Job Satisfaction, happiness, and work-life balance: *from R to Python*

Reproducible Research

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Outline

Introduction

- **Job satisfaction** is a broad term studied from different perspectives, including **psychology**, **sociology**, **management sciences**, and **economics**.
- This complex feeling is important not only for individuals but also has a significant impact on various aspects of **organisational life**.
- Research shows that job satisfaction influences employee **productivity**, **loyalty**, and helps in **preventing absenteeism** (Gazioglu, 2006).
- Additionally, high levels of job satisfaction can lead to **better teamwork**, **lower turnover rates**, and **improved overall performance** within organisations. Therefore, from the employer's perspective, it is crucial that employees feel satisfied with their work.

Findings: *econometric analysis in R*

- **Positive** correlation between happiness and job satisfaction
- Religiosity and participation in skill-enhancing courses **positively** affect job satisfaction
- Flexibility at work and longer working hours are associated with **higher** job satisfaction
- Job-related fatigue and the neglect of family due to work demands **negatively** impact job satisfaction
- While gender alone **does not significantly influence** job satisfaction, the interaction between gender and happiness indicates **differing impacts** across genders

Why did we choose to reproduce this topic?

- We previously conducted an econometric analysis based on the **European Social Survey** (ESS), focusing on: Job satisfaction, Happiness Work-life balance.
- However, we realized that:
  - Our analysis was **not fully reproducible**
  - Code **documentation** was **limited**
  - **Transparency** and **robustness** could be **improved**
- Our prior analysis used R and complex ordinal models
- We now aim to test:
  - the **robustness**,
  - the **reproducibility**,
  - and **transparency** of our findings by **rewriting** and **documenting** the process in Python

What we are solving?

- **Re-analyze** and **reproduce** the study in a new programming environment
- Test consistency of:
  - **Model assumptions** (Brant test, multicollinearity)
  - **Key interactions** (e.g., happy $\times$ gender)
- **Trace** and **document** all methodological decisions
- Original analysis in R give us **clear code** to translate into Python
- ESS data are **open-access** - easy to replicate
- Clear **replication challenges** (variable recodes, missing scripts) let us audit and document gaps

Methodology

- **Data:** European Social Survey 2020
- **Econometric models:** Ordered Choice Models
- **Original code-base:** R (regression models, diagnostics, plots)
- **New environment:** Python
- **Version control:** GitHub with branches, pull requests, and issue tracking for collaboration and history tracking
- **Documentation:** Jupyter notebooks
- **Output:** Fully documented reproducible report

Team responsibilities

- **Bartłomiej Ramotowski**
  - Rewriting Ordered Choice Models in Python
  - Conducting statistical assumption checks (Brant test, multicollinearity)
- **Emilia Selwa**
  - Data cleaning and transformation (e.g., Likert scaling, variable recoding)
  - Replicating visualizations and analyzing model discrepancies
- **Eliza Hałatek**
  - Preparing final reproducible report (e.g., Jupyter + Quarto export)
  - Structuring and styling documentation and plots for clarity
- **All team members**
  - Collaboratively managing the GitHub repository
  - Committing changes with clear version control and documentation logs
  - Mutual support and solving (potential) problems together :-)

Thank you!

Questions?

Literature

- Gazioglu, S., & Tansel, A. (2006). Job satisfaction in Britain: individual and job related factors. Applied Economics, 38(10), 1163–1171. https://doi.org/10.1080/00036840500392987