

NEPS

National Educational Panel Study

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## Samples, Weights and Nonresponse

NEPS Starting Cohort 6 — Adults

*Adult Education and Lifelong Learning*

Wave 10

Research Data

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

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

### 1. Prequel

This report documents the sample sizes and the weighting procedures of the panel Wave 10 of the NEPS Starting Cohort 6 (SC6, Adult Education and Lifelong Learning).<sup>1</sup>

This paper supplements the previous report for weighting by Hammon, Zinn, Aßmann, and Würbach (2016) which gives more detailed information on the applied sampling procedure, the derivation of design weights, their successive adjustments, and the computation of panel weights for previous waves.

In total, the SC6 sample comprises three subsamples: respondents from the ALWA sample (ALWA), the enhancement & refreshment sample of Wave 2 (NEPS 1), and the refreshment sample of Wave 4 (NEPS 3). Table 1 summarizes the study numbers, the survey modes, the periods of the studies, as well as the numbers of participants in each wave. Table 2 completes this information by detailing the composition of the distinct samples together with the numbers of nonrespondents and final drop-outs.

*Table 1: Summary of waves.*

Wave	Study number	Survey mode	Period	Number of Participants
2	B72	CATI/CAPI	2009/10	11,649
3	B67	CAPI/CATI	2010/11	9,320
4	B68	CATI/CAPI	2011/12	14,104
5	B69	CAPI/CATI	2012/13	11,696
6	B70	CATI/CAPI	2013/14	10,639
7	B97	CAPI/CATI	2014/15	9,770
8	B115	CATI/CAPI	2015/16	9,236
9	B116	CAPI/CATI	2016/17	8,662
10	B117	CATI/CAPI	2017/18	8,125

CATI: Computer-assisted telephone interview, CAPI: Computer-assisted personal interview.

The remainder of this supplement is structured as follows: Section 2 describes how the panel weights of Wave 10 are derived. This includes nonresponse adjustments and the post-stratification of weights, respectively. Section 3 concludes with a summary of the design variables and the sampling weights provided.

<sup>1</sup>The wave corresponds to study B117 (Wave 10).

Table 2: Case numbers, respondents, nonrespondents and final drop-outs.

Wave	Sub-sample	Panel cohort	Not used	Used sample	Participants	Participation proportion	Temporary drop-outs	Final drop-outs (within wave)	Final drop-outs (after wave)
2	<b>Gesamt</b>	8997	0	27009	11649	0.431	1927	13433	1381
	ALWA	8997	0	8997	6572	0.730	1927	498	1097
	NEPS 1	-	0	18012	5077	0.282	0	12935	284
3	<b>Gesamt</b>	12195	0	12195	9323	0.764	2566	306	511
	ALWA	7402	0	7402	5639	0.763	1582	181	511
	NEPS 1	4793	0	4793	3684	0.769	984	125	0
4	<b>Gesamt</b>	11390	0	28501	14112	0.495	1806	12583	414
	ALWA	6714	0	6714	5380	0.801	1023	311	204
	NEPS 1	4676	0	4676	3524	0.754	783	369	210
	NEPS 3	-	0	17111	5208	0.304	0	11903	0
5	<b>Gesamt</b>	15504	255	15249	11696	0.767	2113	1440	0
	ALWA	6199	3	6196	4880	0.788	757	559	0
	NEPS 1	4097	8	4089	3100	0.758	548	441	0
	NEPS 3	5208	244	4964	3716	0.749	808	440	0
6	<b>Gesamt</b>	13809	251	13558	10639	0.785	2354	565	528
	ALWA	5637	114	5523	4555	0.825	814	154	161
	NEPS 1	3648	119	3529	2847	0.807	520	162	114
	NEPS 3	4524	18	4506	3237	0.718	1020	249	253
7	<b>Gesamt</b>	12465	22	12443	9770	0.785	1771	902	344
	ALWA	5208	2	5206	4189	0.805	737	280	109
	NEPS 1	3253	10	3243	2604	0.803	385	254	82
	NEPS 3	4004	10	3994	2977	0.745	649	368	153
8	<b>Gesamt</b>	11197	10	11187	9236	0.826	1458	493	616
	ALWA	4817	2	4815	4099	0.851	554	162	616

*Table 2: Case numbers, respondents, nonrespondents and final drop-outs.*

Wave	Sub-sample	Panel cohort	Not used	Used sample	Participants	Participation proportion	Temporary drop-outs	Final drop-outs (within wave)	Final drop-outs (after wave)
	NEPS 1	2907	4	2903	2450	0.844	322	131	0
	NEPS 3	3473	4	3469	2687	0.775	582	200	0
9	<b>Gesamt</b>	10078	23	10055	8662	0.861	1003	390	392
	ALWA	4427	23	4404	3835	0.871	431	138	131
	NEPS 1	2641	0	2641	2289	0.867	240	112	117
	NEPS 3	3010	0	3010	2538	0.843	332	140	144
10	<b>Gesamt</b>	9273	0	9273	8125	0.876	921	227	319
	ALWA	4135	0	4135	3669	0.887	395	71	126
	NEPS 1	2412	0	2412	2133	0.884	203	76	90
	NEPS 3	2726	0	2726	2323	0.852	323	80	103

## 2. Cross-sectional and Longitudinal Weights for Wave 10

### 2.1. Wave 10

In Wave 10, participation of the ALWA and NEPS1 subsample depends on *birth cohort, migration background, subsample, marital status, household size, federal state* and *educational level*. Individuals of the oldest birth cohort and divorced persons are still less likely to drop out than units from the youngest age group and unmarried individuals. The propensity of participating increases with increasing level of education as in previous waves. Units from the ALWA study have a higher likelihood to participate than units from NEPS1 subsample. Furthermore, migration background has a very negative impact on the probability of participating in the survey. Individuals from *Sachsen, Thüringen, Berlin, and Bremen* are more likely to participate than people from *Nordrhein-Westfalen*, whereas units from *Saarland* have a higher likelihood to drop out than those from *Nordrhein-Westfalen*. In addition, units who live in a two-person-household have a lower probability of participating than those who live in a household with three or more persons. The model of the NEPS3 subsample shows selectivity with regards to *migration background, birth cohort* and *educational level*. The effects are similar to those reported for the ALWA and NEPS1 subsample. In addition, units from *Sachsen* and *Sachsen-Anhalt* are more likely to participate than respondents from *Nordrhein-Westfalen*. The parameter estimates of both models can be found in Table 1 and 2 in the Appendix.

The longitudinal weights of continuous participation until Wave 10 are derived using the longitudinal weights of Wave 9, and the participating propensities in Wave 10 that are predicted by the computed logistic regression models. The cross-sectional weights were calibrated to match sample distributions with those of the Microcensus 2017. A comparison of the (unweighted) Wave 10 sample distributions and the benchmark distributions from the Microcensus can be found in Tables 3 to 8 in the Appendix. The distribution of *country of birth* and especially that of *educational level* differ considerably between sample and Microcensus. In addition, middle-aged individuals are more and younger units are less represented in the sample than in the target population.

## 3. Summary of Design Variables and Weights

To ease statistical analysis, all of the survey weights are provided in a standardized form, where standardization was performed to have weights with mean one. Table 3 lists the types of weights provided for the SC6 SUF release version 10-0-0 and Table 4 gives some summary statistics of the (standardized) weights provided. Along with sampling weights, variables highlighting the sampling design are published. They are summarized in Table 5.

Table 3: Types of weights provided.

Type of weight	Label
Weights of individuals participating in Wave 10 (study B117)	w_t10_cal
Weights of individuals participating in Wave 2, 3, 4, 5, 6, 7, 8, 9, and 10	w_t2345678910_std
Weights of individuals participating in Wave 4, 5, 6, 7, 8, 9, and 10	w_t45678910_std

Table 4: Summary statistics for (calibrated and standardized) weights.

Label of weight	Number of individuals	Min.	Lower Quart.	Median	Mean	Upper Quart.	Max.
w_t10_cal	8,125	0.014	0.142	0.370	1.000	1.040	18.149
w_t2345678910_std	4,262	0.044	0.222	0.471	1.000	1.156	5.201
w_t45678910_std	6,391	0.027	0.189	0.388	1.000	0.983	5.446

Table 5: Design variables provided.

Type of design information	Label
Primary Sampling Unit (Sampling point number)	psu
Identifier of stratum (Implicit stratification)	stratum
Initial sample (ALWA, NEPS)	sample
Initial sample detailed (ALWA, NEPS enhancement, NEPS refreshment)	subsample
Federal state	tx80101
BIK 10 classification	tx80102
BIK 7 classification	tx80103

## References

Hammon, A., Zinn, S., Aßmann, C., & Würbach, A. (2016). *Samples, weights, and nonresponse: the adult cohort of the national educational panel study (wave 2 to 6)* (NEPS Survey Paper No. 7). Bamberg, Germany: Leibniz Institute for Educational Trajectories, National Educational Panel Study.

## A. Results of Nonresponse Modeling and Calibration

**Table 1: Results of the logit regression model measuring the participation propensity of individuals in Wave 10 for the ALWA and NEPS 1 subsample.**

Variable	Reference	Odds Ratio	P-Value
<i>Subsample</i> NEPS1	ALWA	0.67	0.00
<i>Birth year</i> 1956 – 1969 1970 – 1979 1980 – 1986	1944 – 1955	1.08 0.96 0.66	0.22 0.59 0.00
<i>Gender</i> female	male	1.07	0.07
<i>Country of birth</i> born abroad	born in Germany	0.56	0.00
<i>Marital status</i> unmarried married widowed	divorced	0.77 0.95 1.13	0.00 0.46 0.37
<i>Household size</i> one person two persons	three persons and more	0.93 0.89	0.29 0.01
<i>School qualification</i> ISCED 3ac/4ab ISCED 3b ISCED 5a/6 ISCED 5b	ISCED 1/2ab	1.95 1.30 2.36 1.66	0.00 0.00 0.00 0.00
<i>Federal State</i> Hamburg Niedersachsen Bremen Schleswig-Holstein Hessen Rheinland-Pfalz Baden-Württemberg Bayern Saarland Berlin Brandenburg Mecklenburg-Vorpommern Sachsen Sachsen-Anhalt Thüringen	Nordrhein-Westfalen	1.01 1.04 1.68 0.98 1.09 0.95 0.96 1.05 0.69 1.26 1.20 1.09 1.24 0.85 1.30	0.97 0.60 0.04 0.89 0.26 0.56 0.54 0.43 0.03 0.04 0.11 0.58 0.02 0.18 0.03
<i>BIK categories</i> 2000 to 5000 inhab. 5000 to 20,000 inhab. 20,000 to 50,000 inhab. 50,000 to 100,000 inhab. (styp 2/3/4) 50,000 to 100,000 inhab. (styp 1) 100,000 to 500,000 inhab. (styp 2/3/4) 100,000 to 500,000 inhab. (styp 1) more than 500,000 inhab. (styp 2/3/4) more than 500,000 inhab. (styp 1)	less than 2000 inhab.	0.94 9.91 0.86 0.95 1.00 0.84 0.96 0.89 0.93	0.72 0.54 0.42 0.75 0.98 0.45 0.77 0.45 0.62

<i>Attempts to contact target</i>		0.99	0.00
<b>Number of cases</b>	12,482		

**Table 2: Results of the logit regression model measuring the participation propensity of individuals in Wave 10 for the NEPS 3 subsample.**

<b>Variable</b>	<b>Reference</b>	<b>Odds Ratio</b>	<b>P-Value</b>
<i>Birth year</i>	1944 – 1955		
1956 – 1969		1.05	0.56
1970 – 1979		0.85	0.09
1980 – 1986		0.76	0.01
<i>Gender</i>	male		
female		1.00	0.94
<i>Country of birth</i>	born in Germany		
born abroad		0.45	0.00
<i>Marital status</i>	divorced		
unmarried		0.89	0.33
married		1.10	0.37
widowed		1.47	0.05
<i>Household size</i>	three persons and more		
one person		1.07	0.50
two persons		1.10	0.19
<i>School qualification</i>	ISCED 1/2ab		
ISCED 3ac/4ab		1.71	0.00
ISCED 3b		1.32	0.02
ISCED 5a/6		2.21	0.00
ISCED 5b		1.63	0.00
<i>Federal State</i>	Nordrhein-Westfalen		
Hamburg		0.71	0.14
Niedersachsen		1.17	0.14
Bremen		1.36	0.40
Schleswig-Holstein		0.97	0.84
Hessen		1.00	0.99
Rheinland-Pfalz		0.95	0.72
Baden-Württemberg		0.88	0.21
Bayern		1.11	0.26
Saarland		0.86	0.56
Berlin		1.06	0.74
Brandenburg		1.26	0.17
Mecklenburg-Vorpommern		0.93	0.75
Sachsen		1.34	0.05
Sachsen-Anhalt		1.56	0.01
Thüringen		1.18	0.35
<i>BIK categories</i>	less than 2000 inhab.		
2000 to 5000 inhab.		0.89	0.68
5000 to 20,000 inhab.		1.05	0.83
20,000 to 50,000 inhab.		1.00	0.99
50,000 to 100,000 inhab. (styp 2/3/4)		0.79	0.34
50,000 to 100,000 inhab. (styp 1)		1.15	0.63
100,000 to 500,000 inhab. (styp 2/3/4)		0.96	0.87
100,000 to 500,000 inhab. (styp 1)		1.01	0.97

more than 500,000 inhab. (styp 2/3/4)		1.30	0.27
more than 500,000 inhab. (styp 1)		0.98	0.93
<i>Attempts to contact target</i>		0.99	0.00
<b>Number of cases</b>	5,208		

**Table 3: Comparison of the distribution of the Wave 10 sample data and the target distribution (Microcensus 2016) according to gender and educational attainment.**

Gender and education	actual distribution	target distribution	
	net sample	population (Microcensus 2016)	
	%	%	total
<b>male</b>			
ISCED 1	0.25	1.69	784,000
ISCED 2	1.18	4.24	1,969,000
ISCED 3	16.18	24.11	11,202,000
ISCED 4	3.09	3.71	1,723,000
ISCED 5	26.84	15.13	7,030,000
ISCED 6	1.38	0.95	441,000
<b>female</b>			
ISCED 1	0.32	1.91	886,000
ISCED 2	2.86	6.27	2,915,000
ISCED 3	18.04	23.67	10,999,000
ISCED 4	4.16	6.48	3,010,000
ISCED 5	24.89	11.31	5,254,000
ISCED 6	0.81	0.55	255,000
<b>Total</b>	100.00	100.00	46,468,000

**Table 4: Comparison of the distribution of the Wave 10 sample data and the target distribution (Microcensus 2016) according to birth year and educational attainment.**

Birth year and education	actual distribution	target distribution	
	net sample	population (Microcensus 2016)	
	%	%	total
<b>1975 – 1986</b>			
ISCED 1	0.12	0.99	447,000
ISCED 2	0.64	2.43	1,103,000
ISCED 3	4.26	9.86	4,470,000
ISCED 4	1.60	3.51	1,590,000
ISCED 5	9.83	7.47	3,385,000
ISCED 6	0.76	0.45	205,000
<b>1965 – 1974</b>			
ISCED 1	0.05	0.97	442,000
ISCED 2	0.75	2.54	1,150,000
ISCED 3	8.65	12.60	5,712,000
ISCED 4	2.51	3.13	1,418,000
ISCED 5	12.97	6.85	3,107,000
ISCED 6	0.53	0.39	177,000

<b>1956 – 1964</b>			
ISCED 1	0.15	0.87	395,000
ISCED 2	1.22	2.53	1,146,000
ISCED 3	11.67	12.99	5,887,000
ISCED 4	2.24	2.29	1,040,000
ISCED 5	16.89	6.20	2,813,000
ISCED 6	0.47	0.36	161,000
<b>1944 – 1955</b>			
ISCED 1	0.25	0.75	341,000
ISCED 2	1.43	3.08	1,395,000
ISCED 3	9.65	12.61	5,716,000
ISCED 4	0.90	1.14	519,000
ISCED 5	12.04	5.68	2,573,000
ISCED 6	0.43	0.32	143,000
<b>Total</b>	<b>100.00</b>	<b>100.00</b>	<b>45,335,000</b>

**Table 5: Comparison of the distribution of the Wave 10 sample data and the target distribution (Microcensus 2016) according to Federal State.**

<b>Federal State</b>	actual distribution	target distribution	
	net sample	population (Microcensus 2016)	
	%	%	total
Schleswig-Holstein	2.94	3.48	1,618,000
Hamburg	1.81	2.20	1,026,000
Niedersachsen	10.51	9.53	4,436,000
Bremen	0.74	0.78	365,000
Nordrhein-Westfalen	21.97	21.60	10,055,000
Hessen	7.66	7.51	3,497,000
Rheinland-Pfalz	4.63	4.95	2,304,000
Baden-Württemberg	11.91	12.99	6,046,000
Bayern	15.82	15.70	7,310,000
Saarland	1.17	1.22	566,000
Berlin	4.05	4.37	2,036,000
Brandenburg	3.53	3.19	1,487,000
Mecklenburg-Vorpommern	1.65	2.04	948,000
Sachsen	5.55	4.96	2,307,000
Sachsen-Anhalt	2.95	2.81	1,306,000
Thüringen	3.11	2.69	1,252,000
<b>Total</b>	<b>100.00</b>	<b>100.00</b>	<b>46,559,000</b>

**Table 6: Comparison of the distribution of the Wave 10 sample data and the target distribution (Microcensus 2016) according to BIK categories of municipal size.**

BIK categories	actual distribution	target distribution	
	net sample	population (Microcensus 2016)	
	%	%	total
less than 2000 inhab.	2.01	1.71	797,000
2000 to 5000 inhab.	2.49	2.55	1,186,000
5000 to 20,000 inhab.	7.68	8.54	3,975,000
20,000 to 50,000 inhab.	11.61	11.01	5,125,000
50,000 to 100,000 inhab. styp 2/3/4	8.64	7.83	3,644,000
50,000 to 100,000 inhab. styp 1	1.99	2.13	991,000
100,000 to 500,000 inhab. styp 2/3/4	15.83	15.04	7,004,000
100,000 to 500,000 inhab. styp 1	16.05	14.44	6,722,000
500,000 and more inhab. styp 2/3/4	9.46	9.87	4,594,000
500,000 and more inh. styp 1	24.25	26.89	12,518,000
<b>Total</b>	<b>100.00</b>	<b>100.00</b>	<b>46,556,000</b>

**Table 7: Comparison of the distribution of the Wave 9 sample data and the target distribution (Microcensus 2016) according to birth year.**

Year of birth	actual distribution	target distribution	
	net sample	population (Microcensus 2016)	
	%	%	total
1944	1.67	1.68	781,000
1945	1.30	1.26	585,000
1946	1.56	1.48	689,000
1947	1.74	1.66	775,000
1948	1.75	1.83	853,000
1949	2.36	2.02	940,000
1950	2.33	2.08	970,000
1951	2.40	2.14	998,000
1952	2.63	2.18	1,014,000
1953	2.23	2.15	999,000
1954	2.55	2.26	1,052,000
1955	2.17	2.28	1,062,000
1956	3.45	2.38	1,106,000
1957	3.08	2.48	1,156,000
1958	3.40	2.52	1,175,000
1959	4.09	2.62	1,220,000
1960	3.82	2.73	1,273,000
1961	3.64	2.88	1,340,000
1962	3.63	2.89	1,347,000
1963	3.73	3.06	1,426,000
1964	3.80	3.05	1,420,000
1965	3.74	3.04	1,414,000
1966	3.48	2.98	1,388,000
1967	3.21	2.87	1,338,000
1968	2.97	2.72	1,311,000
1969	2.61	2.68	1,250,000
1970	2.50	2.54	1,183,000

1971	1.97	2.47	1,149,000
1972	1.85	2.28	1,061,000
1973	1.74	2.09	974,000
1974	1.40	2.08	969,000
1975	1.38	2.06	958,000
1976	1.49	2.12	986,000
1977	1.56	2.12	989,000
1978	1.46	2.20	1,025,000
1979	1.45	2.15	1,001,000
1980	1.29	2.28	1,061,000
1981	1.28	2.28	1,060,000
1982	1.34	2.27	1,056,000
1983	1.48	2.26	1,051,000
1984	1.29	2.20	1,023,000
1985	1.42	2.29	1,060,000
1986	1.77	2.29	1,067,000
<b>Total</b>	100.00	100.00	45,866,000

**Table 8: Comparison of the distribution of the Wave 10 sample data and the target distribution (Microcensus 2016) according to country of birth.**

<b>Country of birth</b>	actual distribution	target distribution	
	net sample	population (Microcensus 2016)	
	%	%	total
born abroad	6.88	19.82	9,227,000
born in Germany	93.12	80.18	37,328,000
<b>Total</b>	100.00	100.00	46,555,000