

## DATA MODELLING UPDATE

September 2, 2021

### Data Modelling

The Government of Alberta has released an evidence summary with previous modelling that informed recommendations earlier this year. This fact sheet lays out updated modelling that is helping to inform the province's current approach to COVID-19. Health modelling is a specialized skill where experts build these models based on key findings from the latest in COVID-19 research, with assumptions and considerations based on Alberta's own data, and using evidence as it emerges from other jurisdictions. Recommendations to the government are always made based on the best information available at the time. Please note that the longer out the projection into the future, the greater the uncertainty of the numbers.

A previous evidence summary based on information from June can be found in its entirety online at [alberta.ca/covid-19-alberta-data.aspx](https://alberta.ca/covid-19-alberta-data.aspx)

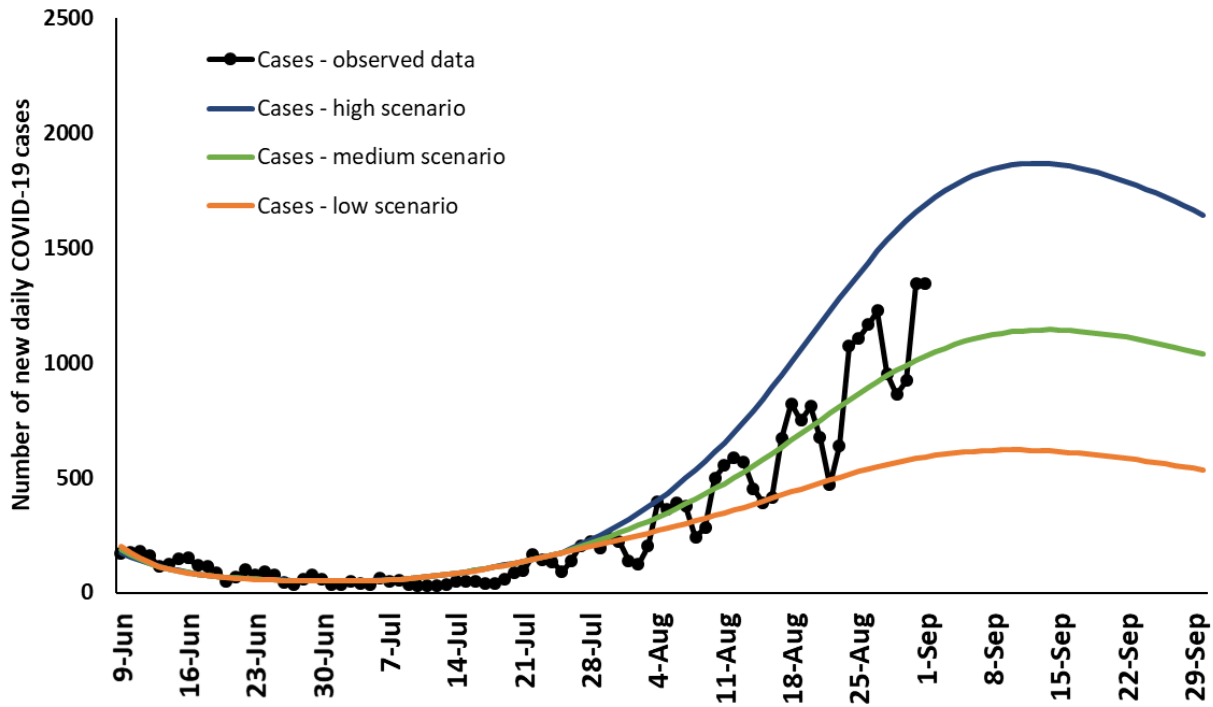
The following figures also illustrate the current hospitalization data that the Government of Alberta is using in its most recent decisions.

### COVID-19 new daily cases estimates (as of September 1, 2021)

Below is a figure showing the estimates of new daily COVID-19 cases from June 9 to September 30, 2021. Currently, observed COVID-19 cases are tracking towards the high scenario that peaks around 1,900 cases. It is very likely that unless interventions are put in place, the magnitude and timing of this peak will exceed these current projections given the anticipated behaviour and contact pattern changes that will occur with upcoming fall activities. Therefore, the trend lines should not be taken as guaranteed predictions of the future. If cases accelerate further, there would be even greater impacts than currently predicted in our acute care system.

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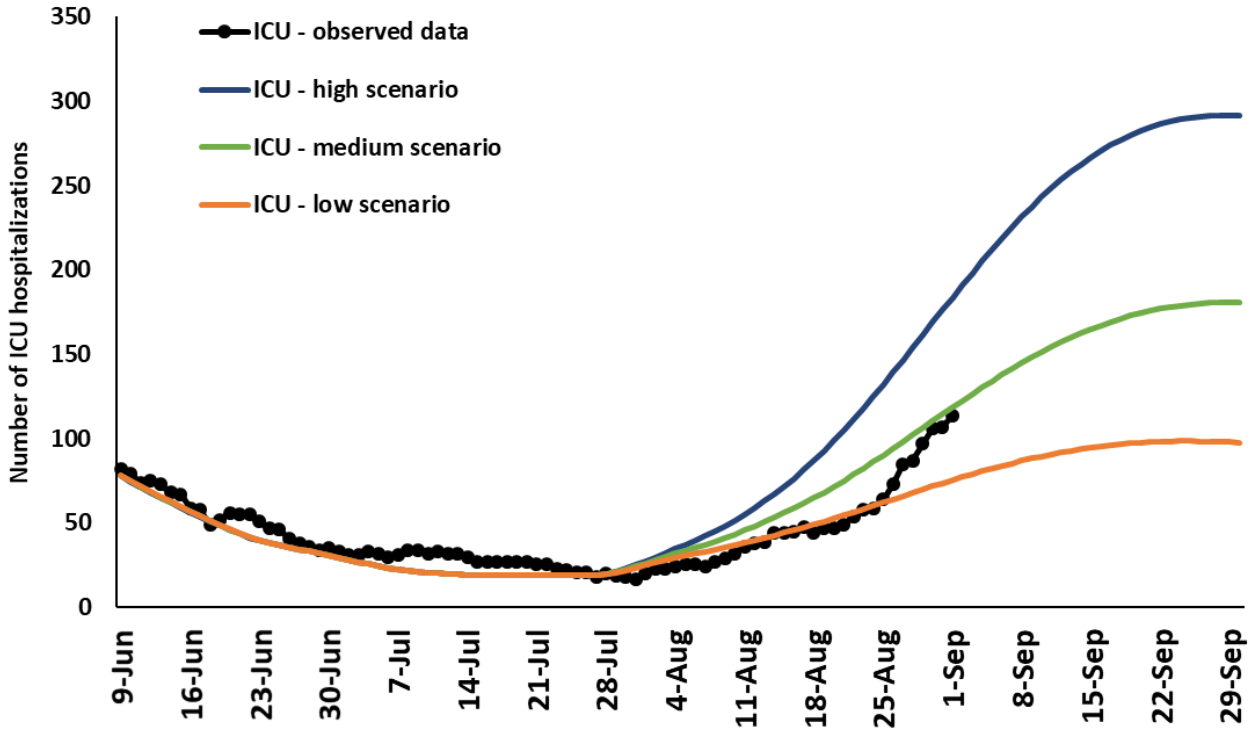


## COVID-19 ICU hospitalization estimates (as of September 1, 2021)

Below is a figure showing the estimates of ICU hospitalizations from June 9 to September 30, 2021. Currently, observed ICU hospitalizations are tracking along the middle scenario that peaks around 180, however trends can change quickly, as demonstrated below with ICU numbers shifting from the low to medium scenario within one week. If another acceleration happens, the impacts could move towards the high scenario, which peaks around 300 in ICU, higher than any of our previous waves.

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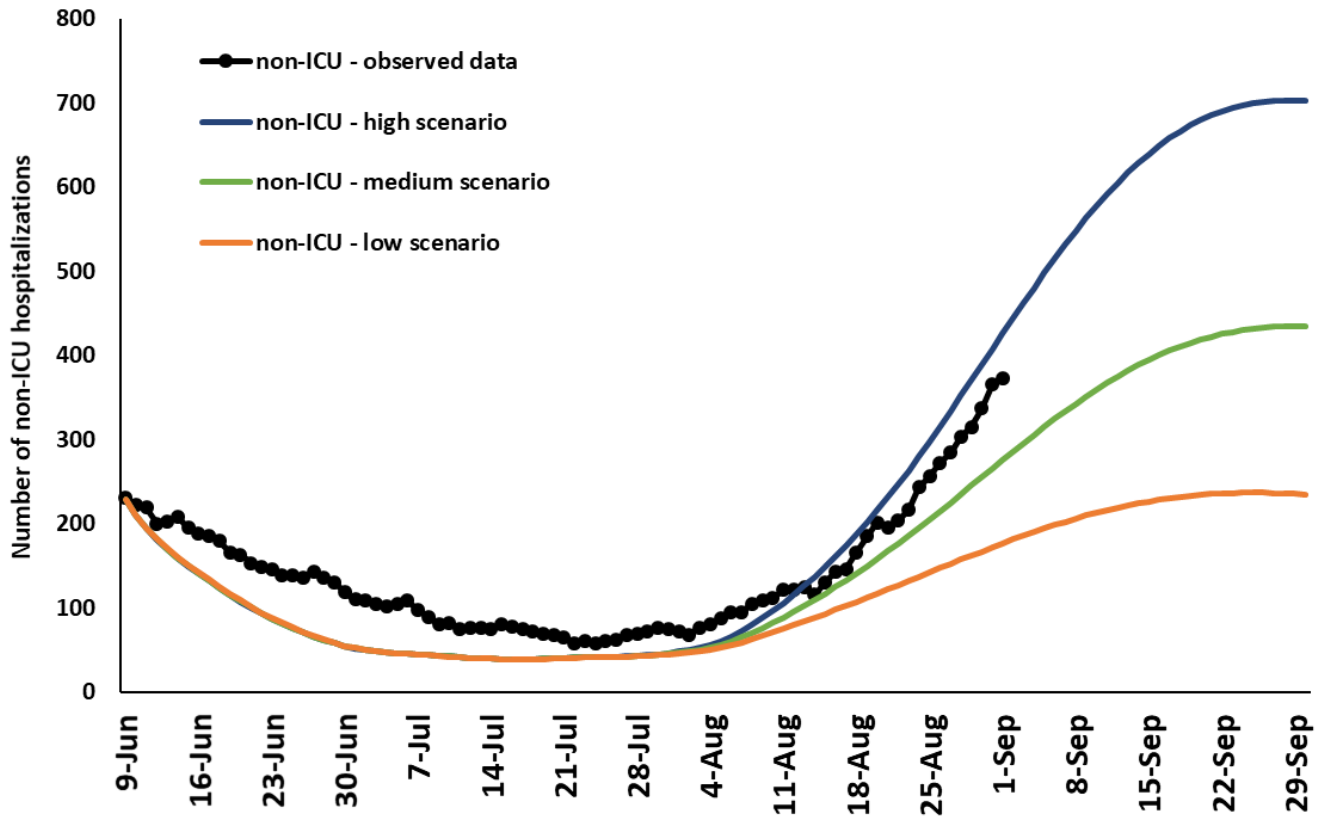


## COVID-19 non-ICU hospitalization estimates (as of September 1, 2021)

Below is a figure showing the estimates of non-ICU hospitalizations from June 9 to September 30, 2021. Non-ICU hospitalizations are currently tracking underneath the high scenario, with a peak of around 700. If ICU and non-ICU hospitalizations both reach or exceed the high scenario, the acute care impact would surpass all of the previous waves.

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### Modeling details

As in June, we used a deterministic model to project a range of possible outcomes for cases and current hospitalizations (ICU and non-ICU). This model used over 10,000 simulations to estimate these projections.

One strength of this simulation based modelling method is that it can serve as an early warning tool if observed data deviate from their current trajectory. This would highlight changes in model assumptions that would be revisited while being closely monitored, as happened in early August when deviations resulted in a pause in implementation of changes to testing and isolation. This current model assumes that the level of testing and case identification is similar to historical estimates and that additional transmission is negligible following case identification. It does not include:

- Potential emergence of new variants that follow from Delta
- Unexpected transmission leading to outbreak events
- Waning immunity of full dose vaccinations
- Potential increase in future transmission
- Future changes in policy regarding non-pharmaceutical interventions

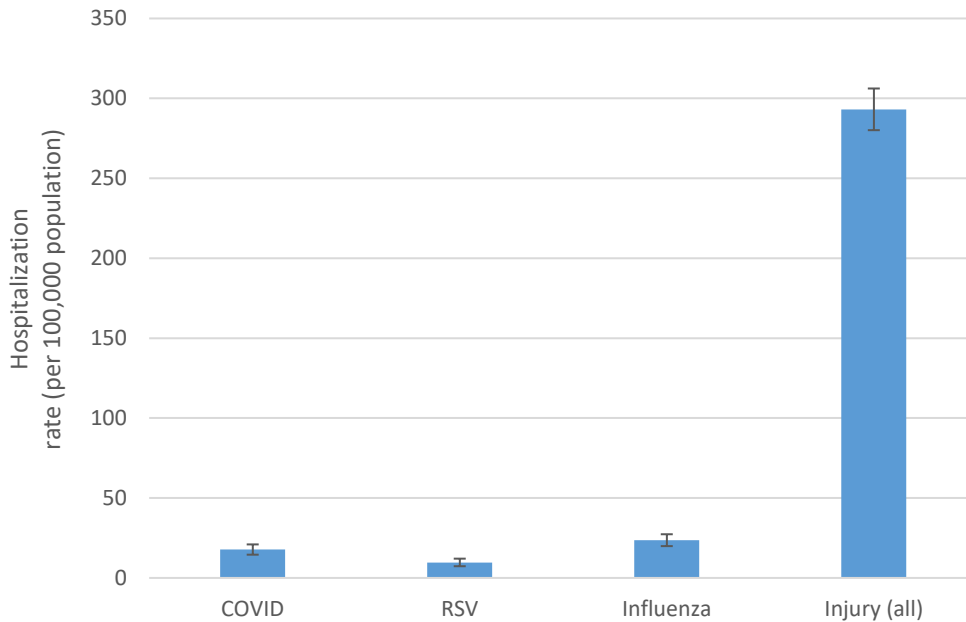
Alberta Health will continue to revise the modelling based on new information available.

### Comparative risks of COVID-19 for children under 12 in Alberta

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This figure compares the hospitalization rate for children with COVID-19 to other risks to children’s health in Alberta. For children under 12 years of age, the risk of hospitalization with COVID-19 is similar to the risks of hospitalization for respiratory syncytial virus (RSV) and influenza in a pre-COVID year (2019). Furthermore, children are more than 16 times more likely to be hospitalized from an injury than with COVID-19.



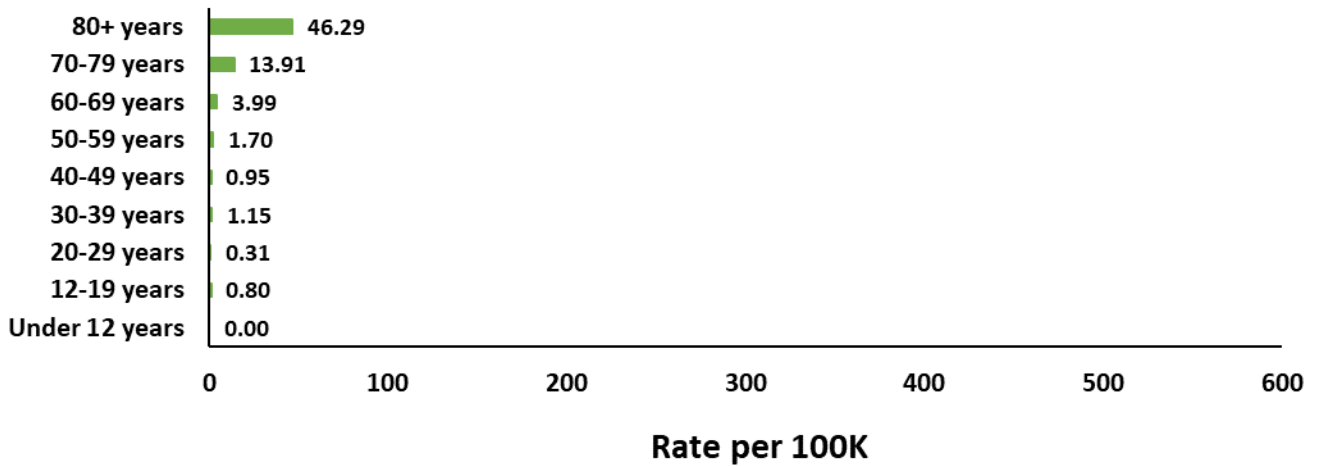
### Impact of vaccination on acute care burden due to COVID-19 in Alberta

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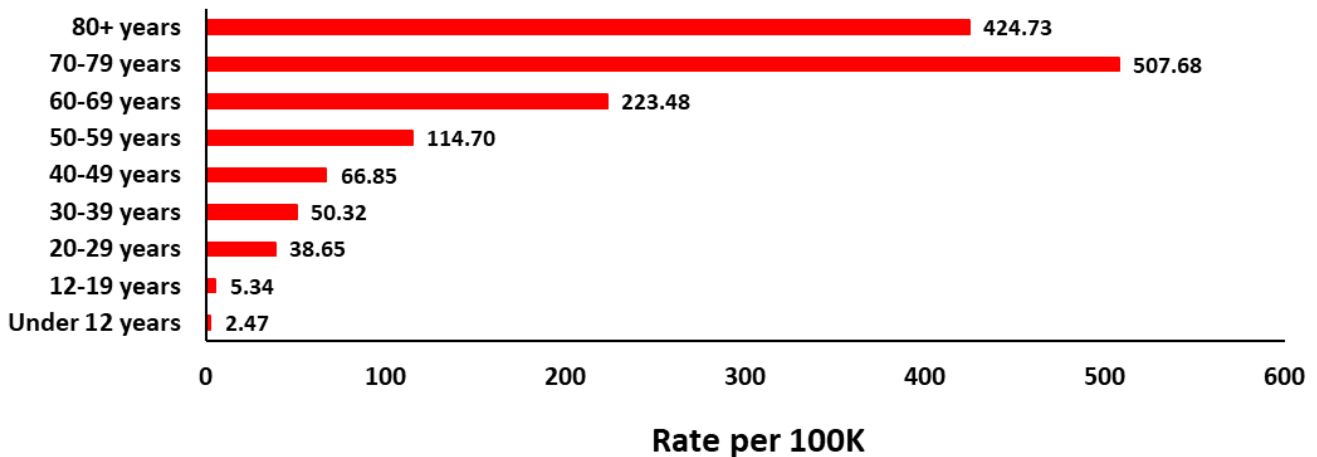
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The figures below compare COVID-19 hospitalization rates per 100,000 population in Alberta by vaccine status since July 1, 2021: fully vaccinated (top) and unvaccinated (bottom). Overall hospitalization rates are around 10 times greater for unvaccinated compared to fully vaccinated people in the 80+ age group. In younger age groups, the relative impact of vaccine increases and unvaccinated people are 30 to 120 times more likely to be admitted to hospital with COVID-19 than those with vaccine protection. Across all age groups, COVID-19 hospitalization rates are much higher among unvaccinated compared to those who are fully vaccinated.

### Fully Vaccinated



### Unvaccinated



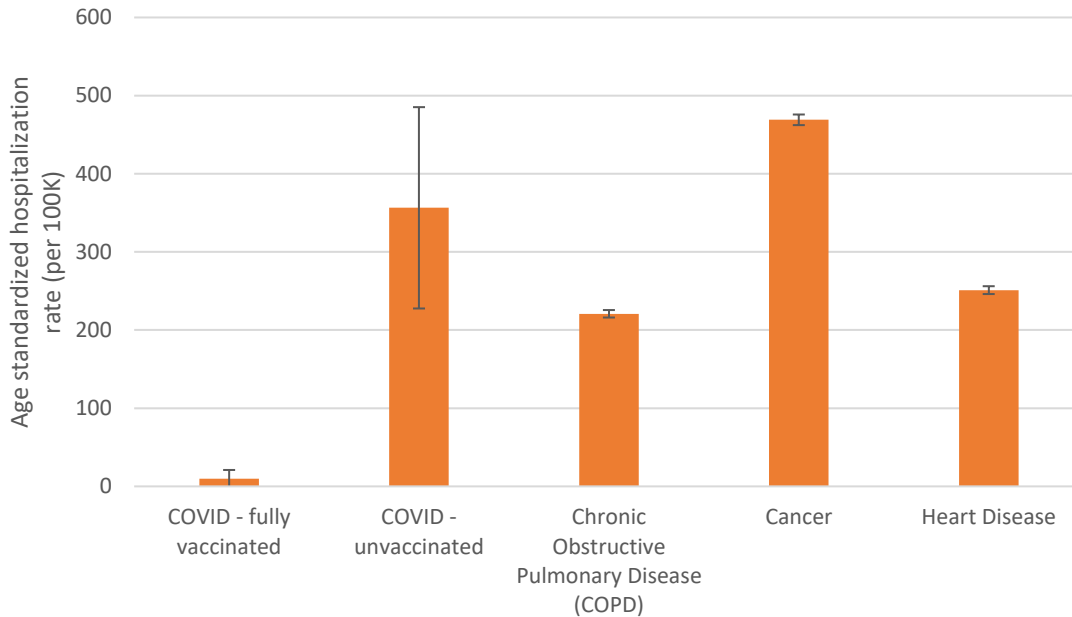
### Comparative risks of COVID-19 for vaccinated Albertans

This figure illustrates that the risk of hospitalization with COVID-19 for immunized adults is quite small compared to the risk of hospitalization with COVID-19 for unvaccinated people. For those with no vaccine protection, the risk of hospitalization with

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COVID is greater than or similar to other diseases such as chronic obstructive pulmonary disease (COPD), cancer, or heart disease.



### Descriptive analysis details

Data used for descriptive analysis were obtained from various data sources: a) Interactive Health Data Application ([http://www.ahw.gov.ab.ca/IHDA\\_Retrieval/ihdaData.do](http://www.ahw.gov.ab.ca/IHDA_Retrieval/ihdaData.do)) and b) COVID-19 case and vaccine data (see Data Notes section for more details about the data sources at <https://www.alberta.ca/stats/covid-19-alberta-statistics.htm#data-notes>).

ICD-10 Definitions for non-COVID-19 diseases:

- a) Chronic Obstructive Pulmonary Disease: J40-J44,J47
- b) Cancer: C00-D48
- c) Heart Disease: I20-I25
- d) Influenza: J9-J11
- e) RSV: J121
- f) All Injury: S,T,V,W,X,Y

For non-COVID-19 diseases, 2019 age standardized rates were used for comparison.

For COVID-19, an annualized rate was estimated from data between 2020 and 2021 for kids under 12 years old. For all ages, annualized age-standardized rates were estimated for data from January 2021. Immunization events that occurred within 14 days prior to a COVID-19 diagnosis or after diagnosis were not included.