FORS GUIDES
to survey methods
and data management

Panel Surveys

Oliver Lipps[1]

[1] FORS and University of Bern

FORS Guide No. 14, Version 1.1 (last update January 2025)

March 2021

Abstract:

In this guide, we describe characteristics of probability-based, scientific social science panel surveys and compare them with cross-sectional surveys in terms of data collection and analysis potential. While panel surveys have analytical advantages for describing individual dynamics and conducting causal analyses, they are also more expensive than repeated cross-sectional surveys and require considerable efforts to keep data quality high.

Keywords: causal analysis, longitudinal studies, unobserved heterogeneity, attrition, panel care

How to cite:

Lipps, O. (2020). Panel surveys: advantages and disadvantages compared with repeated cross-sectional surveys. FORS Guides, 14, Version 1.1, 1-13. https://doi.org/10.24449/FG-2021-00014

The FORS Guides to survey methods and data management

The FORS Guides offer support to researchers and students in the social sciences who intend to collect data, as well as to teachers at university level who want to teach their students the basics of survey methods and data management. Written by experts from inside and outside of FORS, the FORS Guides are descriptive papers that summarise practical knowledge concerning survey methods and data management. They give a general overview without claiming to be exhaustive. Considering the Swiss context, the FORS Guides can be especially helpful for researchers working in Switzerland or with Swiss data.

Editorial Board

FORS, Géopolis, CH-1015 Lausanne
www.forscenter.ch/publications/fors-guides
Contact: info@forscenter.ch

1. CROSS-SECTIONAL VERSUS PANEL SURVEYS

Panel studies enjoy increasing popularity. This is driven by an increasing importance of life course studies (Bernardi, Huinink, & Settersten Jr 2019), as well as a growing need to understand individual dynamics and conduct causal analyses (Morgan & Winship 2015). For both of these purposes, panel surveys are ideal data sources. Nevertheless, both to produce good panel data and to analyze them may require more effort and care than working with cross-sectional data.

This guide gives advice about analytical and methodological characteristics of panel surveys, presents some examples of panel surveys in the Swiss context, and describes some data collection challenges. It focuses on academically driven probability based social science panels and gives several examples for administrative panels. Access, online, or opt-in panels are not covered here.

1.1 CHARACTERISTICS OF CROSS-SECTIONAL AND PANEL SURVEYS

Cross sectional surveys measure units, such as enterprises, households or individuals, once in time. Data from such surveys are used if the research interest is on distributions of variables, correlations between variables, or differences between person-groups. An example is to calculate the mean difference of wellbeing between, say, employed and unemployed people.

Repeated cross-sectional surveys ask the same questions (or the same "core" questions) over time but use a fresh sample of units at each repetition ("round"). Data from such surveys are used if the research question is on temporal changes with certain groups such as, for example, of wellbeing of employed and unemployed people (trends).

Like repeated cross-sections, *panel surveys* ask the same questions several times. However, unlike cross-sectional surveys, the *same* units answer these questions repeatedly (in each "wave"). In the example, one may be interested in the causal effects of unemployment on wellbeing, i.e., the change in wellbeing *due to* becoming unemployed. Further, the order of such an event may play a role, such as the question about changes in wellbeing *due to* becoming unemployed for the n^{th} time. Finally, panel surveys allow for measuring expectations and intentions whose realisations can be checked in later waves.

It is also possible to ask respondents to give information *retrospectively* in a cross-sectional survey, using so-called life history calendars (e.g., Morselli et al. 2016). Such retrospective information seems most accurate if it refers to more objective information like employment or family histories, or information about the parent's education (which is often asked in the first wave of a panel survey). However, asking retrospectively subjective questions about wellbeing is usually plagued by measurement error such as recall error (Eisenhower, Mathiowetz, & Morganstein 2004).

1.2 ANALYTICAL ADVANTAGES OF PANEL SURVEYS

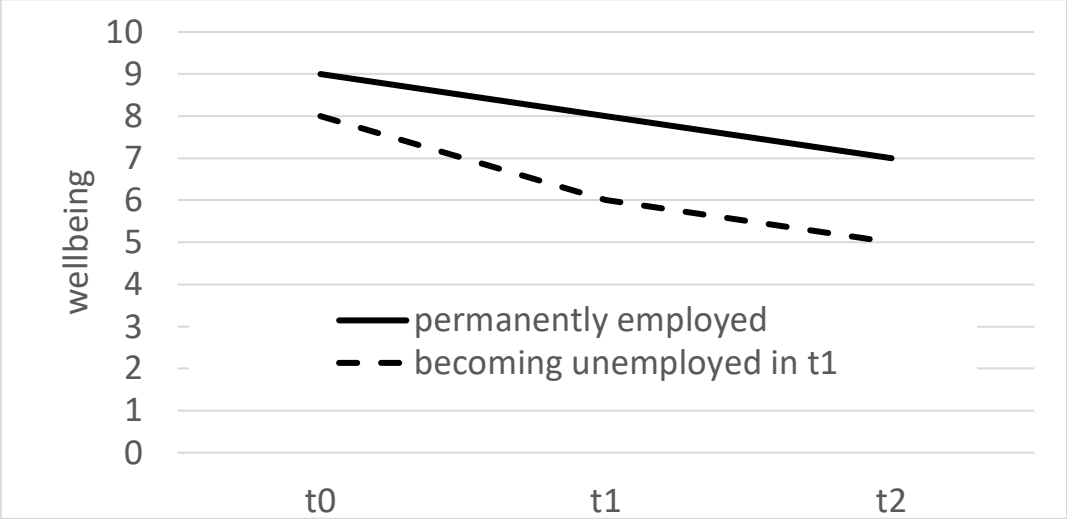
Since cross-sectional surveys ask information of sample members at one point in time, such information can only compare different people, such as the wellbeing of employed people with the wellbeing of unemployed people. If one is interested in a *change in wellbeing due to becoming unemployed*, such a measure will generally result in a biased estimate of the true underlying causal effect of unemployment. The reason is that it is very likely that the wellbeing

of unemployed people is lower than the wellbeing of employed people even before becoming unemployed. So called confounders, which are responsible for this bias, are factors that are correlated with both employment and wellbeing such as working in more precarious industries with higher unemployment, or less motivation or performance in the job. Survey methodologists refer to this phenomenon as self-selection. Such selection issues make the cross-sectional difference between the employed and the unemployed a questionable estimator of the causal effect of unemployment on wellbeing.

By observing the same units repeatedly before and after the onset of certain events, panel surveys enable analyses of individual-level dynamics. These types of analyses are important to study temporal stability, instability, and causal effects. Often, phenomena seem stable in the population (such as the unemployment rate) across years while individuals may exit or enter unemployment more often than expected, based on assessments of the more stable aggregate population patterns. Such individual dynamics can only be analysed by following individuals over time. Being able to analyse such individual dynamics is crucial for causal analyses of social phenomena, because changes happen within units. Figure 1 illustrates this situation by comparing cross-sectional information with information provided by panel surveys. It also highlights the analytical differences between common cross-sectional and panel estimators.

Suppose we measure the wellbeing of two groups of people at three points in time (t_0, t_1, t_2), one group being employed all the time (solid line), and the other group being employed at t_0, and then becoming unemployed in t_1 (dashed line):

Figure 1: Wellbeing of the permanently employed and of those becoming unemployed



Notes: the y-axis refers to wellbeing of individuals. For the purpose of this exercise, it is measured in units from 0 to 10. The x-axis refers to the timeline which is measured at 3 points in time (t_1, t_2, and t_3). Solid lines refer to the wellbeing of people permanently employed, dashed lines to the wellbeing of people who become unemployed in t_1. Source: Own elaboration.

A cross-sectional survey conducted at t_1 would find for the employed a mean wellbeing of 8, and for the unemployed of 6. The "effect" of unemployment would thus be 2. Since the trend is the same for the employed and the unemployed, a repeated cross-sectional survey at t_1 and t_2 would compare the pooled wellbeing of the unemployed and of the employed and find the same "effect" of 2 (=(8+7)/2-(6+5)/2). Now, a panel survey, which follows people over time, would rather conclude an effect of 1. This is the within-individual difference after becoming unemployed and before becoming unemployed (= 8-6) controlled for the time trend (=1). By

calculating the individual difference after and before the event, this design *excludes time-invariant unobserved individual differences,* such as ability, motivation, or an individual-specific "base-level" wellbeing. In this example, also data of the people who remain employed ("controls") are used to correct for trends (difference-in-difference). Methods that are more sophisticated match the control sample with those who become unemployed on similar covariates at t_0 (pre-treatment) to correct for time-variant common trends.[1]

While some of the variables responsible for the lower wellbeing of people who become unemployed may be controlled for in cross-sections, some of those influences are likely to remain unobserved. Typically, low explained variances in usual multivariate regressions suggest a lot of unexplained variance, which may cause biased estimates due to unobserved heterogeneity. Thus, following people over time and comparing times with and times without the event (fixed effects models) are generally a better approach to analyze causal effects.

1.3 METHODOLOGICAL CHALLENGES OF PANEL SURVEYS

The main problem of panel surveys for data users is *attrition*, that is, units dropping out of the survey not by design. Attrition (or a low so-called *retention rate*) reduces sample size and has negative effects on the statistical power. If attrition is selective, this causes in addition biased estimates of changes of outcomes (Voorpostel & Lipps 2011).

Panel conditioning (Warren & Halpern-Manners 2012) describes the phenomenon that answers to survey questions may be influenced by being member of the panel. Such effects may result in phenomena such as declining frequencies of "don't know" responses or instances of learning how to answer difficult questions. Panel conditioning may also result in strategic response behavior that may not reveal true information such as respondent's attempts to avoid answering filtered follow-up questions or deliberate misreporting.

Finally, panel data help assessing issues like selection into treatment or questions of causal ordering. When it comes to analyzing reverse causality, the correct specification of temporal lags remains an important challenge in panel studies. This can be explained by the fact that the time intervals between panel waves and manifestations of true effects are in general not aligned.

1.4 TYPES OF PANEL SURVEYS

First, panel surveys can keep their sample members in the *short-term or the long-term*. Short-term panels are typically designed as rotating panels, which means that a part of the sample is deliberately dropped from the study after a certain number of waves and replaced by a new sample by design. For example, the European Statistics of Income and Labor Conditions (EU-SILC[2]) ask respondents annually over a four-year period. The Swiss Labor Force Survey is conducted four times a year in the form of a panel and sample members are then replaced. Short-term panels are preferred if only few transitions are needed per individual and if a high level of population representativeness is important.

In principle, long-term panels are designed to keep sample members for an infinite duration. An example is the Swiss Household Panel (SHP[3]). While some long-term panels aim at

[1] Time invariant variables are automatically controlled within estimators by using the differenced values (=0).
2 https://ec.europa.eu/eurostat/web/microdata/european-union-statistics-on-income-and-living-conditions
[3] https://forscenter.ch/projects/swiss-household-panel/

representing the total (residential) population such as the SHP, some panels only target special population cohorts, usually birth cohorts, such as the TRansition from Education to Employment (TREE[4]) panel.

Second, *intervals between successive waves* may differ largely across studies. For example, while most of the cohort surveys in the United Kingdom take up to ten years between waves, this interval between interviews is only two years in the case of the Survey of Health, Ageing, and Retirement in Europe (SHARE[5]) survey and the US Panel Study on Income Dynamics (PSID[6]; one year before 1997), or one year in case of the SHP or the German Socio-Economic Panel Survey (SOEP[7]). The Swiss Election survey (Selects[8]) asks sample members to fill in a long questionnaire right after the national elections every four years and shorter follow-up questionnaires every year. Most European web-based probability panels like the Dutch Longitudinal Internet studies for the Social Sciences panel (LISS[9]), the French Étude Longitudinale par Internet Pour les Sciences Sociales (ELIPSS[10]) are run every month, and the German Internet panel (GIP[11]) and the GESIS Panel[12] every other month. Not all panel surveys repeat the entire questionnaire for each wave, but ask "core" questions less often, yet "event-related" questions more often to provide up-to-date information about recent events.

2. DATA COLLECTION IN PANEL SURVEYS

2.1 INITIAL UNIT NONRESPONSE VERSUS ATTRITION

Motivating participants to commit to the study for a long time remains the highest obstacle at the start of a (long-run) panel survey, especially if self-administered modes are used (Sakshaug et al. 2020, Voorpostel et al. 2020b). Sometimes, initial unit nonresponse can be reduced by remaining vague about the duration of the panel (e.g., by telling potential respondents that funding is guaranteed for the current and the next wave). Often, initial unit nonresponse in panel surveys is higher than in cross-sectional surveys. Initial nonresponse has probably a more detrimental effect on survey quality than attrition. This is because there is a lot of information available about attrited sample members, because information from responding waves can be used in post-survey adjustments.

2.2 SAMPLING, RECRUITING AND KEEPING SAMPLE MEMBERS

Ideally, samples for administrative or academic social science panel surveys are recruited from a population register. In Switzerland, municipal and cantonal registers have been harmonized to elaborate such a sampling frame (SRPH – Stichprobenrahmen für Personen- und Haushaltserhebungen), which includes contact addresses and basic socio-demographic

[4] https://www.tree.unibe.ch/index_eng.html
[5] http://www.share-project.org/home0.html
[6] https://psidonline.isr.umich.edu/
[7] https://www.diw.de/en/soep
[8] https://forscenter.ch/projects/selects. Note that the panel design was introduced in 2019.
[9] https://www.lissdata.nl/
[10] https://www.elipss.fr/fr/
[11] https://www.uni-mannheim.de/gip/
[12] https://www.gesis.org/en/gesis-panel/gesis-panel-home

variables of all (registered) household members. The Swiss Federal Statistical Office draws samples from the SRPH for surveys, which can also be made to fit specific requirements[13].

A comparatively new method to recruit sample members is asking respondents in cross-sectional surveys if they are willing to become part of a panel survey. For example, after completing the 2016 face-to-face European Social Survey (ESS), the CRONOS (CROss-National Online Survey) panel invited respondents in Estonia, Great Britain and Slovenia to participate in six 20-minute web surveys over a time period of twelve months. Recruiting panel sample members for short-interval web surveys from existing offline surveys (*piggy-bag recruitment*) seem to be a good alternative to conventional sampling methods, in particular if there is no reliable sampling frame that would fit the study purposes.

Often, panel surveys use larger participation incentives than cross-sectional surveys. In Switzerland, good experiences have been made with a 10 CHF cheque and recently with 10 CHF cash in cross-sectional surveys, yet incentives should be higher in panel surveys (Lipps et al. 2019). There is evidence that response can be boosted by giving first (age eligible) respondents, late cases, or loyal respondents an extra incentive (Laurie & Lynn 2009). Often households that have not participated in the survey for at least one wave are re-approached progressively (e.g., in the SHP). To motivate these households to participate again in the study, they often receive a higher incentive. Further, current wave refusers are re-contacted toward the end of the fieldwork period by interviewers who received special training in refusal conversion (Calderwood et al. 2016, Voorpostel 2019). Finally, there are no carryover effects in subsequent data collection outcomes (Brick 2006, Jäckle & Lynn 2008, McGonagle 2020, Singer, Groves, & Corning 1999).

To be allowed to keep the contact addresses of cross-sectional respondents for future contacts, these respondents need to give their consent, that is, they must be informed about potential recontacting efforts and be able to object to it. Such information can be presented using a neutral question such as “Do you agree to be contacted again?” with a yes/no option, or a so-called opt-in question like “I agree to be contacted again” with just a yes option. In Switzerland[14], so-called opt-out questions are allowed: “I don’t agree to be contacted again” with just a yes option. This means that if respondents do not explicitly object, addresses can be kept for future contacts. Preliminary research shows that opt-out questions produce the most consent, followed by the yes/no questions, and finally opt-in questions (Lipps et al. 2020).

To motivate sample members to continue participation (“*panel care”*), panel surveys often use intermediate newsletters or updates on results as an incentive and a reminder that they are still part of the panel survey. Some panels use Christmas cards or other incentives. Importantly, to successfully track moving sample members (Couper and Ofstedal 2009), some panels use (pre-stamped) address cards and moved households often receive incentives after having sent their new address. It is important to record other means of contact, in case moved households cannot be tracked otherwise. Other means of contact are e-mail addresses, mobile numbers, social media accounts, address of a family member living outside of the household, a close friend etc. It is particularly important to keep those contact information for those who experience change in the panel: there is evidence that changes are often underrepresented,

[13] https://www.bfs.admin.ch/bfs/en/home/basics/census/natonal-census-integrated-system/sampling-frame.html.

[14] Personal communication Pablo Andrés Diaz Venegas, FORS and University of Lausanne.

either because they are not reported or – more importantly – because members with changes tend, to a higher extent, to drop out of a study (Voorpostel and Lipps 2011). In face-to-face panel surveys, it can be helpful to send the same interviewers to future interviews of study participants, in order to build a good contact with these sample members (Lynn, Kaminska, and Goldstein 2011).

2.3 FOLLOWING RULES IN HOUSEHOLD PANELS

Future sample composition and -size, fieldwork, cost, and analysis methods are, to a high extent, determined by the decision who to follow in moving households and who to include in the study in split households (e.g. for the EU-SILC: Iacovou and Lynn 2013). For example, in the SHP (Voorpostel et al. 2020a), all households of the original sample (SHP_I) that were interviewed in the first wave, with at least the household questionnaire and one individual questionnaire completed, were followed. For refreshment samples (SHP_II and SHP_III), all households that completed at least the grid questionnaire in the first wave, were approached again. On the individual level, the SHP initially only followed respondents from the first wave (OSM-original sample member) and their children; other individuals were only (re-)interviewed as long as they lived with an OSM. Since 2007, the SHP also follows non-OSMs as well as people who moved together with existing panel members.

2.4 CHANGING PROCEDURES ACROSS WAVES

A further question is whether and how survey questions or procedures may change over time. While measurement procedures need to be kept constant over time to be able to measure true change, the questionnaire may or may not be modularized. For example, the SHP introduced a new system of modularization in 2009, mainly in the individual questionnaire (Voorpostel et al. 2020a). The new modules contain three different types of questions: (1) questions asked only once (usually in the first interview), (2) questions asked each wave and (3) questions asked regularly, but not each year. While the decision to ask questions only once is often easy to take (fixed traits such as about social origin or events that are finished), the optimal frequency of asking questions on time-varying traits strongly depends on the rate of change on these variables.

A controversial question is whether the technique of *dependent interviewing* (Jäckle 2009) should be employed. In dependent interviewing designs substantive answers from previous waves are fed forward. These are used to tailor the wording and routing of questions or to include in-interview edit checks. A variety of dependent interviewing designs have been developed with pros and cons on the preciseness of measurements.

2.5 SWITCHING THE MODE

To restrict costs and to reduce measurement errors such as socially desired answers in interviewer-based modes, some panels switch to the web mode or to a push-to-web mixed mode design. There is little experience with switching modes in existing panels. Generally, a mode switch does not seem to cause a break in the time series when it comes to objective measures. With respect to more subjective measures, however, people tend to give less socially desired answers in web or paper and pencil mode, but item nonresponse increases with these self-administered modes. Unit-nonresponse seems to increase slightly, but not dramatically in self-administered surveys. Cost savings also seem to be possible using alternatives to face-to-face interviewing as long as all household members can be switched to a self-administered mode or the telephone in former face-to-face panel surveys.

Long-running panel surveys, which have traditionally used interviewer-based modes, tend to be conservative with respect to switching to a mixed-mode design. The SOEP and the UK Understanding Society (US) established a so-called innovation panel (IP) to conduct research experiments such as testing the switch to a different mode (Buck & McFall 2011, Richter & Schupp 2015). For example the US-IP wave 5 (2012) included web as an alternative mode (Jäckle, Lynn, and Burton 2015) and a UK cohort study included web in a mixed mode design together with the telephone mode in 2013 (Brown 2016). The SHP set up an experiment (SHP IV pilot) to test the feasibility of using the push-to-web mode as primary survey mode (Voorpostel at al. 2020b). Response rates were lower in the web mode, but retention was higher in the second wave. Measurement error was slightly higher in the web mode.

2.6 DATA PREPARATION IN PANEL SURVEYS

Because a lot is known of sample members from previous waves, *consistency checks* should make extensive use of this knowledge. In particular, reported changes and transitions must be, in theory, possible. Unlike in cross-sectional surveys where post-survey adjustment weights are based on crossed socio-demographic totals (cross-sectional weights), *longitudinal weights* are constructed in panel surveys in addition to reduce biased (change) effects from selective attrition (Roberts et al. 2009). These weights are based on the probability of longitudinal units (individuals, but not households) to participate in the current wave, using information from previous waves, including subjective variables. *Missing values* of variables (item nonresponse) are often imputed rather than weighted. In particular, for missing information concerning the amount of income and its components, there are various established procedures to impute income based on information from previous waves (e.g., Watson and Starick 2011).

2.7 PANELS IN THE SWISS CONTEXT

Building a panel survey in small countries like Switzerland involves high costs per output (e.g., publication). In Switzerland, questionnaires and documentation need to be translated into the three main national languages, including English to allow for internationally comparative studies. With relatively large immigration in recent years (Herzing et al. 2019), long-term population representative panel surveys also need regular refreshment samples. Particularly in small countries it may be worth considering a comparative perspective combining panel surveys from different countries. For example, the SHP is part of the Cross National Equivalent File (CNEF; Frick et al. 2007), which provides harmonized variables for general population panels from the United States, Germany, the United Kingdom, Canada, Russia, Korea, Switzerland, Australia, and Japan. SHARE is a good example for an ex-ante harmonized collaboration which benefits from cost savings, thanks to international collaboration in survey design, questionnaire translation, data dissemination, etc. Such collaborations provide high incentives for researchers to analyze several countries together at little additional costs.

The SRPH provides a high-quality sampling frame for scientific surveys in Switzerland. In addition, high-speed internet is well established in most areas in Switzerland and internet competence among the population is high such that a switch to the web appears to be an option for many surveys.

In addition to survey data, there exist many other forms of data collected by administrative and scientific institutions in Switzerland from different domains and on different levels (context data), which are available in various forms (texts, audio, video, etc.). Currently, there are efforts

underway to make these data easily available and better usable to researchers (https://www.swissubase.ch), and help researchers to link these data with survey data or other data sources (https://linkhub.ch).

3. IMPLICATIONS FOR SURVEY PRACTITIONERS

Recommendation 1 – Be aware that the time it takes until data will be usable for your research purpose (e.g., at least three waves) may be much longer than you envisage.

Recommendation 2 – Be aware that chasing sample members to participate in panel surveys may be difficult, time-consuming, and expensive. Also, remember that you always need to stick to the data protection rules in your country.

Recommendation 3 – There is an almost infinite number of possible design choices to make – population of interest, sample size, sampling frame, questionnaire content and duration, questionnaire modularization, mode(s), frequency of wave, following rules, etc., all of which have legal, budgetary, and time implications and need to be carefully planned and aligned. Similarly, there are an almost infinite number of possible analysis methods with the right choice of method being largely dependent on the study design, characteristics of the data source and variables at hand.

4. FURTHER READINGS

A good starting point when planning to run a panel survey is the book edited by Lynn (2009). Further, Lynn and Lugtig (2017) discuss representation and measurement errors in panel surveys. Design aspects are highlighted in the monograph edited by Lynn et al. (2019), which is a collection of papers from the second Conference on the Methodology of Longitudinal Surveys in 2018. If you consider switching to the web mode, Voorpostel et al. (2020c) report on experiences of other panel surveys and those made in the first wave of the SHP IV mode experiment. Warren and Halpern-Manners (2012) give a good overview on panel conditioning and Jäckle (2009) on dependent interviewing.

Morgan and Winship (2015) introduce the concept of causality. Vaisey and Miles (2017) show that panels with three or more waves allow for the analysis of simultaneity and reversed causality. Andress, Golsch and Schmidt (2013) give an easy to read introduction to panel data analysis including panel data management, Brüderl et al. (2019) into the longitudinal modeling of social inequality, and Brüderl and Ludwig (2015) into fixed effects modeling, including a comparison of different panel estimators. Leszczensky and Wolbring (2019) provide a test of different panel models if the assumption of reverse causality is violated or temporal lags are misspecified.

Acknowledgments: the author likes to thank Jessica Herzing, Jürgen Maurer and the editors of the FORS Guides for valuable comments to an earlier version.

REFERENCES

Andreß, H.-J., Golsch, K., & Schmidt, A. (2013). Applied Panel Data Analysis for Economic and Social Surveys. Springer.

Bernardi, L., Huinink, B., and Settersten, R. Jr (eds.) (2019). Theoretical and Methodological Frontiers in Life Course Research. *Advances in Life Course Research* Special Issue.

Bosnjak, M., Dannwolf, T., Enderle, T., Schaurer, I., Struminskaya, B., Tanner, A., & Weyandt, K. (2018). Establishing an open probability-based mixed-mode panel of the general population in Germany: The GESIS Panel. *Social Science Computer Review*. 36(1), 103-115. doi: 10.1177%2F0894439317697949

Brick, M., Hagedorn, M. Montaquila, J., Roth, S., & Chapman, C. (2006). Impact of Monetary Incentives and Mailing Procedures - An Experiment in a Federally Sponsored Telephone Survey. Methodology Report, National Center for Education Statistics, Washington, DC.

Brown, M., (2016). Going online with the National Child Development Study: Design decisions during the development of the Age 55 web survey. Centre for Longitudinal Studies Working paper 2016/2, UCL, London.

Buck, N., & McFall, S. (2011). Understanding Society: design overview. *Longitudinal and Life Course Studies*, 3(1), 5-17.

Brüderl, J., & Ludwig, V. (2015). Fixed-effects panel regression. In: H. Best and C. Wolf: The Sage handbook of regression analysis and causal inference: 327-357.

Brüderl, J., Kratz, F., & Bauer, G. (2019). Life course research with panel data: an analysis of the reproduction of social inequality. *Advances in Life Course Research*, 41, 100247.

Calderwood, L., Plewis, I., Ketende, S., & Mostafa, T. (2017). Evaluating the immediate and longer term impact of a refusal conversion strategy in a large scale longitudinal study. In *Survey Research Methods* 10(3): 225-236. doi: 10.18148/srm/2016.v10i3.6275.

Couper, M. P., & Ofstedal, M. B. (2009). Keeping in contact with mobile sample members. In: P. Lynn (Ed.): *Methodology of longitudinal surveys*: 183-203.

Eisenhower, D., Mathiowetz, N. A., & Morganstein, D. (2004). Recall error: Sources and bias reduction techniques. *Measurement errors in surveys*, 125-144.

Frick, J. R., Jenkings, S. P., Lillard, D. R., Lipps, O., & Wooden, M. (2007). The Cross-National Equivalent File (CNEF) and its member country household panel studies. *Schmollers Jahrbuch: Zeitschrift für Wirtschafts-und Sozialwissenschaften*, 127(4), 627-654.

Herzing, J. M. E., Elcheroth, G., Lipps, O., & Kleiner, B. (2019). Surveying national minorities. *FORS Guides*, 6, Version 1.0, 1-15. doi: 10.24449/FG-2019-00006.

Iacovou, M. & Lynn, P. (2013) Implications of the EU-SILC "following rules" (and their implementation) for longitudinal analysis, *Eurostat statistical working paper*, Luxembourg: Publications Office of the European Union. doi: 10.2785/45341.

Jäckle, A. (2009). Dependent interviewing: A framework and application to current research. In P. Lynn (Ed.), Methodology of longitudinal surveys (pp. 93-111). New York: Wiley.

Jäckle, A., & Lynn, P. (2008). Respondent incentives in a multi-mode panel survey: cumulative effects on nonresponse and bias. *Survey Methodology*, 34(1), 105-117.

Jäckle, A., Lynn, P., & Burton, J. (2015). Going online with a face-to-face household panel: Effects of a mixed mode design on item and unit non-response. *Survey Research Methods* 9(1): 57-70. doi: 10.18148/srm/2015.v9i1.5475.

Leszczensky, L., & Wolbring, T. (2019). How to deal with reverse causality using panel data? Recommendations for researchers based on a simulation study. *Sociological Methods & Research*, doi: 10.1177/0049124119882473.

Laurie, H., & Lynn, P. (2009). The use of respondent incentives on longitudinal surveys. In P. Lynn (Ed.), *Methodology of longitudinal surveys* (pp. 205-233). New York: Wiley.

Lavrakas, P. J. (2008). *Encyclopedia of survey research methods* (Vols. 1-0). Thousand Oaks, CA: Sage Publications, Inc. doi: 10.4135/9781412963947.

Lipps, O., Herzing, J. M. E., Pekari, N., Ernst Stähli, M. Pollien, A., Riedo, G., Reveilhac, M. (2019). Incentives in surveys. *FORS Guides*, 8, Version 1.0, 1-16. doi: 10.24449/FG-2019-00008.

Lipps, O., Tresch, A. & Pekari, N. (2020). Asking consent to participate in a panel study - which design is most promising? Presentation at the '14. Workshop der Panelsurveys im deutschsprachigen Raum', Feb. 3, University of Mannheim.

Lynn, P. (ed) (2009) *Methodology of longitudinal surveys*, New York: Wiley.

Lynn, P., Couper, M. & Watson, N. (2019). Longitudinal surveys – unique opportunities and unique methodological challenges, *Longitudinal and Life Course Studies* 10(4): 415–420, doi: 10.1332/175795919X15683588414527.

Lynn, P., Kaminska, O., & Goldstein, H. (2011). Panel attrition: how important is it to keep the same interviewer? (No. 2011-02). *ISER Working Paper Series*. University of Essex.

Lynn, P. & Lugtig, P. (2017). Total survey error for longitudinal surveys. In P. Biemer, E. De Leeuw, S. Eckman, B. Edwards, F. Kreuter, L. Lyberg, . . . B. West (Eds.), *Total Survey Error in Practice* (Chap. 14). Hoboken NJ: Wiley.

McGonagle, K. (2020). The effects of an incentive boost on response rates, fieldwork effort, and costs across two waves of a panel study. *methods, data, analyses*. doi: 10.12758/mda.2020.04.

Morgan, S. L., & Winship, C. (2015). *Counterfactuals and causal inference*. Cambridge University Press.

Morselli, D., Berchtold, A., Granell, J. C. S., & Berchtold, A. (2016). On-line life history calendar and sensitive topics: A pilot study. *Computers in Human Behavior*, 58, 141-149.

Richter, D., & Schupp, J. (2015). The SOEP Innovation Sample (SOEP IS). Schmollers Jahrbuch: *Journal of Applied Social Science Studies*, 135(3), 389-400.

Roberts, G., Ren, Q., Rao, J. N. K. (2009). Using Marginal Mean Models for Data from Longitudinal Surveys with a Complex Design: Some Advances in Methods, in *Methodology of Longitudinal Surveys* (Chapter 20), ed. Lynn P, pp. 351–366, West Sussex: Wiley.

Sakshaug, J. W., Hülle, S., Schmucker, A., & Liebig, S. (2020). Panel Survey Recruitment with or Without Interviewers? Implications for Nonresponse, Panel Consent, and Total Recruitment Bias. *Journal of Survey Statistics and Methodology*, 8(3), 540-565.

Singer, E., Groves, R.M., & Corning, A.D. (1999). Differential Incentives: Beliefs about Practices, Perceptions of Equity, and Effects on Survey Participation. *Public Opinion Quarterly*. 63: 251-260.

Vaisey, S. & A. Miles. 2014. What you can—and can't—do with three-wave panel data. *Sociological Methods & Research*, 46(1), 44–67. doi: 10.1177/0049124114547769

Voorpostel, M., & Lipps, O. (2011). Attrition in the Swiss Household Panel: Is change associated with later drop-out? *Journal of Official Statistics* 27(2): 301-318.

Voorpostel, M. (2019). Refusal Conversion. *FORS Guide* No. 04, Version 1.0. Lausanne: Swiss Centre of Expertise in the Social Sciences FORS. doi:10.24449/FG-2019-00004.

Voorpostel, M., Tillmann, R, Lebert, F., Kuhn, U., Lipps, O., Ryser, V.-A., Antal, E., Monsch, G.-A., Dasoki, N., Klaas, H.S. & Wernli, B. (2020a). Swiss Household Panel Userguide (1999-2018), Wave 20, February 2020. Lausanne: FORS.

Voorpostel, M., Kuhn, U., Tillmann, R., Monsch, G.A., Antal, E., Ryser, V.-A., Lebert, F., Klaas, H., & Dasoki, N. (2020b). Introducing web in a refreshment sample of the Swiss Household Panel: Main findings from a pilot study. *Fors Working Series* paper 2020-2. Lausanne: FORS.

Voorpostel, M., Lipps, O. & Roberts, C. (2020c). Mixing modes in household panel surveys: recent developments and new findings.

Warren, J. R., & Halpern-Manners, A. (2012). Panel conditioning in longitudinal social science surveys. *Sociological Methods & Research*, 41(4): 491-534.

Watson, N., & Starick, R. (2011). Evaluation of alternative income imputation methods for a longitudinal survey. *Journal of Official Statistics*, 27(4), 693-715.