**Lab Exercise I. Introducing R (along with RStudio and Git)**

**Biostatistics (ES-5190-A)**

**Environmental Studies Department**

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***Introduction***

The R programming language offers a robust environment for statistical computing. In addition to having a diverse array of packages for statistical analyses, it also works with several other languages like Python, BUGS, JAGS, and Stan, and it is tightly integrated with GRASS GIS, a powerful open source GIS platform. R’s flexibility provides a pragmatic reason for using it in this Biostatistics course, and we will begin the semester by introducing you to some general tasks that will simplify managing materials for this class while giving you a quick orientation to some of the basic tasks that can be done in R. We will also introduce RStudio and Git, two programs that will help simplify how you obtain code and data for this class.

First, you need to get a bit of software. These programs will be installed for you to use on the computers in the GIS lab, but you should install them on your own computer if you’re planning to use it for this class. R can be downloaded and installed from [https://cran.r-project.org](https://cran.r-project.org/). Select the appropriate link from the top of the page to get to the proper version of the software for your system.

RStudio is a free and open-source integrated development environment (IDE) for R. An IDE provides tools to facilitate software development. RStudio provides tools that facilitate debugging R code and provides an organized view of files, objects, plots, and other items you will keep track of as you work on assignments and projects. You can download an installer for your operating system at <https://www.rstudio.com/products/rstudio/download/>.

Git is a version control system, which helps track changes to software and facilitate collaborative work on projects. Git can be used with RStudio to download repositories and create new projects. To install Git, visit the website: <https://git-scm.com/downloads>and download the appropriate installer for your computer.

***Setting up a Project in RStudio with Git***

Now that the software is installed, we will use Git to set up a new projects in RStudio for this week’s lab exercise. To do this:

1. Open RStudio

2. Click on the “File” menu and select “New Project...”

3. Click on “Version Control” then click on “Git”

4. Type in “[https://github.com/biostat-aune-s17/lab1](https://github.com/openfields/biostat-aune-s17/lab1)” in the space for the Repository URL. RStudio should automatically name the project “lab1” and select a directory for it. If you want to change the directory, do that now, then click “Create Project.”

5. Wait for the repository to get cloned into a new project, then open the file ./R/lab1.r. You’re now ready to start following along with the lab exercise described below.