

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**

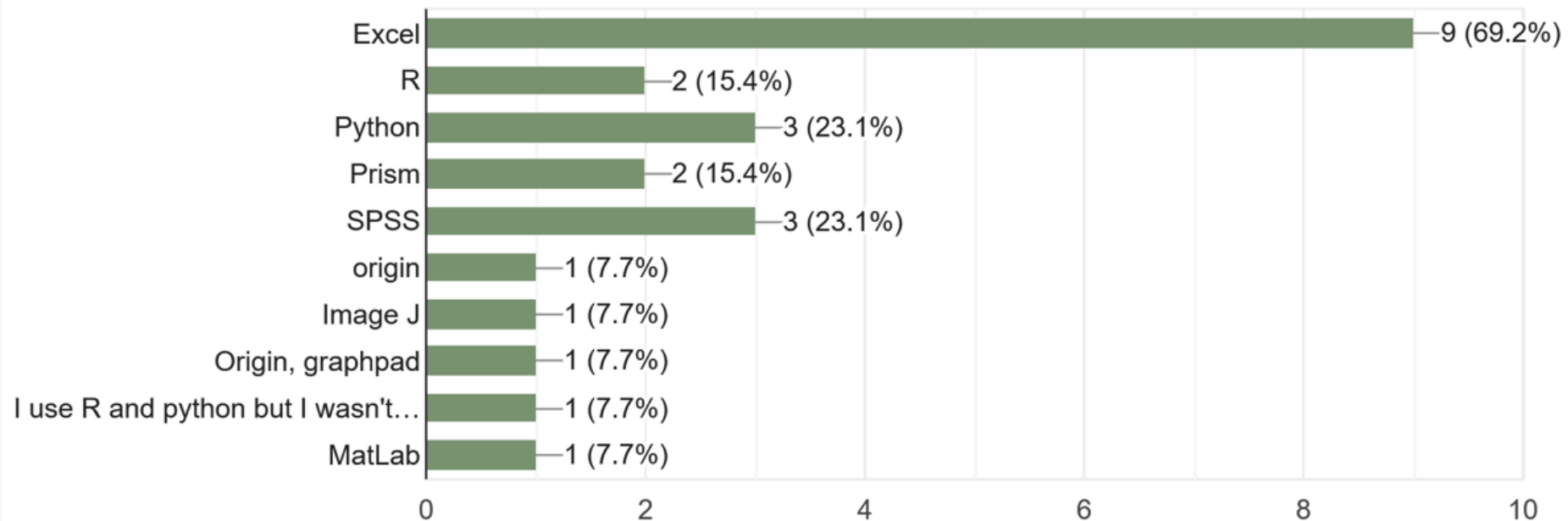
The effect of community diversity on **bacterial spatial patterns in the phyllosphere**

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?

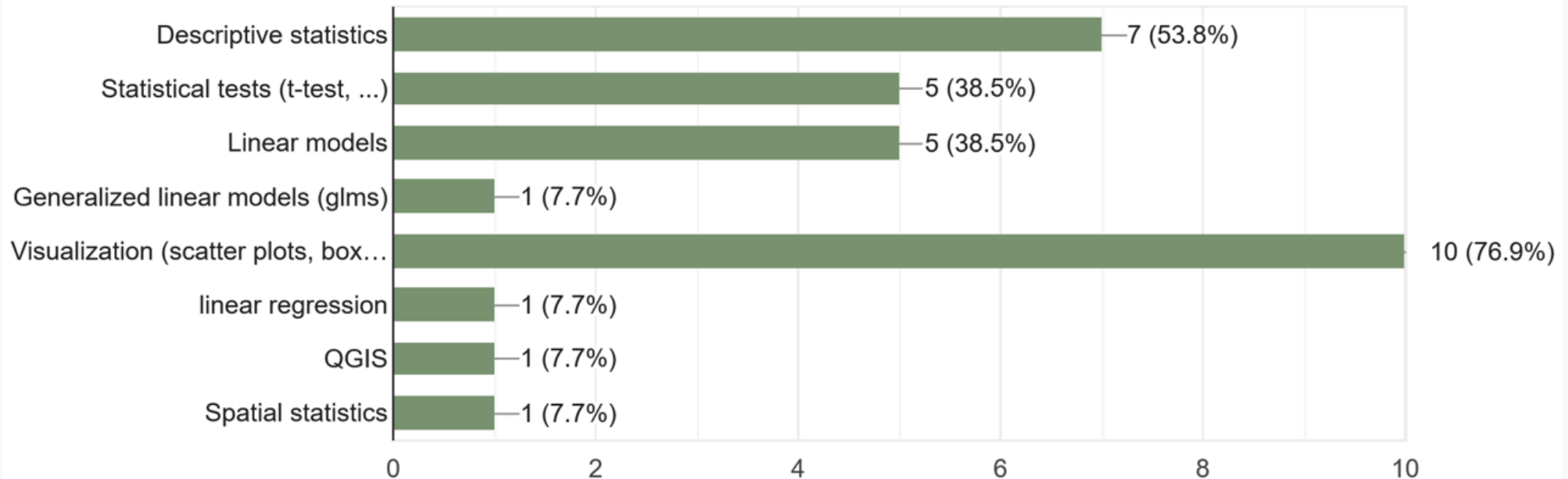
13 responses



Who are you?

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

13 responses



Workshop topics

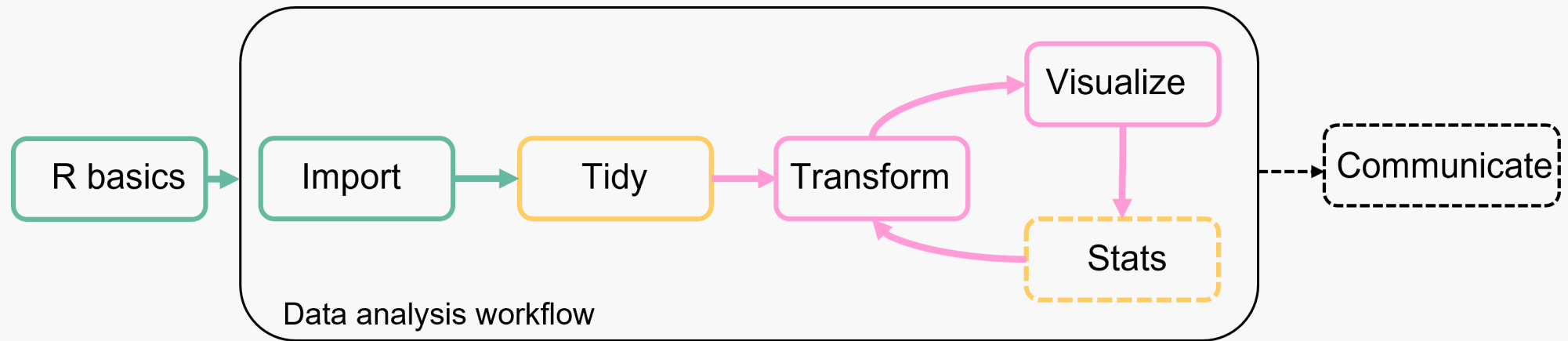


Image adapted from Wickham & Grolemund: [R for Data Science](#)

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