NEPS
Nationales Bildungspanel

Research Data

Sven Pelz

NEPS Technical Report: Implementation of the ISCED-97, CASMIN and Years of Education Classification Schemes in SUF Starting Cohort 2

valid as of release 10.0.0

LIfBi
LEIBNIZ-INSTITUT FÜR
BILDUNGSVERLÄUFE

NEPS Technical Report: Implementation of the ISCED-97, CASMIN and Years of Education Classification Schemes in SUF Starting Cohort 2

Valid as of Release 10.0.0

Sven Pelz[1]

Leibniz Institute for Educational Trajectories, Bamberg, Germany

[1] For his contribution to earlier versions, we also thank our former colleague Markus Nester at the RDC.

1 Introduction

Bearing in mind the variety of utilized questions and possible answers on (un-)completed school and vocational episodes, three main educational classification schemes were used to harmonize given responses and to facilitate standardized analyses: Firstly, the International Standard Classification of Education in its version of 1997 (ISCED-97)[1][2], secondly, the Comparative Analysis of Social Mobility in Industrial Nations (CASMIN)[3][4] and, thirdly, the Years of Education. Each classification scheme was generated for the interviewed parental units of Starting Cohort 2 and also for their partners and siblings of the target persons. Since the implementation process partly varies for the considered subjects, not only regarding the variables and data sources used but also regarding the detailed procedure and final data structure, a comprehensive overview as well as a step by step description of the underlying derivation processes is presented here.

2 Data source, variables and the general integration process

To obtain the ISCED-97, CASMIN and Years of Education scale scores, information from the pParent and spSibling dataset were used. In the pParent dataset, for the interviewed parental units and their partners, respectively, two variables with the information on the highest school-leaving qualification (parental units (pu): p731802, p731807; partners (p): p731852, p731857) and four variables on the highest vocational qualification (pu: p731813, p731818, p731820, p731821; p: p731863, p731868, p731870, p731871) were used in order to obtain two auxiliary variables that contain the highest school-leaving qualification and the highest vocational qualification in an already ISCED-97 or CASMIN specific categorization. In the spSibling dataset, for the siblings, one variable with the highest school-leaving qualification (s: p732313) and four variables on the highest vocational qualification (s: p732318, p732322, p732324, p732325) were used. Subsequently, for the interviewed parental units and their partners, the data matrix was sorted using a previously generated parent/partner ID and wave and both auxiliary variables were carried forward in time to fill in the missing information when no change was observed due to the questionnaire design[2]. The data were checked for consistency and “falling” schooling degrees were overwritten with the prior higher school degree information. Because of the questionnaire design, no carry forward or overwriting of information was made for the siblings. All this was necessary for the last step, the line by line combination of the auxiliary variables to derive the final ISCED-97 or CASMIN scale scores.

[2] This step was necessary because the highest school-leaving qualification was asked only when a parental unit was surveyed for the first time, no prior schooling information was given, or, for the partners, in case of an occurring partner change. The same applies to the last vocational degree, which was updated only when a vocational change was stated explicitly in a corresponding filter question. The final scores therefore represent the last known combined information and are also provided and filled in waves where no (new) information was asked.

3 ISCED-97 classification (p731802_g1, p731852_g1, p732313_g1)

On a variable level, ISCED-97 was built in this last step on the following combination of categories: Beginning with the auxiliary variables for the highest school-leaving qualification, parental units, partners and siblings with another type of school-leaving qualification or a residual value (pu: p731802 = -98, -97, 7; p731807 = -98, -97, 7 / p: p731852 = -98, -97, 7; p731857 = -98, -97, 7 / s: p732313 = -98, -97, 7) were initially treated as not determinable ("-55"), occurring missings by design (pu: p731802 = -54; p731807 = -54 / p: p731852 = -54; p731857 = -54 / s: p732313 = -54) equally worded ("-54"). Concerning determinable statements, no school-leaving qualification or one from a special needs school (pu: p731802 = -20, 6; p731807 = -20, 6 / p: p731852 = -20, 6; p731857 = -20, 6 / s: p732313 = -20, 6) were classified into ISCED-97 "0A/1A". Parental units, partners and siblings with a basic or qualifying school-leaving qualification were categorized into "2B" (pu: p731802 = 1, 2; p731807 = 1, 2 / p: p731852 = 1, 2; p731857 = 1, 2 / s: p732313 = 1, 2), those with an intermediate secondary school-leaving qualification into "2A" (pu: p731802 = 3; p731807 = 3 / p: p731852 = 3; p731857 = 3 / s: p732313 = 3), and those with an entrance certificate for a university of applied science or a university into "3A" (pu: p731802 = 4, 5; p731807 = 4, 5 / p: p731852 = 4, 5; p731857 = 4, 5 / s: p732313 = 4, 5). Remaining cases were treated as a system-missing value.

For the auxiliary variables on the last vocational degree, parental units, partners and siblings with another type of vocational qualification or a residual value (pu: p731813 = -98, -97, -55, 21; p731813 = 3 & p731821 ≠ 1, 2, 3, 4; p731813 = 8, 9, 10, 16 & p731818 = ., -98, -97 / p: p731863 = -98, -97, -55, 21; p731863 = 3 & p731871 ≠ 1, 2, 3, 4; p731863 = 8, 9, 10, 16 & p731868 = ., -98, -97 / s: p732318 = -98, -97, 21; p732318 = 3 & p731821 ≠ 1, 2, 3, 4; p732318 = 8, 9, 10, 16 & p732322 = ., -98, -97) were treated once again as not determinable ("-55") and missings by design (pu: p731813 = -54 / p: p731863 = -54 / s: p732318 = -54) in equal measure ("-54"). Then, those with no vocational degree (pu: p731813 = -20 / p: p731863 = -20 / s: p732318 = -20) were coded to "0" ("no degree"). A vocational qualification with a journeyperson's or assistant's certificate, dual vocational education and training, semi-skilled vocational training with a company, as a semi-skilled worker in the former German Democratic Republic or for an ordinary rank within the civil service (pu: p731813 = 1, 17, 19; p731821 = 1 / p: p731863 = 1, 17, 19; p731871 = 1 /s: p732318 = 1, 17, 19; p732325 = 1) were classified into "3B". A vocational degree for a middle rank within the civil service (pu: p731821 = 2 / p: p731871 = 2 / s: p732325 = 2) was categorized into „3C". „5B" was assigned to those with a certificate as Master or Technician, from a school for health care professionals, a "Berufsfachschule" or commercial school, a "Fachschule", a "Berufsakademie", a college of public administration or for a higher rank within the civil service (pu: p731813 = 2, 4, 5, 6, 7, 12, 13; p731813 = 8, 9, 10, 16 & p731818 = 1, 2, 5; p731821 = 3 / p: p731863 = 2, 4, 5, 6, 7, 12, 13; p731863 = 8, 9, 10, 16 & p731868 = 1, 2, 5; p731871 = 3 / s: p732318 = 2, 4, 5, 6, 7, 12, 13; p732318 = 8, 9, 10, 16 & p732322 = 1, 2, 5;

p732325 = 3). Finally, parental units, partners and siblings with a qualification for a senior rank within the civil service, with a degree from a university of applied science or a university (pu: p731813 = 14, 15; p731813 = 8, 9, 10, 16 & p731818 = 3, 4; p731821 = 4 / p: p731863 = 14, 15; p731863 = 8, 9, 10, 16 & p731868 = 3, 4; p731871 = 4 / s: p732318 = 14, 15; p732318 = 8, 9, 10, 16 & p732322 = 3, 4; p732325 = 4) were coded to "5A", those with an additional doctorate or habilitation (pu: p731813 = 11; p731820 = 1 / p: p731863 = 11; p731870 = 1 / s: p732318 = 11; p732324 = 1) into "6". Remaining cases were treated again as system-missing.

Subsequently, for the interviewed parental units and their partners, the data matrix was sorted using a previously generated parent/partner ID and wave and both auxiliary variables were carried forward in time to fill in the missing information when no change was observed due to the questionnaire design. The data were checked for consistency and "falling" schooling degrees were overwritten with the prior higher school degree information. Because of the questionnaire design, no carry forward or overwriting of information was made for the siblings.

Bringing together the codings, only the resulting maximum ISCED-97 scale scores of the two auxiliary variables within each line or point in time were considered. Hence, for example, parental units, partners and siblings with a "not determinable" school-leaving qualification and no further vocational degree were categorized into "0A/1A", while those with the same vocational information and a school-leaving qualification, leading to "2B", "2A" or "3A", were classified within the final ISCED-97 scale to the latter[3]. Furthermore, considering second cycles, in the presence of the combination "3A" as highest school-leaving qualification and "3B" as last vocational degree, "4A" was given to the concerning subjects (cf. Table 1).[4]

4 CASMIN classification (p731802_g2, p731852_g2, p732313_g2)

The derivation processes for the CASMIN scale scores were similar to the procedures for the ISCED-97 classifications in the section above. Initially, two auxiliary variables for the highest school-leaving and last vocational qualification were generated and, subsequently, the CASMIN scale scores were obtained by combining them. Considering a relationship between the ISCED-97 and CASMIN classification, it was possible to utilize the auxiliary variables of the former as a starting point for the corresponding latter ones, modified by some CASMIN-specific changes.

[3] Another example would be, if a person's information on the highest school-leaving qualification is missing or not codable, but the respondent indicates to have a university degree as a further vocational qualification. Here, ISCED-97 was coded "5A". This assumes the fact, that the person must have had any type of entrance qualification when starting university studies.

[4] Information on the temporal order of events was not available for parental units and partners, because only the highest degree was collected. Therefore, no further differentiation between second cycles "4A" and "4B" was possible and "4A" was used as a reference.

Here, it was feasible to use the corresponding ISCED-97 auxiliary variables for the highest school-leaving qualification without any further modifications as CASMIN ones. Then, for the corresponding CASMIN auxiliary variables that indicate the last vocational degree, it was possible to keep the information not determinable, missing by design and no vocational qualification. Furthermore, parental units, partners and siblings with an ISCED-97 of "3B", "3C" and "5B" were summarized into only one new category, containing those with a vocation-specific schooling or training. Indeed, it was not practicable to use the given information to identify subjects with a vocational degree from a university of applied science or a university. Here, it was necessary to generate two new categories, consisting of those with either a degree from a university of applied science (pu: p731813 = 14; p731813 = 3, 8, 9, 10, 11, 12, 13, 16 & p731818 = 3 / p: p731863 = 14; p731863 = 3, 8, 9, 10, 11, 12, 13, 16 & p731868 = 3 / s: p732318 = 14; p732318 = 3, 8, 9, 10, 11, 12, 13, 16 & p732322 = 3) or a university (pu: p731813 = 15; p731813 = 3, 8, 9, 10, 11, 12, 13, 16 & p731818 = 4; p731813 = 11 & p731818 = ., -98, -97; p731820 = 1; p731821 = 4 / p: p731863 = 15; p731863 = 3, 8, 9, 10, 11, 12, 13, 16 & p731868 = 4; p731863 = 11 & p731868 = ., -98, -97; p731870 = 1; p731871 = 4 / s: p732318 = 15; p732318 = 3, 8, 9, 10, 11, 12, 13, 16 & p732322 = 4; p732318 = 11 & p732322 = ., -98, -97; p732324 = 1; p732325 = 4). Remaining cases were treated again as system-missing values.

Parallel to the derivation of the ISCED-97 scale scores, the two auxiliary variables were additionally carried forward in time for the interviewed parental units and their partners, but not for the siblings. The final CASMIN scale scores were subsequently derived along the combinations shown in table 4.

5 Years of Education classification (p731802_g3, p731852_g3, p732313_g3)

Completing the derivation process, the Years of Education were gained from the given data. For this purpose, a function based on the CASMIN classification scheme was used to maintain the corresponding scale scores for the respective targets and all additionally considered persons. Generally, drawing from the categories of the CASMIN scheme, "1b" was assigned to 9, "1c" to 12, "2b" to 10, "2a" and "2c_gen" to 13, "2c_voc" to 15, "3a" to 16 and "3b" to 18 years of education. Those with neither a school-leaving nor a vocational qualification ("1a") were assigned the residual value "-20" because having no school-leaving qualification cannot be equated to a certain number of years of education reliably.[5] Finally, those with a non-codable, system-missing, or missing by design scale score within the CASMIN classification were treated exactly the same way within the Years of Education scheme.

[5] Consider, for example, migrants whose school attendance periods differ from the German compulsory one or whose certificates were not acknowledged.

References

[1] United Nations Educational, Scientific and Cultural Organization (1997): International Standard Classification of Education ISCED 1997. http://www.uis.unesco.org/Library/Documents/isced97-en.pdf [08.07.2015].

[2] United Nations Educational, Scientific and Cultural Organization (2012): Mapping of National Educational Qualifications: Germany. http://www.uis.unesco.org/Education/ISCEDMappings/Documents/North%20America%20and%20Western%20Europe/Germany_ISCED_mapping.xls [12.04.2016].

[3] König, Wolfgang; Lüttinger, Paul; Müller, Walter (1988): A Comparative Analysis of the Development and Structure of Educational Systems. Methodological Foundations and the Construction of a Comparative Educational Scale. CASMIN-Working Paper No. 12.

[4] Lechert/ Yvonne; Schroedter, Julia; Lüttinger, Paul (2006): Die Umsetzung der Bildungsklassifikation CASMIN für die Volkszählung 1970, die Mikrozensus-Zusatzerhebung 1971 und die Mikrozensen 1976-2004. ZUMA-Methodenbericht 2006/12.

Table 1: ISCED-97 interviewed parental units, respective partner(s) and siblings[6]

		Vocational qualification							
School-leaving qualification		Missing	Not determinable	No qualification, Vocational courses (0A/1A)	Assistant's certificate, Ordinary civil service, ... (3B)	Middle civil service (3C)	Technician, Master, Higher civil service, ... (5B)	University (of applied sciences), Senior civil service (5A)	Doctorate, Habilitation (6)
	Missing	Missing	-55	0A/1A	3B	3C	5B	5A	6
	Not determinable	-55	-55	0A/1A	3B	3C	5B	5A	6
	No qualification, Special needs school, Elementary school (0A/1A)	0A/1A	0A/1A	0A/1A	3B	3C	5B	5A	6
	"Hauptschule", Vocational training (2B)	2B	2B	2B	3B	3C	5B	5A	6
	Intermediate secondary school (2A)	2A	2A	2A	3B	3C	5B	5A	6
	Entrance certificate university (of applied sciences) (3A)	3A	3A	3A	4A	3C	5B	5A	6

[6] Missings by design "-54" can occur – by design – only simultaneously and the resulting score is, of course, also "-54" – missing by design; for simplicity this line and row was left out of the table.

Table 2: CASMIN interviewed parental units, respective partner(s) and siblings[7]

		Vocational qualification					
School-leaving qualification		Missing	Not determinable	No vocational qualification	Vocational specific schooling	University of applied science	University
	Missing	Missing	-55	1a	1c	3a	3b
	Not determinable	-55	-55	1a	1c	3a	3b
	No qualification, Special needs school, Elementary school	1a	1a	1a	1c	3a	3b
	"Hauptschule", Vocational training	1b	1b	1b	1c	3a	3b
	Intermediate secondary school	2b	2b	2b	2a	3a	3b
	Entrance certificate university (of applied sciences)	2c_gen	2c_gen	2c_gen	2c_voc	3a	3b

[7] Missings by design "-54" can occur – by design – only simultaneously and the resulting score is, of course, also "-54" – missing by design; for simplicity this line and row was left out of the table.