**Agent Parameters Impacting Practice of Safe Sex**

**Attitude:** users can separately define the initial tendency of the male or female agent to practice safe sex, i.e., condom use (using the **avg-male-condom-intention** and **avg-female-condom-intention** sliders, both with ranges 0 to 100%). The desire that an agent wants to practice safe sex is set by a normally distributed random variable ranging from 0 to 100% which is gender dependent.

**Certainty:** agents have an initial confidence in their attitude [towards safe sex], which influences how resistant they will be to adopting alternate viewpoints. This variable reflects how much of their upbringing encouraged safe sex. These views might consist of parents' beliefs, life experiences, religious attitudes, etc. hence why/so The initial average population value is set with the **avg‑mesosystem-condom-encouragement** [slider 0-100]. A derivative variable which would be [100 - certainty] would be willingness to change their attitude.

**Model Setup**

The network is arranged as mostly discrete social circles, with some social butterflies that have links to members of other social groups. Turtles start with a certain number of friend links, and no sexual partner links. Establishing networks consisting of "friendship" links and "sexual partner" links (differentiated by color). Friend links are gender independent, sexual partners are not. Individual variables per agent are assigned randomly following a normal distribution based on slider or global values [assign-normally-distributed-member-variables]

When the model is set up, everyone is initially single and uninfected.

The system has several stop conditions:

* If every single agent/turtle is infected
* If certainty of every agent gets so high that attitudes won’t change anymore based on this model’s implementation
* If every agent comes to the same attitude consensus
* If several key variables remain unchanged for a certain number of ticks

**Agent Behavior**

The turtles do not move, but

On each tick:

* Agents talk to their friends (indicated with blue links), and potentially update their opinions about safe sex (and consequently their likelihood to practice safe sex).
  + Agents talk to their friends and sexual partner (if any), which might impact their personal likelihood of practicing safe sex ( **talk-to-peers** )
* Agents look for a sexual partner (male-female coupling).
  + If they are not coupled, they might try to find another single turtle of the opposite gender, i.e., 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 three 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 they are already coupled with a sexual partner, they just increase length of relationship (turtles are monogamous in this simulation)
  + If they are NOT coupled, a turtle tries to find a mate. Any turtle can initiate mating if they are not coupled (and random chance permits)
* Agents make friends. This gives everyone (coupled or not) a chance to make a friend.
  + everyone should attempt to make friends on each tick as well, because otherwise, all the sexual partner links break, then it becomes single-sex clusters and no sexual behavior happens
  + If this agent already has reached their maximum limit of friends, they don't try to create any more friend links
  + If this agent has not reached their maximum limit of friends, they try to make a friend **[ make-friends ]**
* Agents can uncouple or potentially break up. Agents will **uncouple** if the length of the relationship reaches the commitment threshold for one of the partners.
  + A restriction is placed on who can couple after uncoupling, to simulate that exes wouldn’t be friending each other again, and this model doesn't (intend to) simulate instant rebounds
* If agents are still in a couple, each tick they have sex. The likelihood that the couple will engage in safe sex depends on the attitudes of both participants. If turtles are coupled (have a sexual partner), they will have sex on each tick, and thus will have the potential of spreading an STI if they have unprotected sex.
  + 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 are influenced by the other turtles (“friend group”) that the turtle is linked with.
  + If the turtles are coupled, on each tick, they have sex, and have a chance of using protection based on a probability derived from a function based on attitude. If the couple does choose to use a condom, there is additionally a chance that they will use the condom correctly, based on available statistics. 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.
  + If one of the partners is infected and the couple has unprotected sex, there is a chance that the other partner will become infected. An infected agent is distinguished by a dot on their shape.
* Turtles check to see if they are infected only after having sex, because symptoms take a while to show up. Only agents of genders that are symptomatic (set by the symptomatic? slider) will know they are infected. If an agent knows s/he is infected, s/he will always want to practice safe sex for the rest of the simulation.
  + 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.
  + If an agent has unsafe sex and doesn’t notice any consequences (either is not infected, or is not symptomatic), that agent’s inclination to practice safe sex will decrease.