

Module 7 - Modeling Tools

Modeling Tools & Questions	Spreadsheets - Excel	Systems Tools - Vensim	Agent-Based Tools - NetLogo
What can the tool accomplish?	Data handling, analysis, and graphing; modeling of data and simulations; some concept animation	Time-dependent models and simulations representing aggregate behavior of a system	Interaction of agents showing animated individual behavior as well as aggregated data
How are models generated?	Computations based on mathematical relationships expressed as formulas	Computations using a "concept map" process; mathematics is camouflaged	Probability-based or deterministic rules defining the actions of the agents
	Can be used as a systems tool by using difference equations and Euler's Method	Choice of time-step and numerical method result in less computational error	Random nature of actions underlying processes is illustrated
How are results displayed?	Macroscopic behavior	Macroscopic behavior	Microscopic behavior
How are results displayed?	Data tables and graphs	Data tables and graphs; can export data	Animation and graphs; can export data
What is the cost?	Excel - \$ Open Office Calc - freeware http://www.openoffice.org	Vensim PLE - freeware http://www.vensim.com/freedownload.html	NetLogo - freeware http://ccl.northwestern.edu/netlogo/download.shtml
Where can I find examples?	Excelets at http://academic.pgcc.edu/~ssinex/excelets/ Will work on Mac or PC platform; should function in OpenOffice Calc	MVHS Models at http://mvhs.shodor.org Select your subject area to find models in relevant topics	NetLogo models library at http://ccl.northwestern.edu/netlogo/models
General Comments	Excel models run in Open Office Calc may require cosmetic clean-up	Vensim will run off thumbdrive or CD if needed	NetLogo models may be run through a browser as Java applets if software installation is not allowed