

# gesis

Leibniz Institute  
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## PIAAC Data Analysis in Stata: A practical guide

*Video 1: Introduction to PIAAC Data*  
*GESIS – Leibniz Institute for the Social Sciences*

# In a Nutshell

## Goal:

- Practical guide for three existing tools to perform PIAAC data analysis in Stata

## Target Group:

- Researchers with some experience in Stata, but little or no experience on analysis of PIAAC data in Stata

## Structure:

- General overview of how the three tools work, as well as several exemplary analyses with the PIAAC data

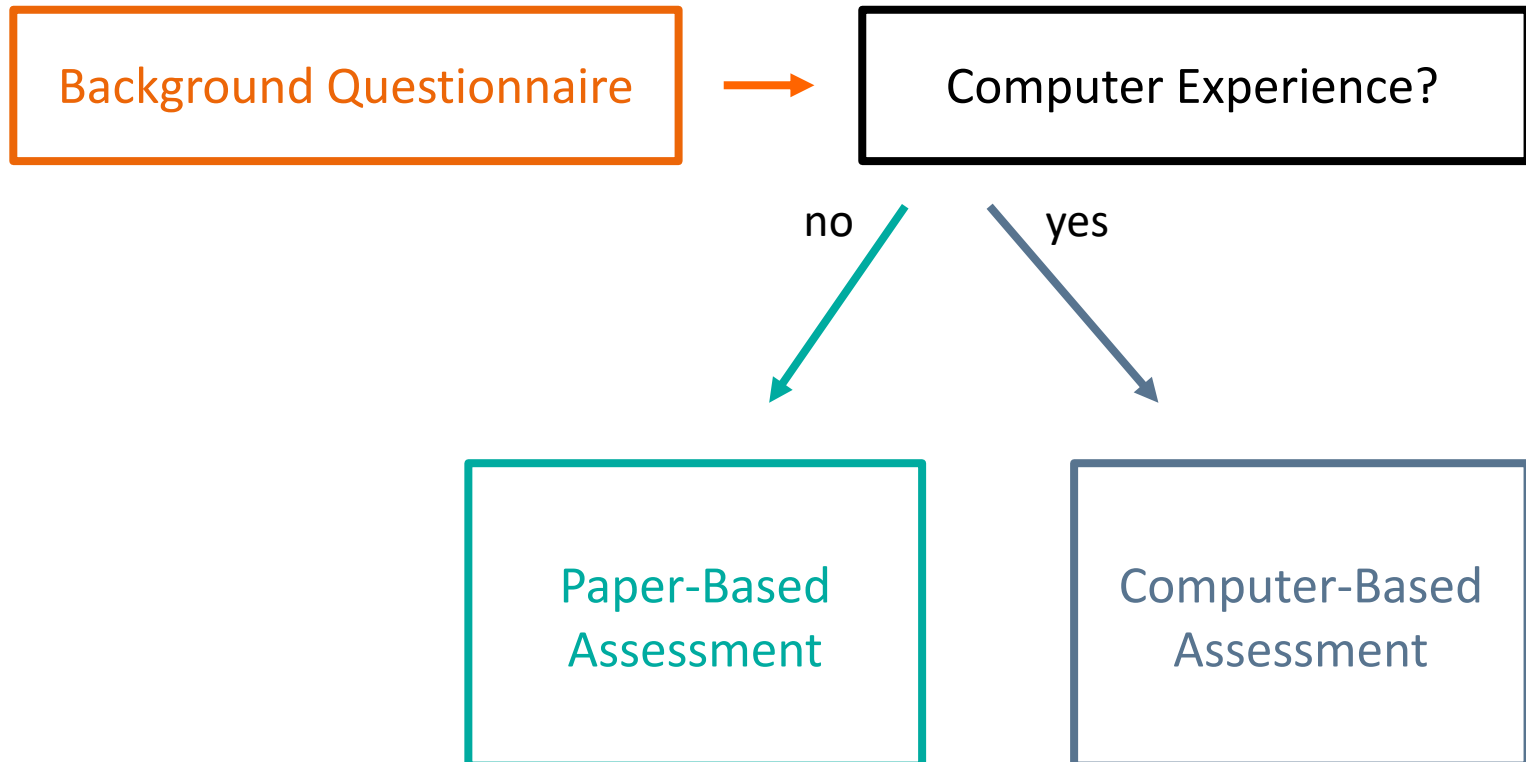


*Video 1:  
Introduction to PIAAC Data*

## Short Introduction to PIAAC

- International large-scale assessment of adult skills
- Initiated by the Organization for Economic Cooperation and Development (OECD)
- Three rounds of data collection between 2011 and 2017 in 38 (OECD and partner) countries
- In each country, nationally representative sample of adults between 16 and 65 years ( $N \approx 5,000$ )
- Interview structure:
  1. Background questionnaire (personal interview)
  2. Skill assessment (self-administered)

# Interview Structure



# Skill Assessment in PIAAC

- Skill assessment in three key domains
  - ▶ Literacy
  - ▶ Numeracy
  - ▶ Problem-solving in technology-rich environments (PS-TRE)
- Results reported
  - ▶ On proficiency scales from 0-500 points or
  - ▶ As proficiency levels
- Further information:
 

<https://www.oecd.org/skills/piaac/>

Level	Scores
Below Level 1	< 176 points
Level 1	176 – 225 points
Level 2	226 – 275 points
Level 3	276 – 325 points
Level 4	326 – 375 points
Level 5	> 375 points

## PIAAC Research Topics I

- Skill differences across sociodemographic groups, e.g., gender, migration background, ...
- Skill differences across countries, educational systems, ...
- Returns to skills and skill mismatch in the labor market
- Skill use in the workplace and during leisure time
- Skills and social outcomes, e.g., risk, trust, ...
- Methodological aspects, e.g., interviewer effects, non-response bias analysis, ...
- And many more...

# PIAAC Research Topics II



## Reference:

Maehler, D.B., Jakowatz, S., & Konradt, I. (2021). PIAAC Bibliography - 2008-2020. GESIS Papers, 2021/06. Köln: GESIS - Leibniz-Institut für Sozialwissenschaften.  
<https://doi.org/10.21241/ssoa.r.72521>



# Important facts for analyzing PIAAC data

## Plausible Values (PV):

- Each respondent only worked on a subset of items
- Unbiased proficiency estimates: 10 PVs are drawn from distribution of latent proficiency, conditional on observed response scores and background information
- PIAAC provides 10 PVs for each of the three skill domains

## Complex Sampling:

- Sampling variance needs to be taken into account
- PIAAC applies replication method which produces up to 80 replicate weights to be considered in addition to a full sample weight

- All analyses in PIAAC that include proficiency have to use the ten PVs values
- Variance estimation in PIAAC needs to reflect uncertainties due to measurement of skills and due to sampling

## Further Reading on PIAAC

- OECD: <http://www.oecd.org/skills/piaac/publications/>
- GESIS: <https://www.gesis.org/en/piaac/rdc>
- Maehler, D. B., & Rammstedt, B. (2020). *Large-scale cognitive assessment: Analyzing PIAAC data*. Springer International Publishing.

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