PIAAC Adjudication Report: **Ireland**

Sampling

Ireland followed the PIAAC Technical Standards and Guidelines (TSG) related to sampling and weighting. Most QC materials were completed fully and returned in a timely manner.

- Sampling plan: No issues
- Sample selection
    - Home office: No issues
    - In field: No issues
- Sample weighting: The Consortium followed the procedures in the PIAAC Weighting and Variance Estimation Plan to create weights for Ireland.
- Sampling error: Ireland's design effect due to unequal weights is 1.37 for a sample size of 5 983. The effective sample size, which is the sample size needed to achieve the same sampling variance as a simple random sample, is 3 347. The effective sample size was computed as the number of cases with plausible values divided by the overall design effect (using the literacy component first plausible value), which accounts for both unequal weights and clustering. Ireland's sample design involved an unequal probability sample at the person level due to selecting one person no matter the household size. Further variation in the weights was added through nonresponse and calibration adjustments, although the Consortium followed standard procedures to balance bias and variance.

Coverage and Nonresponse Bias

- Population coverage
    - Frame: The estimated percentage of the target population excluded from the frame was 0.4% (The Geo-directory can underestimate mobile dwellings).
    - Data collection: N/A
- Weighted response rate: 72%
- Nonresponse bias analysis
    - Basic: Ireland performed all required analyses. Their analysis showed significantly lower response propensities in areas with lower levels of owner occupancy, areas with higher percentages of eligible non-Irish adults, areas where lower percentages of eligible adults spoke English as a native language, and areas with higher levels of unemployment. The overall response rate also varied by region (from 69% in Mid-East to 77% in South-West). There were no significant differences between respondents and nonrespondents across educational levels. Percentage non-English language spoken at home, percentage unemployment, percentage with lower secondary-level education or

below, percent owner occupied, region, age, and gender were used in nonresponse adjustments.

- Extended: Ireland performed analyses of comparison of weighted estimates to external totals, correlation of auxiliary variables and proficiency estimates and calculation of the range of potential bias. The preliminary extended analysis provides evidence that bias was reduced through the weighting adjustments.
  - Analysis 1 – Not required because overall response rate is above 70%.
  - Analysis 2 – Comparisons of estimates to external totals: Differences were found between the PIAAC estimates (computed using final weights) and the 2011 census estimates of gender and educational attainment, but in percentage terms the overall shape of the distribution is very similar.
  - Analysis 3 – Correlation of auxiliary variables and proficiency estimates: The correlation between the BQ nonresponse cells and literacy scores was below average at 0.51 (0.51 for numeracy). The correlation between the raking dimensions and literacy scores was 0.50 (0.50 for numeracy). The correlation between literacy scores and the combination of nonresponse adjustment cells and raking dimensions was 0.52 (0.53 for numeracy), which was about the average across countries. This indicates some potential for reducing NRB due to the correlation between survey outcome and weighting variables.
  - Analysis 4 – Not required because overall response rate is above 70%.
  - Analysis 5 – Not required because overall response rate is above 70%.
  - Analysis 6 – Not required because overall response rate is above 70%.
  - Analysis 7 – Range of bias: The literacy scores' first plausible value was used to compute the range of scores within the responding sample and predict the range of estimates for nonrespondents. For the responding sample, the minimum score was 87 and the maximum score was 413, for a range of 326. Using weighting adjustment cells, and with an extreme assumption that nonrespondents would all score at the 10^{th} percentile within each weighting cell, and at the other extreme they would all score at the 90^{th} percentile within each weighting cell, the predicted maximum range of the mean was computed to be 27, indicating a minimal potential for bias in outcome statistics. This is a reflection of the very high response rate (72%) in Ireland. That is, even though the variables used for weighting had only moderate correlation with outcome scores, the high response rate has minimised the potential for nonresponse bias in the outcome statistics.

Data Collection

Based on information provided on QC forms and during monthly QC conference calls, Ireland appears to have met the original requirements as described in the PIAAC Technical Standards and Guidelines (TSG), in particular Standard 10.9.3 on fieldwork validation, Standard 9.4.2 on interviewer training and Guidelines 8.1.1B and 8.1.2A on management of field staff.

Instrument Data Quality

Translation

To the best of the Consortium's knowledge, Ireland followed the PIAAC Technical Standards and Guidelines (TSG) associated with translation and verification, in particular, Standard 6.1 for new cognitive items, Standard 6.2 for background questionnaire materials, and Standard 6.3 on linking cognitive items. All adaptations were documented and all materials went through full verification[1] prior to the Field Test and a partial verification[2] prior to the Main Survey.

- Outcome: TSG followed/Passed

Scoring

To the best of the Consortium's knowledge, Ireland followed the PIAAC Technical Standards and Guidelines (TSG) associated with scoring paper-and-pencil instruments, in particular, Standard 11.3.

- Coding agreement of scoring anchor booklets
    a) Core items: 97.1%
    b) Literacy Items: 96.7%
    c) Numeracy Items: 95.0%
- Scoring reliability of paper-based national booklets
    d) Core items: 99.6%
    e) Literacy Items: 99.2%
    f) Numeracy Items: 99.3%

Assessment Data

Overall, 97.6% of respondents who completed the background questionnaire (BQ) went on to take some cognitive assessment in either computer or paper format. In Ireland, 68.3% of the respondents who completed the BQ took the computer-based cognitive assessment, while 30.7% took the paper-based assessment. Across all countries, 73.5% of respondents who completed the BQ took the computer-based form of the assessment and 23.9% took the paper-based form.

Some respondents who reported having computer experience refused to take the PIAAC assessment in computer-based format. Thus, these respondents took the paper-based form of the assessment. In Ireland, 19.4% of respondents who reported having some computer experience refused the computer-based assessment and took the paper-based assessment. An additional 4.3% of those who reported

[1] Full verification was a sentence by sentence check for equivalence to source + linguistic correctness + appropriate/approved adaptations, with a final check that crucial issues identified during verification have been correctly addressed in pre-final instruments.

[2] Partial verification is a check of correct echoing of FT to MS changes in source version + vetting and verification of other changes at the initiative of countries, with again a final check on crucial.

having some computer experience failed the ICT Core and took the paper-based assessment. Overall, across all countries, 11.8% of respondents who reported computer experience refused to take the assessment on the computer and 4.7% failed the ICT Core and were therefore routed to the paper-based assessment.

The captured data for reading components showed no anomalies in terms of accuracy and missing data. Recorded time showed similar characteristics from what was seen in the Field Test in relationship to the skill of respondents.

The assignment of cognitive modules within the Virtual Machine accurately followed the intended workflow. That is to say, the administration of Literacy, Numeracy and PSTRE modules followed the assessment design and the adaptive routing within the Literacy and Numeracy modules was accurately implemented. Analysis also showed accurate data capture for all countries.

Coding

To the best of the Consortium's knowledge, Ireland followed the PIAAC Technical Standards and Guidelines (TSG) associated with coding, in particular, Standard 11.2.

- **Double coding Occupation:** Standard met/Passed
- **Double coding Industry:** Standard met/Passed
- **Comparison with Labour Force Survey: Education:** Standard met/Passed
- **Comparison with Labour Force Survey: Occupation:** Standard met/Passed
- **Comparison with Labour Force Survey: Industry:** Standard met/Passed

Background Questionnaire Data

Background data was of very high quality for Ireland. If a respondent started the interview, the likelihood that she/he provided data is at above a level of 99% with practically only one exception: Income related questions are reported either in exact monetary amounts or in broad categories. In Ireland, about 90.8% of respondents reported income in exact amounts (88.9% across countries) and about 1.8% reported income in broad categories (4.1% across countries). If a respondent decided to break off the interview, the interviewer was able to collect a reason for the breakoff. The data contains about 2.0% cases with breakoff codes across countries, which indicate that the reason for breakoffs were either language related issues, reading writing issues, or disabilities. In Ireland, we observed 0.5% of cases with breakoffs.

Item Non-Response

Overall, the average proportions of non-response (omitted or not reached) for the paper-based items were 6.3% for Literacy and 4.5% for Numeracy. In Ireland, these percentages were 7.1% for Literacy and 5.4% for Numeracy. Overall for computer-based items, the level of non-response was 8.3% for Literacy, 5.6% for Numeracy, and 0.1% for PSTRE. For computer-based items in Ireland, the percentage of non-response for Literacy was 8.8%, for Numeracy it was 6.1%, and for PSTRE it was 0.1%.