



DASISH (Data Service Infrastructure for the Social Sciences and Humanities) brings together all 5 ESFRI research infrastructures in the SSH. The goal of DASISH is to determine areas of cross-fertilisation and synergy in the infrastructure development and to work on concrete joint activities related to data, such as data access, data sharing, data quality, data archiving and legal and ethical aspects.

Keystroke and time stamp analysis and implications for fieldwork*

«Fact Sheet D3.7»

Background and Description

Paradata such as keystroke and time stamp data are a valuable tool during all phases of the survey life-cycle - before fieldwork for informing questionnaire development, during fieldwork to investigate interviewer behaviour and post fieldwork for data quality analysis.

The analyses presented here follow the bi-annual operating cycle of the Survey of Health, Ageing and Retirement in Europe (SHARE)¹ and the European Social Survey (ESS)². We report on analyses of keystroke and time stamp data conducted during the survey life-cycle of SHARE and after the survey fieldwork in ESS and derive suggestions for further potential analysis.

Definition

In the process of survey data collection much paradata, i.e. information about the process of survey production, are generated (Kreuter 2013). While the survey interview is conducted, keystroke data are collected and time stamps are recorded. In SHARE, keystrokes track every action taken on the keyboard and store time stamps every time a key is pressed. For the ESS, time stamps are recorded at the beginning and at the end of the interview and of each module. The granularity of the data depends on the mode of data collection (paper-pencil vs. computerized) and on the set-up of the survey (centralized vs. decentralized).

A survey life-cycle approach

The analysis of time stamp and keystroke data provides additional insights in survey processes during all phases of the survey life-cycle:

During the pretest of SHARE wave 5, keystroke analyses were performed and augmented with data quality indicators derived from the survey data. Questionnaire decisions on inclusion or exclusion of newly introduced items were then made based on these analyses.

During fieldwork, length analyses on interviewer level highlighted irregularities in average interview lengths as well as in durations for reading out introduction texts, which pointed survey managers to shortening or skipping behaviour of interviewers.

Analyses of time stamp data augmented with respondent characteristics conducted after the end of fieldwork for the ESS showed that interview durations are correlated with education and nationality of respondents. The analysis of time stamps of day and time of contact attempts displayed that the working population is difficult to contact during daytime and is more likely to be contacted either during the evening or on the weekend.

Conclusion

A structured approach to keystroke and time stamp analysis is a new field which offers lots of opportunities. Information about the time can be used in multiple phases of the survey lifecycle to inform survey managers. When working with paradata it needs to be noted that it is important to evaluate the quality of these data first, that will then be used to analyse data quality of the survey answers. Time for preparation, data cleaning and outlier diagnostic is needed, but worthwhile. We suggest analysing time stamps and keystroke as part of the quality control process of a survey.

Further Reading

Kreuter, F. (2013). "Improving Surveys with Paradata: Analytic Uses of Process Information." Wiley.
Loosveldt, G. and K. Beullens (2013). "How long will it take? An analysis of interview length in the fifth round of the European Social Survey." *Survey Research Methods* 7(2): 69-78.

* DASISH WP3 Deliverable 3.7: Bristle, J. and Halbherr, V (2014). Report on keystroke analysis and implications for field work. Available at: <http://dasish.eu/deliverables/>.

¹ The Survey of Health, Ageing and Retirement in Europe. For further information see: <http://www.share-project.org/>

² European Social Survey. For further information see: <http://www.europeansocialsurvey.org/>

Highlights of the Results

Proper reading out of introduction texts is a feature of good interviewer behaviour, which is one indicator for the standardisation of data collection. We therefore compared time spent on reading out “long” introduction texts with normative standards (red line, Figure 1). Interviewers who show very little variation around a very short duration do not seem to follow standardised interviewing (encircled with a solid line). Consistently short durations are an indication for skipping behaviour. The interviewer behaviour can be further monitored with other indicators on data quality such as item nonresponse.

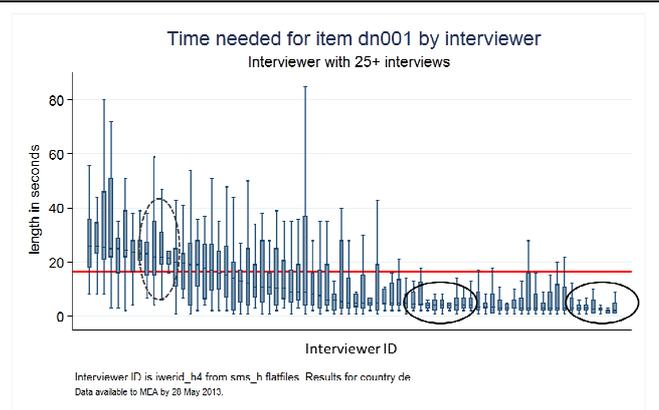


Figure 1: Time to read out item DN001 for interviewers with 25+ interviews in SHARE Germany

Keystroke data provide manifold ways to look at data quality, especially when augmented with respondent information. We looked at interview and module length for different subgroups of respondents in the ESS. No significant differences can be seen for education levels regarding the overall interview length or the length of module B on politics, module C (subjective wellbeing), or D (personal and social wellbeing). For the module A on social trust and TV watching, module E on understanding democracy (Figure 2) and F on the socio-demographic profile the interview duration varies significantly over the different levels of education.

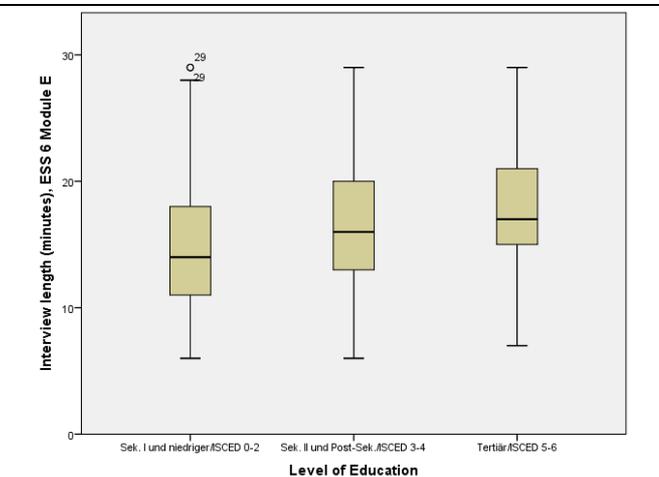


Figure 2: Level of education and length of module E (Understanding democracy), ESS round 6 Germany

Comparing SHARE’s analyses with results from the ESS, we see that findings show some similarities across surveys. Durations are standardized at the survey’s overall mean to better compare interview durations across surveys. We see that in both surveys the same countries tend to have longer or shorter interview lengths. The majority of the countries show a similar pattern across the two surveys (Figure 3).

The comparison of the two surveys suggests that the length of the interview is not a characteristic of the survey only, but also country specific. This might reflect language differences or survey culture differences and goes beyond survey management or the survey topic.

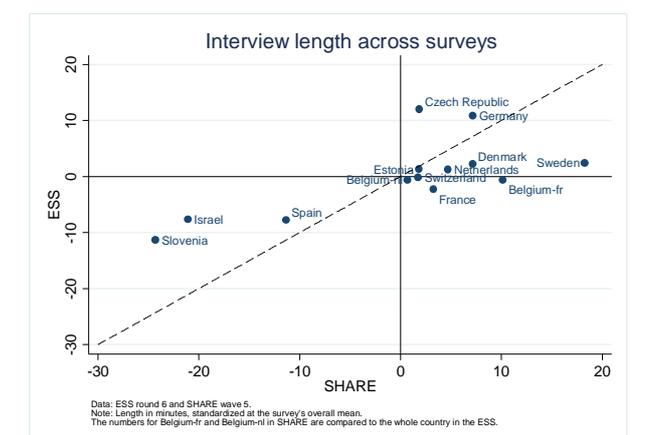


Figure 3: Interview length for ESS round 6 and SHARE wave 5, countries participating in both surveys