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Title

Relationship between COVID-19 Cases and Vaccination Rates in New York State Counties

Priority 1 (Research Category)

COVID-19

Presenters

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Abstract

Context: The presence of new viral variants, in combination with the relaxation of social distancing and other preventative measures, has led to a spike in COVID-19 cases in the United States. The development of COVID-19 vaccinations may reduce the impact of these viral variants on case rates in the population. Objective: To determine the impact of COVID-19 vaccination rates on cases/100k population in each New York State (NYS) county. Study Design: Cross-sectional analysis of COVID-19 cases/100k population per NYS county, frozen at a single snapshot in time. Descriptive statistics and bivariate correlations were conducted to determine vaccination rates across 62 NYS counties, and linear regression was used to examine the effect of vaccination rates on cases/100k, controlling for size of county population. Dataset & Setting: Vaccination rates per county shared by the NYS Department of Health using data reported to the NYS Immunization Information System and the New York City Citywide Immunization Registry. COVID-19 case rates per county available through the John Hopkins University website. Population: NYS residents across 62 counties on March 31st, 2021. Outcome Measures: COVID-19 vaccination rates across counties at a single point in time were compared with cases/100k population. Results: Percentages with 1 dose and with 2 doses are highly correlated ($r=.935$, $p<.001$) with one another, and county population size was strongly correlated with cases per 100k ($r=.715$, $p<.001$). Both the 1 dose and 2 dose rates were negatively correlated with cases per 100k population, although not significantly. However, the two-dose vaccination rate was a significant negative predictor of cases per 100k population in NYS Counties ($\beta = -.866$, $p=.031$), with each percentage point of completed vaccination nearly equating to one case less in the daily count, when controlling for county population size ($\beta = 2.732$, $p<.001$). Conclusion: While COVID-19 variants may impact vaccine effectiveness, current vaccination efforts are helping forestall some cases in NYS. Widespread vaccination is still an important goal. Primary care providers, public officials, and public health scientists should continue to urgently promote and support vaccination efforts.