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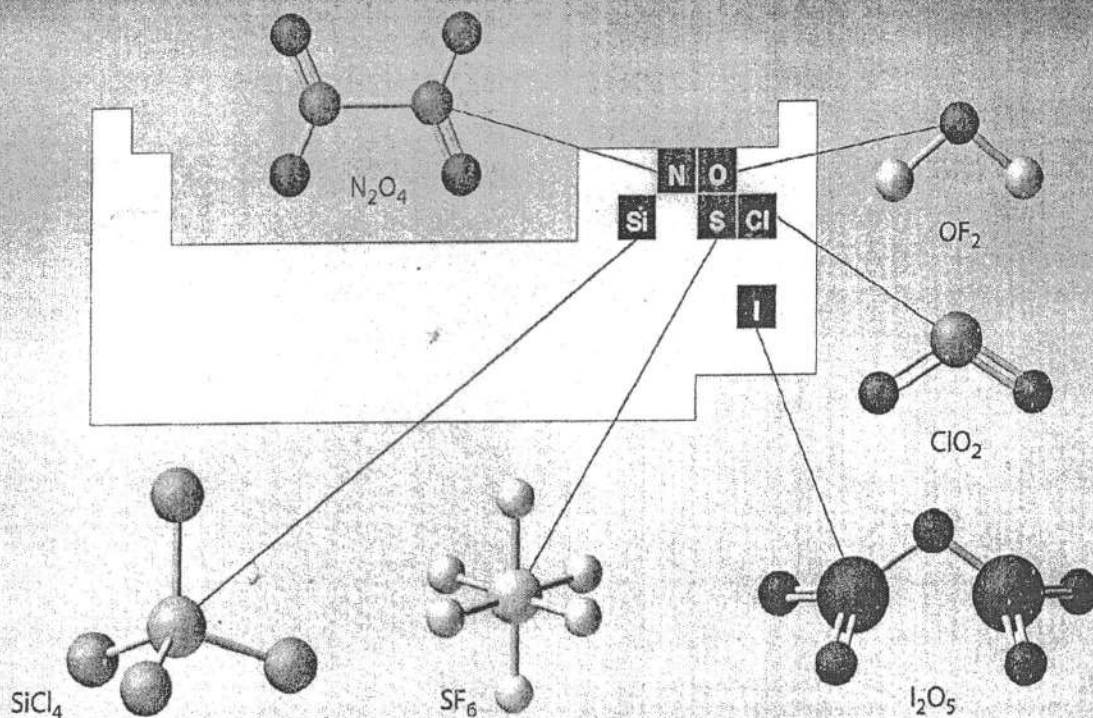
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# THE SEX RATIO SCENARIO IN NASHIK, MAHARASHTRA, INDIA : EVIDENCE OF HUMAN AND TECHNOLOGICAL INTERFERENCES

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## ABSTRACT

Sex ratio at birth has been one of the most studied, yet most poorly understood demographic phenomena. Numerous physiological, ecological and demographic factors seem to influence it although a unique explanation is lacking. Indeed, some countries have exhibited a trend in the sex ratio at birth over the years. Their sex ratio at birth time series can be modeled with the non-random stochastic processes which reflect the interdependency in the subsequent annual observations. This article examines the variations in sex ratio at birth for Nasik region during the period 1901 to 2011. We have compared the sex ratio of rural and urban areas of the region. Further, it was observed that the occurrence of LSCS (Lower Section Caesarean Section) delivery is associated with the decreasing sex ratio. The frequency of LSCS procedure for delivery is highly significant for birth of male child as compare to female child in private hospitals. The comparison is made between private and public hospitals, which shows that proportion of LSCS do not differ significantly gender wise in case of public i.e. government hospitals. The chi square test is carried-out for assessing the independence of attributes namely sex and mode of delivery.

**Key Words :** Sex ratio at birth, LSCS, Time series analysis, Independence of attributes, Chi square test

## INTRODUCTION

Sex ratio is defined as number of females per thousand males. The natural sex ratio in a Asian population typically ranges from 950 to 970 girls per 1,000 boys.<sup>1</sup> India has an alarming gender imbalance and population experts have revealed that female foeticide is being practiced at alarmingly big numbers. The deficit of females was found in prosperous urban and prospering rural areas applying that this phenomenon is being practiced by educated and prosperous families.<sup>2</sup> Child sex ratio is not lowest in poor tribal districts or other backward areas, but in the relatively prosperous Western Maharashtra, India and other economically better off districts. Maharashtra is one of the most progressive states in the country in health, literacy, urbanization and socio-economic indicators

but there also the declining trend of child sex ratio can be seen. A study by the Gokhale Institute of Politics and economics establishes a clear correlation between the number of sonography centres and decline in child sex ratio in Maharashtra, India. The report reveals that 78% of sonography clinics are registered in the rich Western Maharashtra districts of Mumbai, Pune, Nashik, Sangli and Kolhapur.<sup>3</sup> In these districts decline in female sex ratio is observed. In another study at Aurangabad a researcher revealed the fact that prenatal sex determination may change the dynamics of sex ratio.<sup>4</sup> In 1971 abortion was legalized in India, with the help of sonography and other technologies it become very easy to diagnose the sex of the fetus and this technique is widely available. Ill effect of practice of sex-selective abortions became widespread. As the prices for sex-selection diagnostic tests fell

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during the 1980s and 1990s, the practice became even more rampant in the country.<sup>5</sup> Present article is an attempt to review the main dimensions of the recent sex-ratio degradation in one of the leading city in Maharashtra, India. This study analyses the declining sex ratio from its origin, its mechanisms and social characteristics, its implications in the long run. The census data indicates that sex ratio in Maharashtra has declined from 934 in 1991 to 924 females in 2001. In urban and rural area of the district the females are 893 and 945 per thousand males respectively. The just-released data from the Indian 2011 census has refocused the world's attention on the black side of India's demographic change a low and falling ratio of girls to boys. For the last 40 years, each successive census has found the number of young girls decreasing relative to boys.<sup>6</sup> The provisional data in 2011 Census showed that the child sex ratio ( 0 to 6) come down to 914 females per 1000 males against 927 in 2001. This picture is exactly opposite to the developed countries where males are more as compare to females in the population. The inequality in Indian population with respect to number of male and female births showed a preference for male children to female children in the last decade.<sup>7</sup> The low child sex ratio in India arises from the practices of sex-selective abortions and excess female infant mortality, the combination of these two cause results in to imbalance in sex ratio.<sup>8</sup> In economically empowered districts of Punjab and Haryana the prenatal sex determination techniques are widely used which may lead to sex selective abortion and may change the dynamics of sex ratio.<sup>9</sup>

**AIMS AND OBJECTIVES**

1. To study the pattern of sex ratio in Nasik District in a temporal manner
2. To compare the sex ratio between rural and urban areas of the district,
3. To analyse the proportion of sex wise births conducted by LSCS in private and public health facilities in the district

**METHODOLOGY**

The study aims to draw a comparison between the sex ratio in urban and rural areas of the district and further correlate it with the occurrence of LSCS in public and private health facilities. Thus this is a cross-sectional study. The sources of secondary data constitute the census data used primarily for outlining the trend of sex ratio variation in the Nasik district and state of Maharashtra as a whole. To compare the pregnancy outcomes in terms of mode of delivery and sex of the child data from public health facilities and private institution was collected. These institutions were chosen based on simple random sampling. Three private institutions from urban area and five private institutions from rural area were selected. One public institution from rural and urban area respectively was chosen. The data for births from Jan 2009 to 31st Dec 2009 was collected from these institutions and analysed.

**RESULTS AND DISCUSSION**

The sex ratio of the Nashik district over a period of time 1901 to 2011 is shown in tabular form and graphically (Table 1 and Fig .1).

**Table 1 : Sex Ratio of rural and urban areas of Nasik District, Maharashtra, India**

Year	1901	1911	1921	1931	1941	1951	1961	1971	1981	1991	2001	2011
SR Rural	974	984	960	963	953	956	946	954	959	954	945	927
SR Urban	977	985	973	969	965	974	971	882	888	915	893	890

Source : District Socio-Economic survey – Nasik District

**Decadal sex ratio variation**

The Fig. 2 shows a line diagram based on the data from Table 1. The red line shows the trend for sex ratio in urban area while the blue line shows the trend for sex ratio in rural area. It can

be seen that there appears a sharp drop in the sex ratio after year 1961 in the urban graph. Because of emerging concept of family planning and introduction of technological developments, the graph shows sudden decline

in the sex ratio in urban areas. This signifies the advent of factors responsible for sex selection practices. Urbanisation, liberalisation and technology development have thus contributed to the declining sex ratio in the study area. The

percolation and information of sex selection techniques has reached the rural areas as well, which is evident from the declining graph in rural areas. There appears a drop post year 1991 in the rural sex ratio of the district.

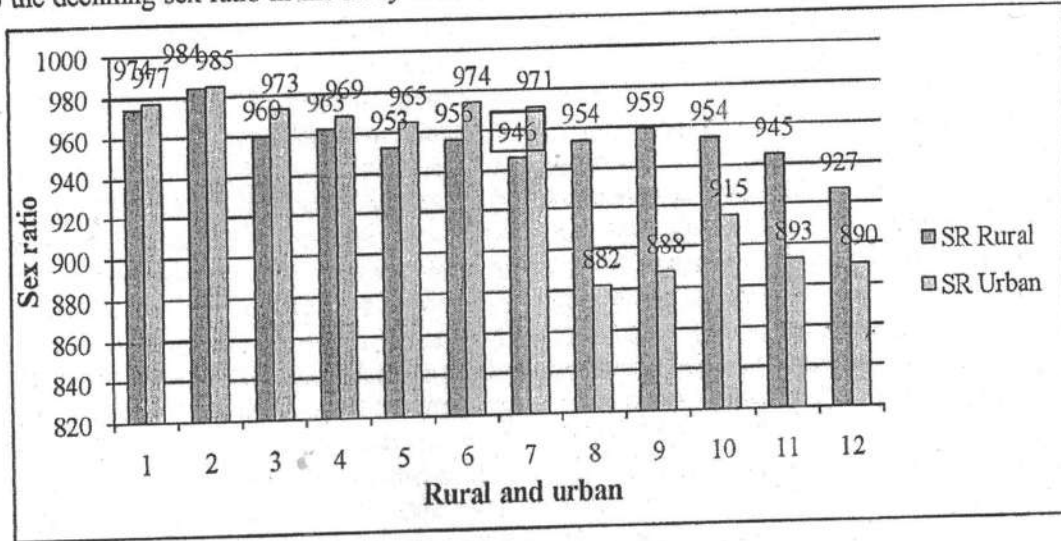


Fig. 1 : Rural and urban sex ratio at birth in Nasik District from 1901 to 2011

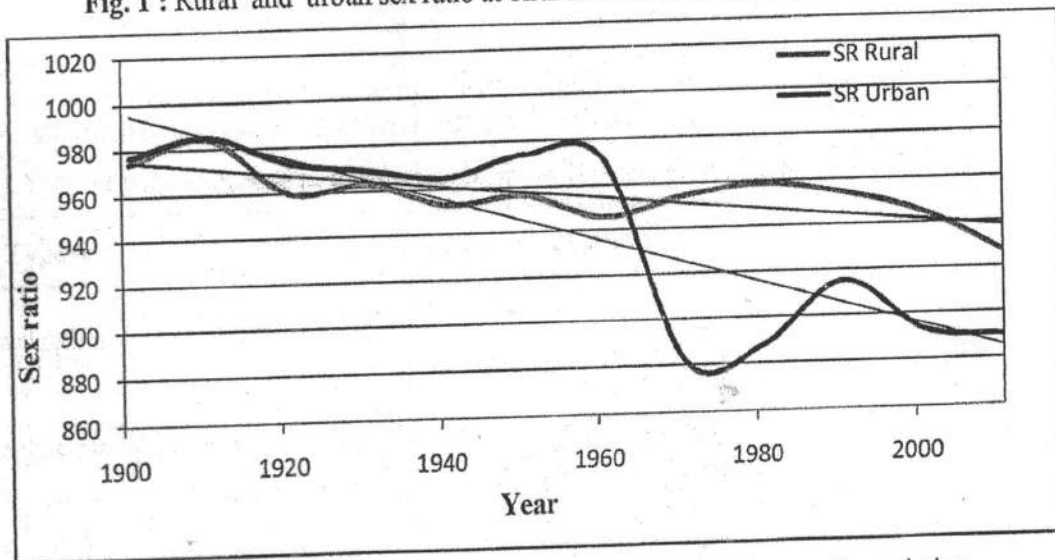


Fig. 2 : Line diagram showing nonlinear decadal sex ratio variation

Fetal sex determination techniques such as amniocentesis, originally intended for the detection of fetal abnormalities, were first introduced in 1975.<sup>8</sup> The rampant misuse of amniocentesis and other techniques, such as chorionic villas sampling and ultrasound, for aborting female foetuses rapidly became a major concern, and it remains so till this day.<sup>9</sup> Ultrasound sex-screening technologies became widely available in Maharashtra since 1990s in rural and urban areas.

Caesarean section is the surgical intervention in case of serious delivery complications. In last three decades caesarean rates have been rapidly increased. The WHO guidelines states that the proportion of caesarean births should range between five and fifteen per cent. The factors associated with caesarean section are age, parity, multiple pregnancy, maternal weight gain and birth weight. Including these factors the caesarean section is justified under certain risk factors with

well as misuse of LSCS technique leading to environmental imbalance and increased medicalisation of society.

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