

CHAPTER 3

ORGANIZING, DISPLAYING, AND PRESENTING DATA

**LET'S INTRODUCE
SOME TERMS**

UNIVARIATE VS. BIVARIATE

**Univariate Statistics involves
only **one** variable.**



**Bivariate Statistics involves
only **two** variables.**



EXAMPLES OF A UNIVARIATE STATISTIC

Frequency distribution

EXAMPLES OF A UNIVARIATE STATISTIC

Proportion (p)

$$p = f/n$$

f = raw frequency

n = total sample size

EXAMPLES OF A UNIVARIATE STATISTIC

Percentage (pct)

$$p = (f/n)100$$

f = raw frequency

n = total sample size

EXAMPLES OF A UNIVARIATE STATISTIC

Rate (r)

$$r = (f/N) \text{Multiplier}$$

f = frequency

N = population

Multiplier = determined by our population size (e.g., if your population is millions, you'd use 100,000)

LET'S DO SOME CALCULATIONS

UCR Index Offenses and Offence Rates, 2015

<i>Crime</i>	<i>f</i>	<i>Rate</i>	<i>Rate per 10,000</i>
Burglary	1,579,527		
Aggravated Assault	764,449		
Motor Vehicle Theft	707,758		

Note: US Population = 321,418,820

EXAMPLES OF A BIVARIATE STATISTICS

CONTINGENCY TABLES

A table showing overlap between two variables.

The top **Columns** and furthest left **Rows** are our variables.

	Dog	Cat	Total
Male	42	10	52
Female	9	39	48
Total	51	49	100

CONTINGENCY TABLES

A table showing overlap between two variables.

Palmer Penguins Count		
Species	female	male
Adelie	73	73
Chinstrap	34	34
Gentoo	58	61

RECAP

- Univariate and Bivariate Statistics
- Proportion, Percents, and Rates
- Contingency Tables

GRAPHS AND CHARTS

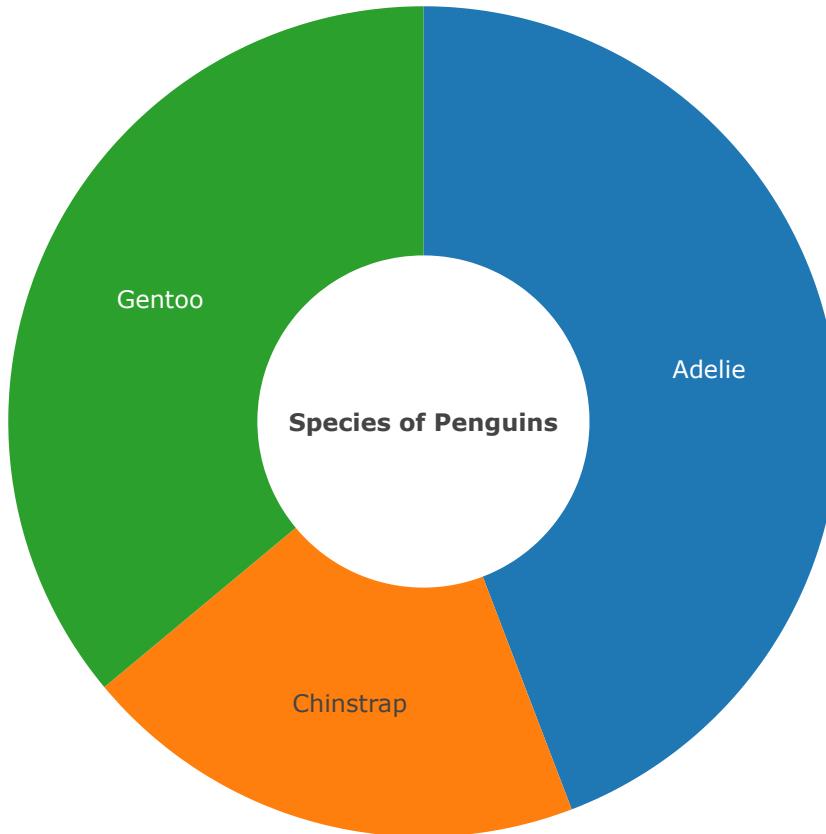
PIE CHARTS

Used for **categorical variables** with only a few groups.



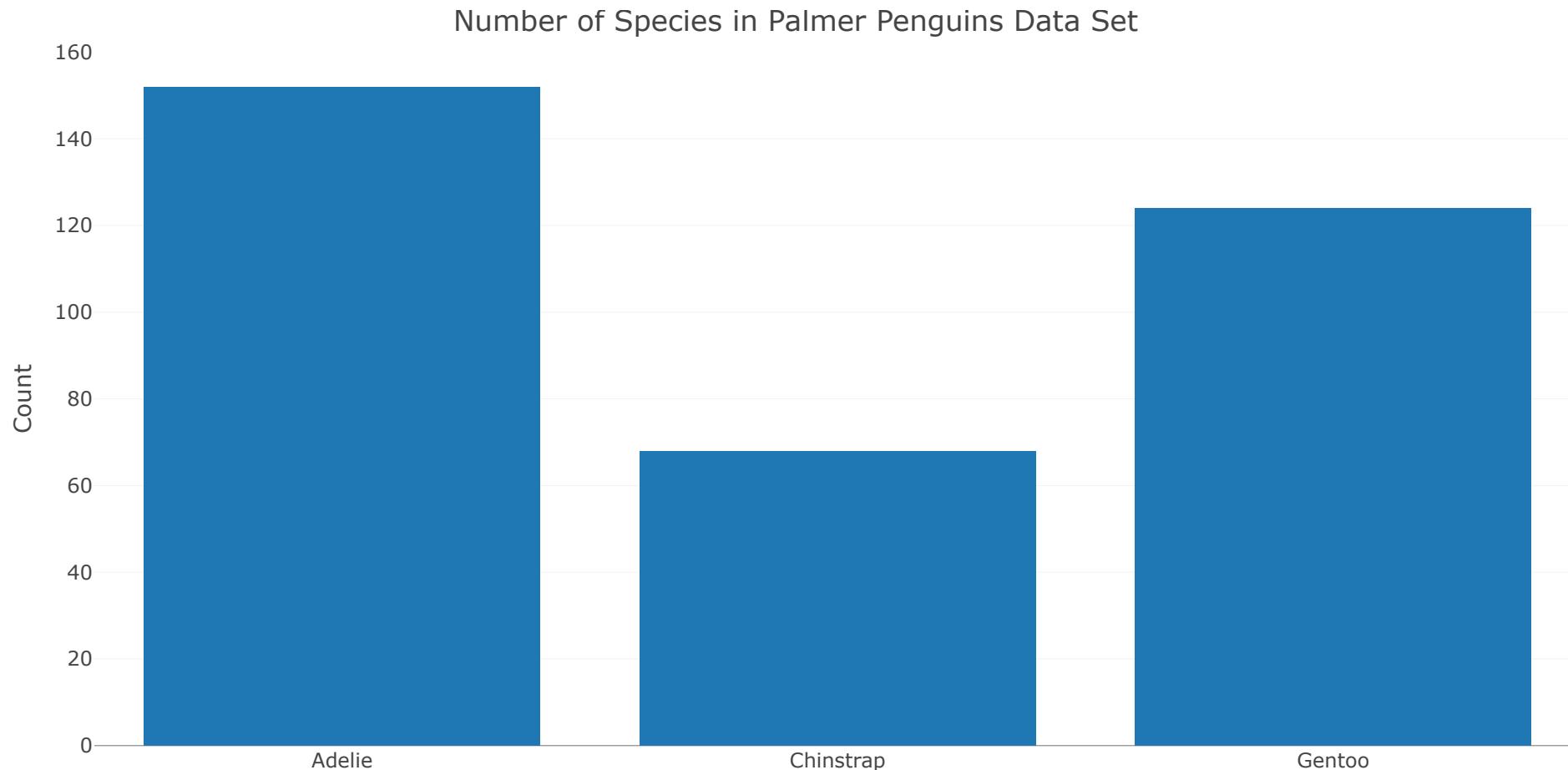
ADDING DATA TO PIES

Adding percentages to pie charts



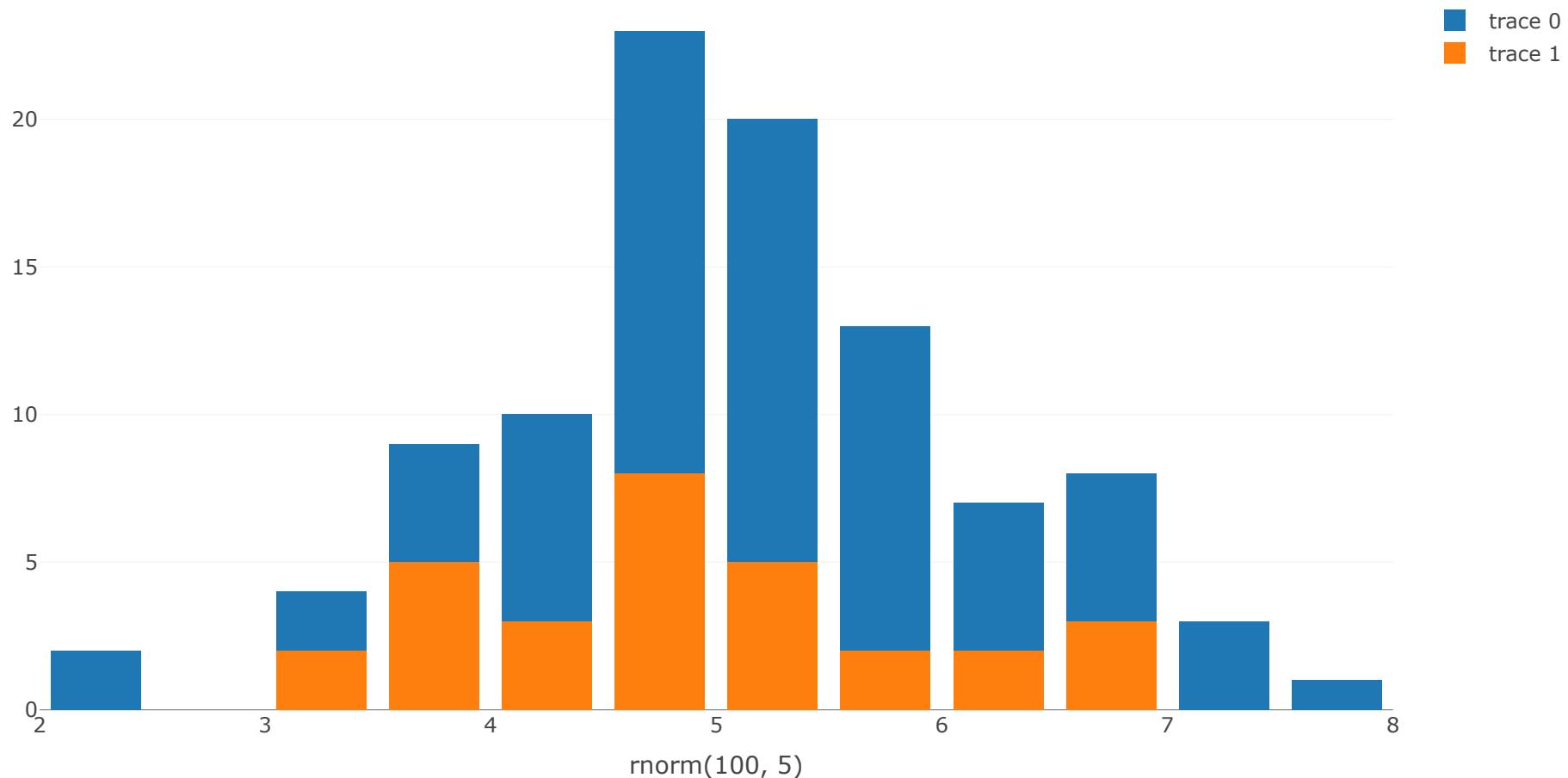
BAR GRAPHS

Used for **categorical** variables that have many or a few groups.



HISTOGRAMS

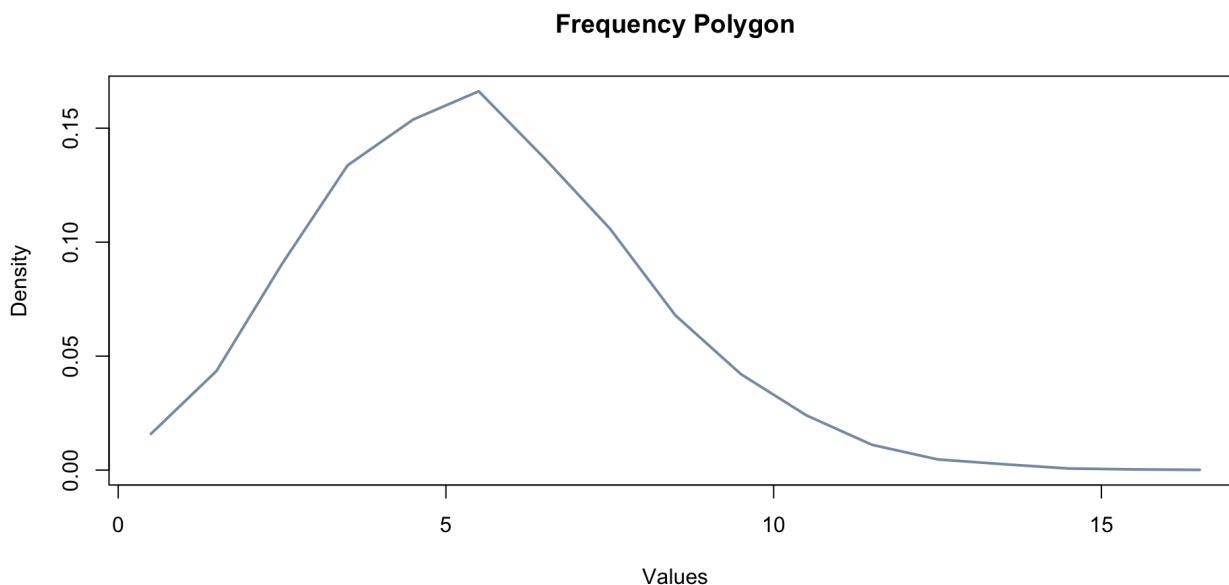
Used for **continuous** variables



FREQUENCY POLYGON

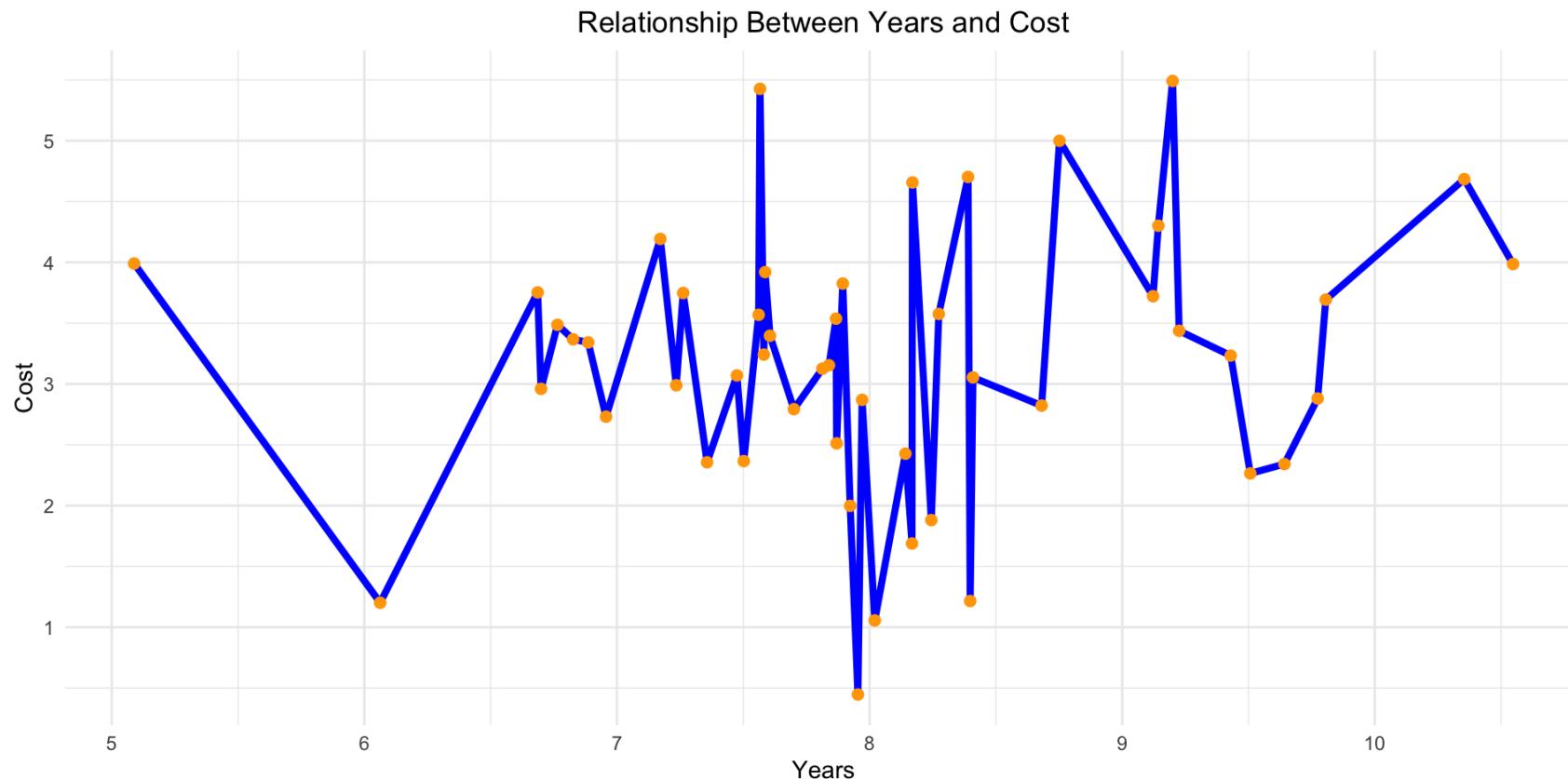
Used for **continuous** variables.

Alternative to a histogram.



LINE CHARTS

These are common for longitudinal variables or trends.



POP QUIZ

01:00

When using categorical graphs, what types of variables can we use?

- A.) Ratio and Ordinal
- B.) Interval and Nominal
- C.) Nominal and Ordinal
- D.) None of the above

SETTING UP POSIT CLOUD

- 1.) Head to Posit Cloud
- 2.) Click “Get Started”
- 3.) Under “Cloud Free” click Learn more
- 4.) Click Sign Up then fill out the form
- 5.) Verify your email

SETTING UP POSIT CLOUD

6.) Once you're in the posit Cloud, click "New Project"

The screenshot shows the Posit Cloud web application interface. The left sidebar contains links for 'Spaces', 'Learn', and 'Help'. The main content area has tabs for 'Content', 'Data', 'Members', 'Usage', and 'About'. The 'Content' tab is selected, showing a list of options: 'All Content' (selected), 'Your Content', 'Templates', 'Archive', and 'Trash'. A 'New Project' button is located in the top right of this section. Below these options, there's a message about project capacity and an 'Upgrade Account' button.

Posit Cloud

Nick NV

Spaces

- Your Workspace
- Nick NV
- + New Space

Learn

- Guide
- What's New
- Primers
- Cheat Sheets

Help

- Current System Status
- Posit Community

Content

All Content (0)

TYPE * ACCESS * SORT A Z

New Project

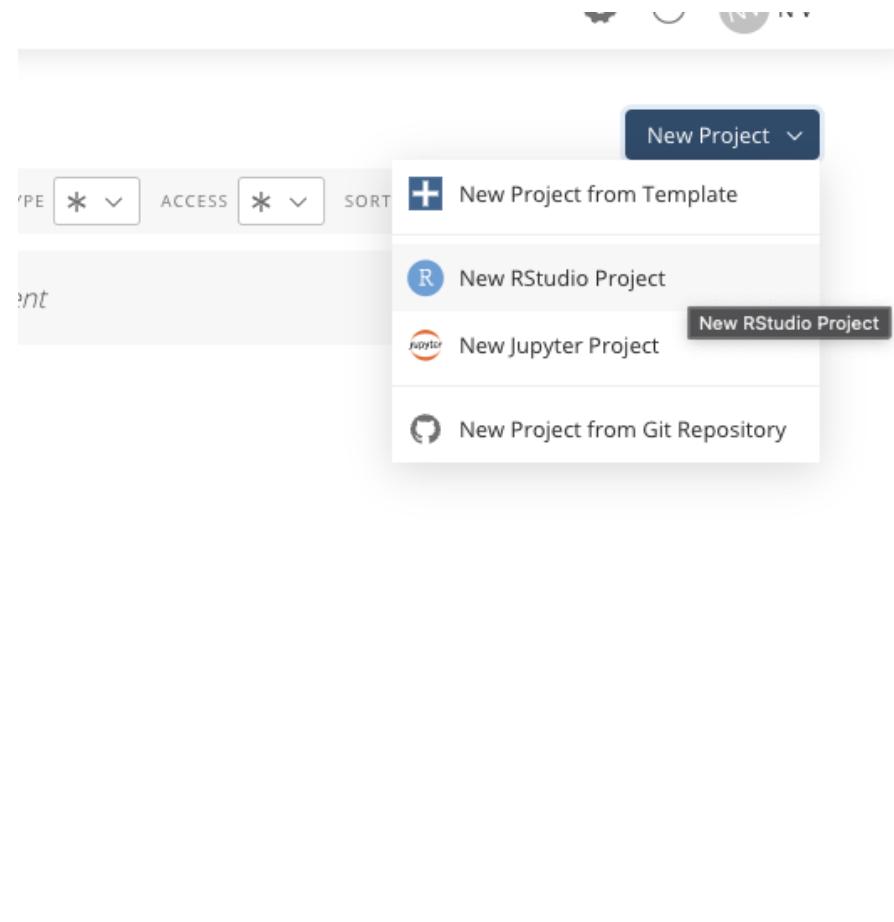
This space can have up to 10 more projects or outputs.

Archive or trash existing content to make room for additional content. If you need more capacity in this space, please upgrade your account.

Upgrade Account

SETTING UP POSIT CLOUD

7.) Then “New RStudio Project”



HAVE A GREAT DAY



Goodbye.

