

# A Global Study of Screening Intensity and Economic Status on Epidemic Control Performance During Various Epidemic Periods of COVID-19 Mutant Strains

Chia-Lin Chang<sup>1</sup> and Chao-chin Chang<sup>1</sup>

<sup>1</sup>National Chung Hsing University

August 16, 2022

## Abstract

This study analyzed global data and provides insights how economic conditions in various countries associate with epidemic control measures during different epidemic periods by mutant strains. In this study, the elasticity coefficient is estimated through a log-log model, which represents the percent change of the confirmed case number with respect to a percent change of the total number of screening tests in a country for epidemic control. The elasticity estimate was used to show the effectiveness of epidemic control by community screening. The 7-day rolling data of screening tests and confirmed cases from the Our World in Data (OWID) database for the pandemic periods of Alpha strain in 2020, Delta strain in 2021, and Omicron strain in 2022, suggests that the magnitude of the elasticity was associated with the economic condition of a country. Compared with the result s during either Alpha - or Delta- pandemic period, the Omicron pandemic has a much higher estimated elasticity coefficient of 1.317 (Alpha: 0.827 and Delta: 0.885). Further comparison of economic conditions that were classified by quartile ranges, the result reveals the elasticity in countries with GDP per capita between \$11,354 and \$26,651 or GDP per capita above \$26,651 is statistically significantly lower than that in countries having GDP per capita below \$3,335. The findings of this study imply that the performance of epidemic control in a country is not only dependent on epidemiological measures applied, but is also influenced by the economic condition of a country.

## Hosted file

TED\_manuscrip(with title page)\_v1\_2022.08.13.docx available at <https://authorea.com/users/501660/articles/582011-a-global-study-of-screening-intensity-and-economic-status-on-epidemic-control-performance-during-various-epidemic-periods-of-covid-19-mutant-strains>

## Hosted file

TED\_figures.docx available at <https://authorea.com/users/501660/articles/582011-a-global-study-of-screening-intensity-and-economic-status-on-epidemic-control-performance-during-various-epidemic-periods-of-covid-19-mutant-strains>

## Hosted file

TED\_tables.docx available at <https://authorea.com/users/501660/articles/582011-a-global-study-of-screening-intensity-and-economic-status-on-epidemic-control-performance-during-various-epidemic-periods-of-covid-19-mutant-strains>