SEIHCRF Model Input Parameters

Field Name	Description	Data Type	Default	WHO AFRO COVID-19 model v 1.3
Model Initialization This step is seeding the compartments with initial values and providing the main disease spread parameters.				
beta	Rate of transmission (exposure)	Float or sequence of floats beta ∈]0, 5[	0.896 Can be set at admin 1 level Is overwritten at country level by the user input	Keep the same value
sigma	Rate of infection (upon exposure)	Float or sequence of floats sigma ∈]0, 1[	0.344 Can be set at admin 1 level Is overwritten at country level by the user input	Default **0.065**
gamma	Rate of recovery (upon infection)	Float or sequence of floats gamma ∈]0, 1[	0.192 Can be set at admin 1 level Is overwritten at country level by the user input	Keep the same value
initN	Init number of individuals	Float (int) or sequence of floats (ints)	From the admin 1 level population	
initE	Init number of exposed individuals	Float (int) or sequence of floats (ints)	0	
initI	Init number of infectious individuals	Float (int) or sequence of floats (ints)	Active cases retrieved from worldometer.org	
initH	Init number of hospitalized individuals	Float (int) or sequence of floats (ints)	0	
initC	Init number of critical individuals	Float (int) or sequence of floats (ints)	Critical cases from worldometer.org	
initR	Init number of recovered individuals	Float (int) or sequence of floats (ints)	Recovered cases from worldometer.org	
initF	Init number of infection-related fatalities (all remaining nodes initialized susceptible)	Float (int) or sequence of floats (ints)	Deaths from worldometer.org	
m	Fraction of infectious that	Float	0.85	Asymptomatic: Default **0.80** Mild: Default **0.08**

	are asymptomatic or mild			
c	Fraction of severe cases that turn critical	Float	1./3.	Default **0.50**
f	Fraction of critical cases that are fatal	Float	0.5	Default **0.88**
t_h	Time a sick person recovers or deteriorates into a critical state	Float	11.5	Keep the same value
t_c	Time a person remains critical before dying or stabilizing	Float	13.	**15 days**
Model Run The model run parameters define how the compartment model is executed.				
T	the number of epochs to run it for, in days	Int or Float	300.	
dt	timestep	Float	1./24.	
checkpoints	For params that don't have given checkpoint values (or bad value given), set their checkpoint values to the value they have now for all checkpoints.	Dictionary 't': list of ints or floats 'beta_factor': float or list of floats 'sigma_factor': float or list of floats 'gamma_factor': float or list of floats		
migration_in_out	Time for migration in and out	List of 2 floats	[8./24., 16./24.]	
Checkpoints The checkpoints allow to define dates at which the disease spread model parameters change.				
t	Days to change parameters	List of ints OR floats		
beta_factor	Rate of transmission (exposure)	List of floats OR list of list of floats		
sigma_factor	Rate of infection (upon exposure)	List of floats OR list of list of floats		
gamma_factor	Rate of recovery (upon	List of floats OR list of list of floats		

	infection)			
phi_factor	Factor to multiply phi (migration fluxes)	Scalar, vector or matrix		

repeat	Repeating patterns	Dict: {
		'time_scale': list of floats,
		'breakpoints': list of list
		of 2 floats
		}		

In addition, we have matrices of fluxed of people between regions within a country. This can also be used as parameters. Example of such matrix used for Djibouti. This is the percentage of people moving from one admin unit to another.

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	609	610	611	612	613	614	615	616	617	618	619	620
609	0	0.001109	2e-04	0.002303	0.000408	0.00018	0.000471	5.9e-05	5.2e-05	0.00022	0.000201	0.000364
610	0.000795	0	0.000202	0.002917	0.000348	0.000191	0.004051	5e-05	8.6e-05	0.000115	0.000134	0.000311
611	0.000148	0.000153	0	0.000322	0.000255	0.000477	0.000174	0.00292	0.00059	0.002529	0.000577	0.00042
612	0.001286	0.002134	0.000276	0	0.000564	0.000248	0.002963	8.1e-05	7.2e-05	0.000304	0.000277	0.000503
613	6.8e-05	7e-05	0.000471	0.000174	0	0.000775	0.000381	6.2e-05	0.000242	0.000221	0.001291	0.005585
614	7.2e-05	7.4e-05	0.001454	0.000156	0.000124	0	8.5e-05	0.000298	0.004028	0.000293	0.00023	0.002491
615	0.000366	0.005949	0.000138	0.001987	0.000413	0.00013	0	3.4e-05	5.8e-05	7.9e-05	9.1e-05	0.000212
616	6.1e-05	6.3e-05	0.00708	0.000133	0.000105	0.000197	7.2e-05	0	0.000243	0.001043	0.000238	0.000173
617	4.9e-05	5e-05	0.002222	0.000105	8.3e-05	0.005972	5.7e-05	0.000335	0	0.000255	9.8e-05	0.000305
618	0.000116	0.00012	0.002983	0.000253	2e-04	0.000268	0.000137	0.003445	0.000331	0	0.000585	0.000437
619	6.4e-05	6.6e-05	0.000856	0.000138	0.00011	0.000176	7.5e-05	0.000198	9.5e-05	0.006459	0	0.001146
620	8.6e-05	8.9e-05	0.001556	0.000187	0.000148	0.004549	0.000101	0.000165	0.00027	0.000448	0.001567	0