BIOSTATISTICS SOFTWARE RESOURCE GUIDE

Center for Innovative Design & Analysis (CIDA)

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Topics covered

1. R & RStudio
2. Statistical methods in R
3. Tableau
4. Power BI
5. Other statistics resources

R

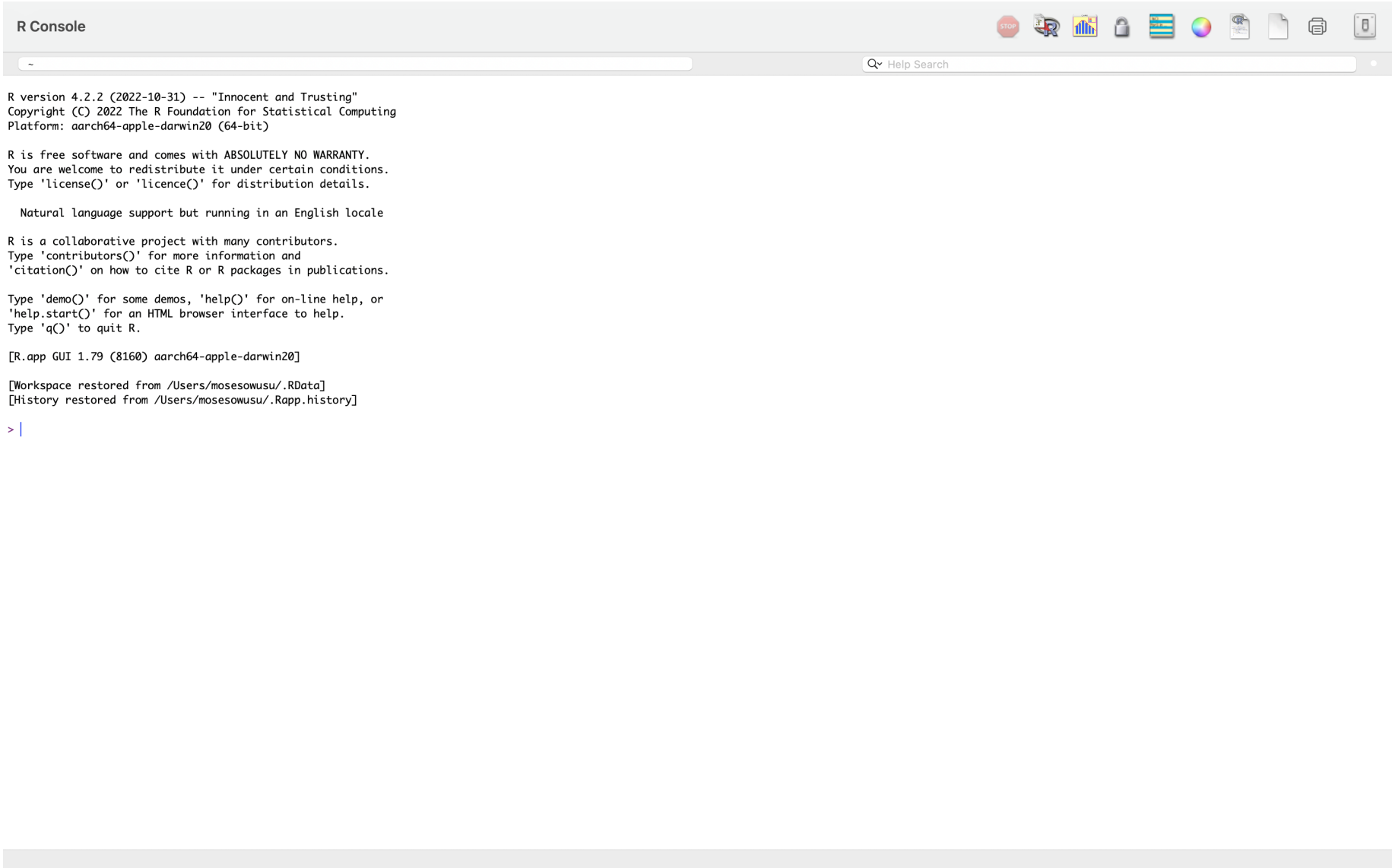
- R is a free, open source software used for statistical analysis. It runs on different platforms. Learn more about R here: The R project for statistical computing)

- A new version of R is released every few months. You do not have to download every version but it is good practice to update at least yearly.

- Download the latest version (use suggested default settings):

  - For Windows
  - For MacOS with Apple silicon
  - For Intel-based Macs

R interface

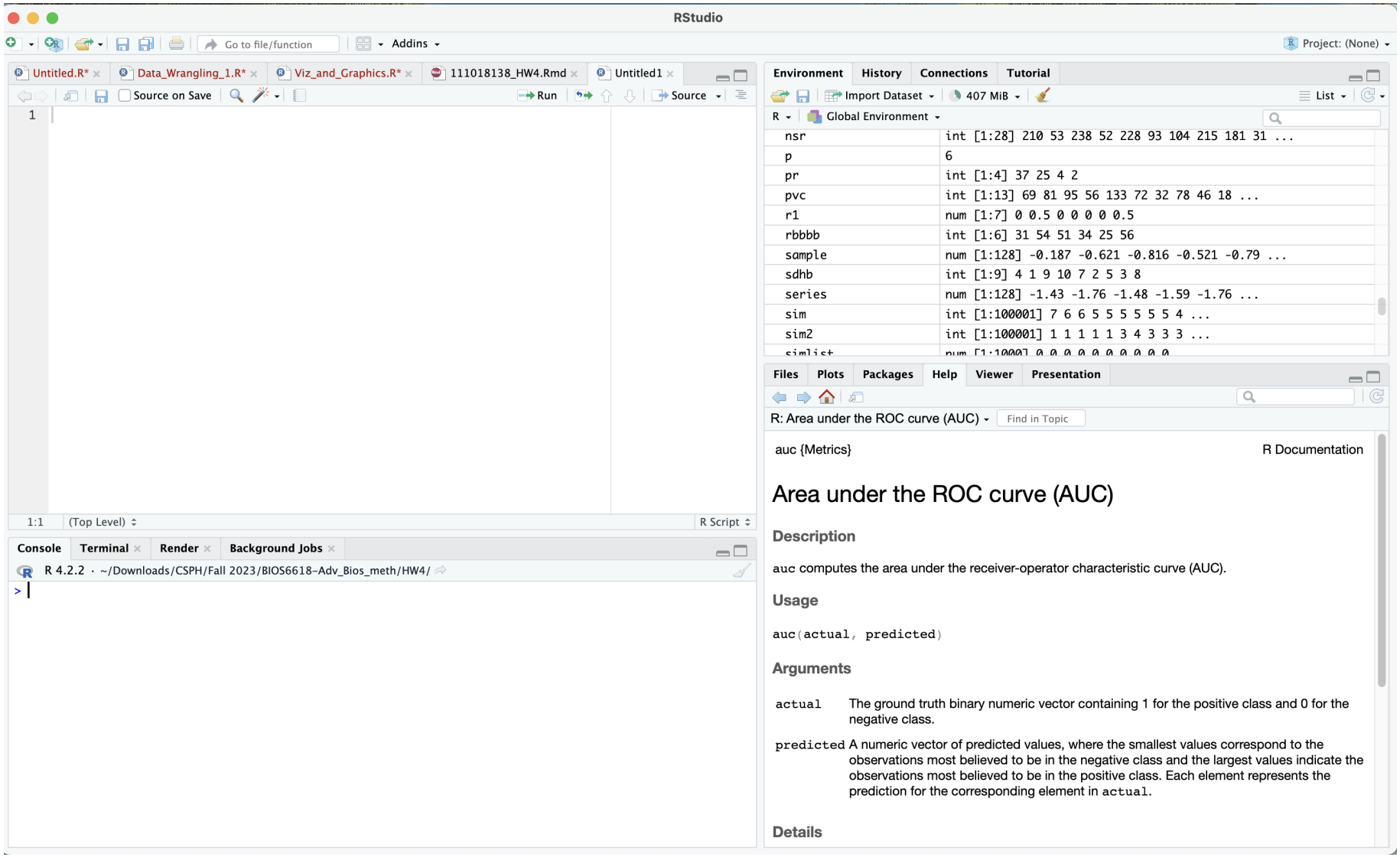


R interface

RStudio

- R-studio is an integrated development environment (IDE) for R.
- Compared to the R interface (previous slide), which mimics the command line prompt, RStudio offers a more user-friendly interface (see screenshot on next slide).
- We recommend you pin RStudio to your taskbar for easy access.
- Download and install R **before** you download RStudio.
- Download RStudio (use suggested default settings):
  - For Windows
  - For MacOS

RStudio interface



R-studio interface

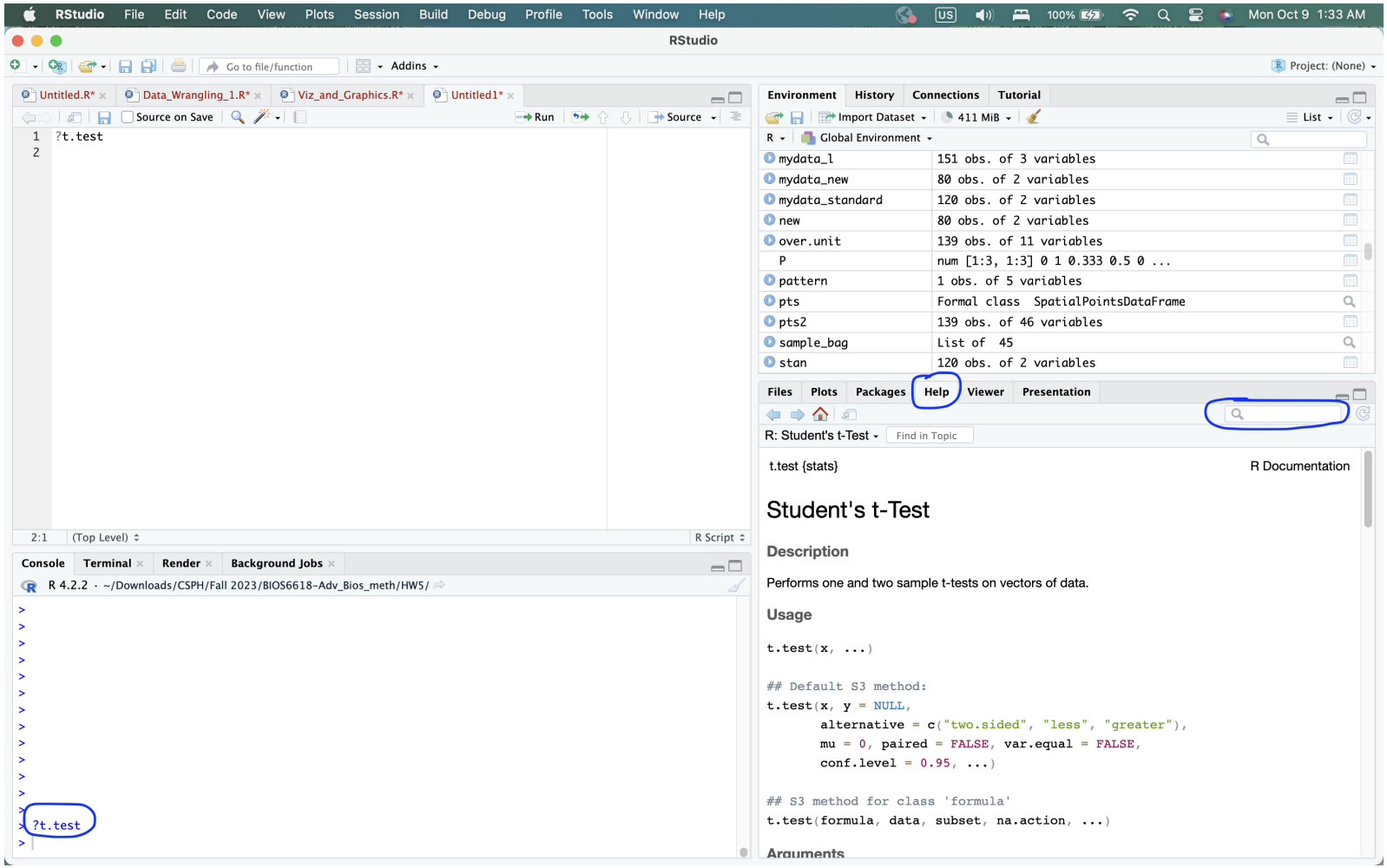
Getting started with R & RStudio

We recommend the following freely available resources for getting started with R and RStudio:

- Grolemund, G. *Hands-on programming with R: write your own functions and simulations.Oreilly Media, Inc., 2014*.
- Wickham, H. & Grolemund, G. *R for Data Science*
- Stack overflow R questions

R quick help

- Type "?[function name]" in the console or in a script for help.
- Use exact function names in the search box.



R help

Regression analysis in R

- Geeksforgeeks: Regression analysis in R
- R documentation: Regression Analysis
- Scribbr: Simple linear regression
- Datacamp: R for Regression

T tests in R

- Geeksforgeeks: T test approach in R
- R documentation: T tests
- Data flair: T tests in R
- Datacamp: T test in R

Power calculations in R

- Power analysis in R
- R documentation: Statistical power & sample size calculations
- Calculating the power of a test
- Datacamp: Power analysis

Tableau

- Tableau is a popular analytic software known for creating graphs, maps, charts and other visualizations using data.
- Tableau offers different platforms & services, including:
  - Tableau Desktop
  - Tableau Server
  - Tableau Cloud
- Download a 14-day trial version of Tableau Desktop
- Students can get a 1-year extended trial using their CU Anschutz credentials. See the Tableau for students FAQ.
- Check the system specifications for using Tableau on your machine.

Tableau tutorials & resources

- Tableau help
- Tableau community
- Edureka Tableau full course
- How-to-videos on the basics : Tableau learn

Power BI

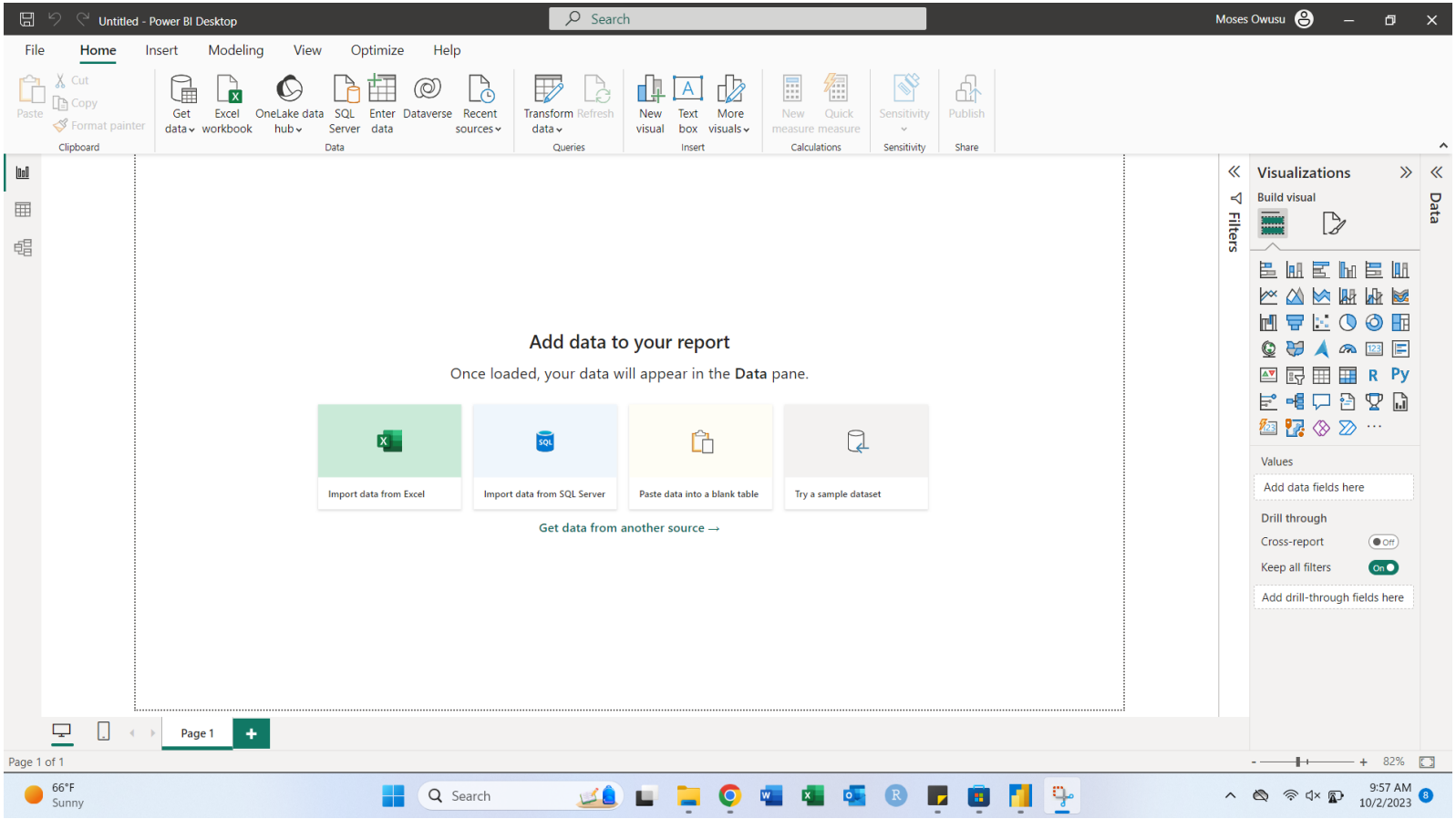
- Power BI is a data visualization tool offered by Microsoft. It is free to download from the Microsoft store but is only available for Windows.

- Power BI also offers paid license options (Power BI Pro, Power BI Premium Per User (PPU)) as well as a paid subscription option (Power BI Premium). The free desktop version (Power BI Desktop) should be sufficient for basic data visualization needs.

- Check the system specifications for using Power BI on your machine.

- Installation is straightforward if you have a Microsoft Office 365 account and are signed in.

Power BI interface



Power BI interface

Power BI resources

- Power BI community
- Microsoft Power BI tutorials

Other helpful statistics resources

- UCLA: What statistical test should I use? (SAS, Stata, SPSS, R)
- Biostats4You: Statistical resources for non-statisticians
- Biostats4You: Topics
- Biostats4You: Sample size calculators
- LISA short courses (R, SAS, JMP, Python)