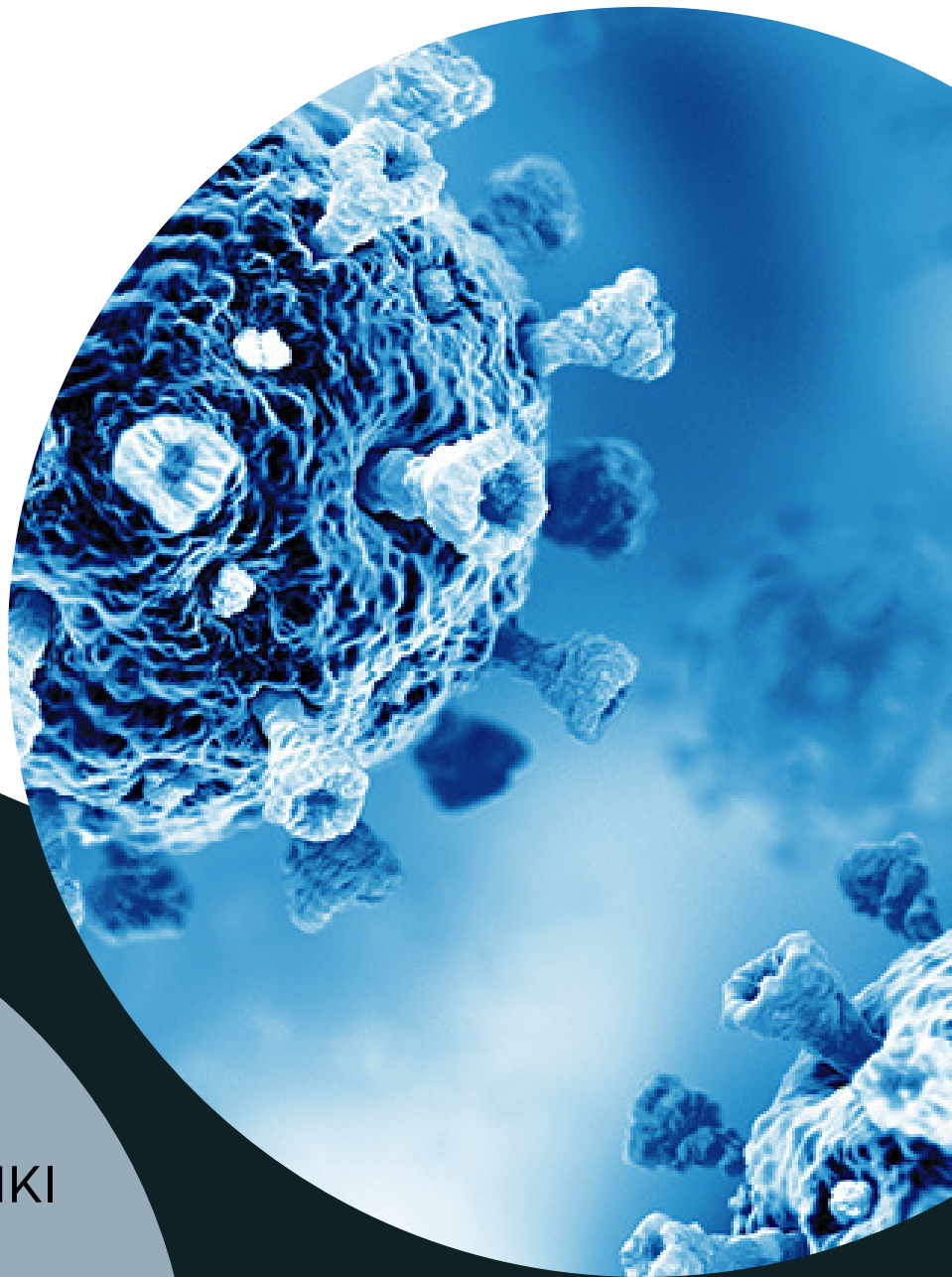# COVID-19 Mortality Rates

Based on Age and Gender data from 2020

Prepared by

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

Introduction:

The report delves into COVID-19 mortality rates, specifically examining age and gender disparities. Utilizing datasets from respected institutions like Johns Hopkins University, WHO, CDC, NHC, and DXY, this analysis aims to uncover the statistical significance behind age differences among survivors and deceased individuals, along with gender-based mortality rates, in response to the global outbreak of the 2019 Novel Coronavirus that originated in Wuhan, China.

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 & Discussion:

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 $p < 0.05$.

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.

Sources:

Valtioneuvosto, accessed 2023, <https://valtioneuvosto.fi/en/-/1271139/high-number-of-covid-19-cases-imposes-a-burden-on-healthcare-and-social-welfare>

Sudarai, R., 2020, "Novel Corona Virus 2019 Dataset" accessed 2023 <https://www.kaggle.com/datasets/sudalairajkumar/novel-corona-virus-2019-dataset/versions/25/data>

"On average, the deceased are older than those who survived."

average 48 y.o.

average 69 y.o.

with 95% confidence

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

"On average, male patients show a higher mortality rate than female"

3.7% death rate

8.4% death rate

with 99% confidence

*p-value = 0.002105 being less than 0.05. This corresponds with high level of confidence of the statistic

*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.

1,085 observations
Average death rate 5.8%

Author: Minh Tran, 2023
Tool:
- R language
- GitHub
- Kaagle