UNIVERSITY OF CANTERBURY
Te Whare Wānanga o Waitaha
CHRISTCHURCH NEW ZEALAND

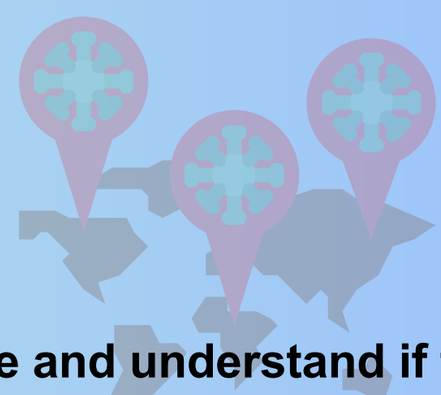
DATA601-23X

Authors:
Nisha Budhathoki
Paloma Gonzalez
Wuqiu Jiang
Mualeoa Leo

Supervisors:
Dr. Arindam Basu
Dr. Phil Davies
Nicki Cartlidge

COVID-19: Analyzing All-Cause Mortality and Excess Deaths

GOALS



- **Analyze the pattern of all-cause mortality, investigating if and how COVID-19 has influenced these trends from 2020 to 2022.**
- **Investigate and understand if there is a relationship between COVID-19 and excess deaths.**

DATA

- 38 OECD Countries (Weekly data)
- All-cause mortality - (2015 to 2022)
- COVID-19 & Excess deaths - (2020 to 2022)
- Ethics: Publicly available data, no individual consent is required

Variables

- **population density**
- **GDP per capita**
- **Access to quality healthcare**
- **% urban area population**
- **% of the population (65 & over)**

METHOD

- Programming tools: R, Jupyter Notebook, and Power BI to analyze and visualize.

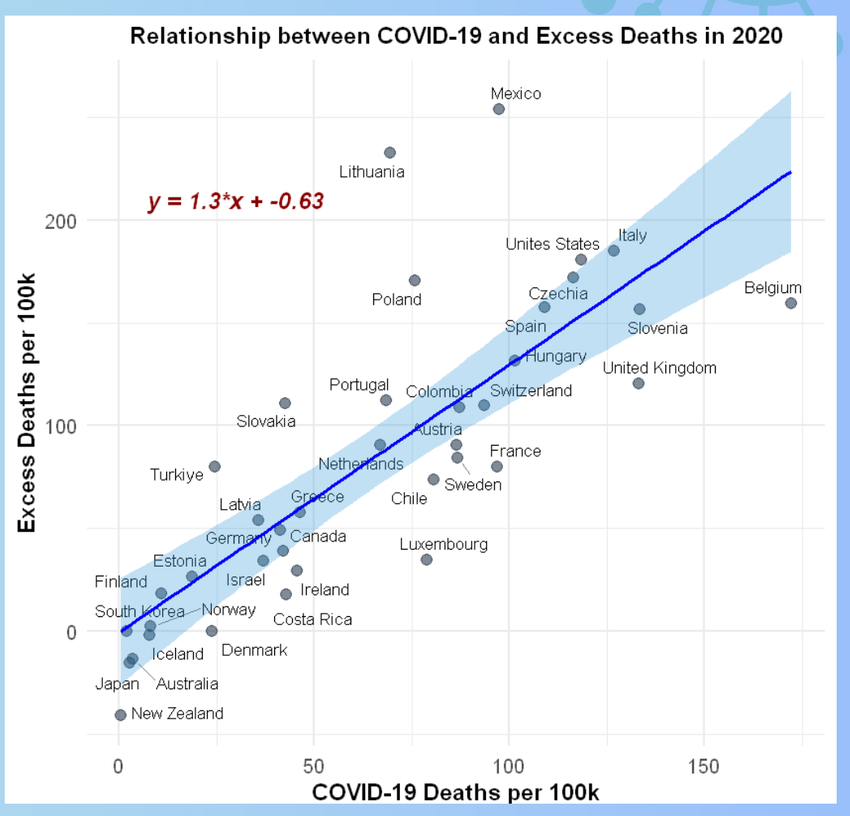
Statistical analysis

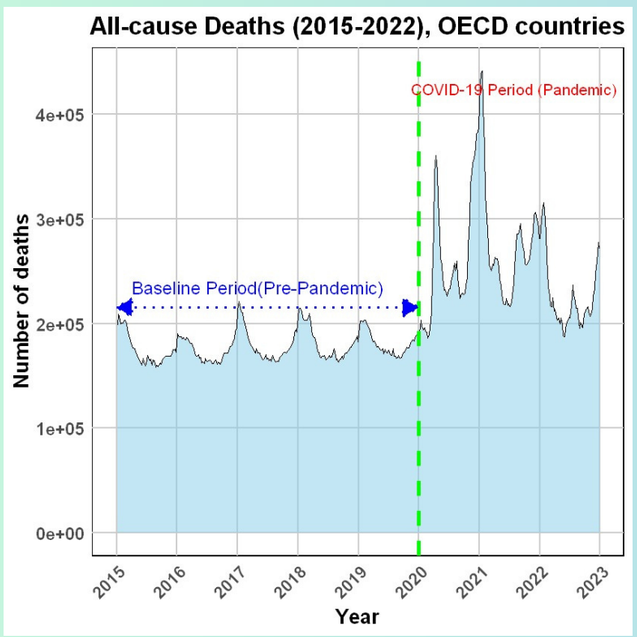
mean, median, Standard deviation, % of change, T-test

Pearson's Correlation, **Multiple regression**, **Linear regression**

RESULTS

- Strong correlation between excess deaths and COVID-19 deaths in 2020 (0.7954) and 2021 (0.8919).
- Correlation weakened in 2022, but remained positive.
- Vulnerable age group - (65 and over)
- 2021: Access to quality healthcare shows a trend toward significance in potentially reducing excess deaths.
- 2022: The presence of other contributing factors - population density exhibits a positive correlation, while GDP per capita demonstrates a marginal positive correlation with excess deaths.





CONCLUSIONS

There are differences in all-cause mortality during 2020-2022 compared to pre-pandemic years.

It wasn't just about the COVID-19, it also depended on how prepared the countries were, how they responded, and how their healthcare systems managed the crisis.

Our analysis highlights the impact of COVID-19 on excess deaths is there.