



Key Points:

- Data indicate that COVID-19 vaccines are effective in preventing hospitalization and death.
- Breakthrough infections are expected because no vaccine is 100% effective.
- Most people who are vaccinated will not be hospitalized from or die of COVID-19.

Background:

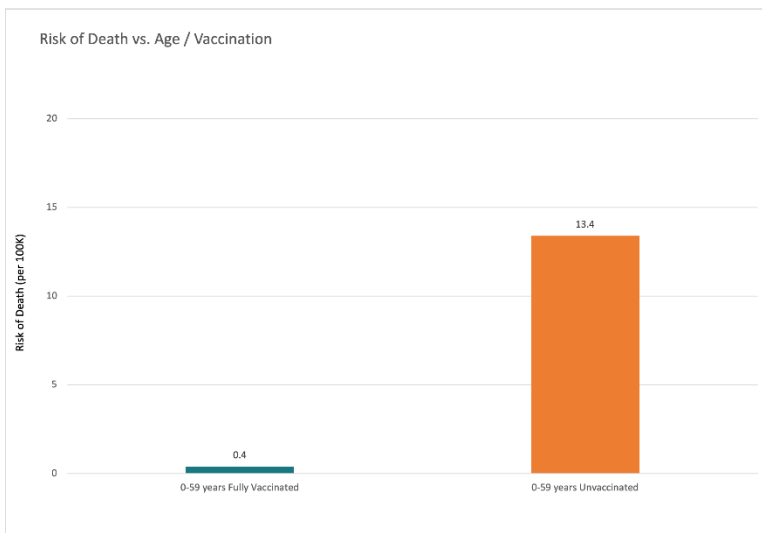
A vaccine breakthrough infection occurs when a fully vaccinated person tests positive for SARS-CoV-2, the virus that causes COVID-19.

The Hawai'i Department of Health (DOH) documents vaccine breakthrough hospitalizations and deaths, which can be an indication of vaccine effectiveness. Evaluation of vaccine effectiveness must be derived from carefully designed studies to avoid bias^{1,2,3}.

Every COVID death is thoroughly investigated to ascertain vaccination status. Vaccine breakthrough status relies on information provided through case investigations and may represent an underestimate of the true number of breakthrough hospitalizations.

Hawai'i SARS-CoV-2 Breakthrough Cases:

Deaths occurred January 1, 2021-September 30, 2021

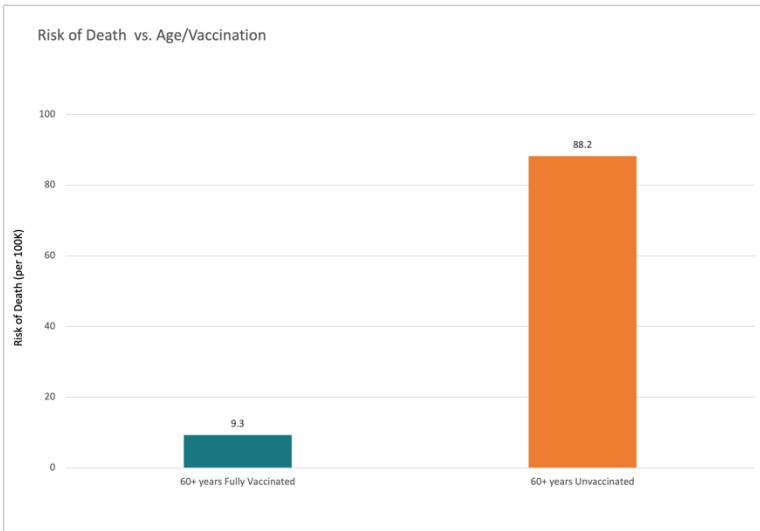


Fully vaccinated people 0-59 years were

34x

less likely to die than those unvaccinated.⁵

<u>Age</u>	<u>Vaccination Status</u>	<u>Risk of Death</u> ⁴
0-59 years	Fully Vaccinated	0.4
0-59 years	Unvaccinated ⁵	13.4



Fully vaccinated people 60+ years were

9x

less likely to die than those unvaccinated.

<u>Age</u>	<u>Vaccination Status</u>	<u>Risk of Death⁴</u>
60+ years	Fully Vaccinated	9.3
60+ years	Unvaccinated	88.2

There were **36** documented **deaths⁶** among **fully vaccinated** people in Hawai'i that occurred from January 1, 2021 through September 30, 2021.

There were **146** documented **hospitalizations⁷** among **fully vaccinated** people in Hawai'i reported from January 1, 2021 through September 30, 2021.
97% of all known breakthrough cases were NOT hospitalized for COVID-19.

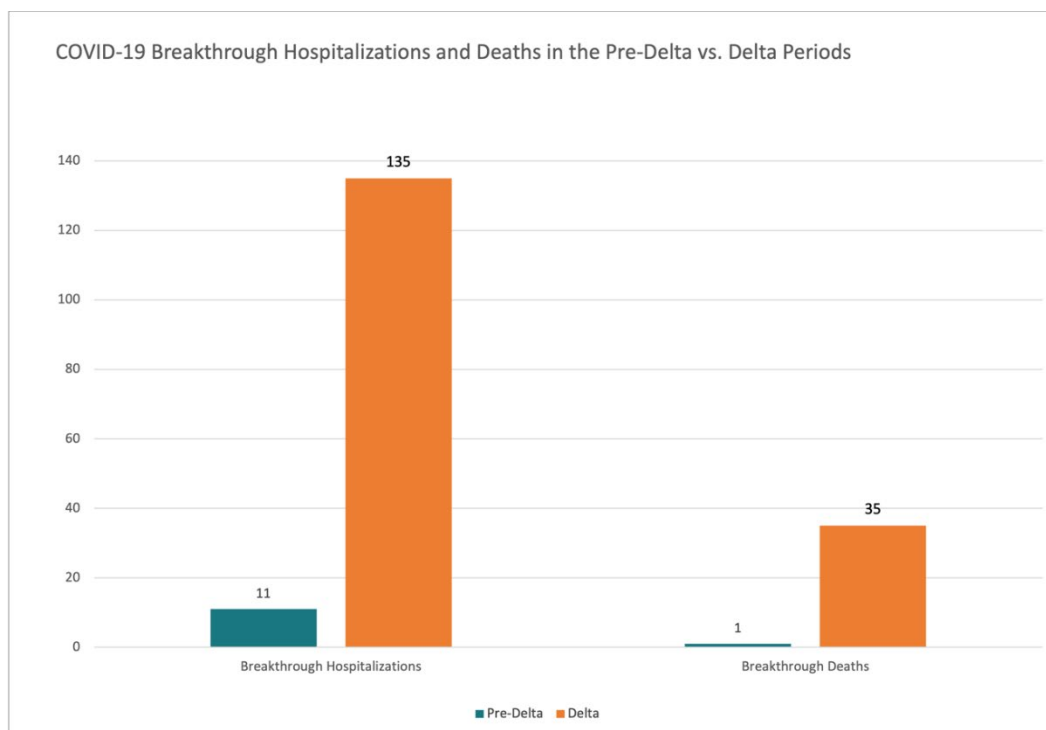
Effect of the Delta Variant:

In July 2021, the more infectious Delta variant emerged in Hawai'i. To understand how the Delta variant impacted vaccination protection, DOH examined vaccine breakthrough surveillance data before and after the period of Delta variant predominance (July 1, 2021).

While the frequency of breakthrough hospitalizations and deaths increased during the Delta variant period, breakthrough events remain relatively uncommon and data indicate that the COVID-19 vaccines continue to provide excellent protection against severe disease and death.

DOH recommends COVID-19 vaccination to protect against severe illness, hospitalization and death related to COVID-19. More information on how to get a COVID-19 vaccine can be found at <https://hawaii-covid19.com/vaccine/>.

January 1 – June 30, 2021 (pre-Delta)	July 1 – September 30, 2021 (Delta*)
<p>11 documented breakthrough hospitalizations</p> <ul style="list-style-type: none"> 96% of known breakthrough cases were NOT hospitalized for COVID-19 	<p>135 documented breakthrough hospitalizations</p> <ul style="list-style-type: none"> 97% of known breakthrough cases were NOT hospitalized for COVID-19
<p>1 breakthrough death</p> <ul style="list-style-type: none"> 0 breakthrough deaths occurred among persons aged <60 years 1 death occurred among persons aged 60+ years 	<p>35 breakthrough deaths</p> <ul style="list-style-type: none"> 4 breakthrough deaths occurred among persons aged <60 years 31 deaths occurred among persons aged 60+ years



More information on COVID-19 vaccine effectiveness from epidemiological research can be found in recent observational studies:

- 17 Sep 2021. 13 Jurisdictions. https://www.cdc.gov/mmwr/volumes/70/wr/mm7037e1.htm?s_cid=mm7037e1_w
- 27 August 2021. 18 States. https://www.cdc.gov/mmwr/volumes/70/wr/mm7034e2.htm?s_cid=mm7034e2_w
- 27 August 2021. 8 US Locations. https://www.cdc.gov/mmwr/volumes/70/wr/mm7034e4.htm?s_cid=mm7034e4_w
- 27 August 2021. LA County. https://www.cdc.gov/mmwr/volumes/70/wr/mm7034e5.htm?s_cid=mm7034e5_w

¹ <https://www.cdc.gov/vaccines/covid-19/effectiveness-research/protocols.html>

² <https://apps.who.int/iris/rest/bitstreams/1337417/retrieve>

³ <https://jech.bmj.com/content/56/12/951>

⁴ Risk of death is the number of deaths per 100,000 population. Population estimates for vaccinated and unvaccinated individuals were estimated using data from the Vaccination Administration Management System, federal data sources and U.S. Census average population estimates for the 2015-2019 period.

⁵ An unvaccinated COVID-19 case refers to a person who did not receive any COVID-19 vaccine or did not complete a primary COVID-19 vaccine series or <14 days has elapsed since completing a primary COVID-19 vaccine series before the specimen collection date.

⁶ Deaths reported to the Department of Health from COVID-19 listed in the cause of death in the death certificate, hospital discharge summary, or coroner's notes.

⁷ Hospitalizations due to COVID-19 were identified by investigation and medical records. Hospitalizations represent cases reported January 1, 2021-September 30, 2021.