Fertility in India
Trends and Prospects

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Population Distribution of India by State, 2001

“EAG” states = 40% of population

2007 TFR >3.0 states = 42% of population

- Maharashtra 9.4%
- Uttar Pradesh 16.2%
- Andhra Pradesh 7.4%
- Tamil Nadu 6.1%
- West Bengal 7.8%
- Rajasthan 5.5%
- Madhya Pradesh 5.9%
- Bihar 8.1%
- Other states 33.7%

2001 Census of India

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Percent of Population Urban, India, 1901 - 2001

Censuses of India
Total Fertility Rate, India and Major States, Rural and Urban, 2007

Sample Registration System

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Total Fertility Rate, India and Major States, Rural and Urban, 2007 - con’t

Sample Registration System
Total Marital Fertility Rate, India, Total, Rural, and Urban, 1998 and 2007

- India 1998, National TFR = 3.2
  - Total: 4.6
  - Rural: 4.8
  - Urban: 4.2

- India 2007, National TFR = 2.7
  - Total: 4.4
  - Rural: 4.5
  - Urban: 3.9

Sample Registration System

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Total Marital Fertility Rate, India and Major States, Rural and Urban, 2007

Sample Registration System
Total Marital Fertility Rate, India and Major States, Rural and Urban, 2007 - con’t

Sample Registration System
## The “Demographic Divide” in Three States of India

<table>
<thead>
<tr>
<th></th>
<th>Uttar Pradesh</th>
<th>Bihar</th>
<th>Kerala</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population 2001 (millions)</td>
<td>166</td>
<td>83</td>
<td>32</td>
</tr>
<tr>
<td>Population 2009</td>
<td>196</td>
<td>97</td>
<td>34</td>
</tr>
<tr>
<td>Literacy Male/Female (%), 2001</td>
<td>69/42</td>
<td>60/33</td>
<td>94/88</td>
</tr>
<tr>
<td>Total fertility rate, 2007</td>
<td>3.9</td>
<td>3.9</td>
<td>1.7</td>
</tr>
<tr>
<td>Modern contraceptive prev. ‘07-08</td>
<td>26.7</td>
<td>28.4</td>
<td>53.1</td>
</tr>
<tr>
<td>Traditional contra. prev. ‘07-08</td>
<td>11.4</td>
<td>3.6</td>
<td>9.0</td>
</tr>
<tr>
<td>Urban population (%), 2001</td>
<td>21</td>
<td>10</td>
<td>26</td>
</tr>
<tr>
<td>Percent of population &lt; age 15, 2001</td>
<td>41</td>
<td>42</td>
<td>26</td>
</tr>
<tr>
<td>Households with electricity (%) ‘07-08</td>
<td>38</td>
<td>10</td>
<td>70</td>
</tr>
<tr>
<td>HH with access to toilet facility, ‘07-08</td>
<td>26</td>
<td>17</td>
<td>97</td>
</tr>
<tr>
<td>HH in permanent-type house, 2001</td>
<td>53</td>
<td>41</td>
<td>68</td>
</tr>
<tr>
<td>HH, with television, 2001</td>
<td>25</td>
<td>9</td>
<td>39</td>
</tr>
<tr>
<td>HH with car, jeep, or van, 2001</td>
<td>2.2</td>
<td>0.9</td>
<td>4.0</td>
</tr>
<tr>
<td>HH with two-wheeler, 2001</td>
<td>10.4</td>
<td>3.6</td>
<td>10.0</td>
</tr>
<tr>
<td>HH in one-room house, 2001</td>
<td>30</td>
<td>43</td>
<td>11</td>
</tr>
<tr>
<td>HH with low standard of living, ‘07-08</td>
<td>64</td>
<td>80</td>
<td>9</td>
</tr>
</tbody>
</table>

2001 Census of India, District Level Health Survey, 2007-2008, and PRB projections
### UTTAR PRADESH: 2001 Census

#### Reported Population, by Age and Sex

<table>
<thead>
<tr>
<th>Age</th>
<th>Male</th>
<th>Female</th>
<th>Female minus Male</th>
<th>Sex Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>All ages</td>
<td>87,563,471</td>
<td>78,631,176</td>
<td>-769,512</td>
<td>1.077</td>
</tr>
<tr>
<td>0-4</td>
<td>10,791,490</td>
<td>10,021,978</td>
<td>-769,512</td>
<td>1.077</td>
</tr>
<tr>
<td>5-9</td>
<td>13,205,699</td>
<td>11,795,908</td>
<td>-1,409,791</td>
<td>1.120</td>
</tr>
<tr>
<td>10-14</td>
<td>12,041,869</td>
<td>10,367,597</td>
<td>-1,674,272</td>
<td>1.161</td>
</tr>
<tr>
<td>15-19</td>
<td>9,018,223</td>
<td>7,098,006</td>
<td>-1,920,217</td>
<td>1.271</td>
</tr>
<tr>
<td>20-24</td>
<td>7,007,116</td>
<td>6,363,864</td>
<td>-643,252</td>
<td>1.101</td>
</tr>
<tr>
<td>25-29</td>
<td>6,009,187</td>
<td>5,835,437</td>
<td>-173,750</td>
<td>1.030</td>
</tr>
<tr>
<td>30-34</td>
<td>5,364,259</td>
<td>5,497,795</td>
<td>133,536</td>
<td>0.976</td>
</tr>
<tr>
<td>35-39</td>
<td>5,100,187</td>
<td>4,751,820</td>
<td>-348,367</td>
<td>1.073</td>
</tr>
<tr>
<td>40-44</td>
<td>4,334,189</td>
<td>3,748,960</td>
<td>-585,229</td>
<td>1.156</td>
</tr>
<tr>
<td>45-49</td>
<td>3,468,288</td>
<td>3,200,143</td>
<td>-268,145</td>
<td>1.084</td>
</tr>
<tr>
<td>50-54</td>
<td>3,027,280</td>
<td>2,330,914</td>
<td>-696,366</td>
<td>1.299</td>
</tr>
<tr>
<td>55-59</td>
<td>1,992,036</td>
<td>2,121,263</td>
<td>129,227</td>
<td>0.939</td>
</tr>
<tr>
<td>60-64</td>
<td>2,274,377</td>
<td>2,036,975</td>
<td>-237,402</td>
<td>1.117</td>
</tr>
<tr>
<td>65-69</td>
<td>1,474,525</td>
<td>1,445,036</td>
<td>-29,489</td>
<td>1.020</td>
</tr>
<tr>
<td>70-74</td>
<td>1,258,532</td>
<td>991,321</td>
<td>-267,211</td>
<td>1.270</td>
</tr>
<tr>
<td>75-79</td>
<td>500,502</td>
<td>446,838</td>
<td>-53,664</td>
<td>1.120</td>
</tr>
</tbody>
</table>
Population Pyramid of Uttar Pradesh, 2001 Census, Smoothed

2001 Census of India, smoothed
Crude Birth Rate, India, 2000 - 2008

Registrar General of India, Sample Registration System
Have States Shown a Tendency for a Slowdown in TFR Decline As an “Ultimate Level” is Reached?
Crude Birth Rate, Bihar and Jharkhand, 1971 - 2008

Sample Registration System
Crude Birth Rate, Madhya Pradesh & Chhattisgarh 1971 - 2008

Births per 1,000 population

Sample Registration System
Total Fertility Rate, Bihar and Uttar Pradesh, 2000 -2007

Children per woman

Bihar
Uttar Pradesh

Registrar General of India, Sample Registration System
Total Fertility Rate, Karnataka and Uttar Pradesh, Three Year Moving Averages, 1971-1973 to 2005-2007

Children per woman

Sample Registration System

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Annual TFR Decrease, Kerala, Based on 3 Year Moving Average

Sample Registration System

TFR = 4.0
TFR = 2.1
Annual TFR Decrease, Tamil Nadu, Based on 3 Year Moving Average

Sample Registration System

TFR = 3.9
TFR = 2.1
TFR = 1.7
Annual TFR Decrease, Karnataka, Based on 3 Year Moving Average 1972-1974 to 2005-2007

Sample Registration System

TFR = 4.2

TFR = 2.1
Annual TFR Decrease, West Bengal, Based on 3 Year Moving Average, 1982-1984 to 2005-2007

Sample Registration System
Annual TFR Decrease, Uttar Pradesh, Based on 3 Year Moving Average, 1972-1974 to 2005-2007
Annual TFR Decrease, Maharashtra, Based on 3 Year Moving Average, 1972-1974 to 2005-2007

TFR = 4.2

TFR = 2.1

Sample Registration System
Contraceptive Use by Currently Married Women, Ages 15-49
Modern and Traditional Methods, India, Four Surveys

- F. Sterilization: 27.3, 34.2, 34.3, 37.3
- Traditional: 3.1, 4.3, 3.1, 4.9
- Pill, IUD: 2.4, 6.8, 5.0, 5.2
- Injectable: 4.3, 5.0, 4.8, 7.3
- Condom: 3.1, 5.4, 7.3, 7.8

Surveys:
- 1992-1993 DHS
- 1998-1999 DHS
- 2002-2003 DLHS
- 2005-2006 DHS
Contraceptive Use by Currently Married Women, Ages 15-49
Modern and Traditional Methods, Bihar, Four Surveys

- 1992-1993 NFHS-1: Modern 21.6, Traditional 1.5
- 1998-1999 NFHS-2: Modern 22.4, Traditional 1.6
- 2005-2006 NFHS-3: Modern 28.9, Traditional 3.0
Contraceptive Use by Currently Married Women, Ages 15-49
Modern and Traditional Methods, Rajasthan, Four Surveys

- Modern
  - 1992-1993 NFHS-1: 30.9
  - 1998-1999 NFHS-2: 38.1
  - 2005-2006 NFHS-3: 44.4
  - 2007-2008 DLHS-3 (Ages 15-44): 54.0

- Traditional
  - 1992-1993 NFHS-1: 0.9
  - 1998-1999 NFHS-2: 1.9
  - 2005-2006 NFHS-3: 2.8
  - 2007-2008 DLHS-3 (Ages 15-44): 2.8
Percent of Currently Married Women, Ages 15-44, Using Female Sterilization and Using Other Methods, Selected States of India, 2007-2008

Andhra Pradesh | Karnataka | Tamil Nadu | Kerala | Madhya Pradesh | Chhattisgarh | Rajasthan | West Bengal | Orissa | Bihar | Jharkhand | Uttar Pradesh
--- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | ---
| 60.3 | 56.7 | 53.8 | 46.1 | 16.2 | 11.1 | 8.4 | 41.3 | 16.5 | 39.0 | 21.4 | 7.4 | 10.3 | 21.9

Other methods
Female sterilization

DLHS-3
Percent of Women, Ages 18-29, Married by Age 18, Major States of India, 2005-2006

INDIA, Bihar, Jharkhand, Rajasthan, Andhra Pradesh, West Bengal, Madhya Pradesh, Uttar Pradesh, Chhattisgarh, Haryana, Karnataka, Maharashtra, Assam, Orissa, Gujarat, Tamil Nadu, Punjab, Kerala, Jammu & Kashmir, Himachal Pradesh

NFHS-3
Median Age of Women at Effective Marriage, All Ages, India and Major States, 2007

Sample Registration System

NFHS-3
Percentage of Women, Ages 20-49, Married Before Age 18, by Age, India 2005-2006

<table>
<thead>
<tr>
<th>Age</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-24</td>
<td>47.4</td>
</tr>
<tr>
<td>25-29</td>
<td>55.4</td>
</tr>
<tr>
<td>30-34</td>
<td>61.2</td>
</tr>
<tr>
<td>35-39</td>
<td>63.4</td>
</tr>
<tr>
<td>40-44</td>
<td>64.6</td>
</tr>
<tr>
<td>45-49</td>
<td>64.2</td>
</tr>
</tbody>
</table>

NFHS - 3

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Median Age at Sterilization of Women, India and Major States, 2005-2006

- INDIA
- Andhra Pradesh
- Karnataka
- West Bengal
- Maharashtra
- Tamil Nadu
- Haryana
- Orissa
- Madhya Pradesh
- Chhattisgarh
- Gujarat
- Kerala
- Rajasthan
- Jharkhand
- Punjab
- Assam
- Bihar
- Jammu & Kashmir
- Uttar Pradesh

NFHS-3
Total Fertility Rate by Level of Education of Women Ages 15-49, 2007

Per cent

<table>
<thead>
<tr>
<th>Education Level</th>
<th>Andhra Pradesh</th>
<th>Uttar Pradesh</th>
</tr>
</thead>
<tbody>
<tr>
<td>No formal education</td>
<td>4.0</td>
<td>1.2</td>
</tr>
<tr>
<td>Below primary</td>
<td>3.6</td>
<td>2.6</td>
</tr>
<tr>
<td>Primary</td>
<td>3.5</td>
<td>2.1</td>
</tr>
<tr>
<td>Middle</td>
<td>2.9</td>
<td>1.8</td>
</tr>
<tr>
<td>Class X</td>
<td>2.5</td>
<td>1.9</td>
</tr>
<tr>
<td>Class XII</td>
<td>2.1</td>
<td>1.3</td>
</tr>
<tr>
<td>Graduate &amp; above</td>
<td>2.3</td>
<td>1.7</td>
</tr>
</tbody>
</table>

Sample Registration System
Percent of Married Women, Ages 15-49, with Two Children Who Want No More, District Level Health Surveys, Selected States of India

We see a bar chart showing the percent of married women, ages 15-49, with two children who want no more in selected states of India, comparing data from 2002-03 and 2007-08. The states listed are West Bengal, Tamil Nadu, Kerala, Orissa, Uttar Pradesh, Madhya Pradesh, Rajasthan, Uttarakhand, Karnataka, Chhattisgarh, Jharkhand, Andhra Pradesh, and Bihar.

The chart indicates that states like Tamil Nadu and Karnataka had higher percentages in 2007-08 compared to 2002-03, while other states showed similar or slightly lower percentages in the later survey.

DLHS-1 and -3

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Currently Married Women, Ages 15-49, Who Want No More Children by Number of Living Children and Number of Living Sons, India, NFHS-1 and NFHS-3

Per cent

<table>
<thead>
<tr>
<th></th>
<th>One living child</th>
<th>Two</th>
<th>Three</th>
<th>Four</th>
</tr>
</thead>
<tbody>
<tr>
<td>No sons</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NFHS-1, 1992-93</td>
<td>14</td>
<td>19</td>
<td>57</td>
<td>41</td>
</tr>
<tr>
<td>NFHS-3, 2005-06</td>
<td>20</td>
<td>61</td>
<td>64</td>
<td>36</td>
</tr>
<tr>
<td>1 son</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NFHS-1, 1992-93</td>
<td>37</td>
<td>66</td>
<td>73</td>
<td>76</td>
</tr>
<tr>
<td>NFHS-3, 2005-06</td>
<td>61</td>
<td>64</td>
<td>62</td>
<td></td>
</tr>
<tr>
<td>2 sons</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NFHS-1, 1992-93</td>
<td>88</td>
<td>72</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NFHS-3, 2005-06</td>
<td>87</td>
<td>89</td>
<td>89</td>
<td></td>
</tr>
</tbody>
</table>

Children per woman

- Punjab
- Haryana
- Rajasthan
- Gujarat
- Himachal Pradesh

Registrar General of India, Sample Registration System

Children per woman

Registrar General of India, Sample Registration System

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Children per woman

Registrar General of India, Sample Registration System

Madhya Pradesh
Kerala
Karnataka
West Bengal
Orissa
Tamil Nadu
Some Observations and Questions

- SRS birth rates are coming down.
- While birth rates are coming down, many large states are still in the middle of their fertility transition.
- Is the glass half empty or half full? Is a family size of two children “in the cards” for the EAG states and other higher-fertility states?
- If sex-selective abortion is successfully prohibited is a two child family likely?
- Cultural and societal values vary greatly across the country.
- What may hold true in one state may not in another.

Village in Uttar Pradesh
Some Observations and Questions - con’t

- The effectiveness of grass-roots programs such as NRHM is highly dependent on the cooperation of state governments.
- Will the very low TFRs observed in the south rise as affluence rises?
- Should subnational projections of large countries with varying TFRs be run and then aggregated to the national level?
- Would the above be worth the effort?
- Opinions in India regarding TFR prospects in UP, etc., see TFRs of 2.1 or lower as a “distant dream.”
- But, to repeat, SRS birth rates are declining.
Thank You