

The Swiss Neighbourhood Index of Socioeconomic Position: Update and Re-validation

Supplementary materials

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1 Data preparation

1.1 SNC - buildings

1.1.1 Eligible buildings

Origin buildings are defined as all buildings for which index is going to be calculated. These buildings need to:

1. Be present at least once in the **period of 2010-2014** in the SNC dataset.
2. Have valid 2010+ **building ID**.
3. Have valid 2010+ **geographical coordinates**.
4. Belong to category of 'normal' **residential buildings** (ie. no prisons, churches or nursing homes; see Appendix).

Buildings are selected from the `snc2_std_pers_90_00_14_all_206_full` dataset and processed as follows:

1. All buildings that have an ID and coordinates on any year from **2010** onward are selected
2. Submeter coordinates are rounded to 1m
3. **Newest** coordinates are always used when several are available under the same building ID
4. **Non-residential** buildings (see above) are excluded
5. Buildings having different ID but **same coordinates** are grouped together using synthetic 'GIS ID' (for instance 153 (sic!) different building IDs pointing to the same coordinates [on a caravan site?](#))

These coordinates become **n'hood centres** for network analysis and construction of an index.

1.1.2 Results

Distribution of years from which coordinates of a building are taken:

(SSEP 2.0 - 'origin' SNC buildings for network analysis)

year — Year of coordinates

		Freq.	Percent	Valid	Cum.
Valid	10	9550	0.62	0.62	0.62
	11	10426	0.68	0.68	1.30
	12	13118	0.85	0.85	2.15
	13	22880	1.49	1.49	3.63
	14	1484614	96.37	96.37	100.00
	Total	1540588	100.00	100.00	

Note the distinction between IDs (ie. small amount of buildings with different ID but same coordinates):

	Observations	
	total	distinct
buildid	1540588	1540588
gisid	1540588	1527177

1.2 SE

1.2.1 Eligible persons & households

Destination households are defined as all household that can provide information for calculation of the index. They need to be present in at least one Structural Survey (SE) during the period of 2012-2015. Surveys of 2010 and 2011 do not provide information about m2 area of the flat which is needed for calculation of standardised rent and were therefore excluded. Additionally, there are some reservations as to quality of the 2010 data.

In order to be included, SE personal record must (sequentially):

1. Link to household record.
2. Link to full SNC for buildid.¹
3. Link to valid coordinates (from ORIGINS dataset, see previous section).

Key variables² needed are then selected from each of the sources:

1. sncid, hhyid, age, sex, educ_agg, educ_curr, occup_isco, workstatus from the SEyy_pers_full dataset.
2. hhyid, hhtype, hhpos, hhpers, flatrooms, typeowner, rentnet from the SEyy_hh_full dataset (linked via hhyid)
3. buildid from the snc2_std_pers_90_00_14_all_206_full dataset (linked via sncid)
4. geox, geoy from the ORIGINS dataset (linked via buildid)

At next stage, individuals are excluded if:

1. Are younger than 19 at the time of SE.
2. Have one of the 'unusual' types of residence permit (Cross-border commuter (G), Short stay (L), Asylum seeker (N), People in need of protection (S), Person required to notify (Meldepflichtige), Diplomat/internat. official with diplomatic immunity, Internat. official without diplomatic immunity, Not classified elsewhere)
3. If individual participated in more than one SE, the latest record is kept.

For remaining individuals and their households, the following data are prepared:

1. Individuals are flagged if they work in **manual or unskilled occupations** (BUT only if they are in **paid employment** at the time of SE; see below).
2. Individuals are flagged if they have **no formal or have only compulsory education** AND are not currently pursuing any further education.
3. Households have their **crowding** (number of persons per room) calculated.
4. Households are flagged if they have **three to five rooms and are rented**.

¹Apart from 2015 SE data that are not yet included in the full SNC; egid identifier of the building was kindly provided by the SNC team

²Where 'yy' in the name stands for the year of the SE

1.2.2 Exclusions: eligibility criteria

Exclusion	Year			
	2012	2013	2014	2015
Start	286015	281990	287842	269509
Age <19	14791	14463	14184	12929
Permit	570	724	692	611
No household link	41319	40275	42175	35900
No building ID	38	7	4	0
Excluded building	1334	1297	1410	3965
End	227963	225224	229377	216104

The explanation of substantial amount of individuals not linked to households came from BfS:

The reference person has to fill out a form for all household members. As the FSO "calibrate" the structural survey using the information from STATPOP they decided to not include the information for the additional household members if the household structure (number of hh members, gender information) given on the SE household form didn't match the household information in STATPOP. This always applies for around 14% of the SE reference persons.

1.2.3 Exclusions: multiple SE

In cases when one person participated in more than one SE only newer records were kept.

Duplicates in terms of sncid

Copies	Observations	Surplus
1	885591	0
2	13074	6537
3	3	2

1.2.4 Results

Distribution of SE individuals over years:

(SSEP 2.0 - 'destination' SE 2012-15 data for SwissSEP 2.0)

SE — Survey year

	Freq.	Percent	Valid	Cum.
Valid 2012	222305	24.92	24.92	24.92
2013	224516	25.17	25.17	50.08
2014	229204	25.69	25.69	75.78
2015	216104	24.22	24.22	100.00
Total	892129	100.00	100.00	

Note the distinction between individuals, households, buildings and gisid, ie. individual and two spatial resolutions:

	Observations	
	total	distinct
sncid	892129	892129
hhyid	892129	892129
buildid	892129	581256
gisid	892129	575955

1.2.5 Limitations

1. Major limitation is that, compared to SEP 1.0, there is no way to define **head of the household** - all respondents (see exclusions) of the SE are then used, irrespectively of their position in household.
2. 2014 SE dataset is **missing information on 'Sozioprofessionelle Kategorie'** (variable sopc). It has been also signalled by BfS that this variable was of poor quality in 2010-2013 years. Therefore, it is not possible to identify individuals in manual and unskilled occupations in the same way as during construction of original index. That was mitigated by using the **ISCO-08 codes** of occupations to define manual and unskilled workers and farmers. Individuals whose occupations belong to one of the major groups 7, 8 & 9 (for manual and unskilled) and 6 (farmers) were selected.³ Note that occupation codes are available only for people in **paid employment** so the denominator for calculating 'employment' domain was adapted and all individuals that were not in paid employment were excluded. Also - small proportion of people eligible for calculations based on ISCO codes had them missing. Again, they were included in the study but had their profession information replaced to missing and again the denominator was adjusted to reflect that.
3. There is significant amount of individuals in SE data with **no link to household SE file** and all these records were excluded.

³Additionally, sensitivity analyses were done with more strict selection of ISCO codes (major groups 8 & 9 only) as well as by converting ISCO-08 codes to **ISEI-08 codes** to obtain continuous measure of 'International Socio-Economic Index of occupational status' and calculating summary of these values in n'hood

1.3 Road network

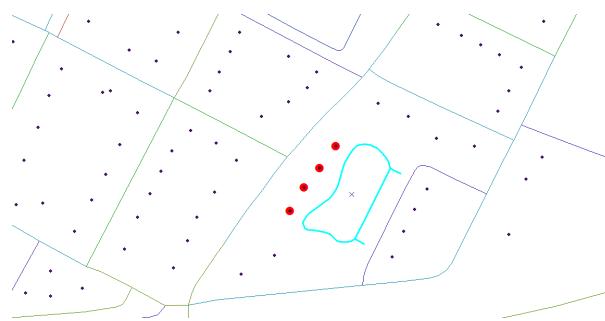
1.3.1 Setup

1. Network analyses were done using updated version of **swissTLM3D** data (1.5 version as compared to 1.0 version in the previous edition).
2. Network analyses were done using ArcGIS 10.5 (previously - ArcGIS 10.2).
3. Network analyses took all SNC buildings as ORIGINS and calculated 50 closest DESTINATIONS from the SE dataset.⁴
4. Threshold for n'hood construction was set up to be maximum 20 km (measured along the road network).⁵
5. As in the 1.0 index, separate n'hoods were created using rented, 3-5 bedroom flats as DESTINATIONS.

Schematic representation of n'hood 'search' comparing the use of all buildings to use of sample buildings could be visualized as follows:



Small *ad hoc* corrections of the **swissTLM3D** dataset were necessary in cases where unconnected segments of the road network were found. These features were then removed:



1.3.2 Results - buildings

Vast majority of the SNC buildings (ORIGINS) have network connections to 50 SE buildings (DESTINATIONS)
⁶:

⁴In that logic, the n'hood is either constructed from one SE household and 49 SE neighbours OR 50 SE neighbours if the n'hood centre is not the SE household

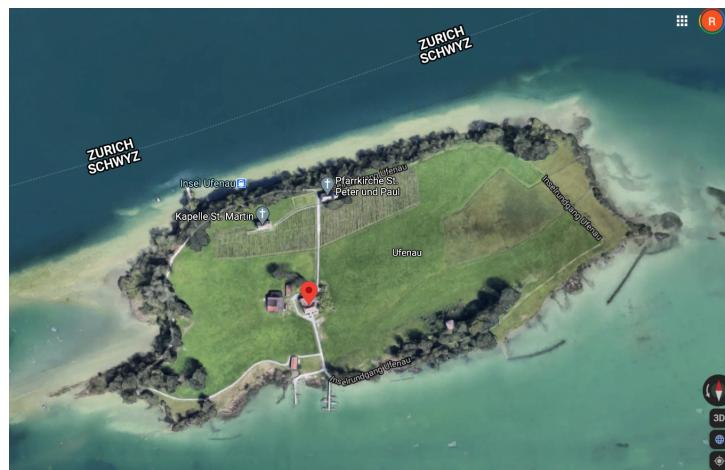
⁵That was based on preliminary checks with data, results of previous analyses & common sense rationale (hard to say it's n'hood if households are more than 20km apart...)

⁶Keep in mind this results will get even better when we move from buildings to households

b_maxdest

		Freq.	Percent	Valid	Cum.
Valid	1	2	0.00	0.00	0.00
	26	29	0.00	0.00	0.00
	41	2	0.00	0.00	0.00
	44	8	0.00	0.00	0.00
	45	2	0.00	0.00	0.00
	49	1	0.00	0.00	0.00
	50	1527131	100.00	100.00	100.00
Total		1527175	100.00	100.00	

The two cases of buildings with no neighbours are legitimate and really have no neighbours on the (highway restricted) road network: one of the buildings is located on [Ufenau Island](#), Lake Zurich; and the other - right next to highway, [on the shore of Thunersee](#). These two buildings were excluded from the analyses and have no index.



Similarly, buildings with n'hoods not meeting the 50 households threshold size will be flagged.

Few areas where less than 50 buildings were found in the n'hood (respecting 20km road network distance) were located in sparsely populated areas such as: [Gondo](#) (close to Simplon Pass) or [Avers](#) (Grisons) villages.

Building with the biggest (89!) number of SE households is located in [Lausanne](#) and is in fact pretty big.

1.3.3 Results - households

The n'hood structure of connectivity between SNC buildings & SE households changes (for better! ;) when we move from buildings to households. Keep in mind - there might be more than one SE household in a certain building and if we take that into account household n'hoods can get smaller than building n'hoods. Number of buildings (within 20km):

(SSEP 2.0 - household n'hood aggregated stats)								
Variable	n	Mean	S.D.	Min	.25	Mdn	.75	Max
tot_bb	1527173	39	8	1	34	41	45	50

Number of households (within 20km):

Quantiles								
Variable	n	Mean	S.D.	Min	.25	Mdn	.75	Max
tot_hh	1527173	51	1	28	50	50	51	91

Number of individuals:

Variable	n	Mean	S.D.	Min	Quantiles			
					.25	Mdn	.75	Max
tot_hhpers	1527173	2.67	1.28	1.00	2.00	2.00	4.00	14.00

Average distance [in meters] to the building where furthest SE household is located (within 20km):

Variable	n	Mean	S.D.	Min	Quantiles			
					.25	Mdn	.75	Max
mean_dist	1527173	447	564	0	187	272	450	16323

1.3.4 Results - households, rent

As expected, results are slightly worse when we limit network analyses to 3-5 bedroom rented flats only.

Number of rented buildings (within 20km):

(SSEP 2.0 - household n'hood aggregated stats - rent)								
Variable	n	Mean	S.D.	Min	Quantiles			
					.25	Mdn	.75	Max
tot_bb_rnt	1527173	35	8	1	31	36	41	50

Number of rented households (within 20km):

Variable	n	Mean	S.D.	Min	Quantiles			
					.25	Mdn	.75	Max
tot_hh_rnt	1527173	51	2	6	50	50	51	101

Average distance [in meters] to the building where furthest rented SE household is located (within 20km):

Variable	n	Mean	S.D.	Min	Quantiles			
					.25	Mdn	.75	Max
max_dist_rnt	1527173	1650	2051	0	492	890	2144	20000

1.4 Swiss Household Panel

1.4.1 Setup

Combined samples I, II and III of the Swiss Household Panel (SHP) dataset were used to validate the index

1. SHP households were included if:
 - (a) they provided questionnaire in 2014
 - (b) had complete information regarding the address
 - (c) address was successfully geocoded⁷
2. Same variables that were used in Table 2 of original publication are extracted⁸
3. Each geocoded household was spatially linked to the closest building from the ORIGINS dataset

1.4.2 Variables

(SSEP 2.0 - SHP '14 data for validation)

Contains data from data/SHP.dta				
Observations:	7,359 <th>SSEP 2.0 - SHP '14 data for validation</th> <td></td> <td></td>	SSEP 2.0 - SHP '14 data for validation		
Variables:	14	13 Sep 2022 15:02		
(_dta has notes)				
Variable name	Storage type	Display format	Value label	Variable label
filter14	byte	%8.0g	FILTER14	Identification of the survey
idhous14	long	%12.0g	IDHOUS14	Identification number of household
nbpers14	byte	%8.0g	NBPERS14	Number of persons in household
h14i20ac	byte	%8.0g	H14I20AC	Savings min. 500 SFrs monthly
h14i21ac	byte	%8.0g	H14I21AC	Reason why no savings min. 500 Sfrs monthly
h14i22	byte	%8.0g	H14I22	Savings into 3rd pillar
h14i23	byte	%8.0g	H14I23	Reasons why no savings into 3rd pillar
h14i50	byte	%8.0g	H14I50	Income: Assessment of income and expenses
h14i51	byte	%8.0g	H14I51	Financial situation manageable
h14i76a	byte	%8.0g	H14I76A	Financial help: health insurance
wh14css	double	%12.0g	WH14CSS	SHPI-SHPII-SHPIII combined, cross-sectional household weight keeping sample size
imphbyn	byte	%8.0g	imputed	imputed yearly household income
eq_ihtyni	float	%9.0g		Equivalised yearly household income, net
eq_idispyi	float	%9.0g		Equivalised disposable household income

Sorted by:
Note: Dataset has changed since last saved.

1.4.3 Geocoding status across surveys

(SSEP 2.0 - SHP '14 data for validation)

Identification of the survey	Geocoding status		Total
	no	yes	
SHP_II (sample 2004)	27	1,358	1,385
	1.95	98.05	100.00
	25.23	18.73	18.82
SHP_I (sample 1999)	44	2,734	2,778
	1.58	98.42	100.00
	41.12	37.70	37.75
SHP_III (sample 2013)	36	3,160	3,196
	1.13	98.87	100.00
	33.64	43.57	43.43

⁷Geocoding was done using map.geo.admin.ch service.

⁸Note that 'Savings min. 500 SFrs monthly' has changed - it used to refer to '100 CHF'

Total	107 1.45 100.00	7,252 98.55 100.00	7,359 100.00 100.00
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1.5 SNC - mortality

1.5.1 Setup

Association of Swiss-SEP with mortality will be assessed using two models based on complete SNC: 'age & sex' and 'semi adjusted' (additionally taking into account: nationality, civil status, language region & level of urbanization). Setup for the analyses in this scenario:

1. Individuals who are recorded in (at least one of the) 2012 - 2018 Censuses are included
2. Individuals below age 30 on the 1.1.2012 are excluded
3. Date of entry is either 1.1.2012 or earliest census if individual was not recorded in 2012
4. Individuals who died on or before 12.31.2011 are excluded (unless the death was cancelled in the dataset)
5. For individuals having information on one of the covariates recorded in several censuses the latest one is used
6. Individuals with missing civil status were excluded
7. Rhaeto-Romansch language region was merged to German
8. Individuals with no link to the index were excluded

1.5.2 Individuals & deaths included

(SSEP 2.0 - full SNC 4.0 2012-2018 data for mortality analyses)

	Observations	
	total	distinct
mortid	304162	304162
gisid	5249089	1426073

1.5.3 Causes of deaths

Variable	Sum
d_all	304,162
d_lc	15,268
d_bc	6,068
d_pc	6,073
d_re	16,073
d_cv	78,859
d_mi	9,453
d_st	10,658
d_ac	1,025
d_al	2,205
d_su	4,237

1.5.4 Variables

Contains data from data/SNC_ALL.dta

Observations: 5,249,089

Variables: 57

SSEP 2.0 - full SNC 4.0 2012-2018 data for mortality analyses

13 Sep 2022 15:04

(_dta has notes)

Variable name	Storage type	Display format	Value label	Variable label
sncid	str11	%11s		Unique SNC ID for SNC 2.0
mortid	long	%10.0g		Mortality ID
recid3	str24	%24s		Unique technical ID (update 17-18)

link	byte	%38.0g	linkco	2000 census records link status
link30	byte	%38.0g	linkco	2000 census records link status (update 2015 & 2016)
link40	byte	%38.0g	linkco	2000 census records link status (update 2017 & 2018)
dstart	int	%dD.N.CY		Start date
dstop	int	%dD.N.CY		Stop date
stopcode	byte	%40.0g	stopcode2_l	Stop code (type of stop date)
dob	int	%dD.N.CY		Date of birth
dod	int	%dD.N.CY		Date of death
yod	int	%10.0g		Year of death
last_demig	int	%dD.N.CY		Latest emig date 00-18
sex	byte	%10.0g	sex_l	Sex
last_census_s~n	int	%dD.N.CY		Date of last census seen
totweight	double	%10.0g		Linkage weight
se11_flag	byte	%12.0g	flag	Avail. in structural enquiry 2011
se12_flag	byte	%12.0g	flag	Avail. in structural enquiry 2012
se13_flag	byte	%12.0g	flag	Avail. in structural enquiry 2013
se14_flag	byte	%12.0g	flag	Avail. in structural enquiry 2014
se15_flag	byte	%12.0g	flag	Avail. in structural enquiry 2015
se16_flag	byte	%12.0g	flag	Avail. in structural enquiry 2016
zar_flag	byte	%12.0g	flag	Avail. in PETRA
death_count	byte	%10.0g		Counted in official statistics
cancelled_death	byte	%8.0g		Death set to missing (Cleaning)
m_civil	byte	%10.0g	civil_l	Marital status at death
m_ddiv	int	%dD.N.CY		(mort) Date of divorce or death of spouse
v0_buildid	long	%10.0g		v0 building number
dis_conc1_code	str1	%9s		Concomitant disease 1, ICD8, complementary code
dis_conc2_code	str1	%9s		Concomitant disease 2, ICD8, complementary code
cause_prim_i~10	str4	%9s		GES-Definitive primary cause, ICD10
cause_prim_i~10s	str1	%9s		GES-Definitive primary cause, ICD10 first character
cause_prim_i~2d	byte	%8.0g		GES-Definitive primary cause, ICD10 two digits
cause_prim_i~3d	byte	%8.0g		GES-Definitive primary cause, ICD10 third digit
age	float	%9.0g		
nat_bin	byte	%12.0g	nat_bin_l	
urban	byte	%12.0g	urban_l	
lang	byte	%15.0g	lang_l *	
civil	byte	%12.0g	civil_l *	
buildid	long	%12.0g		
gisid	long	%12.0g		Building ID (GIS)
geox	long	%12.0g		X coord
geoy	long	%12.0g		Y coord
year	byte	%9.0g		Year of coordinates
dupli	int	%12.0g		Duplicate buildid
hec	byte	%9.0g		Hectare coordinates (analytical)
d_all	byte	%9.0g		All deaths
d_lc	byte	%9.0g		Lung cancer
d_bc	byte	%9.0g		Breast cancer
d_pc	byte	%9.0g		Prostate cancer
d_re	byte	%9.0g		Respiratory
d_cv	byte	%9.0g		CVD
d_mi	byte	%9.0g		MI
d_st	byte	%9.0g		Stroke
d_ac	byte	%9.0g		Traffic accidents
d_al	byte	%9.0g		Alc liver disease
d_su	byte	%9.0g		Suicide

* indicated variables have notes

Sorted by:

1.6 Last census seen

last_census_seen — Date of last census seen

		Freq.	Percent	Valid	Cum.
Valid	31.12.2012	97123	1.85	1.85	1.85
	31.12.2013	99640	1.90	1.90	3.75
	31.12.2014	99477	1.90	1.90	5.64
	31.12.2015	98866	1.88	1.88	7.53
	31.12.2016	101768	1.94	1.94	9.47

31.12.2017	105503	2.01	2.01	11.48
31.12.2018	4646712	88.52	88.52	100.00
Total	5249089	100.00	100.00	

2 Data analysis

2.1 PCA on n'hood aggregated characteristics

Principal components/correlation	Number of obs = 1,527,173				
	Number of comp. = 4				
	Trace = 4				
Rotation: (unrotated = principal)	Rho = 1.0000				
Component	Eigenvalue	Difference	Proportion	Cumulative	
Comp1	1.95642	.776499	0.4891	0.4891	
Comp2	1.17992	.731361	0.2950	0.7841	
Comp3	.448564	.0334764	0.1121	0.8962	
Comp4	.415087	.	0.1038	1.0000	
Principal components (eigenvectors)					
Variable	Comp1	Comp2	Comp3	Comp4	Unexplained
ocu1p	0.6054	-0.1324	0.4427	0.6481	0
edu1p	0.5902	0.2424	0.3022	-0.7082	0
ppri	0.2401	0.7990	-0.4817	0.2680	0
rent	-0.4770	0.5341	0.6933	0.0812	0
(score assumed) (3 components skipped)					
Scoring coefficients sum of squares(column-loading) = 1					
Variable	Comp1	Comp2	Comp3	Comp4	
ocu1p	0.6054	-0.1324	0.4427	0.6481	
edu1p	0.5902	0.2424	0.3022	-0.7082	
ppri	0.2401	0.7990	-0.4817	0.2680	
rent	-0.4770	0.5341	0.6933	0.0812	

2.2 Building construction period

Construction period of the building is retrieved from STATPOP 2018 dataset. Detailed typology is recoded to binary indicator flagging buildings constructed on or after 2001. Buildings with missing information about age are treated as 'old' ones.

In case of small amount of buildings with same gisid but different buildid (spatial duplicates, n = 1886, 0.1%) when two different periods were recorded (old AND new) building is treated as new.

buildper2 — Building period (binary)

		Freq.	Percent	Valid	Cum.
Valid	0 Before 2000	1319272	86.39	86.39	86.39
	1 After 2000	207901	13.61	13.61	100.00
	Total	1527173	100.00	100.00	

2.3 Hybrid version of SEP

This solution is mixing versions 1.0 & 2.0. First the new buildings have value of index 1.0 assigned using the closest (linear distance) neighbour.

Then, construction period of the building is retrieved from STATPOP 2018 dataset and then buildings built before year 2000 have the values of 1.0 index assigned and buildings constructed after 2000 have new values assigned. Buildings without the defined period of construction keep values 1.0 also.

2.4 Index deciles

(SSEP 3.0 - user dataset of index and coordinates with variables used for PCA)

Summary for variables: ssep3
Group variable: ssep3_d (Swiss-SEP 3.0 - deciles)

ssep3_d	Min	Mean	Max
1	0.00	44.78	50.09
2	50.09	52.60	54.74
3	54.74	56.46	58.06
4	58.06	59.51	60.90
5	60.90	62.23	63.56
6	63.56	64.91	66.28
7	66.28	67.72	69.21
8	69.21	70.87	72.65
9	72.65	74.77	77.18
10	77.18	81.28	100.00
Total	0.00	63.51	100.00

2.5 Quantiles

Note that the deciles of third version in user dataset:

Swiss-SEP 3.0 - deciles	Freq.	Percent	Cum.
1	152,719	10.00	10.00
2	152,720	10.00	20.00
3	152,713	10.00	30.00
4	152,721	10.00	40.00
5	152,724	10.00	50.00
6	152,708	10.00	60.00
7	152,717	10.00	70.00
8	152,722	10.00	80.00
9	152,712	10.00	90.00
10	152,717	10.00	100.00
Total	1,527,173	100.00	

... are tad 'broken' in snc dataset :

(SSEP 3.0 - SNC user dataset of index and XY coordinates)

Swiss-SEP 3.0 - deciles	Freq.	Percent	Cum.
1	154,656	10.04	10.04
2	154,195	10.01	20.05
3	154,151	10.01	30.05
4	153,931	9.99	40.05
5	153,917	9.99	50.04
6	153,915	9.99	60.03
7	153,938	9.99	70.02
8	154,028	10.00	80.02
9	154,021	10.00	90.01
10	153,832	9.99	100.00
.	4	0.00	100.00

Total	1,540,588	100.00
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... This is expected behaviour since SNC dataset includes few more buildings (with different BfS IDs but same coordinates). Same applies for missing data - there are few buildings where SEP could not have been calculated due to road network constraints.

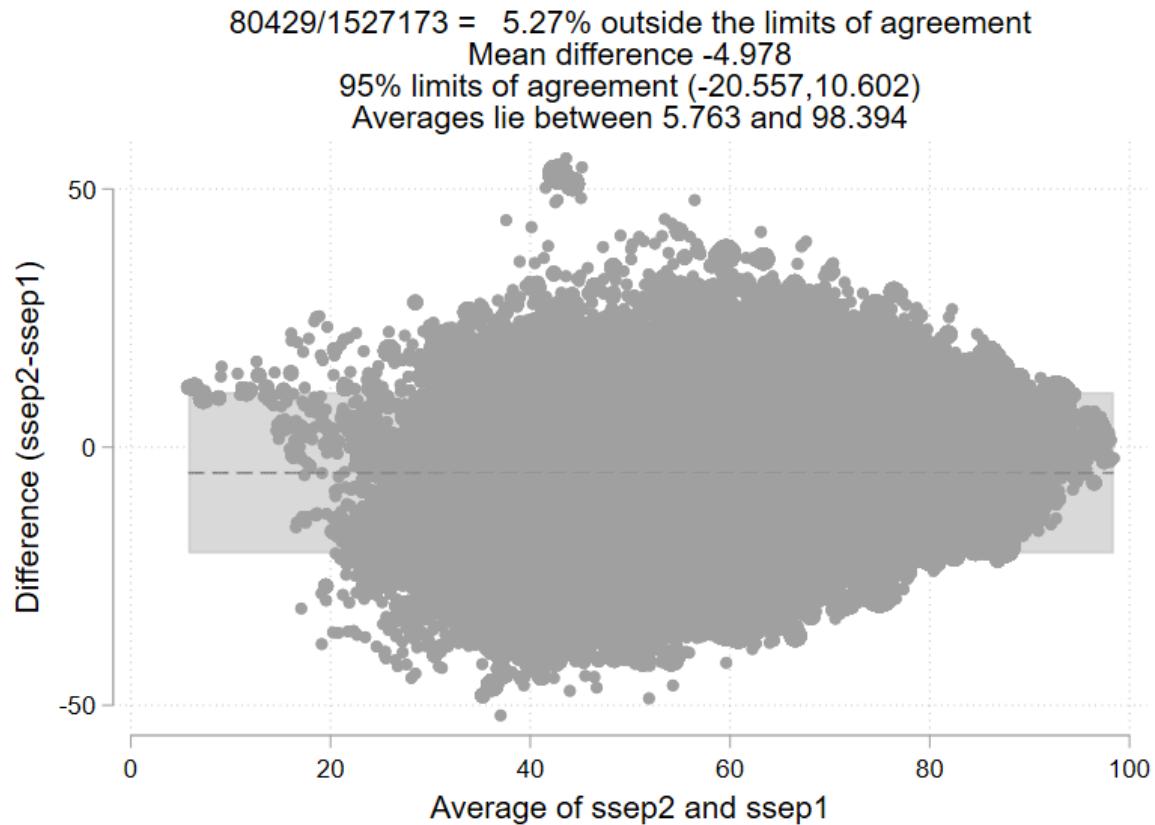
Some transitions happened:

Swiss-SEP 2.0 - deciles		Swiss-SEP 3.0 - deciles								Total
		1	2	3	4	5	6	7	8	
1	68,628	33,911	20,868	13,355	7,906	4,548	2,209	955	152,718	
2	44,710	28,887	25,812	20,181	14,325	9,677	5,633	2,507	152,717	
3	20,383	37,600	24,136	21,690	18,351	13,677	9,562	4,882	152,718	
4	8,808	27,877	29,917	21,365	20,644	17,886	13,133	8,367	152,739	
5	5,394	10,882	28,864	27,551	21,342	20,266	17,411	12,875	152,695	
6	2,472	6,903	10,954	27,974	28,901	21,687	21,508	17,716	152,717	
7	1,257	3,908	6,563	10,840	24,931	33,422	23,358	23,917	152,718	
8	663	1,861	3,837	6,536	9,775	19,497	38,920	27,900	152,721	
9	296	649	1,320	2,494	5,012	8,997	14,783	41,192	152,722	
10	108	242	442	735	1,537	3,051	6,200	12,411	152,708	
Total	152,719	152,720	152,713	152,721	152,724	152,708	152,717	152,722	1,527,173	

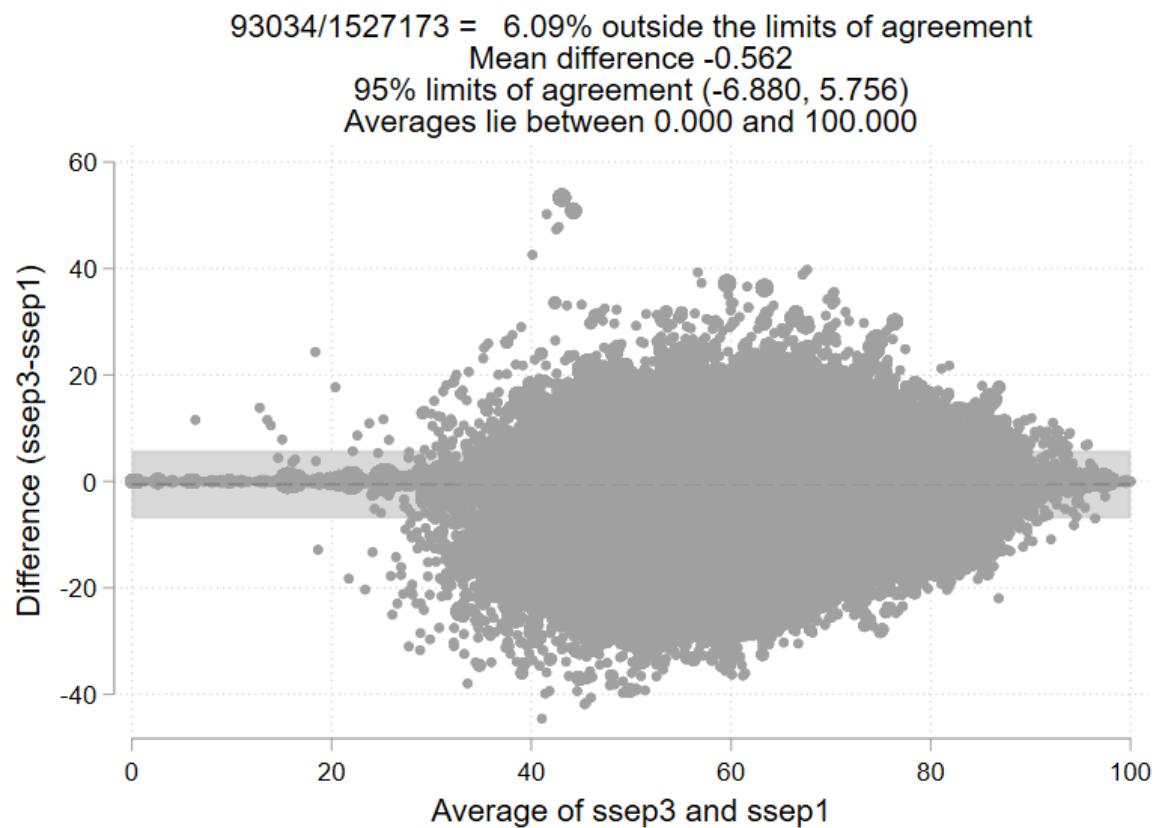
Swiss-SEP 2.0 - deciles		Swiss-SEP 3.0 - deciles								Total	
		9	10								
1		300	38	152,718							
2		784	201	152,717							
3		2,074	363	152,718							
4		3,958	784	152,739							
5		6,647	1,463	152,695							
6		11,390	3,212	152,717							
7		18,333	6,189	152,718							
8		28,982	14,750	152,721							
9		43,571	34,408	152,722							
10		36,673	91,309	152,708							
Total		152,712	152,717	1,527,173							

2.6 Bland Altman plots of diffs

2.6.1 SEP2 vs. SEP1



2.6.2 SEP3 vs. SEP1



2.7 Tables

2.7.1 Old index

Characteristic	levels	1	5	10	Total
Gender	Male	49973 (48.5)	42902 (47.4)	33835 (47.3)	424130 (47.5)
	Female	53051 (51.5)	47540 (52.6)	37667 (52.7)	467997 (52.5)
Age	19-34	26684 (25.9)	20789 (23.0)	12117 (16.9)	200604 (22.5)
	35-49	29199 (28.3)	25897 (28.6)	20870 (29.2)	255462 (28.6)
	50-64	25629 (24.9)	22774 (25.2)	19333 (27.0)	228477 (25.6)
	Above 65	21512 (20.9)	20982 (23.2)	19182 (26.8)	207584 (23.3)
Civil status	Single	26700 (25.9)	24462 (27.0)	17601 (24.6)	235941 (26.4)
	Married	59804 (58.0)	51438 (56.9)	44029 (61.6)	517255 (58.0)
	Widowed	6481 (6.3)	5600 (6.2)	3834 (5.4)	53453 (6.0)
	Divorced	10038 (9.7)	8942 (9.9)	6038 (8.4)	85477 (9.6)
	(Missing)	1 (0.0)	0 (0.0)	0 (0.0)	1 (0.0)
Nationality	Swiss	69811 (67.8)	72574 (80.2)	58774 (82.2)	703676 (78.9)
	Foreigner	33213 (32.2)	17868 (19.8)	12728 (17.8)	188451 (21.1)
First main language	German	40440 (39.3)	54543 (60.3)	50654 (70.8)	518985 (58.2)
	French	33961 (33.0)	21221 (23.5)	14331 (20.0)	226063 (25.3)
	Italian	12965 (12.6)	7721 (8.5)	1153 (1.6)	69155 (7.8)
	Other language	15658 (15.2)	6957 (7.7)	5364 (7.5)	77924 (8.7)
Education	Primary education or less	38542 (37.4)	18785 (20.8)	5790 (8.1)	188309 (21.1)
	Upper secondary level	46778 (45.4)	46688 (51.6)	29277 (40.9)	434965 (48.8)
	Tertiary level	17704 (17.2)	24969 (27.6)	36435 (51.0)	268853 (30.1)
Professional status	Top management and independent professions	1282 (1.2)	1638 (1.8)	3659 (5.1)	20548 (2.3)
	Other self-employed	3530 (3.4)	2914 (3.2)	2348 (3.3)	29047 (3.3)
	Professionals and senior management	3511 (3.4)	5490 (6.1)	8537 (11.9)	60297 (6.8)
	Supervisors/low level management and skilled labour	23768 (23.1)	24116 (26.7)	14029 (19.6)	223131 (25.0)
	Unskilled employees and workers	7321 (7.1)	3022 (3.3)	736 (1.0)	31914 (3.6)
	In paid employment, not classified elsewhere	4102 (4.0)	2702 (3.0)	1453 (2.0)	26426 (3.0)
	Unemployed/job-seeking	3479 (3.4)	1986 (2.2)	1182 (1.7)	20377 (2.3)
	Not in paid employment (Missing)	26686 (25.9)	22589 (25.0)	18772 (26.3)	225064 (25.2)
		29345 (28.5)	25985 (28.7)	20786 (29.1)	255323 (28.6)
Level of urbanisation	Urban	28855 (28.0)	23490 (26.0)	23355 (32.7)	249565 (28.0)
	Peri-urban	30685 (29.8)	40541 (44.8)	46992 (55.7)	408700 (45.8)
	Rural	43484 (42.2)	26411 (29.2)	1155 (1.6)	233862 (26.2)

2.7.2 New index

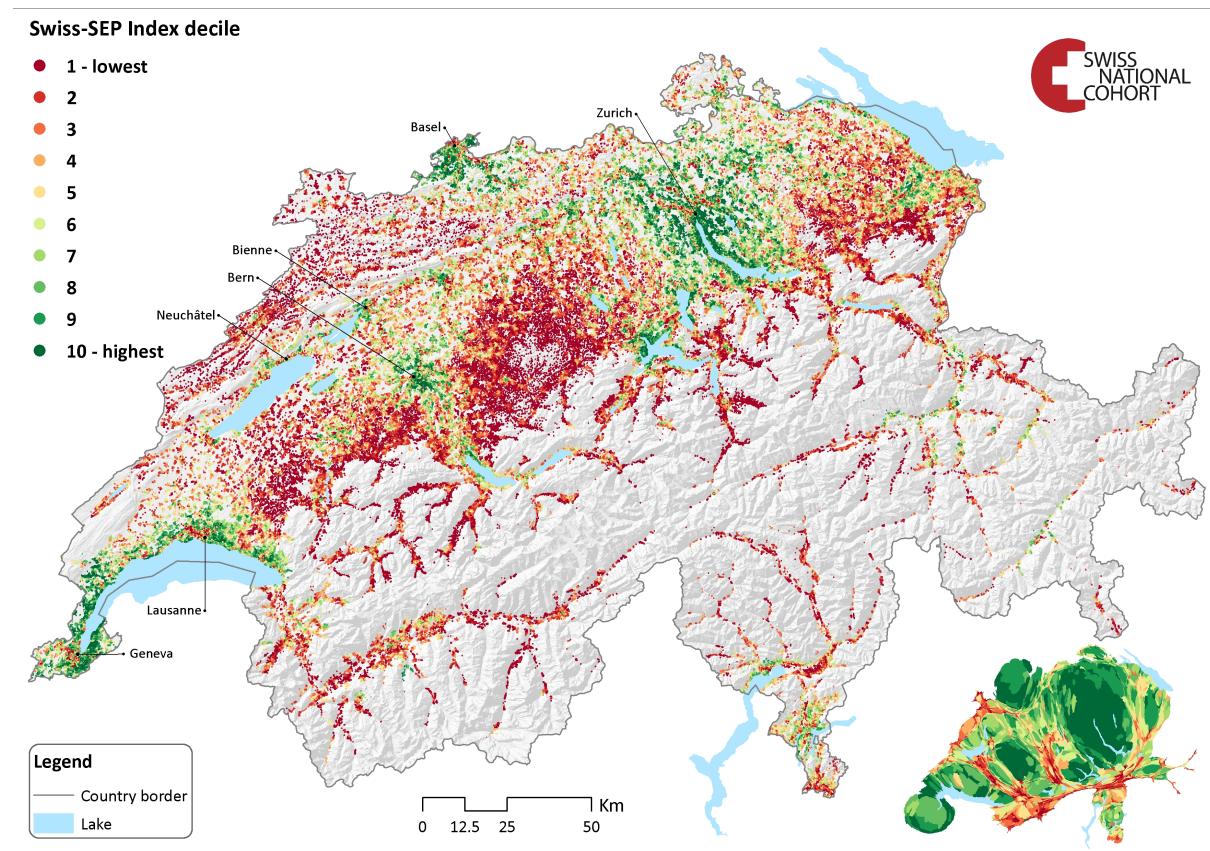
Characteristic	levels	1	5	10	Total
Gender	Male	53978 (48.0)	40053 (47.4)	41146 (47.5)	424130 (47.5)
	Female	58579 (52.0)	44374 (52.6)	45516 (52.5)	467997 (52.5)
Age	19-34	27621 (24.5)	19176 (22.7)	16808 (19.4)	200604 (22.5)
	35-49	30967 (27.5)	23918 (28.3)	26062 (30.1)	255462 (28.6)
	50-64	27659 (24.6)	21810 (25.8)	22465 (25.9)	228477 (25.6)
	Above 65	26310 (23.4)	19523 (23.1)	21327 (24.6)	207584 (23.3)
Civil status	Single	27506 (24.4)	22107 (26.2)	24839 (28.7)	235941 (26.4)
	Married	65548 (58.2)	49181 (58.3)	49833 (57.5)	517255 (58.0)
	Widowed	8129 (7.2)	5115 (6.1)	4444 (5.1)	53453 (6.0)
	Divorced	11373 (10.1)	8024 (9.5)	7546 (8.7)	85477 (9.6)
	(Missing)	1 (0.0)	0 (0.0)	0 (0.0)	1 (0.0)
Nationality	Swiss	76472 (67.9)	68497 (81.1)	69190 (79.8)	703676 (78.9)
	Foreigner	36085 (32.1)	15930 (18.9)	17472 (20.2)	188451 (21.1)
First main language	German	41423 (36.8)	52094 (61.7)	56743 (65.5)	518985 (58.2)
	French	42044 (37.4)	18554 (22.0)	19876 (22.9)	226063 (25.3)
	Italian	11885 (10.6)	7625 (9.0)	2942 (3.4)	69155 (7.8)
	Other language	17205 (15.3)	6154 (7.3)	7101 (8.2)	77924 (8.7)
Education	Primary education or less	44688 (39.7)	17422 (20.6)	6381 (7.4)	188309 (21.1)
	Upper secondary level	50480 (44.8)	44209 (52.4)	34142 (39.4)	434965 (48.8)
	Tertiary level	17389 (15.4)	22796 (27.0)	46139 (53.2)	268853 (30.1)
Professional status	Top management and independent professions	1250 (1.1)	1581 (1.9)	4511 (5.2)	20548 (2.3)
	Other self-employed	3462 (3.1)	2771 (3.3)	2867 (3.3)	29047 (3.3)
	Professionals and senior management	3136 (2.8)	5018 (5.9)	11477 (13.2)	60297 (6.8)
	Supervisors/low level management and skilled labour	24915 (22.1)	22759 (27.0)	17023 (19.6)	223131 (25.0)
	Unskilled employees and workers	8702 (7.7)	2831 (3.4)	744 (0.9)	31914 (3.6)
	In paid employment, not classified elsewhere	4199 (3.7)	2547 (3.0)	1775 (2.0)	26426 (3.0)
	Unemployed/job-seeking	3672 (3.3)	1801 (2.1)	1575 (1.8)	20377 (2.3)
	Not in paid employment (Missing)	31174 (27.7)	21082 (25.0)	21381 (24.7)	225064 (25.2)
	Urban	32047 (28.5)	24037 (28.5)	25309 (29.2)	255323 (28.6)
	Peri-urban	35834 (31.8)	20315 (24.1)	34765 (40.1)	249565 (28.0)
	Rural	31357 (27.9)	37340 (44.2)	50607 (58.4)	408700 (45.8)
		45366 (40.3)	26772 (31.7)	1290 (1.5)	233862 (26.2)

2.7.3 Hybrid index

Characteristic	levels	1	5	10	Total
Gender	Male	49782 (48.6)	41659 (47.3)	36229 (47.3)	424130 (47.5)
	Female	52601 (51.4)	46326 (52.7)	40308 (52.7)	467997 (52.5)
Age	19-34	26569 (26.0)	20017 (22.8)	13509 (17.7)	200604 (22.5)
	35-49	30416 (29.7)	25100 (28.5)	21905 (28.6)	255462 (28.6)
	50-64	25016 (24.4)	22338 (25.4)	20522 (26.8)	228477 (25.6)
	Above 65	20382 (19.9)	20530 (23.3)	20601 (26.9)	207584 (23.3)
Civil status	Single	25912 (25.3)	23574 (26.8)	19571 (25.6)	235941 (26.4)
	Married	60671 (59.3)	50077 (56.9)	46282 (60.5)	517255 (58.0)
	Widowed	6156 (6.0)	5561 (6.3)	4120 (5.4)	53453 (6.0)
	Divorced	9643 (9.4)	8773 (10.0)	6564 (8.6)	85477 (9.6)
	(Missing)	1 (0.0)	0 (0.0)	0 (0.0)	1 (0.0)
Nationality	Swiss	69874 (68.2)	70681 (80.3)	62513 (81.7)	703676 (78.9)
	Foreigner	32509 (31.8)	17304 (19.7)	14024 (18.3)	188451 (21.1)
First main language	German	40613 (39.7)	52824 (60.0)	53579 (70.0)	518985 (58.2)
	French	34020 (33.2)	20684 (23.5)	15712 (20.5)	226063 (25.3)
	Italian	12614 (12.3)	7660 (8.7)	1355 (1.8)	69155 (7.8)
	Other language	15136 (14.8)	6817 (7.7)	5891 (7.7)	77924 (8.7)
Education	Primary education or less	37232 (36.4)	18745 (21.3)	6134 (8.0)	188309 (21.1)
	Upper secondary level	46845 (45.8)	45383 (51.6)	31332 (40.9)	434965 (48.8)
	Tertiary level	18306 (17.9)	23857 (27.1)	39071 (51.0)	268853 (30.1)
Professional status	Top management and independent professions	1320 (1.3)	1582 (1.8)	3833 (5.0)	20548 (2.3)
	Other self-employed	3480 (3.4)	2872 (3.3)	2491 (3.3)	29047 (3.3)
	Professionals and senior management	3599 (3.5)	5232 (5.9)	9250 (12.1)	60297 (6.8)
	Supervisors/low level management and skilled labour	24398 (23.8)	23411 (26.6)	15025 (19.6)	223131 (25.0)
	Unskilled employees and workers	7165 (7.0)	3000 (3.4)	749 (1.0)	31914 (3.6)
	In paid employment, not classified elsewhere	4005 (3.9)	2648 (3.0)	1545 (2.0)	26426 (3.0)
	Unemployed/job-seeking	3319 (3.2)	1981 (2.3)	1293 (1.7)	20377 (2.3)
	Not in paid employment (Missing)	25702 (25.1)	22240 (25.3)	20097 (26.3)	225064 (25.2)
		29395 (28.7)	25019 (28.4)	22254 (29.1)	255323 (28.6)
Level of urbanisation	Urban	27683 (27.0)	22695 (25.8)	26015 (34.0)	249565 (28.0)
	Peri-urban	30417 (29.7)	39055 (44.4)	49217 (64.3)	408700 (45.8)
	Rural	44283 (43.3)	26235 (29.8)	1305 (1.7)	233862 (26.2)

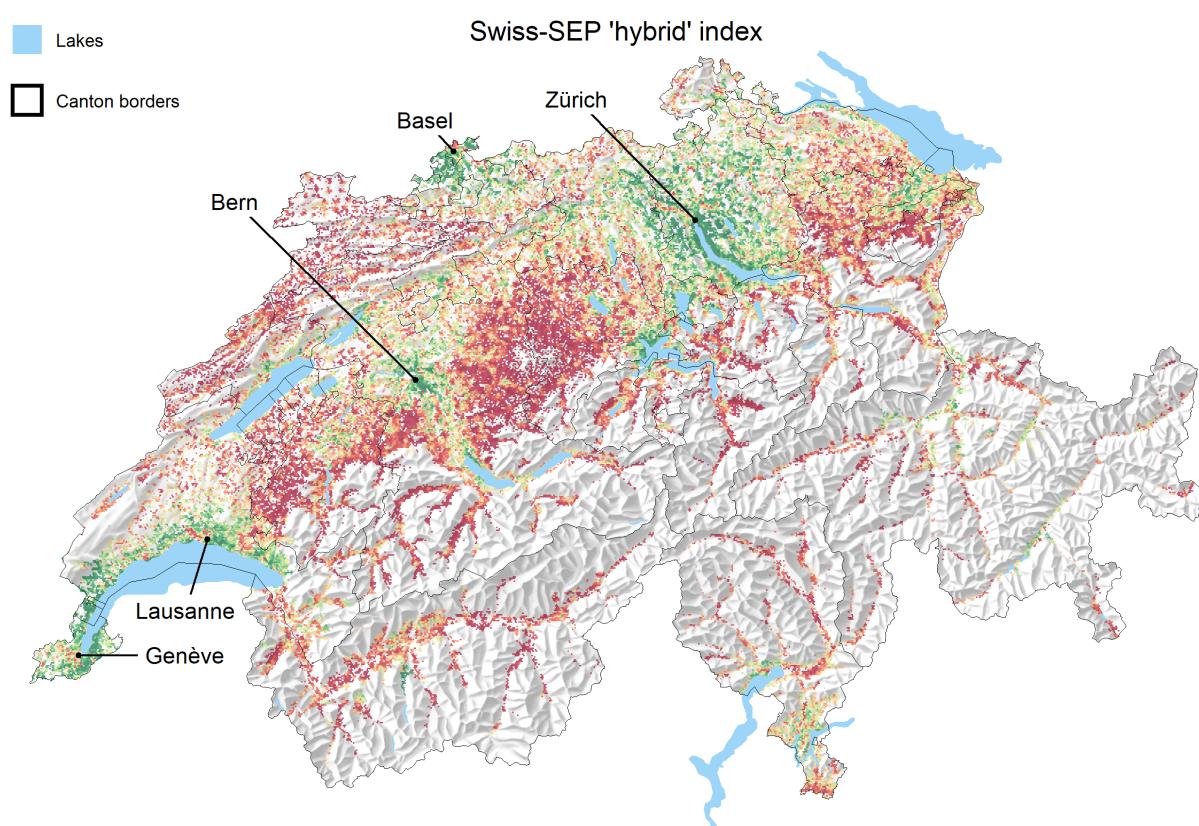
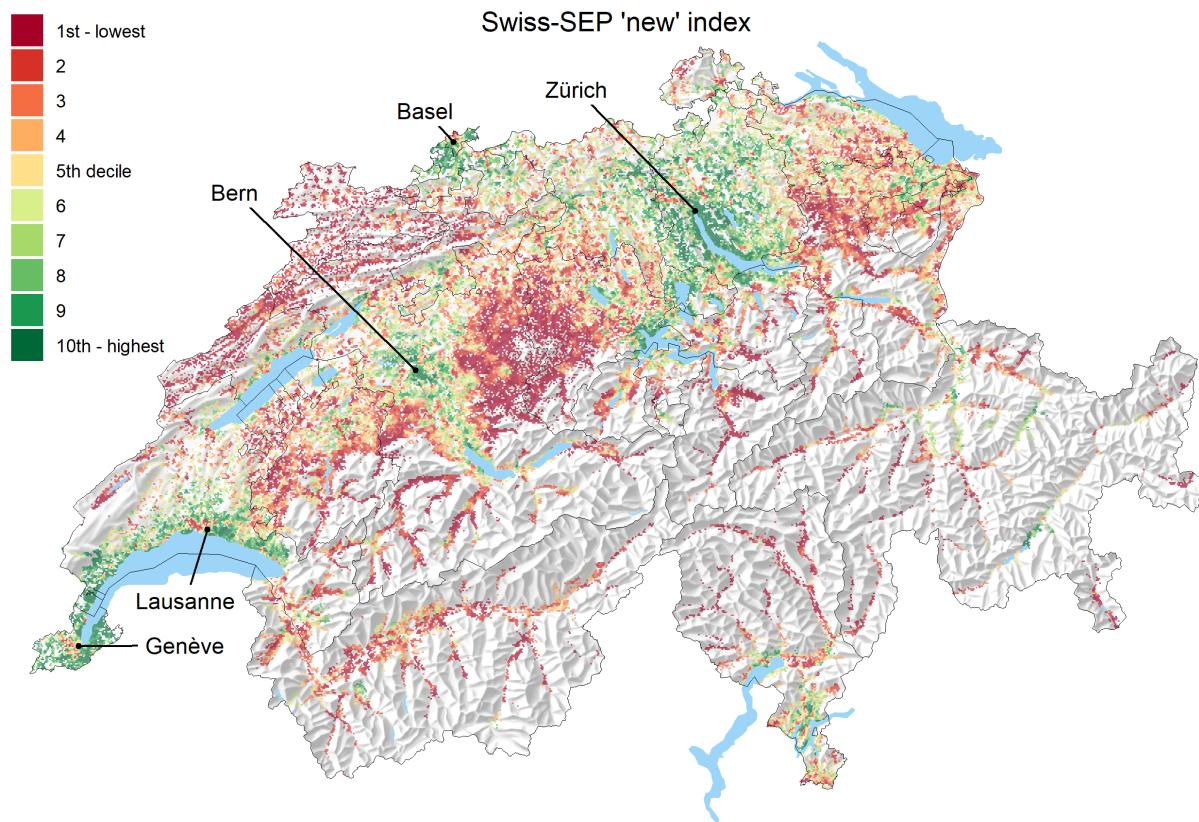
2.8 Maps

2.8.1 Original map

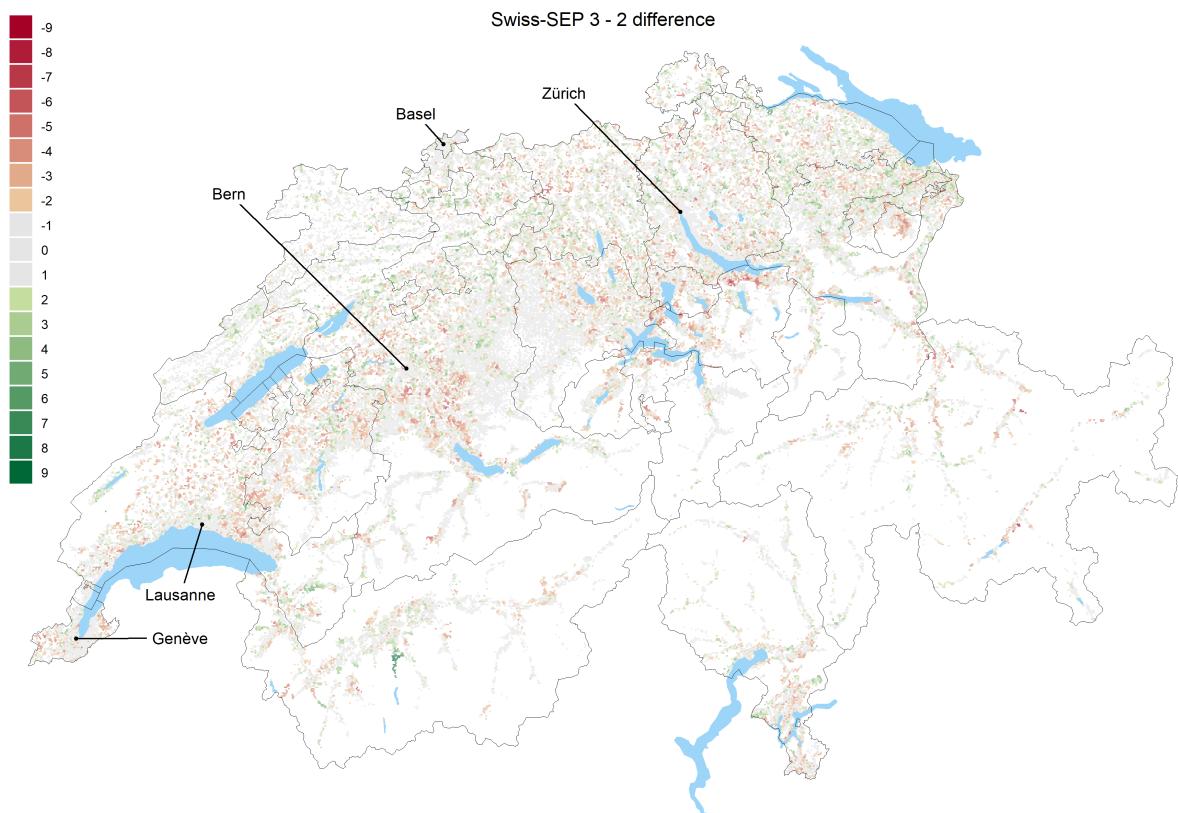


2.8.2 SEP 2 & 3 index

Using hexagonal grid 500m size.

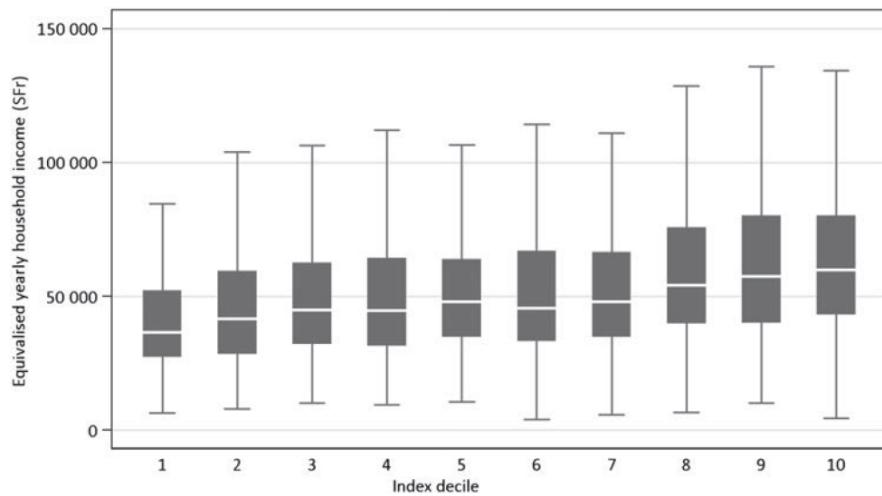


2.8.3 Differences

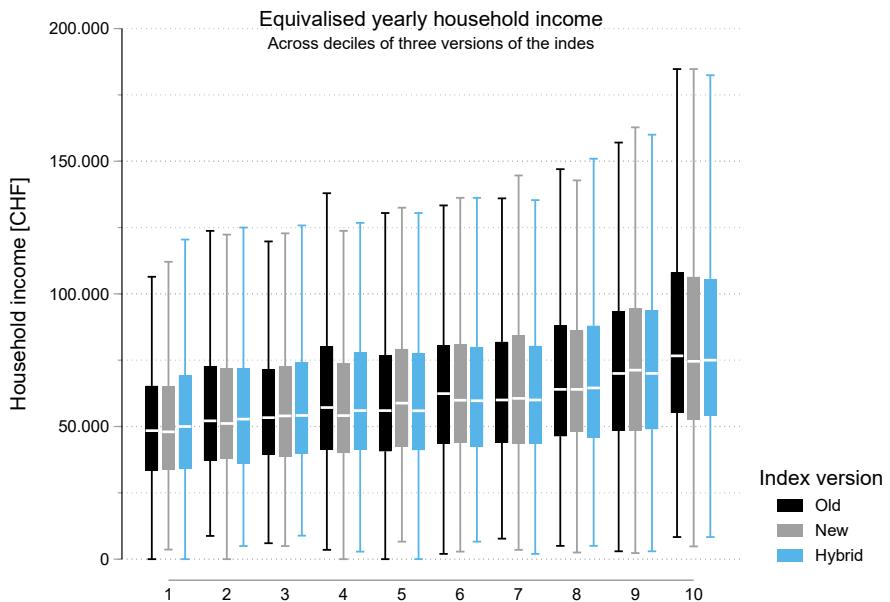


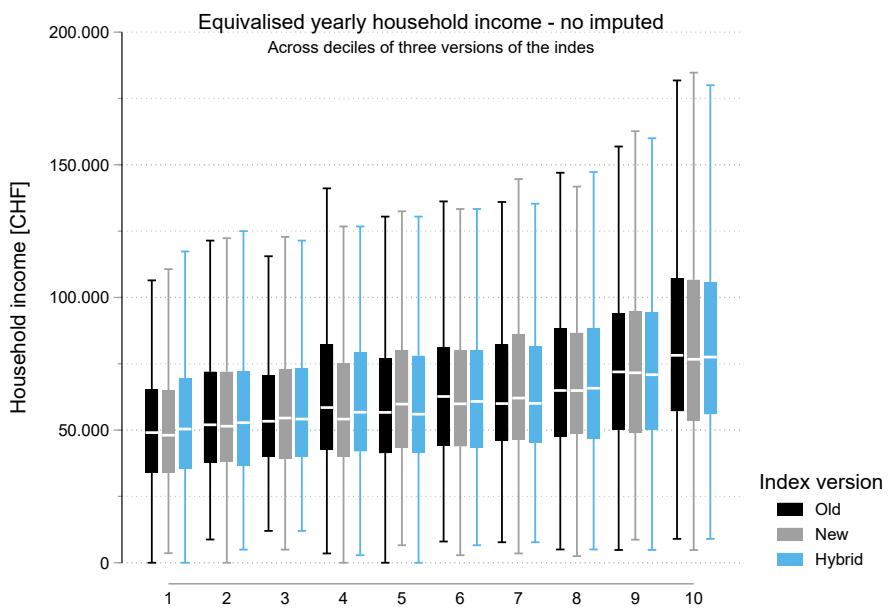
2.9 Validation - SHP data

2.9.1 Income graph - original



2.9.2 Income graph - new indices





2.9.3 Financial variables table - original

Characteristic	Index decile			Total N (%)	p Value
	1 N (%)	5 N (%)	10 N (%)		
Number of households	437 (100.0)	447 (100.0)	426 (100.0)	4460 (100.0)	—
Mean yearly equivalised* household net income in SFr (SD)	42 329 (21 253)	54 785 (33 488)	72 074 (56 796)	55 372 (38 781)	<0.0001
Saving at least 100 SFr/month					
No answer/does not know	4 (0.9)	5 (1.1)	6 (1.4)	54 (1.2)	<0.0001
Yes	329 (75.3)	366 (81.9)	363 (85.2)	3629 (81.4)	
No	104 (23.8)	76 (17.0)	57 (13.4)	777 (17.4)	
Reason why not saving at least 100 SFr/month					
Inapplicable	333 (76.2)	371 (83.0)	369 (86.6)	3683 (82.6)	<0.0001
Because you cannot afford it	88 (20.1)	66 (14.8)	47 (11.0)	642 (14.4)	
For another reason	16 (3.7)	10 (2.2)	10 (2.3)	135 (3.0)	
Voluntary private pension scheme					
No answer/does not know	9 (2.1)	8 (1.8)	4 (0.9)	67 (1.5)	<0.0001
Yes	210 (48.1)	266 (59.5)	266 (62.4)	2581 (57.9)	
No	218 (49.9)	173 (38.7)	156 (36.6)	1812 (40.6)	
Reason why no voluntary private pension scheme					
Inapplicable	219 (50.1)	274 (61.3)	270 (63.4)	2648 (59.4)	<0.0001
No answer/does not know	1 (0.2)	0 (0.0)	2 (0.5)	25 (0.6)	
Because you cannot afford it	81 (18.5)	53 (11.9)	30 (7.0)	553 (12.4)	
For another reason	136 (31.1)	120 (26.8)	124 (29.1)	1234 (27.7)	
Reception of financial help					
No answer/does not know	1 (0.2)	5 (1.1)	1 (0.2)	23 (0.5)	0.002
Yes	102 (23.3)	75 (16.8)	56 (13.1)	765 (17.2)	
No	334 (76.4)	367 (82.1)	369 (86.6)	3672 (82.3)	
Assessment of household income and expenses					
No answer/does not know	2 (0.5)	3 (0.7)	7 (1.6)	38 (0.9)	<0.0001
Your household can save money	189 (43.2)	233 (52.1)	239 (56.1)	2262 (50.7)	
Your household spends what it earns	212 (48.5)	170 (38.0)	152 (35.7)	1821 (40.8)	
Your household eats into its assets and savings	27 (6.2)	39 (8.7)	23 (5.4)	296 (6.6)	
Your household gets into debt	7 (1.6)	2 (0.4)	5 (1.2)	43 (1.0)	
Financial situation manageable, mean (SD)†	6.6 (2.6)	7.5 (2.3)	8.0 (2.1)	7.3 (2.3)	<0.0001

2.9.4 Financial variables table - 1.0

Swiss-SEP 1.0 - deciles	mean(eq_iht~i)
1	52,135
5	62,682
10	89,538
Total	67,164

Swiss-SEP 1.0 - deciles	mean(eq_iht~i)
1	52,716
5	63,099
10	91,203
Total	67,927

Swiss-SEP 1.0 - deciles	mean(h14i51)
1	7
5	7
10	8
Total	7

(running tabulate on estimation sample)

Number of strata = 1
Number of PSUs = 2,006

Number of obs = 2,006
Population size = 2,040,9249
Design df = 2,005

Savings min. 500 SFrs monthly	Swiss-SEP 1.0 - deciles			
	1	5	10	Total
does not	18.08 2.595	5.908 .8046	10.27 1.684	34.26 1.679
yes	348.1 49.96	434.8 59.21	437 71.65	1220 59.77
no	330.5 47.45	293.6 39.98	162.7 26.67	786.8 38.55
Total	696.7 100	734.3 100	610 100	2041 100

Key: Weighted count
Column percentage

Pearson:
Uncorrected chi2(4) = 68.3199
Design-based F(3.88, 7770.00) = 13.5816 P = 0.0000

(running tabulate on estimation sample)

Number of strata = 1
Number of PSUs = 2,006

Number of obs = 2,006
Population size = 2,040,9249
Design df = 2,005

Reason
why no

savings min. 500 Sfrs monthly	Swiss-SEP 1.0 - deciles				
	1	5	10	Total	
inapplic	366.1 52.55	440.7 60.02	447.3 73.33	1254 61.45	
no answe	0 0	.6665 .0908	.4093 .0671	1.076 .0527	
does not	0 0	2.334 .3179	0 0	2.334 .1144	
because	278.3 39.94	229.9 31.31	114.9 18.84	623.1 30.53	
for anot	52.27 7.503	60.7 8.267	47.34 7.762	160.3 7.855	
Total	696.7 100	734.3 100	610 100	2041 100	

Key: Weighted count
Column percentage

Pearson:

Uncorrected chi2(8) = 74.6246
Design-based F(7.18, 14397.70) = 8.3679 P = 0.0000

Savings into 3rd pillar	Swiss-SEP 1.0 - deciles			Total
	1	5	10	
does not know	12 1.91	9 1.20	2 0.32	23 1.15
yes	302 48.09	437 58.50	388 61.49	1,127 56.18
no	314 50.00	301 40.29	241 38.19	856 42.67
Total	628 100.00	747 100.00	631 100.00	2,006 100.00

(running tabulate on estimation sample)

Number of strata = 1
Number of PSUs = 2,006

Number of obs = 2,006
Population size = 2,040.9249
Design df = 2,005

Savings into 3rd pillar	Swiss-SEP 1.0 - deciles			
	1	5	10	Total
does not	14.34 2.058	12.65 1.723	1.901 .3117	28.89 1.416
yes	296.4 42.55	421.1 57.34	373.2 61.18	1091 53.44
no	385.9 55.39	300.6 40.93	234.9 38.51	921.4 45.14
Total	696.7 100	734.3 100	610 100	2041 100

Key: Weighted count
Column percentage

Pearson:

Uncorrected chi2(4) = 56.2102
Design-based F(3.83, 7680.61)= 9.9485 P = 0.0000

Reasons why no savings into 3rd pillar	Swiss-SEP 1.0 - deciles				Total
	1	5	10		
inapplicable	314 50.00	446 59.71	390 61.81		1,150 57.33
does not know	8 1.27	0 0.00	2 0.32		10 0.50
because you cannot af	109 17.36	83 11.11	38 6.02		230 11.47
for another reason	197 31.37	218 29.18	201 31.85		616 30.71
Total	628 100.00	747 100.00	631 100.00		2,006 100.00

(running tabulate on estimation sample)

Number of strata = 1
Number of PSUs = 2,006

Number of obs = 2,006
Population size = 2,040.9249
Design df = 2,005

Reasons why no savings into 3rd pillar	Swiss-SEP 1.0 - deciles			
	1	5	10	Total
inapplic	310.8 44.61	433.7 59.07	375.1 61.49	1120 54.86

does not	12.71	0	1.845	14.56
	1.825	0	.3025	.7133
because	163.4	93.39	40.83	297.7
	23.46	12.72	6.693	14.58
for anot	209.7	207.2	192.2	609.2
	30.11	28.21	31.52	29.85
Total	696.7	734.3	610	2041
	100	100	100	100

Key: Weighted count
 Column percentage

Pearson:

Uncorrected chi2(6) = 104.2012
 Design-based F(5.69, 11415.55) = 11.8847 P = 0.0000

(running tabulate on estimation sample)

Number of strata = 1
Number of PSUs = 2,006

Number of obs = 2,006
Population size = 2,040.9249
Design df = 2,005

Financial help: health insurance	Swiss-SEP 1.0 - deciles			
	1	5	10	Total
does not	6.035 .8663	8.28 1.128	3.104 .509	17.42 .8535
yes	210.1 30.16	151.2 20.59	75.96 12.45	437.3 21.42
no	480.5 68.97	574.8 78.28	530.9 87.04	1586 77.72
Total	696.7 100	734.3 100	610 100	2041 100

Key: Weighted count
Column percentage

Pearson:

Uncorrected chi2(4) = 62.1069
Design-based F(3.89, 7796.26) = 9.4544 P = 0.0000

(running tabulate on estimation sample)

Number of strata = 1
Number of PSUs = 2,006

Number of obs = 2,006
Population size = 2,040.9249
Design df = 2,005

Income: Assessment of income and expenses	Swiss-SEP 1.0 - deciles			
	1	5	10	Total
does not	9.64 1.384	1.86 .2534	5.081 .8329	16.58 .8124
your hou	324 46.51	383.2 52.19	378.7 62.09	1086 53.21
your hou	284.8 40.89	282.2 38.44	172.5 28.29	739.6 36.24
your hou	64.11 9.202	57.71 7.86	47.89 7.85	169.7 8.315
your hou	14.09 2.022	9.247 1.259	5.738 .9407	29.07 1.424
Total	696.7 100	734.3 100	610 100	2041 100

Key: Weighted count
Column percentage

Pearson:

Uncorrected chi2(8) = 39.6660
Design-based F(7.65, 15330.81) = 3.5962 P = 0.0005

2.9.5 Financial variables table - 2.0

Swiss-SEP 2.0 - deciles	mean(eq_iht~i)
1	52,325
5	64,668
10	93,014
Total	69,741

Swiss-SEP 2.0 - deciles	mean(eq_iht~i)
1	52,085
5	65,586
10	95,946
Total	70,798

Swiss-SEP 2.0 - deciles	mean(h14i51)
1	7
5	7
10	8
Total	7

(running tabulate on estimation sample)

Number of strata = 1
Number of PSUs = 2,193

Number of obs = 2,193
Population size = 2,230,6207
Design df = 2,192

Savings min. 500 SFrs monthly	Swiss-SEP 2.0 - deciles			
	1	5	10	Total
does not	17.17 2.209	7.29 1.008	17.36 2.378	41.82 1.875
yes	353.3 45.46	433.8 59.98	509.7 69.8	1297 58.14
no	406.8 52.34	282.1 39.01	203.1 27.82	892 39.99
Total	777.2 100	723.2 100	730.2 100	2231 100

Key: Weighted count
Column percentage

Pearson:
Uncorrected chi2(4) = 98.5097
Design-based F(3.90, 8552.46) = 17.0803 P = 0.0000

(running tabulate on estimation sample)

Number of strata = 1
Number of PSUs = 2,193

Number of obs = 2,193
Population size = 2,230,6207
Design df = 2,192

Reason
why no

savings min. 500 Sfrs monthly	Swiss-SEP 2.0 - deciles			
	1	5	10	Total
inapplic	370.5 47.66	441.1 60.99	527 72.18	1339 60.01
no answe	0 0	0 .0561	.4093 .0183	.4093
does not	0 0	3.197 .4421	0 0	3.197 .1433
because	334.4 43.02	239.6 33.13	143.5 19.66	717.5 32.17
for anot	72.37 9.311	39.32 5.436	59.2 8.108	170.9 7.661
Total	777.2 100	723.2 100	730.2 100	2231 100

Key: Weighted count
Column percentage

Pearson:

Uncorrected chi2(8) = 115.2485
Design-based F(7.39, 16201.91) = 11.6781 P = 0.0000

(running tabulate on estimation sample)

Number of strata = 1
Number of PSUs = 2,193

Number of obs = 2,193
Population size = 2,230.6207
Design df = 2,192

Savings into 3rd pillar	Swiss-SEP 2.0 - deciles			
	1	5	10	Total
does not	6.867 .8836	7.748 1.071	6.762 .926	21.38 .9583
yes	353 45.42	415.3 57.43	461.7 63.24	1230 55.15
no	417.3 53.69	300.1 41.5	261.7 35.84	979.1 43.9
Total	777.2 100	723.2 100	730.2 100	2231 100

Key: Weighted count
Column percentage

Pearson:

Uncorrected chi2(4) = 50.6939
Design-based F(3.90, 8556.36)= 9.2348 P = 0.0000

(running tabulate on estimation sample)

Number of strata = 1
Number of PSUs = 2,193

Number of obs = 2,193
Population size = 2,230.6207
Design df = 2,192

Reasons why no savings into 3rd pillar	Swiss-SEP 2.0 - deciles			
	1	5	10	Total
inapplic	359.9 46.31	423.1 58.5	468.5 64.16	1251 56.1
does not	8.272 1.064	0 0	2.032 .2783	10.3 .4619
because	134.5 17.31	86.59 11.97	40.58 5.558	261.7 11.73
for anot	274.5 35.32	213.5 29.53	219.1 30	707.1 31.7
Total	777.2 100	723.2 100	730.2 100	2231 100

Key: Weighted count
Column percentage

Pearson:

Uncorrected chi2(6) = 80.3954
Design-based F(5.55, 12159.09)= 7.2706 P = 0.0000

(running tabulate on estimation sample)

Number of strata = 1
Number of PSUs = 2,193

Number of obs = 2,193
Population size = 2,230.6207
Design df = 2,192

Financial help: health insurance	Swiss-SEP 2.0 - deciles			
	1	5	10	Total
does not	5.028 .647	2.335 .3228	2.737 .3748	10.1 .4528
yes	205.8 26.48	142.4 19.69	79.24 10.85	427.5 19.17
no	566.4 72.87	578.4 79.98	648.2 88.77	1793 80.38
Total	777.2 100	723.2 100	730.2 100	2231 100

Key: Weighted count
Column percentage

Pearson:

Uncorrected chi2(4) = 60.0216
Design-based F(3.94, 8629.38) = 11.0789 P = 0.0000

(running tabulate on estimation sample)

Number of strata = 1
Number of PSUs = 2,193

Number of obs = 2,193
Population size = 2,230.6207
Design df = 2,192

Income: Assessment of income and expenses	Swiss-SEP 2.0 - deciles			
	1	5	10	Total
does not	4.364 .5615	2.713 .3751	7.818 1.071	14.9 .6678
your hou	376.4 48.43	390 53.92	451.1 61.78	1218 54.58
your hou	292.8 37.67	249.1 34.44	207.8 28.46	749.7 33.61
your hou	81.64 10.5	65.85 9.105	54.73 7.495	202.2 9.065
your hou	21.97 2.827	15.58 2.155	8.733 1.196	46.29 2.075
Total	777.2 100	723.2 100	730.2 100	2231 100

Key: Weighted count
Column percentage

Pearson:

Uncorrected chi2(8) = 32.9997
Design-based F(7.54, 16538.23) = 2.7945 P = 0.0052

2.9.6 Financial variables table - 3.0

Swiss-SEP 3.0 - deciles	mean(eq_iht~i)
1	54,631
5	62,823
10	87,923
Total	67,897

Swiss-SEP 3.0 - deciles	mean(eq_iht~i)
1	55,344
5	63,240
10	90,128
Total	68,917

Swiss-SEP 3.0 - deciles	mean(h14i51)
1	7
5	7
10	8
Total	7

(running tabulate on estimation sample)

Number of strata = 1
Number of PSUs = 2,052

Number of obs = 2,052
Population size = 2,072,3182
Design df = 2,051

Savings min. 500 SFrs monthly	Swiss-SEP 3.0 - deciles			
	1	5	10	Total
does not	19.02 2.609	5.908 .8568	12 1.836	36.93 1.782
yes	364.4 49.99	400 58.01	454.4 69.5	1219 58.81
no	345.5 47.4	283.6 41.14	187.4 28.67	816.6 39.41
Total	729 100	689.5 100	653.8 100	2072 100

Key: Weighted count
Column percentage

Pearson:
Uncorrected chi2(4) = 59.4245
Design-based F(3.89, 7980.95) = 11.5973 P = 0.0000

(running tabulate on estimation sample)

Number of strata = 1
Number of PSUs = 2,052

Number of obs = 2,052
Population size = 2,072,3182
Design df = 2,051

Reason
why no

savings min. 500 Sfrs monthly	Swiss-SEP 3.0 - deciles			
	1	5	10	Total
inapplic	383.4 52.6	405.9 58.86	466.4 71.33	1256 60.59
no answe	0 0	.6665 .0967	.4093 .0626	1.076 .0519
does not	0 0	2.334 .3385	0 0	2.334 .1126
because	292.1 40.07	216.2 31.36	134.9 20.63	643.2 31.04
for anot	53.45 7.331	64.4 9.34	52.14 7.975	170 8.203
Total	729 100	689.5 100	653.8 100	2072 100

Key: Weighted count
Column percentage

Pearson:

Uncorrected chi2(8) = 68.9298
Design-based F(7.21, 14786.45) = 7.4610 P = 0.0000

(running tabulate on estimation sample)

Number of strata = 1
Number of PSUs = 2,052

Number of obs = 2,052
Population size = 2,072.3182
Design df = 2,051

Savings into 3rd pillar	Swiss-SEP 3.0 - deciles			
	1	5	10	Total
does not	12.25 1.681	8.788 1.275	1.901 .2908	22.94 1.107
yes	337.6 46.31	383.1 55.55	393.8 60.23	1114 53.78
no	379.1 52.01	297.7 43.17	258.1 39.48	934.9 45.12
Total	729 100	689.5 100	653.8 100	2072 100

Key: Weighted count
Column percentage

Pearson:

Uncorrected chi2(4) = 31.8437
Design-based F(3.88, 7952.69)= 5.7343 P = 0.0002

(running tabulate on estimation sample)

Number of strata = 1
Number of PSUs = 2,052

Number of obs = 2,052
Population size = 2,072.3182
Design df = 2,051

Reasons why no savings into 3rd pillar	Swiss-SEP 3.0 - deciles			
	1	5	10	Total
inapplic	349.9 47.99	391.8 56.83	395.7 60.52	1137 54.88
does not	11.61 1.592	.8937 .1296	1.845 .2822	14.34 .6922
because	160.1 21.97	92.14 13.36	47.18 7.216	299.5 14.45
for anot	207.4 28.45	204.6 29.68	209.1 31.98	621.1 29.97
Total	729 100	689.5 100	653.8 100	2072 100

Key: Weighted count
Column percentage

Pearson:

Uncorrected chi2(6) = 77.2839
Design-based F(5.81, 11906.96)= 9.7647 P = 0.0000

(running tabulate on estimation sample)

Number of strata = 1
Number of PSUs = 2,052

Number of obs = 2,052
Population size = 2,072.3182
Design df = 2,051

Financial help: health insurance	Swiss-SEP 3.0 - deciles			
	1	5	10	Total
does not	5.277 .7239	5.524 .8012	3.104 .4748	13.91 .671
yes	206.1 28.28	140.3 20.35	77.75 11.89	424.2 20.47
no	517.6 71	543.7 78.85	573 87.63	1634 78.86
Total	729 100	689.5 100	653.8 100	2072 100

Key: Weighted count
Column percentage

Pearson:

Uncorrected chi2(4) = 57.3109
Design-based F(3.94, 8089.74) = 9.4410 P = 0.0000

(running tabulate on estimation sample)

Number of strata = 1
Number of PSUs = 2,052

Number of obs = 2,052
Population size = 2,072.3182
Design df = 2,051

Income: Assessmen t of income and expenses	Swiss-SEP 3.0 - deciles			
	1	5	10	Total
does not	8.21 1.126	5.049 .7323	6.81 1.042	20.07 .9684
your hou	355.7 48.79	367 53.22	389 59.5	1112 53.65
your hou	287.4 39.42	246.4 35.73	195.9 29.96	729.6 35.21
your hou	63.61 8.726	57.97 8.407	55.27 8.453	176.8 8.534
your hou	14.09 1.933	13.17 1.91	6.818 1.043	34.08 1.644
Total	729 100	689.5 100	653.8 100	2072 100

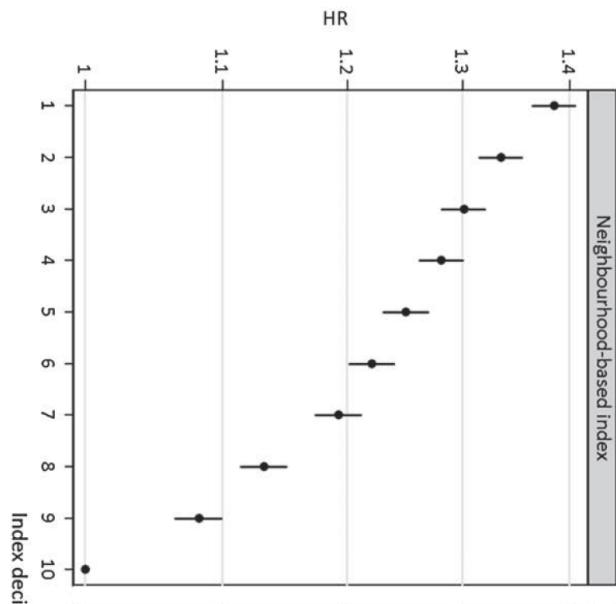
Key: Weighted count
Column percentage

Pearson:

Uncorrected chi2(8) = 18.8303
Design-based F(7.80, 15990.53) = 1.6433 P = 0.1092

2.10 Validation - SNC mortality

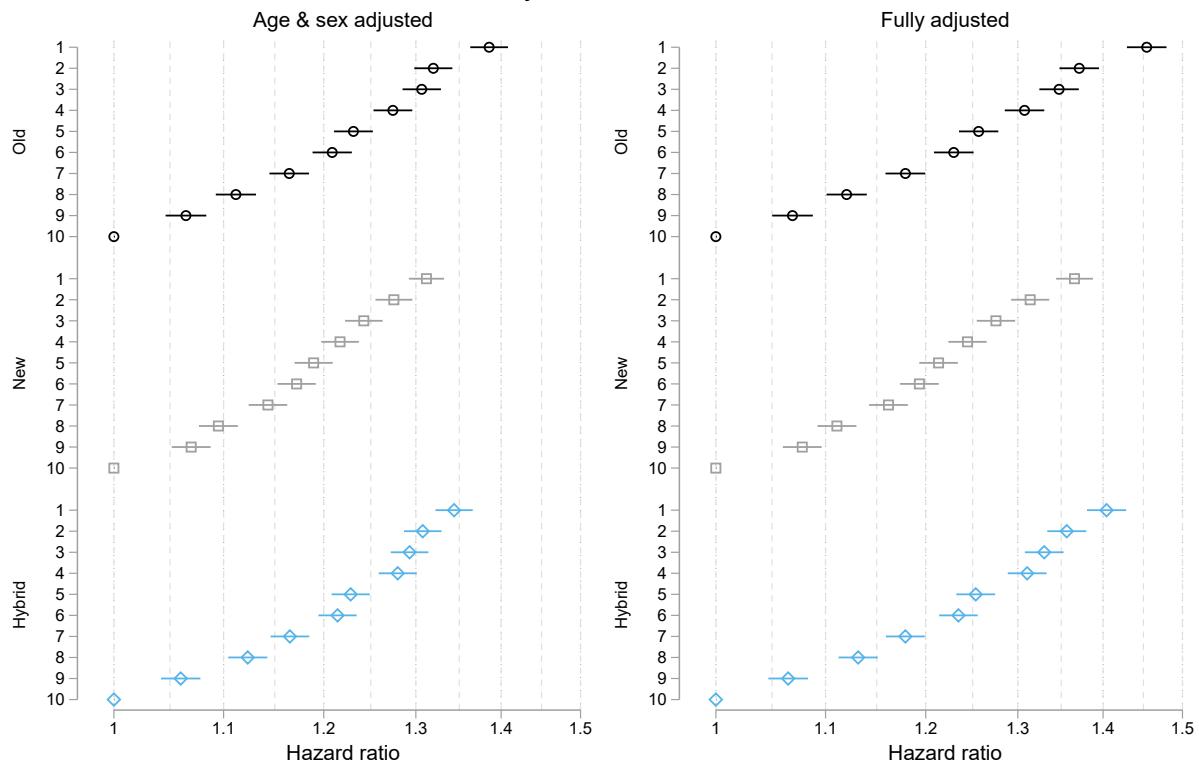
2.10.1 All cause mortality - original



Note: Calculations from 'old' SNC data from the **2001 - 2008 period**, as described in original paper!

2.10.2 All cause mortality - new indices

Hazard ratios of all cause mortality across deciles of three versions of the indices



Note: Results from Cox models. Calculations from 'new' SNC data from the **2012 - 2018 period!** 'Age & sex' - adjusted for age (via `stset`) and sex (as in original figure above); 'Adjusted' - additionally adjusted

for civil status, nationality, level of urbanization and language region. This is not the same adjustment as in
adjusted models in original papers since we are missing some crucial variables.

2.10.3 Cause specific mortality - original

Cause	Age and sex adjusted
	HR (95% CI)
All-causes	1.38 (1.36 to 1.41)
Lung cancer	1.83 (1.71 to 1.95)
Breast cancer	0.93 (0.85 to 1.02)
Prostate cancer	1.17 (1.07 to 1.28)
Cardiovascular diseases	1.48 (1.44 to 1.51)
Myocardial infarction	1.68 (1.57 to 1.80)
Stroke	1.28 (1.20 to 1.36)
Respiratory diseases	1.99 (1.87 to 2.12)
Traffic accidents	2.42 (1.94 to 3.01)
Suicide	0.86 (0.78 to 0.95)

2.10.4 Cause specific mortality - 1.0

	Age & sex HR	95% CI	Adjusted HR	95% CI
Lung cancer	1.93 (1.79, 2.08)		2.00 (1.84, 2.16)	
Breast can-r	1.09 (0.97, 1.23)		1.13 (1.00, 1.28)	
Prostate c-r	1.15 (1.03, 1.29)		1.18 (1.05, 1.33)	
Cardiovasc-r	1.49 (1.44, 1.54)		1.56 (1.51, 1.61)	
Myocardial-n	1.64 (1.48, 1.80)		1.79 (1.62, 1.99)	
Stroke	1.25 (1.14, 1.36)		1.29 (1.18, 1.42)	
Respiratory	1.81 (1.68, 1.94)		1.78 (1.65, 1.92)	
Traffic ac-s	1.80 (1.36, 2.39)		1.47 (1.09, 1.97)	
Suicide	1.32 (1.14, 1.51)		1.38 (1.19, 1.59)	

Note for both tables: HRs for the 10th (lowest SEP) decile compared to 1st (highest SEP). Breast and prostate cancer: for men and women respectively.

2.10.5 Cause specific mortality - 2.0 results

	Age & sex HR	95% CI	Adjusted HR	95% CI
Lung cancer	1.79 (1.67, 1.92)		1.84 (1.71, 1.98)	
Breast can-r	1.01 (0.91, 1.13)		1.05 (0.94, 1.17)	
Prostate c-r	1.13 (1.02, 1.26)		1.14 (1.02, 1.27)	
Cardiovasc-r	1.38 (1.34, 1.43)		1.44 (1.39, 1.48)	
Myocardial-n	1.53 (1.40, 1.67)		1.67 (1.52, 1.83)	
Stroke	1.25 (1.15, 1.35)		1.28 (1.18, 1.40)	
Respiratory	1.63 (1.53, 1.74)		1.60 (1.49, 1.72)	
Traffic ac-s	2.13 (1.59, 2.86)		1.80 (1.33, 2.43)	
Suicide	1.31 (1.15, 1.49)		1.37 (1.20, 1.57)	

Note for both tables: HRs for the 10th (lowest SEP) decile compared to 1st (highest SEP). Breast and prostate cancer: for men and women respectively.

2.10.6 Cause specific mortality - 3.0 results

	Age & sex HR	95% CI	Adjusted HR	95% CI
Lung cancer	1.82 (1.69, 1.96)		1.88 (1.74, 2.04)	
Breast can-r	1.04 (0.93, 1.17)		1.08 (0.95, 1.21)	
Prostate c-r	1.14 (1.02, 1.27)		1.16 (1.03, 1.30)	
Cardiovasc-r	1.44 (1.39, 1.49)		1.50 (1.45, 1.55)	
Myocardial-n	1.55 (1.41, 1.70)		1.68 (1.52, 1.86)	
Stroke	1.22 (1.12, 1.33)		1.26 (1.15, 1.38)	
Respiratory	1.72 (1.60, 1.85)		1.69 (1.57, 1.82)	
Traffic ac-s	1.89 (1.43, 2.51)		1.55 (1.15, 2.08)	
Suicide	1.29 (1.12, 1.48)		1.36 (1.18, 1.57)	

Note for both tables: HRs for the 10th (lowest SEP) decile compared to 1st (highest SEP). Breast and prostate cancer: for men and women respectively.

3 Appendix

3.1 Non-residential buildings

'Non-residential' buildings that were excluded from calculation of the index.

Orig. building class	Freq.	Percent	Cum.
1211 - Hotel, motel	4,906	17.69	17.69
1220 - Office building	3,982	14.36	32.05
1130 - Communities, home for the aged,	3,946	14.23	46.28
1251 - Factory, industrial building	2,898	10.45	56.73
1212 - Short-term dwelling, youth hoste	2,208	7.96	64.69
1271 - Farm, agricultural building, gre	1,805	6.51	71.20
1230 - Wholesale, retail, shopping mall	1,721	6.21	77.40
1274 - Prison, barrack, bus stop, publi	1,707	6.16	83.56
1264 - Hospital, nursing home, institut	1,473	5.31	88.87
1263 - School building, college, univer	1,443	5.20	94.07
1261 - Cinema, theatre, concert hall, a	455	1.64	95.71
1272 - Church, chapel, morgue	356	1.28	97.00
1242 - Parking ramp, parking garage	306	1.10	98.10
1241 - Railway station, airport	182	0.66	98.76
1265 - Sports hall, gym, tennis court	148	0.53	99.29
1252 - Storage building, warehouse, sil	141	0.51	99.80
1262 - Museum, library	55	0.20	100.00
1273 - Monument, memorial	1	0.00	100.00
Total	27,733	100.00	