

The Results in this presentation are based on the preliminary analysis of an ongoing project

We therefore request not to quote or use these results without the prior permission of the authors

Quality of mortality data in the Indian national family health surveys: What can we learn?

Prof. Usha Ram, Dr. Manas R Pradhan & Mr. Akshay Mishra

International Institute for Population Sciences

contact: usharamagrwal@gmail.com

Presented at the

International seminar on 25-years of national family health surveys (NFHS) in India: Lessons learnt and way forward

Organized by the IIPS, Mumbai: October 18-19, 2019, New Delhi, India

Context (1)

- The SRS in India, an important source of data on fertility and mortality
 - Allows a systematic investigation into levels and trends in mortality and fertility at the national and state level
- Since 1990s, data gathering efforts through large scale demographic and health surveys have significantly expanded the opportunity to investigate beyond levels and changes
- For example, understanding of socioeconomic-demographic disparities and their predictors from these data has resulted in evidence based planning and policies

Context (2)

- 3/4 rounds of the NFHS and the on-going 5th round have gathered information on deaths of usual members by age at death, sex, month/year of death
- Both NFHS and DLHS have so far completed four rounds each, yet, systematic evaluation of the data quality from these surveys is lacking

Scope of this presentation

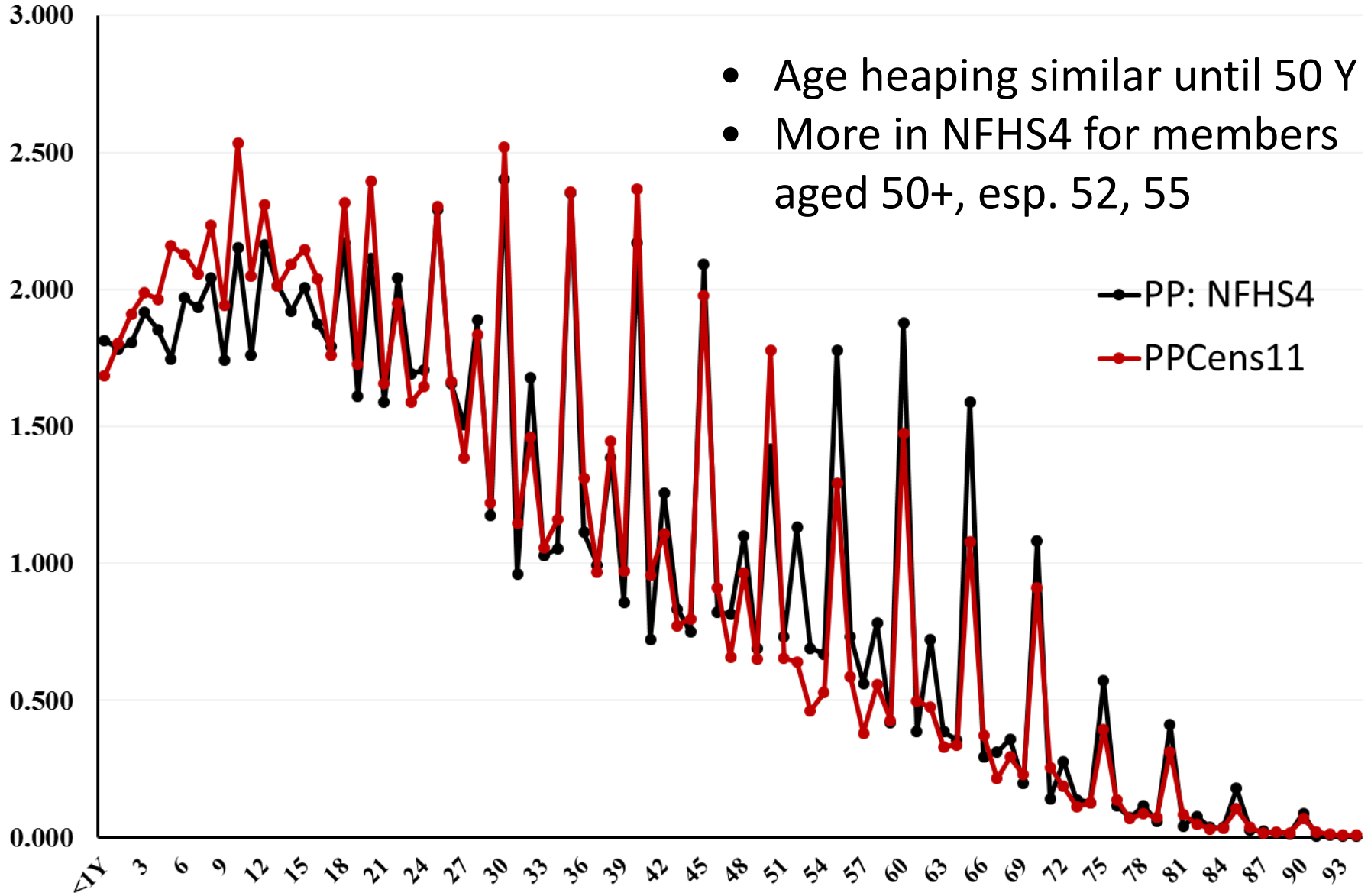
- Comparison of quality of age reporting for the surveyed population in the NFHS with the census
- Quality of age reporting of the deceased in NFHS
- Comparison of quality of age reporting in NFHS by selected socioeconomic status of the surveyed households, characteristics of the respondent of the household schedule and survey strategy
- Comparison of computed mortality rates from NFHS4 with the SRS

Background characteristics included

- HH wealth quintiles, educational status
- HH schedule respondent's characteristics
 - head vs spouse of the head vs others
 - age of the respondent
- Schedule language vs Respondent's mother tongue
- Schedule language vs interview language
- Use of a translator
- Data collection phase
- Time gap between data collection and date of event
- Number of visits made for completing the schedule

Results:
Age reporting – Population

Age heaping in reported age of the member's: NFHS4 & Census 2011



Whipples Index for population in various censuses and NFHS rounds, India

Gender	Digits 0 & 5			Digits 2 & 8		
	Census 1991	Census 2001	Census 2011	Census 1991	Census 2001	Census 2011
Male	229.9	196.7	154.4	118.9	122.6	105.6
Female	229.5	186.8	152.4	123.2	127.1	108.2
Person	229.7	191.9	153.4	121.0	124.7	106.9
	NFHS1	NFHS2	NFHS4	NFHS1	NFHS2	NFHS4
Male	196.1	174.6	156.8	119.3	117.6	112.3
Female	170.5	194.5	151.7	121.6	119.1	114.1
Person	183.5	184.6	154.3	120.4	118.3	113.2

Myers Index (MI) for population in various censuses and NFHS rounds, India

Gender	Myers Index		
	Census1991	Census2001	Census2011
Male	31.9	25.4	12.8
Female	33.1	24.2	13.2
Person	32.5	24.8	13.0
NFHS	NFHS1	NFHS2	NFHS4
Male	25.1	24.2	14.5
Female	18.0	18.1	17.1
Person	22.3	22.0	14.3

UN Joint Score	Cen1991	Cen2001	Cen2011	NFHS1	NFHS2	NFHS4
	54.0	41.0	28.3	65.1	51.3	30.8

Member's age reporting by household & respondent characteristics: NFHS4

- Heaping more in lowest wealth quintile until age 15 and for least educated at older ages
- Heaping less if head or spouse responded; more if R was someone else
- Heaping more problematic if R was younger (below 30 years)
- Heaping pattern did not vary if languages for Interview and schedule were same or different, if R's mother tongue was same or different from the interview language, or if interviewer used a translator or not, phase of data collection (2015 versus 2016), and the number of interview visits by the field investigator

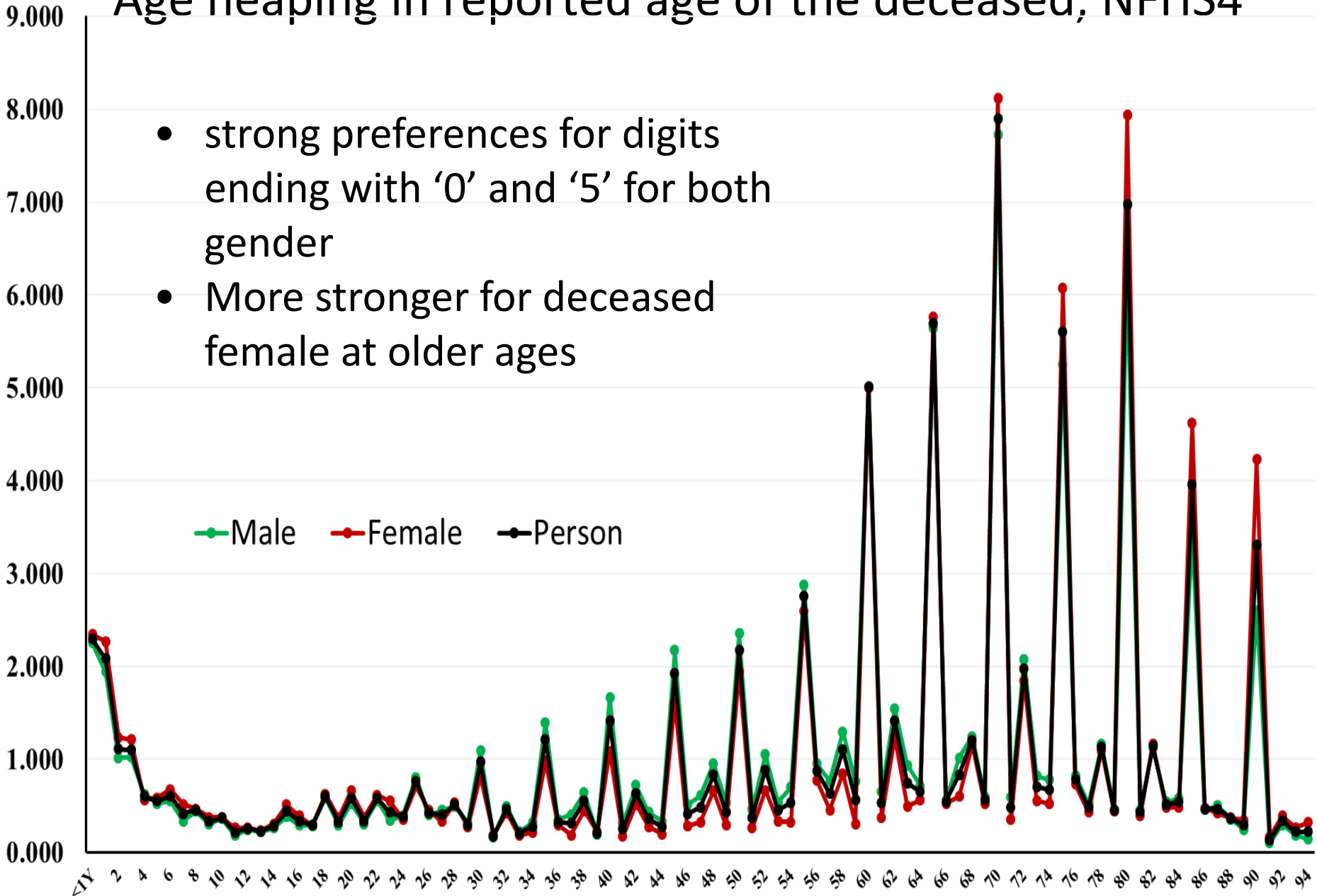
Whipples Index (WI) and Myers Index (MI) of population data by household wealth quintile, India - NFHS4

Wealth Quintile	WI: Digits 0 & 5	WI: Digits 2 & 8	Myers Index
Lowest	171.7	116.9	18.9
Second	160.2	112.8	17.1
Middle	155.7	111.3	14.3
Fourth	147.8	112.1	12.7
Highest	137.6	113.2	10.6

Results:
Age reporting – Deaths

Age heaping in reported age of the deceased, NFHS4

- strong preferences for digits ending with '0' and '5' for both gender
- More stronger for deceased female at older ages



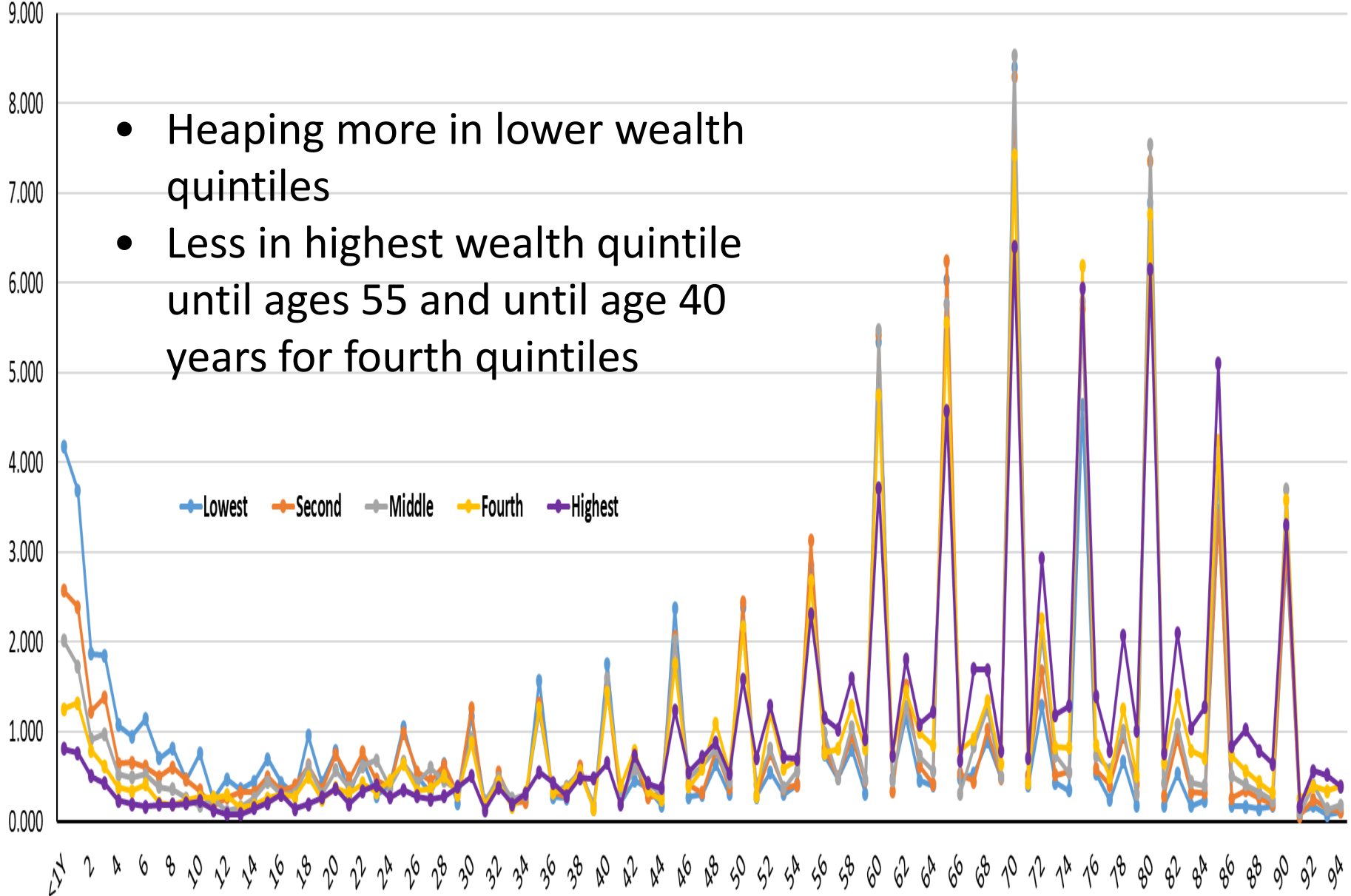
Whipple's Index & Myers Index for deaths in various NFHS rounds, India

Gender	WI: Digits 0 & 5			WI: Digits 2 & 8		
	NFHS1	NFHS2	NFHS4	NFHS1	NFHS2	NFHS4
Male	305.5	301.4	265.1	75.8	85.3	88.0
Female	290.6	304.7	291.9	88.5	80.5	83.1
Person	298.9	302.8	275.9	81.4	83.2	86.0

Gender	Myers Index		
	NFHS1	NFHS2	NFHS4
Male	43.7	43.5	35.4
Female	37.0	39.5	37.6
Person	43.3	44.2	38.1

UN Joint Score	NFHS1	NFHS2	NFHS4
	108.4	107.6	76.8

Age heaping in reported age of deceased by wealth quintile

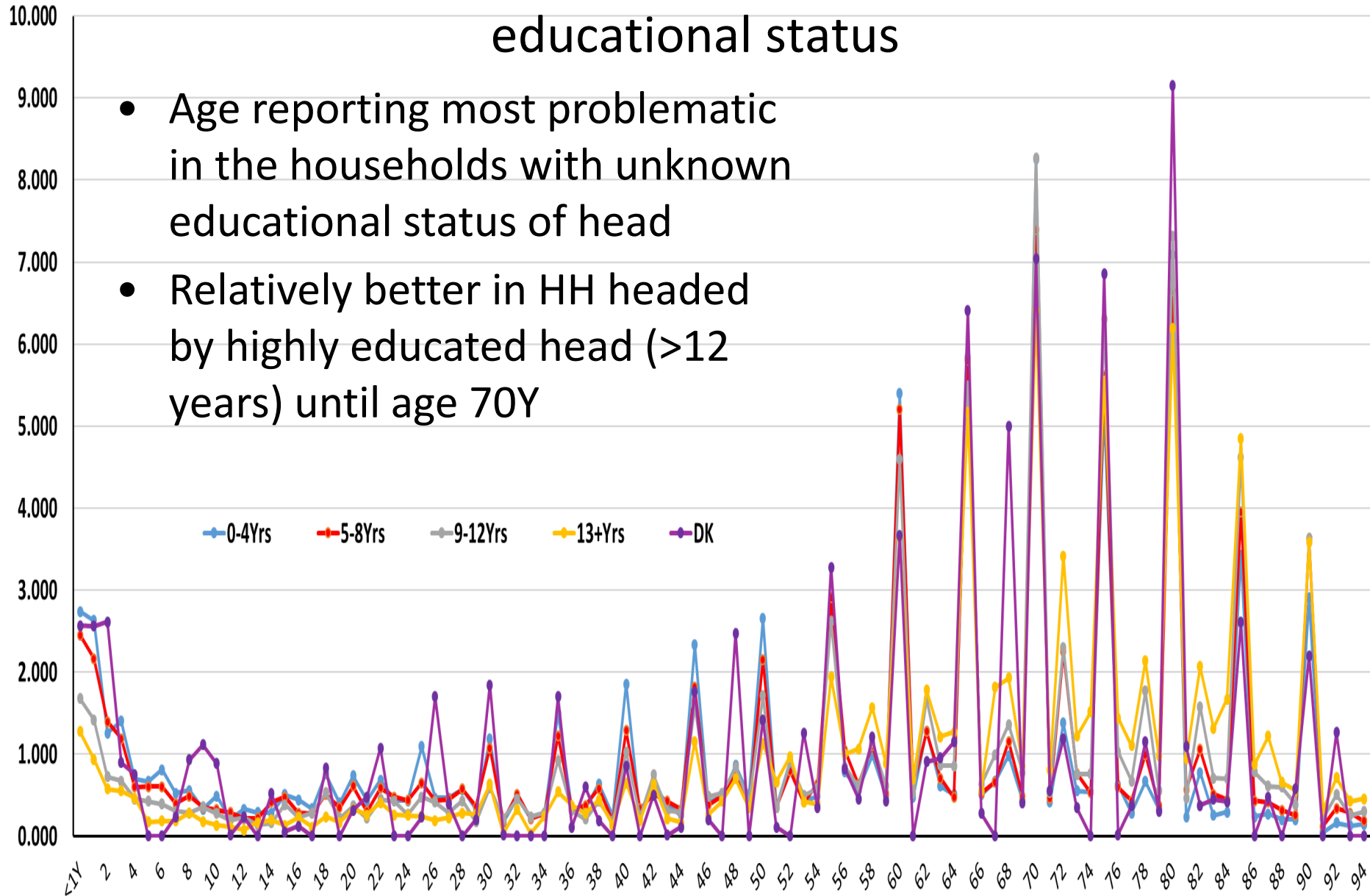


Whipple's Index (WI) and Myers Index (MI) of death data by household wealth quintile, India - NFHS4

Wealth Quintile	WI: Digits 0 & 5	WI: Digits 2 & 8	Myers Index
Lowest	305.9	79.7	46.0
Second	295.0	84.2	38.3
Middle	281.3	81.6	39.6
Fourth	262.1	90.6	34.6
Highest	217.3	97.7	26.2

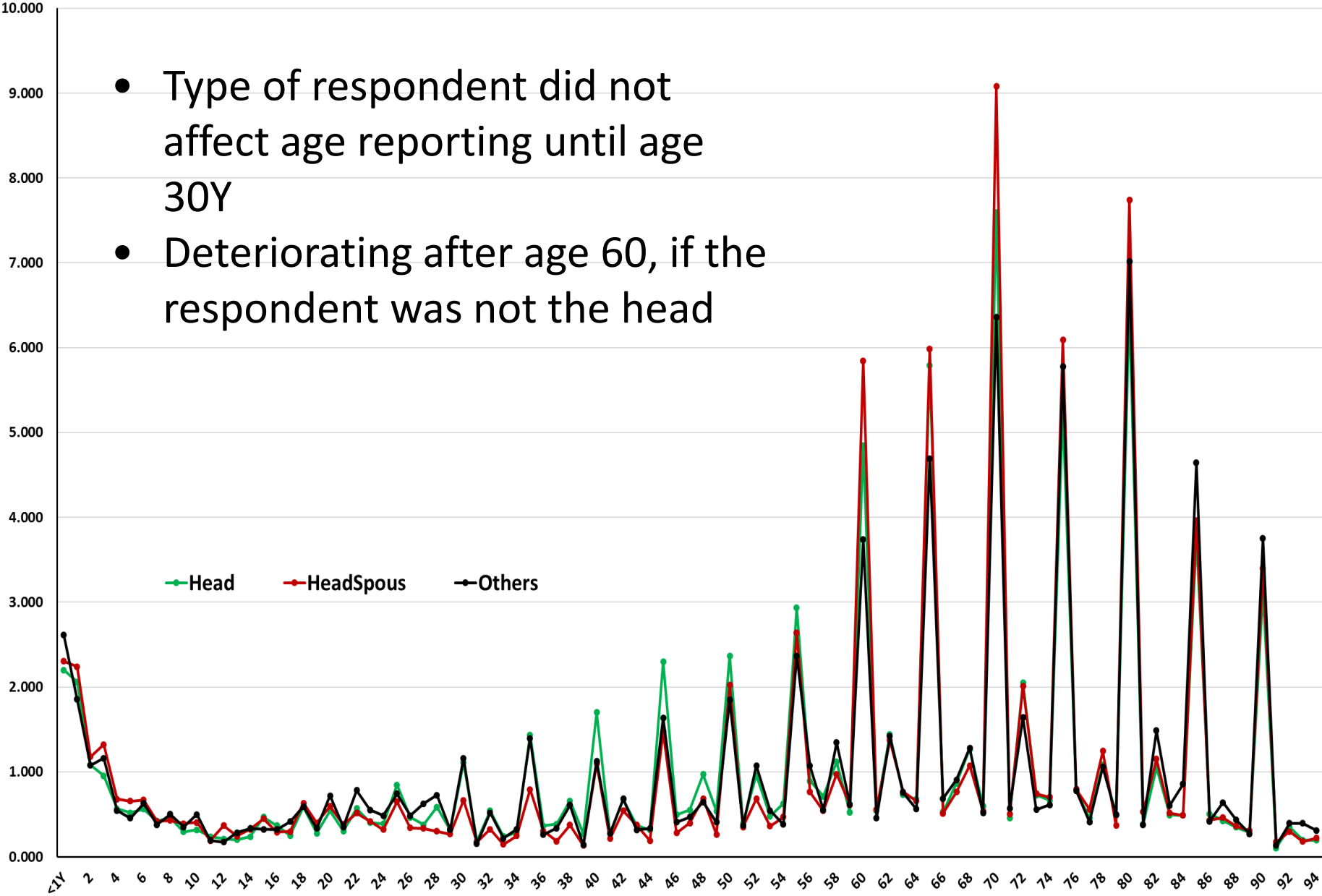
Age heaping in reported age of deceased by head's educational status

- Age reporting most problematic in the households with unknown educational status of head
- Relatively better in HH headed by highly educated head (>12 years) until age 70Y



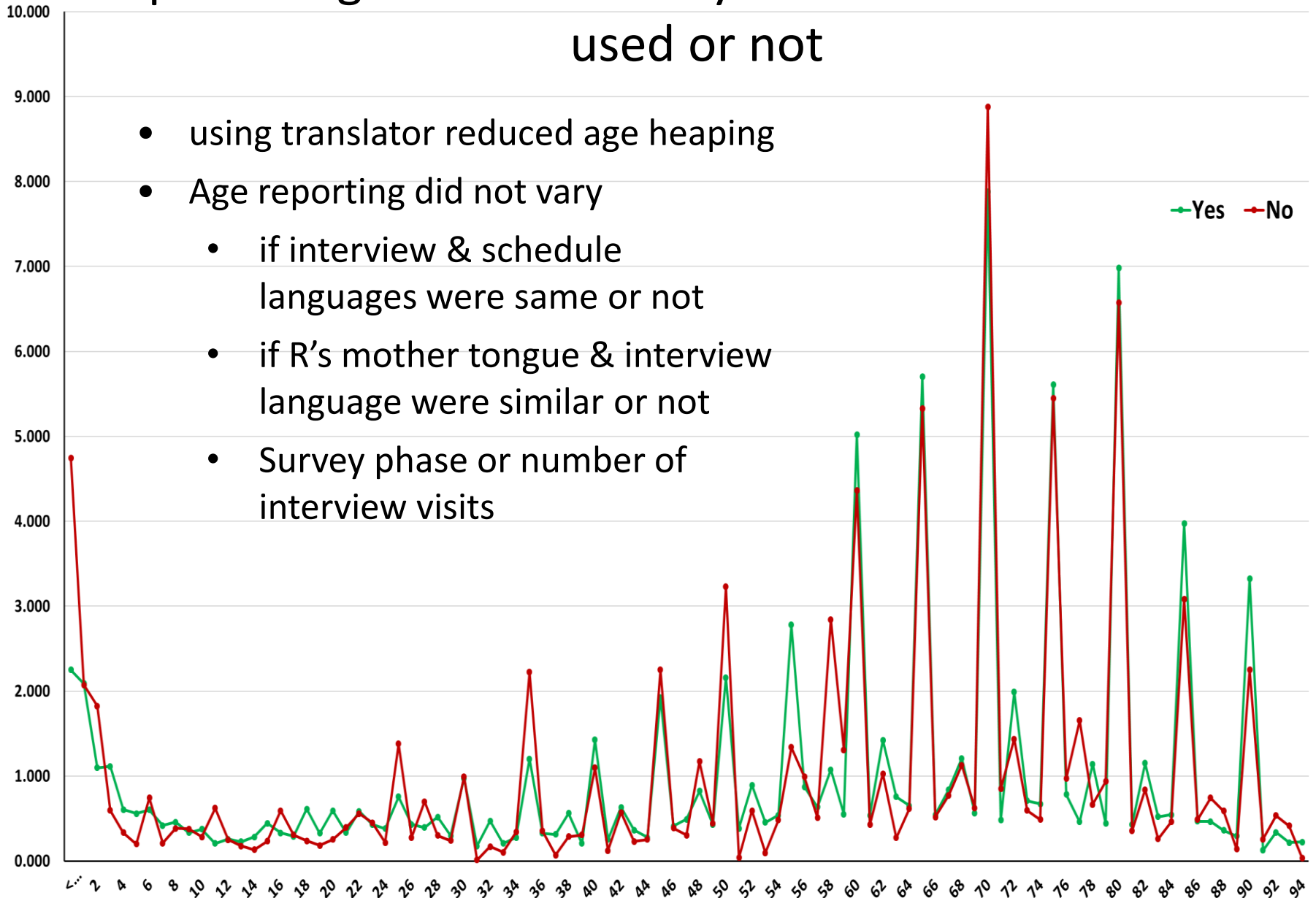
Age heaping in reported age of deceased by respondent type

- Type of respondent did not affect age reporting until age 30Y
- Deteriorating after age 60, if the respondent was not the head

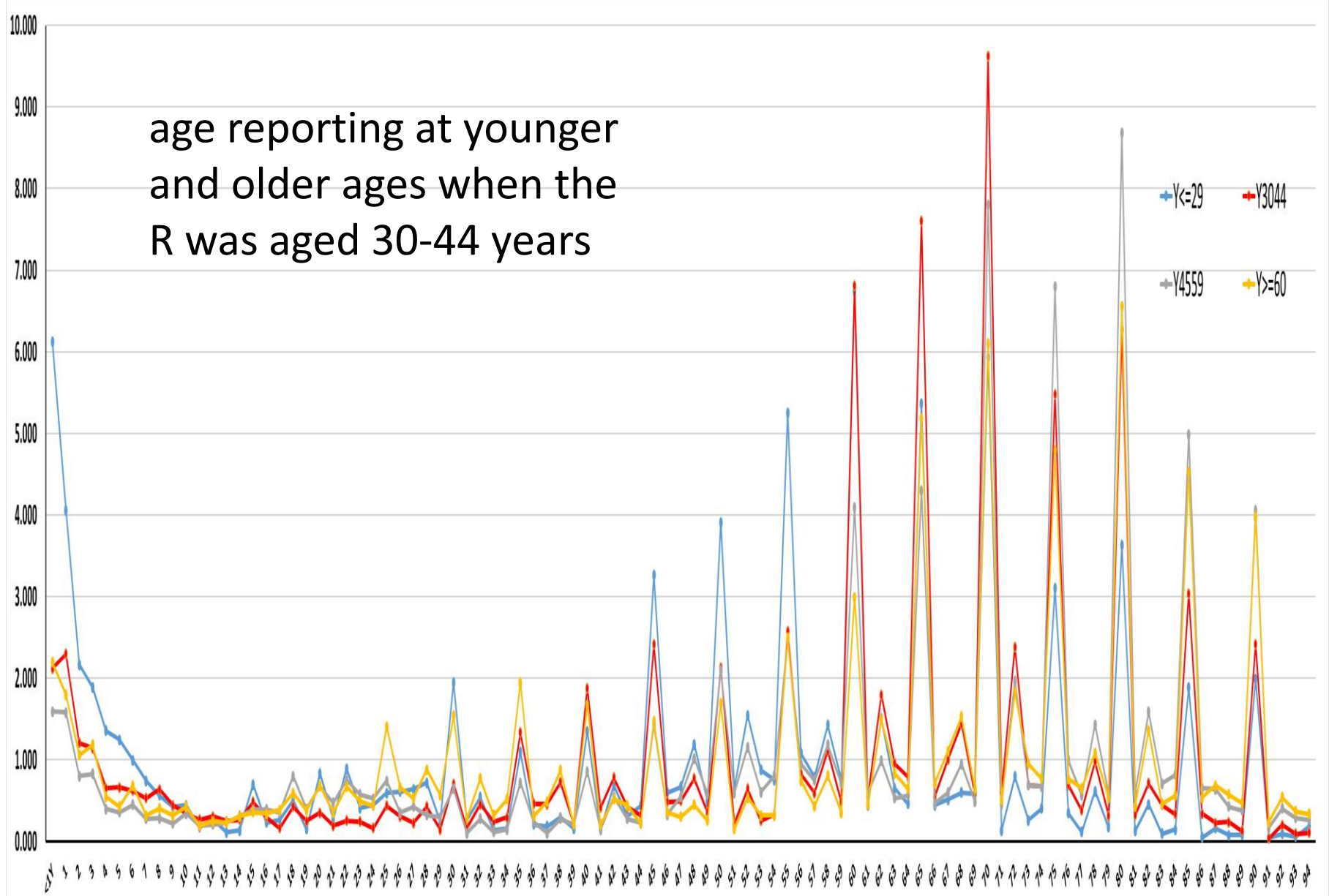


Reported age of deceased by whether a translator was used or not

- using translator reduced age heaping
- Age reporting did not vary
 - if interview & schedule languages were same or not
 - if R's mother tongue & interview language were similar or not
 - Survey phase or number of interview visits



Reported age of deceased by respondent age



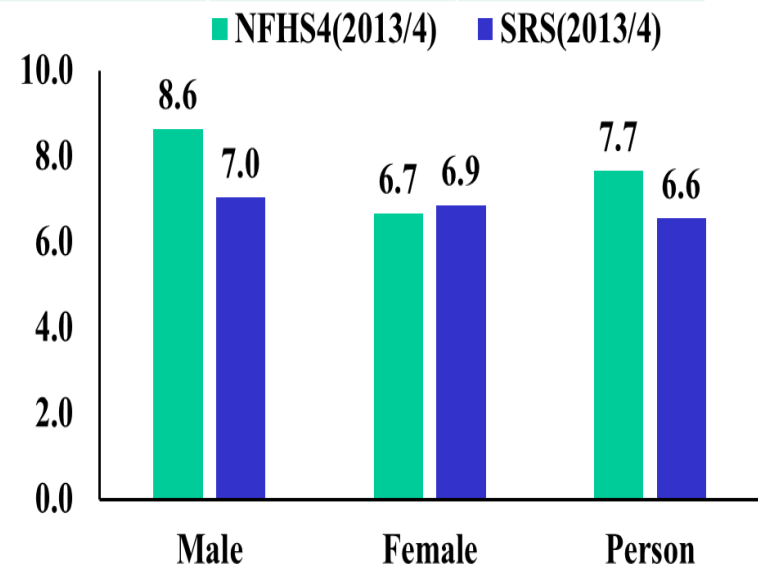
Results: Comparison with SRS

Crude Death Rate (CDR) – NFHS4 versus SRS

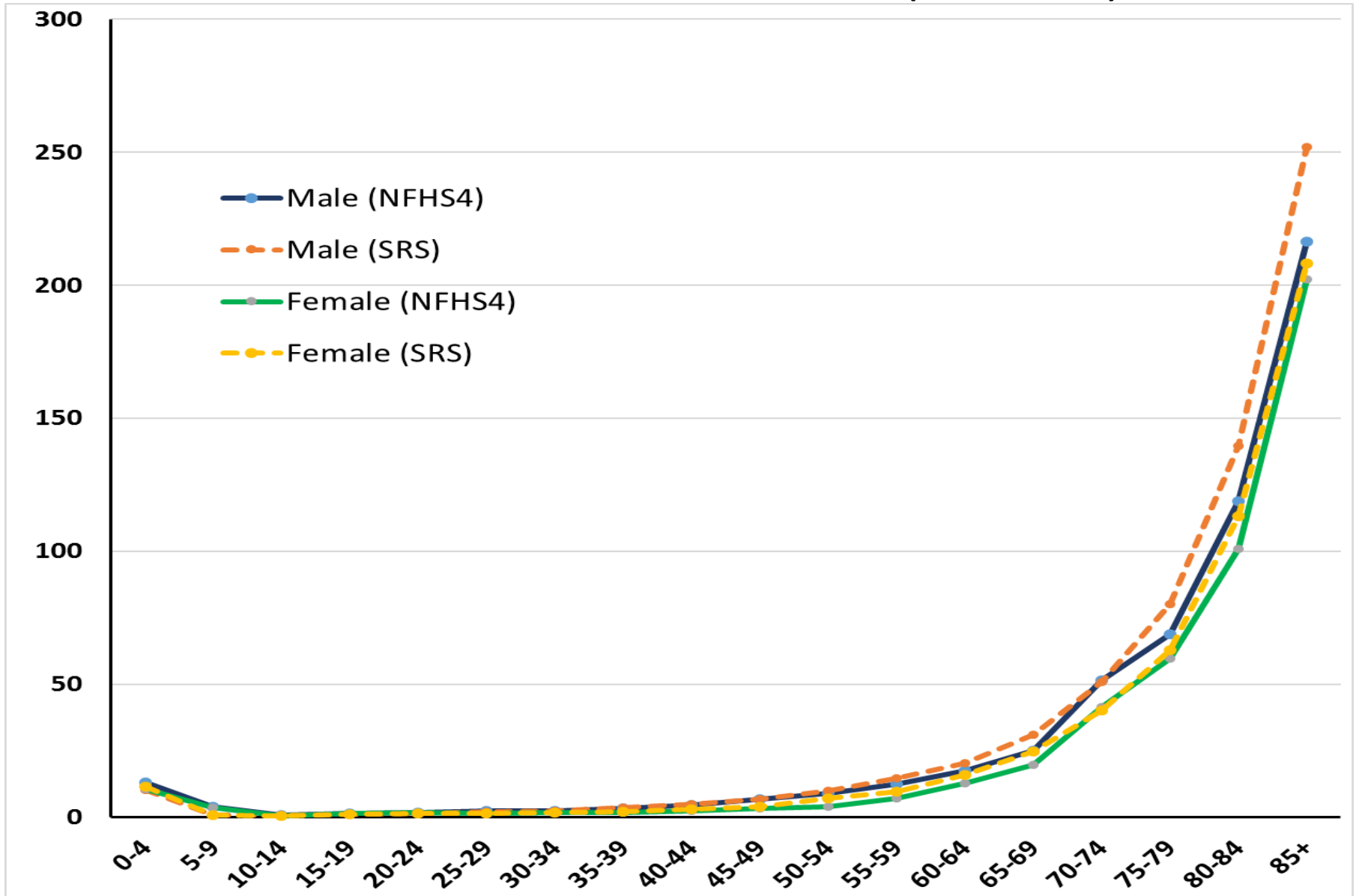
YEAR	CDR (NFHS4)*			CDR (SRS)		
	Male	Female	Person	Male	Female	Person
2016	3.27	2.54	2.91			
2015	6.24	5.01	5.63			
2014	9.19	7.14	8.17	7.10	6.20	6.70
2013	8.46	6.49	7.48	6.98	7.52	6.41
2012	4.26	3.15	3.71			

*** CDR based on population and deaths for the years**

- 2016: states surveyed in 2016 only
- 2015: states surveyed in 2015 & 2016
- 2014: states surveyed in 2015 & 2016
- 2013: states surveyed in 2015 & 2016
- 2012: states surveyed in 2015 only
- 2011: Did not compute due to fewer numbers
- Population for 2012, 2013 and 2014 estimated using corresponding natural growth rates from SRS

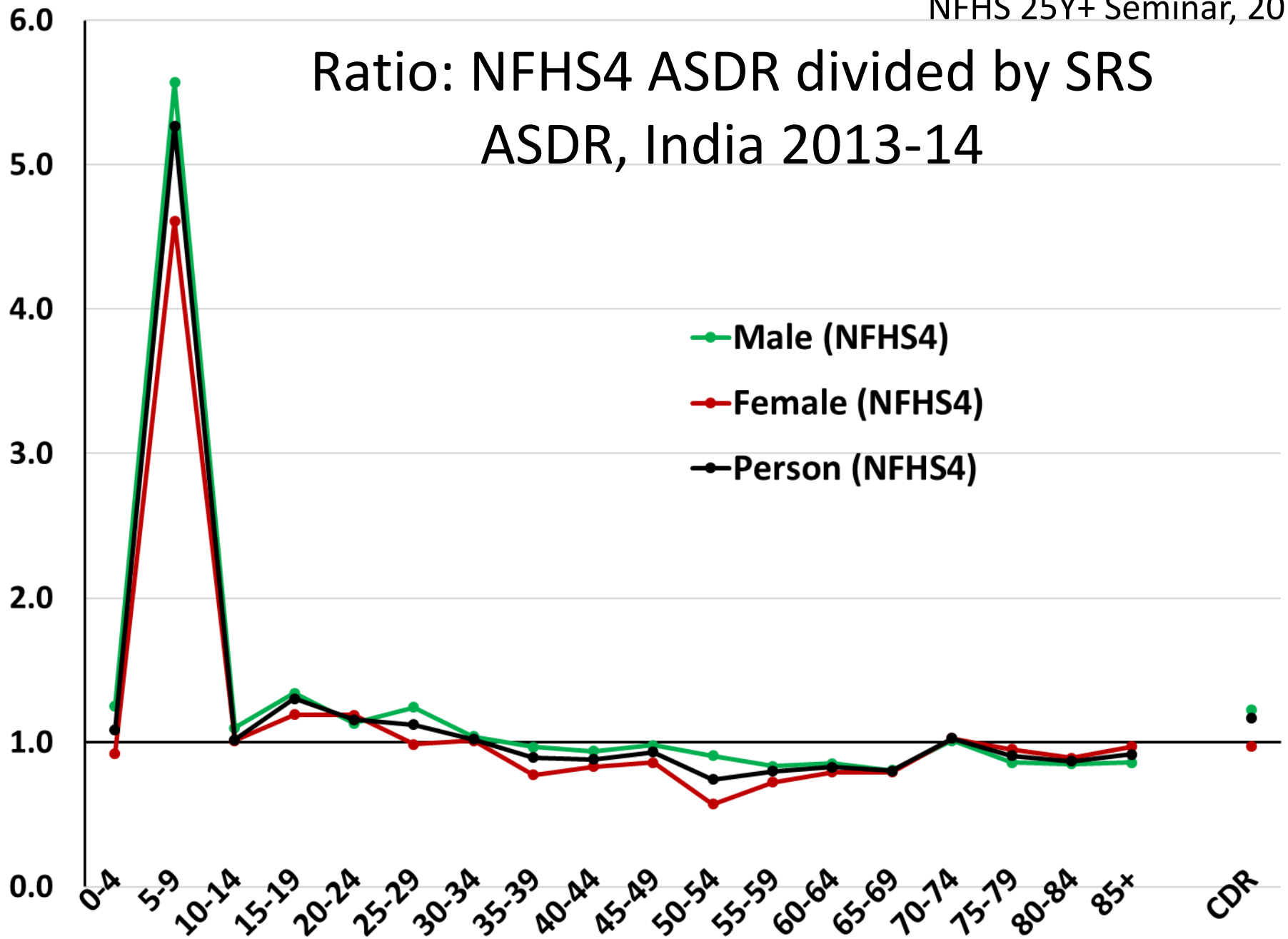


ASDRs for India: NFHS4 vs SRS (2013-14)

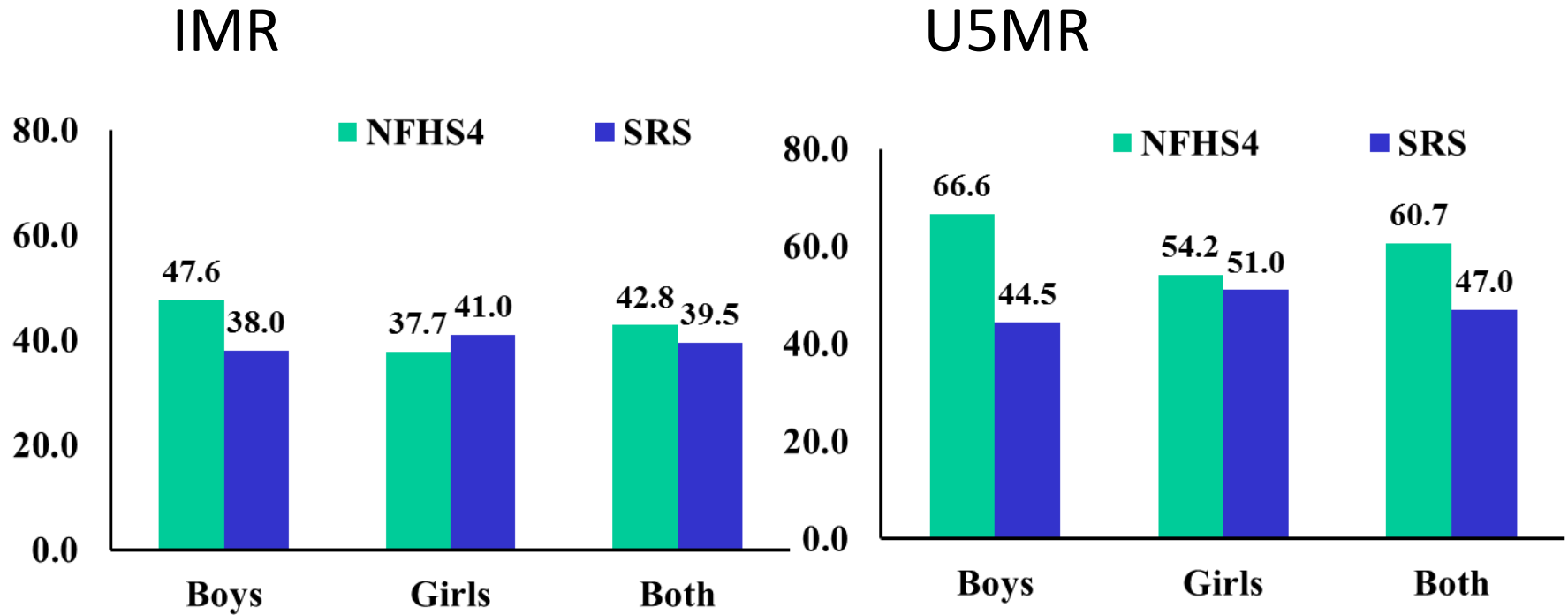


Ratio: NFHS4 ASDR divided by SRS

ASDR, India 2013-14



IMR and U5MR – NFHS4 versus SRS (India, 2013-14)



Ratio: NFHS/SRS	Boys	Girls	Both
IMR	1.25	0.92	1.08
U5MR	1.50	1.06	1.29

Share of deaths by age – NFHS4 versus SRS (India, 20130-14)

Age-Years	NFHS4	SRS	NFHS-SRS
<1	9.9	12.4	-2.4
1-4	4.2	2.2	2.0
0-4	14.1	14.5	-0.4
5-14	5.5	1.9	3.6
15-59	25.4	30.3	-4.9
60+	55.0	53.4	1.6
All ages	100.0	100.0	

Take home message (1)

- The quality of population age reporting is similar in both NFHS and Census
 - More problematic for socioeconomically deprived households and when respondent was younger person (<30 years) and someone other than head or the spouse
- The quality of age reporting for surveyed deaths severely poor; has not improved over time
- Age reporting of deaths deteriorated sharply when respondent was not the head
- Use of translator improved age reporting

Take home message (2)

- At the national level, NFHS4 & SRS mortality rates are similar, except ages 5-9Y
 - The NFHS4 death rates for age group 5-9Y higher by 5-6times
- NFHS4 IMR higher by 25% for male children and lower by 8% for female children
- NFHS4 U5MR –higher by 50% for male children and by 6% for female children
- Among deaths at all ages, share of ID lower in NFHS4 (9.9% versus 12.4%) whereas is double the level observed in SRS at ages 1-4 years (4.2% versus 2.2%)