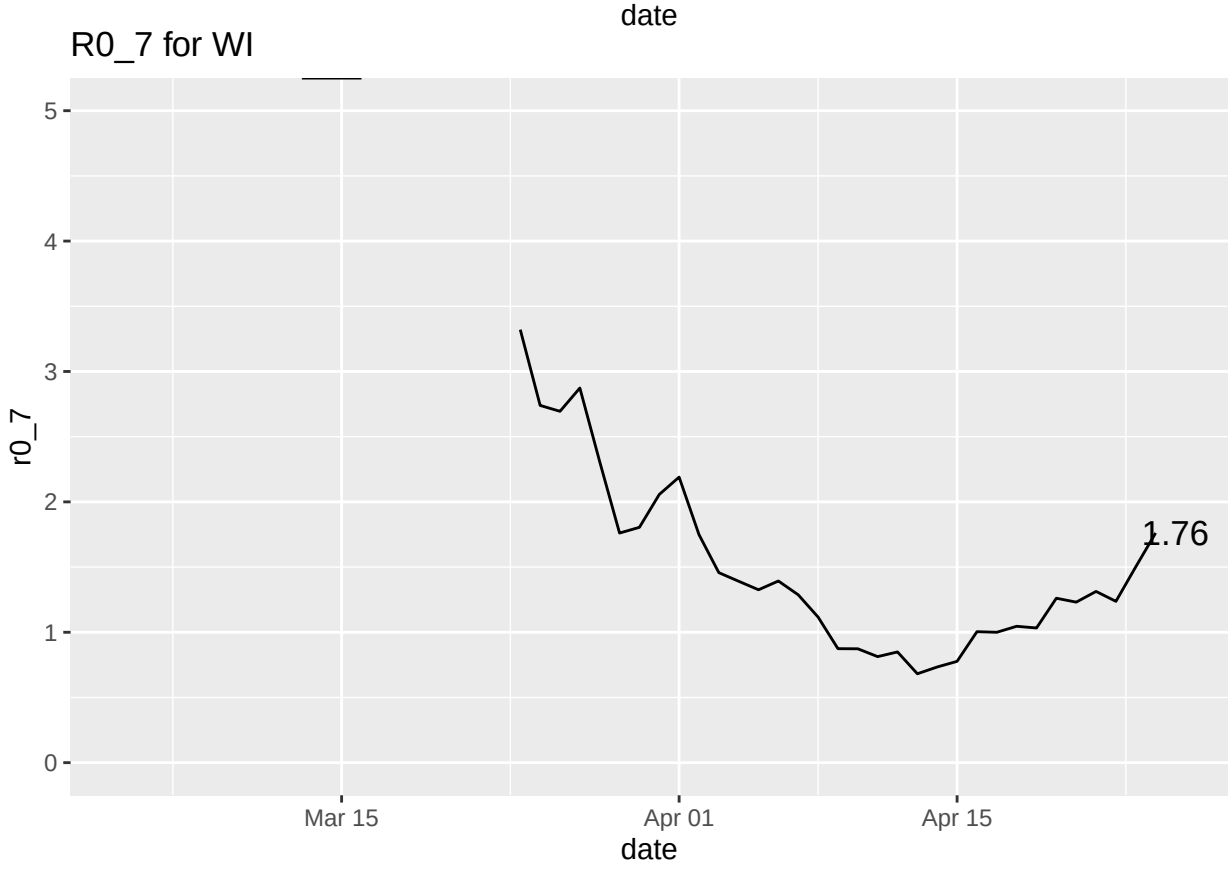

R0_7 for UT
r0_7
5
4
3
2
1
0
1.29
Mar 15
Apr 01
Apr 15
date

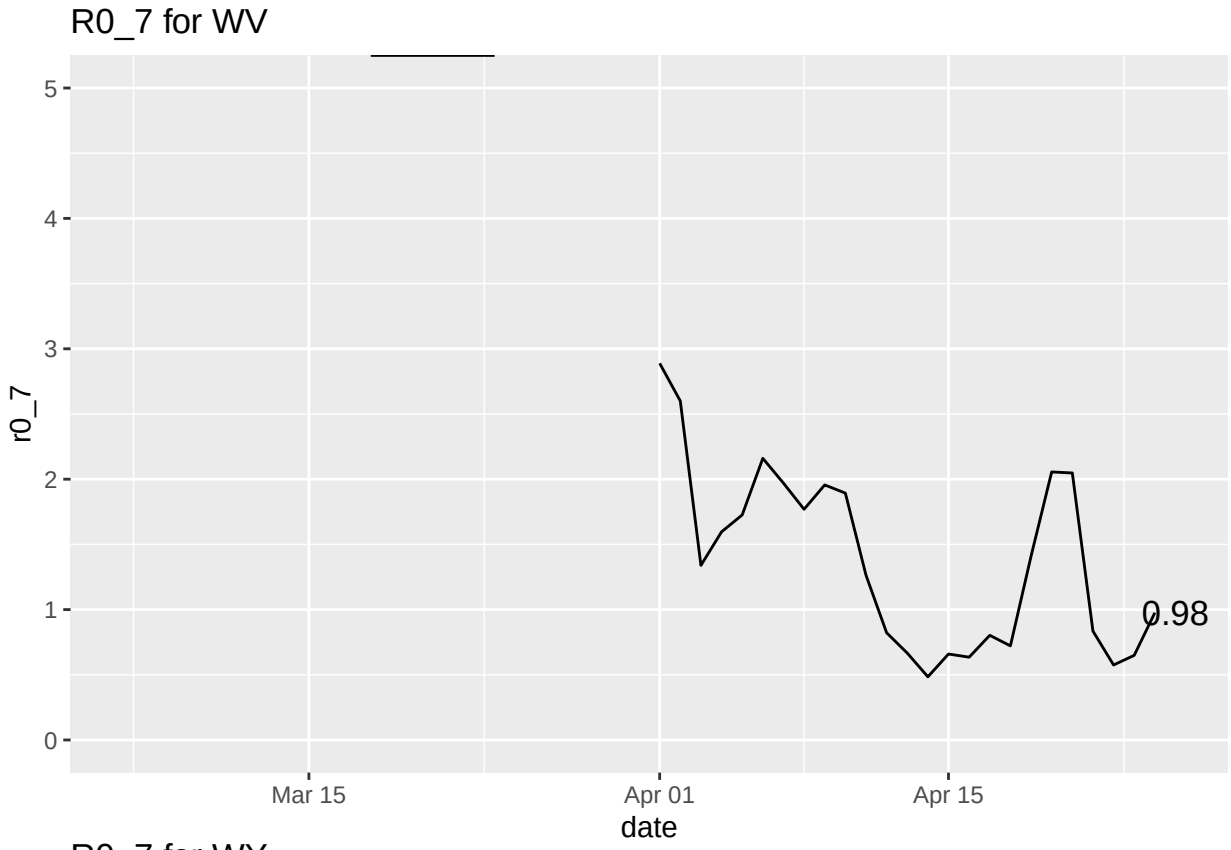

R0_7 for VA
r0_7
5
4
3
2
1
0
1.05
Mar 15
Apr 01
Apr 15
date

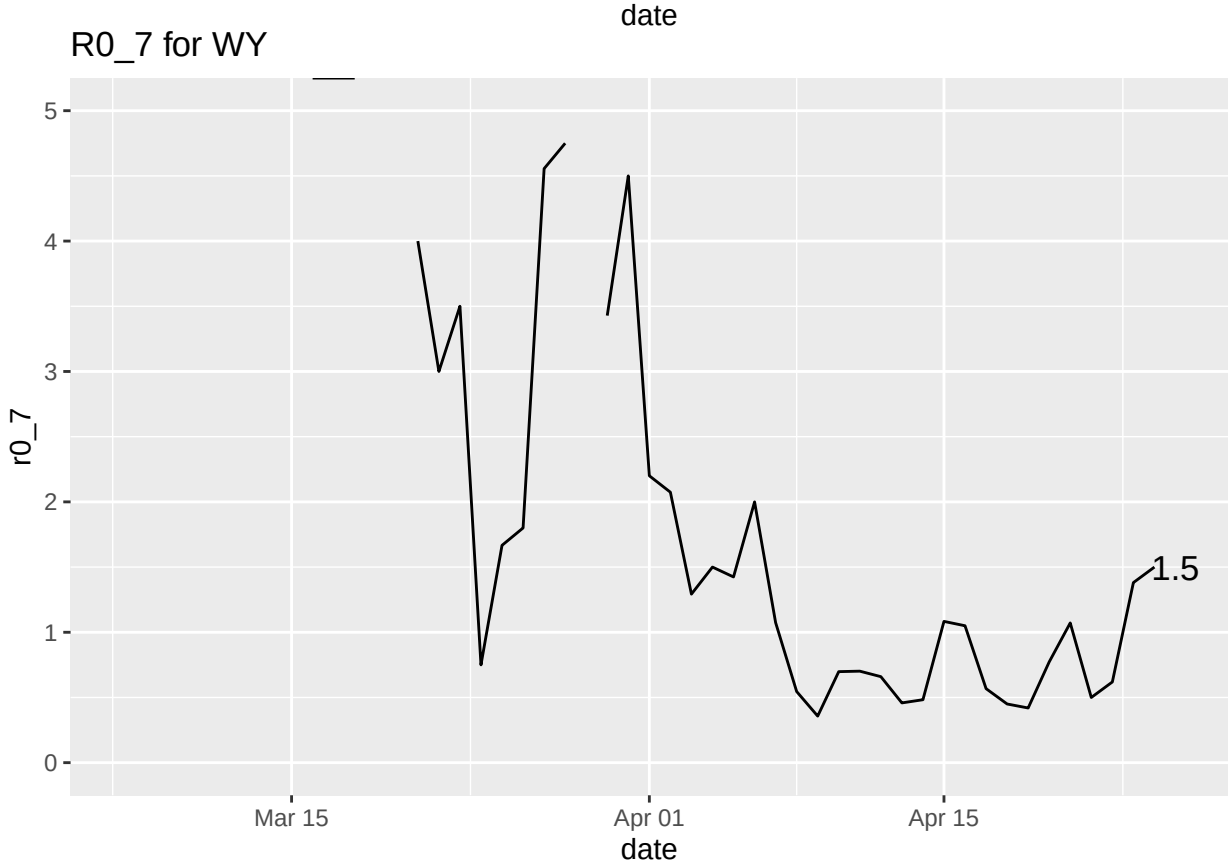

R0_7 for VI
r0_7
5
4
3
2
1
0
Mar 15
Apr 01
Apr 15
date
0.5


R0_7 for VT
r0_7
5
4
3
2
1
0
Mar 15
Apr 01
Apr 15
date
0.45

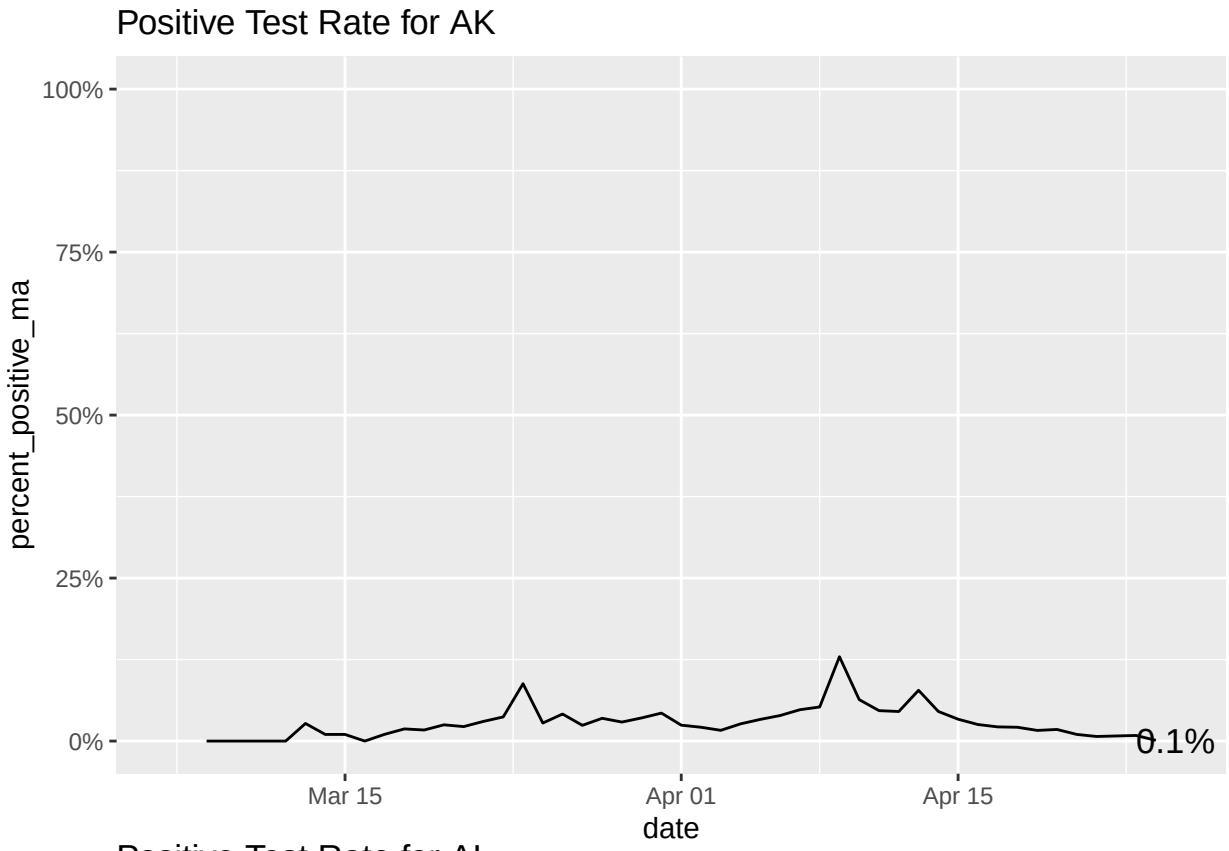

R0_7 for WA
r0_7
5
4
3
2
1
0
0.62
Feb
Mar
Apr
date

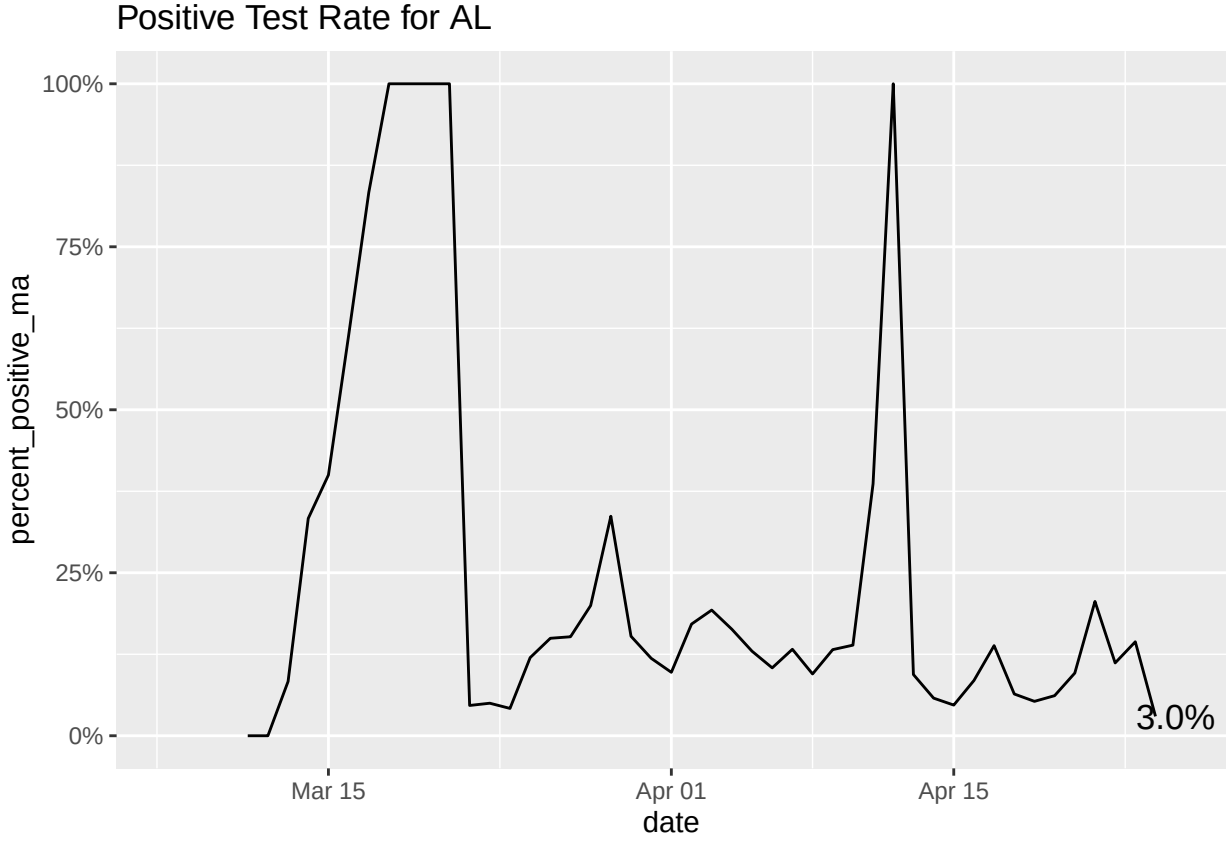

R0_7 for WI
r0_7
5
4
3
2
1
0
1.76
Mar 15
Apr 01
Apr 15
date

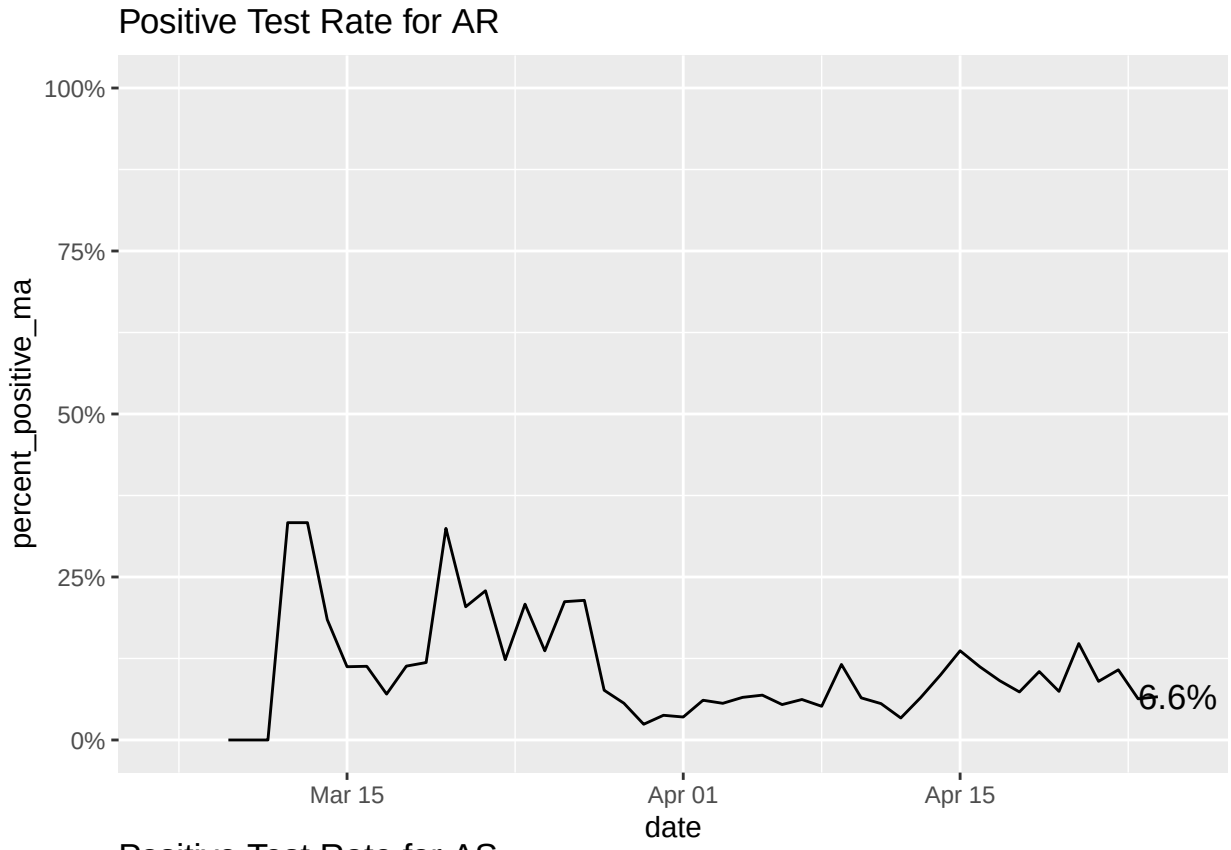

R0_7 for WV
r0_7
5
4
3
2
1
0
0.98
Mar 15
Apr 01
Apr 15
date

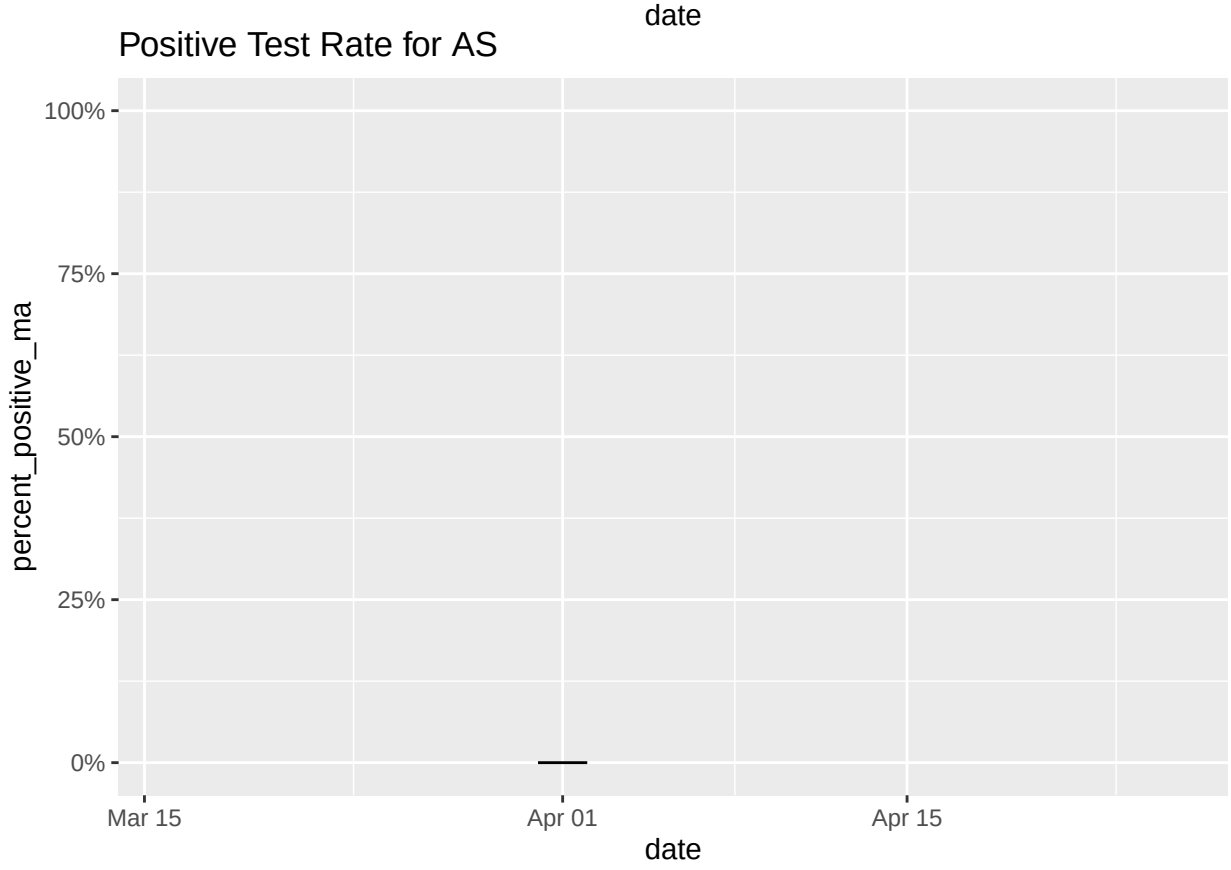

R0_7 for WY
r0_7
5
4
3
2
1
0
1.5
Mar 15
Apr 01
Apr 15
date

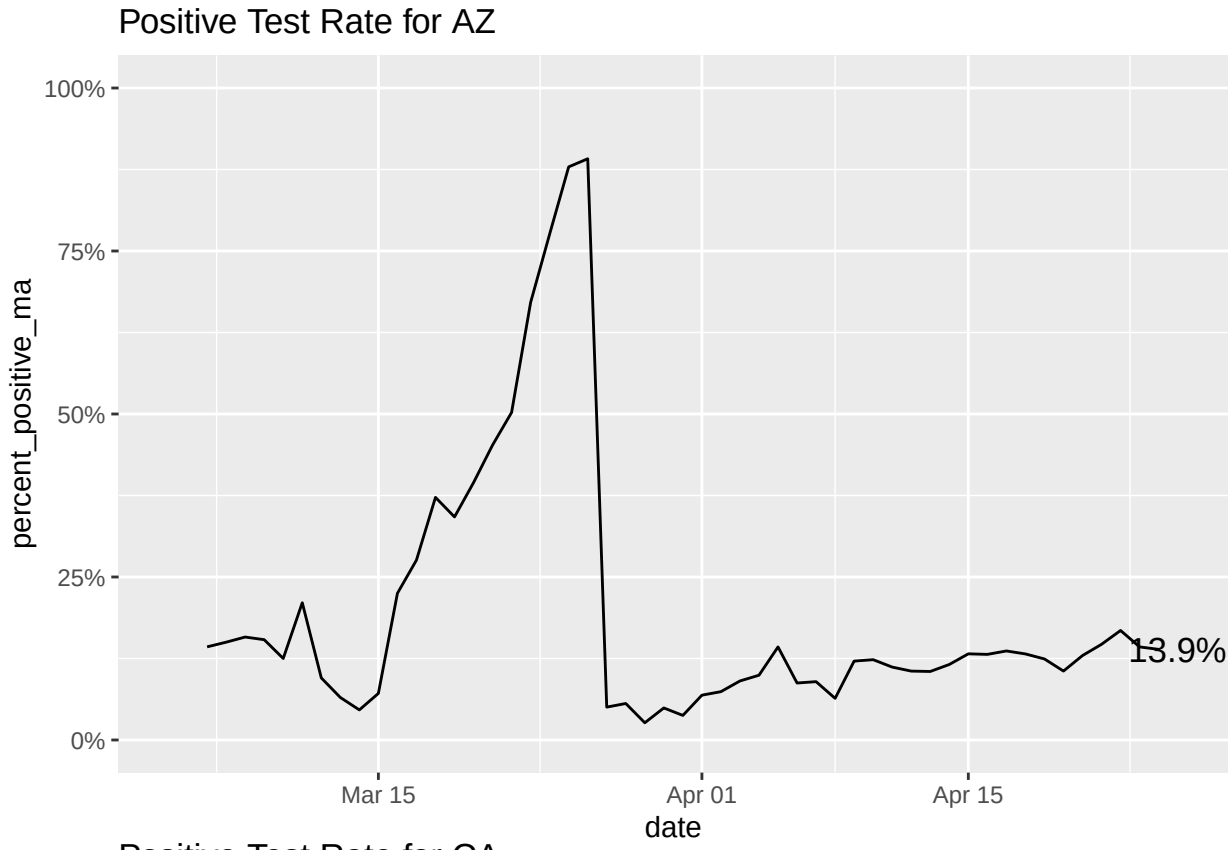
State-by-State % Test Positives

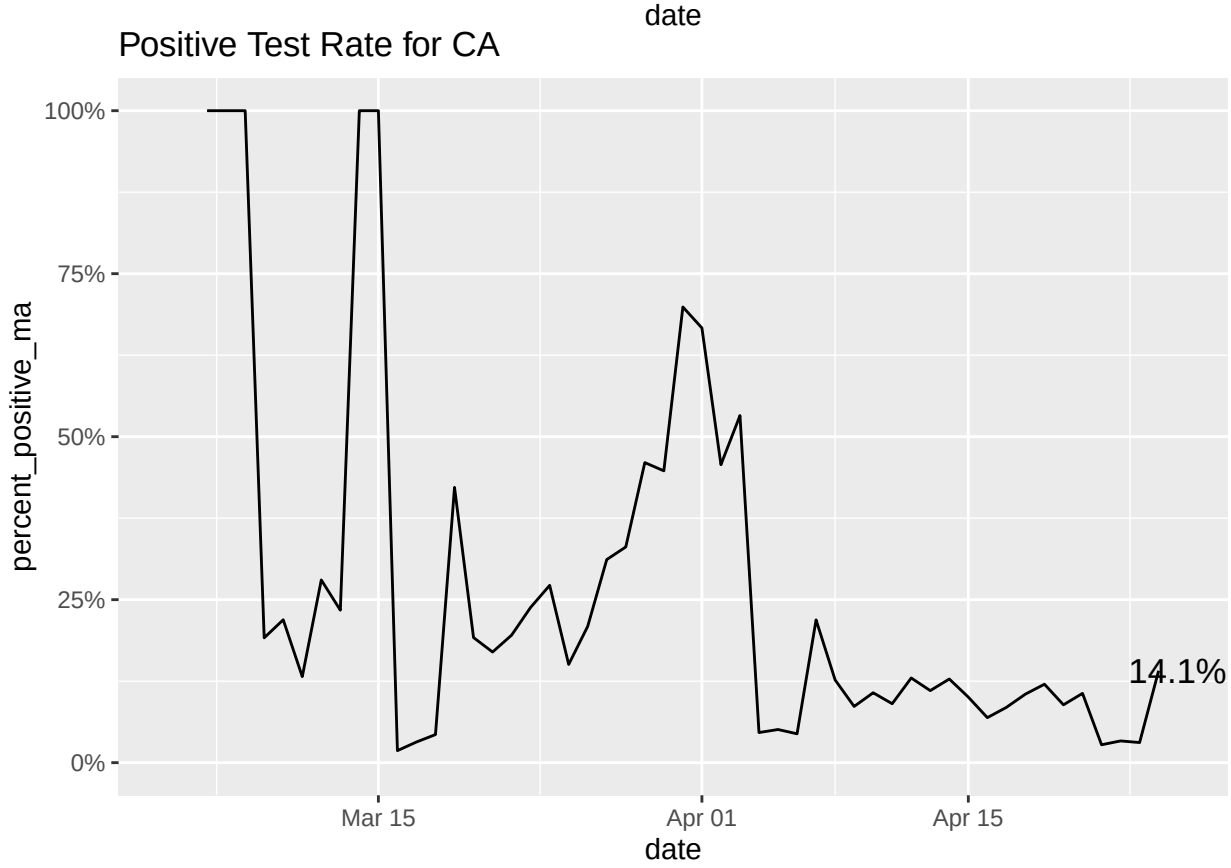


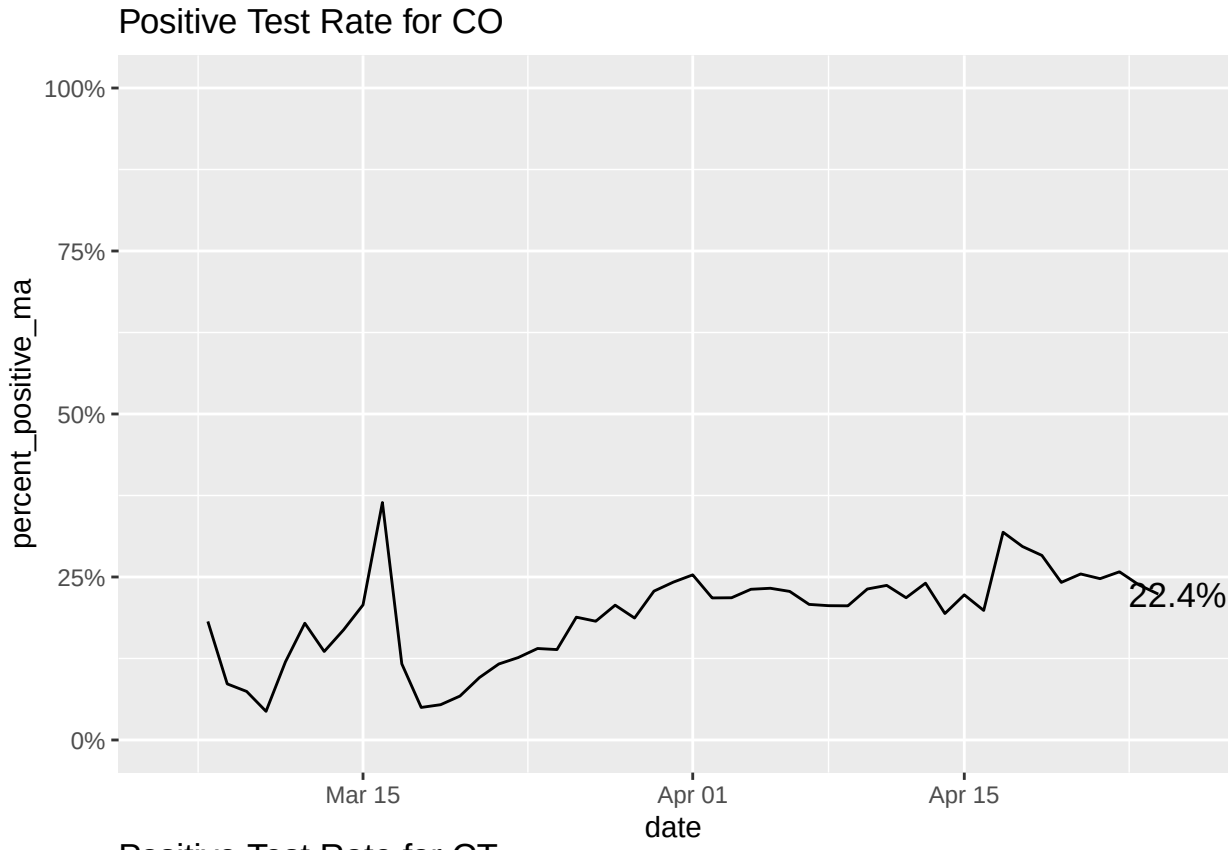


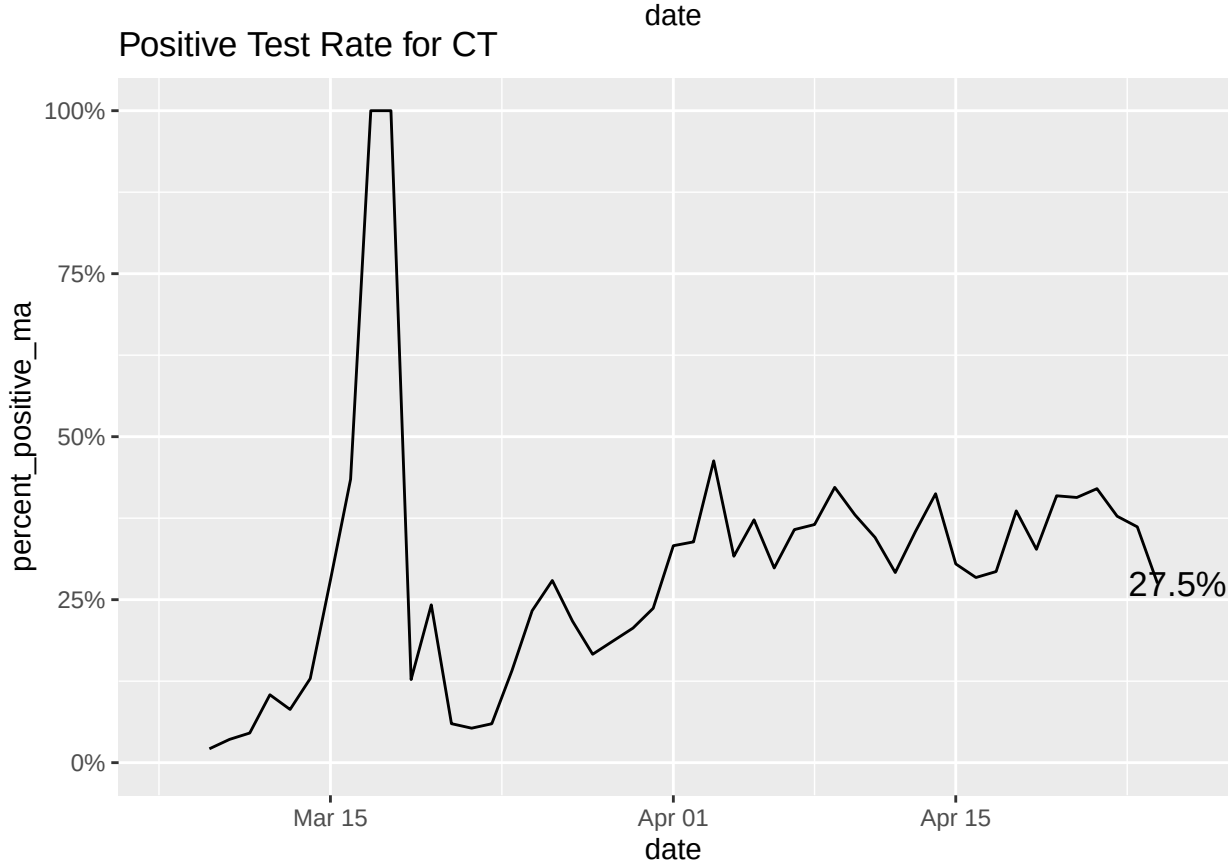

Positive Test Rate for AR
100%
75%
50%
25%
0%
percent_positive_ma
6.6%
Mar 15
Apr 01
Apr 15
date

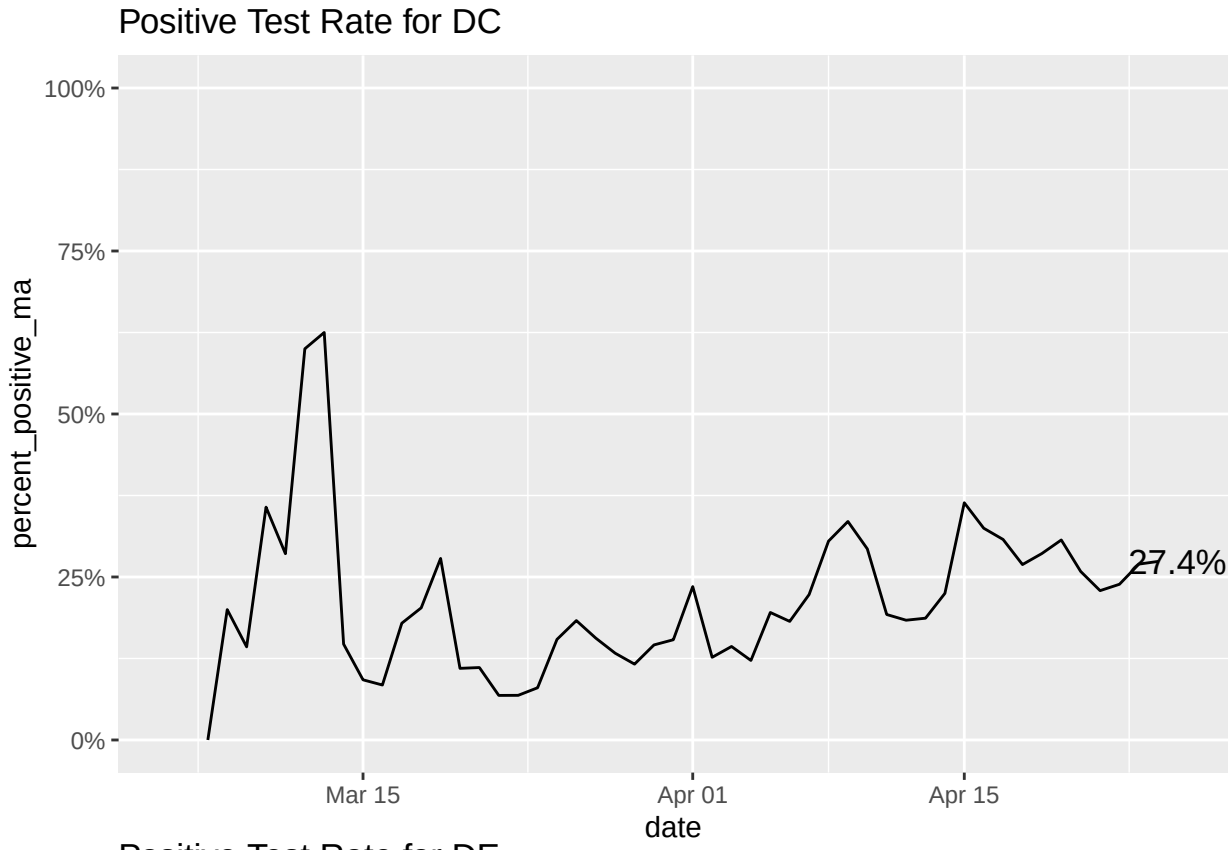

Positive Test Rate for AS
100%
75%
50%
25%
0%
percent_positive_ma
Mar 15
Apr 01
Apr 15
date

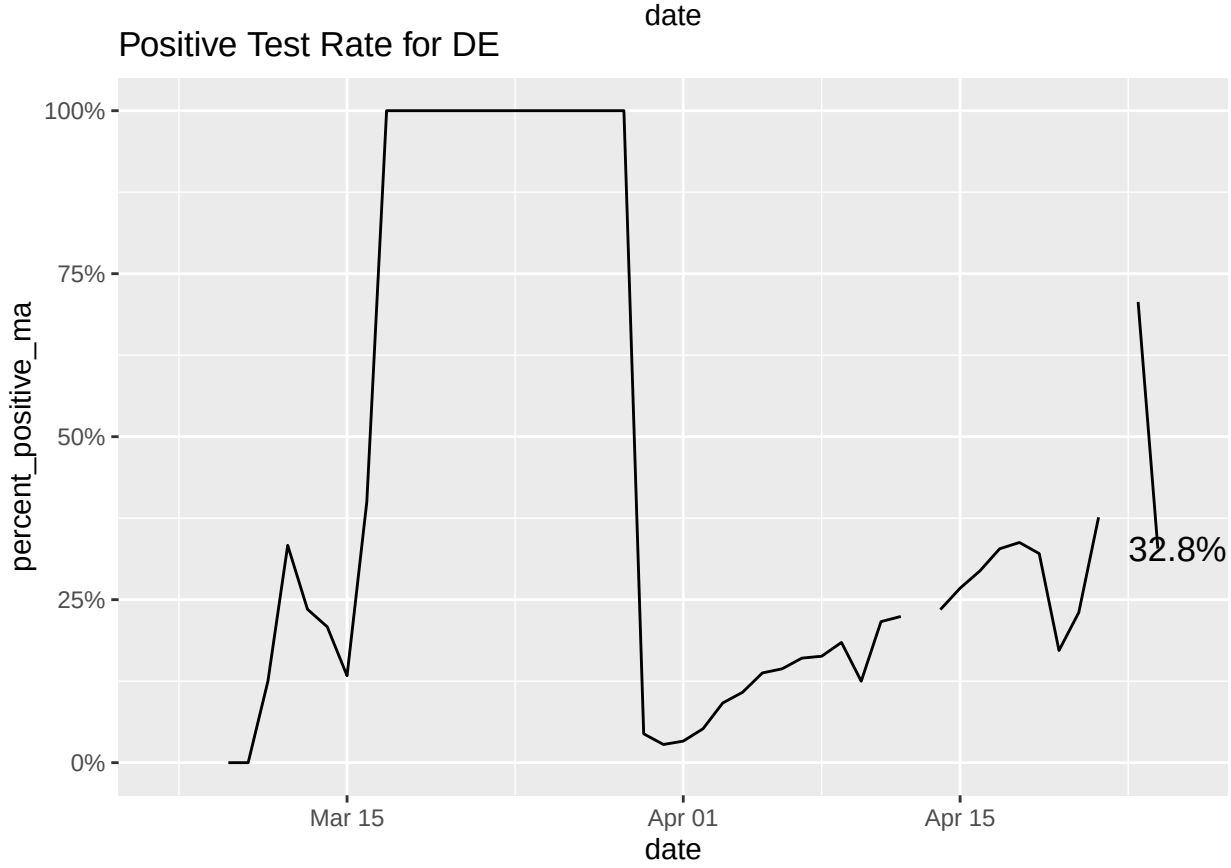

Positive Test Rate for AZ
100%
75%
50%
25%
0%
percent_positive_ma
13.9%
Mar 15
Apr 01
Apr 15
date

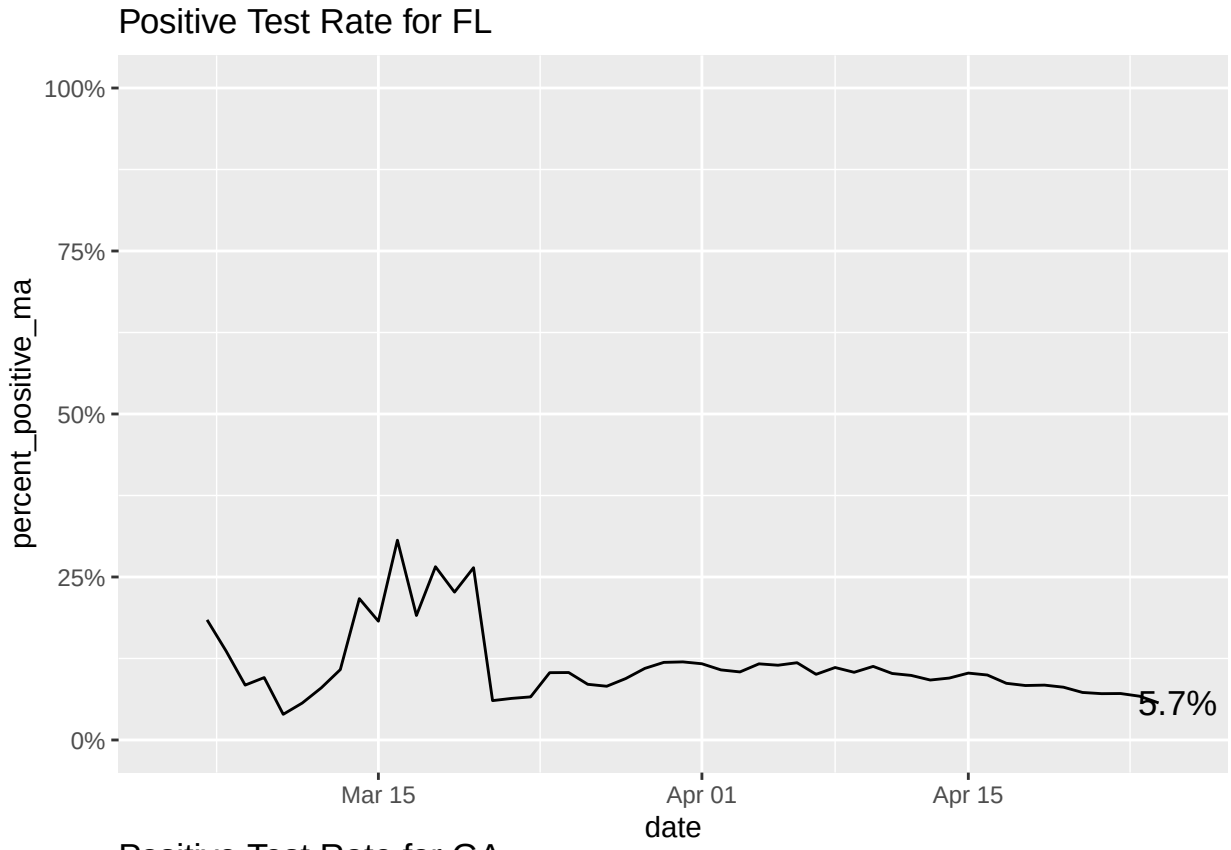

Positive Test Rate for CA
100%
75%
50%
25%
0%
percent_positive_ma
14.1%
Mar 15
Apr 01
Apr 15
date

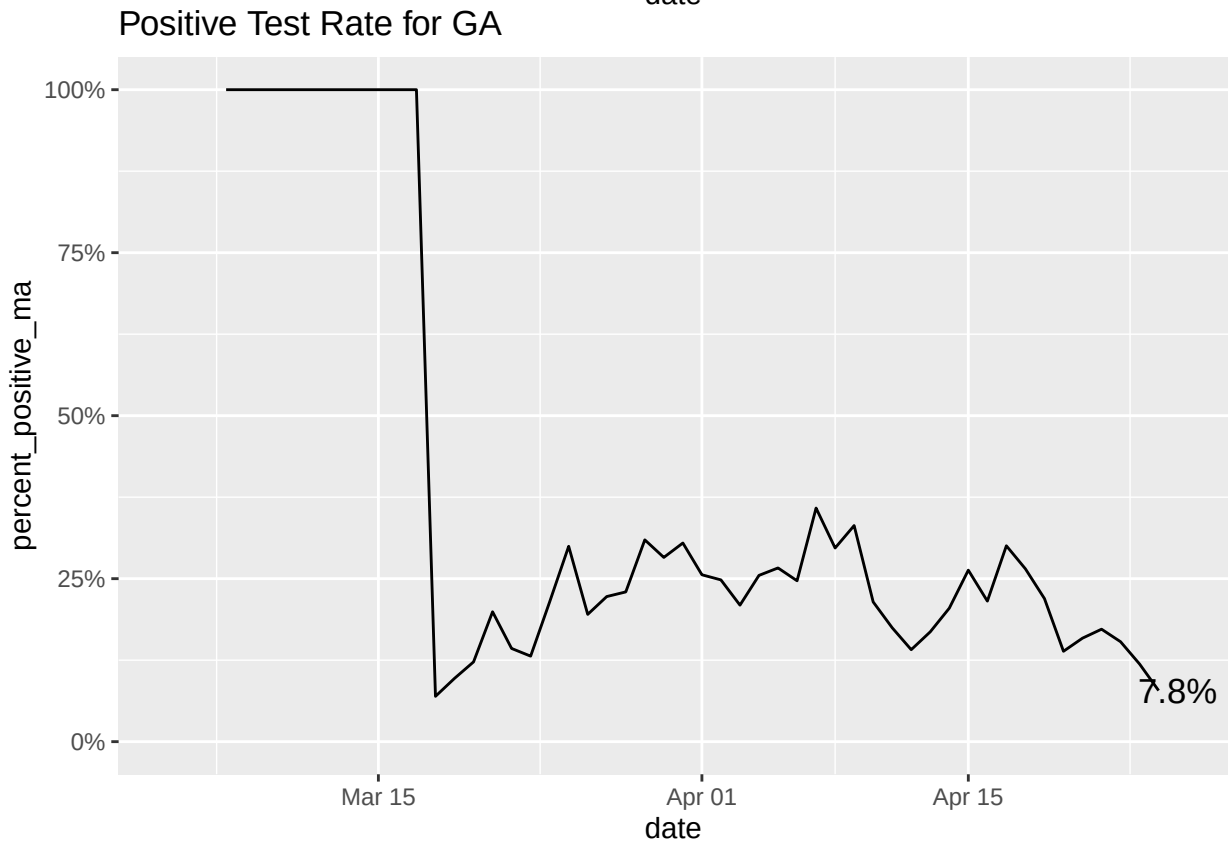

Positive Test Rate for CO
100%
75%
50%
25%
0%
percent_positive_ma
22.4%
Mar 15
Apr 01
Apr 15
date

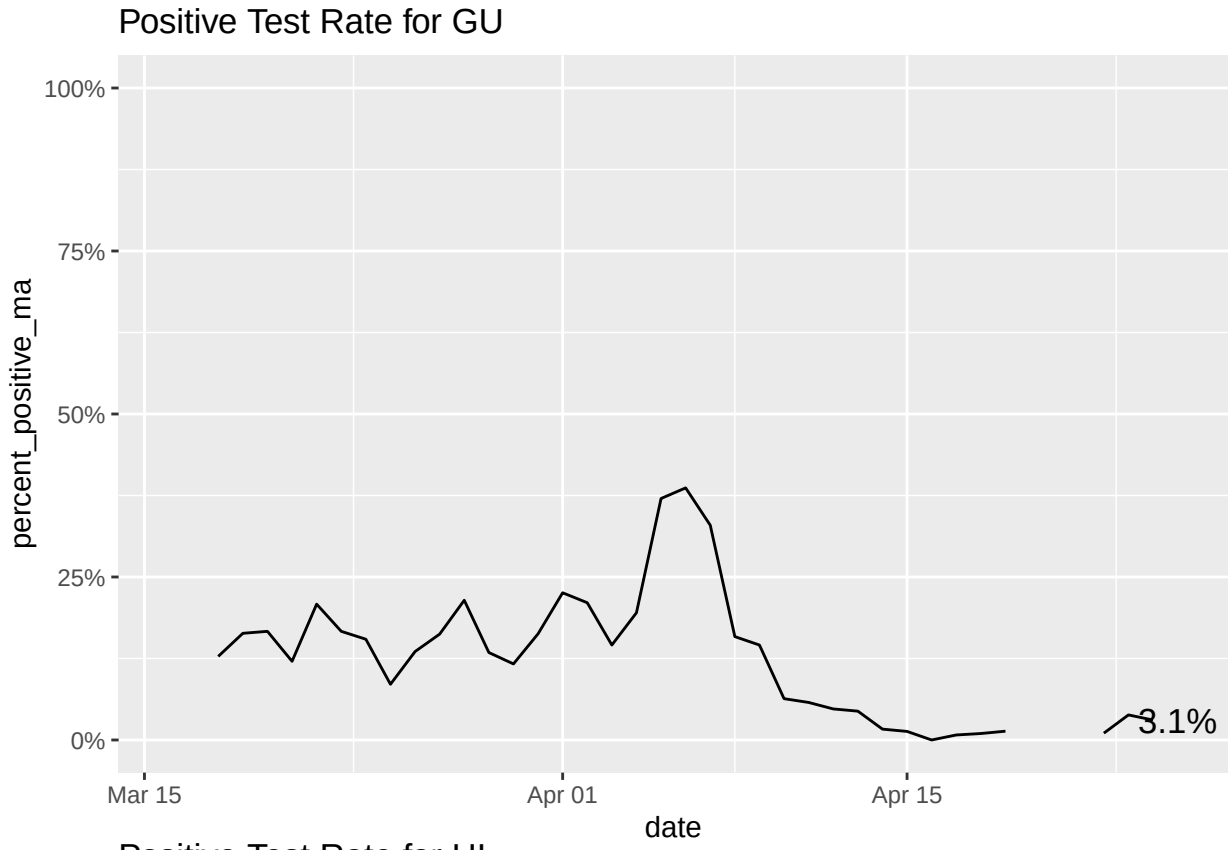

Positive Test Rate for CT
100%
75%
50%
25%
0%
percent_positive_ma
27.5%
Mar 15
Apr 01
Apr 15
date

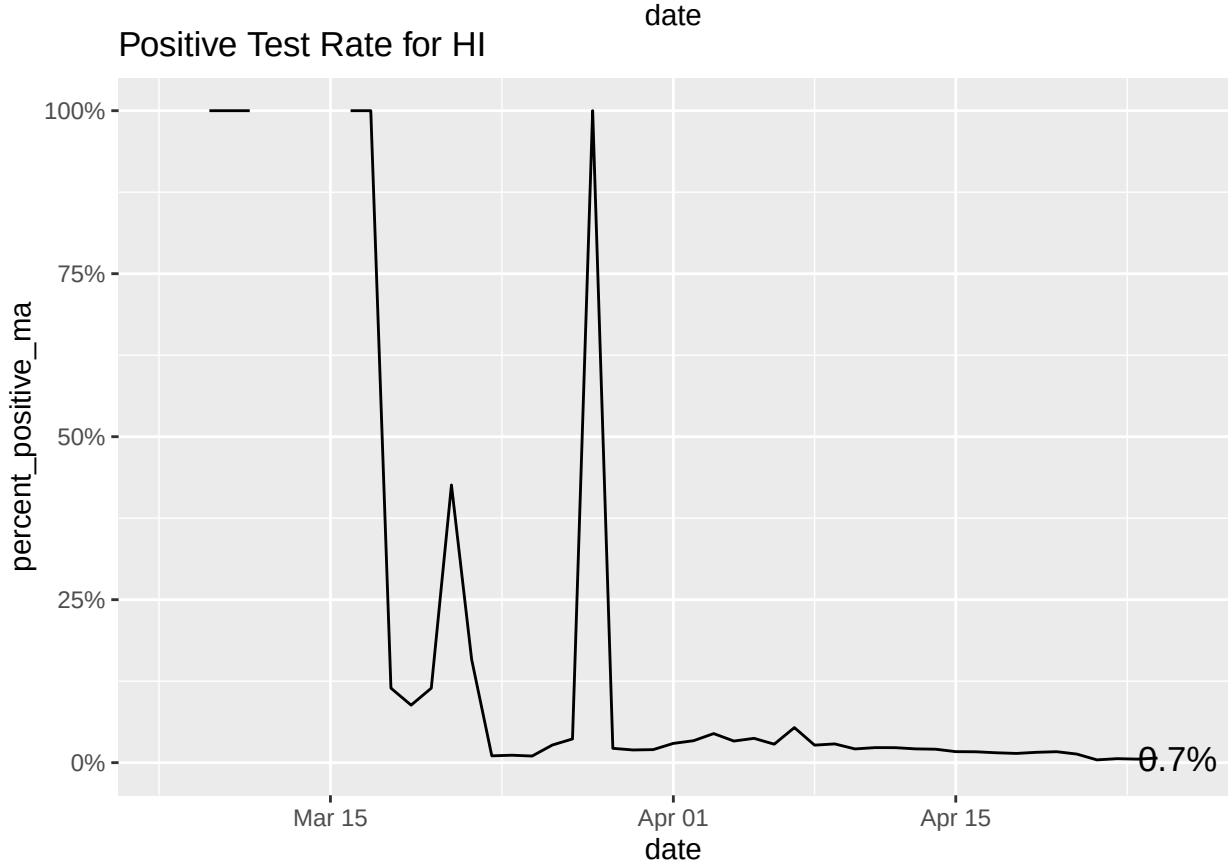

Positive Test Rate for DC
100%
75%
50%
25%
0%
percent_positive_ma
27.4%
Mar 15
Apr 01
Apr 15
date

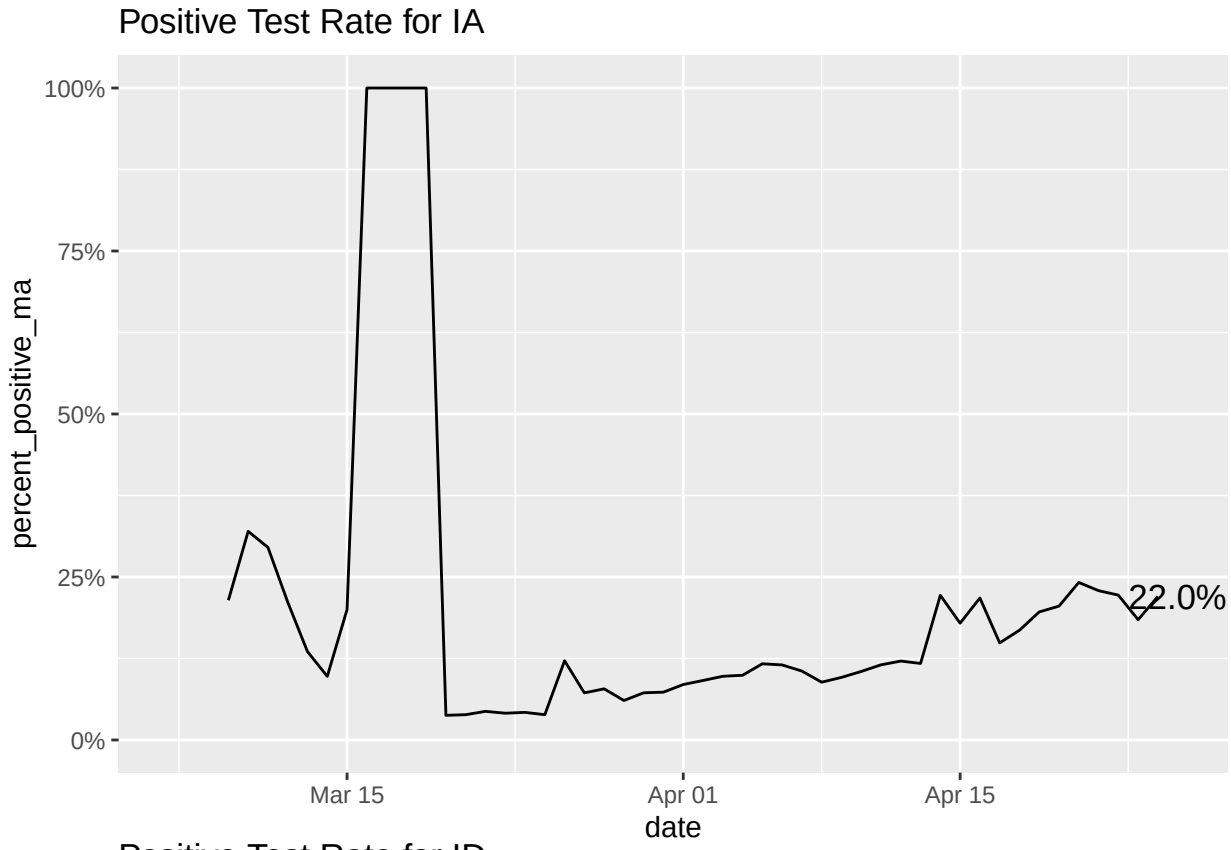

Positive Test Rate for DE
100%
75%
50%
25%
0%
percent_positive_ma
32.8%
Mar 15
Apr 01
Apr 15
date

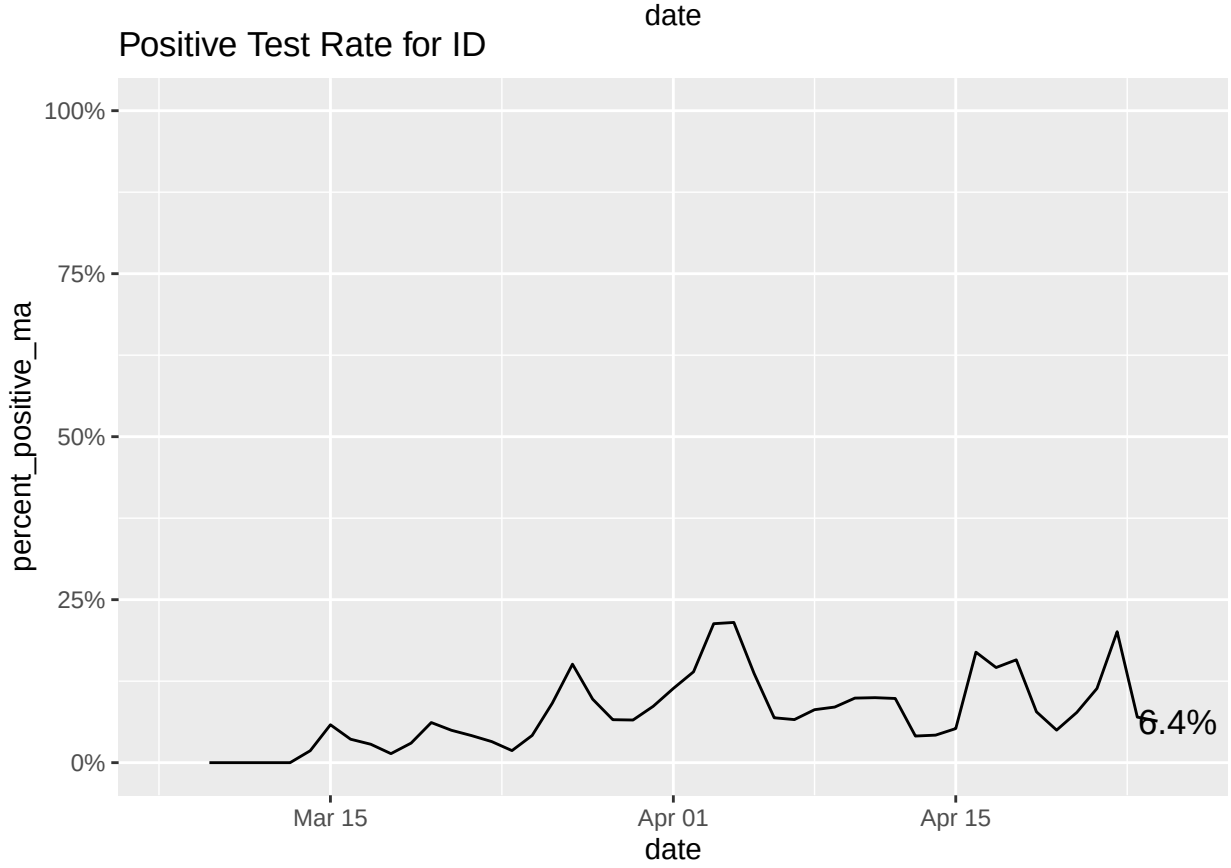

Positive Test Rate for FL
100%
75%
50%
25%
0%
percent_positive_ma
5.7%
Mar 15
Apr 01
Apr 15
date

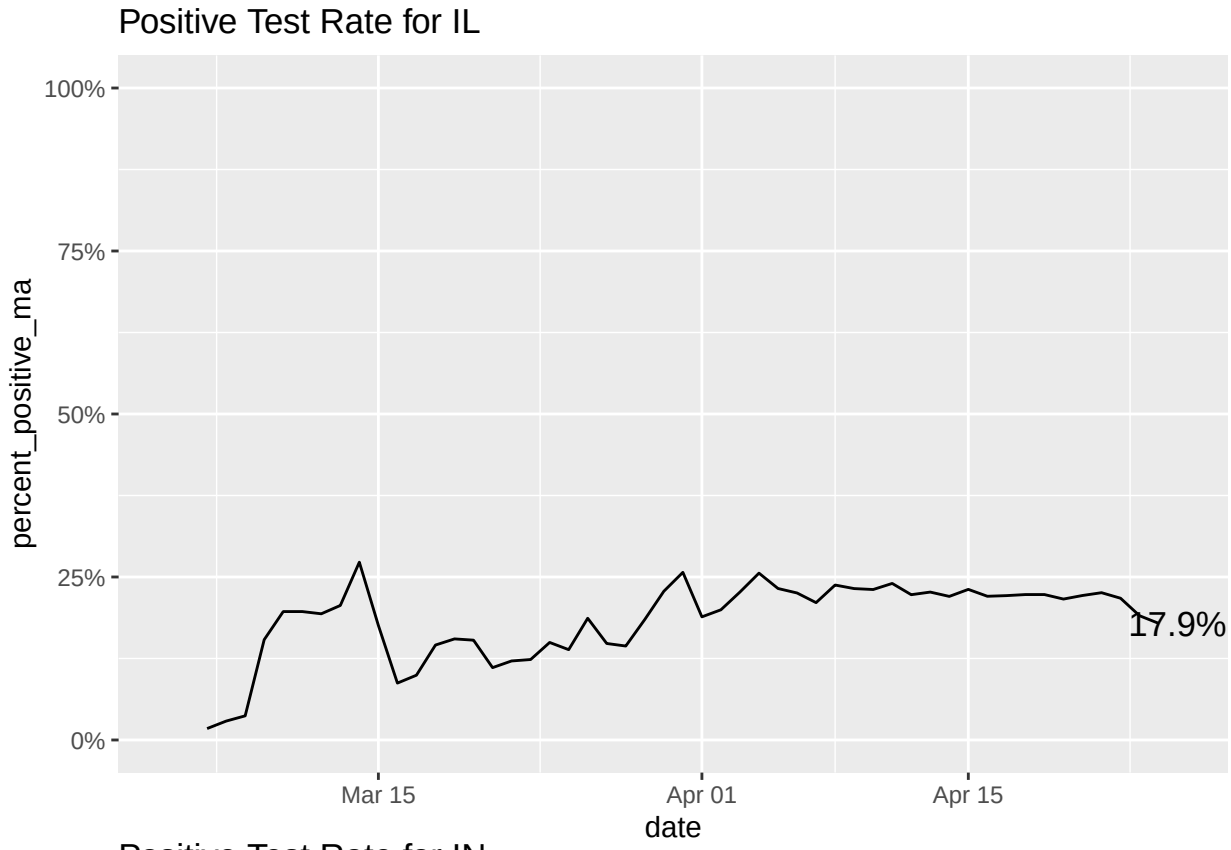

Positive Test Rate for GA
100%
75%
50%
25%
0%
percent_positive_ma
7.8%
Mar 15
Apr 01
Apr 15
date

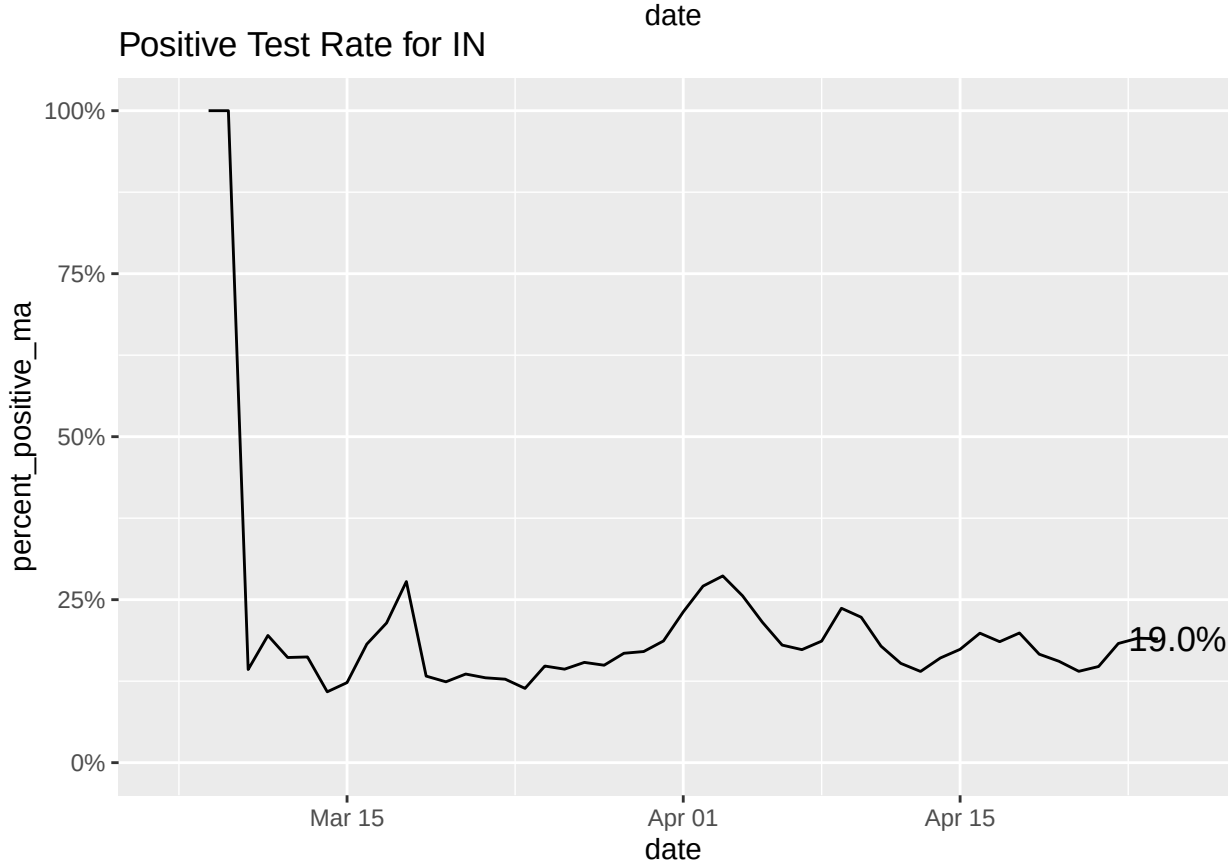

Positive Test Rate for GU
100%
75%
50%
25%
0%
percent_positive_ma
3.1%
Mar 15
Apr 01
Apr 15
date

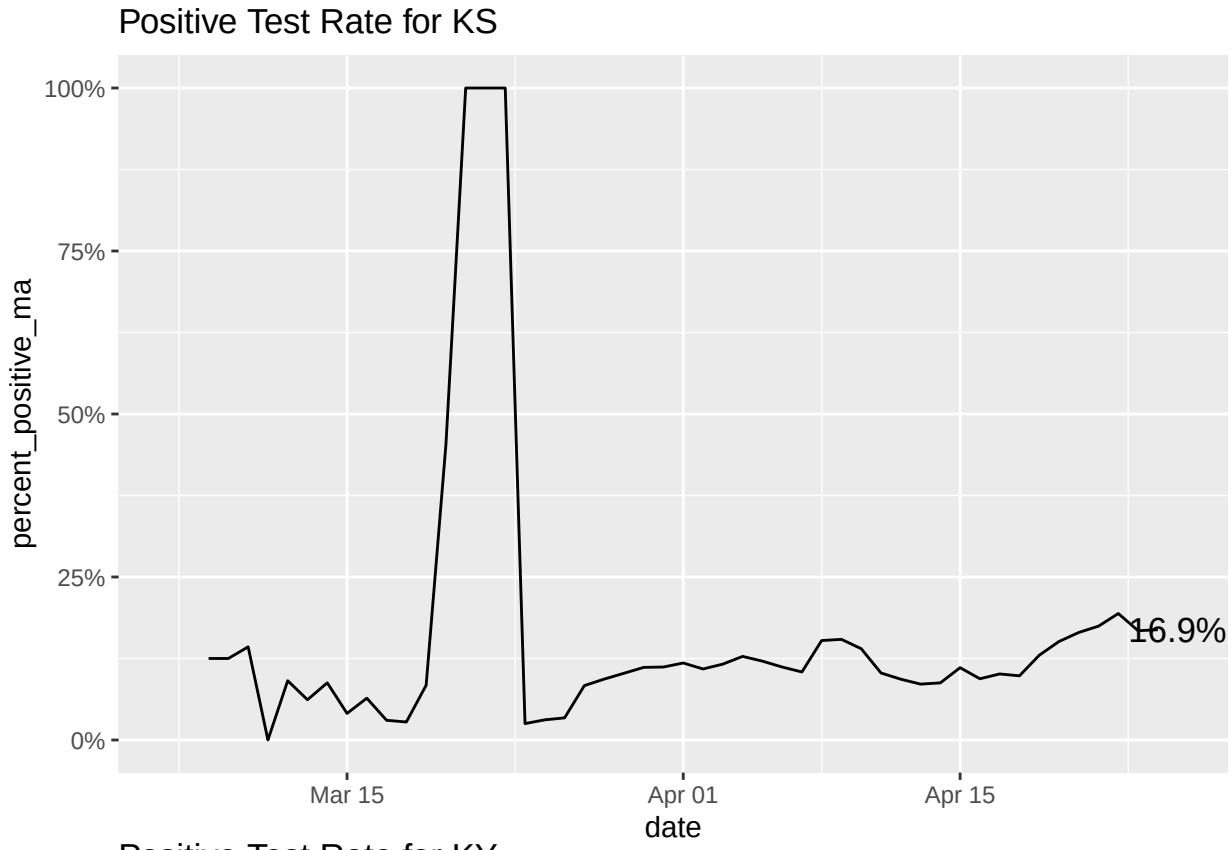

Positive Test Rate for HI
100%
75%
50%
25%
0%
percent_positive_ma
0.7%
Mar 15
Apr 01
Apr 15
date

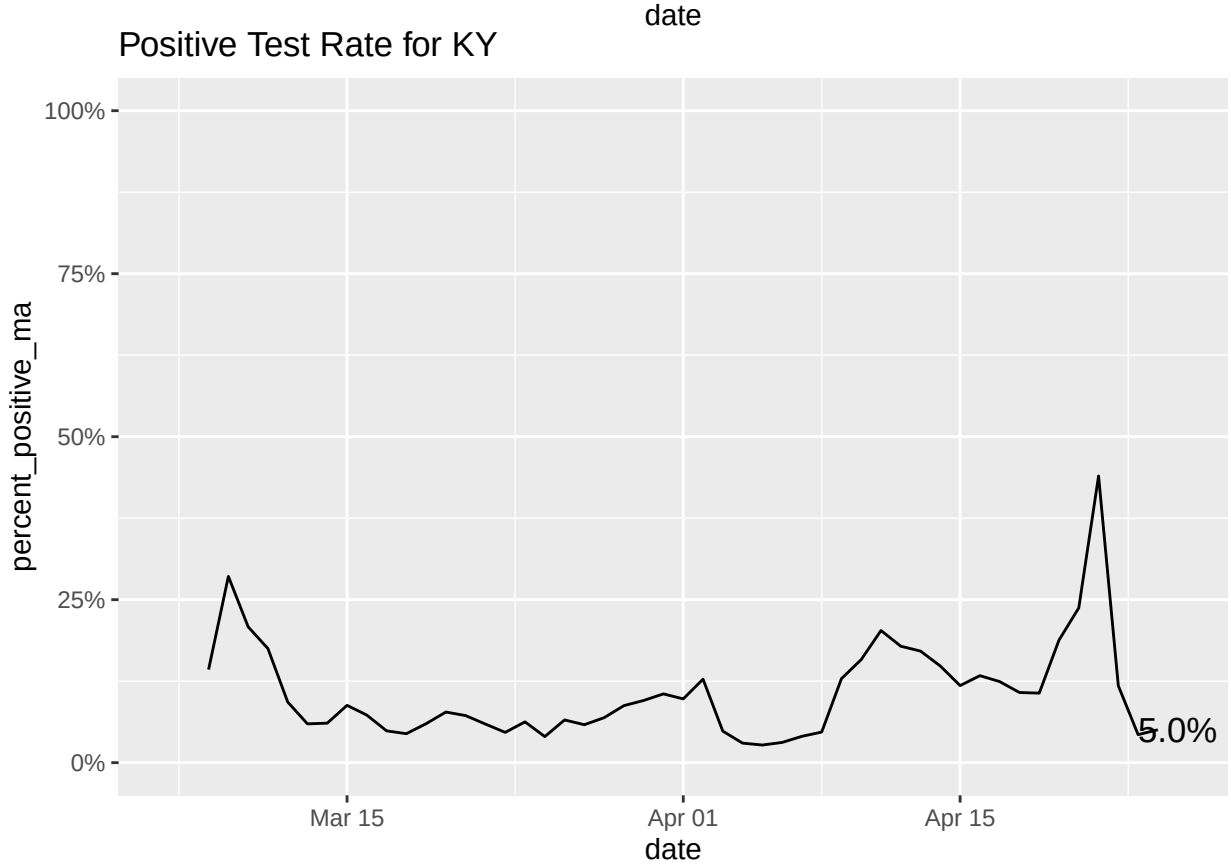

Positive Test Rate for IA
100%
75%
50%
25%
0%
percent_positive_ma
22.0%
Mar 15
Apr 01
Apr 15
date

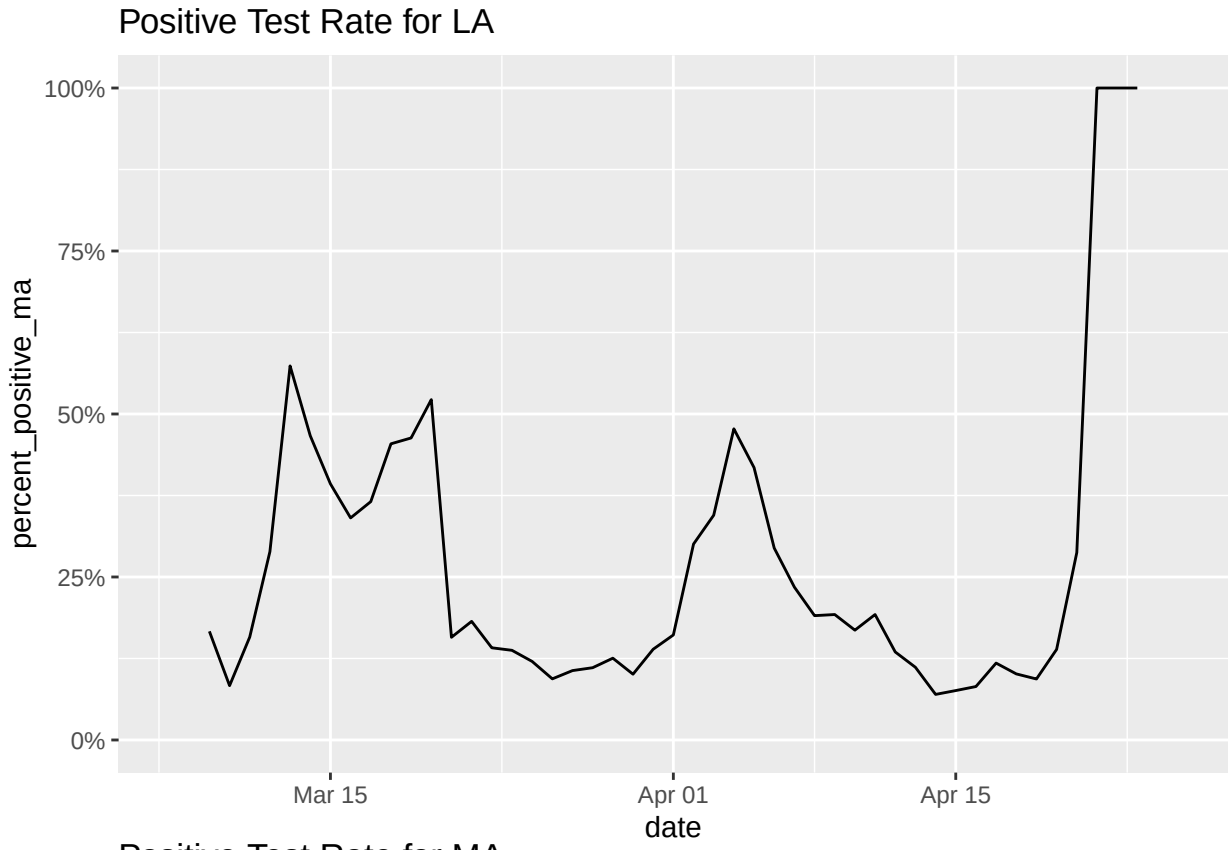

Positive Test Rate for ID
100%
75%
50%
25%
0%
percent_positive_ma
6.4%
Mar 15
Apr 01
Apr 15
date

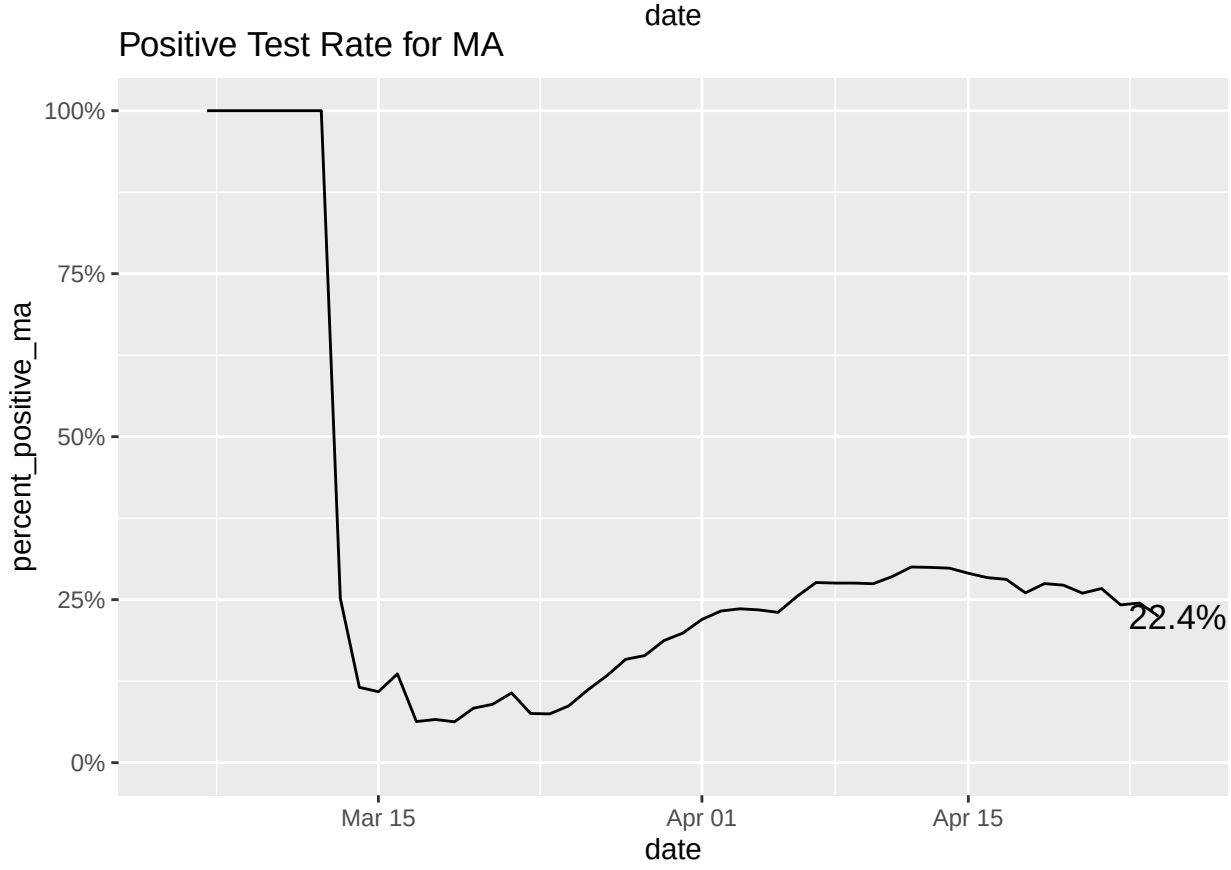

Positive Test Rate for IL
100%
75%
50%
25%
0%
percent_positive_ma
17.9%
Mar 15
Apr 01
Apr 15
date

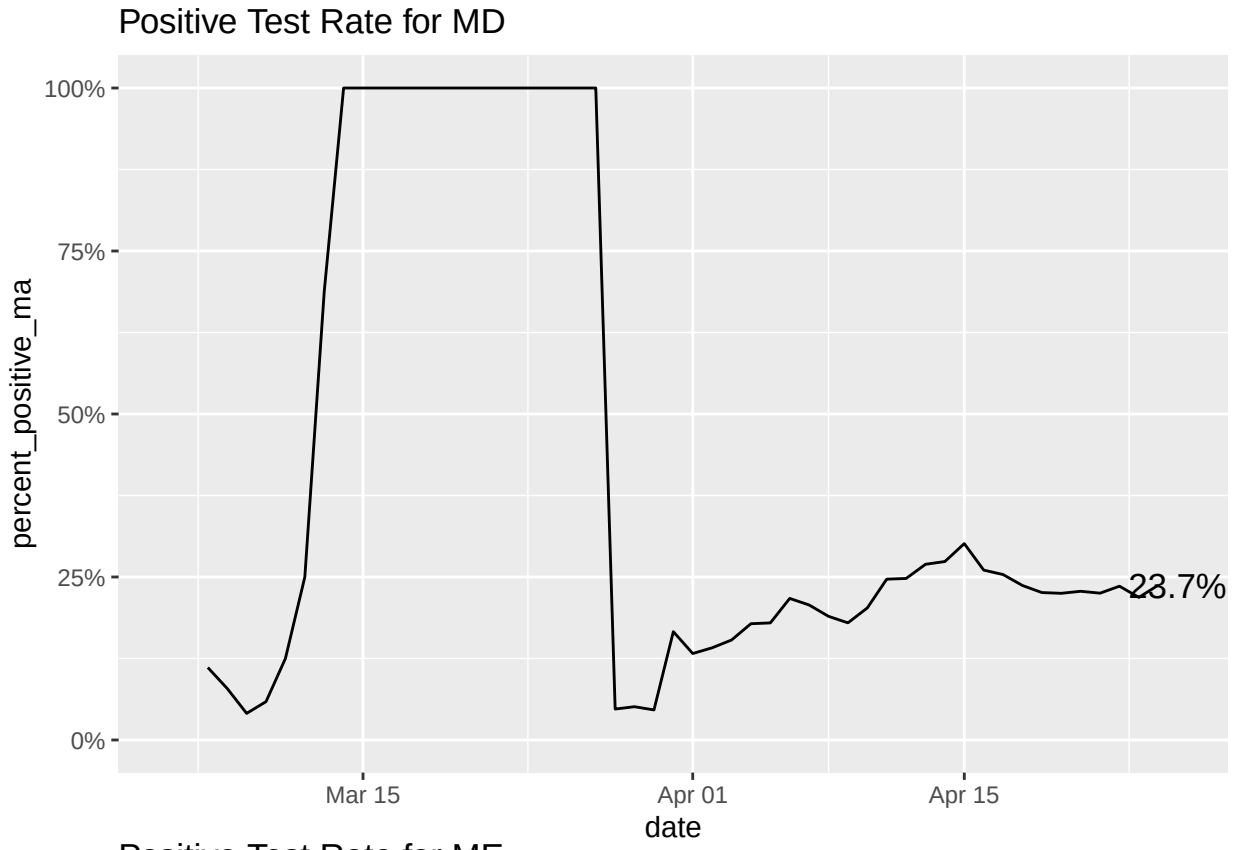

Positive Test Rate for IN
100%
75%
50%
25%
0%
percent_positive_ma
19.0%
Mar 15
Apr 01
Apr 15
date

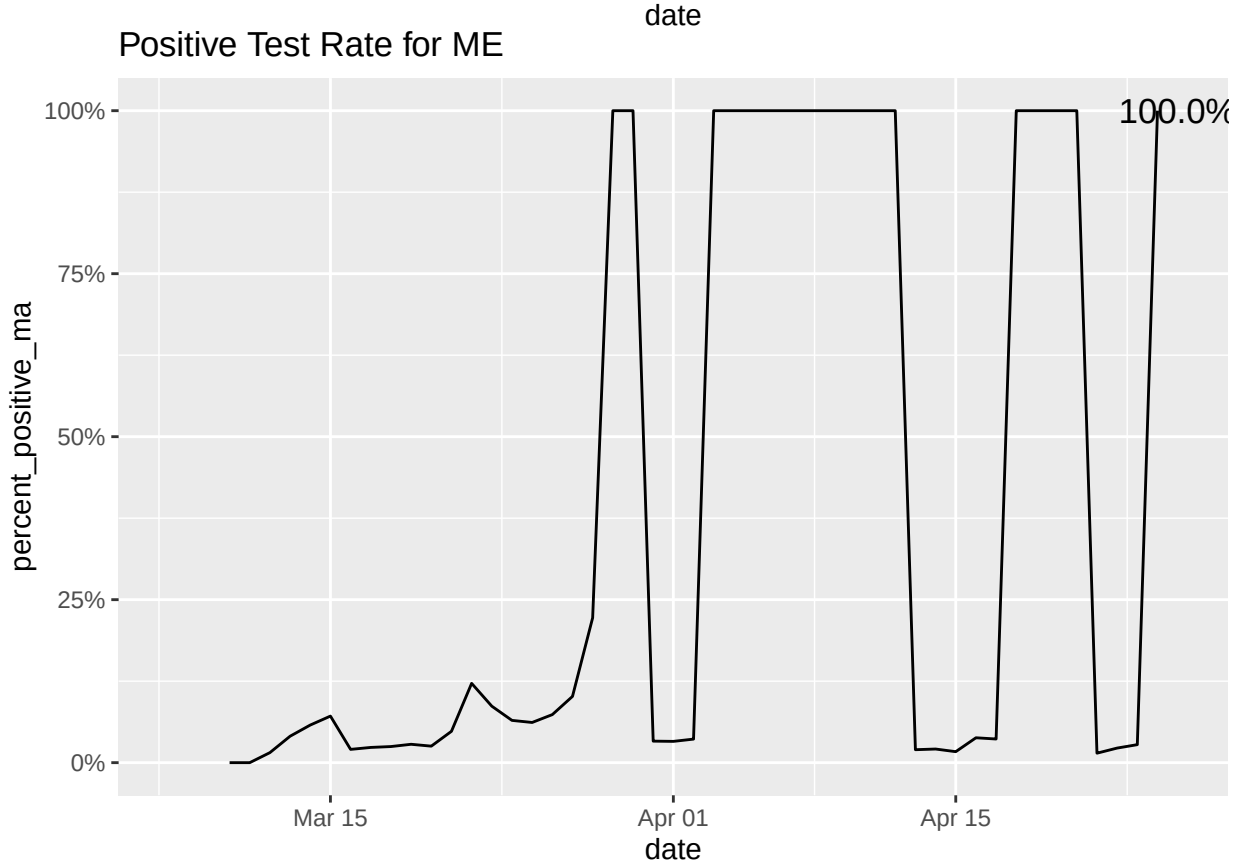

Positive Test Rate for KS
100%
75%
50%
25%
0%
percent_positive_ma
16.9%
Mar 15
Apr 01
Apr 15
date

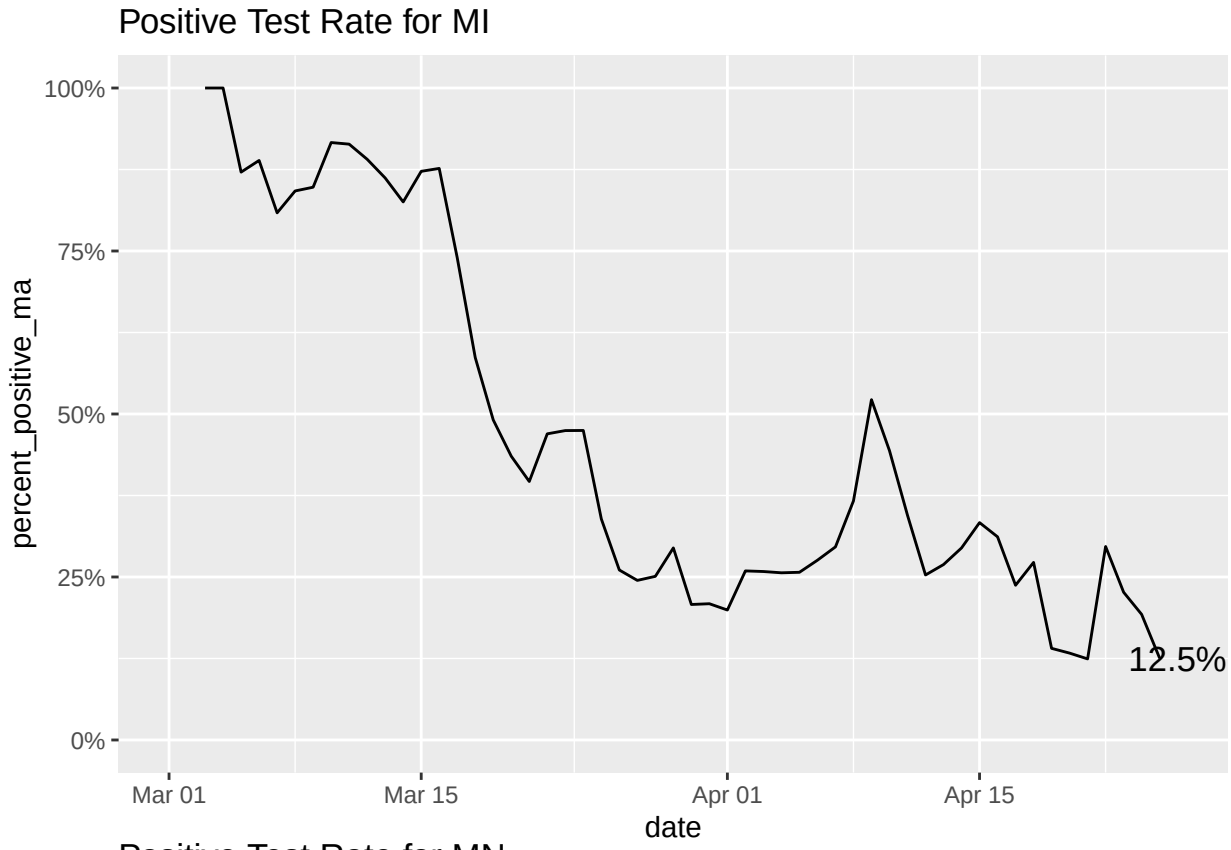

Positive Test Rate for KY
100%
75%
50%
25%
0%
percent_positive_ma
5.0%
Mar 15
Apr 01
Apr 15
date

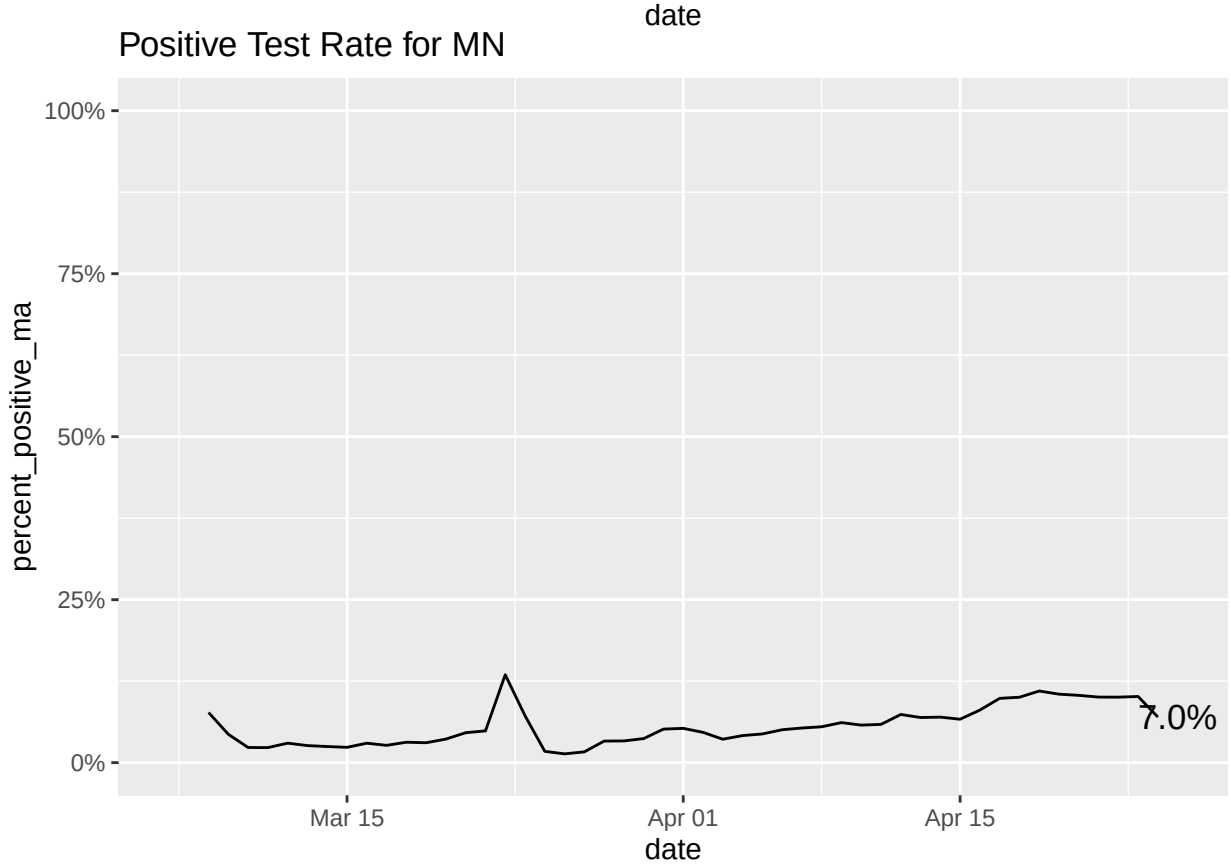

Positive Test Rate for LA
100%
75%
50%
25%
0%
percent_positive_ma
Mar 15
Apr 01
Apr 15
date

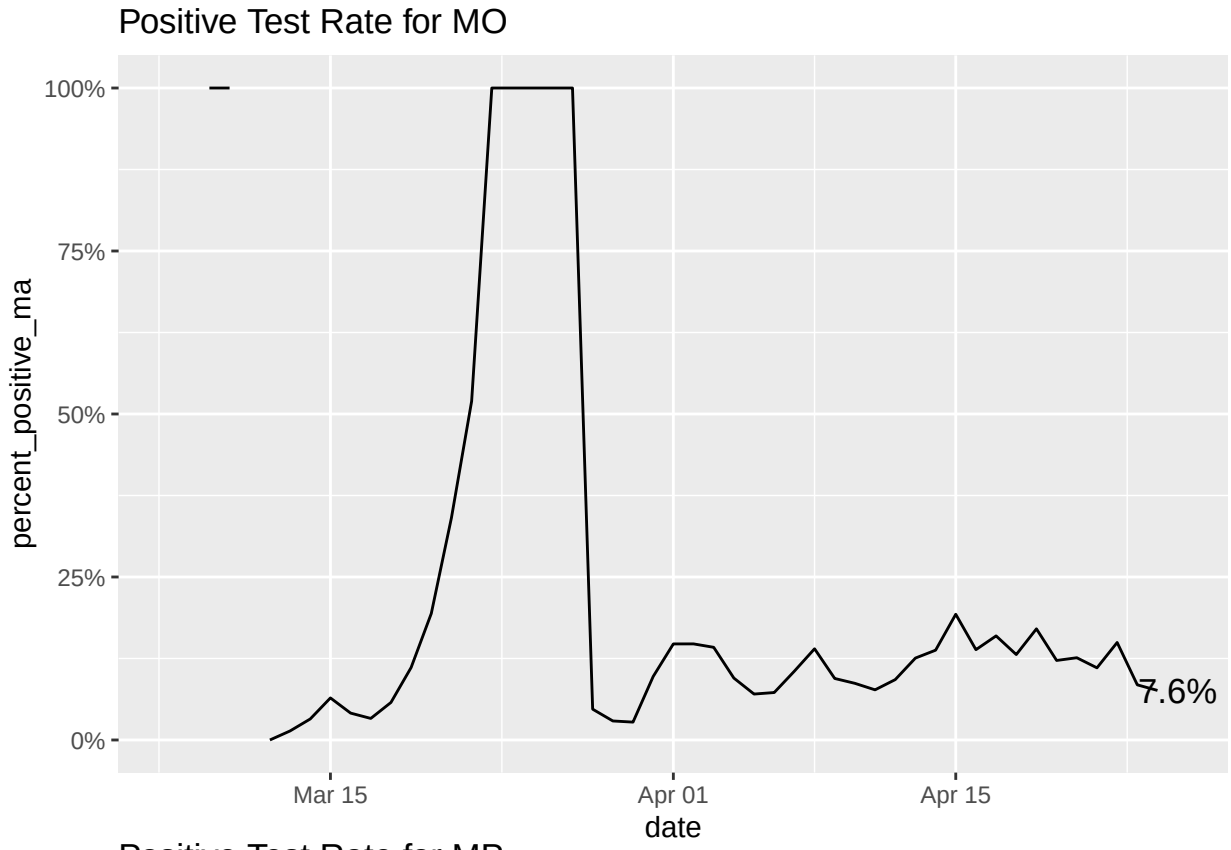

Positive Test Rate for MA
100%
75%
50%
25%
0%
percent_positive_ma
22.4%
Mar 15
Apr 01
Apr 15
date

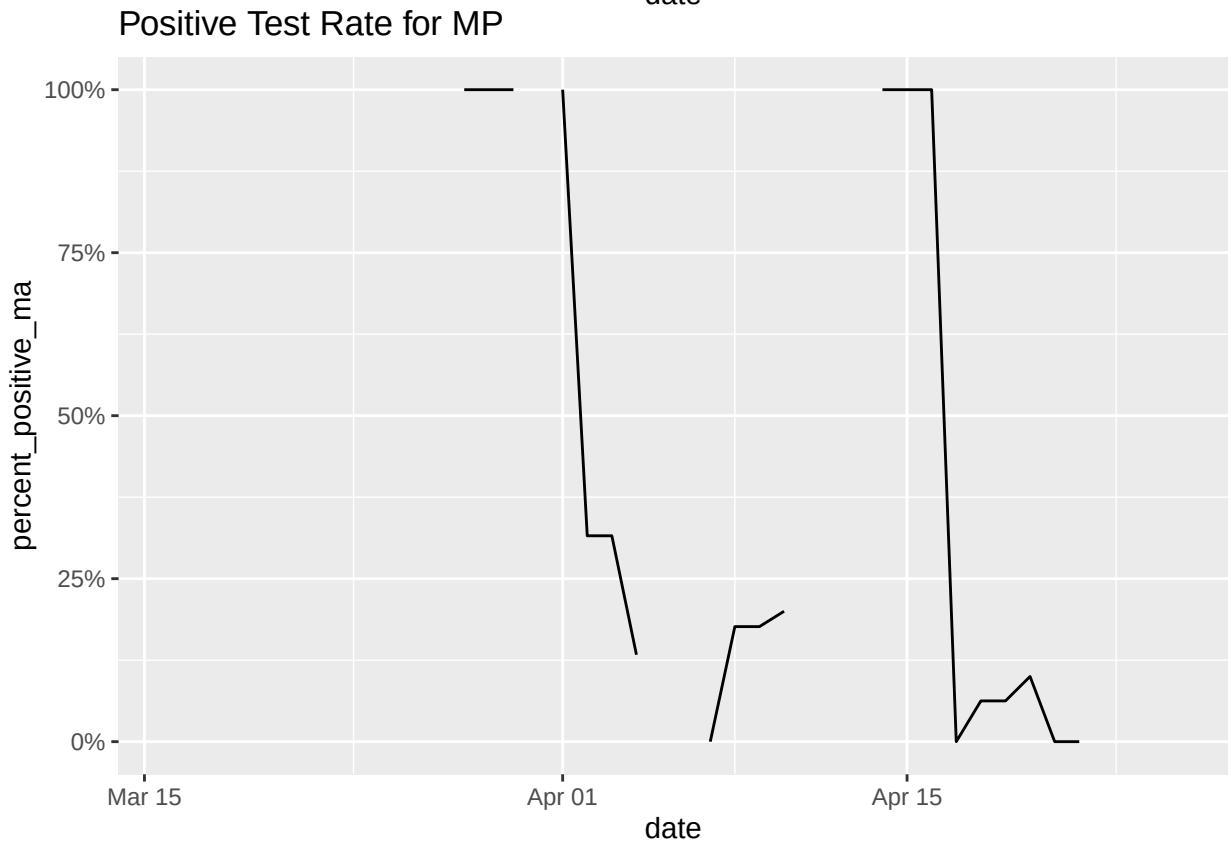

Positive Test Rate for MD
100%
75%
50%
25%
0%
percent_positive_ma
23.7%
Mar 15
Apr 01
Apr 15
date

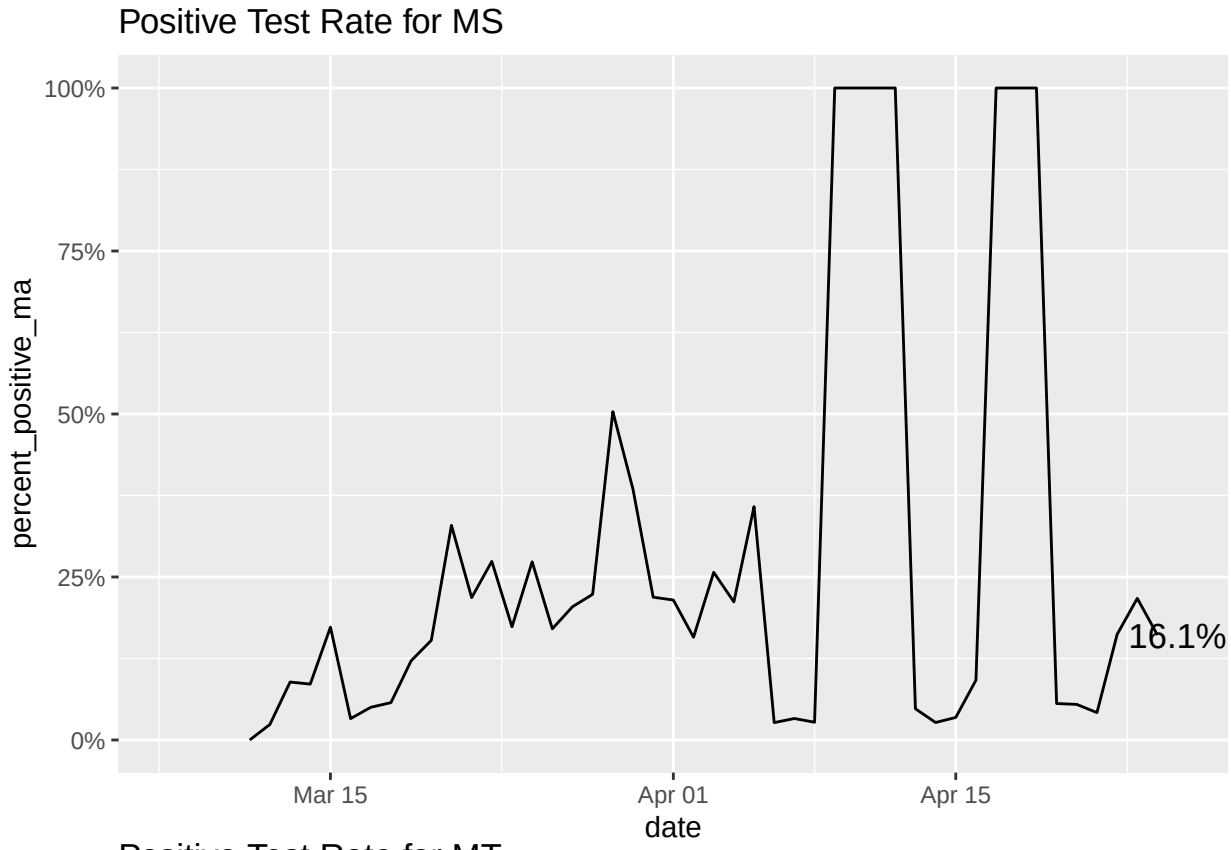

Positive Test Rate for ME
100%
75%
50%
25%
0%
percent_positive_ma
100.0%
Mar 15
Apr 01
Apr 15
date

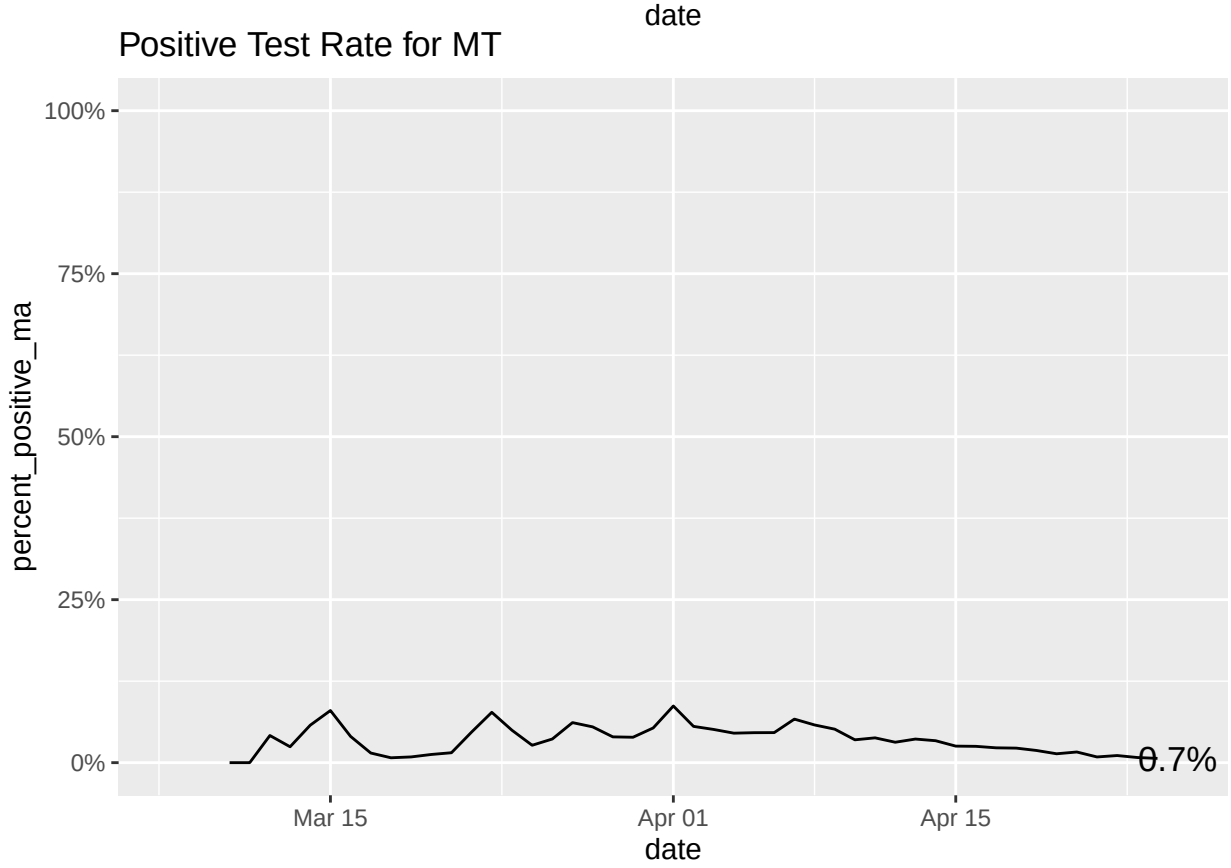

Positive Test Rate for MI
100%
75%
50%
25%
0%
percent_positive_ma
12.5%
Mar 01
Mar 15
Apr 01
Apr 15
date

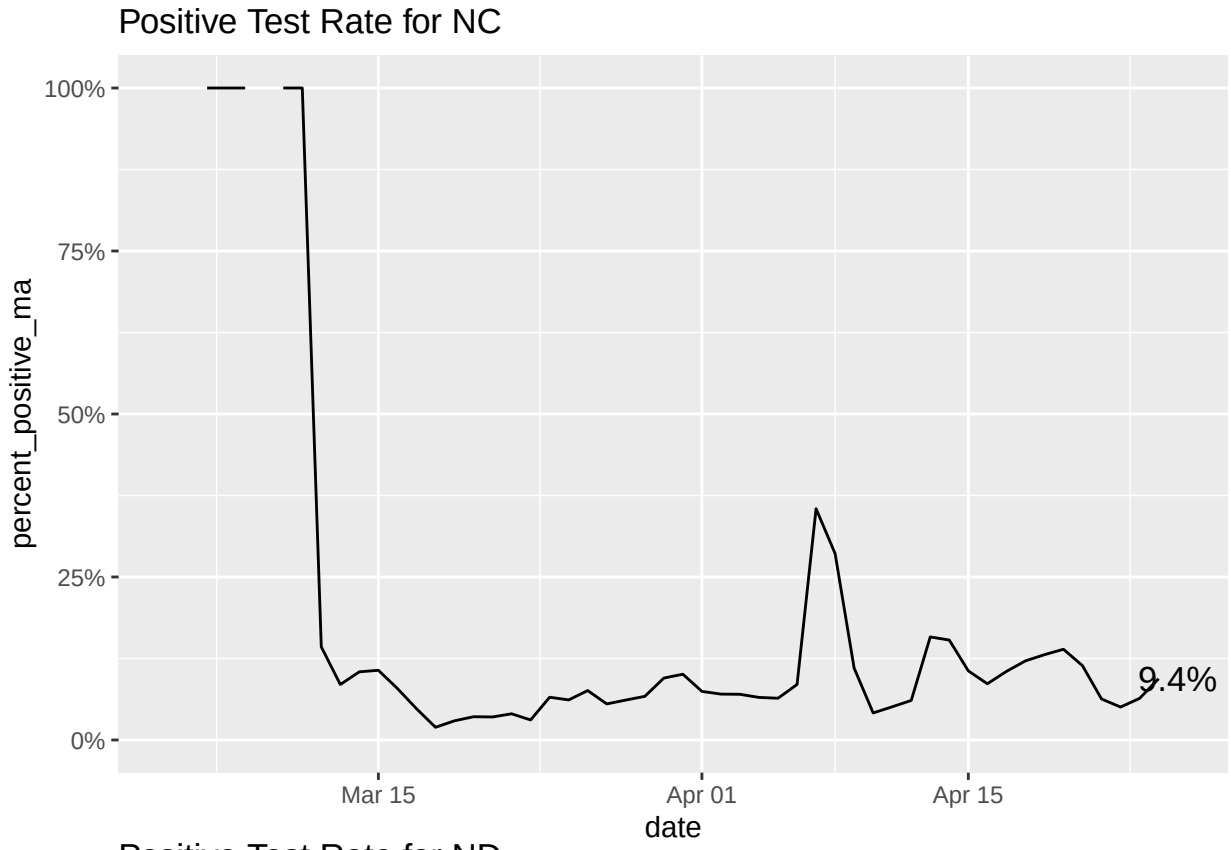

Positive Test Rate for MN
100%
75%
50%
25%
0%
percent_positive_ma
7.0%
Mar 15
Apr 01
Apr 15
date

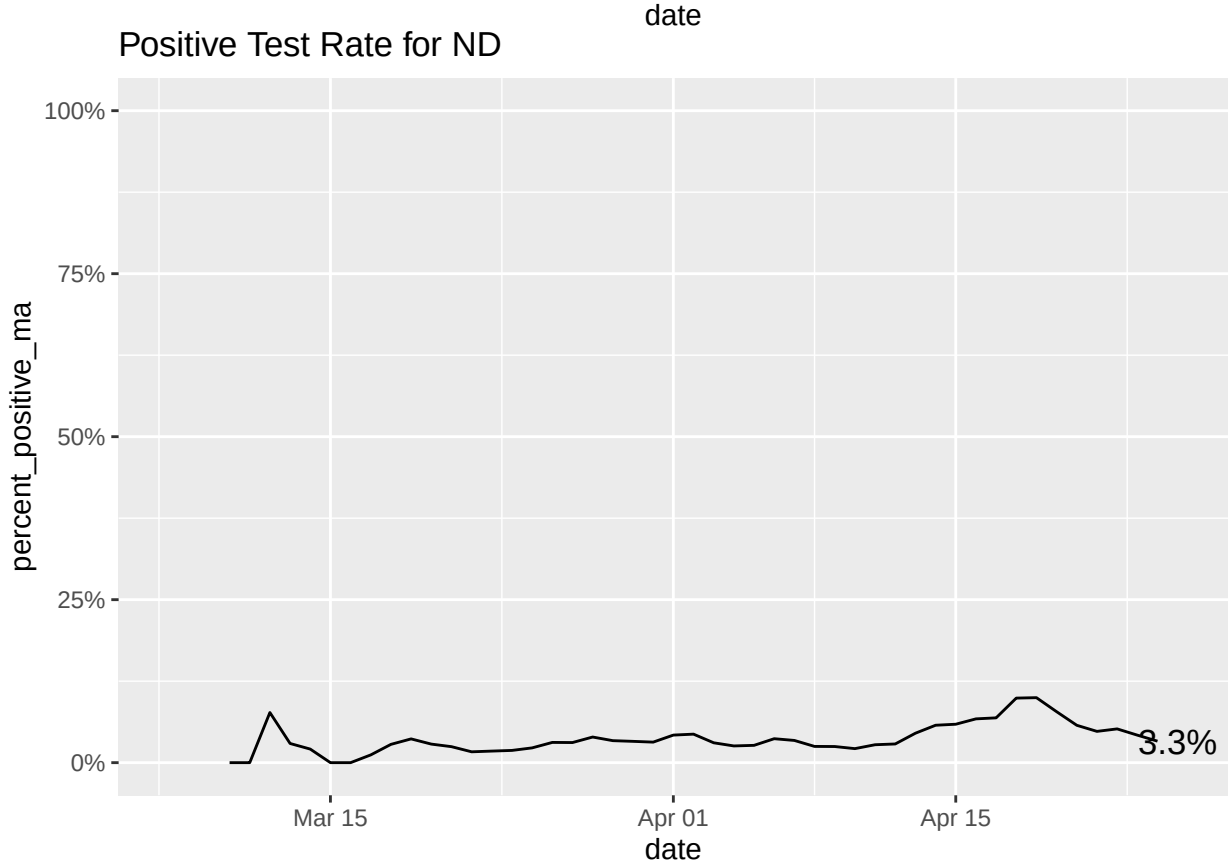

Positive Test Rate for MO
100%
75%
50%
25%
0%
percent_positive_ma
7.6%
Mar 15
Apr 01
Apr 15
date

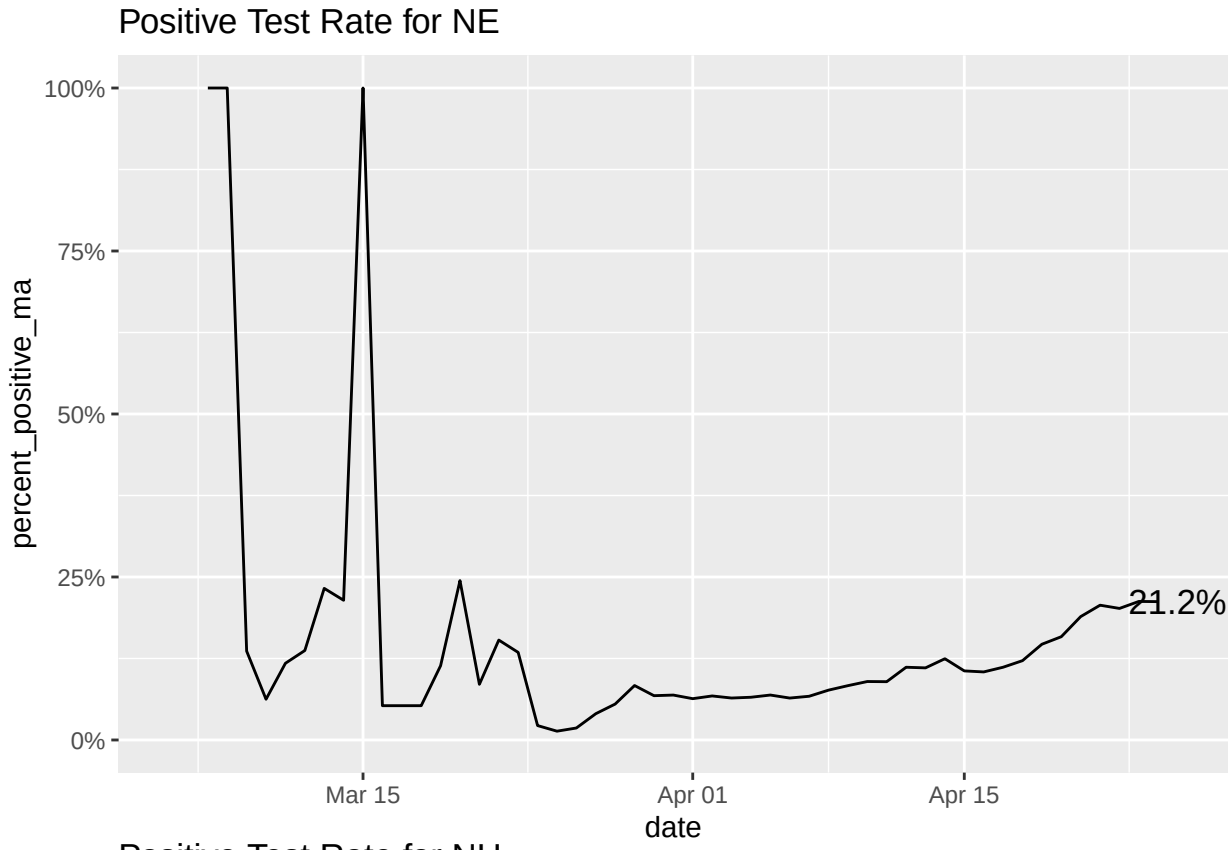

Positive Test Rate for MP
100%
75%
50%
25%
0%
percent_positive_ma
Mar 15
Apr 01
Apr 15
date

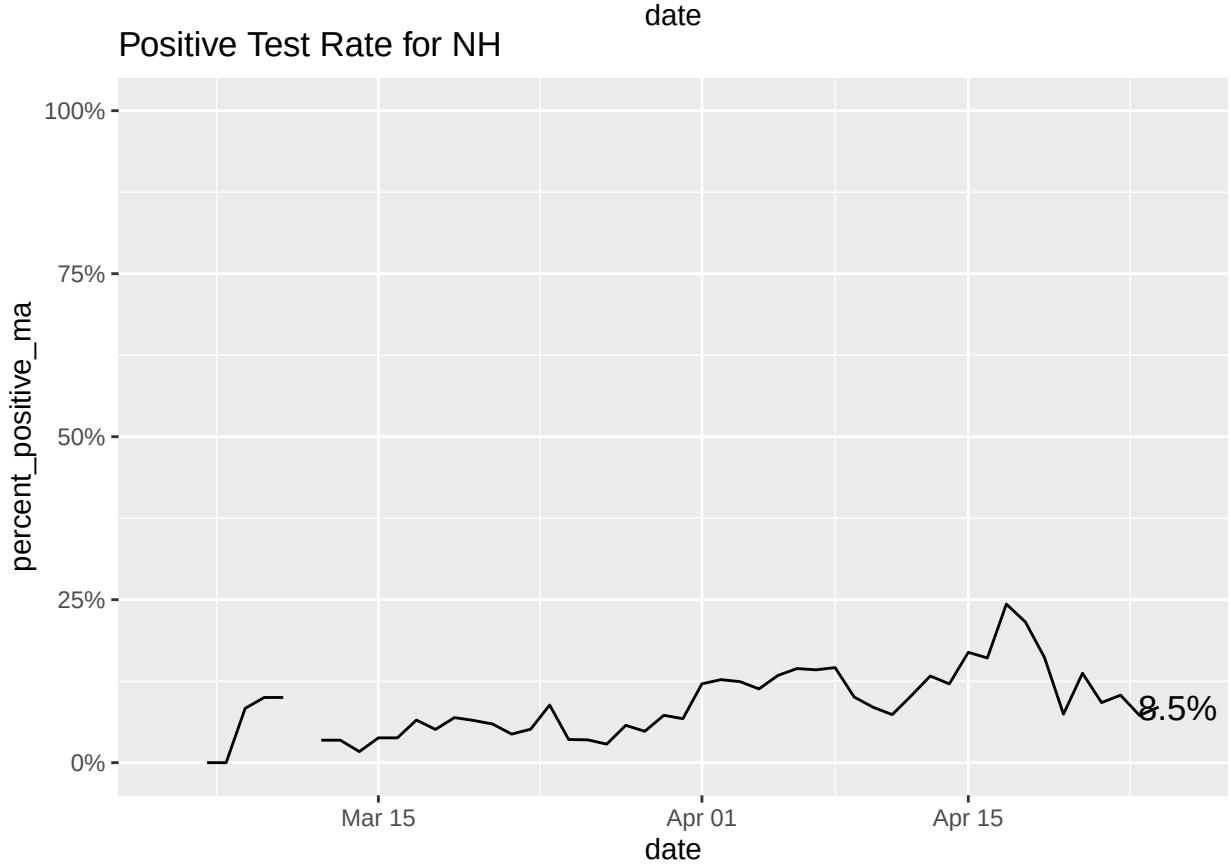

Positive Test Rate for MS
100%
75%
50%
25%
0%
percent_positive_ma
16.1%
Mar 15
Apr 01
Apr 15
date

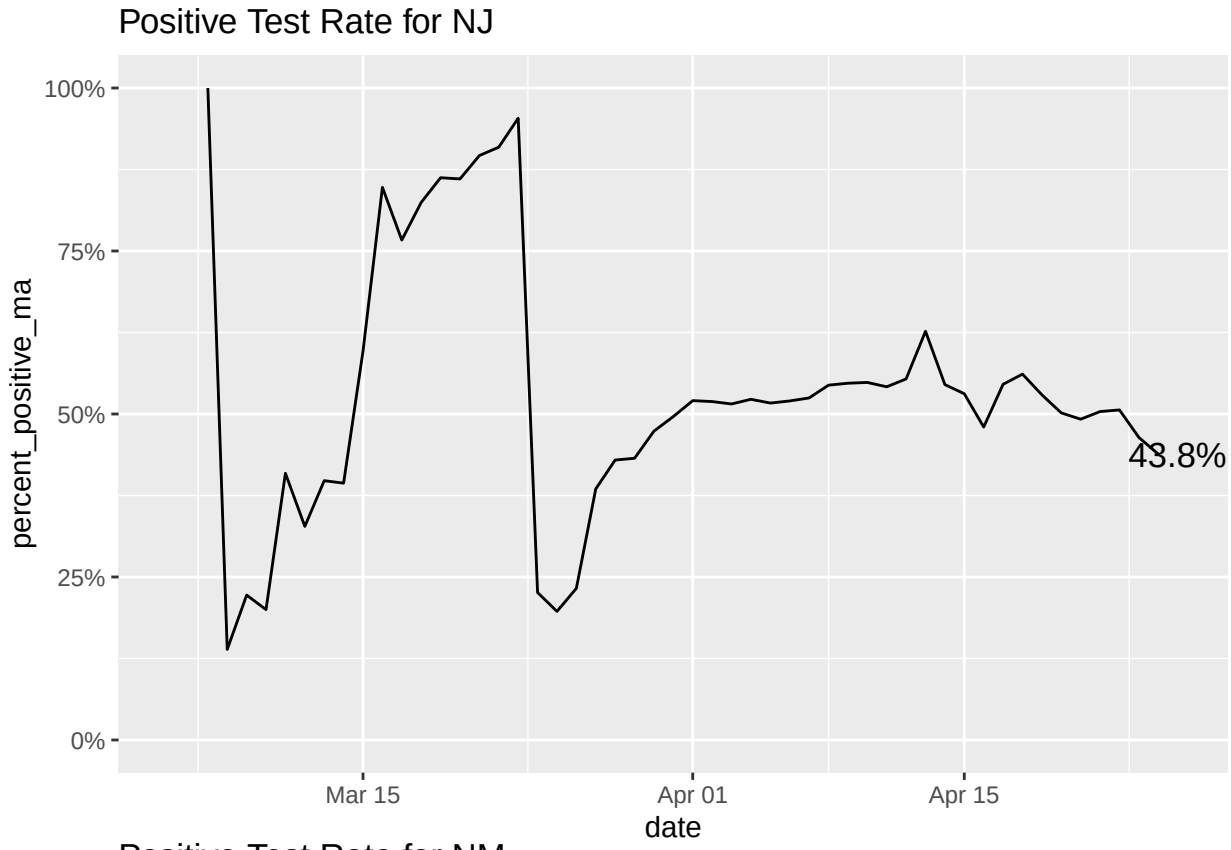

Positive Test Rate for MT
100%
75%
50%
25%
0%
percent_positive_ma
0.7%
Mar 15
Apr 01
Apr 15
date

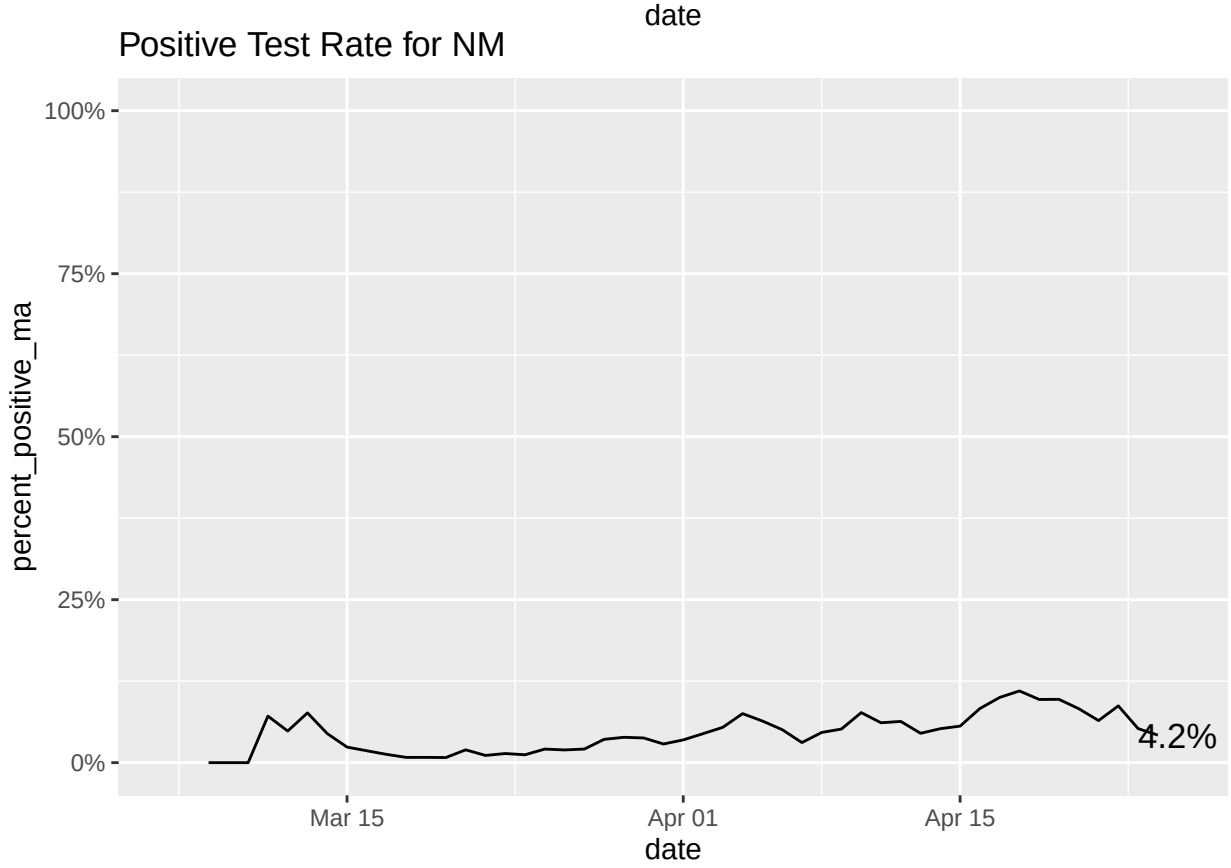

Positive Test Rate for NC
100%
75%
50%
25%
0%
percent_positive_ma
Mar 15
Apr 01
Apr 15
date
9.4%

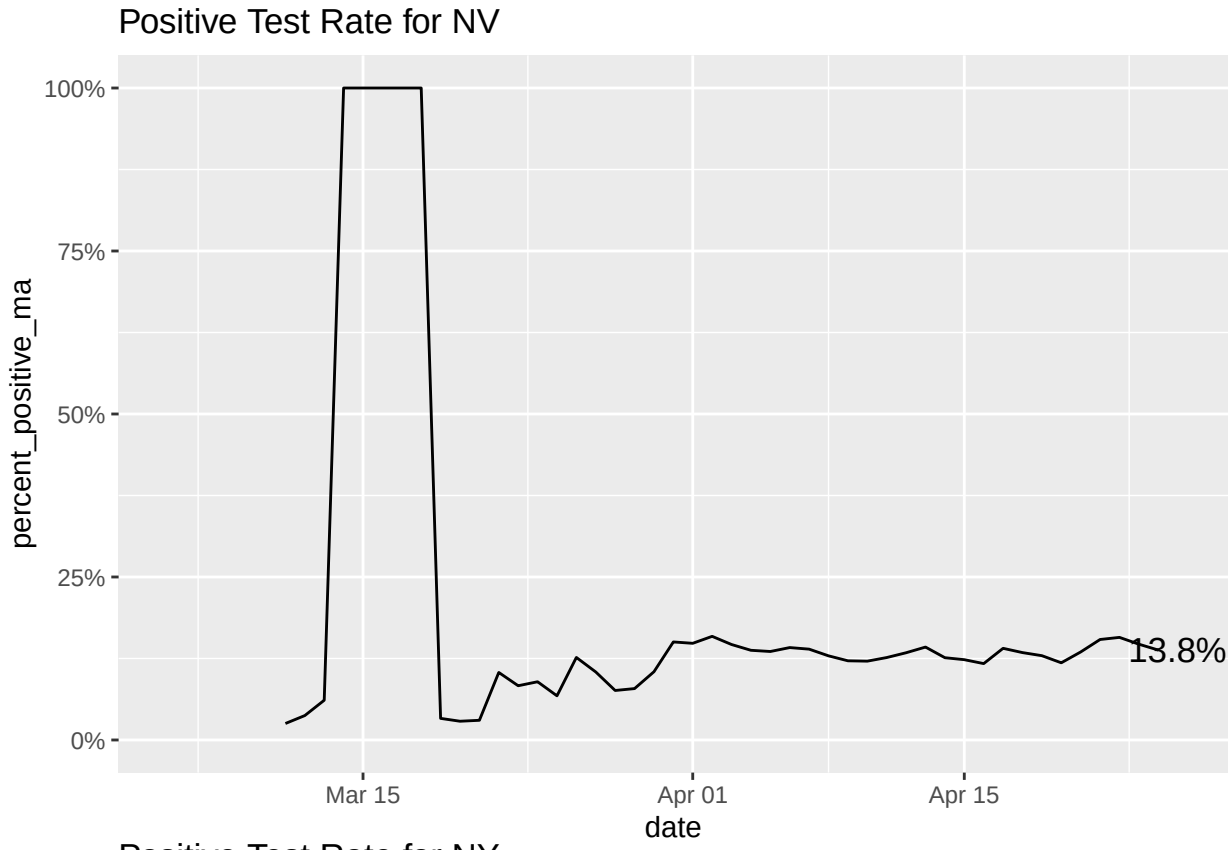

Positive Test Rate for ND
100%
75%
50%
25%
0%
percent_positive_ma
Mar 15
Apr 01
Apr 15
date
3.3%

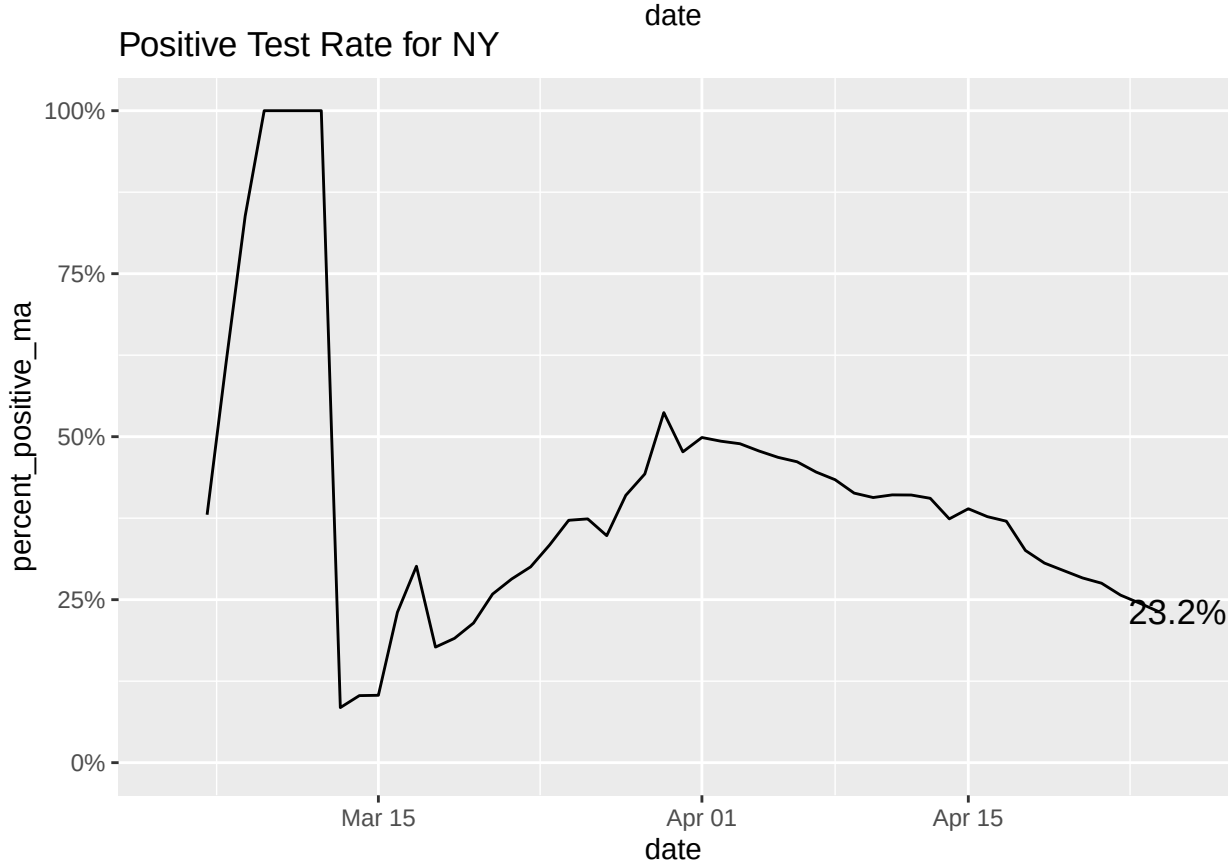

Positive Test Rate for NE
100%
75%
50%
25%
0%
percent_positive_ma
21.2%
Mar 15
Apr 01
Apr 15
date

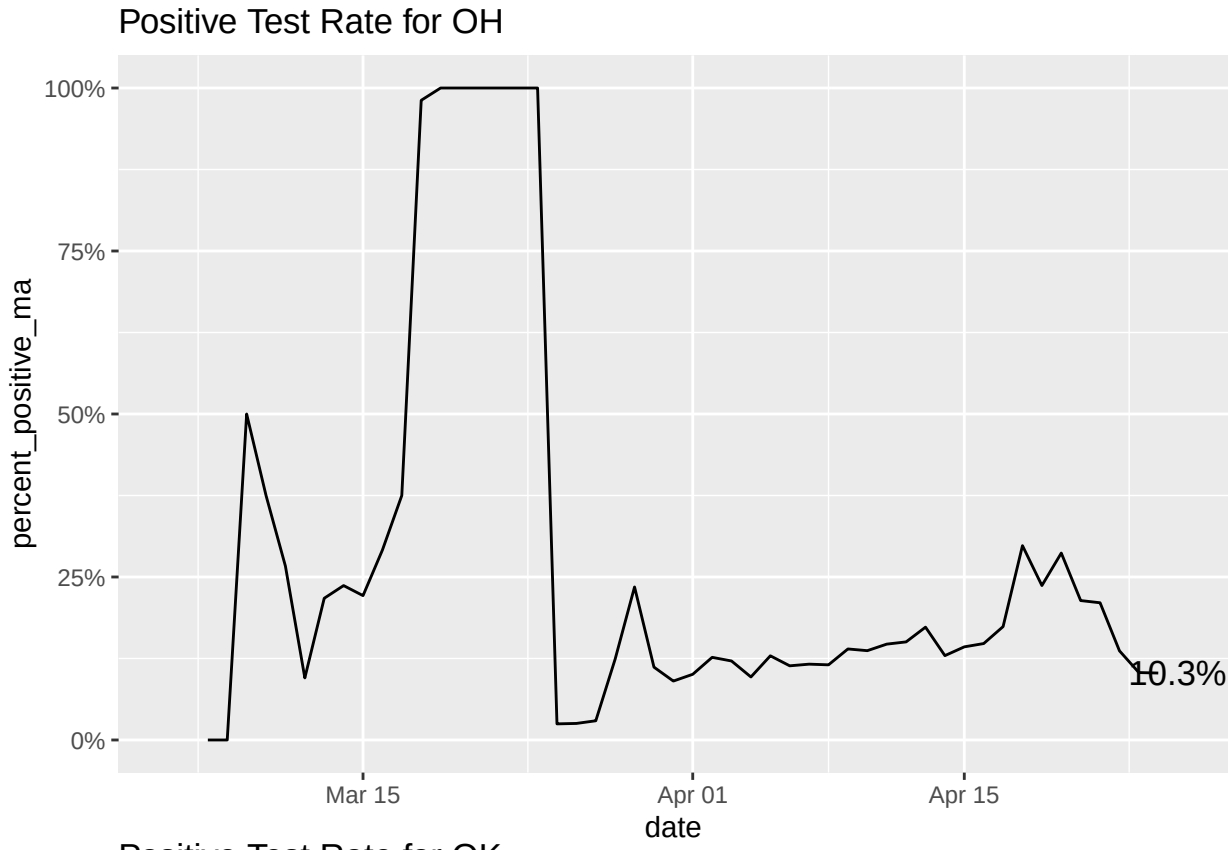

Positive Test Rate for NH
100%
75%
50%
25%
0%
percent_positive_ma
8.5%
Mar 15
Apr 01
Apr 15
date

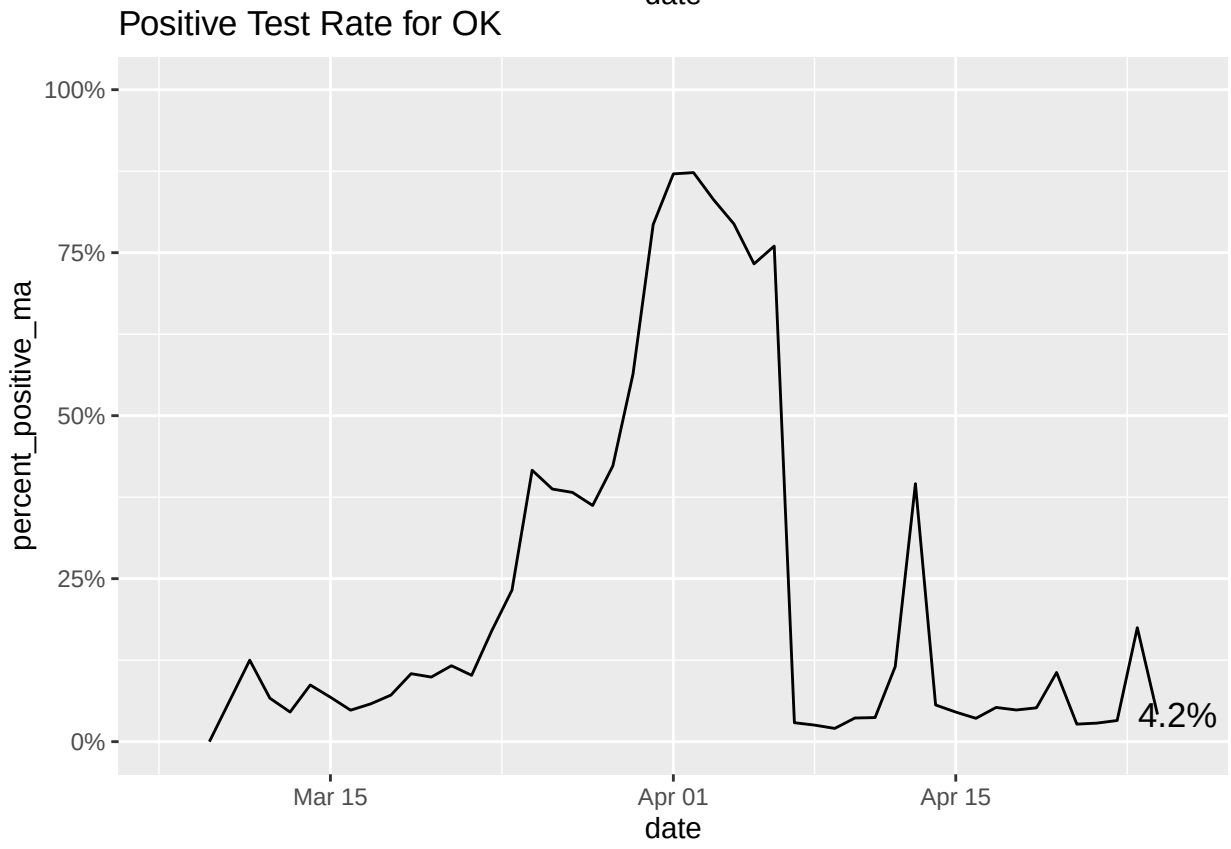

Positive Test Rate for NJ
100%
75%
50%
25%
0%
percent_positive_ma
43.8%
Mar 15
Apr 01
Apr 15
date

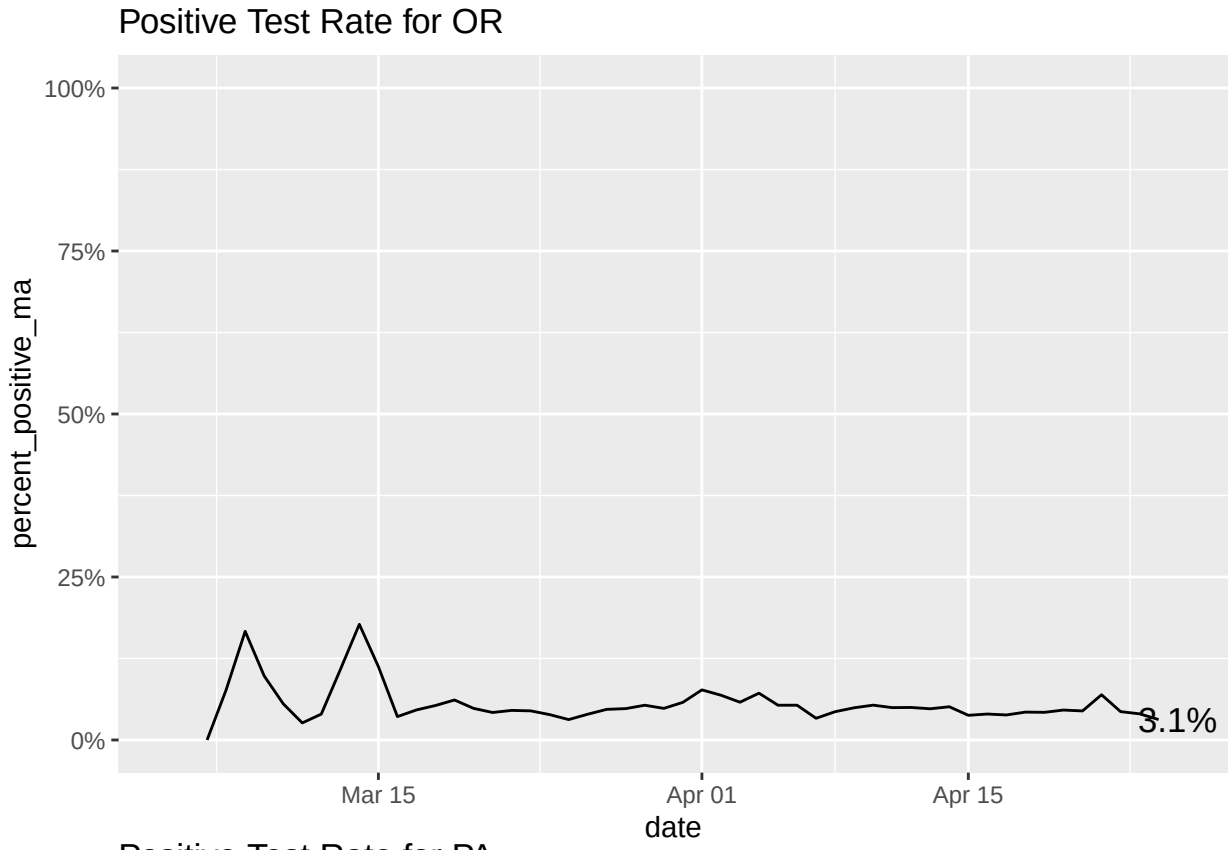

Positive Test Rate for NM
100%
75%
50%
25%
0%
percent_positive_ma
4.2%
Mar 15
Apr 01
Apr 15
date

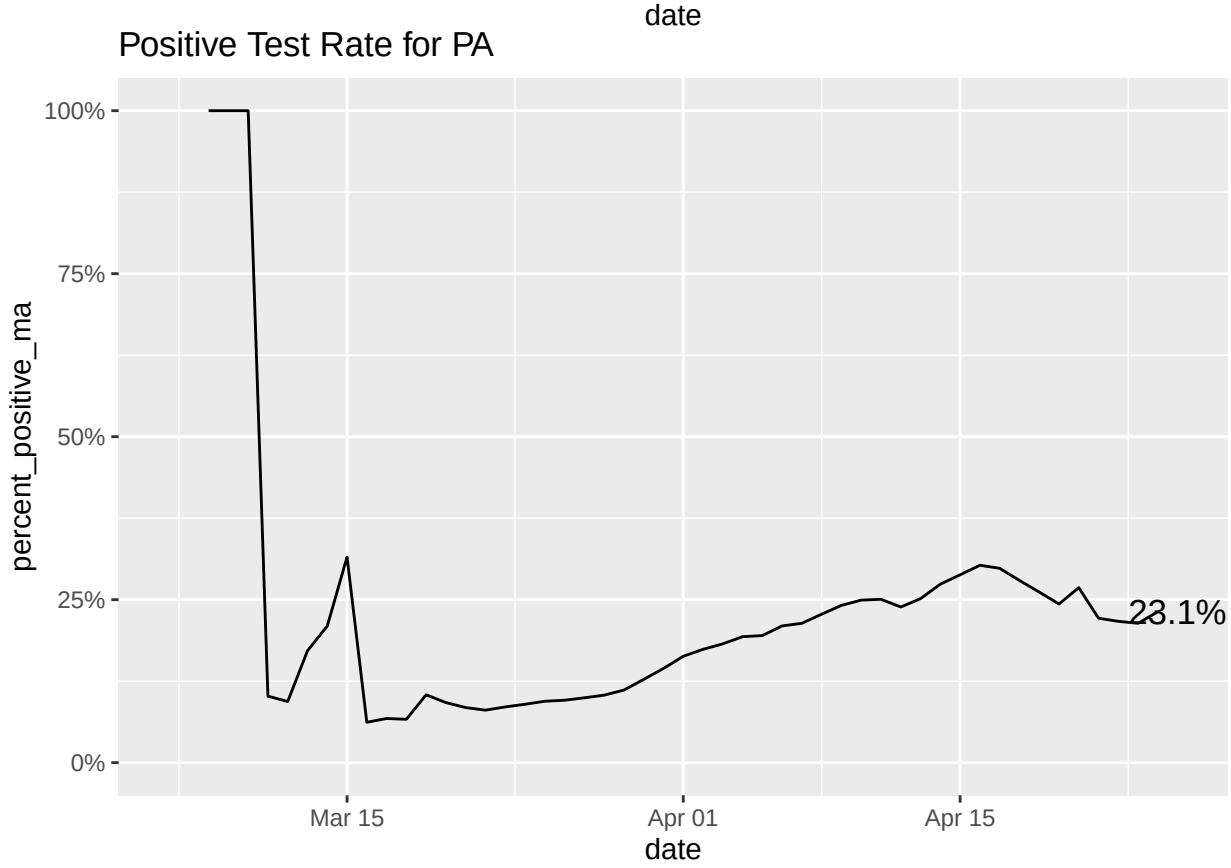

Positive Test Rate for NV
100%
75%
50%
25%
0%
percent_positive_ma
13.8%
Mar 15
Apr 01
Apr 15
date

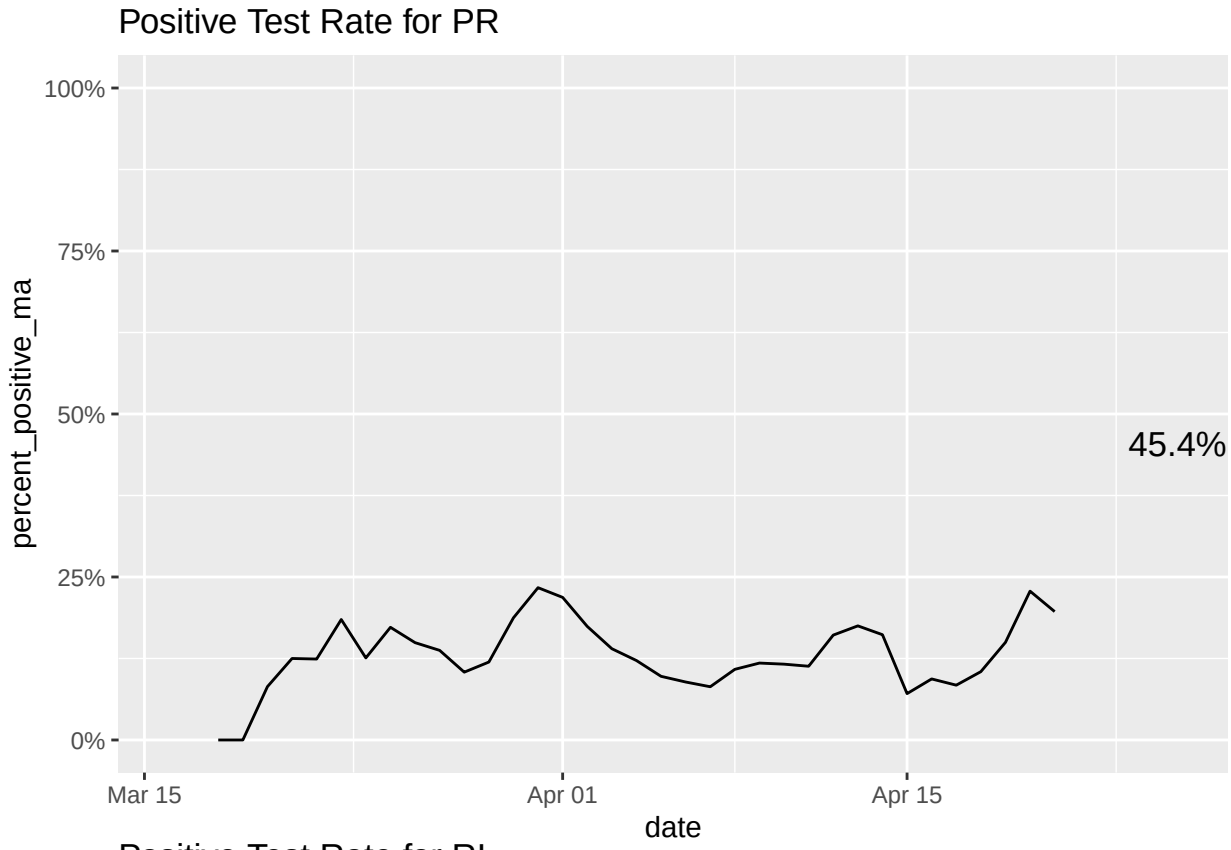

Positive Test Rate for NY
100%
75%
50%
25%
0%
percent_positive_ma
23.2%
Mar 15
Apr 01
Apr 15
date

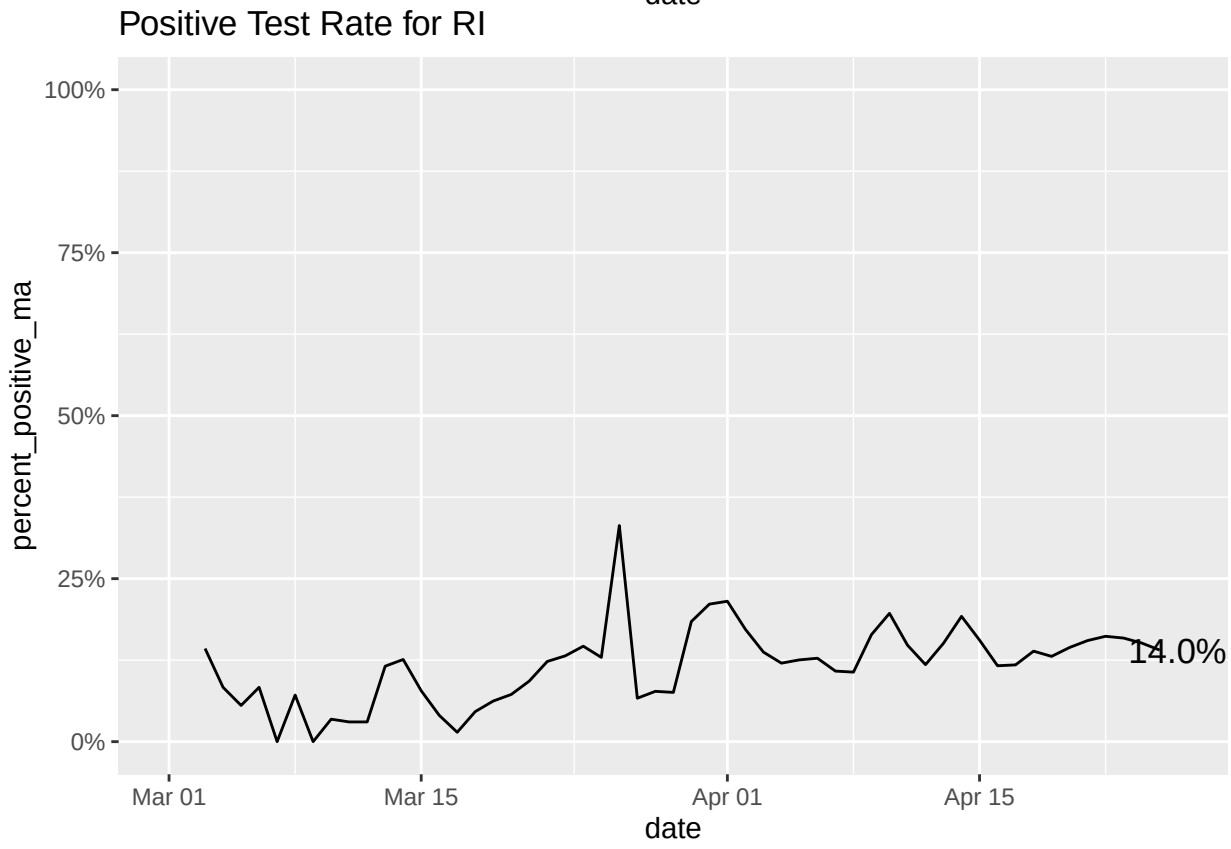

Positive Test Rate for OH
100%
75%
50%
25%
0%
percent_positive_ma
10.3%
Mar 15
Apr 01
Apr 15
date

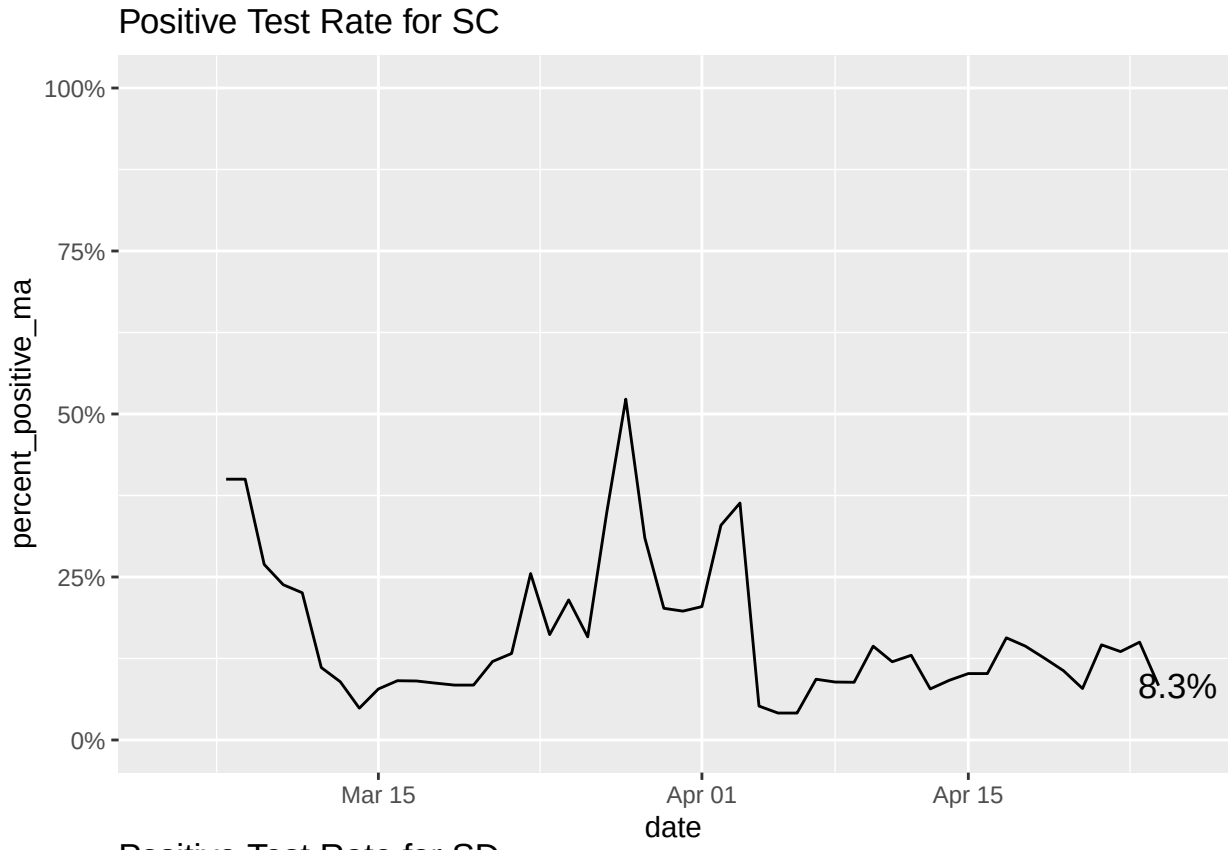

Positive Test Rate for OK
100%
75%
50%
25%
0%
percent_positive_ma
4.2%
Mar 15
Apr 01
Apr 15
date

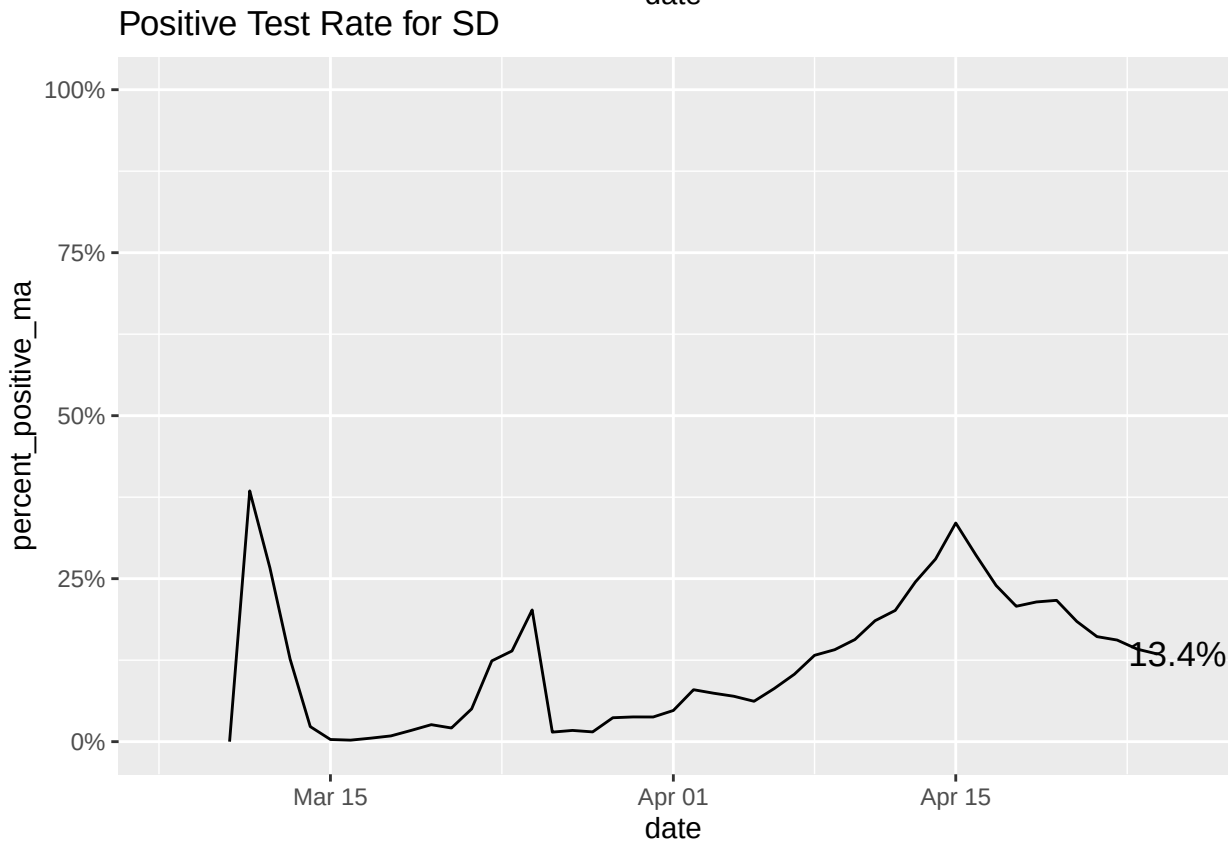

Positive Test Rate for OR
100%
75%
50%
25%
0%
percent_positive_ma
3.1%
Mar 15
Apr 01
Apr 15
date

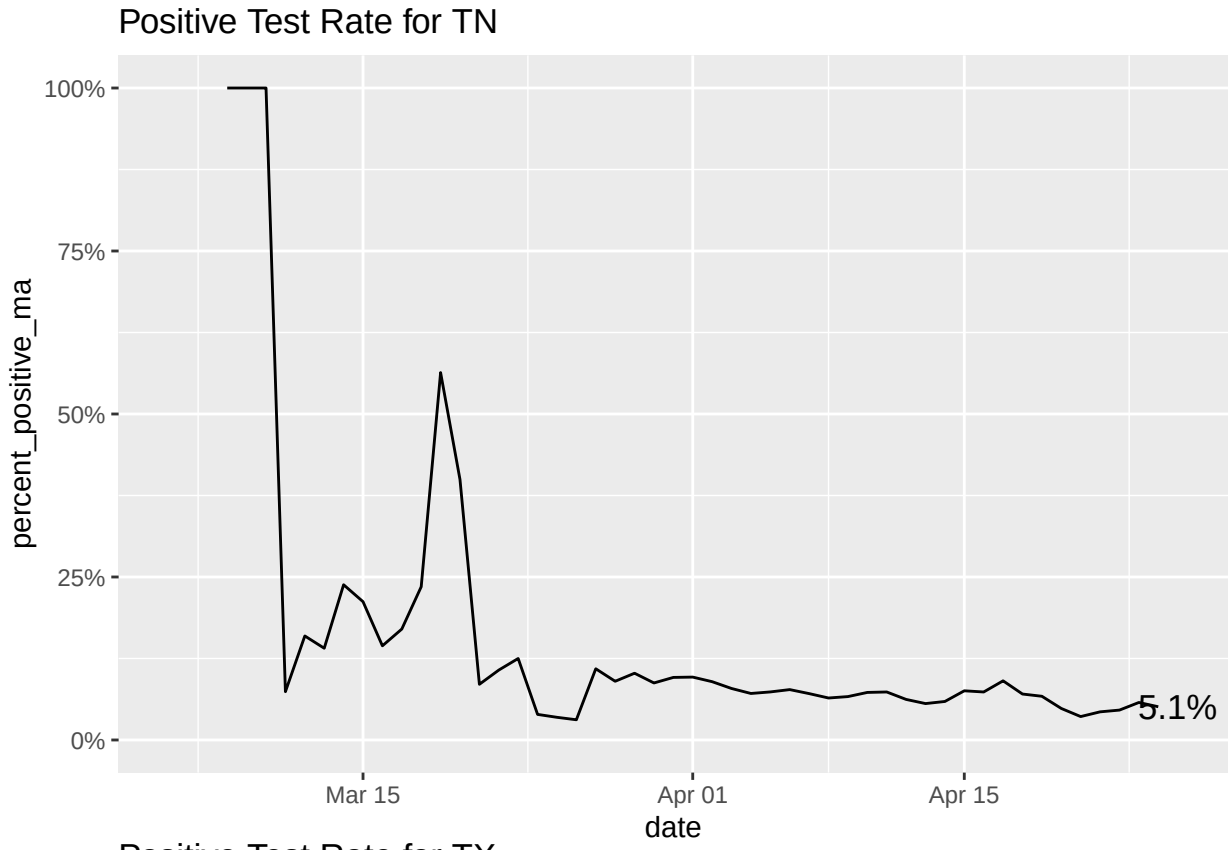

Positive Test Rate for PA
100%
75%
50%
25%
0%
percent_positive_ma
23.1%
Mar 15
Apr 01
Apr 15
date

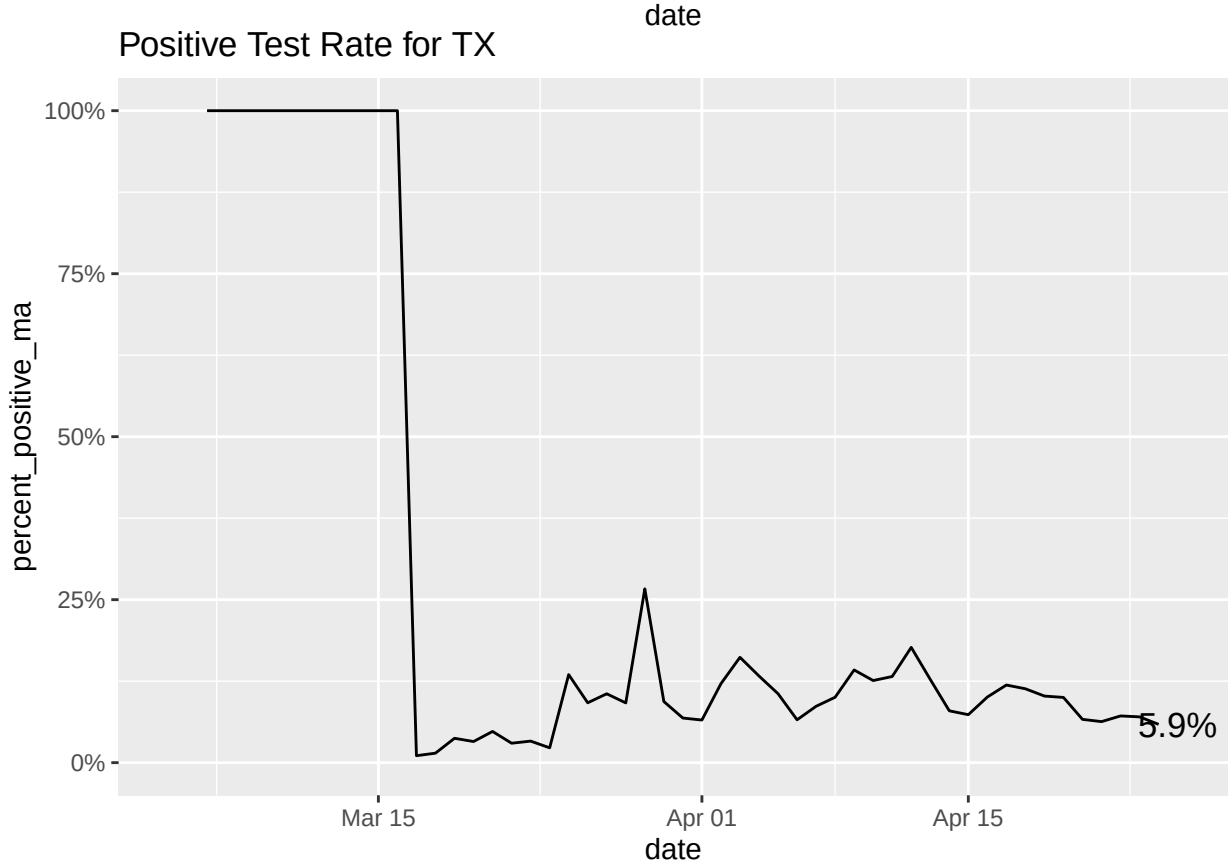

Positive Test Rate for PR
100%
75%
50%
25%
0%
percent_positive_ma
45.4%
Mar 15
Apr 01
Apr 15
date

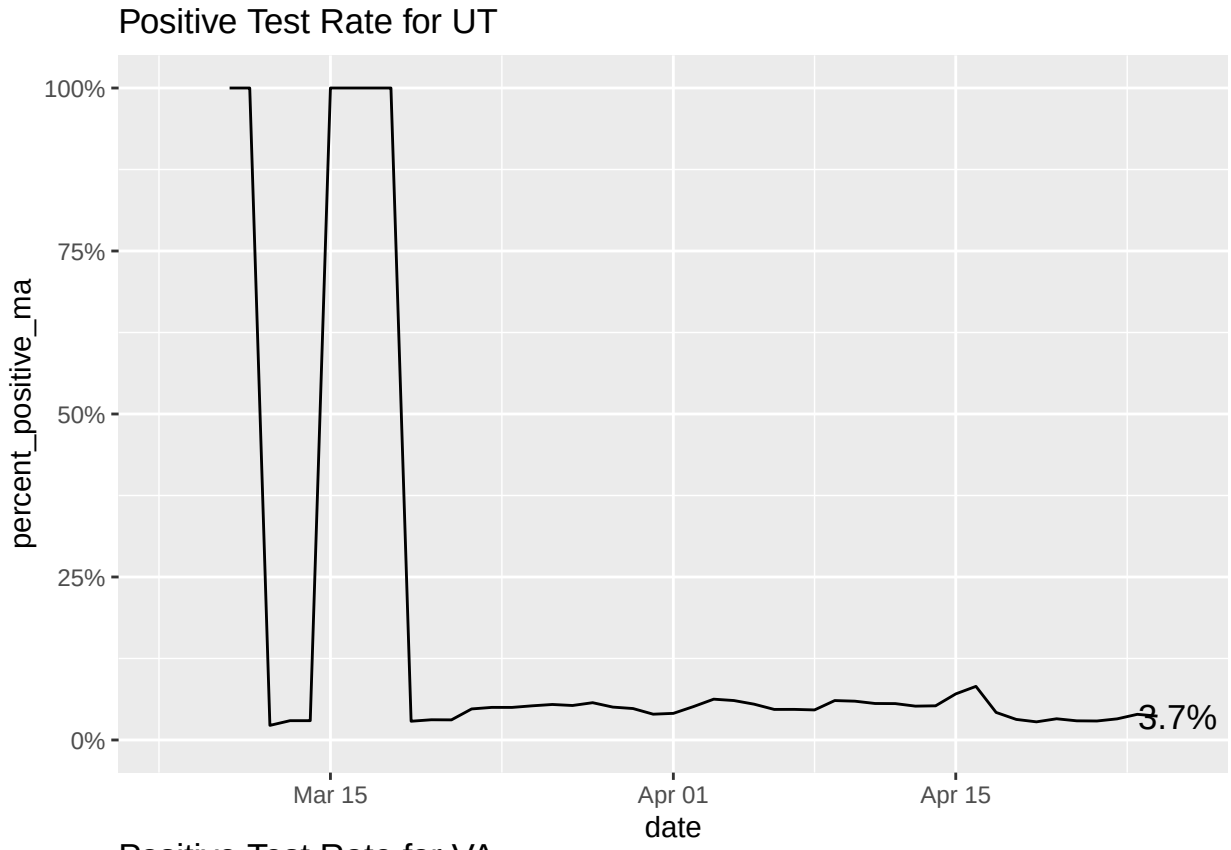

Positive Test Rate for RI
100%
75%
50%
25%
0%
percent_positive_ma
14.0%
Mar 01
Mar 15
Apr 01
Apr 15
date

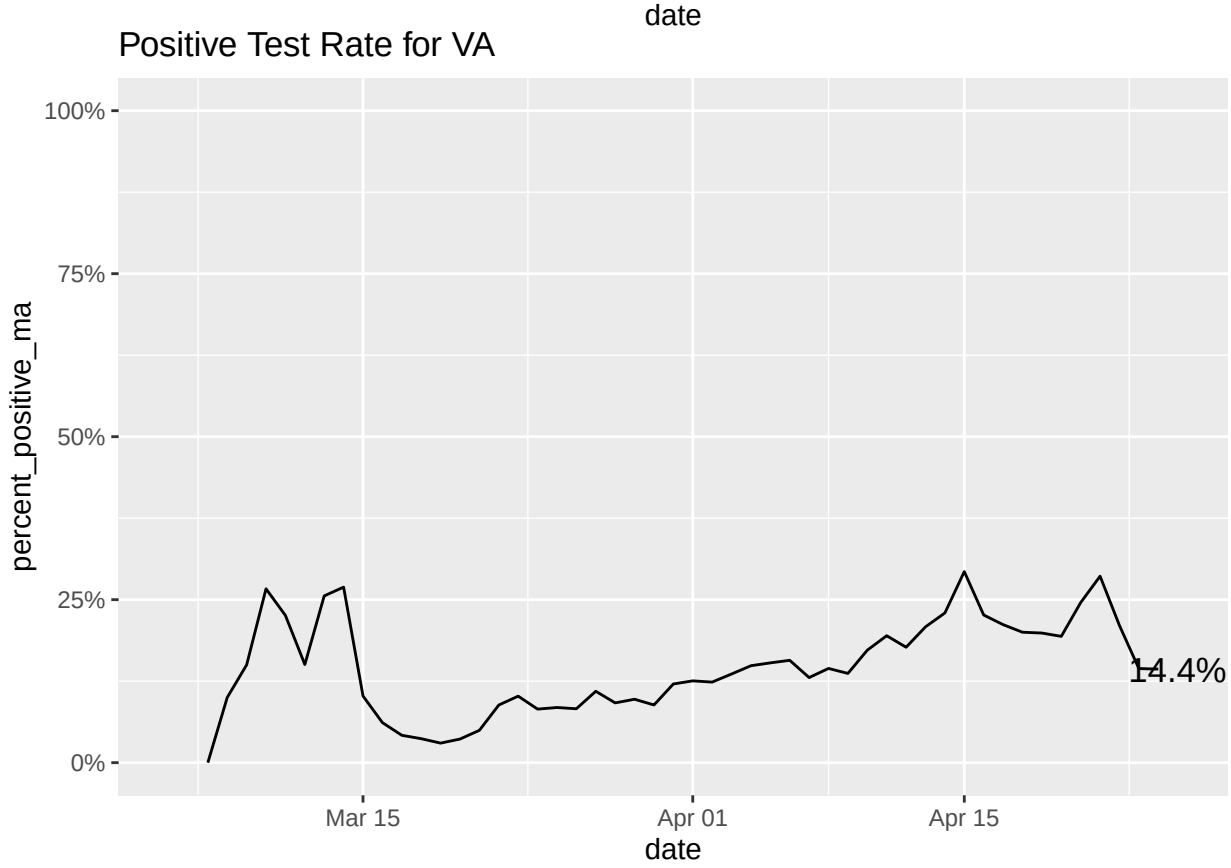

Positive Test Rate for SC
100%
75%
50%
25%
0%
percent_positive_ma
8.3%
Mar 15
Apr 01
Apr 15
date

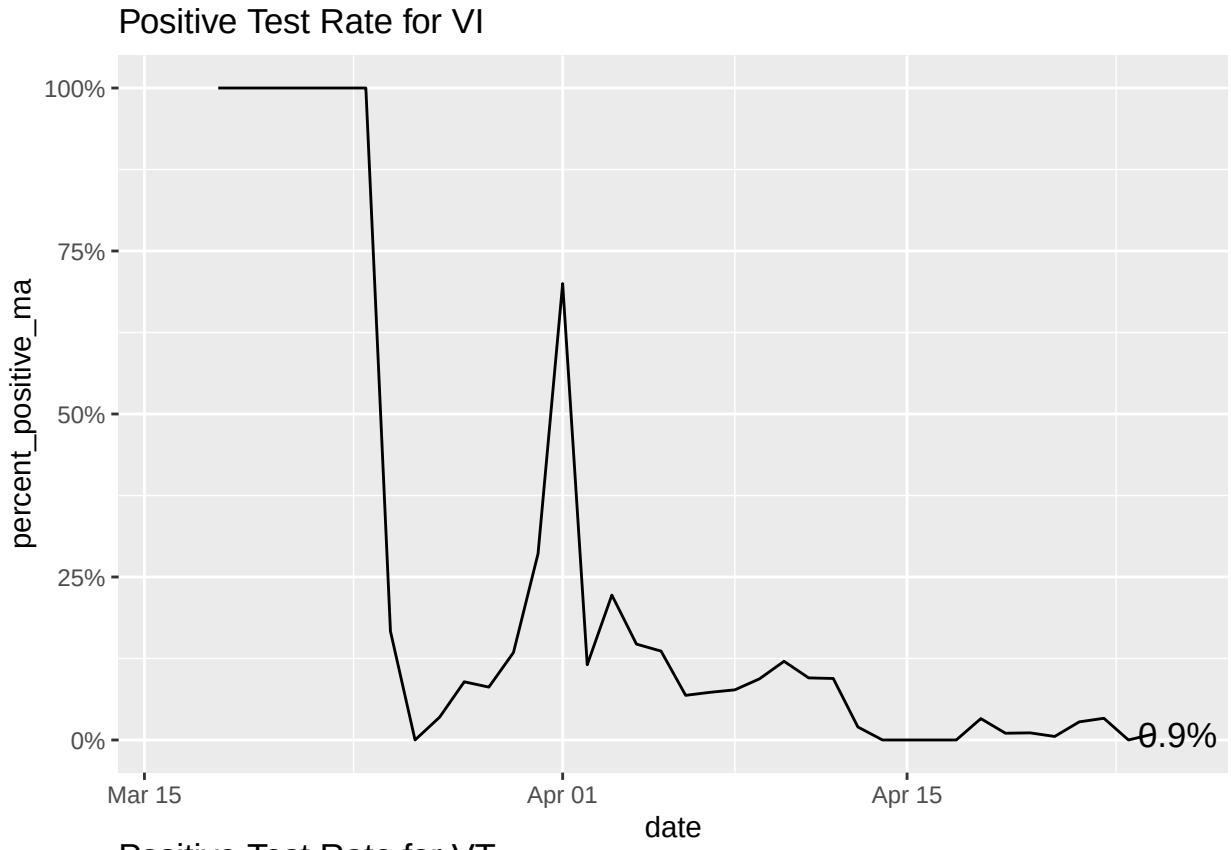

Positive Test Rate for SD
100%
75%
50%
25%
0%
percent_positive_ma
13.4%
Mar 15
Apr 01
Apr 15
date

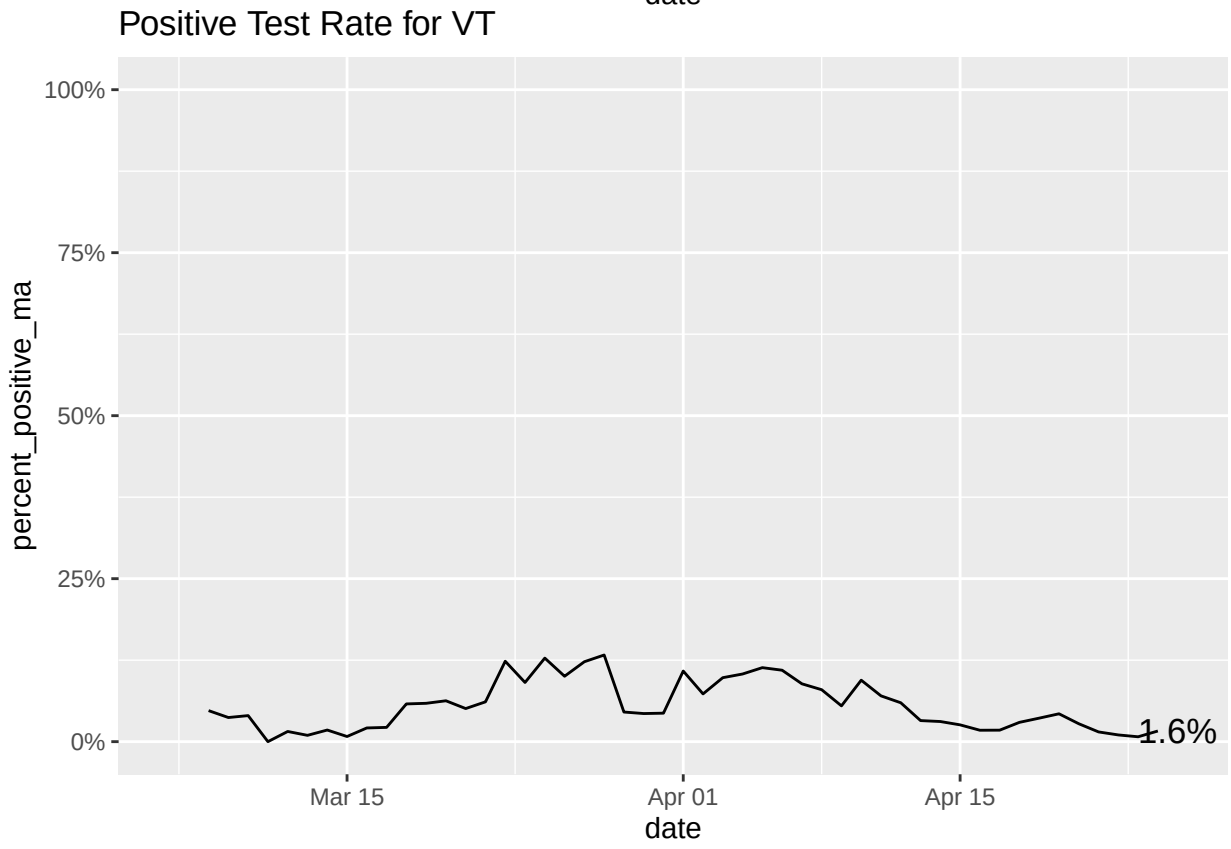

Positive Test Rate for TN
100%
75%
50%
25%
0%
percent_positive_ma
Mar 15
Apr 01
Apr 15
date
5.1%

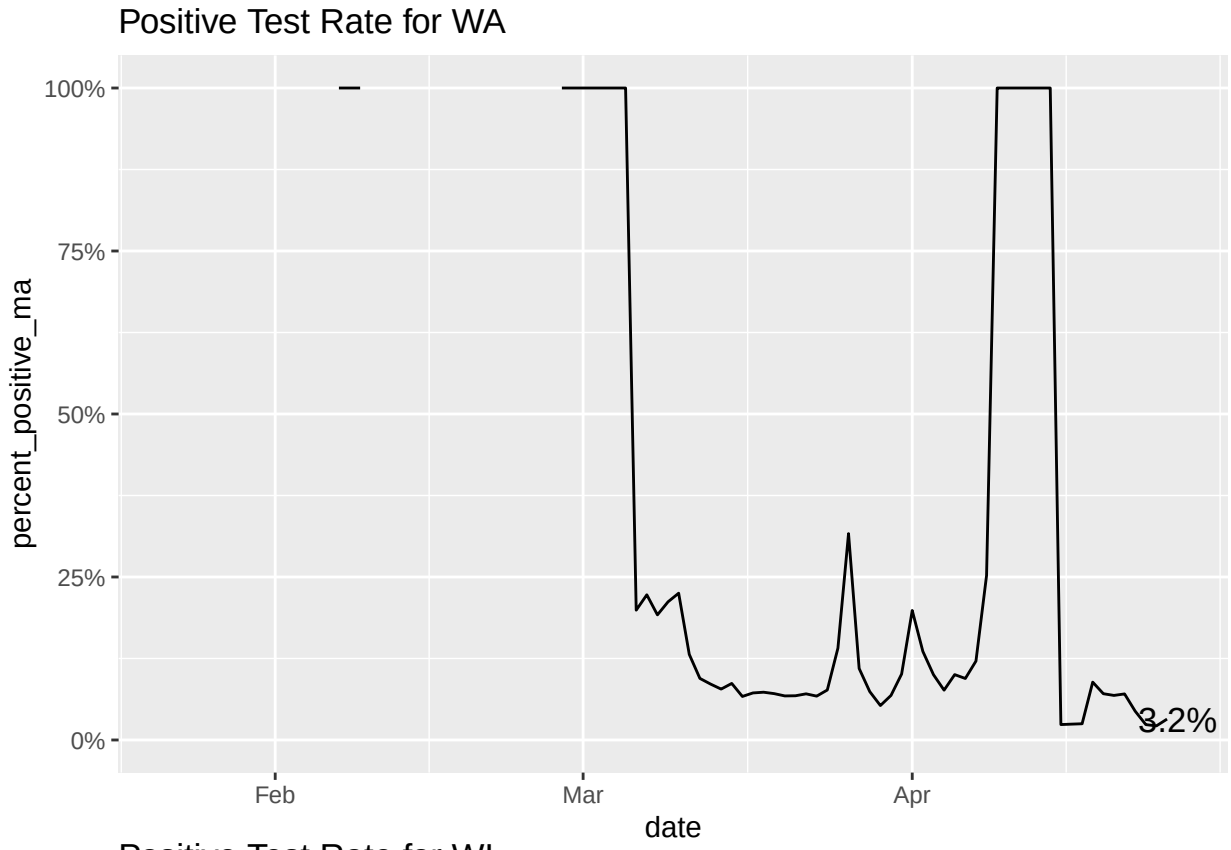

Positive Test Rate for TX
100%
75%
50%
25%
0%
percent_positive_ma
Mar 15
Apr 01
Apr 15
date
5.9%

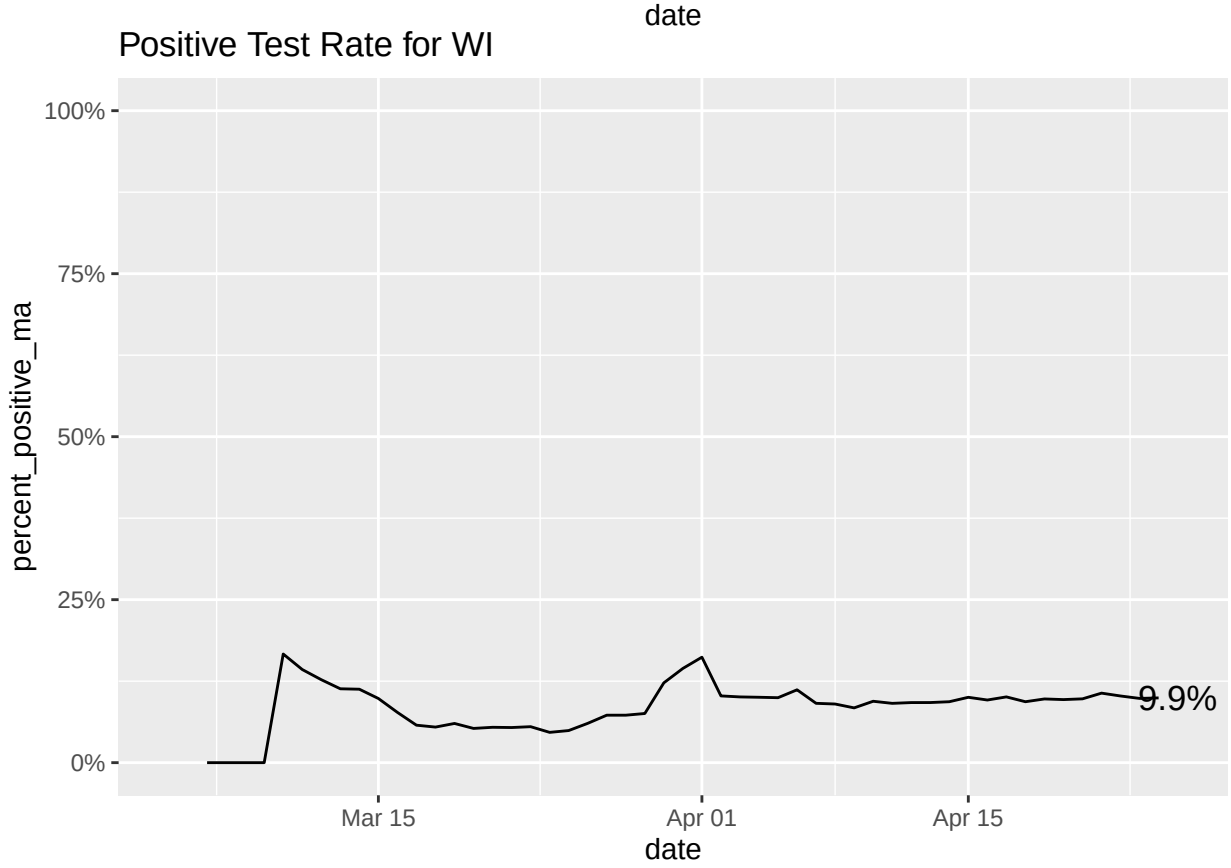

Positive Test Rate for UT
100%
75%
50%
25%
0%
percent_positive_ma
3.7%
Mar 15
Apr 01
Apr 15
date

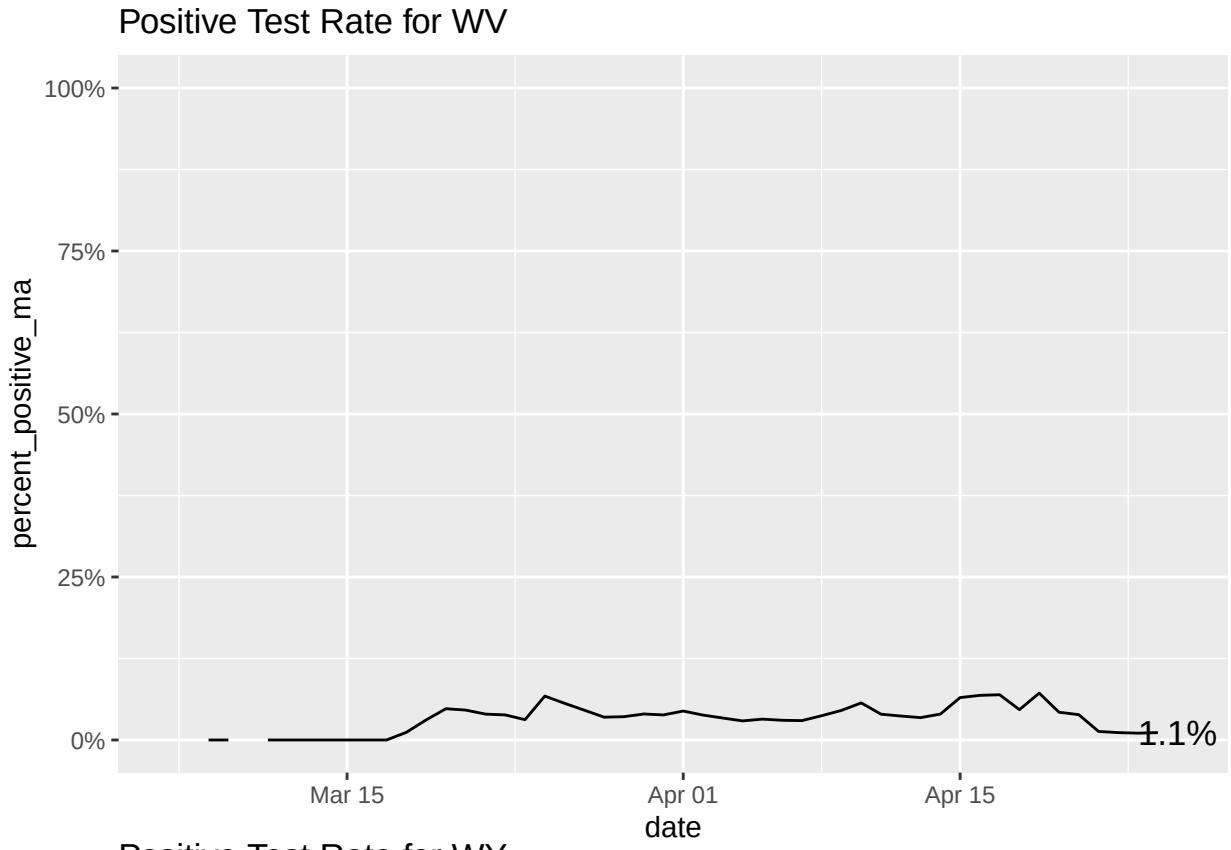

Positive Test Rate for VA
100%
75%
50%
25%
0%
percent_positive_ma
14.4%
Mar 15
Apr 01
Apr 15
date

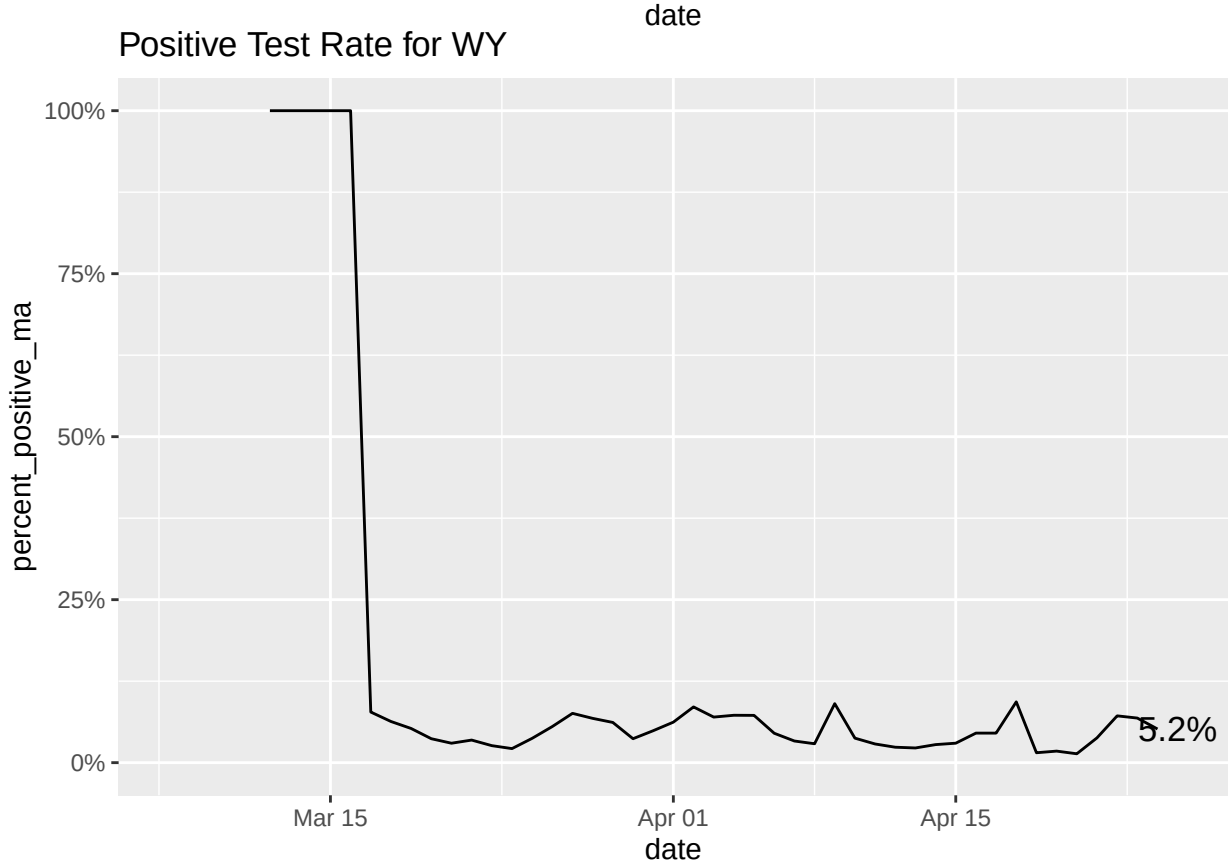

Positive Test Rate for VI
100%
75%
50%
25%
0%
percent_positive_ma
0.9%
Mar 15
Apr 01
Apr 15
date


Positive Test Rate for VT
100%
75%
50%
25%
0%
percent_positive_ma
1.6%
Mar 15
Apr 01
Apr 15
date


Positive Test Rate for WA
100%
75%
50%
25%
0%
percent_positive_ma
Feb
Mar
Apr
date
3.2%


Positive Test Rate for WI
100%
75%
50%
25%
0%
percent_positive_ma
Mar 15
Apr 01
Apr 15
date
9.9%


Positive Test Rate for WV
100%
75%
50%
25%
0%
percent_positive_ma
Mar 15
Apr 01
Apr 15
date
1.1%


Positive Test Rate for WY
100%
75%
50%
25%
0%
percent_positive_ma
Mar 15
Apr 01
Apr 15
date
5.2%

States Plotted by Percent Currently Infected vs. Est'd R0

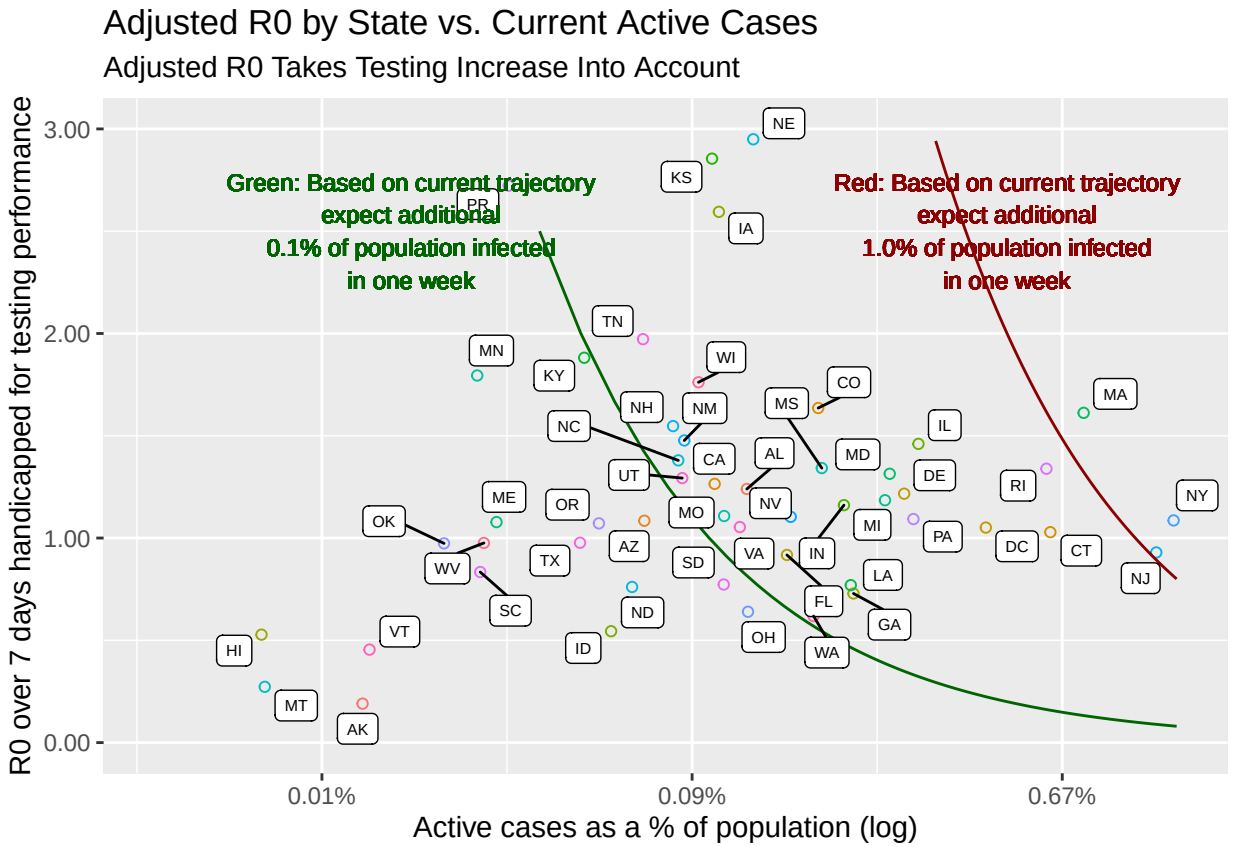
```
state_pop <- read.csv("https://raw.githubusercontent.com/jakevdp/data-USstates/master/state-population.
state_pop <- state_pop %>%  filter(ages == "total", year == 2013)
colnames(state_pop)[1] <- "state"

state_historical_testing_df_2 <- state_historical_testing_df %>%
  inner_join(state_pop, by = 'state')
```

```
## Warning: Column `state` joining factor and character vector, coercing into
## character vector
```

```
state_historical_testing_df_2$death[is.na(state_historical_testing_df_2$death)] <- 0
state_historical_testing_df_2$recovered[is.na(state_historical_testing_df_2$recovered)] <- 0

state_historical_testing_df_2 <- state_historical_testing_df_2 %>%
  mutate(active_cases = positive - recovered - death,
         active_cases = ifelse(active_cases <=0, 100, active_cases),
         active_per_pop = active_cases / population,
         adj_r0_7 = ifelse(r0_7 <=0, 0.01, r0_7))

current_state <- state_historical_testing_df_2 %>%
  group_by(state) %>%
  filter(date == max(date))

active_per_pop = seq(.0001,.02, by = .0001)
r0_7 = .001 / active_per_pop

point_one_percent = data.frame(active_per_pop, r0_7)

active_per_pop = seq(.0001,.02, by = .0001)
r0_7 = .01 / active_per_pop

one_percent = data.frame(active_per_pop, r0_7)



library(ggrepel)
r0_plot <- ggplot(data = current_state, aes(x=active_per_pop)) +
  ggtitle(label = "Adjusted R0 by State vs. Current Active Cases", subtitle = "Adjusted R0 Takes Testing
  geom_point(shape=1, show.legend = FALSE, (aes(y=adj_r0_7, color = state))) +
  scale_y_continuous(labels = scales::number_format(accuracy = 0.01,
                                decimal.mark = '.'), limits = c(0,3)) +
  geom_line(data = point_one_percent, aes(y=r0_7, x = active_per_pop), color = "darkgreen") +
  geom_line(data = one_percent, aes(y=r0_7, x = active_per_pop), color = "darkred") +
  scale_x_continuous(labels = scales::percent_format(accuracy = .01), limits = c(0.00005,.0125), trans =
  geom_label_repel(data=  current_state, aes(x=active_per_pop, y=adj_r0_7, label = state), size = 2) +
  theme(legend.position = "none") +
  labs(y = "R0 over 7 days handicapped for testing performance", x = "Active cases as a % of population
  geom_text(aes(x = .0002, y =2.5, label = "Green: Based on current trajectory\n expect additional \n 0
  geom_text(aes(x = .005, y =2.5, label = "Red: Based on current trajectory\n expect additional \n 1.0%

r0_plot
```

```
## Warning: Removed 2 rows containing missing values (geom_point).
```

```
## Warning: Removed 78 row(s) containing missing values (geom_path).
## Warning: Removed 108 row(s) containing missing values (geom_path).
## Warning: Removed 2 rows containing missing values (geom_label_repel).
```




```
ggsave( "r0_plot.png", r0_plot)
```

```
## Saving 6.5 x 4.5 in image
## Warning: Removed 2 rows containing missing values (geom_point).
## Warning: Removed 78 row(s) containing missing values (geom_path).
## Warning: Removed 108 row(s) containing missing values (geom_path).
## Warning: Removed 2 rows containing missing values (geom_label_repel).
```