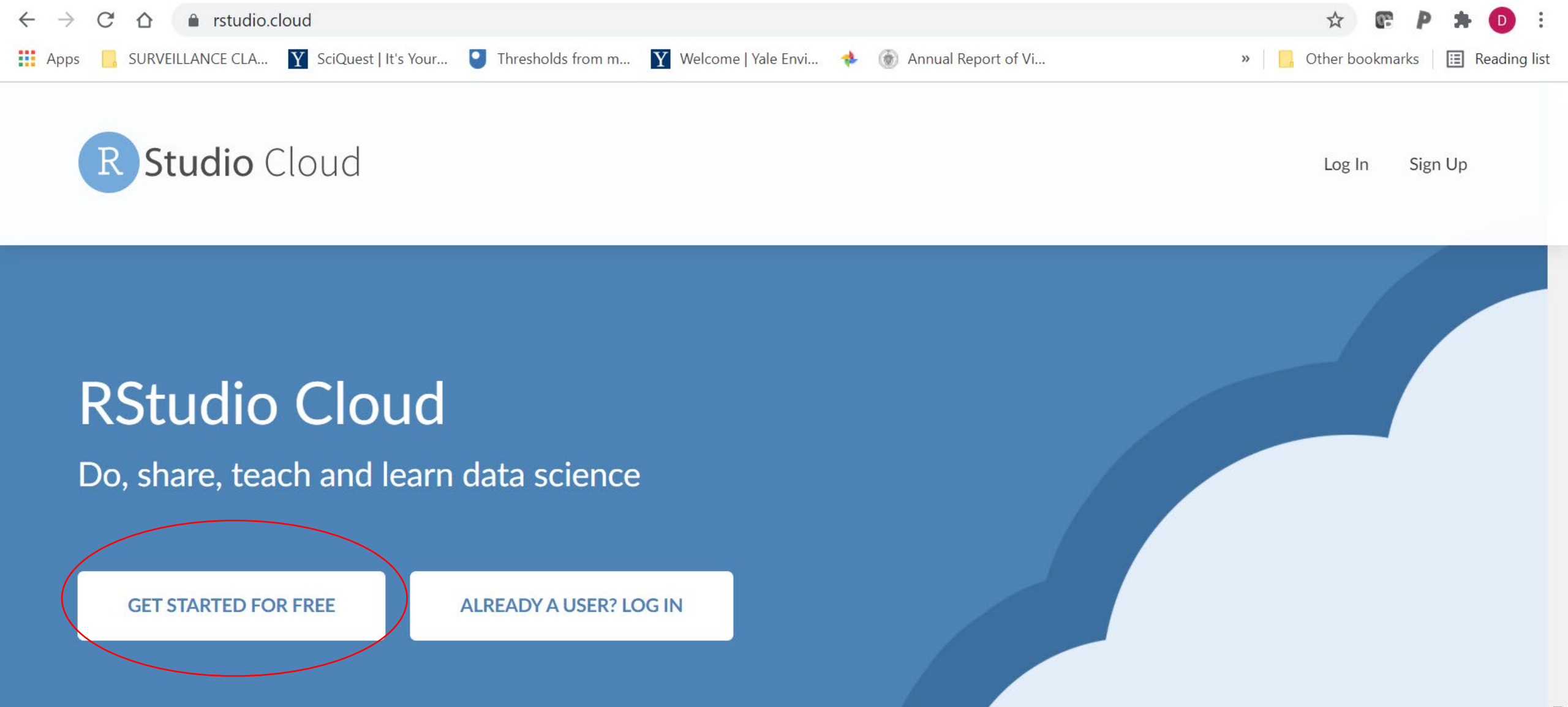
Getting started: Workshop on Vaccine Evaluation

1) Create a free account on the Rstudio Cloud: https://rstudio.cloud/
   ** Please do this even if you already have Rstudio installed on your computer!
2) Join the Workspace titled “Vaccine Evaluation Workshop” (by invitation)
3) Open the folder “Session 0 Intro to R”
4) Double click on the .rproj file
4) Open the “Intro to R English.Rmd” or “Intro to R Spanish.Rmd” file
5) Click the “Run document” button near the top of the screen
6) Follow the tutorial

1) Step 1: Create a free account on the Rstudio Cloud: https://rstudio.cloud/

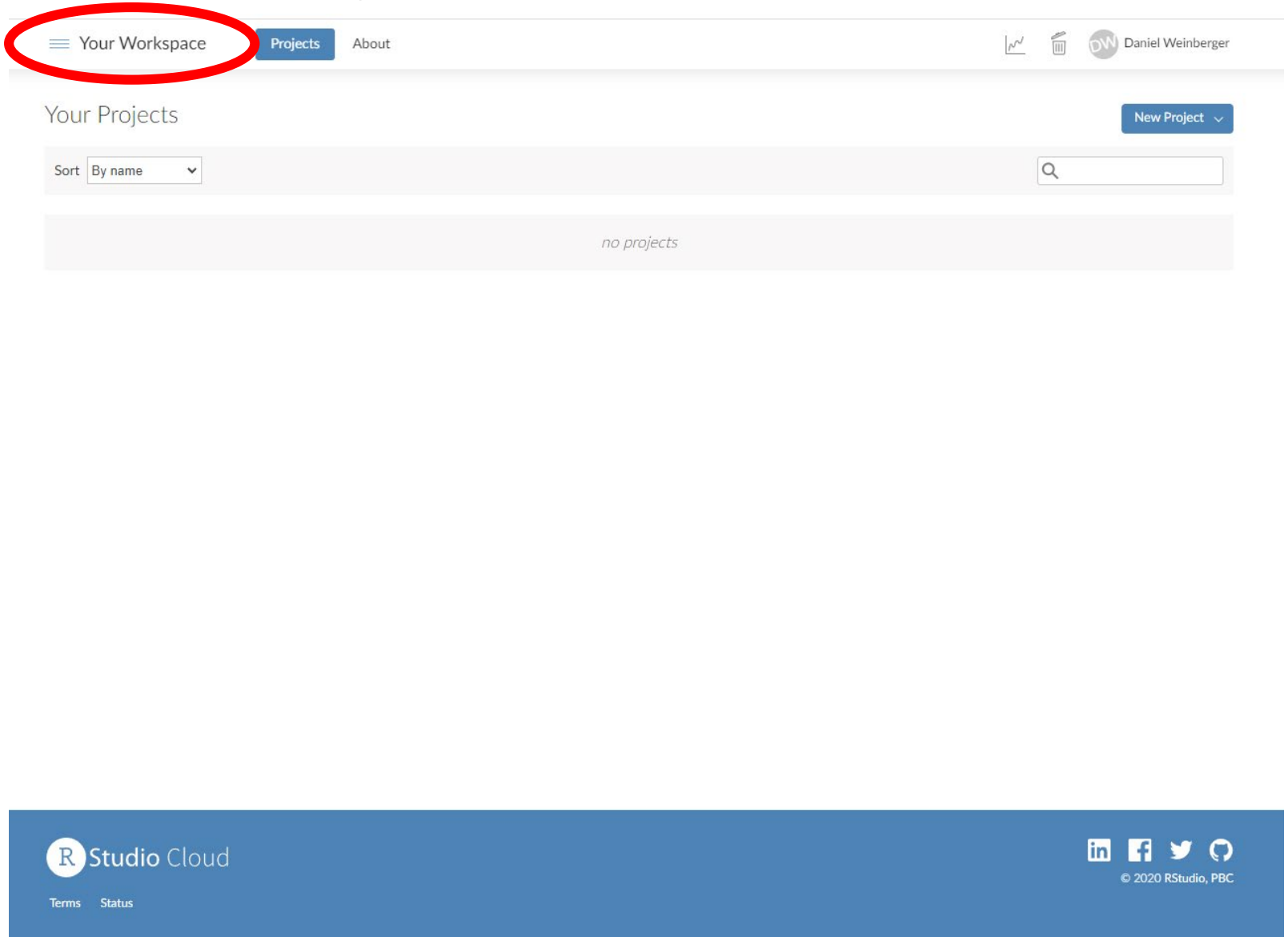


2) Join the Workspace titled “Vaccine Evaluation Workshop”

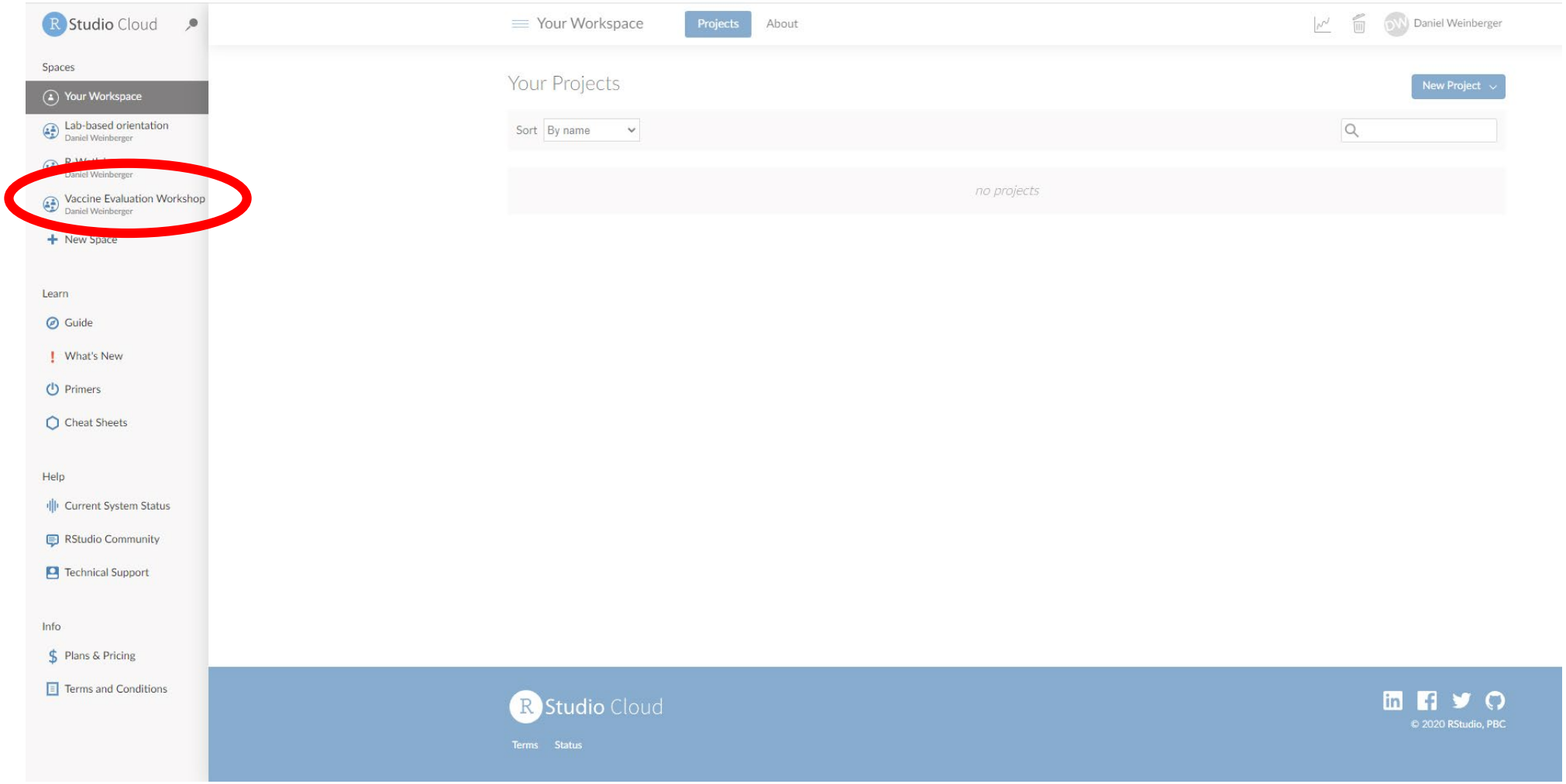
- Click this link to join the work space:

https://rstudio.cloud/spaces/154746/join?access_code=5dTVayuwfwSP1FV2N1iISxhL9smlamBtZhHqq%2BX4

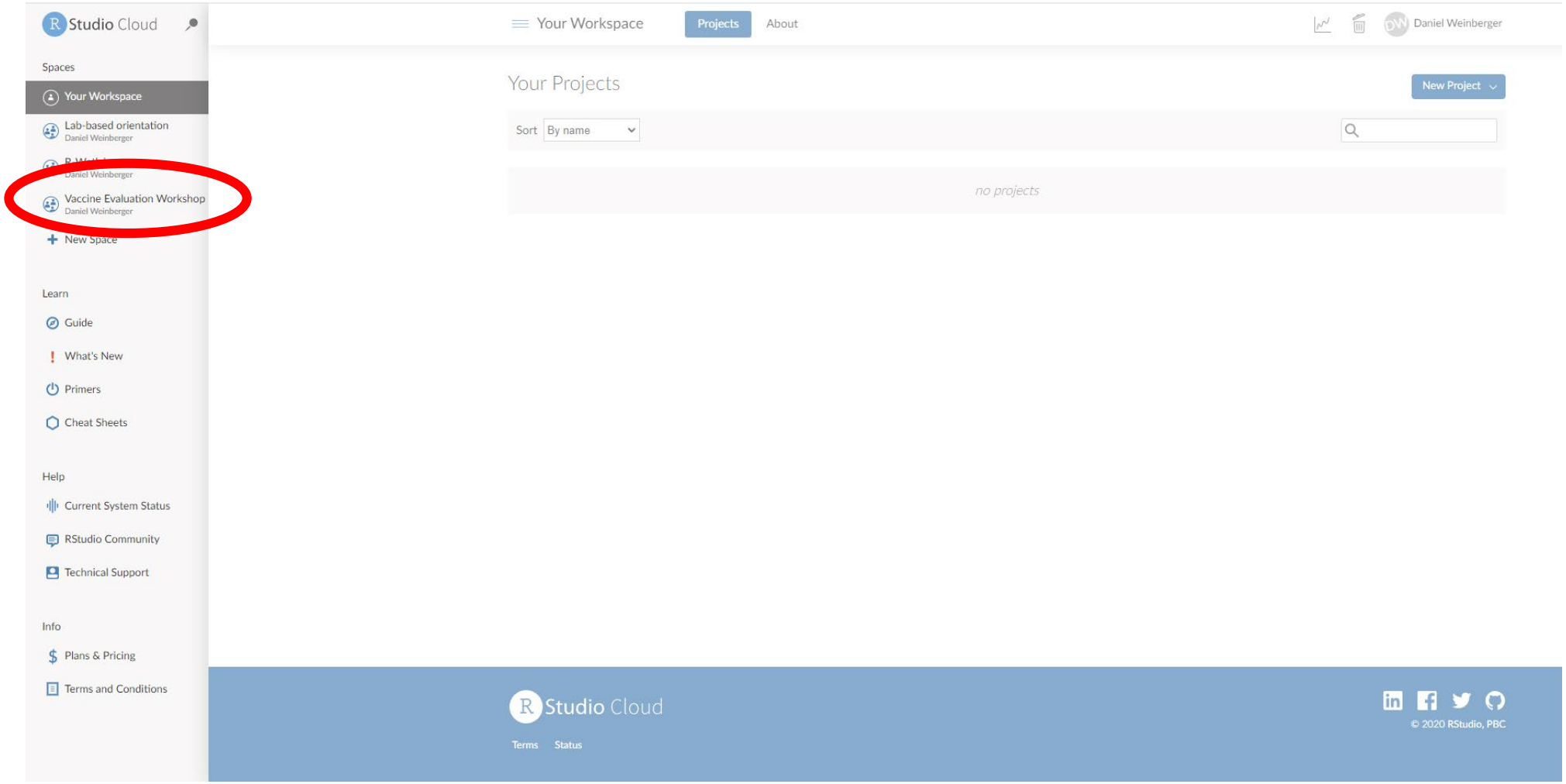
3) Access the space



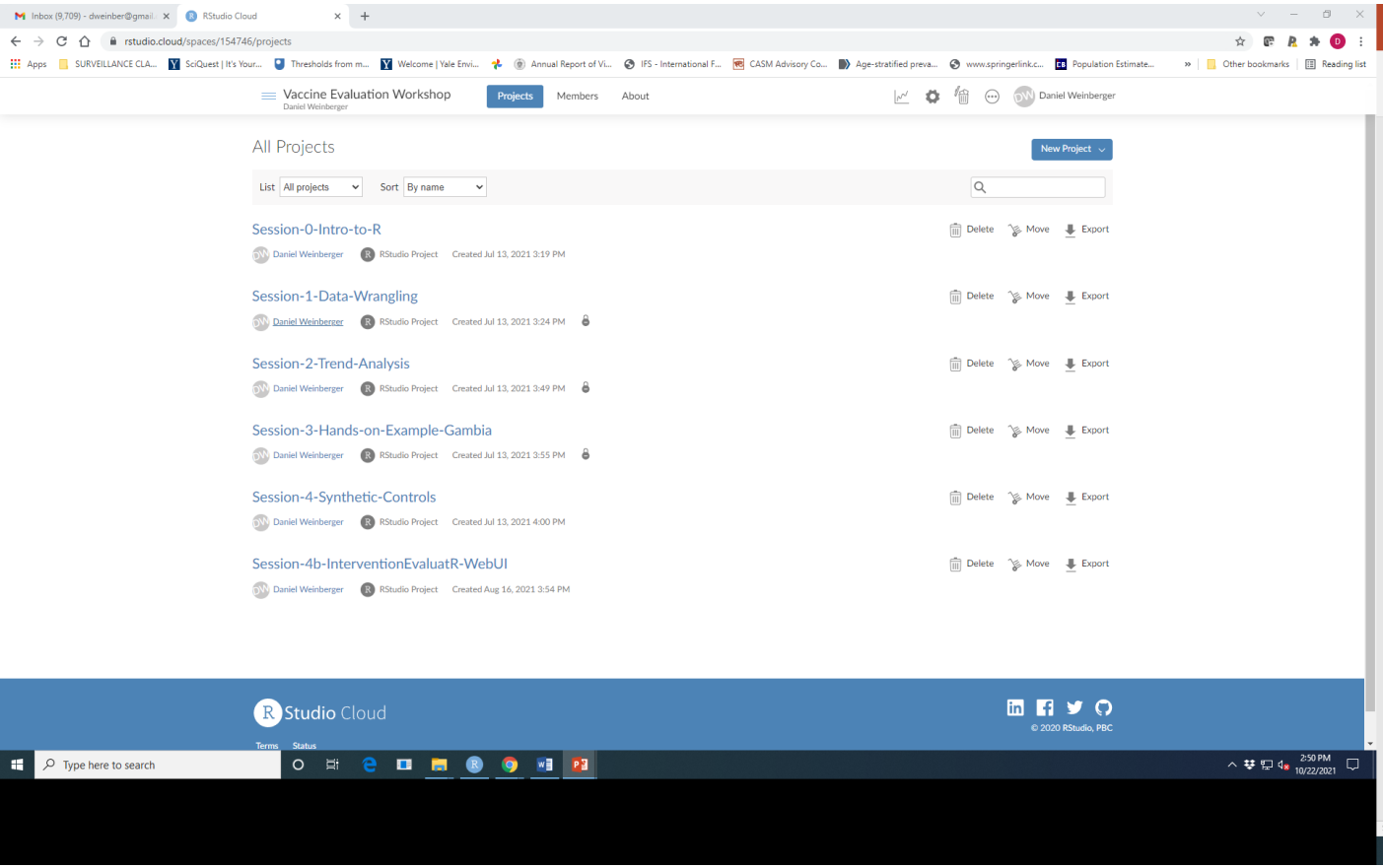
3) Access the space

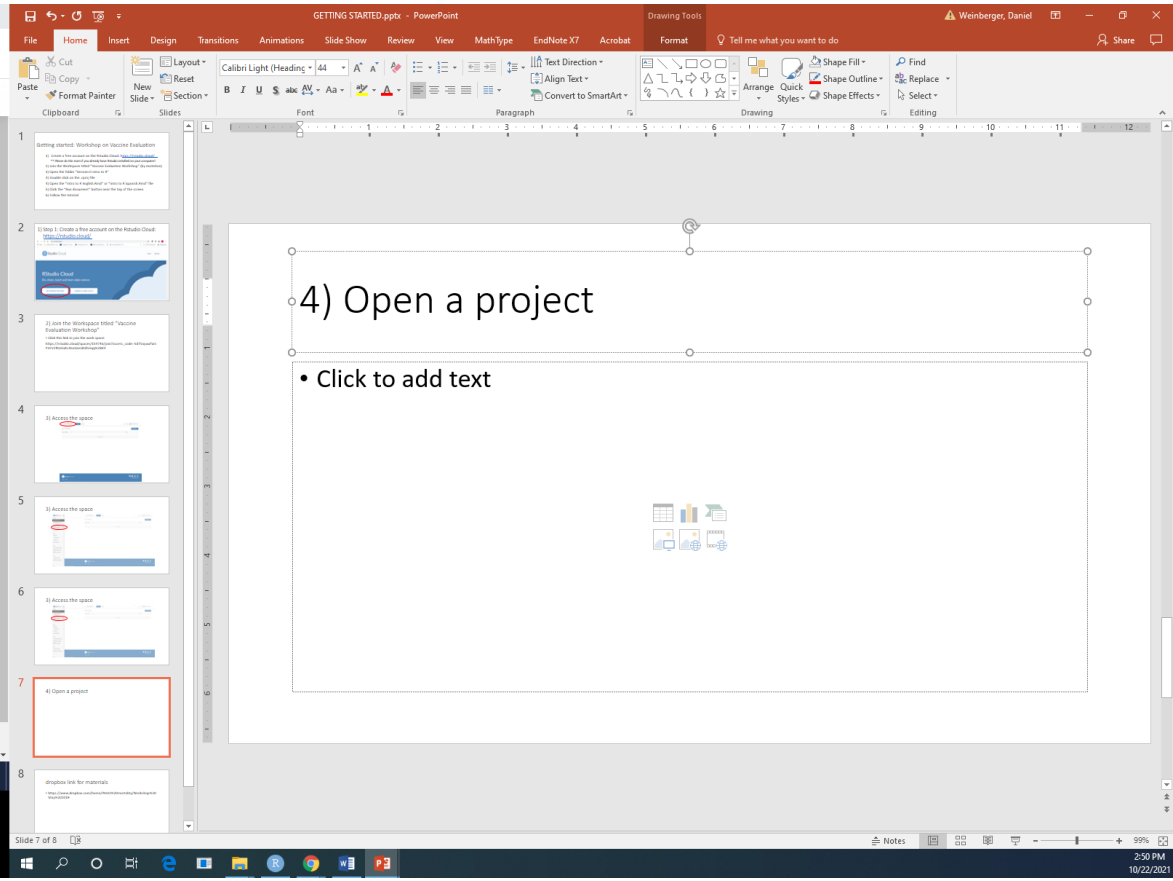


3) Access the space

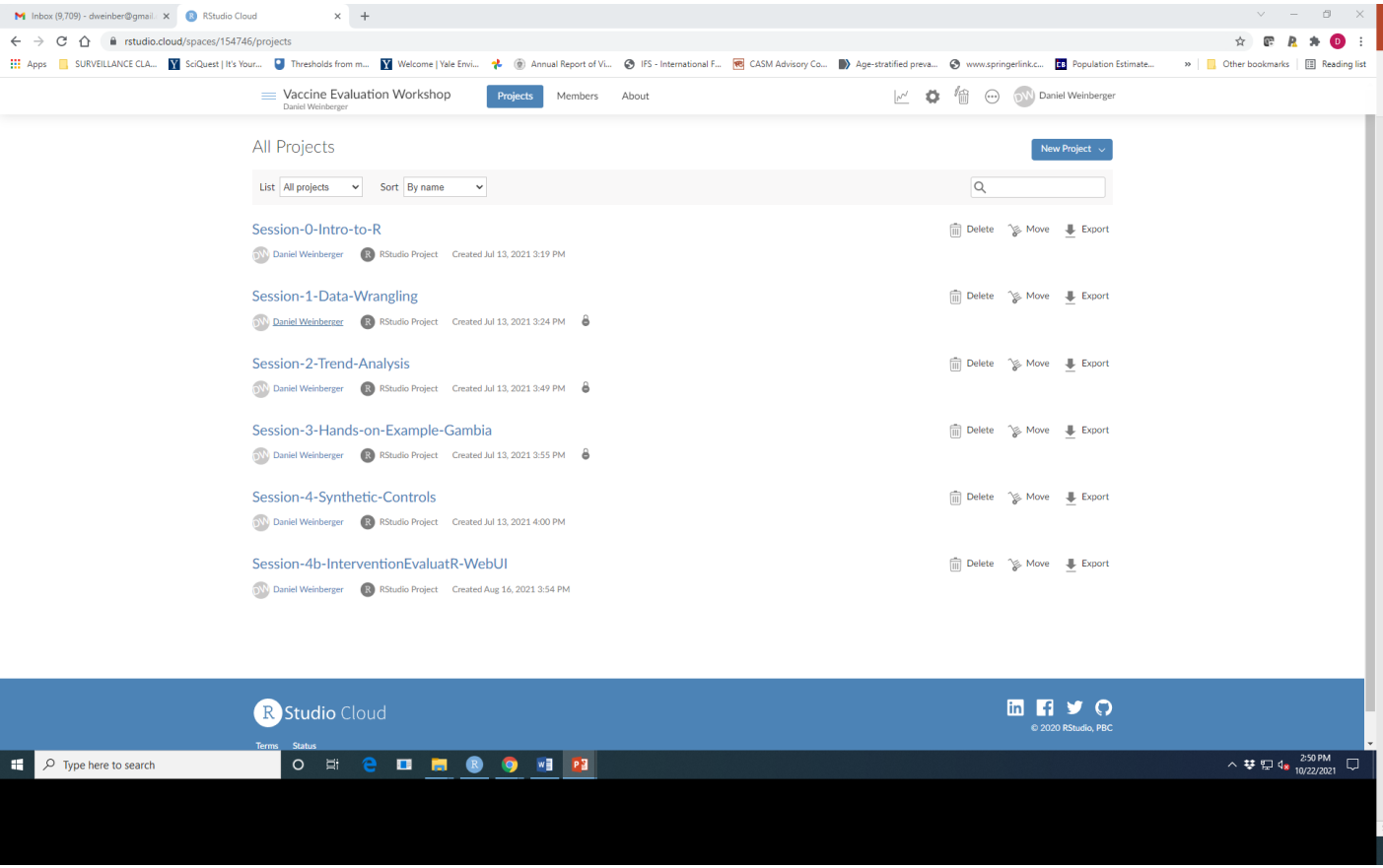


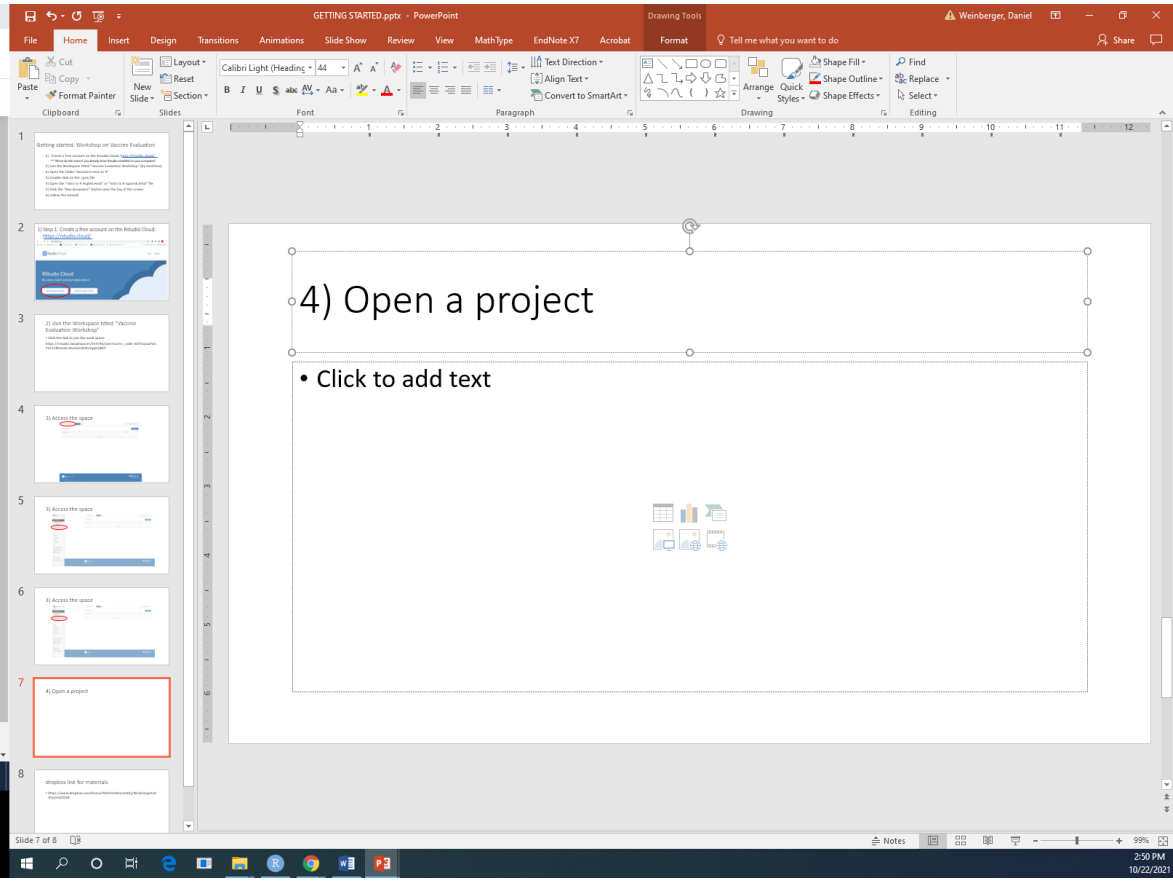
4) Open a project



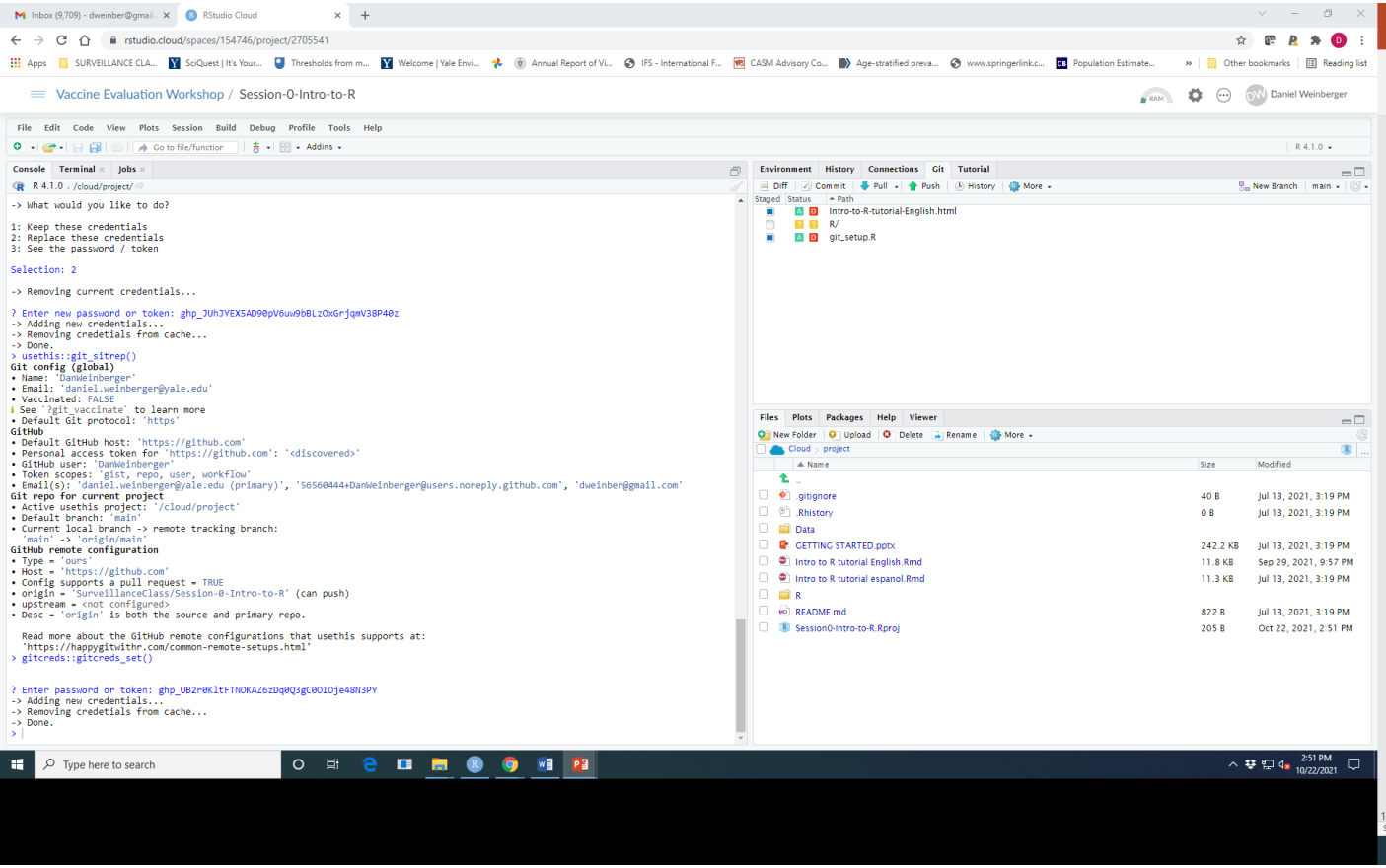


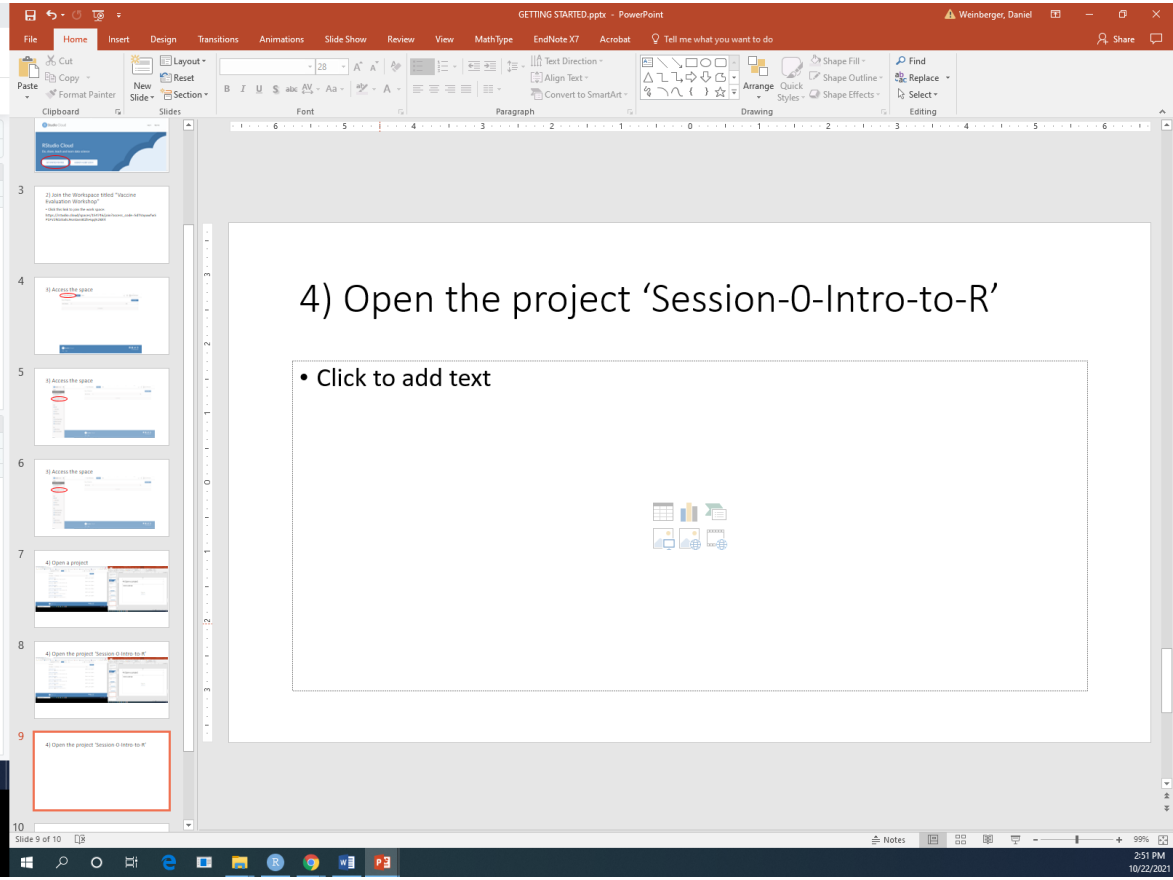
4) Open the project ‘Session-0-Intro-to-R’



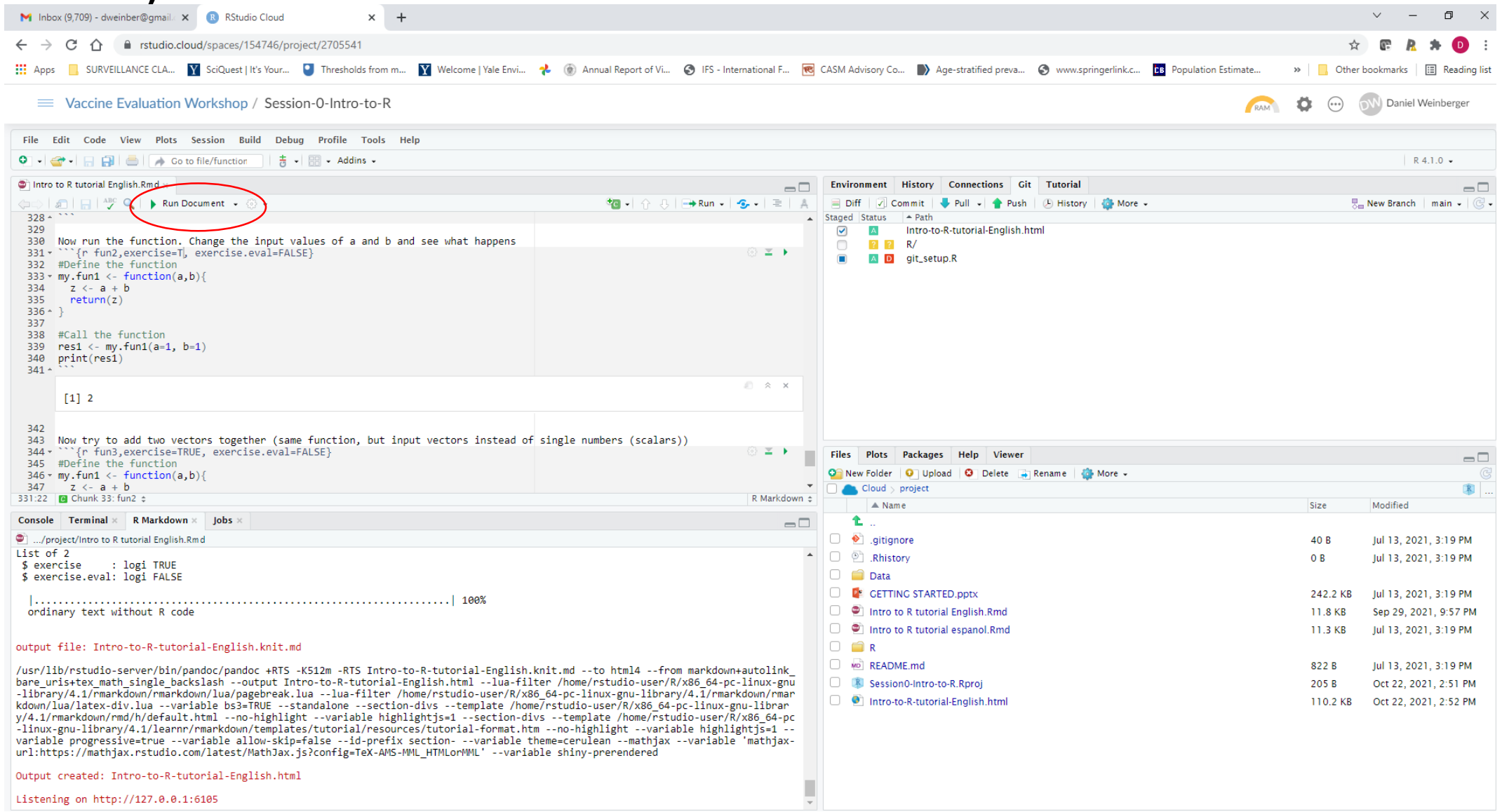


4)Open the file Intro to R tutorial English.Rmd or Intro to R tutorial Spanish.Rmd

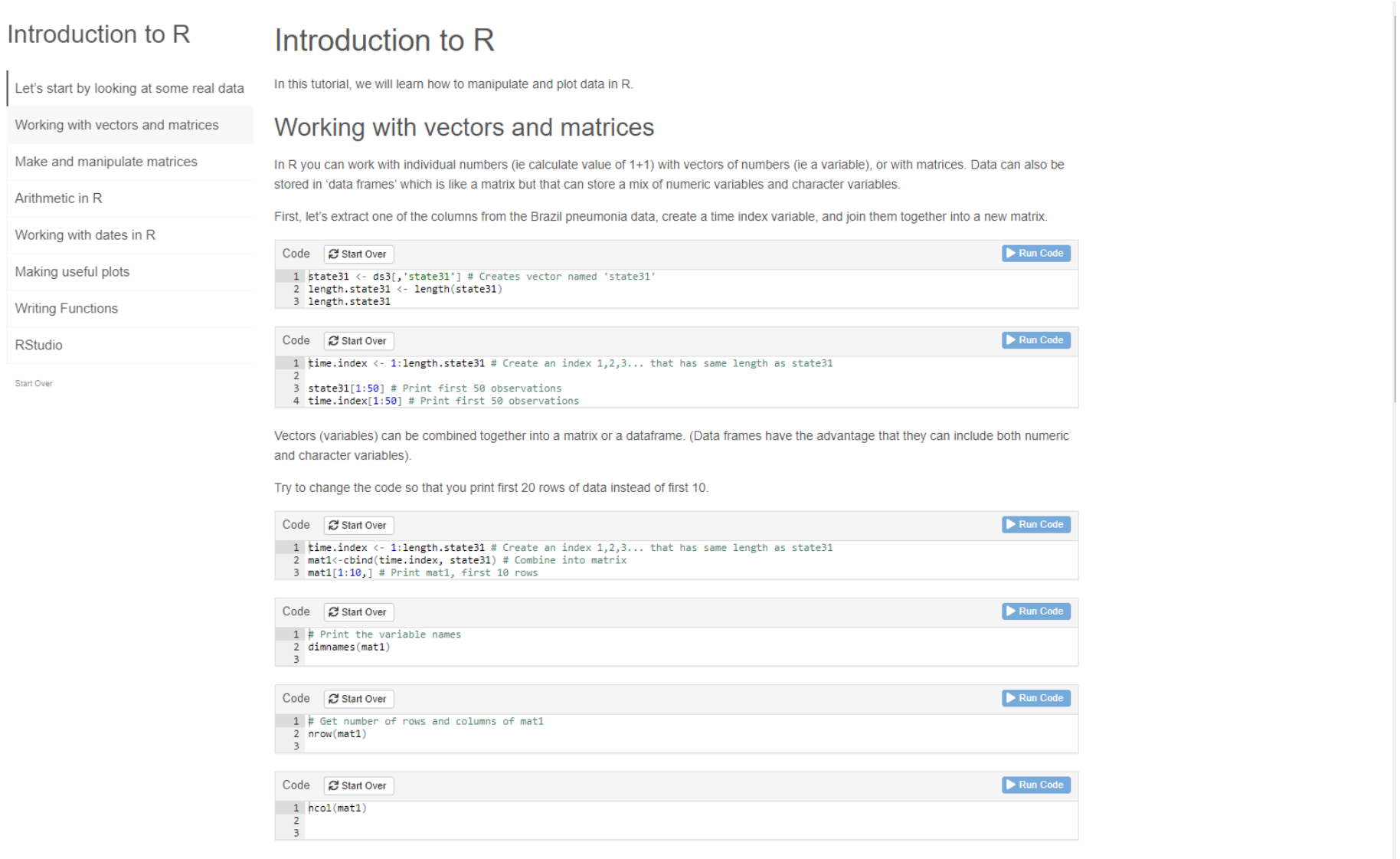




4)Click Run document



4) Follow along with the tutorial, and watch the associated video



Introduction to R

- Let's start by looking at some real data
- Working with vectors and matrices
- Make and manipulate matrices
- Arithmetic in R
- Working with dates in R
- Making useful plots
- Writing Functions
- RStudio

Start Over

Introduction to R

In this tutorial, we will learn how to manipulate and plot data in R.

Working with vectors and matrices

In R you can work with individual numbers (ie calculate value of 1+1) with vectors of numbers (ie a variable), or with matrices. Data can also be stored in 'data frames' which is like a matrix but that can store a mix of numeric variables and character variables.

First, let's extract one of the columns from the Brazil pneumonia data, create a time index variable, and join them together into a new matrix.

Code | Start Over | Run Code

```
state31 <- ds3[,'state31'] # Creates vector named 'state31'
length.state31 <- length(state31)
length.state31
```

Code | Start Over | Run Code

```
time.index <- 1:length.state31 # Create an index 1,2,3... that has same length as state31

state31[1:50] # Print first 50 observations
time.index[1:50] # Print first 50 observations
```

Vectors (variables) can be combined together into a matrix or a dataframe. (Data frames have the advantage that they can include both numeric and character variables).

Try to change the code so that you print first 20 rows of data instead of first 10.

Code | Start Over | Run Code

```
time.index <- 1:length.state31 # Create an index 1,2,3... that has same length as state31
mat1<-cbind(time.index, state31) # Combine into matrix
mat1[1:10,] # Print mat1, first 10 rows
```

Code | Start Over | Run Code

```
# Print the variable names
dimnames(mat1)

```

Code | Start Over | Run Code

```
# Get number of rows and columns of mat1
nrow(mat1)

```

Code | Start Over | Run Code

```
ncol(mat1)


```