Installing R and the IPSUR Package

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This document is designed to describe how to download and configure R on your personal computer. This description addresses the Windows operating system, but it could be modified to discuss the Macintosh OS X and Unix platforms.

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1 Download and Install R

The first thing is to download the latest version of R. You can get the software at CRAN, the *C*omprehensive *R* *A*rchive *N*etwork, found at the url

> http://cran.r-project.org/bin/windows/base/release.htm

Going to the link will automatically download the latest released version of R. The file will look like R-2.4.1-win32.exe; save it on the *Desktop*. The install file size is approximately 28 Mb. Double-click the setup program and follow the menus. When it asks to *Select Components*, make sure that everything on the list is checked. When asked if you want to customize the **Startup options**, select *Yes (customized startup)*. When prompted to choose a **Display Mode**, select *SDI (separate windows)*. It will be fine for most users to accept the defaults for the remaining options. The complete program requires approximately 58 Mb of disk space.

2 Install the IPSUR Package

Once you have R up and running then you will need to install add-on packages. The packages are written and contributed by individuals and they greatly extend the functionality and applicability of the software. In particular, you need to install the IPSUR package. There are three primary ways to do this.

At the R Command Prompt

At the command prompt in the R console type the command

```
install.packages("IPSUR", repos = "http://cran.r-project.org",
                       dep = T)
```

exactly as it is written above, all in one line. The IPSUR package will automatically be downloaded and installed on your Windows machine.

From the IPSUR Website

1. Go to the IPSUR website at

   > http://www.cc.ysu.edu/~gjkerns/IPSUR/package/downloads.htm

   and under the "Downloads" heading you should see a links to Previous, Released, and Development versions of the package. On a Windows system, click the "compiled for Windows" link and you should be prompted to save a file (such as IPSUR_0.0-1.zip). Save the file to a convenient location on your computer, say, the *Desktop*.

2. In the Packages menu on the R Console, choose the option Install package(s) from local zip files... Navigate to the folder from Step 1 containing the file and select it to be installed.

From `CRAN`

In the *Packages* menu on the R Console, choose the option

<p align="center"><code>Install package(s)...</code></p>

You will need to select a `CRAN` mirror, preferably one that is close to your location. In a few moments, a list of all available packages will be displayed. Find `IPSUR` on the list and select it (you can select additional packages if you like by holding down the `Ctrl` key). Click *OK* and wait for the packages to download; they will automatically be installed.

3 Start up `IPSUR`

Once `IPSUR` is installed, you need to load the package into the R workspace. One way to do this is to type `library(IPSUR)` at the Command Prompt ">". Another way is the `Load Packages...` option in the *Packages* menu. Select `IPSUR`.

One of the first things that `IPSUR` does is check your R installation to make sure that you have all of the necessary and recommended packages for `IPSUR` to function properly. Unless you installed a large number of packages in Section 2, it is likely that you will need to install several additional packages. When `IPSUR` asks you to install the packages, click *Yes*.

You will next choose a mirror that is close to your location, and wait. After the download is finished and the unpacking is complete, `IPSUR` will start up automatically. You should see a Commander window open in the upper right corner of your screen. **Congratulations!** You are all set.

In future R sessions, you will always need to type `library(IPSUR)` to load the package.

4 Script Editors

As you become more familiar with R and its capabilities you will soon be performing computations and procedures that are much too complicated to type directly in the Console window. You will be writing lengthy programs, or *scripts*, to do your work for you and you will need a *Script Editor* to help you do this quickly and efficiently.

As it happens, R comes with a pre-packaged Script Editor which can be found by clicking *New Script...* under the *File* menu of the R console. The user types lines of R code in the window that opens. Blocks of code may be cut-and-pasted to the console by highlighting the block of interest and pressing the keys `Ctrl+R`. Scripts can be saved for later execution.

For alternatives to the standard editor, contributors have developed sophisticated software with numerous features such as syntax highlighting, automatic

code completion, and delimiter matching. These are freely available for download. You can browse some of the many alternatives at http://www.sciviews.org/_rgui/projects/Editors.html.

One choice for Windows systems is Tinn-R for Windows, which can be found at http://www.sciviews.org/Tinn-R/. Download the setup (.exe file) for the latest stable version (approximately 2.2 Mb) and install it.

You may customize your version of Tinn-R from its Options menu. Many things can be changed such as the number of recent files that are remembered, the editor appearance, and the details of syntax-highlighting.