Lizz Bartos

EECS 372

Designing and Constructing Models with Multi-Agent Languages

Prof. Uri Wilensky

10 June 2013

Safe Sex Attitudes and Behaviors

**Overview**

**Relevance**

focus more on the sexual attitudes and behaviors of agents in relation to the spread of STIs. Hopefully this will also more clearly distinguish my model from the AIDS or Virus model, which was a concern that both the TA and I had.

Agent behavior: How do the agents behave/work?

Creating custom attitudes for each agent, rather than blanket assumptions about actions

System behavior: How does the overall system behave/work?

Rationale for agent rules: Why did you give the agents these rules?

Model output: Do you think your model currently provides a good description of the system’s behavior? Why or why not?

Questions: What questions do you have about your model?

Next steps: Briefly list your next steps for improving the model.

**System behavior:**

The NetLogo system will model the spread of sexually transmitted diseases (STIs) between young adults (male and female), based on their attitudes and behaviors regarding safe sex. … and the interaction between the two?

Agent behavior and rationale:

Rather than having turtles generate a network, just generate it for them to simplify. Mostly discrete social circles, with some social butterflies that have links to members of other social groups. (in creating this functionality, used Sophia sullivans final project on modeling commons as a starting point, then adjusted breeds and other parameters as necessary). Turtles start with a certain number of friend links, and no sexual partner links. Since sexual partner links will break any sort of link between 2 turtles when the relationship ends (rather than going back to being friends), turtles also have the chance/opportunity to make more links than their original number – this helped fix/account for all links between genders breaking and becoming discrete, gender-segregated friend groups, which isn’t realistic.

The turtles do not move, but one each tick, if they are not coupled, they might try to find another single turtle of the opposite gender /someone to mate with (based on their personal coupling tendency). First they look at friends of the opposite sex, if they have none, then they choose a person of the opposite sex within their friend group, and if there isn’t one, then they resort to choosing the closest non-linked opposite sex turtle. The probability of successfully coupling decreases for each of these 3 types of potential partners. If both partners are willing to become a couple, they form a sexual-partner link (if the two turtles were previously friends, this destroys their friendship link).

If the turtles are coupled, on each tick, they have sex, and have a chance of using protection based on…. If the couple does choose to use a condom, there is a chance that they will use the condom correctly, based on stats from WHERE??? If one of the partners is infected, on each tick with their partner, there is a chance that they will spread the disease to them. This chance is based on whether or not the couple chose to use a condom, whether or not the condom was used correctly (which influences how successful the condom is at preventing infection), and the infectiousness of the disease.

Form of safe sex in question is condoms, because most prevalent and accessible in the demographic I’m interested in modeling.

network connections could potentially be a reasonable way to model friend circles, which could influence behavioral choices and attitudes towards sex and using protection.

I had originally been primarily interested in seeing how an STI that is symptomatic for only one gender travels through the population and potentially reaches some sort of stable state. However, based on the feedback I have received, I think I will focus more on the sexual attitudes and behaviors of agents in relation to the spread of STIs. Hopefully this will also more clearly distinguish my model from the AIDS or Virus model, which was a concern that both the TA and I had. I still need to find some supporting articles/other research in order to root some of the assumptions of my model.

The updated plans for my model are as follows:

System behavior:

The NetLogo system will model the spread of sexually transmitted diseases (STIs) between young adults (male and female), based on their attitudes and behaviors regarding safe sex.

Agent behavior and rationale:

Turtles will move around randomly mostly within a specified area, in order to try to recreate circles of friends or divisions of populations. This has not yet been implemented, but the NW extension or links may be used to confine movement. If a turtle is closely linked to another turtle of the appropriate gender to mate with, there is a probability they will mate. If they mate, there is a probability they will use a form of protection. This probability will be influenced by attitudes and behaviors towards safe sex that a given turtle has, and these attitudes/behaviors are influenced by the other turtles (“friend group”) that the turtle is linked with. If the coupled turtles use protection, there is a probability of using it correctly – if protection is used correctly, it is assumed that the disease will not be passed on. If the protection is used incorrectly or no protection is used, there is a higher probability that the infection will be passed to the partner of the agent.

Depending on the disease and whether an agent is male or female, the agent will feel symptoms. It will be assumed that if the agent detects symptoms, they get checked by a doctor, are diagnosed, and are gradually cured of the infection. Additionally, there is a chance that a turtle will randomly get tested, despite whether they are currently symptomatic – this probability may also be impacted by their attitudes towards safe sex.