

Stratification in Health: How the Intersection of Age, Gender, and Education Shapes Self-Rated Health Across 50 Years of the Life Course in Suriname and Beyond

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- Please send comments to nancygooding@yahoo.com.

BACKGROUND

Stratification in health

- Inequality in health (morbidity, mortality) is well documented: People feeling less healthy as they grow older is not a new insight. What is far less known is when that decline begins and how strongly it manifests itself over the life course.
- Gender affects health and illness throughout the lifespan: women experience more health problem than men. Is this the same across the life course of do men start to resemble women at old age?
- Studies document that a *higher* level of education is positively associated with longer life expectancy and better health outcomes throughout the life course. Dropping out of education or receiving relatively little schooling is linked to health problems and premature mortality. We need to examine at which points the differences arise.
- **Research with ISSP2021 can contribute to this literature**
 - Multiple indicator measurement of (self-reported) health
 - Good (detailed) comparative measurement of education (& income)
 - Global comparison, in particular by good coverage of Global South vs Global North.

Health vs Self-rated Health

- ISSP is social attitudes survey → Health is measured as Self-reported Health
- Health and Self-reported Health are far from identical, but there may be a strong correlation.
- Experienced health (health feelings) is important signal of objective health.

Research Questions

How does the intersection of age, gender, and educational attainment shape self-rated health across 50 years of the life course in Suriname, and to what extent do these patterns align with or diverge from international trends?

DATA & RESEARCH DESIGN

Data: ISSP2021

- N=44,459 in 30 countries, between 2021 and 2023.
- SR collected the data in 2023, N=1468
- After selecting age 21-77: N=41,902.

ISSP countries: Global North vs Global South

- ISSP was originally established in 1985 by five countries: US, UK, AT, AU and DE.
- Despite its membership growing over time to about 45 countries, the ISSP has remained a 'global' survey with a strong underrepresentation of Global South countries.
- The first non-Western country to enter ISSP was PH, in 1993.
- Nevertheless, ISSP has substantial Global South membership and is a useful dataset to compare Global South to Global North.
- ISSP 2021 has eight Global South countries: MX, ZA, PH, IN, TH, SR, CN, TW vs 22 Global North countries.
- SR entered the ISSP om 2015, after piloting ISSP-2009 in 2012.
- In this study, we compare the Surinamese situation with other countries participating in the ISSP.

Strengths of ISSP data

- Cross-national comparative
- Multiple indicator measurement of Self-rated Health
- Very good comparative education data
- (Very good comparative occupation and income data)

Assumption: age groups as life course dynamics

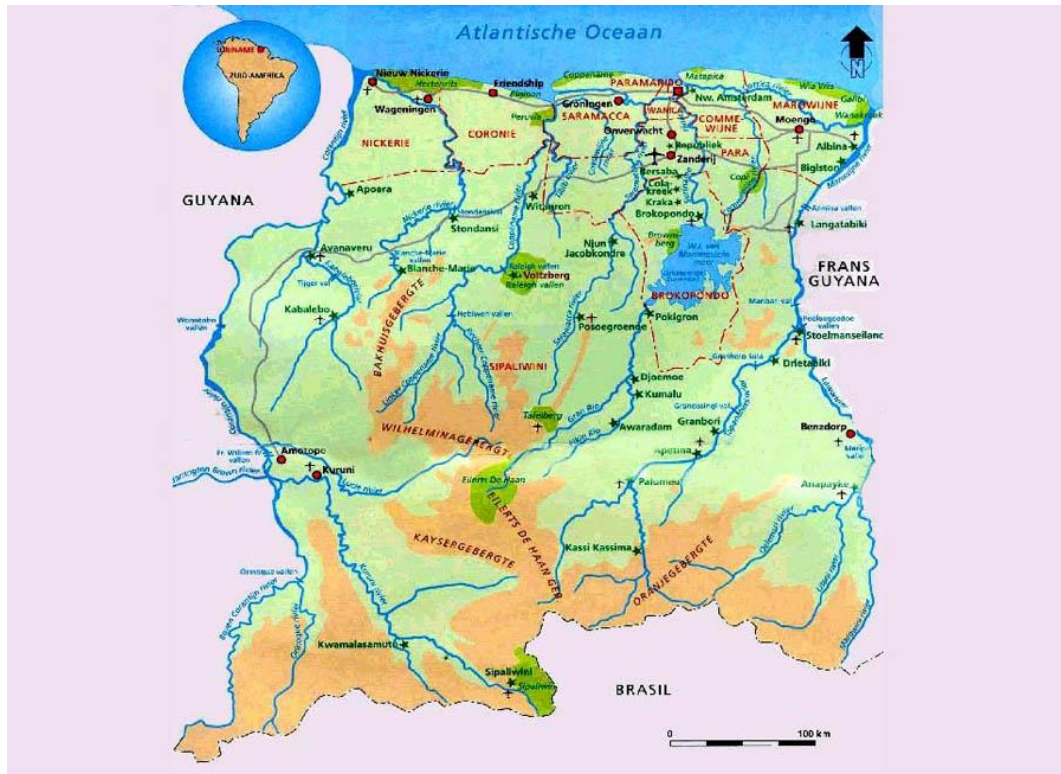
- We compare differences between age groups and assume that these represent (primarily) life course dynamics (= how health outcomes **change** when growing older).
- Of course, an alternative interpretation is possible, i.e. that difference between age groups represent cohort dynamics (= how people were influenced at an early age and carry this pattern with them when growing older).
- We believe (but do not show) that a life-course interpretation is more plausible.

SURINAME

Suriname in South-America



Suriname



- Former colony of the Netherlands (Independence: 1975)
- Strong ties with NL, also in the health care system.
- Main language: Dutch
- Population: ca. 600.000
- Ethnically extremely divers (#3 in the world) due to complicated immigration history.
- Natural resources: 17 / 193
- HDI: 0.722 (rank 114 / 193)

RESULTS

Measuring and Modelling (Self-rated) Health

- ISSP-2021 contains four indicators of self-rated health:
 - *In general, would you say your health is ... excellent .. Poor (EXCELLENT)*
 - *Do you have a long-standing illness, a chronic condition, or a disability? (NO_CHRONIC)*
 - *During the past 4 weeks how often...*
 - *... have you had difficulties with work or household activities because of health problems? (NO_PROBLEMS)*
 - *... have you had bodily aches or pains? (NO_PAINS)*
- All four indicators coded in the direction of **GOOD** health and standardized as **POMP** (1-100) scores [POMP = Percentage of Maximum Possible = range standardization].
- Standard item analysis :
 - Validity: do the four indicators represent a single underlying dimension: (correlation / factor analysis)? **YES**
 - Reliability: how stable does a Health scale measure the underlying dimension? **FAIRLY RELIABLE, BUT WITH VARIATION BETWEEN COUNTRIES.**

Factor analysis

Factor Matrix ^a	
	Factor
	1
ZZV51r	.593
ZZv52	.472
ZZV33r	.752
ZZV34r	.757

Extraction Method: Principal Axis Factoring.

Variance extracted: 42.85%

Reliability analysis

Reliability Statistics

NoSo	CA	N of Items
1 SR	.586	4
2 South	.609	4
3 North	.720	4

Conclusions on measurement of health: **reliability**

- CA estimates of measurement of reliability is around 0.75.
- However, there is a systematic difference in measurement reliability between the Global South (below 0.60) and the Global North (over 0.75).
- (CN is an exception to this pattern.)
- Again, it is a question whether this heterogeneity of measurement quality will affect substantive conclusions: what happens when we correct for attenuation?

HEALTHp by Region

MEANS

Region	P51 Excellent	P52 No_Chronic	P33 No_Problems	P34 No_Pain	HEALTHp
1 SR	43.4	82.5	69.2	60.4	64.3
2 South	53.7	77.0	74.1	69.9	68.6
3 North	53.8	66.8	75.1	61.5	64.2
Total	53.5	70.4	74.6	64.0	65.6

Conclusions on Self-Rated Health

1. Suriname scores lower than the Global South average.

This indicates that respondents in the Global South, on average, report *better self rated health* than respondents in Suriname.

2. Suriname closely resembles the Global North in self rated health.

This is striking, given the considerable socioeconomic and infrastructural differences between these regions.

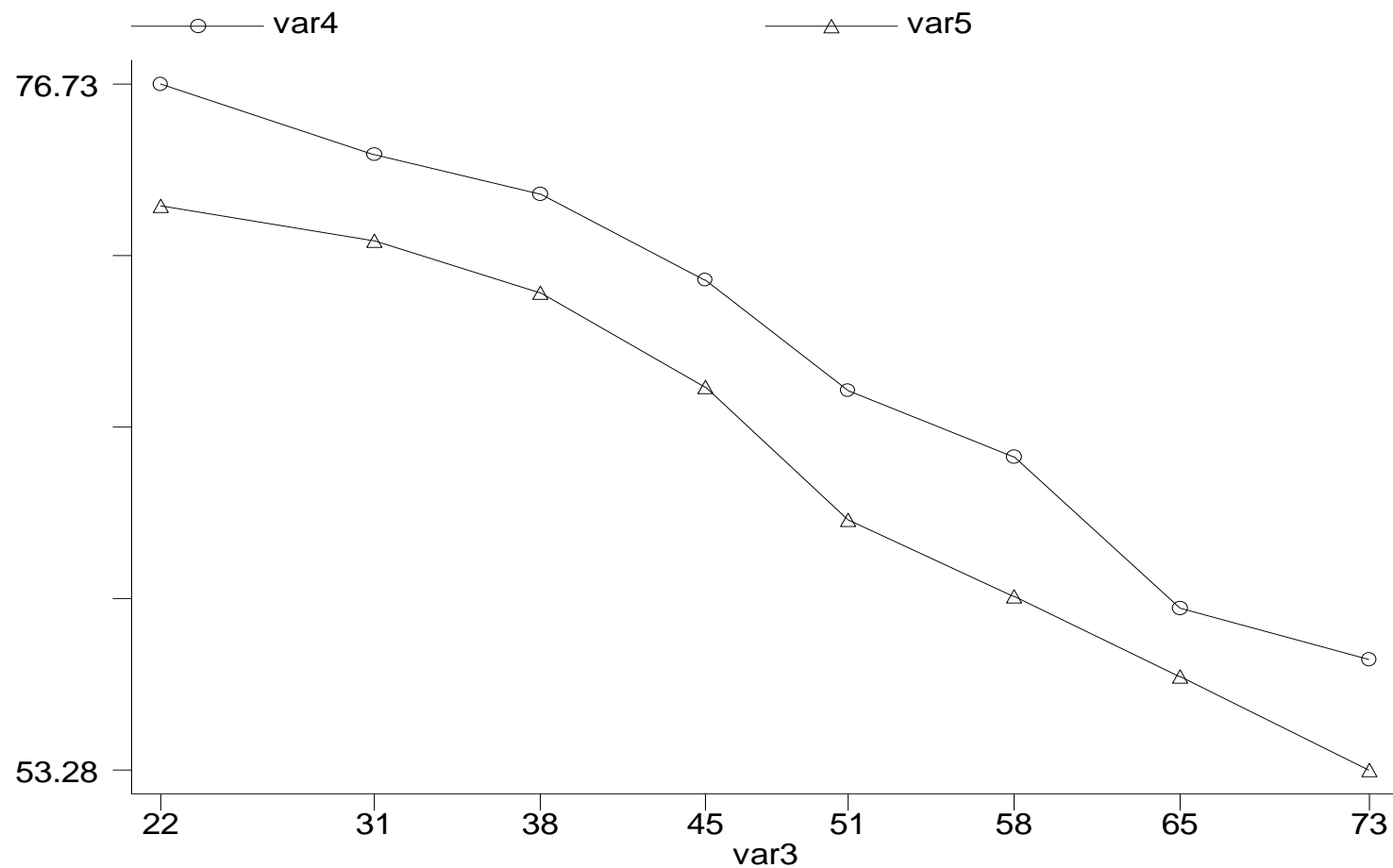
3. The Global South has the highest HEALTHp score. This may reflect differences in reporting styles, cultural norms, or other structural factors.

4. At the item level, Suriname scores particularly high on P52: Absence of Chronic Condition

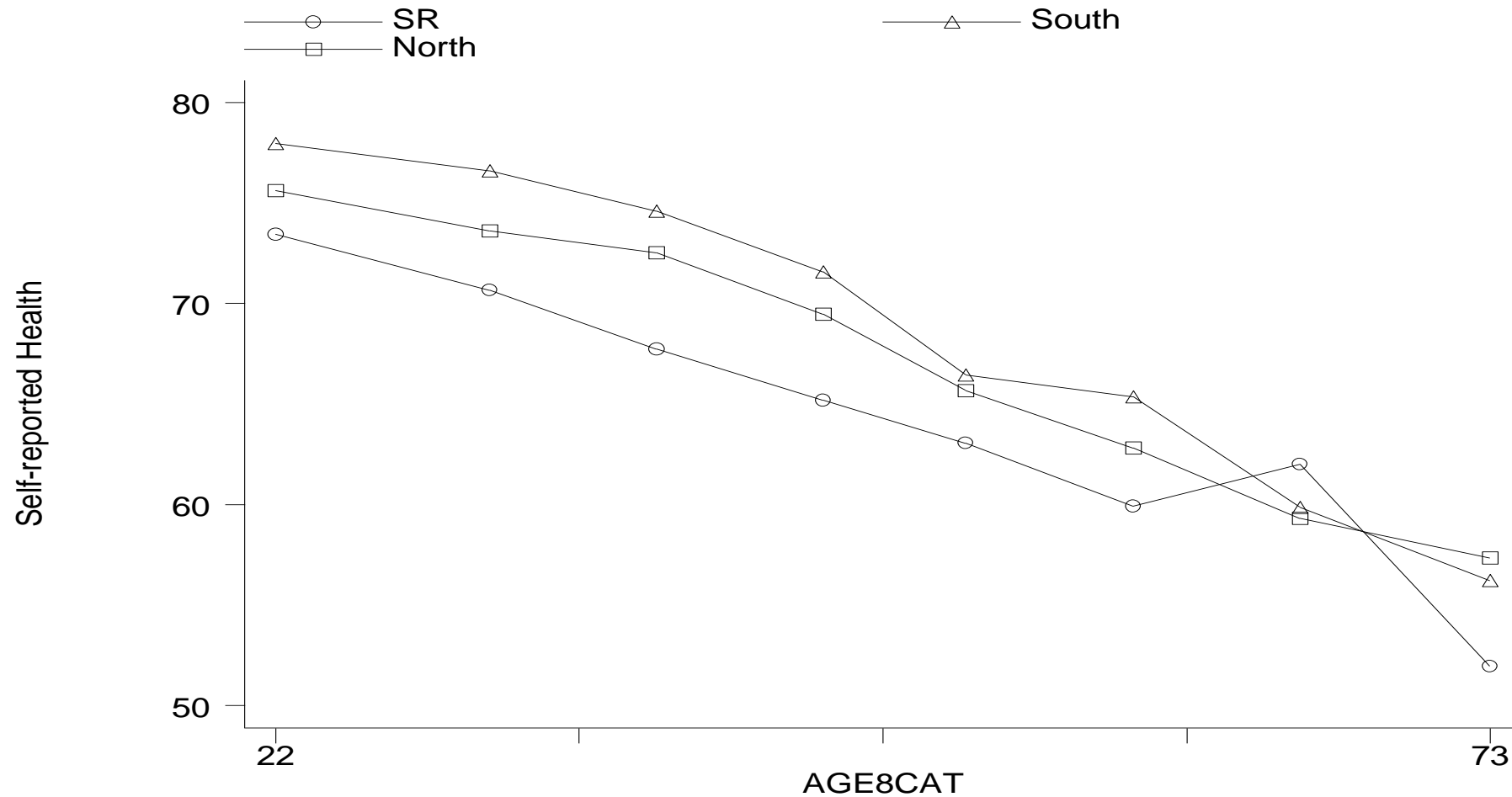
Age distribution SR - South- North

- ❖ The average age in SR (44.1 years) and South (44.3 years) is almost the same.
- ❖ The North region has a considerably higher average age (49.6 years).

HEALTH_p BY AGE_{CAT} FOR MEN AND WOMEN



Self-reported Health by Age & Region



Conclusions on Age → Health

1. Self-rated Health decreases with age continuously; somewhat faster after age 40.
2. Men consider themselves as more healthy than women do at all ages; no interaction between age and gender.
3. Age profile is much the same in SR, South and North. No significant differences in slopes.

EDUCATION

Measuring level of education in ISSP

- ISSP collects level of education in two questions:
 - By **qualification**, cross-nationally harmonized in 9 ranked categories, which is the first digit of ISCED-2011: EDULEVEL
 - By **duration**, specified as the “number of year you spent full-time in education”: EDUCYRS.
- EDULEVEL and EDUCYRS are strongly correlated (.80). Combining them still increases the measurement reliability.
- We **combine** qualification and duration by first scaling EDULEVEL (etc.) by EDUCYRS (expressing both in years) and then average them
$$EDYR = \text{mean}(\text{EDULEVELYR}, \text{EDDUR}).$$

How education is asked in ISSP

- Qualification:
 - ISSP: What is the highest level of education that you have completed? List of country-specific categories/degrees.
 - SR: B01a What is the highest level of education you have *attended*? B01b And what is the highest level of education you have *completed*?
- Duration:
 - ISSP: How many years (full-time equivalent) have you been in formal education? *Include all primary and secondary schooling, university and other post-secondary education, and full-time vocational training, but do not include repeated years. If you are currently in education, count the number of years you have completed so far.*
 - SR: Hoeveel jaar onderwijs hebt u in totaal gevolgd [vanaf het 1 jaar van de lagere school]? (indien parttime, reken terug naar fulltime). Opmerking: tel doublures (zittenblijven) niet mee. Als u nu nog in opleiding bent, tel het aantal jaren onderwijs dat u tot nog toe gehad hebt.

Educational expansion by gender and region with GESIS harmonization

Parameter Estimates

Dependent Variable: EDYR

Parameter	B	SE	t	p	95% Confidence Interval	
					Lower Bound	Upper Bound
Intercept	12.633	.052	242.064	0.000	12.531	12.735
SR	-3.666	.091	-40.153	0.000	-3.845	-3.487
South	-3.146	.036	-86.200	0.000	-3.217	-3.074
North (ref)	0					
FEMALE	-.752	.071	-10.563	.000	-.891	-.612
COHx	2.213	.090	24.618	.000	2.037	2.389
COHx * FEMALE	1.301	.123	10.615	.000	1.061	1.541

Education expansion by gender and region with country-specific measures

Parameter Estimates

Dependent Variable: EDYR

Parameter	B	SE	t	p	95% Confidence Interval	
					Lower Bound	Upper Bound
Intercept	12.662	.053	238.352	0.000	12.558	12.766
SR	-2.281	.093	-24.656	.000	-2.463	-2.100
South	-3.501	.037	-94.117	0.000	-3.573	-3.428
North (ref)	0 ^a					
FEMALE	-.743	.072	-10.263	.000	-.885	-.601
COHx	2.317	.092	25.316	.000	2.138	2.497
COHx * FEMALE	1.299	.125	10.411	.000	1.054	1.543

SR education includes incomplete qualification ("highest education attended")

Conclusions on Education

- **Suriname** and the **Global South** lag behind the **Global North** in terms of years of schooling; the position of SR changes when incomplete qualifications are taken in to account.
- **Women** have historically received fewer years of education than men, but this gap **is closing over time**, as women benefit more strongly from educational expansion across cohorts.
- The interaction effect shows that educational expansion **reduces gender inequality** in schooling.
- **Educational attainment has increased significantly across generations** (a positive cohort effect of +2.21 years).

MULTIVARIATE ANALYSIS

Bivariate relationship between EDYR and HEALTHp

Age and Education by Region

Means

	<u>SR</u>	<u>South</u>	<u>North</u>
AGE	44.1	44.3	49.6
EDYR	11.8	10.5	13.7

Interaction AGECAT * EDYR for South

Parameter Estimates

Dependent Variable: HEALTHp

Parameter	B	Std. Error	t	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
[NoSo=2]	49.908	.983	50.796	0.000	47.982	51.834
FEMALE	-2.799	.363	-7.717	.000	-3.509	-2.088
[AGECAT=22]	26.502	1.695	15.635	.000	23.179	29.824
[AGECAT=31]	23.879	1.404	17.008	.000	21.127	26.632
[AGECAT=38]	20.758	1.209	17.165	.000	18.387	23.128
[AGECAT=45]	16.983	1.052	16.151	.000	14.922	19.044
[AGECAT=51]	11.297	.973	11.606	.000	9.389	13.205
[AGECAT=58]	9.596	.895	10.719	.000	7.841	11.351
[AGECAT=65]	3.871	.895	4.325	.000	2.117	5.626
[AGECAT=73]	0 ^a					
EDYR	.087	.088	.984	.325	-.086	.260
AGE01 * EDYR	.694	.146	4.761	.000	.409	.980

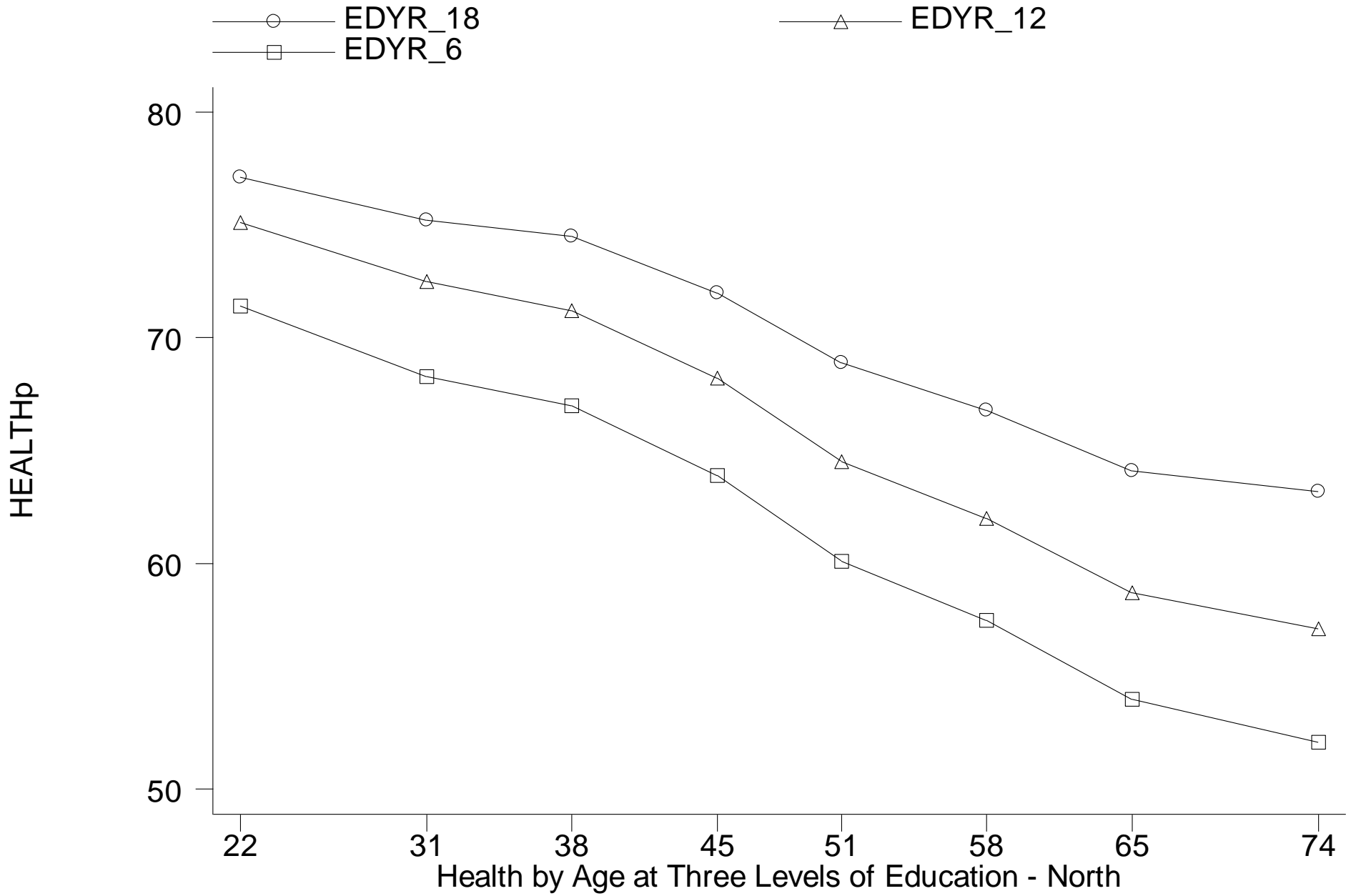
a. This parameter is set to zero because it is redundant.

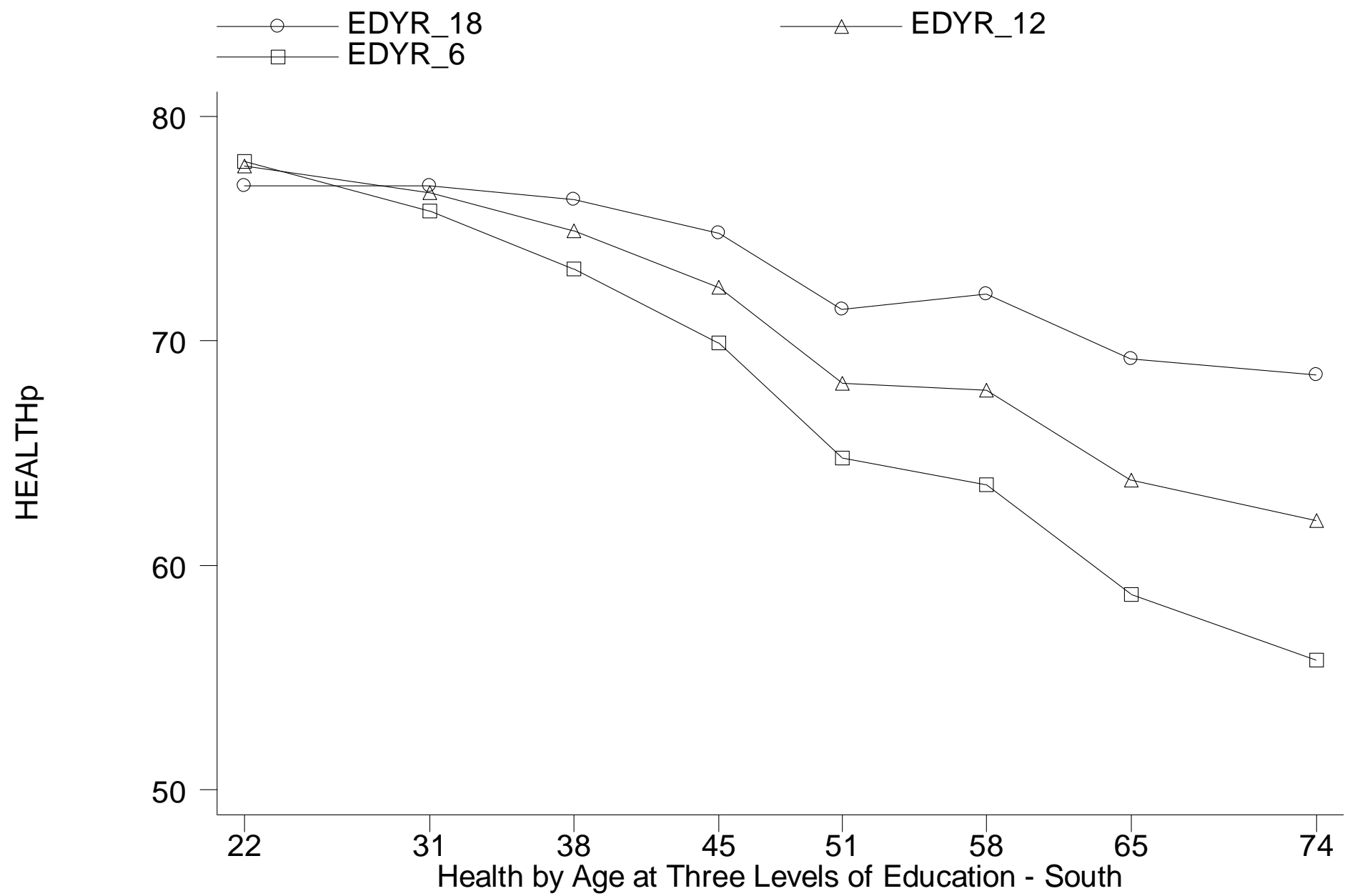
Interaction AGECAT * EDYR for North

Parameter Estimates

Dependent Variable: HEALTHp

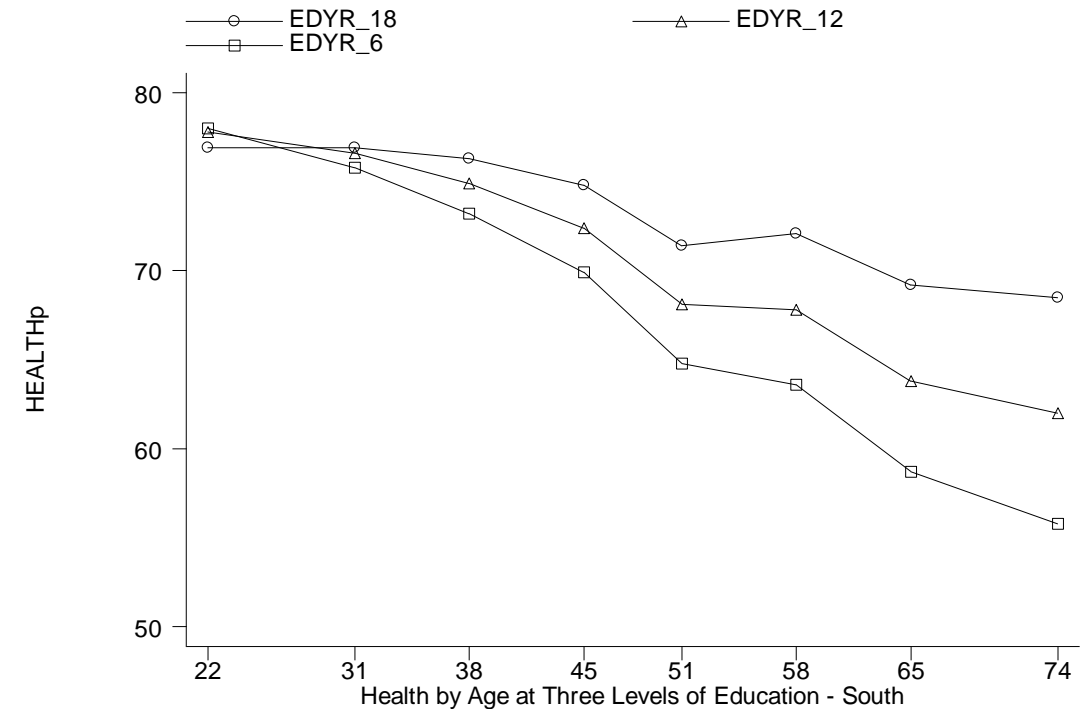
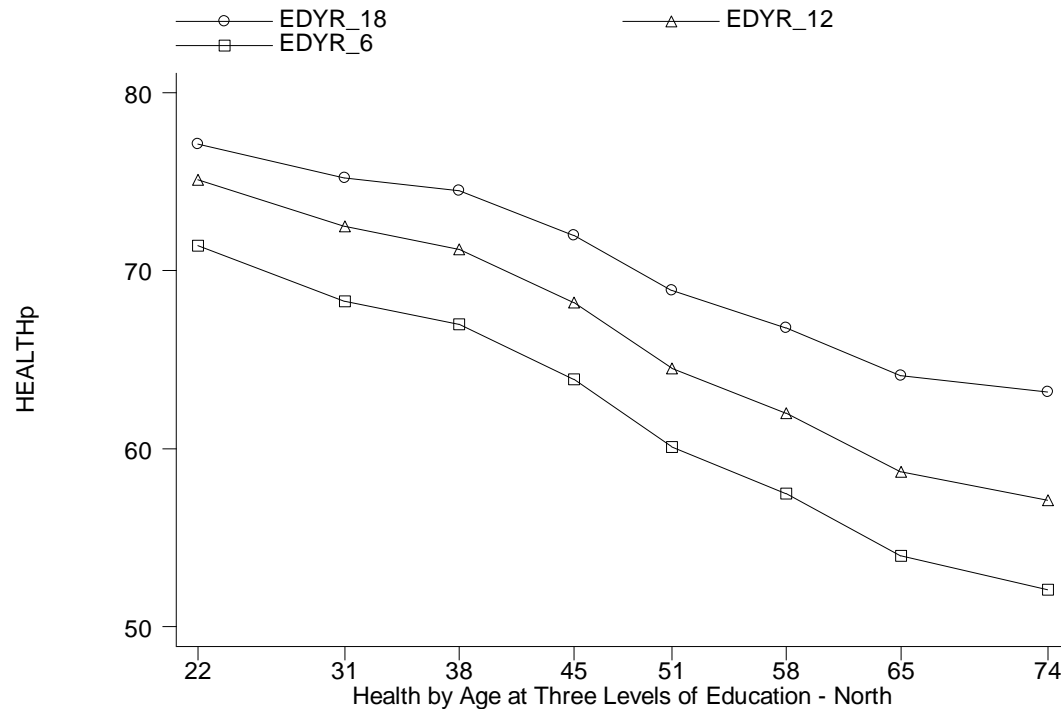
Parameter	B	Std. Error	t	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
[NoSo=3]	49.564	1.028	48.219	0.000	47.550	51.579
FEMALE	-3.961	.286	-13.851	.000	-4.522	-3.401
[AGECAT=22]	15.858	1.876	8.452	.000	12.181	19.536
[AGECAT=31]	13.145	1.672	7.860	.000	9.867	16.423
[AGECAT=38]	12.360	1.399	8.833	.000	9.617	15.103
[AGECAT=45]	9.892	1.137	8.696	.000	7.662	12.121
[AGECAT=51]	6.647	.930	7.145	.000	4.824	8.471
[AGECAT=58]	4.433	.729	6.079	.000	3.004	5.863
[AGECAT=65]	1.447	.592	2.446	.014	.287	2.607
[AGECAT=73]	0 ^a					
EDYR	.789	.098	8.033	.000	.597	.982
AGE01 * EDYR	-.173	.138	-1.259	.208	-.443	.096





Educational differences in HEALTH-AGE for SR

Educational differences in HEALTH-AGE profiles by Region



Conclusions on Education and Health

1. Higher education leads to better health.
2. Education protects against health deterioration at higher ages
3. This protection effect is much stronger in the South than in the North
4. In South almost no difference between education groups at young age (< 31)

Discussion

- Reliability of Health varies between North and South (on average .72 vs .61). **How harmful is this?**
- ISSP harmonization of Education does not work well for Suriname (and other South countries?): incomplete qualifications should be taken into account. **Have we found a good solution by using duration as a metric for different versions of qualifications?**
- **How should take** into account lower life-expectancy in the South?

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