Time Series Forecasting of Newly Diagnosed HIV Cases in Davao Region using ARIMA Models

A Project Proposal

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The Philippines is facing a rapidly growing HIV epidemic, with a significant increase in new HIV cases over the past decade. Compared to the other regions in the Philippines, Region XI ranked 5th, contributing to the 1,347 new cases in the entire country in 2022 (Cayon, 2022). With the aforementioned problem, there is an urgent need to address the problem.

The problem holds significant importance from an application perspective as it has direct implications for public health planning and resource allocation. By forecasting, the researchers can make informed predictions about how HIV cases increase. This information is crucial for individuals, healthcare authorities, and policymakers to make strategic decisions for prevention and control of HIV incidence.

This project aims to formulate a reliable forecasting model using ARIMA modeling technique. Thus, the issue at hand holds considerable interest when viewed through a forecasting perspective, as it provides an opportunity to analyze historical data and identify trend, and seasonal patterns in the spread of HIV infection. Applying this forecasting technique enables us to capture these patterns and make informed predictions for future periods.

The dataset will be obtained from The Regional HIV/STI Surveillance Unit of the Davao Center for Health Development. The researcher will send an email approved by the course instructor to the said office requesting for historical data of the number of monthly diagnosed HIV cases in Davao Region for the year 2003-2022. Once collected and compiled, the dataset will consist of 240 rows and 4 columns, including the year, month, and the number of newly diagnosed HIV cases in the region.

The expected outcome of this study is to generate forecasts for the number of HIV cases in Davao Region from June 2023 to December 2024. The generated forecasts will aid in assessing the future trajectory of the HIV epidemic in the Region, facilitating proactive measures to mitigate the impact of the disease and improve healthcare planning for affected individuals.

The project's findings will potentially benefit various stakeholders. Healthcare authorities and policymakers will gain support for strategic planning, resource allocation, and policy development to effectively address the HIV epidemic in Region XI through accurate forecasts. Medical personnel and healthcare providers will benefit by being able to anticipate the number of newly diagnosed cases, allowing them to prepare for increased demand and provide timely and appropriate care, treatment, and support services. HIV/AIDS organizations and NGOs can utilize forecasting models to design targeted interventions, educational campaigns, and prevention programs based on predicted trends, leading to efficient and improved outreach efforts. Researchers and the academe can also leverage the developed forecasting model and the insights derived from it, contributing to the current body of knowledge.

References

Cayon, C. (2022). HIV cases increasing in Davao Region. *Philippine Information Agency*. Retrieved on June 12, 2023 from https://pia.gov.ph/news/2022/12/19/hiv-cases-increasing-in-davao-region.