

APPENDIX A

POPULATION RESEARCH CENTRES AND CONSULTING ORGANIZATIONS INVOLVED IN THE NFHS FIELDWORK

State	Population Research Centre (PRC)	Consulting Organization
Andhra Pradesh	PRC, Andhra University, Visakhapatnam	Administrative Staff College of India, Hyderabad
Assam	PRC, Gauhati University, Guwahati	MODE Research Private Limited, Calcutta
Arunachal Pradesh ¹	--	MODE Research Private Limited, Calcutta
Bihar	PRC, Patna University, Patna	Centre for Development Research and Training, Madras
Delhi	PRC, Institute of Economic Growth, Delhi	VIMARSH, The Consultancy Group, New Delhi
Goa	PRC, J.S.S. Institute of Economic Research, Dharwad, Karnataka	Centre for Management of Development Programmes, Hyderabad
Gujarat	PRC, Faculty of Science, M.S. University of Baroda, Vadodara	Indian Institute of Health Management Research, Jaipur
Haryana	PRC, Panjab University, Chandigarh	Centre for Research in Rural and Industrial Development, Chandigarh
Himachal Pradesh	PRC, Himachal Pradesh University, Shimla	Centre for Research in Rural and Industrial Development, Chandigarh
Jammu	PRC, Kashmir University, Srinagar	Centre for Research in Rural and Industrial Development, Chandigarh
Karnataka	PRC, Institute for Social and Economic Change, Bangalore	Centre for Development Research and Training, Madras
Kerala	PRC, Kerala University, Thiruvananthapuram	Centre for Development Research and Training, Madras

State	Population Research Centre (PRC)	Consulting Organization
Madhya Pradesh	PRC, Directorate of Economics and Statistics, Government of Madhya Pradesh, Bhopal	VIMARSH, The Consultancy Group, New Delhi
Maharashtra	PRC, Gokhale Institute of Politics and Economics, Pune	Centre for Management of Development Programmes, Hyderabad
Manipur ¹	--	MODE Research Private Limited, Calcutta
Meghalaya ¹	--	MODE Research Private Limited, Calcutta
Mizoram ¹	--	MODE Research Private Limited, Calcutta
Nagaland ¹	--	MODE Research Private Limited, Calcutta
Orissa	PRC, Utkal University, Bhubaneswar	Centre for Management of Development Programmes, Hyderabad
Punjab	PRC, Centre for Research in Rural and Industrial Development, Chandigarh	Centre for Research in Rural and Industrial Development, Chandigarh
Rajasthan	PRC, Mohanlal Sukhadia University, Udaipur	Indian Institute of Health Management Research, Jaipur
Tamil Nadu	PRC, The Gandhigram Institute of Rural Health and Family Welfare Trust, Ambathurai R.S., Tamil Nadu	Centre for Development Research and Training, Madras
Tripura ¹	--	MODE Research Private Limited, Calcutta
Uttar Pradesh	PRC, Lucknow University, Lucknow	VIMARSH, The Consultancy Group, New Delhi
West Bengal ¹	--	MODE Research Private Limited, Calcutta

¹No PRCs were involved in the fieldwork in these states.

APPENDIX B

SAMPLE DESIGN FOR THE STATES

The basic sample design for the NFHS is described in Chapter 2 and more detailed information about the sample design in each state is contained in the individual state reports for the NFHS. Table B.1 summarizes the basic elements of the sample design in each state, including the target and achieved sample size, the number of area units selected, the variables used for rural stratification, and whether the sample is self-weighting. For India as a whole, the target sample size of 85,500 women was exceeded by 5 percent. A total of 1,405 urban area units and 2,117 rural area units were selected for the sample. The samples are self-weighting in 16 of the 25 states. In rural areas, the samples were stratified according to a variety of variables in each state, including regions, village size, geographic location, distance to the nearest town, female literacy, and the proportion of the population belonging to Scheduled Castes and Scheduled Tribes.

Table B.1 Sample characteristics

STATE	1991 POPULATION	TARGET SAMPLE OF WOMEN	ACHIEVED SAMPLE OF WOMEN	SELF-WEIGHTING	VARIABLES FOR RURAL STRATIFICATION	NUMBER OF AREA UNITS SELECTED
Andhra Pradesh	66,508,008	4,000	4,276	Yes	Regions Distance from nearest town Village size Female literacy (implicit)	Urban: 58 Rural: 100
Arunachal Pradesh	864,558	1,000	882	Yes	Regions Village size Geographic location	Urban: 8 Rural: 56
Assam	22,414,322	3,000	3,006	No	Regions Village size Female literacy (implicit)	Urban: 50 Rural: 68
Bihar ¹	86,374,465	5,550	5,949	No	Regions Proportion of SC/ST Village size Geographic location/female literacy (implicit)	Urban: 51 Rural: 134
Goa	1,169,793	3,000	3,141	Yes	Village size Geographic location Female literacy (implicit)	Urban: 63 Rural: 90
Gujarat	41,309,582	4,000	3,832	Yes	Regions Female literacy Proportion of SC/ST Village size (implicit)	Urban: 68 Rural: 76
Haryana	16,463,648	3,000	2,846	No	Regions Village size Female literacy (implicit)	Urban: 50 Rural: 68

Table B.1 Sample characteristics (Contd.)

STATE	1991 POPULATION	TARGET SAMPLE OF WOMEN	ACHIEVED SAMPLE OF WOMEN	SELF-WEIGHTING	VARIABLES FOR RURAL STRATIFICATION	NUMBER OF AREA UNITS SELECTED
Himachal Pradesh	5,170,877	3,000	2,962	No	Regions Distance from nearest town Village size Female literacy (implicit)	Urban: 46 Rural: 80
Jammu	3,504,290	3,000	2,766	No	Geographic location	Urban: 50 Rural: 68
Karnataka	44,977,201	4,000	4,413	Yes	Regions Village size Distance from nearest town Female literacy (implicit)	Urban: 68 Rural: 84
Kerala	29,098,518	4,000	4,332	Yes	Proportion of non-agricultural workers Geographic location Village size (implicit)	Urban: 58 Rural: 74
Madhya Pradesh ¹	66,181,170	6,400	6,254	No	Regions Village size Distance from nearest town Female literacy (implicit)	Urban: 76 Rural: 168
Maharashtra	78,937,187	4,000	4,106	Yes	Regions Village size Distance from nearest town Proportion of SC/ST Female literacy (implicit)	Urban: 78 Rural: 81
Manipur	1,837,149	1,000	953	Yes	Regions Village size Geographic location	Urban: 20 Rural: 50

Table B.1 Sample characteristics (Contd.)

STATE	1991 POPULATION	TARGET SAMPLE OF WOMEN	ACHIEVED SAMPLE OF WOMEN	SELF-WEIGHTING	VARIABLES FOR RURAL STRATIFICATION	NUMBER OF AREA UNITS SELECTED
Meghalaya	1,774,778	1,000	1,137	Yes	Regions Village size Geographic location	Urban: 12 Rural: 52
Mizoram	689,756	1,000	1,845	Yes	Regions Village size Geographic location	Urban: 30 Rural: 34
Nagaland	1,209,546	1,000	1,149	Yes	Regions Village size Geographic location	Urban: 12 Rural: 52
Orissa	31,659,736	4,000	4,257	No	Regions Proportion of SC/ST Village size Female literacy Geographic location (implicit)	Urban: 50 Rural: 94
Punjab	20,281,969	3,000	2,995	Yes	Regions Village size Proportion of SC/ST (implicit)	Urban: 44 Rural: 66
Rajasthan ¹	44,005,992	4,750	5,211	Yes	Regions Village size Distance from nearest town Proportion of SC/ST Geographic location (implicit)	Urban: 54 Rural: 114
Tamil Nadu	55,858,946	4,000	3,948	Yes	Regions Village size Female literacy (implicit)	Urban: 74 Rural: 100

Table B.1 Sample characteristics (Contd.)

STATE	1991 POPULATION	TARGET SAMPLE OF WOMEN	ACHIEVED SAMPLE OF WOMEN	SELF-WEIGHTING	VARIABLES FOR RURAL STRATIFICATION	NUMBER OF AREA UNITS SELECTED
Tripura	2,757,205	1,000	1,100	Yes	Regions Village size Geographic location	Urban: 10 Rural: 46
Uttar Pradesh ¹	139,112,287	9,800	11,438	No	Regions Backward/Non-backward districts Village size Distance from nearest town Female literacy (implicit)	Urban: 96 Rural: 242
West Bengal ¹	68,077,965	4,000	4,322	No	Regions Female literacy (implicit)	Urban: 54 Rural: 110
Delhi	9,420,644	3,000	3,457	Yes	Geographic location	Urban: 225 Rural: 10

SC = Scheduled Caste

ST = Scheduled Tribe

¹Has grouped backward districts.

APPENDIX C

ESTIMATES OF SAMPLING ERRORS

The estimates from a sample survey are affected by two types of errors: (1) nonsampling errors and (2) sampling errors. Nonsampling errors are the result of errors committed in implementing data collection and data processing, such as failure to locate and interview the correct household, misunderstanding of the questions on the part of either the interviewer or the respondent, and data entry errors. Although numerous efforts were made during the implementation of the NFHS to minimize nonsampling errors, they are impossible to avoid and difficult to evaluate statistically.

Sampling errors, on the other hand, can be evaluated statistically. The sample of women selected in the NFHS is only one of many samples that could have been selected from the same population, using the same design and expected sample size. Each of these samples would yield results that differ somewhat from the results of the actual sample selected. The sampling error is a measure of the variability among all possible samples. Although the degree of variability is not known exactly, it can be estimated from the survey results.

The sampling error is usually measured by the *standard error* for a particular statistic (for example, a mean or percentage), which is the square root of the variance. The standard error can be used to calculate confidence intervals within which the true value for the population can reasonably be assumed to fall. For example, for any given statistic calculated from a sample survey, the value of that statistic will fall within a range, calculated as the value of the statistic plus or minus two times the standard error of that statistic, in 95 percent of all possible samples of identical size and design.

If the sample of women had been selected as a simple random sample, it would have been possible, for many statistics, to use straightforward formulas for calculating sampling errors. However, the NFHS sample is the result of a multi-stage stratified sample design, and it is therefore necessary to use more complex formulas. The computer software used to calculate sampling errors for the NFHS is the ISSA Sampling Error Module (ISSAS). This module uses the linear Taylor series approximation method for variance estimation, known as the CLUSTERS model, for survey estimates of means, proportions and ratios. The JACKKNIFE repeated replication method is used for variance estimation for more complex statistics such as fertility and mortality rates.

The ISSAS package treats any percentage or average as a ratio estimate, $r = y/x$, where y represents the sample value for variable y , and x represents the number of cases in the group or subgroup under consideration. The variance of r is computed using the formula given below, with the standard error being the square root of the variance:

$$\text{var}(r) = \frac{1-f}{x^2} \sum_{h=1}^H \left[\frac{m_h}{m_h-1} \left(\sum_{i=1}^{m_h} z_{hi}^2 - \frac{z_h^2}{m_h} \right) \right]$$

in which

$$z_{hi} = y_{hi} - r x_{hi}$$

$$z_h = y_h - r x_h$$

where

- h represents the stratum which varies from 1 to H,
- m_h is the total number of PSUs selected in the h^{th} stratum,
- y_{hi} is the sum of the values of variable y in PSU i in the h^{th} stratum,
- x_{hi} is the sum of number of cases in PSU i in the h^{th} stratum, and
- f is the overall sampling fraction, which is so small that ISSAS ignores it.

In addition to the standard error, ISSAS computes the design effect (DEFT) for each estimate, which is defined as the ratio of the standard error using the given sample design to the standard error that would result if a simple random sample had been used. A DEFT value of 1.0 indicates that the sample design is as efficient as a simple random sample, while a value greater than 1.0 indicates the increase in the sampling error due to the use of a more complex and less statistically efficient design. ISSAS also computes the relative error and confidence limits for the estimates.

Sampling errors for the NFHS are calculated for selected variables considered to be of primary interest. The results are presented in this appendix for the country as a whole and for urban and rural areas separately. For each variable, the type of statistic (mean, proportion, ratio or rate) and the base population are given in Table C.1. Table C.2 presents the value of the statistic (R), its standard error (SE), the number of unweighted (N) and weighted (WN) cases, the standard error assuming a simple random sample (SER), the design effect (DEFT), the relative standard error (SE/R), and the 95 percent confidence limits ($R \pm 2SE$), for each variable.

Table C.1 List of selected variables for sampling errors, India, 1992-93

VARIABLE	ESTIMATE	BASE POPULATION
Sex ratio	Ratio	Household <i>de facto</i> population
Illiterate	Proportion	Household <i>de facto</i> population age 6 and older
Different sources of drinking water	Proportion	Households
Illiterate	Proportion	Ever-married women 13-49
With secondary education or higher	Proportion	Ever-married women 13-49
Currently married	Proportion	Ever-married women 13-49
Children ever born	Mean	Ever-married women 13-49
Children surviving	Mean	Ever-married women 13-49
Know at least one contraceptive method	Proportion	Currently married women 13-49
Know source for any modern method	Proportion	Currently married women 13-49
Have ever used any method	Proportion	Currently married women 13-49
Currently using any method	Proportion	Currently married women 13-49
Currently using any modern method	Proportion	Currently married women 13-49
Currently using pills	Proportion	Currently married women 13-49
Currently using Copper T/IUD	Proportion	Currently married women 13-49
Currently using injections	Proportion	Currently married women 13-49
Currently using condoms	Proportion	Currently married women 13-49
Currently using female sterilization	Proportion	Currently married women 13-49
Currently using male sterilization	Proportion	Currently married women 13-49
Currently using periodic abstinence	Proportion	Currently married women 13-49
Using public source for modern method	Proportion	Current users of modern methods
Do not want any more children	Proportion	Currently married women 13-49
Want to delay birth at least 2 years	Proportion	Currently married women 13-49
Ideal number of children	Mean	Ever-married women 13-49
Ideal number of sons	Mean	Ever-married women 13-49
Ideal number of daughters	Mean	Ever-married women 13-49
Received no antenatal care	Proportion	Births in the last 4 years
Received tetanus toxoid (2 doses)	Proportion	Births in the last 4 years
Received medical assistance at delivery	Proportion	Births in the last 4 years
Had diarrhoea in the last 24 hours	Proportion	Children under 4 years old
Had diarrhoea in the last 2 weeks	Proportion	Children under 4 years old
Treated with ORS packets	Proportion	Children under 4 with diarrhoea in last 2 weeks
Consulted medical personnel for diarrhoea	Proportion	Children under 4 with diarrhoea in last 2 weeks
Showing vaccination card	Proportion	Children 12-23 months
Received BCG vaccination	Proportion	Children 12-23 months
Received DPT vaccination (3 doses)	Proportion	Children 12-23 months
Received polio vaccination (3 doses)	Proportion	Children 12-23 months
Received measles vaccination	Proportion	Children 12-23 months
Fully vaccinated	Proportion	Children 12-23 months
Fertility rates	Rate	All women, population
Mortality rates	Rate	Births, population

Table C.2 Sampling errors, India, 1992-93

Variable/residence	Value (R)	Standard error (SE)	Number of cases		Standard error assuming SRS (SER)	Design effect (DEFT)	Relative error (SE/R)	Confidence limits	
			Unweighted (N)	Weighted (WN)				R-2SE	R+2SE
SEX RATIO (Household <i>de facto</i> population)									
Urban	932	6.3	79102	67833	3.860	1.641	0.007	919.8	945.1
Rural	966	3.6	171165	185052	2.614	1.366	0.004	959.1	973.4
Total	957	3.1	250267	252885	2.162	1.441	0.003	950.9	963.4
ILLITERATE (Household <i>de facto</i> population, age 6 and over)									
Urban	0.239	0.006	132992	113717	0.002	3.109	0.024	0.228	0.251
Rural	0.511	0.003	284089	305111	0.001	2.249	0.006	0.504	0.517
Total	0.437	0.003	417081	418828	0.001	2.432	0.007	0.431	0.443
PIPED WATER AS SOURCE OF DRINKING WATER (Households)									
Urban	0.695	0.009	28822	24424	0.003	3.454	0.013	0.677	0.714
Rural	0.193	0.006	59740	64138	0.002	3.844	0.032	0.180	0.205
Total	0.331	0.005	88562	88562	0.002	3.393	0.016	0.321	0.342
PUMPED WATER AS SOURCE OF DRINKING WATER (Households)									
Urban	0.181	0.006	28822	24424	0.002	2.817	0.035	0.168	0.194
Rural	0.416	0.006	59740	64138	0.002	3.176	0.015	0.403	0.429
Total	0.351	0.005	88562	88562	0.002	3.113	0.014	0.341	0.361
WELL WATER AS SOURCE OF DRINKING WATER (Households)									
Urban	0.092	0.006	28822	24424	0.002	3.258	0.060	0.081	0.103
Rural	0.321	0.007	59740	64138	0.002	3.489	0.021	0.307	0.334
Total	0.258	0.005	88562	88562	0.001	3.481	0.020	0.248	0.268
SURFACE WATER AS SOURCE OF DRINKING WATER (Households)									
Urban	0.010	0.002	28822	24424	0.001	3.445	0.207	0.006	0.013
Rural	0.051	0.003	59740	64138	0.001	3.644	0.065	0.044	0.057
Total	0.039	0.002	88562	88562	0.001	3.730	0.062	0.034	0.044
OTHER SOURCE OF DRINKING WATER (Households)									
Urban	0.022	0.003	28822	24424	0.001	3.446	0.136	0.016	0.028
Rural	0.020	0.001	59740	64138	0.001	2.047	0.059	0.018	0.022
Total	0.020	0.001	88562	88562	0.000	2.476	0.058	0.018	0.023
ILLITERATE (Ever-married women age 13-49)									
Urban	0.368	0.009	27534	23455	0.003	3.028	0.024	0.350	0.386
Rural	0.724	0.004	62243	66322	0.002	2.043	0.005	0.717	0.731
Total	0.631	0.004	89777	89777	0.002	2.324	0.006	0.624	0.639
WITH SECONDARY EDUCATION OR MORE (Ever-married women age 13-49)									
Urban	0.284	0.009	27534	23455	0.003	3.200	0.031	0.267	0.302
Rural	0.052	0.002	62243	66322	0.001	1.876	0.032	0.049	0.056
Total	0.113	0.003	89777	89777	0.001	2.533	0.024	0.108	0.118
CURRENTLY MARRIED (Ever-married women age 13-49)									
Urban	0.941	0.002	27534	23455	0.001	1.438	0.002	0.937	0.945
Rural	0.944	0.001	62243	66322	0.001	1.334	0.001	0.941	0.946
Total	0.943	0.001	89777	89777	0.001	1.365	0.001	0.941	0.945
MEAN NUMBER OF CHILDREN EVER BORN (Ever-married women age 13-49)									
Urban	2.842	0.023	27534	23455	0.012	1.855	0.008	2.796	2.888
Rural	3.174	0.014	62243	66322	0.009	1.473	0.004	3.147	3.202
Total	3.088	0.012	89777	89777	0.008	1.566	0.004	3.064	3.111

Table C.2 Sampling errors, India, 1992-93 (Contd.)

Variable/residence	Value (R)	Standard error (SE)	Number of cases		Standard error assuming SRS (SER)	Design effect (DEFT)	Relative error (SE/R)	Confidence limits	
			Unweighted (N)	Weighted (WN)				R-2SE	R+2SE
MEAN NUMBER OF CHILDREN SURVIVING (Ever-married women age 13-49)									
Urban	2.546	0.019	27534	23455	0.011	1.730	0.007	2.509	2.583
Rural	2.651	0.011	62243	66322	0.008	1.378	0.004	2.630	2.672
Total	2.624	0.009	89777	89777	0.006	1.464	0.004	2.605	2.642
KNOW AT LEAST ONE CONTRACEPTIVE METHOD (Currently married women age 13-49)									
Urban	0.987	0.001	25904	22077	0.001	1.309	0.001	0.985	0.989
Rural	0.947	0.002	58654	62601	0.001	2.071	0.002	0.943	0.951
Total	0.958	0.001	84558	84678	0.001	2.073	0.001	0.955	0.960
KNOW SOURCE FOR ANY MODERN METHOD (Currently married women age 13-49)									
Urban	0.955	0.002	25904	22077	0.001	1.667	0.002	0.950	0.959
Rural	0.865	0.003	58654	62601	0.001	2.431	0.004	0.858	0.872
Total	0.888	0.003	84558	84678	0.001	2.413	0.003	0.883	0.894
HAVE EVER USED ANY METHOD (Currently married women age 13-49)									
Urban	0.594	0.005	25904	22077	0.003	1.763	0.009	0.583	0.605
Rural	0.425	0.004	58654	62601	0.002	1.898	0.009	0.418	0.433
Total	0.469	0.003	84558	84678	0.002	1.913	0.007	0.463	0.476
CURRENTLY USING ANY METHOD (Currently married women age 13-49)									
Urban	0.510	0.005	25904	22077	0.003	1.676	0.010	0.500	0.521
Rural	0.369	0.004	58654	62601	0.002	1.849	0.010	0.362	0.376
Total	0.406	0.003	84558	84678	0.002	1.837	0.008	0.400	0.412
CURRENTLY USING ANY MODERN METHOD (Currently married women age 13-49)									
Urban	0.453	0.005	25904	22077	0.003	1.514	0.010	0.443	0.462
Rural	0.331	0.004	58654	62601	0.002	1.840	0.011	0.324	0.339
Total	0.363	0.003	84558	84678	0.002	1.786	0.008	0.357	0.369
CURRENTLY USING PILLS (Currently married women age 13-49)									
Urban	0.019	0.001	25904	22077	0.001	1.451	0.064	0.017	0.022
Rural	0.009	0.000	58654	62601	0.000	1.247	0.053	0.008	0.010
Total	0.012	0.000	84558	84678	0.000	1.312	0.041	0.011	0.013
CURRENTLY USING COPPER T/IUD (Currently married women age 13-49)									
Urban	0.039	0.002	25904	22077	0.001	1.418	0.044	0.036	0.043
Rural	0.012	0.001	58654	62601	0.000	1.201	0.046	0.011	0.013
Total	0.019	0.001	84558	84678	0.000	1.293	0.032	0.018	0.020
CURRENTLY USING CONDOM (Currently married women age 13-49)									
Urban	0.058	0.002	25904	22077	0.001	1.421	0.036	0.054	0.062
Rural	0.012	0.001	58654	62601	0.000	1.269	0.047	0.011	0.014
Total	0.024	0.001	84558	84678	0.001	1.325	0.029	0.023	0.026
CURRENTLY USING FEMALE STERILIZATION (Currently married women age 13-49)									
Urban	0.304	0.004	25904	22077	0.003	1.534	0.014	0.295	0.312
Rural	0.263	0.003	58654	62601	0.002	1.820	0.013	0.256	0.269
Total	0.273	0.003	84558	84678	0.002	1.766	0.010	0.268	0.279
CURRENTLY USING MALE STERILIZATION (Currently married women age 13-49)									
Urban	0.032	0.001	25904	22077	0.001	1.315	0.045	0.029	0.035
Rural	0.035	0.001	58654	62601	0.001	1.912	0.041	0.032	0.038
Total	0.034	0.001	84558	84678	0.001	1.817	0.033	0.032	0.037

Table C.2 Sampling errors, India, 1992-93 (Contd.)

Variable/residence	Value (R)	Standard error (SE)	Number of cases		Standard error assuming SRS (SER)	Design effect (DEFT)	Relative error (SE/R)	Confidence limits	
			Unweighted (N)	Weighted (WN)				R-2SE	R+2SE
CURRENTLY USING PERIODIC ABSTINENCE (Currently married women age 13-49)									
Urban	0.035	0.002	25904	22077	0.001	1.906	0.062	0.030	0.039
Rural	0.023	0.001	58654	62601	0.001	1.352	0.036	0.022	0.025
Total	0.026	0.001	84558	84678	0.001	1.534	0.032	0.025	0.028
USING PUBLIC SOURCE FOR MODERN METHOD (Current users of modern methods)									
Urban	0.624	0.008	11999	9992	0.004	1.880	0.013	0.608	0.641
Rural	0.870	0.004	19796	20750	0.002	1.715	0.005	0.861	0.878
Total	0.790	0.004	31795	30741	0.002	1.798	0.005	0.782	0.798
DO NOT WANT ANY MORE CHILDREN (Currently married women age 13-49)									
Urban	0.308	0.005	25904	22077	0.003	1.592	0.015	0.298	0.317
Rural	0.242	0.003	58654	62601	0.002	1.514	0.011	0.236	0.247
Total	0.259	0.002	84558	84678	0.002	1.541	0.009	0.254	0.264
WANT TO DELAY BIRTH AT LEAST TWO YEARS (Currently married women age 13-49)									
Urban	0.160	0.003	25904	22077	0.002	1.304	0.019	0.154	0.166
Rural	0.209	0.002	58654	62601	0.002	1.383	0.011	0.204	0.214
Total	0.196	0.002	84558	84678	0.001	1.384	0.010	0.193	0.200
IDEAL NUMBER OF CHILDREN (Ever-married women age 13-49)									
Urban	2.516	0.015	25779	21804	0.006	2.412	0.006	2.486	2.546
Rural	2.991	0.010	55878	58909	0.005	1.938	0.003	2.972	3.010
Total	2.862	0.008	81657	80713	0.004	2.045	0.003	2.846	2.879
IDEAL NUMBER OF SONS (Ever-married women age 13-49)									
Urban	1.231	0.012	25720	21738	0.005	2.245	0.010	1.207	1.255
Rural	1.682	0.007	55744	58748	0.004	1.879	0.004	1.667	1.696
Total	1.560	0.006	81464	80486	0.003	1.978	0.004	1.547	1.573
IDEAL NUMBER OF DAUGHTERS (Ever-married women age 13-49)									
Urban	0.912	0.008	25719	21737	0.004	1.921	0.008	0.897	0.927
Rural	1.105	0.005	55742	58745	0.003	1.763	0.004	1.096	1.115
Total	1.053	0.004	81461	80482	0.002	1.803	0.004	1.045	1.061
RECEIVED NO ANTENATAL CARE (Births in last 4 years)									
Urban	0.178	0.007	13032	11242	0.004	1.708	0.038	0.164	0.191
Rural	0.424	0.006	35336	38128	0.003	1.989	0.014	0.412	0.436
Total	0.368	0.005	48368	49369	0.003	1.989	0.014	0.358	0.378
RECEIVED TETANUS TOXOID (2 DOSES) (Births in last 4 years)									
Urban	0.744	0.008	13032	11242	0.004	1.740	0.010	0.728	0.759
Rural	0.477	0.006	35336	38128	0.003	1.931	0.012	0.465	0.489
Total	0.538	0.005	48368	49369	0.003	1.923	0.009	0.528	0.548
RECEIVED MEDICAL ASSISTANCE AT DELIVERY (Births in last 4 years)									
Urban	0.653	0.009	13032	11242	0.005	1.761	0.013	0.636	0.671
Rural	0.250	0.004	35336	38128	0.003	1.686	0.018	0.241	0.259
Total	0.342	0.004	48368	49369	0.002	1.717	0.012	0.333	0.350
HAD DIARRHOEA IN THE LAST 24 HOURS (Children under 4 years old)									
Urban	0.040	0.002	12311	10611	0.002	1.335	0.059	0.036	0.045
Rural	0.050	0.002	32399	34752	0.001	1.296	0.032	0.047	0.054
Total	0.048	0.001	44710	45363	0.001	1.316	0.028	0.045	0.051

Table C.2 Sampling errors, India, 1992-93 (Contd.)

Variable/residence	Value (R)	Standard error (SE)	Number of cases		Standard error assuming SRS (SER)	Design effect (DEFT)	Relative error (SE/R)	Confidence limits	
			Unweighted (N)	Weighted (WN)				R-2SE	R+2SE
HAD DIARRHOEA IN THE LAST 2 WEEKS (Children under 4 years old)									
Urban	0.088	0.003	12311	10611	0.003	1.317	0.039	0.081	0.095
Rural	0.104	0.002	32399	34752	0.002	1.369	0.023	0.100	0.109
Total	0.100	0.002	44710	45363	0.001	1.375	0.020	0.097	0.104
TREATED WITH ORS PACKETS (Children with diarrhoea in the last 2 weeks)									
Urban	0.169	0.014	1200	932	0.012	1.195	0.082	0.141	0.196
Rural	0.177	0.008	3607	3626	0.007	1.246	0.047	0.160	0.194
Total	0.175	0.007	4807	4558	0.006	1.253	0.041	0.161	0.190
CONSULTED MEDICAL PERSONNEL FOR DIARRHOEA (Children with diarrhoea in the last 2 weeks)									
Urban	0.687	0.019	1200	932	0.014	1.310	0.027	0.650	0.724
Rural	0.593	0.011	3607	3626	0.009	1.302	0.019	0.570	0.615
Total	0.612	0.010	4807	4558	0.007	1.318	0.016	0.593	0.631
SHOWING VACCINATION CARD (Children age 12-23 months)									
Urban	0.378	0.013	3176	2715	0.009	1.558	0.035	0.351	0.405
Rural	0.285	0.007	8426	9138	0.005	1.387	0.024	0.271	0.298
Total	0.306	0.006	11602	11853	0.004	1.430	0.020	0.294	0.318
RECEIVED BCG VACCINATION (Children age 12-23 months)									
Urban	0.776	0.011	3176	2715	0.007	1.474	0.014	0.754	0.798
Rural	0.576	0.008	8426	9138	0.005	1.475	0.014	0.561	0.592
Total	0.622	0.007	11602	11853	0.004	1.478	0.011	0.609	0.635
RECEIVED DPT VACCINATION (3 DOSES) (Children age 12-23 months)									
Urban	0.688	0.012	3176	2715	0.008	1.491	0.018	0.663	0.712
Rural	0.466	0.008	8426	9138	0.005	1.391	0.016	0.451	0.481
Total	0.517	0.006	11602	11853	0.005	1.404	0.013	0.504	0.530
RECEIVED POLIO VACCINATION (3 DOSES) (Children age 12-23 months)									
Urban	0.702	0.012	3176	2715	0.008	1.439	0.017	0.679	0.726
Rural	0.484	0.008	8426	9138	0.005	1.406	0.016	0.469	0.499
Total	0.534	0.006	11602	11853	0.005	1.410	0.012	0.521	0.547
RECEIVED MEASLES VACCINATION (Children age 12-23 months)									
Urban	0.575	0.013	3176	2715	0.009	1.450	0.022	0.549	0.600
Rural	0.377	0.007	8426	9138	0.005	1.356	0.019	0.362	0.391
Total	0.422	0.006	11602	11853	0.005	1.367	0.015	0.410	0.434
FULLY VACCINATED (Children age 12-23 months)									
Urban	0.507	0.013	3176	2715	0.009	1.430	0.025	0.482	0.533
Rural	0.309	0.007	8426	9138	0.005	1.373	0.022	0.295	0.323
Total	0.354	0.006	11602	11853	0.004	1.374	0.017	0.342	0.367

Table C.2 Sampling errors, India, 1992-93 (Contd.)

Variable/residence	Value (R)	Standard error (SE)	Relative error (SE/R)	Confidence limits	
				R-2SE	R+2SE
TOTAL FERTILITY RATE (Women age 15-49)					
Urban	2.698	0.039	0.015	2.620	2.777
Rural	3.671	0.039	0.011	3.594	3.749
Total	3.391	0.030	0.009	3.330	3.451
TOTAL FERTILITY RATE (Women age 15-44)					
Urban	2.679	0.038	0.014	2.603	2.755
Rural	3.642	0.038	0.010	3.567	3.718
Total	3.364	0.029	0.009	3.306	3.423
AGE-SPECIFIC FERTILITY RATE (Age group 15-19)					
Urban	0.075	0.002	0.029	0.071	0.080
Rural	0.131	0.002	0.014	0.127	0.135
Total	0.116	0.001	0.013	0.113	0.119
AGE-SPECIFIC FERTILITY RATE (Age group 20-24)					
Urban	0.203	0.003	0.017	0.196	0.210
Rural	0.243	0.002	0.010	0.238	0.248
Total	0.231	0.002	0.009	0.227	0.235
AGE-SPECIFIC FERTILITY RATE (Age group 25-29)					
Urban	0.154	0.004	0.024	0.147	0.162
Rural	0.177	0.003	0.017	0.171	0.183
Total	0.170	0.002	0.014	0.166	0.175
AGE-SPECIFIC FERTILITY RATE (Age group 30-34)					
Urban	0.071	0.003	0.044	0.065	0.077
Rural	0.108	0.003	0.027	0.102	0.113
Total	0.097	0.002	0.023	0.092	0.101
AGE-SPECIFIC FERTILITY RATE (Age group 35-39)					
Urban	0.027	0.002	0.077	0.023	0.031
Rural	0.051	0.002	0.043	0.047	0.056
Total	0.044	0.002	0.039	0.040	0.047
AGE-SPECIFIC FERTILITY RATE (Age group 40-44)					
Urban	0.006	0.001	0.168	0.004	0.008
Rural	0.019	0.001	0.072	0.016	0.022
Total	0.015	0.001	0.068	0.013	0.017
AGE-SPECIFIC FERTILITY RATE (Age group 45-49)					
Urban	0.004	0.001	0.328	0.001	0.006
Rural	0.006	0.001	0.153	0.004	0.008
Total	0.005	0.001	0.139	0.004	0.007
NEONATAL MORTALITY (5-year period preceding survey)					
Urban	34.139	1.916	0.056	30.307	37.970
Rural	52.859	1.478	0.028	49.904	55.814
Total	48.617	1.243	0.026	46.132	51.103
INFANT MORTALITY μ_0 (5-year period preceding survey)					
Urban	56.148	2.544	0.045	51.061	61.236
Rural	85.040	1.837	0.022	81.366	88.714
Total	78.492	1.571	0.020	75.351	81.634

Table C.2 Sampling errors, India, 1992-93 (Contd.)

Variable/residence	Value (R)	Standard error (SE)	Relative error (SE/R)	Confidence limits	
				R-2SE	R+2SE
CHILD MORTALITY ${}_5q_1$ (5-year period preceding survey)					
Urban	19.556	1.692	0.087	16.171	22.941
Rural	37.594	1.250	0.033	35.094	40.095
Total	33.407	1.048	0.031	31.311	35.504
UNDER-FIVE MORTALITY ${}_5q_0$ (5-year period preceding survey)					
Urban	74.606	3.077	0.041	68.453	80.760
Rural	119.437	2.233	0.019	114.971	123.903
Total	109.278	1.922	0.018	105.433	113.122
CRUDE BIRTH RATE (Based on Household Questionnaire)					
Urban	23.562	0.401	0.017	22.760	24.364
Rural	29.641	0.285	0.010	29.072	30.210
Total	28.047	0.245	0.009	27.557	28.537
CRUDE DEATH RATE (Based on Household Questionnaire)					
Urban	7.634	0.225	0.030	7.184	8.084
Rural	10.418	0.169	0.016	10.079	10.757
Total	9.688	0.142	0.015	9.404	9.972
CRUDE RATE OF NATURAL INCREASE (Based on Household Questionnaire)					
Urban	15.928	0.438	0.028	15.052	16.804
Rural	19.223	0.284	0.015	18.654	19.792
Total	18.359	0.242	0.013	17.875	18.843
CRUDE BIRTH RATE (Based on birth history)					
Urban	24.126	0.321	0.013	23.485	24.768
Rural	30.371	0.255	0.008	29.862	30.880
Total	28.656	0.205	0.007	28.246	29.066
MATERNAL MORTALITY RATE (Based on Household Questionnaire)					
Urban	396.663	95.067	0.240	206.529	586.797
Rural	447.926	60.303	0.135	327.321	568.531
Total	437.383	51.515	0.118	334.353	540.412

SRS: Simple random sample

APPENDIX D

DATA QUALITY TABLES

The purpose of this appendix is to provide the data user with an initial view of the general quality of the NFHS data. While Appendix C is concerned with sampling errors and their effects on the survey results, the tables in this appendix refer to possible *nonsampling* errors: for example, rounding or heaping on certain ages or dates; omission of events occurring further in the past; deliberate distortion of information by some interviewers in an attempt to lighten their work loads; noncooperation of the respondent in providing information; and refusal to have children measured and weighed. A description of the magnitude of such nonsampling errors is provided in the following paragraphs.

The distribution of the *de facto* household population by single year of age is presented in Table D.1 (see also Figure 3.1). In many (but not all) cases, the respondent was the head of the household. In cases where an eligible woman was later interviewed with the Woman's Questionnaire, her own reported age from the Woman's Questionnaire was substituted for the age in the household listing when there was a difference, because it was assumed that she would be better able than the household respondent to report her own age.

It is well documented that ages are poorly reported in most parts of India. Ages are of little relevance to much of the rural population in particular, and no amount of probing will ensure that ages are properly recorded. In interviewer training for the NFHS, a great deal of emphasis was placed on obtaining as accurate information as possible on ages and dates of events. Nevertheless, it is clear that age reporting in the NFHS shares the same problems inherent in all Indian censuses and surveys. Heaping on ages ending in 0 and 5 is severe, particularly in the older age groups, and a pattern of heaping on ages ending in 2 and 8 is also evident. However, the NFHS age data are evidently of considerably better quality than age data from other sources. This can be seen, for example, by comparing the degree of age heaping in the NFHS with the 1981 Census, which is the most recent census that has already published data by single year of age (see Chapter 3, Section 3.1). The age reporting for females appears to be particularly good during the childbearing years, when interviewed women reported their own ages. Another measure of the quality of the NFHS age data is the negligible number of persons whose ages were recorded as not known or missing. In the country as a whole, age was missing for only 142 persons out of a total of 494,939 persons listed on the household schedule.

Table D.2 examines the possibility that some eligible women (that is, ever-married women age 13-49) were not properly identified in the NFHS. In some surveys, interviewers may try to reduce their work load by pushing women out of the eligible age range or recording ever-married women as never married so that they will not have to be interviewed. If such practices were being followed to a noticeable extent, Table D.2 would normally show (1) a shortage of ever-married women in the 45-49 age group and an excess in the 50-54 age group or (2) an unusually low proportion of ever-married women by age. Neither of these patterns is evident in the NFHS data. It can, therefore, be concluded that there was no concerted effort to misidentify eligible women in the NFHS.

Table D.1 Household age distribution

Single year age distribution of the *de facto* household population by sex (weighted), India, 1992-93

Age	Male		Female		Age	Male		Female	
	Number	Percent	Number	Percent		Number	Percent	Number	Percent
< 1	6645	2.6	6541	2.7	38	2669	1.1	2645	1.1
1	6502	2.6	6151	2.5	39	1182	0.5	2165	0.9
2	5852	2.3	5724	2.4	40	6948	2.7	3172	1.3
3	6586	2.6	6146	2.5	41	898	0.4	1771	0.7
4	6082	2.4	5476	2.3	42	2318	0.9	2254	0.9
5	7585	3.0	6736	2.8	43	873	0.3	1622	0.7
6	7127	2.8	6549	2.7	44	873	0.3	1755	0.7
7	6589	2.6	6295	2.6	45	5770	2.3	2505	1.0
8	7567	3.0	6976	2.9	46	1168	0.5	1630	0.7
9	5740	2.3	5388	2.2	47	826	0.3	1510	0.6
10	7830	3.1	7310	3.0	48	1637	0.6	1720	0.7
11	5157	2.0	4520	1.9	49	805	0.3	1369	0.6
12	7670	3.0	6841	2.8	50	4750	1.9	1735	0.7
13	5110	2.0	4993	2.1	51	611	0.2	1042	0.4
14	5404	2.1	5119	2.1	52	1512	0.6	1994	0.8
15	5762	2.3	5170	2.1	53	662	0.3	1215	0.5
16	5364	2.1	5367	2.2	54	698	0.3	971	0.4
17	3970	1.6	4496	1.9	55	3687	1.5	4327	1.8
18	6479	2.6	6551	2.7	56	978	0.4	1388	0.6
19	3379	1.3	4307	1.8	57	503	0.2	731	0.3
20	6421	2.5	6176	2.6	58	1215	0.5	1314	0.5
21	3090	1.2	4278	1.8	59	492	0.2	480	0.2
22	5593	2.2	4926	2.0	60	5079	2.0	4713	1.9
23	3153	1.2	4107	1.7	61	424	0.2	392	0.2
24	3157	1.2	4292	1.8	62	1077	0.4	1198	0.5
25	7348	2.9	5040	2.1	63	384	0.2	445	0.2
26	3585	1.4	3881	1.6	64	429	0.2	395	0.2
27	2772	1.1	3576	1.5	65	3521	1.4	2983	1.2
28	4432	1.8	4034	1.7	66	455	0.2	394	0.2
29	1701	0.7	3193	1.3	67	302	0.1	245	0.1
30	8059	3.2	4370	1.8	68	530	0.2	478	0.2
31	1263	0.5	2697	1.1	69	231	0.1	232	0.1
32	3827	1.5	3323	1.4	70+	7774	3.1	6434	2.7
33	1474	0.6	2748	1.1	Don't				
34	1582	0.6	2792	1.2	know/				
35	8243	3.3	3732	1.5	missing	57	--	85	--
36	2158	0.9	2654	1.1					
37	1290	0.5	2271	0.9	Total	252885	100.0	242055	100.0

Note: The *de facto* population includes residents and nonresidents who slept in the household the night before the interview.

-- Less than 0.05 percent

One traditional measure of the quality of data is the extent to which information is missing on key variables. Although completeness of responses does not necessarily indicate that the results are accurate, the existence of missing information for a large number of cases would suggest that the data collection was not carried out with sufficient care. For India as a whole, the extent of missing information is very low on all of the measures shown except for the month and year of birth of the interviewed women and the measurement of the height and weight of young children (Table D.3). The data are exceptionally complete for month and year of birth for children listed in the birth history, age at death, age at first marriage, woman's education, child's size at birth and prevalence of diarrhoea in the two weeks preceding the NFHS. A large majority of eligible women (74 percent) did not report both the month and year of their birth. For women who did not know their month and year of birth, the information was imputed based

Table D.2 Age distribution of eligible and interviewed women

Percent distribution of the *de facto* household population of women age 10-54 and of interviewed women age 13-49, and percentage of eligible women who were interviewed (weighted), India, 1992-93

Age	All women	Ever-married women	Interviewed women		Percent interviewed
			Number	Percent	
10-12	18671	171	NA	NA	NA
13-14	10112	510	352	0.4	69.1
15-19	25891	10123	9095	10.1	89.8
20-24	23780	19423	17983	20.0	92.6
25-29	19724	18809	17441	19.4	92.7
30-34	15930	15640	14661	16.3	93.7
35-39	13467	13333	12461	13.9	93.5
40-44	10575	10475	9748	10.9	93.1
45-49	8735	8668	8036	9.0	92.7
50-54	6958	6914	NA	NA	NA
13-49	128213	96981	89777	100.0	92.6

Note: The *de facto* population includes all residents and nonresidents who slept in the household the night before the interview. To allow comparison of distributions, weights for both households and interviewed women are household weights.
NA: Not applicable

on her reported age (or the age estimated by the interviewer after detailed probing). Data on height and weight are available for more than 80 percent of children, which is also acceptable since in any survey many children cannot be measured because they are not at home or they are ill at the time of the survey. In some cases when the child was at home, either the child refused to be measured or the mother refused to allow the child to be measured because of cultural beliefs, and no amount of persuasion could change their mind.

Another measure of data quality is the completeness and accuracy of information on births. Table D.4 examines the distribution of births by calendar year to identify any unusual patterns which may indicate that births have been omitted or that the ages of children have been displaced. Overall, 98 percent of living children listed in the birth history had complete birth dates recorded as did 92 percent of children who had died. Thus, the completeness of data on birth dates is exceptionally good. Although the annual number of births does fluctuate somewhat, real annual fluctuations are to be expected and there is no evidence of the wholesale omission of births or displacement of birth dates which would substantially affect the fertility rate estimates for recent years.

It should be noted that many surveys that include both demographic information and health information for children below a specified age have been subject to a substantial amount of age displacement. In particular, there is often a tendency for interviewers to "age" children out of the eligible period for asking health questions. This problem was well known before the NFHS began; therefore, interviewer training stressed this issue to try to avoid any biases due to age displacement. The cutoff date for asking the health questions was 1 January 1988 for surveys that began in 1992 and 1 January 1989 for surveys that began in 1993. Since the cutoff date was not the same for all states, it is difficult to assess whether there is any gross

Table D.3 Completeness of reporting			
Percentage of observations missing information for selected demographic and health questions (weighted), India, 1992-93			
Subject	Reference group	Percentage missing information	Number of cases
Birth date	Ever-married women		
Year only		2.57	89777
Month only		7.96	89777
Month and year		73.60	89777
Birth date	Births in last 15 years		
Month only		2.38	187405
Month and year		0.07	187405
Age at death	Deaths to births in last 15 years	0.38	23027
Age at 1st marriage	Ever-married women	0.06	89777
Woman's education	Ever-married women	0.01	89777
Child's size at birth	Births in last 0-47 months	0.54	50001
Anthropometry¹	Living children age 0-47 months		
Height ²		16.26	33154
Weight		15.57	45982
Height or weight ²		16.59	33154
Diarrhoea in last 2 weeks	Living children age 0-47 months	0.47	45969

¹Child not measured
²Excludes children from states where height was not measured due to nonavailability of measuring instruments

displacement of births across this boundary. However, an examination of calendar year ratios in Table D.4 indicates that the number of births reported for the year 1988 is slightly lower than births reported for the years 1987 and 1989; and some of the children recorded as being born in 1987 might have actually been born in 1988. This problem seems to be more pronounced in the case of dead children. But the magnitude of age displacement of births is small and has only a limited effect on the recent fertility estimates.

Another measure of completeness of reporting of births is the sex ratio at birth, which reflects the differences in completeness of reporting for male and female births. The expected sex ratio at birth is about 105-107 male births per 100 female births, and any tendency to omit female births would lead to a higher sex ratio. The sex ratio for all children ever born is 935 females per 1,000 males, or 107 male births per 100 female births. This estimate is at the top of the expected range. There is no consistent trend in the sex ratio at birth by calendar year, and it does not exceed 107 males per 100 females for any of the five-year periods shown, suggesting that female births have not been grossly underreported in the NFHS. However, the reported sex ratio at birth for births that occurred more than 20 years before the survey (1971 or earlier) is 112, which suggests that underreporting of female births is likely during that early period.

Table D.4 Births by calendar year

Distribution of births by calendar year for living (L), dead (D), and all (T) children, according to reporting completeness, sex ratio at birth, and ratio of births by calendar year (weighted), India, 1992-93

Calendar year	Number of births			Percent with complete birth date ¹			Sex ratio at birth ²			Calendar year ratio ³		
	L	D	T	L	D	T	L	D	T	L	D	T
1993	1408	77	1485	100.0	100.0	100.0	878	708	868	NA	NA	NA
1992	10195	745	10940	99.9	98.4	99.8	1004	823	991	NA	NA	NA
1991	12051	1014	13066	99.7	97.1	99.5	939	859	933	115	112	115
1990	10683	1065	11748	99.3	96.5	99.1	974	1054	981	93	99	94
1989	10919	1148	12068	99.1	95.8	98.8	956	1006	960	101	98	100
1988	11015	1284	12299	99.0	95.8	98.7	887	1055	903	95	86	94
1987	12208	1842	14050	98.3	94.6	97.8	929	982	936	105	121	107
1986	12244	1771	14015	98.0	92.8	97.3	930	1032	942	104	98	103
1985	11442	1766	13207	97.5	93.4	97.0	961	946	959	94	100	95
1984	12135	1748	13883	97.4	91.2	96.6	934	951	936	111	101	109
1983	10482	1714	12197	97.6	92.9	96.9	899	965	908	88	95	89
1982	11596	1880	13476	97.3	92.9	96.7	954	967	956	117	112	117
1987-1991	56877	6354	63230	99.1	95.8	98.8	936	991	941	NA	NA	NA
1982-1986	57899	8879	66779	97.5	92.6	96.9	936	972	941	NA	NA	NA
1977-1981	45545	8542	54087	97.1	91.4	96.2	924	1020	938	NA	NA	NA
1972-1976	34010	7786	41796	96.3	90.2	95.2	925	998	938	NA	NA	NA
1971 or earlier	29601	9275	38876	95.4	87.9	93.6	903	861	893	NA	NA	NA
All	235535	41658	277192	97.5	91.5	96.6	930	960	935	NA	NA	NA

NA: Not applicable

¹Both year and month of birth given

² $(B_f/B_m) \times 1000$, where B_f and B_m are the numbers of female and male births, respectively

³ $[2B_x / (B_{x-1} + B_{x+1})] \times 100$, where B_x is the number of births in calendar year x

Table D.5 presents information on the reporting of age at death in days. Results from the table suggest that early infant deaths have not been severely underreported in the NFHS, since the ratios of deaths under seven days to all neonatal deaths are quite high (a ratio of less than 25 percent is often used as a guideline to indicate underreporting of early neonatal deaths). The ratios decline slightly over time, from 70 in the five years preceding the survey to 66 in the period 10-14 years preceding the survey. Although there was no severe underreporting of deaths in the NFHS, there was some misreporting of age at death due to a preference for reporting the age at death at 3, 6, 8, 10, 12, 15, 20 and 25 days (see Table D.5).

Table D.6 shows the percentages of infant deaths that occurred during the neonatal period. These ratios are also quite high, suggesting that there is no major omission of early deaths. Moreover, there is a slight increase over time from 60 to 65, indicating that reporting of early infant deaths is most complete for the five years preceding the survey. One problem that is inherent in most retrospective surveys is heaping of the age at death on certain digits, e.g., 6, 12 and 18 months. Misreporting of age at death will bias estimates of the age pattern of mortality if the net result of misreporting is the transference of deaths between age segments for which the rates are calculated; for example, an overestimate of child mortality relative to

Table D.5 Reporting of age at death in days

Distribution of reported deaths under 1 month of age by age at death in days and the percentage of neonatal deaths reported to occur at ages 0-6 days, for five-year periods of birth preceding the survey (weighted), India, 1992-93

Age at death (days)	Years preceding survey			
	0-4	5-9	10-14	0-14
< 1	749	877	753	2379
1	434	491	456	1382
2	184	282	229	694
3	293	331	271	895
4	150	189	151	489
5	119	169	213	501
6	131	226	188	545
7	115	185	161	461
8	162	196	179	537
9	64	65	64	193
10	83	136	130	349
11	41	55	53	149
12	49	65	62	176
13	23	27	22	72
14	19	16	33	69
15	104	174	175	453
16	7	30	37	75
17	20	9	17	46
18	19	40	23	82
19	3	11	8	22
20	65	87	72	224
21	26	28	29	83
22	24	18	28	69
23	4	3	6	13
24	11	9	5	25
25	17	27	24	68
26	4	4	6	15
27	3	6	3	12
28	8	22	19	49
29	10	19	16	46
30	6	18	14	39
Missing	1	2	0	2
0-30	2946	3817	3449	10211
Percent early neonatal ¹	70	67	66	67

¹Deaths during first 6 days divided by deaths during first 30 days

infant mortality may result if children dying during the first year of life are reported as having died at age one year or older. Thus, heaping at 12 months can bias the mortality estimates because a certain fraction of these deaths, which are reported to have occurred after infancy (that is, at age 12-23 months), may have actually occurred during infancy (that is, at age 0-11 months). In this case, heaping would bias the infant mortality rate downward and child mortality upward.

Examination of the distribution of deaths under age two years during the 15 years prior to the survey by month of death (Table D.6) indicates that there is some heaping of deaths at age 12 months, but few deaths were reported to have occurred at age one year. The calculated infant mortality rates for the country as a whole are not likely to be understated by more than

Table D.6 Reporting of age at death in months

Distribution of reported deaths under two years of age by age at death in months and the percentage of infant deaths reported to occur at age under one month, for five-year periods of birth preceding the survey (weighted), India, 1992-93

Age at death (months)	Years preceding survey			
	0-4	5-9	10-14	0-14
< 1	2941	3800	3434	10175
1	294	449	400	1143
2	238	308	295	841
3	190	303	258	751
4	130	147	155	431
5	96	132	145	372
6	184	299	287	771
7	77	113	113	303
8	106	170	168	444
9	95	163	160	417
10	107	187	195	489
11	81	192	156	429
12	201	336	379	915
13	25	56	53	134
14	29	49	64	143
15	22	57	28	107
16	17	35	28	80
17	11	17	12	39
18	77	175	160	412
19	6	14	5	25
20	13	15	13	41
21	8	9	12	29
22	5	15	18	38
23	12	20	27	59
Missing	1	1	0	2
1 year	39	111	76	226
0-11	4539	6264	5765	16568
Percent neonatal ¹	65	61	60	61

¹Deaths during first month divided by deaths during first year

1-2 percent due to these types of age misreporting¹.

¹ For example, in the five years before the survey, even if the reported deaths at age 12 months were redistributed equally to 11, 12, and 13 months, and all of the deaths at age "1 year" were assumed to have occurred in the first year of life (which is an extreme assumption), then the infant mortality rate would increase by only 2 percent.

APPENDIX E

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APPENDIX F

SURVEY INSTRUMENTS

The uniform core questionnaires that were used in all states are presented in this appendix. In addition to the core questions, state-specific questions on topics of special interest were added in most states. The topics of the state-specific questions are listed in Section 2.2 of Chapter 2. In addition, slight modifications were made to the core Household Questionnaire, Woman's Questionnaire and Village Questionnaire in individual states. These modifications are specified below.

Household Questionnaire

Questions 15-19: In the Phase 1 states (Andhra Pradesh, Himachal Pradesh, Madhya Pradesh, Tamil Nadu and West Bengal), these questions were asked individually for each person listed in the household schedule rather than for all persons together. In those states, Questions 14-18 began with the phrase "Does (NAME) suffer from...". Question 19 was worded as follows: "Did (NAME) suffer from malaria at any time during the last THREE months?"

Question 42: In the Phase 1 states, bullock cart, thresher, tractor and water pump were not included in the list of household items.

Questions 43, 45, 58, 60, and interviewer instructions before Questions 48 and 63: In states with fieldwork beginning in 1993, change 1990 to 1991.

Woman's Questionnaire

Question 155: In the Phase 1 states, bullock cart, thresher, tractor and water pump were not included in the list of household items.

Questions 225, 401, 402, 448, 617, and 701: In states with fieldwork beginning in 1993, change 1988 to 1989.

Questions 320, 331, 349 and 351: In Uttar Pradesh, two additional response codes were added for these questions (Code 17 = E.S.I. HOSPITAL/CLINIC and Code 26 = N.G.O. HOSPITAL/CLINIC).

Questions 322, 329 and 334: In Uttar Pradesh, two additional response codes were added for these questions (Code 17 = E.S.I. HOSPITAL/CLINIC and Code 24 = N.G.O. HOSPITAL/CLINIC).

Question 440: In the Phase 1 states, Code 95 = "STILL BREASTFEEDING" was not explicitly included for the next-to-last-birth.

Questions 705 and 706: In the Phase 1 states, these questions were omitted.

Question 708: In the Phase 1 states, the designation for this question was "DATE WEIGHED".

Question 709: In the Phase 1 states, Code 1 = CHILD WEIGHED.