COLORADO
Office of Communications
Department of Public Health & Environment

FOR IMMEDIATE RELEASE
CONTACT:
COVID-19 MEDIA LINE: 303-900-2849 (Please leave a message)
Email: media_info@state.co.us

State provides COVID-19 modeling data

DENVER (April 5, 2020): The state today released additional COVID-19 modeling data to the public. Governor Jared Polis first provided an in-depth analysis of the data during a press conference on March 27. The state will continue to review data as it evolves to inform future policy decisions.

The modeling data was produced by an expert team that the Colorado School of Public Health (ColoradoSPH) assembled to assist the Colorado Department of Public Health and Environment (CDPHE) in understanding the potential course of the pandemic in Colorado.

Drawing on expertise from the ColoradoSPH and the University of Colorado School of Medicine at the CU Anschutz Medical Campus, and the University of Colorado in Denver and Boulder, a team of volunteer experts modeled the pandemic using approaches tailored to Colorado, updating the modeling as the disease continues to spread in the state.

The team uses a fundamental approach: the SEIR model. The basics of the models are intuitive: prior to infection, individuals are susceptible (S) and once exposed (E) and infected (I) they are contagious, whether symptomatic or asymptomatic; those infected may recover and become resistant (R) or become sufficiently ill to need hospitalization and possibly critical care and to die. This standard model is thus abbreviated as the SEIR model.

Another important number in the model is the reproductive number (R0), that is, the average number of new cases generated per infected person at the beginning of the outbreak. (The Governor has referred to this number as the “R naught.”) If that number exceeds one then the infection will spread. Various figures for R0 have been reported at the start of the COVID-19 pandemic from different parts of the world, ranging from about 2 to 5. The reproductive number depends, in part, on the frequency of contacts between infected and uninfected individuals. The goal of social distancing, which we are all experiencing now, is to reduce these contacts and lower the reproductive number with a target value below one so that contagion ends. A critical question is: How much social distancing is needed to control the epidemic, and how long does it need to be in place?

The tables below provide two sets of numbers provided to CDPHE and the Governor’s Office. The numbers provided are for critical indicators and show the variation by the value of R0 at the beginning of the outbreak and the effectiveness of social distancing at reducing the contact rate, ranging from none to an 80% reduction. When these numbers were calculated, the team found that the R0 value for Colorado was likely above 3. To capture the uncertainty in R0 and the effectiveness of social distancing, estimates are provided for a range of values.

Model R0 3.5 4.0 with SD 0 to 80
Model R0 3.0 4.0 SD 0 to 60

The Colorado modeling team has continued to refine its models as the data accumulate on the course of the pandemic. There are other models that provide estimates for Colorado, but those models are not as closely linked to the state's data.
Continue to stay up to date by visiting covid19.colorado.gov.
###