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The 'Missing Women' in India

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Twenty-five years ago Nobel Laureate Amartya Sen used the concept of 'missing women' to highlight the gender bias in mortality that results in a huge deficit of women in substantial parts of Asia and Africa. It was an innovative and novel way to use the sex ratios to assess the cumulative effect of gender bias in mortality by estimating the additional number of females of all ages who would be alive if there had been equal treatment of the sexes. Sen classified those additional numbers of women as 'missing' because they had died as a result of discrimination in the allocation of survival-related goods (Sen, 1990, 1992).

As a general rule boys outnumber girls at birth everywhere in the world. For every 100 female children there are 106 male children. Why nature has endowed this pattern in human species is the subject of much debate in biology. But after birth nature seems to favour women. Women in general tend to live longer than men if they receive the same health care and nutritional allocations. Research has also shown women are more resistant to diseases and in general are sturdier than men (Sen 1992; 2003; Waldron 1983; Sheila Ryan Johansson 1991; Alter, et al 2004)

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It is plausible that this biological advantage for higher frequency of male births over females is linked to human evolution (Fisher 1930). But environmental, social and economic factors and the cultural patterns which produce and reproduce them have a deleterious effect on gender equality. While expressions of these inequalities are not uniform, in general they have tended to disadvantage women in getting equal access as men to survival-related goods such as nutrition, economic opportunities, health care, medical attention. This relative neglect of women has led to higher rates of morbidity and mortality resulting in a lower proportion of women in many parts of the world than would have been the case if they had equal care.

Sen estimated that the "missing women" numbered close to 100 million in the regions suffering from excess female mortality. By doing so he demonstrated that the gender bias in mortality was not a minor issue but one of the worst human catastrophes of modern times. For example, the number of 'missing women' in the early-1990s is larger than the combined deaths from all famines in the twentieth century and also exceeds the combined death toll of the two world wars (Sen 2003).

The gender bias in mortality and morbidity caused by endemic poverty shared the feature that they occur largely unnoticed and do not generate the moral outrage and flurry of activity and intervention that the more "sensational' catastrophes such as famines , floods, tsunamis, earthquakes, wars and refugee crises typically create. The concept of 'missing women' has helped to generate public debate, concern and policy discussions that it deserves. This paper is a modest contribution to this debate. It will explore the phenomenon of 'missing women' in India by focusing specifically on the trends in sex ratios in India over the past thirty years. The paper is based on data from the most recent censuses, analysis of demographic trends and recent research on the differential child mortality rates in India.

'Missing Women' in India

Using sex ratio differences Sen has estimated that in the early-2000s India had 37 million 'missing women' which is the second largest number in the world. China with 40 million has the highest number of 'missing women'. More recent estimates put the number in India at 39.4 million. The numbers of 'missing women' in Pakistan and Bangladesh are estimated to be 4.9 million and 2.7 million respectively (Klasen and Wink 2003; see appendix Table A). The good news is that health and welfare public policies in India have resulted in reducing

female disadvantage in mortality in recent years. This is reflected in improving sex ratios between 1991 and 2011. In this period the sex ratio (number of females per 1000 males) increased from 927 to 940. But this improvement has been counterbalanced by a significant decline in the sex ratio of children under the age of 6 years from 945 to 914 in the same period (Table 1). In other words the marginal 1.4 per cent improvement in sex ratio was offset by 3.3 per cent decline in child sex ratio in this period. **See Table 1**

The net result of these two trends is that the improvement in the sex ratio has not produced the gender balance in India. The reason for this is the radical medical advances in the past two decades which have created a new female disadvantage, through sex-specific abortions aimed at the female foetus, which has counterbalanced reduction in female mortality. The availability of modern techniques to determine sex of the foetus has made sex-selective abortions possible and easy, and is widely being used in countries with cultural norm of male preference. As a consequence of this development the sex ratios have become more imbalanced increasing the magnitude of 'missing women'. On the basis of 2011 sex-ratios the approximate number of 'missing women' in India in 2013 was 41 million. These trends are analysed in some detail in the following sections.

Variations in Sex Ratios in India

All-India sex ratio hides the fact that there are large variations among the Indian states (Census of India 2011; Rutherford and Roy 2003). Some states have significantly lower sex ratios compared with the national norm. These variations are shown in Table 2. If we use the sex ratio for India as a benchmark it splits the country into remarkable almost-contiguous halves. The states in the north and the west have sex ratios significantly below the national benchmark figure led by Madhya Pradesh, Rajasthan, Maharashtra, Gujarat, Bihar, Uttar Pradesh, Haryana and Punjab. The states in the other half with sex ratios above the benchmark are concentrated in the south and the east with Kerala, Tamil Nadu, Andhra Pradesh, Odisha and West Bengal leading the pack. This can be visually seen in the Map A. **See Table 2 and Map A[2]**

[2] **Editor's Note: The maps in this paper have been extracted by the author from different sources. The Institute of South Asian Studies (ISAS), Singapore, does not confirm the accuracy and authenticity of these maps**.

How can this remarkable division of India be explained? Is this trend influenced by religion or the rate of economic development? Indian Muslims constitute 14 per cent of India's population, and they have a higher fertility rate than the Hindu majority. Is it plausible that they also have similar patterns in child sex ratio? Using data from the 2006 National Family Health Survey, a recent World Bank study explored the relationship between religion and demographic behaviour including sex ratios of non-Dalit Hindus, Dalits and Muslims. The relevant findings are given in Table 3. The data indicate that the decline in child sex ratios between 1990 and 2011 cannot be attributed to high child mortality among Indian Muslims. Muslims have lower levels of female mortality, as a result of that their child sex ratio is significantly more favourable to girls compared with the upper caste and Dalit Hindus. The differences between non-Dalit Hindus, Dalits and Muslims are statistically significant at .0001 level. In fact these findings suggest that Indian Muslims may have positively contributed to the improvement in the sex ratio between 1990 and 2011, but the decline in the child sex ratio between 1991 and 2011 displayed by the data in Table 1 is almost entirely due the child mortality trends of the Hindu majority. **See Table 3**

An empirically grounded analysis of the relationship between economic development and sex ratios would require relevant time series data which is not available, but there appears to be some correspondence between the rate of economic growth and the sex ratios. The states with sex ratios *below* the national norm appear to have the higher rate of economic growth compared with the state with sex ratios *above* the national norm **(See Map B)**. Are there other cultural values and/or religious traditions which are causing or contributing to this split? Sen had also noticed the northwest and southeast divide in his analysis of child sex ratios and sex bias in natality in late-1990s and early-2000s. He found the division of India (splitting the country into two disparate halves) puzzling and speculated if there were any cultural or deep political significance in the fact that religion-based parties have been more successful in making bigger inroads in the north and the west and not in the east and the south. To test this tentative hypothesis he looked at the1999 general election and found that 169 of the 197 (86 %) parliamentary members of the Hindu right-wing parties were elected from northern and western states.

Was this link coincidental? The results of the Indian general election of 2014 indicate that religion-centred Bharatiya Janata Party (BJP) won 216 of the 282 or 77% of its parliamentary seats from the northern and the western states. This outcome is very close to the 1999

election results noted by Sen. Is it plausible that gender-based discrimination which produces imbalances in sex ratios may also be related to cultural and religious factors which have garnered political support for the BJP? However, this may be purely coincidental since the rise of religion-centred politics and the emergence of female foeticide are both quite new in parts of India where they have suddenly become common and require further empirical support.

Sex Bias in Natality

As indicated in Table 1 child sex ratio in India has been declining since 1991. According to the 2011 Indian census there were 7.1 million fewer baby girls than boys aged 0-6 years. This was a substantial increase over 2001 and 1991 censuses which revealed deficit of 6 million and 4.2 million girls respectively. As noted earlier, the child sex ratio between 1991 and 2011 declined by 3.3 per cent. The most plausible explanation of this trend is medically inspired prenatal sex determination and subsequent selective abortion of female foetuses. A recently published study on the subject in the British medical journal Lancet offers significant evidence on the practice of selective female-foetus abortions in India (Jha, P. et al. 2011).

The study was based on the data gathered from three rounds of the nationally representative National Family Health Surveys carried out between 1990 and 2005. It examined sex ratios by birth order in 0.25 million births to estimate the scale of selective abortions of female foetuses. The evidence from economically advanced countries show that only slightly more boys than girls are born with recorded sex ratios at birth of 950-975 girls per 1000 boys (Coale 1991; Hesketh and Xing 2006). This sex ratio varies little by birth order, or by the sex of previous birth (Rogers and Doughty 2001; Almond and Edlund 2008). In India the sex ratio of the second birth, when the firstborn is a girl, is much lower than if the first born is a boy (Jha et al. 2006). The mean number of children born to an Indian woman fell from 3.8 in 1990 to 2.8 in 2008 with households preferring a son over a daughter. Foetal ultrasound has become more available in recent years mainly to monitor foetal health and also for sex determination purposes with subsequent selective abortion of female foetuses (Barida, Paul, Kapoor and Anand 2004).

In their study Jha, et al. (2011) investigated trends over time in selective abortions of female foetuses in India. They compared the sex ratios of second- order births after firstborn girls

with the second- order sex ratios after firstborn boys. The study also investigated how these trends might have been influenced by wealth and education of the mother. Their findings revealed a statistically significant fall in sex ratio for second order births when first-born was a girl from 906 per 1000 boys in 1990 to 836 in 2005.

The practice of female foetus abortions is much more prevalent among mothers with 10 or more years of schooling than mothers with no education and in wealthier households compared with poorer households. By contrast they found no significant declines in sex ratios for second-order births when the firstborn was a boy, or for the firstborn. After adjusting for excess mortality rates in girls the number of selective abortions of female foetuses rose from 0-2.0 million in 1980 to 1.2-4.1 million in 1990s, and 3.1-6.0 million in 2000s. A one per cent decline in child sex ratio at ages 0-6 years implied 1.2-3.6 million more selective abortions of female foetuses. The study estimated that selective abortions of female foetuses totalled about 4.2-12.1 million from 1980-2010, with a greater rate of increase in the 1990s than in the 2000s. (Jha et al 2011).

Another significant finding of their study is that between 2001 and 2011 the child sex ratios in the north-western districts of India declined significantly as a result of increasing selective female foetus abortions. This trend is illustrated in Map C. This also points to the divide between the north-west and the south-east regions of India. The sex ratio and child sex ratio in the former were historically lower than the latter and are now declining significantly at a greater rate as a result of selective abortion of female foetuses. **See Map C**

Similar findings have also been reported by Retherford and Roy in their analysis of selective abortions in the Indian states. They found the practice of sex-selective abortions prevalent among women from high status groups in the West, North and East but not in South group of states. The study also found that in Punjab, Delhi, Haryana and Maharashtra which had the high rates of sex-selective abortion the son preference was falling which may lead to fall in sex-selective abortion at some stage in the future (Retherford and Roy 2003; Tandon and Sharma 2006; Sekher and Hatti 2005).

Conclusions

The number of 'missing women' in India now stands in the vicinity of 41 million. Notwithstanding the availability of public policies to redress Indian women's health and wellbeing, the magnitude of the problem has increased since it was first identified by Amartya Sen twenty-five years ago. Whatever benefits may have accrued from such policies have been counterbalanced by aggravating child sex ratio due to the increasing practice of selective abortion of female foetuses. This practice is more prevalent among the more educated and affluent women and in the northern and the western but not in the southern and the eastern Indian states.

In terms of sex ratios and preference of male child and associated discrimination that accompanies it India appears to be equally divided into two contiguous halves as displayed in Map A. What may account for this division? It is suggested that some of it may be due to cultural factors which also account for the rise in the support of Hindu religion-parties in the northern and western states. The paper has used the rise and support of BJP to highlight this phenomenon. As in 1999 parliamentary elections, in 2014 parliamentary elections BJP has won 77 per cent of its parliamentary seats from these states. However, as both developments – rise of the Hindu religion-parties and the practice of selective abortions of female foetuses – are relatively new phenomena, a deeper understanding of the cause requires sober reflection and grounded and focused further research.

The scale of the problem of selective female foetus abortions identified by studies requires urgent public policies and interventions to stop the practice of premeditated selective gender-related abortions which are already illegal under the existing Indian laws. The practice exists because of entrenched discrimination against women in private and public domains of Indian society. The following case study from the state of Haryana provides insights into the discrimination women face. It relates to a 25-year-old woman. She and her husband are educated and affluent couple from Rohtak, Haryana. She already had a daughter when she became pregnant for the second time. She had an abortion after an ultrasound scan indicated the foetus was female. She later went on to have a son.

> "When I got pregnant the second time, I told my husband that if I am pregnant with a girl, I will abort it. I got my ultrasound done and they told me my baby was a girl. I paid 500 rupees for another ultrasound to make absolutely sure. When it was confirmed I spent 3000 rupees for an abortion. My

> husband and I fought over my desire to have an abortion. I told him that this society does not value girls and I do not want to give birth to another one. I told him that girls are a burden on the family. They have to face violence in all spheres of life. If the girl commits even a small mistake she and her entire family have to bear the burden. When I gave birth to my first daughter everyone pitied me. They all told me that I could not have a son. The taunts from society and from my in-laws that I would have to face for not having a son forced me to abort. I had no other option. Knowing the amount of harassment my baby would go through after her birth, I think it is much better to die" (Disappearing Daughters 2008).

The practice of sex-selective abortion has risen sharply in the last two decades among more affluent and educated families, making it a 'national crisis'. The use of medical technologies to decide whether to abort a female foetus is illegal in India but the poor monitoring and implementation of the relevant laws have not improved the situation. More stringent monitoring of the practice is required by the authorities to bring about the law's effective enforcement to stop the practice and to bring relief to its innocent victims.

Table 1. India: Sex ratio and Child sex ratio (0-6 years)

Year	Sex ratio	Child sex ratio
1991	927	945
2001	933	927
2011	940	914

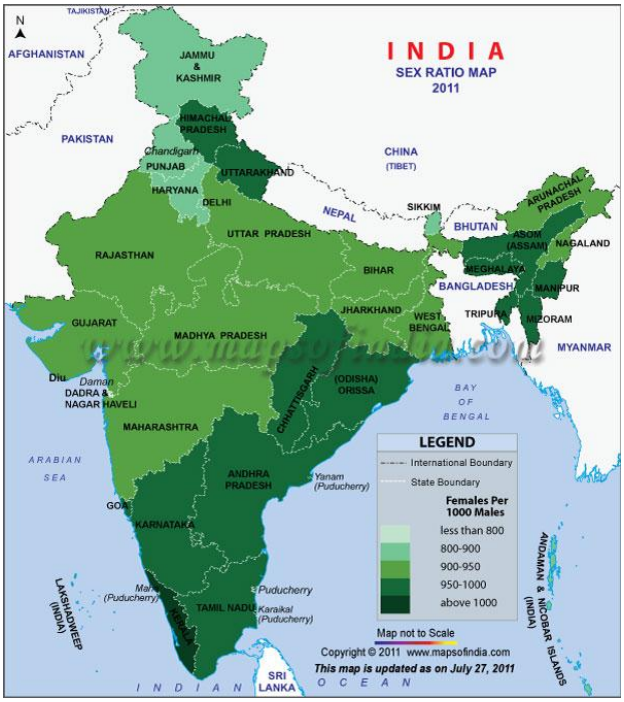
Source: Medindia (www.medindia.net/health_statistics/general/sex-ratio-in-india-2011.asp)

Table 2 Sex Ratios of Indian States and Territories 2011			
State	**Sex Ratio**	**State**	**Sex Ratio**
INDIA national Sex Ratio	**940**		
Kerala	1,084	Nagaland	931
Puducherry (2011)	1,038	Madhya Pradesh	930
Tamil Nadu	995	Rajasthan	926
Andhra Pradesh	992	Maharashtra	925
Chhattisgarh	991	Arunachal Pradesh	920
Manipur	987	Gujarat	918
Meghalaya	986	Bihar	916
Odisha (2011)	978	Uttar Pradesh	908
Mizoram	975	Punjab	893
Himachal Pradesh	974	Sikkim	889
Karnataka	968	Jammu & Kashmir	883
Goa	968	Andaman & Nicobar Islands	878
Uttarakhand (2011)	963	Haryana	877
Tripura	961	Delhi	866
Assam	954	Chandigarh	818
Lakshadweep	946	Dadra & Nagar Haveli	775
Jharkhand	947	Daman & Diu	618
West Bengal	947		

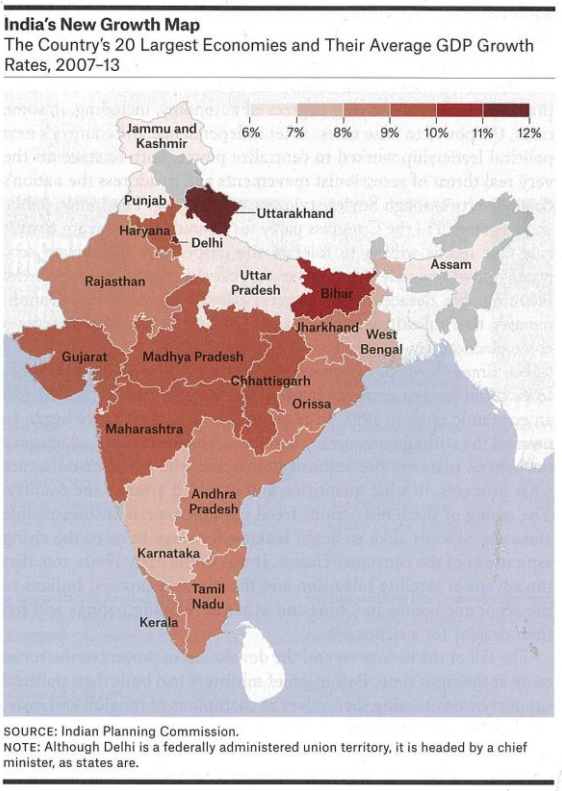
Source : Census of India 2011

Table 3. Sex Ratios: Differences between Non-Dalit Hindus, Muslims and Dalits						
Sex Ratios	Non-Dalit Hindus	Muslims	Diff	Non Dalit Hindus	Dalits	Diff
Sex ratio of children alive	980.8	1053.4	72.50*	981.5	1033.8	52.29***
Sex ratio of children ever-born	972.7	1029.8	57.05*	972.7	1007.6	32.49***

Source: Borooah, Vani. et al 2008 Table 2. ***p<0.001

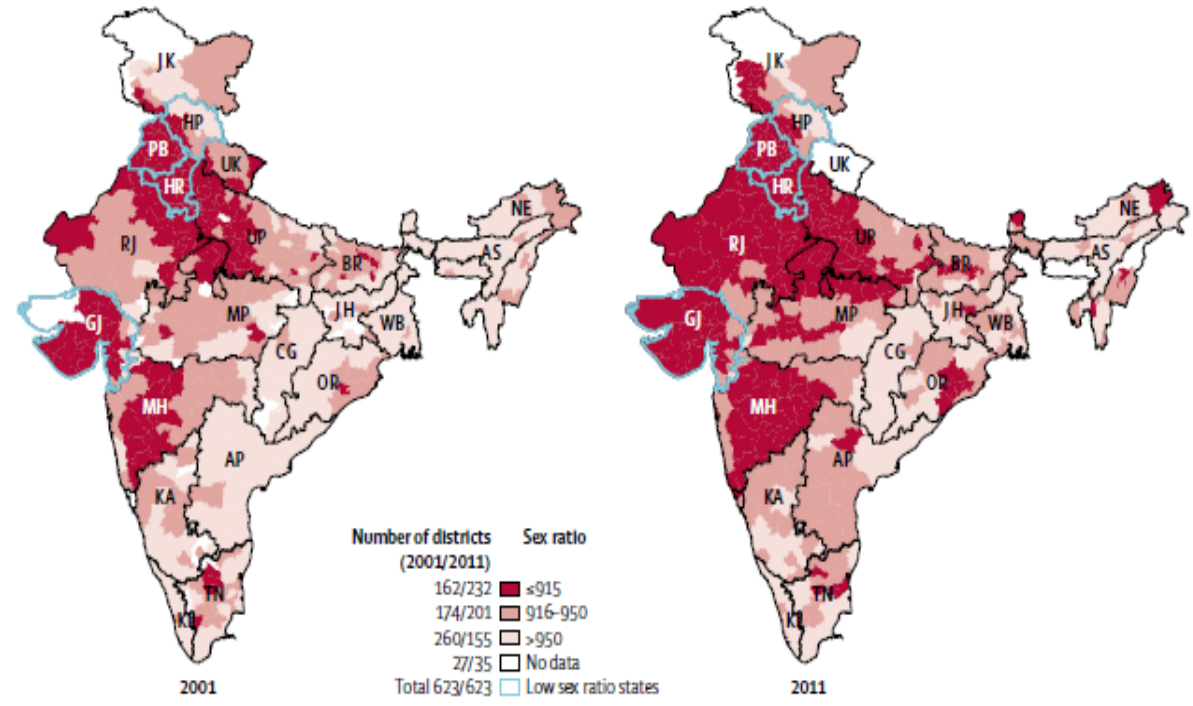


Map A
Source: www.mapsofindia.com/census2011/female-sex-ratio.html



Map B
Source: Scanned image of the map on Page 77 of *Foreign Affairs*, September/October 2013

Map C. Child sex ratio of girls to boys at ages 0-6 years in 2001 and 2011 by districts (Source: Jha et al 2011**)** www.thelancet.com (published online May 2011)



Appendix Table A: Number of Missing Women in South Asia and China

Country	Year	Actual number of women	Actual sex ratio	Expected sex ratio at birth	Expected sex ratio	Expected number of women	Missing women	% missing
China	2000	612.3	1.067	1.050	1.001	653.2	40.9	6.7
India	2001	495.7	1.072	1.039	0.993	534.8	39.4	7.9
Pakistan	1998	62.7	1.081	1.042	1.003	67.6	4.9	7.8
Bangladesh	2001	63.4	1.038	1.040	0.996	66.1	2.7	4.2
Nepal	2001	11.6	0.997	1.037	0.992	11.7	0.1	0.5
Sri Lanka	1991	8.6	1.005	1.052	1.006	8.6	0	0

Source: Adapted from Klasen and Wink (2003) Table 3.

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