

# Advanced Machine Learning Techniques in Biostatistics: Applications and Challenges

Safet Linie\*

Department of Biostatistics, Shandong Normal University, Jinan, China

## Introduction

A decomposition analysis is a statistical technique used to understand the factors contributing to these inequalities. It aims to identify which socio-economic factors are responsible for the disparities in child survival rates. The decomposition analysis is typically applied to data obtained from surveys or other sources that provide information on child survival rates and socio-economic variables. These variables can include factors such as household income, parental education and access to healthcare facilities, sanitation, and other indicators of economic and social well-being. Socio-economic inequalities in child survival in India refer to the disparities in the likelihood of survival among children from different socio-economic backgrounds [1,2].

## Description

The decomposition analysis breaks down the observed differences in child survival rates among different socio-economic groups into various components. These components help identify the contributions of different socio-economic factors to the overall inequality in child survival. The analysis identifies which socio-economic factors play a significant role in explaining the disparities. For instance, it may reveal that the availability of healthcare facilities and access to sanitation are critical determinants of child survival inequalities. The decomposition analysis quantifies the contributions of each factor to the observed inequalities. This quantification helps policymakers understand which factors should be prioritized to address the disparities effectively. Based on the findings of the decomposition analysis, policymakers can develop targeted interventions and policies to improve child survival rates among disadvantaged socio-economic groups. For example, if the analysis reveals that lack of access to healthcare services is a major driver of child mortality disparities, policies could focus on improving healthcare infrastructure and ensuring affordable healthcare services for vulnerable populations. The child survival rate is calculated as the proportion of children who survive to a certain age (e.g., 5 years) among different socio-economic groups. For example, researchers might calculate the child survival rate for children from low-income households, middle-income households, and high-income households separately.

By conducting a decomposition analysis, policymakers and researchers can gain insights into the root causes of socio-economic inequalities in child survival in India. This knowledge can then be utilized to design more effective and targeted interventions aimed at reducing these disparities and improving child health outcomes across different socio-economic backgrounds. Furthermore, advancements in machine learning and artificial intelligence algorithms are improving the accuracy and speed of fingerprint matching, enhancing system performance and reducing false acceptance and rejection rates. Additionally,

it is crucial for researchers and policymakers to consider the multifaceted nature of socio-economic inequalities in child health. Socio-economic factors can interact and compound, leading to complex health disparities. Therefore, a comprehensive approach is necessary, involving various sectors such as health, education, infrastructure development, and social welfare, to address the underlying determinants of child health inequalities [3-5].

## Conclusion

By using a decomposition analysis, researchers can better understand the complex relationship between socio-economic factors and child survival rates, which, in turn, can aid in developing effective policies and programs to reduce child mortality and improve overall child health outcomes in India. This approach can also be applied in other contexts to study disparities in various health and social outcomes among different population groups.

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## Conflict of Interest

The Author declares there is no conflict of interest associated with this manuscript.

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\*Address for Correspondence: Safet Linie, Department of Biostatistics, Shandong Normal University, Jinan, China, E-mail: hinie81@edu.cn

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