

Argentina Covid Report

Chris Andino

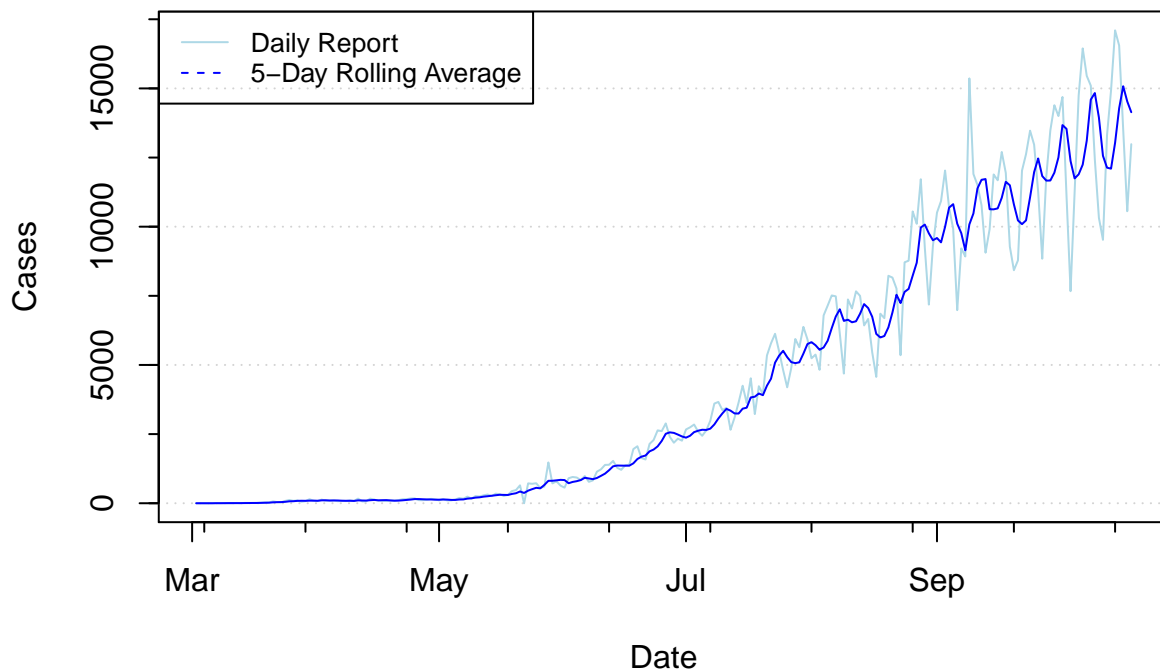
October 14 2020

Data as of 9:40 am 20-OCT-2020

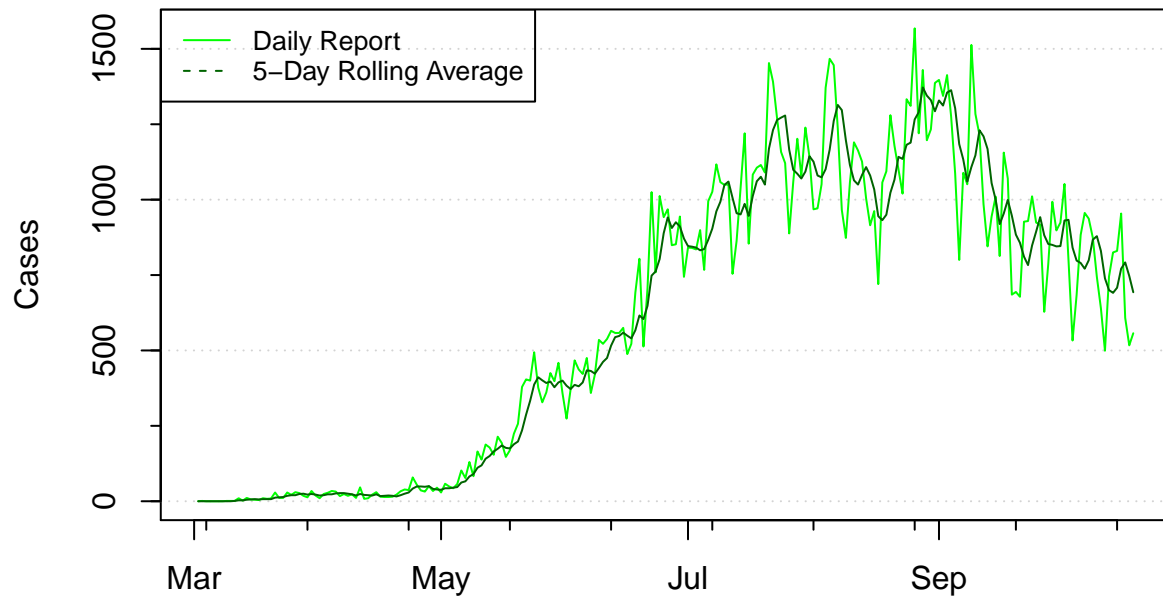
New Cases

The following graphs show the overall epidemiological curves in the localities based on simple “new cases per day” as reported. Note that date of case report DOES NOT equal date of first symptoms or diagnosis, necessarily. Rather, this data is the change in cases from the previous day’s report:

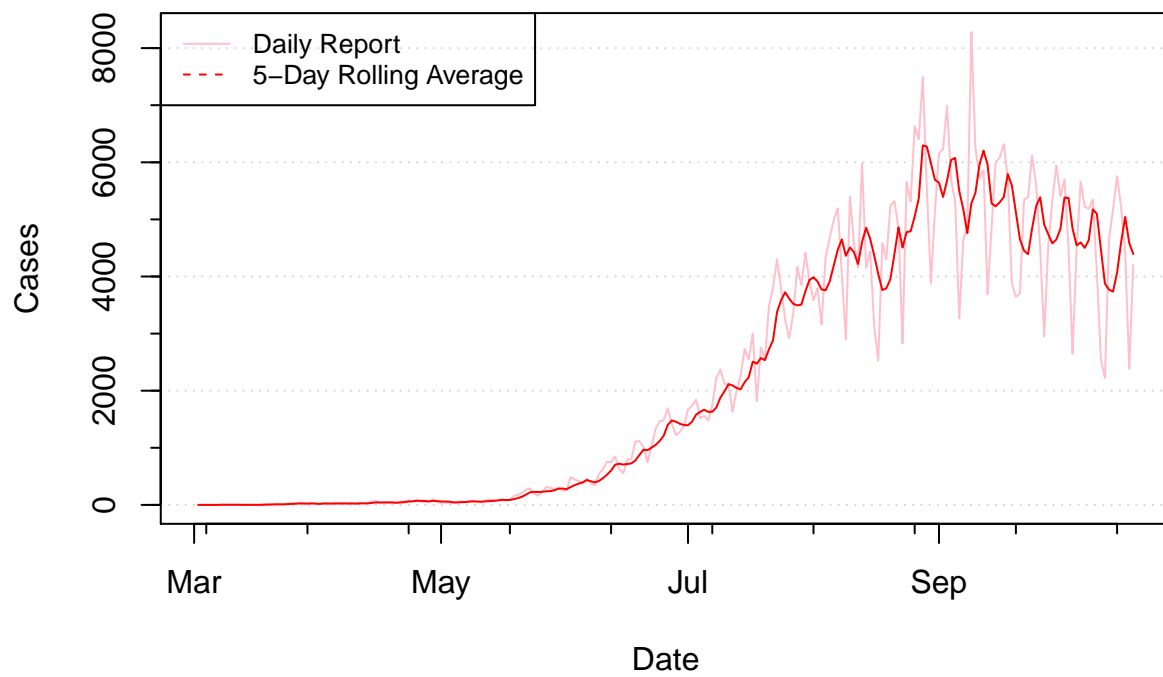
Daily new cases, Argentina



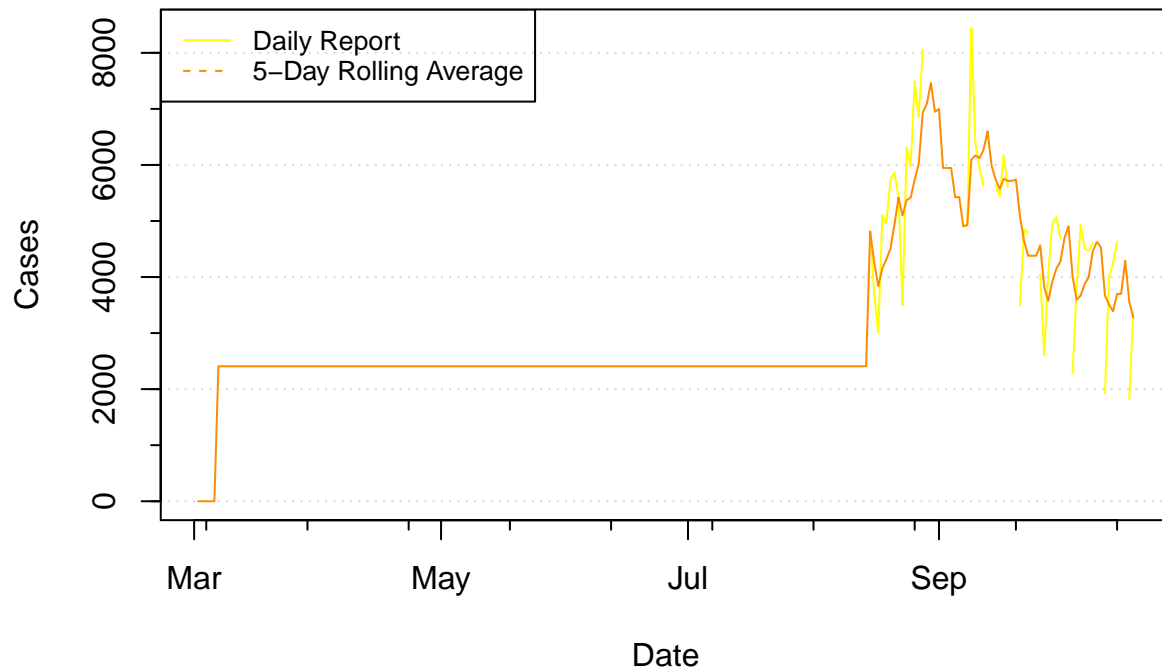
Daily new cases, CABA



Daily new cases, PBA



Daily new cases, AMBA



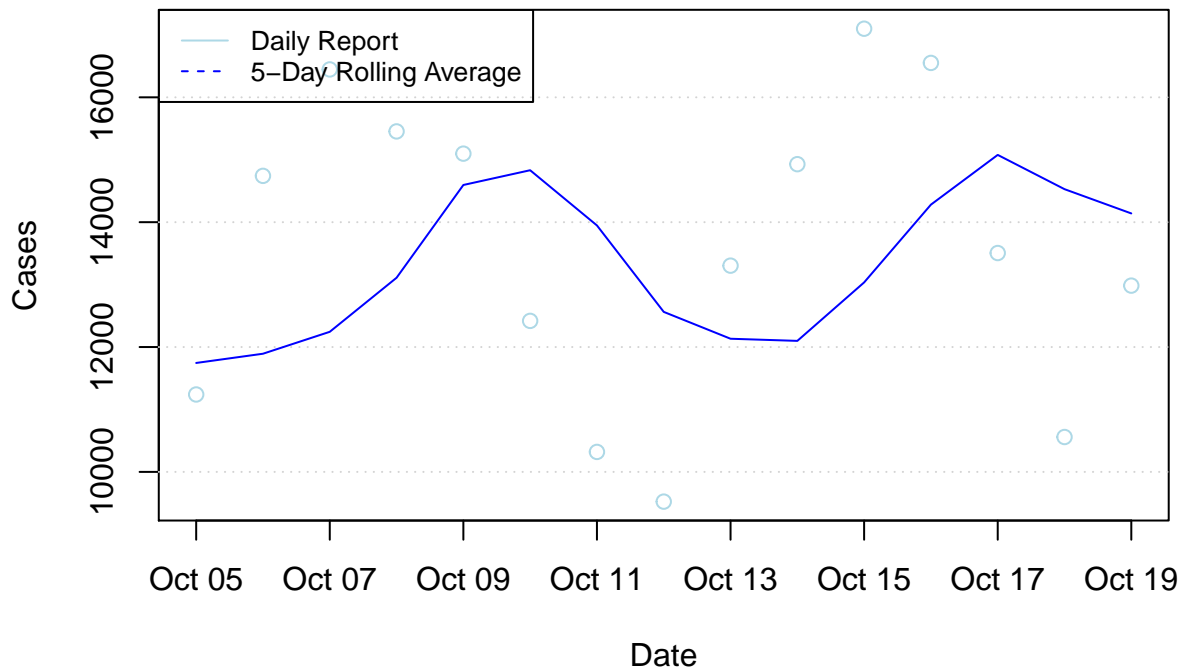
##	Date	TotalCasesNational	NewCasesNational	AvgCasesNational	
## 218	2020-10-05	809722	11240	11745	
## 219	2020-10-06	824464	14742	11893	
## 220	2020-10-07	840911	16447	12244	
## 221	2020-10-08	856365	15454	13110	
## 222	2020-10-09	871463	15098	14596	
## 223	2020-10-10	883882	12419	14832	
## 224	2020-10-11	894202	10320	13948	
## 225	2020-10-12	903726	9524	12563	
## 226	2020-10-13	917030	13304	12133	
## 227	2020-10-14	931959	14929	12099	
## 228	2020-10-15	949058	17099	13035	
## 229	2020-10-16	965609	16551	14281	
## 230	2020-10-17	979115	13506	15078	
## 231	2020-10-18	989674	10559	14529	
## 232	2020-10-19	1002658	12984	14140	
##	TotalCasesCABA	NewCasesCABA	AvgCasesCABA	TotalCasesPBA	NewCasesPBA
## 218	129956	684	798	440402	4470
## 219	130839	883	790	446062	5660
## 220	131795	956	771	451284	5222
## 221	132732	937	799	456468	5184
## 222	133606	874	867	461814	5346
## 223	134350	744	879	465890	4076
## 224	134990	640	830	468430	2540
## 225	135489	499	739	470651	2221
## 226	136234	745	700	475316	4665
## 227	137059	825	691	480489	5173
## 228	137889	830	708	486247	5758
## 229	138843	954	771	491449	5202
## 230	139451	608	792	495866	4417

## 231	139968	517	747	498248	2382
## 232	140525	557	693	502455	4207
##	AvgCasesPBA	TotalCasesAMBA	NewCasesAMBA	AvgCasesAMBA	
## 218	4545	502891	3805	3592	
## 219	4596	507822	4931	3671	
## 220	4501	512325	4503	3879	
## 221	4637	516799	4474	3998	
## 222	5176	521405	4606	4464	
## 223	5098	NA	NA	4628	
## 224	4474	526890	NA	4528	
## 225	3873	528813	1923	3668	
## 226	3770	532811	3998	3509	
## 227	3735	537055	4244	3388	
## 228	4071	541686	4631	3699	
## 229	4604	NA	NA	3699	
## 230	5043	549300	NA	4291	
## 231	4586	551118	1818	3564	
## 232	4393	554499	3381	3277	

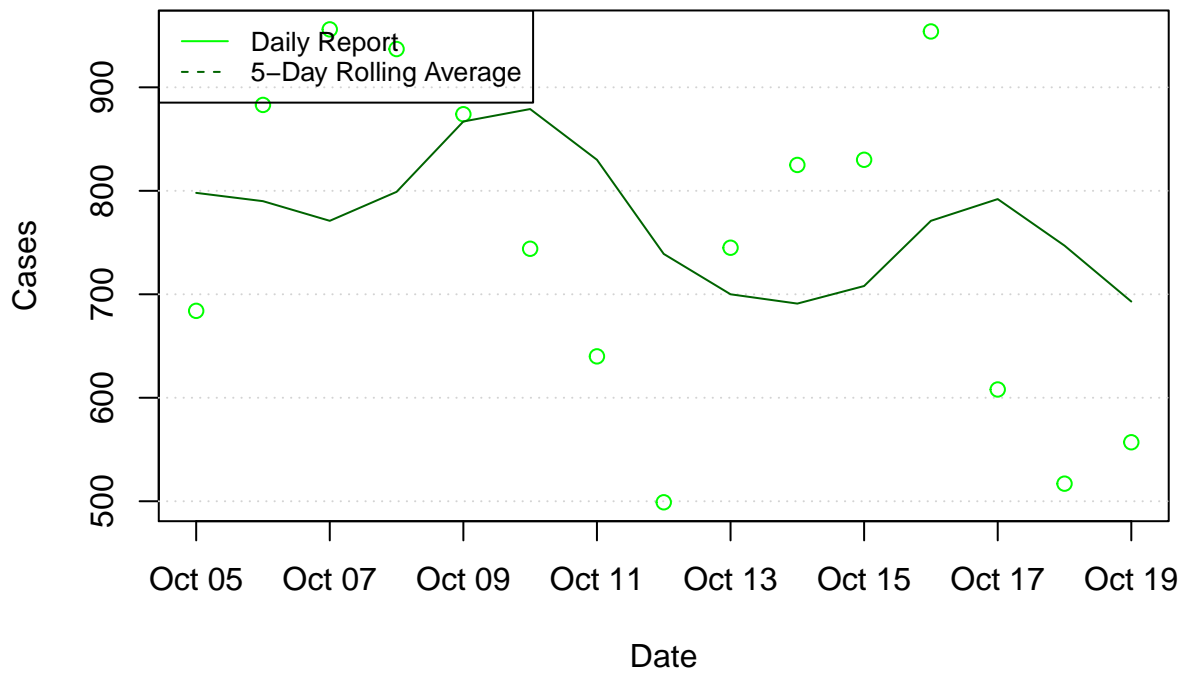
14-day trend

Phase 1: 14-day trend lines

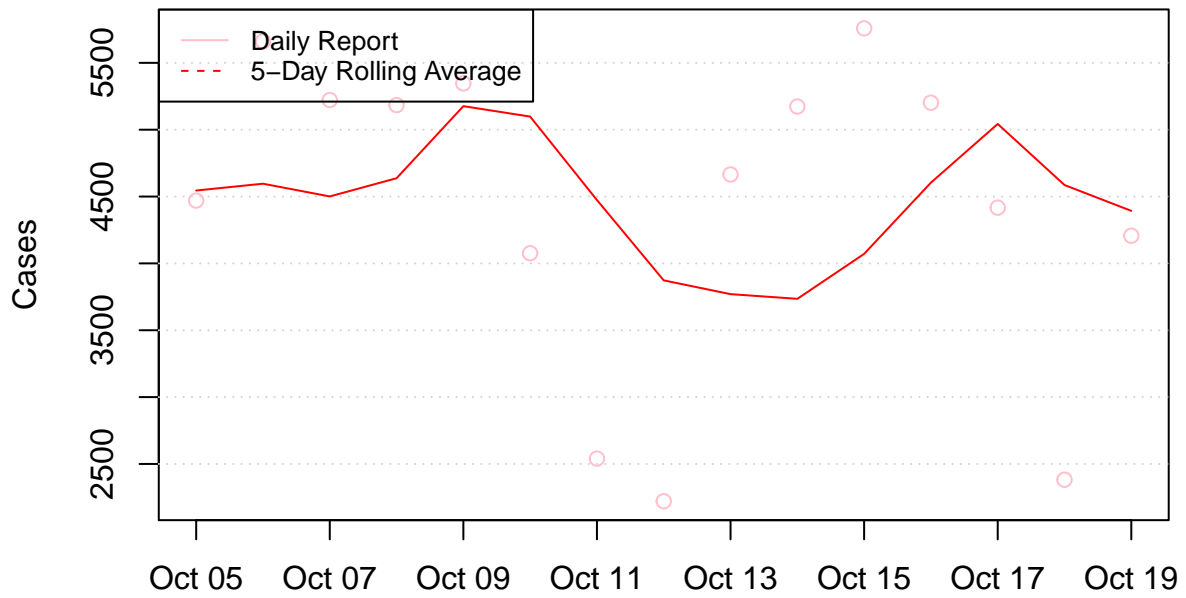
14-day trend, Argentina



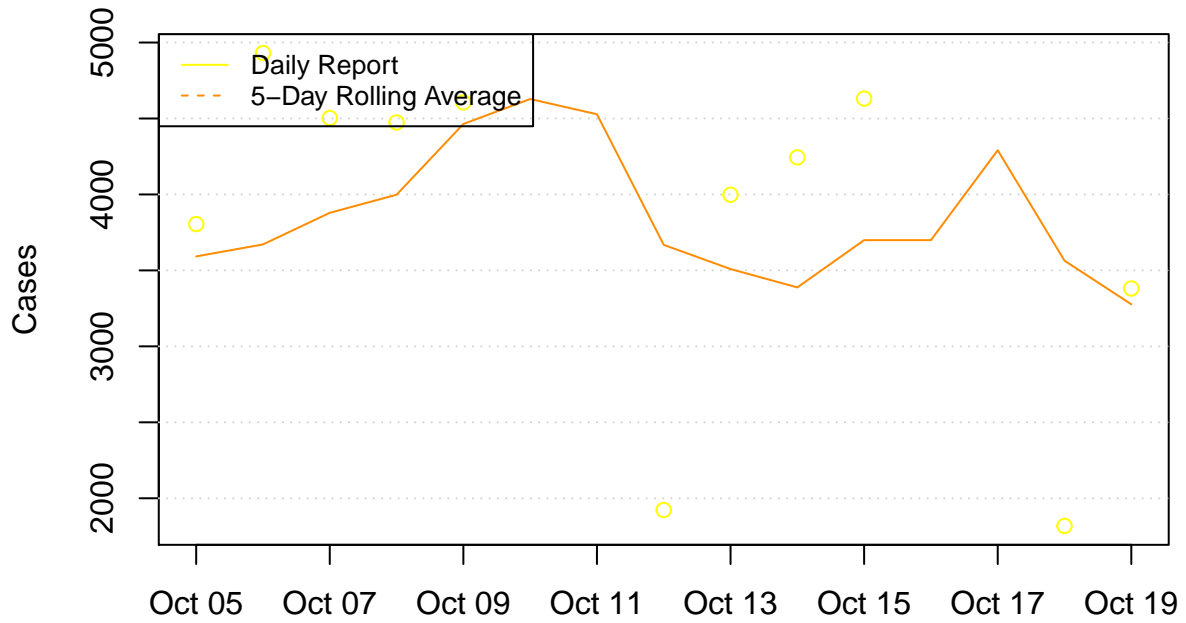
14-day trend, CABA



14-day trend, PBA



14-day trend, AMBA

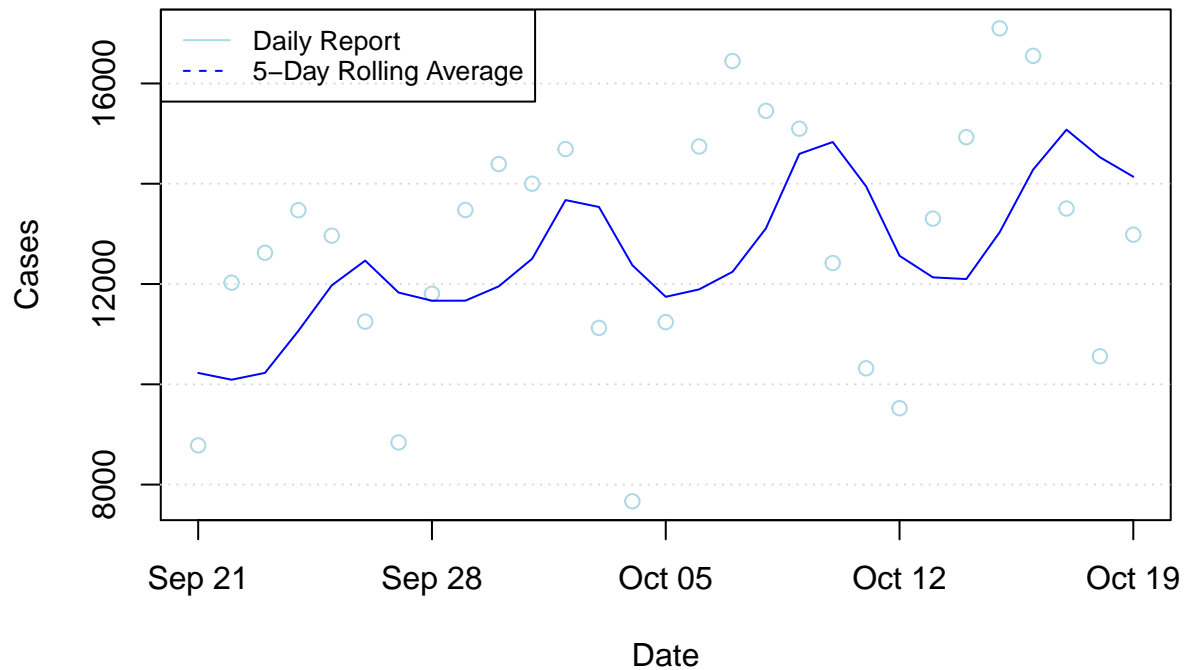


Date

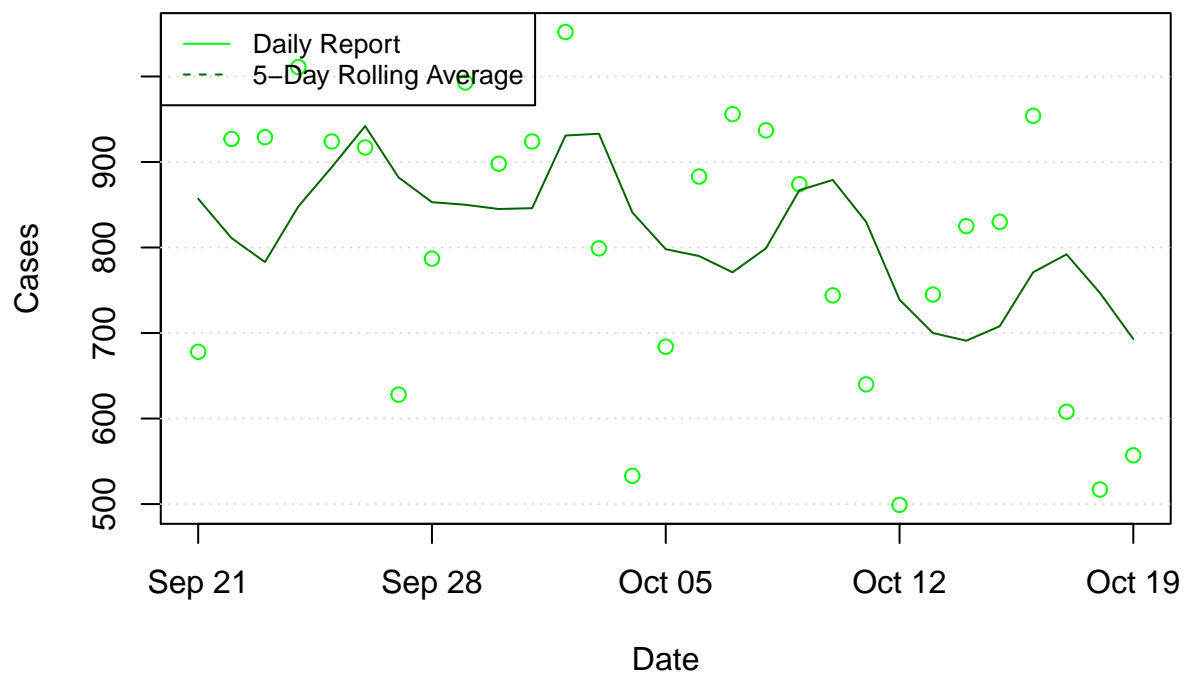
##

Phase 2 decisions

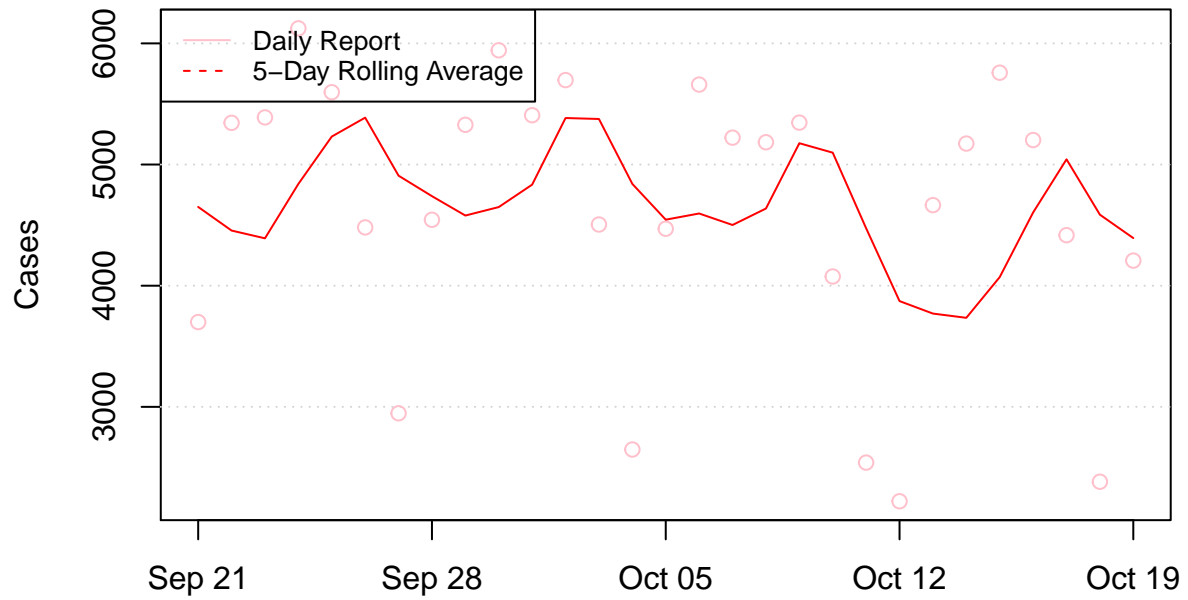
28-day trend, Argentina



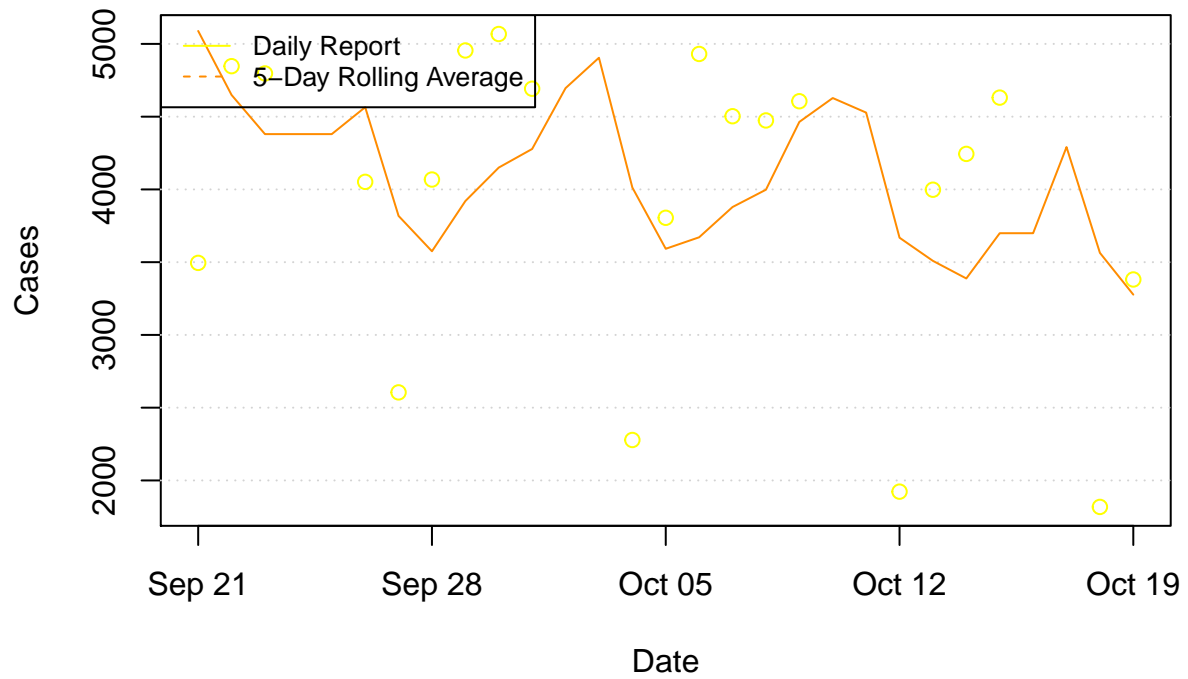
28-day trend, CABA



28-day trend, PBA



28-day trend, AMBA



Log graphs

The following graphs are generated by:

$$x = \text{Number of Days since March 3}$$

$$y = \log(\text{Number of New Cases this day})$$

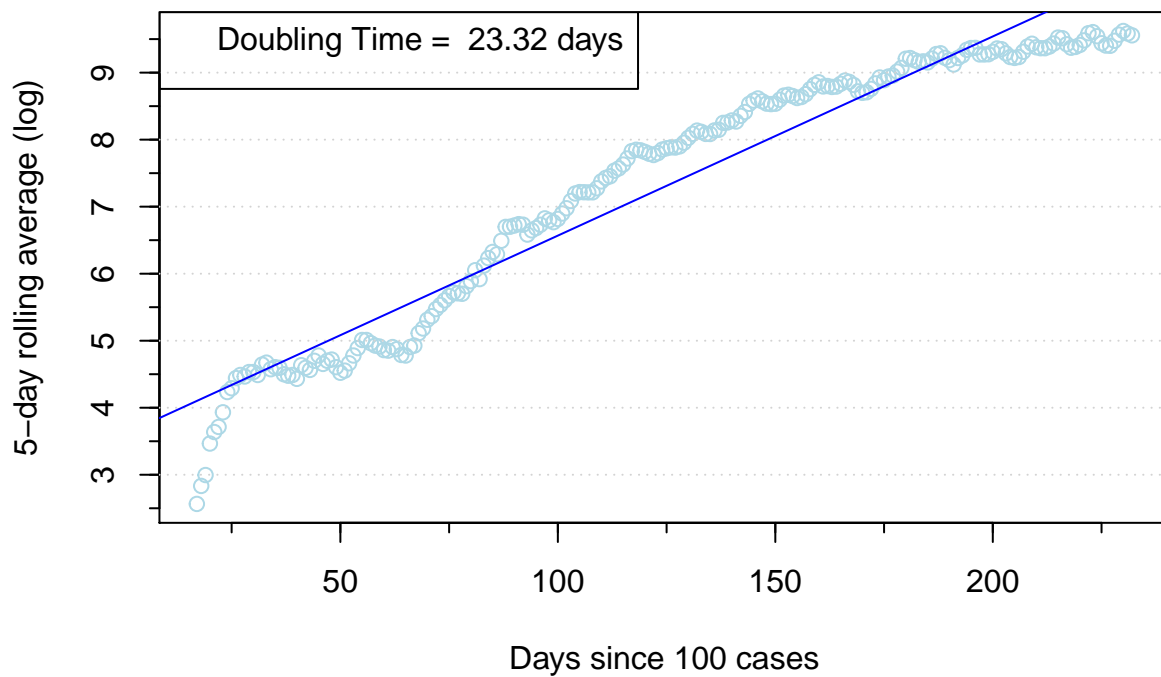
The regression line is drawn using the R “lm()” function over the x values.

R0 is estimated from the slope of the regression line:

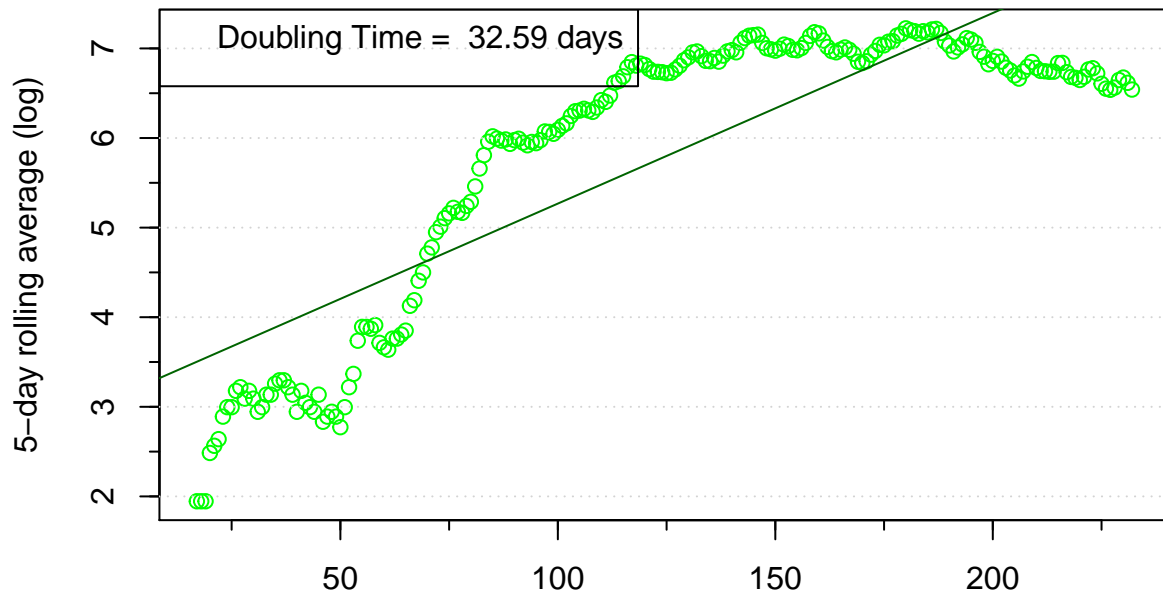
$$y = a + bx$$

$$dt = \log(2)/b$$

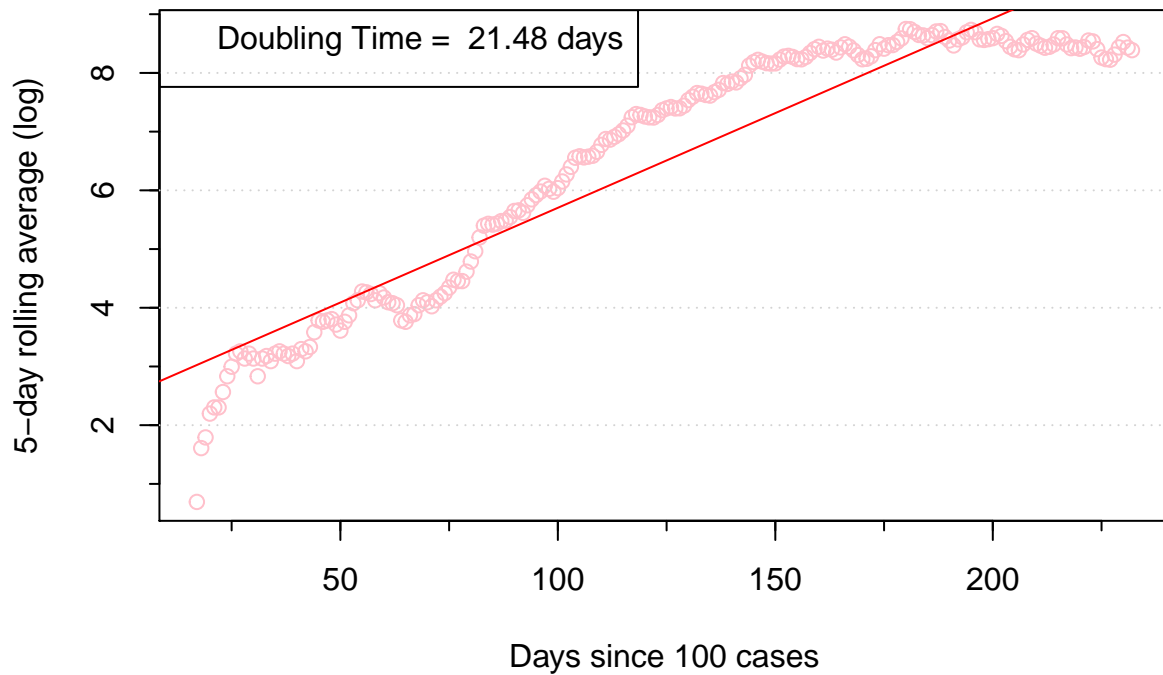
New cases (log scale), Argentina – all dates



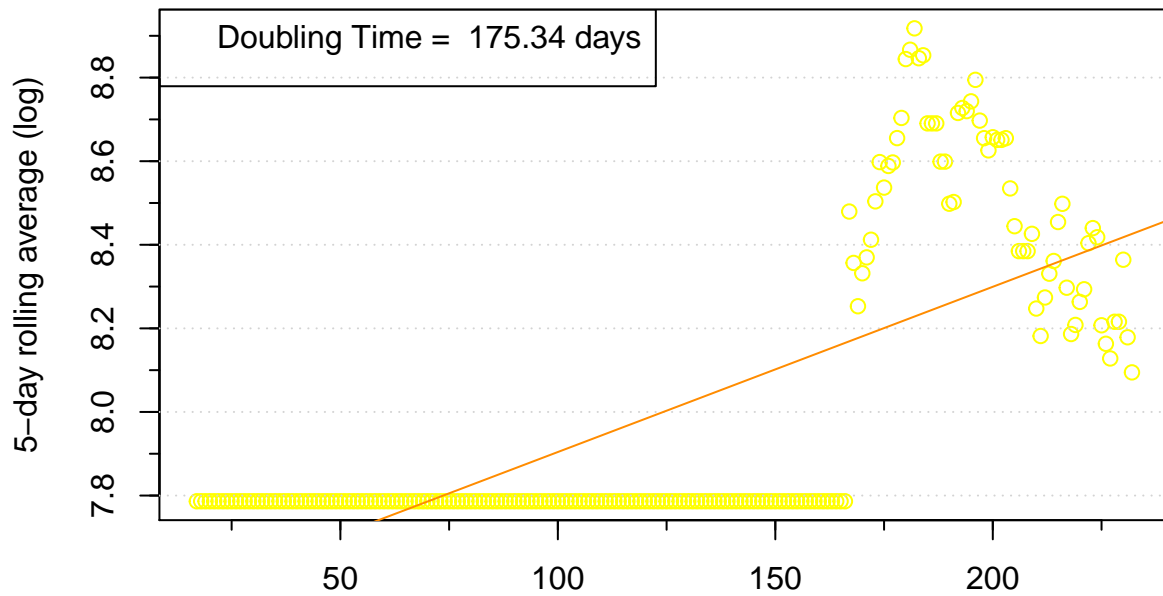
New cases (log scale), CABA – all dates



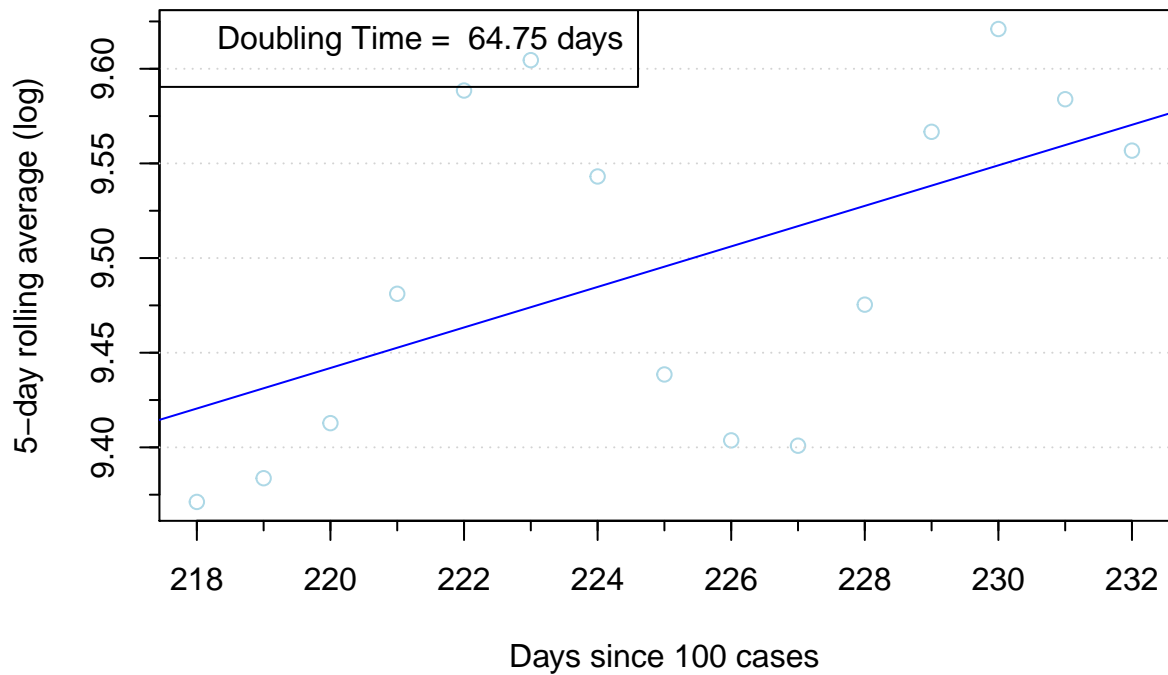
New cases (log scale), PBA – all dates



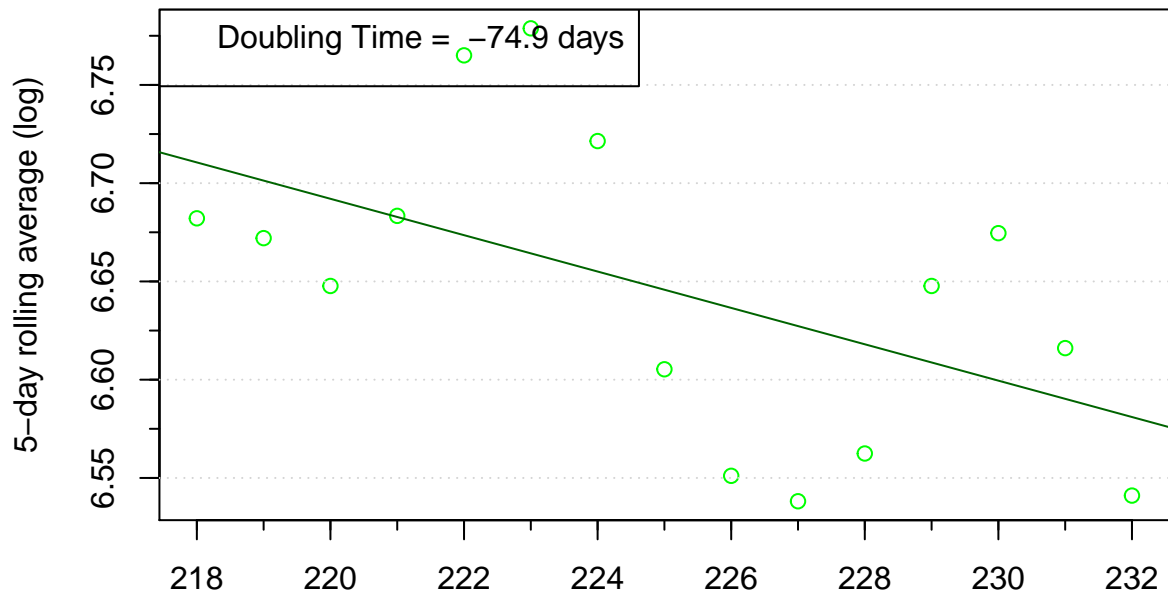
New cases (log scale), AMBA – all dates



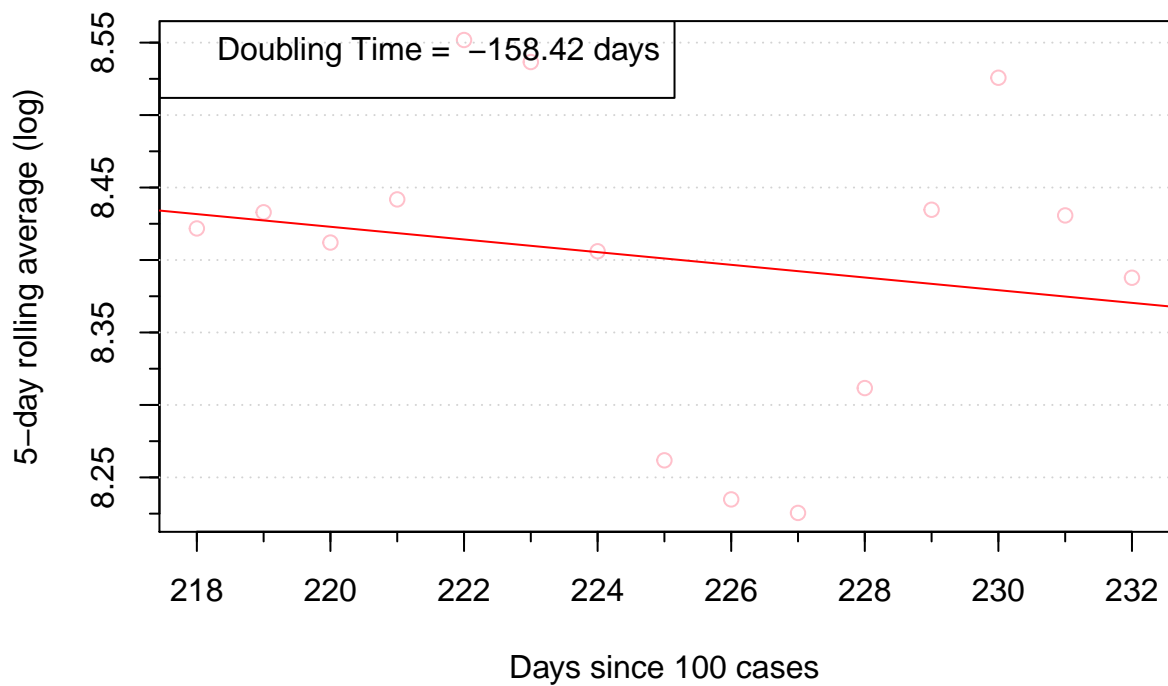
New cases (log scale), Argentina – past 14 days



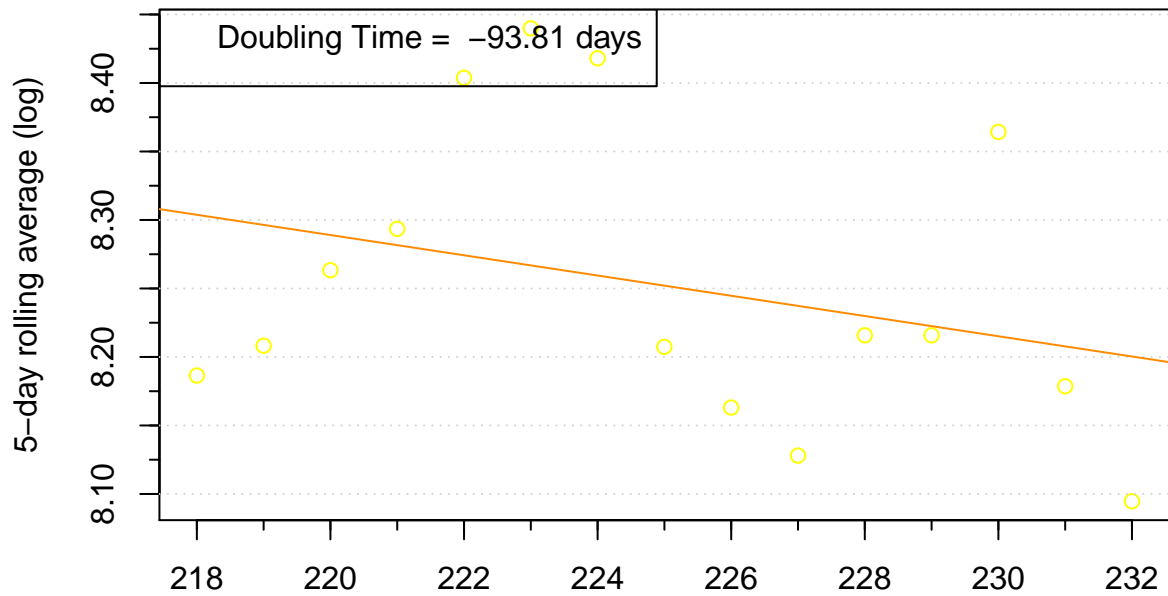
New cases (log scale), CABA – past 14 days



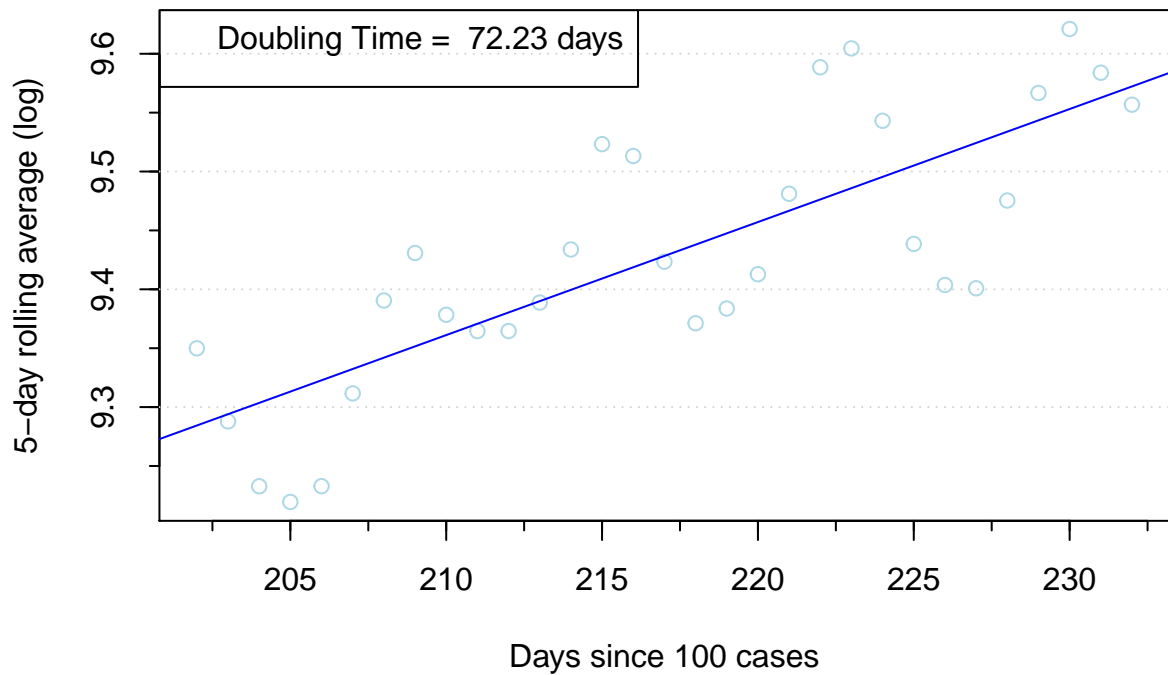
New cases (log scale), PBA – past 14 days



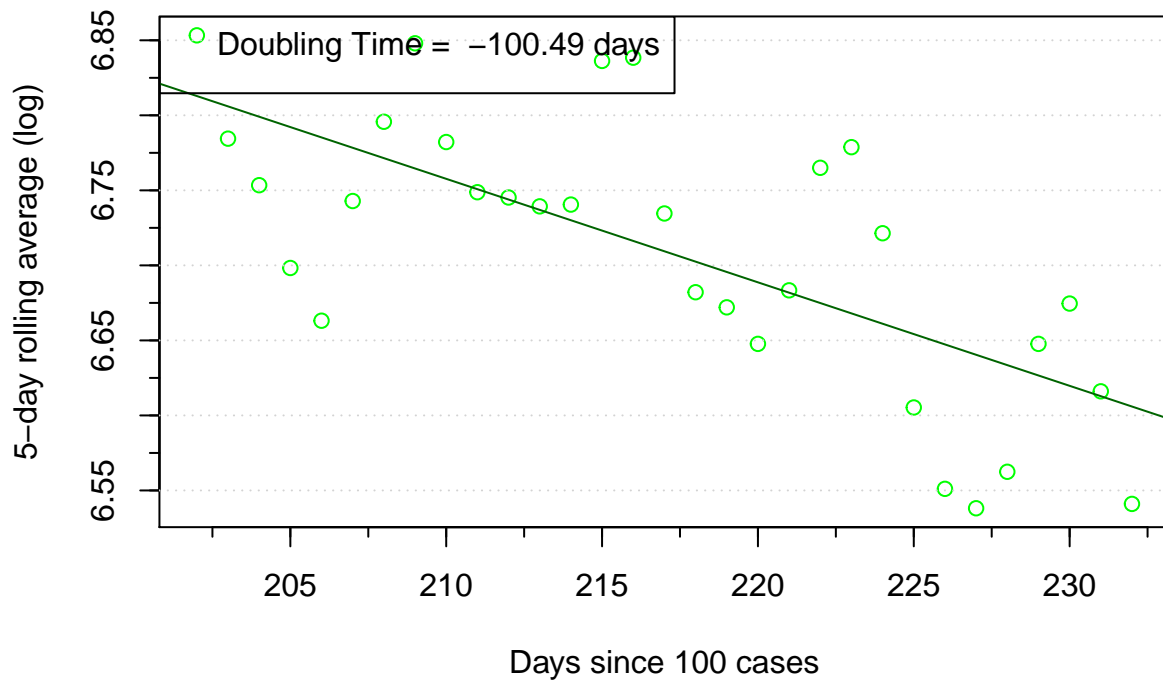
New cases (log scale), AMBA – past 14 days



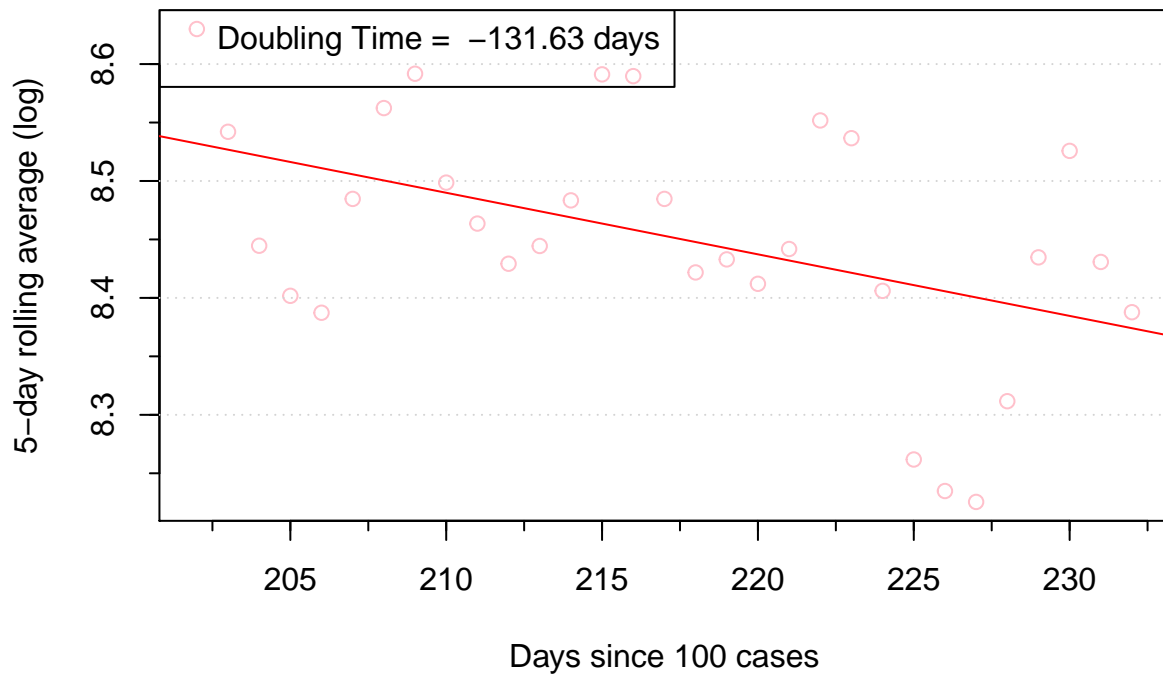
New cases (log scale), Argentina – past 30 days



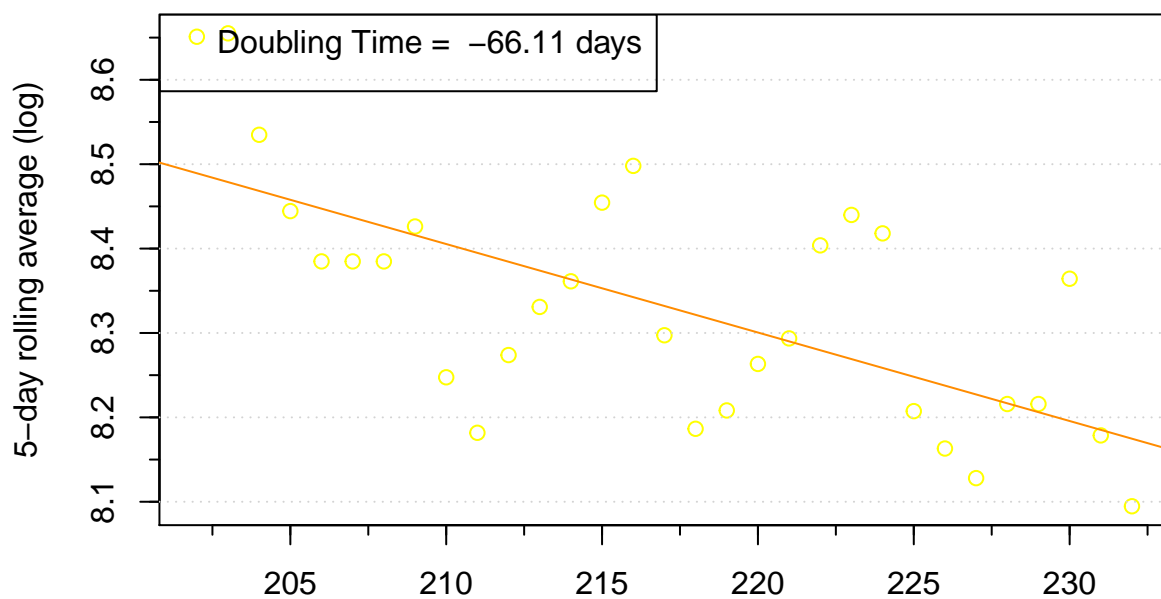
New cases (log scale), CABA – past 30 days



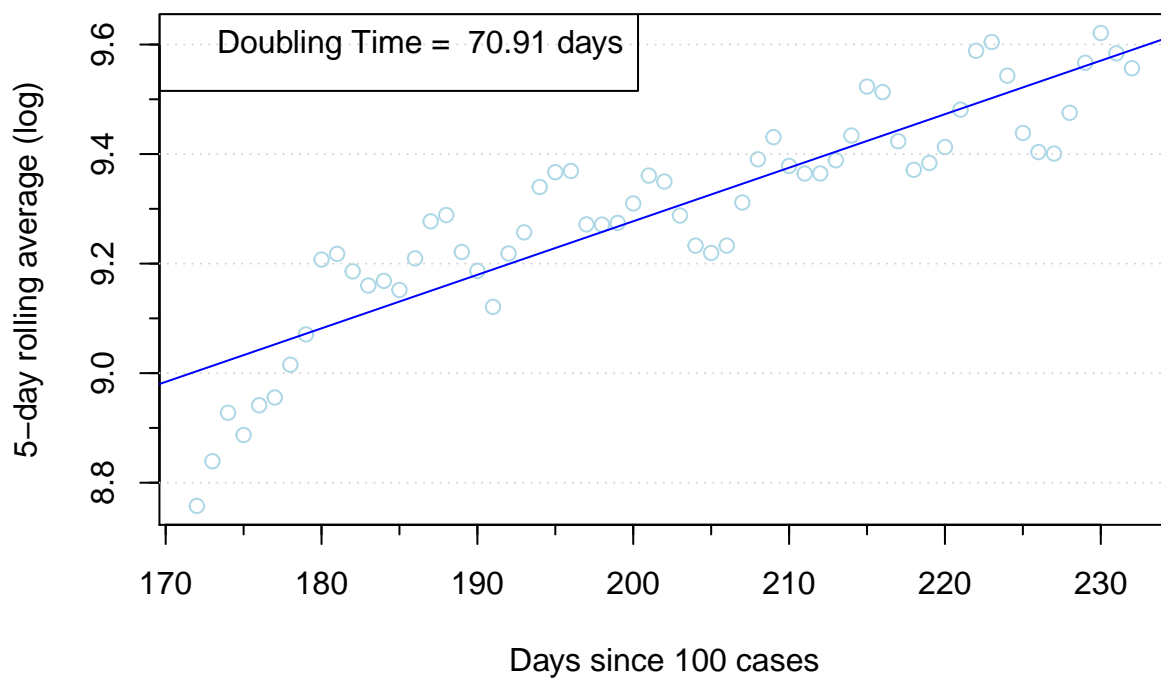
New cases (log scale), PBA – past 30 days



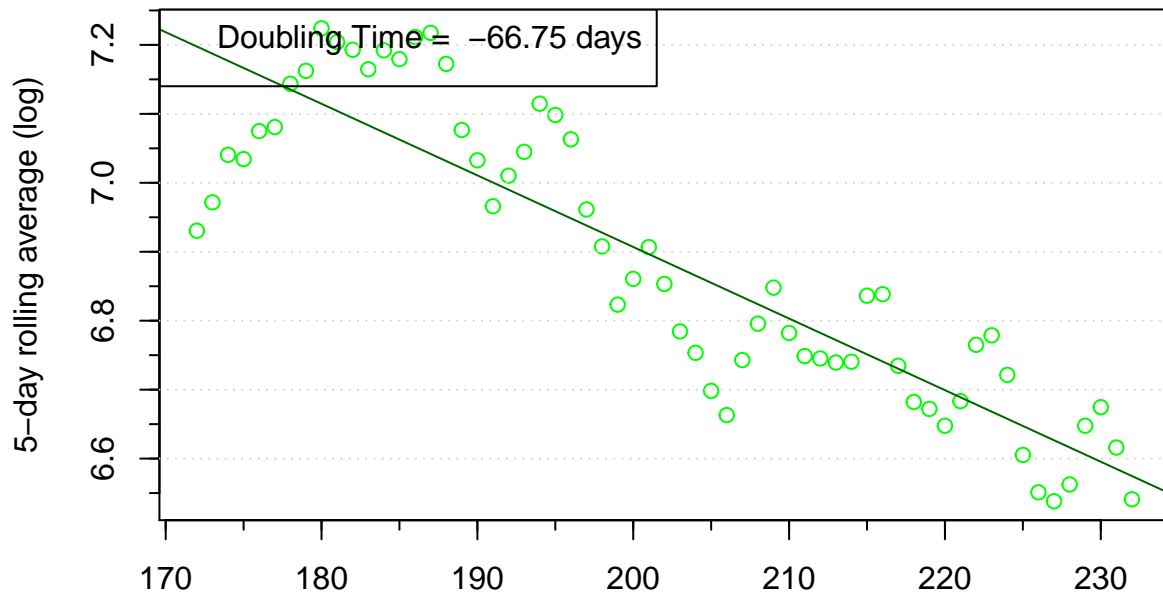
New cases (log scale), AMBA – past 30 days



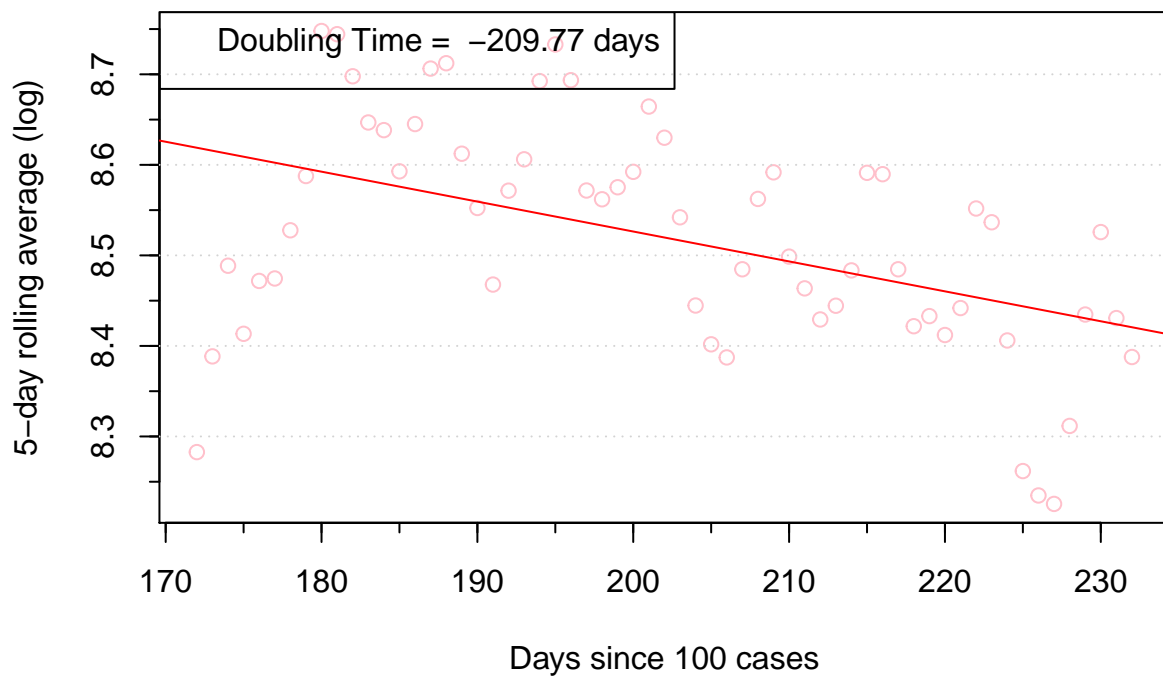
New cases (log scale), Argentina – past 60 days



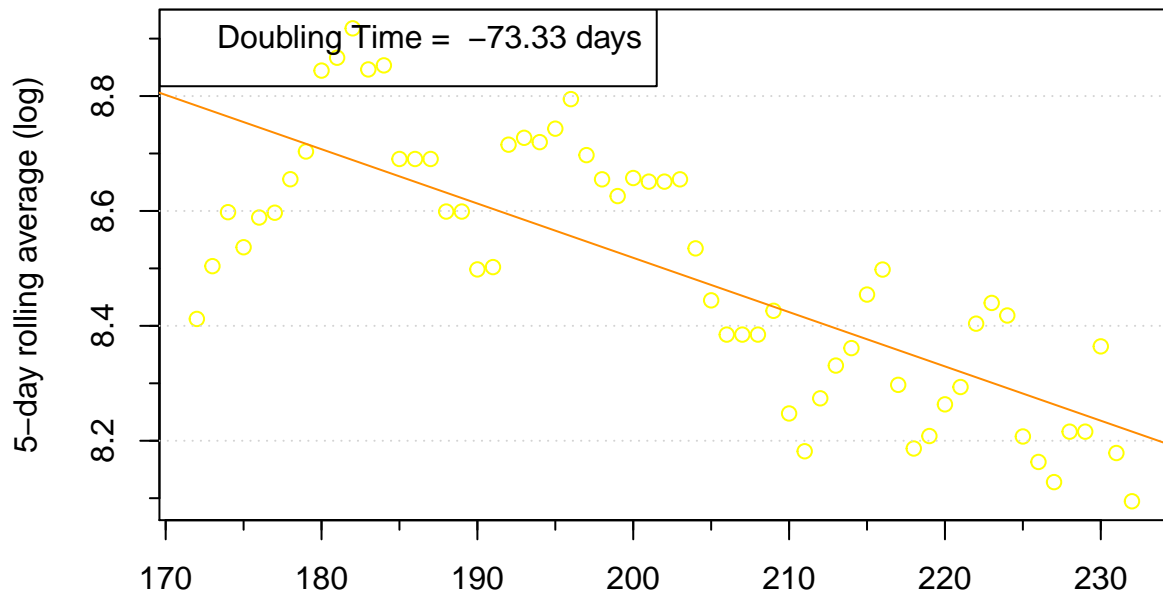
New cases (log scale), CABA – past 60 days



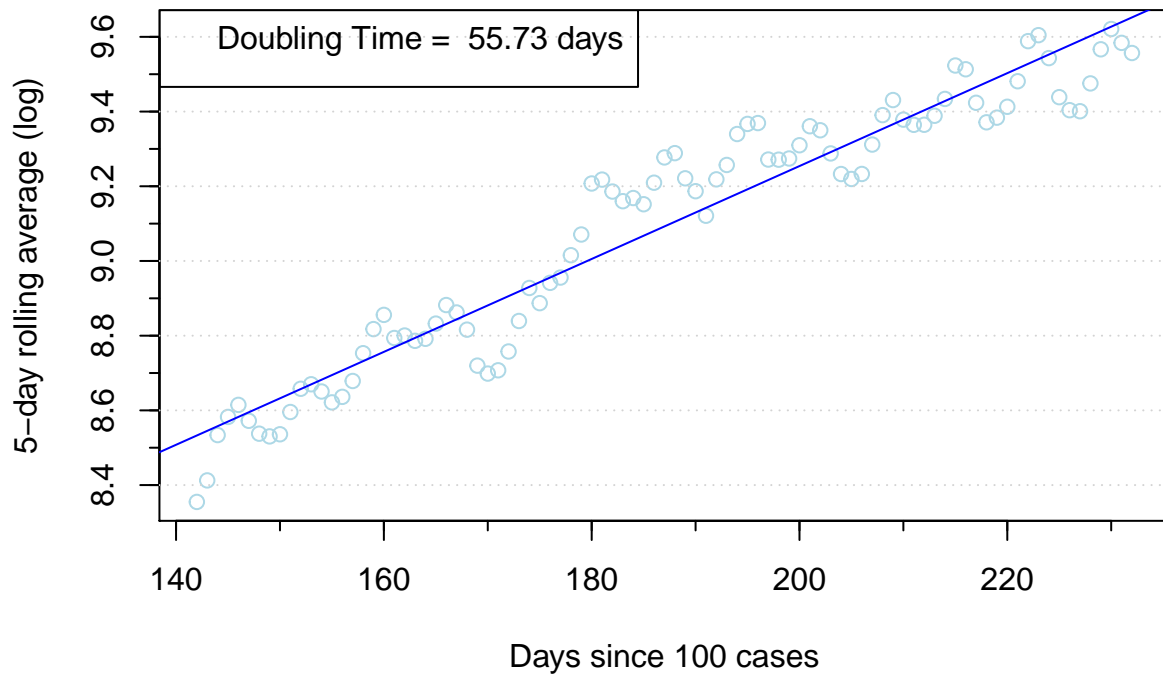
New cases (log scale), PBA – past 60 days



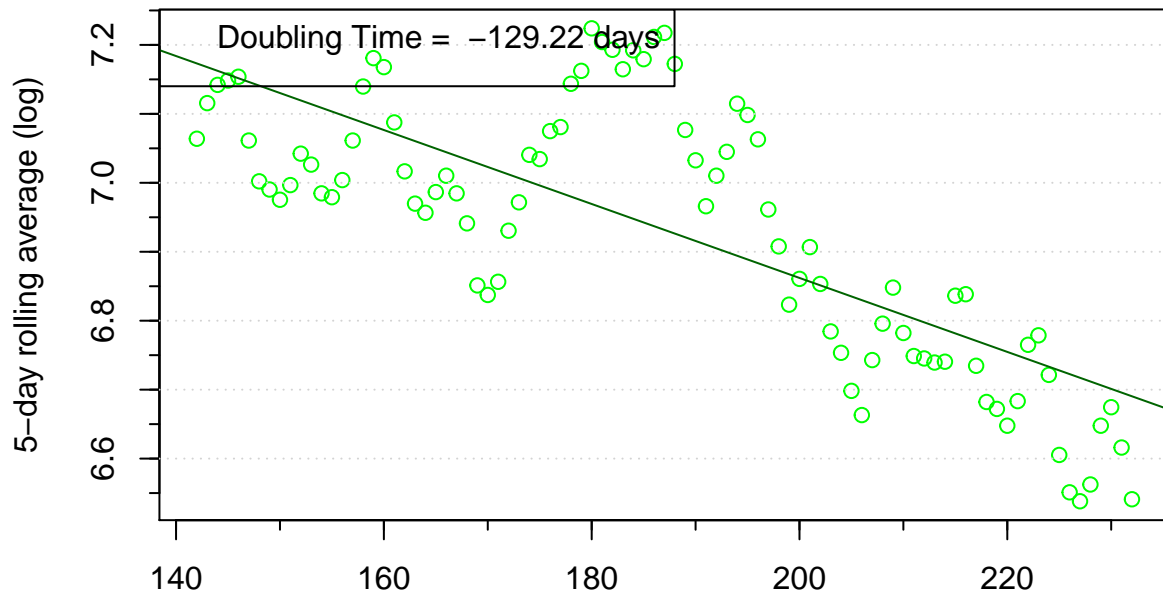
New cases (log scale), AMBA – past 60 days



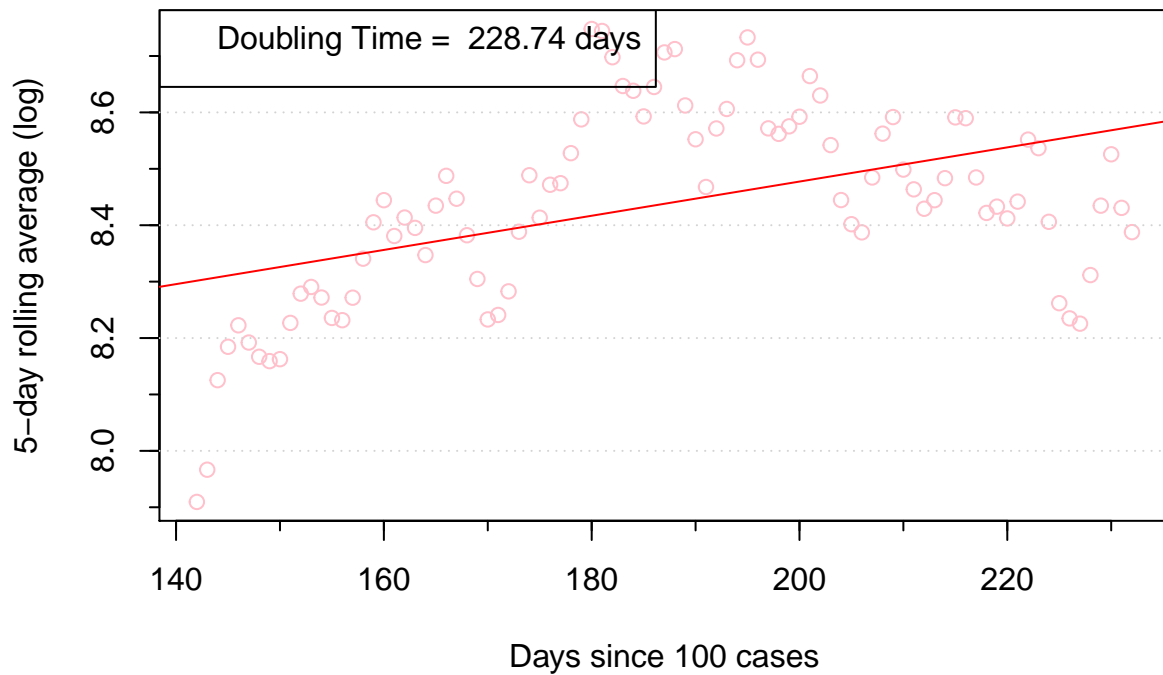
New cases (log scale), Argentina – past 90 days



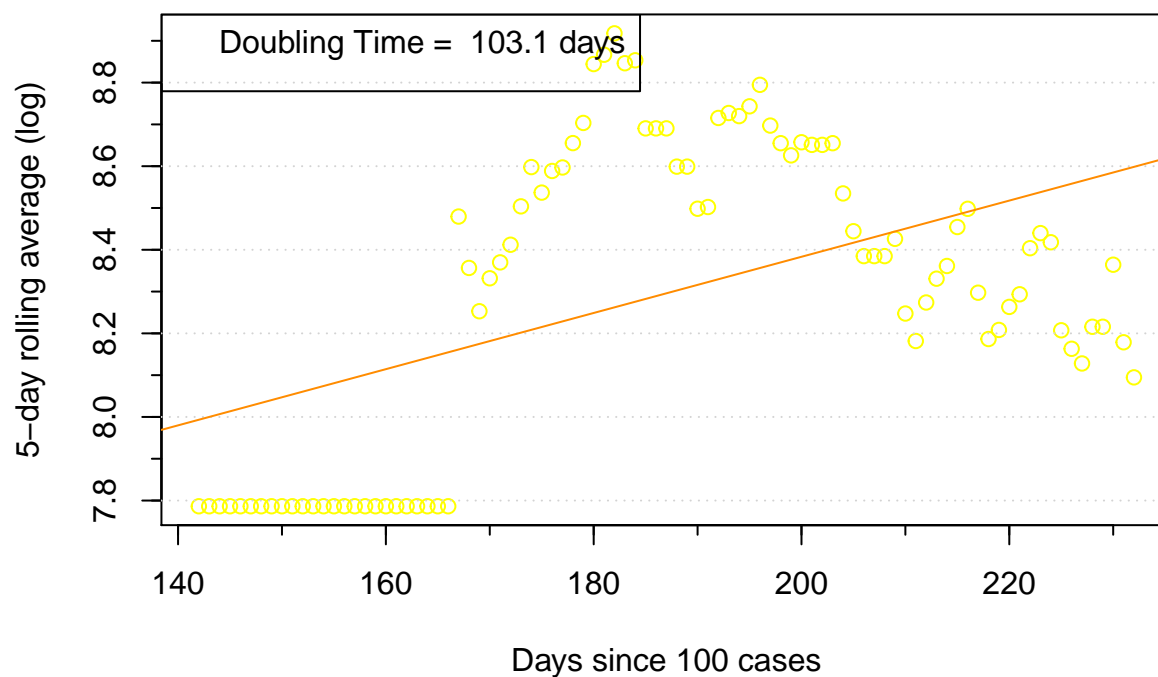
New cases (log scale), CABA – past 90 days



New cases (log scale), PBA – past 90 days



New cases (log scale), AMBA – past 90 days



##	Argentina	CABA	PBA	AMBA
## all dates	23.32	32.59	21.48	175.34
## past 14 days	64.75	-74.90	-158.42	-93.81
## past 30 days	72.23	-100.49	-131.63	-66.11
## past 60 days	70.91	-66.75	-209.77	-73.33
## past 90 days	55.73	-129.22	228.74	103.10

R0 over time (daily cases estimate)

These graphs rely heavily on the EpiR, EpiEstim, and incidence modules in R. These graphs are rough estimates based on the number of new cases reported each day and not/not the actual date of registry/onset of symptoms, which provide a more-accurate picture of the rate of transmission.

The following data on serial incidence are drawn from a meta analysis of COVID-19: <https://doi.org/10.1002/jmv.26041>

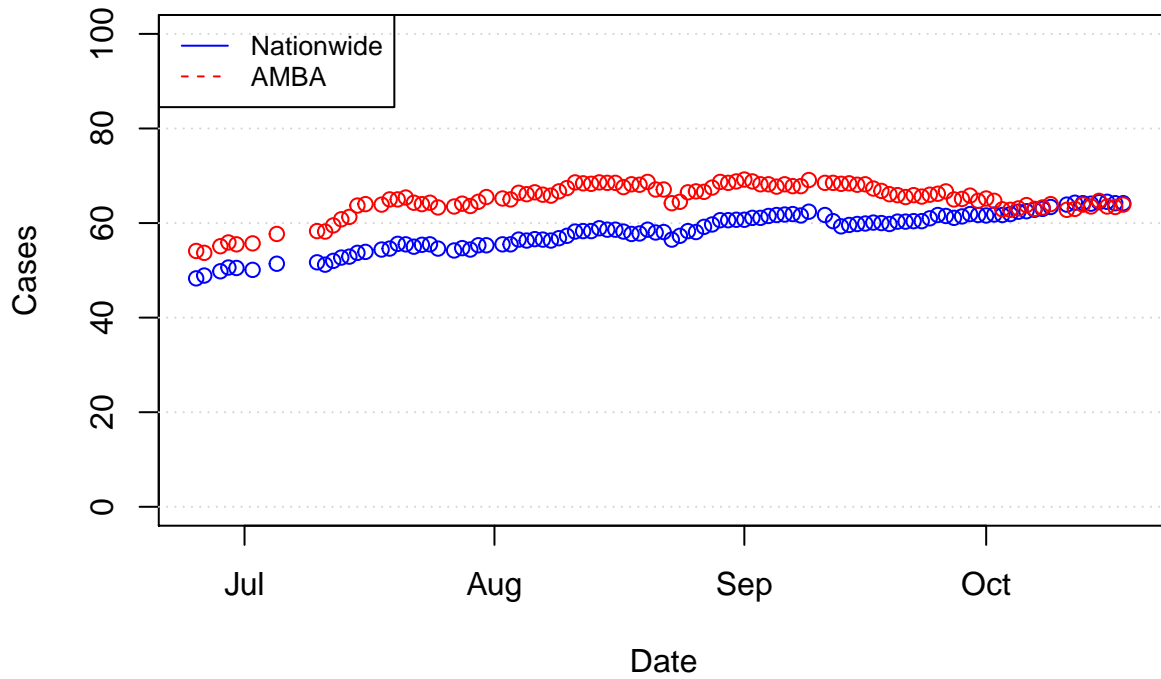
$$\mu = 5.08 \text{ days}$$

$$\sigma = .18$$

A gamma distribution is created programatically, and the `estimate_R` function is run against incidence objects containing the new cases reported each day.

ICU Capacity

Daily ICU Bed Rate



##	Date	ICUBeds	ICUPctNation	ICUPctAMBA
## 88	2020-09-20	3261	60.3	65.9
## 89	2020-09-21	3387	60.3	65.5
## 90	2020-09-22	3362	60.4	65.9
## 91	2020-09-23	3511	60.4	65.6
## 92	2020-09-24	3527	61	66
## 93	2020-09-25	3595	61.7	66.2
## 94	2020-09-26	3633	61.5	66.7
## 95	2020-09-27	3604	61.1	65
## 96	2020-09-28	3678	61.4	65.1
## 97	2020-09-29	3768	61.9	65.8
## 98	2020-09-30	3792	61.7	64.7
## 99	2020-10-01	3799	61.6	65.2
## 100	2020-10-02	3828	61.8	64.7
## 101	2020-10-03	3820	61.7	62.9
## 102	2020-10-04	3950	61.9	62.8
## 103	2020-10-05	3978	62.4	63.1
## 104	2020-10-06	4007	62.5	63.8
## 105	2020-10-07	3997	62.8	63
## 106	2020-10-08	4043	63	63.3
## 107	2020-10-09	4092	63.4	64
## 108	2020-10-10	NA	<NA>	<NA>
## 109	2020-10-11	4237	63.9	62.8
## 110	2020-10-12	4287	64.3	63
## 111	2020-10-13	4294	64.2	63.9
## 112	2020-10-14	4316	64.1	63.5
## 113	2020-10-15	4278	64.4	64.7
## 114	2020-10-16	4346	64.5	63.5

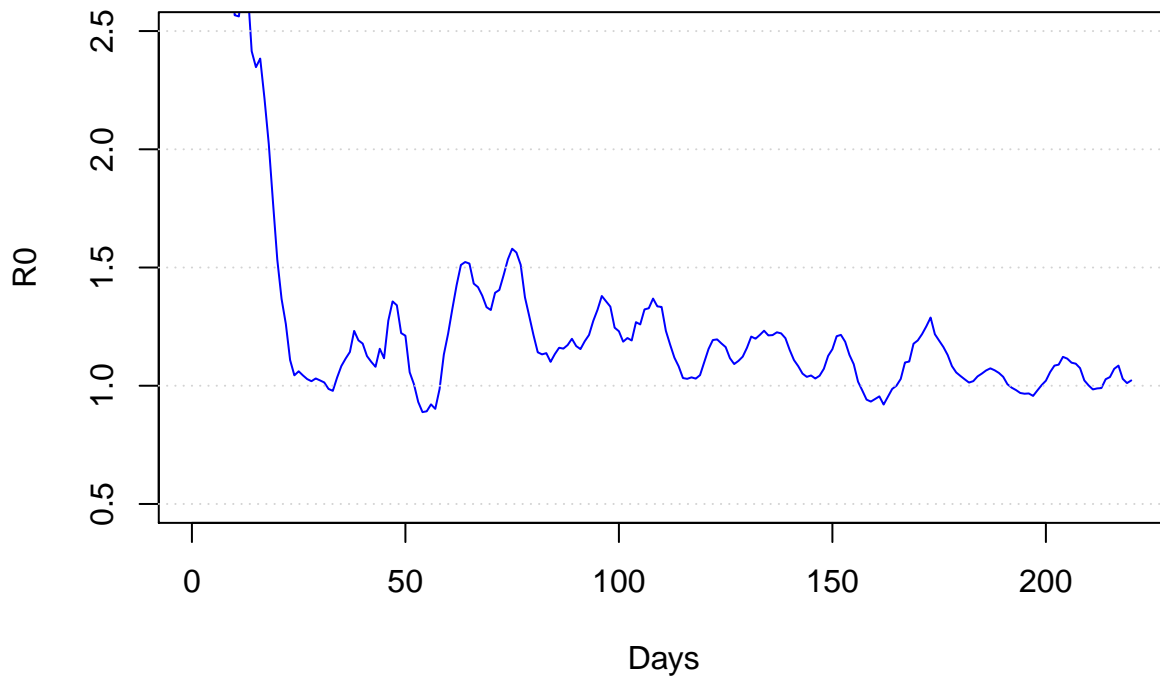
##	115	2020-10-17	4386	64.2	63.4
##	116	2020-10-18	4387	64.2	63.9
##	117	2020-10-19	NA	<NA>	<NA>

Better R Estimate

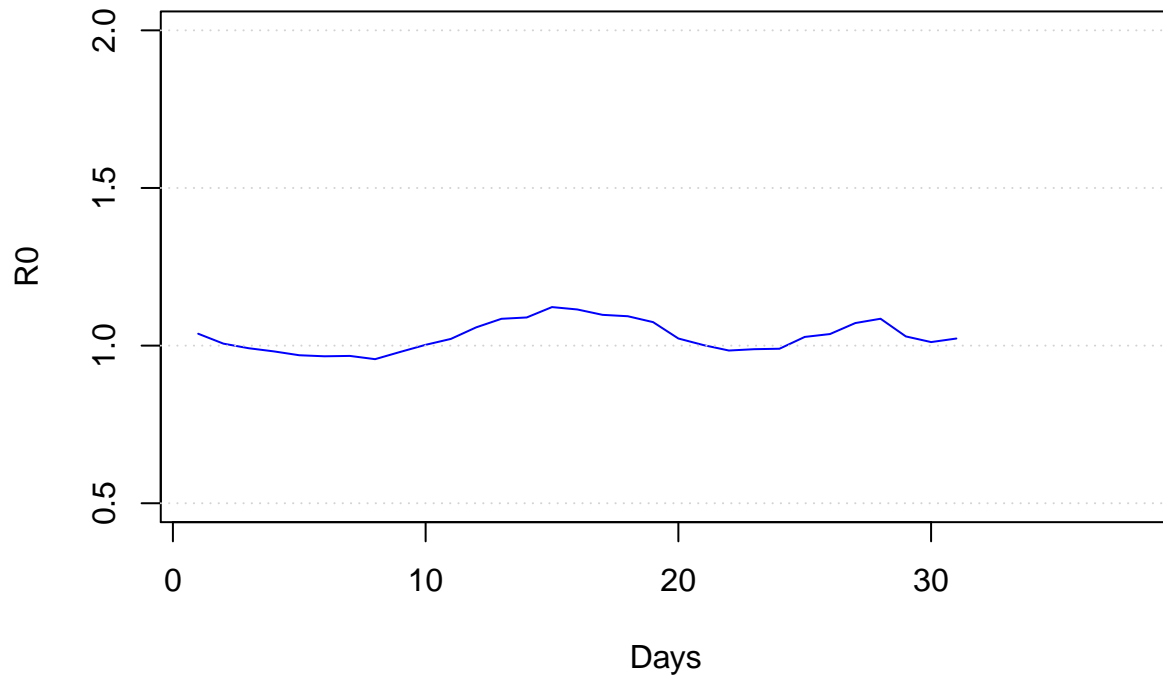
This data is drawn from over 1 million epidemiological records, indexed by the date the case was registered with the Ministry of Health. Cases are often registered prior to a confirmed diagnosis; therefore, this data “lags”.

An incidence object is created using all confirmed cases in Argentina. The `estimate_R()` function from the `EpiEstim` package is used with the serial interval as described in the R estimate section above. While the `estimate_R()` function uses a rolling 7-day window, we also force the estimate away from the last five days of data due to the confirmation lag.

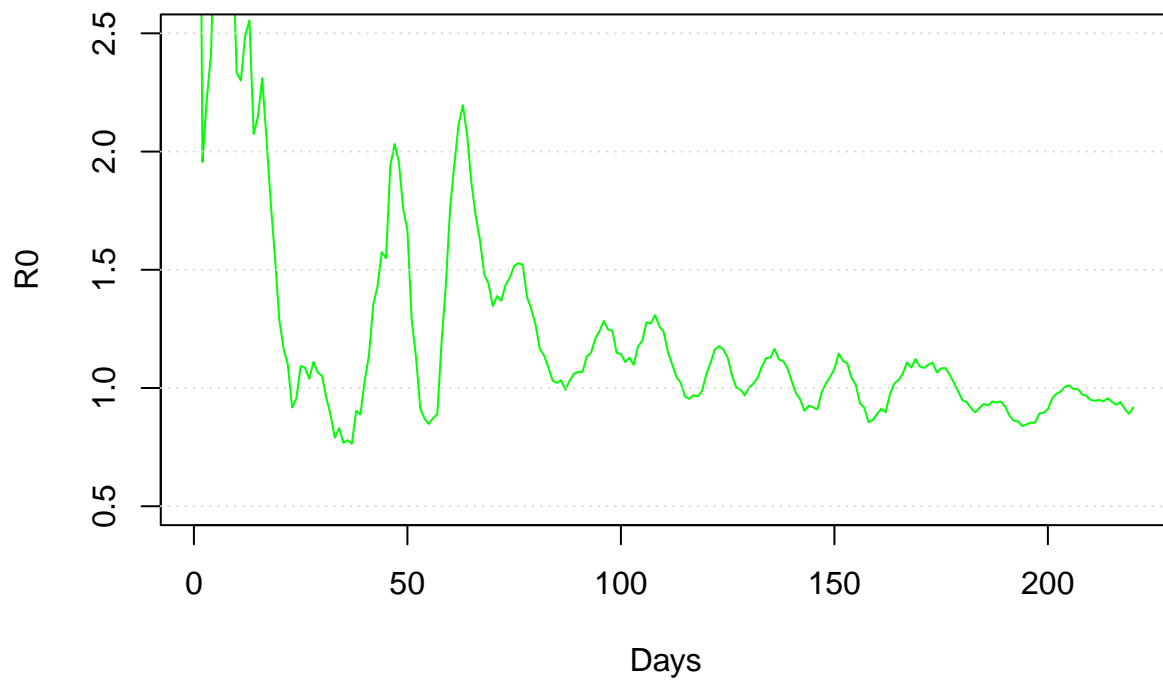
R0 over time, National Overall



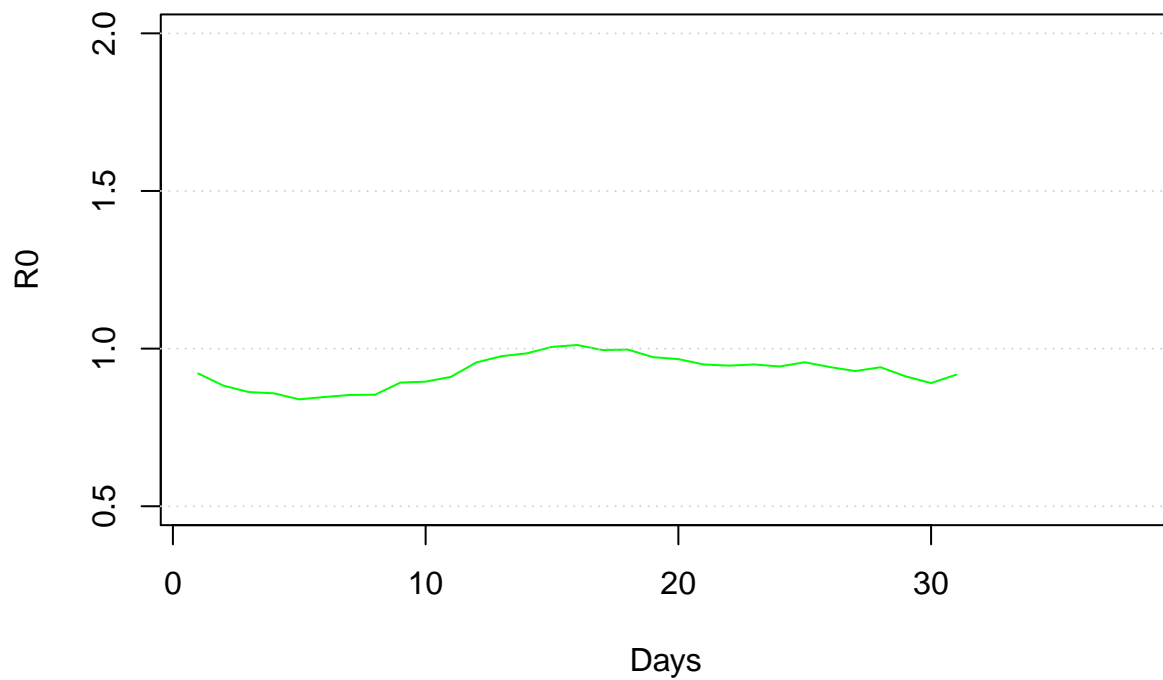
R0 over time, National Past Month



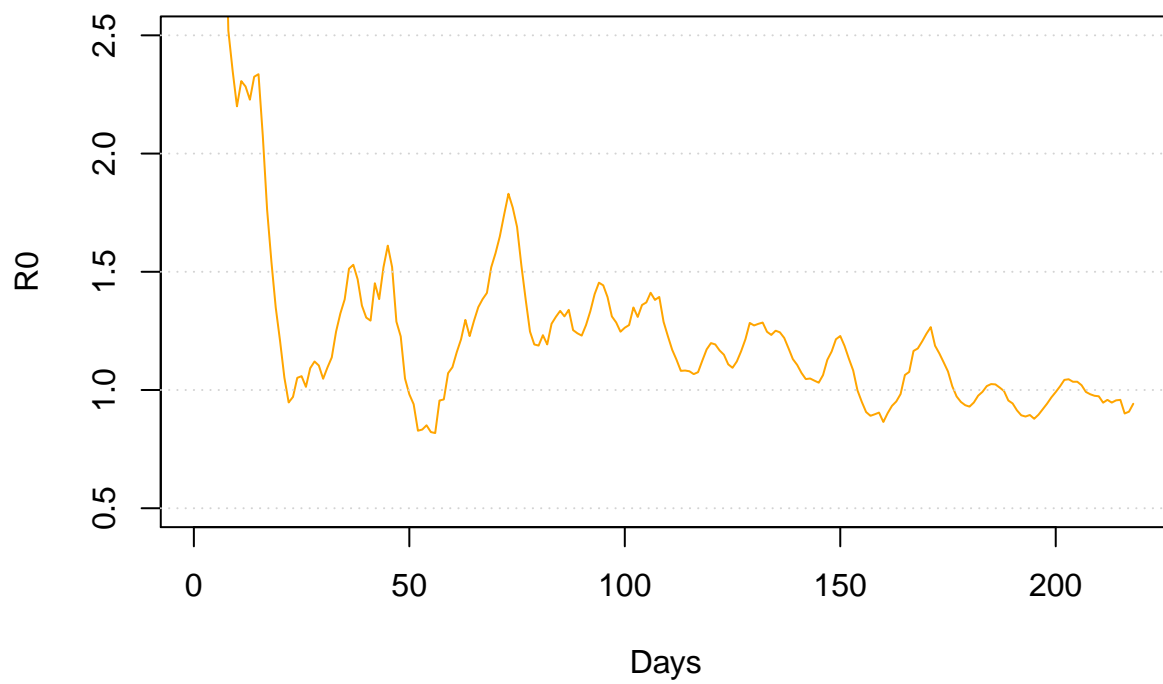
R0 over time, CABA Overall



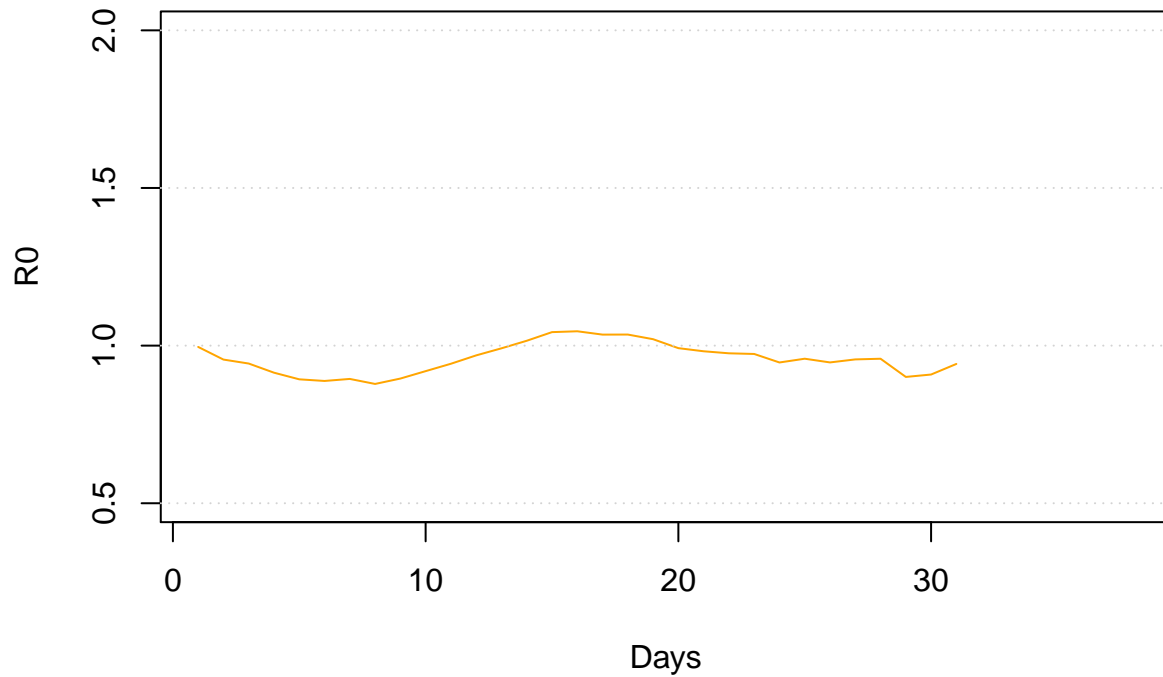
R0 over time, CABA Past Month



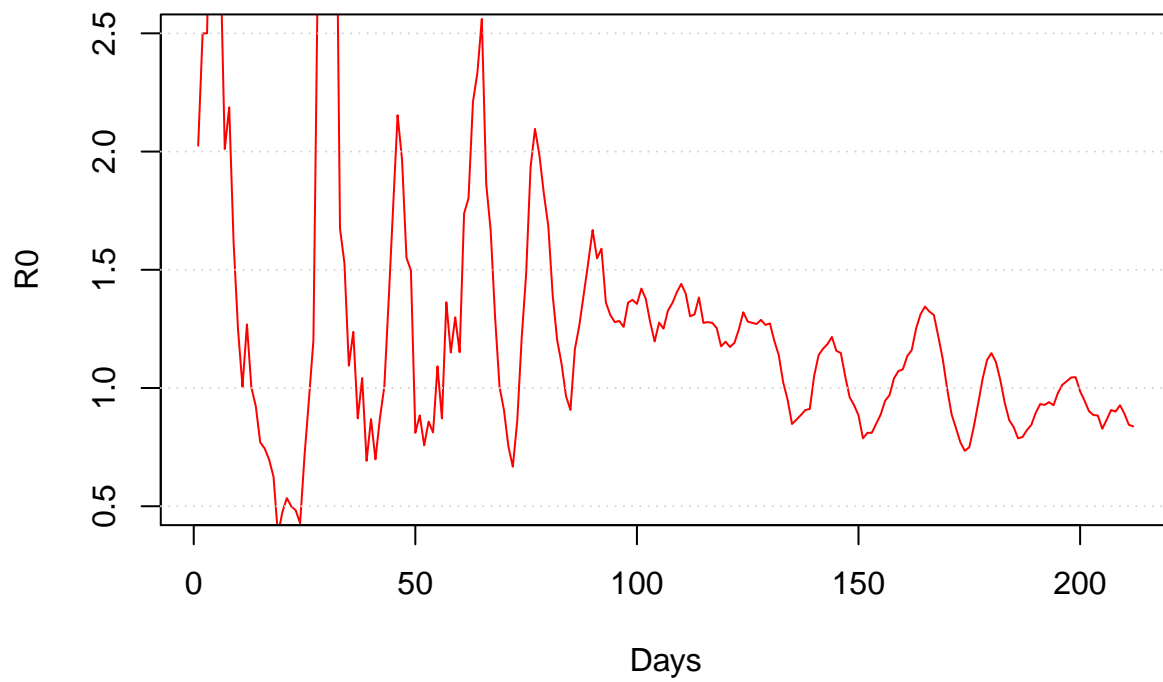
R0 over time, Conurbano Overall



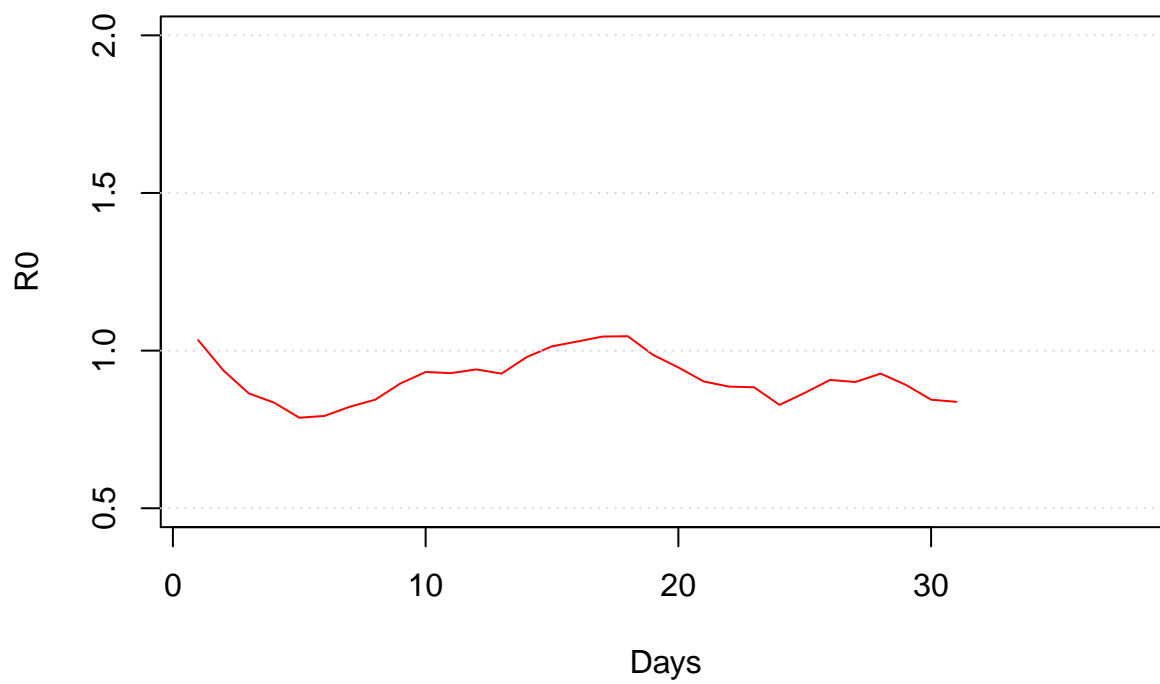
R0 over time, Conurbano Past Month



R0 over time, AMBA Overall

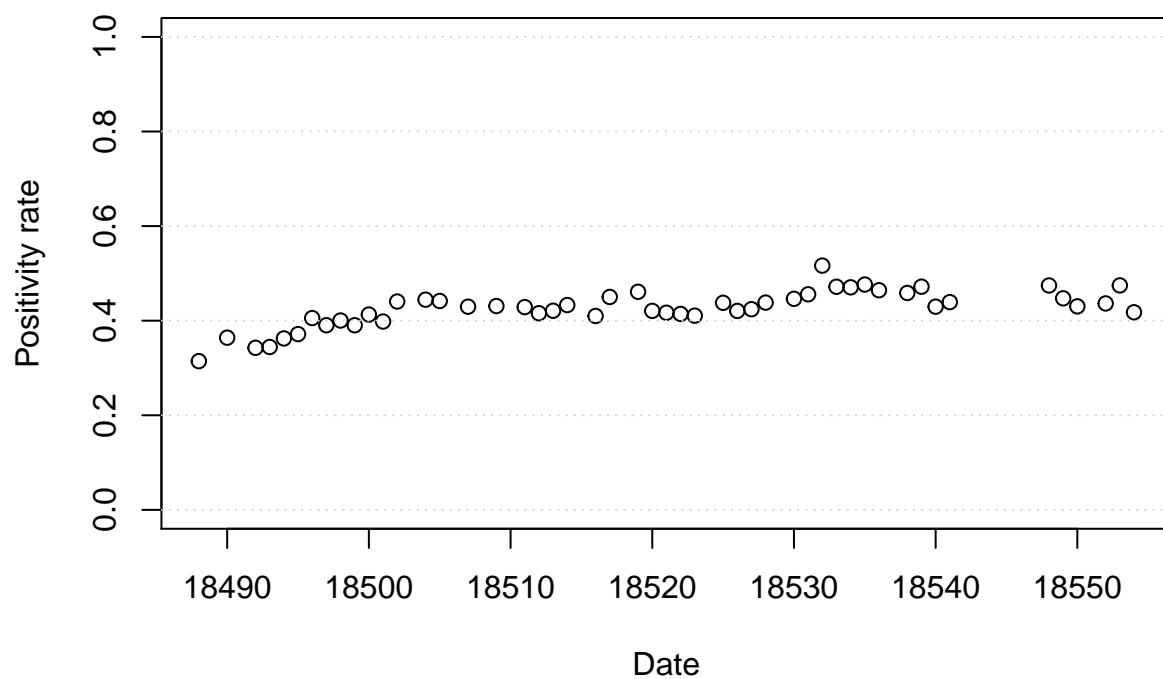


R0 over time, AMBA Past Month

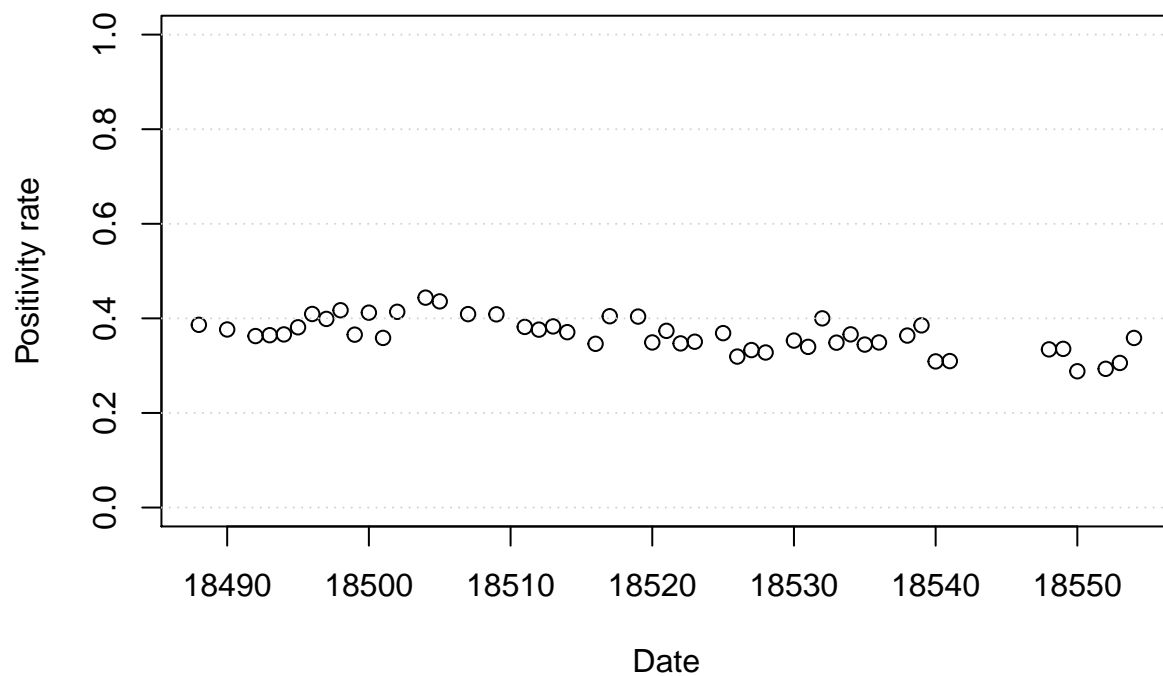


Testing and positivity rates

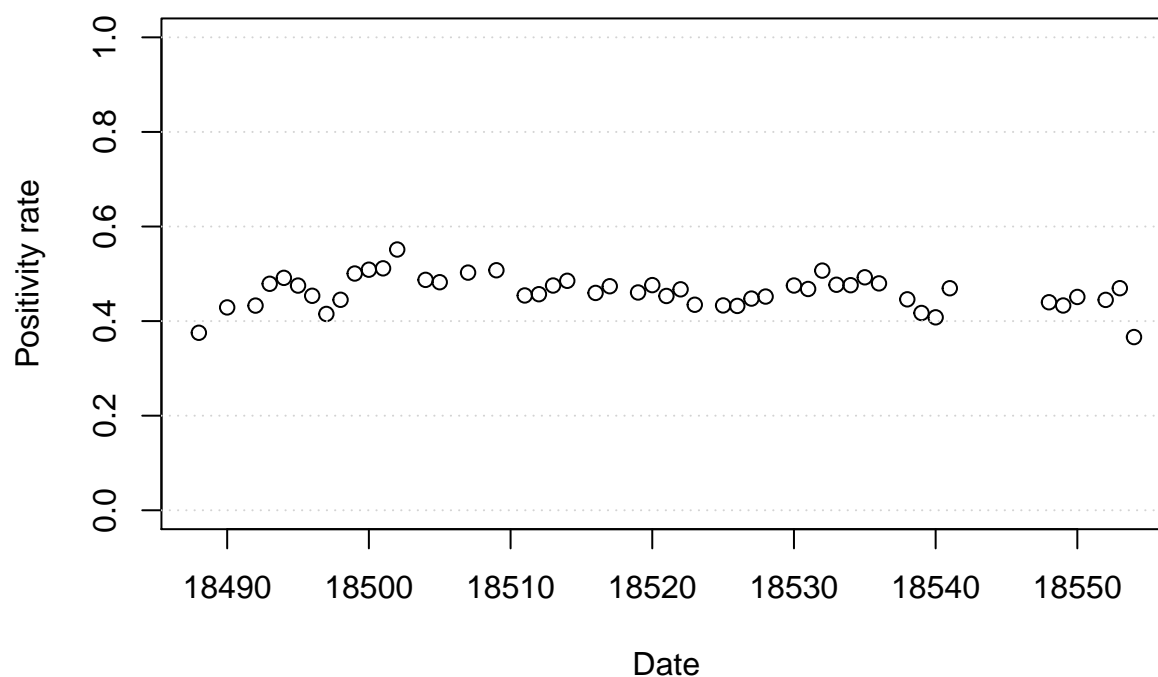
Test positivity rate National



Test positivity rate CABA



Test positivity rate Province of Buenos Aires



##	V1	NewTestsNational	PositiveTestsNational	PositivityNational	NewTestsCABA
## 1	18488	986389	310156	0.3144358	491484
## 2	18490	32633	11882	0.3641100	15314
## 3	18492	33544	11494	0.3426544	14119
## 4	18493	19841	6832	0.3443375	8375
## 5	18494	22827	8274	0.3624655	10250
## 6	18495	22084	8207	0.3716265	9758
## 7	18496	19607	7951	0.4055184	9324
## 8	18497	13628	5320	0.3903728	6206
## 9	18498	22040	8824	0.4003630	12122
## 10	18499	22556	8804	0.3903174	10206
## 11	18500	25378	10481	0.4129955	11805
## 12	18501	26391	10509	0.3982039	12460
## 13	18502	25696	11320	0.4405355	12690
## 14	18504	36630	16281	0.4444717	17219
## 15	18505	20953	9254	0.4416551	10043
## 16	18507	49293	21174	0.4295539	20869
## 17	18509	53770	23173	0.4309652	22255
## 18	18511	38362	16447	0.4287316	15483
## 19	18512	21629	8992	0.4157381	9132
## 20	18513	27683	11655	0.4210165	11614
## 21	18514	28452	12322	0.4330803	11623
## 22	18516	57159	23432	0.4099442	22744
## 23	18517	22765	10248	0.4501647	9176
## 24	18519	40853	18838	0.4611167	14390
## 25	18520	27583	11605	0.4207302	10379
## 26	18521	26253	10943	0.4168286	9175
## 27	18522	29602	12263	0.4142625	11280
## 28	18523	26954	11068	0.4106255	9183
## 29	18525	38689	16939	0.4378247	13992

## 30	18526	20010	8416	0.4205897	6666
## 31	18527	26800	11370	0.4242537	9430
## 32	18528	27001	11833	0.4382430	8687
## 33	18530	54438	24293	0.4462508	18049
## 34	18531	22326	10175	0.4557467	7085
## 35	18532	15442	7975	0.5164486	3980
## 36	18533	23119	10906	0.4717332	6712
## 37	18534	26581	12507	0.4705241	8790
## 38	18535	27442	13074	0.4764230	8184
## 39	18536	26015	12082	0.4644244	8794
## 40	18538	47981	22005	0.4586190	15331
## 41	18539	14929	7045	0.4719003	4052
## 42	18540	22393	9622	0.4296878	7734
## 43	18541	27772	12199	0.4392554	9155
## 44	18548	132609	62916	0.4744474	39945
## 45	18549	22322	9984	0.4472717	7800
## 46	18550	25678	11048	0.4302516	8461
## 47	18552	57710	25188	0.4364582	19394
## 48	18553	35625	16908	0.4746105	11393
## 49	18554	6173	2579	0.4177871	2047
##	PositiveTestsCABA	PositivityCABA	NewTestsPBA	PositiveTestsPBA	PositivityPBA
## 1	189909	0.3863992	226778	85115	0.3753230
## 2	5766	0.3765182	7985	3425	0.4289292
## 3	5119	0.3625611	8632	3736	0.4328082
## 4	3052	0.3644179	5026	2407	0.4789097
## 5	3752	0.3660488	5655	2779	0.4914235
## 6	3719	0.3811232	5891	2799	0.4751316
## 7	3816	0.4092664	4897	2221	0.4535430
## 8	2475	0.3988076	3151	1308	0.4151063
## 9	5057	0.4171754	4561	2030	0.4450778
## 10	3731	0.3655693	5767	2887	0.5006069
## 11	4865	0.4121135	6430	3271	0.5087092
## 12	4469	0.3586677	6732	3444	0.5115865
## 13	5252	0.4138692	5985	3300	0.5513784
## 14	7642	0.4438121	8331	4059	0.4872164
## 15	4378	0.4359255	4274	2061	0.4822181
## 16	8535	0.4089798	12624	6344	0.5025349
## 17	9092	0.4085374	13026	6611	0.5075234
## 18	5913	0.3819027	9205	4181	0.4542097
## 19	3435	0.3761498	4498	2055	0.4568697
## 20	4448	0.3829861	7407	3520	0.4752261
## 21	4310	0.3708165	6867	3332	0.4852192
## 22	7874	0.3462012	14298	6571	0.4595748
## 23	3712	0.4045336	5617	2661	0.4737404
## 24	5811	0.4038221	9687	4461	0.4605141
## 25	3623	0.3490702	6633	3158	0.4761043
## 26	3428	0.3736240	6543	2965	0.4531560
## 27	3915	0.3470745	7186	3357	0.4671584
## 28	3220	0.3506479	6735	2927	0.4345954
## 29	5160	0.3687822	7931	3435	0.4331106
## 30	2128	0.3192319	4807	2077	0.4320782
## 31	3140	0.3329799	6318	2828	0.4476100
## 32	2848	0.3278462	6298	2846	0.4518895
## 33	6372	0.3530389	12553	5966	0.4752649

## 34	2407	0.3397318	4828	2259	0.4678956
## 35	1592	0.4000000	2818	1428	0.5067424
## 36	2340	0.3486293	5324	2539	0.4768971
## 37	3219	0.3662116	5633	2681	0.4759453
## 38	2820	0.3445748	6354	3130	0.4926031
## 39	3070	0.3491017	5428	2604	0.4797347
## 40	5575	0.3636423	10946	4882	0.4460077
## 41	1561	0.3852419	3543	1478	0.4171606
## 42	2390	0.3090251	4699	1917	0.4079591
## 43	2835	0.3096668	6053	2842	0.4695192
## 44	13359	0.3344348	27787	12221	0.4398100
## 45	2617	0.3355128	5275	2284	0.4329858
## 46	2438	0.2881456	5534	2496	0.4510300
## 47	5689	0.2933381	12689	5645	0.4448735
## 48	3483	0.3057140	7121	3344	0.4695970
## 49	734	0.3585735	1439	527	0.3662265