# Introduction to Data Analysis with R

#### Day 1: Welcome to the workshop

Selina Baldauf Freie Universität Berlin - Theoretical Ecology

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## Who am I?

- Scientific programmer @theoretical ecology group
- PhD in dryland ecology
- **Teaching** R, Git, good scientific practice, ...

## I'm using **Q** a lot for ...

```
... data analysis
```

... ecological modelling

... writing documents/websites/presentations

.... workflow automation

. . .

## Who are you?

What are the molecular basis of learning and memory in the brain?

Is this newly developped sample **preparation** technique suitable for use in clinical diagnostics?

How do neurons **Biophysics** connect to their

partners?

**Biochemistry** 

**Environmental** ecology

To study the **biofilm formation** process in flow by analyzing the fluorescent images

Structure and Function study of the Glycogen **Debranching** Enzyme

The impact of tripartite interactions among host immunity, microbiota, and pathogens on pathogen virulence evolution

**Department of Economics** and Government of Agriculture, Food and **Natural Resources** 

Behavioral economics

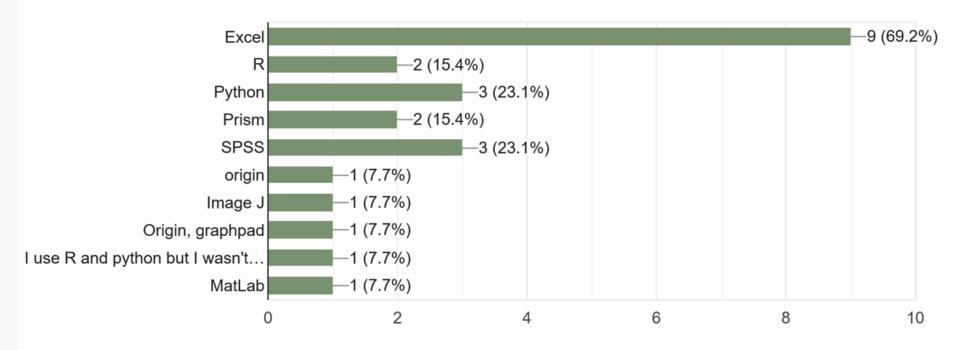
The effect of community diversity on bacterial spatial patterns in the phyllosphere

How can biochemical markers and comparative methods contribute to the monitoring of ash dieback in Germany?

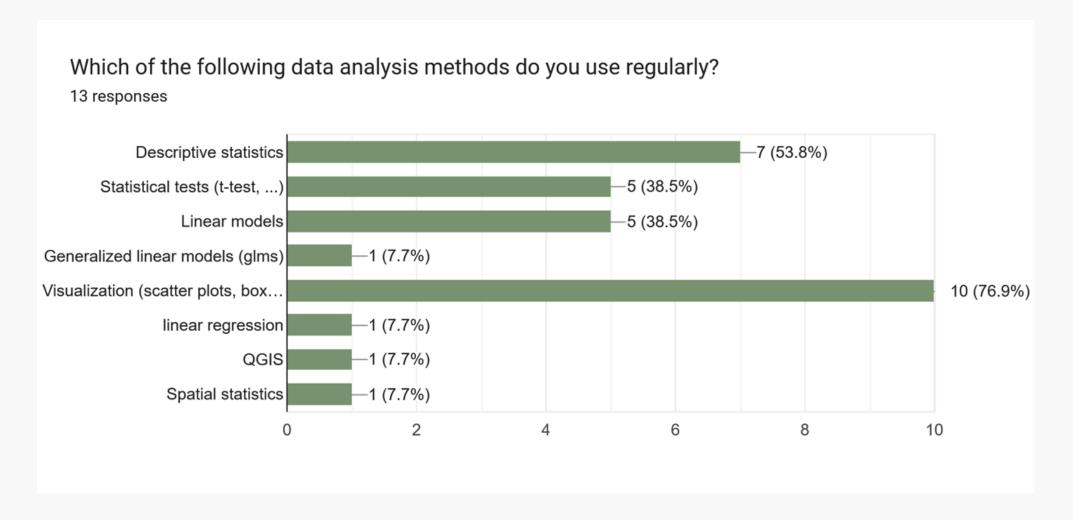
## Who are you?

Which tools did you use for data analysis so far?

13 responses



### Who are you?



## Workshop topics

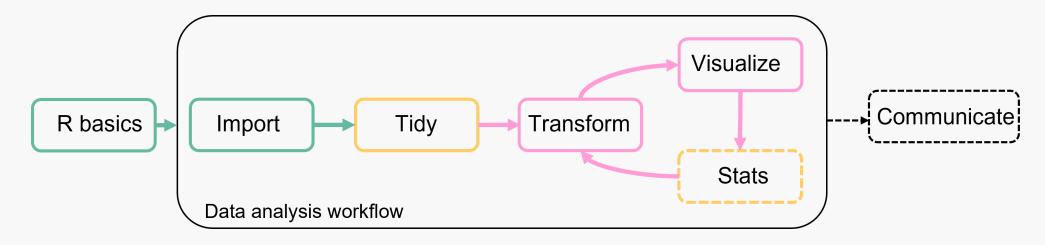


Image adapted from Wickham & Grolemund: R for Data Science

Day1 Introduction to R and RStudio and data import

Day2 Data transformation and visualization with the tidyverse

Day3 Cleaning data, statistical tests, good practice and AI tools

Day 4 Bring your own data

Day 5 Bring your own data + Q&A (optional)

## Schedule and Organization

- 10.03.2025 11.03.2025 from 4 9 a.m. 4 p.m.
- 🚃 17.03.2025 🕘 9 a.m. 12 a.m.
- ~ 12 a.m. 1 p.m., in between
- ★ We will meet in the General meeting on Webex

#### 1. Input sessions

Presentation and demonstration of a topic + examples

#### 2. Tasks

- Solve them in small groups
- 3. Joint discussion of tasks & questions

#### **Material**

- All material can be found on the workshop's website
  - Presentations, Tasks, Solutions, Additional resources
- You can download slides and R Scripts from there
- Website will stay online after the workshop

## Bring your own data

On the last workshop day, you can **work with your own research data**. I will also provide some **real life data sets** from different topics.

#### Learning by doing

- Get started using R for your own analyses
- Use any of the methods from the course or try new things, ...
- Present/discuss your results, questions and problems at the end of the day
- Add your name and some details on what you plan to do in this joint table

## Before we get started I

- Help each other if possible
- Have an eye on the chat and on the time
- All questions and comments are welcome
- If possible, please turn on your camera
- Feedback is welcome (Evaluation at the end of the workshop)

## Before we get started II

Did anyone have problems installing R and RStudio?



Download and install R from https://cran.r-project.org



Download and install RStudio from https://www.posit.co

## Before we get started III

#### How to use Webex teams

- General channel for our joint meetings and chat
- Groups 1-4 for solving tasks jointly
  - Group spaces have their own chat and meetings
  - Ask questions in the chat, share screenshots, share your screen and talk

# Now you (10 min)

Get to know your team

- Go into your groups and start a meeting there
- Introduce yourself to your team (2 minutes for everyone)
  - What is your PhD about?
  - Which tools did you use so far for data analysis?
  - Which types of data analysis do you need?
- Come back to the general meeting after 15 mins