

COVID-19 Projections: A Quick Look

Jon Samet

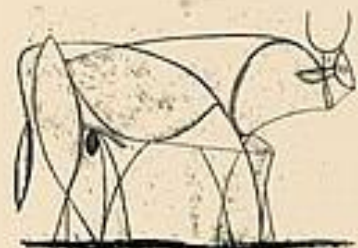
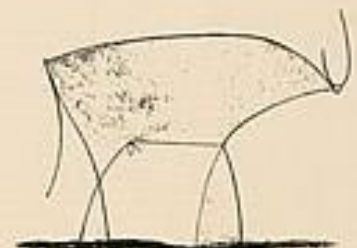
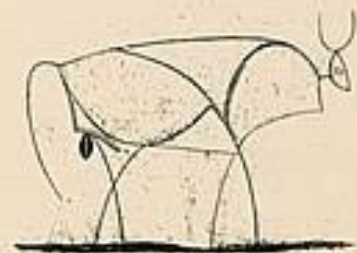
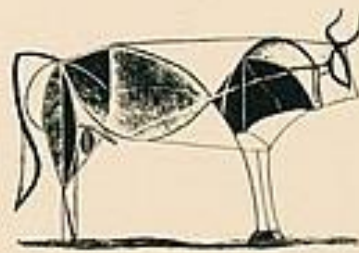
Dean, ColoradoSPH

June 18, 2020



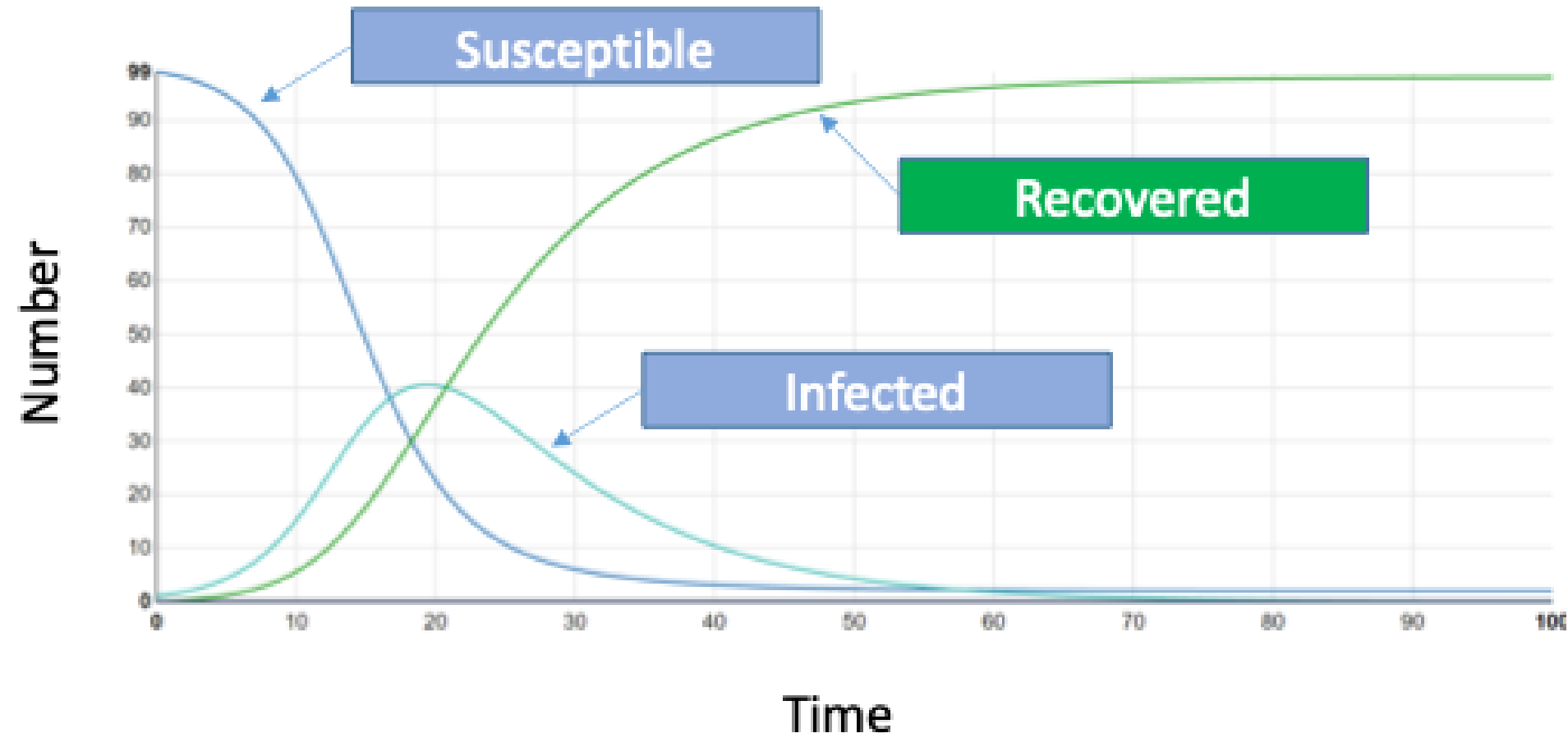
**COVID-19 Modeling Group:
ColoradoSPH, UC SOM, UC
Denver and Boulder, CSU**





Pinto

Epidemic Basics



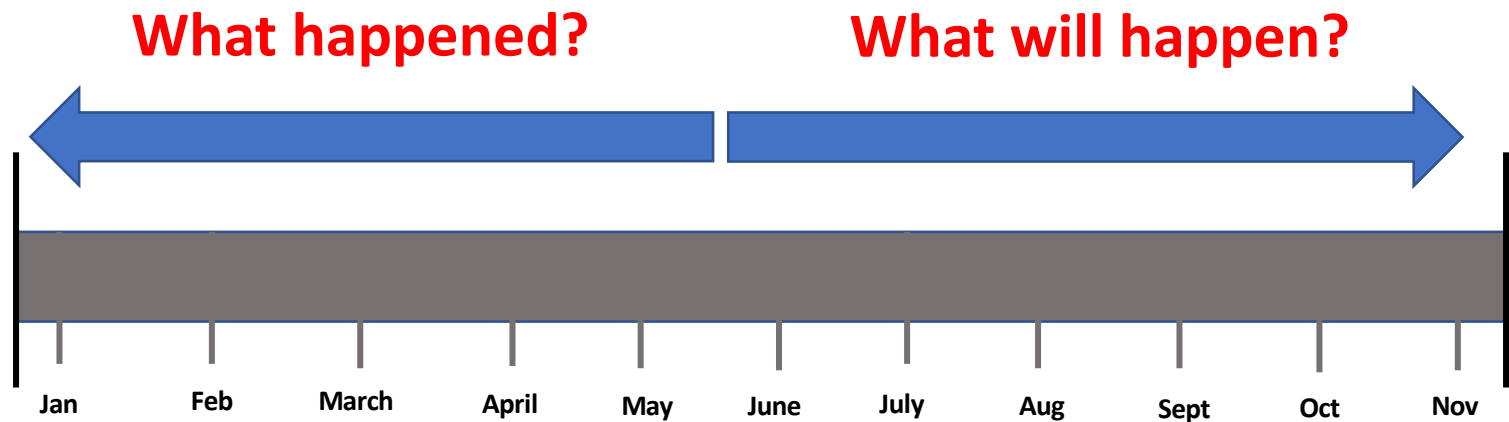
The reproductive number (R_0) is the rate of new cases per infected person: **If below 1, epidemic ends.**

We vary:

- Social distancing
- Behavior by age
- Use of masks
- Epidemiological control
- Adding contact tracing

What do we find?

Using Models to Look Backwards and Forwards



Estimating What Has Happened

First COVID-19 case reported in CO, 3/05

Ski resorts closed, 3/14

Restaurants, bars, theatres, casinos closed, 3/17

13 day lag between infection and hospitalization

Model estimates changes in contacts, "social distancing"

Model Phase 1
3/17-3/25

Phase 2
3/26 – 4/26

Phase 3
4/27 – 5/8

Phase 4
5/9 – 5/14

Impact unknown
5/15-

Denver metro: Stay at home*
3/26 – 5/8

Safer at Home
5/9 -

Colorado: Stay at home
3/26 – 4/26

Safer at home
4/27 -

3/5

3/17

3/26

4/26

5/8

5/14

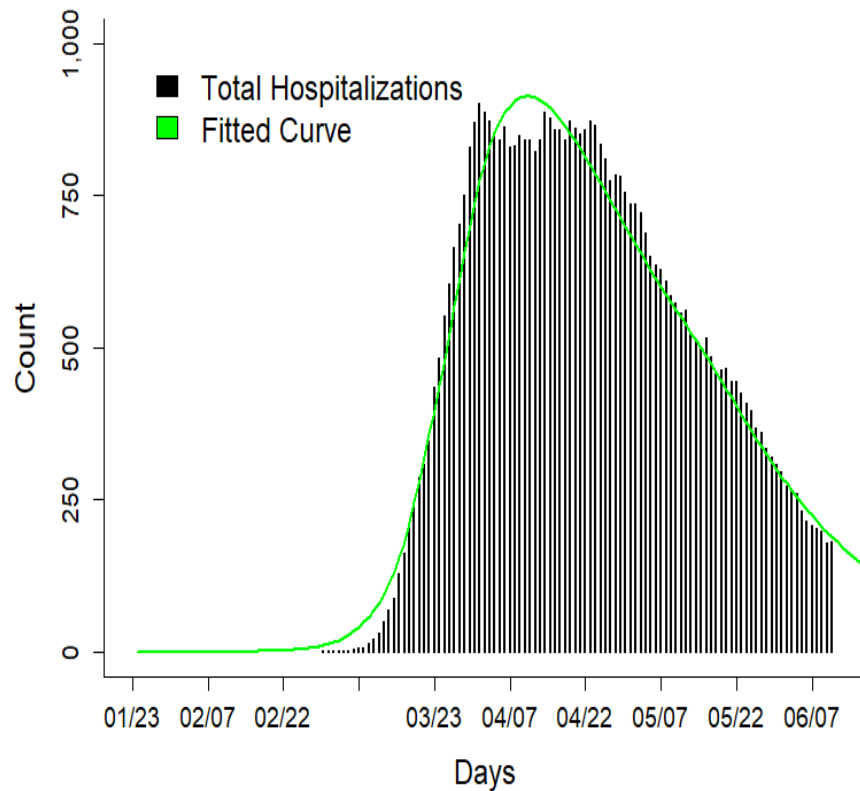
5/27

*Approximately 50% of the Colorado population was included in the extended Denver metro region Stay at Home order

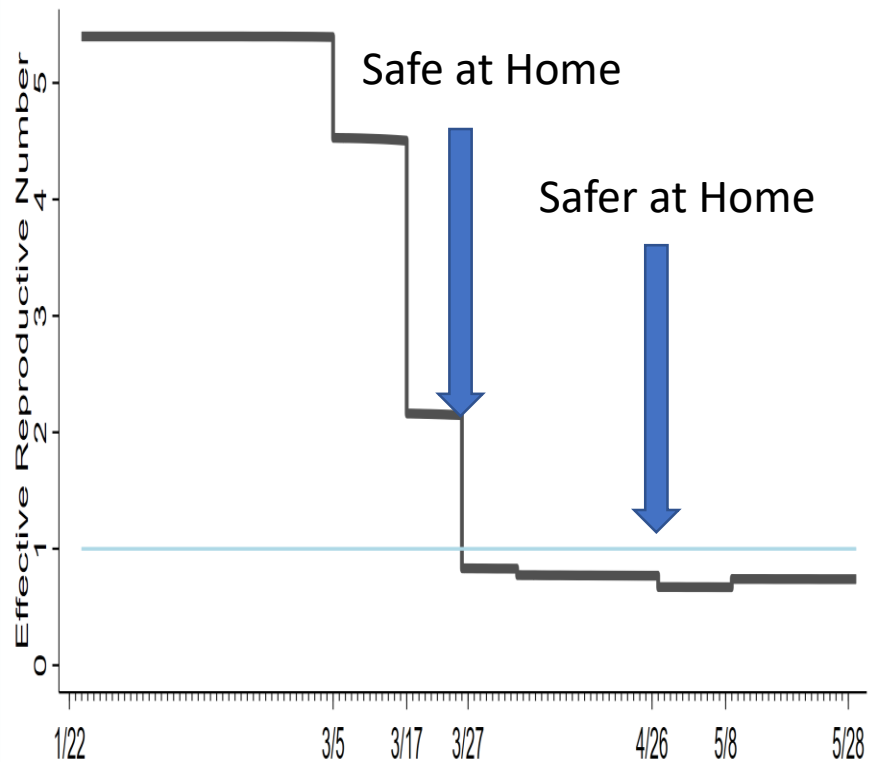
Model also includes mask wearing and some isolation of symptomatic cases

Colorado is doing well for now!

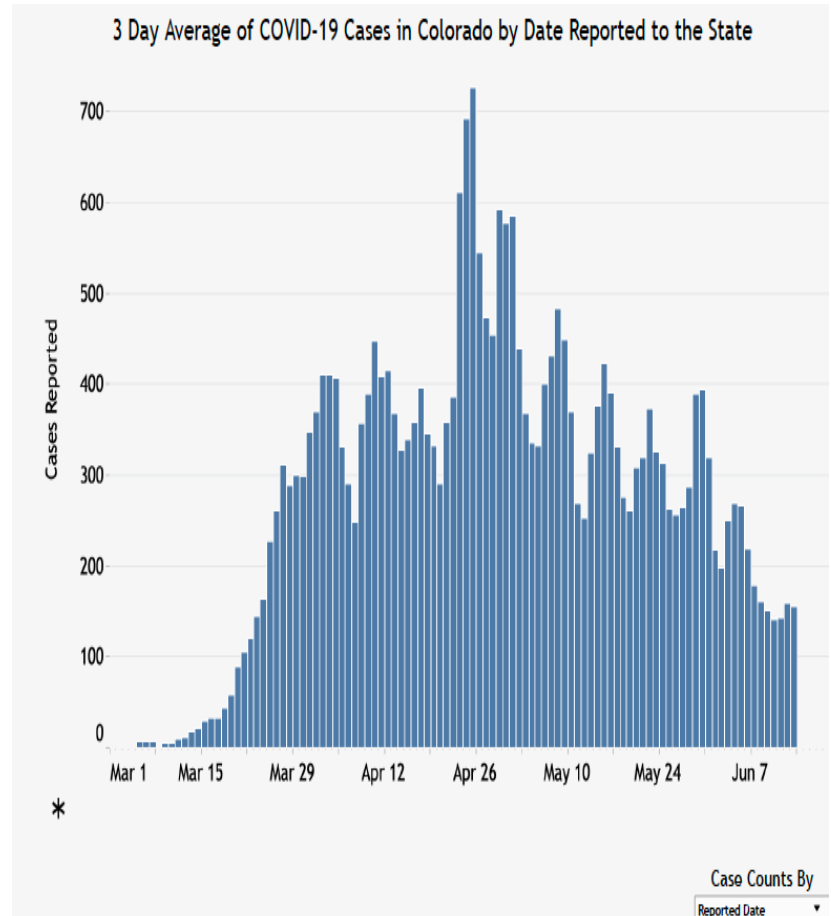
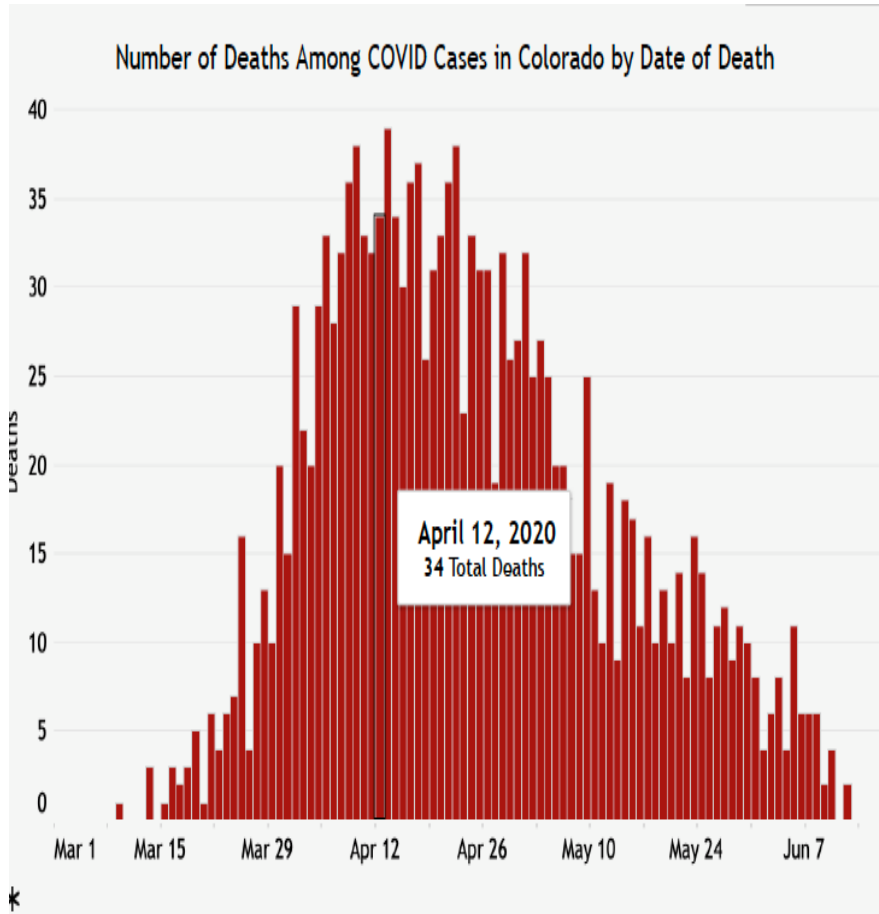
Hospitalizations down



R_0 below 1



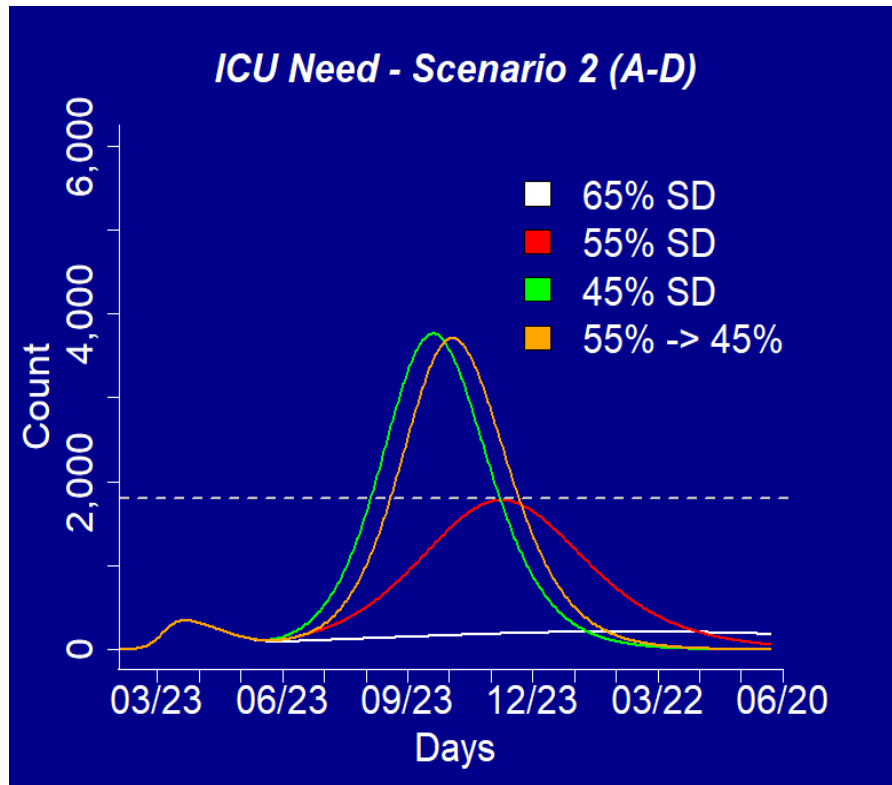
COVID-19 in CO, June 14, 2020



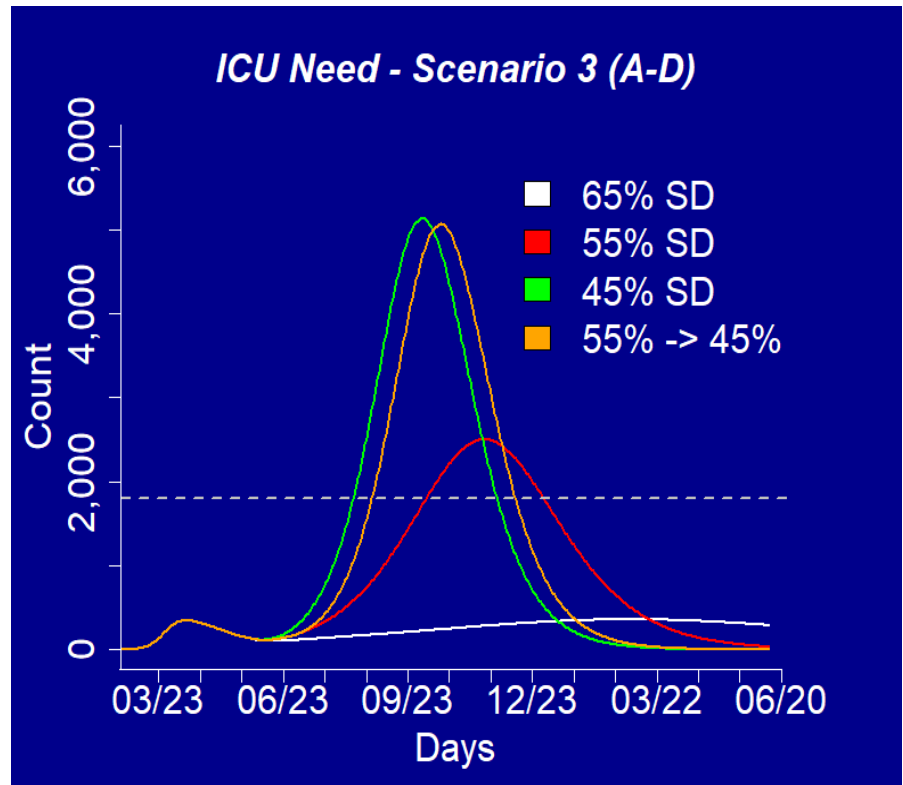
What could happen?

Looking to the Summer and Fall

All adults 65+ at high (80%) social distancing

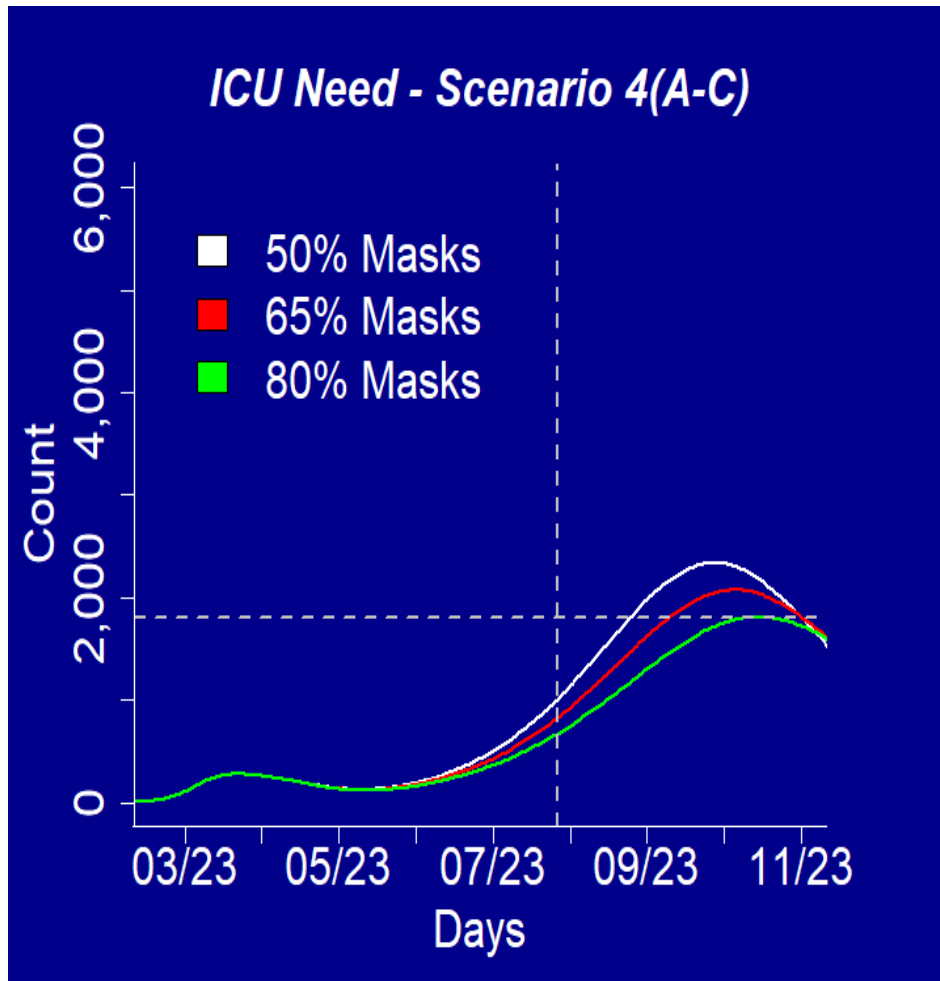


Half of adults 65+ at high (80%) social distancing



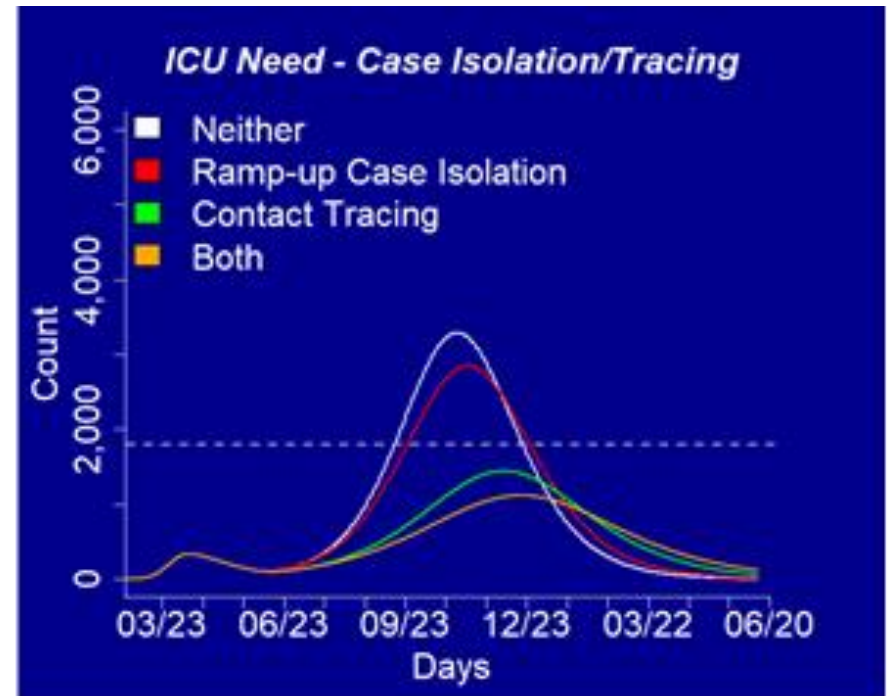
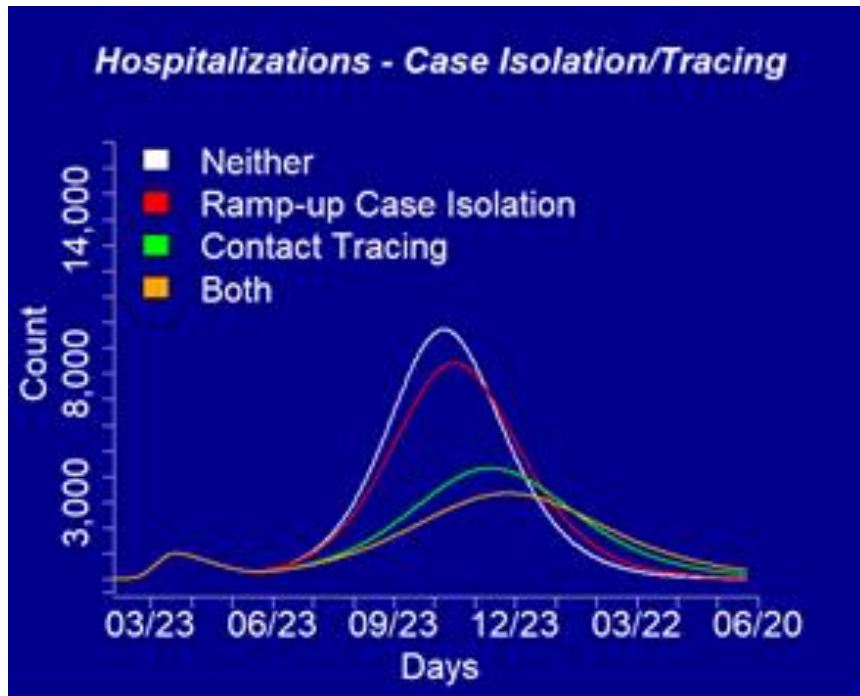
Models assume current levels of mask wearing continue and case detection and isolation is increased 5% per week to 80% of symptomatic cases isolated.

Projected Benefits of Mask Wearing



Projected total hospitalizations (left) and ICU needs (right) if mask wearing is held at 50% (white line), increased to 65% on 5/27 (red line), or 80% on 5/27 (green line). These projections assume 55% social distancing of individuals under 60 starting 5/27, half of individuals over 60 maintaining high (80%) social distancing, and case detection and isolation is increased 5% per week up to 80% of symptomatic cases isolating.

Estimated impact of ramp up of case isolation and contact tracing



Assumes 55% social distancing starting 5/27, half of 60+ maintain high social distancing, mask wearing continues. Contact tracing assumes 48 hr lag between case report and contact quarantine, successful isolation of 4 contacts per case.

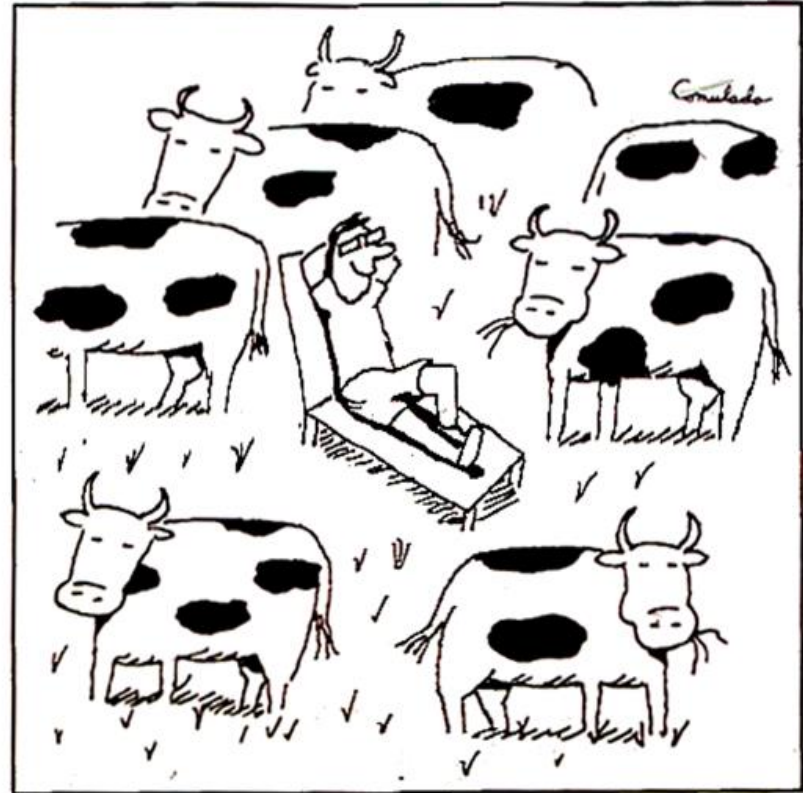
What is the end game?

- Enough of us need to become infected to achieve herd immunity:

and/or
We have a
vaccine



When will
we have a
vaccine?



BOB MISUNDERSTANDS THE CONCEPT OF "HERD IMMUNITY".