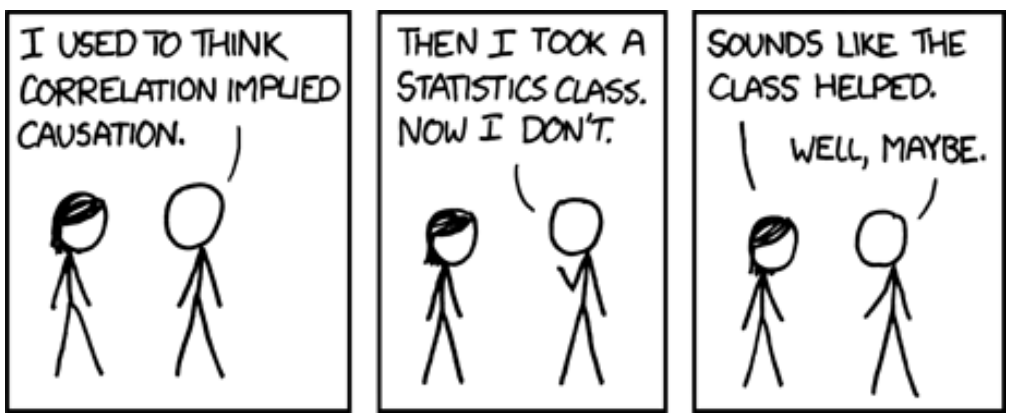
ECON 0150 | Economic Data Analysis

How economists do data analysis.



What is economic data analysis?

The data analysis done by economists :)

Economists use data to build models and inform decisions.

Examples:

1. The impact of analyzing unemployment data for setting policy.
2. Evaluating the effect of stimulus checks on consumer spending.

Course Goals

Developing the data analysis pipeline used by economists.

Skillset 1. Summarize data (tables and figures).

Skillset 2: Build and interpret models (general linear model).

Skillset 3: Communicate findings (writting and presentations).

Course Structure

*The course is divided into **six parts**.*

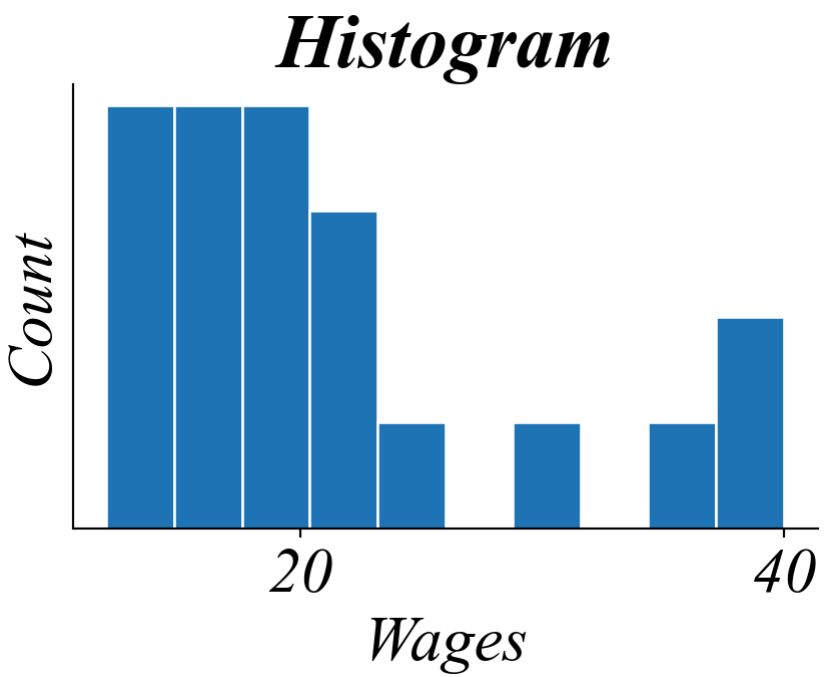
Part 1: Summary Exploratory Data Analysis (EDA)
Part 2: Pattern Exploratory Data Analysis (EDA)
Part 3: Building Linear Models
Part 4: The General Linear Model
Part 5: Advanced GLM
Part 6: Communicating with Data

Part 1: Summary EDA

***Focus**: Understanding data through summarization (eg. tables and figures).*

Example: Analyzing a dataset of wages.

Wage	EduYrs
12	8
13	10
14	10
14	11
15	12

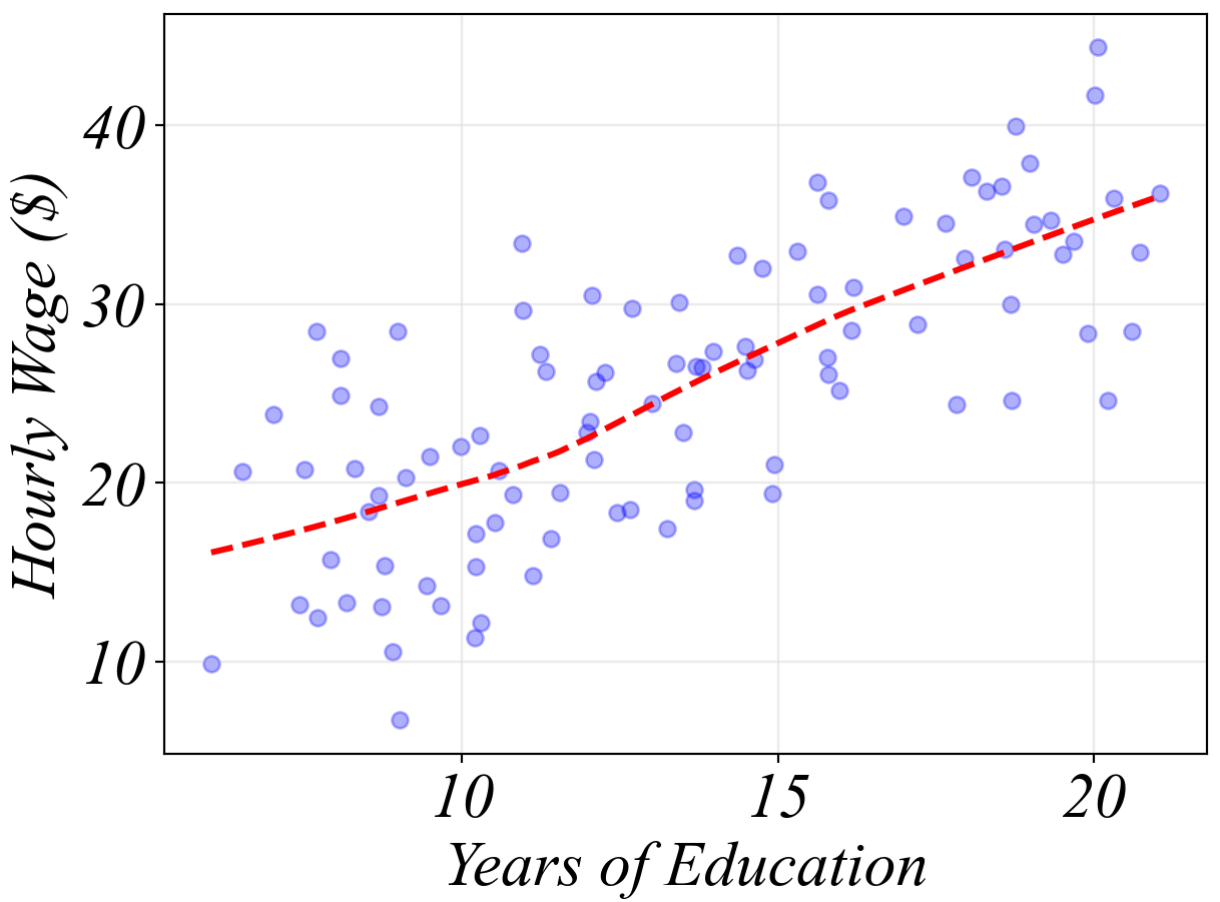


Part 2: Pattern EDA

***Focus**: Understanding relationships between variables (eg. scatterplot).*

Example: Exploring a relationship - education and wages.

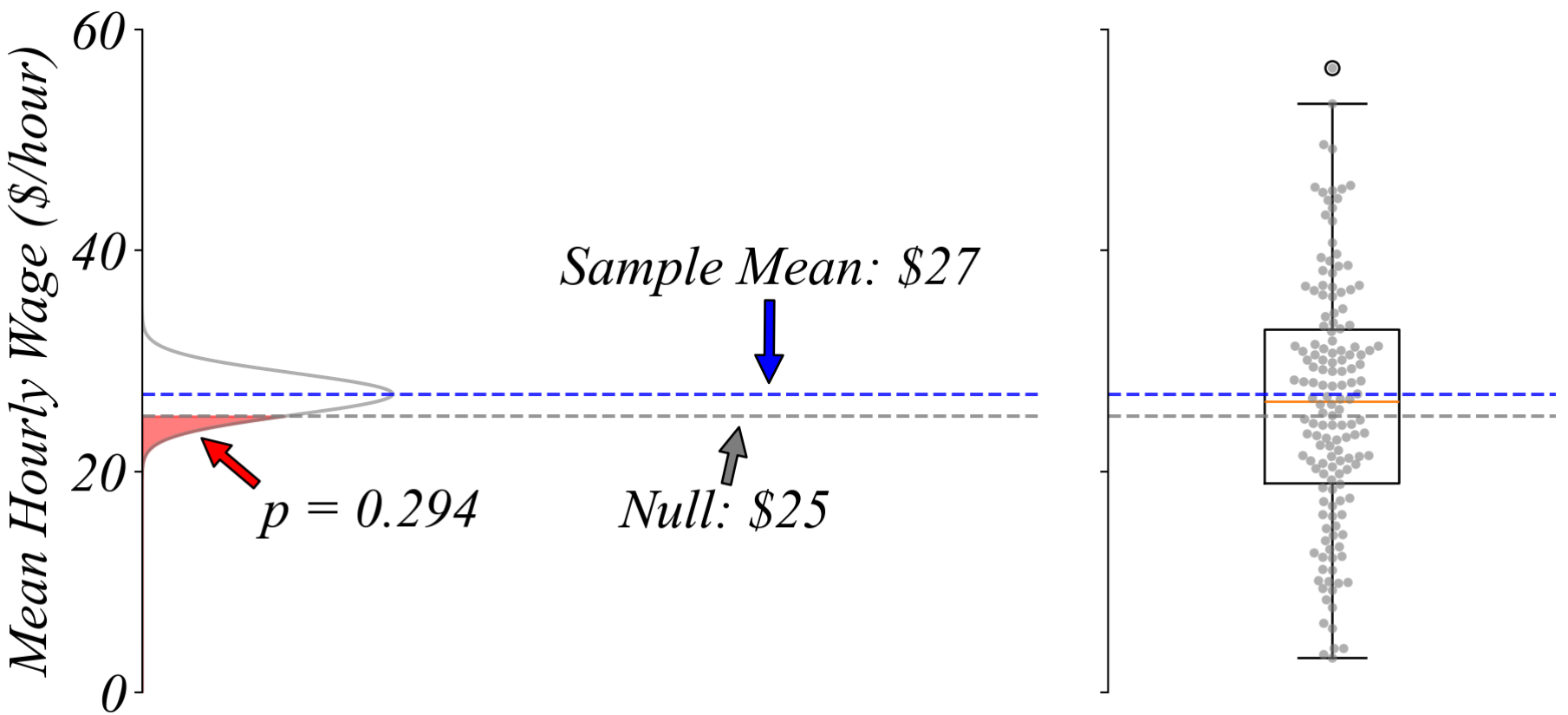
Wage	EduYrs
14	10
15	12
16	12
18	13
18	14
20	14
22	15



Part 3: Building Linear Models

***Focus**: Sampling variation, Central Limit Theorem, and basic testing.*

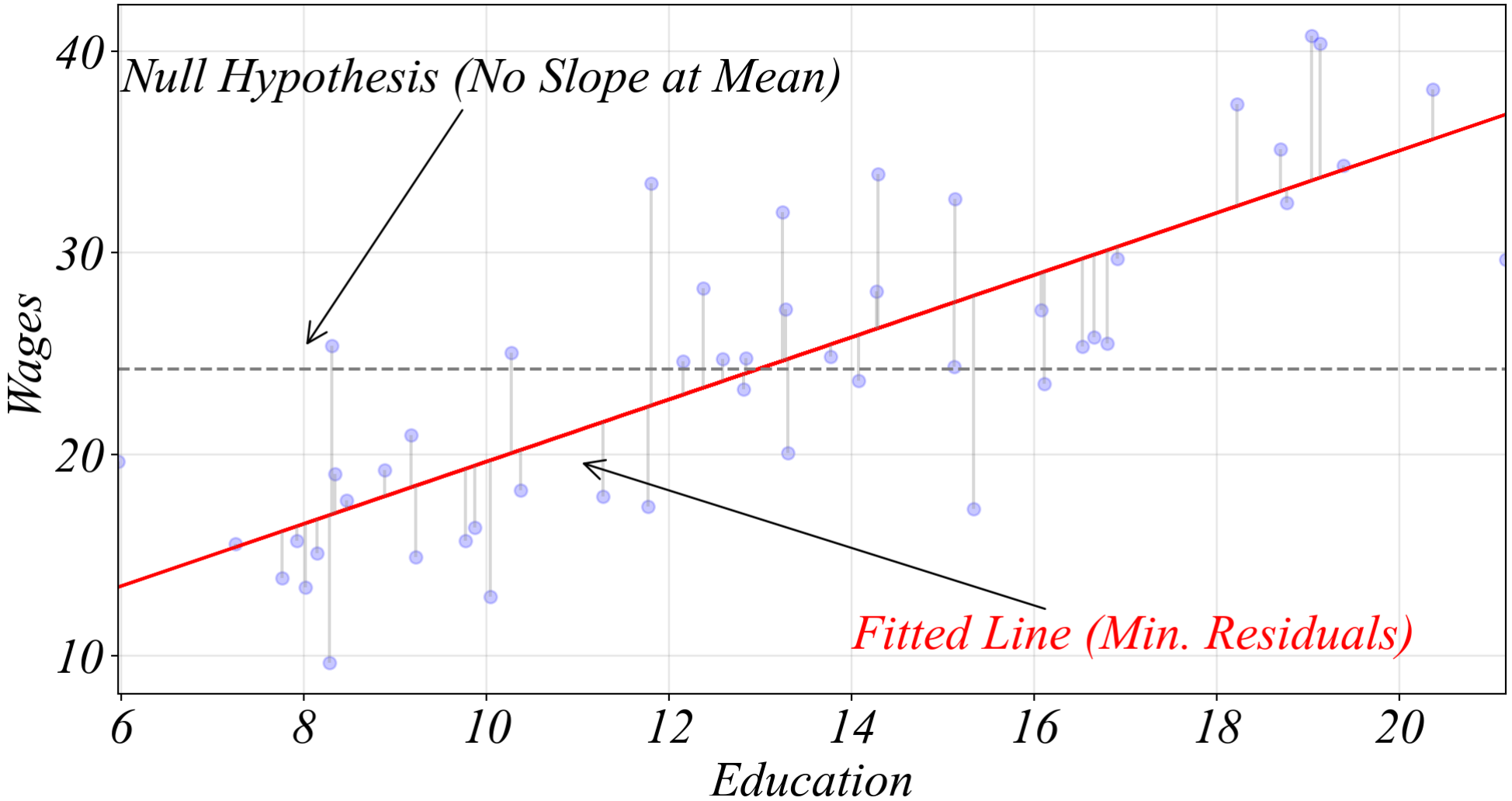
Example: Is the difference from $25 a real pattern or just noise?



Part 4: Basic General Linear Model

__Focus__: Single and multiple regression, residual analysis, and testing.

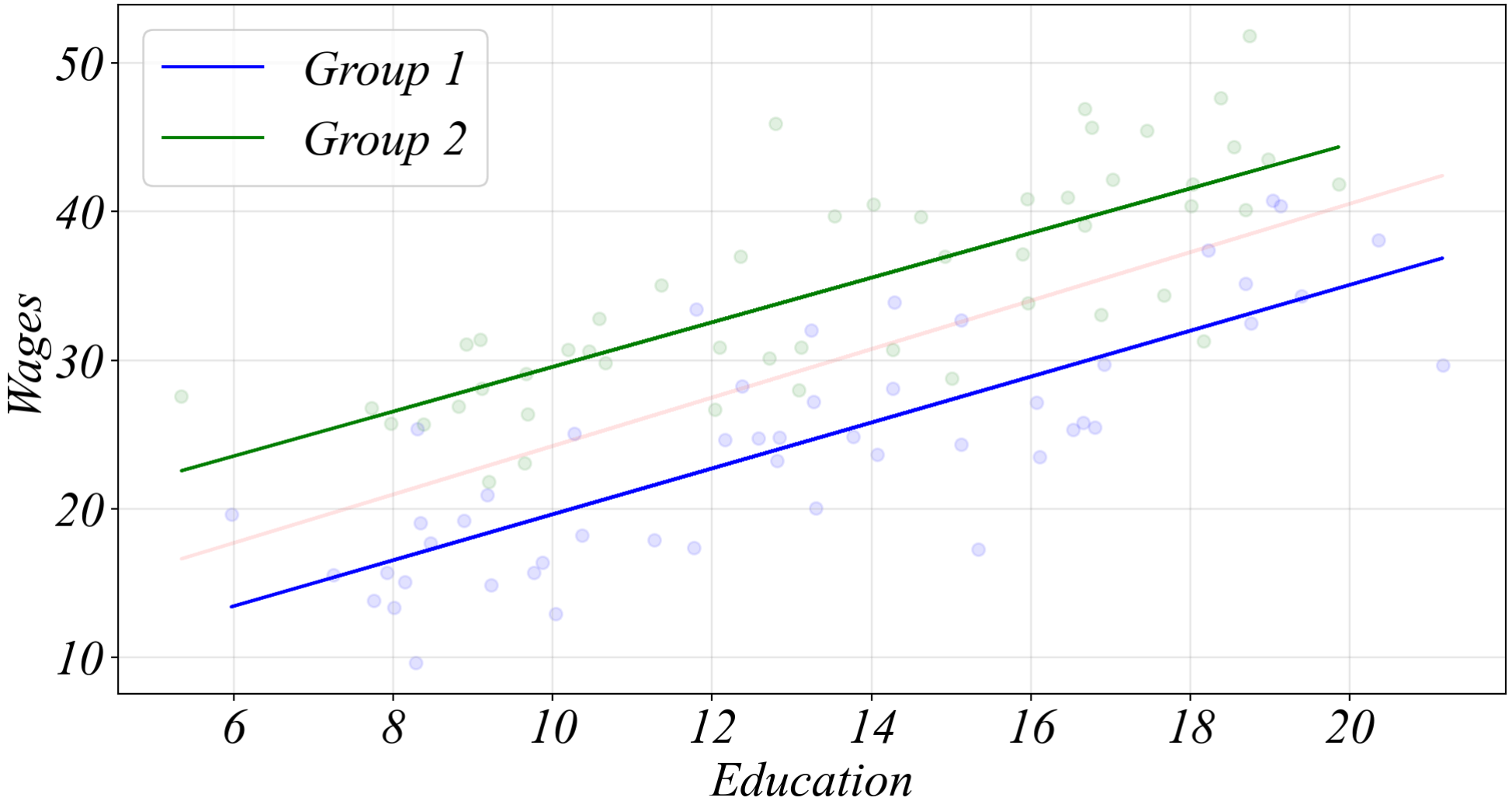
Example: Is the positive slope a real pattern or just noise?


Null Hypothesis (No Slope at Mean)
Fitted Line (Min. Residuals)
Wages
Education
40
30
20
10
6
8
10
12
14
16
18
20

Part 5: More General Linear Model

***Focus**: Fixed effects, repeated measures, time series.*

Example: Do different groups have different relationships?


Group 1
Group 2
Wages
50
40
30
20
10
6
8
10
12
14
16
18
20
Education

Part 6: Communicating with Data

***Focus**: Clear narratives, effective visualization, presentation skills.*

Example:

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Course Logistics

Resources & Tools

Software: Excel & Python

Website: ECON_0150

People:

- Taylor Weidman: 4702 Posvar Hall, taylorjweidman@pitt.edu
- TA: Jacob Stenstrom (dcy14@pitt.edu), posted on Canvas

Optional Textbooks:

- *Data Visualization and Analysis in R* by Dustin Fife
- *How Charts Lie* by Alberto Cairo
- *Analysis of Economic Data* (2nd ed.) by Gary Koop

Grading Breakdown

Homework (10%)

- Most Fridays at 5PM; lowest 3 dropped.

MiniExams (70%)

- Weekly in the first 10 minutes; lowest 3 dropped.
- Open-book, open-note (no electronics).

Final Capstone (20%)

- Presentation + paper.
- Demonstrate full analysis from start to finish.

Low Key Policies

Email Policy:

- Response may take up to 1-2 days.
- Be concise with questions.
- My email is off in the evening and on the weekend.

AI Policy:

- Encouraged as a learning and coding too.
- Your work must be your own.
- Cite your source.

Academic Conduct:

- Adhere to the Academic Integrity Code.

Looking Ahead

First Homework:

- Due Friday (Jan 17) at 5PM on Gradescope

First MiniExam:

- First class of Week 3 (Jan 20/21) during the first 10 minutes.
- Bonus “preview” question on material not yet covered.
- Bring your notes!

Getting Set Up

Excel:

- Free for students through Pitt's institutional access

Python:

- Google Colab Notebooks (*recommended*)
- Anaconda and JupyterLab (*more advanced*)