

# R, Rstudio and GitHub

Tanzanian HCES Analysis and TFNC Training

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# **1 Week 1 : R and RStudio**

## 1.1 R and Rstudio

- R is a free software environment for statistical computing and graphics
- Rstudio is a integrated development environment (IDE) for R and Python.
  - **open source** and commercial editions (Windows, Mac, and Linux)

## **1.2 Rstudio (cont..)**

- console for direct code execution
- syntax-highlighting editor
- tools for plotting
- viewing history
- managing your workspace

## 1.4 Git

### 1.4.1 Git

Open source

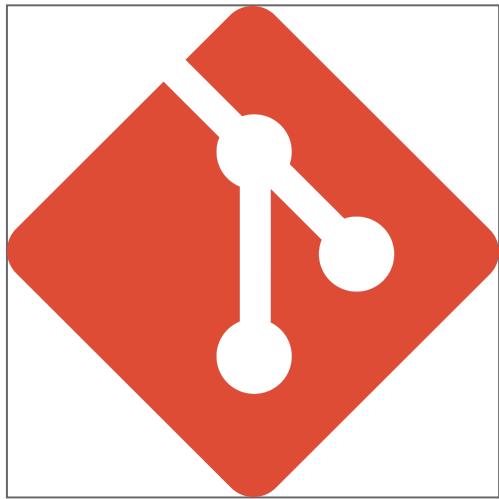
Tracks file changes

Branch based non-linear workflows (we can all work at the same time)

Rstudio IDE intergration

Speed of work (for quick homework assistance)

Local environment



## **1.5 GitHub**

GitHub is a web-based interface that uses Git, to let multiple people work and make changes on a project concurrently

### **1.5.1 Premium Repository based**

- Repository based (Projects)

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dzvoti

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dzvoti / README.md

- 👋 Hi, I'm @dzvoti
- 👀 I'm interested in spatial data analysis and visualisation
- 🌱 I'm currently learning data engineering and machine learning
- ❤️ I'm looking to collaborate on any python or R data science projects
- 📫 How to reach me:
  - Twitter @dzvoti
  - LinkedIn

#### Popular repositories

[SBStatsRLatex](#)

Public template

Document Reproducibility with R and Latex

R

★ 1

[DataSignOff](#)

Public

[visualizations](#)

Public

Forked from ipicci96/visualizations

[Book-For-Programmers](#)

Public

Forked from rajucs/Book-For-Programmers

[Data-Science-For-Beginners](#)

Public

Forked from microsoft/Data-Science-For-Beginners

10 Weeks, 20 Lessons. Data Science for All!

[awesome-github-profile-readme](#)

Public

Forked from abhisheknaidu/awesome-github-profile-readme

LuciaSegovia / UoN-FAO Private

Watch 1 Fork 1 Star 0

Code Commits Issues 9 Pull requests Actions Projects Security Insights

All branches main 74-presentation-...

Merge branch 'main' of <https://github.com/LuciaSegovia/UoN-FAO> into main  
LuciaSegovia committed 20 hours ago ✓

adding new SL matches  
LuciaSegovia committed 20 hours ago ✓

Merge pull request #84 from TomCodd/main  
TomCodd committed 1 days ago ✓

Merge branch 'LuciaSegovia:main' into main  
TomCodd committed 1 days ago ✓

Fixed position of fat standardisation  
TomCodd committed 1 days ago ✓

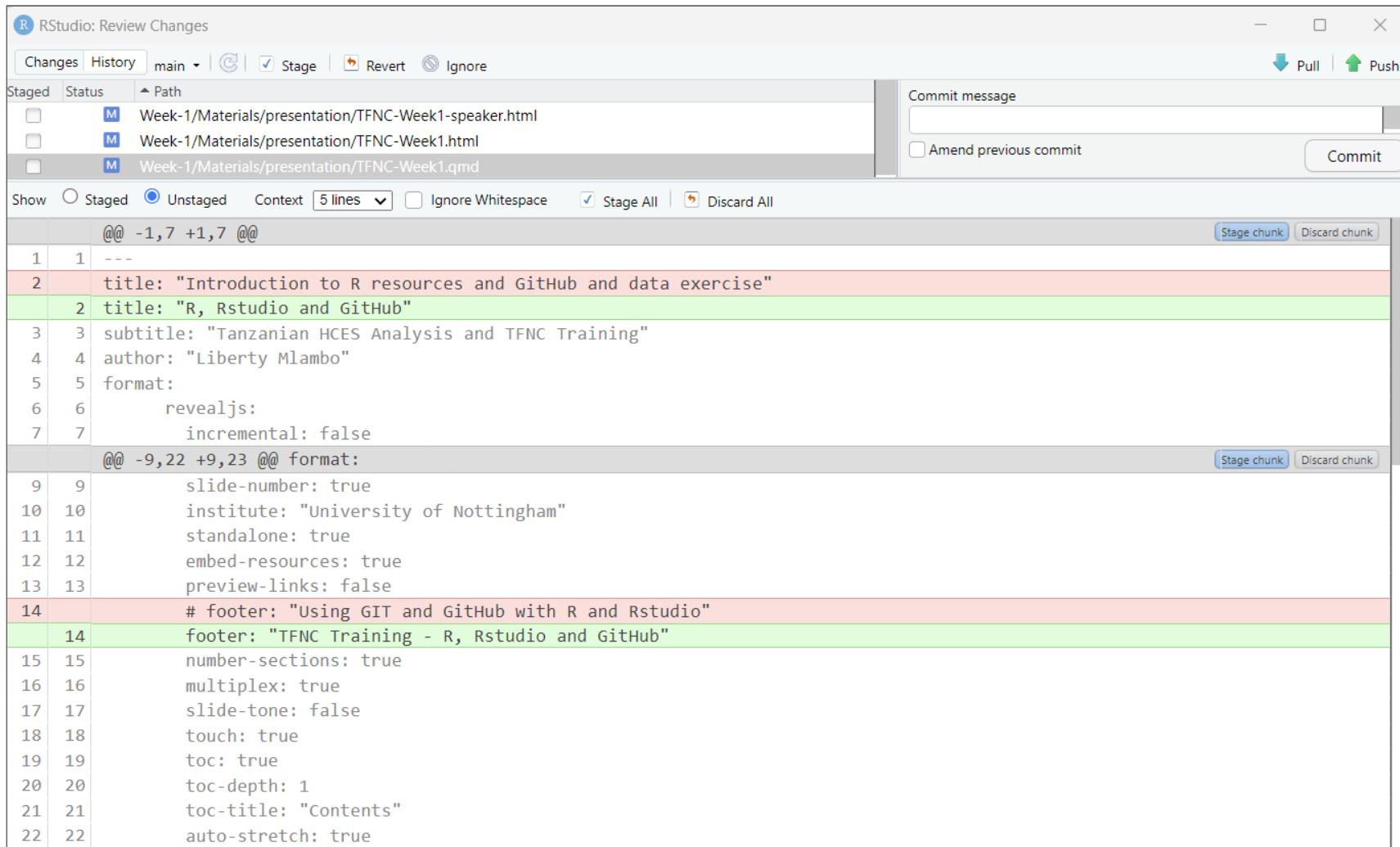
Merge pull request #83 from TomCodd/main  
TomCodd committed 2 days ago ✓

Added FAT\_g\_standardised step, and used this value for FAT values fro...  
TomCodd committed 2 days ago ✓

added sl data  
LuciaSegovia committed 3 days ago ✓

The screenshot shows a GitHub repository for 'LuciaSegovia / UoN-FAO'. The 'Commits' tab is selected. A red box highlights the first commit: 'Merge branch 'main' of https://github.com/LuciaSegovia/UoN-FAO into main' by LuciaSegovia. A red circle highlights the second commit from the bottom: 'Merge branch 'LuciaSegovia:main' into main' by TomCodd. The commit list also includes other commits from both users, such as 'adding new SL matches' and 'Fixed position of fat standardisation'.

### 1.5.3 File History Tracking



The screenshot shows the RStudio: Review Changes interface. The top menu bar includes 'Changes' (selected), 'History', 'main', 'Stage', 'Revert', 'Ignore', 'Pull', and 'Push'. The left sidebar shows 'Staged' and 'Status' sections with three files listed: 'Week-1/Materials/presentation/TFNC-Week1-speaker.html', 'Week-1/Materials/presentation/TFNC-Week1.html', and 'Week-1/Materials/presentation/TFNC-Week1.qmd'. The main area displays a diff view between two versions of the 'TFNC-Week1.qmd' file. The diff highlights changes in lines 2, 3, 4, 5, 6, 7, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, and 22. The commit message field contains 'Amend previous commit' and a 'Commit' button.

```
@@ -1,7 +1,7 @@
1 1 ---
2 2 title: "Introduction to R resources and GitHub and data exercise"
2 2 title: "R, Rstudio and GitHub"
3 3 subtitle: "Tanzanian HCES Analysis and TFNC Training"
4 4 author: "Liberty Mlambo"
5 5 format:
6 6     revealjs:
7 7         incremental: false
@@ -9,22 +9,23 @@
9 9         slide-number: true
10 10        institute: "University of Nottingham"
11 11        standalone: true
12 12        embed-resources: true
13 13        preview-links: false
14 14 # footer: "Using GIT and GitHub with R and Rstudio"
14 14 footer: "TFNC Training - R, Rstudio and GitHub"
15 15 number-sections: true
16 16 multiplex: true
17 17 slide-tone: false
18 18 touch: true
19 19 toc: true
20 20 toc-depth: 1
21 21 toc-title: "Contents"
22 22 auto-stretch: true
```

### 1.5.4 Unlimited Public/ Private Repositories

The image shows a GitHub user profile for Liberty Mlambo. At the top, there's a circular profile picture of a Black man with glasses and a beard, wearing a dark suit jacket over a white shirt. Below the picture is the user's name, **Liberty Mlambo**, followed by their GitHub handle, **dzvoti**. There's a button labeled "Edit profile". To the right of the profile picture, there are tabs for "Overview", "Repositories" (which is selected, showing 25 repos), "Projects", and "Packages". A search bar says "Find a repository...".

**TFNC-Training** Public

Tanzania HCES Analysis and TFNC training

HTML MIT License Updated 10 hours ago

**TFNC-GitHub-Demo** Private

R MIT License Updated yesterday

**LearnGit** Public

HTML Updated last month

**Sutton\_Bonnington\_Statistics\_Group** Public

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## 1.5.5 Track issues and task progress

[LuciaSegovia / UoN-FAO](#) Private

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[Code](#) [Issues 9](#) [Pull requests](#) [Actions](#) [Projects](#) [Security](#) [Insights](#)

[Filters](#)  [Labels 9](#) [Milestones 0](#) [New issue](#)

[Clear current search query, filters, and sorts](#)

[9 Open](#) [29 Closed](#)

<input type="checkbox"/>	Author ▾	Label ▾	Projects ▾	Milestones ▾	Assignee ▾	Sort ▾
<input type="checkbox"/>	<a href="#">[Presentation]</a>	- Review and comments!				<a href="#">3</a>
	#79 opened 8 days ago by LuciaSegovia					
<input type="checkbox"/>	<a href="#">[HCES]</a>	- Food matching				<a href="#">5</a>
	#76 opened 12 days ago by LuciaSegovia <a href="#">3 tasks</a>					
<input type="checkbox"/>	<a href="#">[Presentation]</a>	- Making the Plot: Missing values for retinol by ICS code interactive				<a href="#">8</a>
	#74 opened 13 days ago by LuciaSegovia					
<input type="checkbox"/>	<a href="#">5)</a>	Averages				<a href="#">30</a>
	#72 opened 20 days ago by LuciaSegovia					
<input type="checkbox"/>	<a href="#">Fisheries</a>	- Feedback and comments	<a href="#">bug</a>			
	#71 by LuciaSegovia was closed 29 days ago					
<input type="checkbox"/>	<a href="#">[Fisheries]</a>	- Check colouring and other minor formatting	<a href="#">enhancement</a>			 <a href="#">3</a>

## 1.5.6 Track issues and task progress

# CARTBEQmcg (Carotene Eq.) #44

[Edit](#)[New issue](#)[Closed](#)Tracked by [#40](#)LuciaSegovia opened this issue on Oct 3 · 19 comments · Fixed by [#57](#)

LuciaSegovia commented on Oct 3 · edited



...

Objective: Populating `CARTBEQmcg_std` (Beta-Carotene Eq. standardised) variable.

Preferred source of the data - calculated with the function.

- **standard:** Calculate Beta-Carotene Eq. from carotenoids `(1 * CARTBmcg + 0.5 * CARTAmcg + 0.5 * CRYPXBmcg)` and add a string comment with the components used to calculate `CARTBEQmcg` value (E.g., "CARTBEQmcg value only used CARTBmcg").
- **imputed:**
  1. When carotenoids are not available, then use Beta-Carotene Eq.
  2. If Beta-Carotene Eq. is not available, but retinol and Vitamin A (RAE)/Vitamin A are available: re-calculate from `(VITA_RAEmcg - RETOLmcg)*12 OR (VITAmcg - RETOLmcg)*6`. Add a string `comment` with the components used to calculate the value.

`CARTBEQmcg_std` is necessary to calculate `VITAmcg_std` and `VITA_RAEmcg_std`.

UPDATE: The formula to calculate (Beta-Carotene Eq.) from `VITA_RAEmcg` and `VITA_RAEmcg` used in the spreadsheet is incorrect.

Related to: [#40 \(comment\)](#)

## Assignees

- dzvoti
- LuciaSegovia
- TomCodd

## Labels

None yet

## Projects

None yet

## Milestone

No milestone

## Development

Successfully merging a pull request may close this issue.

[Update : Split the CARTBEQmcg\\_std\\_creat...](#)  
LuciaSegovia/UoN-FAO

## 1.5.7 Lessons learnt

**Cloud storage and collaboration**  
very important and a key focus area

**Reproducibility through version  
tracking is fundamental**

**Choose tools carefully to avoid  
security lapses**

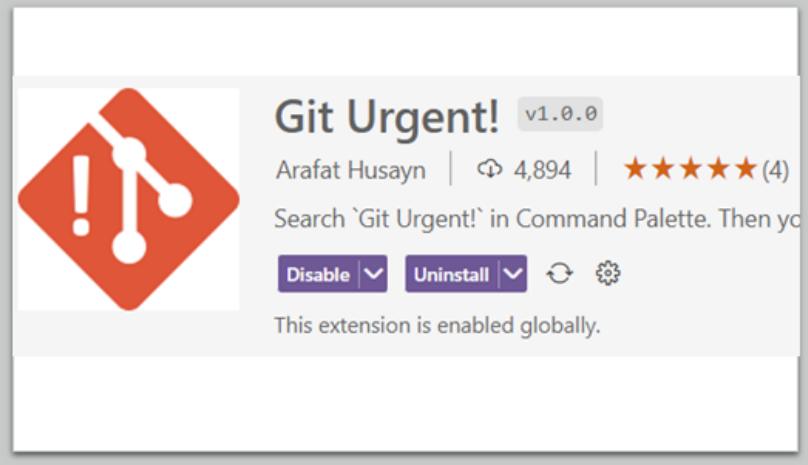
**CTRL + ALT + SHIFT+F (Git Urgent)**

In case of fire

• 1. git commit

↑ 2. git push

🏃 3. leave building



## **1.6 Practical Demonstration**

### **1.6.1 Practical Assumptions**

- Computer (Mac, Windows, Linux, etc..) with administrative privileges
- Software download and installation experience

### **1.6.2 Practical Requirements**

- GitHub account
- Rstudio
- Git

## 1.7 Exercises

### 1.7.1 Exercises 1

Activity	Description
1.1 GitHub sign-up	<a href="#"><u>GitHub signup</u></a>
1.2 R download and installation	<a href="#"><u>R download</u></a>
1.3 Rstudio download and installation	<a href="#"><u>Rstudio</u></a>
1.4 Git download and installation	<a href="#"><u>Git</u></a>

### 1.7.2 Exercises 2 - RStudio and Git connection (optional)

Action	Command
In Rstudio console type	<code>usethis::create_github_token()</code>
In your github account	<code>generate and copy token</code>
In Rstudio console type	<code>gitcreds::gitcreds_set()</code>
In Rstudio console	<code>paste token</code>

Action	Command
In Rstudio terminal	<code>git config user.name "YourGitHubUsername"</code>
In Rstudio terminal	<code>git config user.email "YourGitHubEmail@here.com"</code>

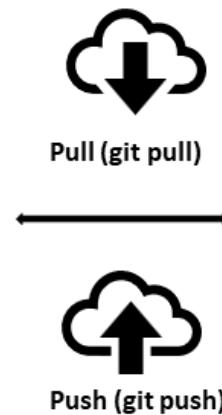
## **2 Week 2 : Linking GitHub and R**

## 2.1 Week 1 Recap

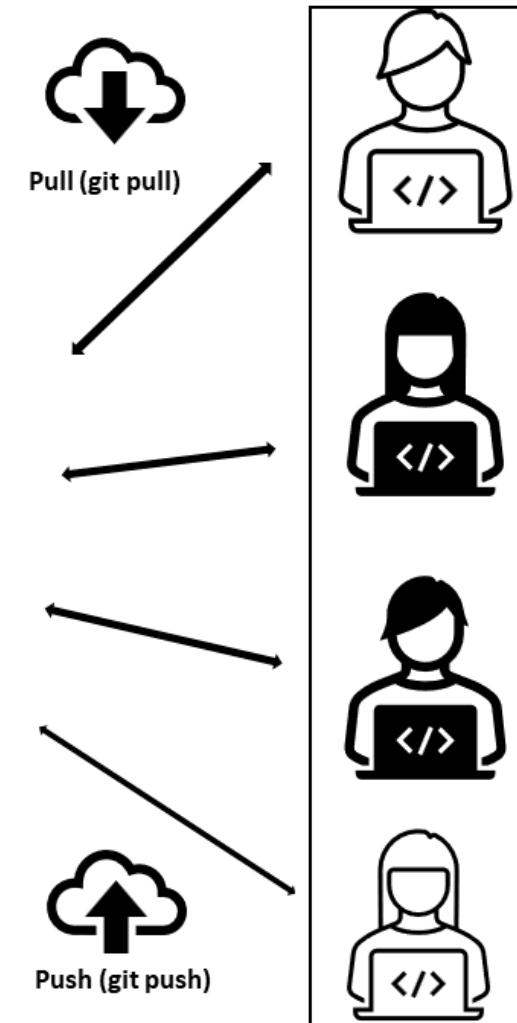
- Last week we introduced Git, GitHub, R and RStudio.
- Exercise 1: – Creating GitHub credential – Downloading and Installing R, RStudio and Git
- Exercise 2 (Optional) - Linking GitHub and R

## 2.2 GitHub workflow

- ✓ Created local repository in R (Git)
- ✓ Local changes
- ✓ Stage changes
- ✓ Commits
- ✓ Commit message



## Remote repository (GitHub)



- ✓ Pull (git pull)
- ✓ Local changes
- ✓ Create Branch
- ✓ Stage changes
- ✓ Commits
- ✓ Commit message
  - ✓ Merge Branch
- ✓ Push to GitHub

## **3 Additional Resources**

### 3.1 Additional Resources

- - [GitHub Docs](#)
  - [GitHub glossary](#)
  - [Happy Git and GitHub for the useR](#)
  - [Git, GitHub, & GitHub Desktop for beginners](#)
  - [R package called “swirl” that teaches you R from within the R studio](#)
  - [R for Data Science](#)
  - [Crash Course in R.](#)
  - [R Cheat Sheets](#)
  - [YaRrr! The Pirate’s Guide to R](#)
  - [R for Social Scientists](#)

Thank you!

T<sup>3</sup>IC Training - R, Rstudio and GitHub

