

Health inequalities in India and Switzerland: Measurement and conceptual issues

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Background of the project (I)

- Collaboration initiated with the joint Indo-Swiss seminar 'Social dynamics of well-being: Indian and Swiss approaches', Bangalore september 2014
- Contrasted health, social, cultural and economic characteristics of India and Switzerland
- Interest for measuring the distribution of population health in both contexts: what can we learn from the comparison?

Background of the project (II)

General health indicators for India and Switzerland

	India	Switzerland
Health expenditure as % of GDP	1.4%	7.7%
Per capita health expenditure	58 US\$	9071 US\$
Density of physicians /10'000	7	40.5
Nursing and midwifery personnel/10'000	17.1	173.6
Life expectancy at birth	66 years Men 65 / Women 68	83 years Men 81 / Women 85
Healthy life expectancy at birth	58 years	72 years

Source: World Health Organization statistics 2015

Outcomes

Preparation of 3 papers to be submitted to peer-reviewed journals

- The health transition and the social gradient in health. A comparison of health inequalities in India and Switzerland (CBJ)
- How misleading is self-reported morbidity for reckoning socio-economic inequality in health? (AC)
- Comparing reliability of self-rated health item in India and Switzerland: A construct validation study (AC)

Methodology

Secondary analysis of available data

India

- World Health Survey 2003: 9'228 respondents
- National sample survey, various rounds

Switzerland

- Swiss Health Interview Survey 2007: 16'651 respondents

Paper 1

Comparison of health inequalities in India and Switzerland

- The **health transition model** (Frenk et al 1991; Johansson 1991)
 - Epidemiological transition
 - Healthcare transition
 - Transformations in the cultural, social and behavioral components of health
- **Health inequalities research**
 - Social and economic determinants of health
 - Universal social gradient in health

Comparison of health inequalities in India and Switzerland

- Measurement of health

"Ever since the 1947 WHO definition of health, researchers have grappled with operational definitions and methodological approaches to measure health at the population level, in particular non-fatal health [sic]" (Sadana et al. 2002)

- Internal versus external views (Sen 2002)

"One of the complications in evaluating health states arises from the fact that a person's own understanding of his or her health may not accord with the appraisal of medical experts" (Sen 2002)

- Different views on the most important determinants of health (socioeconomic determinants versus access to healthcare)

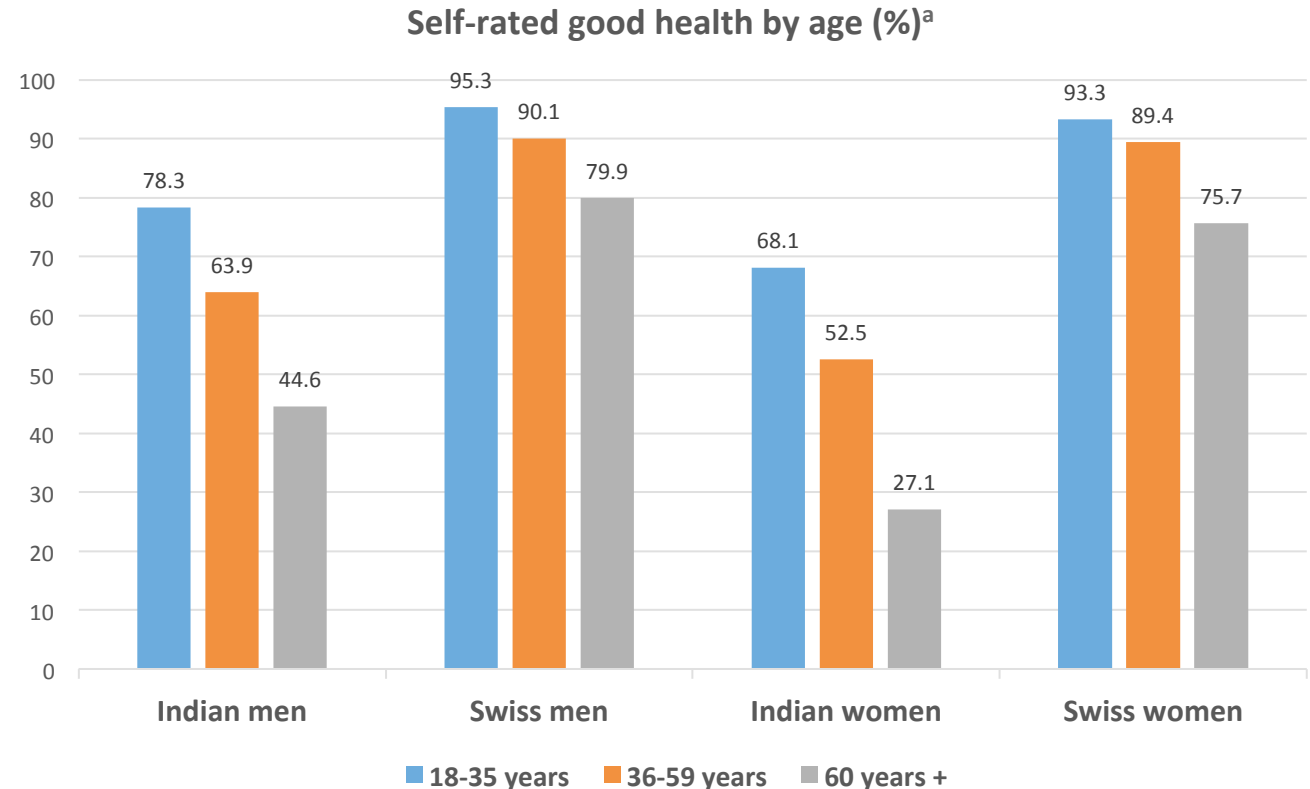
→ self-rated health and morbidity in general population surveys

Comparison of health inequalities in India and Switzerland

- Comparison of health inequalities in India and Switzerland as representing **two contrasted stages of the health transition**
- **Objectives**
 - To assess the similarities in health inequalities across different categories of the population
 - To describe the characteristics of the social gradient in health

Observations

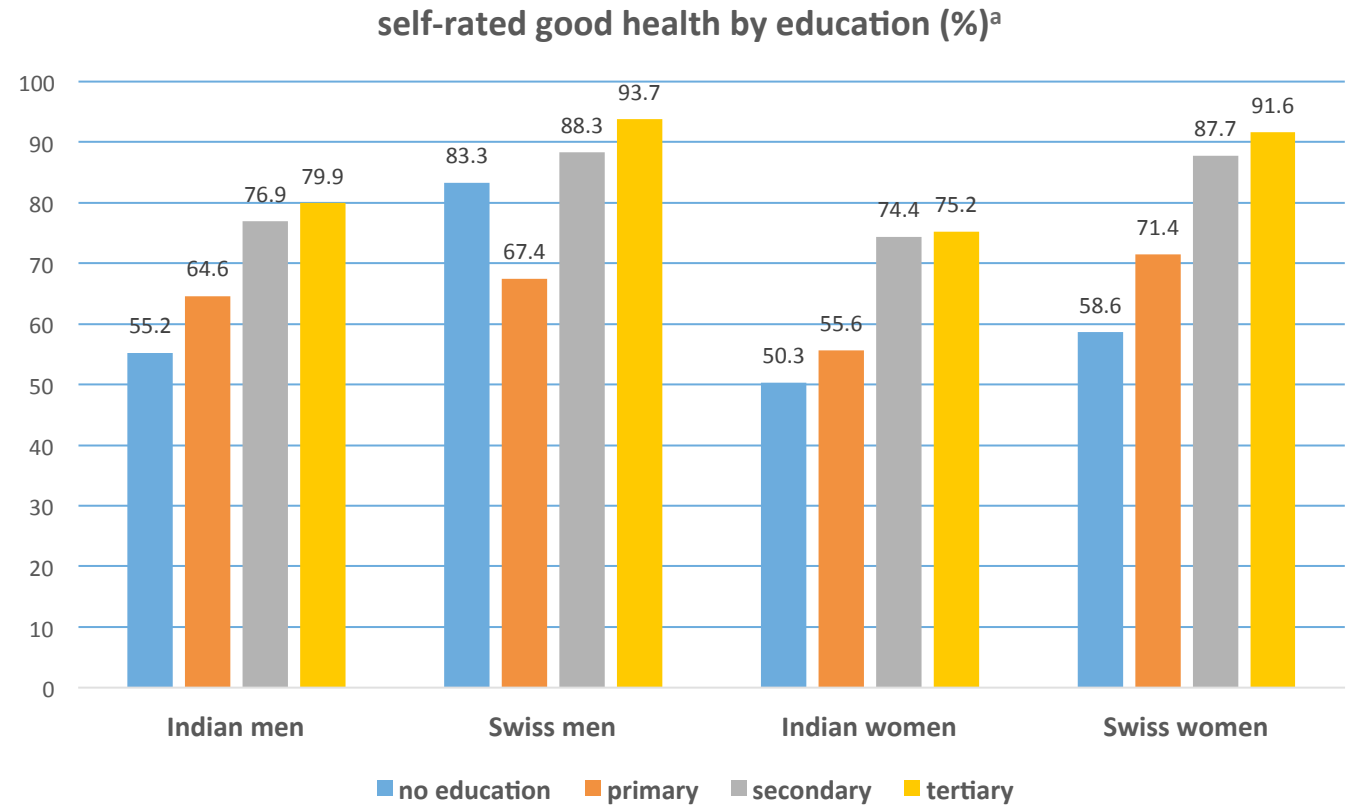
- Different levels of self-reported good health
- Women report less good health, in both contexts
- Self-reported health declines with age, in both contexts



^a weighed proportions

Observations

- Contrasted levels of education across the 2 countries
- But gradient of self-reported health with education



^a weighed proportions

Observations

- Lower employment levels in India, especially for women
- Those who are in the labour force are in better health in Switzerland, but no difference in India



^a weighed proportions

Comparison of health inequalities in India and Switzerland

- Analyses question the dominant view that socioeconomic development and increased investment in health are systematically associated with improvement of the population health
 - Reasonably high levels of good health in India
 - Social gradient in health observed in both India and Switzerland
- 3 consistent patterns in India and Switzerland
 - Self-reported health declines with age
 - Women report poorer health than men
 - Self-reported health improves with each further level of education attained

Comparison of health inequalities in India and Switzerland

- Contrasted role of employment
 - In Switzerland, those who are employed report better health
 - In India, no impact on women's health and limited impact on men's health
- No impact of living in a rural versus urban environment, in both India and Switzerland
- Persistence and universality of the social gradient in health confirms the role of economic, social and cultural factors, beyond access to healthcare

Paper 2

Background

- Amartya Sen's powerful critique of self-reported morbidity data [Sen (PPA 1993; BMJ 2002)]
 - 'Internal' and 'external' views ('Positional objectivity')
 - Reported morbidity in Kerala and Bihar
 - Patient's internal assessment may be seriously limited by her *social experience*
 - 'can thoroughly mislead public policy on health care and medical strategy'
- Questioning and grappling with morbidity data
 - Murray & Chen (PDR, 1992)
 - Salomon, Tandon & Murray (BMJ, 2004)
 - Subramanian et al (SSM, 2009)

Sen's observation

“There is much evidence that people in states that provide more education and better medical and health facilities are in a better position to diagnose and perceive their own particular illnesses than are the people in less advantaged states, where there is less awareness of treat-able conditions” [Sen (BMJ, 2002)]

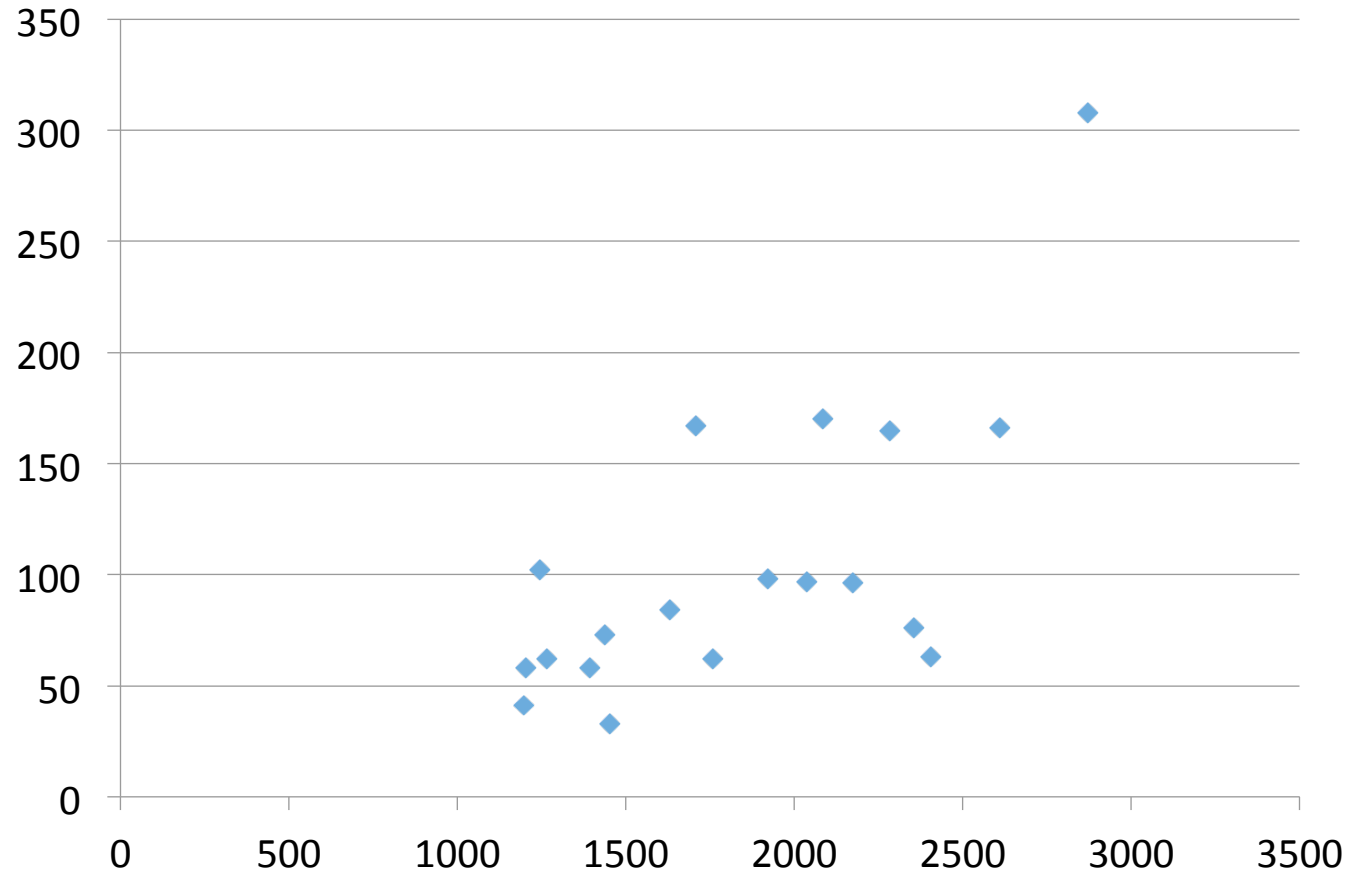
Is it generally valid for Indian states?

- [A]ggregated data on morbidity rates reported by Sen in his 2002 editorial, is from the “mid-1970s” (A. Sen, 2002). Indeed, the data from more recent years on life expectancy and self-reported morbidities in Kerala and Bihar show that Bihar not only has lower life expectancy as compared to Kerala, it also has higher levels of self-reported morbidities, as one would expect (Subramaniam et al., 2009).
- Reviewing the reports of subsequent Health Rounds of the NSS, we find that the Bihar-Kerala gap in self-reported morbidities not only persists, but has further widened, in both urban and rural areas

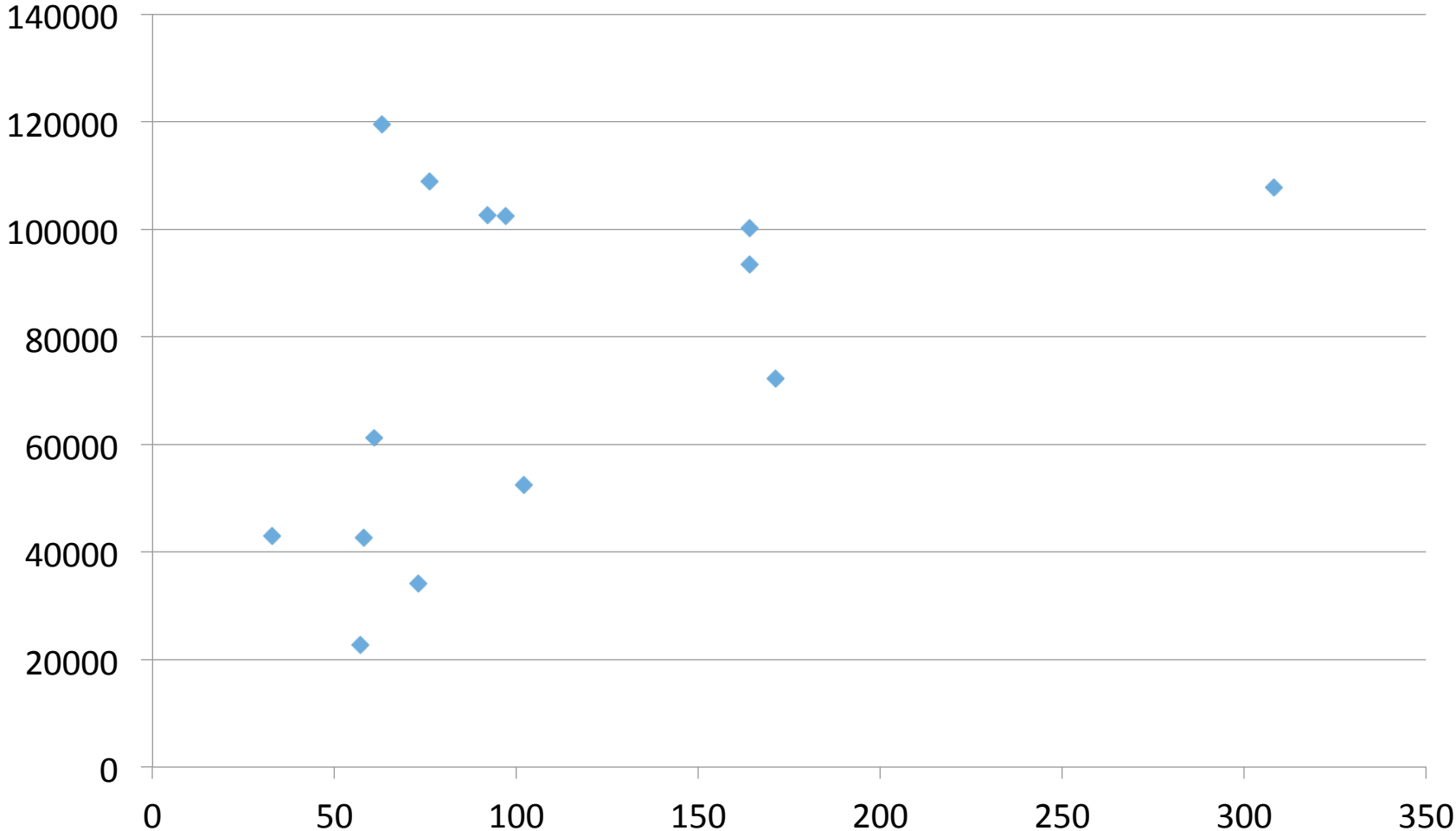
Proportion of Ailing Persons (PAP) in Bihar, Kerala and India in 1995-96, 2004-05 and 2014

State	Rural			Urban		
	Round 52	Round 60	Round 71	Round 52	Round 60	Round 71
Bihar	36	53	57	41	63	57
Kerala	118	255	310	88	240	306
India	55	88	89	54	99	118

Average MPCE and PAP across states



PCNSDP (at Factor Cost, at Constant Prices), 2013-14 and PAP, 2014 across the Indian States



- Pooling data from the two states, Bihar and Kerala, from the unit level data of NSS Round 71, we find that ***even after controlling for various positional parameters affecting morbidity*** (viz. age, sex, social group, region of residence, level of living and education), there is a strong state effect that affects the prevalence of any ailment, chronic ailment, acute (any other) ailment and specific ailments (infection, skin, gastrointestinal and respiratory diseases, diabetes, and hypertension) occurring during the reference period.

MPCE and Morbidity (General)

- Rich systematically report more PAP (acute /chronic/ both), chronic and acute illness
- Urban areas have higher ailments (PAP, chronic, acute)
- Positive relation between MPCE and morbidity holds in both rural and urban areas
- Dispersion across MPCE classes is less for acute illness compared to chronic

PAP (general) across economic classes

MPCE Class	India (Total)			Rural			Urban		
	Any Ailment	Chronic	Acute	Any Ailment	Chronic	Acute	Any Ailment	Chronic	Acute
Poorest	78.7	38.4	43	77.7	37.7	42.9	86.0	43.2	44.2
Poorer	103.0	58.8	48	100.5	55.3	48.9	113.4	73.7	46.4
Middle	122.5	77.1	52	117.4	72.7	49.8	136.3	88.8	56.3
Richer	152.4	106.5	53	147.6	101.9	52.1	159.1	113.0	54.3
Richest	195.5	149.8	62	222.0	166.9	77.5	185.6	143.4	55.5
Total	125.8	81.7	51	112.8	68.5	49.7	153.3	109.6	53.2

Source: Calculations from NSS Round 71 Unit Level Data (Adults)

PAP (specific) across economic classes

MPCE Class	Skin	Gastro	Infection	Respiratory	Diabetes	Hypertension	Cancer
Poorest	1.6	7.1	20.1	12.1	2.9	5.5	0.2
Poorer	2.6	9.6	22.1	14.7	7.0	8.5	0.2
Middle	2.4	9.0	24.1	15.7	13.5	14.1	0.8
Richer	2.7	10.5	22.5	15.8	22.9	20.9	0.7
Richest	4.5	10.1	19.7	18.5	40.1	36.3	1.0
Total	2.7	9.1	21.7	15.1	15.8	15.9	0.6

Observation by NSSO

- “....either that the poor are less prone to sickness than the rich, or that reporting of morbidity improves with improvement in the level of living. Of the two hypotheses, the second seems to be the more plausible” (NSS report 441)

- NSSO asks three questions on general morbidity of all household members, namely, whether suffering from any chronic ailment, whether suffering from any other ailment any time during last 15 days and whether suffering from any other ailment on the day before the date of survey.
- PAP on the day before the survey does not vary systematically across economic classes. This may be because of the fact that the poor report higher morbidity for shorter recall periods

Education and morbidity

Puzzle: Secondary and more report lowest morbidity

Relation is not as systematic: Literate below primary report higher morbidity than non-literates

Education	India (Total)		
	Any Ailment	Chronic	Acute
Illiterate	148.2	95.9	58.6
Literate Below Prim	164.3	115.6	62.9
Prim + Upper Primary	127.9	82.7	52.4
Sec + More	93.5	59.0	39.4
Total	125.8	81.7	51

Reporting: Self or Proxy?

- The distribution of self and proxy reporting does not vary much across MPCE classes
- Self-Reporting is higher among literates compared to non-literates
- The distribution between self and proxy reporting may convolute the relation between literacy and ailment
- 47%, 46%, 50% and 59% respectively of non-literates, literates below primary, primary & upper primary and secondary & more are proxy respondents
- This could explain a part of the difference in reported ailment (that has a reverse direction, as compared to mpce) across education classes

Regressing Morbidity on Positional Parameters

- Reported morbidity is higher for self-reporting
- Reported morbidity is higher for females
- Reported morbidity increases with age and across economic classes
- While STs have higher reported morbidity than Hindu others, SCs and other religions have higher reported morbidity
- Those with secondary and higher education have the lowest odds ratio of being ill.
- However the pattern is not systematic across different levels of education, with literates below primary and prim & upper primary having higher odds ratio, compared to non-literates

Self-Rated Health (India) (%) among the elderly

MPCE Classes	Excellent/Very Good	Good/Fair	Poor
Poorest	4.68	69.51	25.81
Poorer	4.94	69.47	25.59
Middle	7.72	67.43	24.85
Richer	6.23	72.55	21.22
Richest	8.64	70.38	20.98
Total	6.49	69.79	23.72

Paper 3

Comparing self-rated health in India and Switzerland

- **self-rated health**

"Would you say your health is...
very good / good / so so / fair / poor ?"

- Commonly used assessment (especially in high income countries)
- Predictive of mortality and health care services
- Multidimensional indicator (physical, mental, social health), and reflecting the WHO definition of health
- Easy to administer
- Can be used in population surveys, independently of health care use

Analysed data

Inclusion criterion: +18 years old

India:

World Health Survey 2003: 9'228 Indians

Switzerland:

Swiss Health Interview Survey 2007: 16'651

Cross-cultural study of construct validation of SRH: India vs. Switzerland

- Does the self-rated health (SRH) item measure the same thing in India and in Switzerland?
- Dependent variable: SRH
- Independent variables: 5 dimensions of health (WHO definition): physical (4 variables), mental (5 var.), functional (2 var.), chronic diseases (3 var.) and health behaviours (5 var.)
- Regression models
- Robustness checks: different coding scheme of SRH (linear vs. binary)

Self-Rated Health (India) (%)

- CI for self-rated poor health (by MPCE):
- India: -0.0474^{***}
- Pro-rich inequality (negative CI)
- CI for self-rated poor health (by Education):
- India: -0.1162^{**}
- Pro-rich inequality (negative CI)
- For PAP, both by MPCE and Education, we find Concentration Curves above the line of equality (as opposed to self-reported morbidities)
- Thus SRH seems to be more objective.

Conclusions and way forward

- Dealt with only two outcome indicators of health/morbidity

What's next:

- A comprehensive understanding of health inequality would require inclusion of various process aspects as well
- Health care foregoing: Project proposal submitted to SNIS (2017)

“The interaction of economic and social determinants in healthcare forgoing: a comparative study of Burkina Faso, India and Switzerland”