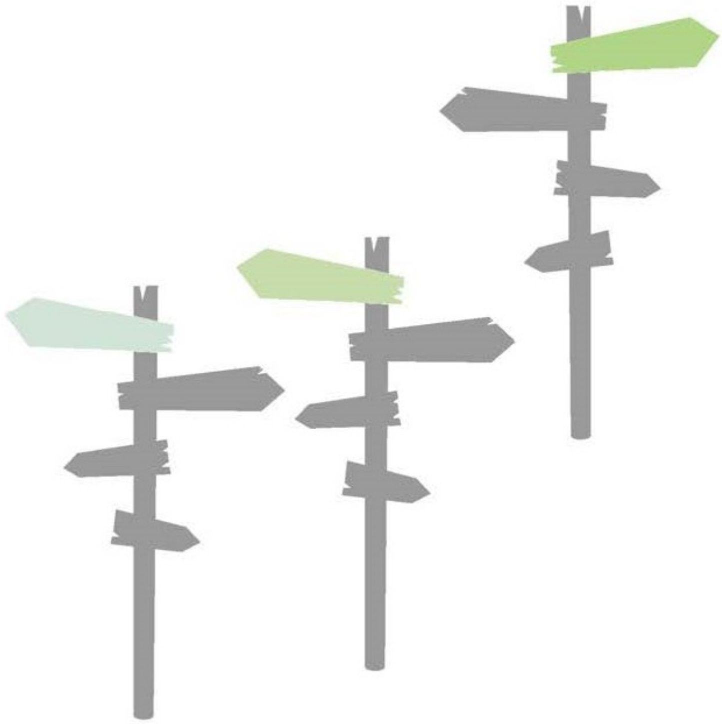
Documentation of the DAB Panel Study

Bern, 12.2023 (Version 7.0)



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1 Introduction

This document provides information on the data collected in the DAB panel study for all interested in the scientific profile of the DAB panel study and for researchers who are planning to conduct empirical analysis with the scientific-use-files. It serves as a technical documentation and, in addition to the wavespecific codebooks and the variable documentation, as an orientation for empirical analysis.

2 Project overview

2.1 Project goals

Since 2012, the DAB panel study has collected longitudinal data on the vocational and educational situation of adolescence in German-speaking Switzerland. The sampled individuals have been observed since their eighth school year and so far have been surveyed eleven times regarding their current training situation as well as their educational and career aspirations. From a life course perspective, the DAB study contributes theory-based empirical evidence for the clarification of relevant questions in the fields of education, labour market and occupational research that previously could not be examined with the available longitudinal data in Switzerland.

The DAB study asks which factors influence the choice of education programmes at the transition from lower secondary education to upper secondary level and potentially tertiary level. The choice of vocational or school based training at the end of compulsory schooling is determined on the one hand by characteristics of the training/labour market and its selection mechanisms, and on the other hand by individual vocational and educational choices. In the first phase of the DAB panel study the interplay of various factors that contribute to the vocational and educational decision (DAB-I) was examined. Individual characteristics of social origin, different competences and school performance, individual interests and preferences as well as ascriptive characteristics such as gender or migration background, previous educational decicions and the regional opportunity structures are taken into account.

The continuation of the DAB panel study (DAB-II/III/IV) examines the progress of vocational training or continued general education after the transition to upper secondary level. The pathway of post-compulsory education as well as the successful attainment of educational qualifications at upper secondary level, the continuation of education and training at tertiary level and the transition into employment and the labour market are of particular interest. On the other hand, the data from the follow-up surveys (DAB-II/III/IV) also enable analyses with regard to the change and stability of training plans and career aspirations as well as their realisation. The data collected within the framework of the DAB panel study not only allow a description of the trajectory of post-compulsory educational attainment and entry to employment, but also analyses with regard to so far unclarified questions concerning the structure and contingency of school and vocational training pathways as well as concerning educational returns and decision-making behaviour.

2.2 Theoretical and conceptual background

The structural-individualistic action model in a dynamic multi-level design has proven to be integrative and expandable in theoretical terms for the explanation of educational decisions from a life course perspective (R.

Becker 2012a; R. Becker 2012b). From a structural-individualistic perspective, two sub-processes can be distinguished concerning the realisation of educational and occupational aspirations: firstly, the formation and developement of aspirations and secondly, the process of educational and occupational decision-making (R. Becker 2000; R. Becker 2003). The distinction between the two sub-processes is theoretically appropriate and can be seen as standard in the relevant educational research. The structural-individualistic multi-level model is applied to explain inequalities regarding the entry into employment as well as the decicion to remain in the education system. This theoretical model is enriched with further theoretical approaches of Boudon (1974), Erikson and Jonsson (1996), Breen and Goldthorpe (1997) and Esser (1999). In the DAB panel study, these considerations are applied to educational decisions after compulsory schooling. Theoretical approaches used are: the theory of primary and secondary effects of origin (Boudon 1974), Status Position Theory (Keller and Zavalloni 1964), the Wisconsin model for idealistic and realistic aspirations (Sewell et al. 1957), Human Capital Theory (G. S. Becker 1964; Mincer 1974), Signal and Filter Theory (Arrow 1973), and the Job Competition Model or Labour Queue Model (Thurow 1975).

While DAB-I focused on the formation and developement of aspirations within the last one and a half years of compulsory schooling, DAB-II investigated their actual realisation. In DAB-III and -IV, in addition to the completion of post-compulsory training, both the educational and career aspirations prior to completion of initial education at upper secondary level as well as their further implementation are considered and analysed. In this context, it is important to clarify who can realise or must revise their educational or occupational aspirations. Of particular interest are the underlying mechanisms which, as a consequence, contribute to or, at most, reinforce inequalities in educational and occupational opportunities according to social origin, gender and migration background.

2.3 Project structure and funding

The DAB panel study is financed by the State Secretariat for Education, Research and Innovation (SERI) and is institutionally located at the Department of Sociology of Education at the Institute for Educational Science at the University of Bern. So far the DAB panel study covers five funding periods:

DAB-I: 10/2011–09/2013 (BBT-Project-Nr.: BB.2011.0117)

DAB-II: 07/2014–06/2015 (SERI-Project-Nr.: BB.2013.0112)

DAB-IIIa: 04/2016–03/2017 (SERI-Project-Nr.: 1315000723)

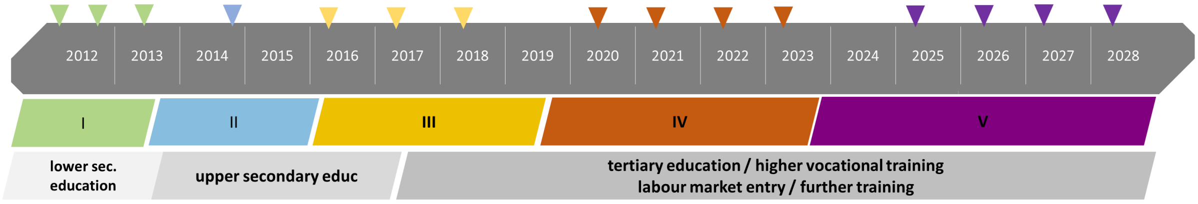
DAB-IIIb: 04/2017–10/2020 (SERI-Project-Nr.: 1315001039)

DAB-IV: 11/2019–06/2024 (SERI-Project-Nr.: 1315001844)

DAB-V: 07/2024–06/2029 (SERI-Project-Nr.: 1315002729)

The overall responsibility for the project lies with Prof. Dr. Rolf Becker as main applicant, supported by the co-applicants Dr. David Glauser and Dr. Sara Möser. Since autumn 2017, Dr. Sara Möser has been responsible for the project management of the DAB panel study.

2.4 Survey design



The data of the first three waves of the DAB panel study were collected via classroom surveys that were administered as online questionnaires. All students of school classes in a random sample were interviewed. The survey took place in the classroom and was conducted by the corresponding teacher according to a prepared script on the procedure and technical details. The administrative effort of preparing and conducting the surveys was relatively high for teachers, therefore, incentives were sent to the teachers before the first and before the second survey, in order to increase their willingness to participate. In addition to the administration of the online questionnaire in the classroom, the teachers provided access to the grades of respondents. When available the teachers also provided information on test scores of the standardized achievement test «Stellwerk» in German and mathematics. Respondends who changed class or school after the first survey were invited to participate in an online version of the second and third surveys via post.

Additionally the respondents' parents were also interviewed in the first survey. A PAPI questionnaire with a reply envelope and the login details to a online questionnaire were given to the students after the first survey.

With the completion of basic compulsory education after grade 9, the survey design was adapted from classroom to individual survey. From the fourth wave onwards the survey was administered in a sequential mixed-mode design. In a first step, the respondends were first invited via post and e-mail to answer the online questionnaire (*Computer Assisted Web Interviews* - CAWI). In a second step, those respondents who did not complete the questionnaire within 10-14 days were contacted by telephone. The telephone interview (*Computer Assisted Telephone Interviews* - CATI) was identical in content to the online questionnaire. As a third survey instrument, a short questionnaire (*Paper and Pencil Interviews* - PAPI) was sent by post in waves 6 and 7 following the online and CATI survey. Reminder letters were sent out regularly during all three field phases. The respondents were informed by post that they would be contacted by telephone if they did not complete the online questionnaire. They were also reminded to participate via e-mail and, from the sixth survey wave onwards, also by SMS.

With the exception of the fifth wave, for which Limesurvey was used, the online questionnaires were programmed with the survey software UNIPARK from Questback. The CATI surveys of the fourth and seventh wave were carried out by the survey institute MIS-Trend in Bern, the sixth wave by the LINK Institute in Lucerne and the fifth and tenth wave was administered by the DAB team in the university's own CATI laboratory.

As part of the continuation of DAB-V, a total of four surveys are planned in May 2025 to 2028, which will be conducted exclusively as online surveys.

In the continuation of the DAB panel study (DAB-II/III/IV), material incentives were used in accordance with the logic of the "Tailored Design Method" (Dillman 2000; Dillman et al. 2014) to achieve the highest possible response rate. The effectiveness of this measure was evaluated in two papers (R. Becker and Glauser 2018; R. Becker, Möser, et al. 2019), showing that the incentives contributed to a higher willingness to participate and shorter latency until response after first contact.

Table 1 Overview survey design

	DAB I				DAB II	DAB III			DAB IV				DAB V			
Wave	E*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Contact	Classroom Survey				Individual survey											
Survey Mode																
CAWI	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CATI	✗	✗	✗	✗	✓	✓	✓	✓	✓	✗	✗	✓	✗	✗	✗	✗
PAPI	✓	✗	✗	✗	✗	✗	✓	✓	✗	✗	✗	✗	✗	✗	✗	✗
Incentive	✗	✗	only teachers	✗	10 CHF Migros voucher with ex. split	10 CHF Migros voucher	ball-point pen	10 CHF cash	10 CHF cash	10 CHF cash	10 CHF cash **	10 CHF cash **	10 CHF cash	10 CHF cash	10 CHF cash	10 CHF cash

**parent survey, contact via child ** additional Incentive Experiment for Late- and Nonresponders*

3 Population, sampling and response rate

3.1 Population and sampling[1]

The *target population of the DAB panel study* includes all students from 8th grade (regular classes) of public schools in German-speaking cantons or German-speaking parts of cantons in the 2011-2012 school year.[2] The data of the student statistics from the 2009-2010 school year of the Federal Statistical Office's (FSO) were used as the basis for the sampling.

Sampling plan and design: In a first step, the schools of the sample population were assigned to a municipality type according to the typology (9 classes) of the FSO. The use of the municipality typology is reasonable on the one hand due to the correlation of municipality type and social structure. On the other hand, the municipality types reflect the variation of opportunity structures in the education system and on the labour market. In a second step, the number of 8th grades within a school was estimated on the basis of the available data on the number of students at the various schools, because the data basis for the sampling only contains the total number of students in 8th grade, separated by school type, but not the number of these classes in a school.[3] Classes were sampled on the basis of the cantonal guidelines for minimum and maximum class sizes of the various school types (without selection, school type with basic requirements, school type with extended requirements, pre-gymnasium[4]) using the structural data of the Swiss Conference of Cantonal Ministers of Education (EDK 2011).[5]. Finally, for each of

[1]This section was taken from Glauser (2015, pp. 125–128).

[2]Before preparing the data for the sampling, the agreement of the cantonal education departments was obtained for the implementation of the research project and for contacting the school administrations. Consent was refused in the cantons of Appenzell Innerrhoden, Schaffhausen, Solothurn and Uri, which is why schools with 8th grade in these cantons are not included in the sample.

[3]Classes with less than 6 students were not included in the sampling.

[4]Pre-gymnasium consists of two year previously to the gymnasium, which provides the Maturität and access to University.

[5]On the basis of data from the FSO's student statistics, a strict distinction between 8th grades of the school type with extended requirements and the pre-gymnasium is not possible in all cantons. Pre-gymnasium 8th grades are held in the cantons of Aargau, Basel-Land (level P), Basel-Stadt, Freiburg (Orientation School Section A), Glarus, Grisons, Lucerne, Nidwalden, Obwalden, Zug and Zurich. In cantons where pre-gymnasial education is provided by Gymnasiums or cantonal/district schools, allocation is possible without further ado. In the cantons

the nine community types, a stratified 10% random sample of the 8th classes was drawn. The stratification took into account the type of school (basic requirements/without selection, extended requirements, pre-gymnasium) and the proportion of foreign-language students within the schools.[6] The number of classes to be drawn within a strata corresponds approximately to the marginal distributions of school types within the community types and the distribution of classes with a low or high proportion of foreign-language students within a school type.[7] After sampling, the school administrators were contacted. If there were several 8th grades of the same school type within a school or if several grades of the same school were drawn during the sampling process, the 8th grade(s) to be interviewed was (were) randomly selected within a school when the schools were contacted.[8]

3.2 Sampling and response rates

The sample size, the realised sample as well as the response rates of the first seven survey waves of the DAB panel study are listed in Table 2. Overall, the selection procedure described above was used to randomly select a sample of 296 classes at class level from a total of 3045 classes. After contacting school administrators and teachers, 215 out of 296 classes were won for participation in the first survey wave, which corresponds to a response rate of 72.6% at class level. The vast majority of the classes that participated in wave 1 also participated in the following surveys of waves 2 and 3. 12 classes no longer participated in wave 2, while only 4 classes refused to participate in wave 3. The response rate realised at the level of the classes in wave 3 is 67.2% - based on the initial sample of classes in wave 1 (296)[9].

Class lists provided by the teachers were used to prepare the surveys. Based on this information the gross sample of students can be calculated. In this context, a distinction must be made between the DAB sample and a wave-specific gross sample. The DAB sample consists of 4083 students. This sample contains all students that belong to the gross sample in wave 1 (3815) as well as those students that entered a class of the DAB sample at a later point in time (205 before wave 2 and 63 before wave 3). The wave-specific gross samples refer to those students that are eligible to participate in wave X, i.e. these students are part of the DAB sample and have not yet been definitively eliminated from the sample at the time of wave X. Thus, the gross sample (N=3997) in wave

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of Basel-Land and Fribourg the number of pre-gymnasium classes within the schools was determined in consultation with the responsible education departments. In the canton of Basel-Land, the data of secondary school students, differentiated by level, from the school year of 2010/11 were used. For the schools in the German-speaking part of the canton of Fribourg, the current figures for the school year of 2011/12 were used. Although the sampling plan only provides for regular classes in public schools, in the Canton of Graubünden private schools that run pre-gymnasial classes were also considered, as adolescents in the Canton of Graubünden usually attend the nearest gymnasium.

[6] In order to consider the proportion of foreign-language students in schools, the median for all schools in the sample was first calculated (15.8%). Schools with a proportion of foreign language speakers below the median were classified as schools with a low proportion, the others as schools with a high proportion of foreign language students.

[7] An exception is the proportion of pre-gymnasium classes in the central municipalities. Although slightly more than 22% of the classes in this type of municipality are classified as pre-gymnasium 8th grade, the proportion of classes to be drawn was limited to 10%. Since with the transition to the 9th grade a non-negligible proportion of students transfer to a gymnasium anyway, this approach prevents the proportion of adolescents from other school types in this type of community from becoming too small.

[8] In the random selection process, first the names of the teachers under consideration were asked and an alphabetical order was formed from the list. A random key was then used to determine which teacher took part in the survey. This procedure could be applied in 84% of the cases of classes to be drawn using the random key. Where school principals did not agree to the random selection, the class(es) proposed by the school principals were included in the sample. Due to the very low proportion of classes that could not be randomly selected, no systematic bias of the sample can be assumed.

[9] After finishing the 8th grade, about 700 students have changed their class and/or school. From the second survey onwards, these individuals were contacted personally, if possible, and invited to participate in the survey. During the first survey, the respondents were asked for their contact information. In addition, towards the end of the 8th grade, all teachers were sent address forms for students who left the class and/or school. In both cases it was not compulsory to fill in or return the contact details. A large part of the sample drop-out at class level as well as among the individuals in waves 2 and 3 is due to changes of class or school. The proportion of refusals by teachers (3 classes) is significantly lower than that resulting from the merging or closing of classes (9 classes).

2 is composed of the gross sample in wave 1 (N=3815), plus the students (+205) newly entered in classes of the DAB sample from wave 2 onwards, minus the students (-23) definitely eliminated in wave 1.

Generally the wave-specific gross sample corresponds to the number of eligible students in wave X. Whereby wave 4 is an exception, as 245 people who for various reasons had not participated in wave 3 were inadvertently not invited to take part in the survey.

With the switch from classroom (waves 1 - 3) to individual surveys from wave 4 onwards, *contactability* (by post, electronically or by telephone) of the individuals in the DAB sample is a prerequisite for participation in the survey. Thus, the gross sample in wave 4 includes N= 3526, but only 3281 can be described as eligible to participate due to the explanations given above. Of these 3281 individuals, contact information of 2655 could be used in wave 4. From wave 4 onwards, various measures were taken to complete missing contact details of respondents. As a result, the number of individuals who could be contacted slightly increased or was kept relatively constant in the following waves (wave 5: 2800, wave 6: 2720, wave 7: 2489, wave 8: 2464, wave 9: 2308, wave 10: 2288, wave 11: 2159).

Closely related to the contactability of respondents is the number of people who *definitively dropped out*. While only 23 people definitively dropped out of the DAB sample after the first wave, this number increased to a total of 348 in wave 2 (+325) and 557 in wave 3 (+209). The strongest increase in definitive dropouts occurred in wave 4 (+662) to a total of 1219 people. This is due to a lack of contact details on the one hand and on the other hand to a lower willingness to participate in the individual survey. The number of definite dropouts is pleasingly low in waves 5 to 11 (+126 / +242 / +96 / + 63 / + 7 / + 6 / + 32), and totals 1790 persons by wave 11. In percentage terms - with reference to the DAB sample - the percentage of definite dropouts was around 14% up to wave 3. In wave 4, the percentage of people who definitively dropped out was 29.9% and subsequently increased further up to wave 11 (43.8%).

Realised responses: In wave 1, 3680 individuals took part in the survey. In relation to the gross sample, a response rate of 96.5% was achieved. In the two subsequent surveys, the response rate - with reference to the wave-specific gross sample - is under 90% (wave 2: 83.3%, wave 3: 87.8%). As mentioned above, the strongest decrease in the number of realised responses occurs in wave 4. Although 2236 individuals took part in this survey, in relation to the gross sample (= 3281) only a response rate of 63.4% was achieved. In waves 5 to 9, again higher response rates were achieved (wave 5: 77.8%, wave 6: 75.3%, wave 7: 78.4%, wave 8: 83.7%, wave 9: 80.2%, wave 10: 79.4%, wave 11: 83.8%). If the response rates from wave 4 are calculated in relation to the sample of contactable individuals, the following response rates were achieved: wave 4: 84.2%, wave 5: 79.6%, wave 6: 75.8%, wave 7: 78.7%, wave 8: 81.5%, wave 9: 80.4%, wave 10: 79.9%, wave 11: 84.2%.

With regard to the *response rates regarding the DAB sample* (N = 4083), the following picture emerges. In wave 1 a response rate of 94.9% was achieved[10]. Due to class and/or school changes after completion of the 8th grade, the response rate decreases to 82.9% (wave 2) and 80.4% (wave 3). The strongest decline is seen in wave 4 and thus in the first individual survey after grade 9 and the end of compulsory schooling. In wave 4, for example, a response rate of 54.8% was still achieved. Fortunately, the response rate after wave 4 was kept relatively constant (wave 5: 54.6%, wave 6: 50.5%, wave 7: 48.0%, wave 8: 49.2%, wave 9: 45.4%, wave 10: 44.8%, wave 11: 44.5%)).

[10] To calculate the response rate with reference to the DAB sample, a total of 268 people are subtracted in wave 1 who had not yet entered a class of the DAB sample in wave 1 (W2: 205 students, W3: 63 students) and therefore could not participate in the survey. A similar approach was used to calculate the response rate in wave 2.

Table 2 DAB: Overview of the sample and response rates

	Wave 1 Jan./Feb. 2012	Wave 2 Aug./Oct. 2012	Wave 3 May/Jun. 2013	Wave 4 Oct./Nov. 2014	Wave 5 Jun./Aug. 2016	Wave 6 May/Jun. 2017	Wave 7 May/Jun. 2018	Wave 8 May/Jun. 2020	Wave 9 May/Jun. 2021	Wave 10 May/Jun. 2022	Wave 11 May/Jun. 2023
Sample size											
Gross sample (classes)	296	215	203	-	-	-	-	-	-	-	-
Net sample (classes)	215	203	199	-	-	-	-	-	-	-	-
DAB sample	4083	4083	4083	4083	4083	4083	4083	4083	4’083	4083	4’083
Gross sample (students)	3’815	3’997	3’735	3’526	2’864	2’738	2’496	2490	2’313	2’304	2’169
Eligible to participate	3’815	3’997	3’735	3’281	2’864	2’738	2’496	2490	2’313	2’304	2’169
Not yet in class in wave X	205	63	-	-	-	-	-	-	-	-	-
Contactable students	-	-	-	2’655	2’800	2’720	2’489	2464 2’308	2’288	2’159	
Realised answers											
Students	3’680	3’331	3’281	2’236	2’229	2’061	1’958	2009	1’855	1’829	1’822
Online (*in class*)	3’680	3110	3089	-	-	-	-	-	-	-	
Online (*individual*)	-	221	192	1’227	1’330	1’375	1’646	1877	1’855	1’829	1’793
CATI	-	-	-	1’009	899	598	287	132 -	-	29	
PAPI	-	-	-	-	-	88	25	-	-	-	-
Parents	2’284	-	-	-	-	-	-	-	-	-	-
Online	404	-	-	-	-	-	-	-	-	-	-
PAPI	1’880	-	-	-	-	-	-	-	-	-	-
Response rates in %											
Classes in wave (gross / realized)	72.6%	94.4%	98.0%	-	-	-	-	-	-	-	-
Total classes	72.6%	68.6%	67.2%	-	-	-	-	-	-	-	-
students in wave X (gross / realised)	96.5%	83.3%	87.8%	63.4%	77.8%	75.3%	78.4%	80.7%	80.2%	79.4%	83.8%
Contactable students in wave X	-	-	-	84.2%	79.6%	75.8%	78.7%	82.4%	80.4%	80.7%	84.2%
students total (DAB sample / realized)	94.9%	82.9%	80.4%	54.8%	54.6%	50.5%	48.0%	49.2%	45.4%	44.8%	44.5%
Parents (gross / realised)	59.9% -	- -	-	-	-	-	-	-	-		

For economic reasons, the *parents* were interviewed only in wave 1. With reference to the gross sample in wave 1 (N = 3815) 2284 answers could be realized. This corresponds to a response rate of 59.9%. 82% of the parents returned the PAPI questionnaire, while 18% completed the questionnaire online.

4 Construction of longitudinal weights

The need to weight the data comes from the inherent problem of dropouts and non-response across the subsequent measurement points in panel studies. The inferential statistical weights take the dropout or refusal into account from one survey wave to the next. As is usual in panel studies, the weights are constructed as the reciprocal of the product of the participation probabilities of the individual survey waves. For the DAB panel study this results in:

$$G_{t_i} = \frac{1}{P_{sample}} \times \frac{1}{P_{class}} \times \frac{1}{P_{t1_i}} \times \ldots \times \frac{1}{P_{tX_i}} \tag{1}$$

with:

G_{t_i}	=	Panel weight at time of survey t for respondent i
P_{sample}	=	Samplingprobability within strata for class of respondent i
P_{class}	=	Probability of participation in DAB survey wave **t1** for class of respondent i
P_{t1_i}	=	Probability of participation in DAB survey wave **t1** for respondent i
P_{tX_i}	=	Probability of participation in DAB survey wave **tX** for respondent i

Firstly, the sampling design is taken into account in the weights provided by including the sampling probability within a stratum in the calculation of the weights. Secondly, the probability of participation at class level is taken into account in order to correct for refusals by teachers and school administrators. Thirdly, the participation probabilities of the individual surveys are included in the weights as reciprocal values of the product of the wave-specific participation probabilities. For example, the panel weight at survey time $t3$ for respondent i is made up of:

$$G_{t_i} = \frac{1}{P_{sample}} \times \frac{1}{P_{class}} \times \frac{1}{P_{t1_i}} \times \frac{1}{P_{t2_i}} \times \frac{1}{P_{t3_i}} \tag{2}$$

The weights of the other survey waves are generated in the same way. In the following, it is explained how the wave-specific probabilities of participation were calculated (Chapter 4.1), which form the basis of the longitudinal weights according to the equation 1. The resulting wave-specific raw weights are then poststratified and truncated. The poststratification procedure is presented in chapter 4.2 and chapter 4.3 explains the truncation of the wave-specific gross weights. Finally, chapter 4.4 contains an overview of the weights provided in the DAB data.

4.1 Probability of participation

Since no information from previous surveys or external data sources are available to estimate the *probability of participation in wave 1*, the probability of participation is based on the average participation of individuals within their stratum. The average probability of participation is .901 (Min: .742, Max: .978).

The same procedure is applied to the calculation of the *probability of participation in wave 2*, since no information from the first survey is available for the estimation of the probability of participation in wave 2 for those who entered in a class of the DAB sample from wave 2.

From wave 3 onwards, the probability of participation is estimated using the results of logistic regressions based on the wave-specific gross sample. Across all waves of the DAB panel study, a selective willingness to participate can be identified. Differences in the probability of participation can be seen according to community type, gender, social background and educational background. Detailed information on the variables used as well as regression tables and interpretations of the estimation models can be found in the appendix A.

In wave 4, separate models are estimated for contactability and for participation. As explained above, the strongest decrease in the analysis sample can be seen when switching from the classroom survey to the individual survey and thus in wave 4. Both the probability of contactability and participation were taken into account when calculating the longitudinal weighting provided for wave 4.

Table 3 Probability of participation

	mean	sd	min	max	N
W1	0.901	0.051	0.742	0.978	4083
W2	0.820	0.069	0.500	1.000	4060
W3	0.878	0.097	0.527	0.969	3735
Contactability W4	0.809	0.098	0.117	0.969	3281
W4	0.842	0.093	0.332	0.977	2655
W5	0.778	0.163	0.142	0.976	2864
W6	0.753	0.225	0.083	0.975	2738
W7	0.784	0.220	0.138	0.994	2496
W8	0.837	0.207	0.080	0.997	2400
W9	0.802	0.249	0.082	0.983	2313
W10	0.794	0.280	0.036	0.985	2304

4.2 Poststratification

With the estimation of the participation probabilities for all survey waves, all wave-specific probabilities are available for the calculation of the weighting variables according to equation 1. If the systematic dropout processes underlying the non-response are approximately mapped by the estimation models used, the provided weights enable sample estimates that are true to expectations. However, as the presented weighting models (see Appendix A) can not include all sources of systematic non-response in a completely correct specification, a subsequent stratification ('poststratification') is carried out to increase the stability of the weighted sample. Poststratification is performed in order to adjust the realised weighted sample to known frequencies of relevant characteristics of the population.

As there is a lack of suitable reference distributions, e.g. from official statistics, for the 2013 school-leaving cohort in question, the poststratification is based on the realised data from wave 1. This data is not affected by panel mortality and is therefore best suited to approximate the unknown distribution in the population as closely as possible. Poststratification takes into account the type of school attended at lower secondary level, parental educational background, migration background and gender. A total of twenty strata were defined (see table Table 4), the distribution of which is kept constant longitudinally via the provided weights.

Poststratification ensures that the recalibrated sample weights (see below) of all later waves approximately reproduce the reference distribution shown in table 4 based on the initial sample of wave 1. It should be noted here that the poststratification is only carried out with the sample of people who participated in the corresponding wave.

Table 4 reference distribution for poststratification

Type of secondary school	parental educational background	migration background	gender	proportion (%)
Basic requirements	ISCED 0-3	without	Male	4.82
Basic requirements	ISCED 0-3	with	Male	4.91
Basic requirements	ISCED 4-8	All	Male	5.42
Basic requirements	ISCED 0-3	without	Female	3.88
Basic requirements	ISCED 0-3	with	Female	4.09
Basic requirements	ISCED 4-8	All	Female	3.12
Advanced requirements	ISCED 0-3	without	Male	7.16
Advanced requirements	ISCED 0-3	with	Male	3.33
Advanced requirements	ISCED 4-8	without	Male	6.74
Advanced requirements	ISCED 4-8	with	Male	4.08
Advanced requirements	ISCED 0-3	without	Female	7.89
Advanced requirements	ISCED 0-3	with	Female	4.52
Advanced requirements	ISCED 4-8	without	Female	6.23
Advanced requirements	ISCED 4-8	with	Female	4.08
(Pre-) Gymnasium	All	All	Male	4.76
(Pre-) Gymnasium	All	All	Female	7.27
All	missing info.	All	All	6.83
Basic requirements	ISCED 0-3	missing info.	All	3.11
Advanced requirements	ISCED 0-3	missing info.	All	3.56
Advanced requirements	ISCED 4-8	missing info.	All	4.19

4.3 Truncation[11]

With the estimation of the participation probabilities for all survey waves, all wave-specific probabilities for the calculation of the weighting variables according to equation 1 are available. Given that the systematic default processes underlying the non-response can be approximated by the estimation models used, the provided weighting variables allow for unbiased sample estimates.

In the application of sample weights, there is a conflict between the aim of correcting non-response bias and minimizing the negative impact of the weighing on the precision of sample-based estimates and projections. Basically, the expected decrease in estimation precision increases with the variance of the weighting variables. In panel data, the dispersion of weights increases from wave to wave due to the relationship given in equation 1. This affects the estimation precision over the survey waves or the estimation precision decreases. However, it is often the case that only a few observations have very high weights and that these weights strongly influence the dispersion of the weighting variables, which decreases the estimation precision. Few extreme weights are also problematic because they not only negatively influence the estimation precision, but also because this applies in

[11]This section has been adopted in consultation and with the consent of Stefan Sacchi (2011) and adapted to the DAB data.

Table 5 Truncation of the calibrated gross weights from wave 5

	cv	var(μ_W)/var(μ)	number
Without truncation	0.6569	1.4315	0
Truncation of the recalibrated weights from …			
>7	0.6513	1.4242	1
>6	0.6439	1.4146	3
>5	0.6324	1.3999	8
>4	0.6033	1.3640	17
>3.5	0.5735	1.3289	42
>3	0.5341	1.2853	54
>2.5	0.4901	1.2402	126

particular to evaluations that relate to smaller subsamples. According to Kish (1992), for example, the variance of a weighted mean estimation (μ_W) increases in comparison with an unweighted mean estimation (μ) according to the following expression, where cv corresponds to the coefficient of variation of the weighting variable used:

$$\text{var}(\mu_W) = \text{var}(\mu) * (1 + \text{cv}^2) \tag{3}$$

The disadvantages of extreme weights mentioned above can be avoided or at least mitigated by truncating the weights. All individual weights that exceed a defined upper limit are truncated to this limit. The optimal benchmark for the truncation is determined by an evaluation based on the relationship in equation 3. As an example, this is shown in Table 5 for the truncation of the weights of wave 5, where the used weighting variable from wave 5 - according to equation 1 - was recalibrated to an average value of 1. The first column shows the systematically varied upper benchmark of the calibrated weights, on which the weights from wave 5 are truncated. The second column shows the resulting coefficient of variation of the individual weights of wave 5 that are truncated to different parameters. The third column provides information on how the variance of the weighted sample estimator according to equation 3 changes depending on the selected benchmark of the truncation. Without the truncation, a purely weighting-based reduction of the estimation accuracy by a factor of about 1.4 would be expected. The more the variability of the weighting variables is reduced by means of truncation, the more the estimation precision decreases. If the number of individual weights affected by the support is also included (fourth column), support at a benchmark of 3.5 proves to be optimal overall in the selected example: With a more radical support, the precision of the sample estimation increases. However, this would result in a strong increase in the number of individual weights affected by the support, which would improve the efficiency of the non-response corrections and the predictability of the values would diminish. The recalibrated gross weights of wave 5 considered in the example are truncated at an upper corner value of 3.5.

The estimation accuracy can be improved thanks to the truncation of weights. Table 6 shows how the estimation precision of the individual waves is improved by the truncation and how many extreme weights are affected by the truncation. Generally, it must be noted that the truncation of the gross weights improves the estimation precision significantly only from wave 6 onwards, while the influence of the extreme weights in the preceding waves is comparatively small even without truncation.

Table 6 Overview of the truncation of the weights

	threshold value for truncation	without truncation $\text{var}(\mu_W)/\text{var}(\mu)$	with truncation $\text{var}(\mu_W)/\text{var}(\mu)$	truncated weights number	in %
Wave 1	3	1.0836	1.0592	22	0.59
Wave 2	3	1.0723	1.0566	21	0.63
Wave 3	3	1.1332	1.1217	21	0.64
Wave 4	3	1.2162	1.1890	18	0.76
Wave 5	3	1.2330	1.1947	21	0.94
Wave 6	4	1.6314	1.3950	26	1.26
Wave 7	5	2.4112	1.7384	30	1.53
Wave 8	5	3.5655	1.9407	41	2.04
Wave 9	5	5.4366	2.0915	43	2.26
Wave 10	5	18.9617	2.2872	54	2.95

Note: Coefficients refer to the sample realized per wave.

As the truncation of the extreme weights leads to a change in the weighted distribution of the sample, post-stratification and truncation are repeated successively in an iterative process until the two methods result in identical weights. The wave-specific longitudinal weight is subsequently recalibrated to a mean value of 1.

4.4 Overview of the weighting variables

As the poststratification matrix and truncation benchmarks are discretionary, the DAB data also include the raw weights, allowing for individual adjustment as required. For each survey wave, the wave-specific raw weight (t**X**weight_raw) and the poststratified, truncated and calibrated weight (t**X**weight) are available (see Table 7).[12] While the raw weight is available for all individuals who are considered eligible to participate in wave X (see Table 2), the poststratified, calibrated and truncated weights are only available for observations that participated in wave X.

4.5 Use of the weighting variables

Due to the complex sampling structure and the selective participation probabilities, the use of design and longitudinal weights is recommended. Generally, the weight of the survey wave from which variables are considered in the analyses should be used. If, for example, data up to and including wave 5 are used for analysis purposes, the weight of wave 5 should be used.[13]

Statistics programs differ in the handling of weighting variables. In Stata, the wave-specific weighting variables can be used in different ways. On the one hand, the weights can be specified within the scope of the available commands. In the documentation of the commands, it is explained in each case which types of weights can be used.[14] On the other hand, the command prefix `svy` can be used, which requires that the variables for identifying the survey design and weighting variables are specified in advance with the `svyset` command.

[12] In earlier publications of the DAB data, extrapolation weights were also provided. If you are interested in extrapolation weights, please contact the DAB project team: dab@edu.unibe.ch.

[13] This is a recommendation that must be specified for the respective analysis objective and the sample used

[14] See in general: help weights.

Table 7 Overview of the weighting variables, Waves 1 to 10

	mean	sd	min	max	N
Design weight (sample_weight)	9.749	2.069	7.000	30.000	4083
Survey weight (class_weight)	1.378	0.157	1.146	2.931	4083
W1: Raw weight (t1weight_raw)	14.987	4.224	9.533	57.761	4083
W1: Truncated weight (t1weight)	1.000	0.243	0.640	3.015	3680
W2: Raw weight (t2weight_raw)	18.293	4.670	11.786	64.981	4060
W2: Truncated weight (t2weight)	1.000	0.238	0.647	3.011	3331
W3: Raw weight (t3weight_raw)	21.117	5.943	12.653	69.271	3735
W3: Poststratified and truncated weight (t3weight)	1.000	0.349	0.526	3.000	3281
W4: Raw weight (t4weight_raw)	30.867	11.437	15.582	228.136	2655
W4: Poststratified and truncated weight (t4weight)	1.000	0.435	0.440	3.000	2236
W5: Raw weight (t5weigh_raw)	43.048	26.656	14.684	323.565	2864
W5: Poststratified and truncated weightt (t5weight)	1.000	0.441	0.402	3.000	2229
W6: Raw weight (t6weigh_raw)	82.904	136.045	16.955	2183.615	2738
W6: Poststratified and truncated weight (t6weight)	1.000	0.629	0.369	4.001	2061
W7: Raw weight (t7weight_raw)	109.211	202.216	13.992	3285.611	2496
W7: Poststratified and truncated weight (t7weight)	1.000	0.859	0.335	5.002	1958
W8: Raw weight (t8weight_raw)	158.243	412.973	14.521	7824.032	2400
W8: Poststratified and truncated weight (t8weight)	1.000	0.970	0.194	5.003	2009
W9: Raw weight (t9weight_raw)	461.563	2003.470	20.322	38487.54	2313
W9: Poststratified and truncated weight (t9weight)	1.000	1.045	0.168	5.004	1855
W10: Raw weight (t10weight_raw)	4559.438	35589.71	21.278	757531.8	2303
W10: Poststratified and truncated weight (t10weight)	1.000	1.135	0.124	5.006	1829

5 Data structure

The DAB data is provided in wave-specific data sets. The parent and students surveys of the first survey wave were published in individual data sets and a data file with additional cross-wave data (identification, weighting variables, socio-demographic characteristics and school information) is also published.

All DAB panel respondents are assigned an individual ID (variable: code), which is identical for all waves. The individual ID can be used to link the data of the waves required for each analysis. In general, the variable names start with the prefix t**X** where **X** stands for the respective wave. The variables of the parent survey are marked with the prefix **e**. The *first three survey* waves focus on socio-demographic information, educational decisions and subjective cost and benefit assessments. In order to obtain detailed information on the desired upper secondary education, the respondents are filtered according to a general part of the questionnaire as follows:

> *Depending on whether people are aiming for vocational apprenticeship following 9th grade (**filter 1, 2, 3**), school education (**filter 4 / 5**), an interim solution (**filter 6**), direct entry into employment (**filter 8**), are still undecided (**filter 7**) or have other plans (**filter 9**).*

The variable names of the filters of waves 1 to 3 are structured as follows:

t **X** **f** variable name

with:

X: Wave 1–3

f: Filter 1–9

The survey *waves four to nine* focus on the documenting of educational and occupational trajectories. The respondents are asked whether the last activity reported is still current and, if not, which activity(ies) have been performed since the last activity was terminated. The occupational and educational situations are divided into eight categories. With the help of a detailed filter guide, various characteristics of the training and activities are recorded:

> ***Filter A****: employment;* ***Filter B****: further training;* ***Filter C****: VET;* ***Filter D****: university study;* ***Filter E****: school based education;* ***Filter F****: internship;* ***Filter G****: military and civilian service;* ***Filter H****: unemployment;* ***Filter Z****: non-assignable activity. In addition, from the sixth wave onwards, parallel activities were also surveyed, for example, if a continuing VET course was attended part-time.*

The episode structure is reflected in the last digit of the variable name and documents the individual training or professional episodes that have been completed during the observation period of a specific wave. The first episode is always the one that was exercised at the time of the previous survey. If this first episode was completed during the time between surveys and a new activity was started, this is marked by a 2 and so on. The variable naming of the activity variables from wave 4 onwards is structured as follows:

> t **X** f**Y** variablename **Z**

with:

> **X**: Wave 4–8
>
> **Y**: Filter A–Z
>
> **Z**: Episode number: 1–6

The variable `t5fEstartm3`, for example, was collected in the fifth wave (t5) and contains the starting month (startm) of school education (fE), which represents the third activity episode (3) of the respondent since the time of the survey in the fourth wave.

Furthermore, waves 5 and 6 contain a detailed query of future plans following the current activity, which in turn was subject to a filter structure.

> ***Filter a****: vocational further training;* ***Filter b****: employment;* ***Filter c****: university study;* ***Filter d****: VET;* ***Filter e****: school based education;* ***Filter f****: internship;* ***Filter g****: Interim solution*

For example, the variable `t6fetyp` was collected in the sixth wave (t6) and contains the type of school education (fetyp) that is aimed for after the end of the current job.

In addition to the wave-specific codebooks contained in the data, a cross-wave codebook of the data from the DAB panel study provides an overview of which variables were (recurrently) collected in which survey waves. The wave-specific codebooks contain detailed information on the concepts and scales covered in each wave.

To ensure compatibility with all Stata versions, Stata BE datasets with fewer than 2,048 variables are provided for the Wave 8, 9 and 10. For this purpose, a number of variables from the sixth episode have been removed from the dataset. This affects filters E, J and K in waves 8 and 9 and additionally filters B, C and D in wave 10.

6 Missings – Coding of missing values

In the data of the DAB panel study, different types of missing values are reported as follows:

«**.**» = Person did not participate in the interview in wave X.

«**.l**» = Left censored person in waves 1 and 2, i.e. person had not yet entered the class at the time of the survey.

«**.m**» = Person participated in interview, but did not answer the question.

«**.n**» = Person participated in survey, but the question was not submitted due to the filter guidance.

«**.p**» = Person has filled out the questionnaire in paper format. Paper questionnaires were offered in a shortened version, which is why not all questions were presented to these people.

«**.t**» = Person has left class after wave 1 or 2 and in wave 2 and/or 3 filled out the questionnaire individually rather than in the classroom survey. The questionnaires for individual participation were offered in a shortened version, which is why not all questions were presented to these people.

«**.a**» = Anonymised information (available on request)

7 Availability of data and citation

The data from the first ten waves are freely accessible at SWISSUbase as scientific-use files.

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A Longitudinal weights: Estimation models of participation probabilities

A.1 Probability of participation in wave 1 and 2

Since no information from previous surveys or external data sources are available to estimate the *probability of participation in wave 1*, the probability of participation is based on the average participation of individuals within their stratum. The average probability of participation is .901, with the range of values between min = .742 and max = .978 (see Table 8).

The same procedure is applied to the calculation of the *probability of participation in wave 2*, since no information from the first survey is available for the estimation of the probability of participation in wave 2 for those who entered in a class of the DAB sample from wave 2 onwards. The sample size is N = 4060 minus the number of people who definitively dropped out from wave 1 (= 23), and the average probability of participation in wave 2 is .820, with the range of values between min. = .5 and max. = 1 (see Table 8).

Table 8 Probability of participation in wave 1 and 2

	mean	sd	min	max	N
Probability of participation W1	.9012981	.0508371	.7419355	.9782609	4083
Probability of participation W2	.8204434	.0694607	.5	1.0	4060

A.2 Probability of participation in wave 3

From wave 3 onwards, the estimation of the probability of participation is based on the results of logistic regressions. Subtracting individuals who definitively dropped out up to and including wave 2 (= 348), the sample size in wave 3 is N = 3735. The following variables are used in the logistic regression model to the dependent variable, which has the values 0 (no participation) or 1 (participation). The municipality type of the classes in the sample is included using a categorical variable, whereby municipality types are partially summarized: central municipality/suburban municipality (= reference category), high-income periurban municipality, touristic municipality, industrial-tertiary municipality, rural commuter/agricultural mixed/agricultural municipality. Additionally, it is controlled for gender (with men as reference category), type of school (basic requirements/without selection (reference category), extended requirements, pre-gymnasium) and the participation mode in wave 2 (classroom survey (reference category), individual survey, without participation in W2).

Table 9 Participation in wave 3, logistic regression, odds ratios

	OR	SE	z	p
Municipality type (*Ref.*: Center Community/Suburban)	1.000	.	.	.
High income / Periurban	0.900	0.408	−0.233	0.816
Touristic	0.945	0.327	−0.164	0.869
Industrial tertiary	1.342	0.270	1.457	0.145
Rural commuters/agricultural mixed/agricultural	2.038**	0.494	2.937	0.003
Women (*Ref.*: Men)	0.972	0.107	−0.258	0.797
School type 8th grade (*Ref.*: Basic requirements)	1.000	.	.	.
Advanced requirements	1.322	0.260	1.416	0.157
Pre-baccalaureate	1.832*	0.439	2.524	0.012
Participation mode in t2 (*Ref.*: in class)	1.000	.	.	.
Individual survey	0.150***	0.031	−9.110	0.000
Without participation	0.209***	0.032	−10.076	0.000
Beobachtungen	3735			
Pseudo R^2	0.095			
log-likelihood	−1251.0			
$\chi^2(df)$	222.1(9)			

The results of the logistic regression on the *probability of participation in wave 3* indicate that individuals from the community types rural-commuter/agricultural-mixed/agricultural have a higher chance of participating in wave 3 than those from the reference category (central community/suburban community). There are no differences in participation by gender in wave 3. In contrast, adolescents from pre-gymnasium have a higher chance of participating in wave 3 than adolescents from school types with basic requirements, while the latter do not differ significantly from adolescents who attended school types with extended requirements. Finally, the chance that an individual participates in wave 3, given that they either participated in the individual survey in wave 2 or did not participate at all, is significantly lower compared to those who participated in the classroom survey in wave 2.

The probability of participation for observation i is estimated using the effect coefficients and the individual variable values. Descriptive values of the probability of participation in wave 3 are shown in Table 10.

Table 10 Probability of participation in wave 3

	mean	sd	min	max	N
Probability of participation W3	.8784471	.0965799	.526704	.9694722	3735

A.3 Probability of participation in wave 4

In wave 4, separate models are estimated for contactability and for participation. As explained above, the strongest decrease of the response rate was observed when switching from classroom surveys to individual surveys in wave 4. Therefore, the probability of contactability as well as the probability of participation was considered for the calculation of the longitudinal weight for wave 4.

In addition to the control variables reported for wave 3, the status of educational decision in wave 3 (occupational training (reference category), secondary school, Interim solution/bridge-year courses, etc., no information), the social class situation of the parents (EGP classes I/II (reference category), EGP classes III/IV, EGP classes V-VII, EGP class missing), the time preference in wave 3 (z-standardised) as well as the response time in wave 3 are also taken into account to estimate the *contactability in wave 4* (see Table 11). A positive aspect is that the contactability in wave 4 is neither related to gender, nor to the type of attended school or the social background. This also applies to a limited extent to the status of the educational decision in wave 3. Only respondents, who had stopped the questionnaire before the questions on the status of their training decision, had a lower chance of being contacted in wave 4 than those seeking occupational training. Nonetheless, it appears that those with a strong time preference for the present, i.e. young people for whom it is important that their training is as short as possible, have a lower chance of being contacted in wave 4. The same applies to those who did not participate in wave 2 compared to people who had participated in the classroom survey. Finally, it turns out that young people who took more time to answer the questionnaire in wave 3 have a higher chance of being contacted in wave 4. Descriptive parameters of the probability of being contacted in wave 4 are shown below.

With regard to the *probability of participation in wave 4* the following is found (see Table 13): In wave 4, women have a higher chance of participating in the survey than men. Individuals who attended a type of school with extended requirements or a pre-baccalaureate instead of the type of school with basic requirements in grade 8 also have a higher chance of participation. Furthermore, individuals with very good mathematics scores (grade 5.5 or 6) have a higher chance of participating than those with average grades in mathematics (grades 4 to 5), too. In terms of class level, adolescents from working class families (EGP classes V-VII) do not have a lower chance of participation than those from upper and lower service classes (EGP classes I/II). No effect on participation is observed in relation to the highest level of education of parents.

There are no significant effects regarding the parents' country of birth or the generational status of the child. Finally, adolescents who consider it important for a man to earn a lot have a lower chance of participation. This is not a gender effect. Descriptive parameters of the probability of participation in wave 4 are shown below.

A.4 Probability of participation in wave 5

The calculation of the *probability of participation in wave 5* is based on the logistic regression model shown in Table 15. Wave 5 also shows a gender effect. Women show a higher willingness to participate than men. Likewise, the chance of participation in wave 5 is lower for adolescents who had attended a type of school with basic requirements instead of a type of school with extended requirements or a pre-school. With regard to social background (occupational situation and education of parents), no direct effects can be seen. These are mostly mediated by the type of school attended in grade 8. Also without direct effects is the country of birth of the parents and the generation status of the children.

Table 11 Contactability in wave 4, logistic regression, odds ratios

	OR	SE	z	p
Municipality type (*Ref.*: Center Community/ Suburban)	1.000	.	.	.
High income/Periurban	1.488	0.441	1.341	0.180
Touristic	2.887*	1.276	2.398	0.016
Industrial tertiary	1.128	0.287	0.476	0.634
Rural commuters/agricultural mixed/ agricultural	1.494	0.462	1.301	0.193
Women (*Ref.*: Men)	1.196	0.130	1.648	0.099
School type 8th grade (*Ref.*: Basic requirements)	1.000	.	.	.
Advanced requirements	0.893	0.189	−0.537	0.591
Pre-baccalaureate	1.488	0.538	1.100	0.272
Status educational decision in t3 (*Ref.*: VET)	1.000	.	.	.
(Middle) school	1.047	0.187	0.259	0.796
Interim solution/bridge-year courses, etc.	0.800	0.123	−1.449	0.147
No information	0.214***	0.058	−5.727	0.000
Social class of parents (*Ref.*: EGP-Klasse I/II)	1.000	.	.	.
III/IV	0.970	0.167	−0.178	0.859
V-VII	0.824	0.116	−1.372	0.170
No information	0.739	0.133	−1.674	0.094
Time preferences in t3, standardised (t3timepref1)	0.861**	0.039	−3.272	0.001
Participation mode in t2 (*Ref.*: in class)	1.000	.	.	.
Individual survey	1.452	0.356	1.521	0.128
Without participation	0.482***	0.073	−4.841	0.000
Response time in t3 (t3duration)	1.000*	0.000	1.983	0.047
Observation	3281			
Pseudo R^2	0.056			
log-likelihood	−1510.2			
$\chi^2(df)$	126.6(17)			

Table 12 Probability of contactability wave 4

	mean	sd	min	max	N
Contactability W4	.8092045	.0982937	.1168456	.969012	3281

Finally, with regard to the training situation and participation in wave 4, the following is found: Those for whom no information on the training situation is available from wave 4 and those who participated in the telephone survey in wave 4 have a lower chance of participating in wave 5. Descriptive parameters for the probability of participation in wave 5 are shown in Table 16.

A.5 Probability of participation in wave 6

In contrast to the previous waves 4 and 5, there is no gender difference with regard to the chance of participating in wave 6 (see Table 17 on page 25). The effects for the type of school attended at lower secondary level are unchanged, i.e. young people from the school type with basic requirements are less willing to participate compared to young people from the other school types (extended requirements, pre-baccalaureate). On the other hand, under control of the type of school, no direct effect of the grades in German and mathematics can be observed. Rather unexpected is the finding that adolescents from parents belonging to the working classes (EGP classes V-VII) have a higher chance of participating in wave 6 than adolescents in the reference category (EGP classes I/II: upper and lower service classes). Moreover, it is not shown that children parents who have a tertiary education have a higher chance of participating in wave 6. This is also true when tertiary educational qualifications are used as a reference category. While there are no significant effects with regard to the country of birth of the parents, individuals of the 2nd generation participate in wave 6 with a lower chance than those of the reference category (3rd generation). Finally, as in wave 5, it is apparent that those who participated in the previous wave of the telephone survey have a lower chance of participating in wave 6. Descriptive parameters of the probability of participation in wave 6 are shown in Table 18 (see page 26).

Table 13 Participation in wave 4, logistic regression, odds ratios

	OR	SE	z	p
Municipality type (*Ref.*: Center Community/ Suburban)	1.000	.	.	.
High income/Periurban	1.313	0.286	1.246	0.213
Touristic	0.515^{***}	0.098	-3.476	0.001
Industrial tertiary	1.022	0.191	0.117	0.907
Rural commuters/agricultural mixed/ agricultural	0.833	0.146	-1.041	0.298
Women (*Ref.*: Men)	1.344^{**}	0.143	2.772	0.006
School type 8th grade (*Ref.*: Basic requirements)	1.000	.	.	.
Advanced requirements	1.919^{***}	0.270	4.636	0.000
Pre-baccalaureate	2.149^{**}	0.539	3.050	0.002
Mathematics scores 9th class (*Ref.*: average)	1.000	.	.	.
No information	0.642	0.250	-1.139	0.255
Below average	0.822	0.122	-1.322	0.186
Above average	1.732^{**}	0.321	2.960	0.003
Status educational decision in t3 (*Ref.*: VET)	1.000	.	.	.
(Middle) school	1.439	0.283	1.855	0.064
Interim solution/bridge-year courses, etc.	1.151	0.215	0.750	0.453
Social class of parents (*Ref.*: EGP class I/II)	1.000	.	.	.
III/IV	1.431^{*}	0.257	1.999	0.046
V-VII	1.180	0.211	0.927	0.354
No information	1.009	0.237	0.037	0.970
Highest level of education parents (*Ref.*: Max. ISCED 3C) 1.000	1.000	.	.	.
ISCED 3B	1.245	0.244	1.121	0.262
ISCED 3A	1.467	0.394	1.426	0.154
ISCED 4-6	1.420	0.300	1.659	0.097
No information	1.003	0.237	0.011	0.991
Country of birth parents (*Ref.*: CH)	1.000	.	.	.
EU/EFTA - CH-mixed rest	1.271	0.634	0.481	0.630
Balkan, TUR, POR	1.047	0.529	0.090	0.928
No information	1.022	0.387	0.057	0.954
Generational status (*Ref.*: 3rd generation)	1.000	.	.	.
1st generation	0.492	0.267	-1.305	0.192
2nd generation	0.709	0.368	-0.663	0.507
2.5 Generation	0.558	0.275	-1.185	0.236
No information	0.514	0.236	-1.448	0.148
Importance of status maintenance (t3impjstat3)	1.090	0.059	1.593	0.111
Important, that men earn a lot (t3malrole2)	0.857^{*}	0.058	-2.269	0.023
Observations	2655			
Pseudo R^2	0.069			
log-likelihood	-1077.3			
$\chi^2(df)$	183.8(28)			

Table 14 Probability of participation in wave 4

	mean	sd	min	max	N
Probability of participation W4	.8421846	.0929037	.3319636	.9766418	2655

A.6 Probability of participation in wave 7

As in wave 6, there is no gender difference in wave 7 with regard to the chance of participating in wave 7 (see table 19 on page 27). The effects for the type of school attended at lower secondary level remain un-changed. While there are no significant effects of the German grade, an insufficient grade reduces the chance of participation in wave 7. Moreover, the chance of participation is increased for individuals who wanted to start secondary school in wave 3, while no direct effects on the classroom situation and the educational level of the parents can be observed. Furthermore, it can be seen that respondends who started post-secondary education in wave 6 have a higher chance of participating in wave 7 than people in basic occupational training. Finally, the chance of participation in wave 7 is related to the political interest - observed in wave 6. The more pronounced the political

Table 15 Participation in wave 5, logistic regression, odds ratios

	OR	SE	z	p
Municipality type (*Ref.*: Center Community/ Suburban)	1.000	.	.	.
High income/Periurban	0.973	0.169	−0.155	0.876
Touristic	1.234	0.410	0.633	0.527
Industrial tertiary	1.134	0.171	0.831	0.406
Rural commuters/agricultural mixed/ agricultural	1.311	0.216	1.646	0.100
Women (*Ref.*: Men)	1.485^{***}	0.155	3.784	0.000
School type 8th grade (*Ref.*: Basic requirements)	1.000	.	.	.
Advanced requirements	1.770^{***}	0.204	4.962	0.000
Pre-baccalaureate	2.451^{***}	0.630	3.486	0.000
German score 9th class (*Ref.*: average)	1.000	.	.	.
No information	1.122	0.263	0.492	0.623
Below average	0.731	0.144	−1.595	0.111
Above average	1.268	0.210	1.431	0.153
Status educational decision in t3 (*Ref.*: VET)	1.000	.	.	.
Secondray school	1.018	0.211	0.087	0.930
Interim solution/bridge-year courses, etc.	1.019	0.165	0.118	0.906
No information	2.554^{**}	0.759	3.156	0.002
Social class of parents (*Ref.*: EGP class I/II)	1.000	.	.	.
III/IV	0.867	0.144	−0.862	0.389
V-VII	1.027	0.162	0.168	0.867
No information	0.836	0.168	−0.889	0.374
Highest level of education parents (*Ref.*: Max. ISCED 3C)	1.000	.	.	.
ISCED 3B	1.275	0.195	1.587	0.113
ISCED 3A	1.245	0.268	1.018	0.309
ISCED 4-6	1.234	0.207	1.255	0.209
No information	1.787^{**}	0.387	2.677	0.007
Country of birth parents (*Ref.*: CH)	1.000	.	.	.
EU/EFTA - CH-mixed rest	0.651	0.291	−0.959	0.338
Balkan, TUR, POR	0.601	0.283	−1.081	0.280
No information	1.405	0.471	1.015	0.310
Generational status (*Ref.*: 3rd generation)	1.000	.	.	.
1st generation	0.765	0.381	−0.538	0.591
2nd generation	1.107	0.498	0.226	0.821
2.5 generation	1.110	0.510	0.228	0.820
No information	0.863	0.241	−0.374	0.709
Educational situation in t4 (*Ref.*: VET)	1.000	.	.	.
(Middle) school	1.275	0.319	0.969	0.332
Interim solution/bridge-year courses, etc.	0.912	0.301	−0.279	0.780
No information	0.286^{**}	0.118	−3.036	0.002
Participation mode in t4 (*Ref.*: online)	1.000	.	.	.
CATI	0.638^{***}	0.079	−3.620	0.000
No participation	0.531	0.228	−1.477	0.140
Observations	2864			
Pseudo R^2	0.135			
log-likelihood	−1311.1			
$\chi^2(df)$	394.9(32)			

Table 16 Probability of participation in wave 5

	mean	sd	min	max	N
Probability of participation W5	.7782821	.1633423	.1415374	.9755289	2864

interest, the higher the chance that people took part in the seventh survey of the DAB panel study. Descriptive parameters of the probability of participation in wave 7 are shown in Table 20 (see page 27).

A.7 Probability of participation in wave 8

There is no gender difference regarding the probability to participate in wave 8 (see table 21 on page 28). The effects of the type of school attended at lower secondary level are strong; those who attended a pre-baccalaureate school have a significantly higher chance of participating in wave 8. While there are no significant effects of the

Table 17 Participation in wave 6, logistic regression, odds ratios

	OR	SE	z	p
Municipality type (*Ref.*: Center Community/ Suburban)	1.000	.	.	.
High income/Periurban	1.120	0.193	0.659	0.510
Touristic	0.691	0.216	−1.180	0.238
Industrial tertiary	1.072	0.166	0.448	0.654
Rural commuters/agricultural mixed/ agricultural	0.991	0.169	−0.053	0.958
Women (*Ref.*: Men)	1.117	0.124	0.995	0.32
School type 8th grade (*Ref.*: Basic requirements)	1.000	.	.	.
Advanced requirements	1.536***	0.193	3.413	0.001
Pre-baccalaureate	2.074**	0.520	2.907	0.004
German scores 9th class (*Ref.*: average)	1.000	.	.	.
No information	1.560	1.641	0.423	0.672
Below average	0.915	0.235	−0.347	0.729
Above average	1.178	0.239	0.809	0.418
Mathematics scores 9th class (*Ref.*: average)	1.000	.	.	.
No information	0.593	0.611	−0.507	0.612
Below average	0.962	0.159	−0.237	0.813
Above average	1.200	0.193	1.136	0.256
Status educational decision in t3 (*Ref.*: VET)	1.000	.	.	.
(Middle) school	1.171	0.263	0.702	0.483
Interim solution/bridge-year courses, etc.	1.078	0.197	0.411	0.681
No information	0.820	0.202	−0.805	0.421
Social class of parents (*Ref.*: EGP class I/II)	1.000	.	.	.
III/IV	1.189	0.229	0.899	0.369
V-VII	1.427*	0.245	2.072	0.038
No information	1.100	0.269	0.389	0.697
Highest level of education parents (*Ref.*: Max. ISCED 3C)	1.000	.	.	.
ISCED 3B	0.625*	0.118	−2.479	0.013
ISCED 3A	0.616*	0.137	−2.174	0.030
ISCED 4-6	0.795	0.161	−1.131	0.258
No information	0.751	0.176	−1.221	0.222
Country of birth parents (*Ref.*: CH)	1.000	.	.	.
EU/EFTA - CH-mixed rest	1.275	0.590	0.524	0.600
Balkan, TUR, POR	1.052	0.481	0.110	0.912
No information	0.932	0.335	−0.197	0.844
Generational status (*Ref.*: 3rd generation)	1.000	.	.	.
1st generation	0.630	0.292	−0.997	0.319
2nd generation	0.421*	0.186	−1.961	0.050
2.5 generation	0.642	0.305	−0.932	0.351
No information	0.371*	0.150	−2.455	0.014
Status educational decision in t5 (*Ref.*: VET)	1.000	.	.	.
(Middle) school	1.170	0.290	0.633	0.527
No information	0.538*	0.144	−2.316	0.021
General satisfaction in t5 (*Ref.*: rather unsatisfied)	1.000	.	.	.
Rather satisfied	1.437	0.318	1.638	0.101
No information	1.527	1.956	0.331	0.741
Participation mode in t5 (*Ref.*: online)	1.000	.	.	.
CATI	0.446***	0.060	−6.001	0.000
No participation	0.101	0.127	−1.813	0.070
Observations	2738			
Pseudo R^2	0.240			
log-likelihood	−1163.9			
χ^2 (*df*)	678.3(36)			

German grade, a very good mathematics grade increases the chance of participation in wave 8. While no direct effects can be observed for migration background and class situation, the chance of participation increases with a higher educational level of the parents. Furthermore, it can be seen that individuals who started post-secondary education in wave 7 have a higher chance of participating in wave 8 than those who are still in basic vocational education. However, the previously made training decision in t3 shows no effect. Finally, it can be seen that people who are satisfied with their educational and occupational history are more likely to participate in the eighth survey of the DAB panel study than those who are rather dissatisfied. Descriptive characteristics of the probability of participation in wave 8 are shown in table 22 (see page 28).

A.8 Probability of participation in wave 9

In wave 9, however, there is again a gender difference with regard to the chance of participating (see table 23 on page 29). The effects of the type of school attended at lower secondary level are also evident. Those who attended a school with basic requirements have a significantly lower chance of participating in wave 9 than those who attended a school with extended requirements. While no direct effects of class situation and parental educational background can be observed, the probability of participation is higher for persons whose parents were born in Switzerland than for those with a migration background. Furthermore, it can be seen that people who are studying in wave 8 have a higher chance of participating in wave 9. However, the previously made education decision in t3 shows no effect. Finally, it appears that persons who participated by telephone in the last survey have a low chance of participating in wave 9. Descriptive parameters of the probability of participation in wave 9 are shown in table 24 (see page 29).

A.9 Probability of participation in wave 10

There is also a gender difference in wave 10 with regard to the chance of participating (see Table 25 on page 30). It can also be seen people who were studying at the time of wave 9 have a higher chance of participating in wave 10. However, the previously made training decision in t3 shows no effect with regard to participation in wave 10. Furthermore, there are no direct significant effects of class, parental educational background or migration background. People who did not take part in the last survey and those who took part in the 8th survey by telephone have a low chance of taking part in wave 10. Descriptive parameters of the probability of participation in wave 10 are shown in Table 26.

Table 18 Probability of participation in wave 6

	mean	sd	min	max	N
Probability of participation W6	.7527392	.2249789	.0836424	.9745457	2738

Table 19 Participation in wave 7, logistic regression, odds ratios

	OR	SE	z	p
Municipality type (*Ref.*: Center Community/ Suburban)	1.000	.	.	.
High income/Periurban	1.127	0.219	0.614	0.539
Touristic	1.491	0.409	1.453	0.146
Industrial tertiary	1.181	0.209	0.940	0.347
Industrial tertiary	1.032	0.204	0.158	0.875
Women (*Ref.*: Men)	1.228	0.156	1.613	0.107
School type 8th grade (*Ref.*: Basic requirements)	1.000	.	.	.
Advanced requirements	1.649^{***}	0.207	3.980	0.000
Pre-baccalaureate	2.380^{***}	0.601	3.431	0.001
German scores 9th class (*Ref.*: average)	1.000	.	.	.
No information	0.458	0.264	−1.354	0.176
Below average	1.286	0.329	0.984	0.325
Above average	1.101	0.241	0.442	0.659
Mathematics scores 9th class (*Ref.*: average)	1.000	.	.	.
No information	1.760	0.985	1.010	0.313
Below average	0.693^{*}	0.122	−2.088	0.037
Above average	0.927	0.183	−0.383	0.702
Status educational decision in t3 (*Ref.*: VET)	1.000	.	.	.
(Middle) school	1.587^{*}	0.350	2.093	0.036
Interim solution/bridge-year courses, etc.	0.987	0.217	−0.061	0.951
No information	1.009	0.278	0.031	0.975
Social class of parents (*Ref.*: EGP class I/II)	1.000	.	.	.
III/IV	1.119	0.249	0.504	0.614
V-VII	0.770	0.159	−1.266	0.206
No information	0.918	0.252	−0.31	0.756
Highest level of education parents (*Ref.*: Max. ISCED 3C)	1.000	.	.	.
ISCED 3B	1.188	0.213	0.963	0.335
ISCED 3A	1.356	0.367	1.125	0.261
ISCED 4-6	1.352	0.291	1.403	0.161
No information	0.943	0.240	−0.23	0.818
Country of birth parents (*Ref.*: CH)	1.000	.	.	.
EU/EFTA - CH-mixed rest	0.744^{*}	0.110	−1.994	0.046
Balkan, TUR, POR	0.818	0.156	−1.054	0.292
No information	0.782	0.185	−1.038	0.299
Status educational decision in t6 (*Ref.*: VET)	1.000	.	.	.
(Middle) school	1.442	0.436	1.208	0.227
Paid Work	0.861	0.154	−0.839	0.402
Post secondary training	3.116^{**}	1.315	2.693	0.007
Other	1.062	0.242	0.262	0.793
No participation	0.460^{**}	0.127	−2.802	0.005
General interest in politics in t6 (*Ref.*: low interest)	1.000	.	.	.
Partly	1.992^{***}	0.350	3.917	0.000
High interest	2.560^{***}	0.557	4.326	0.000
No participation	0.299^{***}	0.075	−4.836	0.000
Observations	2496			
Pseudo R^2	0.255			
log-likelihood	−968.8			
χ^2 (*df*)	646.4(34)			

Table 20 Probability of participation in wave 7

	mean	sd	min	max	N
Probability of participation W7	.7844551	.2196565	.1377769	.9940798	2496

Table 21 Participation in wave 8, logistic regression, odds ratios

	OR	SE	z	p
Municipality type (*Ref.*: Center Community/ Suburban)	1.000	.	.	.
High income/Periurban	0.820	0.167	−0.973	0.331
Touristic	1.488	0.825	0.717	0.473
Industrial tertiary	0.915	0.216	−0.378	0.705
Rural commuters/agricultural mixed/ agricultural	1.280	0.276	1.142	0.253
Women (*Ref.*: Men)	1.304	0.184	1.878	0.060
School type 8th grade (*Ref.*: Basic requirements)	1.000	.	.	.
Advanced requirements	1.925***	0.298	4.234	0.000
Pre-baccalaureate	5.275***	2.073	4.230	0.000
German grade 9th class (*Ref.*: average)	1.000	.	.	.
No information	3.356	2.652	1.532	0.125
Below average	1.308	0.416	0.844	0.399
Above average	1.068	0.245	0.285	0.776
Mathematics grade 9th class (*Ref.*: average)	1.000	.	.	.
No information	0.363	0.276	−1.331	0.183
Below averag	0.867	0.178	−0.695	0.487
Above average	2.263***	0.499	3.699	0.000
Status educational decision in t3 (Ref.: VET)	1.000	.	.	.
(Middle) school	0.919	0.216	−0.360	0.719
Interim solution/bridge-year courses, etc.	1.120	0.249	0.511	0.610
No information	1.318	0.454	0.803	0.422
Social class of parents (*Ref.*: EGP-Klasse I/II)	1.000	.	.	.
III/IV	1.102	0.254	0.419	0.675
V-VII	1.263	0.273	1.079	0.281
No information	1.492	0.421	1.420	0.156
Highest level of education parents (*Ref.*: Max. ISCED 3C)	1.000	.	.	.
ISCED 3B	1.697*	0.359	2.501	0.012
ISCED 3A	1.659*	0.425	1.977	0.048
ISCED 4-6	1.727*	0.432	2.182	0.029
No information	1.119	0.303	0.416	0.678
Country of birth parents (Ref.: CH)	1.000	.	.	.
EU/EFTA - CH-mixed other	0.839	0.153	−0.962	0.336
Balkan, TUR, POR	0.754	0.157	−1.353	0.176
No information	0.599	0.158	−1.940	0.052
Status educational situation in t7 (Ref.: VET)	1.000	.	.	.
(Middle) school	2.569	1.657	1.464	0.143
Paid Work	1.134	0.299	0.478	0.633
Post secondary education	2.290*	0.859	2.208	0.027
Other	1.044	0.307	0.145	0.885
No information	0.403	0.249	−1.473	0.141
Satisfaction with educational trajectory (Ref.: unsatifsfied)	1.000	.	.	.
Satifsfied	1.726*	0.421	2.240	0.025
No information	0.319	0.195	−1.871	0.061
Observations	2400			
Pseudo R^2	0.295			
log-likelihood	−751.6			
χ^2 (df)	536.8			

Table 22 Probability of participation in wave 8

	mean	sd	min	max	N
Probability of participation W8	.8370833	.2060078	.0821911	.9973385	2400

Table 23 Participation in wave 9, logistic regression, odds ratios

	OR	SE	z	p
Municipality type (*Ref.*: Center Community/ Suburban)	1.000	.	.	.
High income/Periurban	1.241	0.305	0.880	0.379
Touristic	1.229	0.507	0.500	0.617
Industrial tertiary	1.300	0.294	1.163	0.245
Rural commuters/agricultural mixed/ agricultural	0.872	0.177	−0.675	0.500
Women (*Ref.*: Men)	1.493**	0.212	2.818	0.005
School type 8th grade (*Ref.*: Basic requirements)	1.000	.	.	.
Advanced requirement	1.458*	0.230	2.386	0.017
Pre-baccalaureate	1.628	0.470	1.685	0.092
Status educational decision in t3 (Ref.: VET)	1.000	.	.	.
(Middle) school	1.175	0.283	0.671	0.503
Interim solution/bridge-year courses, etc.	0.894	0.218	−0.458	0.647
No information	0.597	0.188	−1.641	0.101
Social class of parents (*Ref.*: EGP class I/II)	1.000	.	.	.
III/IV	1.234	0.315	0.823	0.410
V-VII	1.064	0.239	0.277	0.782
No information	1.095	0.316	0.314	0.754
Highest level of education parents (*Ref.*: Max. ISCED 3C)	1.000	.	.	.
ISCED 3B	0.735	0.163	−1.393	0.164
ISCED 3A	0.672	0.187	−1.429	0.153
ISCED 4-6	1.120	0.264	0.480	0.632
No information	0.808	0.230	−0.750	0.453
Country of birth parents (Ref.: CH)	1.000	.	.	.
EU/EFTA - CH-mixed other	0.655*	0.108	−2.560	0.010
Balkan, TUR, POR	0.656	0.159	−1.745	0.081
No information	0.824	0.231	−0.691	0.489
Educational or occupational situation in t8 (Ref.: paid workt)	1.000	.	.	.
Training	1.695*	0.355	2.521	0.012
Other	1.552	0.399	1.710	0.087
Survey mode in t8 (*Ref.*: Online)	1.000	.	.	.
CATI	0.118***	0.026	−9.835	0.000
Non Response	0.038***	0.006	−19.824	0.000
Observations	2313			
Pseudo R^2	0.337			
log-likelihood	−763.4			
$\chi^2(df)$	613.7(27)			

Table 24 Probability of participation wave 9

	mean	sd	min	max	N
Probability of participation W9	.8019888	.2493326	.0807985	.9852402	2313

Table 25 Participation in wave 10, logistic regression, odds ratios

	OR	SE	z	p
Type of municipality (*Ref.*: centre municipality)	1.000	.	.	.
High income	0.983	0.222	-0.075	0.940
Touristic	1.214	0.446	0.527	0.598
Industrial-Tertiary	1.304	0.242	1.428	0.153
Agricultural-Mixed	0.977	0.210	-0.110	0.913
Women (*Ref.*: Men)	1.355^{*}	0.197	2.089	0.037
School type 8th grade (*Ref.*: basic requirements)	1.000	.	.	
Advanced requirements	1.114	0.179	0.669	0.503
Pre-Gymnasium	0.800	0.187	-0.952	0.341
Education and employment situation in t9 (Ref.: Paid work)	1.000	.	.	.
Secondary education	2.770	1.943	1.453	0.146
Further education	2.269	1.385	1.342	0.180
Study	1.689^{*}	0.382	2.321	0.020
Other	1.384	0.519	0.868	0.385
No participation in W9	0.079^{***}	0.014	-13.975	0.000
Class position of parents (*Ref.*: EGP class I/II)	1., 000	.	.	.
III/IV	1.412	0.368	1.325	0.185
V-VII	1.343	0.320	1.241	0.215
Not specified	1.718	0.549	1.696	0.090
Highest educational qualification of parents (*Ref.*: Max. ISCED 3C)	1.000	.	.	.
ISCED 3B	1.578	0.389	1.849	0.064
ISCED 3A	1.595	0.487	1.528	0.127
ISCED 4-6	1.420	0.387	1.289	0.198
Not specified	0.711	0.215	-1.128	0.260
Parents' country of birth (Ref.: CH)	1.000	.	.	.
EU/EFTA - CH-mixed other	0.926	0.166	-0.428	0.669
Balkans, TUR, POR	0.658	0.157	-1.751	0.080
Not specified	0.756	0.192	-1.101	0.271
Participation mode in t8 (*Ref.*: Online)	1.000	.	.	.
CATI	0.655	0.178	-1.557	0.119
No participation	0.131^{***}	0.027	-9.785	0.000
Observations	2304			
Pseudo R^2	0.415			
log-likelihood	-686.2			
$\chi^2(df)$	591.8(24)			

Table 26 Probability of participation wave 10

	mean	sd	min	max	N
Probability of participation W10	.7938368	.279743	.0362908	.9847832	2304