Economics of Financial Crisis
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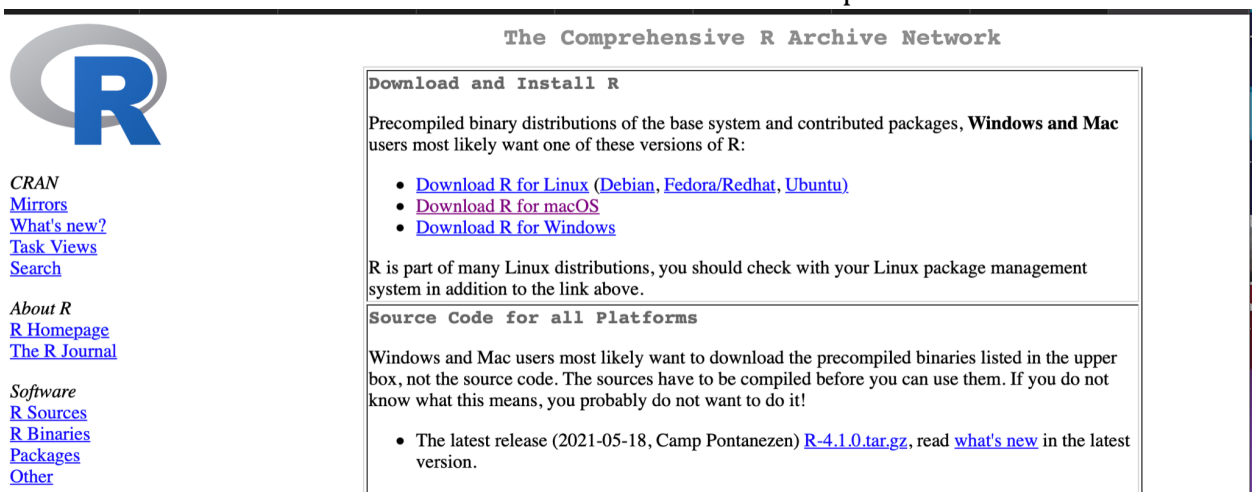
Introduction to R, RStudio, and ggplot

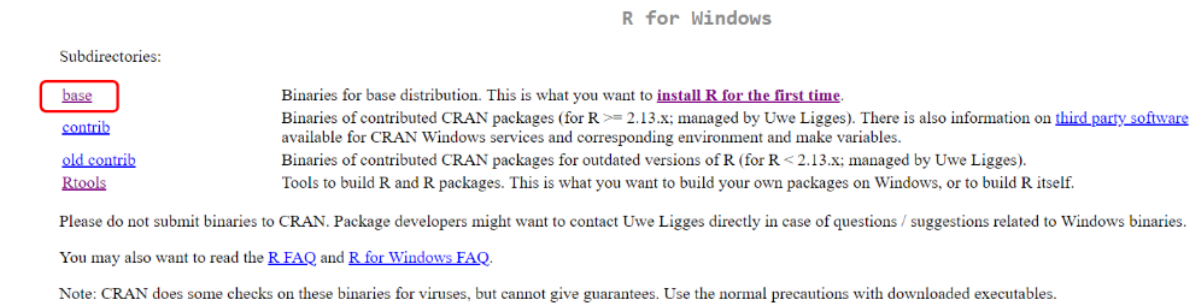
If you would like to install R and RStudio on your own machine, below are instructions.

Downloading R
Helpful installation videos:
PC: https://www.youtube.com/watch?v=9-RrkJQQYqY
Mac: https://www.youtube.com/watch?v=5-ly3kyxwEg

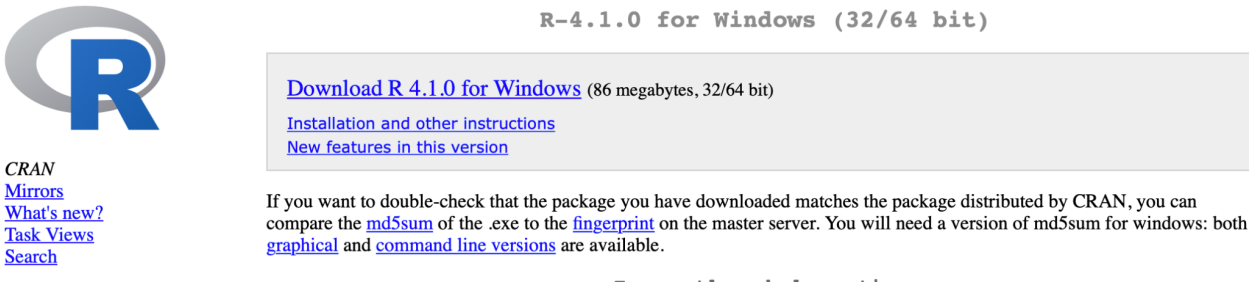
1. Download R https://archive.linux.duke.edu/cran/index.html
    a. **PC users:**
        i. Choose the "Download R for Windows" option



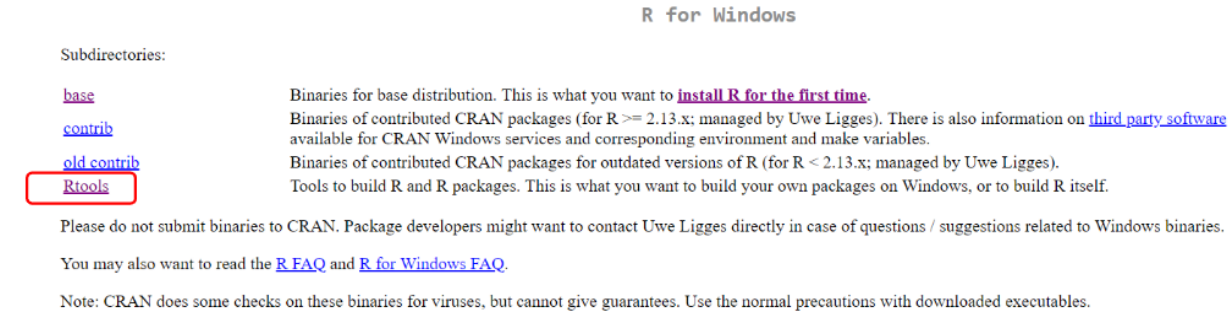
        ii. Click the "base" option



iii. Click "Download R 4.1.0 for Windows"



iv. Then go back to the above link, click "Rtools" instead of "base"



v. Click on the recommended version to download.

Installing Rtools40

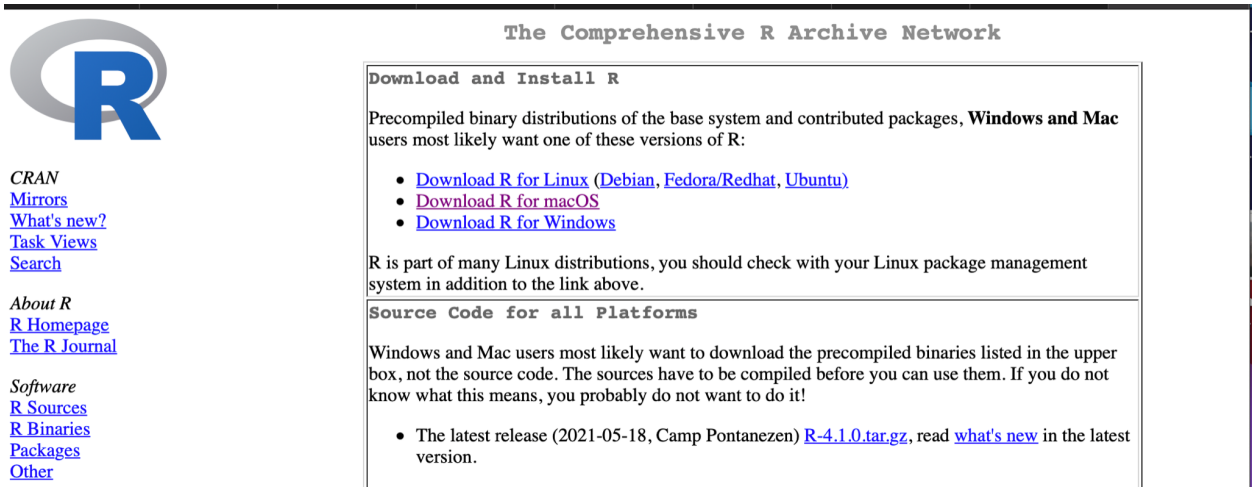
Note that rtools40 is only needed build R packages with C/C++/Fortran code from source. By default, R for Windows installs the precompiled "binary packages" from CRAN, for which you do not need rtools!

To use rtools40, download the installer from CRAN:

- On Windows 64-bit: rtools40v2-x86_64.exe (recommended: includes i386, x64, and x64-ucrt compilers)
- On Windows 32-bit: rtools40-i686.exe (i386 compilers only)

Note for RStudio users: please check you are using a recent version of RStudio (at least `1.2.5042`) to work with rtools40.

b. **Mac users**:
   i. Choose the "Download R for Mac OS" option

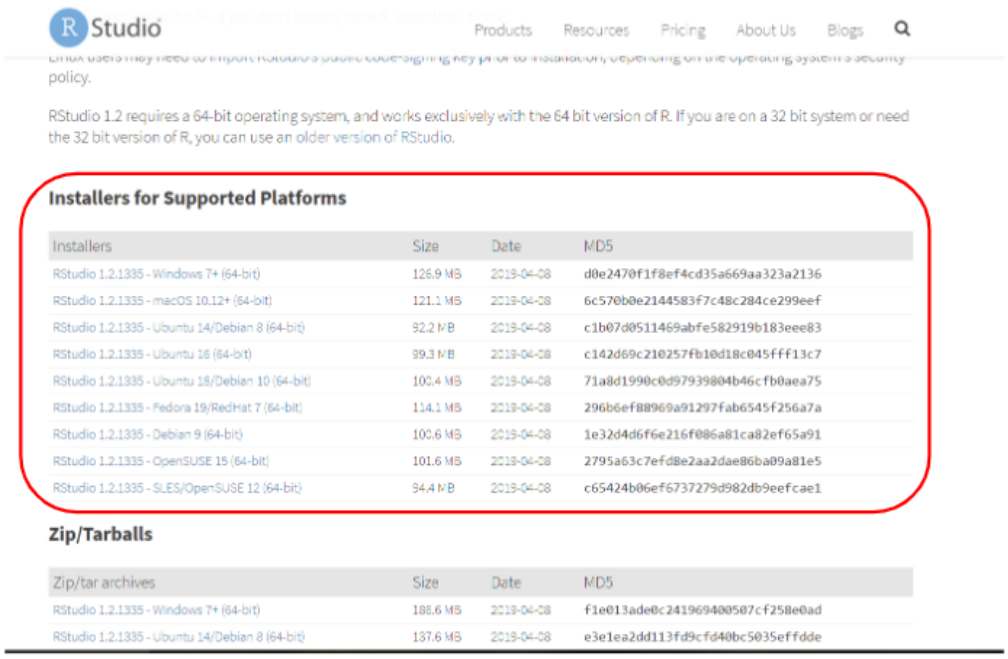


   ii. install the **latest release package best-suited for <u>your</u> system** (High Sierra or Big Sur)

Latest release:

R-4.1.0.pkg (notarized and signed) SHA1-hash: df4d6fc17bbf6b7a27d4e015c0084d4bb6f7b428 (ca. 87MB)	**R 4.1.0** binary for macOS 10.13 (**High Sierra**) and higher, **Intel 64-bit** build, signed and notarized package. Contains R 4.1.0 framework, R.app GUI 1.76 in 64-bit for Intel Macs, Tcl/Tk 8.6.6 X11 libraries and Texinfo 6.7. The latter two components are optional and can be ommitted when choosing "custom install", they are only needed if you want to use the `tcltk` R package or build package documentation from sources. Note: the use of X11 (including `tcltk`) requires XQuartz to be installed since it is no longer part of OS X. Always re-install XQuartz when upgrading your macOS to a new major version. This release supports Intel Macs, but it is also known to work using Rosetta2 on M1-based Macs. For native Apple silicon arm64 binary see below. **Important:** this release uses Xcode 12.4 and GNU Fortran 8.2. If you wish to compile R packages from sources, you may need to download GNU Fortran 8.2 - see the tools directory.
R-4.1.0-arm64.pkg (notarized and signed) SHA1-hash: 7354c1b249cab9bafea6ae67c73563303a05fa17 (ca. 88MB)	**R 4.1.0** binary for macOS 11 (**Big Sur**) and higher, **Apple silicon arm64** build, signed and notarized package. Contains R 4.1.0 framework, R.app GUI 1.76 for Apple silicon Macs (M1 and higher), Tcl/Tk 8.6.11 X11 libraries and Texinfo 6.7. **Important:** this version does NOT work on older Intel-based Macs. Note: the use of X11 (including `tcltk`) requires XQuartz. Always re-install XQuartz when upgrading your macOS to a new major version. This release uses Xcode 12.4 and experimental GNU Fortran 11 arm64 fork. If you wish to compile R packages from sources, you may need to download GNU Fortran for arm64 from https://mac.R-project.org/libs-arm64. Any external libraries and tools are expected to live in `/opt/R/arm64` to not conflict with Intel-based software and this build will not use `/usr/local` to avoid such conflicts.

2. **PC and Mac-** Download R Studio: https://www.rstudio.com/products/rstudio/download/
    a. Scroll down to the “Installers for Supported Platforms” and choose which installer you will need for your computer



3. **PC and Mac**- Go through the setups of the R and R Studio download until you are finished with both! (The videos walk you through each window of each setup box - you don't need to adjust any settings for each)

Downloading ggplot2

R packages page **https://www.rstudio.com/products/rpackages/**
Click ggplot2. Click project site link (https://ggplot2.tidyverse.org)

R vs. RStudio vs. R Markdown vs. R Notebooks
R: The basic software environment to run the R programming language. You can Use R without having to download RStudio.

RStudio: An integrated development environment (IDE) [read: easier user interface] for programming, usually R. You need to download R to use RStudio (but recently other languages could be used for RStudio, too).

R Markdown: A file format for making dynamic documents with R. An R Markdowndocument is written in markdown (an easy-to-write plain text format) and contains chunks of embedded R code

R Notebooks: An R Markdown document with chunks that can be executed independently and interactively, with output visible immediately beneath the input.

Saving

Be sure to have a comprehensive setup of your data. Make sure there is an R Projects folder saved somewhere you can find it, holding all of the projects you work on using R. Be clear with how you name your subfolders and datafiles, as you will have to find them later when setting up your working directory in RStudio.

ggplot2

ggplot2 is an open-source data visualization package meant for use with the programming language R. The software is free to download and install on personal computers.

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