Waipapa Taumata Rau
University of Auckland

Introduction to Python

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ResBaz
RESEARCH BAZAAR

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Learning Objectives

- Firsthand **experience** using Python in a Jupyter Notebook (hosted on Google Colab)
- **Awareness** of programming fundamentals and use of Python in a research context.
- **Knowledge** about ways of **ingesting** existing **data** and **visualising** it
- **Confidence** with common programming workflows (trial and error; debugging, etc.)

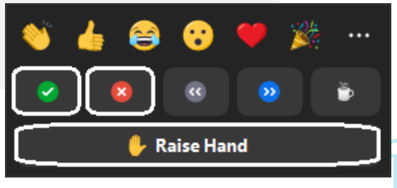
- **Not** a full introduction to programming course.

Housekeeping

- Zoom: Stay **muted**, **camera on**
- **Change Zoom name** to your name (not UPI, etc.)
- **Participate** as much as possible
- **Introduce** yourself over Zoom chat (name, research area, institution, what you hope to get from this workshop)

- Code of Conduct

- We'll aim for a 5 min break on the hour



How we handle Questions

- Questions are **good** - use Zoom **chat** or Zoom Reactions - ‘raise hand’ to ask questions.

- **Helpers monitor** the Zoom **chat**
  - If they spot questions that seem **relevant to more people**, the helper will raise this **with** the **instructor**.

- The instructor may suggest a **helper take** a question posed to the group or **postpone** answering until a suitable point.

Workshop overview

- This lesson is based on The Carpentries Programming with Python
  - It follows the Carpentries style of teaching (live-coding, embracing mistakes -- just to name a few)
  - Usually **an 8 hour course over 2 days!** Check out the material for much more.

- You made a great choice with Python
  - Python is a **rather abstract** programming **language**.
    - That's great for many research projects where you often don't care too much about *what's going on under the hood* but just want to use it.
    - It is very **popular**/the *most searched for* programming language
      - This is good – there are great communities and resources to tap into when we get stuck.
    - there are tons of great **libraries** that can be used for data analysis
      - We'll take a look and use some of these.
    - Often considered a good "scripting" language – Great for little files that get a job done.

THE CARPENTRIES https://carpentries.org/

Some Context

How this workshop differs from the core Carpentries lesson

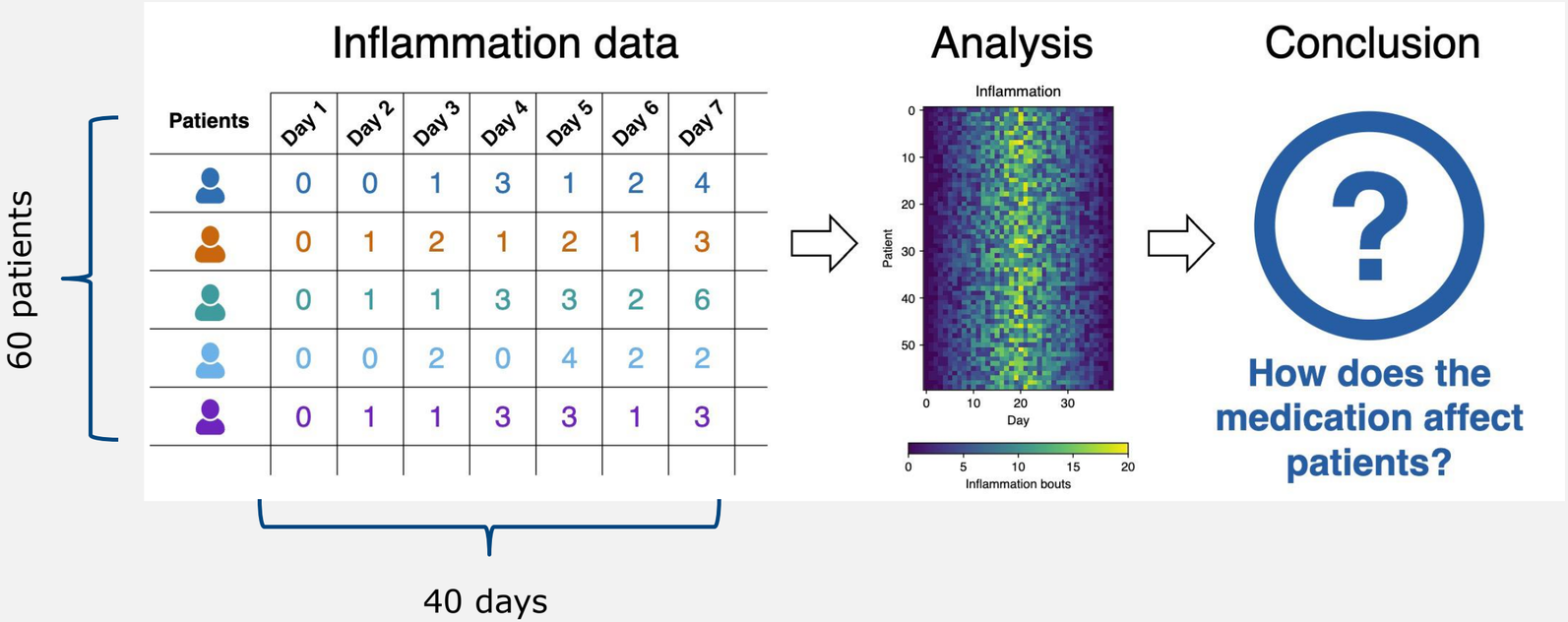
- we don't use local Python installs
- we use Google Colab –
  - Check out Victor’s session tomorrow at 10am for more!
- For bigger projects, we recommend local installation (or a Virtual Machine/VM) and an Integrated Development Environment (IDE) such as Visual Studio Code
  - we share this notebook afterwards (intentionally afterwards!)

Doctor Maverick's
Miracle Arthritis Inflammation Cure!
exclusive preprint!
Patent Pending!

Learning Python through data analysis

Investigating Dr. Maverick's miracle arthritis inflammation cure!

- We have some files (csv) containing inflammation data that we're going to explore using Python.



- Vocabulary: Inflammation *bout* = *flare-up* = *pain*

Workshop outline

Content	Instructor
0) Colab introduction 1)Analysing Data 2)Visualising Data	James
5 min break	
6) Analysing data from multiple files 7) Making choices (if we have time) 8) Creating functions	Chris
Wrap-up and Questions	Chris

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Go Python!