Class 29

DATA1220-55, Fall 2024

Sarah E. Grabinski

2024-11-11

Lab 02

- Open RStudio and start a new project in a folder called `lab02`

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- Go to File > New File > R Script. Save the file as `lab02.R`.

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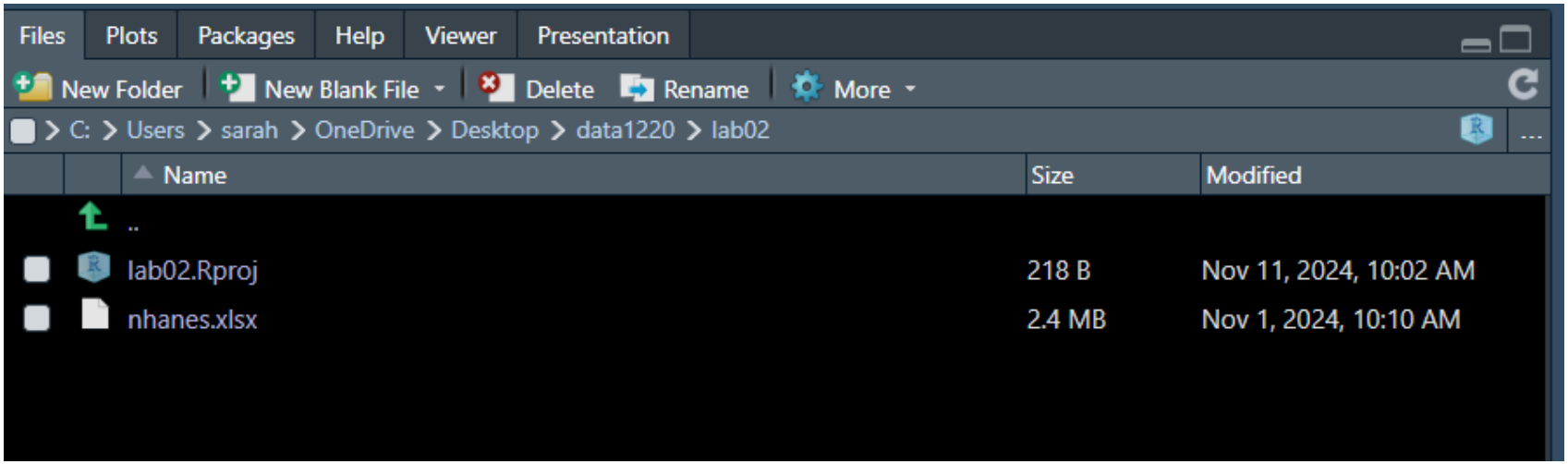
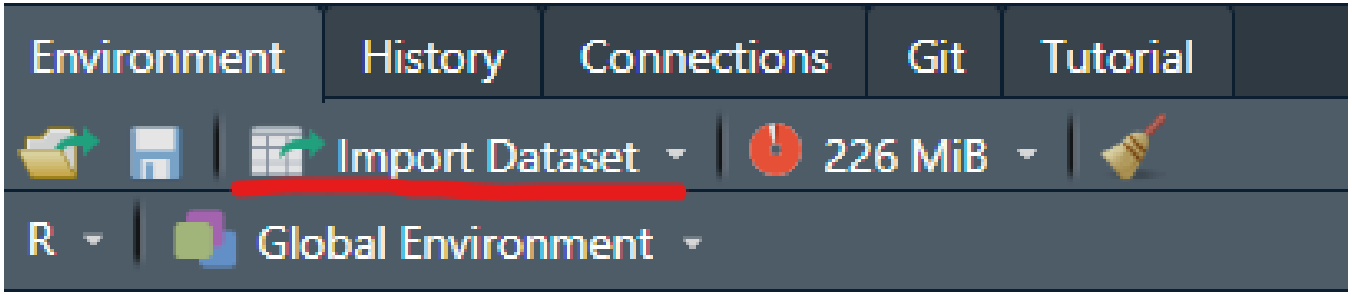
- Go to File > New File > R Script. Save the file as `lab02.R`.
- Download the file `nhanes.xlsx` from Canvas under Lab 1 or find it in your `lab01` project folder.

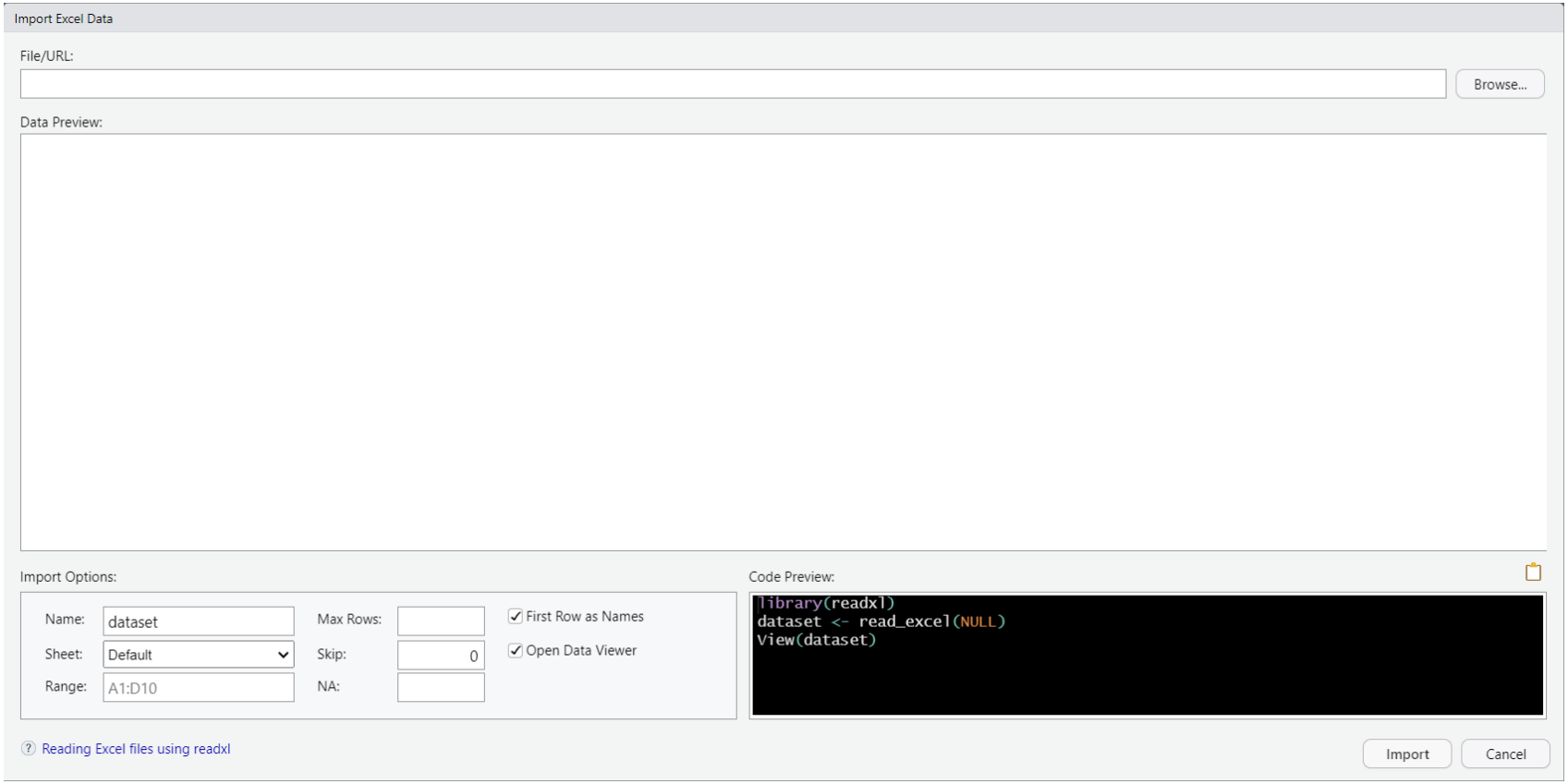
Files View


Files
Plots
Packages
Help
Viewer
Presentation
New Folder
New Blank File
Delete
Rename
More
C: > Users > sarah > OneDrive > Desktop > data1220 > lab02
Name
Size
Modified
..
lab02.Rproj
218 B
Nov 11, 2024, 10:02 AM
nhanes.xlsx
2.4 MB
Nov 1, 2024, 10:10 AM

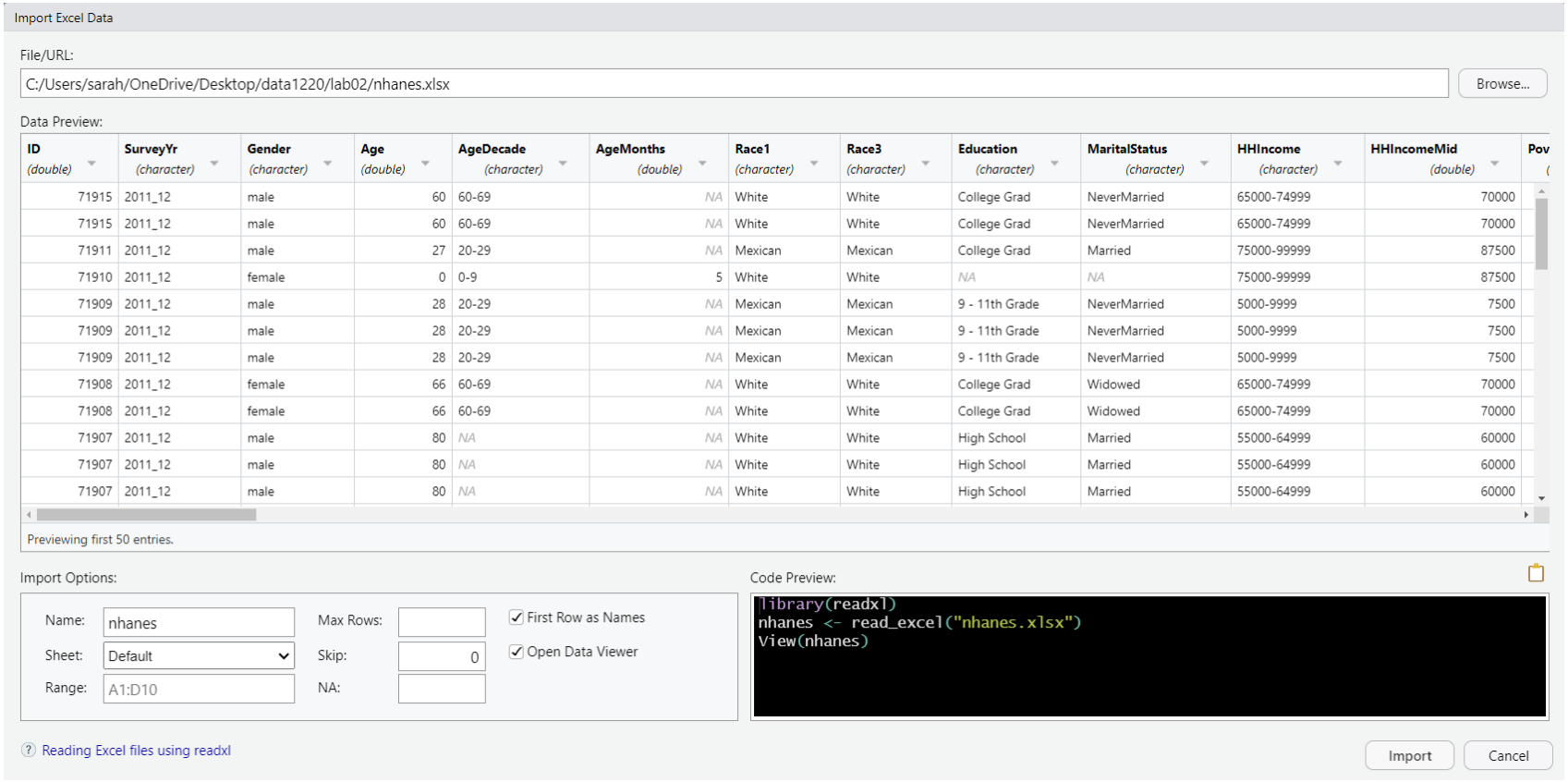
Importing a Dataset



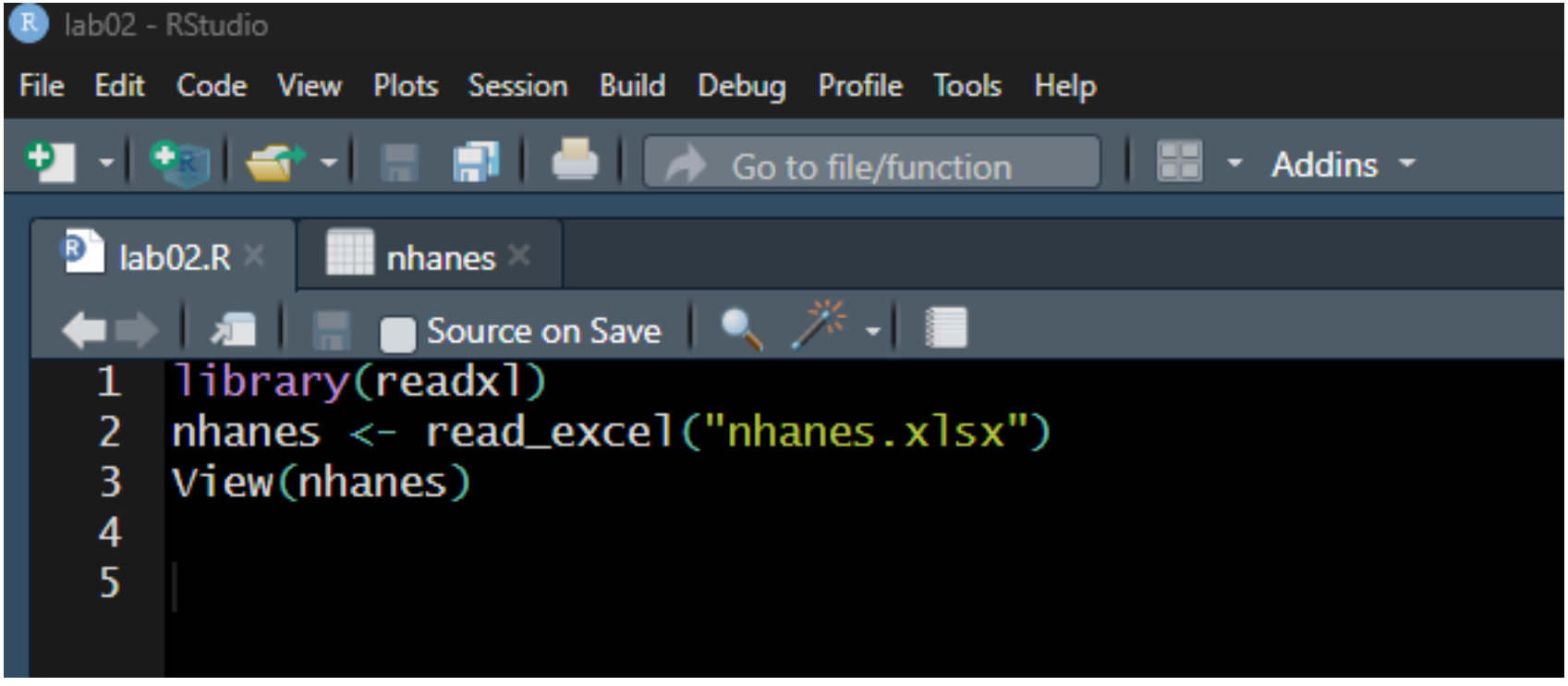
Importing Files - Excel



Importing Files - Excel



Importing Files - Excel (Code)



Load packages

- `readxl`: `read_xlsx()` function
- `Hmisc`: `describe()` function
- `dplyr`: `summarize()` and `select()` functions

Codebook

- `Gender`: male or female
- `AlcoholYear`: count of the number of days in a year the subject drinks alcohol

Research Question

How many days in a year do men and women drink on average?

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- Confidence intervals for population means $\bar{x}_m \pm T^*_{\text{df}} \times \text{SE}_{\bar{x}_m}$ and $\bar{x}_f \pm T^*_{\text{df}} \times \text{SE}_{\bar{x}_f}$

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- P-value for test statistic t from Student's t distribution with degrees of freedom $\mathsf{df} = \min\left(n_m, n_f\right) - 1$

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- Test statistic Z for observed $\hat{p}_m - \hat{p}_f$ under null distribution $\hat{p}_m - \hat{p}_f \sim \text{N}\left(0, \text{SE}_{\hat{p}_m - \hat{p}_f}\right)$

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- Test statistic Z for observed $\hat{p}_m - \hat{p}_f$ under null distribution $\hat{p}_m - \hat{p}_f \sim \text{N}\left(0, \text{SE}_{\hat{p}_m - \hat{p}_f}\right)$
- P-value for test statistic Z from the standard normal Z distribution