Supplemental Materials

Appendix 1

Supplemental Table 1. Notifications of pulmonary TB in Mozambique and incidence rates per 100,000 habitants, 2020

Region	Cases observed 2020					Cases per 100,000 habitants (annualized)*				
	Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total
North	5464	4537	5167	5006	20174	204.1	169.5	193.0	187.0	188.4
Niassa	1323	983	1121	1053	4480	264.8	196.8	224.4	210.8	224.2
Cabo Delgado	1329	901	1233	1219	4682	210.5	142.7	195.3	193.1	185.4
Nampula	2812	2653	2813	2734	11012	181.9	171.6	182.0	176.8	178.1
Central	10162	10490	12308	11944	44904	311.7	321.8	377.6	366.4	344.4
Zambézia	3891	4338	5684	5134	19047	279.6	311.7	408.4	368.9	342.1
Tete	1947	2235	2157	2161	8500	268.5	308.3	297.5	298.0	293.1
Manica	2318	1679	2468	2275	8740	438.5	317.6	466.9	430.4	413.3
Sofala	2006	2238	1999	2374	8617	326.5	364.2	325.3	386.4	350.6
South	6731	4728	4865	5887	22211	361.7	254.0	261.4	316.3	298.4
Inhambane	1638	1088	1287	1714	5727	427.7	284.1	336.0	447.5	373.8
Gaza	1893	1571	1595	1691	6750	523.7	434.6	441.2	467.8	466.8
Maputo Provincia	3200	2069	1983	2482	9734	286.6	185.3	177.6	222.3	217.9
Total	22357	19755	22340	22837	87289	286.7	253.3	286.5	292.9	279.8

Note. The quarterly number of new cases is reported per one-quarter of the national population so that quarterly and annual figures can be compared. Data for Maputo City and Maputo Province were merged and presented as Maputo Provincia.

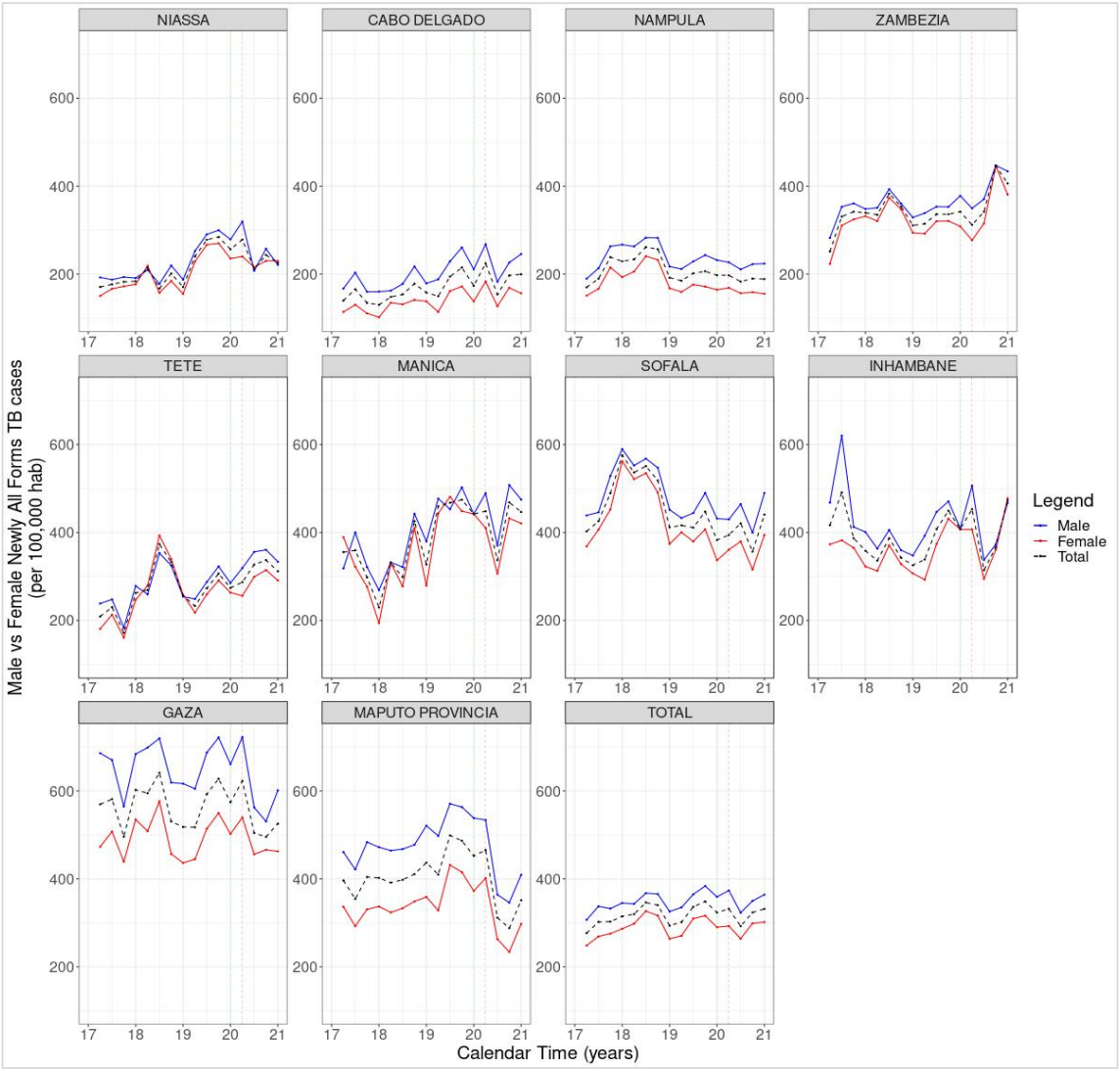
Supplemental Table 2. Expected number of 2020 notifications of pulmonary TB in Mozambique using the multilevel model, and absolute differences between the observed and expected counts

Region	Model expected	Absolute differences	% Loss from

											expected	
	Q1	**Q2**	**Q3**	**Q4**	**Total**	**Q1**	**Q2**	**Q3**	**Q4**	**Total**	**%**	**95% CI**
North	5398	5494	5598	5709	22199	66	-957	-431	-703	-2025	-9.1	-17.4, -0.4
Niassa	1255	1317	1384	1454	5410	68	-334	-263	-401	-930	-17.2	-25.9, -6.4
Cabo Delgado	1209	1253	1298	1346	5107	120	-352	-65	-127	-425	-8.3	-17.1, 2.0
Nampula	2934	2924	2916	2909	11682	-122	-271	-103	-175	-670	-5.7	-13.6, 1.4
Central	10542	10703	10875	11057	43177	-380	-213	1433	887	1727	4.0	-5.1, 13.2
Zambézia	4383	4445	4508	4575	17911	-492	-107	1176	559	1136	6.3	-1.2, 14.2
Tete	1822	1863	1906	1951	7543	125	372	251	210	957	12.7	2.8, 22.8
Manica	2257	2336	2418	2505	9516	61	-657	50	-230	-776	-8.2	-17.6, 2.4
Sofala	2080	2060	2042	2026	8208	-74	178	-43	348	409	5.0	-6.5, 14.9
South	9000	9279	9571	9878	37727	-2269	-4551	-4706	-3991	-15516	-41.1	-50.4, -31.0
Inhambane	1615	1653	1693	1735	6695	23	-565	-406	-21	-968	-14.5	-23.6, -4.7
Gaza	1842	1868	1894	1922	7527	51	-297	-299	-231	-777	-10.3	-20.5, -0.1
Maputo Provincia	5543	5758	5984	6221	23505	-2343	-3689	-4001	-3739	-13771	-58.6	-67.7, -48.3
Total	24939	25476	26043	26645	103103	-2582	-5721	-3703	-3808	-15814	-15.3	-24.3, -5.9

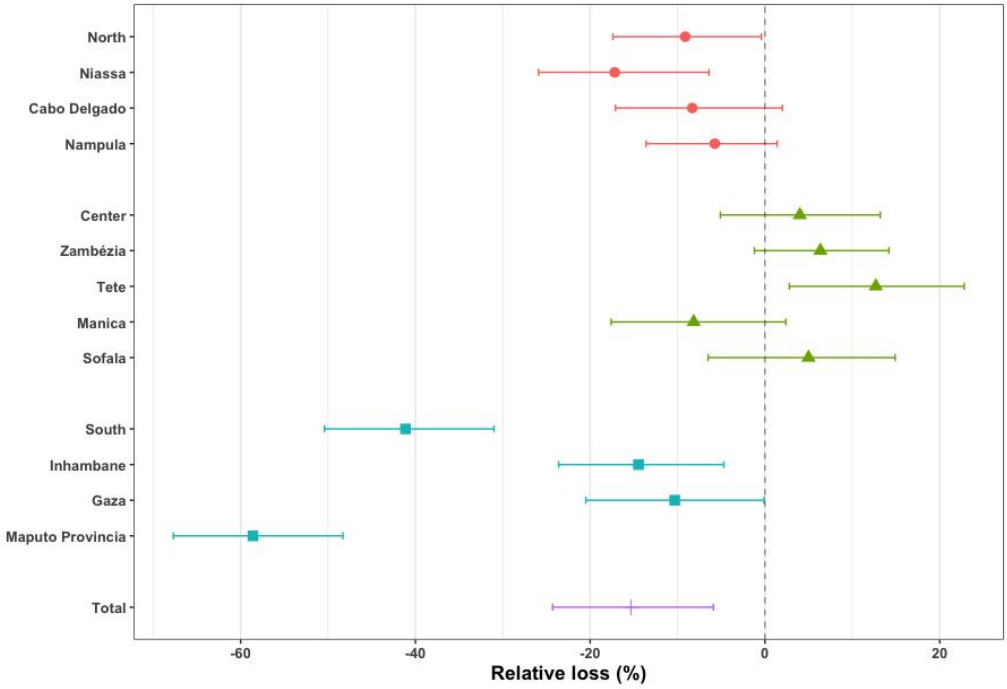
Note. Data for Maputo City and Maputo Province were merged and presented as Maputo Provincia.

Appendix 2:



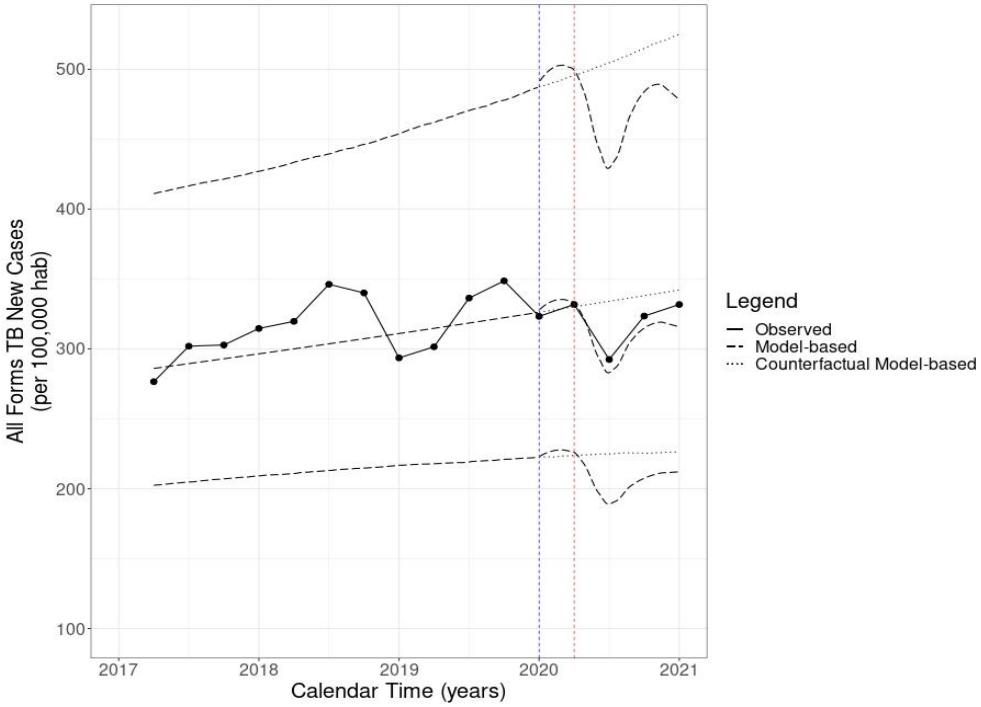
Supplemental Figure 1. Incidence of all forms of TB per 100,000 habitants in Mozambique, by sex and province. Data for Maputo City and Maputo Province were merged and presented as Maputo Provincia.

Appendix 3:



Supplemental Figure 2. Relative loss in pulmonary TB notifications and 95% confidence intervals. Provinces are grouped by region (north, central, and south); both province and regional means are shown. Data for Maputo City and Maputo Province were merged and presented as Maputo Provincia. The purple line labeled "Total" shows the mean national estimate.

Appendix 4:



Supplemental Figure 3 –Mozambique New all forms of TB diagnosed per 100,000 habitants. The solid line is the observed data. The dashed line is the model based (fitted with its confidence interval). The dotted line is the counterfactual (i.e indicates what would have happened if the pre-2020 was extended to 2020) or the forecast based on the previous year's trend. The vertical dotted lines are to indicate the beginning of 2020 and the end of the first quarter of 2020 (which coincides with measures of public calamity).

Appendix 5:

a) The model with random-effects of the district of the province (model 1)

Coefficient	Estimate	Est.Error	l-95% CI	u-95% CI
(Intercept)	-7.255	0.175	-7.601	-6.894
timeyrc	0.048	0.029	-0.009	0.105
covid	0.017	0.038	-0.058	0.093
covid.q2	-0.149	0.065	-0.279	-0.019
covid.q3	-0.049	0.087	-0.225	0.124
covid.q4	-0.035	0.057	-0.149	0.079
SD Random-Effects for district				
sd(Intercept)	0.3161	0.0212	0.2770	0.3606
sd(timeyrc)	0.0880	0.0087	0.0715	0.1055
sd(covid)	0.1857	0.0225	0.1431	0.2301
sd(covid.q2)	0.0406	0.0298	0.0016	0.1102
sd(covid.q3)	0.0299	0.0226	0.0012	0.0836
sd(covid.q4)	0.0491	0.0354	0.0018	0.1296
SD Random-Effects for province				
sd(Intercept)	0.5169	0.1542	0.3084	0.8930
sd(timeyrc)	0.0815	0.0276	0.0432	0.1484
sd(covid)	0.0677	0.0460	0.0034	0.1745
sd(covid.q2)	0.1711	0.0626	0.0807	0.3245
sd(covid.q3)	0.2454	0.0787	0.1355	0.4420
sd(covid.q4)	0.1450	0.0557	0.0606	0.2777
shape	19.5396	0.7838	18.0426	21.1189

b) the model without province random-effects but with fixed-effects at province level (as dummy indicators) (model 2)

Coefficient	Estimate	Est.Error	l-95% CI	u-95% CI
Intercept	-7.757	0.087	-7.927	-7.586
timeyrc	0.043	0.011	0.022	0.065
covid	0.018	0.030	-0.041	0.078
covid.q2	-0.138	0.030	-0.197	-0.081
covid.q3	-0.028	0.030	-0.087	0.030
covid.q4	-0.030	0.030	-0.088	0.028
Province				
Niassa	0.000			
Cabo Delgado	-0.179	0.121	-0.414	0.059
Nampula	0.211	0.113	-0.010	0.432
Zambezia	0.556	0.113	0.335	0.780
Tete	0.142	0.122	-0.101	0.379
Manica	0.538	0.130	0.285	0.790
Sofala	0.964	0.129	0.707	1.220
Inhambane	0.799	0.125	0.558	1.046
Gaza	1.110	0.131	0.851	1.366
Maputo Provincia	0.836	0.126	0.592	1.081
SD Random-Effects for district				
sd(Intercept)	0.3178	0.0218	0.2781	0.3625
sd(timeyrc)	0.1063	0.0091	0.0892	0.1247
sd(covid)	0.2205	0.023	0.1772	0.2669
sd(covid.q2)	0.0447	0.0321	0.002	0.1178
sd(covid.q3)	0.0536	0.0371	0.0025	0.1364
sd(covid.q4)	0.0493	0.0352	0.0021	0.1298
shape	18.6016	0.7443	17.1851	20.111

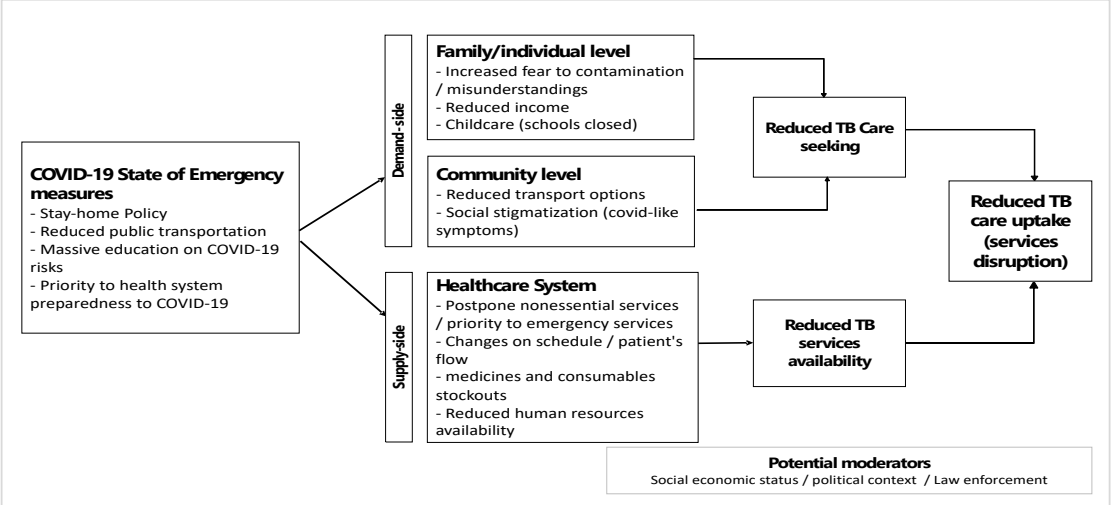
c) the model without province random-effects neither the fixed-effects at province level (as dummy indicators) (model 3)

Coefficient	Estimate	Est.Error	l-95% CI	u-95% CI
Intercept	-7.305	0.042	-7.387	-7.223
timeyrc	0.044	0.011	0.022	0.065
covid	0.018	0.030	-0.041	0.077
covid.q2	-0.138	0.029	-0.196	-0.081
covid.q3	-0.029	0.030	-0.087	0.030
covid.q4	-0.031	0.030	-0.089	0.027
SD Random-Effects for district				
sd(Intercept)	0.3178	0.0218	0.2781	0.3625
sd(timeyrc)	0.1063	0.0091	0.0892	0.1247
sd(covid)	0.2205	0.023	0.1772	0.2669
sd(covid.q2)	0.0447	0.0321	0.002	0.1178
sd(covid.q3)	0.0536	0.0371	0.0025	0.1364
sd(covid.q4)	0.0493	0.0352	0.0021	0.1298
shape	18.6544	0.7508	17.2249	20.1644

d) comparison of the 3 models using the widely available information criterion (WAIC)

	WAIC	SE
Model 1	-11652.0	65.6
Model 2	-11700.8	64.4
Model 3	-11703.2	64.0
Model1 - Model2	**48.8**	**8.6**
Model1 - Model3	**51.2**	**9.9**

Appendix 6:



Supplemental Figure 4: Conceptual framework

The SoE (level 3) measures led to immediate restrictions on several services, including education, public transportation, and the health-care delivery system. These measures affected both healthcare seeking and service availability. Supplemental Figure 4 was drawn to summarise the cause–effect theory. It highlights the potential pathways that could explain the association between COVID-19–related measures and TB service disruptions.