# MIS 6380.004 – DATA VISUALIZATION
# GROUP 8 PROJECT REPORT

## The effect of COVID – 19 and its infection on different age groups and their places of death in the State of Florida during Pandemic (2020-2023)


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# Executive Summary

This data visualization project aimed to explore the impact of COVID-19 and related illnesses on mortality rates across various age groups and locations within the state of Florida. The project's objective was to investigate the relationships between age, gender, illness severity, and place of death to gain insights into the patterns of COVID-19-related mortality. The project hypothesis was that certain age groups and locations would experience higher mortality rates due to COVID-19 and related illnesses, and that gender and illness severity would also play a role in mortality outcomes. Through data visualization techniques, the project aimed to provide a comprehensive overview of the COVID-19 mortality landscape in Florida and identify potential areas for further research and intervention.

**The project's findings support the following hypotheses**:

- Individuals aged 74-85 are more vulnerable to mortality from COVID and associated infections such as influenza and pneumonia due to weakened immune systems and age-related health issues.
- Influenza mortality followed a seasonal pattern and was lower during the months with the highest COVID and pneumonia fatalities, demonstrating that it was unaffected by pneumonia or COVID.
- Because of the severity and subsequent exposure to the virus, a higher percentage of COVID and pneumonia-related fatalities occurred in inpatient health care than in any other place of death.
- During the pandemic, males with pneumonia and influenza had higher mortality rates.
- There is a link between the COVID-19 mortality rate and the pattern of pneumonia fatalities across all age categories during the pandemic era, which sometimes coincides with COVID.
- The outcomes of this investigation shed light on the influence of COVID-19 and associated illnesses on various age groups and locales of mortality. This data may be utilized to design targeted preventative and treatment initiatives for susceptible populations, such as the elderly and men.

# INDEX

# 1. DATA DESCRIPTION

Our dataset for this project is taken from DATA.CDC.GOV. The Excel data set provides information on COVID-19 deaths, total deaths, and deaths due to other respiratory illnesses in the state of Florida. The data is broken down by various demographics, including age group and Place of Death. The data also provides information on deaths due to pneumonia, influenza, or a combination of both, in addition to deaths specifically attributed to COVID-19. This data set is useful in understanding the impact of COVID-19 on public health in Florida, including which populations may be most affected. The data also allows for comparisons to be made between COVID-19 deaths and deaths due to other respiratory illnesses, providing insight into the overall burden of respiratory diseases on public health in the state. The data set is valuable for researchers and policymakers alike, as it can inform public health policies and guide resource allocation to better address the impact of respiratory illnesses on the population. The dataset has 123930 rows and 15 columns. The secondary dataset contains data on deaths related to Covid-19 and other illnesses, categorized by sex.

**1.1. Data Sources:** https://data.cdc.gov/NCHS/Provisional-COVID-19-Deaths-by-Place-of-Death-and-/4va6-ph5s

**1.2. Data Source:** https://data.cdc.gov/NCHS/Provisional-COVID-19-Deaths-by-Sex-and-Age/9bhg-hcku

# 2. DATA CLEANING

**Step 1:** This is a code written in R programming language that loads the required libraries, checks for missing values in a dataframe named "Florida_state_info", imputes the missing values with median and exports the cleaned dataframe to an Excel file using the "writexl" package.

**Step 2:** The first two lines of code load the necessary libraries "readxl" and "writexl" for reading and writing Excel files.

**Step 3:** The third line of code checks for missing values in the data frame "Florida_state_info" using the "is.na" function, which returns a logical vector indicating whether each element of the input vector is missing or not. The "colSums" function is used to sum up the missing values in each column.

**Step 4:** The next six lines of code impute missing values with the median of each column using the "median" function with the "na.rm" argument set to "TRUE" to remove missing values from the calculation. The "is.na" function is used again to identify the missing values in each column, and the median is assigned to those missing values using the bracket notation with the logical indexing.

**Step 5:** The next two lines of code check for missing values again after the imputation is completed to ensure that there are no missing values left in the dataframe.

**Step6:**The last line of code exports the cleaned dataframe to an Excel file named "cleanednew21_file.xlsx" using the "write_xlsx" function from the "writexl" package.

# 2.1.R CODE USED IN DATA CLEANING:

```r
setwd('C:/Users/kunka/OneDrive/Desktop/semester 2/Data visualization/Group Project')
# Load the required libraries
library(readxl)
library(writexl)

Book2<- read_excel('Book2.xlsx')

# Check for missing values
colSums(is.na(Book2))

# Impute missing values with median
COVID19Deaths.median <- as.integer(median(Book2$`COVID-19 Deaths`, na.rm = TRUE))
Book2[is.na(Book2$`COVID-19 Deaths`), "COVID-19 Deaths"] <- COVID19Deaths.median

TotalDeaths.median <- as.integer(median(Book2$`Total Deaths`, na.rm = TRUE))
Book2[is.na(Book2$`Total Deaths`), "Total Deaths"] <- TotalDeaths.median

PneumoniaDeaths.median <- as.integer(median(Book2$`Pneumonia Deaths`, na.rm = TRUE))
Book2[is.na(Book2$`Pneumonia Deaths`), "Pneumonia Deaths"] <- PneumoniaDeaths.median

PneumoniaCOVID19Deaths.median <- as.integer(median(Book2$`Pneumonia and COVID-19 Deaths`, na.rm = TRUE))
Book2[is.na(Book2$`Pneumonia and COVID-19 Deaths`), "Pneumonia and COVID-19 Deaths"] <- PneumoniaCOVID19Deaths.median

InfluenzaDeaths.median <- as.integer(median(Book2$`Influenza Deaths`, na.rm = TRUE))
Book2[is.na(Book2$`Influenza Deaths`), "Influenza Deaths"] <- InfluenzaDeaths.median

PICDeaths.median <- as.integer(median(Book2$`Pneumonia, Influenza, or COVID-19 Deaths`, na.rm = TRUE))
Book2[is.na(Book2$`Pneumonia, Influenza, or COVID-19 Deaths`), "Pneumonia, Influenza, or COVID-19 Deaths"] <- PICDeaths.median

# Check for missing values again after imputation
colSums(is.na(Book2))

# Export the cleaned dataframe to an Excel file using the writexl package
write_xlsx(Book2,"cleanedBook.xlsx")
```

RStudio

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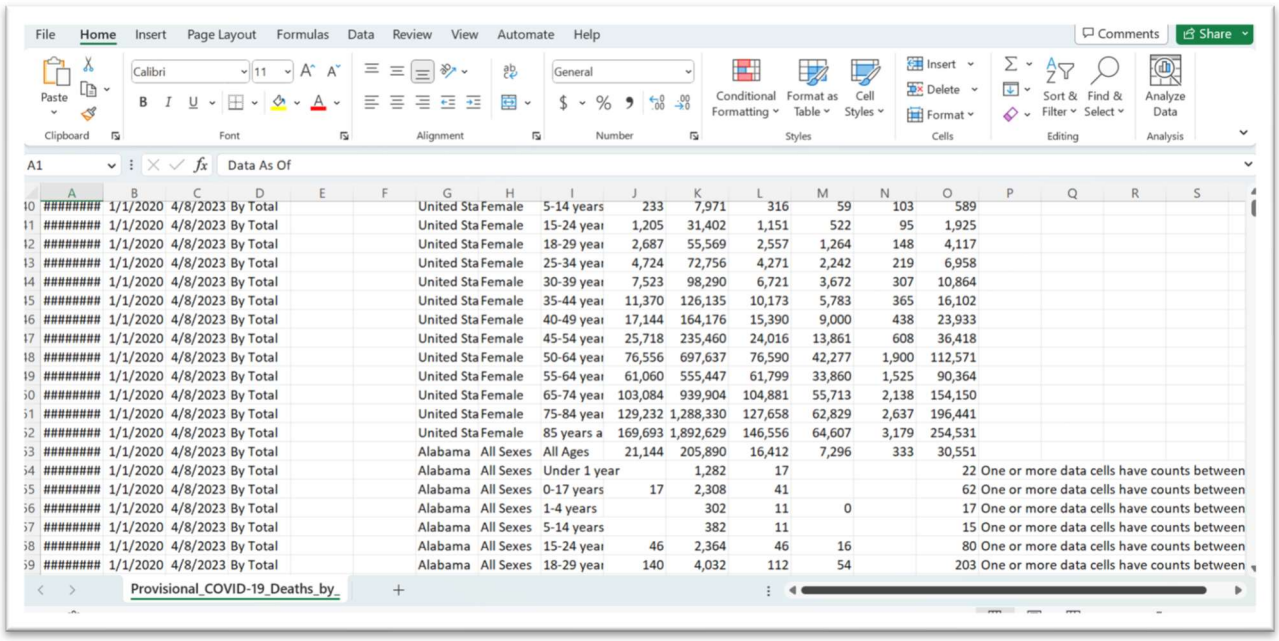
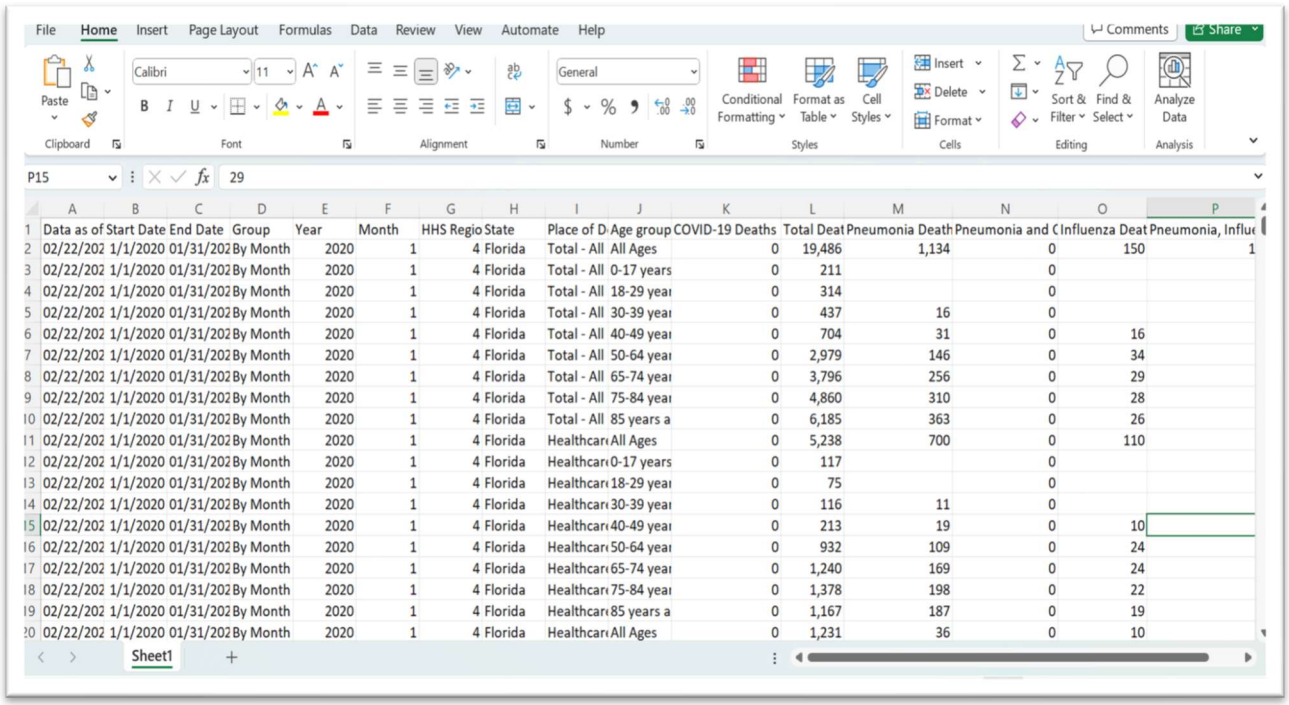
```r
# Load the required libraries
library(readxl)
library(writexl)

# Check for missing values
colSums(is.na(Florida_state_info))

# Impute missing values with median
COVID19Deaths.median <- as.integer(median(Florida_state_info$`COVID-19 Deaths`, na.rm = TRUE))
Florida_state_info[is.na(Florida_state_info$`COVID-19 Deaths`), "COVID-19 Deaths"] <- COVID19Deaths.median

TotalDeaths.median <- as.integer(median(Florida_state_info$`Total Deaths`, na.rm = TRUE))
Florida_state_info[is.na(Florida_state_info$`Total Deaths`), "Total Deaths"] <- TotalDeaths.median

PneumoniaDeaths.median <- as.integer(median(Florida_state_info$`Pneumonia Deaths`, na.rm = TRUE))
Florida_state_info[is.na(Florida_state_info$`Pneumonia Deaths`), "Pneumonia Deaths"] <- PneumoniaDeaths.median

PneumoniaCOVID19Deaths.median <- as.integer(median(Florida_state_info$`Pneumonia and COVID-19 Deaths`, na.rm = TRUE))
Florida_state_info[is.na(Florida_state_info$`Pneumonia and COVID-19 Deaths`), "Pneumonia and COVID-19 Deaths"] <- PneumoniaCOVID19Deaths.median

InfluenzaDeaths.median <- as.integer(median(Florida_state_info$`Influenza Deaths`, na.rm = TRUE))
Florida_state_info[is.na(Florida_state_info$`Influenza Deaths`), "Influenza Deaths"] <- InfluenzaDeaths.median

PICDeaths.median <- as.integer(median(Florida_state_info$`Pneumonia, Influenza, or COVID-19 Deaths`, na.rm = TRUE))
Florida_state_info[is.na(Florida_state_info$`Pneumonia, Influenza, or COVID-19 Deaths`), "Pneumonia, Influenza, or COVID-19 Deaths"] <- PICDeaths.median

# Check for missing values again after imputation
colSums(is.na(Florida_state_info))

# Export the cleaned dataframe to an Excel file using the writexl package
write_xlsx(Florida_state_info,"cleanednew21_file.xlsx")
```

## 2.2.RAW DATASETS:

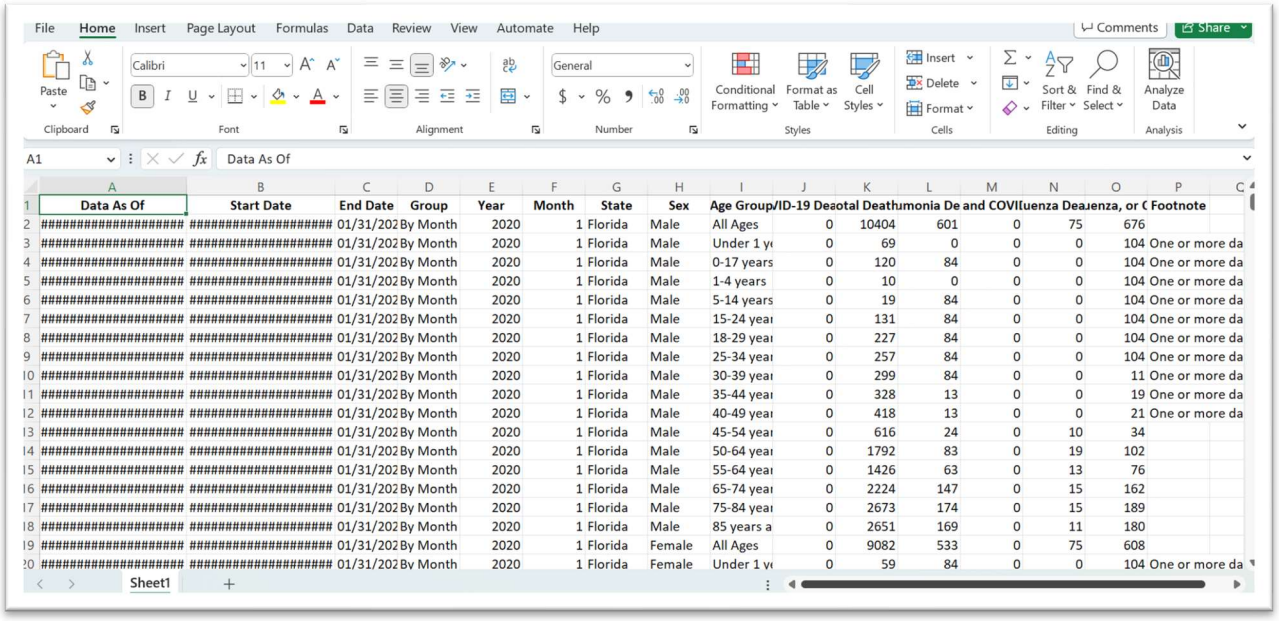


| | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 | ######## | 1/1/2020 | 4/8/2023 | By Total | | | United Sta | Female | 5-14 years | 233 | 7,971 | 316 | 59 | 103 | 589 | | | | |
| 11 | ######## | 1/1/2020 | 4/8/2023 | By Total | | | United Sta | Female | 15-24 year | 1,205 | 31,402 | 1,151 | 522 | 95 | 1,925 | | | | |
| 12 | ######## | 1/1/2020 | 4/8/2023 | By Total | | | United Sta | Female | 18-29 year | 2,687 | 55,569 | 2,557 | 1,264 | 148 | 4,117 | | | | |
| 13 | ######## | 1/1/2020 | 4/8/2023 | By Total | | | United Sta | Female | 25-34 year | 4,724 | 72,756 | 4,271 | 2,242 | 219 | 6,958 | | | | |
| 14 | ######## | 1/1/2020 | 4/8/2023 | By Total | | | United Sta | Female | 30-39 year | 7,523 | 98,290 | 6,721 | 3,672 | 307 | 10,864 | | | | |
| 15 | ######## | 1/1/2020 | 4/8/2023 | By Total | | | United Sta | Female | 35-44 year | 11,370 | 126,135 | 10,173 | 5,783 | 365 | 16,102 | | | | |
| 16 | ######## | 1/1/2020 | 4/8/2023 | By Total | | | United Sta | Female | 40-49 year | 17,144 | 164,176 | 15,390 | 9,000 | 438 | 23,933 | | | | |
| 17 | ######## | 1/1/2020 | 4/8/2023 | By Total | | | United Sta | Female | 45-54 year | 25,718 | 235,460 | 24,016 | 13,861 | 608 | 36,418 | | | | |
| 18 | ######## | 1/1/2020 | 4/8/2023 | By Total | | | United Sta | Female | 50-64 year | 76,556 | 697,637 | 76,590 | 42,277 | 1,900 | 112,571 | | | | |
| 19 | ######## | 1/1/2020 | 4/8/2023 | By Total | | | United Sta | Female | 55-64 year | 61,060 | 555,447 | 61,799 | 33,860 | 1,525 | 90,364 | | | | |
| 50 | ######## | 1/1/2020 | 4/8/2023 | By Total | | | United Sta | Female | 65-74 year | 103,084 | 939,904 | 104,881 | 55,713 | 2,138 | 154,150 | | | | |
| 51 | ######## | 1/1/2020 | 4/8/2023 | By Total | | | United Sta | Female | 75-84 year | 129,232 | 1,288,330 | 127,658 | 62,829 | 2,637 | 196,441 | | | | |
| 52 | ######## | 1/1/2020 | 4/8/2023 | By Total | | | United Sta | Female | 85 years a | 169,693 | 1,892,629 | 146,556 | 64,607 | 3,179 | 254,531 | | | | |
| 53 | ######## | 1/1/2020 | 4/8/2023 | By Total | | | Alabama | All Sexes | All Ages | 21,144 | 205,890 | 16,412 | 7,296 | 333 | 30,551 | | | | |
| 54 | ######## | 1/1/2020 | 4/8/2023 | By Total | | | Alabama | All Sexes | Under 1 year | | 1,282 | 17 | | | 22 | One or more data cells have counts between | | | |
| 55 | ######## | 1/1/2020 | 4/8/2023 | By Total | | | Alabama | All Sexes | 0-17 years | 17 | 2,308 | 41 | | | 62 | One or more data cells have counts between | | | |
| 56 | ######## | 1/1/2020 | 4/8/2023 | By Total | | | Alabama | All Sexes | 1-4 years | | 302 | 11 | 0 | | 17 | One or more data cells have counts between | | | |
| 57 | ######## | 1/1/2020 | 4/8/2023 | By Total | | | Alabama | All Sexes | 5-14 years | | 382 | 11 | | | 15 | One or more data cells have counts between | | | |
| 58 | ######## | 1/1/2020 | 4/8/2023 | By Total | | | Alabama | All Sexes | 15-24 year | 46 | 2,364 | 46 | 16 | | 80 | One or more data cells have counts between | | | |
| 59 | ######## | 1/1/2020 | 4/8/2023 | By Total | | | Alabama | All Sexes | 18-29 year | 140 | 4,032 | 112 | 54 | | 203 | One or more data cells have counts between | | | |

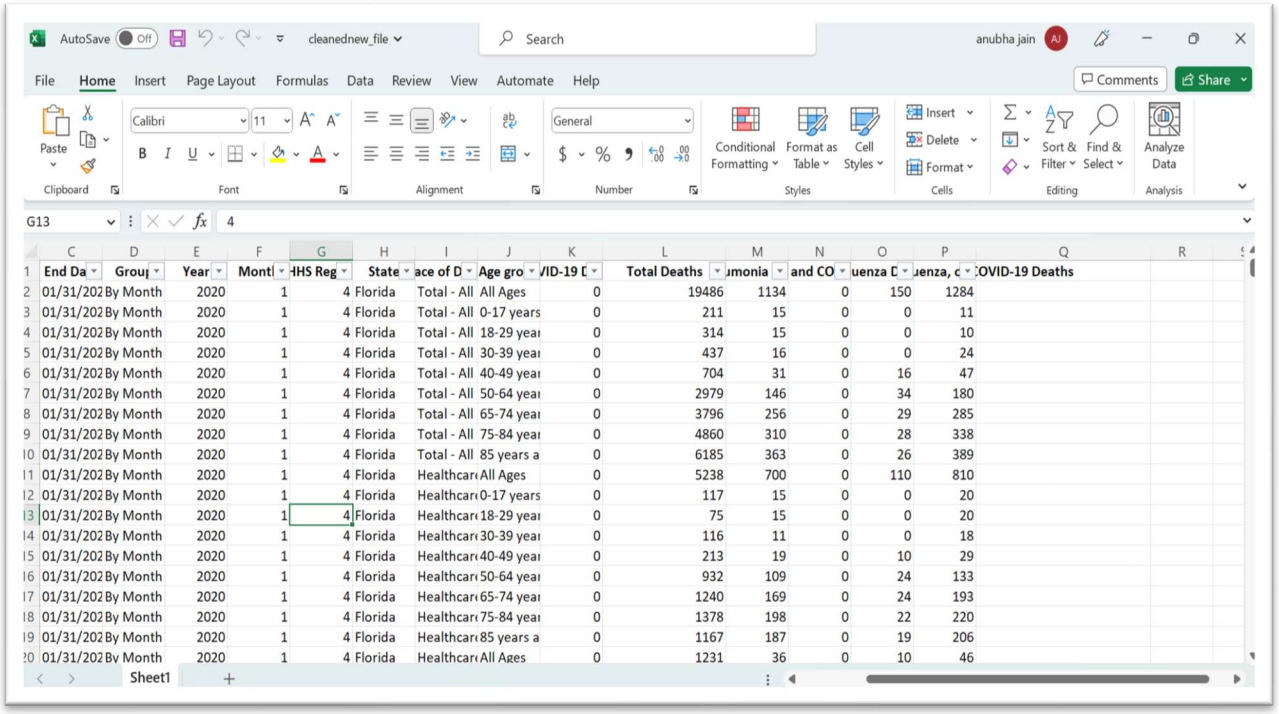


| | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Data as of | Start Date | End Date | Group | Year | Month | HHS Regio | State | Place of D | Age group | COVID-19 Deaths | Total Deat | Pneumonia Death | Pneumonia and C | Influenza Deat | Pneumonia, Influ |
| 2 | 02/22/202 | 1/1/2020 | 01/31/202 | By Month | 2020 | 1 | 4 | Florida | Total - All | All Ages | 0 | 19,486 | 1,134 | 0 | 150 | 1 |
| 3 | 02/22/202 | 1/1/2020 | 01/31/202 | By Month | 2020 | 1 | 4 | Florida | Total - All | 0-17 years | 0 | 211 | | 0 | | |
| 4 | 02/22/202 | 1/1/2020 | 01/31/202 | By Month | 2020 | 1 | 4 | Florida | Total - All | 18-29 year | 0 | 314 | | 0 | | |
| 5 | 02/22/202 | 1/1/2020 | 01/31/202 | By Month | 2020 | 1 | 4 | Florida | Total - All | 30-39 year | 0 | 437 | 16 | 0 | | |
| 6 | 02/22/202 | 1/1/2020 | 01/31/202 | By Month | 2020 | 1 | 4 | Florida | Total - All | 40-49 year | 0 | 704 | 31 | 0 | 16 | |
| 7 | 02/22/202 | 1/1/2020 | 01/31/202 | By Month | 2020 | 1 | 4 | Florida | Total - All | 50-64 year | 0 | 2,979 | 146 | 0 | 34 | |
| 8 | 02/22/202 | 1/1/2020 | 01/31/202 | By Month | 2020 | 1 | 4 | Florida | Total - All | 65-74 year | 0 | 3,796 | 256 | 0 | 29 | |
| 9 | 02/22/202 | 1/1/2020 | 01/31/202 | By Month | 2020 | 1 | 4 | Florida | Total - All | 75-84 year | 0 | 4,860 | 310 | 0 | 28 | |
| 10 | 02/22/202 | 1/1/2020 | 01/31/202 | By Month | 2020 | 1 | 4 | Florida | Total - All | 85 years a | 0 | 6,185 | 363 | 0 | 26 | |
| 11 | 02/22/202 | 1/1/2020 | 01/31/202 | By Month | 2020 | 1 | 4 | Florida | Healthcar | All Ages | 0 | 5,238 | 700 | 0 | 110 | |
| 12 | 02/22/202 | 1/1/2020 | 01/31/202 | By Month | 2020 | 1 | 4 | Florida | Healthcar | 0-17 years | 0 | 117 | | 0 | | |
| 13 | 02/22/202 | 1/1/2020 | 01/31/202 | By Month | 2020 | 1 | 4 | Florida | Healthcar | 18-29 year | 0 | 75 | | 0 | | |
| 14 | 02/22/202 | 1/1/2020 | 01/31/202 | By Month | 2020 | 1 | 4 | Florida | Healthcar | 30-39 year | 0 | 116 | 11 | 0 | | |
| 15 | 02/22/202 | 1/1/2020 | 01/31/202 | By Month | 2020 | 1 | 4 | Florida | Healthcar | 40-49 year | 0 | 213 | 19 | 0 | 10 | |
| 16 | 02/22/202 | 1/1/2020 | 01/31/202 | By Month | 2020 | 1 | 4 | Florida | Healthcar | 50-64 year | 0 | 932 | 109 | 0 | 24 | |
| 17 | 02/22/202 | 1/1/2020 | 01/31/202 | By Month | 2020 | 1 | 4 | Florida | Healthcar | 65-74 year | 0 | 1,240 | 169 | 0 | 24 | |
| 18 | 02/22/202 | 1/1/2020 | 01/31/202 | By Month | 2020 | 1 | 4 | Florida | Healthcar | 75-84 year | 0 | 1,378 | 198 | 0 | 22 | |
| 19 | 02/22/202 | 1/1/2020 | 01/31/202 | By Month | 2020 | 1 | 4 | Florida | Healthcar | 85 years a | 0 | 1,167 | 187 | 0 | 19 | |
| 20 | 02/22/202 | 1/1/2020 | 01/31/202 | By Month | 2020 | 1 | 4 | Florida | Healthcar | All Ages | 0 | 1,231 | 36 | 0 | 10 | |

## 2.3. CLEANSED DATASETS:



| Data As Of | Start Date | End Date | Group | Year | Month | State | Sex | Age Group | COVID-19 Deaths | Total Deaths | Pneumonia Deaths | Pneumonia and COVID-19 Deaths | Influenza Deaths | Influenza, or C | Footnote |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ########## | ########## | 01/31/2023 | By Month | 2020 | 1 | Florida | Male | All Ages | 0 | 10404 | 601 | 0 | 75 | 676 | |
| ########## | ########## | 01/31/2023 | By Month | 2020 | 1 | Florida | Male | Under 1 ye | 0 | 69 | 0 | 0 | 0 | 104 | One or more da |
| ########## | ########## | 01/31/2023 | By Month | 2020 | 1 | Florida | Male | 0-17 years | 0 | 120 | 84 | 0 | 0 | 104 | One or more da |
| ########## | ########## | 01/31/2023 | By Month | 2020 | 1 | Florida | Male | 1-4 years | 0 | 10 | 0 | 0 | 0 | 104 | One or more da |
| ########## | ########## | 01/31/2023 | By Month | 2020 | 1 | Florida | Male | 5-14 years | 0 | 19 | 84 | 0 | 0 | 104 | One or more da |
| ########## | ########## | 01/31/2023 | By Month | 2020 | 1 | Florida | Male | 15-24 year | 0 | 131 | 84 | 0 | 0 | 104 | One or more da |
| ########## | ########## | 01/31/2023 | By Month | 2020 | 1 | Florida | Male | 18-29 year | 0 | 227 | 84 | 0 | 0 | 104 | One or more da |
| ########## | ########## | 01/31/2023 | By Month | 2020 | 1 | Florida | Male | 25-34 year | 0 | 257 | 84 | 0 | 0 | 104 | One or more da |
| ########## | ########## | 01/31/2023 | By Month | 2020 | 1 | Florida | Male | 30-39 year | 0 | 299 | 84 | 0 | 0 | 11 | One or more da |
| ########## | ########## | 01/31/2023 | By Month | 2020 | 1 | Florida | Male | 35-44 year | 0 | 328 | 13 | 0 | 0 | 19 | One or more da |
| ########## | ########## | 01/31/2023 | By Month | 2020 | 1 | Florida | Male | 40-49 year | 0 | 418 | 13 | 0 | 0 | 21 | One or more da |
| ########## | ########## | 01/31/2023 | By Month | 2020 | 1 | Florida | Male | 45-54 year | 0 | 616 | 24 | 0 | 10 | 34 | |
| ########## | ########## | 01/31/2023 | By Month | 2020 | 1 | Florida | Male | 50-64 year | 0 | 1792 | 83 | 0 | 19 | 102 | |
| ########## | ########## | 01/31/2023 | By Month | 2020 | 1 | Florida | Male | 55-64 year | 0 | 1426 | 63 | 0 | 13 | 76 | |
| ########## | ########## | 01/31/2023 | By Month | 2020 | 1 | Florida | Male | 65-74 year | 0 | 2224 | 147 | 0 | 15 | 162 | |
| ########## | ########## | 01/31/2023 | By Month | 2020 | 1 | Florida | Male | 75-84 year | 0 | 2673 | 174 | 0 | 15 | 189 | |
| ########## | ########## | 01/31/2023 | By Month | 2020 | 1 | Florida | Male | 85 years a | 0 | 2651 | 169 | 0 | 11 | 180 | |
| ########## | ########## | 01/31/2023 | By Month | 2020 | 1 | Florida | Female | All Ages | 0 | 9082 | 533 | 0 | 75 | 608 | |
| ########## | ########## | 01/31/2023 | By Month | 2020 | 1 | Florida | Female | Under 1 ye | 0 | 59 | 84 | 0 | 0 | 104 | One or more da |



| End Da | Grou | Year | Month | HHS Reg | State | ace of D | Age gro | VID-19 D | Total Deaths | umonia | and CO | uenza D | enza, c | COVID-19 Deaths |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01/31/202 | By Month | 2020 | 1 | 4 | Florida | Total - All | All Ages | 0 | 19486 | 1134 | 0 | 150 | 1284 | |
| 01/31/202 | By Month | 2020 | 1 | 4 | Florida | Total - All | 0-17 years | 0 | 211 | 15 | 0 | 0 | 11 | |
| 01/31/202 | By Month | 2020 | 1 | 4 | Florida | Total - All | 18-29 year | 0 | 314 | 15 | 0 | 0 | 10 | |
| 01/31/202 | By Month | 2020 | 1 | 4 | Florida | Total - All | 30-39 year | 0 | 437 | 16 | 0 | 0 | 24 | |
| 01/31/202 | By Month | 2020 | 1 | 4 | Florida | Total - All | 40-49 year | 0 | 704 | 31 | 0 | 16 | 47 | |
| 01/31/202 | By Month | 2020 | 1 | 4 | Florida | Total - All | 50-64 year | 0 | 2979 | 146 | 0 | 34 | 180 | |
| 01/31/202 | By Month | 2020 | 1 | 4 | Florida | Total - All | 65-74 year | 0 | 3796 | 256 | 0 | 29 | 285 | |
| 01/31/202 | By Month | 2020 | 1 | 4 | Florida | Total - All | 75-84 year | 0 | 4860 | 310 | 0 | 28 | 338 | |
| 01/31/202 | By Month | 2020 | 1 | 4 | Florida | Total - All | 85 years a | 0 | 6185 | 363 | 0 | 26 | 389 | |
| 01/31/202 | By Month | 2020 | 1 | 4 | Florida | Healthcar | All Ages | 0 | 5238 | 700 | 0 | 110 | 810 | |
| 01/31/202 | By Month | 2020 | 1 | 4 | Florida | Healthcar | 0-17 years | 0 | 117 | 15 | 0 | 0 | 20 | |
| 01/31/202 | By Month | 2020 | 1 | 4 | Florida | Healthcar | 18-29 year | 0 | 75 | 15 | 0 | 0 | 20 | |
| 01/31/202 | By Month | 2020 | 1 | 4 | Florida | Healthcar | 30-39 year | 0 | 116 | 11 | 0 | 0 | 18 | |
| 01/31/202 | By Month | 2020 | 1 | 4 | Florida | Healthcar | 40-49 year | 0 | 213 | 19 | 0 | 10 | 29 | |
| 01/31/202 | By Month | 2020 | 1 | 4 | Florida | Healthcar | 50-64 year | 0 | 932 | 109 | 0 | 24 | 133 | |
| 01/31/202 | By Month | 2020 | 1 | 4 | Florida | Healthcar | 65-74 year | 0 | 1240 | 169 | 0 | 24 | 193 | |
| 01/31/202 | By Month | 2020 | 1 | 4 | Florida | Healthcar | 75-84 year | 0 | 1378 | 198 | 0 | 22 | 220 | |
| 01/31/202 | By Month | 2020 | 1 | 4 | Florida | Healthcar | 85 years a | 0 | 1167 | 187 | 0 | 19 | 206 | |
| 01/31/202 | By Month | 2020 | 1 | 4 | Florida | Healthcar | All Ages | 0 | 1231 | 36 | 0 | 10 | 46 | |

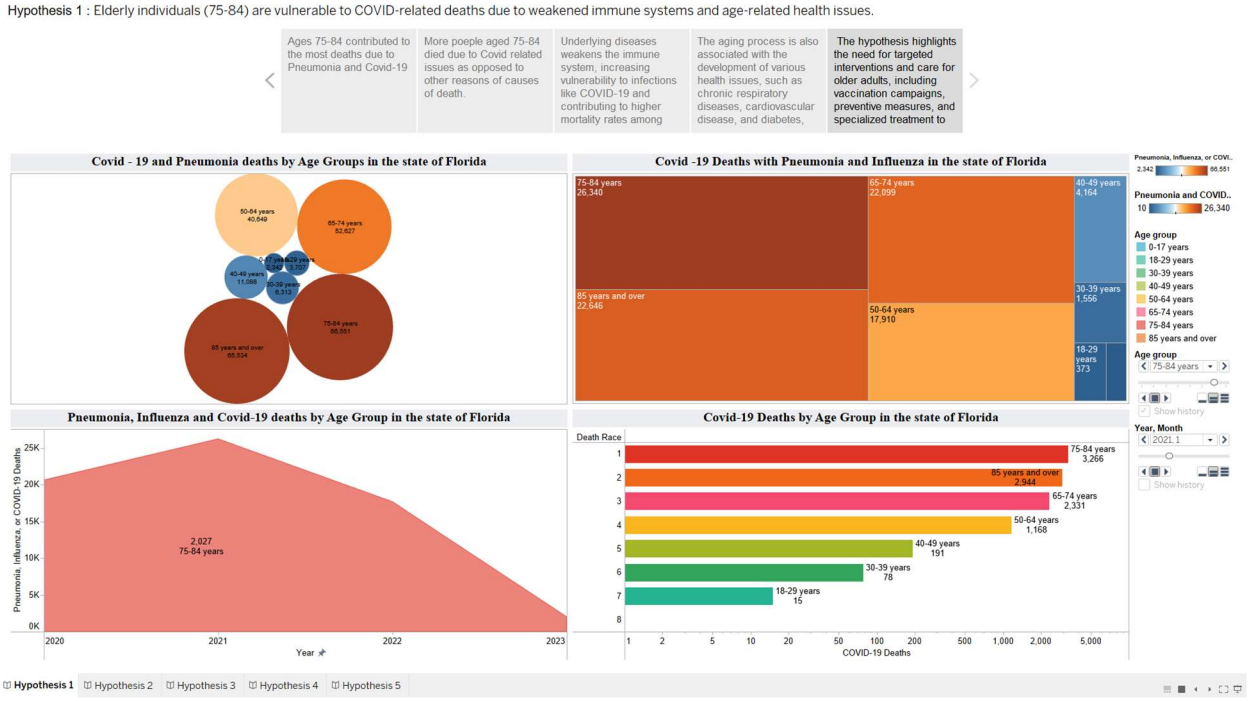
# 3. GENERAL INTRODUCTION

The COVID-19 epidemic has brought the globe to a halt, producing serious public health problems and straining healthcare systems throughout the planet. Numerous research have been undertaken since the pandemic's breakout to better understand the effects of COVID-19 on various age groups, their vulnerability to infection, and the influence on mortality rates. Florida, one of the worst-affected states in the US, has seen a spike in COVID-19 cases and fatalities. This data visualization project intends to investigate the impact of COVID-19 and its infections on various age groups and their sites of death in the state of Florida. The research will examine data on COVID-19 cases, deaths, and other linked diseases such as influenza and pneumonia, as well as their associations with age groups and areas of death.

The project will also test various hypotheses about COVID-19 and other related illnesses, such as the relationship between age and susceptibility to death from COVID-19 and other related infections, the relationship between COVID-19 and pneumonia-related deaths and inpatient healthcare settings, and the impact of gender on mortality rates for pneumonia and influenza during the pandemic. The outcomes of this investigation will give a complete knowledge of the impact of COVID-19 on various age groups, as well as their vulnerability to infection and death rates in Florida. The project's findings might also help politicians and public health professionals better allocate resources and conduct actions to limit the development of COVID-19 and other associated disorders.

# 4. INSIGHTS AND FINDINGS

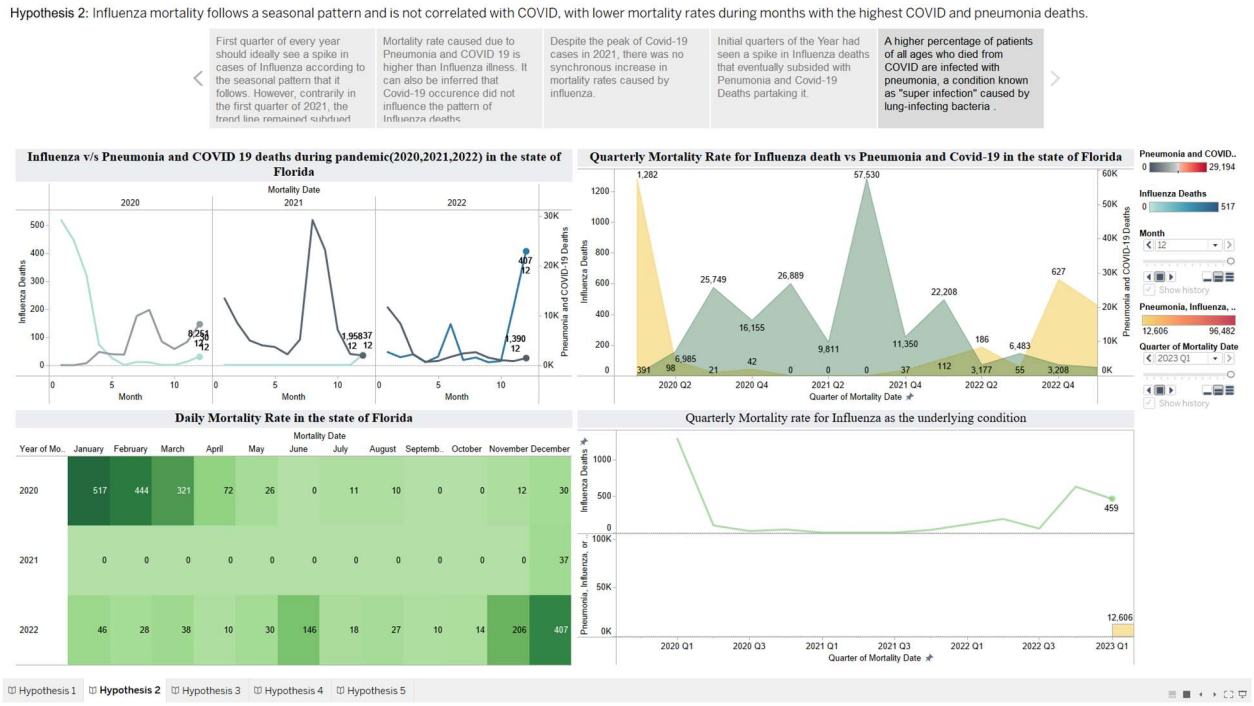
**4.1 HYPOTHESIS 1:** Individuals in the age group of 74 -85 and above died more from COVID and other related infections, because of their weakened immune systems and age-associated health issues.




**Insight:** Age and Susceptibility: The project's findings support the idea that those aged 75 to 84 were more vulnerable to COVID-19 and other associated illnesses. According to the statistics, this age group had the highest fatality rate, suggesting that age-related health difficulties and compromised immune systems lead to increased vulnerability to COVID-19.

## 4.2 HYPOTHESIS 2:

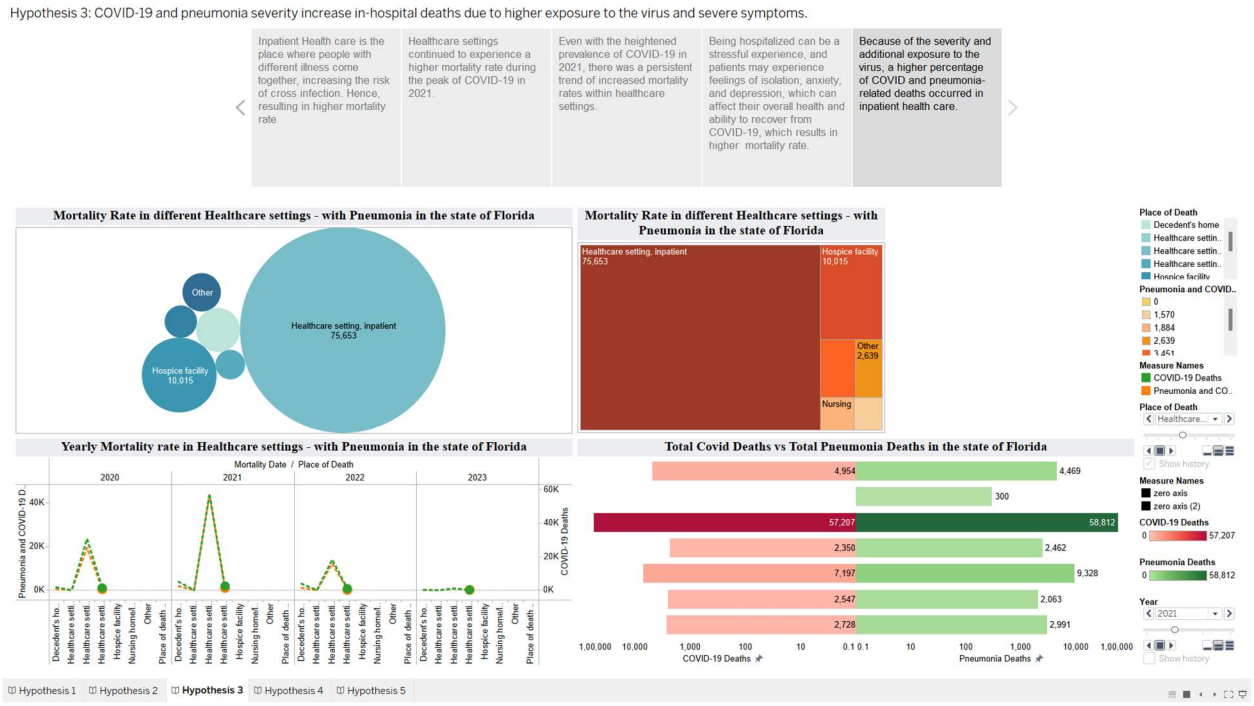
A higher percentage of patients of all ages who died from COVID are infected with pneumonia, a condition known as "super infection" caused by lung-infecting bacteria.




**Insight** :Seasonal Pattern of Influenza Mortality: The findings of the experiment confirm the notion that influenza mortality followed a seasonal pattern, as it did before 2020, and was lower during the months with the largest COVID and pneumonia fatalities. According to the statistics, the flu season in the United States lasts from October to February and has no relationship with COVID-19.

## 4.3HYPOTHESIS 3:

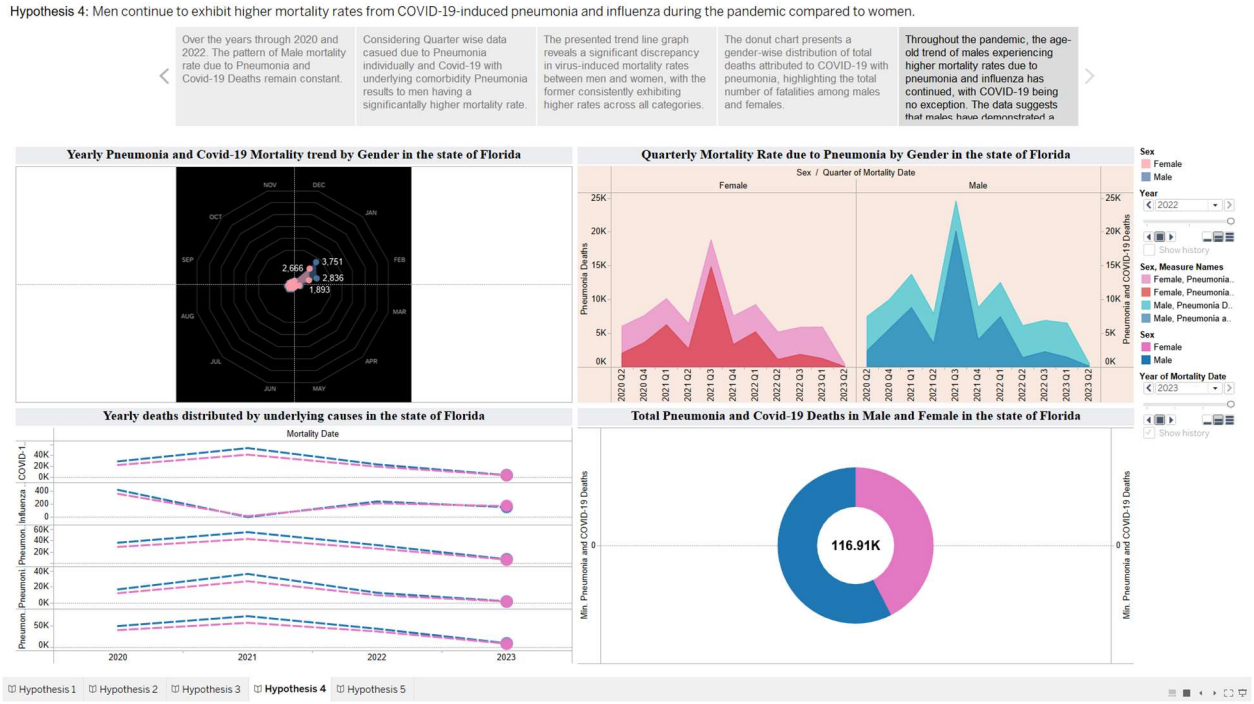
Because of the severity and additional exposure to the virus, a higher percentage of COVID and pneumonia-related deaths occurred in inpatient health care.




**Insight:** The outcomes of the experiment confirm the idea that there is a link between the severity of COVID-19 and pneumonia and the higher chance of mortality in inpatient healthcare settings. According to the statistics, inpatient healthcare facilities had a larger percentage of COVID-19 and pneumonia-related deaths than any other place of death.

## 4.4 HYPOTHESIS 4:

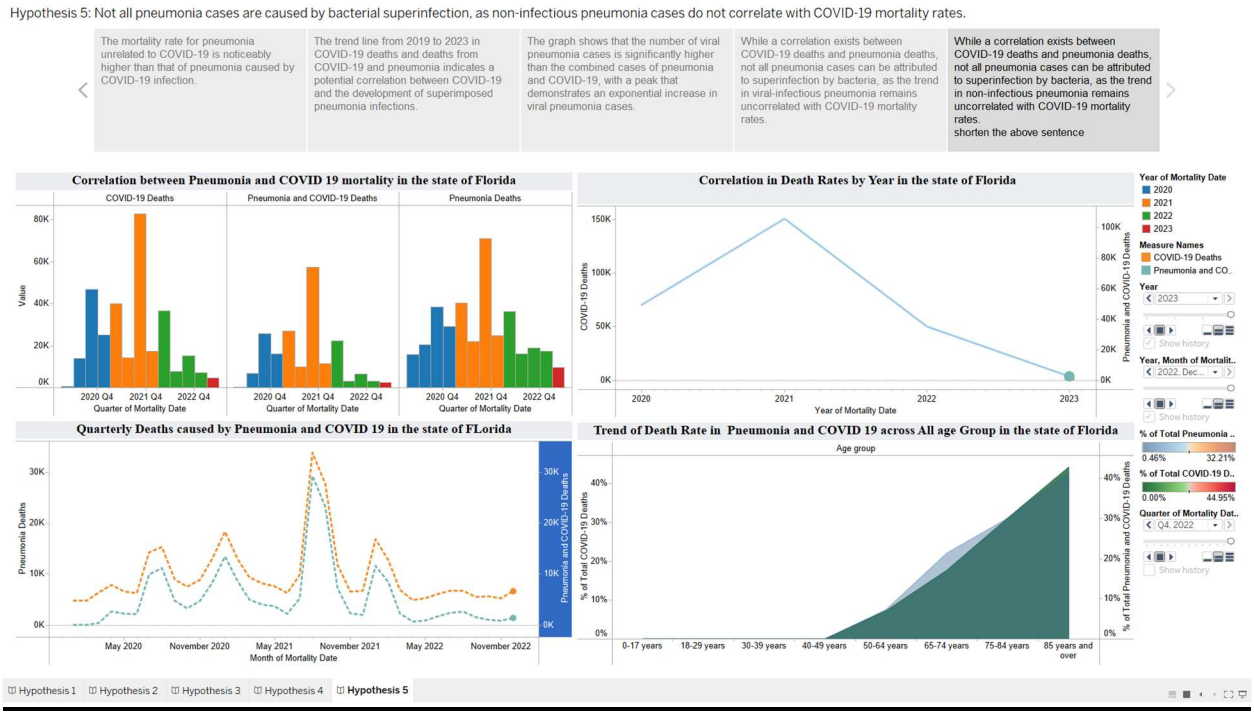
In the COVID era, the data indicates that there may be a disparity in mortality rates between men and women, with a higher number of deaths attributed to pneumonia, COVID-19, and influenza, as well as underlying conditions, observed in men compared to women on average.




**Insight:** Gender and Mortality: The findings of the experiment back up the premise that the previous tendency of higher mortality rates among males with pneumonia and influenza remained during the pandemic. According to the research, males are more susceptible to COVID-19-induced pneumonia and influenza, resulting in higher fatality rates compared to females.

## 4.5 HYPOTHESIS 5:

Although, Covid-19 was directly contributing to Pneumonia bacterial Infection. The peak in Pneumonia cases was not dependent on Covid-19 alone but was dependent on the susceptibility of the Pneumonia Virus.




**Insight**: The outcomes of the experiment support the concept that, while there is a link between COVID-19 mortality and pneumonia deaths, not all pneumonia cases may be attributable to bacterial superinfection. According to the statistics, the trend in non-infectious pneumonia is still unrelated to COVID-19 death rates.

Overall, the outcomes of this data visualization project give a complete knowledge of COVID-19's influence on various age groups, as well as their vulnerability to infection and fatality rates in the state of Florida. Policymakers and public health professionals may use the project's findings to better allocate resources and execute measures to limit the development of COVID-19 and other associated disorders.

# 5. CONCLUSION

The data visualization project examined the influence of COVID-19 and associated infections on various age groups and their sites of death in the state of Florida. The project's findings show that age-associated health issues and compromised immune systems enhance vulnerability to COVID-19 and other related illnesses.

The data analysis for the research also shows that influenza mortality followed a seasonal pattern, similar to before 2020, and was lower during the months with the largest COVID and pneumonia fatalities. Furthermore, the severity of COVID-19 and pneumonia enhanced the chance of mortality occurring in inpatient hospital settings. The previous tendency of increased fatality rates among males with pneumonia and influenza maintained during the pandemic.
Overall, the project's findings can help policymakers and public health professionals better allocate resources and conduct measures to limit the development of COVID-19 and other associated diseases. Policymakers and public health professionals may undertake targeted measures to restrict the spread of the virus and safeguard vulnerable people by studying the impact of COVID-19 on various age groups, as well as their susceptibility to infection and fatality rates.

The findings of the data visualization project back up the necessity for ongoing public health efforts to limit the development of COVID-19 and other associated disorders. The project's findings can also be used to influence future study on the impact of COVID-19 and other associated disorders on different age groups and areas of death.