Team GiT GuD

Final Project Overview

Problem

Humans (agents) want to maximize the number of handshakes they receive from others

Also want to avoid spreading the infectious disease “UberDeath”

Should infected agents lie or tell the truth?

How to balance personal profit with global health? (Common Pool Resource Problem)

Agents

Always aware of the number of healthy and infected humans in the population

When one square away from another human, the agent is able to decide whether or not to interact with them

Most agent decisions will be based on their own and others' infection state

- Healthy agents will refuse to shake hands with a known infected agent
- Infected agents must decide whether to lie to gain handshakes, although doing so risks the spread of UberDeath

The base percentage chance of an infected agent transmitting UberDeath to an uninfected agent will increase as their number of handshakes increases

Emergent Behavior

The sum of rewards from handshakes is maximized while avoiding the extinction of the agent population (defined as the surviving population dropping below 10% of the original population)

The local behavior is to make two choices:

1. Do I tell the truth about my infection?
2. Do I shake this person’s hand?

Experimental Parameters

1. Total initial population
2. Initial number of infected agents
3. Handshake infection rate
4. Time between initial infection and death
5. Individual propensity to lie VS. tell the truth
6. Proportion of lying to truthful agents
7. Proportion of informants (those agents who spread information about the

Hypotheses

1. We expect to find that there is a lying rate that maximizes global reward beyond which total extinction is inevitable.
2. In a mix of lying agents and truthful ones, the lying agents will not have greater reward than honest agents as they will be exiled from the handshaking population quickly
3. Because agents want to avoid total extinction, as the number of infected humans rises the optimal strategy will to lie less.