

The logo for NEPS (National Educational Panel Study) features the letters 'NEPS' in a bold, blue, sans-serif font. To the left of the text is a vertical orange bar that is open at the top and bottom, resembling a bracket or a stylized 'L' shape.

NEPS

National Educational Panel Study

Ariane Würbach

Samples, Weights and Nonresponse

NEPS Starting Cohort 2 — Kindergarten
From Kindergarten to Elementary School

Wave 10

Research Data

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Samples, Weights, and Nonresponse: the Kindergarten Cohort of the National Educational Panel Study (Wave 10)

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Samples, Weights, and Nonresponse: the Kindergarten Cohort of the National Educational Panel Study (Wave 10)

1 Prequel

The National Educational Panel Study (NEPS) surveys a cohort sample of Kindergarten children and Grade 1 students (Starting Cohort 2, SC2) and follows them over their transition to elementary school and beyond. The data are released via corresponding Scientific Use Files (SUF). The current SUF version is available under [DOI:10.5157/NEPS:SC2:10.0.0](https://doi.org/10.5157/NEPS:SC2:10.0.0) (NEPS Network, 2022).¹

This paper supplements the previous reports for weighting by Würbach (2018a, 2018b, 2019, 2020), Würbach et al. (2017) as well as the more detailed NEPS Working Paper by Steinhauer et al. (2016) and the Technical Report by Steinhauer and Zinn (2016), which give information on the applied indirect sampling procedure, the derivation of design weights, their successive adjustments, and the derivation of panel weights for previous waves.

In 2013, the cohort of Kindergarten children transitioned to elementary school. Children who transitioned to previously sampled schools were followed up within their institutional context together with their classmates who augment the cohort sample. Besides that, there are previously sampled schools no children transitioned to. Students within these schools also augment the cohort sample. Children who transitioned to other schools were tracked individually. By design, these children did not take part in the tests until Wave 6. Then, in Wave 6 (Grade 4), the entire sample was surveyed and tested again. As of Wave 7, surveying and testing was no longer done in the institutional context but in the individual retracking field for all targets.

Due to its composition the panel cohort of SC2 can be categorized into three groups:

- Group 1 The group of students tested in Grade 1 in elementary schools, who were not tested in Kindergarten institutions in Wave 1 and Wave 2. These (target) persons form the augmentation sample of Wave 3.
- Group 2 The group of Kindergarten children who were tested only in Kindergartens in Wave 1 and Wave 2. In Wave 3, they are assigned to the individual retracking field and are temporary dropouts by design until Wave 6.
- Group 3 The group of Kindergarten children, who were tested in Kindergartens in Wave 1 and Wave 2 and transition to elementary schools surveyed by NEPS in Wave 3. These (target) persons belong to the longitudinal sample of Waves 1, 2, and 3.

Table 1 documents the accordant study numbers and survey year available in the current SUF.

¹For general information on the NEPS, see Blossfeld and Roßbach (2019) and Blossfeld et al. (2011). More detailed information is available in the documentation section on the [homepage](#).

Table 1: Survey overview for Starting Cohort 2.

Wave	Year	Time	Study number
<i>Kindergarten children</i>			
1	2011	4-5 years	A12
2	2012	5-6 years	A13
<i>Elementary school students</i>			
3	2013	Grade 1	A14, A14A
4	2013	Grade 2	A15, A15-L1
5	2014	Grade 3	A89
6	2015	Grade 4	A97, B103
7	2016	Grade 5	B104
8	2017	Grade 6	B105
9	2018	Grade 7	B129
10	2020	Grade 8	B131_A

For all participating children cross-sectional and, where appropriate, longitudinal weights are provided. Cross-sectional weights are assigned to children relying on their participation in the different panel waves. Furthermore, weights are given for subgroups of the panel cohorts that are of special interest in our analysis. This concerns particularly the group of children continually taking part in the successive waves of the survey and the group of children and parents participating jointly. Longitudinal weights are provided for those children who have continually participated. Additionally, longitudinal weights are provided for joint participation of children and parents. Please note that in Wave 8 and 10 no parent interviews were administered.

The remainder of this supplement is structured as follows: Section 3 details the panel progress as well as the new features of the corresponding weighting data sets. The weighting adjustments are described in Section 4. This section contains the analyses of nonresponse in Wave 10. All nonresponse models are estimated using (multilevel) probit models.

Finally, Section 5 concludes with a summary of the provided sampling weights and design information given in the corresponding weighting data sets.

2 Changes compared to the previous version

Compared to the previous release of the SC2 SUF (version 9.0.0), the current weighting data set does not include weights for joint participation of targets and parents, because the parents have not been surveyed in this wave.

3 Panel progress

The following Table 2 details the panel progress of Starting Cohort 2 by differentiating participants, temporary dropouts, and final dropouts for each group separately and in total. Final dropouts are separated into final dropouts due to refusal during the survey period and final dropouts between two consecutive waves.

Table 2: Panel progress of Starting Cohort 2 by wave.

Wave	Group	Panel Cohort			Status at the end of the wave				Final dropout (after wave)
		Total size	Not used	Used sample	Participants	Temporary dropout	Final dropout (in wave)	Final dropout (after wave)	
1	All	^a 3007	0	3007	2949	47	11	0	
2	All	2996	^b 215	2781	2727	54	0	1	
3	All	9336	2419	6917	6733	184	0	5	
	1	6341	0	6341	6176	165	0	2	
	2	2419	2419	-	-	-	-	^c 3	
	3	576	0	576	557	19	0	0	
4	All	9331	2733	6598	6340	232	26	23	
	1	6339	296	6043	5801	217	25	15	
	2	2416	2416	-	-	-	-	2	
	3	576	21	555	539	15	1	6	
5	All	9282	3118	6164	5799	204	161	77	
	1	6299	669	5630	5296	185	149	41	
	2	2414	2414	-	-	-	-	31	
	3	569	35	534	503	19	12	5	
6	All	9044	555	8489	6942	1180	367	^{d,e} 693	
	1	6109	62	6047	5461	425	161	^d 185	
	2	2383	458	1925	998	735	192	^d 497	
	3	552	35	517	483	20	14	^d 11	
7	All	7984	^{f,g} 50	7934	4220	3671	43	43	
	1	5763	12	5751	3246	2472	33	31	
	2	1694	4	1690	648	1032	10	9	
	3	527	34	493	326	167	0	3	

Table 2: Panel progress of Starting Cohort 2 by wave.

Wave	Group	Panel Cohort			Status at the end of the wave			
		Total size	Not used	Used sample	Participants	Temporary dropout	Final dropout (in wave)	Final dropout (after wave)
8	ALL	7898	^g 18	7880	4164	3691	25	^e 2186
	1	5699	13	5686	3147	2522	17	1357
	2	1675	4	1671	682	982	7	730
	3	524	1	523	335	187	1	99
9	ALL	5687	^g 25	5662	4088	1088	486	^e 133
	1	4325	20	4305	3096	824	385	108
	2	938	4	934	668	193	73	15
	3	424	1	423	324	71	28	10
10	ALL	5068	^h 2	5066	3683	1353	30	^e 378
	1	3832	2	3820	2767	1041	22	279
	2	850	0	850	607	237	6	75
	3	386	0	386	309	75	2	24

Note: “-” does not apply; Group 1 – The group of students tested in Grade 1 in elementary schools, who were not tested in Kindergarten institutions in Wave 1 and Wave 2. These (target) persons form the augmentation sample of Wave 3; Group 2 – The group of Kindergarten children who were tested only in Kindergartens in Wave 1 and Wave 2. In Wave 3, they are assigned to the individual retracking field and are temporary dropouts by design until Wave 6; Group 3 – The group of Kindergarten children, who were tested in Kindergartens in Wave 1 and Wave 2 and transition to elementary schools surveyed by NEPS in Wave 3. These (target) persons belong to the longitudinal sample of Waves 1, 2, and 3.; ^a Panel size in Wave 1 is larger than the number of cases in the SUF, because of 11 final dropouts after Wave 1 and before publication of the SUF. Thus these cases are not included.; ^b Cases not used left the institution they were surveyed in. These cases are tracked individually and surveyed again in Wave 6, when they are supposed to be in Grade 4. In the SUF their status is temporary dropout.; ^c Final dropout in Group 2 is not included in the SUF. Here these cases are labeled as temporary dropout.; ^d Among these final dropouts also previous parent withdrawals are subsumed. Due to the movement into the individual field the related students cannot be asked for participation again.; ^e Target students are final dropouts because contacting was unsuccessful in two successive waves: for 155 after Wave 6, 2094 after Wave 8, 104 after Wave 9, and 375 after Wave 10.; ^f 33 target students could not have been surveyed and tested for technical reasons.; ^g Target students abroad remain in the panel sample, while not being contacted: 16 in Wave 7, 18 in Wave 8, and 25 in Wave 9. ^h Target students that have not been contacted, though staying in the panel sample.

4 Weighting Adjustments for Wave Participation

Systematic refusals may arise and for this, the (non)response and attrition processes of the sampled individuals, has to be accounted for. Thus, for reasons of usability, commonly design weights are adjusted to account for nonresponse in the survey. For this purpose, the units' probabilities to participate in each survey wave as well as in consecutive waves are employed. The processing in the nonresponse analysis is detailed in Chapter 3 in Steinhauer et al. (2016) as well as in Steinhauer and Zinn (2016). The following estimated (non)response models are used as basis for calculation of participation probabilities and hence serve as adjustment factors to derive cross-sectional and longitudinal survey weights.

4.1 Modeling Participation in Wave 10

To estimate the individual participation propensities for students in Grade 8 (participants in Wave 10) a (multilevel) probit model is used.² The individual participation propensities were used to derive adjustment factors for adjusted wave-specific cross-sectional and longitudinal weights. The results are given in Table 3. As can be seen, participation in previous waves highly influences the participation probability in the current wave in all three groups. In Group 2 the place of residence significantly influences individual participation probability. Students living together with both parents are more likely to participate than students living with a single parent. In Group 1, gender has a significant effect on the individual probability of attendance. Male students are less likely to participate than female students.

Please refer to Steinhauer et al. (2016) and Steinhauer and Zinn (2016) regarding the interpretation of the participation propensity in previous waves.

5 Summary of Weights

The NEPS provides various kinds of weights for Kindergarten children and elementary school students together with design information. Table 4 lists the design information and the different weights provided by SUF release version [DOI:10.5157/NEPS:SC2:10.0.0](https://doi.org/10.5157/NEPS:SC2:10.0.0). In SC2, weights are provided in three distinct weighting files: one for Kindergarten children (Groups 2 and 3), which is frozen in Wave 6 and will not be continued, one for elementary school students (Groups 1 and 3), and one for Grade 4 students transferring to lower secondary education (Sec I). The weighting data sets provide all cross-sectional and longitudinal weights in a trimmed and standardized form. Weights are standardized with mean 1 to ease statistical weighted analysis, cp. Chapter 4 in Steinhauer and Zinn (2016).

Summary statistics for all kind of weights provided are given in Table 5.

Please refer to Chapter 6 in Steinhauer and Zinn (2016) for advices regarding the usage of weights.

²To model individual participation in the school context, the `g1mer` function with a probit link provided by `lme4` package (Bates et al., 2015) in R (R Core Team, 2020) was used.

Table 3: Models estimating the individual participation propensities for students in Grade 8.

	Wave 10		
	Group 3	Group 2	Group 1
Constant	−0.505** (0.198)	−1.477*** (0.174)	−0.002 (0.051)
Place of residence: both parents (ref. = "single parent")		0.551*** (0.140)	
Participation in Wave 7: yes (ref. = "no")		0.825*** (0.112)	
Participation in Wave 8: yes (ref. = "no")	0.886*** (0.181)	0.839*** (0.117)	
Gender: male (ref. = "female")			−0.151*** (0.044)
Participation in Wave 9: yes (ref. = "no")	0.850*** (0.186)	0.580*** (0.119)	0.862*** (0.053)
Random intercept (SD) at the school level			0.057
Observations	386	850	3,832

*Note: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$; standard errors are given in parentheses. Group 1 – The group of students tested in Grade 1 in elementary schools but not being tested in Kindergarten institutions in Wave 1 and 2 (forming the augmentation sample of Wave 3); Group 2 – The group of Kindergarten children individually tested in Wave 6; Group 3 – The group of Kindergarten children being tested in Kindergartens in Wave 1 and Wave 2 and transition to elementary schools surveyed by NEPS in Wave 3.*

Table 4: Variables included in the weighting data sets for SC2 SUF version 10.0.0.

Variable	Applies to	Content
<i>Identifier</i>		
ID_t	all targets	Identifier for target person
ID_i	all targets	Identifier for the school the target person was initially sampled in
<i>Design information</i>		
tstud_st	all targets	Study number the target person was first surveyed in (A12, A14, A14A)
group	all targets	Grouping variable for children in Kindergarten and school context
stratum_imp2_R	schools	Implicit sampling stratum (Federal State the school is located in according to sampling frame)
stratum_imp3_R	schools	Implicit sampling stratum (regional classification according to sampling frame)
stratum_imp4_R	schools	Implicit sampling stratum (funding according to sampling frame)
tx80112_R	schools	Total amount of students in Grade 2 (from Official Statistics)
<i>Weights referring to Kindergarten children (Groups 2 and 3)</i>		
w_i	2996	Nonresponse adjusted design weight for Kindergarten, with $i = 1, \dots, 268$
w_t	2996	Calibrated nonresponse adjusted design weight for target (Kindergarten child)
w_t1	2949	Cross-sectional weight for targets participating in Wave 1
w_tp1	2309	Cross-sectional weight for targets jointly participating with one parent in Wave 1
w_t2	2727	Cross-sectional weight for targets participating in Wave 2
w_tp2	1965	Cross-sectional weight for targets jointly participating with one parent in Wave 2
w_t1to2	2685	Longitudinal weight for targets participating in Wave 1 and 2
w_tp1to2	1804	Longitudinal weight for targets jointly participating with one parent in Wave 1 and 2
w_t1to3	539	Longitudinal weight for targets participating in Wave 1, 2, and 3
w_tp1to3	388	Longitudinal weight for targets jointly participating with one parent in Wave 1, 2, and 3
w_t1to4	504	Longitudinal weight for targets participating in Wave 1 up to Wave 4
w_tp1to4	335	Longitudinal weight for targets jointly participating with one parent in Wave 1 up to Wave 4
w_t1to5	460	Longitudinal weight for targets participating in Wave 1 up to Wave 5
w_tp1to5	276	Longitudinal weight for targets jointly participating with one parent in Wave 1 up to Wave 5
w_t1to6	433	Longitudinal weight for targets participating in Wave 1 up to Wave 6
w_tp1to6	238	Longitudinal weight for targets jointly participating with one parent in Wave 1 up to Wave 6
<i>Weights referring to elementary schools students (Groups 1 and 3)</i>		
w_i	6917	Nonresponse adjusted design weight for elementary school, $i = 1, \dots, 279$
w_t	6917	Calibrated nonresponse adjusted design weight for target (Grade 1 student)
w_t3	6733	Cross-sectional weight for targets participating in Wave 3
w_tp3	5636	Cross-sectional weight for targets jointly participating with one parent in Wave 3
w_t4	6340	Cross-sectional weight for targets participating in Wave 4
w_tp4	4866	Cross-sectional weight for targets jointly participating with one parent in Wave 4
w_t3to4	6189	Longitudinal weight for targets participating in Wave 3 and 4
w_tp3to4	4488	Longitudinal weight for targets jointly participating with one parent in Wave 3 and 4

Table 4: Variables included in the weighting data sets for SC2 SUF version 10.0.0. (continued)

Variable	Applies to	Content
w_t5	5799	Cross-sectional weight for targets participating in Wave 5
w_tp5	4026	Cross-sectional weight for targets jointly participating with one parent in Wave 5
w_t3to5	5567	Longitudinal weight for targets participating in Wave 3, 4 and 5
w_tp3to5	3501	Longitudinal weight for targets jointly participating with one parent in Wave 3, 4 and 5
w_t6	6942	Cross-sectional weight for targets participating in Wave 6
w_tp6	4641	Cross-sectional weight for targets jointly participating with one parent in Wave 6
w_t3to6	5256	Longitudinal weight for targets participating in Wave 3 up to Wave 6
w_tp3to6	3047	Longitudinal weight for targets jointly participating with one parent in Wave 3 up to Wave 6
w_t7	4220	Cross-sectional weight for targets participating in Wave 7
w_tp7	3247	Cross-sectional weight for targets jointly participating with one parent in Wave 7
w_t3to7	3093	Longitudinal weight for targets participating in Wave 3 up to Wave 7
w_tp3to7	2099	Longitudinal weight for targets jointly participating with one parent in Wave 3 up to Wave 7
w_t8	4164	Cross-sectional weight for targets participating in Wave 8
w_t3to8	2607	Longitudinal weight for targets participating in Wave 3 up to Wave 8
w_t9	4088	Cross-sectional weight for targets participating in Wave 9
w_tp9	2971	Cross-sectional weight for targets jointly participating with one parent in Wave 9
w_t3to9	2135	Longitudinal weight for targets participating in Wave 3 up to Wave 9
w_tp3to9	1539	Longitudinal weight for targets jointly participating with one parent in Wave 3 up to 7, and 9
w_t10	3683	Cross-sectional weight for targets participating in Wave 10
w_t3to10	1876	Longitudinal weight for targets participating in Wave 3 up to Wave 10
<i>Joint weights referring to Grade 4 students (Groups 1, 2 and 3)</i>		
w_p6	9044	Calibrated panel entry weight for target (Grade 4 student)
w_p6_joint	9044	Calibrated joint panel entry weight for target (Grade 4 student)
w_t6	6942	Cross-sectional weight for targets participating in Wave 6
w_tp6	4641	Cross-sectional weight for targets jointly participating with one parent in Wave 6
w_t7	4220	Cross-sectional weight for targets participating in Wave 7
w_tp7	3247	Cross-sectional weight for targets jointly participating with one parent in Wave 7
w_t6to7	4015	Longitudinal weight for targets participating in Wave 6 and 7
w_tp6to7	2988	Longitudinal weight for targets jointly participating with one parent in Wave 6 and 7
w_t8	4164	Cross-sectional weight for targets participating in Wave 8
w_t6to8	3385	Longitudinal weight for targets participating in Wave 6 up to Wave 8
w_t9	4088	Cross-sectional weight for targets participating in Wave 9
w_tp9	2971	Cross-sectional weight for targets jointly participating with one parent in Wave 9
w_t6to9	2806	Longitudinal weight for targets participating in Wave 6 up to Wave 9
w_tp6to9	2178	Longitudinal weight for targets jointly participating with one parent in Wave 6, 7, and 9
w_t10	3683	Cross-sectional weight for targets participating in Wave 10
w_t6to10	2476	Longitudinal weight for targets participating in Wave 6 up to Wave 10

Table 5: Summary statistics for all weights provided.

Label of weight	Min.	Lower Quart.	Median	Mean	Upper Quart.	Max.
<i>Weights referring to Kindergarten children (Groups 2 and 3)</i>						
w_i	14.572	76.065	106.448	138.220	157.145	1564.080
w_t	9.120	94.544	143.477	216.117	248.543	3269.703
w_t1	0.044	0.456	0.693	1.000	1.210	4.267
w_tp1	0.046	0.462	0.703	1.000	1.218	4.252
w_t2	0.041	0.431	0.677	1.000	1.187	4.454
w_tp2	0.030	0.326	0.516	1.000	0.951	5.199
w_t1to2	0.044	0.455	0.706	1.000	1.213	4.255
w_tp1to2	0.044	0.474	0.699	1.000	1.182	4.222
w_t1to3	0.112	0.466	0.736	1.000	1.224	4.110
w_tp1to3	0.102	0.470	0.734	1.000	1.209	4.056
w_t1to4	0.111	0.462	0.726	1.000	1.236	4.174
w_tp1to4	0.098	0.455	0.726	1.000	1.245	4.183
w_t1to5	0.110	0.458	0.727	1.000	1.225	4.151
w_tp1to5	0.098	0.454	0.735	1.000	1.247	4.127
w_t1to6	0.112	0.466	0.735	1.000	1.235	4.093
w_tp1to6	0.099	0.460	0.722	1.000	1.260	4.120
<i>Weights referring to elementary schools students (Groups 1 and 3)</i>						
w_i	9.452	23.505	30.904	39.315	43.397	332.640
w_t	16.668	48.043	73.305	97.546	115.784	3869.294
w_t3	0.174	0.507	0.778	1.000	1.235	3.749
w_tp3	0.159	0.491	0.753	1.000	1.226	3.931
w_t4	0.159	0.477	0.731	1.000	1.181	4.089
w_tp4	0.100	0.330	0.510	1.000	0.930	5.297
w_t3to4	0.174	0.513	0.783	1.000	1.233	3.700
w_tp3to4	0.166	0.515	0.765	1.000	1.231	3.720
w_t5	0.147	0.454	0.700	1.000	1.160	4.362
w_tp5	0.056	0.195	0.315	1.000	0.641	5.726
w_t3to5	0.171	0.513	0.782	1.000	1.228	3.675
w_tp3to5	0.160	0.497	0.762	1.000	1.234	3.792
w_t6	0.093	0.328	0.534	1.000	1.032	5.076
w_tp6	0.022	0.118	0.204	1.000	0.575	5.806
w_t3to6	0.169	0.512	0.784	1.000	1.235	3.688
w_tp3to6	0.159	0.502	0.756	1.000	1.225	3.786
w_t7	0.067	0.255	0.441	1.000	0.921	5.403
w_tp7	0.021	0.081	0.148	1.000	0.498	5.868
w_t3to7	0.152	0.498	0.778	1.000	1.263	3.701
w_tp3to7	0.161	0.501	0.749	1.000	1.247	3.806
w_t8	0.040	0.168	0.329	1.000	0.914	5.572
w_t3to8	0.151	0.491	0.769	1.000	1.258	3.769
w_t9	0.034	0.152	0.334	1.000	1.008	5.528
w_tp9	0.011	0.047	0.107	1.000	0.705	5.864
w_t3to9	0.157	0.484	0.767	1.000	1.249	3.824
w_tp3to9	0.162	0.496	0.747	1.000	1.238	3.826
w_t10	0.027	0.123	0.290	1.000	1.036	5.589
w_t3to10	0.154	0.481	0.771	1.000	1.261	3.829

Table 5: Summary statistics for all weights provided. (continued)

Label of weight	Min.	Lower Quart.	Median	Mean	Upper Quart.	Max.
<i>Joint weights referring to Grade 4 students (Groups 1, 2 and 3)</i>						
w_p6	11.852	58.169	95.355	155.992	173.955	4501.028
w_p6_joint	3.123	37.049	56.559	77.996	92.182	2832.785
w_t6	0.068	0.476	0.744	1.000	1.230	3.995
w_tp6	0.047	0.423	0.660	1.000	1.174	4.467
w_t7	0.092	0.395	0.654	1.000	1.118	4.622
w_tp7	0.049	0.277	0.447	1.000	0.872	5.400
w_t6to7	0.109	0.457	0.730	1.000	1.214	4.041
w_tp6to7	0.080	0.427	0.664	1.000	1.184	4.410
w_t8	0.066	0.262	0.466	1.000	1.036	5.243
w_t6to8	0.128	0.452	0.723	1.000	1.201	4.121
w_t9	0.047	0.216	0.414	1.000	1.107	5.300
w_tp9	0.021	0.139	0.262	1.000	0.765	5.701
w_t6to9	0.121	0.445	0.720	1.000	1.197	4.161
w_tp6to9	0.075	0.439	0.679	1.000	1.183	4.416
w_t10	0.032	0.171	0.344	1.000	1.124	5.425
w_t6to10	0.108	0.451	0.728	1.000	1.207	4.113

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