

## COVID-19 Projections: South Sudan

**Report Date: 09 Sep 2020**

This report summarizes the COVID-19 model results for South Sudan, developed by the OCHA Centre for Humanitarian Data in partnership with the Johns Hopkins University Applied Physics Laboratory. These projections are based on COVID-19 cases and deaths data up to 2020-09-09. The data is sourced from WHO and the MOPH. For dynamic updates to this data and more, see the [HDX COVID-19 Map Explorer](#). For additional information, please contact Leonardo Milano at: [leonardo.milano@un.org](mailto:leonardo.milano@un.org).

### 1. Key Messages<sup>12</sup>

**Current Situation** (as of 09 Sep 2020)

- A total of 2,555 cases and 49 deaths have been reported.
- New reported cases have declined by 25% and new reported deaths have been stable with respect to last week.
- The current number of severe cases requiring healthcare support is estimated at 4 - 6.
- According to the data reported by the MOPH and the WHO, the number of new reported cases had been decreasing in August but show a slight uptick since our last update.
- Few COVID-related deaths have been documented, which is likely attributable to limitations in reporting.
- Concerning data gaps limit visibility into the current situation.
- The highest numbers of new cases, severe cases and deaths were reported at least 4 weeks ago.
- The number of cases reported provided by the MOPH at the subnational level is systematically lower than that provided by the WHO at the national level.

**National Projections** (in the next 4 weeks or by 07 Oct 2020)

- In the next 4 weeks, the total number of cases is projected to reach 2,512 - 2,522 (a 1-2% increase) and the total number of deaths is projected to reach 47 - 48 (a 2-3% increase) if current NPIs are maintained.
- Lifting of NPIs would lead to a larger increase in cases and deaths (up to 228 more cases and up to 4 more deaths; see sections 2 and 3 for details).
- The number of severe cases requiring health care support is projected to stay constant unless NPIs are lifted, in which case they are projected to increase sharply (see section 3).

**Subnational Projections** (in the next 2 weeks or by 23 Sep 2020)

- **Data gaps and inconsistencies in the reported number of cases and deaths in South Sudan represent major challenges.** For this reason the team hasn't been able to produce subnational results yet.

<sup>1</sup>**Reported cases** refers to the number of infections expected to be reported. It takes into account the **case reporting rate** which corresponds to the estimated number of COVID-19 infections that are actually tested, confirmed and reported. The case reporting rate is calculated based on the reported number of deaths and cases in the last 30 days.

<sup>2</sup>**Severe cases** refers to the number of people which will have severe symptoms and may require healthcare support. It is calculated as a proportion of the reported cases, and is based on planning parameters for case severity and the vulnerability of a given region.

## 2. Key Figures (as of 09 Sep 2020)

### Current situation

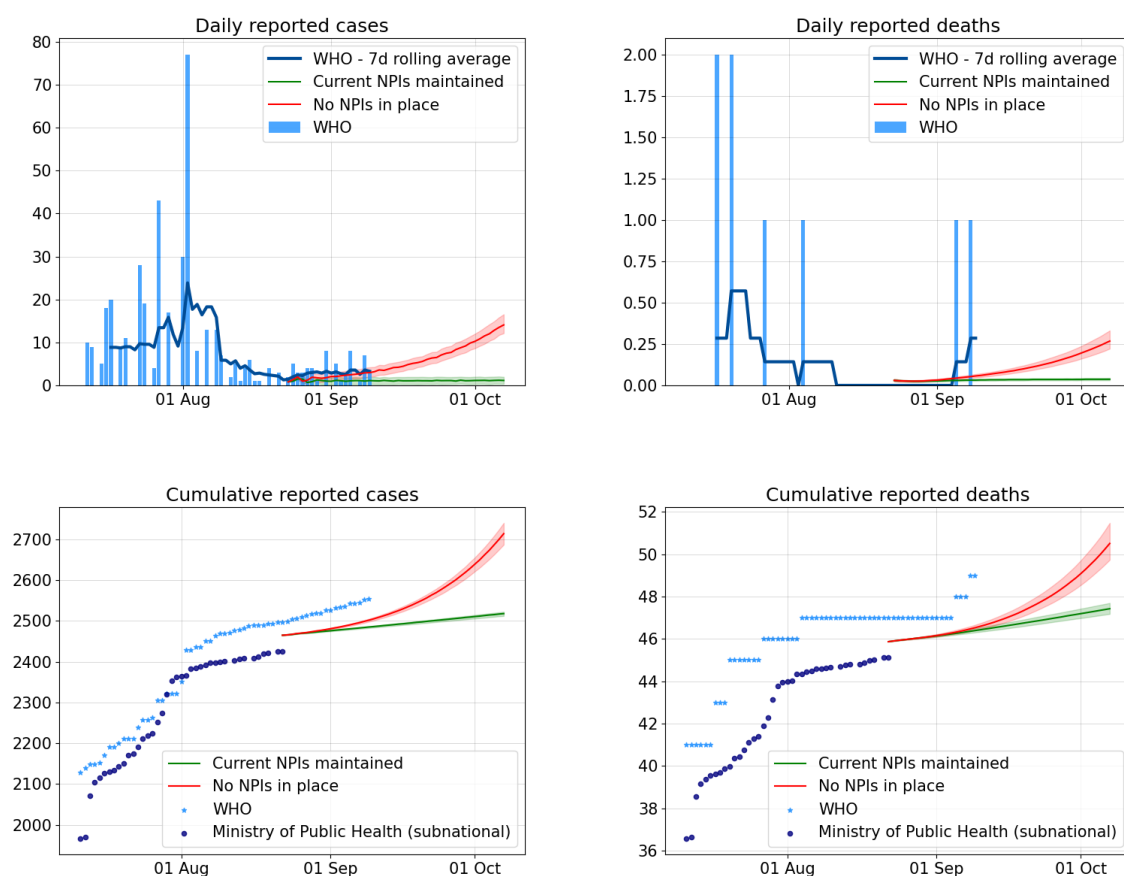
Reported Cases	Reported Deaths	Severe Cases Estimate
2,555	49	4 - 6
Case Fatality Rate: 1.9%		

### Projected situation in the next 4 weeks or by 07 Oct 2020

	Projected Cases	Projected Deaths
With current NPIs maintained	2,512 - 2,522	47 - 48
With no NPIs	2,687 - 2,740	50 - 51

## 3. National Projections

### Projected situation in the next 4 weeks or by 07 Oct 2020



The figures above show the comparison between the reported cases and data from two different sources (national level data from WHO in light blue and subnational data from the Ministry of Public Health in dark blue) together with the projected trends. The two lines presented correspond to 'Current NPIs maintained' and 'No NPIs in place' scenarios.

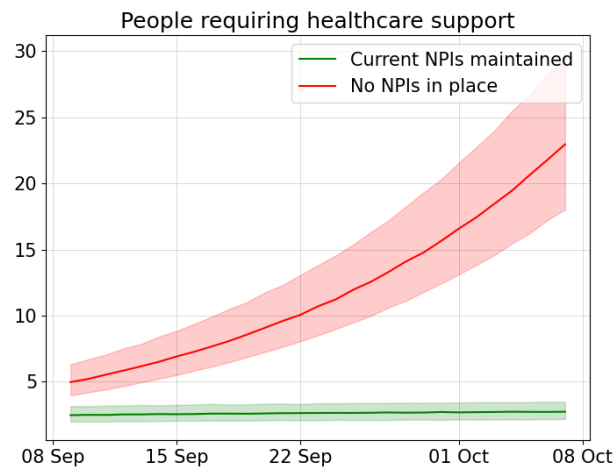
## Severe Cases (Estimated)

With current NPIs maintained

2 - 3

With no NPIs

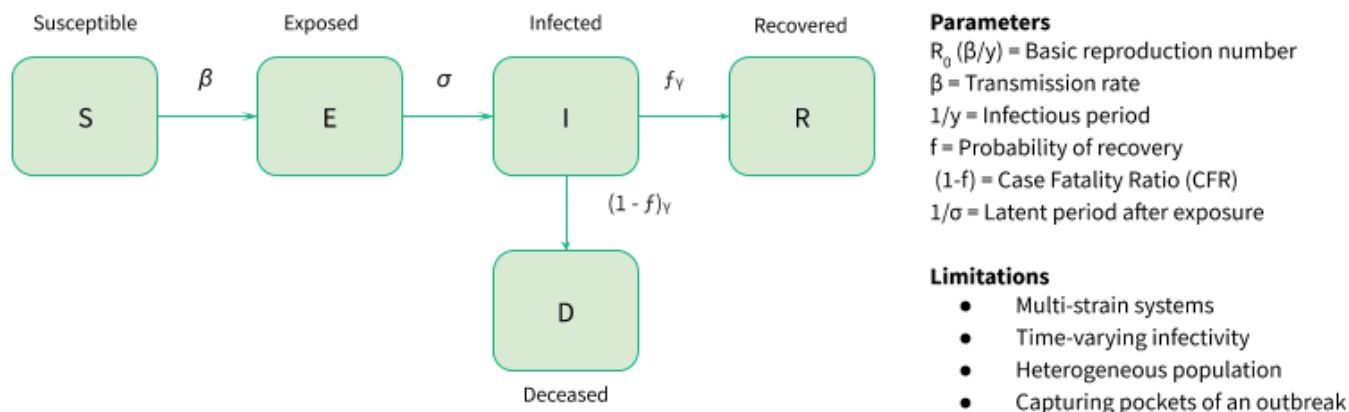
18 - 30



## Background on Model Methodology

The Centre established a partnership with the Johns Hopkins University Applied Physics Laboratory to develop a COVID-19 model which provides projections and insights related to the **scale** of the crisis, the **duration** of the crisis in a specific location, and how different response **interventions** are expected to impact the epidemic curve.

The team is using an **SEIR (Susceptible, Exposed, Infectious, Recovered)** model of infectious disease dynamics which is considered the simplest and most effective technique used in the literature. The model is based on a progression from susceptible to either recovered or dead. Inputs include the reproduction rate ( $R_0$ ), case fatality rate (CFR), and estimated probabilities that an individual person may contract COVID-19. The model then simulates an outbreak and provides estimates for cases, hospitalizations, and deaths.



The key features of the model include:

- **Tuning on reported data** The estimation of the main parameters (mainly the reproduction rate  $R_0$  and the case reporting rate) is tuned according to the observed recent trends in reported COVID-19 cases.
- **Subnational** The model provides COVID-19 projections at the subnational level, matching the administrative level at which COVID-19 cases are reported.
- **Spatial spread** The density of roads is used to estimate the expected mobility patterns and to simulate the spread of COVID-19 between administrative units.
- **Population stratification** The model fidelity is increased by taking into consideration:
  - The age structure of the population at the subnational level
  - The expected probability of contact between populations of different age groups, including contacts expected to happen at work, school, home and everywhere else (social mixing)
  - Vulnerability factors such as food insecurity, household air pollution and access to handwashing facilities.
- **Non-pharmaceutical interventions (NPIs)** The model simulates the expected impact of NPIs at the subnational level, and also how the outbreaks is influenced by changing NPIs implemented over time. The NPIs currently implemented can be categorised in three main groups:
  - Mobility based NPIs, which would limit the spread of disease between administrative units (e.g. border closures)
  - Contact based NPIs, which reduce the probability of contact between specific groups (e.g. shielding of the elderly, closing schools)
  - $R_0$  based NPIs, which reduce the overall reproduction rate (e.g. awareness campaigns, curfews)