

# Getting started with the agent-based models for the research project “Simulating health behavior”

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## A. INTRODUCTION

An important part of the project titled “Simulating health behavior: a guide to solving complex health system problems with agent-based simulation modeling” are three sample agent-based models. You can download them from the Society of Actuaries web page for the project<sup>1</sup>. Each model is available in two formats, an executable file you can run immediately, and a file containing the model’s computer code that will help you learn how to build agent-based models.

## B. HOW TO RUN THE EXECUTABLE MODELS

In order to run the executable models, you need to have Java working on your computer. (see the sidebar)

After you are sure Java is working on your computer, go to the web page for this project.<sup>2</sup> Then, to download a model you want to run, click on the link to its executable file, as shown below:

To download an executable file for a model, click on it.

Executable files	Computer code files
<a href="#">Physician network model</a>	<a href="#">Physician network model</a>
<a href="#">Workplace wellness model</a>	<a href="#">Workplace wellness model</a>
<a href="#">Adverse selection model</a>	<a href="#">Adverse selection model</a>

Unzip (or extract) the file and save the unzipped file to a convenient place on your computer, then click on it. The Repast Symphony Model Installer window should then appear:



Select your language, and click “OK”.

### Getting Java to work

Because Java is ubiquitous, it is likely that it already works on your computer. To test if it does, go to “[www.java.com/en/download/testjava.jsp](http://www.java.com/en/download/testjava.jsp)” and follow the instructions. For the test to run on your computer, you may need to grant your operating system permission to run it.

After you run the test, if Java is working, you will see something like:



If it is not working, or you don’t have the latest version, go to “[java.com/en/download/index.jsp](http://java.com/en/download/index.jsp)” to download and install Java. Just follow the directions for your type of computer.

After you make sure that an up-to-date version of Java is installed on your computer, if you are running a Windows operating system, you also need to make sure that your computer knows where Java is installed. To do this, you need to put Java’s “bin” folder in your computer’s “Path” environment variable. This is easy to do. You can find instructions on the video accompanying this document.

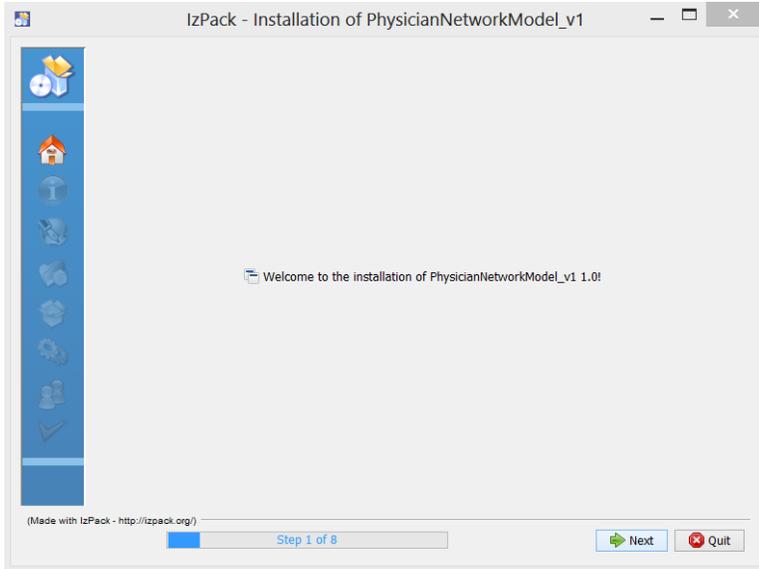
To learn more about Java, see Chapter fifteen (Agent-based modeling tools) Section D (Java) of the project’s report.

<sup>1</sup> The web page address is “[www.soa.org/research/research-projects/health/simulating-health-behavior-a-guide-to-solving.aspx](http://www.soa.org/research/research-projects/health/simulating-health-behavior-a-guide-to-solving.aspx)”.

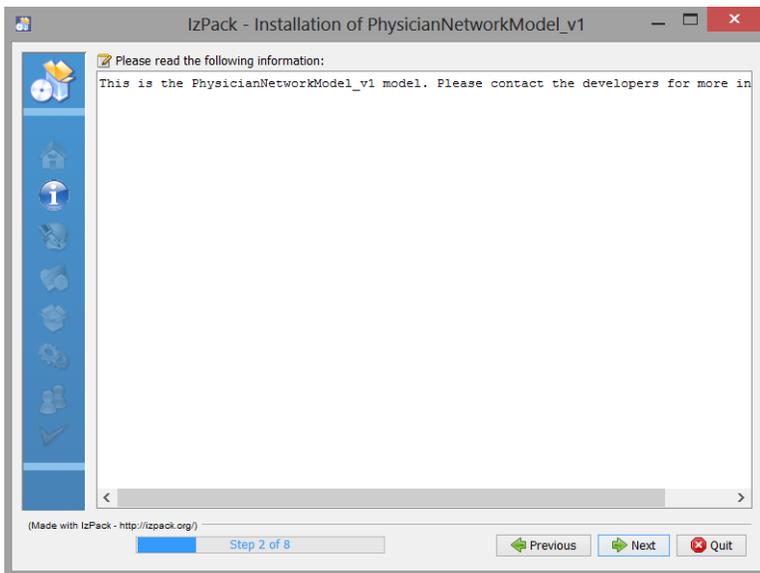
<sup>2</sup> The web page address is “[www.soa.org/research/research-projects/health/simulating-health-behavior-a-guide-to-solving.aspx](http://www.soa.org/research/research-projects/health/simulating-health-behavior-a-guide-to-solving.aspx)”.

## B. HOW TO RUN THE EXECUTABLE MODELS continued

You should then see something like the following widow:



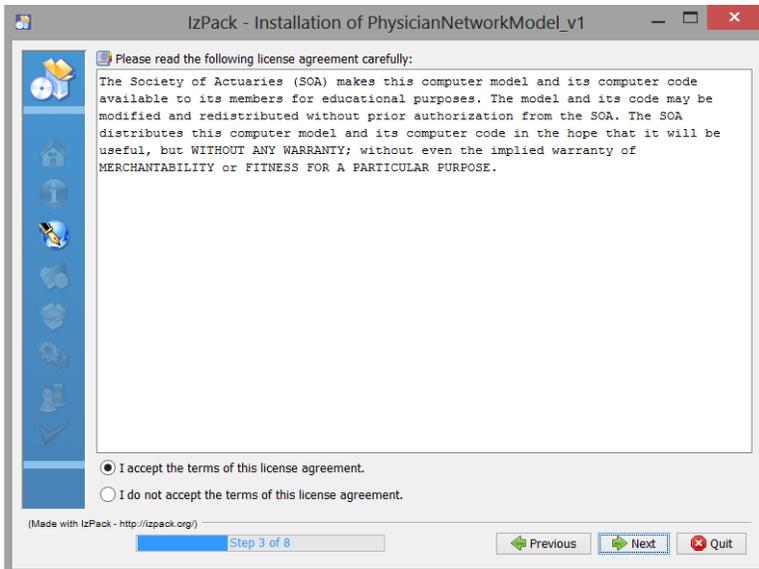
Click "Next", and a window like the following should appear.



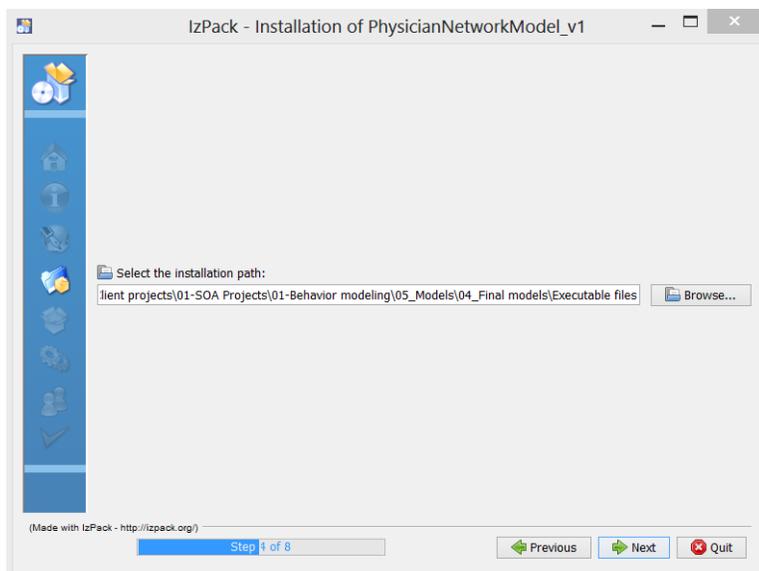
Click "Next".

## B. HOW TO RUN THE EXECUTABLE MODELS continued

Read the license agreement, and if you accept its terms, check “I accept the terms of this license agreement” and click “Next”.

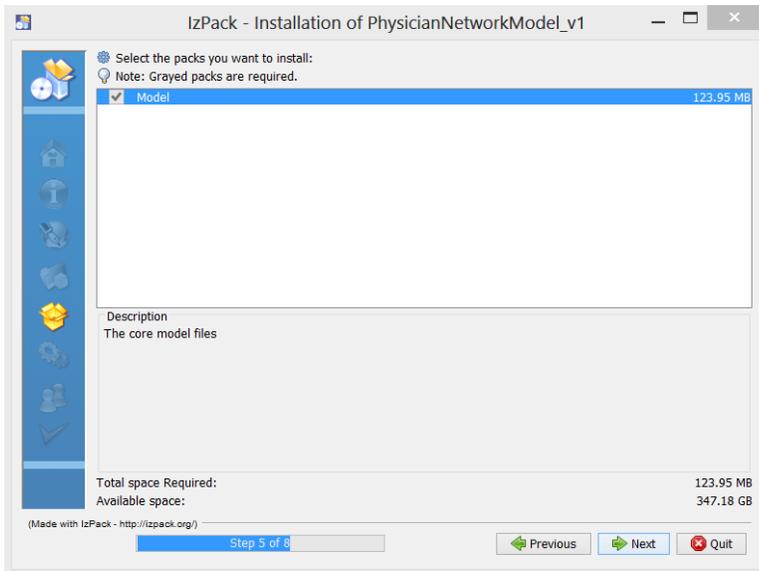


In the next window, select where you would like to install the executable file. This can be any place on your computer (where you have permission to write files). For this purpose, you may want to create a special folder, named something like “Physician Network Model”, a sub-folder under “Executable files”. If you don’t like where the files end up, you can always copy them to another folder.

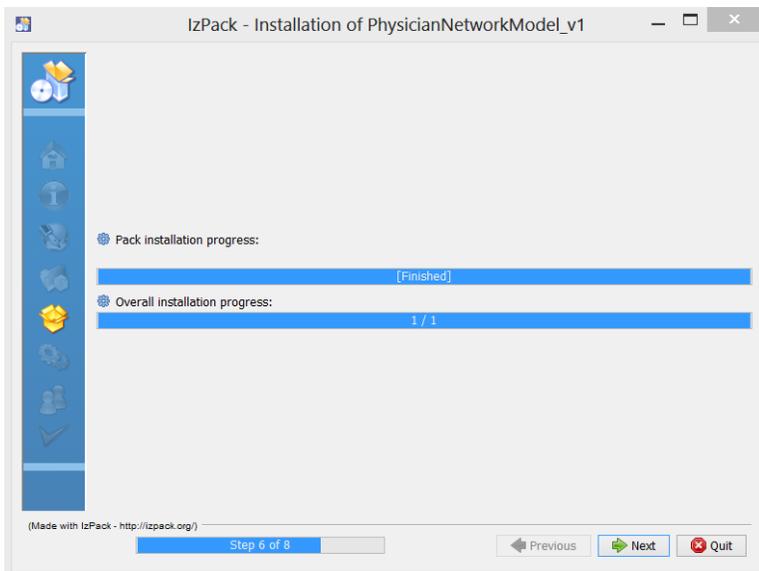


## B. HOW TO RUN THE EXECUTABLE MODELS continued

A window like the following should then appear. Click “Next”.



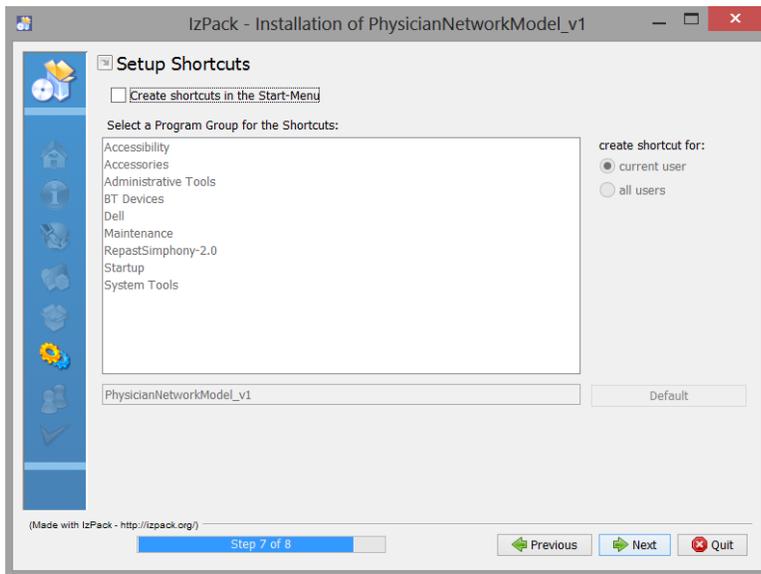
The installation process should then start. The next window shows the installation's progress.



After the installation is complete, click “Next”.

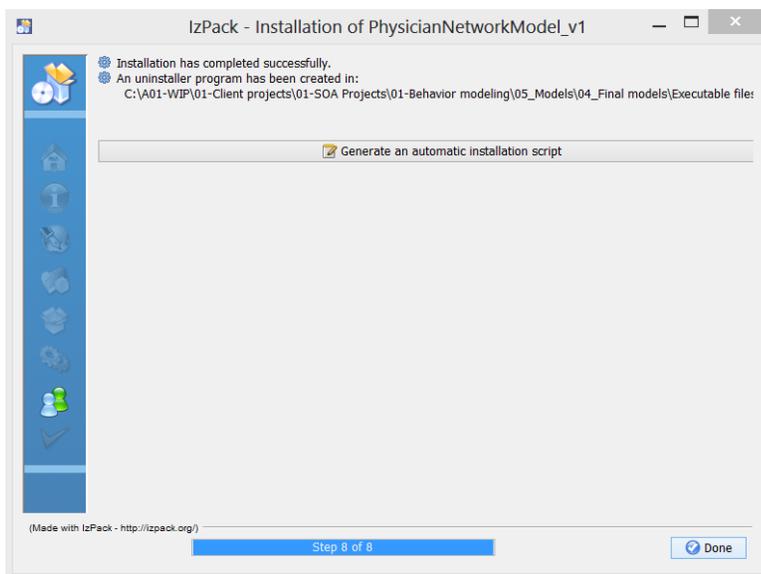
## B. HOW TO RUN THE EXECUTABLE MODELS continued

A window like the following should then appear.



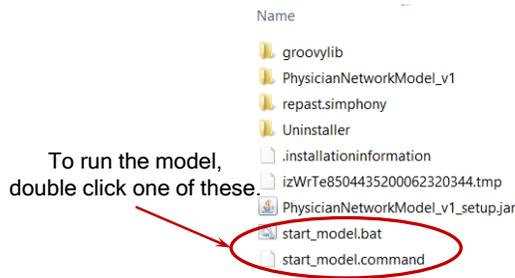
Because it is generally not necessary to set up a shortcut, it is safe to un-select the check box labeled “Create shortcuts in the Start Menu”. After you do this, click “Next”.

A window like the following then appears. Because it is generally not necessary to generate an automatic installation script, click “Done”.

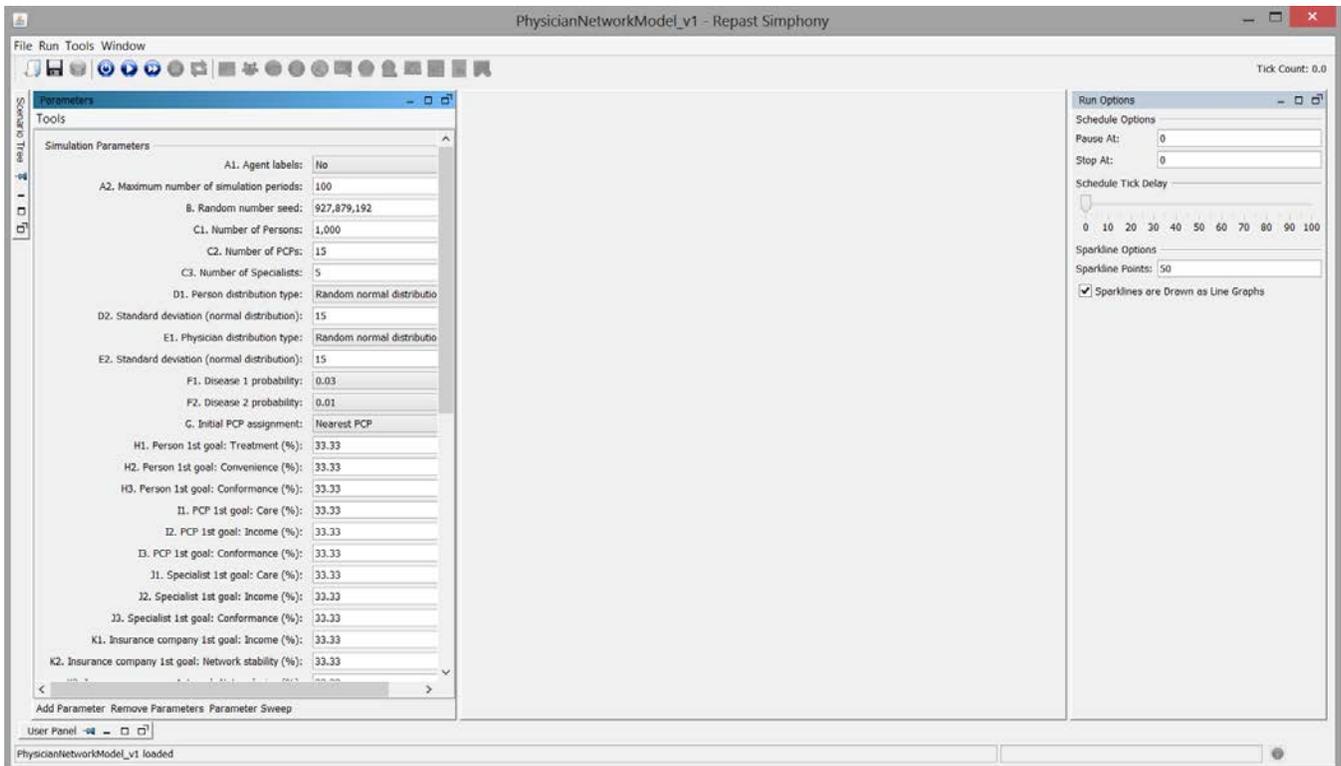


## B. HOW TO RUN THE EXECUTABLE MODELS continued

To run the model, go to the folder where you installed the executable files. Then, if your computer has a Windows operating system, double click “start\_model.bat”. If your computer is a Mac, double click “start\_model.command”.



The Repast graphical user interface, like the one below, should then appear.<sup>1</sup> For information about running the model, go to Chapter sixteen (Sample agent-based models) of the project’s report.



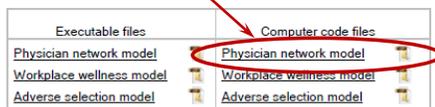
<sup>1</sup> If your computer uses the Windows operating system, and instead of the Repast graphical interface you get the error message “Windows cannot find ‘javaw’. Make sure you typed the name correctly, and then try again.”, make sure that the Java bin folder is in your computer’s “Path” environment variable. See the sidebar on page 1.

### C. HOW TO USE THE COMPUTER CODE FILES

The files containing the computer code for the models will help you learn how to build agent-based models. In order to use the computer code files, you need to have Repast Symphony working on your computer. (see the sidebar)

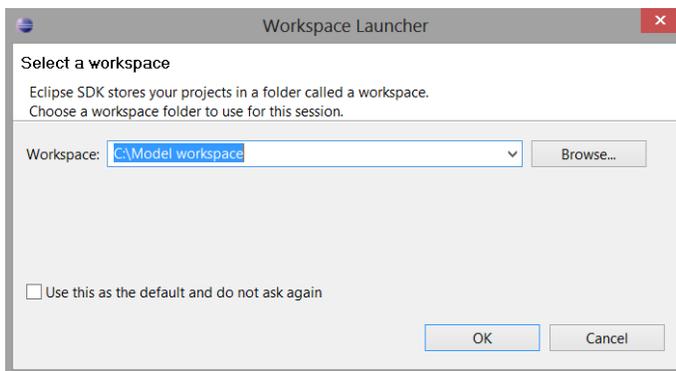
After you have downloaded and installed Repast Symphony, go to the web page for this project.<sup>1</sup> Then, to download the computer code for a model you want to run, click on the link for the model, as shown below:

To download a computer code file for a model, click on it.



Unzip (or extract) the file, and put the unzipped file in a folder that will become your Eclipse workspace. You might name it something like “Model workspace”.

By clicking on the Repast Symphony Eclipse icon (like the one to the right), launch the Eclipse development environment for Repast Symphony, pointing to the workspace where you put the computer code file:



#### Getting Repast Symphony to work

To download and install the latest version of Repast Symphony version 2.0, go to “[repast.sourceforge.net/download.html](http://repast.sourceforge.net/download.html)”.

Instructions for downloading Repast are under “Newest Repast Symphony release”. As you will see, there are separate versions of Repast Symphony for Windows and Linux. When you download and install Repast Symphony, make sure you check the box to pin the Repast Symphony icon to your start menu.

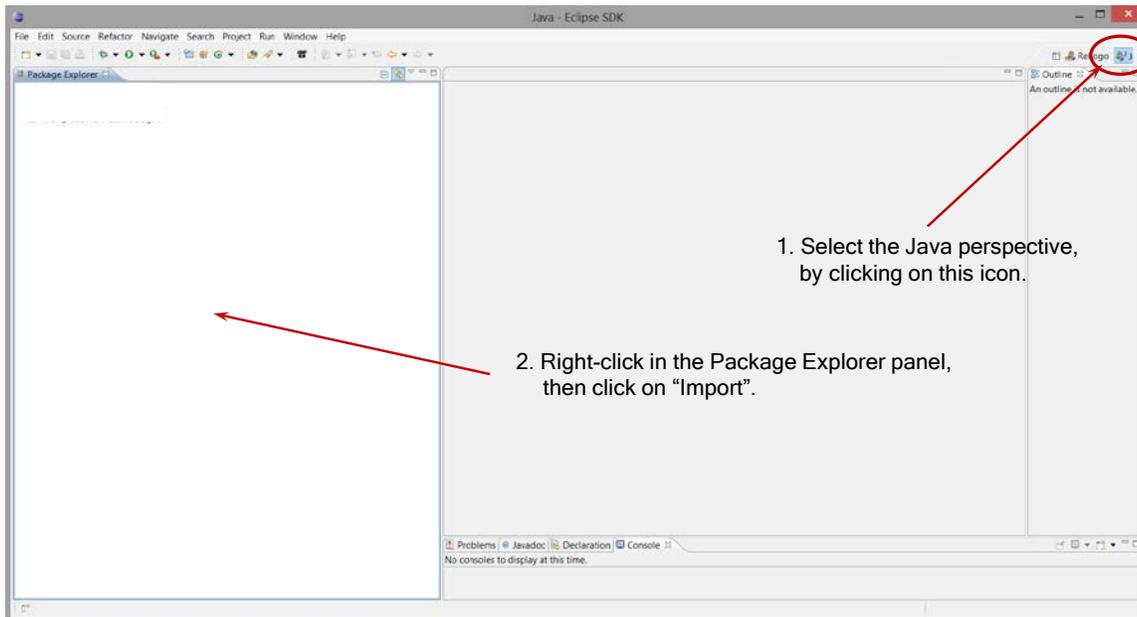
To learn more about Repast Symphony and its development environment “Eclipse”, see Chapter fifteen (Agent-based modeling tools) Section D (Java) and Section E (Eclipse) of the project’s report.



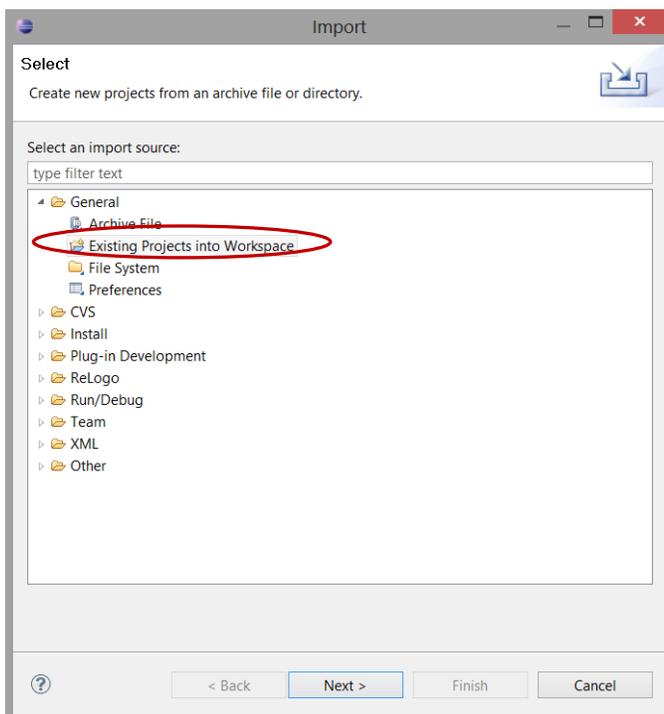
<sup>1</sup> The web page address is “[www.soa.org/research/research-projects/health/simulating-health-behavior.aspx](http://www.soa.org/research/research-projects/health/simulating-health-behavior.aspx)”.

### C. HOW TO USE THE COMPUTER CODE FILES continued

The resulting window should look something like:

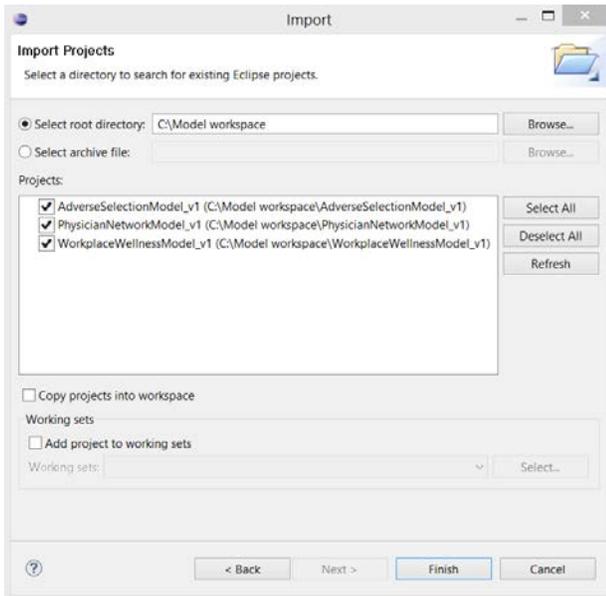


Select the Java perspective for Eclipse by clicking the "J" icon in the upper right-hand corner. Then right-click in the Package Explorer panel, and in the resulting menu click "Import". In the ensuing window, click "Existing Projects into Workspace". Then click "Next".

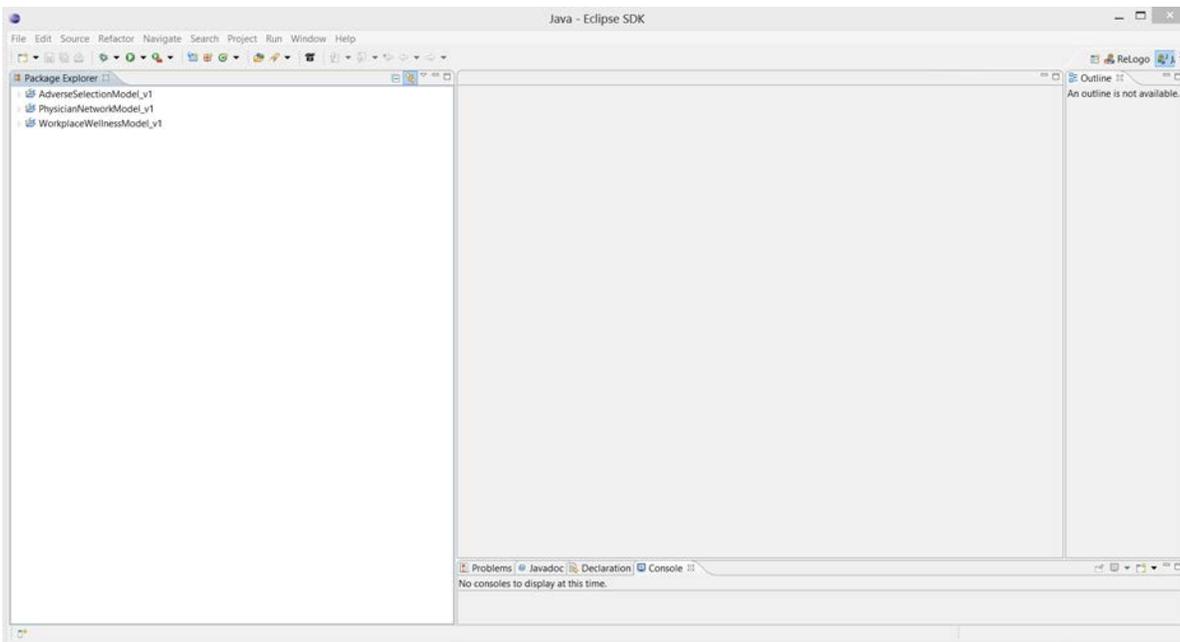


### C. HOW TO USE THE COMPUTER CODE FILES continued

In the resulting window, check the model(s) you would like to explore, and click “Finish”. There is no need to check the box labelled “Copy projects into workspace”, because you have already placed the projects in the workspace.



The result should look something like:



You are now ready to explore the model code, and to run models from Eclipse. For more about this, see the report’s Chapter sixteen (Sample agent-based models).