



# GitHub 101

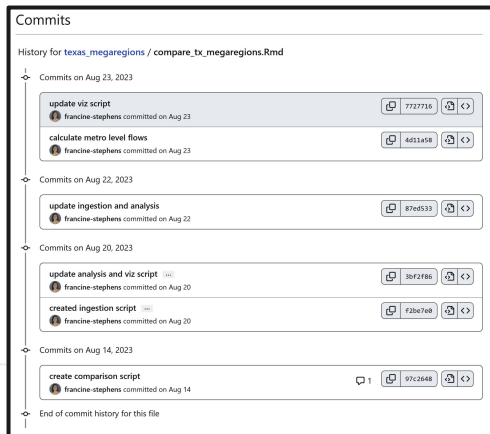


Jon Stermac | Francine Stephens  
Quant UR  
October 18, 2023

# GitHub enhances code management and collaboration

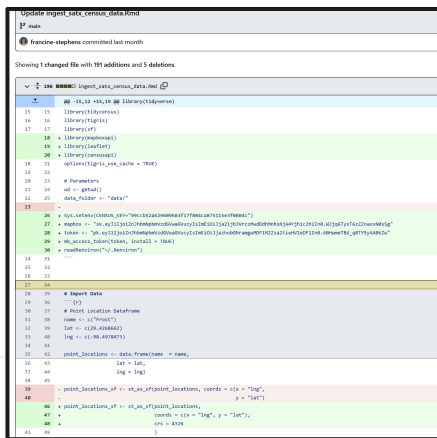
## Track Changes in Your Code

Commit history allows you to review your changes over time.



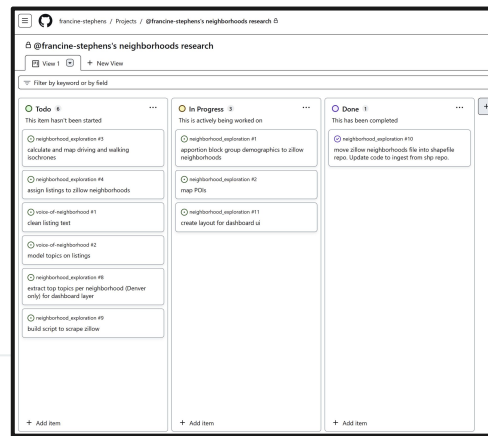
## Streamlines Code Reviews

Commits show summary of code **inserted** and **deleted** and highlights changes.



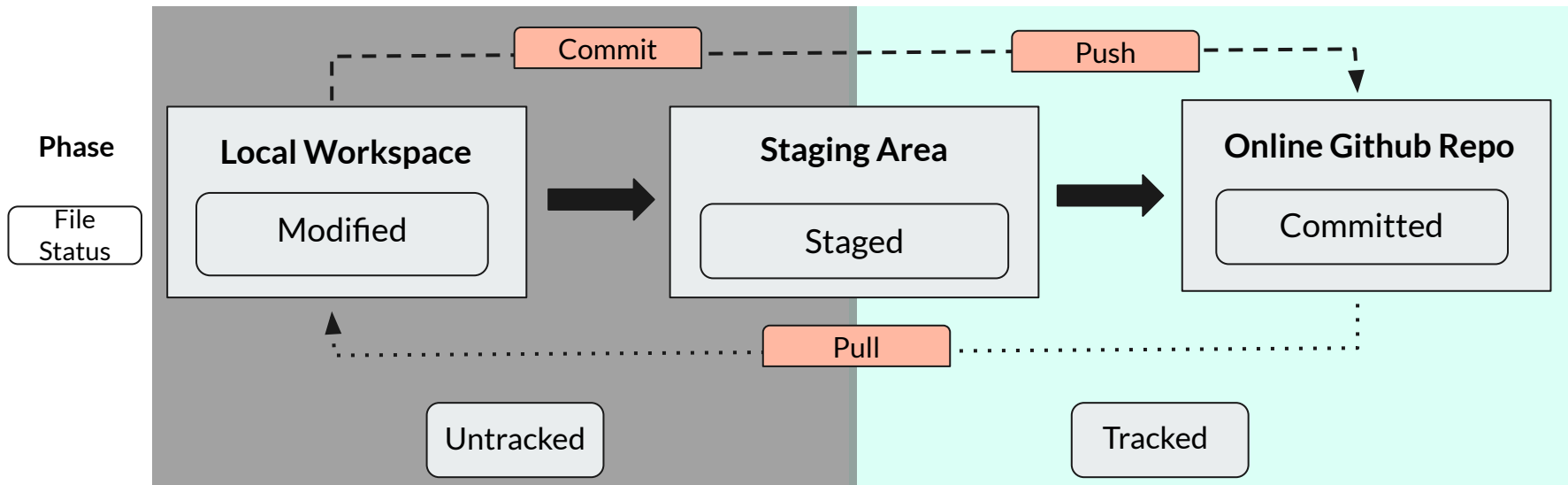
## Visualizes Progress on Projects

Task lists and project boards house notes, comments, and issues for projects.



# GitHub Structure and Process

Mental model of Github phases, file statuses, and key commands.



---

# Recommended Workflow

(with RStudio GitHub Client)



# Getting Started

[Step-by-Step instructions](#) for setting up GitHub on your machine/R Studio.

1. Set-up your GitHub Account & Profile
2. Check that Git is installed on your machine
  - a. Use Terminal/Shell
  - b. Install if not already installed
3. Set your GitHub username and email as part of the GitHub global config

```
1 ## install if needed (do this exactly once):  
2 ## install.packages("usethis")  
3  
4 library(usethis)  
5 use_git_config(user.name = "Francine Stephens", user.email = "fis@stanford.edu")  
6
```

# Create a GitHub Repository Online

1. In the Repositories tab on your GitHub account, select the New button.
2. In the Create a new repository window, include a:
  - a. Name (of repository)
  - b. Readme file
  - c. Gitignore (Excludes e.g., raw data folder)

2

## Create a new repository

A repository contains all project files, including the revision history. Already have a project repository elsewhere? [Import a repository.](#)

Required fields are marked with an asterisk (\*).

Owner \* francine-stephens Repository name \* github101-demo2

Great repository names are short and memorable. Need inspiration? How about [cautious-memory](#)?

Description (optional)

Materials for introduction to github

☒ Public Anyone on the internet can see this repository. You choose who can commit.  
☐ Private You choose who can see and commit to this repository.

Initialize this repository with:

☒ Add a README file  
This is where you can write a long description for your project. [Learn more about READMEs.](#)

Add .gitignore

.gitignore template: R

Choose which files not to track from a list of templates. [Learn more about ignoring files.](#)

Choose a license

License: None

A license tells others what they can and can't do with your code. [Learn more about licenses.](#)

This will set `main` as the default branch. Change the default name in your [settings](#).

☒ You are creating a public repository in your personal account.

Create repository

1

francine-stephens  
Overview Repositories 37 Projects 4 Packages Stars 28



Francine Stephens

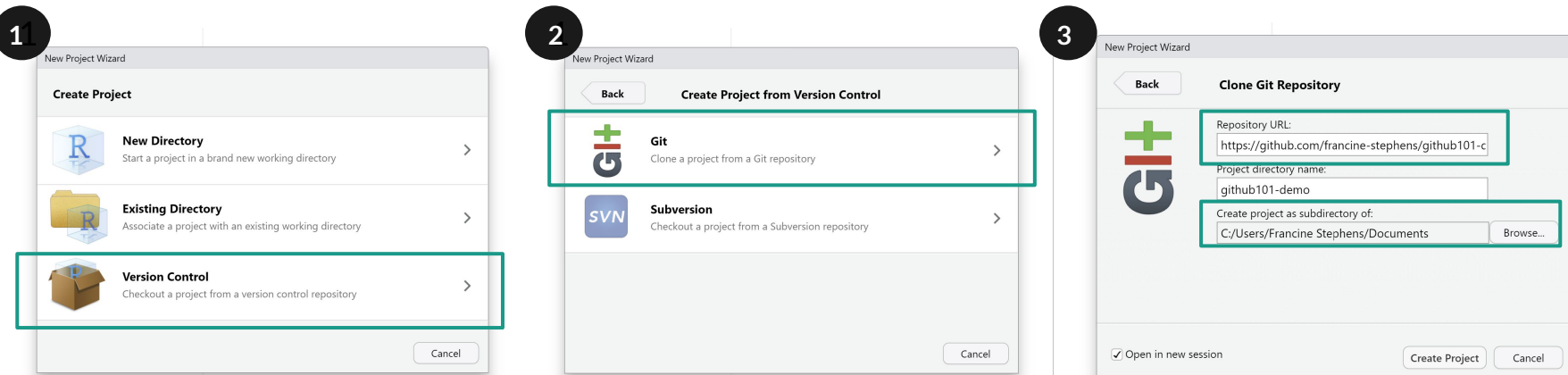
Find a repository... Type Language Sort New

**github101-demo** (Public)  
Repo used for Github 101 demo  
R Updated 2 hours ago

**neighborhood\_exploration** (Public)  
Analysis for my personal housing and neighborhood searches  
R Updated 18 hours ago

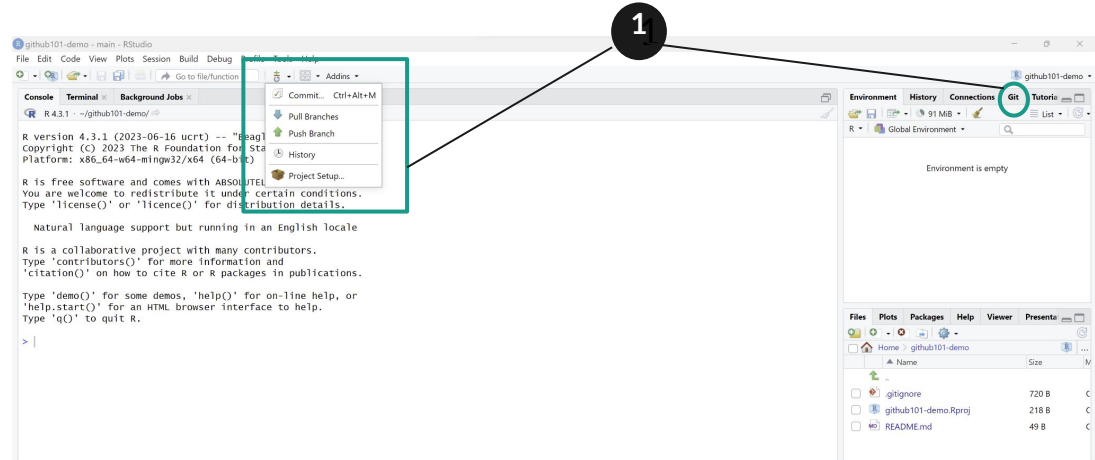
# Set-up a GitHub Project in a Local Folder (Pull)

1. In R Studio, use the project wizard to set up a new R Project with version control.
2. Select clone a project from a Git repository.
3. Specify the URL for your GitHub repository and the directory on your computer to store your repo.



# Create and Modify Files in Local Workspace

1. Verify that the R project has a Git client in the R Studio interface.
2. Create, add, and modify files in the R project as you normally would.
3. If there are new outputs/data that you do not want to be stored in the repository online, update the gitignore file to exclude them from your future commits.

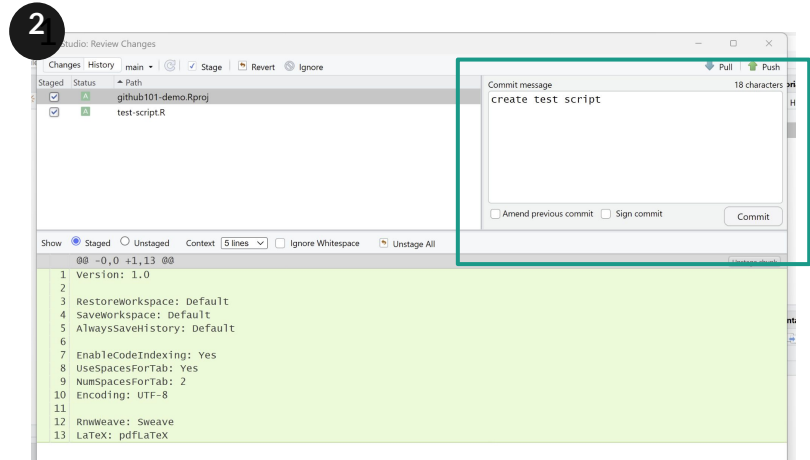
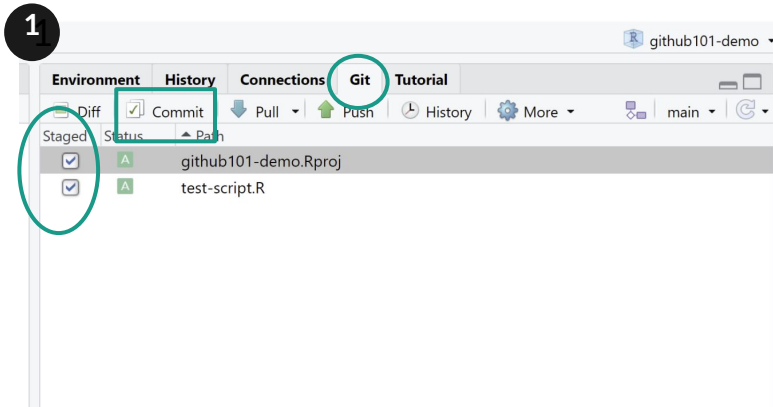




# Commit Changes

In the R Studio Git Client (staging area):

1. In the environment pane, select the Git tab and select checkboxes on the modified files that you want to store in GitHub.
2. Select Commit button to launch the commit window. Give the commit a brief and informative name/description and press Commit.

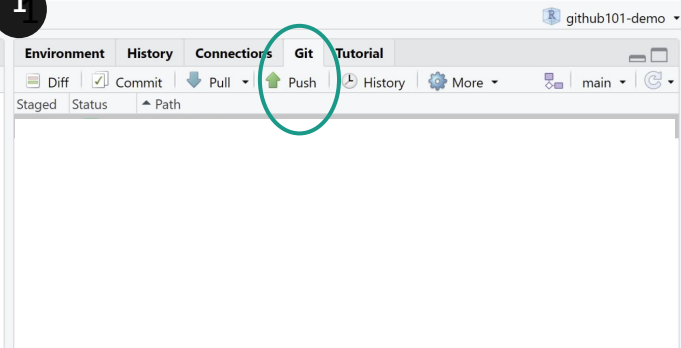


# Push Changes to GitHub and Repeat Steps

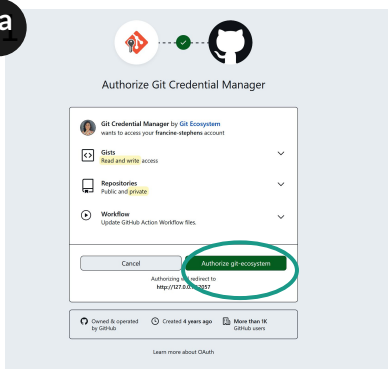
1. After committing changes, return to the Git tab in the Environment pane and select push.
    - a. *Windows Only:* The first time that you push to a new repo will require that you authenticate yourself.
    - b. Mac: you likely need to create a [Personal Access Token](#) to input as your “password”.
  2. Verify that your push was successful in the push window or by viewing the GitHub repo online.
- Repeat steps: Code → Commit → Push

*Note: If collaborators have made changes, before you start working, pull any changes to local repo using the Git Client.*

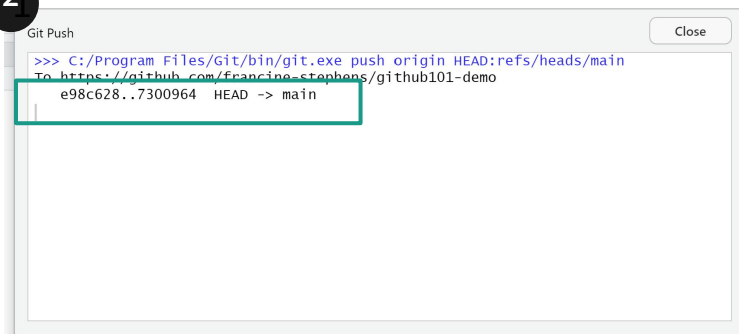
1



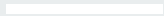
1a



2



# Thank You



# Reference

---

---

## Key Git Terms

- **Repository (Repo):** A storage space for the code, data, outputs, and documentation used in your project.
- **Cloning:** Create a replicate of all materials in the Github repo on your local machine.
- **Commit:** Git command that takes a snapshot of your repo (files and changes in the files) and saves it so that you can compare the materials in the repo to any previous version. (i.e., save locally)
- **Push:** Git command that uploads content from your local repo to the remote Github repo. (i.e., cloud save)
- **Pull:** Git command that downloads content from the remote Github repo to your local repo.
- **Merge:** Git command that assembles all commits and merges them onto the Github repo.