Ontario School Forecast Scenarios

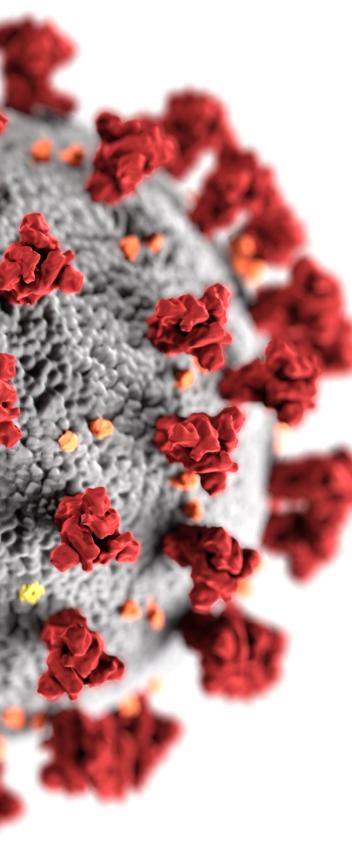
How Scarsin can help Ontario, NOW!

November 18, 2020



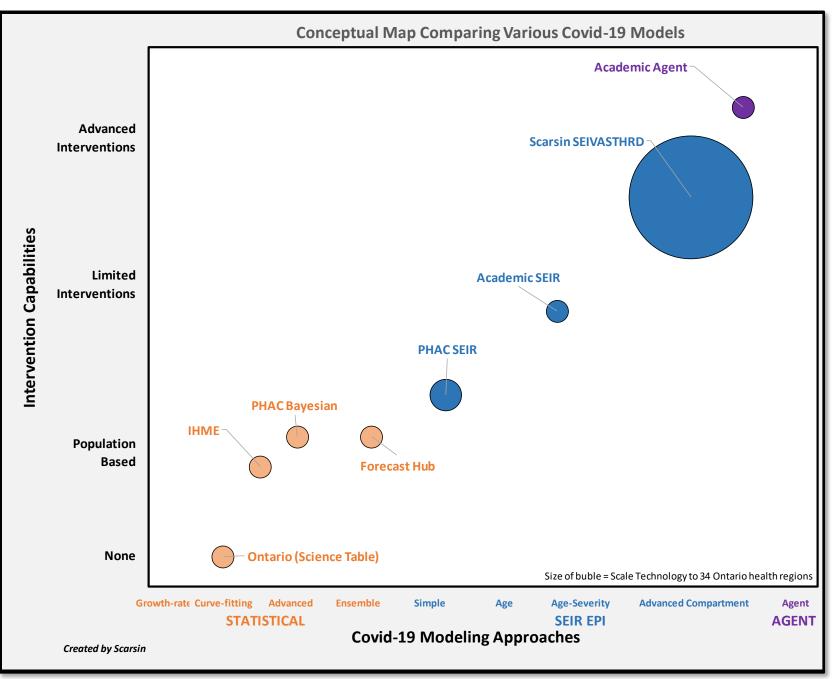
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www.scarsin-covid.com



School Scenarios

- The kind of "modeling" used is very important in terms of intervention decision making
 - It determines how much information decision makers have in setting policy and measuring results
 - It also influences how far they can plan ahead which is the difference between reactive and proactive decisions
- Scarsin's SEIVASTHRD SEIR model is capable of advanced intervention planning
 - We have taken the current debate about school closing in Ontario and produced a series of scenarios to provide "<u>best available scientific knowledge</u>"* in alignment to the provinces states goes and to do that in a transparent manner



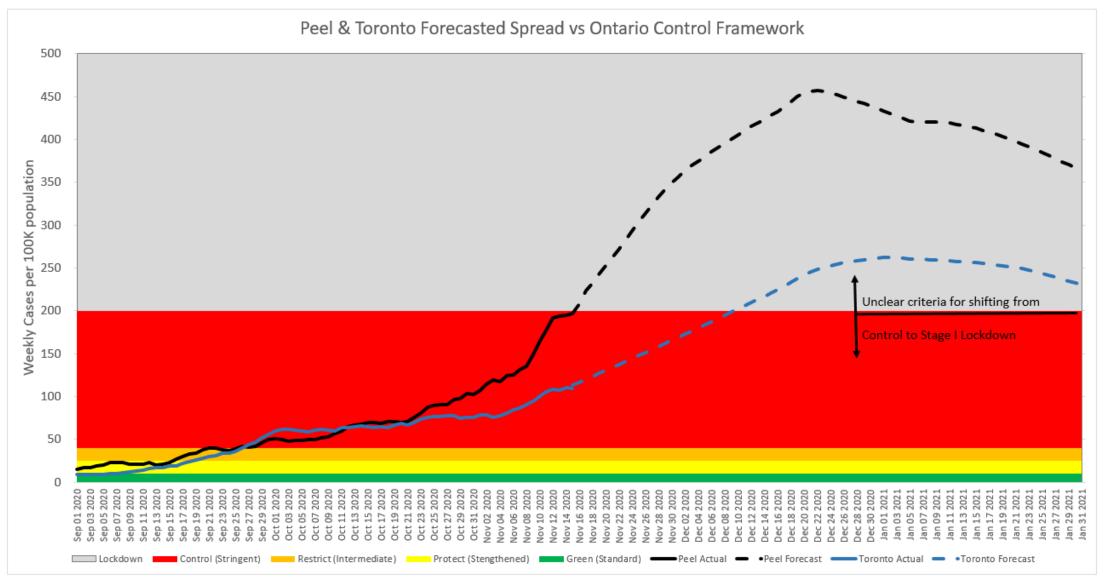
* One of the 4 key principles of keeping Ontario Safe and Open, Slide 6 https://covid19-sciencetable.ca/wp-content/uploads/2020/11/Update-on-COVID-19-Projections.pdf

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School Scenarios – Peel & Toronto Only

- The Scarsin forecasts for the next 30 days as outlined in our video posted on Nov 16 is around 3,000 cases in mid Dec ٠
- Peel and Toronto make up ~65% of Ontario's cases so we have restricted our school intervention scenarios to just these two regions ٠
- The graph below layers on the Ontario colour framework although it is unclear exactly what will trigger a shutdown
- The current Peel forecast peaks at ~450 weekly cases per 100k, which is deeply concerning!



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Premier Doug Ford to announce new measures for Toronto, Peel, York on Nov 20 (below)

Scarsin to remodel after the announcement

https://www.cbc.ca/news/canada/toron to/covid-19-coronavirus-ontarionovember-18-update-1.5806310



Three School Closure Scenarios

Intervention:

Scenario one:	Dec 4 - Jan 4 (2 weeks early)
Scenario two:	Dec 18 - Jan 18 (2 weeks later)
Scenario three:	Dec 4 – Jan 18 (2 weeks early + 2 weeks later)

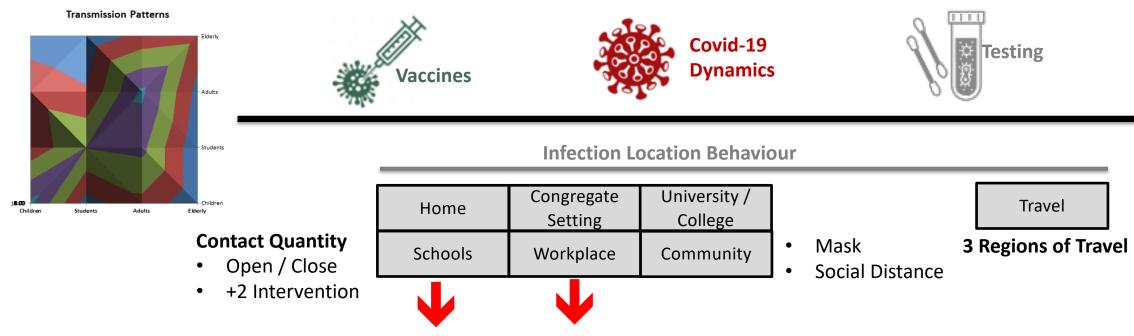


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Impact:

Adjust the Holiday Closure for Schools ↓ Close Schools ↓ Workplace (Teachers/Staff + Parents at home)

Normal Contact Behaviour



SCARSIN Decision Support

SEIVASTHRD

<u>S</u>usceptible

<u>E</u>xposed

Imported

Vaccinated

<u>A</u>symptomatic

Symptomatic

<u>T</u>ested

<u>H</u>ospitalized

<u>R</u>ecovered

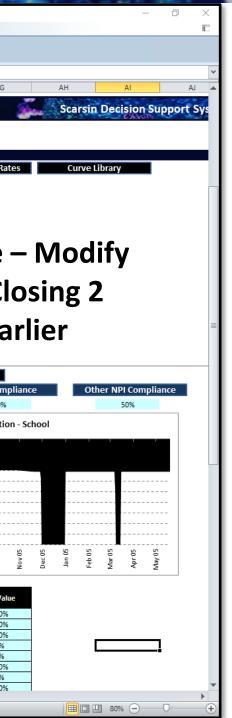
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Scarsin Covid-19 Model

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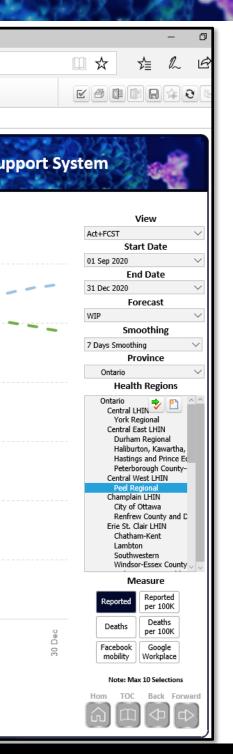
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Scarsin Dashboard – No Closings

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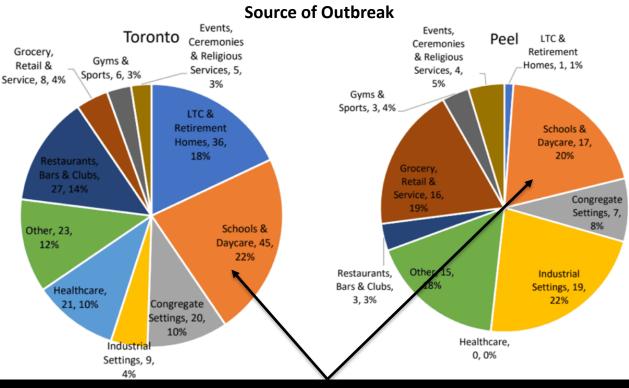
Positivity Rate By Age Group

Positivity Rate

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- Positivity Rate among the first 4 age groups (0 to 17 yrs old) have had the largest growth relative to other age groups from Oct to Nov
- Toronto and Peel are the 1st and the 2nd largest school boards in Canada with 255k-42k and 155k-15k students and staff respectively
- All imposed restrictions have had very limited impact on positivity rate growth among students
- Schools and Daycares constitute 22% and 20% of outbreaks in Toronto and Peel
- Given the high proportion of asymptomatic cases among students/children, the continuous positivity rate growth is very concerning

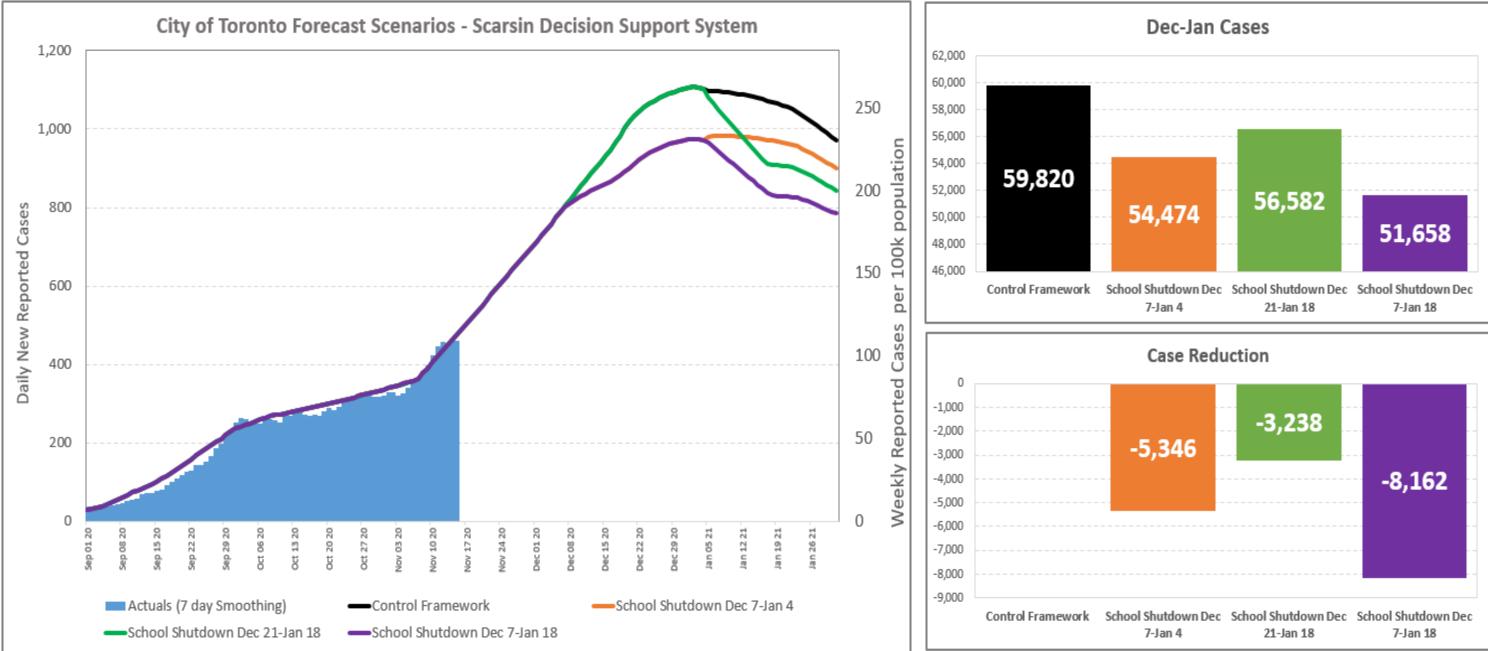
			October		November	Nov (44)/Oct (39) Growth	
Week No	39	40	41	42	43	44	
Age Group							
75+	1.3	1.4	1.8	2.3	2.8	3.4	162%
65-74	1.2	1.3	1.7	1.9	2.2	2.6	117%
55-64	1.4	1.6	2.3	2.4	2.4	3	114%
45-54	1.9	1.9	2.7	2.8	3	3.8	100%
35-44	1.5	1.7	2.4	2.7	2.9	3.7	147%
25-34	2.5	2.2	2.9	3.2	3.4	4	60%
18-24	3.6	2.6	3.5	3.9	4.3	4.6	28%
14-17	1.9	2.1	2.9	4.1	4.1	5.4	184%
9-13	0.8	1.2	1.8	2.8	3.7	4.8	500%
4-8	0.4	1	1.5	2.7	2.7	3.7	825%
0-3	0.7	1.3	2.2	2.5	2.2	3	329%
Total	1.6	1.8	2.4	2.8	3	3.7	131%



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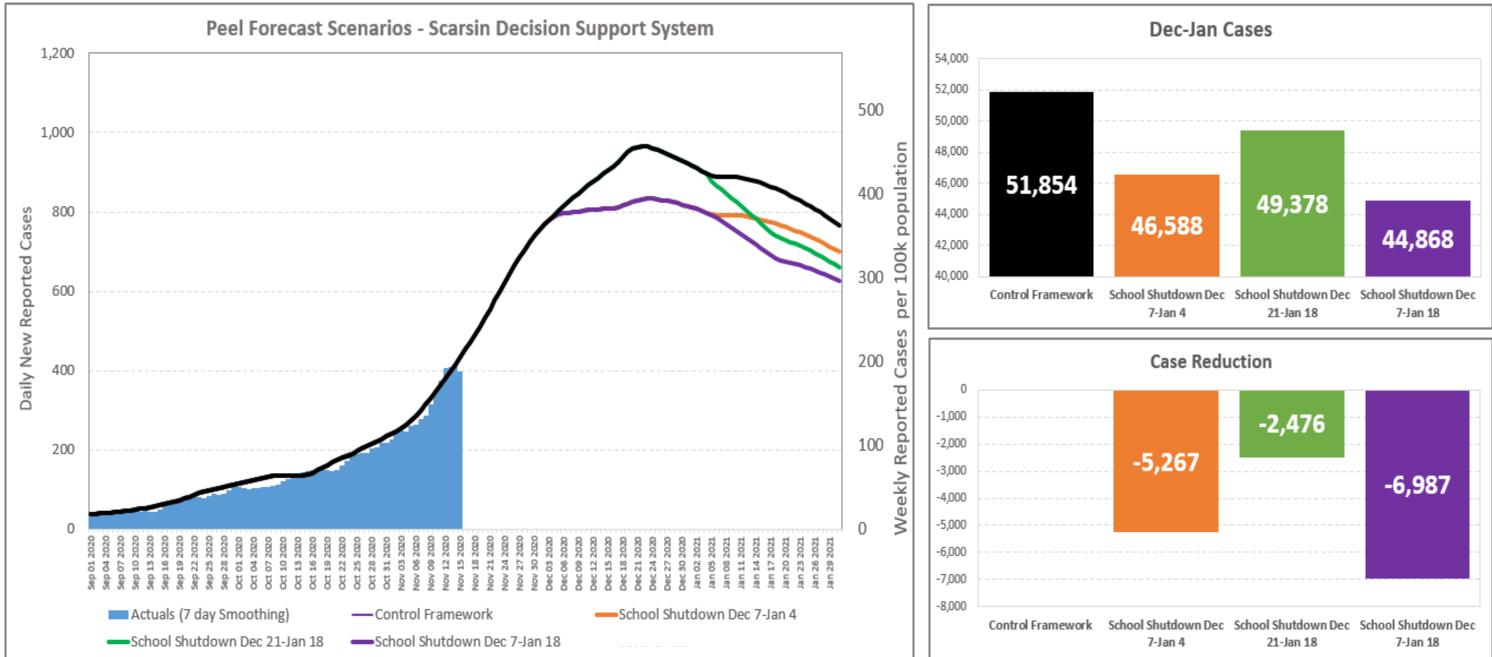
Scarsin Model – Toronto Scenarios



November 18, 2020



Scarsin Model – Peel Scenarios



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7	-2,476	
		-6,987
wn Dec	School Shutdown Dec 21-Jan 18	School Shutdown Dec 7-Jan 18

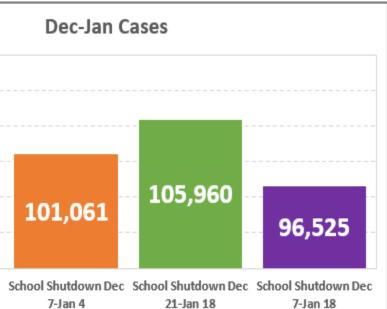
Scarsin Model – Peel+Toronto Scenarios

Peel+Toronto Forecast Scenarios - Scarsin Decision Support System **Dec-Jan Cases** 2,500 115,000 110,000 350 105,000 100k population 2,000 300 100,000 111,674 95,000 Cases 101,061 250 90,000 1,500 Daily New Reported 85,000 200 per Control Framework 7-Jan 4 Cases 1,000 150 **Case Reduction** Weekly Reported 100 -2,000 500 -4,000 -10,613 50 -6,000 -8,000 10,0000 0 -12,000-14,000 -16,000 Actuals (7 day Smoothing) School Shutdown Dec 7-Jan 4 Control Framework Control Framework School Shutdown Dec 21-Jan 18 School Shutdown Dec 7-Jan 18 7-Jan 4

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Scarsin Model – Peel+Toronto Scenarios

- Ontario cases to date on November 18 is 98,162 •
- Toronto & Peel base forecasts for Dec and January will add a staggering 111,674 case (based on currently \bullet announced Control measures)
- Closing schools can provide a deceleration of the spread and is a relevant consideration given the ● positivity rates and growth in school age children
- The general peaking behavior in our base forecast is due to general citizen behavior changes in the \bullet absence of government action when the rates of infection reach critical levels
- Allowing Peel to reach such a high spread increases the risk of a long sustained Lockdown to regain \bullet control
- This analysis demonstrates the agility of the Scarsin system to evaluate detailed interventions at a health region level
- We remain open to help the province with its decision making, but to do that they have to meet with us
- https://www.cbc.ca/news/business/covid-pandemic-ontario-ottawa-forecasting-model-1.5804374 •

Backup Material



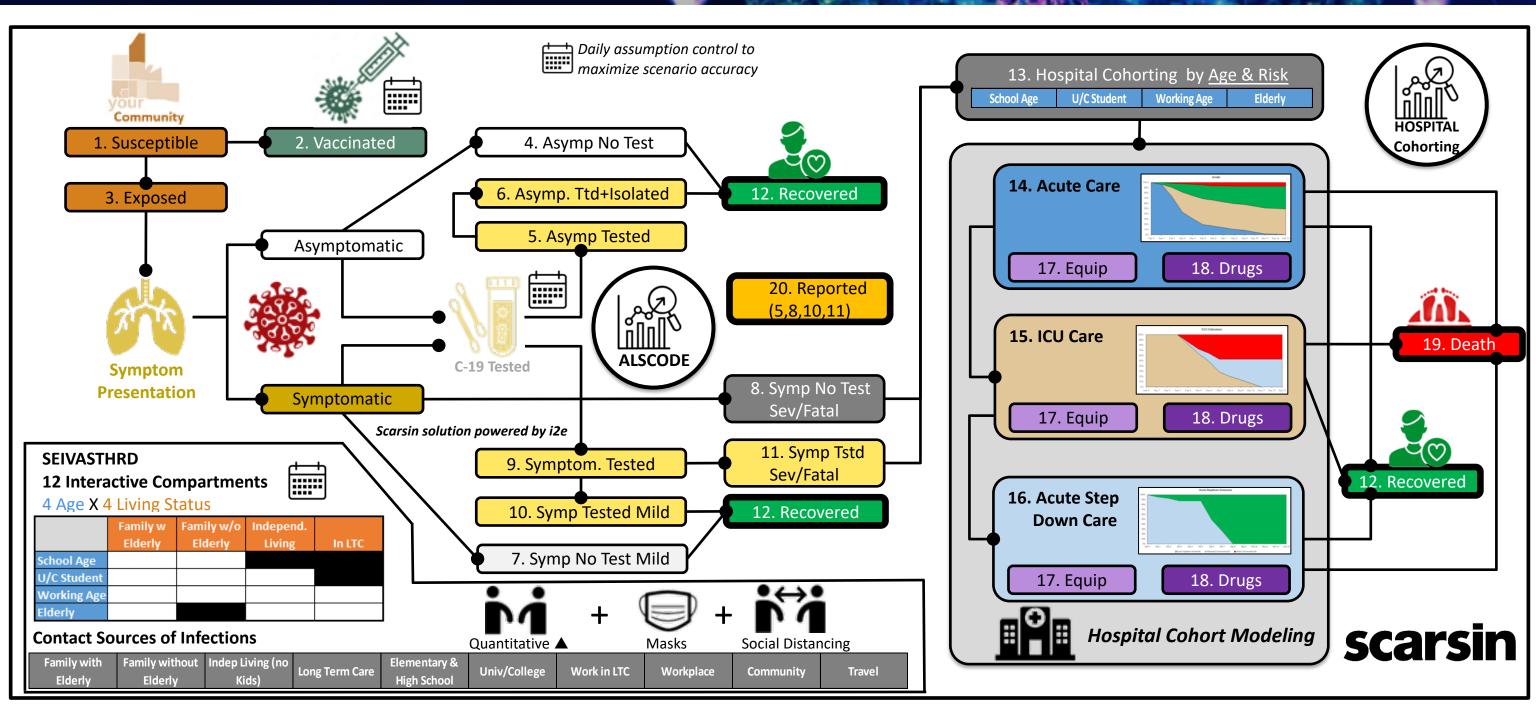
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Flexible and Pragmatic models

Robust Age – Living Status Compartmental ODE > Hospital Cohorting Model



November 18, 2020

i2e Technology Overview

