**Early Indicators of Covid 19 Updates in 14 States of United States**

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**Obeservations and Analysis**

COVID-NET is a population-based surveillance system. Population-based surveillance is the active collection, analysis, and interpretation of data on a population in a specified geographic area.

Tracking COVID-19-associated hospitalization rates helps public health professionals understand trends in virus circulation, estimate disease burden, and respond to outbreaks. Hospitalization rates are updated weekly on the COVID-NET Interactive Data Dashboard. Collecting demographic and more detailed clinical information, including underlying conditions, allows CDC to better understand COVID-19-associated hospitalization trends and determine who is most at risk.

Hospitalization rates show how many people in the surveillance area are hospitalized with COVID-19, compared to the total number of people residing in that area.

The participating states are California, Colorado, Connecticut, Georgia, Maryland, Michigan, Minnesota, New Mexico, New York, Ohio, Oregon, Tennessee, and Utah.

The data was read and converted to dataframe by following Index Index: **State, Season, WeekendDate, AgeCategory\_Legend, Sex\_Label, Race\_Label, Type, WeeklyRate, CumulativeRate**

**OBSERVATIONS FROM BAR GRAPH**

1. Bar graph for states for covid 19 cases had similar cases except Iowa with lower cases. COVID-NET collects surveillance data on laboratory-confirmed, COVID-19-associated hospitalizations among children and adults. Data are collected and reported from a network of sites in acute-care hospitals across 98 counties in 13 states.
2. When we looked upon the season from 2019 to 2024 the highest cases were reported in 2020-21 with decreasing trend from 2021-24. The lowest cases reported in 2019-20 may be due to onset of disease and unawareness during that time period
3. We re-grouped the Age in Children, Adults, Middle Aged and Senior Citizens. We have the highest number for Children and lowest for Middle Aged. The reason for highest number in children was that it had wide range from 0-17 years
4. The Pie chart shows male and female number cases were similar. The major percentage was from All that was not defined by gender.
5. Looking at Race label bar graph, the number of cases reported were almost similar in all.
6. Then the major number of cases reports are from Crude rate. In the context of health or epidemiology, the term "crude rate" refers to a basic calculation of a rate without any adjustments or standardization for factors such as age, sex, or other variables that may affect the outcome being measured.,Crude rates are often used as a starting point to provide a general overview of a particular health outcome or event within a population. They are simple calculations that divide the number of events (such as cases of a disease) by the total population at risk, usually expressed per a specific unit of time (e.g., per week, per year).
7. The line graph between Weekend date and weekly rate confirmed the highest cases in year 2020-21.

ANALYSIS

1. We plotted the box plot to analyze Cumulative rate by Age group.  The "CumulativeRate" column likely represents the total rate up to a specific week or time period. Each week's rate is added to the previous cumulative rate to show the overall progression or accumulation of the rate over time.

The median Value of 194.80 in Senior citizen indicates the highest incidences among that age group while lowest in Children (median = 24.0)

1. Then we looked at the Cumulative rate by States. Median value of 77,70 in New Mexico was highest followed by Minnesota, 74.2 and 73.3 in Colorado. The lowest rate was in Tennessee, 40.50.
2. Cumulative rate by season had highest incidences in 2021-22, median value 98.60.
3. When looking at cumulative rates in Races, we found that Black, Non Hispanic had highest number of cases with median value of 80.60 and lowest in A/PI Non Hispanic, 54.30.
4. Looking at gender, there was not much difference in incidences between male and female with males on higher trend.

In Conclusion, this data analysis provides insights for collecting demographic and more detailed clinical information, including underlying conditions, that allows to better understand COVID-19-associated hospitalization trends and determine who is most at risk.