Trends in Sex Differential Childhood Mortality in Ballabgarh HDSS (1992-2009)

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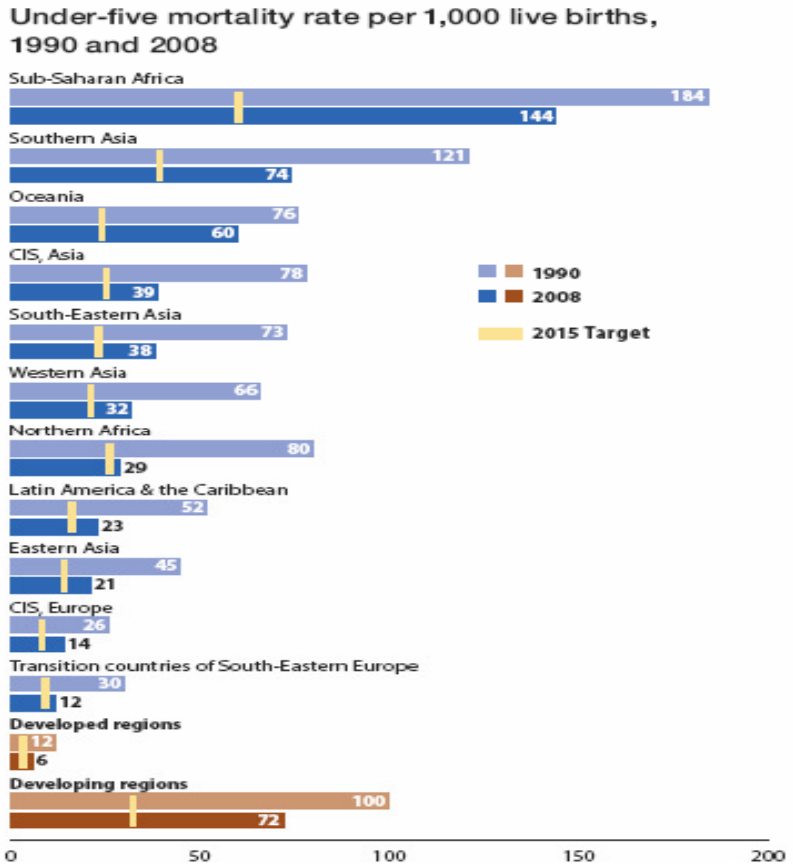
Goal 4

Reduce child mortality

TARGET
Reduce by two thirds, between 1990 and 2015, the under-five mortality rate

Child deaths are falling, but not quickly enough to reach the target



Goal 3: Promote gender equality and empower women

NNMR & IMR in Ballabgarh HDSS

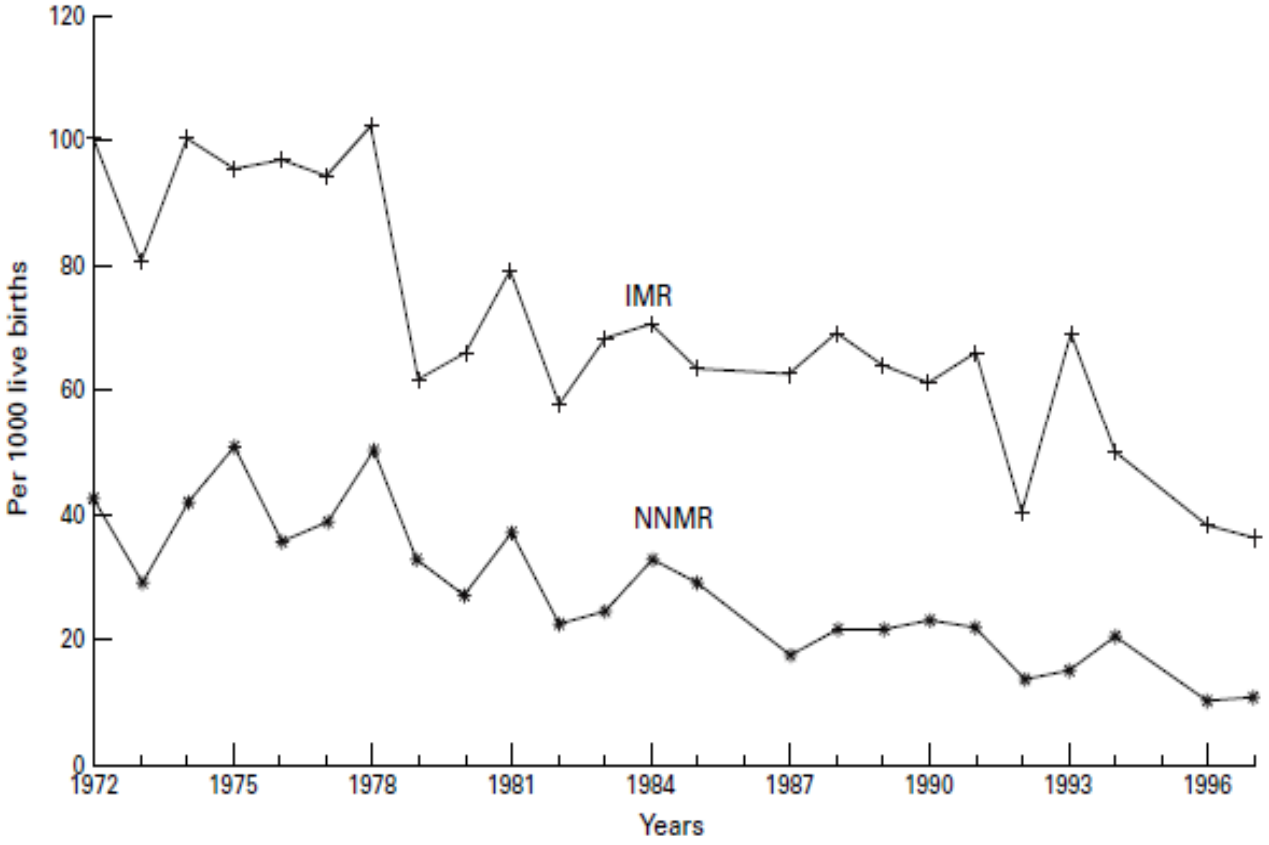


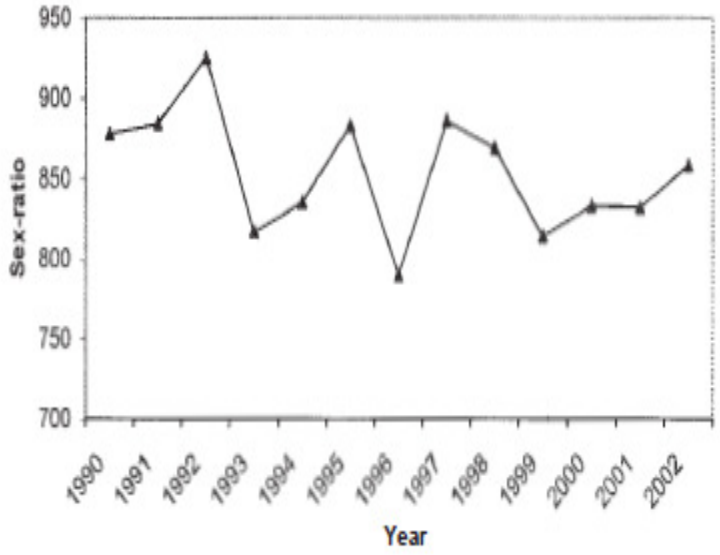
Figure 1 Infant and neonatal mortality rates in BalIabgarh (1972–1997).

- **Lower than rest of rural north India**
- **Gender Differential not studied**

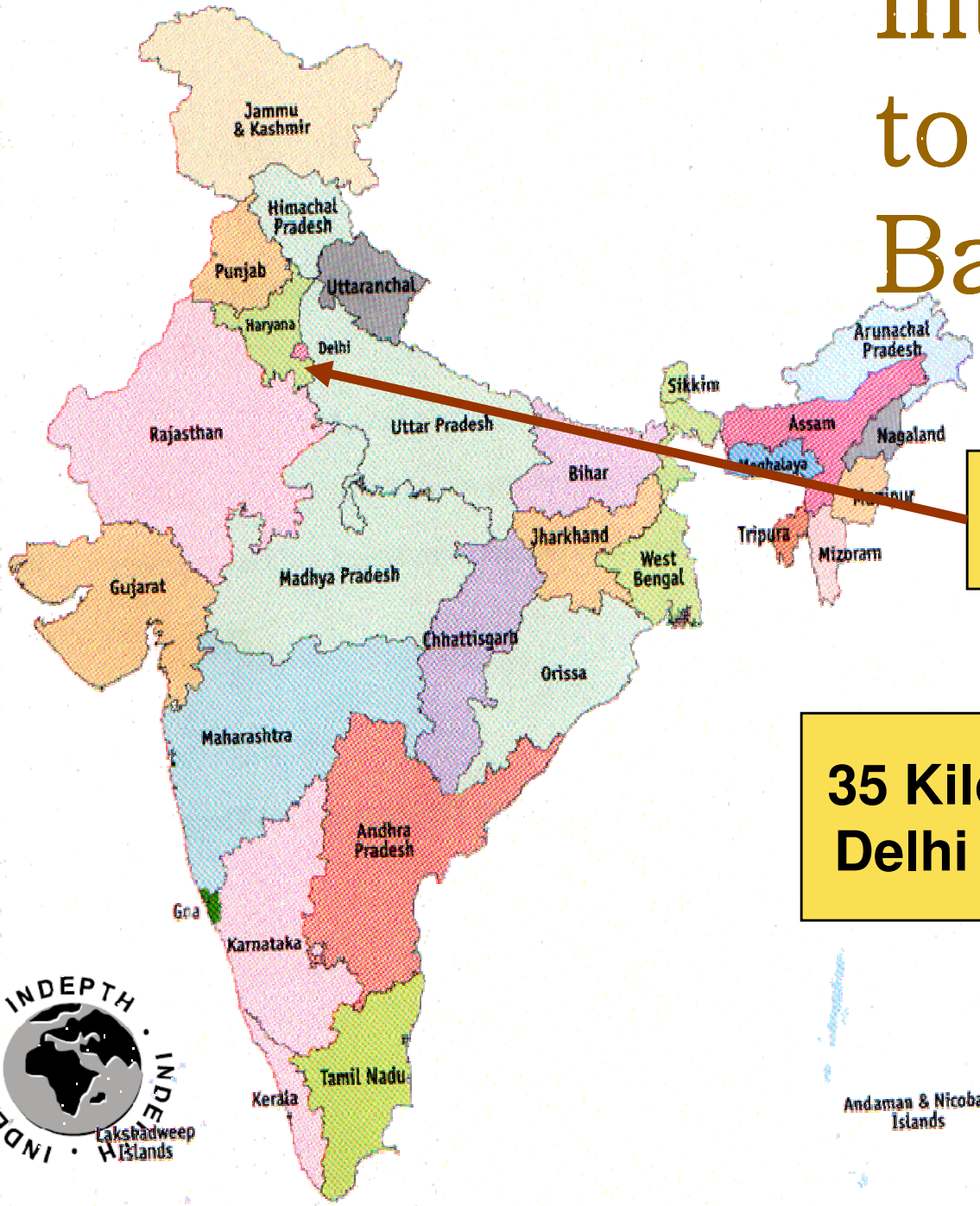
Why focus on Gender

- **Child mortality rates stagnant for the last decade – Is it related to gender differentials**

- **Declining sex ratio at birth came to the fore in mid nineties and early 2000.**



Introduction to Ballabgarh



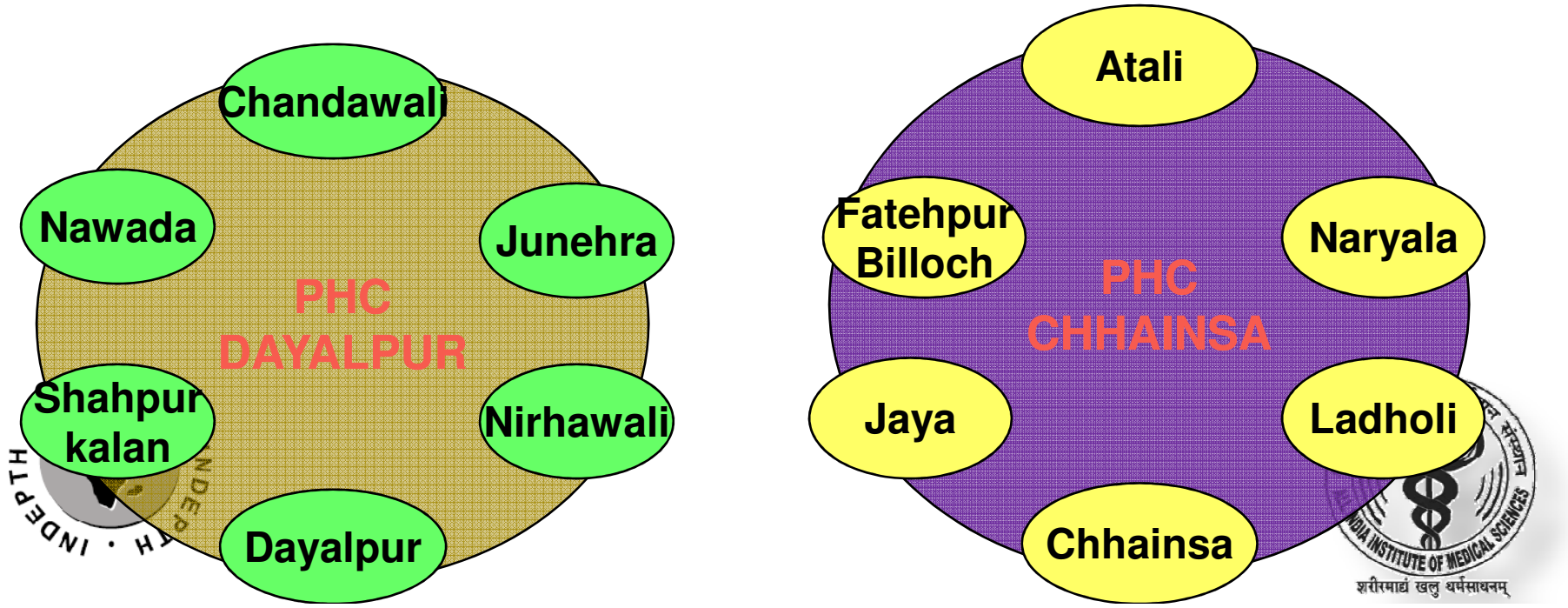
Ballabgarh, Haryana

35 Kilometer from AIIMS, Delhi – Mathura Highway

INDEPTH · INDEPTH

C.R.H.S. Project, Ballabgarh

Rural Intensive Field Practice Area – 87002 in December 2009



Methods – Data collection

- **Birth and death data collected during monthly visits by health worker – service provision like immunization, antenatal care etc.**
- **Annual Census in December every year to identify additional births and deaths.**
- **Quality checks by supervisors as well as medical students**

Data Storage

- **Electronic Database:**
- **Started since 1988: fully functional since 1992.**
- **Mainly started for service provision and not for demographic surveillance**
  - In migration data not captured and stored
  - Deaths archived
- **Since joining INDEPTH in 2003 have been looking at ways to meet both the ends**
  - INDEPTH Fellows were very useful

Data Management

- **Problem: Inability to differentiate between native born (and eligible for denominator) and migrated (ineligible) for child mortality rates.**
- **Would result in a bias of decreasing mortality rates over time.**
- **During Census 2009 all houses visited and in migration year collected for those still living and database corrected.**
  - Low in migration rates mainly due to marriage
  - Unlikely to be a sex differential
- **Revised childhood mortality rates calculated.**

Data Analysis

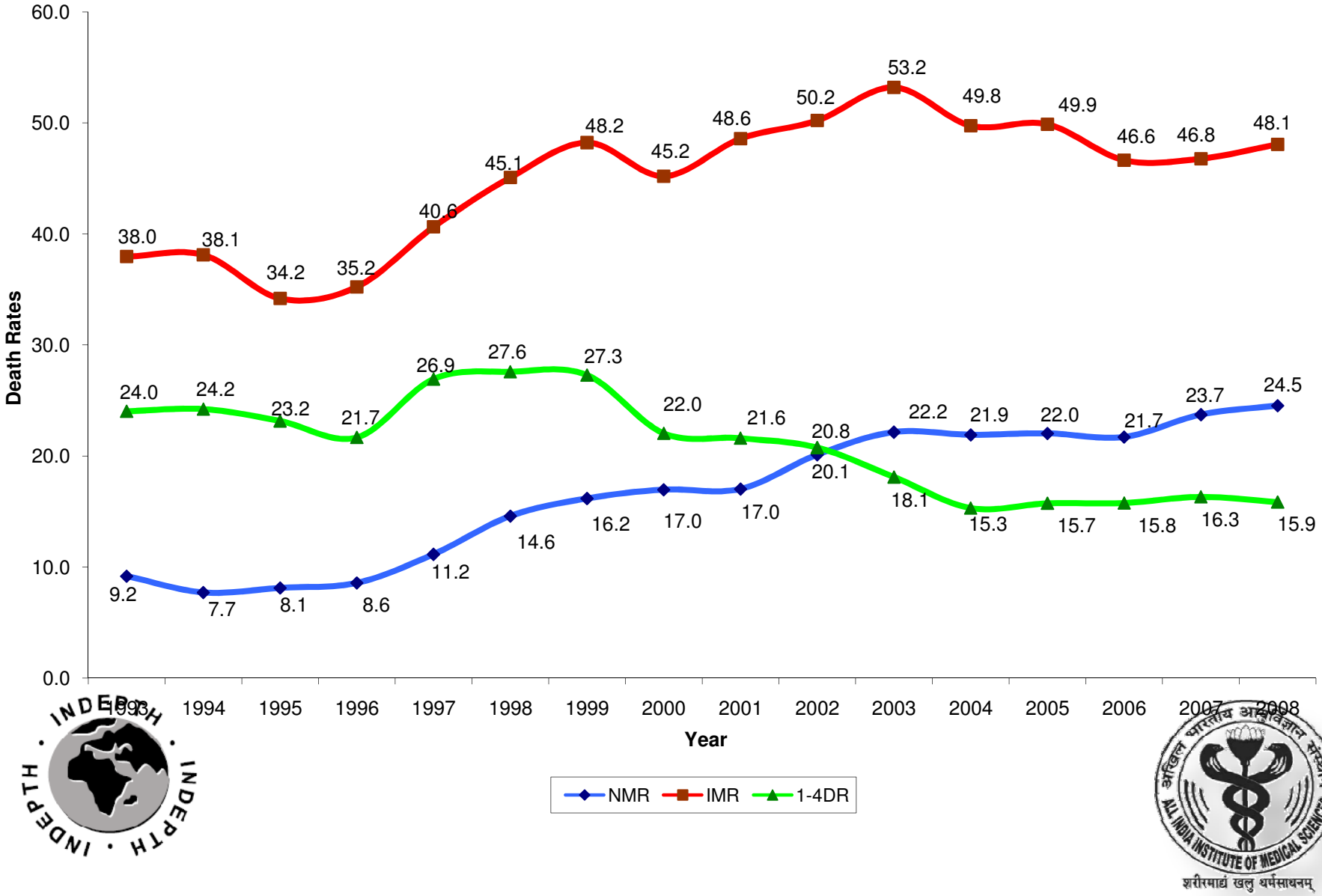
- **Three year moving averages used**
  - Small denominators : around 1900 live births
  - Fluctuating mortality rates

- **As census is done and all events are enumerated – confidence intervals not reported.**

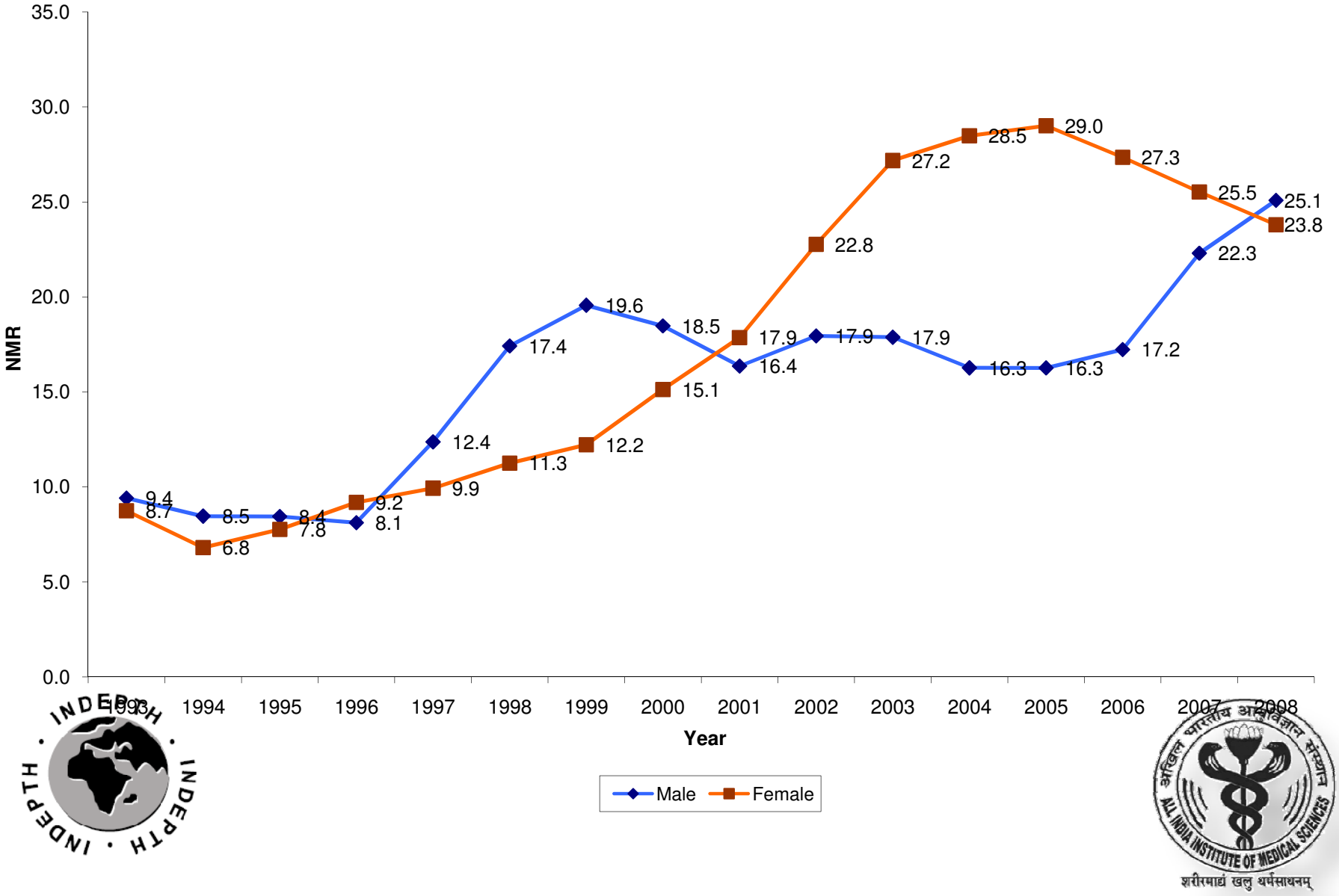
Current child mortality rates (2007-2009) (95% C.I.)

	M	F	T
NNMR	25.1	23.8	24.5
PNMR	19.0	28.9	23.6
IMR	44.1	52.7	48.1
1-4 MR	11.6	20.8	15.9

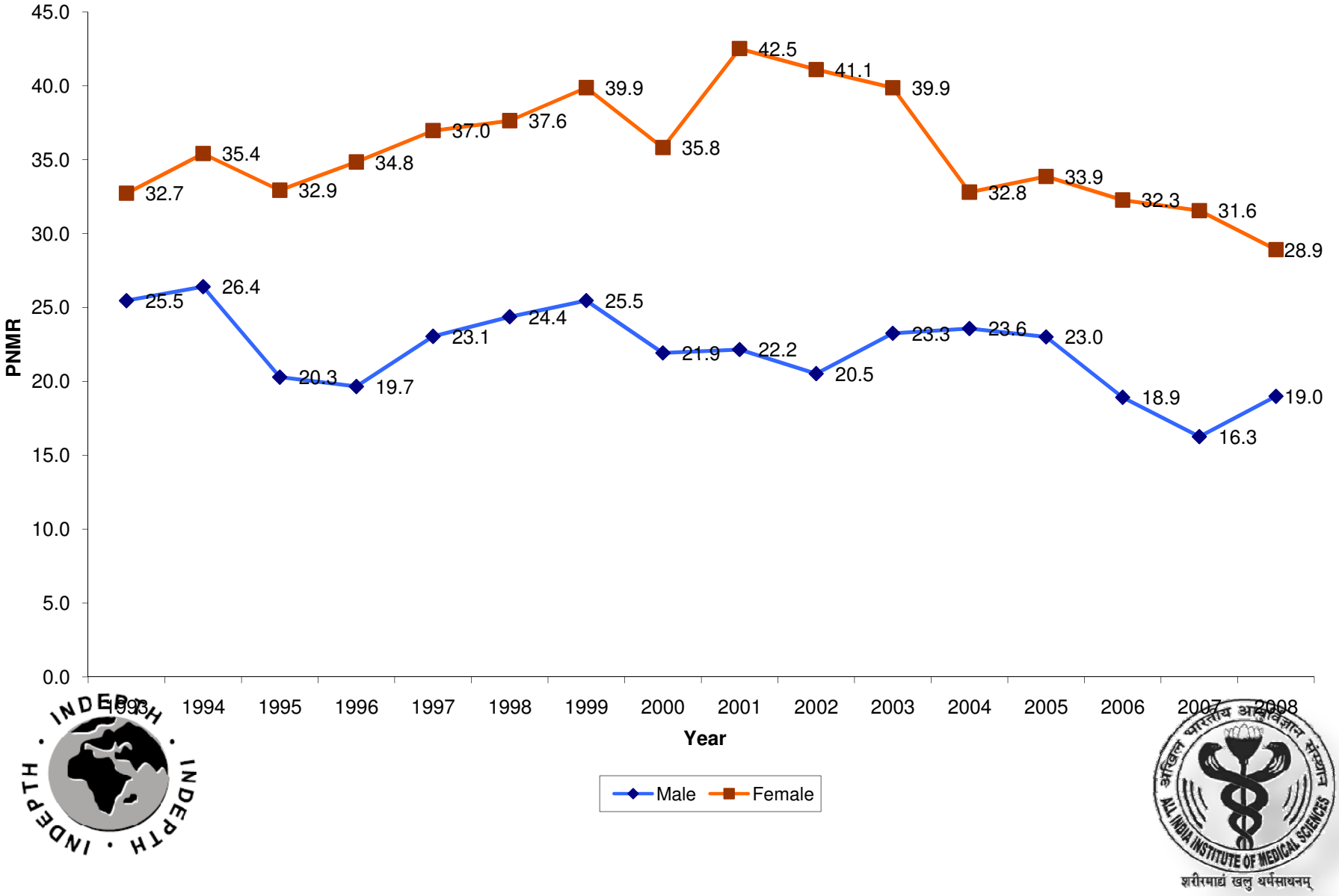
Total Death Rates (1992-2009)



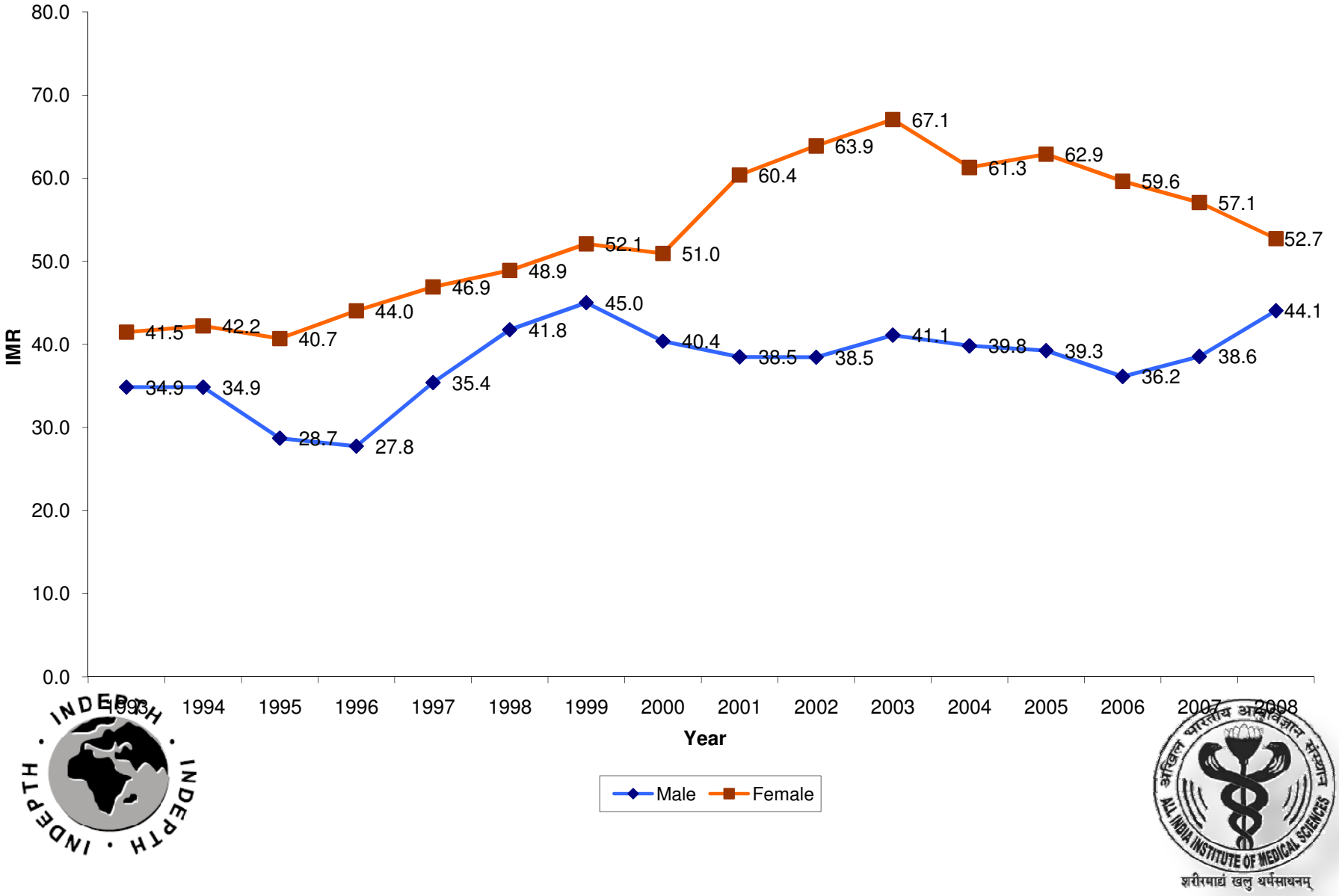
Neonatal Mortality Rate

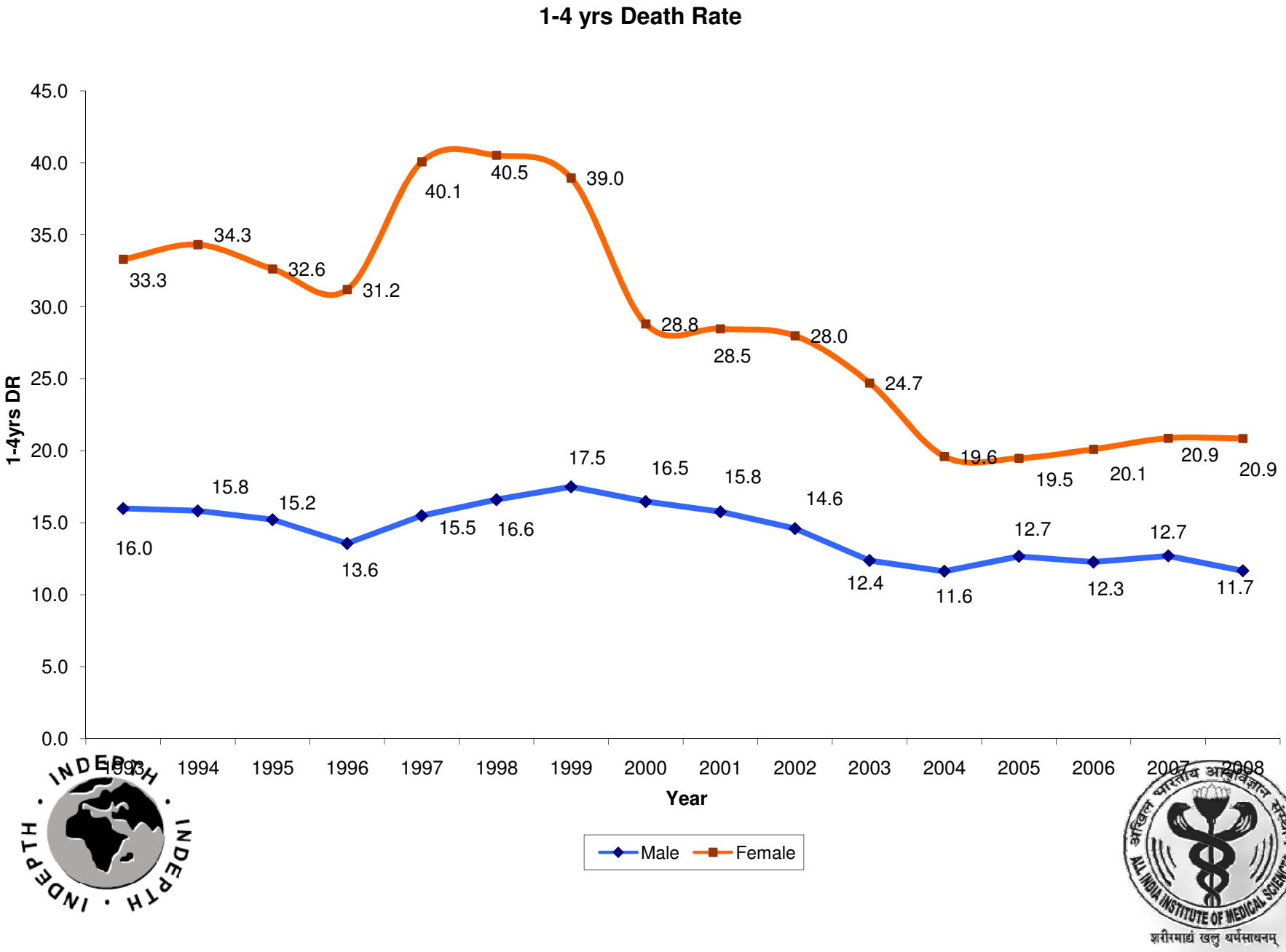


Post Neonatal Mortality rate

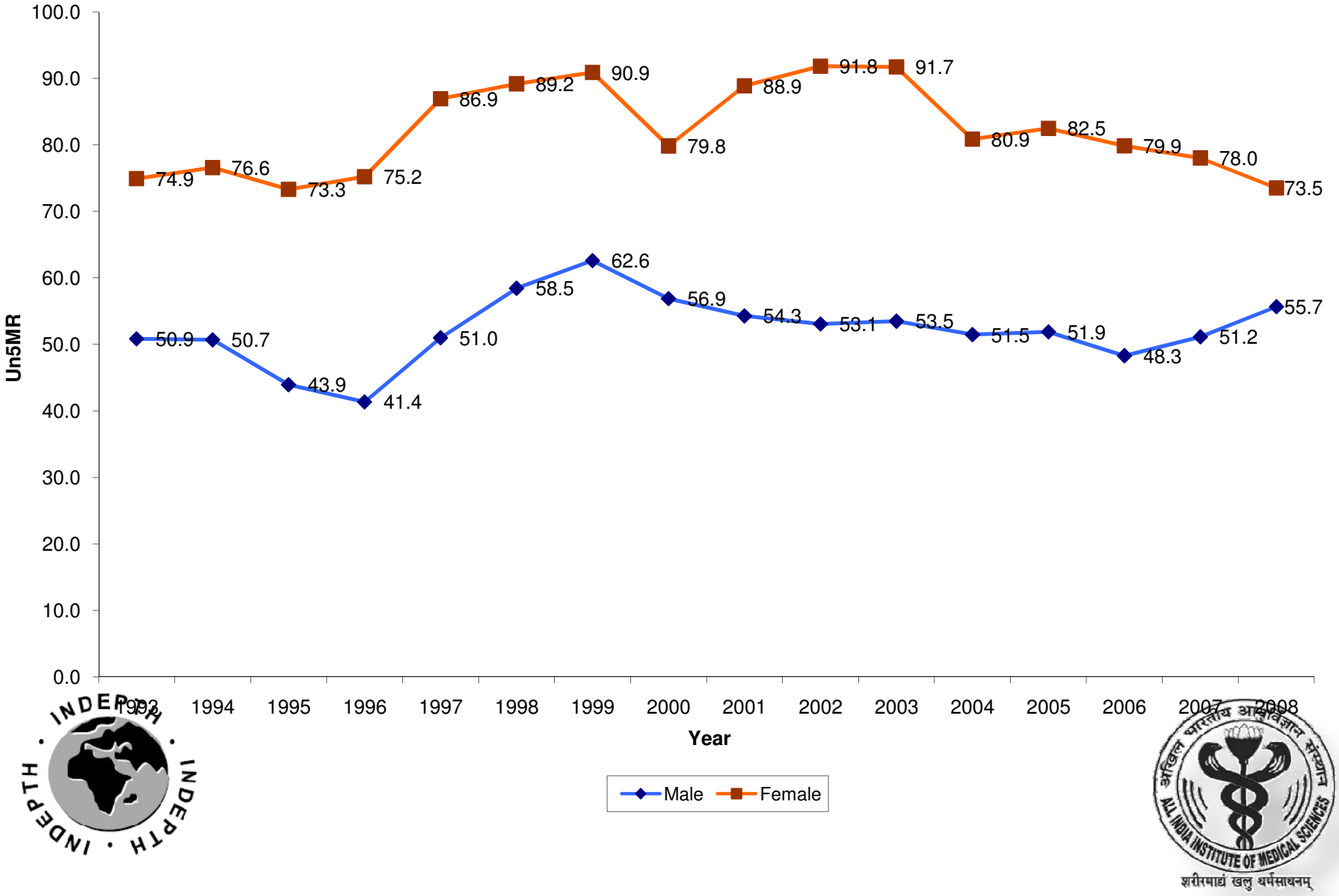


Infant Mortality Rate

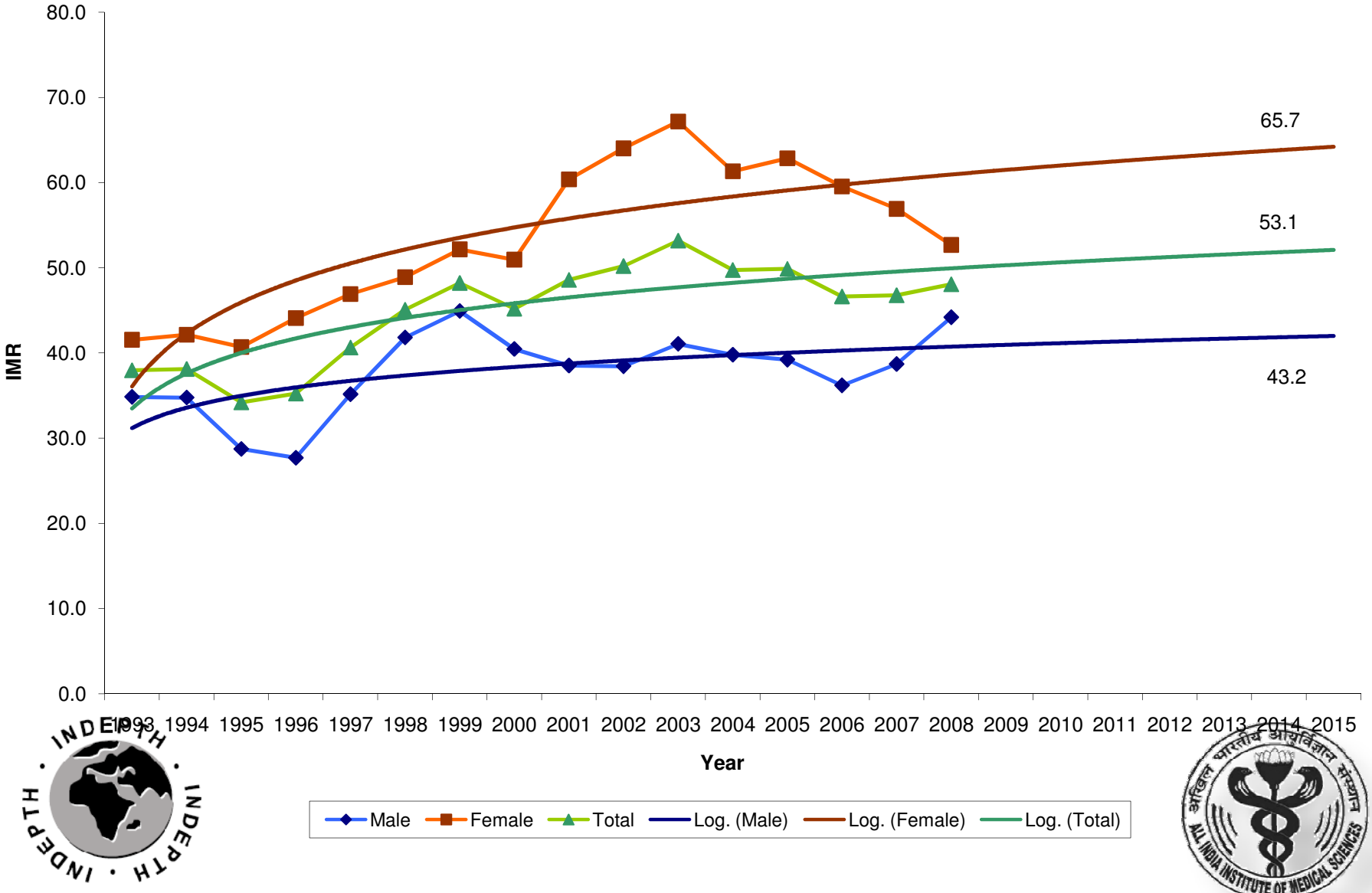



1-4 yrs Death Rate
1-4yrs DR
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
33.3
34.3
32.6
31.2
40.1
40.5
39.0
28.8
28.5
28.0
24.7
19.6
19.5
20.1
20.9
20.9
16.0
15.8
15.2
13.6
15.5
16.6
17.5
16.5
15.8
14.6
12.4
11.6
12.7
12.3
12.7
11.7
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
Year
Male
Female

Under Five Mortality Rate



Infant Mortality Rate 1993-2008



Was it always like this?

Year	NNMR	IMR	1-4 MR
1966-69			NR
M	43.7	91.6	
F	41.4	123.6	
1972-74	NR		
M		42.5	31.0
F		57.5	69.0
1982-84	NR		
M		43.7	32.1
		56.4	62.9

From published sources

What about other parts of India?

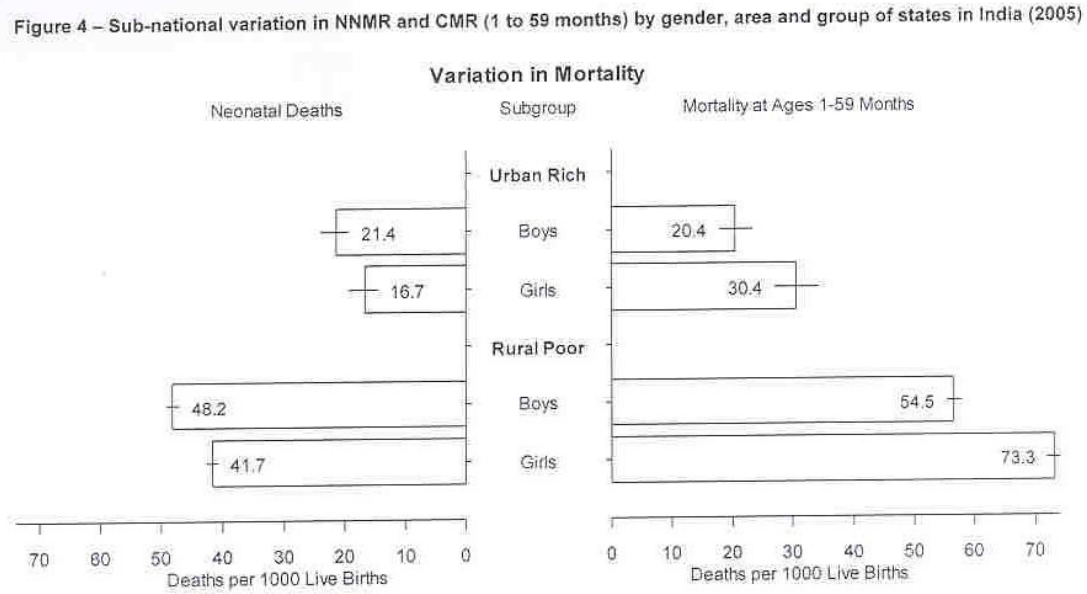
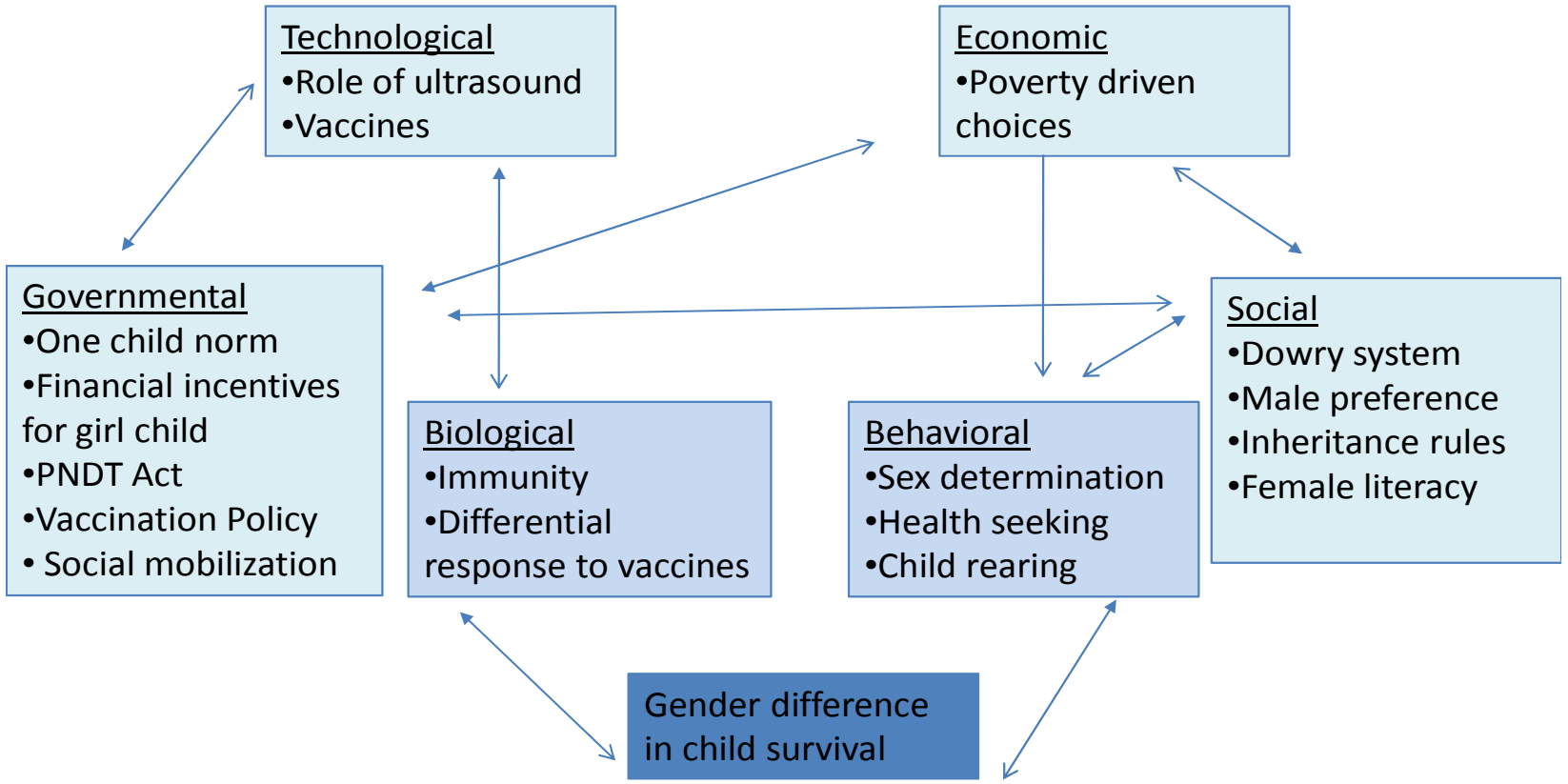


Figure 4 – Sub-national variation in NNMR and CMR (1 to 59 months) by gender, area and group of states in India (2005)

One million death study 2005

Fig 1. - Framework for explaining Gender differences in child survival



Key Messages

- **Girl Children have higher mortality rates at all levels and even at neonatal period in Ballabgarh HDSS population.**
- **With low sex ratio at birth this appears a continuum.**
- **MDG goals unlikely to be reached unless gender differential is addressed.**
- **Major socio-cultural issues involved which need to be understood better and subsequently tackled.**

What needs to be done

- **At Site Level**
  - Address neonatal mortality – being done in collaboration with Unicef India
  - Understand issue better – Part of PhD work with Umea
  - Social Mobilization for Gender discrimination – being done

- **INDEPTH Level**
  - Part of Equity working group
  - Report all data by sex as a rule

- **National / Global Level**
  - Advocacy for gender