

# Inequality of Opportunity in South Asia

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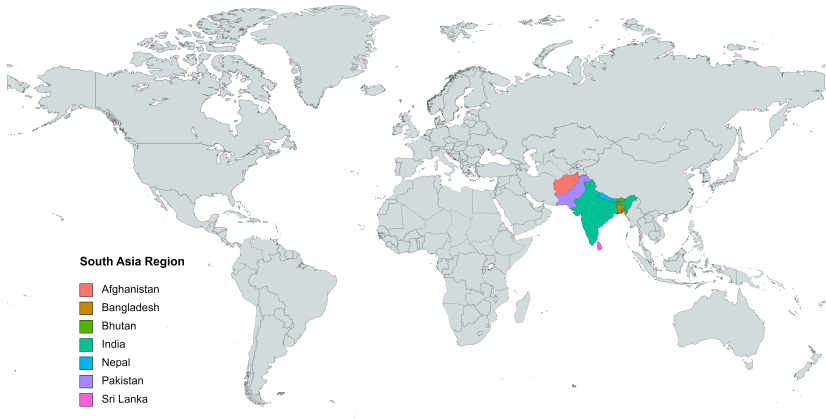
# Introduction

## Motivation

- Inequality of opportunity (IOp) is unfair.
- Inequality of opportunity (IOp) is a barrier to economic growth.
- Equality of opportunity is the prevailing conception of justice among citizens.
- Are these arguments valid outside western and rich countries?
- Yes.

# Introduction

## South Asia Region



# Introduction

## Contribution

- unify fragmented data to assess IOp in the entire SA region, in different dimensions (education, consumption)
  - obtain comparable estimates
  - estimate IOp across birth cohorts and countries to capture trends
  - identify drivers of IOp
  - extract parental background info for individuals co-residing with parents
- ⇒ co-resident bias?

# Introduction

## Preview Results

- cohort-based analysis reveals trends mainly hidden in cross-sectional analysis
- large educational expansion
  - striking increases in literacy (IOp, HOI)
  - reducing IOp in years of education
  - ⇒ large regional heterogeneity in improvements and levels
- BUT no clear development in IOp for HH consumption
  - remains rather constant for most countries across time
- coresident data only representative for narrow age-group of general population

# Inequality of Opportunity (IOp)

## Conception

$$y = g(C, e)$$

- individual's outcome  $y$  is determined by:
  - circumstances  $C$
  - effort  $e$
- Equality of opportunity: compensate for the different circumstances; reward the effort.

# Inequality of Opportunity (IOp)

## Measurement

- Two-step procedure:
  1. Generate counterfactual distribution reflecting only unfair inequalities.
  2. Measure inequality in counterfactual distribution
- Ex-ante: focus on inequality between opportunity sets (proxied by outcome distributions conditional to circumstances)
- Ex-post: fix effort, focus on outcome inequality among individuals with the same effort
- Focus on share of total inequality explained by circumstances

$$IOp^{rel} = \frac{I([\tilde{Y}_i])}{I([Y_i])}$$

# Inequality of Opportunity (IOp)

## Empirical Implementation

### Ex-ante IOp

- parametric
- machine learning
- Gini and Dissimilarity



# Data

- Gather all available surveys of interest for each country (i.e., including circumstance and outcome variables)
    - harmonized years of education
    - harmonized HH consumption via World Banks's PPP
  - Census type surveys for India, Nepal, Pakistan and Sri Lanka
- ⇒ Pooling across surveys renders sufficient sample size for **cohort analysis (10 and 5 years)** Sample Size

# Data

## Overview Sources - Education

Sample Size

Surveys HH Consumption

Country	Survey	Name	Years
Afghanistan	ALCS	Afghanistan Living Conditions Survey	2013, 2016
Afghanistan	IELFS	Integrated Expenditure and Labor Force Survey	2019
Afghanistan	NRVA	National Risk and Vulnerability Assessment	2007, 2011
Bangladesh	HIES	Household Income and Expenditure Survey	2000, 2005, 2010, 2016
Bangladesh	IHS	Integrated Household Survey	2012, 2015*, 2019*
Bhutan	BLSS	Bhutan Living Standards Survey	2003*, 2007, 2012, 2017
India	DHS	Demographic and Health Surveys	2015, 2019
India	IHDS	India Human Development Survey	2005*, 2011*
Nepal	NLSS	Nepal Living Standards Survey	2003, 2011*
Nepal	NPHC	National Population and Housing Census	2011
Pakistan	HIES	Household Integrated Economic Survey	2007, 2010, 2011, 2013, 2015, 2018
Pakistan	PIHS	Pakistan Integrated Household Survey	1991*
Pakistan	PSLM	Pakistan Social And Living Standards Measurement	2010, 2012, 2014, 2019
Sri Lanka	HIES	Household Income and Expenditure Survey	1995, 2002, 2006, 2009, 2012, 2016

**Note:** Surveys marked with \* include direct questions on parental background.

# Data

## Outcomes

- individual level
  - years of education, literacy
  - income [see results](#)
    - limited coverage non-formal employment
    - gender disparity (not account for HH resource pooling)
- household (HH) level
  - HH consumption per capita (and equivalent): all countries
  - HH income per capita (and equivalent): majority of countries BUT reporting issue (self-production, informality)
  - ⇒ underestimate gender dimension while accounting for resource sharing
  - ⇒ both proxy for individual welfare

# Data

## Circumstances

- variables:
  - gender
  - urbanity of residence (as proxy for urbanity at birth)
  - geographical region of residence (as proxy for region of birth)<sup>1</sup>
  - demographic group (composite variable)
  - + parental education (max of mother and father years of education)

⇒ 2 sets of circumstances:

- limited: gender, urban, region, demo. group<sup>2</sup>
- extended: limited + parental education<sup>3</sup>

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<sup>1</sup>see intra-country migration estimates for validity

Geo-spatial mobility

<sup>2</sup>+ age in cross-sectional analysis

<sup>3</sup>father's occupation has been collected but sign. reduction of sample size

sample size

# Data

## Circumstances - Demographic Group

Country	Definition	Levels	Names
Afghanistan	X		
Bangladesh	Religion	2	Muslim; Hindu + Others
Bhutan	X		
India	Caste/Religion	6	Scheduled Caste; Scheduled Tribe; Other backward Class; Muslim; Christian, Sikh, Jain; Other
Nepal	Caste/Religion	4	Janajati; Khas; Muslim; Others
Pakistan	Language	6	Urdu; Punjabi; Sindhi; Pushtu; Balochi; Other
Sri Lanka	Ethnicity	7	Sinhalese; Sri Lanka Tamil; Indian Tamil; Sri Lanka Moors; Malay; Burgher; Other

**Note:** For India, "Muslim" and "Christian, Sikh, Jain" are only identified by their religion of they do not belong to "Scheduled Caste" or "Scheduled Tribe"; individuals are coded as "Others" if they state to be of no caste or none of the three disadvantaged ones and not belong to one of the religions minorities above such that the group is mostly composed of forward castes other caste members and brahmins.

# Data

## Circumstances - Overview

Country	Age	Gender	Demogr. Group	Urban	Region	Sub-Region	Parental Education	
							Direct Question	Coresident Info
Afghanistan	✓	✓		✓	✓	✓		✓
Bangladesh	✓	✓	✓	✓	✓	✓	✓	✓
Bhutan	✓	✓	✓	✓	✓	✓	✓	✓
India	✓	✓	✓	✓	✓	✓	✓	✓
Nepal	✓	✓	✓	✓	✓	✓	✓	✓
Pakistan	✓	✓		✓	✓			✓
Sri Lanka	✓	✓	✓	✓	✓	✓		✓

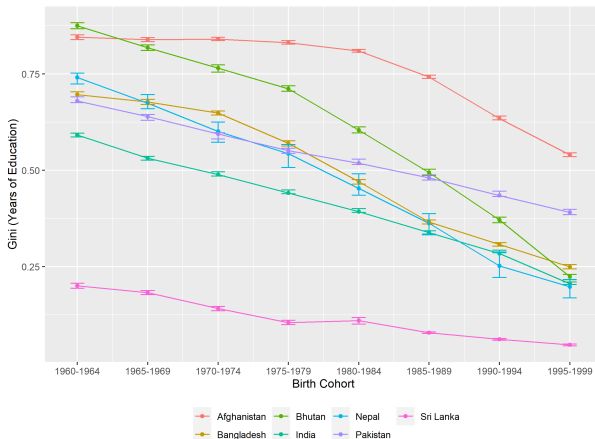
**Note:**

Summary Statistics

Missing Circumstances

# Education

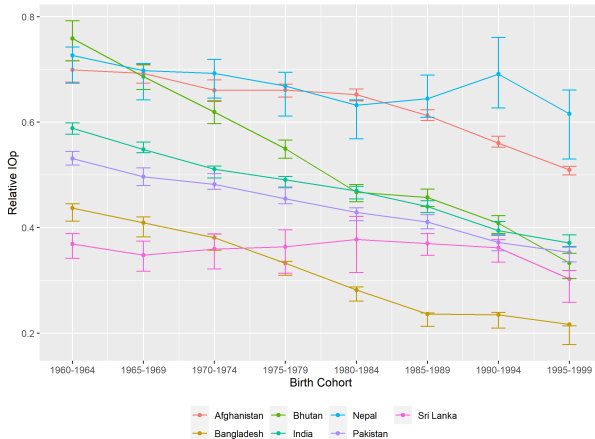
## Total Inequality - Full Sample



# Education

## Relative IOp - Full Sample limited C

Comparison Estimation Methods

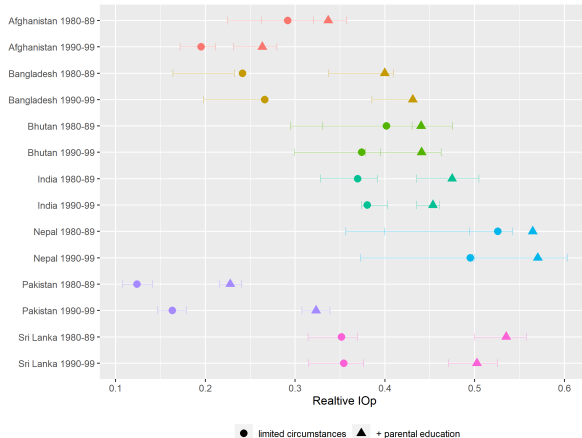




# Education

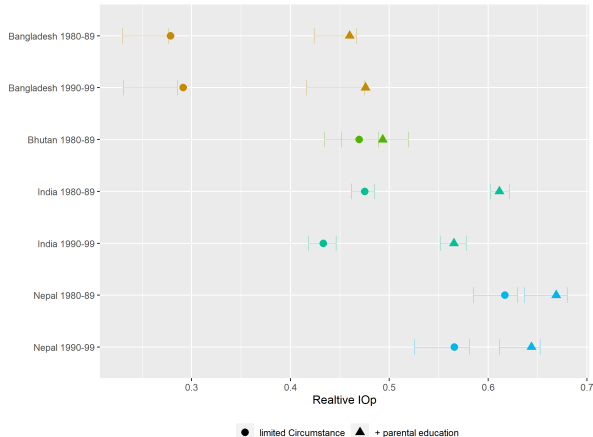
## Relative IOp - Impact adding parental background (Coresident Sample)

Comparison Estimation Methods



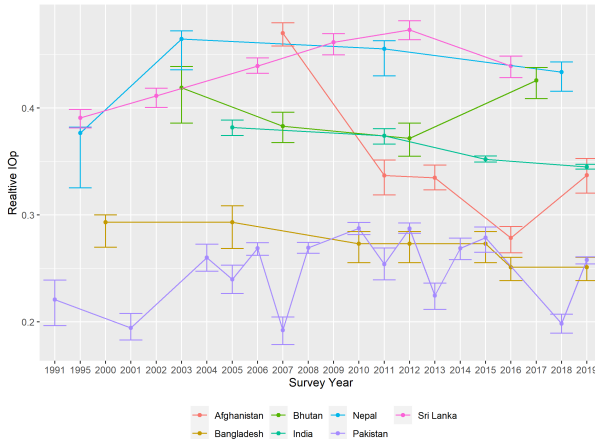
# Education

Relative IOp - Impact adding parental background (Full Sample - Non-Coresident Data)



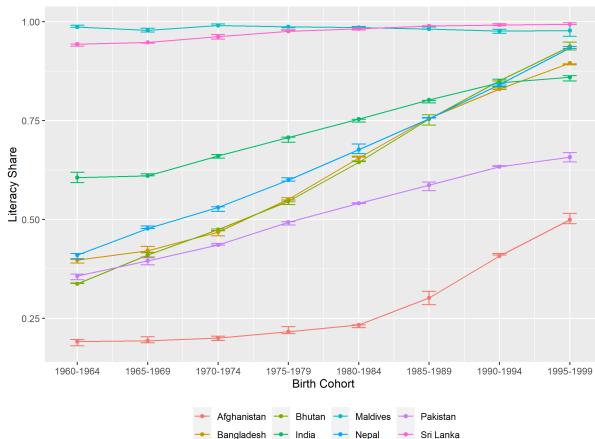
# Education

Relative IOp - Cross-section (Full Sample limited C) Coresident Sample



# Literacy

## Literacy Share

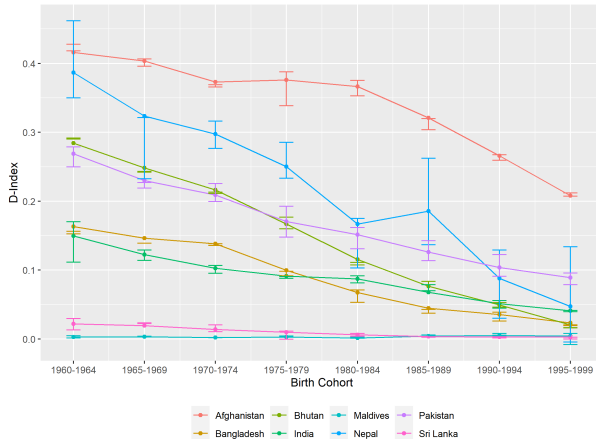


# Literacy

## D-Index - Full Sample

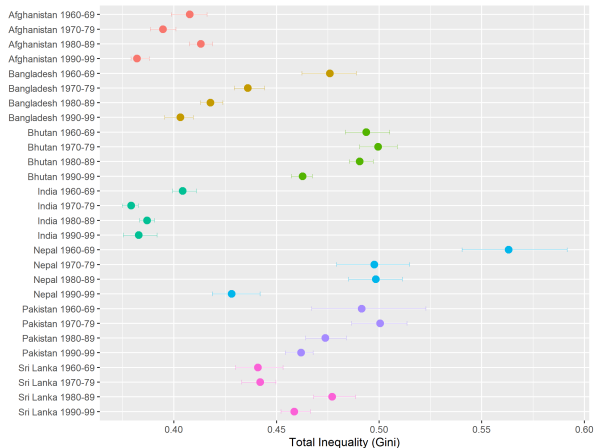
HOI Estimates

Comparison Estimation Methods



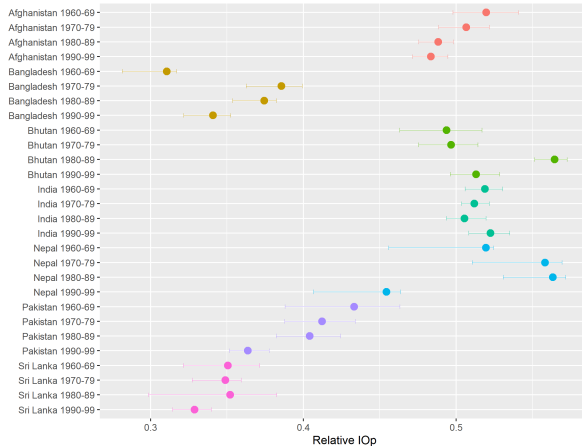
# HH Consumption

## Total Inequality (Full Sample)



# HH Consumption

## Relative IOp (Full Sample)



# IOp Estimates

## Results

- years of education: large reduction in total inequality and in IOp
  - cross-sectional analysis hides such changes
- literacy: large catch-up for most countries in absolute terms and IOp
- HH consumption: mixed picture - total inequality and IOp different rankings (India and Afganistan: low inequality, high IOp); some countries exhibit declines in total inequality (e.g. Afganistan, Bangladesh, Pakistan) while others stay constant; similar for IOp but only limited/no improvements
- parental background matters:
  - more for education than for HH consumption (as expected)
  - ⇒ coresident sample can provide a good reasonable proxy for the importance of parental background BUT only for limited age group



# The contribution of circumstances: Education

## Shapley decomposition



# The contribution of circumstances: Consumption

## Shapley decomposition



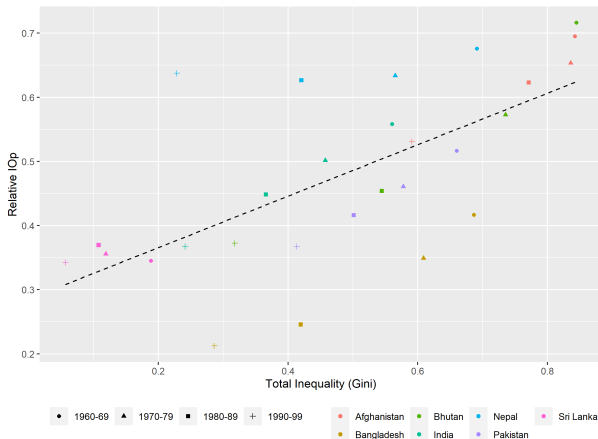
# IOp Drivers

## Results

- Main findings:
  - Gender: important across the region (exception Sri Lanka) with remarkable improvements (exception Afghanistan)
  - Urban: importance constant across time and varying across countries
  - Caste/Ethnicity: main driver for many countries with no decline across time
  - Region: highly important and mostly no decline across time
- Differences across cohorts highlight changes in opportunity structure
  - changing educational opportunities vs. stagnation in consumption
- Coresident sample reasonable proxy for drivers of cohort IOp
- Results are robust across estimation procedures:
  - forest estimates and opportunity trees mainly coincide with parametric importance estimates

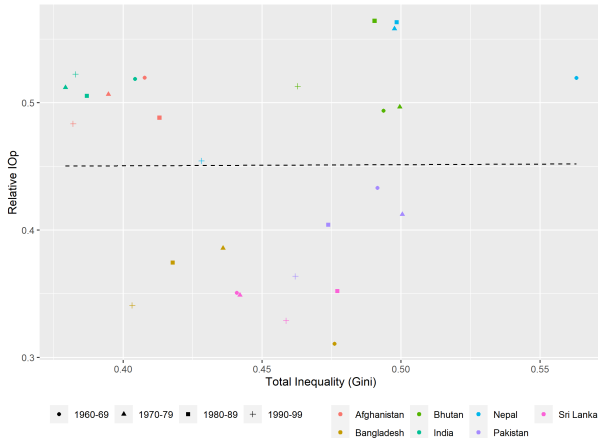
# Great Gatsby Curve

Total Inequality vs. Relative IOp - Education (Corak, 2013; Brunori et al., 2013)



# Great Gatsby Curve

Total Inequality vs. Relative IOp - HH Consumption (Corak, 2013; Brunori et al., 2013)



# References

- Brunori, P., Ferreira, F. H., and Peragine, V. (2013). Inequality of opportunity, income inequality, and economic mobility: Some international comparisons. In Paus, E., editor, *Getting development right: structural transformation, inclusion and sustainability in the post-crisis era*, pages 85–115. Palgrave Macmillan.
- Corak, M. (2013). Income inequality, equality of opportunity, and intergenerational mobility. *Journal of Economic Perspectives*, 27(3):79–102.
- De Barros, R. P., Ferreira, F. H. G., Vega, J., and Chanduvi, J. (2009). *Measuring inequality of opportunities in Latin America and the Caribbean*. World Bank Publications.
- Munshi, K. and Rosenzweig, M. (2016). Networks and Misallocation: Insurance, Migration, and the Rural-Urban Wage Gap. *American Economic Review*, 106(1):46–98.
- Palmisano, F., Peragine, V., Biagi, F., et al. (2019). Inequality of opportunity in tertiary education in europe. *Joint Research Centre Technical Report*.

# Appendix

# Inequality of Opportunity (IOp)

## Empirical Implementation - Literacy

Binary outcome requires adjustment of:

- Estimation method: probit
- Inequality measure: dissimilarity  $D$ -Index (Palmisano et al., 2019): average distance btw predicted outcomes and mean predicted outcome (equity)

$$D = \frac{1}{2N\bar{y}} \sum_{i=1}^N |\tilde{y}_i - \bar{y}|$$

- Interpretation similar to Gini:
  - 0 means that opportunities are equally distributed across individuals
  - 1 means that all opportunities are concentrated on one individual
- related to Human Opportunity Index HOI (De Barros et al., 2009):  $\bar{y}(1 - D)$ ; overall coverage ( $\bar{y}$ ) corrected for equity



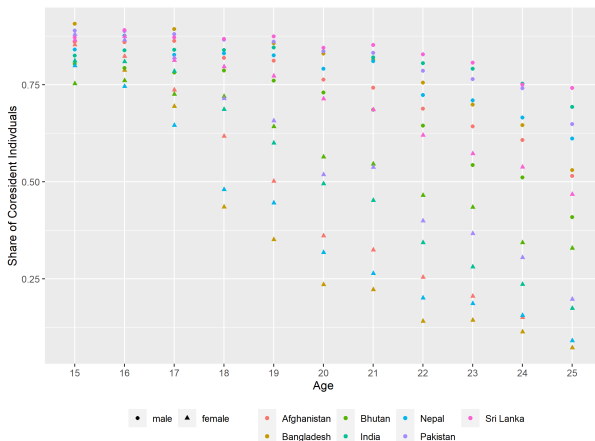
# Data

## Overview Sources - HH Consumption [back](#)

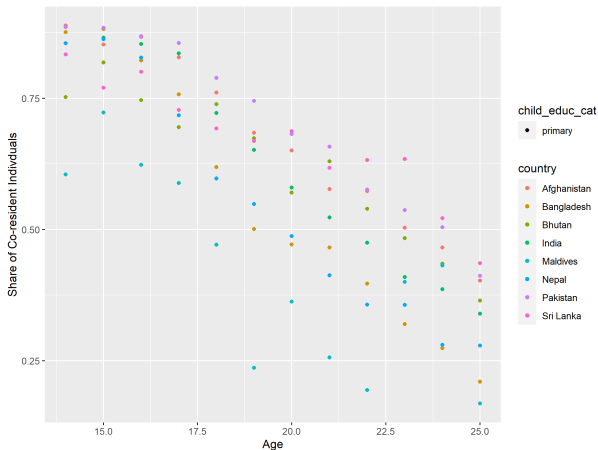
Country	Survey	Years
Afghanistan	ALCS	2013
Afghanistan	IELFS	2019
Afghanistan	NRVA	2007, 2011
Bangladesh	HIES	2005, 2010, 2016
Bangladesh	IHS	2012, 2015*, 2019*
Bhutan	BLSS	2003*, 2007, 2012, 2017
India	IHDS	2005*, 2011*
Nepal	NLSS	2003, 2011*
Sri Lanka	HIES	2002, 2006, 2009, 2012, 2016

**Note:** Surveys marked with \* include direct questions on parental background.

# Sample Frame I/III

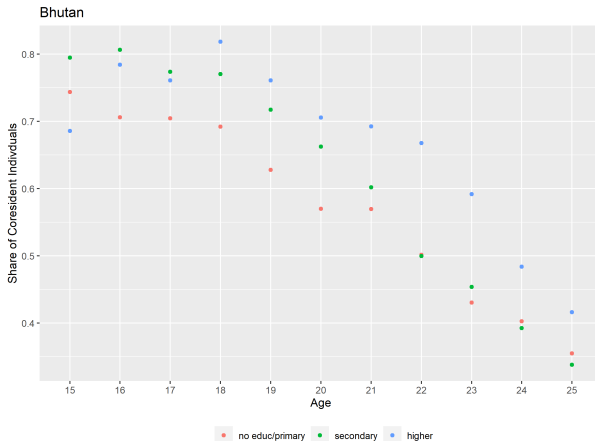
by gender [back](#)

# Sample Frame II/III

No/Primary education [back](#)

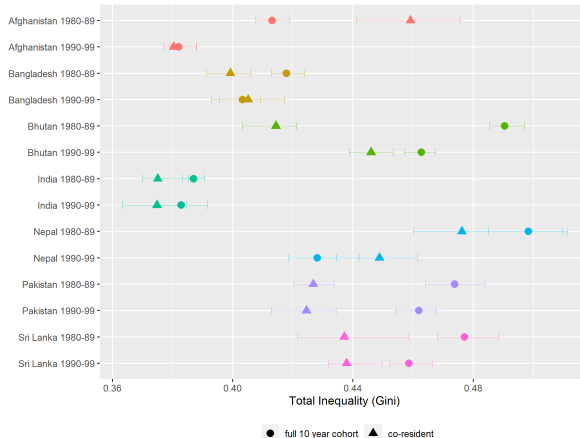
# Sample Frame III/III

Ex Bhutan: Education categories by age [back](#)



# Sampling Frame

## Coresident Distortion - HH Consumption

[back](#)

# Summary

## 10 year Cohorts

[back](#)

Country	Cohort	Sample Size	
		Full	Coreresident
Afghanistan	1960-69	44412	
Afghanistan	1970-79	64373	
Afghanistan	1980-89	96870	4540
Afghanistan	1990-99	109996	46846
Bangladesh	1960-69	38871	
Bangladesh	1970-79	50798	
Bangladesh	1980-89	63497	6808
Bangladesh	1990-99	47574	15040
Bhutan	1960-69	15292	
Bhutan	1970-79	20239	
Bhutan	1980-89	28420	3016
Bhutan	1990-99	18752	7931
India	1960-69	578118	
India	1970-79	711107	
India	1980-89	871836	14012
India	1990-99	999595	190196
Nepal	1960-69	160586	
Nepal	1970-79	278521	1239
Nepal	1980-89	450031	1770
Nepal	1990-99	503778	331496
Pakistan	1960-69	195194	
Pakistan	1970-79	261110	3178
Pakistan	1980-89	342041	
Pakistan	1990-99	423806	154488
Sri Lanka	1960-69	66114	
Sri Lanka	1970-79	71967	6149
Sri Lanka	1980-89	60188	10655
Sri Lanka	1990-99	30780	16320

Note:

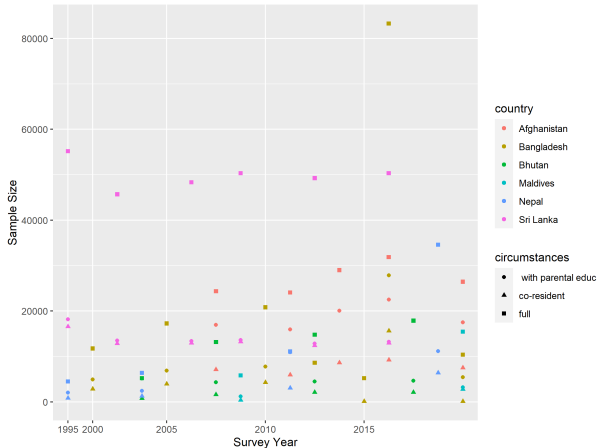
## Sample Size

Cross-Sections [back](#)

Country	Survey	Year	direct	Full Sample			Cosident Sample		
				Total	Education	Consumption	Education	Consumption	
Afghanistan	NRVA	2007		73010	72881	72957	11870	22149	National Risk and Vulnerability Assessment
Afghanistan	NRVA	2011		75579	75132	75572	11001	21706	National Risk and Vulnerability Assessment
Afghanistan	ALCS	2013		76151	76029	76111	11795	23723	Afghanistan Living Conditions Survey
Afghanistan	ALCS	2016		74840	74840		11461		Afghanistan Living Conditions Survey
Afghanistan	IELFS	2019		64817	63251	8615	9685	3142	Integrated Expenditure and Labor Force Survey
Bangladesh	HIES	2000		21695	21690	21695	2411	4949	Household Income and Expenditure Survey
Bangladesh	HIES	2005		28290	28282	28290	3183	6528	Household Income and Expenditure Survey
Bangladesh	HIES	2010		32720	32720	32720	3127	7205	Household Income and Expenditure Survey
Bangladesh	IHS	2012		13262	13262	13262			Integrated Household Survey
Bangladesh	IHS	2015	X	13460	13460	13460	49	201	Integrated Household Survey
Bangladesh	HIES	2016		114207	114092	113604	10909	22504	Household Income and Expenditure Survey
Bangladesh	IHS	2019	X	13611	13611	13611	64	225	Integrated Household Survey
Bhutan	BLSS	2003	X	11045	11045	11045	1313	2959	Bhutan Living Standards Survey
Bhutan	BLSS	2007		29463	29080	29451	2447	6012	Bhutan Living Standards Survey
Bhutan	BLSS	2012		25446	25146	25437	2104	5132	Bhutan Living Standards Survey
Bhutan	BLSS	2017		30759	30759	30759	1853	5454	Bhutan Living Standards Survey
India	IHDS	2005	X	132930	129901	130358	15246	41565	India Human Development Survey
India	IHDS	2011	X	128764	128577	128701	12553	42733	India Human Development Survey
India	DHS	2015		1779343	1712702		134990		Demographic and Health Surveys
India	DHS	2019		1797487	1725800		124507		Demographic and Health Surveys
Nepal	NLSS	2003		11953	10904	11889	1101	2929	Nepal Living Standards Survey
Nepal	NLSS	2011	X	15863	15711	15711	1980	4224	Nepal Living Standards Survey
Nepal	NPHC	2011		2277845	2275915		129734		National Population and Housing Census
Pakistan	PHS	1991	X	18048	17430	17989	2456	5947	Pakistan Integrated Household Survey
Pakistan	HIES	2007		58279	58262		8181		Household Integrated Economic Survey
Pakistan	HIES	2010		60392	60392		8464		Household Integrated Economic Survey
Pakistan	PSLM	2010		273872	273869		39889		Pakistan Social and Living Standards Measurement
Pakistan	HIES	2011		58672	58672		7885		Household Integrated Economic Survey
Pakistan	PSLM	2012		269351	269348		37732		Pakistan Social and Living Standards Measurement
Pakistan	HIES	2013		64154	64151		8417		Household Integrated Economic Survey
Pakistan	PSLM	2014		270932	270932		36473		Pakistan Social and Living Standards Measurement
Pakistan	HIES	2015		88867	88867		11707		Household Integrated Economic Survey
Pakistan	HIES	2018		87341	40326		3392		Household Integrated Economic Survey
Pakistan	PSLM	2019		489693	489693		66735		Pakistan Social and Living Standards Measurement
Sri Lanka	HIES	1995		57070	57070	57070	6050	16111	Household Income and Expenditure Survey
Sri Lanka	HIES	2002		46527	46527	46527	4287	12400	Household Income and Expenditure Survey
Sri Lanka	HIES	2006		49073	49048	49073	3979	12394	Household Income and Expenditure Survey
Sri Lanka	HIES	2009		50905	50695	50902	4017	12659	Household Income and Expenditure Survey
Sri Lanka	HIES	2012		49463	49430	49463	3850	11862	Household Income and Expenditure Survey
Sri Lanka	HIES	2016		50036	50005	50036	3728	12227	Household Income and Expenditure Survey

Note:

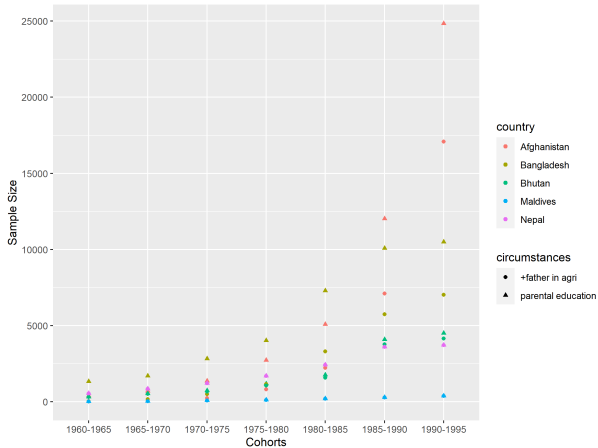
# Sample Size

Cross-Sections [back](#)



# Sample Size

⇒ excl. father working in agriculture from  $C$  as sample size reduction to large [back](#)



# Summary Statistics

[Education](#) [back](#)

Country & Cohort	Full Sample					Coresident Sample				
	Mean	SD	Gini	Literacy	N	Mean	SD	Gini	Literacy	N
Afghanistan 1960-69	2.01	4.35	0.84	0.21	44598					
Afghanistan 1970-79	2.05	4.32	0.84	0.22	64634					
Afghanistan 1980-89	2.94	5.02	0.77	0.29	97335	10.16	2.59	0.12	0.66	1167
Afghanistan 1990-99	5.13	5.63	0.59	0.48	110888	9.84	2.48	0.13	0.77	14193
Bangladesh 1960-69	3.35	4.59	0.69	0.39	38890					
Bangladesh 1970-79	4.28	4.89	0.61	0.49	50820					
Bangladesh 1980-89	6.10	4.56	0.42	0.70	63536	9.42	2.06	0.12	0.93	2564
Bangladesh 1990-99	7.75	3.98	0.29	0.86	47604	9.53	2.13	0.12	0.95	5249
Bhutan 1960-69	1.76	3.83	0.84	0.33	15333					
Bhutan 1970-79	3.00	4.62	0.74	0.46	20338					
Bhutan 1980-89	5.49	5.42	0.54	0.67	28750	9.67	2.43	0.13	0.92	614
Bhutan 1990-99	8.31	4.81	0.32	0.87	18900	9.97	2.16	0.11	0.97	1784
India 1960-69	5.14	5.26	0.56	0.59	590137					
India 1970-79	6.52	5.35	0.46	0.66	731342					
India 1980-89	7.98	5.13	0.36	0.76	916808	9.88	2.25	0.12	0.94	7744
India 1990-99	10.10	4.47	0.24	0.86	1043535	10.52	1.75	0.08	0.96	72746
Nepal 1960-69	3.19	4.55	0.70	0.43	161120					
Nepal 1970-79	4.62	4.90	0.58	0.55	279337					
Nepal 1980-89	6.34	4.51	0.40	0.74	451039	8.86	2.02	0.13	0.95	602
Nepal 1990-99	7.97	3.53	0.24	0.88	504082	9.22	1.98	0.12	0.96	114458
Pakistan 1960-69	3.99	5.08	0.66	0.42	195374					
Pakistan 1970-79	4.98	5.29	0.58	0.51	261246	8.86	2.80	0.17		1878
Pakistan 1980-89	6.12	5.44	0.50	0.61	342041					
Pakistan 1990-99	6.96	5.13	0.41	0.70	423806	9.98	2.21	0.12	0.88	65690
Sri Lanka 1960-69	9.02	3.34	0.19	0.95	66179					
Sri Lanka 1970-79	9.79	2.67	0.12	0.97	72016	10.26	1.59	0.06	0.98	4355
Sri Lanka 1980-89	9.71	2.23	0.11	0.98	60257	9.64	1.70	0.09	0.99	7535
Sri Lanka 1990-99	10.87	1.54	0.06	0.99	30813	10.75	1.01	0.04	1.00	11472

Note:

# Summary Statistics

HH Consumption [back](#)

Country & Cohort	Full Sample				Coresident Sample			
	Mean	SD	Gini	N	Mean	SD	Gini	N
Afghanistan 1960-69	68.40	58.67	0.40	31664				
Afghanistan 1970-79	64.32	54.70	0.40	44955				
Afghanistan 1980-89	74.18	68.69	0.41	68357	94.06	81.75	0.43	8569
Afghanistan 1990-99	78.10	65.47	0.38	64393	93.16	71.42	0.37	18185
Bangladesh 1960-69	25.05	39.07	0.47	39015				
Bangladesh 1970-79	23.01	26.86	0.43	50904				
Bangladesh 1980-89	23.44	30.24	0.43	64250	22.35	23.40	0.40	10292
Bangladesh 1990-99	28.25	37.60	0.41	50232	29.07	32.29	0.40	12264
Bhutan 1960-69	289.95	366.01	0.50	15328				
Bhutan 1970-79	289.23	365.43	0.50	20336				
Bhutan 1980-89	294.38	343.50	0.49	28748	295.19	302.77	0.45	2302
Bhutan 1990-99	396.37	421.25	0.47	18895	463.06	446.17	0.44	3416
India 1960-69	150.30	159.42	0.40	49391				
India 1970-79	130.16	125.65	0.38	60786				
India 1980-89	133.00	127.29	0.38	76472	156.22	147.98	0.39	38984
India 1990-99	127.90	131.60	0.38	32633	143.22	137.83	0.38	20990
Nepal 1960-69	27.53	46.87	0.57	4898				
Nepal 1970-79	22.21	41.25	0.53	6311				
Nepal 1980-89	21.07	34.24	0.53	7749	29.82	47.85	0.52	3059
Nepal 1990-99	25.55	31.02	0.46	4022	30.86	35.71	0.45	2551
Pakistan 1960-69	64.62	112.15	0.50	168543				
Pakistan 1970-79	54.84	79.26	0.49	225491				
Pakistan 1980-89	32.78	57.95	0.50	302724	34.46	41.09	0.48	54522
Pakistan 1990-99	29.64	41.56	0.48	372716	33.98	43.54	0.46	142893
Sri Lanka 1960-69	388.05	416.99	0.45	66179				
Sri Lanka 1970-79	341.68	349.54	0.45	72016				
Sri Lanka 1980-89	249.43	353.89	0.54	60257	264.14	262.37	0.49	27944
Sri Lanka 1990-99	57.81	97.06	0.47	30813	53.09	67.13	0.45	20018

Note:

# Summary Statistics

Share of missing circumstances [back](#)

Country	Age	Gender	Demogr. Group	Urban	Region	Parental Education	
						Direct Question	Corecident Info
Afghanistan 1960-69	0.00	0.00	100.00	0.00	0.00		3.26
Afghanistan 1970-79	0.00	0.00	100.00	0.00	0.00		0.75
Afghanistan 1980-89	0.00	0.00	100.00	0.00	0.00		0.36
Afghanistan 1990-99	0.00	0.00	100.00	0.00	0.00		0.25
Bangladesh 1960-69	0.00	0.00	0.00	0.00	0.00	5.27	21.05
Bangladesh 1970-79	0.00	0.00	0.00	0.00	0.00	2.47	15.77
Bangladesh 1980-89	0.00	0.00	0.00	0.00	0.00	8.09	17.11
Bangladesh 1990-99	0.00	0.00	0.00	0.00	0.00	43.83	24.00
Bhutan 1960-69	0.00	0.00	100.00	0.00	0.00	0.57	36.47
Bhutan 1970-79	0.00	0.00	100.00	0.00	0.00	0.33	33.10
Bhutan 1980-89	0.00	0.00	100.00	0.00	0.00	0.44	27.56
Bhutan 1990-99	0.00	0.00	100.00	0.00	0.00		28.98
India 1960-69	0.00	0.00	0.38	0.00	0.00	29.48	79.75
India 1970-79	0.00	0.00	0.38	0.00	0.00	29.20	81.15
India 1980-89	0.00	0.00	0.45	0.00	0.00	19.67	82.37
India 1990-99	0.00	0.00	0.42	0.00	0.00	6.52	80.58
Nepal 1960-69	0.00	0.00	1.49	0.00	0.00	1.55	52.41
Nepal 1970-79	0.00	0.00	1.22	0.00	0.00	1.52	46.45
Nepal 1980-89	0.00	0.00	0.10	0.00	0.00	1.61	45.11
Nepal 1990-99	0.00	0.00	0.00	0.00	0.00	0.65	47.56
Pakistan 1960-69	0.00	0.00	0.01	0.00	0.00	0.00	6.41
Pakistan 1970-79	0.00	0.00	0.00	0.00	0.00	0.00	6.24
Pakistan 1980-89	0.00	0.00	0.00	0.00	0.00		7.40
Pakistan 1990-99	0.00	0.00	0.00	0.00	0.00		6.28
Sri Lanka 1960-69	0.00	0.00	0.00	0.00	0.00		43.02
Sri Lanka 1970-79	0.00	0.00	0.00	0.00	0.00		26.23
Sri Lanka 1980-89	0.00	0.00	0.00	0.00	0.00		20.72
Sri Lanka 1990-99	0.00	0.00	0.00	0.00	0.00		18.13

Note:

# Geo-spatial Migration [back](#)

Country	Survey	Year	Migration Birth to Current Location		
			Urban	Region	Sub-Region
Afghanistan	ALCS	2013	6.58	3.16	7.36
Afghanistan	ALCS	2016		3.75	6.43
Bangladesh	IHS	2015		3.03	9.89
India	IHDS	2005	12.82		4.87
India	IHDS	2011	9.76		3.85
Nepal	NLSS	2011	22.68	9.72	27.27
Nepal	NPHC	2011	2.31	6.64	18.31
Pakistan	PSLM	2019	3.19	1.35	7.82

**Note:** For India, Munshi and Rosenzweig (2016) provide evidence for low migration flows, especially for male individuals, due to caste-based rural insurance networks.

# Overview Education

## Full vs Coresident - limited Circumstance

Country & Cohort	Full Sample			Coresident Sample		
	Gap	Relative IOp	N	Gap	Relative IOp	N
Afghanistan 1980-89	0.842 (0.838,0.846)	0.298 (0.682,0.708)	44412			
Afghanistan 1970-79	0.836 (0.832,0.839)	0.66 (0.649,0.669)	64373			
Afghanistan 1980-89	0.771 (0.768,0.774)	0.625 (0.617,0.633)	96870	0.123 (0.115,0.131)	0.262 (0.225,0.321)	2656
Afghanistan 1990-99	0.588 (0.585,0.591)	0.528 (0.519,0.531)	121981	0.113 (0.11,0.116)	0.195 (0.172,0.212)	16952
Bangladesh 1960-69	0.669 (0.661,0.691)	0.418 (0.401,0.427)	37943			
Bangladesh 1970-79	0.608 (0.603,0.613)	0.351 (0.335,0.357)	49536			
Bangladesh 1980-89	0.419 (0.415,0.423)	0.243 (0.227,0.25)	67940	0.113 (0.11,0.118)	0.241 (0.164,0.232)	3110
Bangladesh 1990-99	0.288 (0.285,0.292)	0.207 (0.186,0.21)	48962	0.117 (0.113,0.122)	0.260 (0.198,0.267)	6774
Bhutan 1960-69	0.845 (0.84,0.85)	0.718 (0.688,0.732)	15292			
Bhutan 1970-79	0.725 (0.713, 743)	0.571 (0.568,0.587)	20239			
Bhutan 1980-89	0.544 (0.537,0.55)	0.452 (0.438,0.463)	28924	0.115 (0.099,0.13)	0.402 (0.295,0.43)	906
Bhutan 1990-99	0.322 (0.316,0.327)	0.305 (0.352,0.377)	20787	0.09 (0.083,0.096)	0.374 (0.299,0.395)	1960
India 1960-69	0.563 (0.561,0.564)	0.565 (0.562,0.568)	570118			
India 1970-79	0.463 (0.461,0.464)	0.501 (0.496,0.504)	711107			
India 1980-89	0.363 (0.362,0.364)	0.449 (0.446,0.451)	871836	0.116 (0.11,0.121)	0.37 (0.328,0.392)	12642
India 1990-99	0.242 (0.241,0.242)	0.37 (0.366,0.373)	1069079	0.079 (0.078,0.081)	0.38 (0.374,0.403)	82382
Maldives 1960-69	0.713 (0.698,0.736)	0.362 (0.284,0.424)	1289			
Maldives 1970-79	0.395 (0.37, 417)	0.288 (0.231,0.345)	1517			
Maldives 1980-89	0.245 (0.232,0.256)	0.09 (0.036,0.126)	2288	0.278 (0.127,0.464)	0.399 (-0.947,0.944)	17
Maldives 1990-99	0.218 (0.205,0.231)	0.128 (0.067,0.182)	1745	0.135 (0.091,0.18)	0.107 (-0.13,0.209)	215
Nepal 1960-69	0.712 (0.704,0.721)	0.661 (0.617,0.671)	166524			
Nepal 1970-79	0.58 (0.572,0.589)	0.547 (0.511,0.656)	286555	0.15 (0.113,0.187)	0.524 (0.329,0.596)	420
Nepal 1980-89	0.427 (0.42,0.434)	0.576 (0.559,0.583)	460183	0.117 (0.108,0.126)	0.526 (0.395,0.495)	547
Nepal 1990-99	0.257 (0.252,0.262)	0.517 (0.516,0.549)	608891	0.102 (0.089,0.109)	0.495 (0.373,0.498)	118668
Pakistan 1960-69	0.657 (0.633,0.661)	0.498 (0.481,0.505)	195194			
Pakistan 1970-79	0.574 (0.571,0.577)	0.445 (0.439,0.451)	261841	0.17 (0.161,0.179)	0.142 (0.087,0.199)	2450
Pakistan 1980-89	0.495 (0.491,0.498)	0.388 (0.383,0.393)	343041	0.147 (0.144,0.149)	0.124 (0.107,0.141)	46144
Pakistan 1990-99	0.41 (0.408,0.412)	0.322 (0.317,0.327)	448764	0.113 (0.11,0.115)	0.163 (0.147,0.179)	88800
Sri Lanka 1960-69	0.191 (0.188,0.196)	0.354 (0.334,0.368)	66114			
Sri Lanka 1970-79	0.121 (0.117,0.125)	0.354 (0.329,0.372)	71967	0.066 (0.053,0.069)	0.346 (0.299,0.374)	6571
Sri Lanka 1980-89	0.115 (0.109,0.12)	0.329 (0.277,0.36)	63599	0.055 (0.053,0.057)	0.352 (0.314,0.369)	6190
Sri Lanka 1990-99	0.065 (0.064,0.066)	0.29 (0.271,0.303)	34948	0.036 (0.025,0.038)	0.254 (0.315,0.378)	12269

Note

# Overview Education

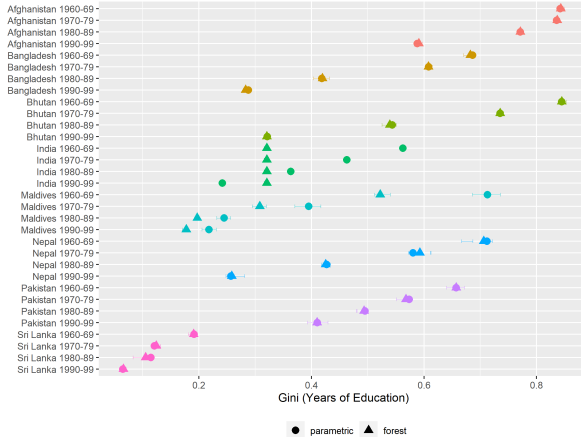
## Education & Literacy - limited Circumstance

Country & Cohort	Years of Education			Literacy	
	Geo	Relative IOp	N	Share	D-Index
Afghanistan 1960-69	0.842 (0.838,0.846)	0.895 (0.882,0.708)	44412	1	44411
Afghanistan 1970-79	0.836 (0.832,0.839)	0.86 (0.848,0.868)	64373	2	64372
Afghanistan 1980-89	0.771 (0.768,0.774)	0.825 (0.817,0.833)	96870	3	96870
Afghanistan 1990-99	0.838 (0.835,0.841)	0.826 (0.819,0.831)	121881	4	77058
Bangladesh 1960-69	0.688 (0.681,0.691)	0.418 (0.401,0.427)	37943	1	39042
Bangladesh 1970-79	0.608 (0.603,0.613)	0.351 (0.335,0.357)	49536	2	50923
Bangladesh 1980-89	0.419 (0.415,0.422)	0.243 (0.227,0.25)	62940	3	59964
Bangladesh 1990-99	0.388 (0.385,0.392)	0.207 (0.186,0.21)	48962	4	48930
Bhutan 1960-69	0.845 (0.84,0.85)	0.718 (0.698,0.732)	15292	1	15294
Bhutan 1970-79	0.735 (0.73,0.742)	0.573 (0.558,0.587)	20239	2	20240
Bhutan 1980-89	0.544 (0.537,0.55)	0.452 (0.438,0.463)	28924	3	27983
Bhutan 1990-99	0.322 (0.316,0.327)	0.365 (0.352,0.377)	20787	4	12708
India 1960-69	0.563 (0.561,0.564)	0.565 (0.562,0.568)	575118	1	73200
India 1970-79	0.483 (0.481,0.484)	0.501 (0.498,0.504)	711107	2	106708
India 1980-89	0.363 (0.362,0.364)	0.449 (0.446,0.451)	871836	3	124407
India 1990-99	0.242 (0.241,0.242)	0.37 (0.365,0.373)	1096079	4	72716
Maldives 1960-69	0.713 (0.698,0.738)	0.362 (0.35,0.424)	1289	1	3639
Maldives 1970-79	0.395 (0.37,0.417)	0.288 (0.232,0.345)	1517	2	4284
Maldives 1980-89	0.245 (0.232,0.256)	0.09 (0.036,0.129)	2288	3	6737
Maldives 1990-99	0.218 (0.205,0.231)	0.126 (0.087,0.182)	1745	4	4450
Nepal 1960-69	0.712 (0.704,0.721)	0.661 (0.637,0.671)	186624	1	363817
Nepal 1970-79	0.58 (0.572,0.589)	0.647 (0.631,0.656)	285555	2	498486
Nepal 1980-89	0.427 (0.42,0.434)	0.576 (0.559,0.583)	480183	3	637943
Nepal 1990-99	0.257 (0.252,0.262)	0.337 (0.316,0.349)	609891	4	321847
Pakistan 1960-69	0.857 (0.853,0.861)	0.408 (0.401,0.505)	195194	1	190244
Pakistan 1970-79	0.574 (0.571,0.577)	0.445 (0.439,0.451)	281941	2	256439
Pakistan 1980-89	0.495 (0.493,0.498)	0.388 (0.383,0.393)	342041	3	342099
Pakistan 1990-99	0.41 (0.408,0.412)	0.322 (0.317,0.327)	482744	4	317252
Sri Lanka 1960-69	0.191 (0.186,0.196)	0.354 (0.334,0.368)	88114	1	88114
Sri Lanka 1970-79	0.321 (0.317,0.325)	0.394 (0.329,0.372)	71967	2	67898
Sri Lanka 1980-89	0.115 (0.109,0.12)	0.329 (0.277,0.36)	63599	3	52397
Sri Lanka 1990-99	0.085 (0.084,0.086)	0.29 (0.271,0.303)	34948	4	18334

Note: Share is the share of literate individuals.

# Education

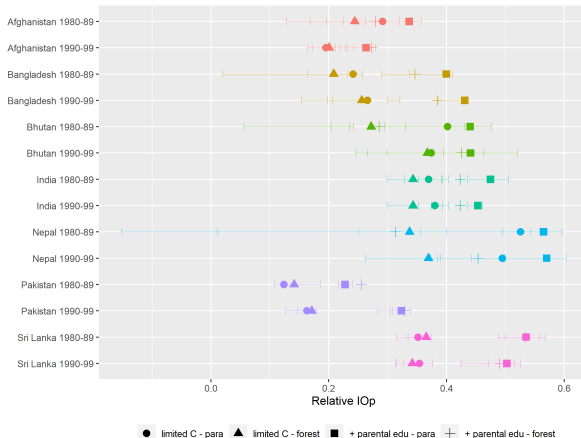
## Comparison Estimation Methods- Full Sample limited C





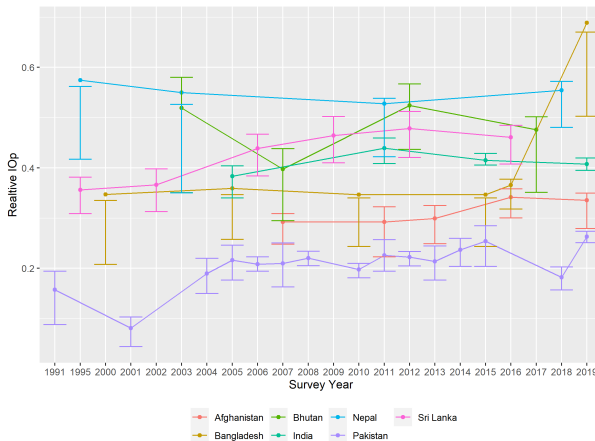
# Education

## Comparison Estimation Methods - Impact adding parental background (Co-resident Sample)

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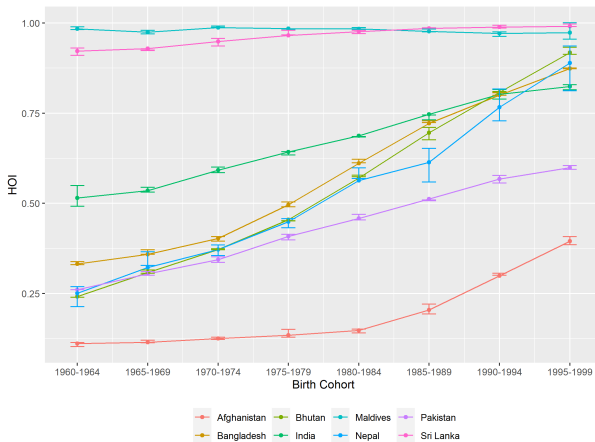
# Education

## Relative IOp - Cross-section (Co-resident Sample limited C)



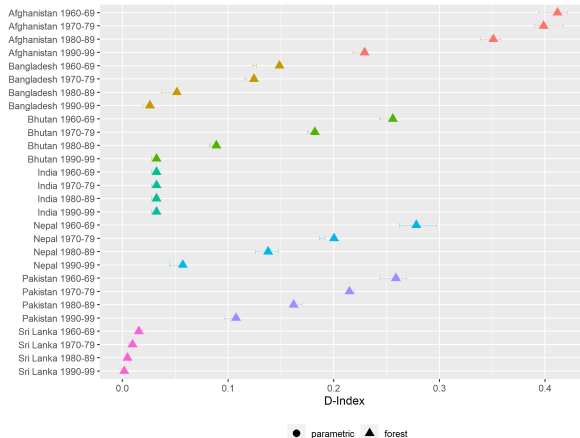
# Literacy

## HOI



# Literacy

## D-Index - Full Sample - Comparison Estimation Methods [back](#)



# Education

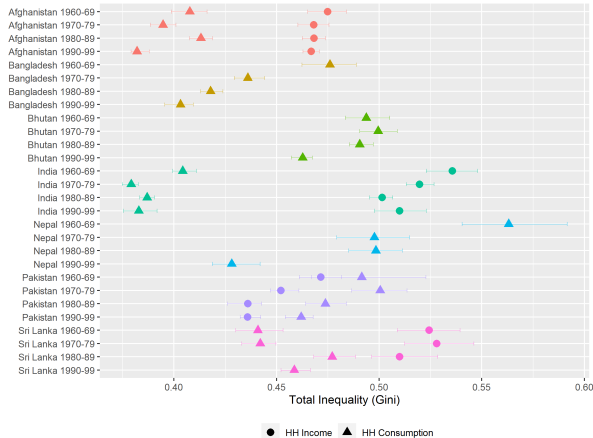
## Coresident - Distortion vs. Proxy

Country & Cohort	Total Inequality		Relative IOp			
	Full-Cores	Age-Cores	limited C	naive	proxy	true
Afghanistan 1980-89	-84.00	-80.70	-54.40	-49.40	10.90	
Afghanistan 1990-99	-77.70	-75.00	-68.60	-58.60	31.90	
Bangladesh 1980-89	-72.00	-67.70	-1.10	54.90	56.60	65.00
Bangladesh 1990-99	-58.60	-54.90	7.80	68.90	56.60	63.20
Bhutan 1980-89	-75.60	-72.20	-7.90	-0.00	8.60	5.10
Bhutan 1990-99	-64.30	-59.80	-0.60	18.30	19.00	
India 1980-89	-67.10	-58.90	-14.00	5.60	22.90	28.70
India 1990-99	-65.60	-51.10	0.80	25.00	24.00	30.50
Nepal 1980-89	-70.10	-63.80	-21.10	-14.40	8.50	8.40
Nepal 1990-99	-49.70	-51.70	-25.80	-14.90	14.80	13.80
Pakistan 1980-89						
Pakistan 1990-99	-71.90	-68.70	-59.90	-27.80	79.90	
Sri Lanka 1980-89	-20.20	-18.50	-5.30	33.40	40.90	
Sri Lanka 1990-99	-30.00	-18.90	-6.60	24.60	33.40	

**Note:** The table displays in % changes of estimate displayed in column header for: (i) restricting the full sample to co-residing individuals in terms of **total inequality** (1) and relative IOp with **limited C** (2); (ii) **naive** being the difference between full sample with limited C and coresident sample with extended C; (iii) **proxy** being the difference between limited and extended C for coresident sample; and (iv) **true** being the difference between limited and extended C for full sample (only surveys with direct parental background question).

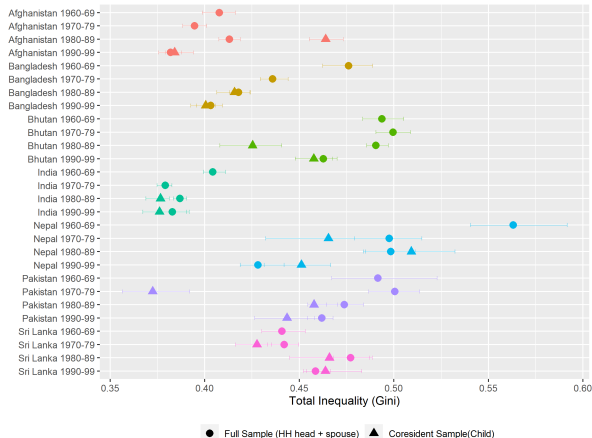
# HH Consumption vs. HH Income

## Total Inequality

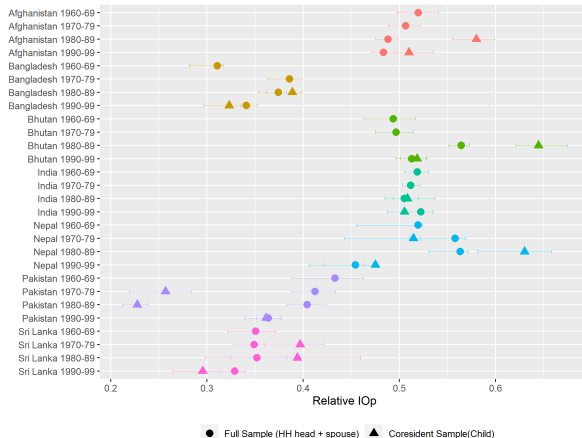


# Sampling Frame

## Co-resident Distortion - HH Consumption

[back Sampling Frame](#)[back HH results](#)

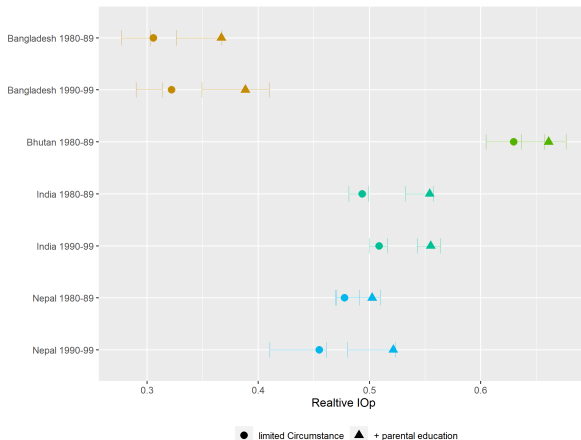
# HH Consumption

Full vs. Co-resident Sample [back](#)



# HH Consumption

Relative IOp - Impact adding parental background (Full Sample - Non-Coresident Data)

[back](#)

# HH Consumption

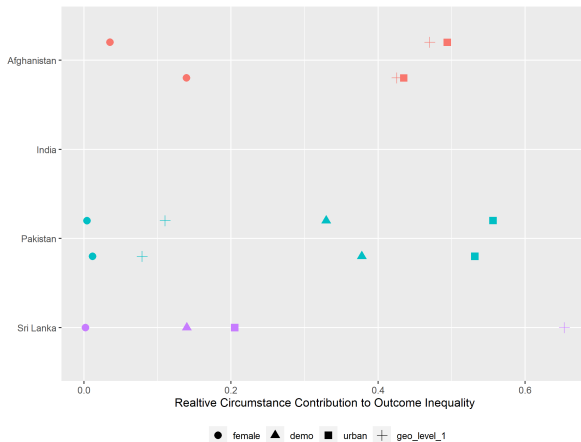
Coresident - Distortion vs. Proxy [back](#)

Country & Cohort	Total Ineq.	Relative IOp			
		limited C	naive	proxy	true
Afghanistan 1980-89	5.50	13.90	18.90	4.30	
Afghanistan 1990-99	-1.70	6.80	11.70	4.60	
Bangladesh 1980-89	5.90	-13.90	32.40	53.90	19.90
Bangladesh 1990-99	-2.90	-8.80	46.00	60.00	20.60
Bhutan 1980-89	-2.20	-0.40	7.70	8.20	5.00
Bhutan 1990-99	0.80	-1.10	7.30	8.50	
India 1980-89	1.30	-1.80	11.00	13.10	12.30
India 1990-99	0.00	0.70	8.90	8.10	9.10
Nepal 1980-89	3.60	1.80	13.10	11.10	5.20
Nepal 1990-99	-0.10	-2.50	18.70	21.70	14.60
Pakistan 1980-89	2.10	7.20	30.70	21.90	
Pakistan 1990-99	-0.30	4.30	36.60	31.00	
Sri Lanka 1980-89	5.70	-6.90	5.60	13.40	
Sri Lanka 1990-99	0.40	1.10	28.40	27.00	

**Note:** The table displays in % changes of estimate displayed in column header for: (i) restricting the full sample to co-residing individuals in terms of **total inequality** (1) and relative IOp with **limited C** (2); (ii) **naive** being the difference between full sample with limited C and coresident sample with extended C; (iii) **proxy** being the difference between limited and extended C for coresident sample; and (iv) **true** being the difference between limited and extended C for full sample (only surveys with direct parental background question).

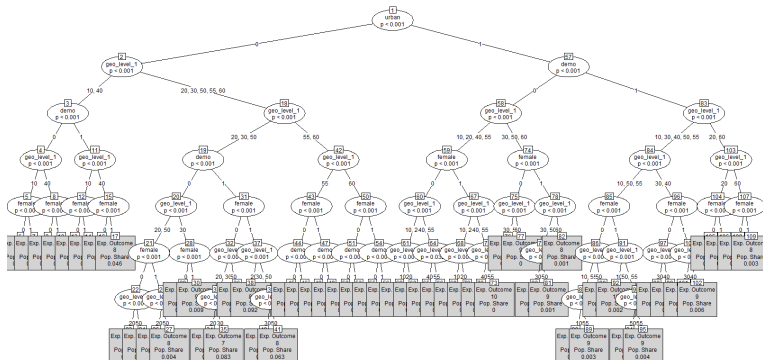
# Circumstance Importance HH Income

Parametric - relative Contribution [back](#)



# Circumstance Importance Education

Tree Bangladesh Cohort 1990-99 [back](#)



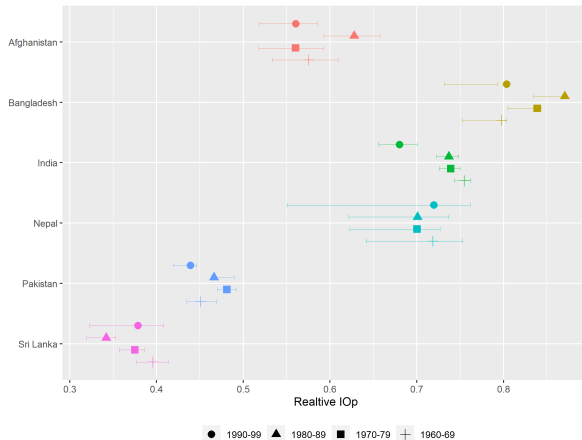


# Individual Income

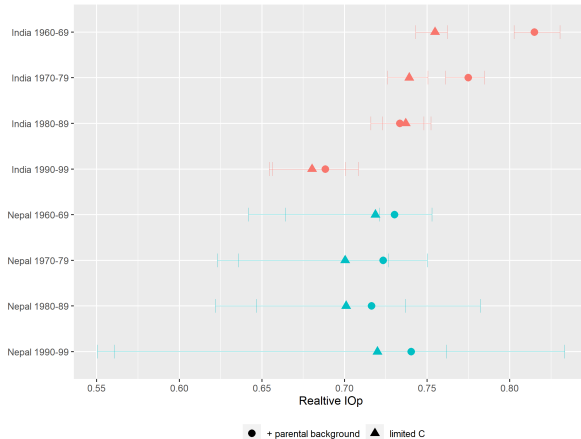
[back](#)

- female underrepresented  $\Rightarrow$  no account for HH resource sharing
- partial limitation to formal employment
- co-resident individuals not representative for population with income
  - $\Rightarrow$  1. use full sample with limited C
  - $\Rightarrow$  2. check importance parental background for countries with background data

# Individual Income I/II

[back](#)

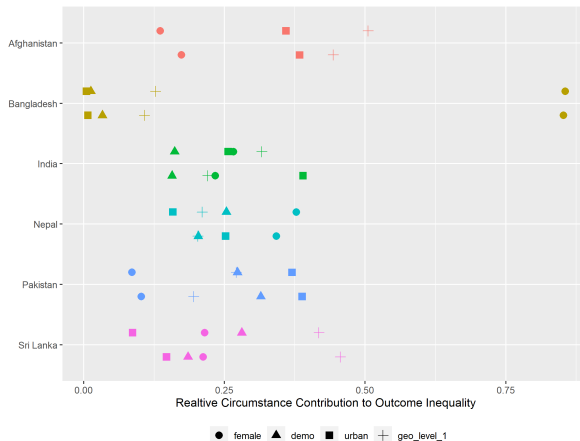
# Individual Income II/II

[back](#)



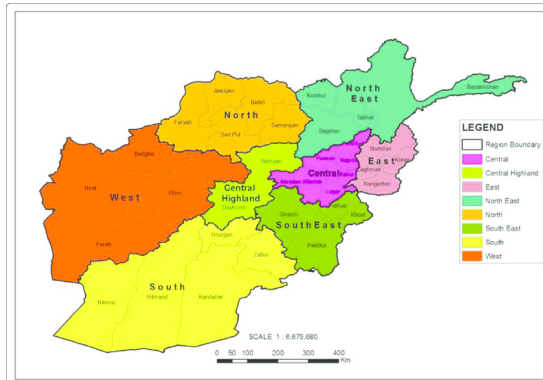
# Circumstance Importance Income

Parametric - relative Contribution [back](#)



# Country-specific Regions

Afghanistan [back](#)



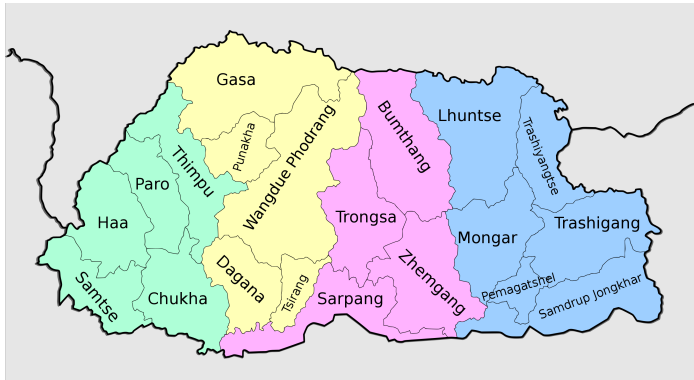
# Country-specific Regions

Bangladesh [back](#)



# Country-specific Regions

Bhutan [back](#)



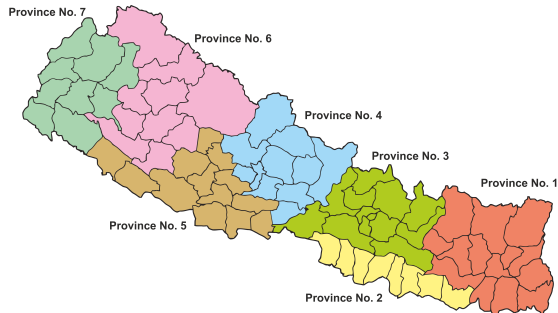
# Country-specific Regions

India [back](#)



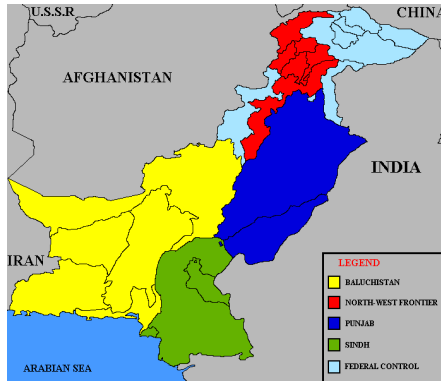
# Country-specific Regions

Nepal [back](#)



# Country-specific Regions

Pakistan [back](#)



North West Frontier Province = Khyber Pakhtunkhwa + Federally Administered Tribal Areas (2018)

# Country-specific Regions

Sri Lanka [back](#)

