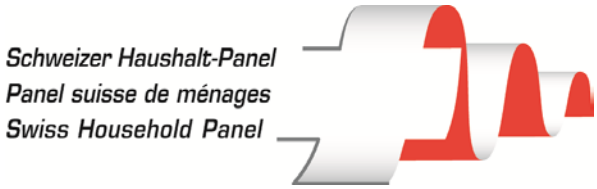

Swiss Household Panel
User Guide
(1999 - 2015)

Wave 17
December 2016

By

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User Guide SHP Table of Contents

CHAPTER 1 INTRODUCTION

1.1 Aims and Analytic Potential

The principal aim of the Swiss Household Panel (SHP) is to observe social change, in particular, the dynamics of changing living conditions and social representations in the population of Switzerland. During the years 1998-2007, the SHP was a joint project run by the Swiss National Science Foundation, the Swiss Federal Statistical Office and the University of Neuchâtel. Since January 2008, the SHP is part of the Swiss Centre of Expertise in the Social Sciences (FORS), hosted by the University of Lausanne.

The creation of the SHP was one of the key structural measures implemented by the Swiss Priority Program "Switzerland Towards the Future" during the period 1998-2003 and had two main purposes (Farago 1996, Joye and Scherpenzeel 1997):

1) To ensure a solid database for social reporting on stability and changes in living arrangements and well-being in Switzerland, that complements data collected by the Swiss Federal Statistical Office;
2) To promote opportunities for quantitative social science research, by making high quality data available to Swiss social scientists and to the international social science research community.

The structure of the SHP was developed using insights from the social sciences and the experiences made by various panel surveys[1] in Europe and North America (Budowski et al. 1998, Budowski et al. 2001, Joye and Scherpenzeel 1997). It was based on theoretical work on the structure and development of contemporary societies (Beck 1986, Eisenstadt 1990, Haferkamp 1990, Konietzka 1995, Leisering and Walker 1998, Mayer 1991, Müller and Schmid 1995), recent analyses of Swiss society and the way it functions (Höpflinger et al. 1991, Leu et al. 1997, Levy et al. 1997) and on literature about social monitoring (Davies 1994, Noll 1998).

Like other households panels, the SHP is a tool for fine-tuning our conceptions and analyses of social dynamics (Budowski et al. 2001, Berthoud and Gershuny 2000, Rose 1995). The dynamics at the macrosocial level do not directly belong to the field of observation covered by a panel survey. What panel surveys are intended to investigate, however, are the effects of changes at the macrosocial level on the living conditions of households and individuals, the manner in which these changes affect the individuals and households, and how they produce social change on a microsocial level. The main purpose of household panels is therefore to understand the processes, causes and ef-

[1] Panel data is data collected about the same units at more than one point in time. It allows for insights into dynamic transformations – social processes and changes across time (Menard 2002). Instead of simply taking a snapshot of people and households at one given point in time, by interviewing the same households and their members annually, panel data enables the following; the observation of changes for the same entities, the reconstruction of the nature and development of their actions, the examination of precedents, concurrent dynamics, and the consequences of alternative strategies.

fects of the social changes currently occurring. The data collected from household panels supply *unique information*, allowing not only to estimate gross transitions but also providing an "understanding" of the transitions observed, i.e. the circumstances (family events, a change in the activity status, heath events, etc.) causing movements in and out of a given state (e.g. the fact that a household or an individual is living below a defined poverty line). In other words, by observing the same individuals over the course of time it is not only possible to study the change in numbers but also the flow of movements between the various states of being and to establish links of causality between different factors and events. Moreover, the SHP has two other main characteristics that increase its analytic potential. First, it is a comprehensive survey covering a broad range of fields and a variety of topics. This makes the SHP a valuable source of information for studies in different disciplines and also allows for cross-domain analyses. To keep up with changes in the field, the SHP occasionally modifies the questionnaire as well as adds new constructed variables to the dataset. Modules of questions are evaluated periodically and if needed revised, following feedback from experts in the field. A major criterion for any changes to the questionnaire is that it should not compromise comparability of the data over time. A second strong feature of the SHP is that all members of the households in the panel aged 14 years and over are interviewed. This allows for intra-household studies, such as the study of mutual influence of household members' attitudes and behaviour over time.

1.2 Institutional Setting

To date, the SHP has experienced three main periods. In its first phase (1998-2003), when it was created by the Swiss Priority Program "Switzerland Towards the Future", the SHP was a joint project run by the Swiss National Science Foundation, the Swiss Federal Statistical Office and the University of Neuchâtel. At the end of the SPP "Switzerland Towards the Future", the SHP entered its second phase (2004-2007). Still located at the University of Neuchâtel, the SHP developed a joint venture project "Living in Switzerland-2020" aimed at conducting the Statistics of Income and Living Conditions (SILC) pilot study 2004-2005 in collaboration with the Swiss Federal Statistical Office. The SILC pilot data were distributed by the SHP until the end of 2008. During the whole period at the University of Neuchâtel, the SHP contributed to academic teaching. The third phase of the SHP is linked to the integration into the Swiss Centre of Expertise in the Social Sciences (FORS). Still mainly funded by the Swiss National Science Foundation, the SHP is part of FORS and hosted by the University of Lausanne since 2008.

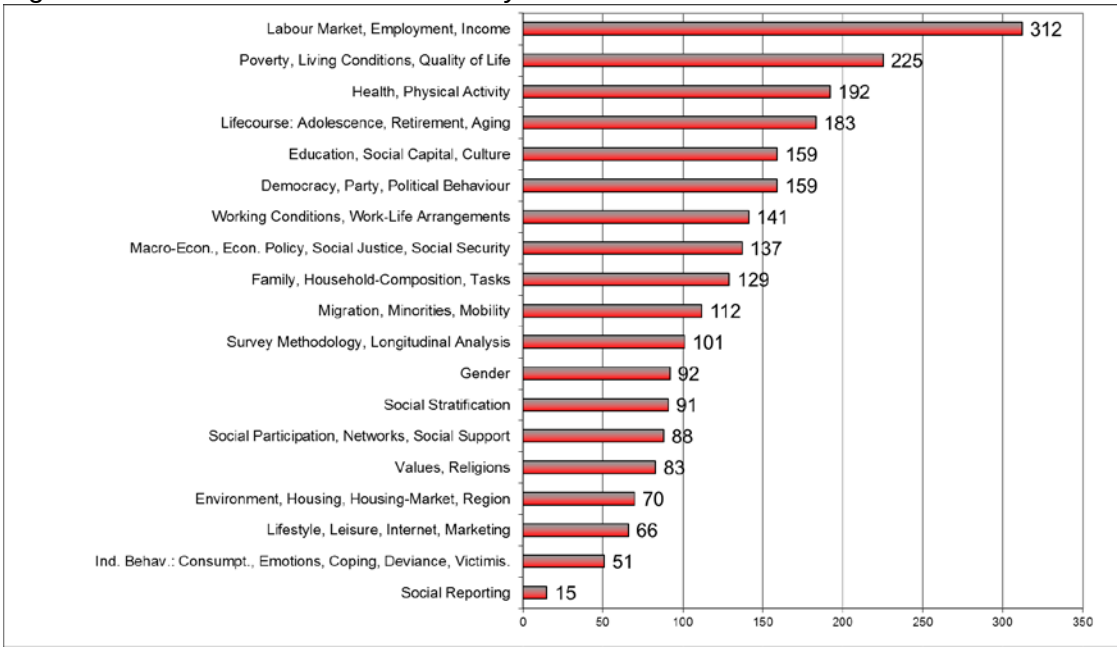
1.3 Use of the SHP

The SHP data users (n=2043 in 2015) mentioned around 2400 research topics. Figure 1 shows the relative importance of the single topic categories given by the SHP research network members (last updated in 2015).

The category with the topics "Labour Market, Employment, Income" leads the table. "Poverty, Living Conditions, Quality of Life", "Health, Physical Activity" and "Life Course: Adolescence, Retirement, Aging" are also among the most frequently listed researched topics. Moreover, 362 users mentioned using the data in the framework of seminars and courses.

In conclusion, the active data users of the SHP research network cover a very broad spectrum of research domains. This is a strong indication that the multidisciplinary SHP survey serves the research needs of a very diversified and interdisciplinary academic community, both nationally and internationally.

Figure 1 Areas of interest mentioned by SHP data users



Since the start of the SHP in 1999, a great variety of issues of social and economic significance have been studied using the SHP data and many more questions can be addressed with the wealth of information the SHP contains. For example:

- *Evolving patterns in changing living conditions, quality of life and life satisfaction*: Who is progressively better or worse off and why? What are the necessary living conditions to warrant a good quality of life? Which objective and subjective factors most strongly determine life satisfaction?
- *Family life and interaction with society at large*: What are the consequences of various forms of living together in terms of social support and solidarity? Which "services" are produced and consumed within the family unit, obtained from the outside or provided by external bodies (e.g. care for children and the elderly)?
- *Labour market participation, work and life satisfaction*: What are the different forms of labour market participation (full-time vs. part-time employment, precarious and insecure employment, sub-employment vs. over-employment, under- and over-qualification, etc.) and their relationship to work and life satisfaction? How do people (especially women with small children) manage conflicting demands from the workplace and from home?
- *Poverty and social exclusion*: What kinds of living conditions are associated with poverty and social exclusion? What are the family and individual characteristics of the poor and what is the mechanism that leads them out of poverty? Who re-

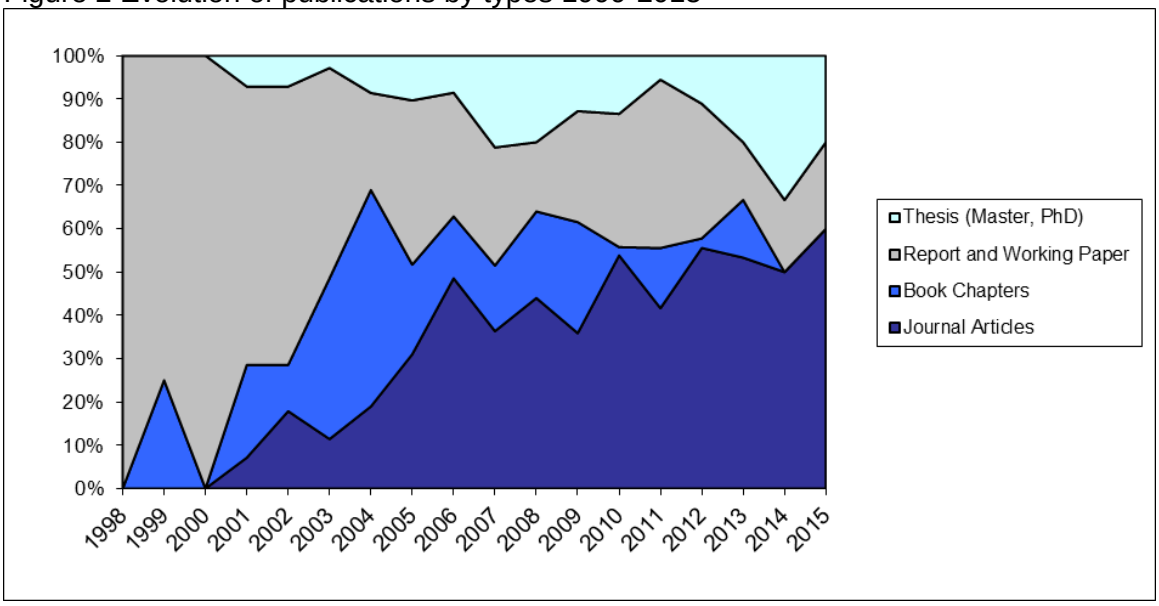
mains poor despite policy measures for support? What are the complex relationships between poverty, social isolation and externally induced social exclusion?

- *Gender, social and economic participation*: How do life-trajectories diverge according to gender? Why do professional careers of men and women with similar educational resources still diverge?
- *Social determinants of health*: How is the life course of individuals and families of widely different origins and facing different social conditions related to health behaviour and outcomes? What are the consequences of worsening living conditions on health? What impact does ill health have on living conditions, employment and quality of life later in life?
- *Emotional trait stability over time*: How do changes in living conditions and/or health affect negative (anxiety, irritation, depressions) and positive emotional states (joy, hope, optimism)? Does a negative emotional state cause illness and low life satisfaction?

Evidence based answers to these and other questions are highly valuable for the formulation and implementation of new policies, since they facilitate evidence-based political decision-making. The release of each consecutive wave of SHP data and the synergies between researchers working with the data, make the SHP data increasingly rich, leading to a steadily increasing number of scientific publications.

All SHP data users are contractually required to report back any publication based on the SHP data, be it journal articles, books, working papers, etc., but also unpublished work such as diploma or doctoral theses, or seminar work. Figure 2 shows the evolution of the number of publications by type between 1999 and 2015.

Figure 2 Evolution of publications by types 1999-2015



1.4 SHP and CNEF

Since 2008 the SHP participates in the Cross-National Equivalent File (CNEF). The CNEF contains equivalently defined variables for the American Panel Study of Income Dynamics (PSID), the German Socio-Economic Panel (GSOEP), the British Household Panel Study (BHPS), the Household Income and Labour Dynamics in Australia (HILDA), the Canadian Survey of Labour and Income Dynamics (SLID), the Korea Labor and Income Panel Study (KLIPS), the Swiss Household Panel (SHP), and the Russia Longitudinal Monitoring Survey (RLMS). The data are designed to allow cross-national researchers access to harmonized versions of these panels.[2] For acquiring the data, see

http://forscenter.ch/en/our-surveys/swiss-household-panel/datasupport/cnef-2/

1.5 Access to the data and data protection rules

The SHP data are available at no charge. Users must sign a contract available on the SHP website:

http://forscenter.ch/en/our-surveys/swiss-household-panel/datasupport/data-contract-2/

Once the contract is signed, users will have access to the most recent SHP data.

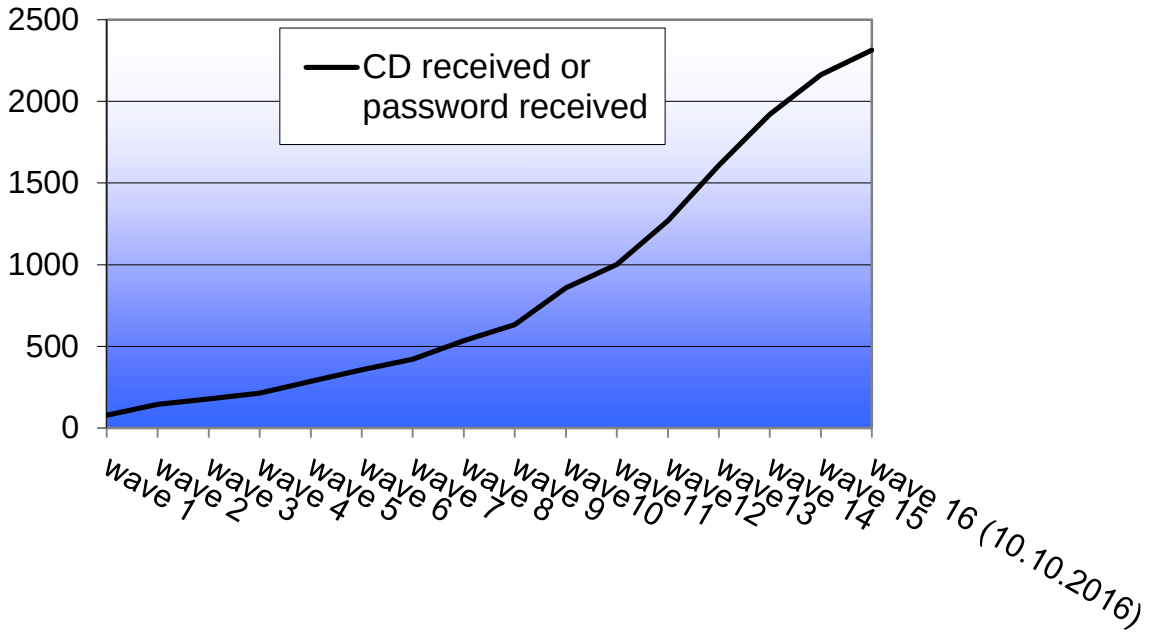
Acces to the SHP data is only allowed for non-commercial purposes. It is strictly forbidden to attempt to identify particular households or individuals and to make parts or all of the data available to a third party. In a research team, all users have to sign the contract individually. SHP data users commit themselves to sending a copy of all working papers, final reports or publications to the SHP (swisspanel@fors.unil.ch).

1.6 Research network Living in Switzerland

In September 2016 the research network “Living in Switzerland” had some 2314 registered members, of which 271 new members since September 2015. So far, 64 special contracts for CNEF data have been signed with the SHP. Figure **3** shows the continuous increase of SHP data users since the first wave.

[2] For more information, see http://cnef.ehe.osu.edu/ or Frick et al. (2007).

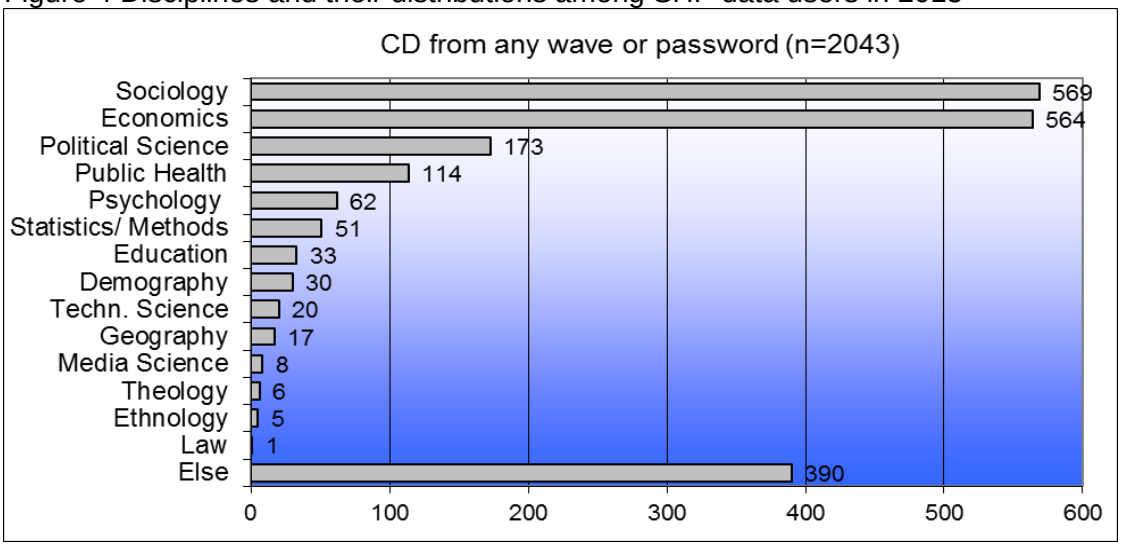
Figure 3 Number of users who ever received a SHP CD or password (Final version SHP-Data)



Among the SHP data users, sociology (34%) and economics (34%) are by far the most prevalent disciplines, followed by political science (10%), public health (7%), psychology (4%), statistics (3%), and education (2%). A few scientists from technical sciences, geography, theology and media science are also present, indicating that spatially related topics are also being analysed using the SHP data.

The data users belong to the following institutions: Swiss academic institutions (74%), international academic institutions (17%), public administrations (5%), and private institutes (4%). Academic communities clearly dominate, but the “statistical” use by public administrations and private research facilities is certainly not negligible. Nowadays almost 20% of the researchers come from abroad. Within Switzerland, all universities and many universities of applied science (Fachhochschule/HES) are represented among the data users.

Figure 4 Disciplines and their distributions among SHP data users in 2015



1.7 Getting more information

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Registration, data contract, secretariat, research network, conferences	Denise Bloch	**swisspanel@fors.unil.ch** +41 (0)21 692 3730
Data, methods, income and simulated taxes, CNEF, programming in Stata	Ursina Kuhn	**ursina.kuhn@fors.unil.ch** +41 (0)21 692 3722
Data, communication with the households, instruction of interviewers, monitoring of the survey, programming in SPSS	Florence Lebert	**florence.lebert@fors.unil.ch** +41 (0)21 692 3715
Interviewer data, contact data, methods, programming in Stata	Oliver Lipps	**oliver.lipps@fors.unil.ch** +41 (0)21 692 3724
Data, methods, (political) participation and attitudes, programming in SPSS	Gian-Andrea Monsch	**gian-andrea.monsch@fors.unil.ch**+41 (0)21 692 3748
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Data, communal data, programming in SPSS	Boris Wernli	**boris.wernli@fors.unil.ch** +41 (0)21 692 3723

CHAPTER 2 STUDY DESIGN

2.1 General design of the SHP

Since its origin in 1999, the SHP survey "Living in Switzerland" has covered a broad range of topics and approaches in the area of social sciences. The survey is conducted annually from September to February by M.I.S. Trend in Lausanne and Bern using the computer assisted telephone interview technique (CATI). Since 2010 computer assisted personal interviewing (CAPI) and computer assisted web interviewing (CAWI) are used for refusal conversion.

The SHP is a panel, i.e. the same persons and households are interviewed annually and answer, with a few exceptions, the same questions. In contrast to a rotating panel it is an indefinite life (simple) panel. There are, therefore, no continuous refreshments of the sample. At present, the SHP comprises three samples drawn by the Swiss Federal Statistical Office: the SHP_I (the sample of households and individuals selected in 1999 and interviewed for the first time that year), the SHP_II (interviewed for the first time in 2004) and the SHP_III (interviewed for the first time in 2013).

Information is collected at the household and the individual level. The SHP uses three types of questionnaires: a household grid questionnaire to assess the household composition (lasting less than 10 minutes), a household questionnaire (lasting 15 minutes on average) and an individual questionnaire (lasting around 35 minutes). All individuals aged 14 or more (living in the household) are eligible to answer the individual questionnaire. The household questionnaire includes in addition a proxy questionnaire on household members younger than 14 years, household members who are absent for a longer period, or who are unable to respond themselves due to illness or disability.

2.2 Sample structure

The SHP consists currently of three different samples: SHP_I was drawn in 1999, SHP_II in 2004 and SHP_III in 2013. Because of the temporal differences, there are also some distinctions in the respective sampling frames and the sampling designs.

2.2.1 Sampling frame

The first sample (SHP_I) is a stratified random sample of private households whose members represent the non-institutional resident population in Switzerland. In 1999, the methodology section of the Swiss Federal Statistical Office drew a simple random sample in each of the seven major statistical regions of Switzerland, on the basis of the Swiss telephone directory (SRH – Stichprobenregister für Haushalterhebungen, or sample frame for household surveys). This sample of households was representative of the various social groups in all regions of Switzerland. In order to compensate for the erosion of the original 1999 sample (deaths, hospitalisation, migration, refusals), a refreshment random sample of households was added in 2004 (SHP_II) following the same

methodology. The sampling frame was CASTEM (Cadre de Sondage pour le Tirage d'Echantillons de Ménages), the follow-up register of SRH, which is owned by the Swiss Federal Statistical Office and also represents a telephone directory. A second refreshment sample started in 2013 (SHP_III). This sample was drawn from the SRPH (Stichprobenrahmen für die Personen- und Haushaltserhebungen), which consists of data coming from the cantonal and communal register of residents and which is owned by the Swiss Federal Statistical Office. As this sampling frame is on an individual basis, the selection units of the SHP_III were individuals rather than households, as was the case for the SHP_I and SHP_II.

2.2.2 Sampling designs

The samples of SHP_I, SHP_II and SHP_III are stratified by major geographic region (NUTS II), in proportion to the number of households (or individuals in the case of the SHP_III) per stratum, see Graf (2009). This means that for the SHP_I and the SHP_II the selection was proportional to the number of households per major region without overrepresentation of smaller regions. For the SHP_III, the number of addresses was proportional to the number of individuals per major region. In both cases the selection did not take into account the average number of persons in households per region. Within one major region, each household or individual had the same inclusion probability, independent of the size of the household.

The addresses of the gross sample are distributed according to the following proportions (SHP_I: census 1990; SHP_II: 2000 census; SHP_III: STATPOP 2012):

Table 2.1 Stratification of gross sample

Strata	Cantons[a]	Proportion of addresses SHP_I (%)	Proportion of addresses SHP_II (%)	Proportion of addresses SHP_III (%)
Lake Geneva region	VD, VS, GE	18.45	18.22	18.90
Mittelland	BE, FR, SO, NE, JU	23.25	22.92	22.25
North-west Switzerland	BS, BL, AG	13.44	13.86	13.57
Zurich	ZH	17.51	18.22	17.52
Eastern Switzerland	GL, SH, AR, AI, SG, GR, TG	15.68	13.70	13.98
Central Switzerland	LU, UR, SZ, OW, NW, ZG	7.20	8.75	9.53
Ticino	TI	4.47	4.33	4.25
Total		100	100	100

[a]) See Appendix A for a list of cantons and their abbreviations

The size of the strata at the moment of the selection for SHP_I,SHP_II and SHP_III were as follows:

Table 2.2 Sizes of strata at the moment of selection (number of households for SHP_I and SHP_II and numbers of individuals for SHP_III)

Strata	Cantons[a]	SHP_I (N): households	SHP_II (N): households	SHP_III (N): Individuals
Lake Geneva region	VD, VS, GE	714'725	648'590	1'519'189
Mittelland	BE, FR, SO, NE, JU	837'452	784'266	1'788'791
North-west Switzerland	BS, BL, AG	484'667	455'833	1'091'302
Zurich	ZH	646'469	587'850	1'408'575
Eastern Switzerland	GL, SH, AR, AI, SG, GR, TG	531'731	493'606	1'123'672
Central Switzerland	LU, UR, SZ, OW, NW, ZG	313'548	306'605	765'879
Ticino	TI	180'623	160'123	341'652
Total		3'709'215	3'436'873	8'039'060

2.2.3 Coverage

Because of the different sampling frames, the population of reference differs slightly according to the sample. For the SHP_I and the SHP_II, the population of reference consists of all individuals living in private households in Switzerland who had a telephone connection registered in the telephone directory (landline or mobile). In case of the SHP_III, the sampling frame includes all individuals living in private households in Switzerland, independent of the availability of a telephone connection.
For all three samples individuals living in old peoples' homes, institutions, collective households or prison, are not part of the population of reference.

An estimated 98.5% of private households had a telephone connection at the time of the selection of the sample for the SHP_II in 2004. The SRH covered about 93% of these households. In 1999, at the time of the selection of the sample for the SHP_I, the SRH's coverage rate was about 95%.

The sampling frame SRH and CASTEM are subject to the following errors:

- *undercoverage*: some households were not listed in the directory at the time of selection. This includes households with unlisted numbers and households that could not be contacted by telephone. This problem may produce a bias (differences in the estimates based on the actually observed population (SHP survey) compared to those that would have been observed based on the target population, see Lipps and Kissau (2012)).

- *duplicates:* despite meticulous checking of the SRH to ensure that only one number is kept per household, some households appear more than once in the survey frame. This problem results in incorrect initial selection probabilities. As the effect is negligible, no correction factor was calculated for households with several telephone lines.

- *overcoverage*: selection of units outside the target population (businesses, homes, prisons, collective households, second homes ….). It should be noted that for a panel, this problem is only encountered at wave 1 and that these addresses are usually considered as out of sample (non-sample cases).

The SRPH is updated every three months by the communities and cantons. The entries are thus not based on the entry of a phone directory, but on the register in the municipality or the canton. Although undercoverage or overcoverage can still occur, they are negligible.

2.3 Follow-up procedure

For the first sample, all households that were interviewed in the first wave (with at least the household questionnaire and one individual questionnaire completed) formed the initial panel to be followed over time. For the second and third samples, all households that completed at least the grid questionnaire in the first wave were approached again. Households that were not reached at all during the first wave or those that did not supply any information at the time of the first wave were not included in the panel in later waves. Households were no longer approached if they could not be contacted for seven waves, refused to participate any longer, moved away from Switzerland, or moved to an institution.

On the individual level, the SHP initially only followed original sample members[3] (OSMs) from the first wave and their children; cohabitants[4] were only (re-)interviewed as long as they lived with an OSM. Since 2007, cohabitants have also been followed and have been entered into the panel as a new household upon leaving the original household. As a general rule, OSMs are followed indefinitely until they leave the target population (e.g., in the case of death or institutionalisation).

2.4 Questionnaires

2.4.1 General content of the questionnaires

The Living in Switzerland survey is a comprehensive survey. The questionnaires (household and individual) cover a broad range of social fields and topics. They are also designed to collect both „objective" (resources, social position, participation, etc.) and „subjective" data (satisfaction, values, evaluation, etc.). The whole constitutes an operationalisation of the different elements of the microsocial level: living conditions, life events, attitudes and perceptions, and lifestyles/ways of life (Budowski et al., 1998).

The questionnaire at *the household level* covers the following areas (Tillmann et al., 2016):

1. *composition of the household:* basic information (collected in the grid questionnaire) about all the members of the household, such as their age, sex, relations, nationality, level of education, and occupational status;
2. *accommodation:* the type and size of the accommodation, home ownership or tenancy, cost of and/or the subsidies received for housing, satisfaction with the accommodation, and evaluation of the state of the accommodation;

[3] These include all eligible household members living in the selected households in the first wave (in 1999, 2004 or 2013).
[4] Cohabitants are persons who entered the selected households after the first wave, and who are not children of any OSM.

3. *standard of living*: possession of various goods such as cars, televisions or computers, and participation in various activities, such as holidays, meals at restaurants, or dentist visits, and the reasons (financial or otherwise) households do not have these goods or carry out these activities;
4. *the household's financial situation*: financial difficulties, indebtedness (and the reasons for it), total household income, payments to other households, expenses (e.g. for childcare), satisfaction with income, an estimate of the minimum income the household considers necessary, and an evaluation of how the household's financial situation has evolved;
5. *the household and the family*: external help available to the household for housework, childcare, or care for other household members, the division of housework and childcare, and decision-making within the household.

The *individual questionnaires* cover the following main topics[5]:

1. *the household and the family:* information on children living outside the household, time spent on housework, and satisfaction with private life and the share of housework;
2. *health and quality of life:* general illness and health problems, doctor and hospital visits, long-term handicaps, threats or attacks endured, self-perceived state of health, estimated evolution of the state of health, satisfaction with health and with life in general, feelings of safety, tobacco consumption, and physical activities;
3. *social origin (asked at first interview only):* information related to each respondent's parents, including profession, professional position, educational level, political positioning, nationality and any financial difficulties in the family of origin (at the reference age of 15);
4. *education:* the respondent's native language(s), level of education completed, education currently being pursued, and participation in on-the-job training;
5. *employment:* information on the respondent's profession, such as working conditions, number of hours worked, work schedule, atypical work, status in the labour market, previous jobs, job satisfaction, job insecurity, and personal qualifications;
6. *income:* total personal income, total professional income, social security pensions, social and private transfers, and other income, plus satisfaction with the financial situation and evaluation of changes in it;
7. *participation, integration, and networks:* frequency of social contacts, unremunerated work outside the home, participation in associations, membership of and participation in groups, assessment of social capital by means of evaluation of potential practical help and emotional support (from various social network ties) and general trust in people;
8. *politics and values:* political participation, membership, party identification, political positioning, satisfaction with the political system, evaluation of issues and political values;
9. *leisure and media:* leisure activities, amount of leisure and holiday time, use of media, and satisfaction with leisure and free time.
10. *psychological scales*: (from 2009 onwards) dimensions of self-perception (such as self-mastery and self-esteem) and other aspects like the Big Five personality traits.

[5] The first wave of the SHP_III did not include an individual questionnaire. The first time an individual questionnaire was administered was in Wave 2 (2014). In Wave 1 in addition to the grid and household questionnaire, respondents completed a biographical questionnaire (see 2.4.7).

Since the second wave, the questionnaire has also included a life events module assessing the occurrence of events such as the termination of relationships, deaths of family or friends, and conflicts with relatives; and an occupational calendar module assessing (on a monthly basis) the respondent's employment situation in the twelve months prior to the interview.

More information on the content of the questionnaires is available here:
http://forscenter.ch/en/our-surveys/swiss-household-panel/documentationfaq/questionnaires/
And here (as pdf):
http://forscenter.ch/en/our-surveys/swiss-household-panel/documentationfaq/questionnaires-pdf/

2.4.2 Modular design

In 2009, the SHP introduced a new system of modularization of the individual questionnaire similar to other panels such as the GSOEP, BHPS and HILDA. The SHP now contains 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 (see Table 2.3).

Table 2.3: Questionnaire content

Topics	**Unique**	**Core**	**Rotating core**
Last job[1]	X		
Social origin	X		
Socio-demographics		x	
Life events		x	
Health		x	
Education		x	
Current job		x	
Occupational calendar		x	
Income		x	
Social network			x
Leisure			x
Social participation			x
Politics			x
Religion			x
Psychological scales			x

[1]) Last job refers to the last job held prior to entering the panel for those respondents who were not in employment at the time of the first interview.

The rotation calendar is the following:

Tab. 2.4: Rotation calendar of the SHP modules from 2010 to 2020

Module	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Social network	X			X			X			X	
Religion			X			X			X		
Social participation		X			X			X			X
Political behaviour and values		X			X			X			X
Leisure and culture	X			X			X			X	
Psychological scales			X			X			X		

X = Administration of the module

2.4.3. Revised rotating core modules

Module "religion": The revised module contains in addition to questions of the original module, new questions on attitudes toward religions, religious socialization, and two ("centrality", "spirituality") scales (Lebert and Tillmann 2011).

Module "psychological scales": This module is dedicated to topics such as life satisfaction, self-mastery, worry domains, and life goals (Ryser et al. 2012).

Module "social participation": Besides participation in various associations and groups, the revised module contains new topics such as behaviour regarding donations, and a measure of self-interest taken from the Morally Debatable Behaviour Scale (Halpern 2001) (Lebert and Tillmann 2010).

Module "political behaviour and values": In addition to questions of the former module, this module contains new information on opinions about public expenditures, party identification and sympathy, environmental protection, and subjective class consciousness (Schmid and Tillmann 2011).

Module "leisure and culture": The revised module contains updated questions on leisure activities and new variables for television and internet use. Furthermore, a series of new questions on holidays is asked (Schmid and Tillmann 2010).

Module "social networks": The revised module includes in addition to existing questions on social networks: additional information on (non-resident) family members (partner, children, parents, siblings), provision of informal support, loneliness, and online social networks (Voorpostel et al. 2012).

2.4.4. Other new questions and modules

New "sports" module in the individual questionnaire (in waves 15 and 17): A new sports module has been developed in collaboration with the Swiss Institute for Empirical Economics Research (SEW-HSG). It focuses on the types of sports the respondent does regularly, the frequency and duration and location of exercise. Furthermore, respondents are asked with whom they are doing sports and whether they participate in competitions.

At the first administration (wave 15) of the new sports module, the respondents were questioned on their sports habits at the age of 12.

Tobacco consumption: At regular intervals we ask questions on smoking and quitting behaviours. At the first administration in wave 12, questions on former smoking behaviour were asked.

New variables in the household questionnaire: Since wave 15 the survey includes new questions concerning renovation of the respondent's accommodation. These questions mainly focus on the type of renovation that has been done and its costs (financial burden for the household). Additionally, the questions on deprivation (a list of things the household can afford) have been updated.

New questions in wave 16: First, one question on nutrition was included in the questionnaire. Second, we added one question on the field of study at the tertiary level in the module "education". Third, we revised the "current job" module, which now contains new questions on unemployment and access to employment. Fourth, the "income" module was evaluated, and questions on rental income, interests and dividends, and savings were added to the questionnaire.

New variable on type of employment (P$$W29) for waves 6 and 7 (2004-2005): as an alternative formulation made up of two questions was used in waves 6 and 7 to gather information on type of employment (P$$W29A and P$$W29B), we reconstructed P$$W29 for those two waves, in order to provide this variable each year of the panel. Note that the distribution of this variable in waves 6 and 7 is somewhat different from the other waves due to the fact that the second question (P$$W29B) was not understood correctly by respondents and we therefore renounced to use part of the provided information.

2.4.6 The use of 11-point scales[6]

For many questions of the Swiss Household Panel questionnaire, the 11-point scale has been chosen instead of a category scale. The 11-point scale is used in many other ongoing surveys, for example the GSOEP and World Value Study, and seems to be well handled by respondents. Respondents are asked to indicate the strength of their attitude or opinion in a number between 0 and 10, with the endpoints 0 and 10 being defined by verbal labels. This type of scale is often called a "number production scale".

The main arguments in favour of this type of scale are:

1. Minimisation of categorisation effects

We assume that attitudes fall along a single, latent continuum, ranging from positive to negative. The larger the number of points on a response scale, the better it represents this underlying, latent continuum and the more accurate it reflects the variation. Scales with relatively few response alternatives force respondents to categorise their reaction towards an attitude object instead of directly mapping it onto the response continuum, thus causing information loss. Early research has already shown that respondents dif-

[6] This section is a summary. See www.swisspanel.ch under Documentation for the complete version.

ferentiate more between objects when offered response scales with greater numbers of categories (Bendig 1954, Garner 1960). The larger the number of points, the more powerful the scale is in discriminating, but at a certain point respondents become unable to make fine distinctions and thus round off.

2. Improvement of data analysis
Improving the measurement procedures is one way to improve the quality of data analysis. In their investigation of the possibilities to optimise measurement procedures in social science, Van Doorn, Saris, and Lodge (1983) did not simply enlarge the number of scale points, but used psychophysical scaling (see also Lodge 1981). Respondents expressed their answers on continuous scales by drawing lines or assigning numbers to their opinions, thus creating interval level measures. The best alternative to category scales within the class of magnitude estimation scales that can be used in CATI is the number production scales.

It is essential that a magnitude estimation scale has fixed anchors, or reference points. The 11 point number scale used in the panel questionnaire has, for example, two reference points, 0 and 10. These reference points have been given labels that clearly indicate the end point of the scale, for example: 'completely satisfied' and not, for example: 'very satisfied'. Scales with two or more reference points and clear labels that fix the end points have proven to decrease the measurement error that can result from variation in response functions (Saris and De Rooij 1988).

3. Reliability of the data (less measurement error)
Another argument is the effect of measurement error, or the reliability of the data. Scales with more response alternatives will be more reliable than those with fewer. It is often stated that the reliability of scales increases with the number of points used. There is probably a limit to the benefit of adding response categories or scale points. An international study of satisfaction, across 10 different countries, showed that the 11-point scale was the most valid and reliable scale of all scales included in the study (Scherpenzeel and Saris 1995).

In addition, the reasons why this type of scale is especially suitable for CATI are:

4. Time saving
The number production scales do not consist of lists of alternatives that all have to be read aloud in a telephone interview. Instead, *only* the first and end point are read aloud and respondents are asked to produce a response alternative themselves. This takes considerably less time than reading lists of fully labelled categories.

5. No response-order biases
Response alternatives presented at the beginning and end of a list may be more likely to be recalled and therefore perhaps selected more often. When no visual aids are presented and when the list is long, memory effects may be important (Schuman and Presser 1981).

The number production scales do not consist of lists of alternatives. Instead, *only* the first and end point are read aloud and respondents are asked to produce a response alternative themselves. Since CATI is exclusively oral, verbal category scales are likely to suffer from the response-order biases. Therefore, number production scales are more appropriate in CATI.

2.4.7 The biographical questionnaire (SHP_III Wave 1)

The questionnaires used in the first wave of the SHP_III differed from the SHP_I and SHP_II. The aim of the first wave of the SHP_III was to collect retrospective individual biographical data. For this purpose respondents in the SHP_III sample completed, in addition to the regular grid and household questionnaire, a life calendar. The SHP_III life calendar is presented as a two way grid with the temporal dimension in years in rows, and various domains of life in columns. Respondents were asked to report events for each domain of life in this grid. This questionnaire has been developed in collaboration with the NCCR LIVES.

The grid provides a visual structure which enhances several aspects of memory retrieving (Caspi et al., 1996). The SHP_III participants can visualize their life trajectories in all domains and can therefore link the occurrence and duration of events in different domains. Interrelatedness facilitates recall for distinct events, because interrelated themes reflect the individual autobiographical memory (Belli, 1998; Belli, Lee, Stafford, & Van Hees, 2002). The visual structure also helps to detect gaps and inconsistencies. Overall this method produces high quality retrospective data (Freedman, Thornton, Camburn, Alwin, & Yound-De Marco, 1988).

The life calendar covers the following domains of life:

1. *residential trajectory*: information on residential mobility.
2. *residence permit*: information on the different residence permits of non-Swiss respondents.
3. *living arrangements*: information on with whom the respondent lived during the life course.
4. partner *relationships*: information on partner relationships and changes in civil status.
5. *family events*: information on the occurrence and timing of family related events such as birth or death of a child, separation or divorce of the parents, death of a member of the family.
6. *professional activities*: information on professional activities and periods during which the respondent received social benefits.
7. *health*: information on the occurrence and duration of different health problems.

Although the domain of *education* was not included in the life calendar, the educational trajectory was assessed in Wave 2 of the SHP_III.

See for more information on the SHPIII files 6.1.6a.

CHAPTER 3 FIELDWORK SHP_I/SHP_II

Starting with the selection and training of the interviewers this chapter describes the whole fieldwork process from how the participating households are approached to the measures taken to increase response and quality control.
Since the beginning in 1999, the fieldwork for the Swiss Household Panel (SHP) is done by M.I.S. Trend in Lausanne and Bern (www.mistrend.ch), by conducting computer-assisted telephone interviews (CATI) in German, French and Italian.

3.1. Approaching the participating households

The fieldwork is scheduled from September to February and starts with sending a letter to the participating households informing them of the upcoming interviews. To make sure that the first personal contact by an interviewer follows shortly after the initial mail (approximately one week later), the letters are sent in three mailings with an interim of one week. Enclosed with the preliminary mail, participants receive a newsletter containing some results of recent analyses of the SHP data as well as an unconditional incentive (for further information see 3.3.4.).

Households that did not respond since at least one wave are contacted at a later point in time, also divided in three groups. They are treated like households refusing in the current wave as part of the refusal conversion procedure (see also 3.3.3).

3.2 Selecting and training interviewers and supervisors

To guarantee a smooth functioning of the fieldwork, M.I.S. Trend employs a large group of interviewers plus specially trained supervisors. Before the start of the fieldwork interviewers and supervisors participate in a training consisting of two sessions.

The supervisors' training aims to prepare the supervisors for their roles as contact persons, organizers of the interviews and supervisors of the interviewers. The supervisors – who are experienced interviewers themselves – are responsible for the performance of the interviewers.

The aim of the interviewers' training is to become familiar with the SHP in general, with its longitudinal design and the specific difficulties. Complex items are discussed and the interviewers learn how to convince respondents to participate in the study. They work through the questionnaires and study the training manual as well as the advance letters and newsletters that the participating households received.

The training sessions are conducted by M.I.S. Trend in Lausanne and Bern, assisted by the supervisors and a member of the SHP-Team.

For the refusal conversion, M.I.S. Trend uses only the most successful interviewers – measured by their individual response rates and the quality of their interviewing performance. They receive extra training to be well prepared.

M.I.S. Trend ensures a strict selection of only the most experienced interviewers and guarantees that all interviews are conducted by native speakers.

3.3 Measures to increase response

Over the past years, the SHP has taken several measures to fight attrition. These measures concern: incentives for the interviewers, incentives for the participating households, refusal conversion, maintaining contact with the households and minimizing noncontact.

3.3.1 Incentives for the interviewers

To increase the interviewers' motivation they can earn two collective bonuses. One bonus is based on the general response rate: all interviewers together have to accomplish at least 95% of last year's individual interviews. The second bonus is only oriented towards interviewers who are engaged in refusal calls and is based on the refusal conversion rate. Additionally, there are regular briefings of all interviewers and supervisors on the progression of the fieldwork.

3.3.2 Incentives for the participating households

Since wave 12 an *unconditional* incentive is offered to each eligible respondent. This incentive is sent to the households with the preliminary letter asking them to participate in the new wave.

Between wave 12 and wave 14, an additional incentive was offered to *complete households*. A household is called "complete" if all members of the household of 14 years or older completed the individual interview and if the household reference person completed the grid and the household questionnaire. This additional incentive was only offered to households consisting of at least two members. For budgetary reasons this additional incentive was dropped in wave 15.

The general unconditional incentive is sent to the respondents with the preliminary letter asking the household to participate in the new wave of the SHP. The additional incentive for complete households was given to the participants at the end of the fieldwork.

3.3.3 Refusal conversion

Households that have not participated in the survey for at least one year have been reapproached progressively. These households are sent a preliminary letter with the request to take part in the next wave of data collection. Only the most successful and specially trained interviewers are selected to contact these households. Also households and individuals who refuse participation in the current wave are re-contacted at a later point by refusal conversion trained interviewers.

The refusal conversion rate, calculated as the percentage of completed individual interviews of all eligible individuals who refused previously, amounts to about 45% (Lipps, 2011).

3.3.4 Staying in contact with the respondents

To avoid household drop out of the panel because of unsuccessful tracing (due to moving, changed phone numbers, household splits, etc.), several measures ensure that contact can be re-established with the respondents in later waves.

First, the participating households are informed annually by means of a newsletter enclosed with the advance letter at the start of each fieldwork phase. The newsletters can be viewed here:
http://forscenter.ch/en/our-surveys/swiss-household-panel/information-for-participating-households/newsletters-study-living-switzerland/

Second, respondents are asked to leave their mobile number and/or their e-mail address. If respondents are not willing to give this information or do not have a mobile number or e-mail address, they are asked to leave the address of an auxiliary (e.g. a family member living outside of the household or a close friend) who can help in case of losing track of the respondent.

Third, households are called on different days of the week and on different times during the day in order to minimize noncontact. And fourth, a bilingual interviewer responsible for administration and tracking of the addresses is briefed on how to find relocated respondents. The following measures are taken by this interviewer in case the advance letter is returned to sender:

- Checking whether phone number is still valid
- Contacting mobile phone, e-mail address or auxiliary
- Searching directories and the local inhabitant register
- Request the dcl data care (a service of the Swiss post mandated to seek currently valid household addresses and the corresponding phone numbers)
- If no phone number can be found, a form is sent to the address provided by the dcl data care asking to complete contact details.

3.4 Quality control

Prior to each wave, extensive pre-tests are carried out, checking correct technical functioning of filters and new items and running different scenarios. After the training of supervisors and interviewers (for more details see 3.2), the fieldwork agency monitors the interviewer performance during the fieldwork: supervisors listen in to the interviews, evaluate interviewers on several criteria (e.g. accurateness and pace of reading, argumentation), document performance and give feedback to the interviewers. M.I.S. Trend carries out the training and monitoring of interviewers in collaboration with the SHP-Team.

CHAPTER 4 FIELDWORK SHP_III LIFE CALENDAR (WAVE 1)

As for the SHP_I and the SHP_II, the fieldwork for the third sample of the SHP is done by M.I.S. Trend in Lausanne and Bern (www.mistrend.ch). The first wave of the SHP_III took place from September 2013 to March 2014. It consisted of a paper and pencil biographical questionnaire in addition to the grid and the household questionnaires done by CATI or CAPI.

4.1. Approaching the participating households

Fieldwork for the SHP_III took place in parallel with the SHP_I and SHP_II and started with sending a letter and an informative flyer to the participating households informing them about the upcoming interviews. For the biographical questionnaire in the first wave of the SHP_III only participants aged 16 or older were eligible. They received an unconditional 10.- CHF incentive. Two different approaches were used: one for households for which address and telephone number were available and one for households for which only an address was known.

4.1.1 Procedure for the households with a known address and telephone number

When a telephone number was known, households were contacted by phone to complete the grid and household questionnaires (CATI). Two to four days after this initial interview, biographical questionnaires, an instruction manual and a return envelope were sent to all eligible participants. Participants who did not return the biographical questionnaire within two weeks received a reminder. Participants who still did not respond within the two weeks following this first reminder were re-contacted by a special face to face team. This team provided help with the completion of the biographical questionnaire if needed.

4.1.2 Procedure for households of which only an address was known

If no telephone number was available, interviewers went to the households to complete the grid and household questionnaire face-to-face (CAPI). If possible, the respondents also completed the biographical questionnaire at this time. Otherwise, the biographical questionnaire, a manual and a return envelope were left with the respondent who could complete the questionnaire at a later time. The follow up of nonrespondents was the same as for the households under 4.1.1.

4.2 Selection and training of interviewers and supervisors

Before the start of the fieldwork interviewers and supervisors followed a training, either a three hour training for CATI interviews, or a one day training for CAPI interviews.

As for the SHP_I and the SHP_II, the supervisors' training prepared the supervisors for their roles as contact persons, organizers of the interviews and supervisors of the interviewers.

The aim of the interviewers' training was to become familiar with the SHP_III in general, its longitudinal design and the specific difficulties of the biographical questionnaire. Interviewers learned how to convince respondents to take part in the survey; they worked through the grid, household and biographical questionnaires and studied the training manuals. Interviewers were also asked to complete their own biographical questionnaire to fully understand the objectives of the questionnaire and to become familiar with the difficulties that may arise.

The training sessions were conducted by M.I.S. Trend in Lausanne and Bern, with the assistance of the supervisors and a member of the SHP-Team.

Like in the SHP_I and SHP_II, for refusal conversion in the SHP_III M.I.S. Trend uses only the most successful interviewers who received extra training.

4.3 Measures to increase response

The procedure is quite similar to the two existing samples of the SHP. To encourage participation, participants received an unconditional incentive. Interviewers were trained to convince sample members to participate in the study.

4.3.1 Incentives for the interviewers

M.I.S. Trend introduced different procedures and collective incentives to increase the interviewers' performance:

- Improvements in "address management" by M.I.S Trend (using extended inquiries): use of local inhabitant registers, contacts by e-mail or mobile phone, use of "dcl data care",[12] use of a fixed person specifically trained for address monitoring;
- selection of more experienced interviewers (choosing those interviewers who had already worked for the SHP and/or the SILC surveys); selection of interviewers with the lowest refusal rates for refusal conversion; improvement of supervision; introducing a collective bonus system for interviewers based on targets.

4.3.2 Refusal conversion

The procedure for the SHP_III is similar to the one for the SHP_I and the SHP_II. Households that refused to participate in the survey have been re-approached by refusal conversion trained interviewers.

4.3.3 Contacting respondents for the future

For all three samples, to avoid household drop out because of unsuccessful tracing (due to moving, changed phone numbers, household splits, etc.), several measures ensure that contact can be established with the respondents in future waves. These measure are presented in detail in 3.3.4 .

4.4 Quality control

Measures of quality control are the same as for the SHP_I and SHP_II (see 3.4 Quality control)

CHAPTER 5. DATA QUALITY

5.1. Response rates and attrition

5.1.1 Response rates

Initial response rates (in the first wave) at the household level were 64% for SHP_I, 65% for SHP_II an 60% for SHP_III. On the individual level initial response rates (conditional upon household participation) were 85%, 76%, and 81%, respectively. Tables 5.1 to 5.3 indicate the number of interviewed households and persons for the years 1999-2015 in the three SHP samples. See Appendix A for further detail on response figures.

SHP_I

For the SHP_I (waves 1 to 17), 5,074 households were first interviewed in 1999. In the seventeenth wave, 2,802 households and 4,596 persons responded (Tables 5.1 and 5.2). Out of the 7,799 persons interviewed for the first time in 1999, 19.8% (n=1,547) completed a personal interview in each of the following waves including the seventeenth wave conducted in 2015 (Table 5.3). At the household level (see Table 5.1, % A), the drop in participation was particularly high in the second (13%) and the fourth (11%) waves, compared to the other waves in the 1999-2005 period (5 to 8%). Between 2006 and 2010 the number of households interviewed increased due to various measures taken to re-introduce households that were abandoned earlier into the study. Response has been rather stable since 2011..

At the individual level (see Table 5.2, % A), the drop in participation was particularly high in the fourth (12%) wave compared with the other waves in the 1999-2005 period (between 6 and 10%). From 2006 to 2011 the number of persons interviewed increased in general (with a slight drop in 2008) due to the measures to re-introduce dropped-out households and to extra efforts made by the interviewers of M.I.S. Trend to enrol all eligible household members for an individual interview. Since 2012 response rates have stabilized.

SHP_II

In the SHP_II (waves 1 to 12), 2,538 households and 3,654 individuals were first interviewed in 2004. In the twelfth wave, 1,354 households and 2,075 persons responded. At the household level (see Table 5.1, % A), there was a clear drop in participation in the second wave (29%, compared to 5 to 8% in the 2004-2007 period[7]). As was the case for the SHP_I, between 2008 and 2010 the number of interviewed households increased. Since 2011 household response rates have remained stable.

At the individual level (Table 5.2, % A), the drop in participation was – as was the case at the household level – particularly strong in the second wave (28%), compared to later waves, when the drop in participation was between 2 and 6%. Also on the individual lev-

[7] Contrary to the SHP_I starting in 1999, the household recruited in 2004 were not explicitly asked to commit themselves for several years. According to the interviewers, many households were surprised to be called one year later, to be interviewed again in the ongoing panel study.

el was there an increase in the number of interviews between 2008 and 2010, after which the number of interviews decreases slightly.

SHP_III

After three waves of the SHP_III, participation declined from 3,988 households (6,088 individuals) to 2,700 households (4,498 individuals). The decline in number of interviews was especially large in the second wave (14% fewer household interviews, 20% fewer individual interviews), and still substantial in wave 3 (12% fewer household and individual interviews).

Table 5.1 Number of *households* interviewed in SHP_I, SHP_II and SHP_III (1999-2014)

Year	Wave	SHP_I n	%* A	%** B	SHP_II n	%* A	%** B	SHP_III n	%* A	%** B	SHP_I+II+III n
1999	1	5,074	100	100							5,074
2000	2	4,425	87	87							4,425
2001	3	4,139	82	94							4,139
2002	4	3,582	71	87							3,582
2003	5	3,227	64	90							3,227
2004	6/1	2,837	56	88	2,538	100	100				5,375
2005	7/2	2,457	48	87	1,799	71	71				4,256
2006	8/3	2,537	50	103	1,684	66	94				4,221
2007	9/4	2,817	56	111	1,494	58	89				4,311
2008	10/5	2,718	54	96	1,546	61	103				4,264
2009	11/6	2,930	58	108	1,476	58	95				4,406
2010	12/7	2,985	59	102	1,557	61	105				4,542
2011	13/8	2,977	59	100	1520	60	97				4,495
2012	14/9	2,968	58	100	1,493	59	98				4,461
2013	15/10/1	2,881	57	97	1,488	57	100	3,989	100	100	8,357
2014	16/11/2	2,778	55	96	1,385	55	93	3,197	80	80	7,359
2015	17/12/3	2,761	55	101	1,326	53	98	2,700	68	85	6,787

*These percentages are calculated on the basis of the number of interviews conducted in the first year (1999, 2004 or 2013).
**These percentages are calculated on the basis of the number of interviews conducted in the previous year. They may therefore exceed 100%.

Table 5.2 Number of *persons* interviewed in SHP_I, SHP_II and SHP_III (1999-2014)

Year	Wave	SHP_I n =	%* A	%** B	SHP_II n =	%* A	%** B	SHP_III n =	%* A	%** B	SHP_I+II + III n =
1999	1	7,799	100	100							7,799
2000	2	7,073	91	91							7,073
2001	3	6,601	85	93							6,601
2002	4	5,700	73	86							5,700
2003	5	5,220	67	92							5,220
2004	6/1	4,413	57	85	3,654	100	100				8,067
2005	7/2	3,888	50	88	2,649	72	72				6,537
2006	8/3	4’091	52	105	2,568	70	97				6,659
2007	9/4	4,630	59	113	2,350	64	92				6,980
2008	10/5	4,494	58	97	2,410	66	103				6,904
2009	11/6	4,800	62	107	2,309	63	96				7,109
2010	12/7	5,057	65	105	2,489	68	108				7,546
2011	13/8	5,103	65	101	2,481	68	100				7,584
2012	14/9	5,032	65	99	2,414	66	97				7,446
2013	15/10/1	4,880	63	97	2,327	64	96	6,090	100	100	13,295
2014	16/11/2	4,678	60	96	2,150	59	92	5,264	86	86	12,090
2015	17/12/3	4,596	59	98	2,075	57	97	4,498	74	85	11,169

*These percentages are calculated on the basis of the number of interviews conducted in the first year (1999, 2004 or 2013).
**These percentages are calculated on the basis of the number of interviews conducted in the previous year. They may therefore exceed 100%.

Table 5.3 Number of *persons* interviewed in every wave (SHP_I and SHP_II)

Year	Wave	SHP_I (fully longi-tudinal) n =	%* A	%** B	SHP_II (fully longi-tudinal) n =	%* A	%** B	SHP_III (fully longi-tudinal) n =	%* A	%** B
1999	1	7,799	100	100						
2000	2	6,335	81	81						
2001	3	5,429	69	86						
2002	4	4,480	57	83						
2003	5	3,888	50	87						
2004	6/1	3,076	39	79	3,654	100	100			
2005	7/2	2,622	34	85	2,395	66	66			
2006	8/3	2,399	31	91	1,930	53	81			
2007	9/4	2,209	28	92	1,601	44	83			
2008	10/5	2,060	26	93	1,400	38	87			
2009	11/6	1,952	25	95	1,289	35	92			
2010	12/7	1,876	24	96	1,220	33	95			
2011	13/8	1,811	23	97	1,155	32	95			
2012	14/9	1,739	22	96	1,102	30	95			
2013	15/10/1	1,661	22	96	1,039	28	94	6,090	100	100
2014	16/11/2	1,598	20	96	957	26	92	4,453	73	73
2015	17/12/3	1,547	20	97	900	25	94	3,588	59	81

*These percentages are calculated on the basis of the number of interviews conducted in the first year (1999, 2004 or 2013).
**These percentages are calculated on the basis of the number of interviews conducted in the previous year.

5.1.2 Attrition in the three SHP samples

Not only response rates are decisive in assessing quality of the data. Of crucial importance is the extent to which nonrespondents differ from respondents on relevant characteristics. As a result nonresponse can cause nonresponse bias in survey estimates (Behr et al. 2005, Groves 2006, Groves and Peytcheva 2008). Hence, the central concern in the analysis of attrition is selection bias, because selection bias results in a distortion of the estimation results due to non-random patterns of attrition. To guarantee the quality of the data, it is important to closely monitor the impact of attrition on the representativeness of the longitudinal sample and how this might impact variables of interest and research findings.

The common distinction made in the literature on nonresponse and attrition, is between attrition that is completely at random, attrition that is selective on variables unobserved in the data, and attrition that is selective on variables observed in the data (Alderman et al. 2001). In the analyses presented in this section, we will consider attrition on observed variables. This kind of attrition may introduce bias in the estimates of interest, but this bias is amenable to statistical solutions. Two analyses are performed on the impact of attrition in the SHP on an annual basis; one focusing on group representativeness, the other on potential bias in variables of interest.

We refer to Appendix C for a general impression of how respondents with various response patterns differ from each other on demographic characteristics and several measures of social involvement. A comparison is made between respondents who are in the panel every wave, respondents with an irregular response pattern and respondents who have dropped out of the panel. Note that calculations are based on unweighted data. For the complete study (including SHP_I and SHP_II only) we refer to the SHP Working Paper 1-09 (Voorpostel, 2009) on the website (http://forscenter.ch/en/our-surveys/swiss-household-panel/) and Voorpostel (2010). A comparable study on attrition in relation to income can be found here as well (Kuhn, 2009). We also refer to other studies on attrition in the SHP (Lipps 2007), including a comparison to attrition in other panel studies (Lipps 2009).

Effects of attrition on variables of interest

This is an overview of the results and methods of analysis to study the effect of attrition on a large number of variables (for a detailed description, see Weaver 2010). The goal is to describe the consequences, in terms of bias, caused by the continuing and selective loss of individual participants to the survey over the course of time. One statistical solution to attrition is the use of weights. Weights attempt to correct non-response at all levels; personal, household, and grid. As we will see, some variables in the SHP are affected by attrition and show a bias in the statistics. The weights often correct for attrition and therefore compensate for the bias but sometimes the bias persists even after weighting or, in rare cases, is a result of weighting itself.

In order to identify the variables affected by attrition, we examine all variables that were included in the latest wave and in the previous waves. Attrition from both the first sample of the Swiss Household Panel (SHP_I), the first and second sample (SHP_I and SHP_II) and all three samples combined (SHP_I, SHP_II and SHP_III) combined is considered. We then compare means and frequencies for all variables calculated with the value of the first year of the variable ££ in (99,…,13) on the sub-populations of respondents still present in the latest wave as follows:

$$
\begin{aligned}
sL^{R\pounds\pounds} &= sL^{\pounds\pounds} \\
sL^{R\$\$} &= sL^{\pounds\pounds} \cap sL^{\$\$} \\
&\dots \\
sL^{R11} &= sL^{\pounds\pounds} \cap sL^{12}
\end{aligned}
,
$$

where $sL^{\pounds\pounds}$ are the longitudinal respondents (original sample members) in 1999 for the SHP_I, 2004 for the combined panel SHP_I and SHP_II, and 2013 for the combined panel SHP_I-_II-_III. $sL^{\$\$}$ are the longitudinal respondents in year 20$$. Basically, we test to see if samples that still respond in a later year are representative of the same individuals that responded in the first year. The tests run through the most recently released version (wave 16).

One has to be cautious with the results presented below because a selective process may have already occurred at the first wave of data collection, introducing bias. This is undetectable by this method. Moreover, the calculations are done on the entire sample of longitudinal respondents and there are no comparisons on sub-populations (by sex, age class, nationality, etc.). Such comparisons could reveal differences which are not observed at the aggregate level. Of course, the inverse is also possible.
Researchers need be especially careful when analysing the variables identified as being biased by attrition (these were in particular variables related to leisure and politics). The results presented here do not mean that these variables are unusable. However, they show that the phenomenon of attrition can certainly not be ignored. The researcher must account for this in his analyses and, if necessary, in the given interpretation. Note also that the variables for which a bias occurred after weighting and not before, were part of the rotating module “Leisure and culture”.

For the first panel, there are 1774 variables that appear in at least one wave of the personal files and are thus eligible for testing. Out of these 1774, there are 473 deemed unfit to be tested. The following groups of variables were excluded:

- proxy variables, as it concerns reports on other household members
- variables with the same response in all waves considered, such as status
- variables with too few respondents (for categorical variables, if no category has at least 30 respondents, and for numeric, if the total number of respondents is less than 30)
- variables of which the modality is too high (this is for categorical variables with more than 100 distinct responses, such as the 4 digit isco job classification)
- variables for which testing does not make sense, such as id variables, dates, and weights.

Table 5.4 gives a summary of the results. If a variable is biased for any year without using weights, then it falls into the category of “Difference without weight”. If a variable has bias detected for any year after weighting then it falls into the category of “Difference with weight”.

Table 5.4: Composite results for the first panel (1999-2015)

Difference without weight	Difference with weight	Explanation	Occurrences out of the 1774 variables in the personal files all waves (percent out of the 1301 variables tested in parentheses)
-	-	Not compared either because of insufficient response, too high of modality, or it did not make sense to test the variable.	473
No	No	No difference, with or without weights. The variable considered does not appear to be biased from attrition.	1082(83.2%)
No	Yes	No differences without weights, but the weighted results are different. The weighting introduces bias.	44(3.4%)
Yes	No	We observe a difference without weights, but it disappears when the results are weighted. The variable is therefore touched by attrition but the weighting corrects the phenomena.	35(2.7%)
Yes	Yes	We observe a difference without the weight and it persists even with weighting. The variable is therefore touched by attrition without the possibility of correction by weighting. Mainly leisure and politics variables.	140(10.8%)

For the combined panel of SHP_I and SHP_II, there are 1418 variables that appear in at least one wave of the personal files (since 2004). Out of these, 329 are deemed unable to be tested. The reasons are the same as given above. Table 5.5 gives a summation of these results.

Table 5.5: Composite results for the combined panel SHP_I-SHP_II (2004-2015)

Difference without weight	Difference with weight	Explanation	Occurrences out of the 1418 variables in the personal files all waves (percent out of the 1089 variables tested in parentheses)
-	-	Not compared either because of insufficient response, too high of modality, or it did not make sense to test the variable.	329
No	No	No difference, with or without weights. The variable considered does not appear to be biased from attrition.	948(87.1%)
No	Yes	No differences without weights, but the weighted results are different. The weighting introduces bias.	28(2.6%)
Yes	No	We observe a difference without weights, but it disappears when the results are weighted. The variable is therefore touched by attrition but the weighting corrects the phenomena.	47(4.3%)
Yes	Yes	We observe a difference without the weight and it persists even with weighting. The variable is therefore touched by attrition without the possibility of correction by weighting. Mainly leisure and politics variables.	66(6.1%)

The results for the combined panel of SHP_I-_II-_III are presented in the table 5.6.

Table 5.6: Composite results for the combined panel SHP_I-_II-_III (2013-2015)

Difference without weight	Difference with weight	Explanation	Occurrences out of the 1086 variables in the personal files all waves (percent out of the 870 variables tested in parentheses)
-	-	Not compared either because of insufficient response, too high of modality, or it did not make sense to test the variable.	216
No	No	No difference, with or without weights. The variable considered does not appear to be biased from attrition.	839(96.4%)
No	Yes	No differences without weights, but the weighted results are different. The weighting introduces bias.	7(0.8%)
Yes	No	We observe a difference without weights, but it disappears when the results are weighted. The variable is therefore touched by attrition but the weighting corrects the phenomena.	13(1.5%)
Yes	Yes	We observe a difference without the weight and it persists even with weighting. The variable is therefore touched by attrition without the possibility of correction by weighting. Mainly leisure and politics variables.	11(1.3%)

5.2 The weighting scheme of the SHP

Compared to cross-sectional surveys, longitudinal household panels face some additional methodological challenges. One of them is the complex weighting scheme. On one side, the objective of longitudinal surveys is to analyse the evolution of a population over time. This is done by using longitudinal weights. These weights refer to the population in the first wave of a particular panel (1999, 2004, and 2013 for SHP_I, SHP_II, and SHP_III, respectively). On the other side, longitudinal surveys are also used for cross-sectional analyses, referring to the population in any given year. For this purpose, there is also a need for cross-sectional weights. Furthermore, in a household panel survey, cross-sectionally there are not only individuals to weight for every wave, but also households. We recently also developed cross-sectional weights for the children (<15 years old) in the SHP households. For each of the types of weights, the SHP delivers two versions: one weight to obtain the size of the Swiss population and one to maintain the sample size.

In this chapter, we briefly describe the current weighting scheme. We give a general overview of how the weights are constructed and what techniques are used.[8] Moreover, we give an overview of all the weights that are delivered with the data, as well as some guidelines on how to use them.

5.2.1 Overview of techniques

In this section the major steps used for the construction of weights in the SHP are briefly presented.

Initial weights based on inclusion probability

In a first step, the inclusion probabilities (probabilities to be "in" the sample) are determined for every unit of the reference population and then their inverse is taken as the sampling weights. As these probabilities are entirely determined by the sampling design the sampling weights are design weights.

Adjustments for non-response

The second step is to compute an adjustment factor for the non-response. The method used for modelling non-response is analysis by segmentation, as proposed by Kass (1980).

The goal of segmentation is to determine the response probability of the panel members (or households) and is used for modelling non-response either to the grid, the household questionnaire or the individual questionnaire. The method proposed by Kass is the Chi-squared Automatic Interaction Detector (CHAID) procedure. When modeling non-response, the dependent variable consists of the response status, whereas socio-demographic information is used as independent variables. As one needs information that is available also for non-respondents, the choice of the variables used to adjust non-response is limited. Information on the non-respondents comes from the official registers from which the samples were drawn, and from questionnaires completed in previous waves.

CHAID proceeds in consecutive steps and represents a kind of classification tree that shows at each intersection the auxiliary variable that best models the non-response. The algorithm first chooses the variable for the partition of the data that is most highly associated with the response status according to the highest Pearson Chi-square. The data is then divided into two groups, according to this chosen predictor. Each of these sub-groups is then analyzed separately to produce further subdivisions (Kass, 1980).

The partitioning process continues until each subgroup satisfies one of the following conditions: (1) none of the remaining variables is significantly related to the response propensity, (2) the number of members of the subgroup (including non-respondents) would fall below a given threshold (set at 30) if the sub-group would be divided, or (3)

[8] For a detailed exposition on the construction and the production of the weights, a complete documentation can be found here: http://forscenter.ch/en/our-surveys/swiss-household-panel/documentationfaq/methods/weighting/.

the response rate would fall below a given level (set at .3) if the subgroup would be divided. The resulting subsets represent homogenous response groups (HRG). Adjustment for non-response is based on these HRG: the adjustment factor corresponds to the inverse of the response rate of a given HRG.

Generalized weight share method
Because the inclusion probabilities of new household entrants (cohabitants) are not known, we apply an alternative strategy in order to allocate them a cross-sectional individual weight. This strategy consists of using only the (known) inclusion probabilities of the original sample members and allocating parts of these weights within a household to cohabitants. The strategy used in the SHP is the Generalized Weight Share Method (GWSM) developed by Lavallée (2007).

The GWSM produces an estimation weight for each unit surveyed in the target population U^B (cohabitants). This estimation weight corresponds to the average of the sampling weights of the population U^A (original sample members) from which the sample is selected.

We calculate the weight w_{ik} for each non-original sample member as follows:

$$w_{ik} = \frac{\sum_{k=1}^{M_i^B} w'_{ik}}{\sum_{k=1}^{M_i^B} L_{ik}^B}$$

where the numerator represents the sum of the initial weights w'_{ik} for all original sample members *k* in each household *i* and the denominator is the total number of links for that household with the population of reference U^A, that is the number of original sample members in each household *i*.

Combination of multiple panels
Because we have multiple panels, we have to consider the way the panels are combined in order to enable cross-sectional estimations. The combination of the panels is performed using the method of Merkouris (2001).

His method consists of allocating each unit a factor p_l ($0 < p_l < 1$) when the unit is part of the l^{th} sample. The combination of the panels occurs at the level of the seven regions and is a so-called "convex combination", as the allocation factor defines the relative importance of the samples according to their size. Fundamentally it is the design effects that are compared in order to determine the factors but considering that the sampling designs of the three panels are the same, only the sizes matter. For example, if the three samples combined have a larger share of households from a particular region than in the population, the weights associated with this region need to be adjusted. The calculation of factor p_l is as follows:

$p_l = \frac{n_l}{\sum_{l=1}^{L} n_l}$, where n_l is the number of responding units from the l^{th}panel and L is the number of panels. Evidently, the sum of the combination factors is 1. The unit is either

the person - in the case of the individual weights - or the household in the case of the household weights. If the unit is a member of the SHP_I, the weight is then multiplied by the factor p_1 and if the unit is a member of the SHP_II the weight is multiplied by the factor p_2 and so on.

Calibrations to known population totals
After the adjustment for non-response and the combination of the two panels, the weights are softly calibrated (Guggemos, and Tillé, 2010). Calibrations are used to adjust all the weights so that certain population sums are correct (equal to the sums of the non-institutionalized Swiss population). The adjustments due to calibration are chosen to be as small as possible to minimize the introduction of bias for non-correlated variables. The method applies population totals coming from ESPOP until 2010 and STATPOP since 2011. There were two different calibration total classes depending on the information available and memory restraints. The first is the classical version with totals on:

- sex*age category (0-13, 14-24, 25-34, 35-44, 45-54, 55+),
- the number of individuals living in the seven major statistical regions Lake Geneva (VD, VS and GE), Middleland (BE, FR, SO, NE and JU), North-West Switzerland (BS, BL, AG), Zurich, East Switzerland (GL, SH, AR, AI, SG), Central Switzerland (LU, UR, SZ OW, NW) and Ticino,
- the number of individuals with Swiss nationality, and
- the number of married individuals.

The second uses the same variables but breaks all totals up by age category. One should note that values for age 0-13 are used for the household cross-sectional weights and for the weights of children (produced from wave 15 onwards). Note also that the number of married individuals is not available for the longitudinal weights of the SHP_I. Weights calibrated using totals of the first type were the longitudinal weights and the cross-sectional household weights for the SHP_I. The remaining weights were calibrated using the second type.

5.2.2 Overview of the current weights
Until wave 15 (respectively 10 for the SHP_II and 1 for the SHP_III), three types of weights are delivered with the SHP data: (a) individual longitudinal weights, (b) individual cross-sectional weights, (c) and household cross-sectional weights. From this year the SHP also delivers cross-sectional weights for children.

Children cross-sectional weights
As only individuals more than 14 years old are interviewed, children below this age have no initial weights. In order to allocate weights to them some kind of weight sharing method has to be applied. In the SHP, children are first given the average of the initial weight of the OSM in their household. These weights are then adjusted for non-response using the adjustment factor of the reference person of the household. The next step is to calculate allocation factors according to the number of children of each panel. Finally, in order to produce the final weights, a calibration is performed to reflecting the distribution in the population regarding sex by age, nationality and region from ESPOP/STATPOP.

Individual transitional factors
As the longitudinal weights can only be used when analysing change since the first wave of any given panel, they are not suitable if the period analysed starts at a later wave. For

the development of longitudinal samples that start after the first wave, transitional factors are provided. These transitional factors enable the researcher to create custom-made individual longitudinal weights over several consecutive waves.

Determining these transitional factors is a two-step process. First, segmentation is used to model response to the grid at wave t given response to the individual questionnaire in wave t-1. Second, response to the individual questionnaire in wave t is modelled given response at the grid at the same wave. These factors are especially useful when combining a limited number of waves, but it should be noted that they may become problematic when many waves are strung together. Because of this, we recommend not to use more than three consecutive years.

More information on the construction of these transitional factors, their applicability, and their limitations is available on the SHP homepage.[9]

In order to simplify the application of weights for longitudinal analysis concerning a sample with an arbitrarily chosen starting date, from this wave onward (W17) we also deliver additional longitudinal weights. To accommodate for these additional weights the SHP has changed the naming conventions for the weights. For more details about the names of the weight variables see:
http://forscenter.ch/en/our-surveys/swiss-household-panel/documentationfaq/methods/weighting/.

5.2.3 Selection of the appropriate weight

It is essential to use weights in order to have estimates that are representative of the underlying population. Cross-sectional weights always refer to the year analysed, both for households and for individuals, whereas longitudinal weights (individuals) always extrapolate to the population resident in Switzerland in 1999 for SHP_I, to the population resident in Switzerland in 2004 for the combined panel SHP_I and SHP_II and to 2013 for the population resident in Switzerland for the combined panel SHP_I, SHP_II and SHP_III. Although this may not be ideal for some analyses, it is generally better to use a slightly imperfect longitudinal weight which will at least take into account inclusion probabilities and non-response then none at all. Moreover, the transitional factors allow weighting respondents to a selection of consecutive waves with other starting points and refer to the first year of the sequence.

Therefore, when selecting a weight, one needs to know whether the study concerns only one year, i.e. is cross-sectional, or considers several years and is longitudinal in nature.

For each of the types of delivered weights, there are two weights produced. One is to give the weighted size of the sample, the size of the relevant Swiss population. These are the weights as described in the constructions above. These weights should only be used when looking for population totals. The second is to maintain the sample size. That is to say that the weighted sum of sample members is equal to the un-weighted sum. These weights should be used when running regressions, particularly logistic regres-

[9] http://aresoas.unil.ch/DataWeb/Examples/TransitionalFactors/SHP_transitional_factors.pdf.

sions on the complete sample. These weights differ by multiplication of a constant factor only.

This release we also deliver data from the SHP Vaud 2013 and the LIVES Cohort 2013. When combining these samples with the main SHP data, or when using a subsample of the SHP data, the weights should be adjusted. For more information on how to calculate these weights, see more documentation on http://forscenter.ch/en/our-surveys/swiss-household-panel/documentationfaq/methods/weighting/.

Table 5.7 gives a list of the names of all the weight variables as they appear in the data sets until wave 15. Table 5.8 shows the variables as they are named from wave 16 onward. Furthermore it describes their primary use. For longitudinal analyses based on the SHP_I sample, please note that the longitudinal weights have changed name twice (at the start of the SHP_II in 2004, and this year). The longitudinal weights for the SHP_II have changed name once (this year).

Table 5.7 List of weights contained in the dataset, variable names and description (Wave 1- Wave 15)

Types of weights	**Variable name**	**Description**
Longitudinal weights		
SHP_I individuals	wp$$LP1P	Weights for longitudinal adults expanded to the resident Swiss population of 1999
	wp$$LP1S	Weights expanded to the sample size of longitudinal adults in the first panel
SHP_I and SHP_II (combined) Individuals	wp$$L1P	Weights for longitudinal adults expanded to the resident Swiss population of 2004
	wp$$L1S	Weights expanded to the sample size of longitudinal adults in the combined panels
Cross-sectional weights		
SHP_I and SHP_II (combined) individuals	wp$$T1P	Weights expanded to the resident Swiss population of current year
	wp$$T1S	Weights expanded to the sample size of the combined panels
SHP_III individuals	wp$$T3P	Weights expanded to the resident Swiss population of current year
	wp$$T3S	Weights expanded to the sample size of the SHP_III
SHP_I, II and III (combined) individuals	wp$$TP	Weights expanded to the resident Swiss population of current year
	wp$$TS	Weights expanded to the sample size of the combined panels (SHP_I, II and III)
SHP_I and SHP_II (combined) households	wh$$T1P	Weights expanded to the resident Swiss population of current year
	wh$$T1S	Weights expanded to the sample size of individuals in the households
SHP_III households	wh$$T3P	Weights expanded to the resident Swiss population of current year
	wh$$T3S	Weights expanded to the sample size of individuals in the households
SHP_I_II and III (combined) households	wh$$TP	Weights expanded to the resident Swiss population of current year
	wh$$TS	Weights expanded to the sample size of individuals in the households

Note $$ corresponds to the two last digits of the year in question.

Table 5.8 List of weights contained in the dataset, variable names and description (Wave 16 to present)

Types of weights	Variable name	Description
Longitudinal weights		
SHP_I individuals	wi$$LP99	Weights for longitudinal adults expanded to the resident Swiss population of 1999 (SHP_I)
	wi$$LS99	Weights expanded to the sample size of longitudinal adults in the first panel (SHP_I)
SHP_I and SHP_II (combined) Individuals	wi$$LP04	Weights for longitudinal adults expanded to the resident Swiss population of 2004 (SHP_I_II)
	wi$$LS04	Weights expanded to the sample size of longitudinal adults in the combined panels (SHP_I_II)
SHP_I_II_III (combined) Individuals	wi$$LP13	Weights for longitudinal adults expanded to the resident Swiss population of 2013 (SHP_I_II_III)
	wi$$LS13	Weights expanded to the sample size of longitudinal adults in the combined panels (SHP_I_II_III)
SHP_III Individuals	wi$$LP133	Weights for longitudinal adults expanded to the resident Swiss population of 2013 (only for SHP_III)
	wi$$LS133	Weights expanded to the sample size of longitudinal adults in the third panel (only for SHP_III)
	wi$$LP&&	Weights for longitudinal adults expanded to the resident Swiss population of 20&& (SHP_I_II_III)
	wi$$LS&&	Weights expanded to the sample size of longitudinal adults in the “panel” starting at year 20&& (SHP_I_II_III)
	wi$$LP&&3	Weights for longitudinal adults expanded to the resident Swiss population of 20&& (only for SHP_III)
	wi$$LS&&3	Weights expanded to the sample size of longitudinal adults in the “panel” starting at year 20&& (only for SHP_III)
Cross-sectional weights		
SHP_I_II_III (combined) individuals	wi$$CSP	Weights expanded to the resident Swiss population of current year (SHP_I_II_III)
	wi$$CSS	Weights expanded to the sample size of the combined panels (SHP_I_II_III)
SHP_III individuals	wi$$CSP3	Weights expanded to the resident Swiss population of current year (only for SHP_III)
	wi$$CSS3	Weights expanded to the sample size of the SHP_III (only for SHP_III)
SHP_I_II_III (combined) household	wh$$CSP	Weights expanded to the resident Swiss population of current year (SHP_I_II_III)
	wh$$CSS	Weights expanded to the sample size of the combined panels (SHP_I_II_III)
SHP_III households	wh$$CSP3	Weights expanded to the resident Swiss population of current year (only for SHP_III)
	wh$$CSS3	Weights expanded to the sample size of individuals in the households (only for SHP_III)
SHP_I_II_III (combined) children	wc$$CSP	Weights expanded to the resident Swiss population of current year (SHP_I_II_III)
	wc$$CSS	Weights expanded to the sample size of the combined panels (SHP_I_II_III)
SHP_III children	wc$$CSP3	Weights expanded to the resident Swiss population of current year (only for SHP_III)
	wc$$CSS3	Weights expanded to the sample size of the SHP_III (only for SHP_III)

Note $$ corresponds to the two last digits of the year in question.

We would like to share a few additional notes of caution. It is important to keep in mind that the household weights can be used in two different manners. First, they can be used for analyses on the household level, using the household files. An extrapolation thus makes reference to the total number of households in a given year. If one constructs a dataset containing both individual and household level data, one should pay attention to the fact that each household weight needs to be divided by the number of individuals of the respective household in order to get valuable results at the household level. The reason for this correction is that by merging the individual files and the household files, the weight of each household is thus multiplied by the number of household members. An extrapolation to the household totals would in this case represent the number of individuals instead of the number of households. The syntax (SPSS and STATA) for this correction can be found in the syntax example for the file creations that are released together with the data.

5.2.4 Addressing the complex sample structure in analyses

Weighting provides estimates that are representative of the national population. Another issue has to be considered when using the SHP: the complex sample structure of the data. The standard procedures of common statistical software packages (e.g. SAS, SPSS, STATA) underestimate variance (Plaza and Graf, 2007) because they assume a simple random sample. As with most surveys, the SHP sample selection is more complex as it has stratification, clustering, and adjustments due to non-response. Such complex sample needs to be taken into account in the analysis to obtain appropriate estimates of the variance. For SAS users, the recommendation is to rely on the "survey" procedures, for example PROC SURVEYFREQ, PROC SURVEYMEANS, PROC SURVEYREG, PROC SURVEYLOGISTIC. For STATA users, the commands 'svyset' and 'svy:' have to be used. For SPSS users, the module 'complex sample' is needed.

5.3 Data cleaning: Consistency checks and corrections

Before the data is released a few consistency checks are performed. First, the filters used in the questionnaire are checked. In the rare occasions in which a filter was applied incorrectly, a question was either asked when it should not have been, or was not asked when it should have been. In the first situation the answer to the question is deleted, and the value is set to -3 (not applicable, see missing value conventions). In the second situation a code of -7 is given (filter error, see missing value conventions).

Second, the value range of all questions with restricted response categories is verified. Values out of range are usually related to recoding mistakes and are corrected. The value ranges of open questions are not scrutinized, because setting a limit beyond which point values become highly unlikely is always arbitrary.

Third, the households and their individual members are examined to make sure there is information on all household members, and the number of household members adds up to the same number as in the household questionnaire. Also the variable related to response status is checked.

Finally, demographical variables are checked for consistency with earlier waves. This is done for gender, date of birth and civil status. For other variables the general rule is not to make changes retrospectively, i.e. when in a later wave of data collection an error is found in an earlier wave, this is not corrected for the earlier wave.

CHAPTER 6 DATA DOCUMENTATION

6.1 Data files

For every wave (every year) a household and an individual file are released. In addition to these annual files there are several other files: a household master file, an individual master file, a calendar file, a file containing information on respondents' last paid jobs, and a social origin file. All files are available in SAS, Stata[10] and SPSS format. See for a table with an overview of the different files the document "Getting started with the Swiss Household Panel data", downloadable from http://forscenter.ch/en/our-surveys/swiss-household-panel/documentationfaq/user-guide-pdf/.

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6.1.1 Master files: households and individuals

The master files of households and of individuals include all households and individual respondents that are in the panel or have been in the panel in the past. The files contain an overview of response statuses for all waves.

The household master file (**SHP_MH**) contains all households of both samples of the panel. For every wave it is documented who the reference person is, what interviews have been carried out and when they have taken place.

The individual master file (**SHP_MP**) contains all individuals who have resided in the participating households in any of the waves. This file includes the time-invariant variables gender, date of birth (month and year) and identification number of father and mother, as well as response statuses and interview dates for all waves.

See for details on the various files of the SHP_III 6.1.6a.

6.1.2 Annual files: households and individuals

The annual household files (**SHP99_H_USER, SHP00_H_USER**, etc.) contain information from the household interviews complemented by information from the grid questionnaire. For the constructed variables see 6.3.

The information from the annual individual interviews (**SHP99_P_USER, SHP00_P_USER**, etc.) is included in the annual individual files. For the constructed variables in these files see 6.3.

For the complete questionnaires see "Questionnaires" under "Documentation" on http://forscenter.ch/en/our-surveys/swiss-household-panel/.

[10] Please not that Stata is case sensitive and that Stata data file names are in lower-case.

6.1.3 Calendar file

Using the answers in the individual questionnaire, the calendar file contains for every person the activity[11] status in each month. If the person has answered the individual questionnaire in wave x, information on his/her activity is contained for:

- the last 12 months if the person has not answered the individual questionnaire in the preceding wave;
- the period between the individual interview in wave x-1 and the individual interview in wave x if the person has answered the individual interview both in wave x and in the preceding wave.

The activity calendar is empty for waves in which a respondent did not answer the individual questionnaire.

The variable names in the calendar file are as follows:
JAN$$: activity status in January in the year $$
FEB$$: activity status in February in the year $$
MAR$$: activity status in March in the year $$ etc ...

The calendar questions in the questionnaire have changed twice over the course of the years. Three periods can be distinguished: wave 2 and 3, wave 4 and 5, and wave 6 and thereafter. For all waves, however, the professional status at the time of the survey is determined by the variables:

- P$$W01 to P$$W03 (to distinguish between in paid employment or not);
- P$$W39 and P$$W42 (to distinguish between fulltime and part-time employment);
- P$$W06 (to distinguish between unemployment and inactivity).

The respondents who did not work during the week preceding the survey or did not have a job are asked the following question (variable P$$W154):

You are not currently in paid employment. However, since (month-year) have you had a paid job, also be it casual or on an irregular basis?

Respondents who worked at the time of the survey were asked the following question (variable P$$W177):

Since (month-year) has there been a change in the number of hours you work, have you started or ended an activity or even been unemployed? (wave 2 to wave 5)

Since (month, year) have you changed your professional status (employee, self-employed), changed the amount of hours you work (full time, part time), started or stopped work, or been unemployed? (wave 6 and after)

In case the answer is “no” to this question, the activity status by the time of the interview is assumed to hold for every month that elapsed since the preceding interview, or for the last 12 months if the respondent did not respond to the individual questionnaire in the

[11] In terms of labour market participation. Here the term “activity” is used.

preceding wave. For these cases the appropriate value is imputed for all months since the last wave.

In case the answer is “yes” to one of the questions above, i.e. if the person reported any changes in his/her status during the period considered, the calendar questions are asked and the employment situation is assessed for every month since the previous wave.

The calendar questions changed twice since the start of the survey. First, in wave 2 and 3 different questions were asked depending on whether or not the respondent had a paid job. Response categories differed between these two questions (see Table 6.1.1). In wave 4 and 5 both active and inactive respondents answered the same questions in the calendar, with slightly adapted response categories compared to earlier waves. Up to wave 5 it is possible to distinguish between large and small part time jobs. From wave 6 onwards this distinction is no longer made, but separate response categories for self-employed respondents and employees are introduced instead.

Because the calendar file contains information from all waves some detail present in the separate waves has been lost. The calendar file does not include a distinction between small and large part-time jobs, nor does it have a distinction between self-employed individuals and employees. Users of the data interested in analysing these distinctions are advised to use the calendar questions in the personal files of the appropriate waves.

In the calendar file the following codes are used:
1. Employed full time
2. Employed part time
3. Unemployed
4. Inactive
5. Unemployed or inactive (relevant for inactive respondents in W2 and W3 only)

Table 6.1.1 shows the different versions of the calendar questions in the individual interviews and the corresponding codes in the calendar file.

Table 6.1.1 Questions in the personal questionnaire related to the activity calendar and the corresponding codes in the calendar file

W2 and W3				W4 and W5		W6 to present	
Original question Employed respondents	Calendar value	Original question Inactive respondents	Calendar value	Original question	Calendar value	Original question	Calendar value
We are going to review the months between now and (month-year) and for each month, I would like you to tell me if you have worked full-time or part-time or if you have not worked due to a period of unemployment, training or other reason?		We are going to review the months between now and (month-year) and for each month, I would like you to tell me if you have worked full-time or part-time?		We are going to review the months between now and (month-year) and for each month, I would like you to tell me if you have worked full-time or part-time or if you have not worked due to a period of unemployment, training or other reason?		We are going to review the months since (month, year) and for each month you should tell me whether your main activity was: full-time employee, part-time employee, full-time self-employed, part-time self-employed, unemployed, retired, training/education, housework, or any other situation?	
1 fulltime job (>37h)	1	1 fulltime paid job (>37h)	1	1 fulltime paid job (>37h)	1	1 Employee fulltime	1
2 part-time job (19-36h)	2	2 part-time paid job (19-36h)	2	2 part-time paid job (19-36h)	2	2 Employee part-time	2
3 small part-time job (1-18h)	2	3 small part-time job (1-18h)	2	3 small part-time job (1-18h)	2	3 Self-employed fulltime	1
4 unemployed	3	4 no job	5	4 unemployed	3	4 Self-employed part-time	2
5 continued education/ vocational retraining	4			5 continued education/ vocational retraining	4	5 Unemployed	3
6 other	4			6 retired	4	6 Retired	4
				7 other	4	7 Student	4
				8 student	4	8 At home (domestic work, children)	4
						9 Other inactive	4

6.1.4 Last job file

This file contains information on the last job of all individuals who were a) inactive at the time of their first interview, and b) interviewed in person or by proxy in any of the waves since 1999.

The information on the last job is collected within the individual interview if the following three conditions are simultaneously met:

- The person is interviewed for the first time
- The person does not currently work (P$$W01, P$$W02 and P$$W03 ≠ 1)
- The person has already worked in a regular way in the past (P$$W07 = 1)

The information on the last job may also be collected in a proxy interview, if the following three conditions are simultaneously met:

- It is the person's first proxy
- The person does not work (i.e. in the household grid, G$$OCC ≠ 1 or 2)
- The person has already worked for at least one year (X$$W05)

Because this information is collected only once, it is not necessary to display it in the individual file in every wave. The information is combined in a file « last job», comprising the variables of the individual questionnaire and the proxy questionnaire, in which the wave identifier is renamed by $$ (SPSS) or __ (Stata, SAS). A separate variable (LJYY) indicates the wave in which the information is collected.

Note that if a respondent is not working at a given wave, but has been working in any of the previous waves, this information is not included in the last job file, but in the previous annual individual files. More information on how to merge files can be found here: http://forscenter.ch/en/our-surveys/swiss-household-panel/datasupport-2/data-management/.

6.1.5 Social origin file

The social origin file contains information on the employment status of the parents when the respondent was 15 years old. All individuals who were personally interviewed in any of the waves are included.

Unique information about a person's social origin is collected during the first interview. It mainly relates to the composition of the household in which the person lived at the age of 15 and to the level of education and professional activities of both parents. Persons who are not yet 20 years old and still living with their parents are not asked about their parents' employment status. Note that individuals who have had their first interview before they turned 20 are not in the social origin file. For the respondents whose parents live in the household, this information has to be reconstructed using parents' data from their personal interviews.

Given the uniqueness of the social origin module, it does not make sense to attach it to each of the consecutive yearly waves. Therefore, the "social origin module" constitutes a separate file containing variable names, in which the usual two-digit number showing the year of the data collection is replaced by $$ (SPSS) or __ (Stata, SAS). A separate variable (OSYY) indicates the wave during which the data on the person's social origin have been collected.

The questions corresponding to the variables P$$O60 to P$$O65 have only been asked in the first wave (1999).
P$$O60 At age 15: Work in private households: Employer: Father
P$$O61 At age 15: Public Company status: Father
P$$O62 At age 15: Work in private households: Employer: mother
P$$O63 At age 15: Public Company status: Mother
P$$O64 At age 15: Work in private households: Employer: Other person
P$$O65 At age 15: Public Company status: Other person
Therefore, valid values are only available for the persons interviewed for the first time in wave 1. For all the others theses values are labelled 'missing'.

The questions regarding the parents' political orientation are asked since wave 4 (2002):
- P$$P46 Political position: Left, Right: Father
- P$$P47 Political position: Left, Right: Mother
In wave 4, every person responding to the individual questionnaire was asked these two questions in order to obtain this information also from persons having already been interviewed in previous waves in which the questions were not asked. Since wave 5, these two questions are part of the social origin module and are addressed only to persons who are interviewed for the first time. Consequently, the information is missing for persons who answered the social origin module before wave 4 and who did not participate in wave 4.

6.1.6 Biographical files
Two sets of biographical data files are available to the SHP users. The most recent data come from the first wave of the SHP_III. Second, *biographical data* was collected from SHP_I sample members in 2001 and 2002. The data from the pilot study preceding the SHP_III in 2012-2013 are only available upon request.

6.1.6a Biographical files SHP_III
The fieldwork for the SHP_III began in September 2013 (parallel to the fieldwork of the SHP_I and the SHP_II). The questioning in the first wave of this second refresher sample takes the form of a biographical questionnaire (see for more details 2.4.7 and Chapter 4). The files contain for each respondent the complete life history on the domain in question.

Table 6.1.2 gives an overview of the different files of the SHP_III.

Table 6.1.2 Files biographical questionnaire

	File name	Information
Household file Wave 1	SHPIII13_H_USER	Household questionnaire
Indiviudual file Wave 1	SHPIII13_P_USER	Basic information on the respondent
Life domain:		
Residence	SHPIII_RE_USER	Information on geographical mobility
Residence permit	SHPIII_PM_USER	Information on work permits and the acquisition of Swiss citizenship
Living arrangements	SHPIII_LA_USER	Information on with whom

		the respondent lived over the life course
Couple relations and civil status	SHPIII_CS_USER	Information on partner relationships and changes in civil status
Family events	SHPIII_FA_USER	Information on family events such as parental divorce, the birth of a child or a sibling, or the death of a parent
Professional activities	SHPIII_PROF_ACT_USER	Information on paid work, unemployment and periods of inactivity
Health	SHPIII_HEA_USER	Information on operations, accidents and mental health problems.

The files on the various domains are “long files” or “vertical files” where each row contains one episode. Hence, respondents are included with as many rows as they mentioned episodes. Respondents experiencing different episodes in a given domain - for example they have held several jobs - take up multiple rows in the file (one for every job). An index variable is included to preserve the order of the episodes of respondents.

Although the domain of *education* was not included in the life calendar, the educational trajectory was assessed in Wave 2 of the SHP_III.

6.1.6b Biographical files 2001-2002

To obtain additional information about the respondents' life course prior to the panel study, a retrospective biographical questionnaire was administered in 2001 and 2002 with questions regarding respondents’ educational, working, and family histories (see Documentation/Questionnaires PDF/SHP-Biography[12]). This paper-and-pencil questionnaire was sent to the respondents by mail and was self-administered.

Biographical information was gathered in the following domains:

1. Living arrangements (LA)
2. Periods outside of Switzerland (SA)
3. Changes in civil status (CS)
4. Learned professions (LP)
5. Educational trajectory (ED)
6. Work life (WL)
7. Family events (FE)
8. Retirement (RE)

[12] The paper and pencil questionnaire is not available in English, but only in the interview languages German, French and Italian.

In order to assess the potentially negative impact of the self-administered biographical questionnaire on the participation in subsequent waves of the yearly CATI, a "test" survey was conducted in 2001. The results showed that the drop-out rates did not increase substantially as a result of the questionnaire sent in between two waves (Scherpenzeel et al., 2002). Consequently, the "main" survey was carried out in 2002 with those participants who had not yet been part of the "test" survey.

SHP_I *biographical data* are available for 5,560 individuals with the 2001 and 2002 surveys combined. Therefore, some variables only exist for one of the survey years (e.g. education history only for 2002), or only in an aggregated form (e.g. living arrangement for 2001). The overall participation rate was 53%, but over 80% among fully longitudinal panel survey respondents (years 1999-2004) participated in the biography survey (Budowski and Wernli, 2004).

The Biographical files include:
a) two "*horizontal" files* with lines representing individuals (Biography Master File – SHP0_MBI and Biography Data File SHP0_BH_USER), and

b) "*vertical" files* for **each** of the eight domains with lines representing "events" and not individuals, if appropriate (SHP0_BV&&_USER[13]).

SHP0_MBI
The Biography master file contains the identification numbers (idpers) of all individuals who answered the biographical questionnaire (in 2001 or 2002). The master file further includes individual *population* weights (wp00tbgp) and *sample* weights (wp00tbgs). For methodological reasons[14], weights of zero had to be attributed to 199 persons.

SHP0_BH_USER
In the **horizontal file** each row represents one respondent. It contains in total 281 variables representing for each domain per episode the beginning, end and description. For example, for every employment, starting date, end date and several characteristics of the job are included, all as separate variables. Also individual *population* weights (wp00tbgp) and *sample* weights (wp00tbgs) are included in this file.

The vertical files

1. Living arrangements: SHP0_BVLA_USER
2. Periods outside of Switzerland: SHP0_BVSA_USER
3. Changes in civil status: SHP0_BVCS_USER
4. Learned professions: SHP0_BVLP_USER
5. Educational trajectory: SHP0_BVED_USER
6. Work life: SHP0_BVWL_USER
7. Family events: SHP0_BVFE_USER
8. Retirement: SHP0_BVRE_USER

[13] && stands for the domain.

[14] The information of these respondents was of poor quality, or information needed to construct weights was lacking.

In the eight vertical files (one file per domain) a row represents one episode. Respondents experiencing different episodes in a given domain - for example they have held several jobs - take up multiple rows in the file (one for every job). An index variable is included to preserve the order of the episodes of respondents.

6.1.7 Interviewer files

These files contain information gathered from the interviewers who conducted the SHP interviews by means of paper-and-pencil questionnaires. In all waves (except wave 1, 3 and 4) the interviewers answered a short questionnaire. The questionnaires measure a number of interviewer characteristics: demographic traits such as sex, age, language and education, but also characteristics such as the attitude of the interviewers towards this type of study and towards sensitive questions. The content of the questionnaires varies somewhat over time, following changing SHP research interests.

Attention!

The values of the variable "idint" in the Interviewer data files have been coded in order to protect the identity of the Interviewers. Consequently, the merging of the Interviewer-data with the Household and Individual level files is only possible after de-coding. Please contact Oliver Lipps for more details (oliver.lipps@fors.unil.ch). Note further that in 2008 (Wave 9), the interviewer ID changed. Because three digits to identify interviewers were not enough, all interviewers located in the Lausanne studio were added a value of 10,000 and all interviewers located in the Bern studio were added a value of 50,000. This is important for longitudinal interviewer analyses.

6.2 Variable naming conventions

The variable names are coherent over time. The only change is found in the year indicator. In order to assure consistency, the following conventions were adapted.

Year related variables: _yydnn
Non-year related variables (individual number, sex,…): _dnn

Where _ depends on the level of information:
P = Person
H = Household
G = Grid
X = Proxy

Where **yy** denotes the year:
99 = 19**99** 00 = 20**00** 01 = 20**01** , ….

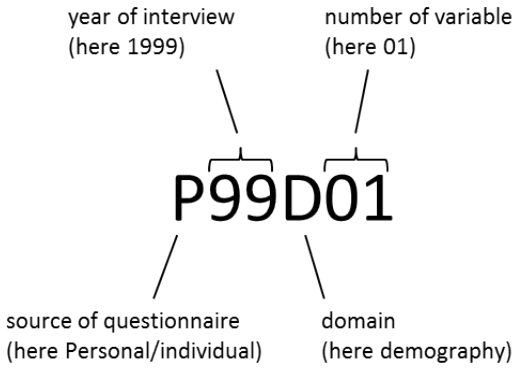
Where **d** denotes the **d**omain:

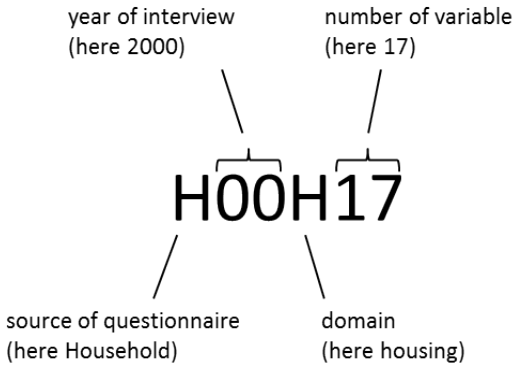
a	Hobbies, leisure, free time, lifestyle, holidays, etc.
b	Biography
c	Health, constitution
d	Demographic variables
e	Education

f	Family (climate, relationships, work repartition,…)
g	Grid
h	Housing
i	Income, financial situation and living condition variables
l	Life-events
m	Geographical mobility
n	Social networks
o	Social origin
p	Politics
r	Religion
v	Values, aspirations, (other than politic)
w	Labour force, work ,social status
y	Violence
yth	Youth
z	Other variables

Where **nn** is a two-digit number which refers to the **n**umber of the question, normally the position in a block dedicated to a specific topic.

Two examples:





Constructed variables do not follow the convention of variable naming and codification. These variables have a name corresponding to their contents (for example wstat00 for working status in 2000). They are classified by their respective domains in the codebook and are found in the module to which they belong (see 6.3).

6.3 Constructed variables

This paragraph presents background information on the construction of socio-demographic variables, education, labour market participation and income, socio-geographical information and weights. For all other constructed variables we refer to http://forscenter.ch/en/our-surveys/swiss-household-panel/documentationfaq/variables-domain/.

6.3.1 Variables related to survey participation

Original Sample Member (OSM): The variable Original Sample Member (OSM) indicates whether a respondent was present in the sample at the first wave (1999 for the SHP_I sample,2004 for the SHP_II sample and 2013 for the SHP_III). People who join the panel after the first wave are so-called “cohabitants”. The variable has three categories: OSM, child of OSM and cohabitant. Only OSM receive a longitudinal weight.

Participation status (RNPX$$): This variable offers a summary of the already available variables concerning participation status and considers furthermore comments coming from the interviewers that are not available to the users. It distinguishes between non-contact, refusal, or non-response due to death, institutionalisation, emigration, family related difficulties, language problems or age or health problems or because the individual left the household (temporarily or permanently).

6.3.2 Socio-demographic variables

Tables 6.3.1 to 6.3.3 present the constructed socio-demographic variables in the household file (Table 6.3.1 and 6.3.2) and the individual file (Table 6.3.3)

Table 6.3.1 Constructed household typology variables in household file

Variable name	Description	Information used for construction
HLDTYP$$	Type of household Classification adopted from **European Community Household Panel** (Eurostat, 2003) and PACO	Relationship to other persons in household, civil status, number of persons and children in household
HLDFFS$$	Household typology adopted from the **Fertility and Family Survey (FFS).** The FFS was launched by the United Nations Economic Commission for Europe and was commissioned by the Swiss Federal Statistical Office for Switzerland (www.bfs.admin.ch).	Relationship to other persons in household, civil status, number of persons and children in household
HLDCEN$$	Household typology **Swiss Census**, Swiss Federal Statistical Office (www.bfs.admin.ch)	Relationship to other persons in household, civil status, number of persons and children in household

Table 6.3.2 Constructed household composition variables in household file

Variable name	Description	Information used for construction
MAXCOH$$	Maximum duration of existence of household in years	Longest time of two members living together in years (information from grid)
NBADUL$$	Number of adults in hld (>=18)	Information from grid
NBKID$$	Number of children in hld (0-17)	Information from grid
AOLDKI$$	Age of oldest coresident child (max. 17)	Information from grid
AYOUKI$$	Age of youngest coresident child (max. 17)	Information from grid
ADUK1_$$	Number of adult children in hld (>=18 & <30)	Information from grid and individual questionnaire
ADUK2_$$	Number of adult children in hld (>=30)	Information from grid and individual questionnaire
NBB_$$	New born baby: birth between two consecutive grid interviews or within last 12 months if	Information from household and individual master file

	no previous year grid interview	
OWNKID$$	The total number of own (biological and adopted) children per person.	Information from individual questionnaire

Table 6.3.3 Constructed socio-demographic variables in individual files

Variable name	Description	Information used for construction
AGE$$	Age in year of interview Difference from the year of birth and the official year of interview (official means the year of the beginning of the wave in question, even when interview took place beginning of following calendar year)	Collected once, confirmed next waves
SEX$$	Gender of respondent	Collected once, confirmed next waves
CIVSTA$$	Civil status in year of interview	Information from household grid and personal interview. Equivalent to question P$$D13. Individual information is considered more reliable than from reference person
MAXCOP$$	Max. time in years of person living with someone else in household	Information from grid
NAT_1_$$	First nationality	Grid and individual questionnaire
NAT_2_$$	Second nationality	Grid and individual questionnaire
NAT_3_$$	Third nationality	Grid and individual questionnaire
REG_1_$$ REG_2_$$ REG_3_$$	Nationality by world region, based on the nomenclature of the Federal statistical office. Categories: Switzerland, Northern Europe, Eastern Europe, Central Europe, Western Europe, South-West Europe, Southern Europe, South-East Europe, Africa, Northern America, Latin America, Asia, Oceania and Antarctica.	Grid and individual questionnaire
HAB_CH$$	Duration of residence in CH: since when	Grid and individual questionnaire (G$$YCH + P$$D164)
OWNKID$$	Number of own (biological or adopted) children (individual level)	Constructed based in individual questionnaire, verified by the respondent

6.3.3 Education

Table 6.3.4 shows the constructed variables related to level of education. This list does not include the original or recoded variables related to education. For all available variables on education we advise to go to our website (http://forscenter.ch/en/our-surveys/swiss-household-panel/documentationfaq/variables-domain/).

Table 6.3.4 Constructed variables related to education in the individual files

Variable	Description	Information used for construction

name		
EDUCAT$$	Highest level of education achieved (11 categories)	From household grid and individual interview. Individual interview considered more reliable.
EDCAT$$	Highest level of education achieved (17 categories)	From household grid and individual interview. Individual interview considered more reliable.
ISCED$$	International Standard Classification of Education. Highest level of education achieved (10 categories)	Based on EDCAT$$ and the ISCED-classification scheme.[15]
EDYEAR$$	Years of education	Based on the ISCED-classification and gives the number of years relative to the highest finished type of education (estimation)[16]

Table 6.3.5 shows how the values on the variable EDCAT$$ translate to the values of ISCED$$ and EDYEAR$$.

[15] Bundesamt für Statistik (BFS). 2015. Nomenclatures – International Standard Classification of Education. http://www.bfs.admin.ch/bfs/portal/fr/index/infothek/nomenklaturen/blank/blank/isced/01.html accessed on 26.2.2015. See Table 6.3.5. for the conversion from EDCAT$$.
[16] See Table 6.3.5 for the conversion from EDCAT$$.

Table 6.3.5 Values of EDCAT$$, EDYEAR$$ and ISCED$$

EDCAT	EDCAT	EDYEAR	ISCED
Value label	Value	Value	Classif.
Specialized school for handicapped	-6	-6	-6
Pre-obligatory schooling	-5	0	0
Not yet school age	-4	0	0
No answer	-2	-2	-2
Does not know	-1	-1	-1
Incomplete compulsory school	0	AGE$$ - 6	0
Compulsory school	1	9	2
Elementary vocational training	2	10	3C
Domestic science course, 1 year school of commerce	3	10	3C
General training school	4	10	3C
Apprenticeship (CFC, EFZ)	5	12	3B
Full-time vocational school	6	12	3B
Vocational maturity	7	14	4A
Teacher training college	8	13	3A
Bachelor/maturity (high school)	9	13	3A
Vocational high school with MA certificate, federal certificate	10	16	5B
Technical or vocational school	11	16	5B
Vocational high school ETS, HTL etc.	12	16	5B
University of teacher education HEP, PH	13	18	5A
University of applied sciences HES, FH	14	18	5A
University, academic high school, EPF, ETH	15	18	5A
PhD	16	21	6

6.3.4 Work status, occupation and social position

Work status (WSTAT$$) is constructed from P$$W01 (working for pay last week), P$$W03 (have a job although not working last week) and P$$W06 (can start work immediately), from the individual questionnaire. Another occupational variable is available (OCCUPA$$), this information comes from the grid and should be considered as less reliable.

All social stratification measures presented below are based on the respondents' occupational titles, which were carefully coded by the Swiss Federal Office of Statistics[17]. This Swiss-specific code was then recoded into the International Standard of Classification of Occupations (ISCO-88), developed by the International Labour Office[18].
Users interested in ISCO-08 codes can transform swiss-specific occupation codes (P$$W28, X$$W01, P$$W111, X$$W06, P$$O12, P$$O29, P$$O46) with the .xls table provided on our website[19].

[17] Cf. Joye and Schuler (1995). For a discussion on how occupations are to some extent reflections of their national and temporal context, see Levy (2002).
[18] If some minor adjustments are made in order to adapt it to the European context, the label ISCO-88 (COM) is used. Cf. International Labour Office (1990). *International Standard Classification of Occupations, ISCO-88*. Geneva: ILO. Following the ISCO-88 classification, armed forces occupations are classified 0 in ISCO-88 1-digit code (major group), 1 in ISCO-88 2-digit (sub-major group), 10 in ISCO-88 3-digit (minor group) and 100 in ISCO-88 4-digit (unit group).
[19] Under the heading DATA/Support, Download data.
File is OCCUPATION_Excel_File.xls.

The SHP provides several occupational classifications. Only people who report an occupational title can be classified. The following classifications were constructed:

A. The Wright class structure (Wright III)
B. Erikson, Goldthorpe and Portocarero's Comparative Analysis of Social Mobility in Industrial Nations schema(CASMIN)
C. The European Socio-economic Classification (ESeC)
D. The Swiss Socio-Professional Categories (CSP-CH)
E. Treiman's Prestige Scale
F. The Cambridge Social Interaction and Stratification Scale (CAMSIS)
G. The Oesch Class Schema[20]

For a comprehensive description of the different classifications we refer to Bergman and Joye (2001), downloadable from http://forscenter.ch/en/our-surveys/swiss-household-panel/documentationfaq/methods/stratification/.

Tables 6.3.6 to 6.3.8 show the variables used to construct the different classifications. The classification of respondent's last job (is4laj$$), father's occupation and mother's occupation is done in the same way. The following explanation of the construction of the classification for respondent's current occupation is therefore also applicable to respondent's last occupation and father's and mother's occupation.

Table 6.3.6 Variables used to construct classifications for respondent's current occupation

	Variable name	profession and sectors	education	Hierarchical level (management, supervision, production)	Number of employees of self-employed	status (self-employed, employee, etc.)	gender
WRIGHT3	WR3MAJ$$	IS4MAJ$$	EDUCAT$$	P$$W34	P$$W31	P$$W29	
GOLDTHORPE	GLDMAJ$$	IS4MAJ$$		P$$W34	P$$W31	P$$W29	
ESeC	ESECMJ$$	IS3MAJ$$		P$$W34	P$$W31	P$$W29	
CSP	CSPMAJ$$	P$$W28	EDUCAT$$	P$$W34	P$$W31	P$$W29	
TREIMAN	TR1MAJ$$	IS4MAJ$$		P$$W34	P$$W31	P$$W29	
CAMSIS	CAIMAJ$$	P$$W28					SEX
OESCH	OESCH$$	IS4MAJ$$ NOGA2M$$	EDUCAT$$		P$$W31		

[20] Please note that the Oesch Class Schema is not included in the dataset as a variable. Rather, the commands (in SPSS, in SAS and in STATA) are provided for users to construct the variable. See http://forscenter.ch/en/our-surveys/swiss-household-panel/datasupport-2/syntaxes-2/diverses/.

Table 6.3.7 Variables used to construct classifications for respondent's last occupation

	Variable name	Profession and sectors	education	Hierarchical level (management, supervision, production)	Number of employees of self-employed	status (self-employed, employee, etc.)	gender
WRIGHT3	WR3LAJ$$	IS4LAJ$$	EDUCAT$$	P$$W117	P$$W114	P$$W112	
GOLDTHORPE	GLDLAJ$$	IS4LAJ$$		P$$W117	P$$W114	P$$W112	
ESeC	ESECLJ$$	IS3LAJj$$		P$$W117	P$$W114	P$$W112	
CSP	CSPLAJ$$	P$$W111	EDUCAT$$	P$$W117	P$$W114	P$$W112	
TREIMAN	TR1LAJ$$	IS4LAJ$$		P$$W117	P$$W114	P$$W112	
CAMSIS	CAILAJ$$	P$$W111					SEX$$
OESCH	OESCH$$	IS4LAJ$$ NOGA2L$$	EDUCAT$$		P$$W114		

Table 6.3.8 Variables used for classifications for father's and mother's occupation

	Variable name	profession	education	Hierarchical level (management, supervision, production)	Number of employees of self-employed	status (self-employed, employee, etc.)
WRIGHT3	WA3FAJ$$/ WA3MOJ$$	IS4FAJ$$/ IS4MOJ$$	P$$O17/ P$$O34	P$$O16/ P$$O33	P$$O14/ P$$O31	P$$O13/ P$$O30
GOLDTHORPE	GLDFAJ$$/ GLDMAJ$$	IS4FAJ$$/ IS4MOJ$$		P$$O16/ P$$O33	P$$O14/ P$$O31	P$$O13/ P$$O30
ESeC	ESECFA$$/ ESECMO$$	IS3FAJ$$/ IS3MOJ$$		P$$O16/ P$$O33	P$$O14/ P$$O31	P$$O13/ P$$O30
CSP	CSPFAJ$$/ CSPMAJ$$	P$$O12/ P$$O29	P$$O17/ P$$O34	P$$O16/ P$$O33	P$$O14/ P$$O31	P$$O13/ P$$O30
TREIMAN	TR1FAJ$$/ TR1MOJ$$	IS4FAJ$$/ IS4MOJ$$		P$$O16/ P$$O33	P$$O14/ P$$O31	P$$O13/ P$$O30
CAMSIS	CAIFAJ$$/ CAIMOJ$$	P$$O12/ P$$O29				

A. The Wright class structure (Wright III)

The classification presented here was developed several years after the first and second versions (cf. Western and Wright, 1994). It was used in particular for the study of social mobility. Its main advantage, already present in Wright's second classification, is that it is based on three dimensions: authority, expertise, and property. These dimensions form seven categories, instead of the twelve that Wright proposed in his second version. The reduction from twelve to only seven cells obviously increases the cell counts and, thus, statistical power.

A number of choices were made for the operationalization and adaptation of this schema, a few of which are to a certain extent necessarily somewhat arbitrary.[21]

[21] This recodification differs slightly from that of Levy et al. (1997).

a) Most cases of self-employment were unproblematic. In some cases, we attributed this status to family members employed in their own family business, as well as to those who considered themselves employees of their own enterprise.
b) The demarcation between "middle-class" and the "petty bourgeoisie" is often based on whether or not the respondent has employees. Here, by homogeneity with other classification schemas, we set the minimum qualification criteria to ten employees.
c) Competence derived from educational attainment are qualified in several ways:
    i) Directly relating to the occupation: ISCO-88 includes in its occupational classification an explicit reflection on the relations between educational attainment and occupational titles;
    ii) According to educational and training trajectories normally followed by those with a particular occupation as established from the Swiss Population Census of 1990;
    iii) Based on the respondents' attained educational and professional qualifications, whatever the relevance to their occupation.

Technically, the following rules apply:
a) "Owners/Employers": self-employed and at least 10 employees;
b) "Petty bourgeoisie": self-employed and less than 10 employees
c) "Managers-Experts": professional leading or supervisory role, as well as an advanced educational attainment;
d) "Managers": salaried with supervisory position and not yet classified in any of the above categories;
e) "Professionals": salaried with advanced educational attainment but without supervisory functions;
f) "Semi-Professionals": salaried with either advanced or middling educational attainment and with middling professional requirements;
g) "Worker": other workers.

B. Erikson, Goldthorpe and Portocarero's Comparative Analysis of Social Mobility in Industrial Nations schema (CASMIN)

The first Goldthorpe class schema was based on occupation and occupational status (self-employed, salaried). Originating from Goldthorpe and Hope's prestige scale (1974) and Goldthorpe's subsequent class schema (1987), two levels of classification were developed that included 7 or 36 categories. Further development in conjunction with the CASMIN (Comparative Analysis of Social Mobility in Industrial Countries) project makes the seven-category schema more suitable for comparative investigations, and it has established itself as the most prominent schema for comparative intergenerational mobility studies. Contrary to earlier versions, the current schema requires information on the respondents' number of employees and supervisory function. As a class schema that is primarily used in comparative research, it is most frequently based on ISCO-88.

Ganzeboom and Treiman (2003) have adapted the most recent Goldthorpe class schema into the following codes:

1) Higher controllers;
2) Lower controllers;
3) Routine non-manual employees;

4) Self-employed with employees;
5) Self-employed without employees;
7) Manual supervisor;
8) Skilled manual employees;
9) Semi- and unskilled manual employees;
10) Farm labour;
11) Self-employed farmers.

It is more difficult than with other schemas presented here to assess how respondents are classified because several dimensions are integrated in complex and unspecified ways.[22]

C. The European Socio-economic Classification (ESeC)

The European Socio-economic Classification (ESeC) is a European occupational classification based on the Erikson-Goldthorpe-Portocarero (EGP) Schema.[23]

The information required to create ESeC is:

- occupation coded to the minor groups (i.e. 3-digit groups) of the EU variant of the International Standard Classification of Occupations 1988 (ISCO88 (COM);
- details of employment status, i.e. whether an employer, self-employed or employee;
- number of employees at the workplace;
- whether a worker is a supervisor.

Table 6.3.9: The European Socio-economic Classification

	ESeC Class	**Common Term**
1	Large employers, higher grade professional, administrative and managerial occupations	Higher salariat
2	Lower grade professional, administrative and managerial occupations and higher grade technician and supervisory occupations	Lower salariat
3	Intermediate occupations	Higher grade white collar workers
4	Small employer and self-employed occupations (excluding agriculture etc)	Petit bourgeoisie or independents
5	Self-employed occupations (agriculture etc)	Petit bourgeoisie or independents
6	Lower supervisory and lower technician occupations	Higher grade blue collar workers
7	Lower services, sales and clerical occupations	Lower grade white collar workers
8	Lower technical occupations	Skilled workers
9	Routine occupations	Semi- and nonskilled workers
10	Never worked and long-term unemployed	Unemployed

[22] See Bergman and Joye (2001) for a more detailed discussion.

[23] This classification was developed by a consortium of nine institutes from the UK, Germany, France, the Netherlands, Sweden, Italy and Ireland. See for more information http://www.iser.essex.ac.uk/research/esec

The primary distinction in an employment relations approach is that between *employers*, who buy the labour of others and assume some degree of authority and control over them; *self-employed* (or *'own account'*) *workers* who neither buy labour nor sell their labour to others; and *employees*, who sell their labour to employers.

Employees are further differentiated according to the employment relations of their occupation, employers are separated by size of establishment and the self-employed according to occupation. Broadly speaking, the kind of contracts employees have depend upon (a) how easily their work may be monitored and controlled by the employer and (b) 'asset specificity', i.e. how specific and crucial their knowledge of technical and organizational issues is to the employer. When monitoring is difficult and asset specificity is high, a service relationship will be typical; labour contracts apply where labour is more easily replaceable in these terms.

More information on the ESeC can be found here:
https://www.iser.essex.ac.uk/research/publications/509337.

D. The Swiss Socio-Professional Categories (CSP-CH)

The Swiss Socio-Professional Categories (CSP-CH; Joye and Schuler, 1995) are based on the occupational coding of the Swiss Federal Office of Statistics, as well as educational achievement. The logic of the CSP-CH is as follows:

Table 5.3.10 Swiss Socio-Professional Categories

	University	**Technical and Professional**	**Apprenticeship**	**Compulsory Education or Less**
Top Executives	1) top executives			
Self-Employed	2) liberal professions	3) self-employed		
Wage-Earners	4) intellectuals and managers	5) middle employees	skilled: 6) non-manual 7) manual	8) unskilled

The significance of an educational attainment may vary according to the details and title of an occupation, which has been taken into account in this schema. For example, a particular employee could be classified as being part of the intellectual professions based on her degree of managerial responsibility, without necessarily having a university education.

E. Treiman's Prestige Scale

Treiman proposes a very general stratification model for modern complex societies based on occupational prestige ratings that are supposedly independent of locality and invariant to national, social, and cultural settings. His work in this area culminates in the construction and validation of the Standard International Occupational Prestige Scale.

Using the four nested levels of the International Standard Classification of Occupations (ISCO), Treiman's occupational prestige scores for each occupation within an ISCO level are averaged to produce a score for occupational groups as summarized by ISCO.

The subjectively attributed prestige of a specific occupation is (a) linked to the privilege and power which individuals enjoy based on their occupational titles, (b) invariant across social and cultural groupings, and (c) similar across all complex modern societies.

The Treiman Prestige Scale differs from Wright and Goldthorpe's class schema not only in that it measures subjectively attributed prestige as an indicator of access to structural and functional power, but also because it explicitly models a prestige hierarchy. The prestige scores range between 0 (lowest prestige) and 100 (highest prestige; Treiman, 1977).

F. The Cambridge Social Interaction and Stratification Scale (CAMSIS)

The Cambridge Social Interaction and Stratification Scale (CAMSIS) is based on the idea that social structure can be expressed by the social distance between individuals, for instance through the co-occurrence of occupations that individuals hold and the relationships that they form with each other. Persons sharing a similar social position, in terms of social class or status group membership, are more likely to socially interact in an equal way with members of the same group than with members of other groups. So, acquaintances, friends and marriage partners will all tend to be chosen much more frequently from within the same group than from without. [24].
CAMSIS has been developed initially from friendship networks and, subsequently, from cohabiting couples (Stewart, Prandy, and Blackburn 1980). For Switzerland, the Population Census of 1990 was used to examine the probability of co-occurrence of occupational titles between cohabiting couples.

In the simplest model, the distances between occupations of couples are calculated on the basis of the contribution of the cell toward the χ^2 of a contingency table. The χ^2 contribution for each cell is entered into a traditional correspondence analysis, which represents the best possible solution in a two-dimensional space. The first dimension represents the combination of occupations among couples who have the same occupational title (typical examples are couples, who both work together on a farm or a restaurant). The second dimension represents the social distance that is reflected in the (dis)similarity between couples' occupations. It should be added that the scores of a dimensional analysis do not have sociological significance in themselves but only in relation to each other. Here, the value allotted to each occupation (i.e. the score of the dimensional analysis) indicates its position on this hypothetical social axis and, consequently, its distance to others. Subsequently, each occupation of the 4-digit ISCO-88 classification is allotted a CAMSIS score. The current version adjusts for national variations and is sensitive to gender. Other dimensions can be easily accommodated (e.g. ethnicity, geographic region) in order to incorporate specific research interests and hypotheses, and to improve the correspondence between this measure and the social categories within their context.

[24] For more details, see Bergman, Lambert, Prandy, and Joye (2002).

See for more information Bergman et al. (2002) and Bergman and Joye (2001).

G. The Oesch Class Schema

This schema tries to capture social stratification in modern service societies. More precisely, it aims at reflecting increasing occupational heterogeneity stemming from trends in the employment structure such as:

- Deindustrialization and service sector expansion
- Women's growing participation in paid employment
- Massive expansion in educational attainment and occupational upgrading

The schema's particularity lies in its focus on both hierarchical and horizontal class divisions. Hence, according to Oesch (2003; 2006a; 2006b), the salaried middle class should not be taken as a unitary grouping nor should the manual/non-manual divide be considered as the decisive division line.

Based on earlier contributions by John Goldthorpe, Gøsta Esping-Andersen, Hanspeter Kriesi and Walter Müller (Oesch, 2003), the schema combines two dimensions. A first *vertical* dimension separates class positions based on the advantage in their employment relationship; this distinction permits to distinguish occupations according to interlinked characteristics such as their marketable skills, their earnings or their mobility prospects. A second *horizontal* dimension distinguishes occupations according to their predominating work logic. Four work logics are differentiated:

- an *interpersonal* logic, typical for service occupations based on face-to-face exchange (occupations in health care, education or welfare)
- a *technical* logic, where the work process is determined by technical production parameters (occupations in IT, craft or assembling)
- an *organizational* logic where primary orientation goes towards the employing organization (occupations in management, administration and the back-office):
- an *independent* logic where entrepreneurial principles of self-employed dominate (entrepreneurs, self-employed professionals, shopkeepers and farmers)

The schema's central argument is that depending on whether an occupation involves the face-to-face attendance to people's personal demands, the deployment of technical expertise and craft, or the administration of organizational power, the work logic and primary orientation differ in fundamental ways. Hence, the schema has been developed, among others, to come to grips with changes in class voting (Oesch, 2008).

Both a 16-class and 8-class version of the schema are available. Depending on the research question under study, the detailed or simplified version may be of greater use. The syntax to construct the schema with the SHP can be found at: http://forscenter.ch/en/our-surveys/swiss-household-panel/datasupport-2/syntaxes-2/diverses/. This syntax is applicable for all waves, only the year has to be changed.

6.3.5 Professional integration (PAUG$$R4)

Paugam's typology is based on a distinction between conditions of employment and conditions of work. The typology distinguishes four types of professional integration (see

Paugam, 2000). Secure integration ('intégration assurée') is defined as the combination of job stability and quality of work measured objectively and subjectively. Three forms of integration deviate from this model: *insecure integration* ('intégration incertaine') is the result of unstable job but good working conditions and satisfaction at work; *constrained integration* ('intégration laborieuse') is the product of a stable job, but with work constraints leading to dissatisfaction; and *disqualifying integration* ('intégration disqualifiante') corresponds to the combination of job instability and poor working conditions (Paugam, 2000).

6.3.6 Income

Respondents are asked about various income sources and total income both in the individual and in the household questionnaire. They are free to report gross or net amounts (after deduction of social security contributions) and to report monthly or annual income. Based on these questions, variables on yearly income amounts are constructed. Both net and gross incomes are simulated using standard assumptions on social security contributions. If respondents have indicated a monthly income, annual income is calculated using information from the number of months the respondent has received this income and from the activity calendar. All constructed variables have passed a series of (manual) plausibility checks. These checks involve typing errors, implausibly high income increases or decreases with respect to the last wave, extreme income, inconsistencies between the sum of income sources and total income and inconsistencies between individual and household income. Details on income construction and plausibility checks are described in the documentation "Collection, construction and plausibility checks of Income Data in the Swiss Household Panel" (see http://forscenter.ch/en/our-surveys/swiss-household-panel/documentationfaq-2/methods/).

Individual income

Table 6.3.11: List of constructed income variables of individuals

Variable	Gross/net	Description
	I$$EMPYG gross	Income from employment: annual amount
	I$$EMPYN net (social security contributions deducted)	Takes account of 13th and 14th month salary, bonuses and gratifications.
	I$$INDYG gross	Income from self-employment: annual amount
	I$$INDYN net (social security contributions deducted)	Takes account of 13th and 14th month salary, bonuses and gratifications if applicable.
	I$$EMPMG gross	Income from employment: monthly amount
	I$$EMPMN, net (social security contributions deducted)	
	I$$INDMG gross	Income from self-employment: monthly amount
	I$$INDMN net (social security contributions deducted)	
I$$OASIY		State pension for old-age (first pillar), widow(er)s or orphans: annual amount Includes additional benefits.
$$AIY		Disability pension: annual amount Includes additional benefits.
I$$PENY		Income from pension schemes (second pillar old-age pension):

		annual amount Includes additional benefits.
I$$UNEY		Income from unemployment social insurance: annual amount
I$$WELY		Income from welfare benefits (social assistance): annual amount
I$$GRAY		Income from scholarships, grants: annual amount Income from private or public institution
I$$INSY		Income from any another private or public institution: annual amount
I$$FAMY		Family or child allowances: annual amount Might additionally be included in income from employment
I$$PNHY		Payments received from individuals not in household: annual amount
I$$PIHY		Payments received from individuals in household: annual amount
I$$CAPY		Income from capital: annual amount (such as interests, dividends)
I$$RENTY		Income from letting, sub-letting: annual amount
I$$OTHY		Other income: annual amount Might include 3rd pillar, inheritance
	I$$PTOTG, gross I$$PTOTN, net (social security contributions on employment income deducted)	Yearly total personal income: annual amount In most cases, total income has been calculated by adding the different income sources. In case of non-response in any of the income sources (and in some other cases in waves 1 to 5), total income refers to a global assessment of income. Amounts of income sources which represent one-off payments over 12'000 CHF, are not considered in total income.
	I$$WYG, gross I$$WYN, net (social security contributions deducted)	Income from employment or self-employment: annual amount Takes account of 13th and 14th month salary, bonuses or gratifications if applicable . From 2002 on: sum of I$$EMPY, I$$INDY
	I$$WMG, gross I$$WMN, net	Income from employment or self-employment: monthly amount (see www.swisspanel.ch)
I$$STPY		Social public transfers: annual amount. From 2002 on: sum of I$$UNEY, I$$WELY, I$$GRAY, I$$INSY
I$$STFY		Income from private persons (informal transfers): annual amount From 2002 on: sum of I$$PNHY, I$$PIHY
I$$AVSY		Income from old age or disability pension: annual amount From 2002 on: sum of I$$OASIY, I$$AIY, I$$PENY
I$$OSY		Other income: annual amount Might include 3rd pillar, inheritance, income from capital, such as income from wealth, letting, sub-letting From 2014 on: sum of I$$CAPY, I$$RENTY, I$$OTHERY

The questions on income have changed over the duration of the panel (cf. Table 6.3.12). With the exception of family allowances (only asked from 2004 onward) and old-age pensions in 1999 (old-age pension was not asked in 1999), these changes should not influence comparisons across waves. The variables collected from 1999-2001 can be constructed for all years by aggregating different income sources as shown in the table.

Table 6.3.12 Collection of individual income, by wave

1999	2000-2001	2002-2003	2004-2013	From 2014
I$$WY	I$$WY	I$$EMPY	I$$EMPY	I$$EMPY
		I$$INDY	I$$INDY	I$$INDY
-	I$$AVSY	I$$OASIY	I$$OASIY	I$$OASIY
		I$$AIY	I$$AIY	I$$AIY
		I$$PENY	I$$PENY	I$$PENY
I$$STPY	I$$STPY	I$$UNEY	I$$UNEY	I$$UNEY
		I$$WELY	I$$WELY	I$$WELY
		I$$GRAY	I$$GRAY	I$$GRAY
		I$$INSY	I$$INSY	I$$INSY
-	-	-	I$$FAMY	I$$FAMY
I$$STFY	I$$STFY	I$$PIHY	I$$PIHY	I$$PIHY
		I$$PNHY	I$$PNHY	I$$PNHY
I$$OSY	I$$OSY	I$$OSY	I$$OSY	I$$CAPY
				I$$RENTY
				I$$OTHERY

Household income

There are two different ways of constructing household income. Firstly, in the household questionnaire, reference persons are asked to estimate total household income (sum of all household members). Secondly, in the individual questionnaire, household members (from 14 years of age) are asked about their personal income. Total individual income amounts (corrected for within-household transfers) are then added to calculate household income. The constructed variables on household income (listed below) represent the sum of individual income in two cases: either if all individuals have answered the income questions in the individual questionnaire or if the sum of individual income is larger than the household-income from the household questionnaire. In the other cases, household income from the household interview is taken. Only if household income is based on individual income, adjustments are made for gross and net income.

Income information of the SHP III sample in 2013 has only been collected at the household level, because there was no regular individual interview (biographic interview in the first wave 2013 instead). Therefore, the variables I$$HTYN and I$$HTYG rely only on estimated total household income by the household reference person. Because total household income is typically underestimated by the household questionnaire, household income in 2013 is lower for the SHP III sample compared to the older samples (SHP I, SHP II). For the analysis of time trends or for income mobility, household income of the SHP III sample in 2013 should therefore be excluded. Figure 5 illustrates that the decline in net household income in 2013, when all samples are considered, can be attributed uniquely to this methodological effect. Disposable household income and simulated taxes cannot be computed for the SHP III sample in 2013 due to lacking individual information.

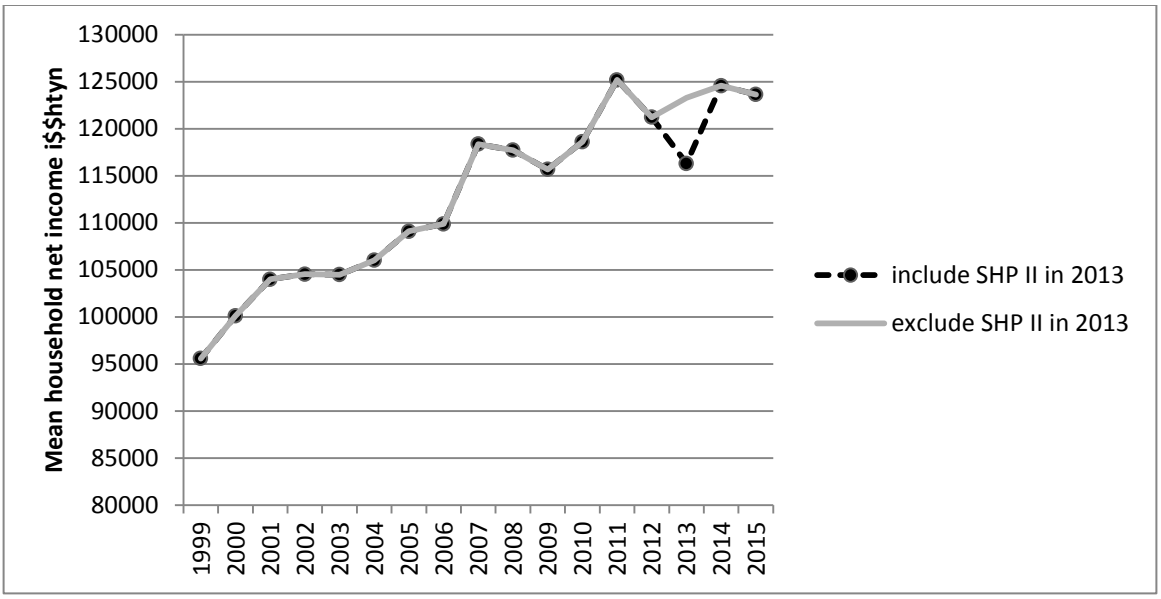


Figure 5: Household income of SHP III sample in 2013

To better assess the income situation of a household, equivalised household income take the size and composition of households into account by converting household income into income of one-person households. To compute equivalised household income, the household income is divided by an equivalence scale. Two different equivalence scales are used in the SHP. Firstly, the modified OECD scale (variables I$$EQON and I$$EQOG) attributes a weight of 1 to the first adult, a weight of 0.5 to all other household members from 14 years on, and a weight of 0.3 to children up to 14 years. The sum of these weights gives the modified OECD scale. Secondly, the SKOS equivalence scale (Swiss Conference of social assistance) (variables I$$EQSN and I$$EQSG) attributes a weight of 1 to a 1-person household, 1.53 to a two-person household, 1.86 to a three-person household, 2.14 to a four-person household, 2.42 to a five-person household, 2.70 to a six-person household, 2.98 to a seven-person household and increases by 0.28 to each additional person.

Table 6.3.13 List of constructed income variables of households

Variable	Gross/net	Description
	I$$HTYG, gross	Yearly income from all members
	I$$HTYN, net (social security taken into account where possible)	Taxes not deducted
	I$$EQSG, gross	Yearly household income, equivalised according to SKOS scale 1998 (see www.swisspanel.ch).
	I$$EQON, net (social security taken into account where possible)	Taxes not deducted
	I$$EQOG, gross	Yearly household income, equivalised according to modified OECD scale.
	I$$EQON, net (social security taken into account where possible)	Taxes not deducted
I$$HTAX		Simulated direct taxes at the municipal, cantonal and federal level
I$$DISPY		Yearly household disposable income

Additional income variables
The constructed annualised income variables of the SHP user files have been imputed if the amount was missing (don't know, no answer, implausible value). These imputed values can be downloaded from http://forscenter.ch/en/our-surveys/swiss-household-panel/datasupport-2/telecharger-les-donnees/.

The SHP cross-national equivalent file (CNEF) contains income sources defined slightly differently than in the SHP user file. The CNEF-variables – with the exception of professional income – report income on the household level. Missing values have been imputed. The CNEF-variables can be downloaded from http://forscenter.ch/en/our-surveys/swiss-household-panel/datasupport-2/cnef-2/. To access CNEF-variables of other household panels, see the CNEF-homepage:
http://cnef.ehe.osu.edu/ Original responses on the questionnaire are available from the SHP-team upon request (email to ursina.kuhn@fors.unil.ch).

Simulated taxes
The variable I$$HTAX simulates the direct taxes paid by the household at the municipal, cantonal and federal level. To assign the percentage of the household income which has to be paid as taxes, we use tax levels in municipalities published by the Swiss Federal Tax administration and take account of household specific deductions that can be applied to the income. Taxes are calculated at the level of tax units (individuals or married couples) and then aggregated to the household level. The detailed procedures to simulate taxes are described in SHP working paper 4_09 "Tax simulation in the SHP" (http://aresoas.unil.ch/workingpapers/WP4_09.pdf).

Household disposable income
The variable I$$DISPY indicates yearly household disposable income, which refers to income available after compulsory deductions (social security contributions, direct taxes I$$HTAX, health insurance premiums). Health insurance premiums are simulated according to mean premiums by canton and age group (below 18, 18-26, adults) for the minimum franchise. Public subventions for health care are taken into account of (at the basis of share of population receiving subvention and total amount of subventions paid per canton).

6.3.7 Geographical information
In addition to the region (REGION$$, 7 regions) and the canton (CANTON$$, 26 cantons) in which the household resides, two community typologies are constructed. This variable is based on the political municipality codes (provided by the Swiss Federal Statistical Office, see Schuler, Dessemontet and Joye 2005, 116f), and recoded into 22 codes based on the municipality in which the household is located ('communes' or 'Gemeinden'). An aggregated version of this variable in 9 categories is provided as well. Table 6.3.14 provides the names and labels of these variables as well as how COM1_$$ is aggregated into COM2_$$.

Table 6.3.14 Coding of the community typology variables

	COM1_$$		COM2_$$
1	Great urban centres	1	Centres (1,2,3)
2	Median sized urban centres		
3	Small centres		
4	Centre of peripheral region		
5	Wealthy communes	3	Wealthy communes (5)
6	Tourist communes	5	Tourist communes (6,7)
7	Semi-tourist commune		
8	Communes with homes and asylums		
9	Labour/job communes in large central regions	2	Suburban communes (9,10,12,13)
10	Suburban residential communes in large central regions		
11	Peripheral urban communes in large central regions	4	Peripheral urban communes (11,14)
12	Labour/job communes outside large central regions		
13	Suburban residential communes outside large central		
14	Peripheral urban communes outside large central regions		
15	Net immigration communes, moderate or high proportion	7	Rural commuter communes (15,16)
16	Native resident communes, moderate or high proportion		
17	Communes with industrial and tertiary sector employment	6	Industrial and tertiary sector communes (4,8,17,18)
18	Communes with industrial employment		
19	Communes with agricultural and industrial employment	8	Mixed agricultural communes (19,20)
20	Communes with agricultural and tertiary sector employment		
21	Communes with agricultural employment population	9	Peripheral agricultural communes (21,22)
22	Communes with strongly shrinking population		

The municipality codes themselves are not included in the user file to guarantee the anonymity of the respondents. Under certain conditions are the codes available for users of the data. This requires special authorization and is only possible when anonymity of the households can be guaranteed.

Other constructed variables in the household file related to socio-geographical characteristics of the household are HHMOVE$$ (whether the household moved since the last interview).

Table 6.3.15 Household moved since last interview (HHMOVE$$)

Variable	Label	Constructed from
HHMOVE$$	moved since last interview	grid and M.I.S. Trend information

6.4 References for psychosocial variables[25]

Several psychological dimensions are assessed in the SHP. Some questions are asked every wave, whereas other questions are asked regularly but not each year. This section gives information about the availability of psychological variables.

6.4.1 Subjective well-being indicators and scales

The concept of subjective well-being (SWB) is composed of two dimensions: a cognitive dimension which includes the participant's evaluation of his/her life in general, or of a particular important domain of life (for example health, professional life, financial situation) and an affective dimension which considers positive and negative affects such as joy, hope, optimism, worries, anxiety and anger (Diener 2000; Diener, Suh, Lucas, and Smith 1999).

The SHP includes one indicator that allows the measurement of general satisfaction with life. Additionally, there are different indicators that measure a wide range of domain specific aspects of life satisfaction. Finally, measures of affective well-being such as positive and negative affect are available.

Below our indicators of SWB are listed:

1. A general measure of SWB which reflects the satisfaction with life in general.

Table 6.4.1 Satisfaction with life in general

Variable	Label	Available in waves
P$$C44	Satisfaction with life in general	W02 – W17

In addition, four items from the life satisfaction scale from Diener et al. (1985) was included every 4 years since 2012, wave 14.

Table 6.4.2 Four life satisfaction items

Variables	Label	Available in waves
P$$C100	LS: Life close to ideal	W14 + W17
P$$C101	LS: Excellent life conditions	W14 + W17
P$$C102	LS: Having gotten important things	W14 + W17
P$$C103	LS: Not changing anything	W14 + W17

In wave 14 the psychometric properties of the Life satisfaction items (combination of the items in table 6.4.1 and the one in table 6.4.2): Cronbach's alpha: 0.82.

2. A general measure of life satisfaction concerning health.

Table 6.4.3 Satisfaction with health

Variable	Label	Available in waves
P$$C02	Satisfaction with health status	W01 - W17

[25] For an exact wording of the questions presented in this section we refer to http://forscenter.ch/fr/our-surveys/swiss-household-panel/documentationfaq/questionnaires-pdf/.

3. Five items assess the satisfaction with the educational environment and its quality.

Table 6.4.4 Satisfaction with the educational environment

Variable	Label	Available in waves
P$$YTH01	Satisfaction with current studies	W03 - W17
P$$YTH05	Satisfaction with things learned during studies	W03 – W17
P$$YTH06	Satisfaction with relationship with the teaching staff	W03 – W17
P$$YTH07	Satisfaction with the atmosphere with fellow pupils/students	W03 – W17
P$$YTH08	Satisfaction with the support from parents	W03 – W17

4. Two items assess satisfaction with the overall financial situation.

Table 6.4.5 Satisfaction with financial situation

Variable	Label	
P$$W92	Satisfaction with income	W01 – W17
P$$I01	Satisfaction with financial situation	W01 – W17

5. Satisfaction with working conditions is measured with five items.

Table 6.4.6 Satisfaction with working condition

Variable	Label	Available in waves
P$$W93	Satisfaction with working conditions	W01 - W17
P$$W94	Satisfaction with working atmosphere	W01 - W17
P$$W229	Satisfaction with the level of interest in tasks	W01 - W17
P$$W230	Satisfaction with the amount of work	W01 - W17
P$$W228	Satisfaction with job in general	W01 - W17

6. Four items assess the perception of the social environment of the individual.

Table 6.4.7 Satisfaction with living arrangements and personal relationships

Variable	Label	Available in waves
P$$F01	Satisfaction with living alone	W01 - W17
P$$F02	Satisfaction with living together	W01 - W17
P$$F04	Satisfaction with way housework is shared	W01 - W17
P$$QL04	Satisfaction with personal relationships	W03 - W17

7. Two items measure the satisfaction with leisure time

Table 6.4.8 Satisfaction with leisure

Variable	Label	Available in waves
P$$A05	Satisfaction with free time	W01 - W17
P$$A06	Satisfaction with leisure activities	W01 - W17

8. One item takes account of the satisfaction with the political system and particularly the perception of democracy.

Table 6.4.9 Satisfaction with democracy

Variable	Label	Available in waves
P$$P02	Satisfaction with democracy	W01 - W11 + W13

The second dimension of SWB – the affective dimension – is also present in the SHP. Generally, affective traits are conceptualized as two dimensions of mood (Watson, Clark, and Tellegen 1988): positive affect (PA), which groups together emotions such as joy, hope, and optimism, and negative affect (NA), which groups together a set of negative emotions such as anxiety, irritation, and depression (Scherer, Wranik, Sangsue, Tran, and Scherer 2004).

The SHP contains one item assessing a very general negative emotional state.

Table 6.4.10 Negative feelings

Variable	Label	Available in waves
	Do you often have negative feelings	
P$$C17	… depression, blues, anxiety	W01 – W17

The construct of positive feelings is measured with an item which assesses a feeling of energy and strength as well as general expectancies concerning future events.

Table 6.4.11 Positive feelings

Variable	Label	Available in waves
	Are you often	
P$$C18	… full of strength, energy and optimism	W02 – W17

Additionally, since 2006 the frequency of four of the most important emotional traits is considered (Scherer, Wranik, Sangsue, Tran, and Scherer 2004).

Table 6.4.12 Positive and negative affects

Variable	Label	Available in waves
	How frequently do you generally experience the following emotions	
P$$C47	… joy	W08 – W17
P$$C48	… anger	W08 – W17
P$$C49	… sadness	W08 – W17
P$$C50	… worry	W08 – W17

6.4.2 Personality traits: Big Five Inventory – 10 (BFI-10)

To provide information about the differences between individuals on five principal personality dimensions (Extraversion, Neuroticism, Agreeableness, Conscientiousness, and Openness to Experience) two different personality traits scales have been used in the SHP.

First, from 2009 (wave 11) to 2014 (wave 16), the Big-Five Inventory ten developed by Rammstedt and John (2007), an abbreviated version of the 44 items Big Five Inventory

(BFI-44; John, and Srivastava, 1999), has been introduced in the SHP (Table 6.4.13). The Big-Five Inventory ten includes two items per personality trait. Each item goes from zero “disagree strongly” to ten “agree strongly” and measures how an individual positions himself relative to a list of ten statements.
In the SHP from 2009 (wave 11) to 2014 (wave 16), the BFI-10 was collected once, at the first interview in this period.

Table 6.4.13 Big Five-10

Variable	Label	Available in wave[1]
	I see myself as someone who	
P$$C60	… is reserved.	W11 – W16
P$$C61	... is generally trusting.	W11 – W16
P$$C62	... does a thorough job .	W11 – W16
P$$C63	... is relaxed, handles stress well.	W11 – W16
P$$C64	... has an active imagination.	W11 – W16
P$$C65	... is outgoing, sociable.	W11 – W16
P$$C66	... tends to find fault with others.	W11 – W16
P$$C67	... tends to be lazy.	W11 – W16
P$$C68	... gets nervous easily.	W11 – W16
P$$C69	... has artistic interests	W11 – W16

Note:
[1]) Only asked after W11 if this was the respondents’ first interview.
Scoring the BFI-10 scales:
P$$C60, P$$C63, P$$C66, and P$$C67 are reversed in valence items.
Each trait is measured with two items:
Extraversion: P$$C60-R - P$$C65; Agreeableness: P$$C61 - P$$C66-R; Conscientiousness: P$$C62 - P$$C67-R; Neuroticism: P$$C63-R - P$$C68; Openness: P$$C64 - P$$C69.
R means reversed item.

An examination of the data collected between 2009 to 2014 shows that in the SHP, the Big Five Inventory ten psychometric properties were debatable (Ryser, 2015). Therefore, an alternative measure of the Big Five, the 15-item Big Five Inventory-Short Version (BFI-15; Gerlitz, and Schupp, 2005) consisting of 15 items was implemented in the SHP wave 17 in 2015 (Table 6.4.14). This version of the Big Five includes three items per personality trait. Each item goes from zero “disagree strongly” to ten “agree strongly” and measures how an individual positions himself relative to a list of 15 statements. In the SHP, the BFI-15 is collected once, at the first interview since 2015.

Table 6.4.14 Big Five-15

Variable	Personality trait Latent Variable	Label I see myself as someone who	Available in wave[1]
P$$C140	Conscientiousness	... does a thorough job.	W17
P$$C141	Extraversion	… is talkative	W17
P$$C142	Agreeableness	... is sometimes rude to others [1].	W17
P$$C143	Openness	… is original, comes up with new idea	W17
P$$C144	Neuroticism	… worries a lot	W17

P$$C145	Agreeableness	… has a forgiving nature	W17
P$$C146	Conscientiousness	... tends to be lazy [1].	W17
P$$C147	Extraversion	... is outgoing, sociable.	W17
P$$C148	Openness	... values artistic, aesthetic experiences.	W17
P$$C149	Neuroticism	... gets nervous easily .	W17
P$$C150	Conscientiousness	… does thing efficiently	W17
P$$C151	Extraversion	… is reserved [1].	W17
P$$C152	Agreeableness	.... is considerate and kind to almost every-one	W17
P$$C153	Openness	... has an active imagination.	W17
P$$C154	Neuroticism	... remains calm in tense situations [1].	W17

Notes: [1]) Items reversed in valence.
Each trait is measured with three items.

For additional information about the theoretical assumptions behind the personality traits taxonomy, John, Naumann and Soto (2008) give information about the history and the construction of the Big Five inventory taxonomy. For the general five factor theory see also McCrae and Costa (2003). Srivastava, Gosling and Potter (2003) provide information on the relative stability of personality traits during adulthood and put forward that not all the personality traits are equally stable. Several authors emphasise the importance to control for acquiescence bias while using big five short scales (e.g. Rammstedt, and Farmer; 2013; Danner, Aichholzer, and Rammstedt 2015).

6.4.3 Self-perception and sense of control

Six items measure a very general personal perception of the self. Some items measure in how far respondents believe that their destiny is controlled by themselves and their own decisions or by external forces over which they do not have any power. Individuals who believe more strongly that they control their own destiny are more likely to develop a feeling of self-efficacy.

The items are rated on an eleven-point scale from 0 “I completely disagree” to 10 “I completely agree”. The first four questions are adapted by Levy, Joye, Guye and Kaufmann (p. 510; 1997) from Strodtbeck (1958). These items are directly related to the perception of the level of self-mastery and self-efficacy toward the environment. The last two items come from the self-esteem scale by Rosenberg (1965) and reflect the appraisal of one’s own worth. These questions are asked at regular intervals and were included every 4 years since 2009 wave 11.

Table 6.4.15 Self perception

Variable	Label	Available in waves
P$$C70	Self-Perception : incapacity to make plans because of unpredictability	W11 + W14 + W17
P$$C71	Self-Perception : little influence on life events	W11 + W14 + W17
P$$C72	Self-Perception : capacity to overcome unexpected problems	W11 +; W14 + W17
P$$C73	Self-Perception : capacity to choose between two possibilities	W11 + W14 + W17
P$$C74	Self-Perception : feeling of uselessness	W11 + W14 + W17

P$$C75	Self-Perception : feeling of self-satisfaction	W11 + W14 + W17

Note: P09C72 P09C73 and P09C75 are reversed in valence.

In 2012, wave 14, items related to the "Sense of control" were introduced in the SHP.

Table 6.4.16 Sense of control

Variable	Label	Available in waves
Personal Mastery		
P12C104	Sense of control: Doing everything set in my mind	W14 + W17
P12C105	Sense of control: Find a way to succeed	W14 + W17
P12C106	Sense of control: What I want is in my hands	W14 + W17
P12C107	Sense of control: What will happen depends on me	W14 + W17
		W14 + W17
Perceived constraints		
P12C108	Sense of control: Others determine what I can do	W14 + W17
P12C109	Sense of control: Feeling of being pushed in my life	W14 + W17

Three items - P$$C106, P$$C107, and P$$C109 - come from Pearlin and Schooler (1978). Three items - P$$C104, P$$C105 and P$$C108 - come from Lachman and Weaver (1998).

A scale score can be constructed by calculating the mean of the 12 items keeping in mind that some items are reversed in valence. The psychometric properties of the 12 items of the self-perception and control dimension wave 14: Cronbach's alpha: 0.74.

6.4.4 Worries

A worries scale adapted from Stöber and Joormann (2001) was included in the SHP in wave 14.

Table 6.4.17 Worries

Variable	Label	Available in waves
P$$C110	Worries: Achieving my ambitions	W14
P$$C111	Worries: Not keeping my workload up to date	W14
P$$C112	Worries: Being not able to afford things	W14
P$$C113	Worries: Feeling insecure	W14
P$$C114	Worries: Cannot afford to pay bills	W14
P$$C115	Worries: Leaving the work unfinished	W14
P$$C116	Worries: Lacking of confidence	W14
P$$C117	Worries: Being unattractive	W14
P$$C118	Worries: Losing close friends	W14
P$$C119	Worries: Have not achieving much	W14

Psychometric properties of the "Worries scale": Cronbach's alpha: 0.91.

6.4.5 Important things in life

Table 6.4.18 Important things in life

Variable	Label	Available in waves

P$$C120	Important things in life: buy things	W14
P$$C121	Important things in life: helping other people	W14
P$$C122	Important things in life: self-actualization	W14
P$$C123	Important things in life: success in job	W14
P$$C124	Important things in life: being owner of house or apartment	W14
P$$C125	Important things in life: good partnership	W14
P$$C126	Important things in life: having children	W14
P$$C127	Important things in life: social activities	W14
P$$C128	Important things in life: travelling	W14

Psychometric properties of the “Important things” dimension: Cronbach’s alpha: 0.63

6.4.6 Gender role attitudes

A number of items measure gender role attitudes and perceived equality between men and women. Both direct and indirect measures of attitudes are present in the SHP with measures at the individual and at the intergroup level.

1. One item assesses the attitude toward traditional gender roles legitimacy in society.

Table 6.4.19 Opinion on family

Variable	Label	Available in waves
P$$D92	Opinion on family: child suffers with working mother	W04 - W13 + W16

2. One item takes into account if an individual perceives work as a possibility to remain independent.

Table 6.4.20 Opinion on family

Variable	Label	Available in waves
P$$D91	Job preserves independence	W04 - W13 + W16

3. Additionally, the data include an item measured annually from 2002 till 2005 on how individuals perceive childbearing within cohabitation.

Table 6.4.21 Opinion on family

Variable	Label	Available in waves
P$$D93	A child develops equally well whether his/her parents are married or not.	W04 - W07

4. Two items are adapted from Roux (1999). These items measure the perception of in-equality at two levels: at the individual level which concerns the private sphere and at the intergroup level concerning society at large. This scale is important because it allows making a distinction between two kinds of discrimination: in this sense this scale gives information whether it is the group and/or the individual which is perceived as a target for discrimination.

Table 6.4.22 Equality

Variable	Question	Available in waves
P$$P20	Do you have the feeling that in Switzerland women are penalized compared with men in certain areas?	W02-W11 + W13 + W16
P$$P21	Do you, in your everyday life, feel penalized compared with the opposite sex?	W02-W11 + W13 + W16

5. Measuring attitudes toward measures promoting gender equality is another way to measure gender role attitudes. Such a scale is much more subtle and provides an indirect measure of gender role attitudes. Two items assess the propensity to behave in a way to improve equality between men and women. One item is a global measure at the group level and one item measures the possibility to act at the individual level. These items are inspired by the neo-sexism scale (Tougas, Brown, and Joly 1995), a scale which assesses the attitude toward gender roles in society instead of measuring attitudes toward women directly. Such measures are supposed to be less threatening compared to direct measures and emphasizes attitudes that are generally hidden.

Table 6.4.23 In favour of equality measures

Variable	Question	Available in waves
P$$P22	Are you in favour of Switzerland taking more steps to ensure the promotion of women?	W02 - W11 + W13 + W16
P$$P23	In your own relationships with the opposite sex, does it seem possible to you that something can be done to increase equality between men and women?	W02 - W11

6.4.7 Risk aversion scale

A single item, rated on an eleven point scale from 0 "avoid taking risks" to 10 "fully prepared to take risks", assesses the global individual attitude toward taking risks in general. For more information, Grund and Sliwka (2006) give a general overview of the theoretical background of this scale.

Table 6.4.24 Risk aversion

Variable	Question	Available in waves
P$$P48	Are you generally a person who is fully prepared to take risk or do you try to avoid taking risks?	W11 – W17

6.5 Main missing value conventions

The following missing value labels are used:

-1 does not know
-2 no answer
-3 inapplicable. This means either
  a) the specific question was not asked because it was not applicable to the respondent
  b) the respondent did not participate in this particular wave
  c) the entire household did not respond/was not contacted
-7 filter error (a question should have been asked but was not)
-8 other error

6.6 Imputation procedures

Apart from the consistency checks and corrections (see 5.3) no values are changed or imputed, with the exception of income variables (see 6.3.5).

6.7 Combining data files

Table 6.7.1 shows the identification numbers that are available in the different data files. The personal ID (idpers) can be found in all files on the individual level, always referring to the same individual. The interviewer ID is available in the interviewer files (see 6.1.7) and the annual individual and household files.

As the composition of households can change over time, their identification number is wave specific.

Identification numbers of parents and spouses refer to their personal ID. For example, to match parents and children, one can attach the info of the parent to the info of the child, by matching idmoth$$ and idfath$$ (idmoth__ and idfath__ in Stata and SAS) to idpers.

To combine information from the household reference person with the household, refper$$ needs to be matched to idpers in the individual file. To add information from the partner to this file rpspou$$ needs to be matched to idpers.

Table 6.7.1 Identification numbers

variable	in files[a]	description
idint[b]	P, H, V	ID of interviewer
Idpers	P, MP, SO, CA, LJ, BH, BV	ID of person
Idhous$$	P, H, MP, MH, BH	ID of household
Idfath$$	MP	ID of father
Idmoth$$	MP	ID of mother
Idspou$$	P	ID of partner
Refper$$	H, MH	ID of reference person in hld
Rpspou$$	H	ID of partner of reference person

[a]) P individual questionnaire (wave specific)

H	household questionnaire (wave specific)
MP	master file individuals
MH	master file households
V	interviewer file
SO	social origin
CA	activity calendar
LJ	last job
BH	biographical file (horizontal)
BV	biographical file (vertical)

[b]) **Attention!**
The values of the variable "idint" in the Interviewer data files have been coded in order to protect the identity of the Interviewers. Consequently, the merging of the Interviewer-data with the Household and Individual level files is only possible after de-coding. Please contact Oliver Lipps for more details (oliver.lipps@fors.unil.ch).

On http://forscenter.ch/en/our-surveys/swiss-household-panel/datasupport-2/syntaxes-2/ there are examples of programming in SAS, SPSS and Stata of how to combine different files (such as matching respondents across waves, matching respondents to households, matching couples, etc.).

6.8 Changing the language of the variable and value labels

Variables and values labels are available for each data file in French, German, Italian and English. The files containing the syntax are:

- Variable_labels_SHP_$WAVE$_$QUEST$_$LANGUAGE$.txt
- Value_labels_SHP_$WAVE$_$QUEST$_$LANGUAGE$.txt

$WAVE$ is to be replaced by:
W1 = Wave 1
W2 = Wave 2
W3 = Wave 3
W4 = Wave 4
W5 = Wave 5
W6 = Wave 6
W7 = Wave 7
W8 = Wave 8
W9 = Wave 9
W10= Wave 10
W11= Wave 11
W12= Wave 12
W13= Wave 13
W14= Wave 14
W15= Wave 15
W16= Wave 16
W17= Wave 17
WA = Waves ALL (modules CA, LJ, MP, MH, OS)

$QUEST$ is to be replaced by:
P = Individual
H = Household

X = Proxy
CA = Activities calendar
LJ = Last Job
MP = Individual Masterfile
MH = Household Masterfile
OS = Social Origin

$LANGUAGE$ is to be replaced by:
E = English
F = Français
D = Deutch
I = Italiano

For **SPSS** labels
To label a SPSS data file, open the files located in the '\LABELS\SPSS\$WAVE$\$LANGUAGE$\' directory in a syntax editor and run the syntax.

For **Stata** labels
To label a Stata data file, open the files located in the '\LABELS\STATA\$WAVE$\$LANGUAGE$\' directory in a do-file editor and run the syntax. Note that all Stata file names variable names use lower case letters.

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Appendix A List of cantons in Switzerland

AG	Aargau
AR	Appenzell Ausserrhoden
AI	Appenzell Innerrrhoden
BS	Basel-Stadt
BL	Basel-Landschaft
BE	Bern
FR	Fribourg
GE	Geneva
GL	Glarus
GR	Graubünden
JU	Jura
LU	Lucerne
NE	Neuchâtel
NW	Nidwalden
OW	Obwalden
SH	Schaffhausen
SZ	Schwyz
SO	Solothurn
SG	St. Gallen
TG	Thurgau
TI	Ticino
UR	Uri
VS	Valais
VD	Vaud
ZG	Zug
ZH	Zurich

Appendix B Participation in the Swiss Household Panel

Table B.1: Participation in the "Living in Switzerland Panel Survey" 1999-2014 (SHP_I)

Number of participating units	**SHP _I 1999 (w1)**	**SHP _I 2000 (w2)**	**SHP _I 2001 (w3)**	**SHP _I 2002 (w4)**	**SHP _I 2003 (w5)**	**SHP _I 2004 (w6)**	**SHP _I 2005 (w7)**	**SHP _I 2006 (w8)**	**SHP _I 2007 (w9)**	**SHP _I 2008 (w10)**	**SHP _I 2009 (w11)**	**SHP _I 2010 (w12)**	**SHP _I 2011 (w13)**	**SHP _I 2012 (w14)**	**SHP _I 2013 (w15)**	**SHP _I 2014 (w16)**	**SHP _I 2015 (w17)**
Households with grids completed	5,074	4,532	4,314	3,685	3,289	2,918	2,526	2,580	2,893	2,793	3,052	3,065	3,055	3,032	2,936	2,821	2,802
Household interview completed	**5,074**	**4,425**	**4,139**	**3,582**	**3,227**	**2,837**	**2,457**	**2,537**	**2,817**	**2,718**	**2,930**	**2,985**	**2,977**	**2,968**	**2,881**	**2,778**	**2,761**
Persons living in participating households	12,931	11,678	11,116	9,537	8,478	7,517	6,491	6,587	7,225	6,905	7,469	7,477	7,450	7,274	6,999	6,703	6,571
Persons aged 14 years and older eligible for individual interviewing	10,293	9,297	8,942	7,553	6,719	5,976	5,220	5,333	5,972	5,740	6,224	6,286	6,335	6,229	6,043	5,798	5,720
Personal interview completed	**7,799**	**7,073**	**6,601**	**5,700**	**5,220**	**4,413**	**3,888**	**4,091**	**4,630**	**4,494**	**4,800**	**5,057**	**5,103**	**5,032**	**4,880**	**4,678**	**4,596**
Proxy Interviews [a]	2,638	2,381	2,174	1,984	1,724	1,482	1,241	1,237	1,226	1,127	1,216	1,163	1,085	1,029	923	882	831
Persons responding in current and all previous waves	------	6,335	5,429	4,480	3,888	3'076	2,622	2,399	2,209	2,060	1,952	1,879	1,813	1,739	1,661	1,598	1,547
Grid level net response rates [b]	64%	91%	88%	86%	90%	82%	91%	87%	86%	91%	91%	94%	93%	93%	94%	92%	94%
Individual level net response rates [c]	85%	84%	88%	89%	88%	85%	87%	81%	81%	82%	81%	85%	84%	84%	84%	84%	84%

Source: Swiss Household Panel, 1999-2013 (http://www.swisspanel.ch/)

[a] The SHP proxy interviews include information about children under 14 years and adult persons unable to respond to the survey (old age, handicap, etc.); the SILC survey doesn't conduct proxy interviews regarding children.

[b] Referring to all gross households minus those with neutral problems (neutral problems: invalid telephone, etc.).

[c] Referring to all called individuals minus those with neutral problems (foreign language etc.).

Note: SHP_I denotes the original households recruited in 1999.

Table B.2: Participation in the "Living in Switzerland Panel Survey" 2004-2014 (SHP_II)

Number of participating units	**SHP_II 2004 (w1)**	**SHP_II 2005 (w2)**	**SHP_II 2006 (w3)**	**SHP _II 2007 (w4)**	**SHP _II 2008 (w5)**	**SHP _II 2009 (w6)**	**SHP _II 2010 (w7)**	**SHP _II 2011 (w8)**	**SHP _II 2012 (w9)**	**SHP _II 2013 (w10)**	**SHP _II 2014 (w11)**	**SHP _II 2015 (w12)**
Households with grids completed	2,704	1,908	1,754	1.548	1663	1,540	1,609	1,561	1,561	1,531	1,413	1,354
Household interview completed	**2,538**	**1,799**	**1,684**	**1.494**	**1546**	**1,476**	**1,557**	**1,520**	**1,493**	**1,488**	**1,385**	**1,326**
Persons living in participating households	6,569	4,673	4,276	3,777	3984	3,686	3,855	3,728	3,696	3,576	3,328	3,153
Persons aged 14 years and older eligible for individual interviewing	5,376	3,845	3,500	3,123	3291	3,033	3,184	3,136	3,115	3,020	2,808	2,659
Personal interview completed	**3,654**	**2,649**	**2,568**	**2,350**	**2410**	**2,309**	**2,489**	**2,481**	**2,414**	**2,327**	**2,150**	**2,075**
Proxy Interviews [a]	1,117	772	745	639	647	624	655	572	565	544	512	483
Persons responding in current and all previous waves	------	2,395	1,930	1,601	1400	1,289	1,221	1,157	1,102	1,039	957	900
Grid level net response rates [b]	65%	81%	78%	84%	81%	91%	88%	90%	85%	92%	89%	88%
Individual level net response rates [c]	76%	75%	78%	80%	80%	81%	83%	84%	81%	80%	81%	82%

Source: Swiss Household Panel, 2004-2014 (http://www.swisspanel.ch/)

[a] The SHP proxy interviews include information about children under 14 years and adult persons unable to respond to the survey (old age, handicap, etc.); the SILC survey doesn't conduct proxy interviews regarding children.

[b] Referring to all gross households minus those with neutral problems (neutral problems: invalid telephone, etc.).

[c] Referring to all called individuals minus those with neutral problems (foreign language etc.).

Note: SHP_II stands for the newly recruited SHP households in 2004.

Table B.3 *Participation in the "Living in Switzerland Panel Survey" 2013-2014 (SHP_III)*

Number of participating units	**SHP_III 2013 (w1)**	**SHP _III 2014 (w2)**	**SHP _III 2015 (w3)**
Households with grids completed	4,066	3,284	2,732
Household interview completed	**3,989**	**3,197**	**2,700**
Persons living in participating households	9,885	7,994	6,624
Persons aged 14 years and older eligible for individual interviewing	7,910	6,498	5,388
Personal interview completed[a]	**6,090**	**5,264**	**4,498**
Proxy interviews[b]		1,457	1,219
Persons responding in current and all previous waves		4,453	3,588
Grid level net response rates [c]	60%	89%	88%
Individual level net response rates [d]	81%	86%	88%

Source: Swiss Household Panel, 2013-2014 (http://www.swisspanel.ch/)

[a] In wave 1 of SHP_III only respondents aged 16 or older completed the biographical questionnaire.

[b] The SHP proxy interviews include information about children under 14 years and adult persons unable to respond to the survey (old age, handicap, etc.).

[c] Referring to all gross households minus those with neutral problems (neutral problems: invalid telephone, etc.).

[d] Referring to all contacted individuals minus those with neutral problems (foreign language etc.).

Appendix C Attrition by demographic characteristics and social involvement in SHP_I, SHP_II and SHP_III

Tables 1 to 3 below present demographic characteristics and social involvement attitudes and behaviour of the three samples of the SHP for respondents with different response patterns. A selection is made of respondents who have participated in an individual interview at least once, and who have not left the sample (i.e. not deceased, institutionalized or out of the country)[26]. A distinction is made between respondents who are interviewed in every wave, those who are interviewed irregularly, and those who dropped out of the panel (this implies the respondent was not interviewed in the last three waves). For the SHP_III we added an additional group of respondents who only completed the calendar in the first wave. As for these respondents no information from the individual questionnaires was available, they are only included when analysing variables on the household level. For SHP_III the "dropped out" group consists of respondents who did not participate in the last wave, hence overestimating the actual dropout as many respondents may come back in the next wave. Note that calculations are based on unweighted data. Significant differences are tested by calculating Cramers' V for all the categorical variables and by t-tests for the continuous variables and the variables measured on an 11-point scale.

Table C.1 Demographic characteristics and social involvement attitudes and behaviour by response pattern (SHP I, 1999-2015)

	Always responding n = 2409	Irregularly responding n = 2945	Dropped out n = 5660
Sex (%)			
men	42.3%	47.6%	47.1%
women	57.7%	52.4%	52.9%
Age (%)			
14 to 19	23.9%	25.8%	22.7%
20 to 29	11.6%	14.1%	18.5%
30 to 39	22.2%	19.2%	19.1%
40 to 49	17.4%	17.9%	15.9%
50 to 59	14.5%	13.8%	10.4%
60 +	10.4%	9.3%	13.3%
Education (%)			
compulsory school	31.8%	36.0%	36.3%
upper secondary level (vocational)	32.5%	35.5%	37.0%
upper secondary level (matura)	10.3%	9.2%	9.8%
tertiary level (vocational)	12.2%	10.7%	8.6%
tertiary level (university)	13.2%	8.6%	8.3%

[26] Following a matching procedure with the Swiss National Cohort (a database containing all residents in Switzerland matched with the mortality register, see Spoerri et al, 2010) we were able to identify additional deceased respondents who, until now, were erroneously included in the "dropped out" group. In wave 17 of the SHP_I sample 363 sample members were identified as deceased and 204 sample members as having left the country or moved to an institution. For the SHP_II the numbers were 119 and 81 respectively, and for SHP_III 30 and 31.

Swiss nationality (%)	96.1%	94.2%	87.8%
Region[a][27] (%)			
Lake Geneva	16.7%	17.6%	17.8%
Middleland	26.7%	25.6%	24.9%
North-west Switzerland	14.9%	15.0%	13.8%
Zurich	17.3%	15.7%	16.1%
East Switzerland	10.3%	11.9%	14.9%
Central Switzerland	10.0%	10.1%	8.4%
Ticino	4.1%	4.1%	4.1%
Urbanization[28][29]			
highly and moderately urbanized centres	60.8%	58.8%	61.3%
small urban centres	9.2%	10.0%	10.3%
communes of urbanized centres	11.7%	10.6%	10.1%
communes of small urban centres	8.6%	8.9%	7.8%
communes remote from urbanized centres	9.7%	11.7%	10.6%
Civil status (%)[30]			
single, never married	42.7%	44.4%	45.4%
married	47.3%	47.1%	43.7%
separated	1.5%	1.0%	1.0%
divorced	6.4%	5.7%	6.0%
widower/widow	2.2%	1.8%	3.9%
Children in household %[31]	59.4%	64.3%	60.3%
Employment (%)			
active occupied	60.3%	63.1%	62.6%
unemployed	1.1%	1.9%	2.1%
not in labour force	38.6%	35.0%	35.4%
Owner residence (%)[32]	52.7%	51.5%	45.1%
Mean satisfaction with health (0-10)	8.42	8.29	8.20
Participate in clubs (%)	59.9%	54.7%	47.8%
Mean general trust in people (0-10)[b]	6.01	5.65	5.38
Mean interest in politics (0-10)	5.36	4.92	4.61

[a])Region: Lake Geneva: VD, VS, GE; Middleland: BE, FR, SO, NE, JU; North-west Switzerland: BS, BL, AG; Zürich; East Switzerland: GL, SH, AR, AI, SG, GR, TG; Central Switzerland: LU, UR, SZ, OW, NW, ZG; Ticino. See Appendix A for a list of cantons.
[b]) Asked from 2002 onwards

[27] Difference between always and irregularly participating is not significant (Cramer's V, p=.42)
[28] Difference between always and irregularly participating is not significant (Cramers' V, p=.08)
[29] Difference between always participating and dropped out is not significant (Cramer's V, p=.06)
[30] Difference between always and irregularly participating is not siginificant (Carmers' V, p=.29)
[31] Difference between always participating and dropped out is not significant (Cramers' V, p=.41)
[32] Difference between always and irregularly participating is not significant (Cramers' V, p=.40)

Table C.2 Demographic characteristics and social involvement attitudes and behaviour by response pattern (SHP II, 2004-2015)

	Always responding n = 1229	Responding irregularly n = 1364	Dropped out n = 2285
Sex (%)[33]			
men	45.1%	47.1%	47.4%
women	54.9%	52.9%	52.6%
Age (%)			
14 to 19	17.5%	22.0%	20.3%
20 to 29	10.3%	12.7%	16.9%
30 to 39	20.3%	18.2%	16.6%
40 to 49	21.4%	17.8%	18.4%
50 to 59	15.1%	14.0%	12.0%
60 +	15.5%	15.3%	15.7%
Education (%)			
compulsory school	22.1%	31.1%	31.5%
upper secondary level (vocational)	35.6%	37.0%	36.9%
upper secondary level (matura)	10.8%	8.3%	9.8%
tertiary level (vocational)	16.8%	13.7%	13.1%
tertiary level (university)	14.6%	10.0%	8.8%
Swiss nationality (%)	93.9%	91.6%	86.3%
Region[34a] **(%)**			
Lake Geneva	17.9%	17.0%	19.2%
Middleland	26.9%	23.7%	23.6%
North-west Switzerland	13.3%	13.5%	13.8%
Zurich	18.7%	17.6%	18.4%
East Switzerland	11.0%	14.1%	13.1%
Central Switzerland	9.4%	9.6%	9.0%
Ticino	2.8%	4.5%	2.9%
Urbanization[35]			
highly and moderately urbanized centres	62.2%	63.2%	63.2%
small urban centres	9.3%	10.0%	10.1%
communes of urbanized centres	11.3%	10.4%	9.1%
communes of small urban centres	7.5%	6.1%	7.3%
communes remote from urbanized centres	9.7%	10.3%	10.3%
Civil status (%)			
single, never married	39.2%	42.2%	44.7%
married	48.0%	47.9%	42.3%
separated	1.6%	1.5%	1.9%
divorced	8.3%	5.1%	6.7%
widower/widow	2.8%	3.3%	4.5%
Children in household %	51.2%	58.5%	55.7%
Employment (%)			

[33] Difference between groups are not significant (Cramer's V, dropped out p=.19, irregularly responding p=.29)
[34] Difference between always participating and dropped out are not significant (Cramer's V, p=.28)
[35] Differences between groups are not significant (Cramers' V, dropped out p=.31, irregularly responding p=.55)

active occupied	68.9%	63.4%	66.1%
unemployed	1.3%	2.2%	3.4%
not in labour force	29.8%	34.4%	30.5%
Owner residence (%)[36]	49.1%	52.8%	45.8%
Mean satisfaction with health (0-10)[37]	8.30	8.16	8.24
Participate in clubs (%)	55.4%	49.2%	44.4%
Mean general trust in people (0-10)	5.75	5.39	5.05
Mean interest in politics (0-10)	5.65	5.03	4.88

[a])Region: Lake Geneva: VD, VS, GE; Middleland: BE, FR, SO, NE, JU; North-west Switzerland: BS, BL, AG; Zürich; East Switzerland: GL, SH, AR, AI, SG, GR, TG; Central Switzerland: LU, UR, SZ, OW, NW, ZG; Ticino

[36] Difference between groups are not significant (Cramer's V, dropped out p=.06, irregularly participating p=.06)
[37] Difference between groups are not significant (T-test, dropped out p=.40, irregularly responding p=.06)

Table C.3 Demographic characteristics and social involvement attitudes and behaviour by response pattern (SHP III, 2013-2015)

	Always responding	Responding irregularly	No interview in last wave	Calendar only[38]
	n = 3763	n = 736	n = 1050	N = 1463
Sex (%)[39]				
men	46.1%	49.0%	50.7%	52.1%
women	53.9%	51.0%	49.3%	47.9%
Age (%)				
14 to 19	8.3%	20.8%	9.8%	7.2%
20 to 29	8.7%	7.9%	14.8%	23.5%
30 to 39	12.7%	9.4%	14.1%	16.6%
40 to 49	21.4%	15.5%	17.3%	17.1%
50 to 59	18.1%	16.3%	19.7%	14.7%
60 +	30.8%	30.2%	24.3%	20.9%
Education (%)				
compulsory school	21.1%	34.1%	25.3%	
upper secondary level (vocational)	34.0%	30.2%	36.6%	
upper secondary level (matura)	10.3%	9.0%	9.0%	
tertiary level (vocational)	13.3%	11.0%	12.6%	
tertiary level (university)	21.2%	15.8%	16.5%	
Swiss nationality (%)	76.1%	65.1%	72.3%	
Region[40a] **(%)**				
Lake Geneva	19.3%	17.5%	17.0%	19.1%
Middleland	23.8%	22.4%	25.7%	22.3%
North-west Switzerland	12.8%	17.4%	15.0%	11.6%
Zurich	15.0%	17.4%	13.1%	17.1%
East Switzerland	14.7%	11.7%	14.9%	14.6%
Central Switzerland	10.0%	7.3%	10.8%	11.5%
Ticino	19.3%	17.5%	17.0%	19.1%
Urbanization[41]				
Highly/moderately urbanized centres	57.6%	63.6%	58.3%	61.9%
small urban centres	11.1%	8.0%	11.1%	12.5%
communes of urbanized centres	13.5%	11.4%	12.3%	9.8%
communes of small urban centres	6.9%	7.3%	7.1%	5.6%
communes remote from urbanized centres	11.0%	9.6%	11.1%	10.2%
Civil status (%)				
single, never married	27.3%	36.8%	34.6%	

[38] As this group did not complete an individual interview it is not included in the analysis of individual-level variables (with the exception of gender and age).
[39] Difference between always and irregularly participating is not significant (Cramer's V, p=.14, irregularly responding p=.29)
[40] Difference between always participating and no interview in last wave is not significant (Cramer's V, p=.13), difference between always participating and only calendar is not significant (p=.22)
[41] Differences between always participating and no interview in last wave is not significant (Cramers' V, p=.89)

married	58.5%	46.3%	52.7%	
separated	1.3%	1.9%	1.5%	
divorced	8.2%	9.8%	7.7%	
widower/widow	4.7%	5.2%	3.5%	
Children in household %[42]	52.0%	56.9%	51.8%	56.0%
Employment (%)[43]				
active occupied	65.9%	54.8%	68.6%	
unemployed	1.6%	2.6%	1.9%	
not in labour force	32.6%	41.0%	29.4%	
Owner residence (%)	60.5%	52.4%	51.0%	46.4%
Mean satisfaction with health (0-10)[44]	8.06	7.99	7.92	
Participate in clubs (%)	48.3%	43.2%	39.7%	
Mean general trust in people (0-10)	6.19	5.69	5.81	
Mean interest in politics (0-10)	5.46	5.16	5.09	

[a])Region: Lake Geneva: VD, VS, GE; Middleland: BE, FR, SO, NE, JU; North-west Switzerland: BS, BL, AG; Zürich; East Switzerland: GL, SH, AR, AI, SG, GR, TG; Central Switzerland: LU, UR, SZ, OW, NW, ZG; Ticino

[42] Difference between always participating and not interviewed in last wave not significant (Cramer's V, p=.91)
[43] Difference between always participating and not interviewed in last wave is not significant (Cramer's V, p=.05)
[44] Difference between always participating and not interviewed in last wave is not significant (T-test, p=.39)