GitHub 101

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Quant UR
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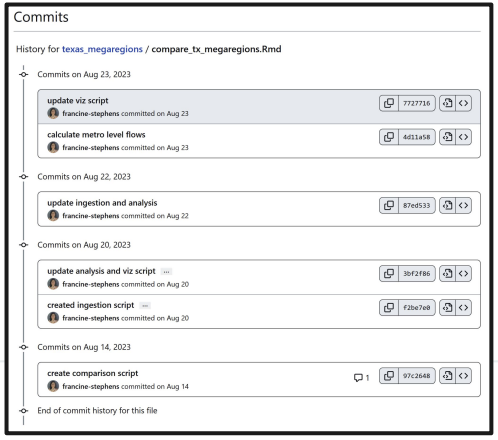
GitHub enhances code management and collaboration

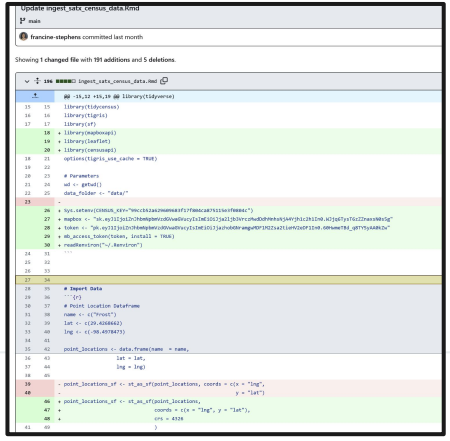
Track Changes in Your Code

Commit history allows you to review your changes over time.



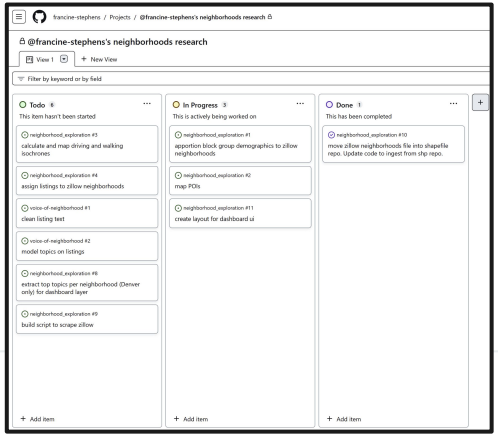
Streamlines Code Reviews

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



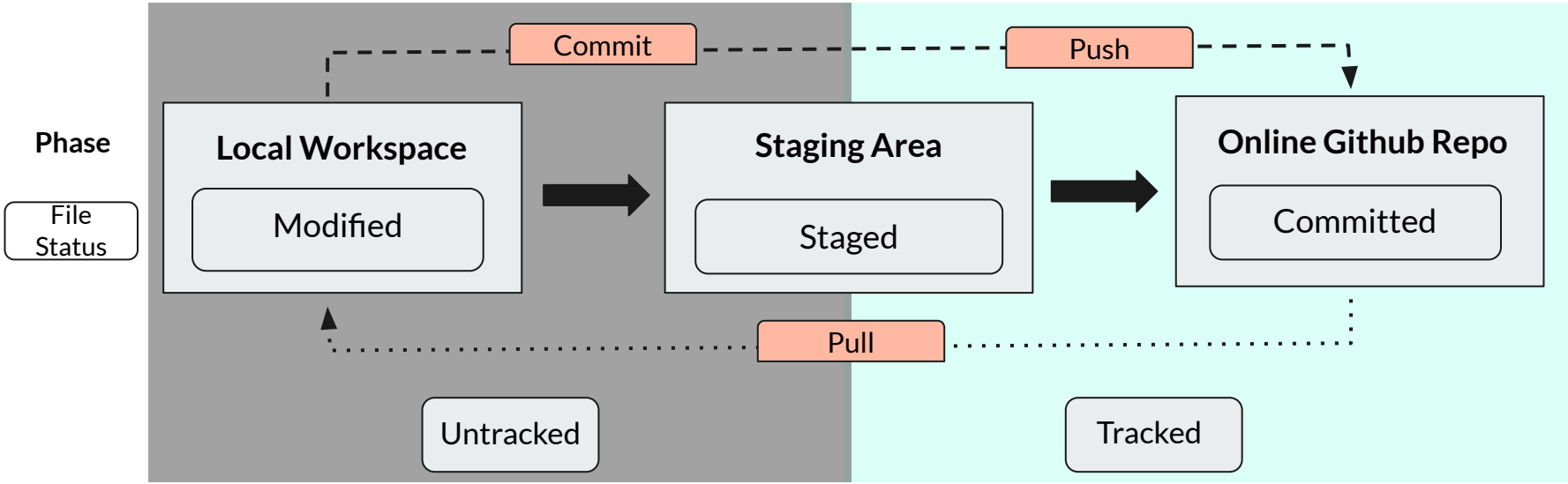
Visualizes Progress on Projects

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

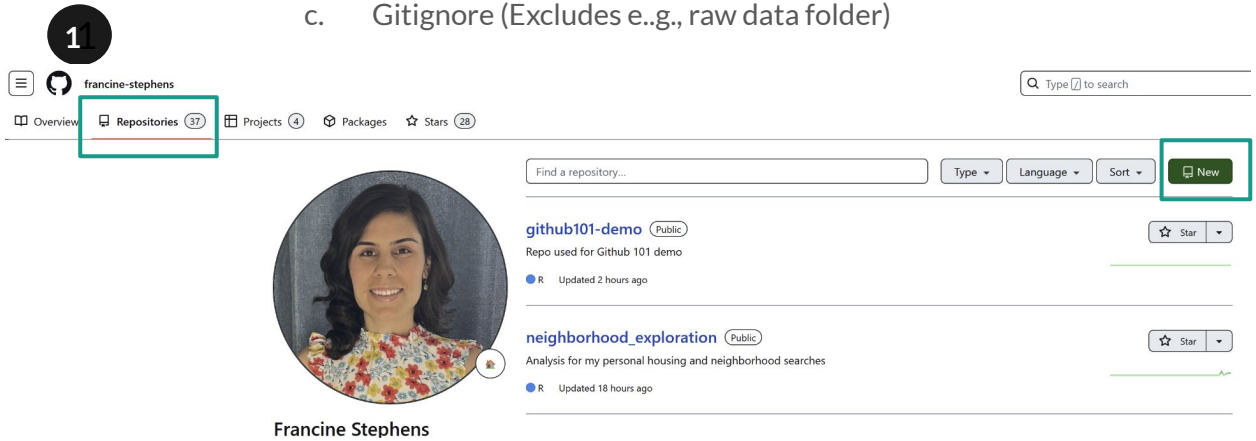
2. Check that Git is installed on your machine
   a. Use Terminal/Shell
   b. Install if not already installed

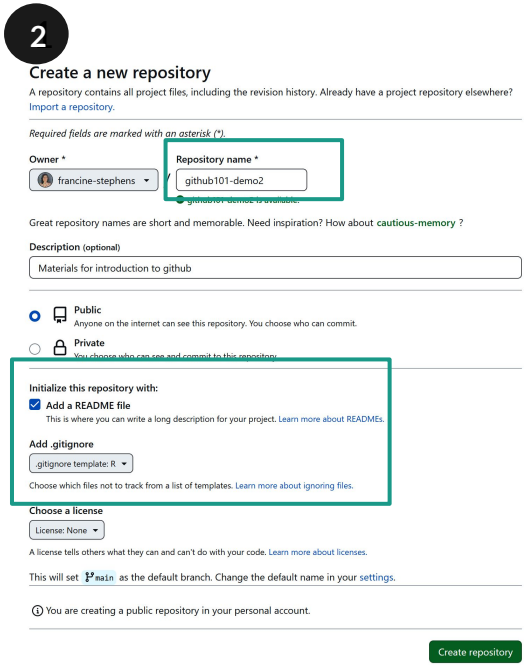
3. Set your GitHub username and email as part of the GitHub global config

```
## install if needed (do this exactly once):
## install.packages("usethis")

library(usethis)
use_git_config(user.name = "Francine Stephens", user.email = "fis@stanford.edu")

```

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)





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**.

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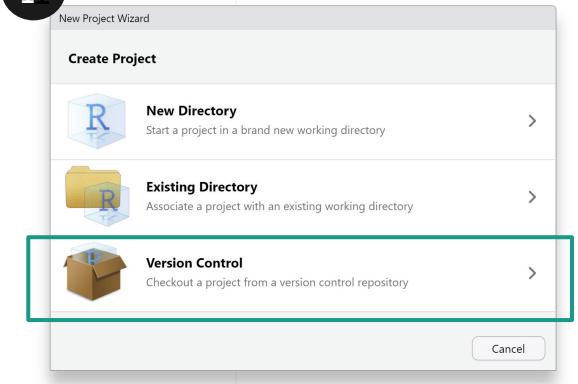

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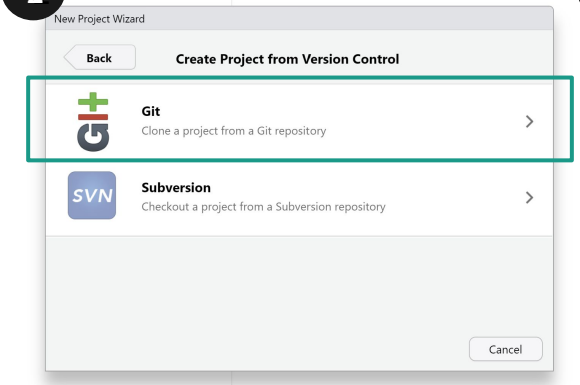

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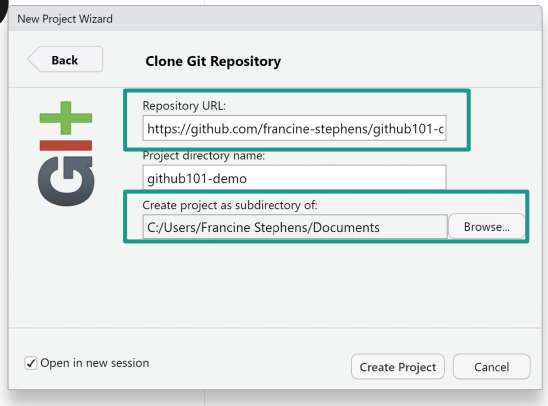
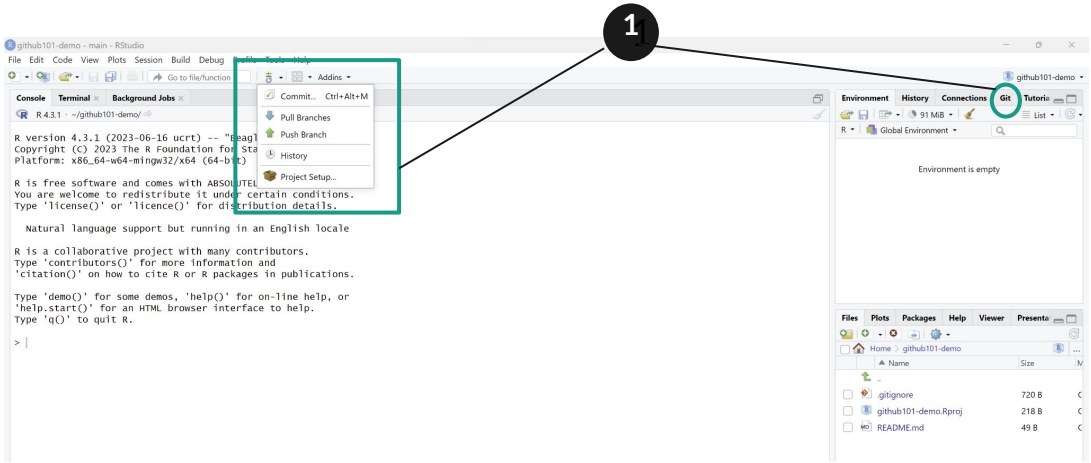


Create and Modify Files in Local Workspace

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.

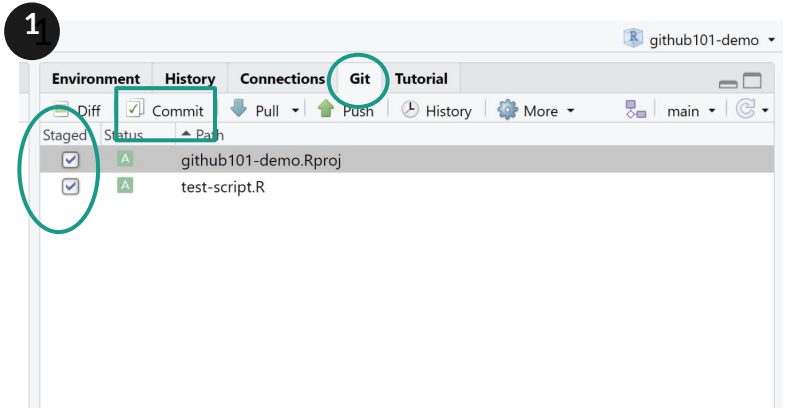
3. If there are new outputs/data that you do not want to be stored in the repository online, update the gitignore file to exclude them from your future commits.

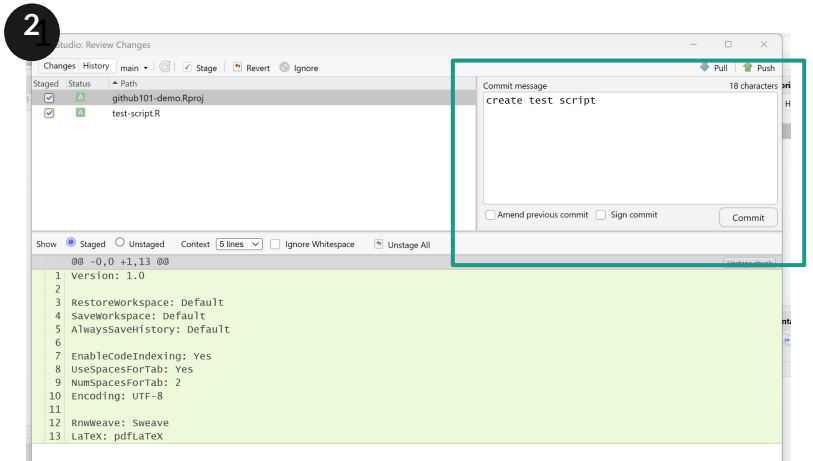


Commit Changes

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.*

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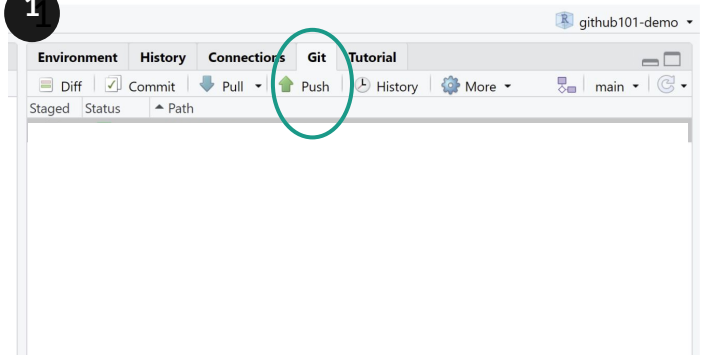

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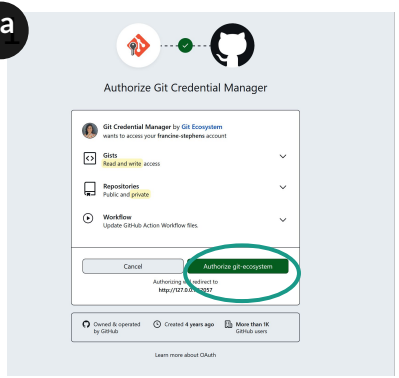

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Thank You

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.