Victoria C. P. Chen\* (vchen@uta.edu), Yuan Zhou, Jay M. Rosenberger, Alireza Fallahi, Amith Viswanatha, Jingmei Yang, Yasaman Ghasemi, Nilabh S. Ohol and Askhan A. Farahani. Balancing the Protection of COVID-19 At-Risk Populations While

Reopening Communities. Preliminary report.

As communities reopen during the COVID-19 pandemic, they are facing two conflicting objectives. The first is to minimize cases of severe illness leading to hospitalizations and potential fatalities. The second is to revive the U.S. economy and the livelihoods of millions of Americans. This research presents a study of the delicate balance between the expected fatality rate and the level of normalcy in the community. Given the disproportionate fatality characteristics of COVID-19 among those in different age groups or with an underlying medical condition or those living with crowding, the key is a framework focused on "key contacts" that separate individuals at higher risk from the rest of the population. Given the lack of pharmaceutical solutions, i.e., a vaccine or cure, we seek to optimize the use of non-pharmaceutical interventions, namely COVID-19 testing; personal protective equipment; and social precautions, such as distancing, hand-washing, and face coverings. Simulations using an agent-based SEIR epidemic model are presented, and extensions to vaccine deployment are also discussed. (Received September 10, 2020)