2011 Census of India:
a population increase of 181 million in the last ten years

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India recently completed its latest population census. Jacques Véron and Aswini K. Nanda explain how this vast and complex operation was organized in a country totalling more than a billion inhabitants. They also examine the initial census findings, published barely one month after field enumeration activities were completed – a remarkable feat. With a population that may increase by a further 500 million over the next half century, India will face enormous challenges in years to come.

According to the first – and still provisional – results of the population census conducted in February, India had 1,210,193,422 inhabitants on 1 March 2011 (Boxes 1 and 2). Despite a slowdown in the annual grouth rate (1.64% on average between 2001 and 2011, compared with 1.97% in the previous decade), the absolute population increase over these two intercensal periods – 182 million between 1991 and 2001, 181 million between 2001 and 2011 – was practically identical. In certain already densely populated states, annual growth rates remain well above the national average. In Uttar Pradesh, for example, the country's most populous state with almost 200 million inhabitants in 2011, the population grew annually by 1.85% on average over the last ten years.
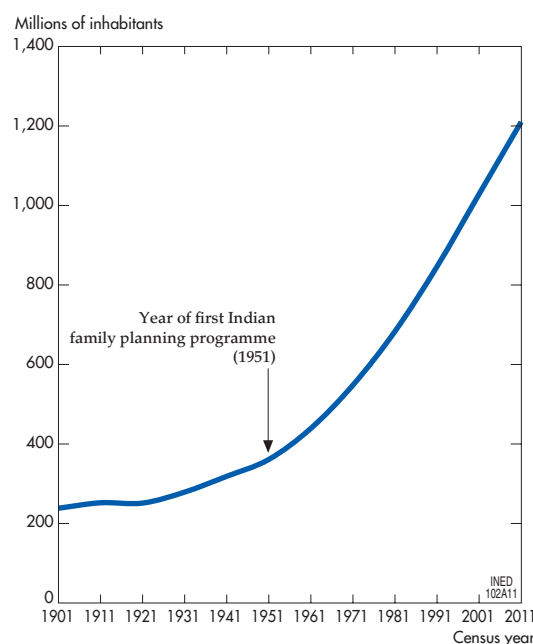
◆ **Continued rapid growth
in certain densely populated states**

In just over a century, from 1901 to 2011, the Indian

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Figure - Population growth in India, 1901-2011

Millions of inhabitants

Year of first Indian family planning programme (1951)

Census year

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population increased five-fold (Figure), and despite the early implementation of a birth control policy, it has continued to increase very quickly in recent years.

At national, state and union territory levels,

The 2011 population census of India and its new features

Wide-ranging awareness campaigns

After testing in 2009, the census questionnaire was amended at a conference of the Directors of Census Operations, then submitted to a technical committee and finally validated by the government. It was administered in 16 languages.

One innovation of the 2011 census was the involvement of NGOs in the training of enumerators, and notably in their sensitization to issues of gender and disability. The initiative called "Census in Schools" was designed to give children a role in ensuring that the data for their own family was recorded correctly. Social networks (Facebook and Twitter) were also used as an awareness-raising tool. A series of lectures and press conferences were organized for the various actors involved at different hierarchical levels, and the census operation received wide media coverage to convince the population of its importance.

The operation began with a houselisting and housing census (April-September 2010) followed by a population enumeration (9-28 February 2011). A post-census survey is in progress to estimate the net omission rate (it was estimated at 2.3% in 2001).

New questions

The 2011 questionnaires contain new additional questions to find out more about the living conditions of populations. Compared with the 2001 census, the housing schedule asks for more detailed information about the type of walls and roof of the dwelling, about the source of drinking water used (treated or untreated), and about latrine facilities. Respondents are also asked if they possess a computer (with or without internet) and if they have a telephone (landline and/or mobile phone).

The household schedule, for its part, has been redesigned so that the documents can be readily scanned (choice of paper, formal layout). It also includes some new questions. To enhance the accuracy of reported information, respondents are asked to give their date of birth as well as their age on last birthday. Separate codes are used for persons who are separated and those who are divorced, and a specific code has been introduced for the "rentier" category among persons with "non-economic activity" status.

Data processing

The first provisional results were obtained very quickly by a simple aggregation procedure. The totals obtained at local level by each enumerator were consolidated in several stages, at successive geographical levels: tehsil,… district, state. The key information collected concerns population numbers, number of children aged 0-6, and literacy rates for each sex.

The final census results will not be available until data from both questionnaires have been processed, data consistency has been checked and information from the housing and household schedules has been cross-matched.

however, growth rates generally declined between 1991-2001 and 2001-2011, the only exceptions being Tamil Nadu, Chhattisgarh (formerly part of Madhya Pradesh) and Puducherry, where they increased between the two periods. But the populations of these regions account for less than 9% of the Indian total. In states that were already densely populated in 2001, such as Bihar, the population continued to grow by more than 2.2% annually in the latest intercensal period, increasing from 80 million in 2001 to more than 100 million in 2011 (at this rate, the population doubles in less than 32 years). In Rajasthan (more than 68 million inhabitants in 2011) the growth rate has dropped by almost 0.6 percentage points, but is still close to 2% per year.

While the demographic transition is completed in many states, notably in the south, it is still ongoing or at its early stages in certain northern states, including certain very densely populated ones. According to the NFHS survey of 2005-2006 (Box 3), fertility exceeded 3 children per woman in Rajasthan, Madhya Pradesh and Jharkhand, and stood at 3.8 in Uttar Pradesh and at 4.0 in Bihar [2]. Infant mortality rates also remain high: according to the 2009 data of the Sample Registration System (SRS) (Box 3), the infant mortality rate is above 60 per 1,000 in Madhya Pradesh and Uttar Pradesh, compared with 28 per 1,000 in Tamil Nadu and 12 per 1,000 in Kerala [3]. The situations are very diverse, however, and there is no clear north-south divide. Andhra Pradesh, for example, a southern state with a relatively low birth rate (18 per 1,000 in 2009), has a high infant mortality rate for India (49 per 1,000), while Bihar, one of the least advanced northern states, has a much higher birth rate (28.5 per 1,000 in 2009), but only slightly higher infant mortality (52 per 1,000).

These results, while only provisional, clearly show that the goal of stabilizing the Indian population, pursued by the Indian government for 60 years now, is still far from being achieved. The family planning programmes deployed since the early 1950s have been held back in the most densely populated regions by poverty and widespread illiteracy. In addition, the effect of demographic inertia should not be under-estimated: even though women fertility has declined, the growing number of women of childbearing age is fuelling population growth.

◆ The challenge of very high population densities

As a direct consequence of ongoing demographic growth, the population density in India is steadily increasing. According to the provisional data, the mean

density is 382 inhabitants per sq.km in 2011, up from 325 ten years earlier. By comparison, population density in China was just 140 inhabitants per sq.km in 2010, according to the census conducted in that year.
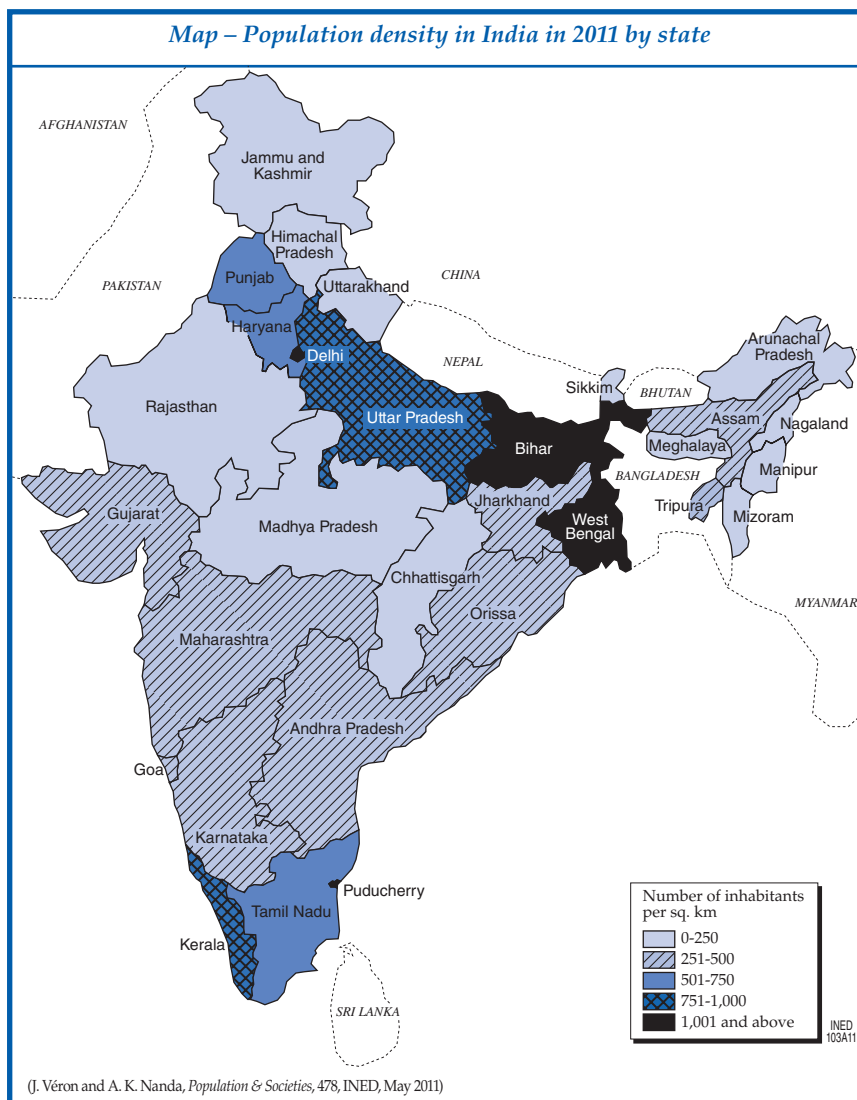
This Indian average conceals enormous disparities (Map), arising from the country's highly contrasting geographical and economic conditions [4]. In Rajasthan, for example, the population density is just 165 inhabitants per sq.km, but almost 60% of its surface area is desert. In the Punjab, with a density of 550 inhabitants per sq.km in 2011, pressure on land is severe, and there are growing national concerns about the high levels of water consumption for intensive agriculture – rice cultivation in particular. In Uttar Pradesh, where almost three-quarters of the population work in agriculture, the density is above 800 inhabitants per sq.km. While the green revolution has lifted a share of the population out of poverty, this is not the case in the southern part of the state, which extends beyond the fertile plain of the Ganges. In Kerala, density is even higher, at above 850 inhabitants per sq.km. The density of West Bengal, which exceeds 1,000 inhabitants per sq.km, is due partly to the vast megacity of Kolkata (Calcutta) with its 15 million city-dwellers. But here too, arable land is in short supply, with just 0.64 hectares per farmer on average (and low yields for rice and other crops). Population density is highest in Bihar, one of India's poorest states, with a largely rural population, high illiteracy rates and very limited infrastructure development.

This steady rise in population densities raises both agricultural and environmental challenges (soil exhaustion, but also greater population vulnerability).

◆ **More intense discrimination against girls**

A major finding of the 2001 census was the scale of discrimination against girls in the north-western states of India, in Haryana and Punjab especially. The provisional data for 2011 show a decrease in the sex ratio at national level for all ages, but an increase for children aged 0-6 (109.4 boys per 100 girls in 2011, versus 107.9 in 2001).

Map – Population density in India in 2011 by state

Number of inhabitants per sq. km
- 0-250
- 251-500
- 501-750
- 751-1,000
- 1,001 and above

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Box 2

A Unique Identification Number for all Indian residents

The 2011 census of India was preceded by the launch of a vast operation to attribute a Unique Identification Number (UID) to all adult residents of the country. Once the process is completed, this centralized identification system will provide the Indian authorities with demographic data (name, age and sex) and biometric information (ten fingerprints and iris) on its entire adult population.

According to the project chairman, half the population will have a UID by 2014.

However, analysis at state level shows that in the two states where discrimination was most intense in 2001, the situation has improved. In Punjab, where the sex ratio exceeded 125 boys per 100 girls in 2001 in the 0-6 age group, it appears to have fallen to 118 in 2011. The government in Punjab has taken active steps to reduce the number of sex-selective abortions (awareness campaigns, broad media coverage of doctors convicted for telling couples the sex of their unborn child) and

these efforts may now be paying off. In Haryana, the sex ratio has also fallen, but less markedly so (from 122 to 120). In both states the sex imbalance remains severe. In Gujarat and in the National Capital Territory of Delhi (larger than the urban agglomeration alone), the situation has changed little, with a sex ratio of around 113 in both years for the former and 115 for the latter. It would appear that in the states previously less affected by daughter discrimination, the situation has worsened in 2011 with respect to 2001. In Maharashtra, for example (the second most populous state with

112 million inhabitants in 2011) and in Rajasthan (69 million), the sex ratio has risen from 110 to 113. However, it is not until the final census results are published that a more in-depth analysis of these trends will be possible.

The provisional results of the 2011 census also show that literacy levels are continuing to improve, with an increase of almost ten percentage points between the two censuses (74% versus 65%). The gender gap has narrowed, but remains wide (almost 17 percentage points). Note that persons aged over 7 years are considered to be "literate" if they can read and write in any language, whether or not they have receiving any formal schooling. The literacy rate for the male and female population ranges from a low of 64% in Bihar to a high of 94% in Kerala.

Population growth remains a key development challenge for the future of India. According to the most recent United Nations projections [5], the population of India could increase by a further 500 million in the next half century, peaking at 1.7 billion inhabitants in 2060 [5].

Box 3

A wide range of demographic data sources in India

Censuses
Following a first asynchronous census (at different dates for the different territories) in 1872, India has held a regular census every ten years since 1881 without interruption. From 1881 to 1931 the census was strictly synchronous, with all operations taking place over a single night. This called for a vast army of census agents. Since 1941, the census has taken place over a three-week period.

The Sample Registration system
The Sample Registration System (SRS) was introduced to make up for the incomplete coverage of the Civil Registration System (SRS). It consists of continuous enumeration of births and deaths in a sample of villages/urban blocks by a resident part time enumerator, and an independent six monthly retrospective survey by a full time supervisor. After matching of the data obtained through these two sources, the unmatched and partially matched events are re-verified in the field. The adjusted figures are then used to produced corrected data series.
The SRS sampling frame is revised every ten years based on the results of latest census.
Civil registration is also progressively improving, with coverage of more than 95% in some states.

National Family Health Surveys
Based on the example of the Demographic and Health Surveys (DHS), three National Family and Health Surveys (NFHS) were conducted in India in 1992-1993 (NFHS-1), in 1998-1999 (NFHS-2) and in 2005-2006 (NFHS-3). These surveys provide detailed data on fertility and contraception, mother and child health, the spread of AIDS, etc., across the whole of India and at the level of the largest states. This type of survey is to be replaced in the near future by a country-wide health survey for all states and union territories permitting data analysis at district level. A District Level Household Survey (DLHS) was also conducted in 2007-2008.

National Sample Surveys
The purpose of the National Sample Surveys (NSS) is to collect economic data, along with certain types of demographic information. The 64th round of this survey, conducted in 2007-2008, provides data on household consumption, employment and migration.

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ABSTRACT

The initial findings of the 2011 census of India, whose content, organization and data processing methods have been updated since the previous census, suggest that population growth has slowed since 2001 (mean annual growth of 1.64% versus 1.97% between 1991 and 2001) and that literacy has increased (from 65% in 2001 to 74% in 2011). But numerous disparities still exist, notably in fertility rates and infant mortality, but also in population densities, which are increasing on the fertile plains along the Ganges and in the megacities of Dehli and Kolkota (Calcutta). Discrimination against girls has decreased in states where it was most pronounced, but has become more severe elsewhere. Although the Indian population is well advanced in the demographic transition, its population will continue to grow over the next fifty years.