

APPENDIX A
SURVEY DESIGN

APPENDIX A

SAMPLE DESIGN

A.1 Introduction

The 1996 ZDHS covered the population residing in private households in the country. The design for the ZDHS called for a representative probability sample of approximately 8,000 completed individual interviews with women between the ages of 15 and 49. It is designed principally to produce reliable estimates for the country as a whole, for the urban and the rural areas separately, and for each of the nine provinces in the country. In addition to the sample of women, a sub-sample of about 2,000 men between the ages of 15 and 59 was also designed and selected to allow for the study of AIDS knowledge and other topics.

A.2 Sampling Frame

Zambia is divided administratively into nine provinces and 57 districts. For the Census of Population, Housing and Agriculture of 1990, the whole country was demarcated into census supervisory areas (CSAs). Each CSA was in turn divided into standard enumeration areas (SEAs) of approximately equal size. For the 1992 ZDHS, this frame of about 4,200 CSAs and their corresponding SEAs served as the sampling frame. The measure of size was the number of households obtained during a quick count operation carried out in 1987. These same CSAs and SEAs were later updated with new measures of size which are the actual numbers of households and population figures obtained in the census. The sample for the 1996 ZDHS was selected from this updated CSA and SEA frame.

A.3 Characteristics of the ZDHS Sample

The sample for ZDHS was selected in three stages. At the first stage, 312 primary sampling units corresponding to the CSAs were selected from the frame of CSAs with probability proportional to size, the size being the number of households obtained from the 1990 census. At the second stage, one SEA was selected, again with probability proportional to size, within each selected CSA. An updating of the maps as well as a complete listing of the households in the selected SEAs was carried out. The list of households obtained was used as the frame for the third-stage sampling in which households were selected for interview. Women between the ages of 15 and 49 were identified in these households and interviewed. Men between the ages of 15 and 59 were also interviewed, but only in one-fourth of the households selected for the women's survey.

A.4 Sample Allocation

Table A.1 and A.2 show the distribution of the population in Zambia as projected to 1996 to the nine provinces and by urban and rural areas.

The provinces, stratified by urban and rural areas, were the sampling strata. There were thus 18 strata. A proportional allocation of the target number of 8,000 women to the 18 strata would yield the sample distribution presented in Table A.3.

The proportional allocation would result in a completely self-weighting sample but would not allow for reliable estimates for at least three of the nine provinces, namely Luapula, North-Western and Western. Results of other demographic and health surveys show that a minimum sample of 800-1,000 women is required in order to obtain estimates of fertility and childhood mortality rates at an acceptable level of sampling errors. It was decided to allocate a sample of 1,000 women to each of the three largest provinces, and a sample of 800

women to the two smallest provinces. The remaining provinces got samples of 850 women. Within each province, the sample was distributed approximately proportionally to the urban and rural areas. Table A.4 shows the proposed sample allocation.

| Province | Urban | Rural | Total |
|---------------|-----------|-----------|-----------|
| Central | 276,926 | 657,729 | 934,655 |
| Copperbelt | 1,429,128 | 185,476 | 1,614,604 |
| Eastern | 117,703 | 1,200,323 | 1,318,026 |
| Luapula | 117,913 | 520,444 | 638,357 |
| Lusaka | 1,191,573 | 163,985 | 1,355,558 |
| Northern | 126,197 | 928,510 | 1,054,707 |
| North-Western | 75,686 | 407,365 | 483,051 |
| Southern | 269,465 | 882,334 | 1,151,799 |
| Western | 78,363 | 652,775 | 731,138 |
| Zambia | 3,682,954 | 5,598,941 | 9,281,895 |

| Province | Urban | Rural | Total |
|---------------|-------|-------|-------|
| Central | 29.6 | 70.4 | 10.1 |
| Copperbelt | 88.5 | 11.5 | 17.4 |
| Eastern | 8.9 | 91.1 | 14.2 |
| Luapula | 18.5 | 81.5 | 6.9 |
| Lusaka | 87.9 | 12.1 | 14.6 |
| Northern | 12.0 | 88.0 | 11.4 |
| North-Western | 15.7 | 84.3 | 5.2 |
| Southern | 23.4 | 76.6 | 12.4 |
| Western | 10.7 | 89.3 | 7.9 |
| Zambia | 39.7 | 60.3 | 100.0 |

| Province | Urban | Rural | Total |
|---------------|-------|-------|-------|
| Central | 239 | 567 | 806 |
| Copperbelt | 1,232 | 160 | 1,392 |
| Eastern | 101 | 1,035 | 1,136 |
| Luapula | 102 | 448 | 550 |
| Lusaka | 1,027 | 141 | 1,168 |
| Northern | 109 | 800 | 909 |
| North-Western | 65 | 351 | 416 |
| Southern | 232 | 761 | 993 |
| Western | 67 | 563 | 630 |
| Zambia | 3,174 | 4,826 | 8,000 |

| Province | Urban | Rural | Total |
|---------------|-------|-------|-------|
| Central | 252 | 598 | 850 |
| Copperbelt | 885 | 115 | 1,000 |
| Eastern | 89 | 911 | 1,000 |
| Luapula | 148 | 652 | 800 |
| Lusaka | 879 | 121 | 1,000 |
| Northern | 102 | 748 | 850 |
| North-Western | 126 | 674 | 800 |
| Southern | 199 | 651 | 850 |
| Western | 91 | 759 | 850 |
| Zambia | 2,771 | 5,229 | 8,000 |

The number of households that would yield the target number of 8,000 women with complete interviews was calculated as follows:

$$\text{Number of HHs} = \frac{\text{Number of women}}{\text{Number of women per HH} \times \text{Overall response rate}}$$

According to the results of the 1992 ZDHS, the number of women age 15-49 was estimated to be 1.4 per urban household, and 1.0 per rural household. The overall response rate found in the same survey was about 93 percent. A more conservative overall response rate of 90 percent (95 percent for households and 95 percent for women) would be more appropriate. Using these two parameters in the above equation, it was expected that approximately 8,000 households would be selected in order to yield the target sample of women, distributed as in Table A.5.

The number of sample points (or clusters) to be selected for each stratum was calculated by dividing the number of women in the stratum by the average take in the cluster. Analytical studies of surveys of the same nature suggest that the optimum number of women to be interviewed is around 20-25 in each urban

cluster and 30-35 in each rural cluster. If on average 20 women were to be selected in each urban cluster and 30 women in each rural cluster (i.e., selecting on average 16 households in each urban cluster and 34 households in each rural cluster), the distribution of sample points would be as in Table A.6.

| Province | Urban | Rural | Total |
|---------------|-------|-------|-------|
| Central | 200 | 664 | 864 |
| Copperbelt | 702 | 128 | 830 |
| Eastern | 71 | 1,012 | 1,083 |
| Luapula | 117 | 714 | 841 |
| Lusaka | 698 | 134 | 832 |
| Northern | 81 | 831 | 912 |
| North-Western | 100 | 749 | 849 |
| Southern | 158 | 723 | 881 |
| Western | 72 | 843 | 915 |
| Zambia | 2,199 | 5,808 | 8,007 |

| Province | Urban | Rural | Total |
|---------------|-------|-------|-------|
| Central | 13 | 20 | 33 |
| Copperbelt | 44 | 4 | 48 |
| Eastern | 4 | 30 | 34 |
| Luapula | 7 | 21 | 28 |
| Lusaka | 44 | 4 | 48 |
| Northern | 5 | 24 | 29 |
| North-Western | 6 | 22 | 28 |
| Southern | 10 | 21 | 31 |
| Western | 5 | 25 | 30 |
| Zambia | 138 | 171 | 309 |

While examining these figures, it was noticed that because of rounding errors, the number of clusters in some provinces would yield a slightly smaller number of women than expected. The number of clusters were then rearranged in each stratum so that (1) it was an even number, but in such a way that (2) the sample size in each province did not fall short of the recommended size. The even number of clusters is recommended for the purpose of calculating sampling errors in which the first step is to form pairs of homogeneous clusters (Table A.7).

| Province | Urban | Rural | Total |
|---------------|-------|-------|-------|
| Central | 12 | 20 | 32 |
| Copperbelt | 44 | 4 | 48 |
| Eastern | 4 | 30 | 34 |
| Luapula | 8 | 22 | 30 |
| Lusaka | 44 | 4 | 48 |
| Northern | 6 | 24 | 30 |
| North-Western | 8 | 22 | 30 |
| Southern | 10 | 20 | 30 |
| Western | 6 | 24 | 30 |
| Zambia | 142 | 170 | 312 |

| Province | Urban | Rural | Total |
|---------------|-------|-------|-------|
| Central | 192 | 680 | 872 |
| Copperbelt | 704 | 136 | 840 |
| Eastern | 64 | 1,020 | 1,084 |
| Luapula | 128 | 748 | 876 |
| Lusaka | 704 | 136 | 840 |
| Northern | 96 | 816 | 912 |
| North-Western | 128 | 748 | 876 |
| Southern | 160 | 680 | 840 |
| Western | 96 | 816 | 912 |
| Zambia | 2,272 | 5,780 | 8,052 |

Tables A.8 and A.9 show the resulting number of households to be selected and the number of women with completed interviews when the number of clusters to be selected is as proposed in Table A.7.

Table A.9 Expected number of women with completed interviews

| Province | Urban | Rural | Total |
|---------------|-------|-------|-------|
| Central | 242 | 612 | 854 |
| Copperbelt | 887 | 122 | 1,009 |
| Eastern | 82 | 918 | 1,000 |
| Luapula | 161 | 673 | 834 |
| Lusaka | 887 | 122 | 1,009 |
| Northern | 121 | 734 | 855 |
| North-Western | 161 | 673 | 834 |
| Southern | 202 | 612 | 814 |
| Western | 121 | 734 | 855 |
| Zambia | 2,864 | 5,200 | 8,064 |

A.5 Stratification and Systematic Selection of Clusters

A cluster is the ultimate area unit retained in the survey. In the 1992 ZDHS and the 1996 ZDHS, the cluster corresponds exactly to an SEA selected from the CSA that contains it. In order to decrease sampling errors of comparisons over time—between 1992 and 1996—it was decided that as many as possible of the 1992 clusters be retained. After carefully examining the 262 CSAs that were included in the 1992 ZDHS, locating them in the updated frame and verifying their SEA composition, it was decided to retain 213 CSAs (and their corresponding SEAs)¹. This amounted to almost 70 percent of the new sample. Only 99 new CSAs and their corresponding SEAs were selected.

As in the 1992 ZDHS, stratification of the CSAs was only geographic. In each stratum, the CSAs were listed by districts ordered geographically. The procedure for selecting CSAs in each stratum consisted of:

- (1) calculating the sampling interval for the stratum:

$$I = \frac{\sum M_i}{a}$$

where $\sum M_i$ is the size of the stratum (total number of households in the stratum according to the sampling frame) and a is the number of CSAs to be selected in the stratum;

- (2) calculating the cumulated size of each CSA;
- (3) calculating the series of sampling numbers $R, R+I, R+2I, \dots, R+(a-1)I$, where R is a random number between 1 and I ;
- (4) comparing each sampling number with the cumulated sizes.

¹The reasons for not retaining the remaining 49 CSAs are as followed: (1) the urban sample of Copperbelt Province is smaller in the 1996 ZDHS than in the 1992 ZDHS so that all clusters in urban Copperbelt are not needed; (2) the SEA composition of certain CSAs was changed during the actual census; and (3) there were errors in the old frame concerning the urban/rural specifications.

The CSA to be selected was the first CSA whose cumulated size was greater or equal to the sampling number.

In each CSA, only one SEA was selected at random (using a random number between 1 and the number of SEAs in the CSA.) The final sample of CSAs (and their corresponding SEAs) shows that of the 57 districts that exist in the country, 55 will be covered by ZDHS.

A.6 Sampling Probabilities

The sampling probabilities were calculated separately for each sampling stage, and independently for each stratum. We use the following notations:

- P_1 : first-stage sampling probability (CSAs)
- P_2 : second-stage sampling probability (SEAs)
- P_3 : third-stage sampling probability (households)

Let a_h be the number of CSAs selected in stratum h , M_{hi} the size (population according to the census frame) of the i^{th} CSA in stratum h , and $\sum M_{hi}$ the total size of stratum h (population according to the census frame). The probability of inclusion of the i^{th} CSA in the sample is calculated as follows:

$$P_{1hi} = \frac{a_h M_{hi}}{\sum_i M_{hi}}$$

In the second stage, we selected one SEA in each CSA. The probability of selection of the j^{th} SEA in the i^{th} CSA is:

$$P_{2hij} = \frac{m_{hij}}{\sum_i m_{hij}}$$

where m_{hij} is the size of the j^{th} SEA according to the census frame.

In order for the sample to be self-weighting within stratum h , the overall probability $f_h = P_{1hr} P_{2hij} P_{3hij}$ must be the same for each household within the stratum, where f_h is the sampling fraction calculated separately for stratum h .

$$f_h = \frac{n_h}{N_h}$$

where n_h is the number of households selected in the stratum, and N_h is the estimated number of households that exist in the stratum in 1996, at the time of fieldwork.

The selection of the households is systematic with equal probability and the selection interval will be calculated as follows:

$$I_{hij} = \frac{1}{P_{3hij}} = \frac{P_{1hi} \cdot P_{2hij}}{f_h}$$

Because of the non-proportional distribution of the sampling to the different strata, sampling weights were required to ensure the actual representativity of the sample at the national level.

A.7 Sample Implementation

A team of 11 listers, 11 mappers and 9 supervisors, all were staff of the Central Statistical Office (CSO), were trained to conduct a mapping and household listing operation in all selected sample areas. One mapper, a lister and a supervisor were assigned to each province, except in Copperbelt and Lusaka Provinces where two mappers and two listers were assigned. Mapping and household listing was carried out in March through July 1996. Not more than fifty days were spent on mapping and households listing in each province. However, the starting times differed in each province, and in some provinces work was disrupted more often than in others. In Copperbelt, Eastern, Lusaka, Central and Northern Provinces, household mapping and listing was completed in May, in Luapula and North-Western Provinces in June, and in Southern and Western Provinces, in July. Once the households in each selected cluster were mapped and listed, the maps and lists were sent to the CSO central office in Lusaka where they were checked for completion. Discrepancies between the actual and listed number of households were evaluated. In most of the clusters, the number of households listed was less than expected. After evaluation, households to be interviewed for the women's and men's surveys in each cluster were selected by two persons trained for the purpose.

Results of the sample implementation by province and urban and rural residence are presented in Tables A.10.1 and A.10.2. The results indicate that of the 8,016 households selected in the survey, 91 percent were successfully interviewed. Four percent of the dwellings were found vacant or destroyed, 4 percent of the households were not at home, and in one percent of the households there was no competent respondent. The response rate at the household level is 99 percent. In these households, there were 8,298 women age 15-49, 97 percent of whom were successfully interviewed. The response rate for the women survey is 96 percent. There is some variation in response rate by province and urban/rural areas. The rate is 95 percent or lower in Northern, Copperbelt, North-Western, Lusaka, and Central Provinces, and 98 percent or higher in Eastern and Luapula Provinces.

Table A.10.2 presents the results for the men's survey. The overall response rate is lower than that for women (90 percent). The rates range from 80 percent in Lusaka to 95 percent in Eastern province.

A.8 Fieldwork

All questionnaires were translated into seven major languages spoken in Zambia, namely Bemba, Kaonde, Lozi, Lunda, Luvale, Nyanja and Tonga. Pretest training and fieldwork took place from April 23 to May 17, 1996. During a three-week period, 12 male and 19 female interviewers were trained to carry out the pretest. Two teams were formed, each consisting of a supervisor, a field editor, four male interviewers and four female interviewers. The pretest fieldwork was conducted for eight days, during which approximately 150 interviews were completed. Discussions with the pretest field staff were held, and necessary modifications to questionnaires were made based on the experience of the pretest exercise.

For the main survey fieldwork, 63 nurses/midwives were recruited through the Provincial Medical Officers. All of the 31 male field staff were from CSO. The survey field staff were selected based on, among others, their ability to conduct interviews in one or more major languages. Fourteen of the nurses/midwives participated in the 1992 ZDHS. Training of the field staff for the main survey took place for four weeks between June 18 and July 10, 1996. Following the DHS guidelines, the training course consisted of instructions regarding interviewing techniques and field procedures, a detailed review of the items on the questionnaires, instruction and practice in weighing and measuring children and women. Mock interviews were conducted among the trainees, and with men and women of eligible age in areas outside the ZDHS sample points. Interviewers were selected on the basis of their overall performance in class, scores on the tests given in class and performance during practice field interviews. From among those selected, candidates suitable as field editors and supervisors were selected. The supervisors and field editors were given additional training in coordination of fieldwork, methods of field editing and data quality control procedures.

Table A.10.1 Sample implementation: women

Percent distribution of households and eligible women in the ZDHS sample by results of the interviews and household, eligible women, and overall response rates, according to region and residence, Zambia 1996

| Result | Region | | | | | | | | Residence | | Total | |
|--|--------------|--------------|--------------|--------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|--------------|
| | Central | Copper-belt | Eastern | Luapula | Lusaka | Northern | North-Western | Southern | Western | Urban | | Rural |
| Selected households | | | | | | | | | | | | |
| Completed © | 92.7 | 95.1 | 95.9 | 90.5 | 94.2 | 85.1 | 79.6 | 96.1 | 88.7 | 94.7 | 89.3 | 90.9 |
| Household present but no competent respondent at home (HP) | 0.3 | 0.5 | 0.4 | 0.1 | 1.5 | 0.7 | 0.7 | 0.3 | 0.8 | 0.9 | 0.5 | 0.6 |
| Refused (R) | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 0.0 | 0.1 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 |
| Dwelling not found (DNF) | 0.3 | 0.0 | 0.2 | 0.6 | 0.0 | 0.9 | 0.0 | 0.3 | 0.8 | 0.0 | 0.5 | 0.3 |
| Household absent (HA) | 2.2 | 1.7 | 1.0 | 3.6 | 1.3 | 5.2 | 14.3 | 0.6 | 2.6 | 1.2 | 4.5 | 3.6 |
| Dwelling vacant (DV) | 3.5 | 1.4 | 1.4 | 3.3 | 2.2 | 6.7 | 2.7 | 2.7 | 5.9 | 2.4 | 3.7 | 3.3 |
| Dwelling destroyed (DD) | 0.7 | 0.8 | 0.6 | 1.6 | 0.2 | 1.1 | 2.4 | 0.1 | 1.0 | 0.4 | 1.2 | 1.0 |
| Other (O) | 0.2 | 0.5 | 0.4 | 0.2 | 0.2 | 0.3 | 0.2 | 0.0 | 0.2 | 0.2 | 0.3 | 0.3 |
| Total percent | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Number | 861 | 845 | 1,154 | 866 | 867 | 941 | 861 | 711 | 910 | 2,329 | 5,687 | 8,016 |
| Household response rate (HRR)¹ | 99.3 | 99.5 | 99.4 | 99.2 | 98.1 | 98.2 | 99.0 | 99.4 | 98.3 | 98.9 | 98.9 | 98.9 |
| Eligible women | | | | | | | | | | | | |
| Completed (EWC) | 95.5 | 95.0 | 99.0 | 98.6 | 96.6 | 95.0 | 95.6 | 96.5 | 97.5 | 96.1 | 97.0 | 96.7 |
| Not at home (EWNH) | 2.9 | 4.0 | 0.6 | 1.0 | 1.9 | 3.8 | 3.5 | 2.3 | 1.7 | 3.0 | 2.0 | 2.3 |
| Postponed (EWP) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 |
| Refused (EWR) | 0.0 | 0.3 | 0.3 | 0.0 | 0.8 | 0.5 | 0.7 | 0.1 | 0.0 | 0.4 | 0.2 | 0.3 |
| Partly completed (EWPC) | 0.1 | 0.2 | 0.0 | 0.0 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.1 |
| Incapacitated (EWI) | 0.8 | 0.3 | 0.1 | 0.3 | 0.5 | 0.7 | 0.2 | 1.0 | 0.3 | 0.4 | 0.5 | 0.5 |
| Other (EWO) | 0.6 | 0.2 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.1 | 0.3 | 0.1 | 0.2 | 0.1 |
| Total percent | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Number | 783 | 1,189 | 1,129 | 909 | 1,112 | 824 | 593 | 877 | 882 | 3,124 | 5,174 | 8,298 |
| Eligible woman response rate (EWRR)² | 95.5 | 95.0 | 99.0 | 98.6 | 96.6 | 95.0 | 95.6 | 96.5 | 97.5 | 96.1 | 97.0 | 96.7 |
| Overall response rate (ORR)³ | 94.8 | 94.5 | 98.4 | 97.8 | 94.7 | 93.3 | 94.6 | 95.9 | 95.8 | 95.0 | 96.0 | 95.6 |

Note: The household response rate is calculated for completed households as a proportion of completed, no competent respondent, refused, and dwelling not found. The eligible woman response rate is calculated for completed interviews as a proportion of completed, not at home, postponed, refused, partially completed, incapacitated and "other." The overall response rate is the product of the household and woman response rates.

¹ Using the number of households falling into specific response categories, the household response rate (HRR) is calculated as:

$$\frac{C}{C + HP + R + DNF}$$

² Using the number of eligible women falling into specific response categories, the eligible woman response rate (EWRR) is calculated as:

$$\frac{EWC}{EWC + EWNH + EWP + EWR + EWPC + EWI + EWO}$$

³ The overall response rate (ORR) is calculated as:

$$ORR = HRR * EWRR$$

Table A.10.2 Sample implementation: men

Percent distribution of households and eligible men in the ZDHS sample by results of the interviews and household, eligible men, and overall response rates, according to region and residence, Zambia 1996

| Result | Region | | | | | | | | Residence | | Total | |
|--|---------|-------------|---------|---------|--------|----------|---------------|----------|-----------|-------|-------|-------|
| | Central | Copper-belt | Eastern | Luapula | Lusaka | Northern | North-Western | Southern | Western | Urban | | Rural |
| Selected households | | | | | | | | | | | | |
| Completed © | 94.4 | 92.2 | 96.8 | 92.1 | 94.0 | 89.2 | 81.9 | 94.4 | 88.4 | 95.2 | 90.0 | 91.6 |
| Household present but no competent respondent at home (HP) | 0.0 | 0.0 | 0.4 | 0.5 | 1.4 | 0.4 | 0.9 | 0.0 | 0.4 | 0.8 | 0.3 | 0.4 |
| Refused (R) | 0.0 | 0.0 | 0.0 | 0.0 | 0.9 | 0.0 | 0.5 | 0.0 | 0.0 | 0.3 | 0.1 | 0.1 |
| Dwelling not found (DNF) | 0.5 | 0.0 | 0.4 | 0.5 | 0.0 | 0.4 | 0.0 | 0.0 | 0.9 | 0.0 | 0.4 | 0.3 |
| Household absent (HA) | 2.3 | 3.2 | 1.1 | 2.8 | 0.5 | 3.3 | 13.9 | 0.6 | 2.1 | 0.5 | 4.4 | 3.3 |
| Dwelling vacant (DV) | 1.9 | 2.8 | 1.4 | 3.3 | 2.8 | 5.4 | 2.3 | 5.1 | 7.3 | 2.7 | 3.9 | 3.5 |
| Dwelling destroyed (DD) | 0.9 | 1.4 | 0.0 | 0.9 | 0.5 | 1.2 | 0.5 | 0.0 | 0.4 | 0.3 | 0.8 | 0.6 |
| Other (O) | 0.0 | 0.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.4 | 0.0 | 0.1 | 0.1 |
| Total percent | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Number | 216 | 217 | 285 | 214 | 216 | 241 | 216 | 178 | 233 | 589 | 1,427 | 2,016 |
| Household response rate (HRR)¹ | 99.5 | 100.0 | 99.3 | 99.0 | 97.6 | 99.1 | 98.3 | 100.0 | 98.6 | 98.8 | 99.2 | 99.0 |
| Eligible men | | | | | | | | | | | | |
| Completed (EMC) | 88.5 | 88.9 | 95.8 | 95.6 | 81.5 | 89.5 | 88.7 | 94.0 | 92.9 | 87.9 | 92.2 | 90.5 |
| Not at home (EMNH) | 8.1 | 8.6 | 3.5 | 2.9 | 12.6 | 10.5 | 6.6 | 3.0 | 4.7 | 8.3 | 6.1 | 7.0 |
| Postponed (EMP) | 0.0 | 0.3 | 0.0 | 0.0 | 0.4 | 0.0 | 0.0 | 0.5 | 0.0 | 0.1 | 0.2 | 0.1 |
| Refused (EMR) | 0.0 | 0.3 | 0.0 | 0.0 | 1.9 | 0.0 | 0.0 | 0.5 | 0.5 | 0.9 | 0.1 | 0.4 |
| Partly completed (EMPC) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.5 | 0.0 | 0.1 | 0.0 | 0.0 |
| Incapacitated (EMI) | 1.9 | 0.9 | 0.3 | 1.0 | 1.1 | 0.0 | 0.9 | 1.5 | 1.9 | 0.9 | 1.1 | 1.0 |
| Other (EMO) | 1.4 | 0.9 | 0.3 | 0.5 | 2.6 | 0.0 | 3.8 | 0.0 | 0.0 | 1.8 | 0.4 | 0.9 |
| Total percent | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Number | 209 | 324 | 288 | 205 | 270 | 229 | 106 | 201 | 211 | 794 | 1,249 | 2,043 |
| Eligible man response rate (EMRR)² | 88.5 | 88.9 | 95.8 | 95.6 | 81.5 | 89.5 | 88.7 | 94.0 | 92.9 | 87.9 | 92.2 | 90.5 |
| Overall response rate (ORR)³ | 88.1 | 88.9 | 95.1 | 94.6 | 79.5 | 88.7 | 87.2 | 94.0 | 91.6 | 86.8 | 91.4 | 89.6 |

Note: The household response rate is calculated for completed households as a proportion of completed, no competent respondent, refused, and dwelling not found. The eligible man response rate is calculated for completed interviews as a proportion of completed, not at home, postponed, refused, partially completed, incapacitated and "other." The overall response rate is the product of the household and man response rates.

¹ Using the number of households falling into specific response categories, the household response rate (HRR) is calculated as:

$$\frac{C}{C + HP + R + DNF}$$

² Using the number of eligible men falling into specific response categories, the eligible man response rate (EMRR) is calculated as:

$$\frac{EMC}{EMC + EMNH + EMP + EMR + EMPC + EMI + EMO}$$

³ The overall response rate (ORR) is calculated as:

$$ORR = HRR * EMRR$$

The ZDHS fieldwork was carried out by 11 teams, each consisting of one team leader, one female field editor, four female interviewers, one male interviewer and a driver. Data collection took place over a five-month period from July 15, 1996 to January 6, 1997.

A.9 Data Processing

The completed questionnaires were returned to the CSO headquarters for data processing. The data processing staff first checked whether all household and individual questionnaires for selected households and eligible women and men were indeed present for all clusters, along with field control forms. Missing information was relayed to the respective team. They then edited the questionnaires, coded open-ended questions, entered the data, and ran the secondary editing program. The data were processed by a team consisting of five data entry clerks, three office editors, and one data entry supervisor. Data processing was accomplished using a computer program developed for DHS surveys, Integrated System for Survey Analysis (ISSA).

