Short-term real-time prediction of total number of reported COVID-19 cases in South Africa - A Bayesian Temporal Modeling Approch

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Abstract

To be updated.

Author summary

To be updated.
Text based on plos sample manuscript, see 1
$https://journals.plos.org/ploscompbiol/s/latex$ 2

Introduction 3

To be updated Here are two sample references: [1,2]. 4

Methods 5

Data 6

A daily record of newly diagnosed COVID-19 cases were extracted for the period 5 7
March 2020 to 15 Feburary 2021, at national and provincial level from a publicly 8
available data repository [ref]. Data from the first 335 days were used to fit the models. 9

Statistical analysis 10

Results 11

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## [1] 11  3
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12

References 13

1. Feynman RP, Vernon Jr. FL. The theory of a general quantum system interacting 14
with a linear dissipative system. Annals of Physics. 1963;24: 118–173. 15
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2. Dirac PA. The lorentz transformation and absolute time. Physica. 1953;19: 17
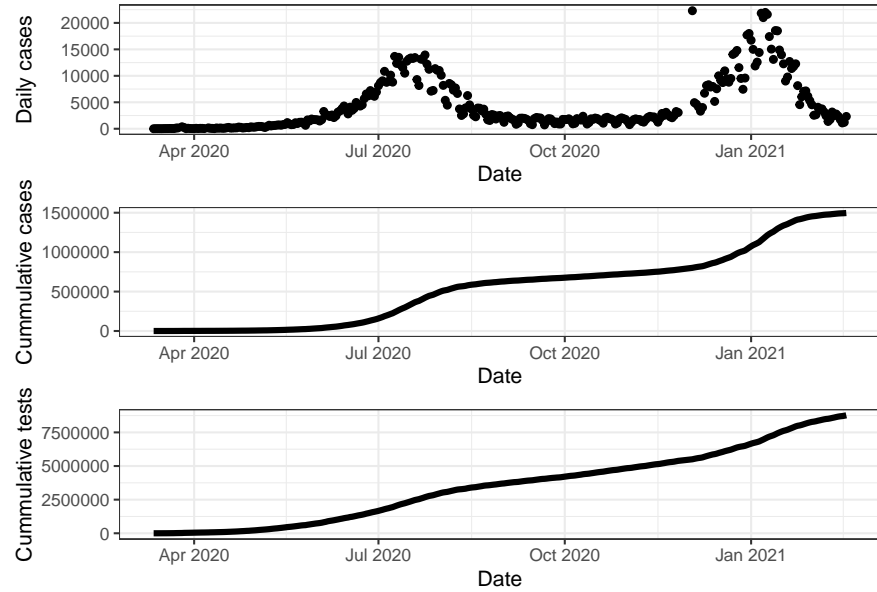888–896. doi:10.1016/S0031-8914(53)80099-6 18

Fig 1. Observed data - cummulative cases, daily cases, and cummulative tests.
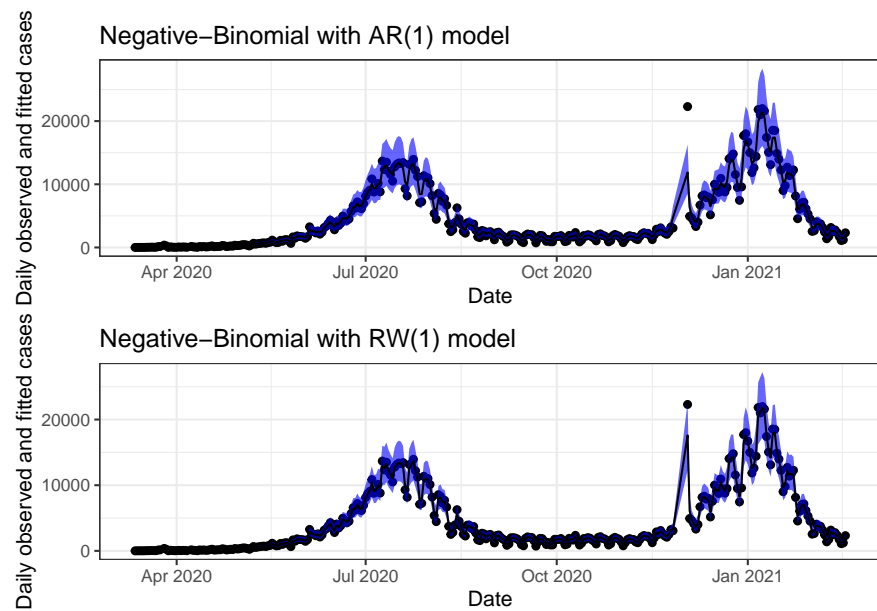

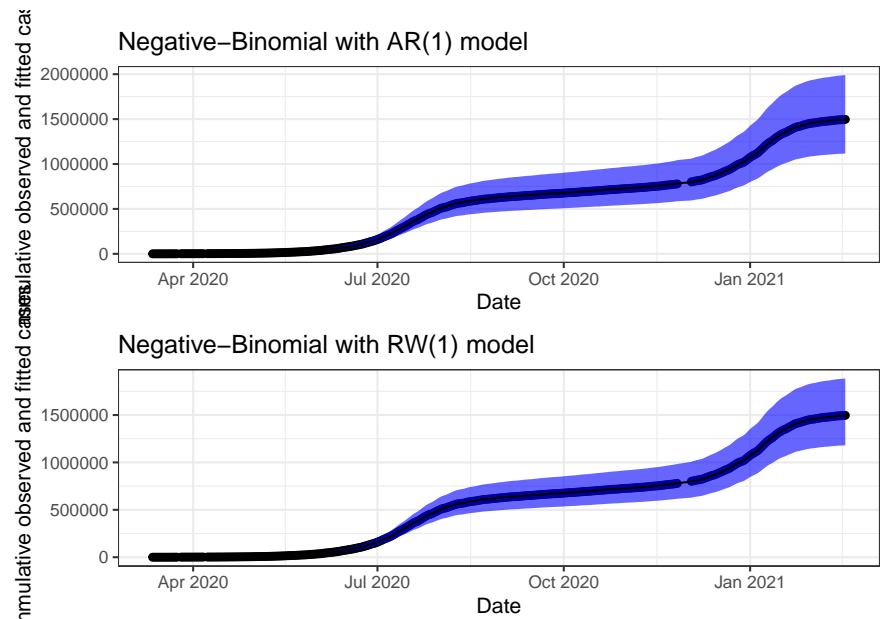**Fig 2.** Fitted and observed data
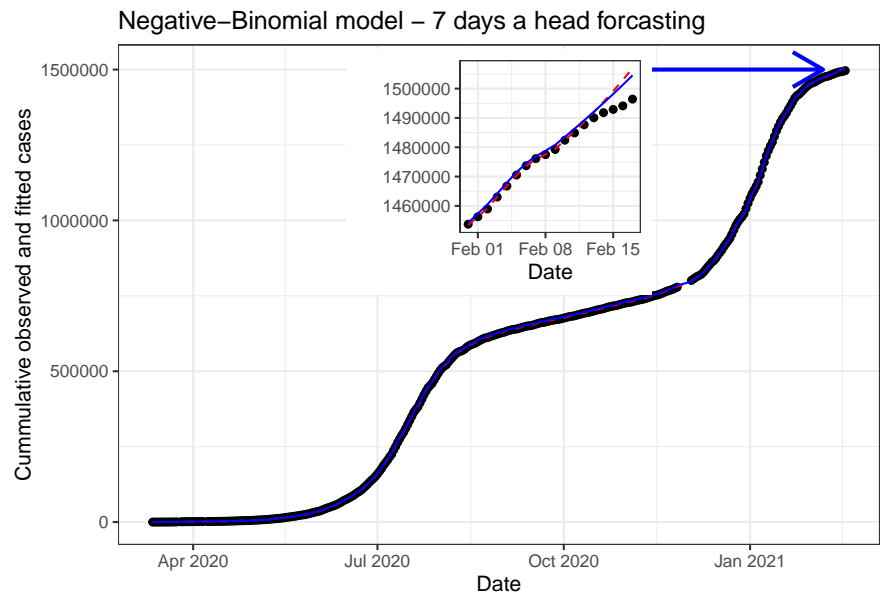
Fig 3. Fitted and observed data

Fig 4. Fitted and observed data

Table 1. Short-term predictions of total number of reported cases at the national level under the RW1 model. Estimation period 05/03/2020-08/02/2021

	Date	Total	Prediction	Prediction Interval
329	2021-02-11	1484900	1485426	(1172950.47-1870542.61)
330	2021-02-12	1487681	1488626	(1174186.41-1877494.66)
331	2021-02-13	1490063	1491973	(1175219.44-1885824.67)
332	2021-02-14	1491807	1495474	(1176106.15-1895538.68)
333	2021-02-15	1492909	1499135	(1176880.67-1906668.9)
334	2021-02-16	1494119	1502966	(1177565.81-1919261.41)
335	2021-02-17	1496439	1506973	(1178177.51-1933370.81)

Table 2. Short-term predictions of total number of reported cases at the national level under the AR1 model. Estimation period 05/03/2020-08/02/2021

	Date	Total	Prediction	Prediction Interval
329	2021-02-11	1484900	1486316	(1107317.92-1978328.98)
330	2021-02-12	1487681	1489176	(1108536.68-1984144.68)
331	2021-02-13	1490063	1492104	(1109578.88-1990818.58)
332	2021-02-14	1491807	1495100	(1110489.52-1998314.17)
333	2021-02-15	1492909	1498166	(1111296.59-2006610.93)
334	2021-02-16	1494119	1501301	(1112019.71-2015697.68)
335	2021-02-17	1496439	1504508	(1112673.2-2025567.73)