Chapter 5
Incisive Real-Time Biosafety Decision-Making Under Societal Reopening:
An Ego-Level Decision-Tree Understructure for a Serious Game (in the COVID-19 Pandemic Era)

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ABSTRACT

In a time of the SARS-CoV-2 / COVID-19 pandemic (and future ones), the choices made by each individual accumulates to population scale and can have widespread repercussions on individual and population health. A critical part of the public health mandate is communicating the nature of the health threats and ways to defend against and mitigate them. For a general population that may not have any training in microbiology or the health sciences or other related fields, understanding the proper defensive measures may be challenging. This work explores the building of ego-level decision-tree understructures for serious games that may inform on such daily life decision-making at a time of societal reopening from pandemic lockdown in a complex ethical and legal space.

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INTRODUCTION

The identification of the novel coronavirus's emergence from the megacity, Wuhan, in Hubei Province, in the People's Republic of China, was revealed to the world in December 2019 (although first cases of an unusual severe pneumonia were showing up in hospitals as early as November 2019). The contagion's spread has been mapped from China to various global population centers through air travel and other forms of travel. Meanwhile, scientists were busy trying to understand the behavior of this virus in human populations. What sort of disease would it cause? Who would be vulnerable? How was it transmitted? How could it be prevented? How could the illnesses it caused be addressed?

It took some time before the global health community settled on a referent name (initially from "novel coronavirus" to "2019-nCoV"): severe acute respiratory syndrome coronavirus 2 or SARS-CoV-2. The resulting disease is referred to as COVID-19, standing for "corona virus disease" from 2019.

As the contagion spread in all directions of the globe through human carriers, the virus landed on U.S. shores by January 2020, and the Secretary of Health and Human Services declared a public health emergency at the end of the month ("Proclamation…" Mar. 13, 2020). A federal state of emergency was announced by mid-March 2020. In the intervening month, time was lost to protect lives, with some modeling showing that at least 36,000 lives could have been saved with a one-week earlier shutdown of cities, and 83% of deaths could have been avoided had the shutdown started on March 1, two weeks earlier (Glanz & Robertson, May 20, 2020). Some governments left their populations unprotected due to a mistaken concept of striving for "herd immunity" (well over 90 percent of the world's population is still uninfected and "naïve" and vulnerable) through brute force infections (with the relevant case fatality rates anywhere between 1 – 8%, given current data). Regardless, in many parts of the U.S., the various states have instituted some stay-at-home orders and restricted movement except for grocery runs, healthcare, and "essential" work. After some weeks of shutdown, to control the density of people interacting, local governments have started reopening in the U.S. At this moment, all the states are under partial reopening. The old mantra of "staying home saves lives" is still true, but now, saving lives has become more complex. How people engage in the public in proximity to others will matter, and how they mask up or not and how they sanitize or not and how they glove up or not (in the absence of much enforcement) and how they use eye coverings (goggles, face shields, hair covering, and others)…will matter for chains of transmission and population health. [While early public health warnings suggest that regular t-shirts as face coverings can be effective, later research suggests that having a face mask with multiple layers of cloth or with an underlying medical / surgical masking beneath the cloth are more effective.]