COVID-19 Vaccine Effectiveness Analysis in Vermont

Denise Kall Ph.D
Tewodros Wassie Ph.D
Moshe Braner Ph.D
Bridget Ahrens MFA MPH

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VERMONT
DEPARTMENT OF HEALTH

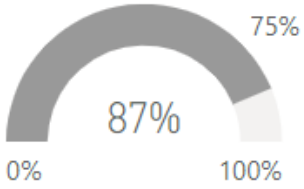
Vermont Has High Covid Vaccine Uptake

Progress

People Reported Immunized through 3/29/2022

Overall progress (age 5+)

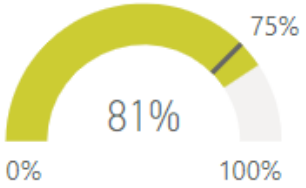
VT residents who have received **at least one dose** of the vaccine



519.4K

People vaccinated

VT residents who have completed a COVID-19 vaccine series

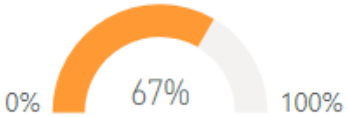


483.7K

People completed

VT residents who have completed vaccination and have received **an additional or booster dose** of the vaccine

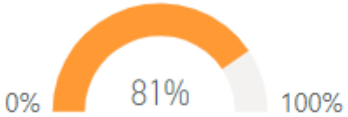
VT residents age 12+



306.2K

12+ additional dose

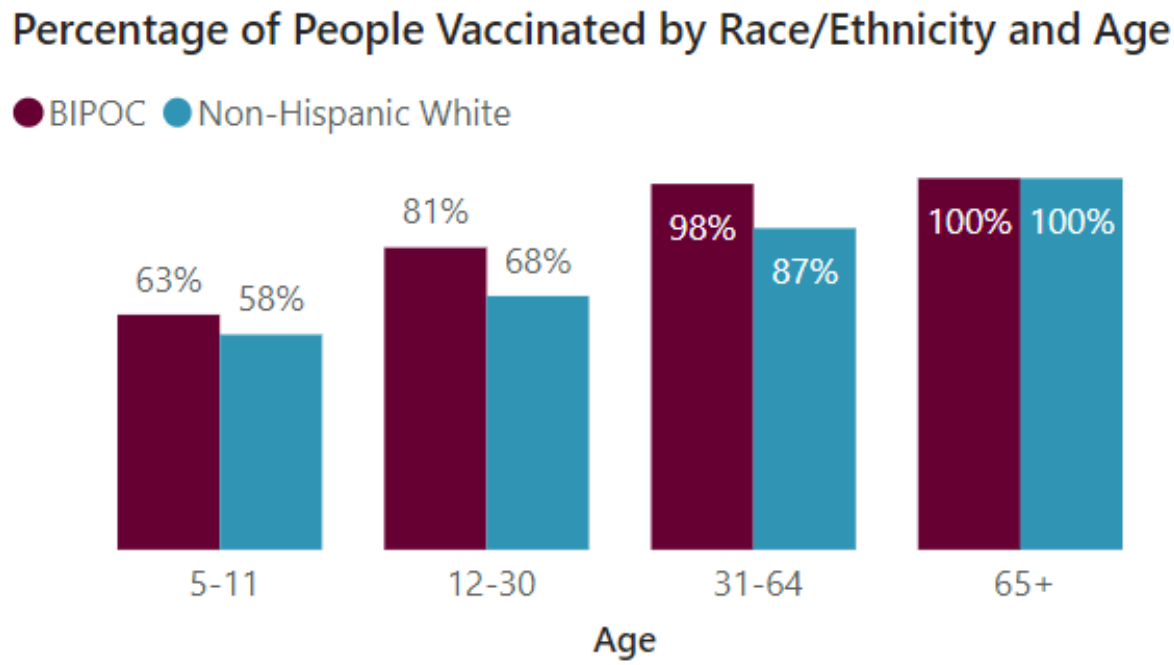
VT residents age 65+



102.3K

65+ additional dose

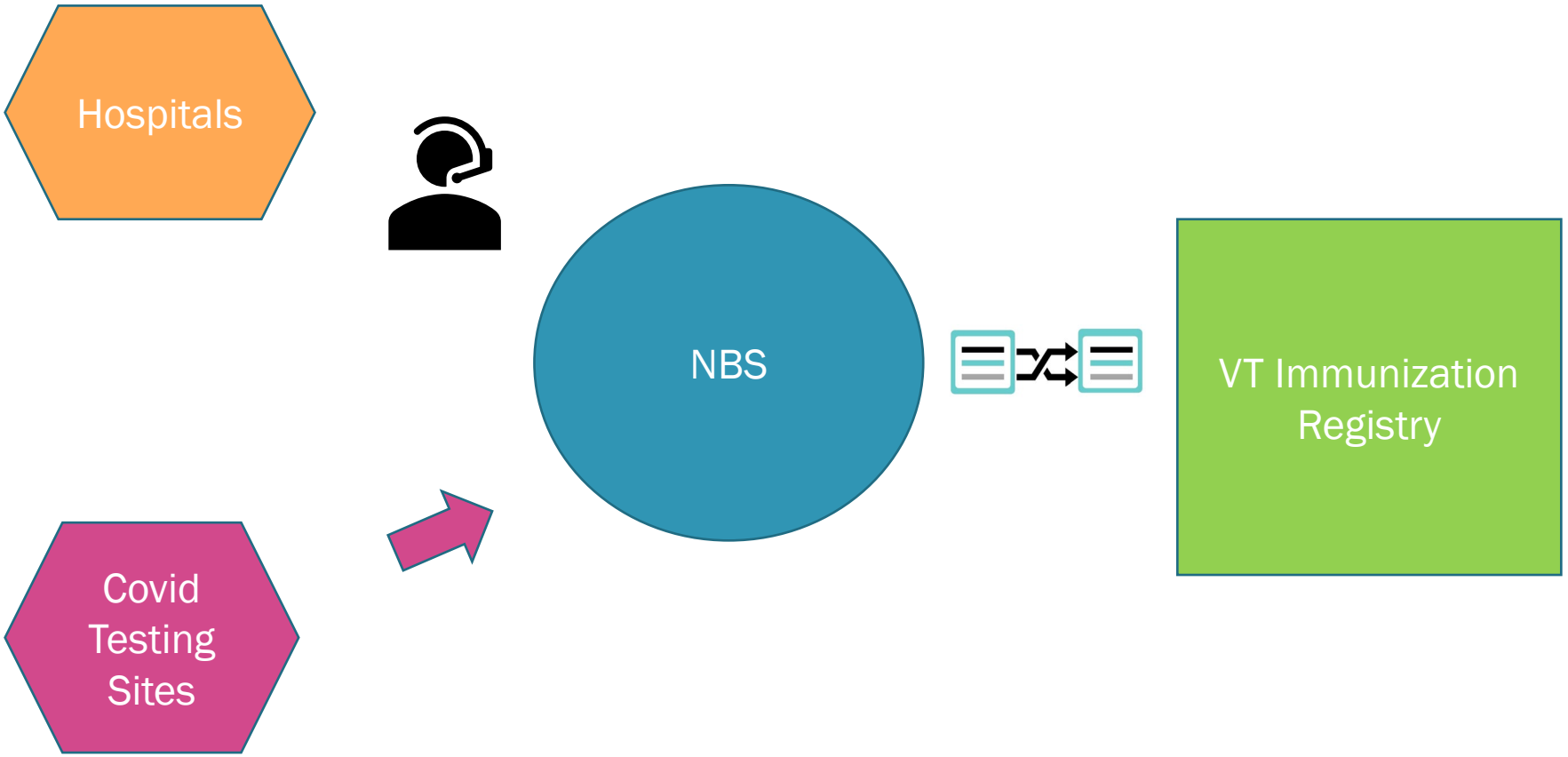
Vermont's High Numbers are Diverse



BIPOC refers to Black, Indigenous, and people of color.

Race/ethnicity information is missing for 4% of people vaccinated.

Data Flow Diagram



The Analysis

COVID-19 Vaccine Effectiveness Analysis

Vaccine effectiveness is a measure of how well vaccination protects people against outcomes such as infection and hospitalization.

Our analysis is similar to that completed by New York State in this MMWR.

New COVID-19 Cases and Hospitalizations Among Adults, by Vaccination Status — New York, May 3–July 25, 2021

Weekly / September 17, 2021 / 70(37);1306–1311

This report has been corrected and republished. Below is the republished report. Please click here to view the detailed changes to the report.

Eli S. Rosenberg, PhD[1,2]; David R. Holtgrave, PhD[2]; Vajeera Dorabawila, PhD[1]; MaryBeth Conroy, MPH[1]; Danielle Greene, DrPH[1]; Emily Lutterloh, MD[1,2]; Bryon Backenson, MS[1,2]; Dina Hoefer, PhD[1]; Johanne Morne, MS[1]; Ursula Bauer, PhD[1]; Howard A. Zucker, MD, JD[1] (View author affiliations)

We also looked at the impact of boosters.

Methodology

Combined weekly Vermont adult COVID-19 case data for new test-confirmed infections and hospitalizations with immunization data from the Vermont Immunization Registry.

Vermont adults were separated into three groups:

- fully vaccinated for COVID-19 but without a booster dose,
- fully vaccinated with a booster dose,
- and unvaccinated.

Methodology

Included Vermont residents ages 18 and older.

Split the population into three broad age groups, 18-49 years, 50-64 years, and 65 years and older.

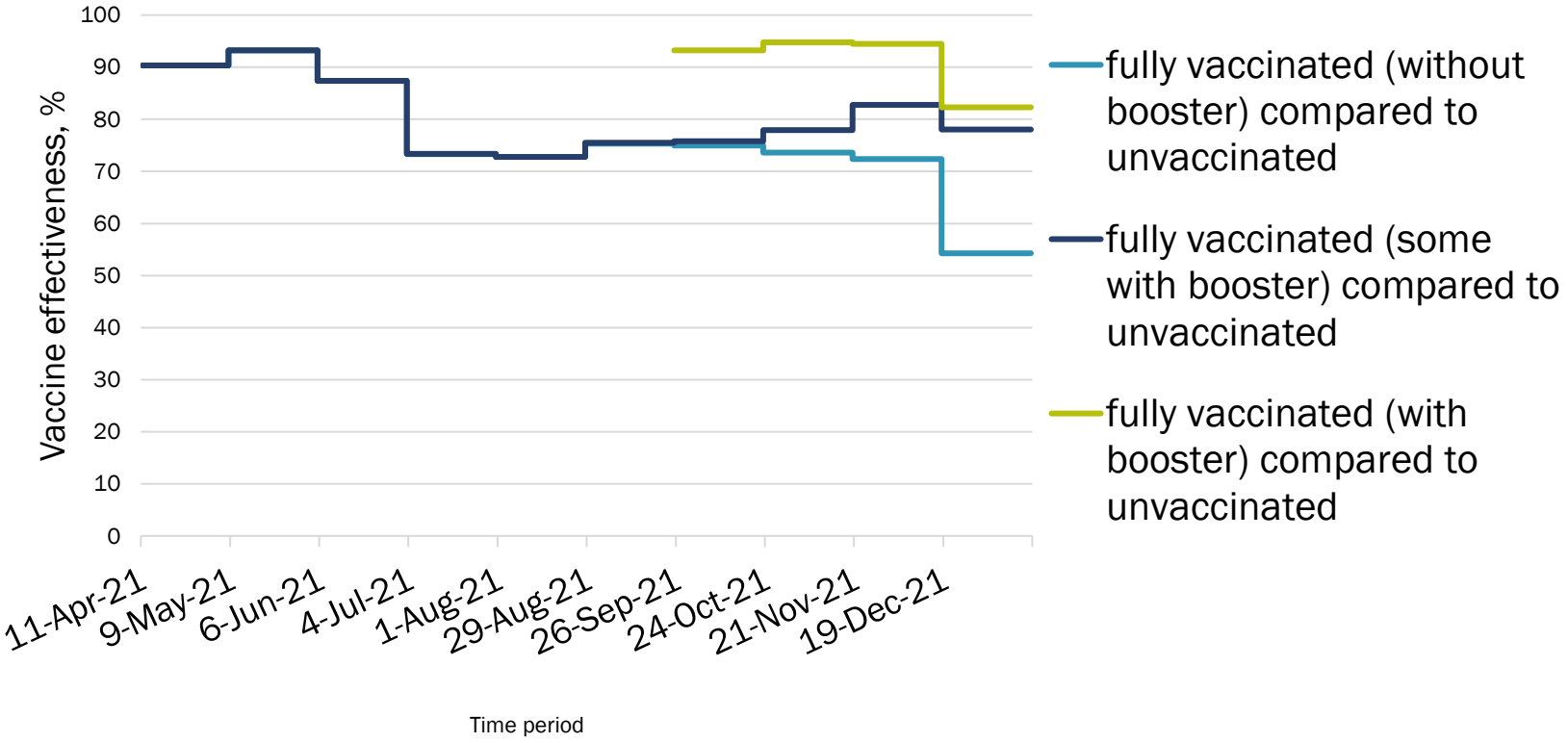
The case/hospitalization rates (per person-week of exposure) were estimated for each age group and then combined, adjusting for the overall (age 18+) state population age structure.

Vaccine effectiveness is calculated as 100% minus the ratio of the case rate of the more vaccinated group to the case rate of the comparison group (the less-vaccinated group).

Vaccine effectiveness is calculated for both cases and hospitalizations, separately.

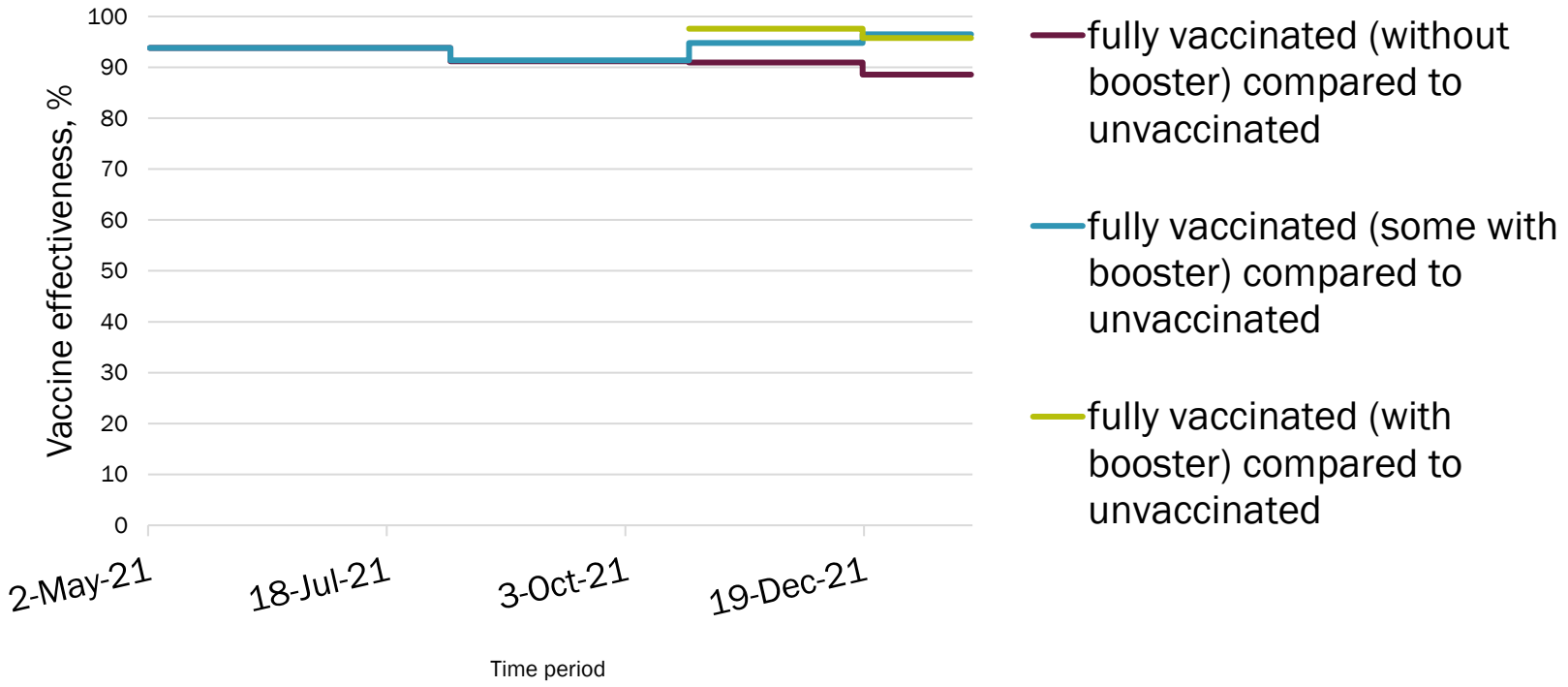
Results

COVID-19 vaccine effectiveness in preventing cases for adult Vermonters aged 18+ who received primary series was about 90% through July 3, 2021, but declined over time. Vaccine effectiveness increased again for those who received a booster dose.



Data sources: Vermont Immunization Registry; Vermont Department of Health COVID-19 Health Surveillance Case and Lab Data.

Since October 24, 2021, COVID-19 vaccine effectiveness in preventing hospitalization remained around 90% or higher for adult Vermonters aged 18+ who were fully vaccinated, with or without a booster dose.



Data sources: Vermont Immunization Registry; Vermont Department of Health COVID-19 Health Surveillance Case and Lab Data.

Limitations

The population estimates are of limited accuracy, which affects the estimates of the number unvaccinated adults.

The number of Vermont residents vaccinated may not be precise due to transient residency data in the Vermont Immunization Registry.

Some vaccinations (for example, Vermonters vaccinated out of state) may not be reported to the Vermont Immunization Registry.

The analysis does not include the partially vaccinated.

The time since one received their vaccine was not accounted for in the analysis and therefore may impact the results.

The case data is only representative of those who have been tested for COVID-19.

Confirmed and probable cases are included according to CDC case definitions. At home self-tests are not included.

The case data was matched to the Vermont Immunization Registry to determine vaccination status, but some people may not have matched.

Key Takeaways

Covid-19 vaccine effectiveness remained high through January 2022, especially for hospitalizations.

Boosters provided additional protection against Covid-19.

The importance of building an interface between the IIS and the disease reporting system is evident.

Credits

Thanks to the analysts on our Data Team:
Tewodros Wassie PH.D
Moshe Braner PH.D

Thanks to our Epidemiology colleague:
Mike Flaherty

Photo credit: Daniel Schludi, Unsplash

For more information: Bridget.Ahrens@Vermont.gov