# Pirana

The flexible modeling environment for NONMEM

## Quick Guide: Using PsN from Pirana

Version 1.1

**Scope**

This Pirana Quick Guide explains how to use Pirana to work with the modeling toolkit Perl speaks NONMEM (PsN). This freely available toolkit is developed by Uppsala University and extends the funtionality of NONMEM with many tools, e.g. for advanced execution of models, performing bootstraps of model estimations, stepwise covariate modeling, log-likelihood profiling, stochastic simulation and (re-)estimation, and many more. PsN can also be used to generate various diagnostics, such as visual and numeric predictive checks (VPC / NPC).

*Note: this is not a guide to PsN itself. If you have questions on the use of PsN, please check the PsN manual or contact the developers of PsN at http://psn.sourceforge.net.*

### Introduction / Setting up PsN

- If you haven't installed PsN, download the latest version from http://psn.sourceforge.net, and follow the instructions.
- The most important part after installation is to make sure that PsN knows where NONMEM is installed. PsN can do this for you automatically during the installation.
- To configure NONMEM installations manually for PsN, look up the file **psn.conf** in the folder where PsN was installed (on Windows probably somewhere in C:\Perl\site\PsN_x_x_x. (Note that an alternative psn.conf can be created in your home folder which overrides the system-wide psn.conf.) Open the configuration file in a text editor (e.g. notepad), and scroll to the section **[nm_versions]**, an example is shown in Figure 1
- In this **[nm_versions]** section you should define where NONMEM versions are installed on your system, and which version. Follow the comments and examples that are given in the PsN website if you are not sure what to put here.

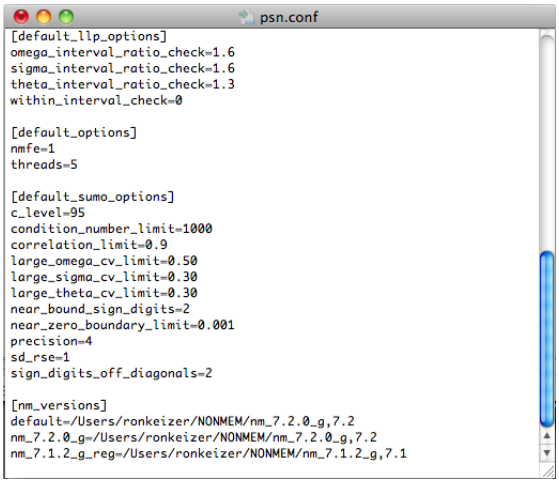


Figure 1: Edit PsN configuration file

**Using the execute command**

- First, we will show how the PsN *execute* command can be used from Pirana.
- Select a model that you want to run in NONMEM, right-click with the mouse in the model overview, and select **PsN** → **execute**. This will bring up the PsN dialog for this command. Alternatively, you can use the Ctrl-E shortcut to do this. Now you will see the following window:
- The top part of this window shows the help file for this command. On the right-hand side you can choose whether you want to see the short help file only a list of the available arguments, or a long help file with explanations of the various arguments.
- In the text-box below, the actual PsN command can be typed. This will look something like:

  ```
  execute -nm_version=default run1.mod
  ```

- To this command you can add arguments that you require. Many options are available, it is highly recommended to look into the available options. But for now let's just start the command like this. Pres the run button (¿), and Pirana will start the execute command, as shown in the screenshot below.
- What PsN actually does is create a subfolder in which the run is executed. After the NONMEM run finishes, PsN will copy back the results files to the main folder.
- Note that Pirana does not automatically detect that new results are available, so you should press the refresh button to load the results into the Pirana overview. To show the folders that PsN has created in the main overview, you have to select either 'PsN folders' or 'All folders' from the folder selection menu, highlighted below.

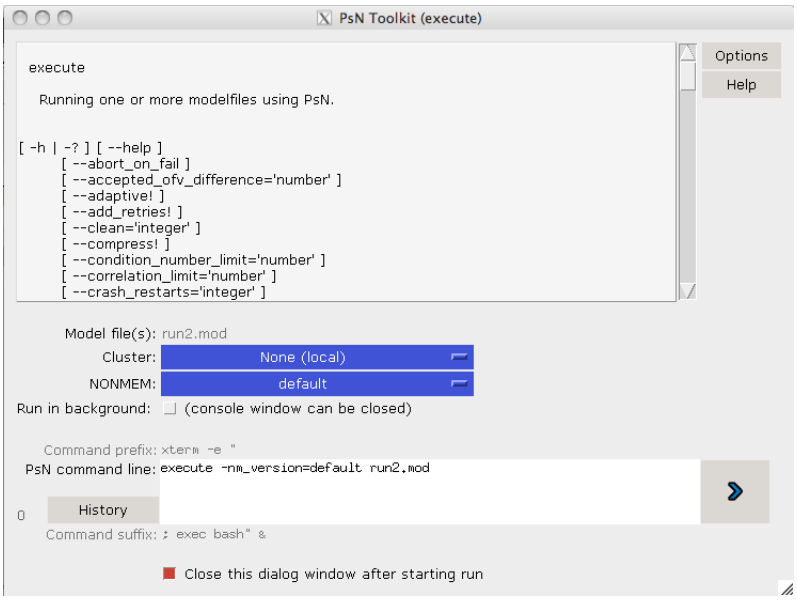


Figure 2: The PsN dialog in Pirana


Figure 3: A PsN run in Windows (but run on a Linux cluster)

### Using the other PsN tools

The other PsN tools are used in exactly the same way. For example to start a bootstrap, select a model and select 'bootstrap' from the PsN menu (under 'Model evaluation'), or using the Ctrl-B shortcut. Make sure that at least the `-samples=...` argument is present in the command to be executed.

- You will notice that a 'History' button is present in the dialog as well. From the command list that is opened by clicking this button, you can select previously used PsN commands. Alternatively from the main PsN dialog you can also retrieve previously executed command by using Ctrl-up and Ctrl-down buttons.
- If there are special argument that you commonly use, you can set them as defaults. In Pirana, go to **Settings** → **PsN**. As shown in Figure 2 you can set here the default arguments for all PsN commands.

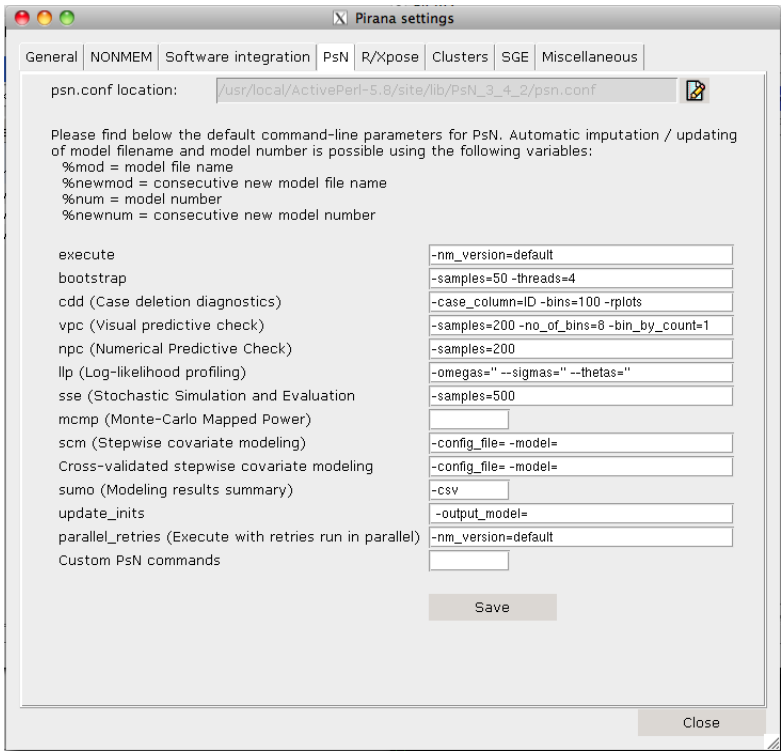


Figure 4: PsN default arguments in Pirana

### Using PsN data transformation tools

Besides tools for working with NONMEM executions, PsN also incorporates some tools to format or transform datasets, or display some statistics. To use these tools, go the file list on the right side of the Pirana window. Select a table or csv-file, and right click. From the menu select e.g. **PsN** $\rightarrow$ **data_stats**.

- A dialog window will now open, similar to the other PsN tools. You will notice that the **data_stats** tool only takes a few arguments.
- If you run this on a csv-file, In the console window that will be opened, some statistics are printed for each column in the dataset.
- The other PsN dataset tools work in exactly the same way, although they perform conversions rather than printing information only.

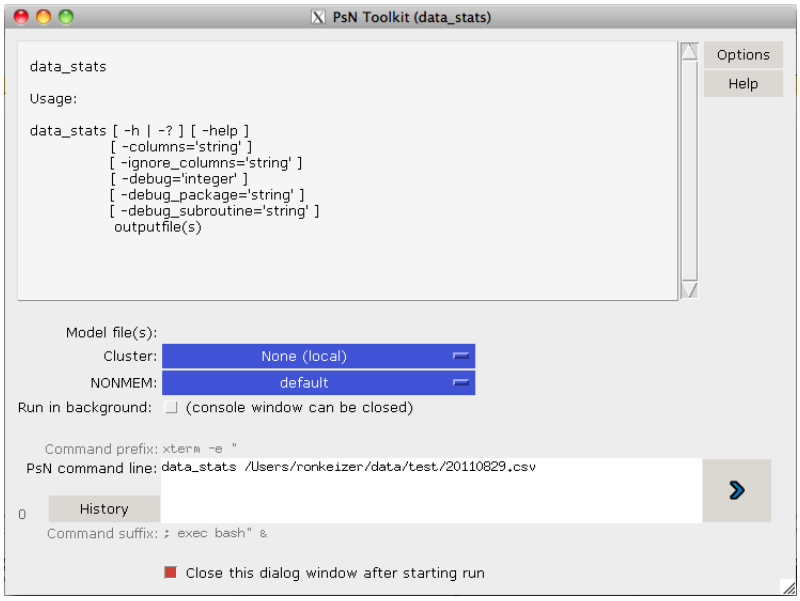


Figure 5: The PsN data_stats dialog in Pirana