6. Technical Annex

The target population was women and men aged 20-49.

The survey was carried out by a three-stage sampling design with stratification at the first stage. The primary sampling units were selected from a total of 8,104 municipalities. They were stratified by five geographical areas (North-western Italy, North-eastern Italy, Central Italy, Southern Italy, Isles) and by demographic size (as measured by the number of women 20-49 years old). One municipality was selected from each stratum with its probability of being chosen proportional to its demographic size. From this first stage, a sample of 262 municipalities was drawn.

In the previous survey (Inf-1, 1979: De Sandre, ed., 1982) the primary sampling units were stratified by geographical areas, demographic size, altimetric zones and main economic activity. However, an analysis of the survey data showed that stratification by geographical areas and demographic size was responsible for most of the reduction of sampling standard errors. This is the reason why only these two variables were used in the current design.

The secondary sampling units were electoral registers. From each selected municipality, at least two electoral registers were selected, without replacement and with equal probability. Special electoral registers (for example of people in hospital) were not considered. A total sample of 603 electoral registers was drawn.

The sampling units at the third stage were women and men aged 20-49. From each selected register, at least eight women and two men were selected without replacement and with equal probability.

In order to allow substitutions, two lists (one basic and one supplementary) were made separately for the selected women and men. Selected women and men were informed by letter and asked if they would respond to a questionnaire by oral interview.

The interviews were carried out between November 1995 and January 1996 by a private agency (Metron, from Rome), closely monitored by Istat.

The interviewers were women only and each interviewer had to interview 30 people maximum. All interviewers attended a one-day training course (13 meetings were located throughout Italy). The interviewers were trained in how to avoid substitutions. Specifically, each interviewer could substitute a sampled person in case of refusal, inability to contact or change of residence. In case of temporary absences, each interviewer had to attempt to visit a sampled person

three times before he could substitute him/her. In each case of substitution, the new person had to be selected from the supplementary lists and had to have similar demographic characteristics (age, sex, marital status) of the replaced person.

From the basic lists 2,802 women and 623 men were interviewed; in addition 2,022 women and 583 men were substituted by persons from the supplementary lists. There were 4,824 (2,802+2,022) interviews of women and 1,206 (623+583) of men (Table 6.1).

Table 6.1 The eligible and interviewed survey population

a. Number of eligible persons according to national statistics (1 January 1995)

| age group | women | | | | men | | | | total |
	single	married	prev. married	total	Single	married	prev. married	total	total
20-24	1,692 125	480,036	9,819	2,181 980	2,122 280	135,299	2,934	2,260 513	4,442 493
25-29	905,187	1,371 712	44,099	2,320 998	1,497 313	857,156	16,789	2,371 258	4,692 256
30-34	403,120	1,746 854	89,582	2,239 556	699,975	1,511 398	45,741	2,257 114	4,496 670
35-39	219,843	1,662 220	107,433	1,989 496	347,017	1,576 156	64,914	1,988 087	3,977 583
40-44	156,815	1,613 680	118,839	1,889 334	220,911	1,579 079	70,686	1,870 676	3,760 010
45-49	147,727	1,651 961	154,371	1,954 059	189,765	1,656 918	75,858	1,922 541	3,876 600
total	3,524 817	8,526 463	524,143	12,575 423	5,077 261	7,316 006	276,922	12,670 189	25,245 612

b. Number of persons in target (basic+supplementary respondents)

age group	unknown	single	married	prev. married	total	Unhnown	single	married	prev. married	total	total
20-24	62	1,019	132	4	1,217	78	261	11	0	350	1,567
25-29	70	587	566	18	1,241	93	207	45	5	350	1,591
30-34	47	261	847	28	1,183	89	106	147	3	345	1,528
35-39	46	155	868	49	1,118	69	48	130	3	250	1,368
40-44	50	96	882	61	1,089	58	25	156	13	252	1,341
45-49	34	81	813	70	998	60	17	161	4	242	1,240
total	304	2,199	4,108	230	6,846	447	664	650	28	1,789	8,635

c. Number of persons interviewed (basic+supplementary respondents)

| age group | women | | | | men | | | | total |
	single	married	prev. married	total	Single	married	prev. married	total	total
20-24	789	98	4	891	232	8	0	240	1,131
25-29	434	425	18	877	188	41	5	234	1,111
30-34	160	655	27	842	92	135	3	230	1,072
35-39	87	635	42	764	35	119	3	157	921
40-44	57	640	60	757	21	152	11	184	941
45-49	37	593	63	693	12	146	3	161	854
total	1,564	3,046	214	4,824	580	601	25	1,206	6,030

d. Per cent non-response $\left(\frac{b-c}{b}100\right)$

| age group | women | | | | men | | | | total |
	single	married	prev. married	total	Single	married	prev. married	total	total
20-24	22.6	25.7	0.0	26.8	11.1	27.3	0.0	31.4	27.8
25-29	26.1	24.9	0.0	29.3	9.2	8.9	0.0	33.1	30.2
30-34	38.7	22.7	3.6	28.8	13.2	8.2	0.0	33.3	29.8
35-39	43.9	26.8	14.3	31.7	27.1	8.5	0.0	37.2	32.7
40-44	40.6	27.4	1.6	30.5	16.0	2.6	15.4	27.0	29.8
45-49	54.3	27.1	10.0	30.6	29.4	9.3	25.0	33.5	31.1
total	28.9	25.8	6.9	29.5	12.6	7.5	10.7	32.6	30.2

The following table reports the frequency of reasons for substitutions:

Reason	WOMEN		MEN	
	Absolute frequency	per cent	absolute frequency	per cent
refusal of any kind of interview	587	29	142	24
refusal of interview on fertility	204	10	48	8
inability to contact	639	32	191	33
change of residence	255	13	67	11
temporary absence	149	7	62	11
others	188	9	73	13
total	2,022	100	583	100

Refusals were positively correlated with the age of persons interviewed, and with the size of municipalities in which they lived.

It is possible to separately analyse the data collected from the interviewed persons from the basic lists and those from the supplementary lists to verify if significant differences exist. Where substitutes were interviewed because of refusals or missing contacts, it is possible to analyse the data of these two subgroups.

Weights were calculated separately for women and men.   **WEIGHTING**

Weights for women were calculated as:

$$_wW_{hij} = {_wK_{hij}} \frac{n}{\sum_{h=1}^{H} \sum_{i=1}^{n_h} \sum_{j=1}^{s_{hi}} (_wK_{hij} w_{hij})} \qquad (1)$$

where

$$_wK_{hij} = \left\{ \frac{W_h}{W_{hi}} \right\} \left\{ \frac{S_{hi}}{s_{hi}} \right\} \left\{ \frac{W_{hij}}{w_{hij}} \right\} \left\{ \frac{W_{ga}}{\hat{W}_{ga}} \right\} \qquad (2)$$

where n denotes the sample size; W_h denotes the total number of women 20-49 years old in h-th stratum; W_{hi} denotes the total number of women 20-49 years old in the i-th municipality in stratum h; S_{hi} denotes the total number of electoral registers in the i-th municipality in stratum h; s_{hi} denotes the number of sampled electoral registers in the i-th municipality in stratum h; W_{hij} denotes the total number of women 20-49 years old in the j-th electoral register in municipality i of stratum h; w_{hij} denotes the number of sampled women 20-49 years old in the j-th electoral register in municipality i of stratum h; W_{ga} denotes the total number of women belonging to the geographical area g and age a on 1st January 1995; $\hat{W}_{ga}$ denotes the direct estimate of women belonging to the geographical area g and age a.

Formula (2) denotes a post-stratified estimate of the total number of women in the different geographical areas (north-western Italy, north-eastern Italy, central Italy, southern Italy, Isles) and in the different age bands (20-29, 30-39, 40-49 years) on 1st January 1995.

The sum of the weights expressed by formula (1) applied to the sample of women, reproduces the actual respondent sample size of 4,824 women.

Weights for men were calculated as:

$$_mW_{hij} = {_mK_{hij}} \cdot \frac{n}{\sum\limits_{h=1}^{H} \sum\limits_{i=1}^{n_h} \sum\limits_{j=1}^{s_{hi}} (_mK_{hij} m_{hij})} \qquad (3)$$

where

$$_mK_{hij} = \left\{\frac{W_h}{W_{hi}}\right\}\left\{\frac{S_{hi}}{s_{hi}}\right\}\left\{\frac{M_{hij}}{m_{hij}}\right\}\left\{\frac{M_{ga}}{\hat{M}_{ga}}\right\} \qquad (4)$$

M_{hij} denotes the total number of men 20-49 years old in the j-th electoral register in municipality i of stratum h; m_{hij} denotes the number of men 20-49 years old in the j-th electoral register in municipality i of stratum h; M_{ga} denotes the total number of men belonging to the geographical area g and age a on 1st January 1995;

$\hat{M}_{ga}$ denotes the direct estimate of men belonging to the geographical area g and age a.

Formula (4) denotes a post-stratified estimate of the total number of men in the different geographical areas (North-western Italy, North-eastern Italy, Central Italy, Southern Italy, Isles) and the different age bands (20-29, 30-39, 40-49 years) on 1st January 1995.

The sum of the weights expressed by formula (3) applied to the sample of men, reproduces the actual respondent sample size of 1,206 men.

A number of comparisons of the sample results, for example concerning fertility by age, show very close agreement with official rates based on exhaustive vital data and with other sample outcomes (see De Sandre et al. eds., 1999, chapters 4-7 and 9-11) . We have proposed procedures to calculate estimates of sampling errors (see De Sandre et al. 1997, pp. 180-183; De Sandre et al. eds., 1999, chapter 4).