

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

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April 2025



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# Outline

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# 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

- **Replicate** original ESS-2020 job-satisfaction model exactly
- **Translate** all **R** scripts **into Python** notebooks
- **Identify gaps** in the published workflow
- **Reproduce** our original analysis in a new environment: Python
- **Compare results** with our original R-based analysis
- Document every step to **ensure transparency** and **reproducibility**
- **Identify** any **discrepancies** or **instability** in model results
- Use **version control** practices throughout

- **Data:** European Social Survey 2020
- **Econometric models:** ordered logit/probit (statsmodels)
- **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 ordinal logit and probit 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?

- 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>