

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

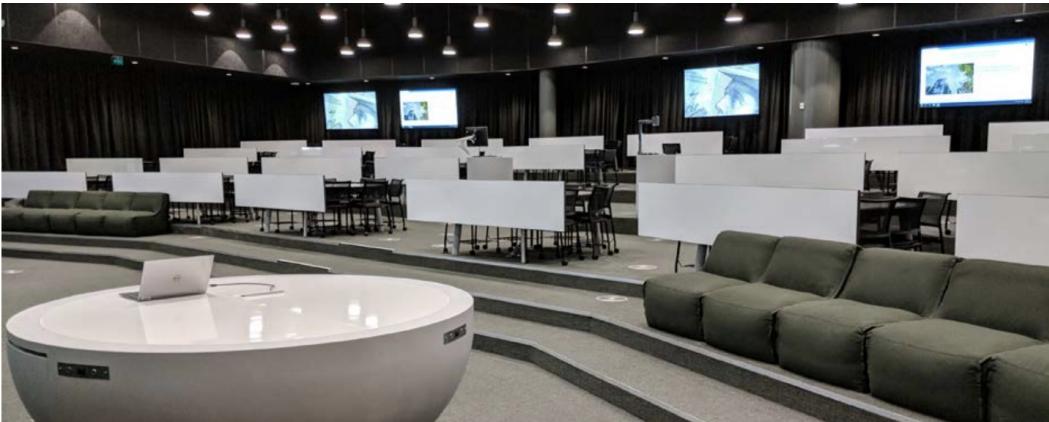
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# Teaching in times of COVID

Instead of using classrooms



Remote and online learning



Common entrance to learning

# Student cohort and units

## Students

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

## Challenges

- Different knowledge and coding levels.

## Units

- Introduction to data analysis



- Reproducible and Collaborative practices

# Goals

## Teaching and Learning Experience

- Efficient and effective experience
- Unify student 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 the entire semester
- Use Rstudio Cloud the first 4 weeks so that students are confident to use Rstudio in their local machines.



# Organization and delivery: Lectures

# Lectures

A small video camera view in the top right corner shows a person with long dark hair, wearing a blue shirt, speaking. The video frame has a white border.

# 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.

A small thumbnail image in the bottom left corner shows a presentation slide with a blue background and some text, likely a preview of the next slide.

16/88

The screenshot shows a dual-monitor setup. The left monitor displays RStudio with an R script titled "Workshop1-Week5.R". The script contains R code for reading titles from IMDB and performing web scraping. The right monitor displays a web browser window for ETC1010-5510: introduction, showing a slide titled "Bow and scrape" with sample R code for web scraping.

Workshop1-Week5.R

```
192 scores <- imdb_data %>
193 html_nodes("strong") %>
194 html_text() %>
195 as.numeric() %>
196 head()
197
198
199
200 ## -----rest-all-together, message=FALSE-----
201 imdb_top_250 <- table(title = titles,
202                         year = years,
203                         score = scores)
204
205 head(imdb_top_250)
206
207
208 ## rvest-titles-text, message=FALSE :
209
210
211
212
213 library(polite)
214 bow("http://www.imdb.com")
215 polite session <http://www.imdb.com>
216   User-agent: polite R package - https://github.com/dm3kno/polite
217   robots.txt: 26 rules are defined for 1 bots
218   (crawl-delay: 5 sec)
219   The path is scrapable for this user-agent
220 bow("http://www.facebook.com")
221 polite session <http://www.facebook.com>
222   User-agent: polite R package - https://github.com/dm3kno/polite
223   robots.txt: 442 rules are defined for 20 bots
224   (crawl-delay: 5 sec)
225   The path is not scrapable for this user-agent
226
227
```

R Session

Console Terminal Jobs

File

Env

Workshop1-Week5.R Untitled\* Workshop1-Week6.R Workshop::

Apps Deep learning

ETC1010-5510: introduction | ETC1010: Introduction to Data | IMDb Top 250 - IMDb | IMDb Top 250

## Bow and scrape

```
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/dm3kno/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/ns" fb:app_id="146152013052228" fb:page_id="146152013052228">
## [1] <head>\n<meta http-equiv="Content-Type" content="text/html; charset=UTF-8"\n<title>IMDb Top 250</title>\n<meta name="og:type" content="website"\n<meta name="og:site_name" content="IMDb Top 250 - IMDb"\n<meta name="og:title" content="IMDb Top 250 - IMDb"\n<meta name="og:description" content="The Official List of the Top 250 Best Movies Ever Made. Includes Ratings, Cast, Plot Summaries, and More."/>
## [2] <body id="styleguide-v2" class="fixed">\n  <div>
```

# Organization and delivery: 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 project name 'ETC1010 - 5510' (attributed to Patricia Menendez), and tabs for 'Projects', 'Members', 'Usage', and 'About'. Below the navigation is a search bar with dropdown menus for 'List' (set to 'Your projects') and 'Sort' (set to 'By name'), and a search icon. A 'New Project' button is also visible. The main area is titled 'Your Projects' and shows a single item: 'Week 1- Workshop 2'. This item has a small circular icon with an 'R', the text 'RStudio Project', 'Space members', and 'Created Jul 30, 2020 9:23 AM'. To the right of the project name are buttons for 'Delete', 'Move', and 'Export'.

# Rstudio Cloud: Tutorials

R Studio Cloud

ETC1010-5510 S1 2021 / Week1 Tutorial

File Edit Code View Plots Session Build Debug Profile Tools Help

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   1: library(platypus)  
19   2: data(platypus)  
20.1  3: data(platypus_nsw)
```

Console Terminal Jobs

R 4.0.5 · /cloud/project/

RAM Settings Help Patricia Menendez

Environment History Connections Tutorial

Import Dataset 286 MiB

Global Environment

Data

- platypus 10698 obs. of 8 variables
- platypus\_nsw 5455 obs. of 8 variables

Values

a	5
a1	2
a2	0.15
a3	44 FFFFFFFF666667

Files Plots Packages Help Viewer

New Folder Upload Delete Rename More

Cloud > project

Name	Size	Modified
.Rhistory	0 B	Feb 25, 2021, 3:01 PM
01-oz-atlas.html	775 KB	Mar 5, 2021, 4:09 PM
01-oz-atlas.Rmd	2.9 KB	Mar 2, 2021, 8:51 AM
data		
project.Rproj	205 B	Jan 10, 2022, 12:07 PM
Week1-Tutorial.pdf	1.7 MB	Mar 1, 2021, 4:58 PM

ETC1010-5510 S1 2021  
Monash University

# Teaching team

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

## Communication / Prep

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

# Teaching associates RStudio Cloud space

The screenshot shows the 'Members' tab of the RStudio Cloud interface for the 'TA space S1 2021' space. There are three current members listed:

Name	Role
AV	Admin
CQ	Admin
PM	Admin

A yellow arrow points from the 'Members' tab in the top navigation bar down to the 'All Members' section. Another yellow arrow points from the 'Role' dropdown for the first user to the 'Admin' role. A third yellow arrow points from the 'Access' section of the 'Options' menu to the 'Invitation required' radio button.

**All Members (8)**

**Current Members** **Invitations**

**Add Member** **Leave Space**

**Search**

**Options**

**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

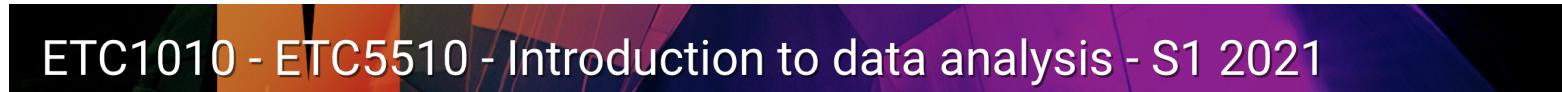
# Assessment

- 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 of items. One item, "Assignment 1", is highlighted with a yellow arrow. At the bottom, there are buttons for Delete, Move, and Export, along with status information: "RStudio Project", "Private", "Created Mar 12, 2021 12:18 PM", and "View 265 derived projects ...".

# Semester Assessment

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

R Studio Cloud



R Studio®

# Things to keep in mind

- Rstudio Cloud accessibility
- Rstudio Cloud users/access
- Connection between Rstudio Cloud - Rstudio
- R projects
- Empower users

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

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Slides:

**Many thanks!**

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