

Coffee with Karl: Understanding COVID-19 epidemiology in Benton and Franklin counties

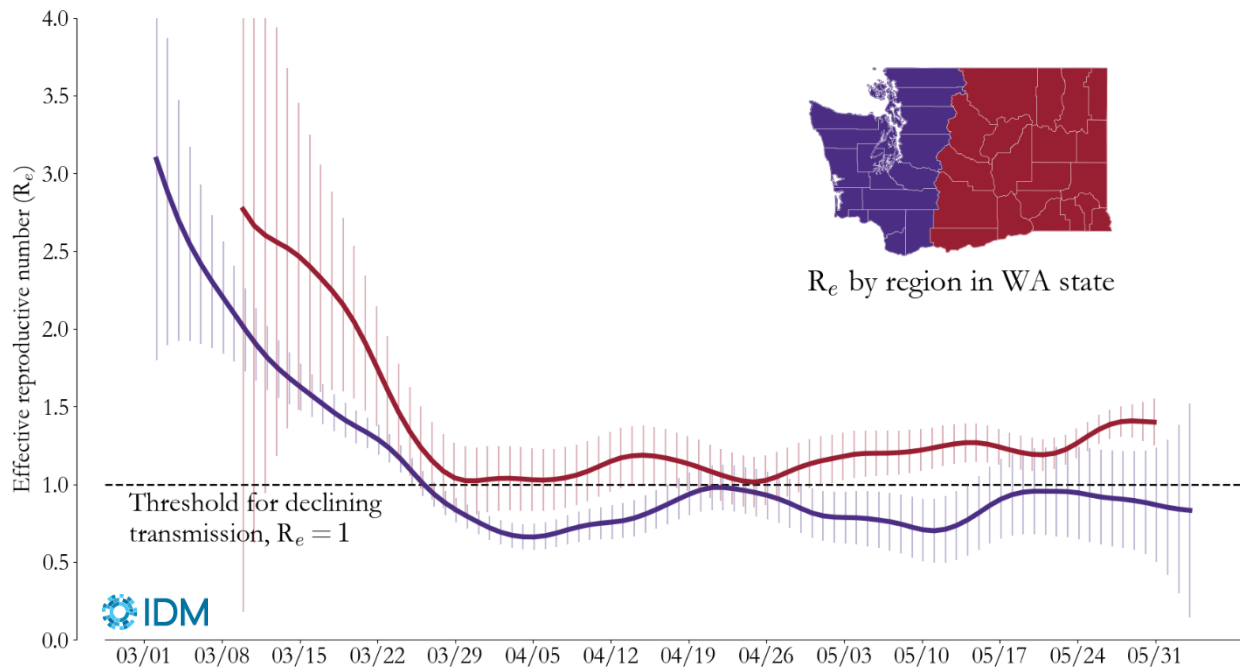
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On behalf of the IDM COVID-19 modeling team

June 19th, 2020



One of the main things models can provide is **insight into transmission processes** we can't directly measure.



The **effective reproductive number** is one example.

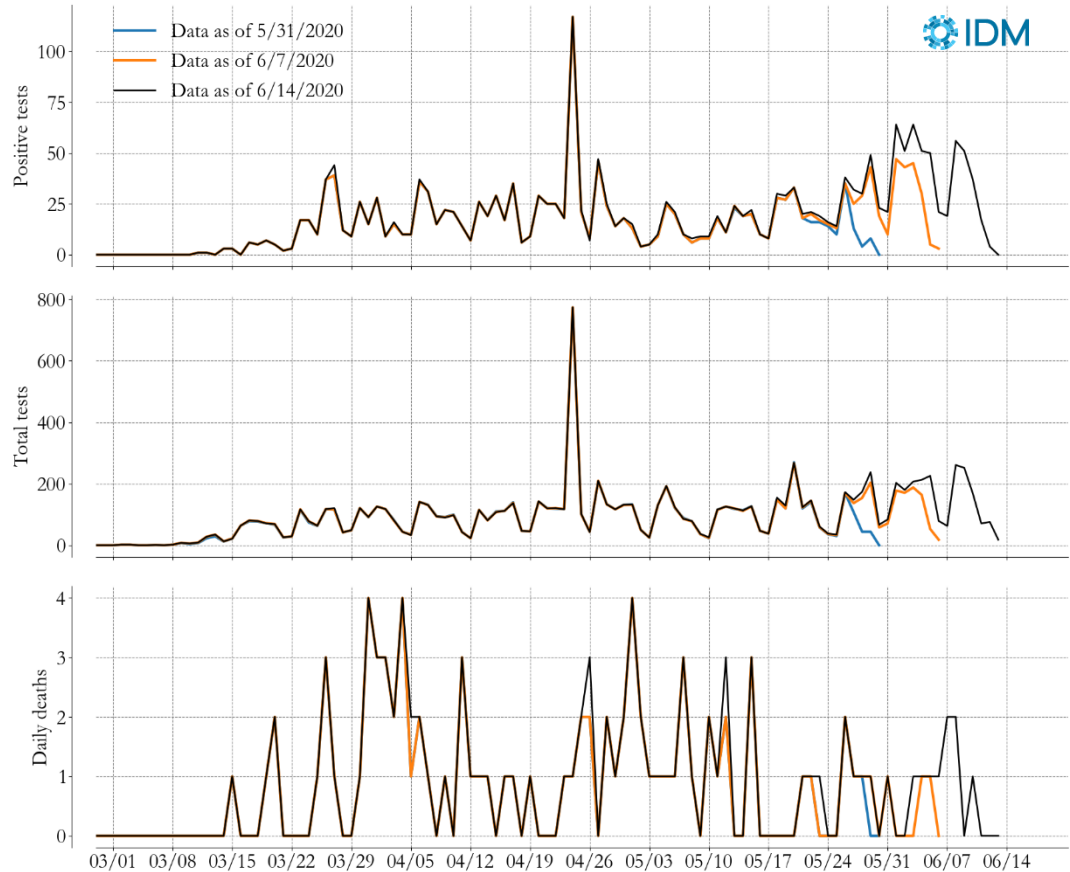
- It's an estimate of, on average, how many people an infected person exposes.
- We base it on the number of tests and the test-positive fraction, accounting for day-to-day changes in the total number of tests.

COVID-19 cases have been rising in Benton and Franklin counties since mid-May. **Daily testing volume is roughly constant over the same period.**

All Tyson workers at plant near Tri-Cities to be tested for coronavirus. Cases reach 100

BY ANNETTE CARY

APRIL 21, 2020 05:36 PM , UPDATED APRIL 22, 2020 11:03 AM



Our effective reproductive number estimates indicate that COVID-19 is a growing problem in Benton and Franklin.

Case data tells us about transmission that happened in the past.

- The fall in transmission early on was likely due to successful distancing.
- The model cannot tell us why these changes happen.

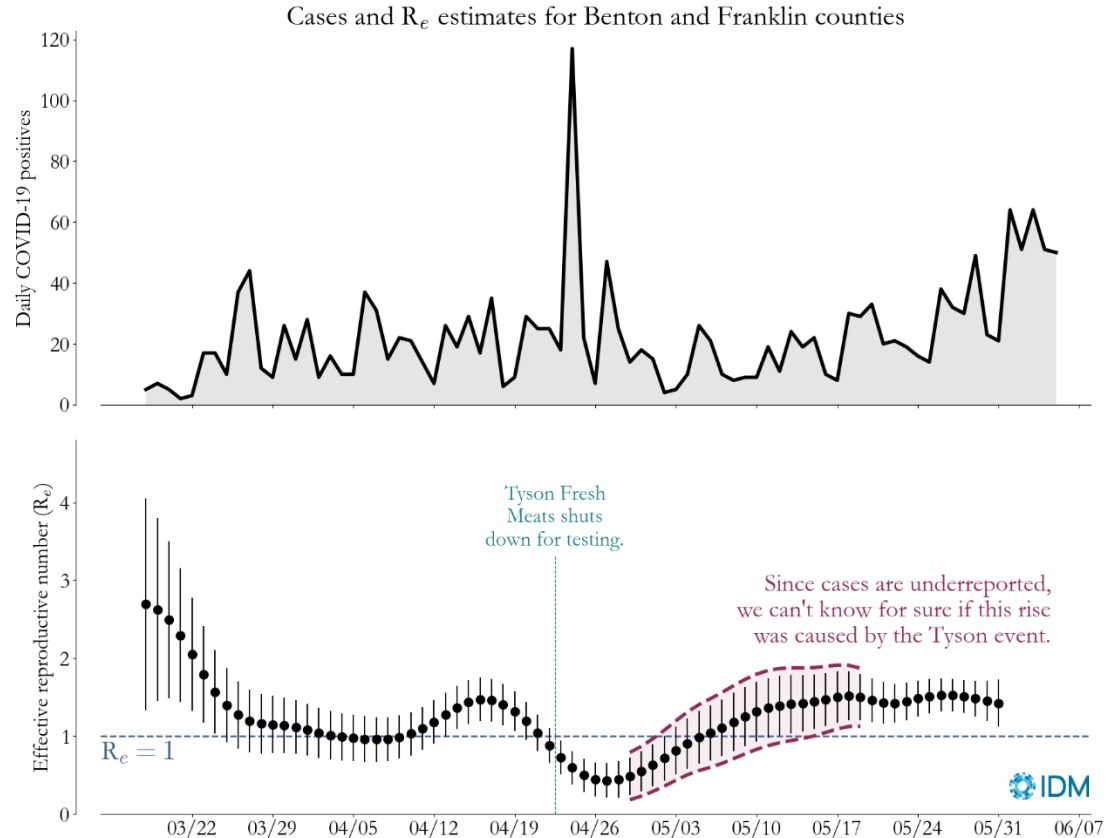


Figure: For more information about how this figure was created, see [our detailed technical report](#).

How do we know if we have a good transmission model?

One way we check is how well the model captures **COVID-19 cases and deaths** in the two counties.

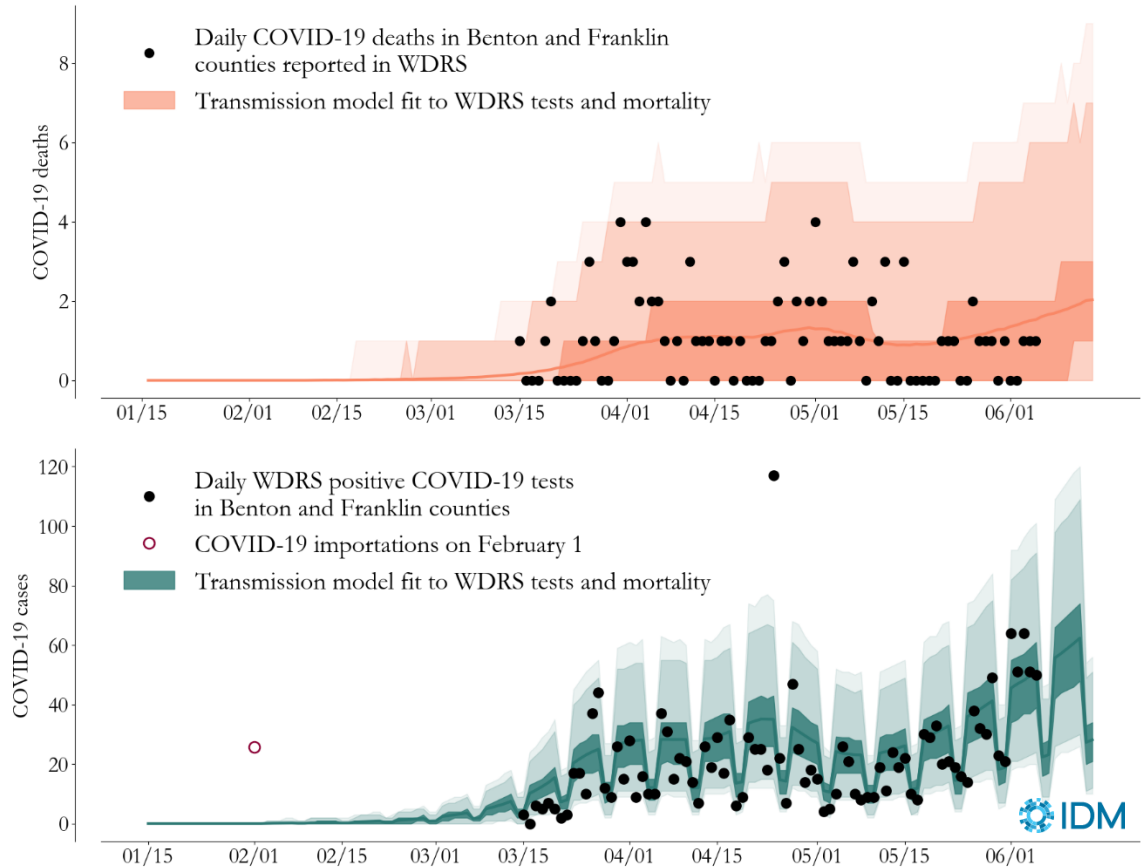
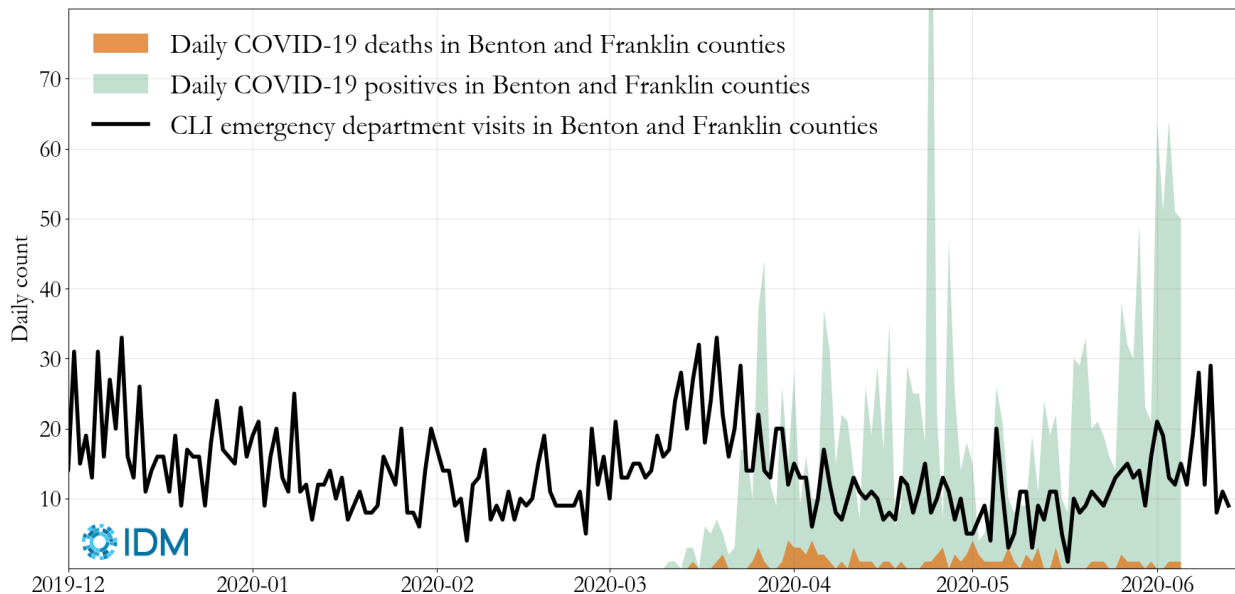


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Data from **emergency departments give us another picture of COVID**, overall consistent with the model's.



CLI (COVID like illness) is either a COVID diagnosis at the ED or a fever and shortness of breath that's confirmed not to be flu. **In EDs in Benton and Franklin, CLI visits have been increasing since mid-May.**

From the model, we get estimates of the prevalence of active COVID-19 infections with corresponding uncertainty.

Metric (as of June 5, 2020)	Estimate (mean, 95% CI)
Active prevalence	0.86% (0.4, 1.5)
Cumulative incidence	4.0% (2.1, 7.1)
Cases detected	16.9% (8.7, 29.9)

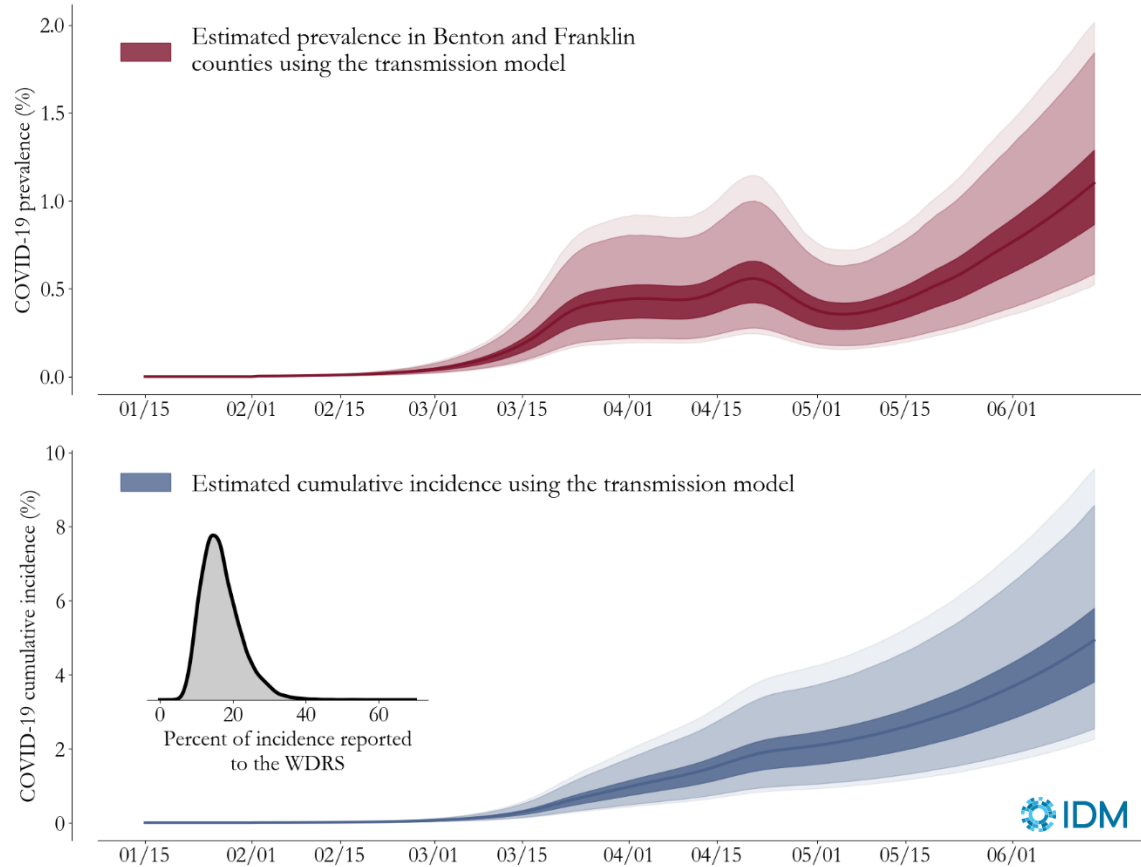
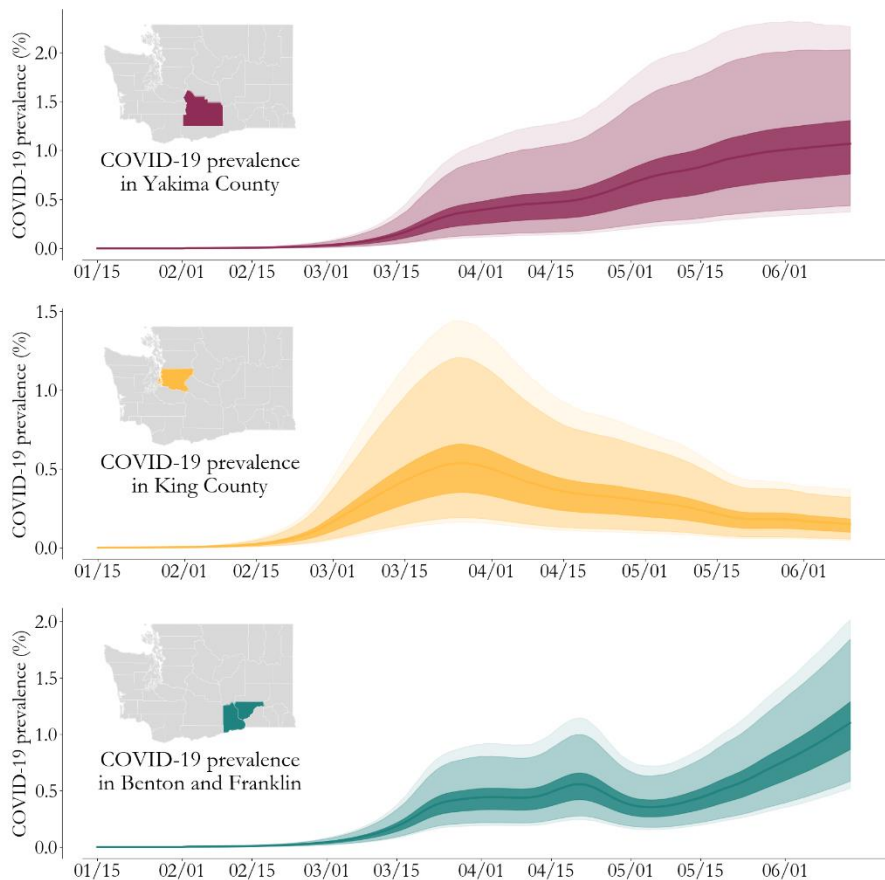


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Prevalence is at the peak levels we saw in King County.

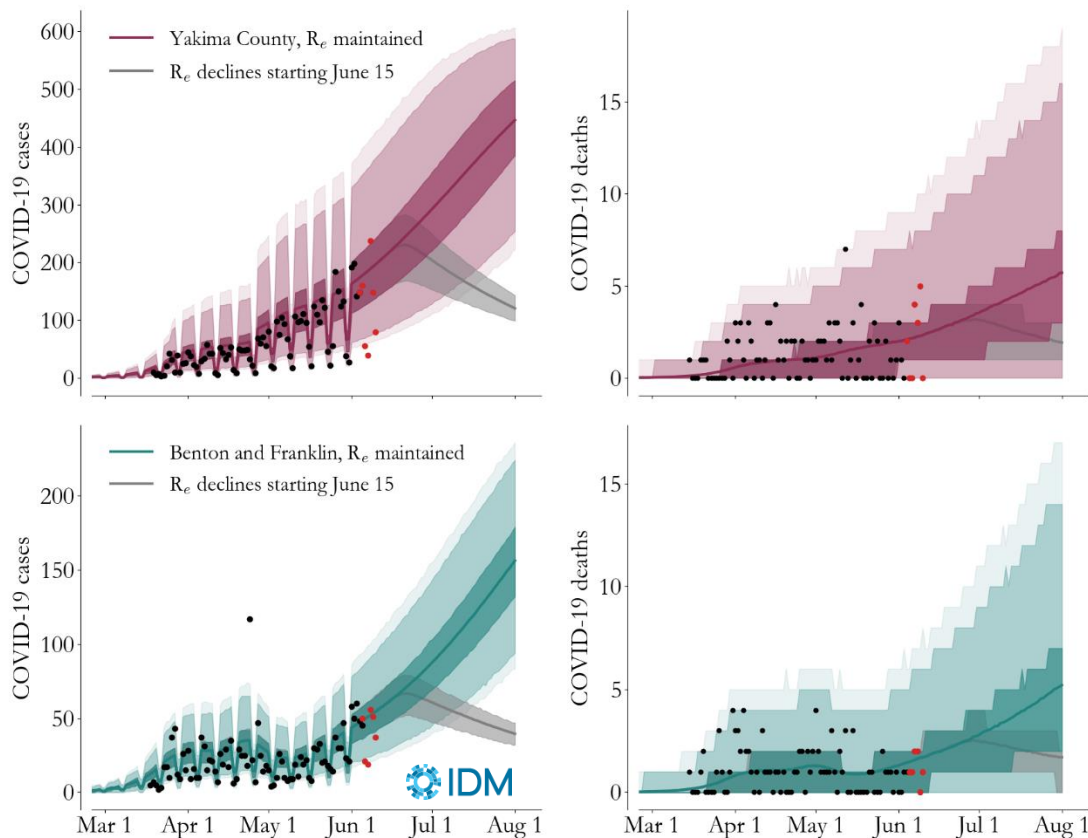


Prior to reaching this peak in March, **King County** received extraordinary attention:

- Field hospital set up
- Testing rapidly expanded
- Targeted interventions for high risk people
- Increased physical distancing

Similar efforts should be urgently considered for Benton and Franklin counties as they are in a similar position per capita today but with less momentum toward rapid improvement.

Burden will continue to grow rapidly if nothing changes.



Two scenarios for future cases and deaths

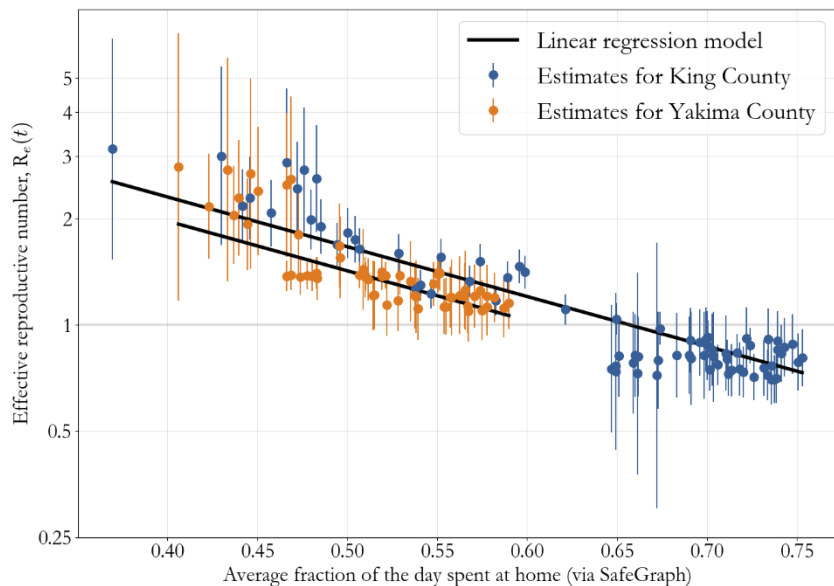
- Transmission rate stays similar to recent past
- Interventions start on Monday June 15 to reduce effective reproduction number to 0.9 by June 22.

Even if physical distancing and NPI at workplaces increased rapidly on Monday, **these counties are likely to see new peaks due to infections incubating now.**

Without intervention, COVID burden will likely exceed local resources.

Simple measures matter.

Staying at home, physical distancing when you're out, face masks, and eye protection all help prevent person-to-person transmission of COVID-19.



Left figure: "Comparing COVID-19 dynamics in King and Yakima counties" on covid.idmod.org.

Right figure: Chu DK, et al. *Lancet* 2020.

Intervention



Physical distancing

For every metre further away in distancing, the relative effect might increase

Chance of infection or transmission

Without intervention

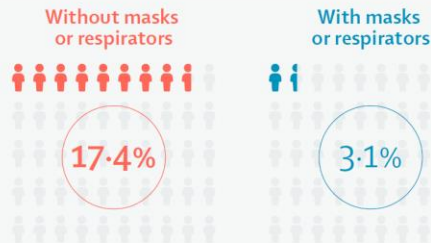
With intervention



Certainty of evidence: **Moderate***



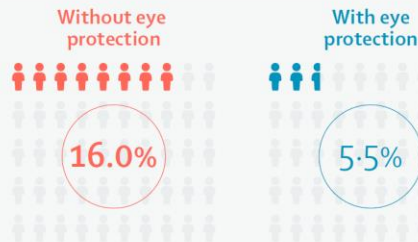
Face masks



Certainty of evidence: **Low***



Eye protection



Certainty of evidence: **Low***