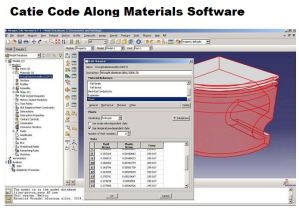
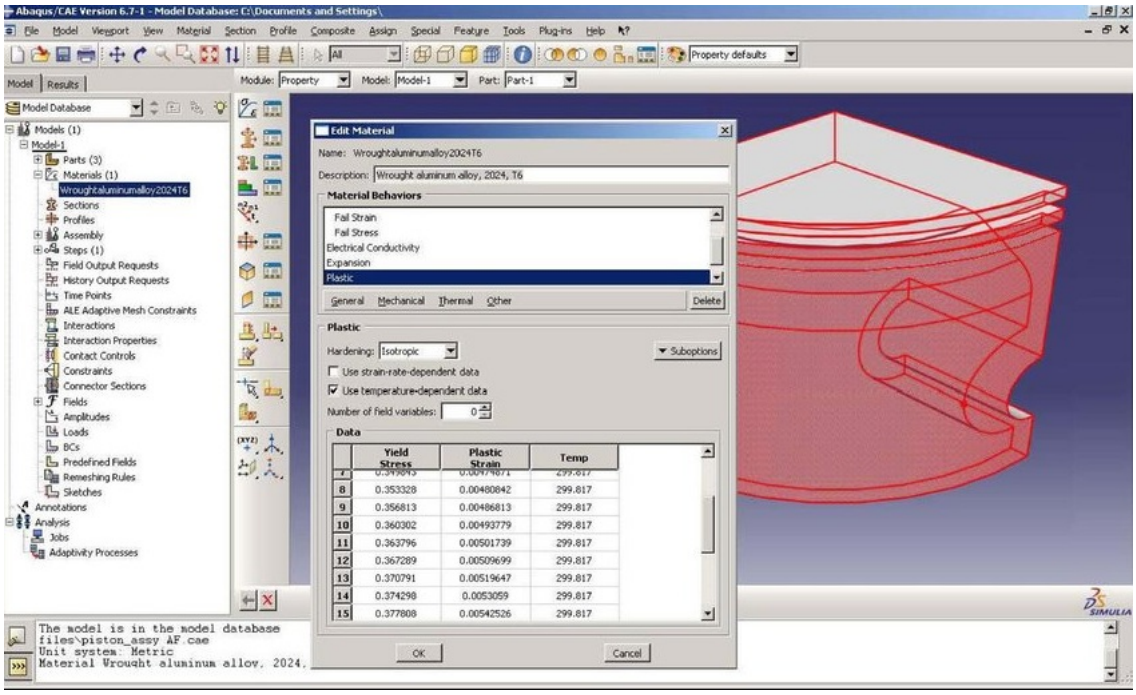


catie Code Along Materials Software Instructions

Contents

Catie Code Along Materials Software



Specifications

- **Software:** CATIE2023 Code-Along Materials
- **Requirements:** R and R Studio (R version > 4.0)

Product Usage Instructions

SECTION 1: Steps to Download Code-Along Materials

1. Download the entire zip file by clicking the download button on the top right.
2. Ensure you have R and R Studio installed. You would need the latest version of R Studio and a version of R that is greater than 4.0.
3. Download and unzip the file CATIE2023_code_along-main.zip.
4. Open the folder CATIE2023_code_along-main.
5. Double-click on the file called CATIE2023_code_along.Rproj. R Studio should automatically open, and the packages you need will be installed for you. This may take a few minutes, so please be patient.

SECTION 2: Instructions for Installing R and R Studio

1. **Download and Install R:**
    - For Mac: Follow the appropriate download link based on your macOS version. Open the downloaded .pkg file and install R.
    - For Windows: Download R for Windows and run the setup to install R.
2. **Download and Install RStudio:**
    - Download the installer for your OS from the provided link.
      Install it as usual.
    - **Note:** R code for this workshop will be presented in RStudio.
    - If prompted to install additional tools, choose “Not Now.”
3. Open RStudio to confirm it’s working.

FAQ:

Q: What do I do if I encounter issues during installation?

A: If you face any difficulties during installation, please reach out to our support team for assistance. We are here to help troubleshoot any issues you may encounter.

Software Instructions

Steps to Download Code-Along Materials

1. Download the software files.
    - Go to the CATIE website
    - Scroll down to the light pink section.
    - Under ‘Software Package’ Select ‘download’.
2. Download the entire zip file by clicking the download button () on the top right.
3. Ensure you have R and R Studio installed (see section 2)
    - You would need the latest version of R Studio and a version of R that is > 4.0
4. Download and unzip the file CATIE2023_code_along-main.zip
5. Open the folder CATIE2023_code_along-main
6. Double-click on the file called CATIE2023_code_along.Rproj
    - R Studio should automatically open and the packages you need will be installed for you. This may take a few minutes, but please be patient.
7. Now, you may open the following files and run them:
    - • V2_code_along.R
    - • V2_code_along_answers.R
    - • V3_code_along.R
8. If your output looks like what you see below, then you are all set!

- Expected output of V2_code_along.R

```
> # Inspect a couple of rows to verify that each responder has
> # two rows (which are exact copies of each other, except for the value of A2!)
> # and a weight of 2
> dat_smart_replicated %>% filter(R == 1) %>% head(., n = 10)
   ID    Y2 A1 A2 R odd severity priormed race   odd_c severity_c priormed_c  race_c design_weights
1   2 4.267  1 -1 1   0   4.1326        0    0 -0.4067    -0.6377       -0.3 -0.8467              2
2   2 4.267  1  1 1   0   4.1326        0    0 -0.4067    -0.6377       -0.3 -0.8467              2
3   3 1.454 -1 -1 1   1   5.5687        0    1  0.5933     0.7983       -0.3  0.1533              2
4   3 1.454 -1  1 1   1   5.5687        0    1  0.5933     0.7983       -0.3  0.1533              2
5   8 4.051  1 -1 1   0   4.3170        0    1 -0.4067    -0.4533       -0.3  0.1533              2
6   8 4.051  1  1 1   0   4.3170        0    1 -0.4067    -0.4533       -0.3  0.1533              2
7  12 2.476 -1 -1 1   0   4.3084        0    1 -0.4067    -0.4620       -0.3  0.1533              2
8  12 2.476 -1  1 1   0   4.3084        0    1 -0.4067    -0.4620       -0.3  0.1533              2
9  22 5.617  1 -1 1   0   0.3776        0    1 -0.4067    -4.3928       -0.3  0.1533              2
10 22 5.617  1  1 1   0   0.3776        0    1 -0.4067    -4.3928       -0.3  0.1533              2
>
> # Inspect a couple of rows to verify that each non-responder has
> # one row and a weight of 4
> dat_smart_replicated %>% filter(R == 0) %>% head(., n = 10)
   ID     Y2 A1 A2 R odd severity priormed race   odd_c severity_c priormed_c race_c design_weights
1   1 0.5983 -1  1 0   1    2.880        0    1  0.5933    -1.8909       -0.3 0.1533              4
2   4 6.7615  1 -1 0   0    4.931        0    1 -0.4067     0.1611       -0.3 0.1533              4
3   5 3.5796  1 -1 0   1    5.502        0    1  0.5933     0.7318       -0.3 0.1533              4
4   6 2.0749  1  1 0   0    5.497        0    1 -0.4067     0.7270       -0.3 0.1533              4
5   7 2.5937  1  1 0   0    6.786        0    1 -0.4067     2.0161       -0.3 0.1533              4
6   9 2.9704  1 -1 0   1    9.088        1    1  0.5933     4.3180        0.7 0.1533              4
7  10 6.0216  1  1 0   0    6.094        0    1 -0.4067     1.3239       -0.3 0.1533              4
8  11 5.5614  1 -1 0   0    2.016        0    1 -0.4067    -2.7542       -0.3 0.1533              4
9  13 3.1878  1  1 0   0    6.290        0    1 -0.4067     1.5193       -0.3 0.1533              4
10 14 3.1164 -1  1 0   0    3.972        0    1 -0.4067    -0.7980       -0.3 0.1533              4
>
```

- V2_code_along_output2.JPG [Expected output of V2_code_along.R]

```
> summary(model)

Call:
geeglm(formula = Y2 ~ A1 + A2 + I(A1 * A2) + odd_c + severity_c +
    priormed_c + race_c, data = dat_smart_replicated, weights = design_weights,
    id = ID, corstr = "independence", std.err = "san.se")

 Coefficients:
            Estimate Std.err   Wald Pr(>|W|)
(Intercept)   2.9142  0.1326 483.31   <2e-16 ***
A1            0.4209  0.1415   8.85   0.0029 **
A2           -0.3473  0.1110   9.79   0.0018 **
I(A1 * A2)   -0.1070  0.1111   0.93   0.3352
odd_c        -0.6989  0.2871   5.92   0.0149 *
severity_c   -0.0694  0.0662   1.10   0.2950
priormed_c   -0.1278  0.3400   0.14   0.7069
race_c        0.5673  0.3739   2.30   0.1292
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Correlation structure = independence
Estimated Scale Parameters:

            Estimate Std.err
(Intercept)     2.66   0.262
Number of clusters:   150  Maximum cluster size: 2
>
```

- The expected output of V2_code_along_answers.R

```
> # CODE-ALONG TASK:
> # In the next line, type in a call to the estimate function
> estimate(model, D)
                                                                 Estimate 95% LCL 95% UCL    SE p-value
Difference in end-of-study mean: (MED, AUGMENT) vs. (BMOD, AUGMENT)     -1.0558 -1.6711 -0.4406 0.314 0.00077 ***
Difference in end-of-study mean: (MED, AUGMENT) vs. (MED, INTENSIFY)     0.4807 -0.1198  1.0811 0.306 0.11667
Difference in end-of-study mean: (MED, AUGMENT) vs. (BMOD, INTENSIFY)   -0.1471 -0.8456  0.5514 0.356 0.67979
Difference in end-of-study mean: (BMOD, AUGMENT) vs. (MED, INTENSIFY)    1.5365  0.8252  2.2478 0.363 < 1e-04 ***
Difference in end-of-study mean: (BMOD, AUGMENT) vs. (BMOD, INTENSIFY)   0.9087  0.2783  1.5391 0.322 0.00472 **
Difference in end-of-study mean: (MED, INTENSIFY) vs. (BMOD, INTENSIFY) -0.6278 -1.4123  0.1568 0.400 0.11681
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
```

- V3_code_along_output1.JPG [Expected output of V3_code_along.R]

```
> print(c1)
                                  Int severity_c race_c priormed_c odd A1 A1:odd
Mean Y under bmod, ODD true         1          0      0          0   1  1      1
Mean Y under med, ODD true          1          0      0          0   1 -1     -1
Mean diff (bmod-med) for ODD true   0          0      0          0   0  2      2
Mean Y under bmod, ODD false        1          0      0          0   0  1      0
Mean Y under med, ODD false         1          0      0          0   0 -1      0
Mean diff (bmod-med) for ODD false  0          0      0          0   0  2      0
```

- V3_code_along_output2.JPG [Expected output of V3_code_along.R]

```
> print(q1)
$stg1coeff
         severity_c     race_c priormed_c         odd          A1     A1:odd
   3.84923   -0.10908    0.71961   -0.16180   -0.67704    0.39047    0.07493

$stg2coeff
                  odd_c   severity_c       race_c   priormed_c           A1    adherence           A2       A2:A1 A2:adherence
     2.35289     -0.62394     -0.04958      0.26271     -0.57735      0.42489      0.92724     -1.17255     -0.15232      1.73313

$ci1
                                    est     low   upp
Mean Y under bmod, ODD true        3.6376 3.14405 4.139
Mean Y under med, ODD true         2.7068 2.21034 3.198
Mean diff (bmod-med) for ODD true  0.9308 0.25073 1.552
Mean Y under bmod, ODD false       4.2397 3.75974 4.661
Mean Y under med, ODD false        3.4588 2.91018 4.054
Mean diff (bmod-med) for ODD false 0.7809 0.08068 1.366

$ci2
NULL
```

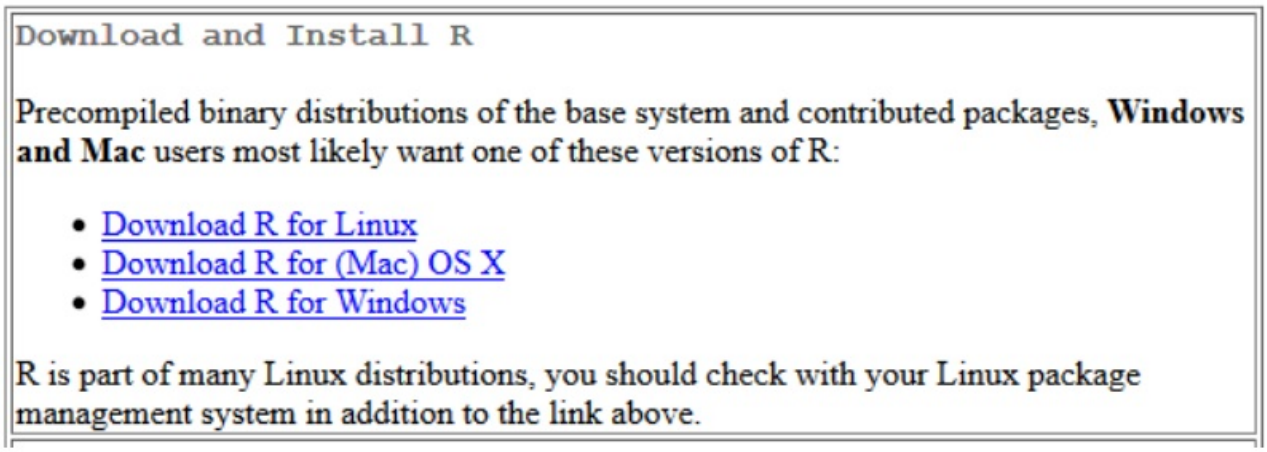
- If you are not able to generate these output, do not worry! We are happy to help.

We will have office hours at the following times:

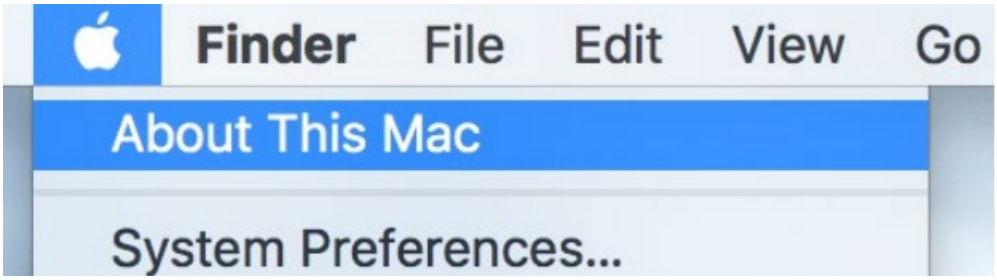
- Monday, May 8th from 10-11 AM ET (zoom link: **https://umich.zoom.us/j/95884651968**)
- Tuesday, May 9th from 10-11 AM ET (zoom link: **https://umich.zoom.us/j/94733704798**)

Instructions for Installing R and R Studio

1. Download and Install R. If R is not installed on your computer, go to **https://cran.rstudio.com** and click the appropriate download link for your operating system.



   - **a.** For Mac, first determine which version of macOS you're running. To do this, click the Apple logo in the top left of the screen, then "About this Mac"



- If the version of macOS is 10.13 or higher, for Intel Macs, download the latest release of R here:

R-4.2.2.pkg (notarized and signed)
SHA1-hash: 99b8d184f855e630ac950ca4e62cb7fc9a1f7b2e
(ca. 87MB) for Intel Macs

R 4.2.2 binary for macOS 10.13 (**High Sierra**) and higher, **Intel 64-bit** (older Macs) build, signed and notarized package.
Contains R 4.2.2 framework, R.app GUI 1.79 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.

- If the version of macOS is 11 or higher, for M1 and higher Macs, download the latest release of R here:

R-4.2.2-arm64.pkg (notarized and signed)
SHA1-hash: c3bb657ca6912b9b98e254f63434a365da26848f
(ca. 86MB) for M1 and higher Macs only!

R 4.2.2 binary for macOS 11 (**Big Sur**) and higher, **Apple silicon arm64** build, signed and notarized package.
Contains R 4.2.2 framework, R.app GUI 1.79 for Apple silicon Macs (M1 and higher), Tcl/Tk 8.6.12 X11 libraries and Texinfo 6.8.
Important: this version does NOT work on older Intel-based Macs - see below for Intel version.

- If the version of macOS is 10.11 or lower, download a legacy release of R:

`Binaries for legacy OS X systems:`

R-3.6.3.nn.pkg (signed)
SHA1-hash: c462c9b1f9b45d778f05b8d9aa25a9123b3557c4
(ca. 77MB)

R 3.6.3 binary for OS X 10.11 (El Capitan) and higher, signed package. Contains R 3.6.3 framework, R.app GUI 1.70 in 64-bit for Intel Macs, Tcl/Tk 8.6.6 X11 libraries and Texinfo 5.2. 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.

R-3.3.3.pkg
MD5-hash: 893ba010f303e666e19f86e4800f1fbf
SHA1-hash: 5ae71b000b15805f95f38c08c45972d51ce3d027
(ca. 71MB)

R 3.3.3 binary for Mac OS X 10.9 (Mavericks) and higher, signed package. Contains R 3.3.3 framework, R.app GUI 1.69 in 64-bit for Intel Macs, Tcl/Tk 8.6.0 X11 libraries and Texinfo 5.2. The latter two components are optional and can be ommitted when choosing "custom install", it is only needed if you want to use the `tcltk` R package or build package documentation from sources.

- Once downloaded, open the .pkg file and follow the instructions to install.
- **b**. For Windows, click “base”, then “Download R 4.X.X for Windows”. Once the download is complete, run the setup to install R as you would like any other program.

R for Windows

Subdirectories:

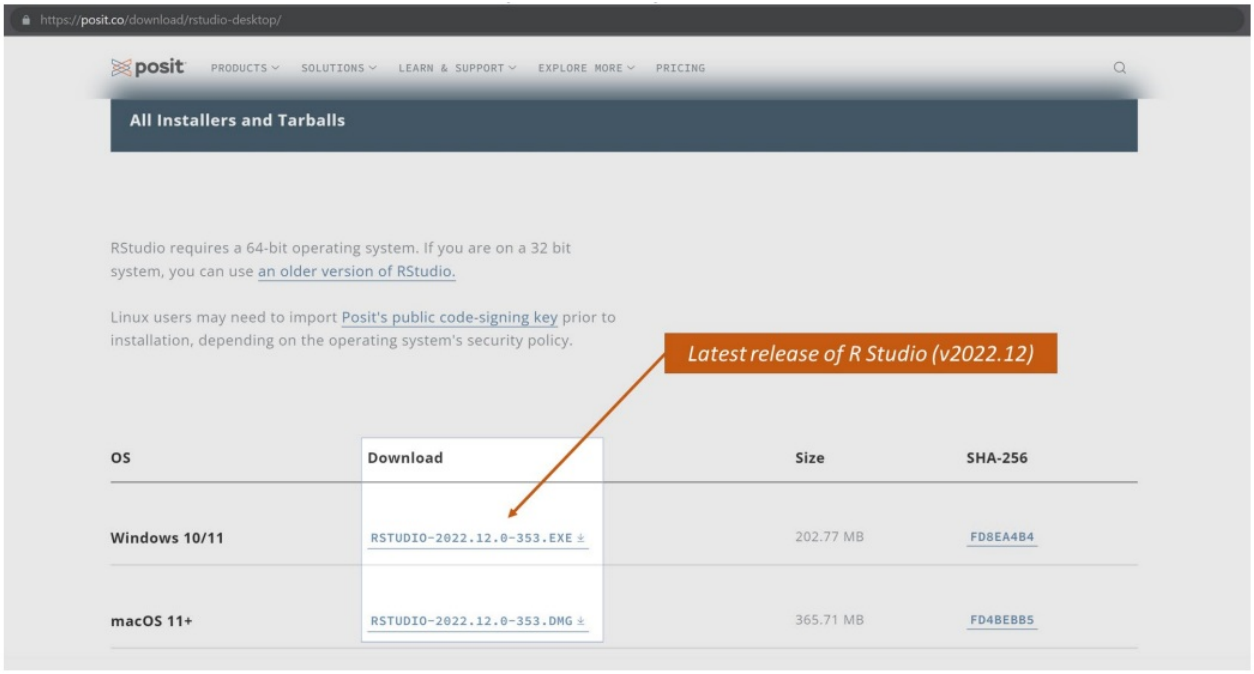
base Binaries for base distribution. This is what you want to **install R for the first time**.

Download R-4.2.2 for Windows (76 megabytes, 64 bit)

README on the Windows binary distribution

New features in this version

2. Download and Install RStudio. Go to **https://posit.co/download/rstudio-desktop/** and download the appropriate installer for your OS.
    - **a**. **NOTE:** R code for this workshop will be presented in RStudio



- **b.** You can install the software as usual.
- **Note:** If you're prompted to install git, XCode, or command line tools, just say "Not Now".

3. Open RStudio to confirm it's working.

Documents / Resources

	catie Code Along Materials Software [pdf] Instructions Code Along Materials Software, Along Materials Software, Materials Software, Software

References

- The Comprehensive R Archive Network
- RStudio Desktop - Posit
- Launch Meeting - Zoom
- Launch Meeting - Zoom
- User Manual