

Why timing matters in the COVID-19 response

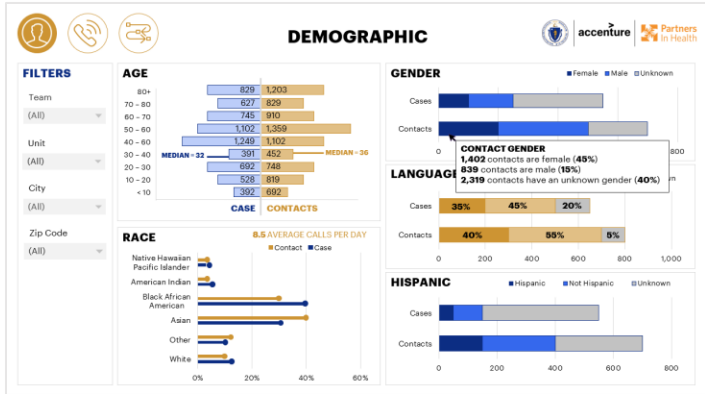
Modeled by the Massachusetts Community Tracing Collaborative

Timing bottlenecks really matter for this virus

- $R_0 = 2.0$
 - infectiousness distributed over time according to [Science, 31 March 2020](#)
- positive cases are tested 20% of the time even if not reached by contact tracers
- isolation is 90% effective (i.e. $R_e = 0.2$) starting immediate after testing
- contact tracing reaches 80% of contacts for a delay of 24, 48, or 72 hours; 90% for delay of 2 hours

Program Impact Dashboard

OVERVIEW



The **Program Impact Dashboard** will help the CTC program think strategically about **long-term implications of COVID-19** and the **impact of the Collaborative's ability to respond to health crises**.

These metrics will both **inform implementation adjustments** (by geography, race, LBOH, etc.) as well as **efficiency considerations**.

Additionally, it will allow the program to **apply an equity and vulnerability lens to public health and support** during the peak of the pandemic.



METRICS CATEGORIES

CASE / CONTACT DEMOGRAPHICS

E.G. % CASES FEMALE

TIMING & BOTTLENECK

E.G. MEDIAN (W/ IQR) TIME FROM E.G. # OF COVID+ TESTS RELEASED MAVEN TO CRM

CASE / CONTACT CASCADE

E.G. # OF COVID+ TESTS RELEASED TO CRM

CASE / CONTACT OUTCOMES

E.G. # OF CASES W/ AN OUTREACH OUTCOME

VULNERABILITY & EQUITY

E.G. INABILITY TO SAFELY ISOLATE / QUARANTINE



TARGET PERSONAS



Command Center

Show positive results of the Contact Tracing Center to the State of MA, monitor progress of CTC ability to keep up with demand, support implementation insights and efficiency considerations

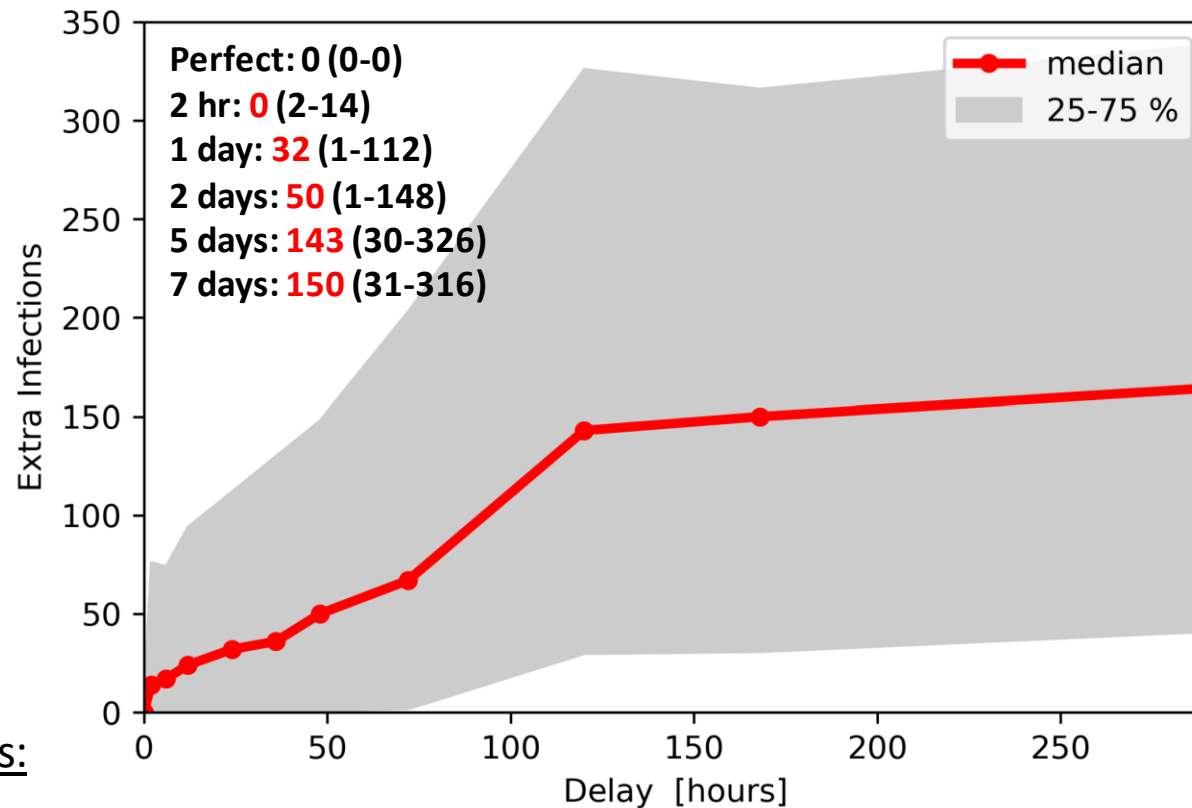


DPH & Commonwealth

Understand COVID-19 impact to the state of MA and make data-driven decisions to decrease the spread. Support strategic planning and direction of the CTC.

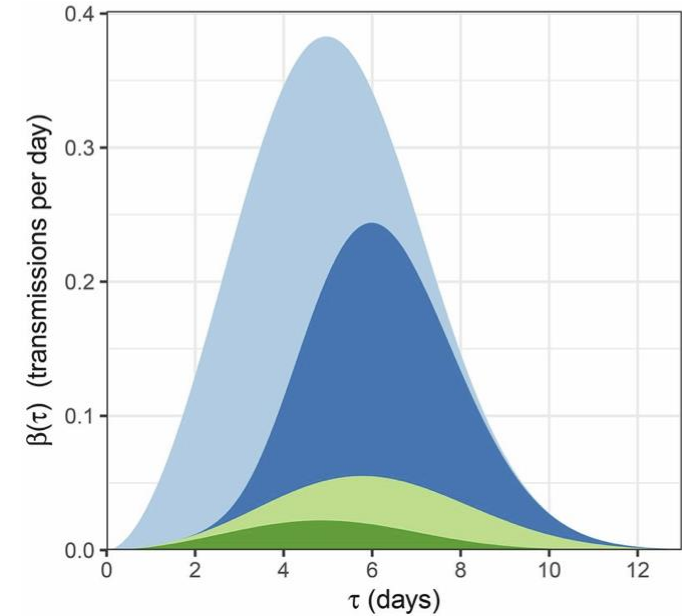
Modeling: what happens with delays?

Simulation follows cases arising from ONE initial case.



Assumptions:

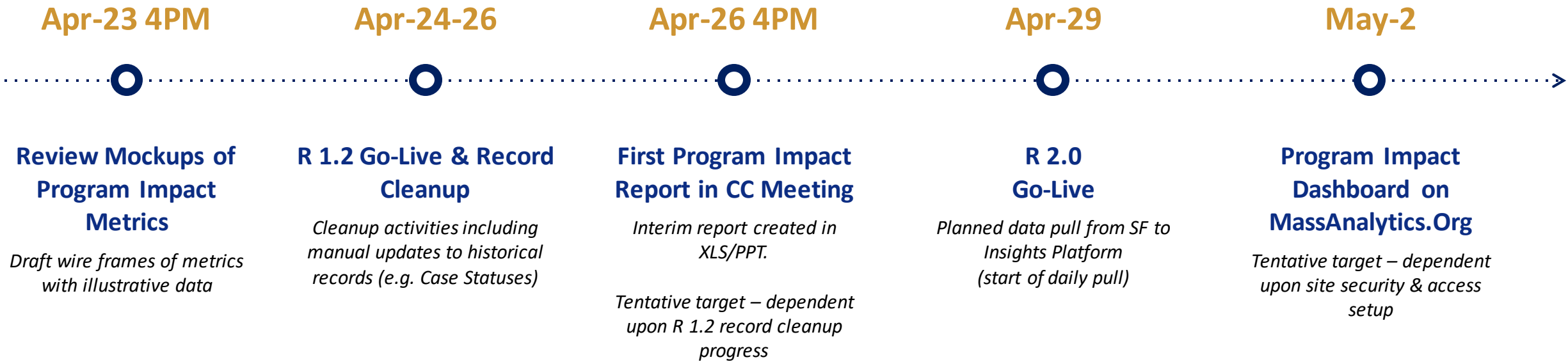
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$R_0 = 2.0$:

- $R_p = 0.9$ from pre-symptomatic
- $R_s = 0.8$ from symptomatic
- $R_e = 0.2$ from environmental
- $R_a = 0.1$ from asymptomatic

Timing



**All dates dependent upon release timing*

Modeling: what happens with delays?

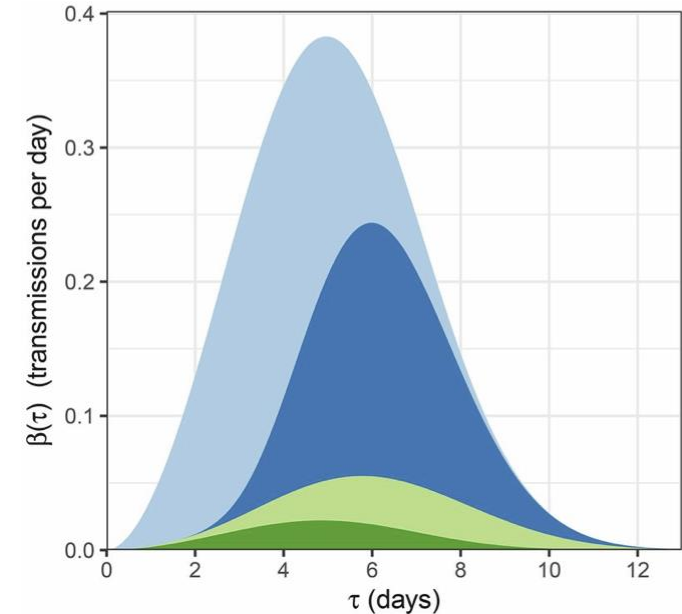
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of **total** infections after 50 days

Model	Median: 50%	Interquartile range: 25%-75%
No contact tracing	482	9-1018
72h delay	190	3-554
48h delay	146	3-418
24h delay	116	3-362
2h delay	16	3-134

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