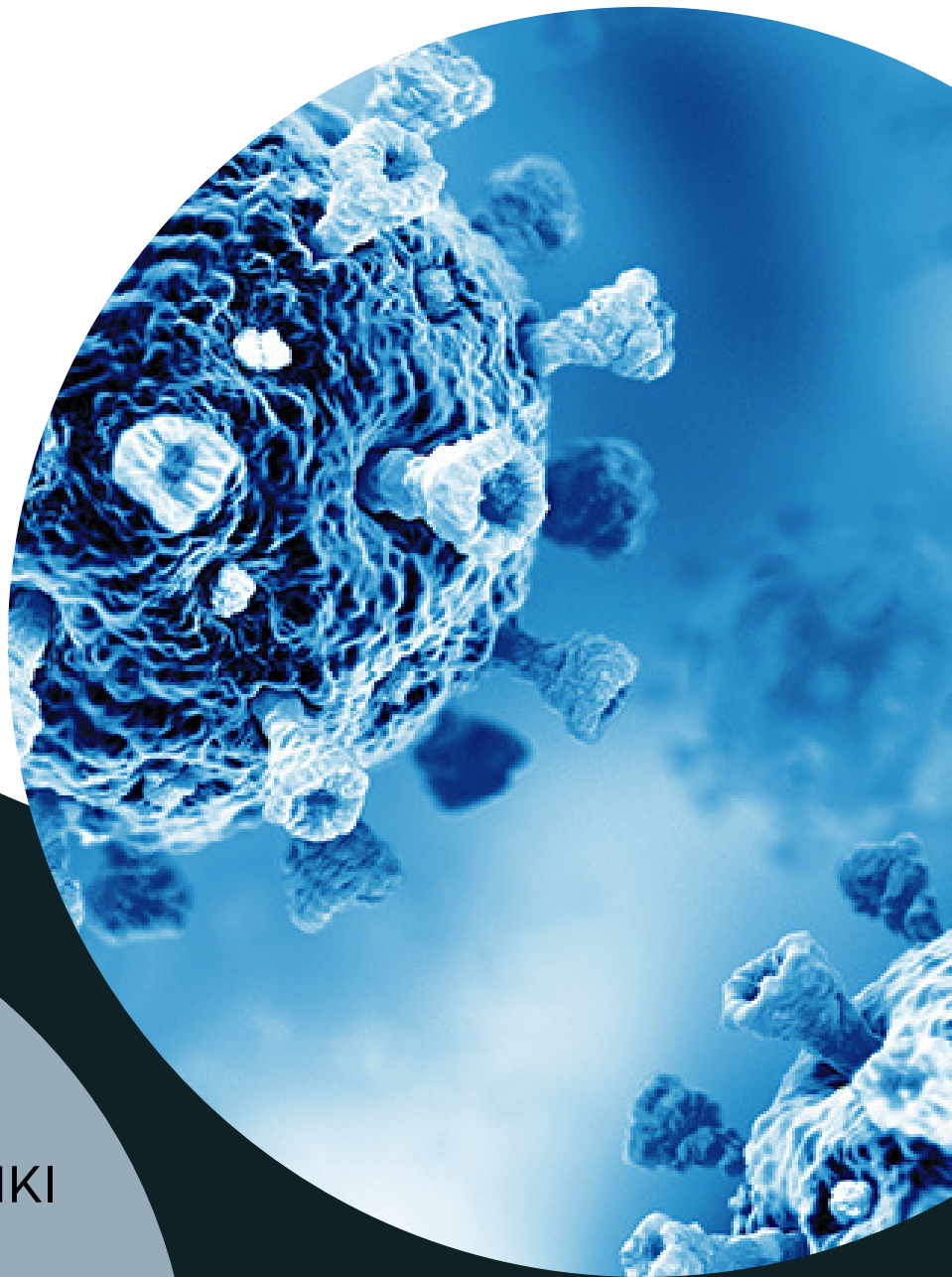# COVID-19 Mortality Rates

Based on Age and Gender data from 2022

Prepared By

MINH TRAN, HELSINKI

2023

Statistical Analysis of COVID-19 Mortality Rates Based on Age and Gender: Insights from Johns Hopkins University and Health Organizations

Abstract:

The report investigates the mortality rates associated with COVID-19, focusing on age and gender differentials. Utilizing datasets from Johns Hopkins University, WHO, CDC, NHC, and DXY, this analysis delves into the statistical significance of age disparities among survivors and deceased individuals, as well as gender-based mortality rates.

Introduction:

The emergence of the 2019 Novel Coronavirus led to a global outbreak, with initial cases traced back to Wuhan, China. The report aims to explore the demographic factors impacting COVID-19 mortality, drawing from datasets compiled by esteemed health organizations.

Methodology:

The analysis employs a time series dataset, comprising cumulative cases of infection, deaths, and recoveries from January 22, 2020. Statistical tools such as Two Sample t-tests were utilized to scrutinize differences in age among survivors and deceased individuals, alongside gender-based mortality rates.

Results:

Preliminary findings revealed that the average age of deceased individuals was notably higher than that of survivors. A Two Sample t-test with a p-value of 2.2e-16 indicated a statistically significant age gap between the two groups. Additionally, the analysis suggested a higher mortality rate among men compared to women, supported by a 99% confidence level and a $p < 0.05$.

Discussion:

The statistically significant discrepancy in ages between survivors and deceased individuals underscores the impact of age on COVID-19 mortality. Moreover, the observed higher mortality rate among men compared to women substantiates the gender-based disparities in susceptibility to severe outcomes.

Conclusion:

The analysis, conducted using R programming language on .csv files from Johns Hopkins University and collaborating health organizations, highlights the statistical significance of age and gender in COVID-19 mortality rates. The results underscore the importance of considering demographic factors in understanding and managing the impacts of the pandemic.

"On average, victims who died are older than those who survived"

with 95% confidence

*p-value = 2.2e-16 indicate a near-zero value. This corresponds with high level of confidence of the statistic

48 y.o.   69 y.o.

*p-value in one sentence:
A p-value less than 0.05 suggests stronger evidence that what's being studied is genuinely happening and not just due to random chance.

3.7% death rate

8.4% death rate

"On average, male has higher mortality rate than female victims"

with 99% confidence

*p-value = 0.002105 indicate a near-zero value. This corresponds with high level of confidence of the statistic

1085 observations
Average death rate 5.8%

Tool used: R language
Important links:
GitHub
Kaggle - Coronavirus dataset

Author: Minh Tran, 2023

Picture credit: **https://valtioneuvosto.fi/en/-/1271139/high-number-of-covid-19-cases-imposes-a-burden-on-healthcare-and-social-welfare**