

● POLITY

● ECONOMICS

● TECHNOLOGY

● ECOLOGY

PERSONALITIES

M S SWAMINATHAN PASSED AWAY

CONTEXT: M S Swaminathan, the legendary agricultural scientist and a key architect of the country's Green Revolution passed away.

The country was dependent on foodgrains imported from the U.S. then. Dr. Swaminathan worked closely with two Agriculture Ministers, C. Subramaniam (1964-67) and Jagjivan Ram (1967-70 & 1974-77) for the success of the Green Revolution. The Green Revolution paved the way for a quantum jump in productivity and production of wheat and rice through adoption of chemical-biological technology.

TIMELINE:

- 1949: Postgraduation in Cytogenetics, Indian Agricultural Research Institute, New Delhi.
- 1952: Doctor of Philosophy degree from the Cambridge.
- 1953: Post-doctoral research from the University of Wisconsin.
- 1954: Joined the Central Rice Research Institute (CRRI), Cuttack.
- 1955: Joined the Indian Agricultural Research Institute, New Delhi
- 1966 – 1972: Director of the Indian Agricultural Research Institute, New Delhi.
- 1967: Conferred with Padma Shri.
- 1971: Director-General of the Indian Council of Agricultural Research (ICAR).

- 1972: Recipient of Ramon Magsaysay award for community leadership.
- 1972: Recipient of Padma Bhushan.
- 1979: Principal Secretary, Union Ministry of Agriculture and Irrigation.
- 1980: Member (Agriculture, Rural Development, Science and Education), Union Planning Commission.
- 1982- 1988: Headed the International Rice Research Institute (IRRI), Philippines.
- 1987: Recipient of the World Food Prize.
- 1988: Established a not-for-profit trust — MS Swaminathan Research Foundation (MSSRF). The Foundation, which began functioning in Chennai since 1989, aims to accelerate use of modern science and technology for agricultural and rural development to improve lives and livelihoods of communities.
- 1989: Conferred with Padma Vibushan.
- 2004: Chairman of the National Commission on Farmers. Popularly known as the Swaminathan Commission, the panel's main recommendation to the Centre was that minimum support price should be at least 50% more than the weighted average cost of production.
- 2007 – 2013: Nominated member of the Rajya Sabha from.
- 2018: Recipient of the first World Agriculture Prize, instituted by the Indian Council of Food and Agriculture.

INTERNATIONAL RELATIONS

FRENCH ARMY CHIEF IN INDIA

CONTEXT: The India and French Armies looking to deepen cooperation with more exercises and sharing best practices among others.

He was in India to participate in the 13th Indo-Pacific Army Chiefs Conference (IPACC) hosted by India jointly with the U.S. from September 25 to 27, as well as the 47th Indo-Pacific Armies Management Seminar (IPAMS) and 9th Senior Enlisted Leaders Forum (SELF).

The French Army Chief referred to the importance of territory and with it the aspect of "sovereignty", which means "protecting, defending, but also promoting resilience." Besides, General Schill focussed upon strengthening the ability of our armies to increase deterrence to preserve peace and regional stability, and also our ability to cooperate with partners in order to be able to have a multilateral approach to support and solve challenges and issues of this area, including the question of Humanitarian Assistance and Disaster Relief [HADR].



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POLITY AND GOVERNANCE

I&B MINISTRY NOTIFIES CHANGES TO TV NETWORK RULES

CONTEXT: The Information and Broadcasting (I&B) Ministry has issued a notification amending the Cable Television Network Rules, 1994.

Cable Television Network (Amendment) Rules

- Introduced a procedure for the renewal of Multi-System Operator (MSO) registrations. The registrations will be granted or renewed for 10 years. The processing fee of ₹1 lakh applies for renewal of registration also. The application for it will be within a window of seven to two months before the expiry of registration.
- Introduced an enabling provision has been inserted in the Rules for the sharing of infrastructure by the cable operators with the broadband service providers to promote Internet penetration to the last mile.

ECONOMICS AND DEVELOPMENT

CURRENT ACCOUNT DEFICIT WIDENS QOQ TO \$9.2 BN ON TRADE GAP**Shortfall widens**

India's current account deficit widened to \$9.2 bn in Q1, from \$1.3 bn in the January-March period, RBI data show



■ Net services receipts fell q-o-q, due to a drop in exports of computer, travel and business services

■ Remittances moderated to \$27.1 bn in the last quarter, from \$28.6 bn in Q4 FY23

■ CAD was \$17.9 bn in the year-earlier quarter of fiscal 2022-23

CONTEXT: India's current account deficit (CAD) widened to \$9.2 billion (1.1% of GDP) in the April-June quarter, from \$1.3 billion (0.2% of GDP) in the preceding three months, as exports of goods shrank even as imports rose and net receipts from services also declined sequentially.

The CAD was \$17.9 billion in the year-earlier quarter of fiscal 2022-23. The widening of CAD on a quarter-on-quarter basis was primarily on account of a higher trade deficit coupled

Non-residents' net claims on India rose \$12.1 bn as at June: RBI

Net claims of non-residents on India rose by \$12.1 billion during Q1 of FY24 and stood at \$379.7 billion as at end June. This was due to an increase in foreign-owned financial assets in India (\$36.2 billion) compared with Indian residents' overseas financial assets (\$24.1 billion). The increase in reserve assets (\$16.6 billion) was the largest contributor to the rise in Indian residents' foreign assets during April-June, followed by direct investment, loans and trade credit.

Inward portfolio investment (\$15 billion) and foreign direct investment (\$8.9 billion) together accounted for two thirds of the rise in foreign liabilities of Indian residents. The ratio of India's international assets to international liabilities moderated to 70.9 % in June from 71.1 % a quarter ago and 71.5 % a year earlier.

with a lower surplus in net services and decline in private transfer receipts. Net services receipts fell sequentially, primarily due to a decline in exports of computer, travel and business services, though they remained higher on a year-on-year (y-o-y) basis. Private transfer receipts, mainly representing remittances by Indians employed overseas, moderated to \$27.1 billion in the last quarter, from \$28.6 billion in Q4 of FY23.

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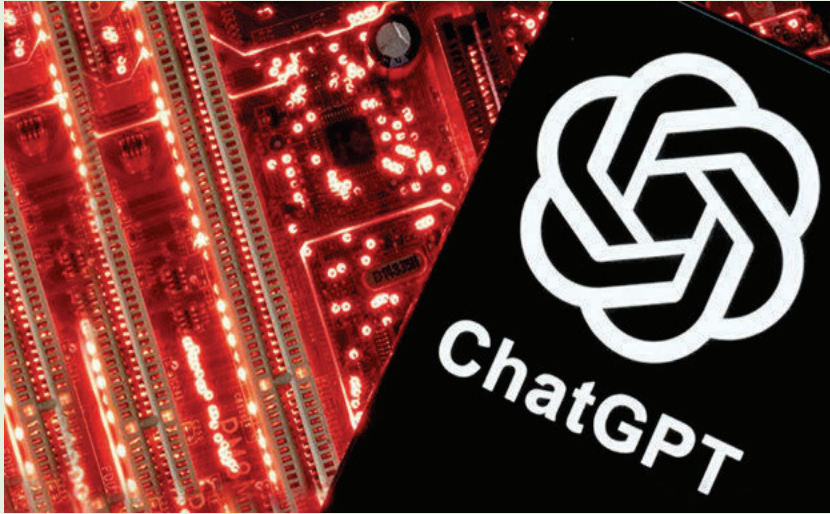
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SCIENCE AND TECHNOLOGY

REGULATION OF GENERATIVE ARTIFICIAL INTELLIGENCE

CONTEXT: Gen AI's rapid rise sparks concerns, prompting deep reflection among policymakers and scientists about regulation.

BACKGROUND: In the United States, the Copyright Office and recent court decisions have clarified that copyright protection is reserved for human creators, leaving AI-generated content largely unprotected. While some argue for copyright rights for AI-involved companies, the current stance is that non-human-authored works lack copyright protection.



EU AI Act compared to US, India

- The EU's approach to regulating emerging tech and AI emphasizes individual protection against dominant companies, as seen in the EU Digital Markets Act.
- Large entities, like Microsoft and Meta, are heavily involved in developing language and generative AI models, posing a challenge the EU AI Act may address.
- The EU AI Act focuses on transparency requirements for generative AI, requiring AI-generated content to be clearly labeled.
- It also suggests providing summaries of training data for copyright purposes.

- The EU adopts a risk-based approach, prohibiting certain practices and implementing transparency requirements, demonstrating proactive global leadership in AI regulation.

EU graded approach vs. US framework

- The U.S. adopts a more relaxed approach to regulating generative AI, possibly underestimating its diverse risks due to lax control and awareness, particularly in education.
- Concerns include the absence of age and content restrictions for students and a lack of awareness about potential risks.
- Generative AI tools in education may negatively impact critical thinking and creativity without appropriate safeguards.
- Generative AI exacerbates online threats, such as deepfakes used for disinformation and phishing, compounding existing challenges in cybersecurity and online safety.
- Initiating discussions on a risk-based approach and developing indigenous strategies for generative AI regulation is suggested.

AI in India: Legal perspective overview

- To address discrimination issues, comprehensive regulatory frameworks, both horizontal and vertical, are needed.
- Clarity on data protection, as seen in the DPDP Act of 2023, is essential to prevent legitimizing data scraping by AI companies.
- The DPDP Act initially aimed to protect individuals but has shifted focus towards generating economic value, weakening individual rights.
- The proposed Digital India Act is expected to address gaps left by the DPDP Act, with hopes for a more balanced approach.
- Striking a balance with leaner regulation is advised to avoid overregulation.

In cases where AI systems gather data globally but withhold details of their training data and models, there's a need for disclosure, especially when social harm is significant. Despite potential trade secret claims, compelling disclosure through a licensing-like regime becomes essential in addressing broader societal consequences, as seen during the pandemic.

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SCIENCE AND TECHNOLOGY

EXPLORING THE COOKIE-FILLED DIGITAL REALM

CONTEXT: India's 2023 Data Protection Act enforces strict consent rules for cookies amid growing online privacy concerns

BACKGROUND: Cookies are vital in the digital world, enhancing online experiences by enabling personalization and user convenience. These small code snippets, stored on devices when users visit websites, streamline access by remembering login information, eliminating the need for repeated login entries. They also store user interactions, such as product browsing and purchases on sites like Amazon.



DEFINING COOKIES: In online browsing, "cookies" refer to small text files stored on a user's device to track website preferences, login status, and enhance the browsing experience.

Cookie varieties: Understand the different types

- Session cookies are temporary and exist only during a browsing session, helping websites remember actions like items in a shopping cart.
- Persistent cookies stay on a device after browsing and remember login info, language preferences, and interactions with ads.
- Secure cookies are sent over encrypted connections, enhancing security, especially for sensitive data.
- Third-party cookies come from domains other than the visited site, commonly used for tracking and advertising, which can be intrusive.

These various types of cookies contribute to a personalized web experience while raising privacy considerations.

Cookies' purposes: Diverse functions in web

- Cookies serve as digital ID cards, enabling user authentication and keeping users logged in during website visits.

- They enhance personalization by remembering preferences like language and website theme choices.
- Cookies act as persistent shopping carts, retaining added items for future visits.
- Website owners benefit from cookies by collecting valuable user interaction data for improvements and content customization.
- Cookies are crucial in targeted advertising, aligning ads with users' interests and browsing history, though they also pose privacy challenges.

Challenges linked to this: Understand them

- Privacy concerns arise as cookies can track online behavior, potentially compromising digital privacy.
- Inadequate cookie security poses security risks, making personal information vulnerable to cybercriminals.
- User consent is now crucial due to privacy regulations, requiring websites to seek approval before using certain cookies.
- India's Digital Personal Data Protection Act 2023 mandates explicit user consent for data collection via cookies, emphasizing transparency.
- The debate over third-party cookies and the data overload they create can slow down browsers, highlighting the complexity of cookie use and regulation.

Cookies are essential for enhancing online experiences but pose privacy and security challenges. As the digital world evolves, so will the use and regulation of cookies. Just like enjoying a delicious cookie, remember that digital cookies make online experiences more personalized, albeit with occasional privacy concerns.

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SCIENCE AND TECHNOLOGY

MONOCLONAL ANTIBODIES IN NIPAH VIRUS OUTBREAK

CONTEXT: India seeks Australian monoclonal antibodies to combat Nipah virus outbreak; Kerala faces recurring health crisis.

BACKGROUND: India sought monoclonal antibody doses from Australia to combat the Nipah virus outbreak in Kerala, where it has killed two and infected at least five. This marks Kerala's fourth Nipah outbreak since 2018. India currently has doses for ten individuals but hasn't administered any yet, as it's effective in early-stage infections.

Monoclonal Antibody: Monoclonal antibodies are synthetic proteins emulating natural immune system antibodies, used to combat diseases and foreign invaders. They work by binding to antigens, typically disease-related molecules, aiding the immune system in eliminating them. Monoclonal antibodies are custom-designed to target specific antigens for therapeutic purposes.

Regulatory status

After the initial trial phase, the Indian Council of Medical Research (ICMR) couldn't advance research on the antibody for Nipah virus treatment. Interestingly, the same antibody has been used to treat Hendra virus infections in Queensland since 2010, highlighting its potential. Both Hendra and Nipah viruses are priority diseases, both bat-borne, emphasizing the need for further research and therapeutics.

Monoclonal antibodies mechanism: How do they function?

- Antigen selection: Identify target antigen, often a specific protein on a pathogen's surface.
- Immunization: Inject antigen into animals to trigger immune response.
- B-cell isolation: Harvest antibody-producing B cells.
- Fusion: Combine B cells with cancerous myeloma cells to create hybridoma cells.
- Selection: Screen hybridomas to find those producing desired monoclonal antibodies.
- Production: Mass-produce selected antibodies for medical or research purposes.

NB: Hybridoma cells are specialized cells used in biotechnology to produce monoclonal antibodies for various medical and research purposes.

DEMOGRAPHICS

INDIA'S DEMOGRAPHIC DILEMMA

CONTEXT: According to the United Nations Population Fund's India Ageing Report 2023, the population above 60 years will double from 10.5 % or 14.9 crore (as on July 1, 2022) to 20.8 % or 34.7 crore by 2050.

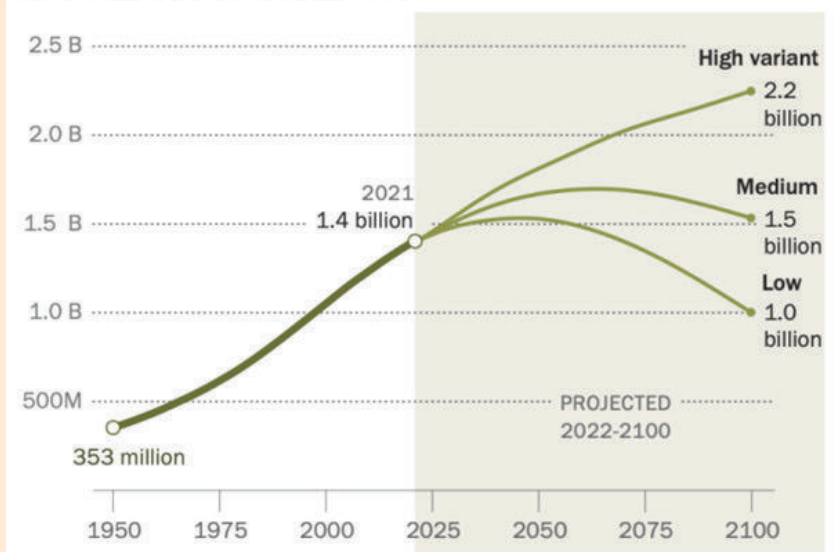
For instance, women elderly citizens outnumber their male counterparts. At 60 years, a person in India may expect to live another 18.3 years, which is higher in the case of women at 19 years compared to men at 17.5 years. If women in India, where labour force participation is low at 24 %, do not have economic and social security, they will become more vulnerable in old age.

Most States in the south reported a higher share of the elderly population than the national average in 2021, a gap that is expected to widen by 2036. While States with higher fertility rates, such as Bihar and Uttar Pradesh, expect to see an increase in the share of the elderly population too by 2036, the level will remain lower than the Indian average. Overall, more than two-fifths of the elderly are in the poorest wealth quintile — ranging from 5% in Punjab to 47% in Chhattisgarh; also, 18.7% of the elderly do not have any income.

A high proportion of the rural population is among the elderly and often economically deprived. To meet the challenges, physical and mental health, basic needs of food and shelter, income security, and social care, a 'whole-of-society' approach is required. Geriatric care must be fine-tuned to their unique health-care needs. There are several schemes targeting the elderly but many are unaware of them or find it too cumbersome to sign up. The National Policy on Older Persons, 1999 and the Maintenance and Welfare of Parents and Senior Citizens Act, 2007

lay down the care of the elderly but to ensure that senior citizens live in dignity, public and private policies must provide a more supportive environment.

Number of people in India, by variant

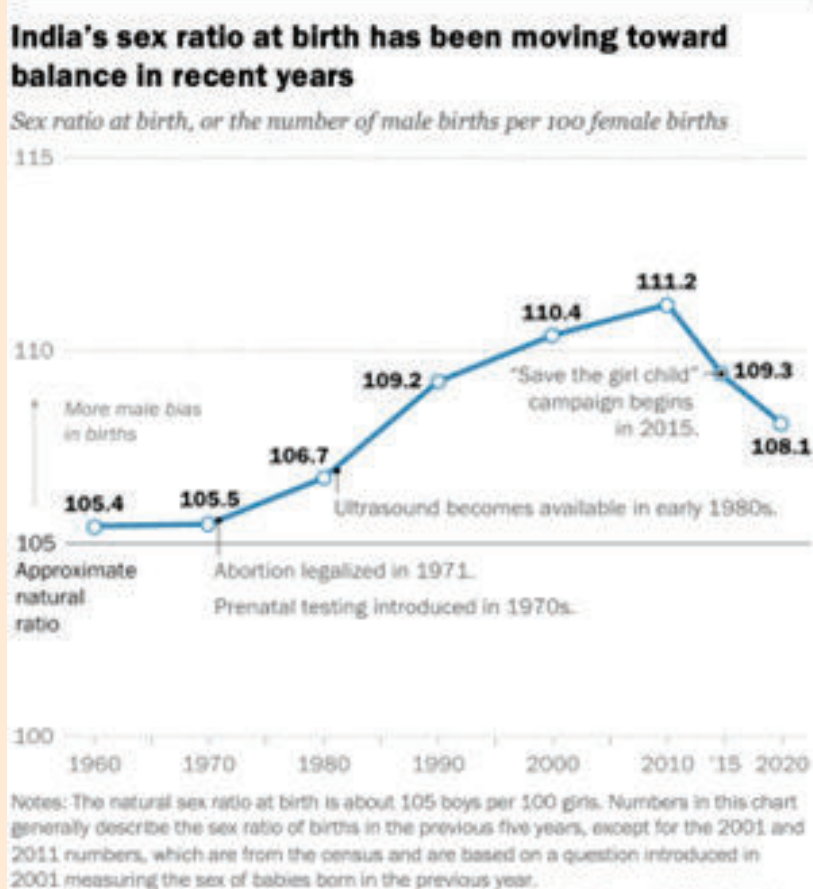
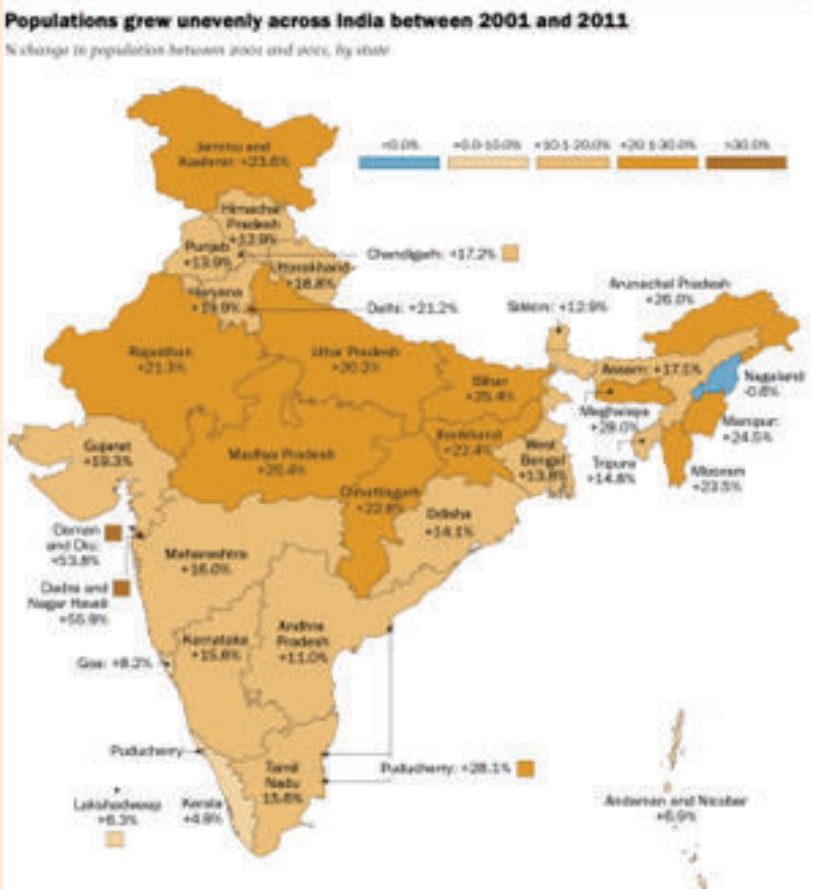
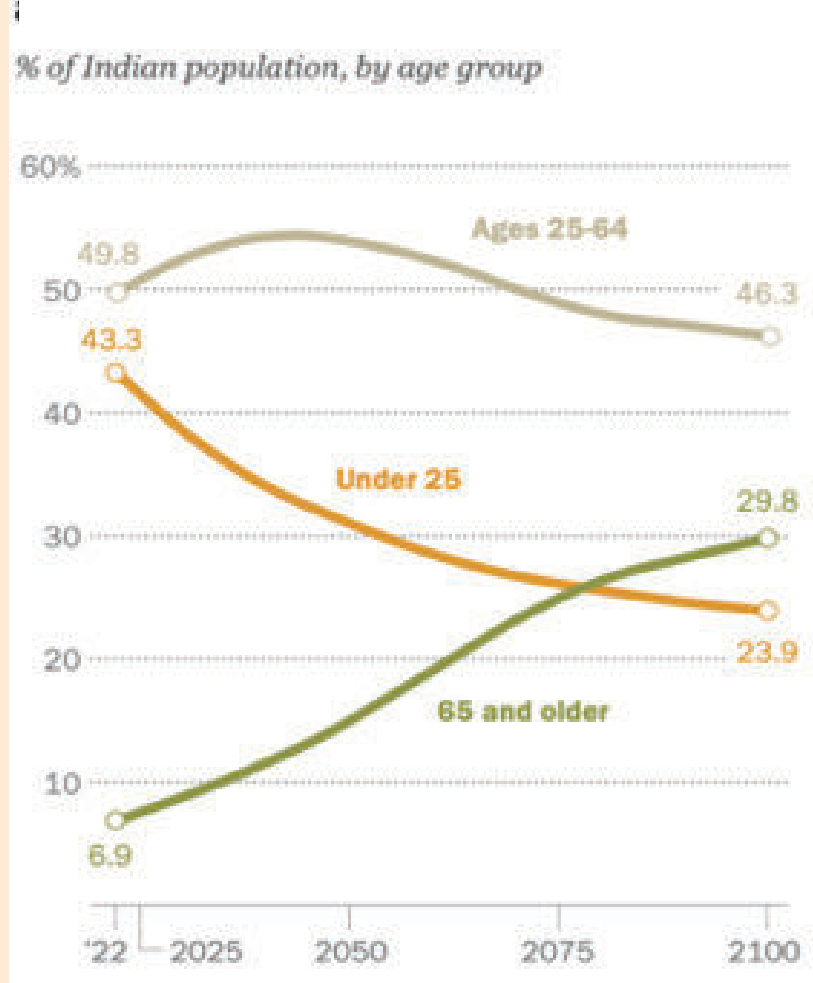
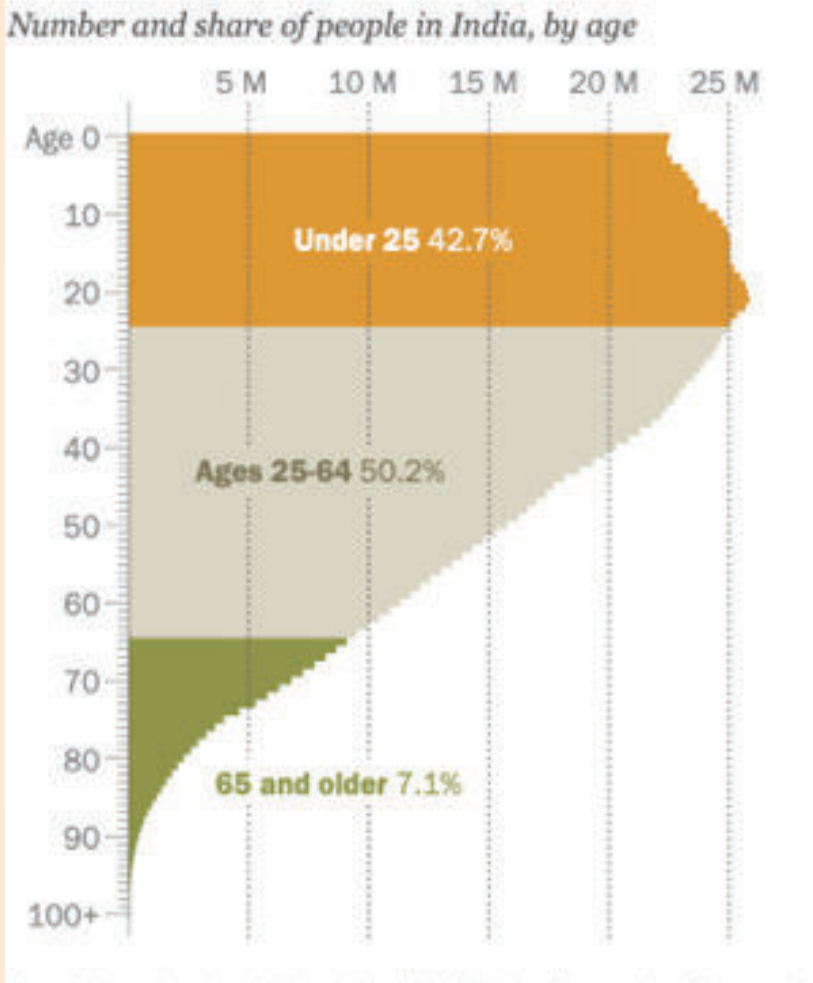


In India, fertility rates have fallen and religious gaps have shrunk

Total fertility rate in India, by religious group



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