

# Introduction to Data Analysis with R

Day 1: Welcome to the workshop

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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 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 developed **sample preparation** technique suitable for use in **clinical diagnostics?**

Biophysics

How do **neurons connect** to their partners?

Biochemistry

Behavioral economics

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

Environmental ecology

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

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

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

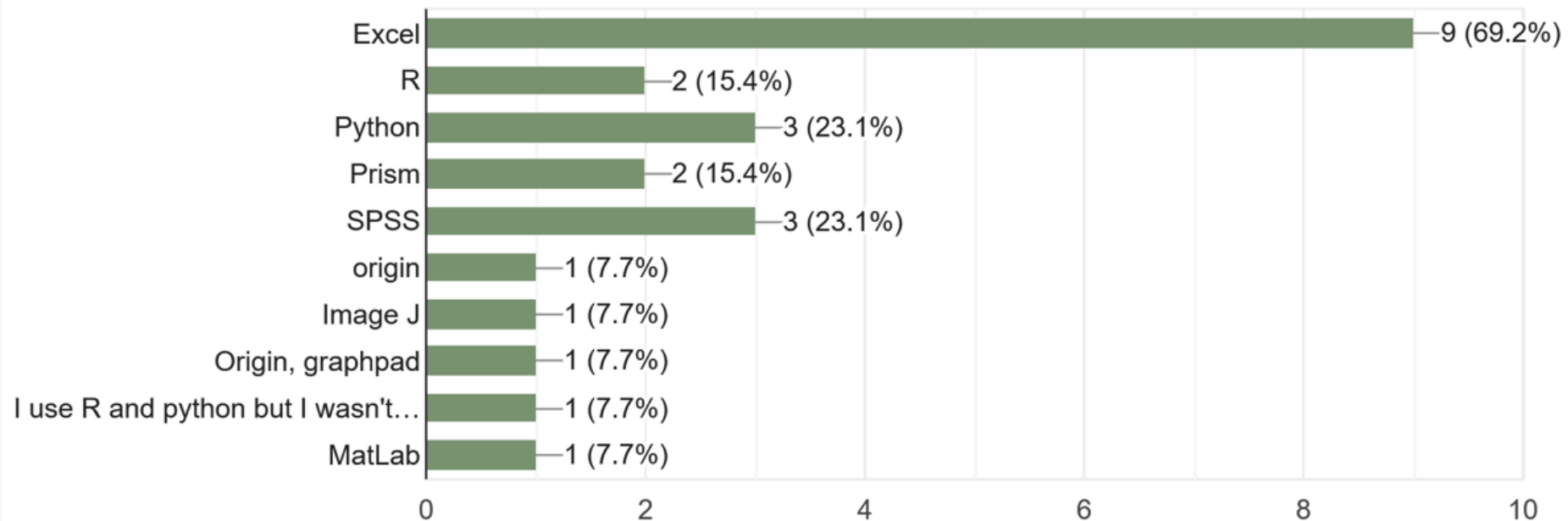
The effect of community diversity on **bacterial spatial patterns in the phyllosphere**

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?

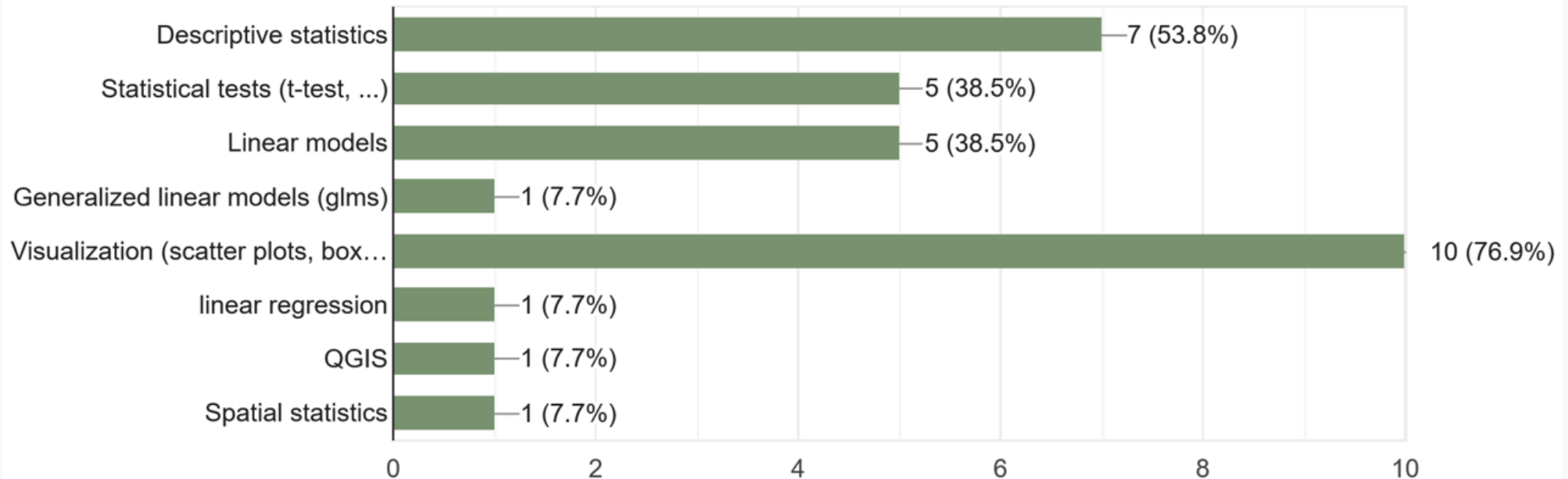
13 responses



# Who are you?

Which of the following data analysis methods do you use regularly?

13 responses



# Workshop topics

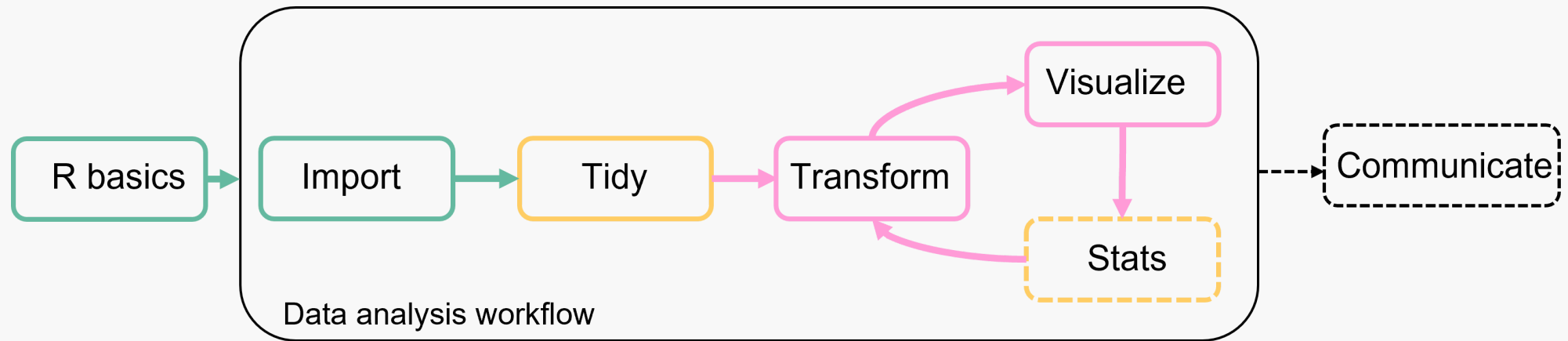


Image adapted from Wickham & Grolemund: [R for Data Science](#)

**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

 03.03.2025 - 04.03.2025 from  9 a.m. - 4 p.m.

 10.03.2025 - 11.03.2025 from  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