

# **Lecture 1: Intro to R, RStudio, and the Data Science Workflow**

FNCE 5352 — Financial Programming & Modeling

Matt McDonald

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# Intro

# Matt McDonald - CV

## Work:



## Education:



# Career Path



# The Core Idea

**Most financial questions aren't about the "right" answer.**

They're about making the **best decision**  
given **noise, uncertainty, and tradeoffs**.

# What This Course Is — And Isn't

**This course is not** - learning every algorithm - optimizing models for their own sake

**This course is** - applied statistical learning for finance - regression and classification - interpretation and model assessment - understanding tradeoffs (accuracy vs robustness, simplicity vs flexibility)

# Tools And Transfer

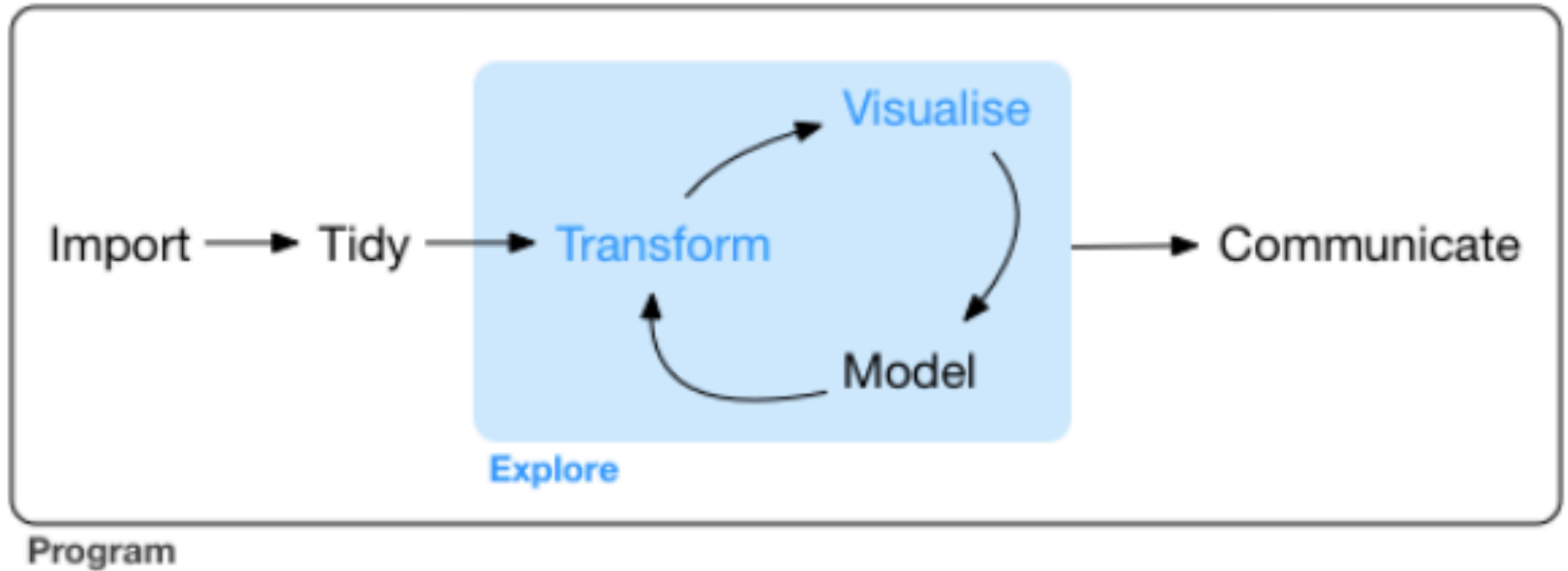
The **ideas** matter more than the language.

- Part 1 uses **R** (lecture language)
- Part 2 uses **Python**
- Assignments may be completed in either language
- The workflow and concepts transfer directly across both

# The Data Science And Modeling Workflow



# The Workflow We Will Use All Semester



This is not a one-time sequence.  
It's a **loop** you will revisit constantly.

# Why This Is A Loop (Not A Checklist)

- New data arrives
- Assumptions change
- Results raise new questions
- Decisions require iteration

In finance, the workflow rarely ends.

# What Each Step Looks Like In Finance

- **Import**

Prices, returns, fundamentals, loan tapes, macro series

- **Tidy**

Dates, joins, missing data, panel structure

- **Explore**

Distributions, correlations, regime changes

- **Model**

Regression and classification to support decisions

- **Communicate**

Plots, narrative, and a clear "so what?"

# R And Python: Portability

# The Key Claim

**If you understand what we're doing in R,  
you'll recognize it instantly in Python.**

# What Actually Transfers

- Data frames / tables
- Functions, objects, and libraries
- Wrangle → visualize → model → evaluate
- Train / test thinking (coming soon)

# RStudio Orientation

# R vs RStudio



# Packages

R: New phone



R Packages:  
Apps you can download



# Projects (Strongly Recommended)

- One folder per project
- Relative paths
- Easier reproducibility

# RStudio Walkthrough (Live)

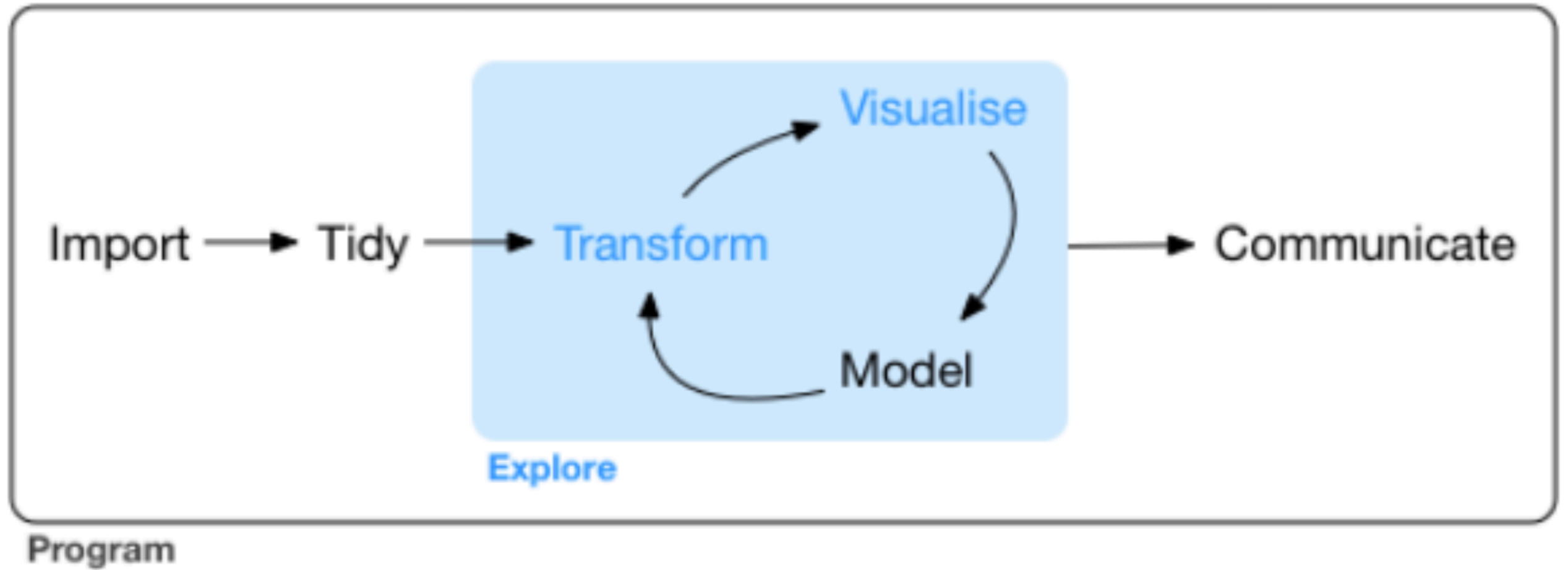
# Positron

# Hands-On Workflow Demo

*(AAPL + SPY)*

# Live Coding In RStudio

# What We Just Did



# ISL Chapter 1 (conceptual)

**This chapter is about how we talk about models, not how we compute them.**



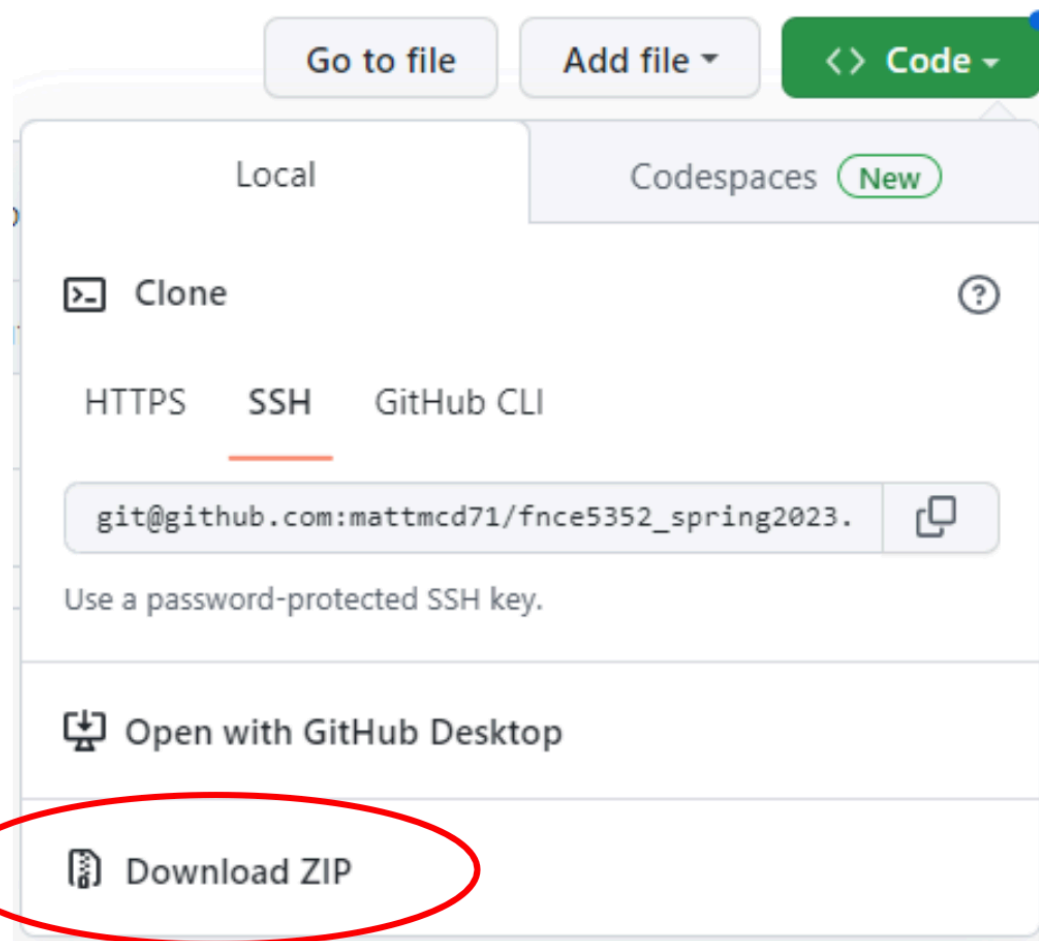
# Vocabulary we'll use all semester

- statistical learning
- prediction vs inference
- training vs test performance (intuition today)
- overfitting (why “looks great in-sample” can be a trap)
- tradeoffs (accuracy vs interpretability; complexity vs robustness)

# Wrap Up

# How to Access the Class GIT Repo

- Download ZIP



- Clone

- HTTPS or SSH
- SSH will require a setup of your SSH keys
  - See happygitwithr page for complete instructions on that

# Next Steps

- Read: R4DS Sections 1–8
- Read: ISL Chapter 1 (conceptual)
- Make sure you can run code and re-render slides