COVID-19 Projections: A Quick Look

Jon Samet
Dean, ColoradoSPH
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COVID-19 Modeling Group: ColoradoSPH, UC SOM, UC Denver and Boulder, CSU
The reproductive number (R0) 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

What happened? What will happen?
First COVID-19 case reported in CO, 3/05

Ski resorts closed, 3/14

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

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

Impact unknown
5/15-

13 day lag between infection and hospitalization

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 -

*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

R0 below 1

- Safe at Home
- Safer at Home
COVID-19 in CO, June 14, 2020

Number of Deaths Among COVID Cases in Colorado by Date of Death

3 Day Average of COVID-19 Cases in Colorado by Date Reported to the State
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?