**Mobility Based SEIAHR Model for Pandemics – With Case Study of Covid-19 in Mozambique**

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**Abstract**

Since December 2019, the world has been experiencing one of the worst health crises caused by the COVID-19 pandemic. The rapid spatial expansion of covid leads us to conjecture that classical compartmental epidemiological models are limited because they do not consider the importance of reducing social connectivity and the importance of restricting mobility. Convinced, we carried out this research to understand how social connectivity and mobility affect the size of the pandemic. We introduced the parameter of social connectivity and the parameter of mobility in our epidemiological model SEIAHR and with this, we simulated in a road network of interprovincial passenger transport, considering the number of inhabitants per province, data collected in the 2020 Yearbook prepared by the National Institute of Statistic. With the simulation, we found that, limiting social connectivity reduces and delays the peak of the pandemic and, with mobility restriction at 10%, 20% and 30%, the total size of the pandemic until reaching the peak decreases by 92%, 85 % and 75% respectively.