# SyntheSim Reference Sheet

SyntheSim is a way to simulate models in Vensim PLE with considerable interactivity. Changes made to the model while in this mode will cause the model to be re-run automatically.

To enter *SyntheSim* mode, click on the *SyntheSim* button . Like the normal Run command, *SyntheSim* should only be used once a model is built, its equations are defined, and everything is ready for simulation.

When you first run a model with *SyntheSim* you will notice several immediate changes:

1. All constant-valued auxiliary variables turn into slider bars.
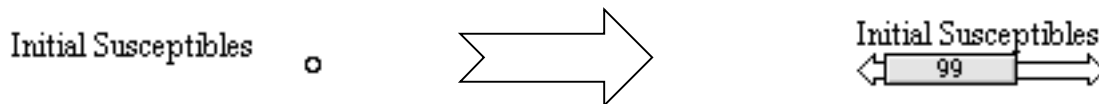
PROCEDURE: Values of constant auxiliary variables can be adjusted by dragging the bar or by clicking on it. Click on the arrows to either side of the slider itself to bring up a window with settings for the slider. Here, you can manually adjust the value, or set the minimum, maximum and increment for the slider bar. Control/Right click on the name of the variable to bring up the input options window where you can override the variable's normal behavior. (see page 4).

2. The boxes around box variables turn into mini-graphs with a single line representing that variable's value over time.
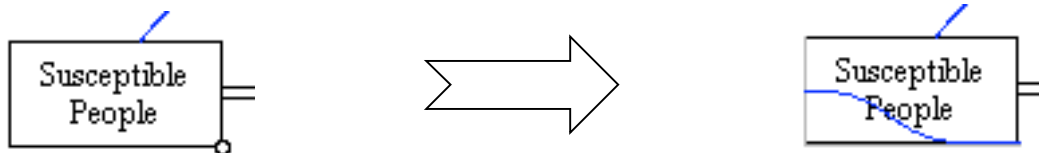
PROCEDURE: Let the mouse hover over a box variable during *SyntheSim* to bring up a larger version of the MiniGraph. Control/Right click on a box variable during *SyntheSim* to bring up a window for overriding the variable's behavior. (see page 4)

WARNING: Models that are highly complex or require significant amounts of computation should be used with care in *SyntheSim* mode. If it takes your machine fifteen minutes to run your simulation, you may not want to use *SyntheSim* with that particular model. Why not? Every time you make a change, the computer will try to re-compute the simulation, a fifteen-minute endeavor!

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3. The upper toolbar will change, adding some new buttons and hiding some old ones.
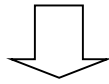
	This button exits *SyntheSim* mode
	This button saves the current model settings and run data.
	This button resets the selected slider to the value it had when *SyntheSim* was started
	This button resets all of the sliders

Table of SyntheSim Toolbar Buttons

4. Permanent Graphs and Sliders, placed in the build window with the Input/Output Object button will become active.

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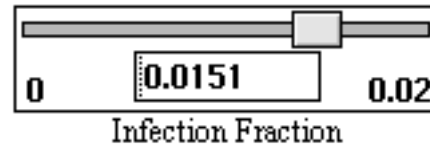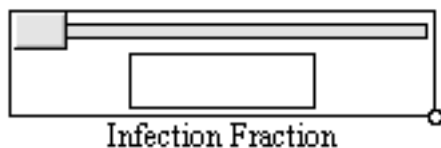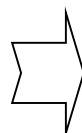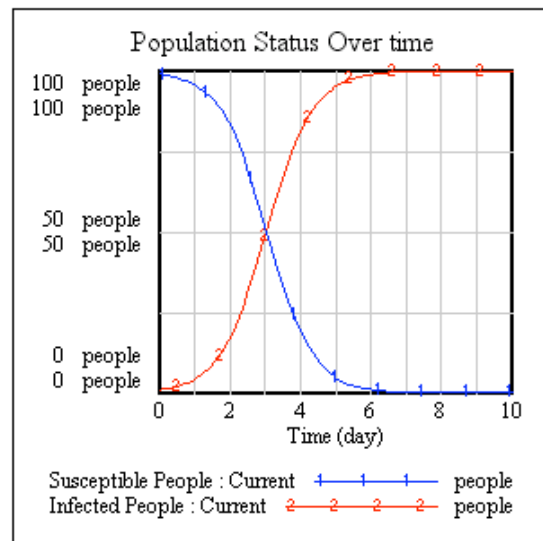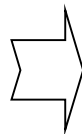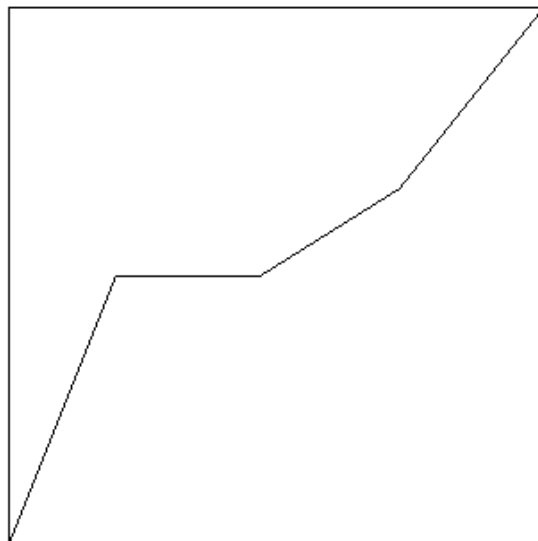
Summary: Properly utilized, *SyntheSim* can greatly enhance the value of models built in Vensim PLE. For best results, be sure to incorporate permanent graphs, tables, and sliders with

the Input/Output Object button ⬈ . Permanent slider bars allow for more sophisticated interface and easy modifications. Permanent graphs and tables automatically reflect changes to the model while *SyntheSim* is on. Graphs will even rescale themselves to better display the data.

SyntheSim OFF

SyntheSim ON

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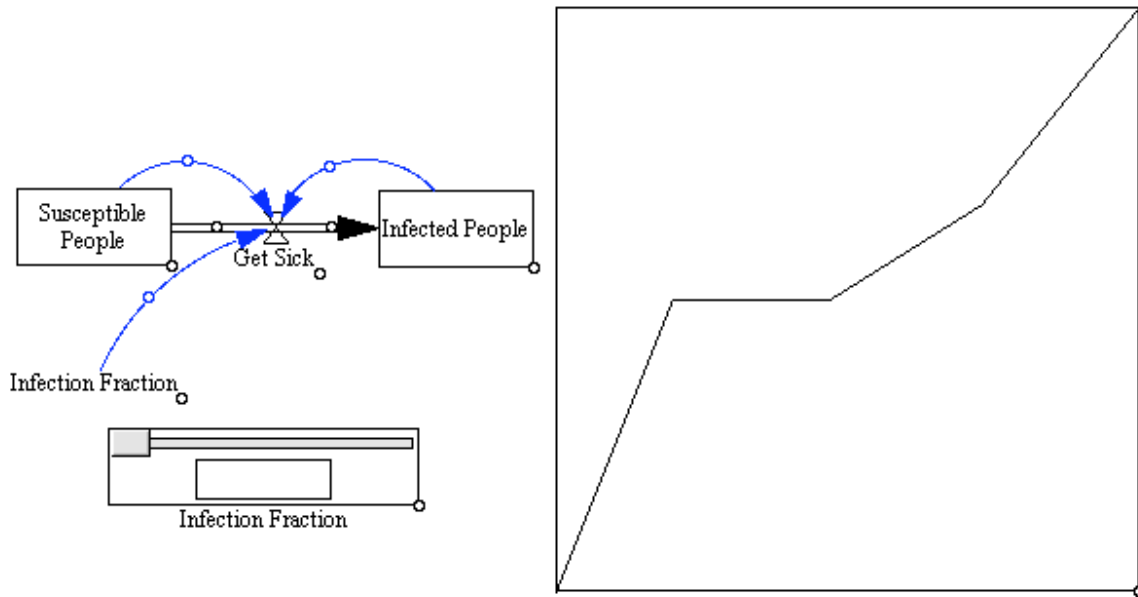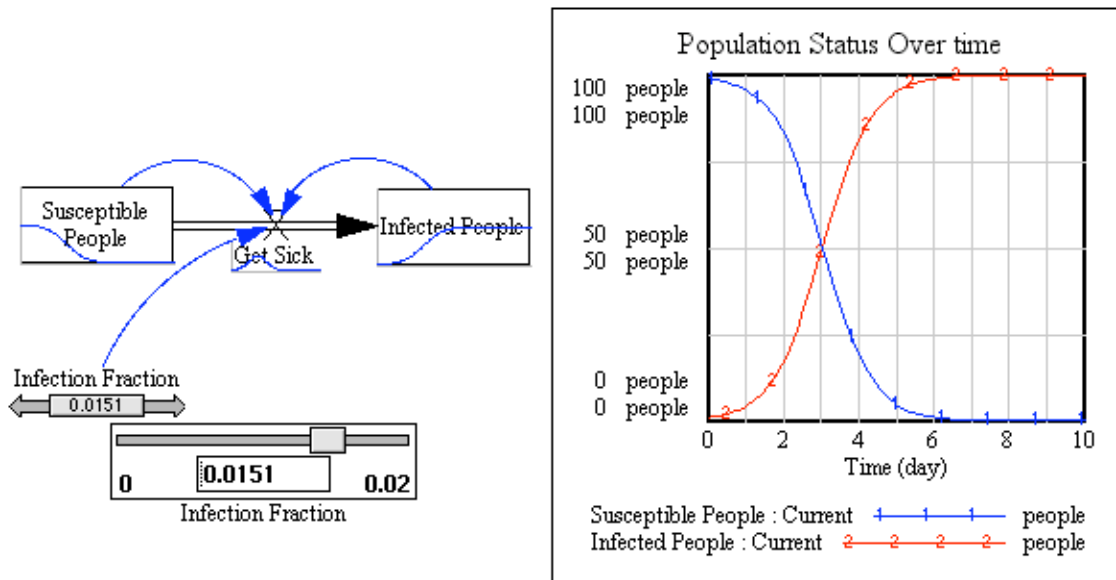
BEHAVIOR OVERRIDES: In *SyntheSim* mode, variables can be assigned an override behavior. For example you can specify a behavioral pattern such as exponential growth or a sin wave. You can also freeze variables at their initial values. Control/right click on a variable and a window will appear containing the override options.

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Input Options for: Variable or Rate
☑ Override normal behavior        Uncheck this and click on OK to revert this one variable
                                   to normal behavior
┌ Input Time Shape ──────────────────────────────────────────────────────┐
│ ◉ Constant (with slider)    ○ Exponential Growth     ○ Pulse            │
│ ○ Step Change               ○ Exponential Decay      ○ Pulse Train      │
│ ○ Ramp                      ○ Sin Wave               ○ Square Wave      │
└────────────────────────────────────────────────────────────────────────┘
Minimum              [-1]                 maximum            [1]


☐ Freeze Levels at initial values    Use this option to study local response to
                                     changes in the current variable.
        [ OK ]                                          [ Cancel ]
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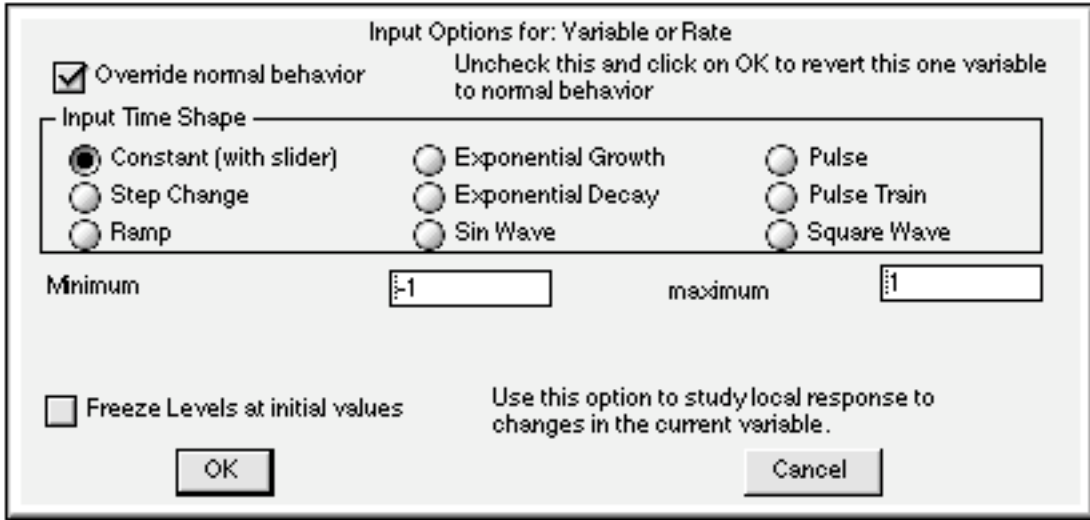
PROCEDURE: Click in the bubble beside the desired behavior. Parameters for that particular behavior will appear in the window. Adjust the parameters as desired and select *OK* to enact the override. *Cancel* will exit this menu without overriding the behavior. To cancel an earlier override, control/right click on that variable and de-select the *Override normal behavior* check box. Additionally, clicking *STOP OVERRIDE* on the toolbar will cancel all active overrides.

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