Invited Symposium:
Linking PIAAC Data to Administrative Data and other Large-Scale Assessments

Chair
Débora B. Maehler & Silke Martin (GESIS - Leibniz-Institute for the Social Sciences, Germany)

Abstract
The symposium addresses content and methodological issues and aims to present research based on PIAAC data linked to administrative data or other large-scale country surveys. Thereby projects and studies of four countries will be presented. Initially research based on PIAAC 2011/2012 linked to register data in Norway will be presented (N = 901). The relationship between skills acquired before the age of 16 years versus those acquired later to formation of skills and subsequent NEET status, were addressed in the study. The second contribution is based on the PISA Young Adult Follow-Up Study (PISA YAFS) conducted in the US. Study design and results comparing for instance literacy from students in PISA 2012 and in the follow up 2016 using PIAAC instruments, assessed as repeated measure, will be presented (N = 2.320). The third contribution integrates PIAAC data linking to PISA data as well as to administrative data. Study design and research based on linking PISA 2000, PIAAC 2011/2012 and register data in Denmark will be presented (N =1.210). In this case the PIAAC sample is a sub-sample of the PISA 2000 sample. The contribution focuses on the relationship of cognitive and non-cognitive skills to earnings and employment rate across time. Finally, the fourth contribution covers the linkage of administrative data with four large-scale assessments in Germany. Following surveys were linked to administrative data of the Institute for Employment Research (IAB): the PIAAC-L (PIAAC Longitudinal; N = 2086), the NEPS (The German National Educational Panel Study, Starting Cohort 6 (SC6); N = 12.621), the SOEP (Socio-Economic Panel; N = 11.500) and the PASS (Panel Study Labour Market and Social Security; N = 30.212). This methodological contribution aims to compare measurement errors for employment related indicators across these surveys.

Presentations
- Title: NEET Status and Early versus Later Skills Among Young Adults: Evidence from Linked Register-PIAAC Data (using Nordic PIAAC Data).
  Authors: Erling Barth (Institute for Social Research, Norway), Anna–Lena Keute (Statistics Norway, Norway), Pål Schone1, Kristine von Simson (Institute for Social Research, Norway), & Kjartan Steffensen (Statistics Norway, Norway)
- Title: Administering Education and Skills Online (ESO) to PISA 2012 Cohort in the United States: Findings from the 2012–2016 PISA Young Adult Follow-up Study (using PISA YAFS).
  Authors: Saida Mamedova (American Institutes for Research/AIR, USA), Maria Stephens (American Institutes for Research/AIR, USA), Yuqi Liao (American Institutes for Research/AIR, USA), Josh Sennett (American Institutes for Research/AIR, USA), Paul Sirma (American Institutes for Research/AIR, USA), & Samantha Burg (National Center for Education Statistics, USA)
- Title: Childhood and Adulthood Skill Acquisition – Importance for Labor Market Outcomes (Danish PISA PIAAC Data).
  Authors: Karl Fritjof Krassel (VIVE/The Danish Center for Social Science Research, Denmark), & Kenneth Lykke Sørensen (The National Board of Social Services, Denmark)
- Title: Validating Measures of Employment Related Information in Surveys Using Linked Administrative Data in Germany (using PIAAC-L/ NEPS/ PASS/ SOEP/ IAB Data).
NEET Status and Early versus Later Skills Among Young Adults: Evidence from Linked Register–PIAAC Data (using Nordic PIAAC Data).

Authors
Erling Barth (Institute for Social Research, Norway), Anna-Lena Keute (Statistics Norway, Norway), Pål Schøne (Institute for Social Research, Norway), Kristine von Simson (Institute for Social Research, Norway), & Kjartan Steffensen (Statistics Norway, Norway)

Abstract
Do skills protect against exclusion in adult ages, and how important are the skills acquired before the age of 16 years versus those acquired later on? To analyze these questions, data from the 2011/2012 PIAAC survey are matched on register data in Norway. We match the scores on numeracy and literacy skills from PIAAC for young adults backwards to grade point average (GPA) data from compulsory school education, which are measured at the age of 16 years (GPA16). We also match the data forwards to employment and education register data 2 years after the PIAAC test.

Results show that there is a high correlation between GPA16 and PIAAC scores even when controlling for parental background, health status, and completion of post-compulsory school education. Including both GPA16 and PIAAC scores in a model of the probability of NEET status 2 years after the PIAAC test shows three times as large differences associated with GPA16 scores than with PIAAC scores, even though the PIAAC test is taken closer in time than the GPA16 results.

Administering Education and Skills Online (ESO) to PISA 2012 Cohort in the United States: Findings from the 2012–2016 PISA Young Adult Follow-up Study (using PISA YAFS).

Authors
Saida Mamedova (American Institutes for Research/AIR, USA), Maria Stephens (American Institutes for Research/AIR, USA), Yuqi Liao (American Institutes for Research/AIR, USA), Josh Sennett (American Institutes for Research/AIR, USA), Paul Sirma (American Institutes for Research/AIR, USA), & Samantha Burg (National Center for Education Statistics, USA)

Abstract
2012–2016 Program for International Student Assessment Young Adult Follow-up Study (PISA YAFS) is a study that followed a sample of U.S. students who participated in PISA 2012, when they were 15 years old, and re-assessed their literacy and numeracy skills four years later at about age 19 using the Education and Skills Online (ESO) survey, which is based on the Program for the International Assessment of Adult Competencies (PIAAC). This presentation will report on the literacy and numeracy performance of U.S. young adults at age 19, as well as examine the relationship between that performance and their earlier reading and mathematics performance in PISA 2012 at age 15. It will also present on how other aspects of their lives at age 19—such as their engagement in postsecondary education,
their participation in the workforce, their attitudes, and their vocational interests—are related to their PISA performance at age 15.

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**Childhood and Adulthood Skill Acquisition - Importance for Labor Market Outcomes (Danish PISA PIAAC Data).**

**Authors**
Karl Fritjof Krassel (VIVE/The Danish Center for Social Science Research, Denmark), & Kenneth Lykke Sørensen (The National Board of Social Services, Denmark)

**Abstract**
Using Danish matched PISA and PIAAC data; the study investigates the return to cognitive and non-cognitive skills to labor market outcomes. It measured skills at childhood and adulthood after entering the labor market. Hence, both whether cognitive and/or non-cognitive skills relate to earnings and employment rate were measured as well as how important the timing of acquiring skills was for outcomes on the labor market. Overall it was found that cognitive skills are important for both earnings and the employment rate but that the timing of the acquisition of the skills is of less importance. On the contrary, non-cognitive skills are important for earnings independent on whether the worker had high or low cognitive skills at childhood, but only important for the employment rate for workers with high cognitive and low non-cognitive childhood skills. Overall findings suggested that both cognitive and non-cognitive skills are important but that the dynamics differ.

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**Validating Measures of Employment Related Information in Surveys Using Linked Administrative Data in Germany (using PIAAC-L/ NEPS/ PASS/ SOEP/ IAB Data).**

**Authors**
Manfred Antoni (Institute for Employment Research/ IAB, Germany), Nadine Bachbauer (Institute for Employment Research/ IAB, Germany), Corina Frodermann (Institute for Employment Research/ IAB, Germany), Knut Wenzig (German Institute for Economic Research/ DIW, Germany), & Débora B. Maehler (GESIS - Leibniz-Institute for the Social Sciences, Germany)

**Abstract**
Existing validation studies often use data sets that link survey data with other data sources at the level of individual respondents (see, e.g., Antoni et al. 2019, Bollinger 1998). Such analyses examine the extent and direction of measurement errors in survey data, usually by determining deviations from information in other data sources that are known to be less affected by measurement errors for certain variables (e.g., earnings, frequency and dating of events or duration of labour market conditions). A common feature of such analyses is that they are limited to the measurement errors in single or very few variables and to the information collected in only one survey. This, however, affects the generalizability and the potential benefit of such results for survey design or practical fieldwork of future surveys. For example, a limitation to the validation of an individual study makes it more difficult to assess the extent of the measurement error determined in comparison to other surveys. For survey practice, on the other hand, it would be important to learn which different ways of collecting a variable (e.g., question wording, filtering questions, use of preloads as memory anchors) lead to the smallest deviation from the true value. To close this gap, we compare measurement errors for a number of employment related variables across the following surveys linked to...
the Integrated Employment Biographies of the Institute for Employment Research (IAB): the National Educational Panel Study (NEPS), the Panel Study Labour Market and Social Security (PASS), the Programme for the International Assessment of Adult Competencies–Longitudinal (PIAAC-L) study and the Socio–Economic Panel (SOEP). One of the methodological challenges is to identify employment related variables that are included in all five data sources and measured in a comparable way. This enables us to harmonise these variables and to compare the following employment related variables: earnings, dating (start/end), duration or frequency of unemployment, job search or participation in active labour market policy measures. These variables are collected very reliably in the administrative data of the IAB, which is why the information contained there can be regarded as ground truth data.