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# MACHINE LEARNING APPROACH FOR PREDICTING UNDER-FIVE MORTALITY DETERMINANTS IN SOMALILAND

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## ABSTRACT

Child mortality is a critical indicator of socioeconomic and demographic development, particularly in regions such as Somaliland in sub-Saharan Africa. This study aims to identify the determinants of under five mortality in Somaliland using machine learning techniques. Data from the 2020 Somaliland Demographic and Health Survey (SDHS) is analyzed, encompassing a comprehensive set of variables at the individual, household, and community levels. Machine learning algorithms are employed to identify key risk factors. The study reveals significant determinants of under-five child mortality in Somaliland. Male children have a higher mortality rate (58%) compared to females (42%), as shown in Figure 1. Twins face a higher mortality risk (63%) compared to non-twins (37%), as illustrated in Figure 2. Higher household wealth is associated with lower mortality rates, with the wealthiest households experiencing a mortality rate of 26% compared to 46% in the poorest households (Figure 3). Children of mothers in nomadic areas face a higher mortality risk (55%) than those in settled areas (45%). This study emphasizes the influence of socioeconomic and demographic factors on under-five child mortality in Somaliland, shedding light on important determinants. Notably, there is no significant link found between maternal education and under-five mortality. However, factors such as wealth index, region of residence, birth order, and twinning are identified as significant determinants. These findings provide valuable insights for policymakers and stakeholders in their efforts to reduce child mortality rates in Somaliland. This study identifies key determinants of under-five child mortality in Somaliland, emphasizing the need to address socioeconomic disparities. Targeted interventions focusing on factors such as twin births, household wealth, birth order, and geographic disparities can significantly reduce child mortality rates in the region.

**Keywords** Under-five mortality · Determinants · Somaliland · Machine learning · Socioeconomic factors · Sex of the child.

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