

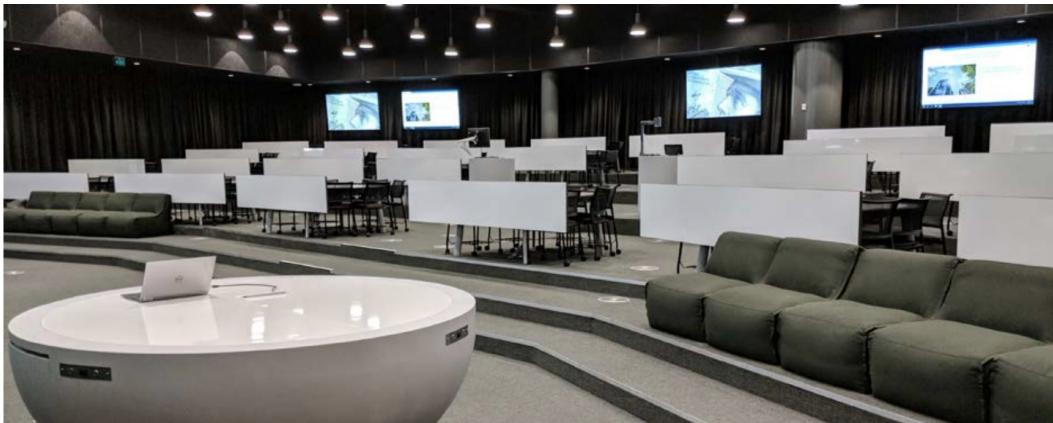
# An inclusive solution for teaching and learning R during the COVID pandemic

Dr Patricia Menéndez

*Department of Econometrics and Business Statistics  
Monash University, Melbourne, Australia  
[patricia.menendez@monash.edu](mailto:patricia.menendez@monash.edu)*

# Teaching in times of COVID

Instead of teaching in classrooms



👉 We moved to remote and online teaching and learning.



Tools to facilitate the task!  
Photo by [Todd Quackenbush](#) on [Unsplash](#)

# Student cohort and units

## Students

- Both undergraduate and graduate.
- Classroom size range from about ~300 to 60~80 students.

## Challenges

- Different knowledge levels and coding experience.
- Remote/online learning.

## Units

- Introduction to data analysis
- Reproducible and Collaborative practices



# Goals

## Teaching and Learning Experience

- Efficient and effective experience
- Unifying learning
- Remove the installation/usage burdens
- Remote/hybrid learning

## Pedagogy

- Active learning and constructivism
- Authentic learning: Usage of practical real examples

# Approach

- Programming language
- Integrated development environment (IDE)



Integrated development environment (IDE) in the **cloud**



# Learning and empowering

- Use Rstudio Cloud for the entire semester
- Use Rstudio Cloud the first 4 weeks so that students are confident to install and use R and Rstudio in their local machines.



# Organization and delivery

## Week 3: Grammar of Graphics and Dates

 Grammar of graphics

 ggplot themes

 Palettes ggplot

 Data visualisation

 Dates and times

 Resources for beginners 140.2KB PDF document

 Week 3 - Lecture 133.5MB PDF document 

 Video: Week 3 - Tutorial 25.9MB Video file (MP4) 

 Rstudio Cloud URL for ETC1010 -5510 if you join in Week 3

 Week 3 - Tutorial 1.6MB PDF document 

# Lectures

## Lectures

### rvest + polite (R packages)

Simplify processing and manipulating HTML data

- `bow()` - check if the data can be scraped appropriately
- `scrape()` - scrape website data (with nice defaults)
- `html_nodes()` - select specified nodes from the HTML document using CSS selectors.
- `html_table()` - parse an HTML table into a data frame.
- `html_text()` - extract tag pairs' content.



16/88

```
192 scores <- imdb_data %>%  
193   html_nodes("strong") %>%  
194   html_text() %>%  
195   dplyr::pull(score) %>%  
196   head()  
197  
198  
199 * ## ----rvest-all-together, message=FALSE  
200 * imdb_top_250 <- tibble(title = titles,  
201   year = years,  
202   score = scores)  
203  
204 head(imdb_top_250)  
205  
206  
207 R2.3  rvest-titles-text, message=FALSE : R Script  
Console Terminal < Jobs >  
~/Desktop/example/ >  
>  
>  
> library(polite)  
> bow("http://www.imdb.com")  
> polite session: http://www.imdb.com  
User-agent: polite R package - https://github.com/dml3kno/polite  
robots.txt: 26 rules are defined for 1 bots  
Crawl delay: 5 sec  
The path is scrapable for this user-agent  
> bow("http://www.facebook.com")  
> polite session: http://www.facebook.com  
User-agent: polite R package - https://github.com/dml3kno/polite  
robots.txt: 443 rules are defined for 20 bots  
Crawl delay: 5 sec  
The path is not scrapable for this user-agent  
>  
  
imdb_session <- bow("http://www.imdb.com/chart/top")  
  
imdb_session  
## <polite session> http://www.imdb.com/chart/top  
## User-agent: polite R package - https://github.com/dml3kno/polite  
## robots.txt: 26 rules are defined for 1 bots  
## Crawl delay: 5 sec  
## The path is scrapable for this user-agent  
  
imdb_data <- scrape(imdb_session)  
  
imdb_data  
## {html_document}  
## <html xmlns:og="http://ogp.me/ns#" xmlns:fb="http://www.facebook.com/2008/fb"  
## [1] <head>\n<meta http-equiv="Content-Type" content="text/html; charset=UTF-8" />\n## [2] <body id="styleguide-v2" class="fixed">\n<div>
```

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# Tutorials

## Tutorials



Introduction to Data Analysis  
Week 2 - Tutorial

### Contents

1 Exercise 1: Use wide, long format and separate	2
2 Exercise 2: Worked example of data cleaning	2
3 Exercise 3: Data exploration and manipulation	3
4 Exercise 4: Data analysis	4

### Workshop objectives

- ✓ Changing the form of a dataset using pivot\_wider and pivot\_longer
- ✓ Altering the dataset using filter and select
- ✓ Adding new variables using mutate
- ✓ Reporting using summarise, count and group\_by
- ✓ Data cleaning and performing data analysis using tidyverse

### Instructions

1. Follow this link [here](#) and log in into Rstudio Cloud using google and enter your monash user details (for help see the week 1 workshop 2 video in Moodle).
2. In each question you will replace '\_\_\_\_' with your answer, please note that the Rmd will not knit until you've answered all of the questions.

The screenshot shows the RStudio Cloud interface. At the top, there's a navigation bar with the RStudio Cloud logo, the course name 'ETC1010 - 5510', and links for 'Projects', 'Members', 'Usage', and 'About'. Below the navigation bar is a search bar with the placeholder 'New Project'. The main area is titled 'Your Projects' and shows a list of projects. One project is highlighted with a yellow arrow pointing to it: 'Week 1- Workshop 2'. Other visible project names include 'RStudio Project', 'Space members', and 'Created Jul 30, 2020 9:23 AM'. At the bottom right, there are buttons for 'Delete', 'Move', and 'Export'.

# Rstudio Cloud: Tutorials

The screenshot shows the RStudio Cloud interface for a project titled "ETC1010-5510 S1 2021 / Week1 Tutorial".

**Top Bar:** Studio Cloud, ETC1010-5510 S1 2021 / Week1 Tutorial, RAM, Settings, Patricia Menendez.

**Left Sidebar:** Spaces, Your Workspace, ETC1010-5510 S1 2021, Monash University.

**Code Editor:** 01-oz-atlas.Rmd

```
1 ---  
2 title: "Australian Atlas"  
3 author: "ETC1010 - 5510"  
4 output:  
5   html_document: default  
6 ---  
7  
8 `r setup`  
9 ``  
10  
11 ## Making a report  
12  
13 We have pulled some data on platypuses from the Atlas of Living Australia using the "ALA4R" package,  
and done some subsetting of the data to only look at a few of the key variables.  
14  
15 Let's read in data with `read_csv`:  
16  
17 `r read-platy, echo=TRUE`  
18 library(readr)  
19 #> #> #> #>
```

**Environment:** Global Environment

platypus	10698 obs. of 8 variables
platypus_nsw	5455 obs. of 8 variables

**Data:** Values

a	5
a1	2
a2	0.15
a3	44.66666666666667

**Files:** .Rhistory, 01-oz-atlas.html, 01-oz-atlas.Rmd, data, project.Rproj, Week1-Tutorial.pdf

**Console:** R 4.0.5 · /cloud/project/

```
>  
>  
>  
>
```

**Terminal:** R 4.0.5 · /cloud/project/

```
>  
>  
>  
>
```

**Jobs:** R 4.0.5 · /cloud/project/

```
>  
>  
>  
>
```

**Bottom Left:** ETC1010-5510 S1 2021, Monash University

**Bottom Right:** Week1-Tutorial.pdf

# Teaching team

- Chief Examiner / lecturer
- Group of fantastic teaching associates!

## Communication / Prep

- Slack channel
- TA dedicated Rstudio Cloud space + Unit space:
  - TA Rstudio Cloud space: Everyone has admin access.
  - Unit space admin share with Head Teaching Associate.

# Teaching associates RStudio Cloud space

The screenshot shows the 'Members' tab of the RStudio Cloud interface for the 'TA space S1 2021' space. The top navigation bar includes 'Projects', 'Members' (which is selected), 'Usage', and 'About'. On the right, there are icons for settings, trash, three dots, and a user profile for Patricia Menendez.

The main area displays 'All Members (8)'. It has two tabs: 'Current Members' (selected) and 'Invitations'. A search bar is available. The table lists members with columns for 'Name' and 'Role'. Each row includes a profile icon, a dropdown menu set to 'Admin', and a delete icon.

A yellow arrow points from the 'Members' tab in the navigation bar down to the 'Members' section in the main content. Another yellow arrow points from the 'Role' column in the table to the 'Admin' dropdown in the first row. A third yellow arrow points from the 'Access' section in the sidebar to the 'Invitation required' radio button.

**Access**

**Invitation required**  
Add specific members to the space by sending invitations.

**Sharing link**  
Anyone with the sharing link can access the space.

**Permissions**

Contributors can see the members list

Contributors can make their projects visible to all members

Contributors can change project resources (e.g. memory)

- Unit space --> Contributors/moderators

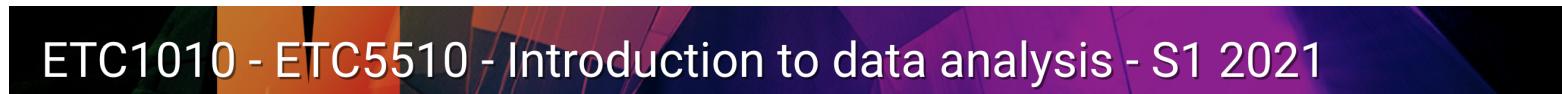
# Assessment

- Assignments
- Group work
- Semester assessment



# Assignments

- Launch and submitted via learning management system (Moodle)



Dashboard / Units / Faculty of Business and Economics / Department of Econometrics and Business Statistics / S1 2021 / ETC1010 - ETC5510 - S1 2021 / Assessments / Assignment 1 2021

## Assignment 1 2021

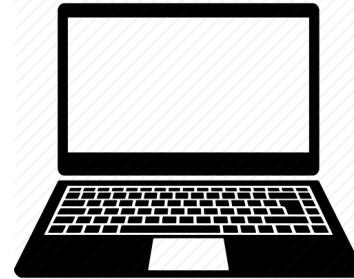
- RStudio Cloud Assignment space

The screenshot shows the RStudio Cloud interface for the "ETC1010 - 5510 Assignments..." project under "Monash University". The header includes navigation links for Projects, Members, Usage, and About. Below the header, a search bar and a "New Project" button are visible. The main area displays "Your Projects" with a list containing "Assignment 1". The project details for "Assignment 1" show it is an "RStudio Project" created on Mar 12, 2021, at 12:18 PM, and has 265 derived projects. Action buttons for Delete, Move, and Export are located in the bottom right corner of the project card.

# Semester Assessment

- Timed exercise (2hrs).
- Launched and submitted via learning management system (Moodle).
- Exercise in Rstudio Cloud unit space.
- Zoom call opened for **technical support**.
- Teaching team on Zoom call/slack channel.

R Studio Cloud



R Studio®

# Some thoughts

- Rstudio Cloud accessibility: remove installation burden/diversity of operating systems.
- Facilitate remote and online learning.
- Rstudio Cloud users/access.
- Connection between Rstudio Cloud - Rstudio.
- R projects!
- A learning, and also empowering, tool for users in their journey to learning R.

**My own view: Teaching and Learning Experience  
It is like fine dining, not only about the food but  
about the experience!!**

Email: *patricia.menendez@monash.edu*

Twitter: *@PM\_maths*

Slides: [https://bit.ly/PMenendez\\_RstudioCloud](https://bit.ly/PMenendez_RstudioCloud)

**Many thanks!**

Photo by [Zane Persaud](#) on [Unsplash](#)