

# Update on COVID-19 Projections

Science Advisory and Modelling Consensus Tables

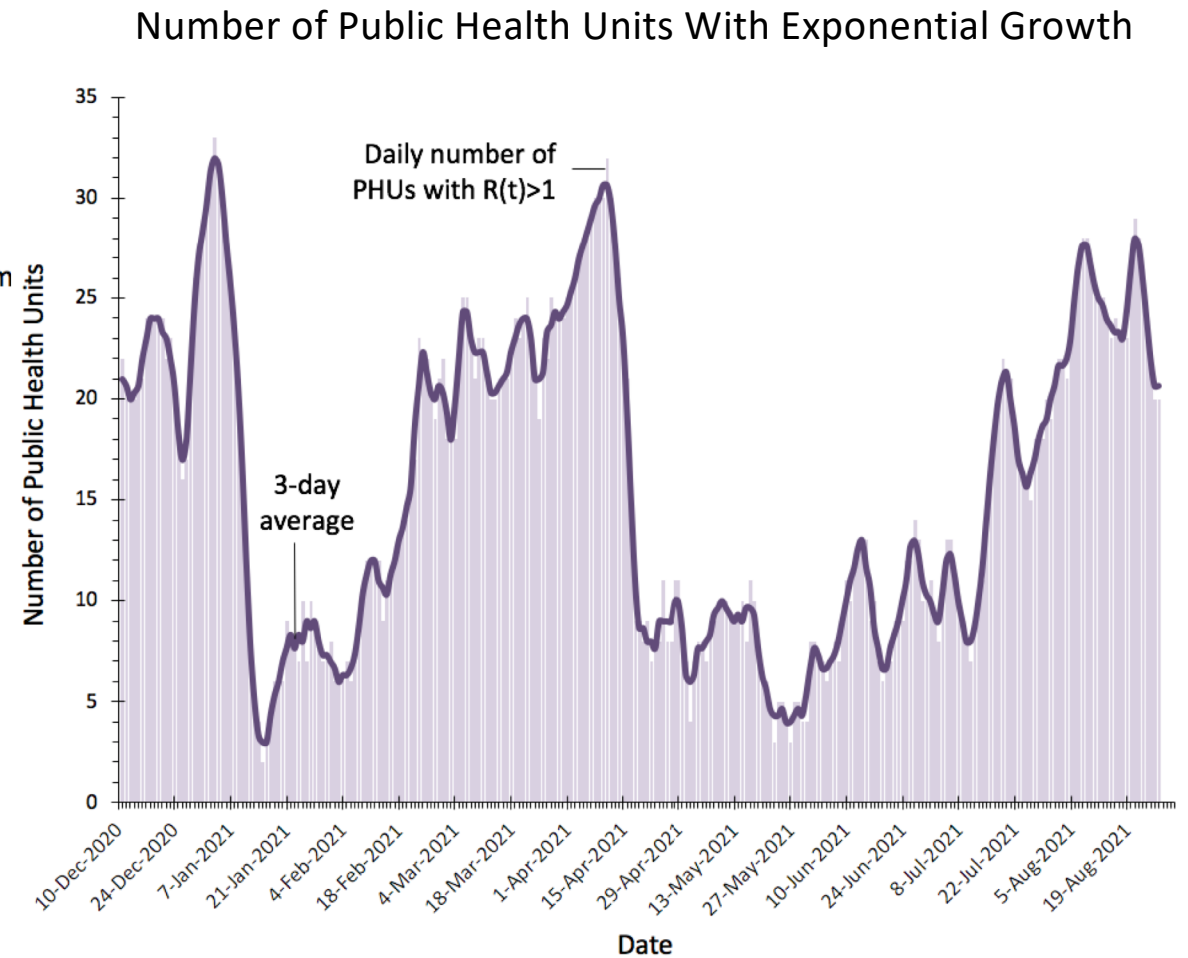
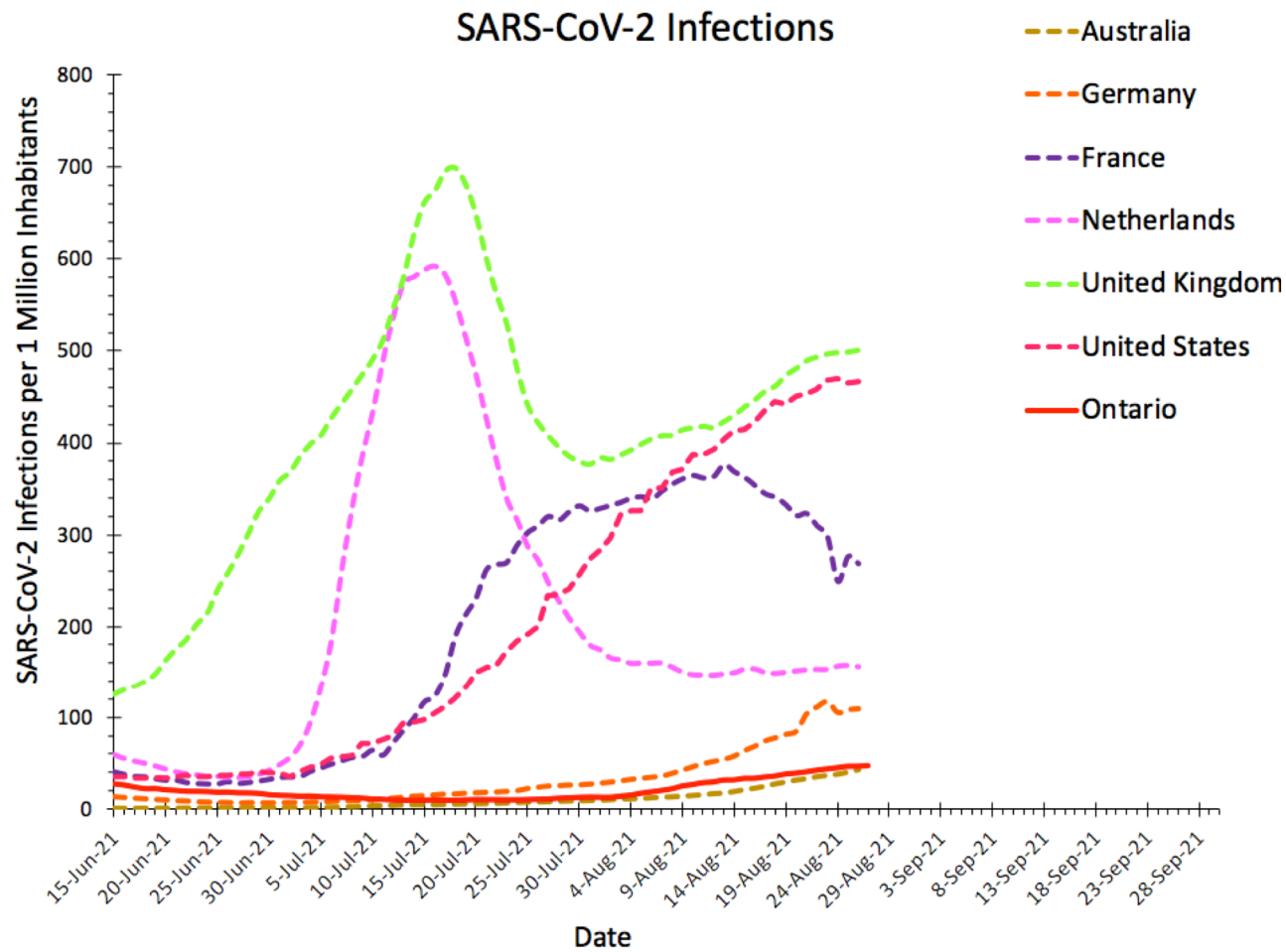
September 1, 2021



# Key Findings

- Like other jurisdictions, Ontario is in the 4<sup>th</sup> wave of the COVID-19 pandemic. Our models, federal models, and models in other jurisdictions predict a substantial 4<sup>th</sup> wave.
- Vaccination offers substantial protection against severe health outcomes. We do not expect to see the same proportion of severely ill cases in the vaccinated. Among the unvaccinated, we do expect to see a rapid increase in the number of seriously ill people needing hospital care as workplaces and education re-open in September.
- The fourth wave will affect all age groups with the potential to exceed ICU capacity.
- Because of the Delta variant and to avoid a lockdown in the Fall, vaccination needs to accelerate substantially above 85% of eligible population aged 12+ fully vaccinated and we need to reduce contacts to about 70% of pre-pandemic levels until vaccination is high enough to protect the population:
  - Reducing indoor density, maintaining physical distancing, limiting large gatherings;
  - Continuing indoor mask policies and working from home; and
  - Implementing policies that accelerate vaccination (e.g. certificates, mandates, outreach).

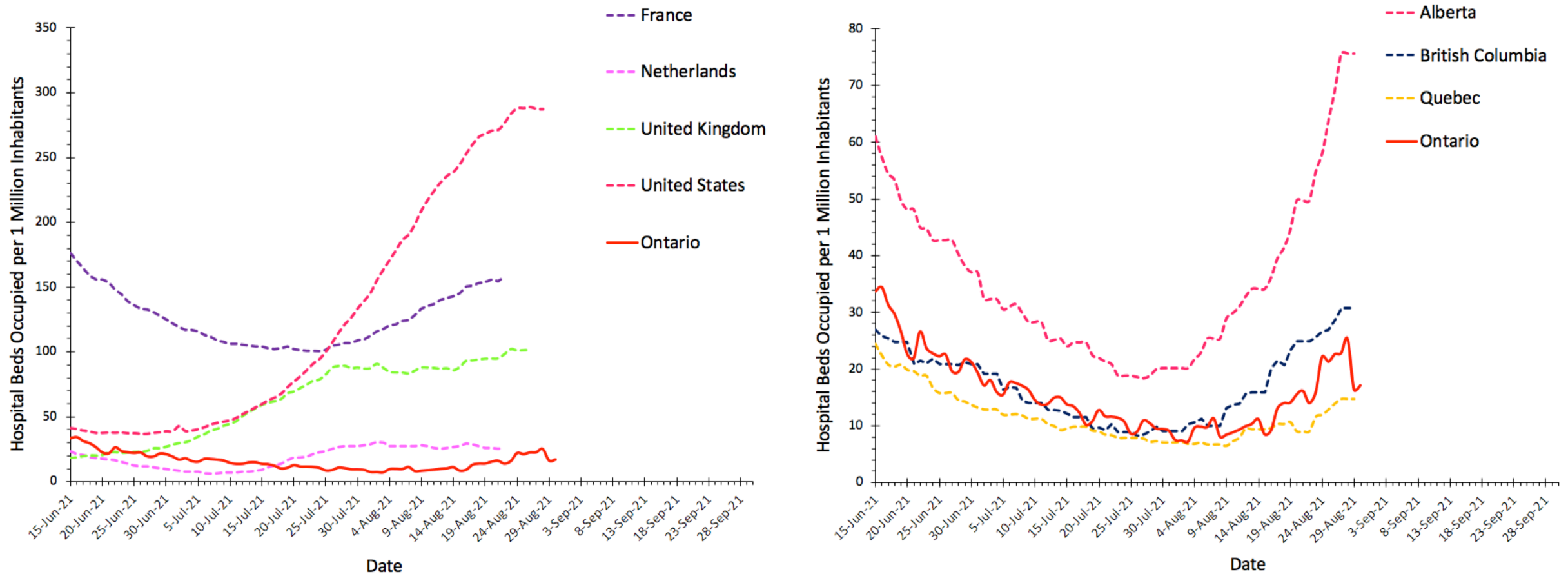
# Following peer jurisdictions, Ontario is at the start of the 4<sup>th</sup> wave of the COVID-19 pandemic



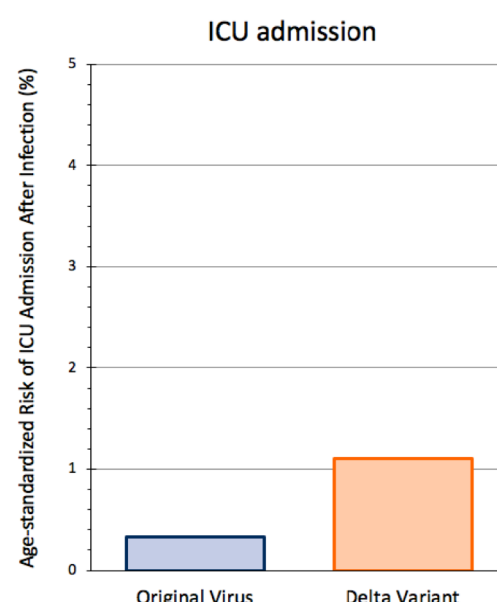
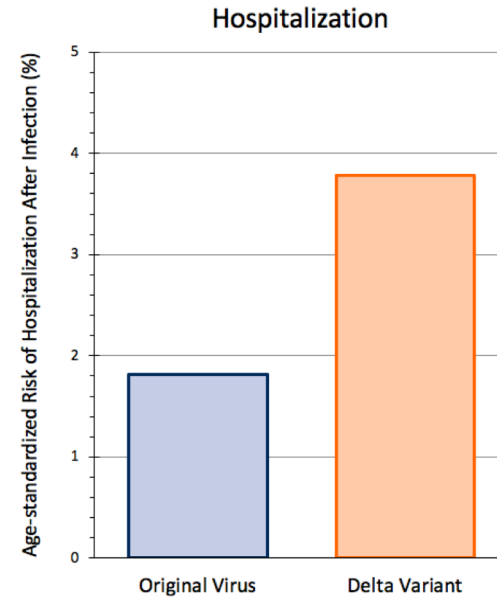
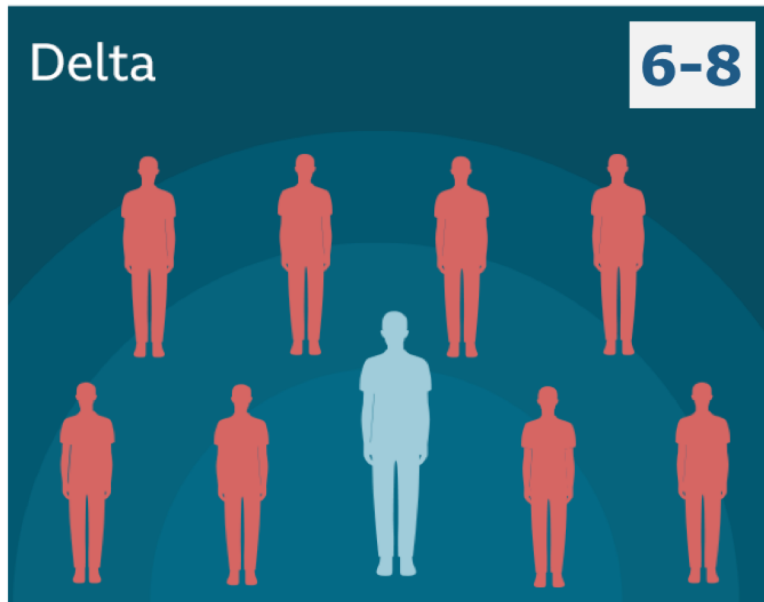
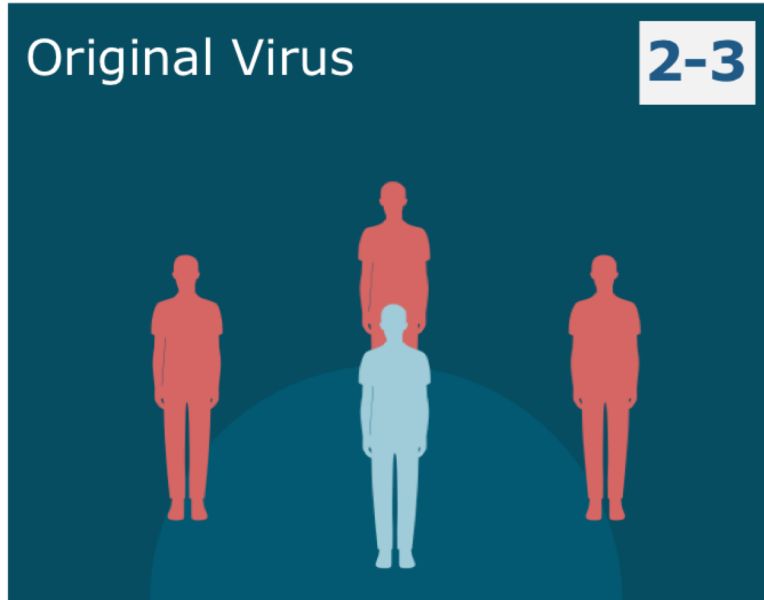
Analysis: Secretariat of the Science Advisory Table (<https://covid19-sciencetable.ca/ontario-dashboard/>)  
Data: <https://data.ontario.ca/> and <https://ourworldindata.org/explorers/coronavirus-data-explorer>

# The 4<sup>th</sup> wave is putting increasing pressure on hospital and ICU capacity in a number of jurisdictions

COVID-19 Patients in Hospital



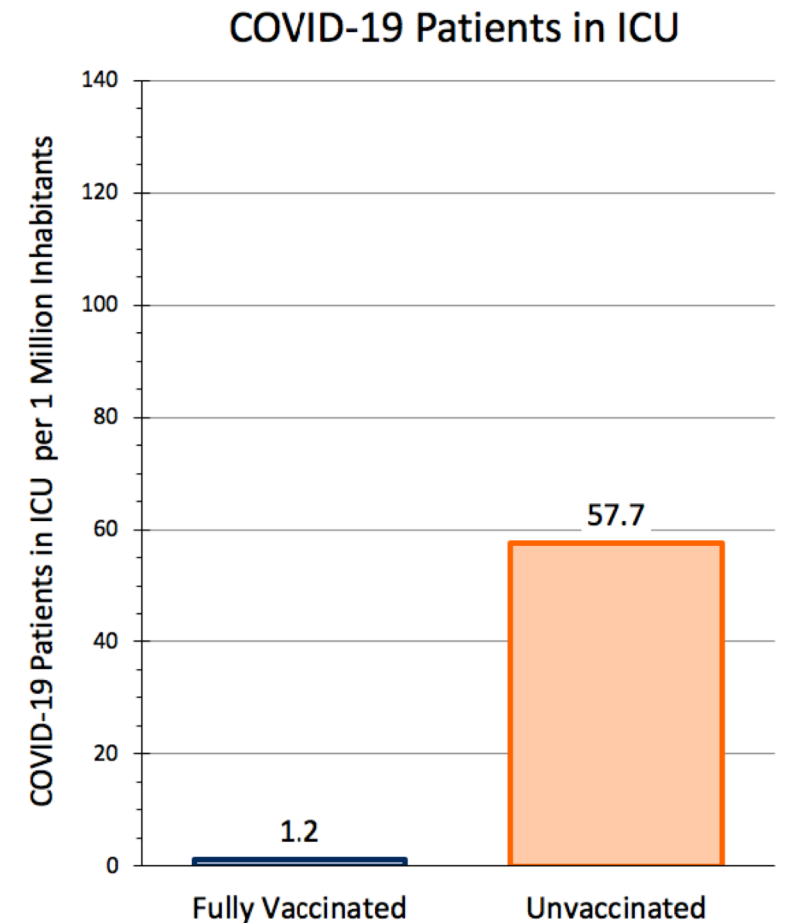
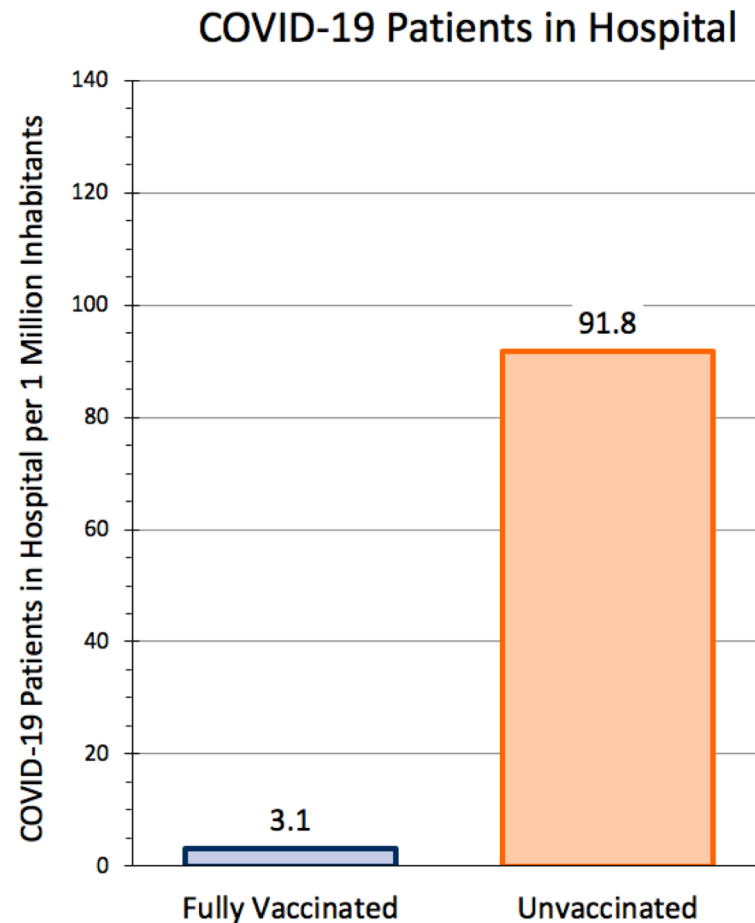
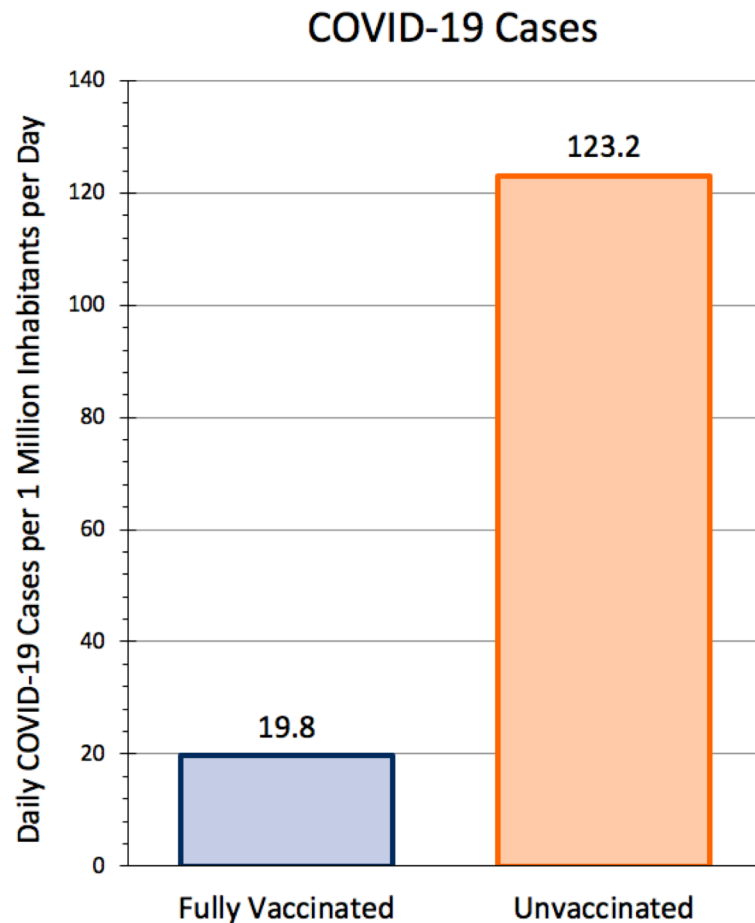
# The Delta Variant is an acute threat to public health



- The Delta variant is more than twice as transmissible than the original SARS-CoV-2 virus.
- For delta,  $R_0$  is 6-8: one infected individual (blue) is expected to infect 6-8 additional people without control measures
- The risk of hospital and ICU admission after infection is 2 to 3 times higher after infection with the Delta variant as compared with the original SARS-CoV-2 virus.

# Vaccination continues to be highly effective

Unvaccinated people have a 6-fold higher risk of symptomatic COVID-19 disease, a 30-fold higher risk of being in the hospital and 48-fold higher risk of being in the ICU compared to the fully vaccinated

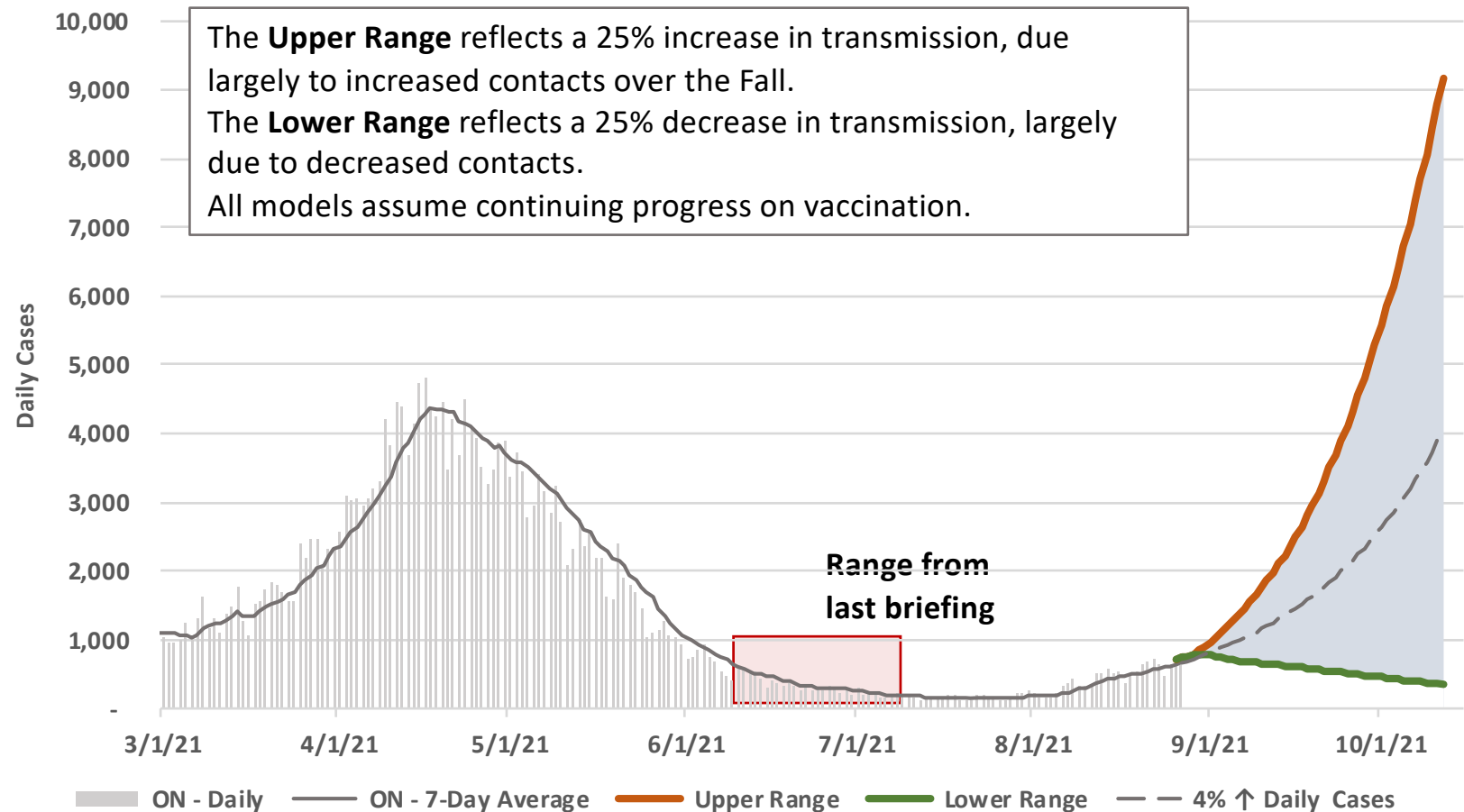


Analysis: Secretariat of the Science Advisory Table (<https://covid19-sciencetable.ca/ontario-dashboard/>)  
Data: <https://data.ontario.ca/> and CCM plus; estimates of patients in hospital and ICU are age standardized

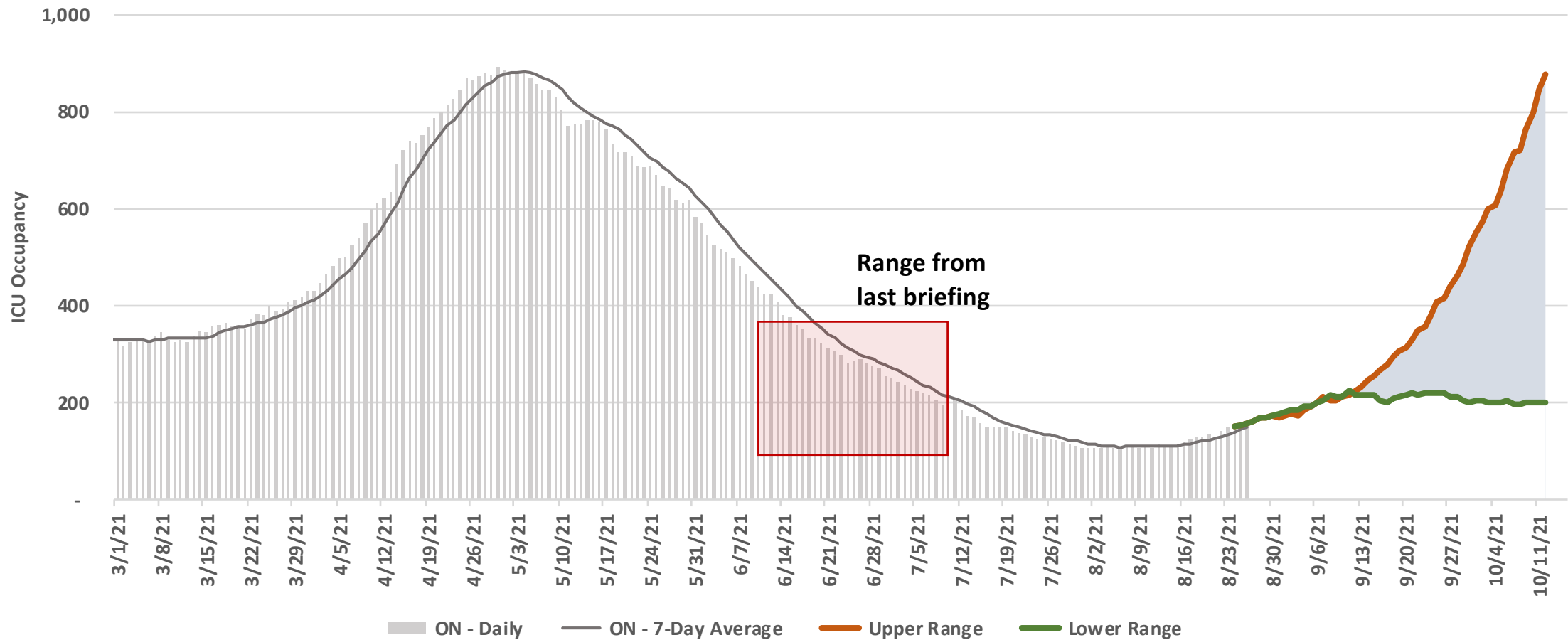
# Public health measures, together with vaccination, can help control the 4th wave

## Figure shows predictions based on a consensus across models

- 5 teams at five Ontario universities build models using different approaches and assumptions
- Each team runs multiple scenarios reflecting key factors like vaccination and contacts
- The teams meet to review and determine a representative range of likely scenarios



# If we cannot reduce transmission, and accelerate vaccination, ICU occupancy could exceed Wave 3 by October



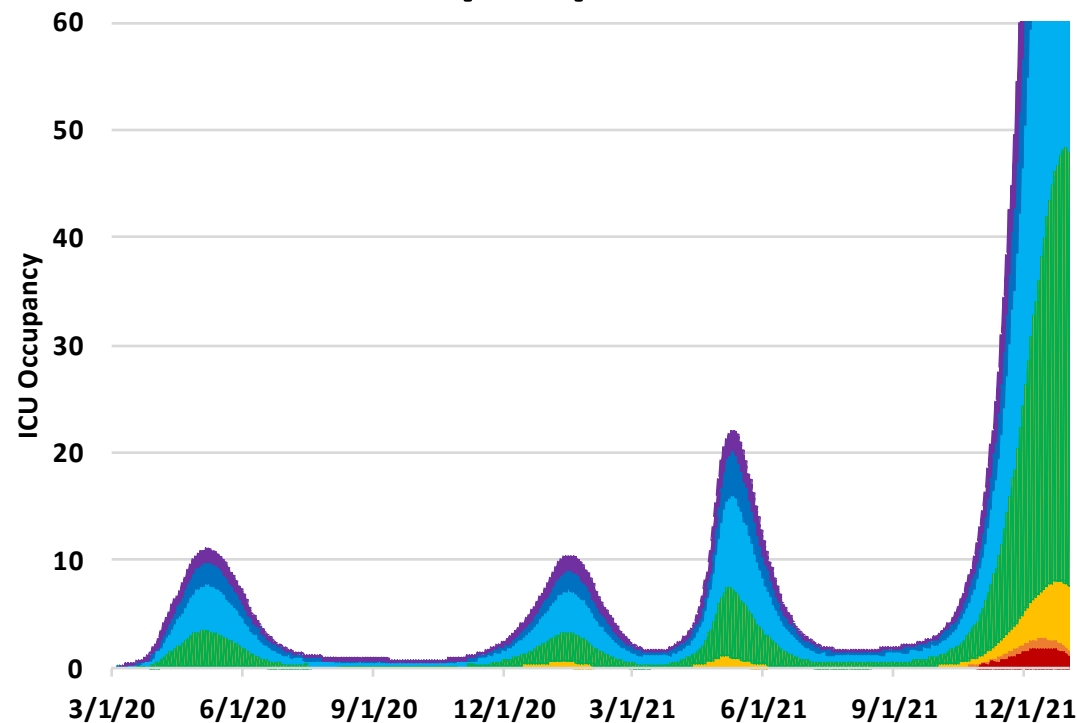
Predictions: COVID-19 ModCollab based on case predictions in previous slide..  
Data (Observed ICU Occupancy): CCSO



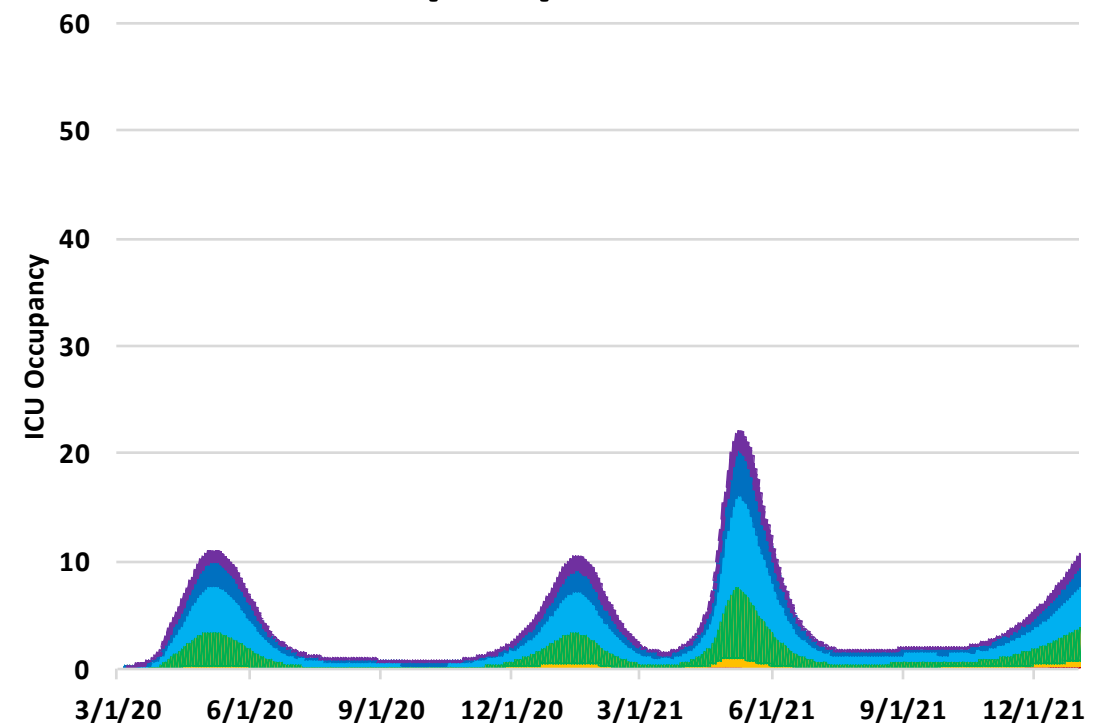
# Contacts should be at or below 70% of pre- pandemic levels to accommodate critically ill patients

Example: London-Middlesex, predicted ICU occupancy for a population of 500,000.  
4<sup>th</sup> wave likely to peak earlier in other urban communities

## Contacts 80% of pre-pandemic levels



## Contacts 70% of pre-pandemic levels



# Substantial progress on vaccination will be necessary to protect Ontarians from COVID-19

*66.9% of all Ontarians are fully vaccinated; 76.4% of eligible population 12+*



Provincial COVID-19 vaccine coverage estimates (partially and fully vaccinated) by gender and age group

Data: COVaxON; Immunizations reported up to August 21, 2021

Source: PHO [https://www.publichealthontario.ca/-/media/documents/ncov/epi/covid-19-vaccine-uptake-ontario-epi-summary.pdf?sc\\_lang=en](https://www.publichealthontario.ca/-/media/documents/ncov/epi/covid-19-vaccine-uptake-ontario-epi-summary.pdf?sc_lang=en)

# Key Findings

- Like other jurisdictions, Ontario is in the 4<sup>th</sup> wave of the COVID-19 pandemic. Our models, federal models, and models in other jurisdictions predict a substantial 4<sup>th</sup> wave.
- Vaccination offers substantial protection against severe health outcomes. We do not expect to see the same proportion of severely ill cases in the vaccinated. Among the unvaccinated, we do expect to see a rapid increase in the number of seriously ill people needing hospital care as workplaces and education re-open in September.
- The fourth wave will affect all age groups with the potential to exceed ICU capacity.
- Because of the Delta variant and to avoid a lockdown in the Fall, vaccination needs to accelerate substantially above 85% of eligible population aged 12+ fully vaccinated and we need to reduce contacts to about 70% of pre-pandemic levels until vaccination is high enough to protect the population:
  - Reducing indoor density, maintaining physical distancing, limiting large gatherings;
  - Continuing indoor mask policies and working from home; and
  - Implementing policies that accelerate vaccination (e.g. certificates, mandates, outreach).

# Contributors

- **COVID-19 Modeling Collaborative:** Kali Barrett, Stephen Mac, David Naimark, Aysegul Erman, Yasin Khan, Raphael Ximenes, Sharmistha Mishra, Beate Sander
- **Fields Institute:** Taha Jaffar, Kumar Murty
- **McMasterU:** Irena Papst, Michael Li, Ben Bolker, Jonathan Dushoff, David Earn
- **YorkU:** Jianhong Wu, Yanyu Xiao, Zack McCarthy
- **PHO:** Kevin Brown, Sarah Buchan, Alyssa Parpia
- **Science Advisory Table:** Peter Juni, Kali Barrett, Antonina Maltsev, Gabrielle Katz, Shujun Yan
- **Western University/London Health Sciences Centre :** Lauren Cipriano, Wael Haddara

# Content and review by Modelling Consensus and Scientific Advisory Table members and secretariat

Beate Sander,\* Peter Juni, Brian Schwartz,\* Kumar Murty,\* Upton Allen, Vanessa Allen, Kali Barrett, Nicolas Bodmer, Isaac Bogoch, Kevin Brown, Sarah Buchan, Yoojin Choi, Troy Day, Laura Desveaux, David Earn, Gerald Evans, Jennifer Gibson, Anna Greenberg, Anne Hayes,\* Michael Hillmer, Jessica Hopkins, Jeff Kwong, Fiona Kouyoumdjian, Audrey Laporte, John Lavis, Gerald Lebovic, Brian Lewis, Linda Mah, Kamil Malikov, Antonina Maltsev, Doug Manuel, Roisin McElroy, Allison McGeer, David McKeown, John McLaughlin, Sharmistha Mishra, Justin Morgenstern, Andrew Morris, Samira Mubareka, Laveena Munshi, Christopher Mushquash, Ayodele Odutayo, Shahla Oskooei, Menaka Pai, Alyssa Parpia, Samir Patel, Anna Perkhun, Bill Praamsma, Justin Presseau, Fahad Razak, Rob Reid,\* Paula Rochon, Laura Rosella, Michael Schull, Arjumand Siddiqi, Chris Simpson, Arthur Slutsky, Janet Smylie, Robert Steiner, Ashleigh Tuite, Jennifer Walker, Tania Watts, Ashini Weerasinghe, Scott Weese, Xiaolin Wei, Jianhong Wu, Diana Yan, Emre Yurga

\* Chairs of Scientific Advisory, Evidence Synthesis, and Modelling Consensus Tables

For table membership and profiles, please visit the [About](#) and [Partners](#) pages on the Science Advisory Table website.