

What a difference a year makes: A snapshot of the trends in vaccinations, hospitalizations, and mortality rates for SARS- CoV-2 across the state of Indiana

Chinade Roper¹, Amy Han², and Martin Brown³

¹Indiana University School of Medicine; ²Indiana University School of Medicine, ³ Gary Health Department and Gary Sanitary District

Background: Many efforts both scientifically and politically helped reduced the spread of SARS-CoV-2. In December of 2020, vaccinations were authorized for distribution. It is important to understand demographical correlations to COVID-19 acute illness rates and whether COVID-19 vaccinations significantly reduced these rates.

Project Methods: This study focused on data from seventeen counties in Indiana. This information was used to determine if there were correlations between demographics and COVID-19 illness rates. County demographics were obtained from the United States Census Bureau. COVID-19 hospitalization and mortality were collected from the Regenstrief Institute and the Indiana State Department of Health respectively. Linear regression analyses were performed to determine if there were significant correlations between demographics and rates COVID-19 illness. T-test analyses assuming unequal variances were performed in order to determine if there has been a significant reduction in COVID-19 illness.

Results: The results of this study revealed that the percentage of the population over the age of 65, with a bachelor's degree, disabled under age 65, and the median income (r values: 0.729, 0.701, 0.661, and 0.533 respectively) are significantly correlated to the mortality rate. The percentage of the population over the age of 65 and with a bachelor's degree (r values: 0.565 and 0.524 respectively) are significantly correlated to the hospitalization rate. When comparing the COVID-19 acute illness rates for each county from 07/27/20 until 02/01/21 to the rates after 02/01/21 until late- June of 2021, each county had significant decrease in the hospitalization and mortality rate after February 1, 2021.

Potential Impact: The result of this study suggests that vaccinating residents was a significant factor in the 50% or higher reduction in COVID-19 hospitalization and mortality rates. These findings emphasize the importance of COVID-19 vaccinations to protect Americans from COVID-19 severe illness.