Estonia 2000: Survey Information

The information below is based on "Household Living Niveau 2000", Statistical Office of Estonia and "Redesign of the Household Budget Survey", Final report by the Sampling Group headed by Imbi Traat set up by the Scientific Council for the redesign of the HBS run by the Estonian Statistical Office, 1999.

Table of contents:

A. General characteristics

Official name of the survey/data source:

Household Budget Survey

Administrative Unit responsible for the survey:

Statistical Office of the Republic of Estonia
Household Budget Survey and Analysis Section
Endla 15, 15174 Tallinn
e-mail: merle.paats@stat.ee, vaino.kuri@stat.ee
Phone: +372 6259 218
Fax: +372 6259 370

The Statistical Office of Estonia conducts the Household Income and Expenditure Survey regularly since July 1995.
The purposes of the survey are:

- to get reliable information about the economic situation of households;
- to calculate indicators reflecting socio-economic development of the society (standard of living, cost of living, inequality, poverty, etc.);
- to project socio-political measures;
- to estimate the effectiveness of soci-political measures.

Since 2000 the survey uses a new methodology, modified with the help of a grant from the World Bank. The main alterations were:

- the sampling design was changed;
- documents identifying household and the questionnaires were redesigned;

- the diaries and questionnaires fixing the income and expenditure data of households were made more handy and user-friendly;
- the usage of data in macro-economics was revised;
- the organization of interviewing was somewhat altered.

Results are published quarterly in the monthly bulletin Eesti Statistika (Estonian Statistics) of the month following each quarter. Annual data are published in the Statistical Yearbook of Estonia and in the annual publication Household Income and Expenditure.

B. Population, sampling size and sampling methods

Population size:
The population size on 1 January 2000 was 1,439,197 (data not adjusted according to the 2000 Population Census).

Coverage:
Population of the survey is – *all Estonian non-institutional households*. Inhabitants of the nursing homes, prisons, boarding schools, monasteries do not belong to the population of HBS. They form ca 1% of Estonian population.

Sample size:
To reduce the cost of the survey the monthly sample size was reduced to 820 households.

Sampling frame:

As in previous years, the Population Register (PR) is used for selection of a random sample. PR is a database (run by Andmevara Ltd) of all individuals living in Estonia (citizens and those having living permission). It includes a record for every person with person's name, personal identification code, address code and some other indicators. In October 1, 1999 PR included 1 476 202 records/persons.

The sampling frame is a part of the PR comprising of people 15 years old and older (earlier the age limit was 16 years), denoted by PR15+. This is reasonable since younger people do not form separate households. It also helps to overcome the problem that some children may not have the address. There may be up-to-two years delay of registration of the address of a new-born child.

By personal talks with the people of Andmevara Ltd it has been found out that records of PR are checked and corrected for big cities and for most of the counties, address codes have been unified so that different presentations of one and the same address are not possible. Analyses which sampling group has ordered from the Population Register convince us that the database can be electronically easily handled, all kinds of comparisons are possible and searches by different indicators work well. Conclusion is that the database is run professionally.

Nevertheless there are some imperfections in the Population Register. They come rather from the situation in our law system than from the data base itself. Namely, we haven't had the registration law, so that people need not necessarily show their addresses in the Population Register. This situation will hopefully change in the near future. Law of the Population Register reached to the Parlament for discussions on September 30, 1999 (193 SE in http://www.riigikogu.ee/). According to this Law each person will have address of his/her living place (or in some cases the contact address) in the Population Register. Consequently, imperfections found in the Population Register now will move toward improvement in the future.

Due to the absence of the registration law sampling group has paid a lot of attention to the analysis of the address part of the Population Register and of its over- and undercoverage. Address part of the Population Register becomes especially important in the redesigned survey. Of course, it is important in any survey since people are found by their addresses. But in the redesigned survey also inclusion probabilities are determined by the addresses.

Sample design:

The sampling design was reorganized with the aim to get more exact estimates using smaller sample size, to reduce the non-response and not to use the replacement households causing a possible bias in estimates.

Sampling is carried through among the records of PR15+ by stratified systematic random sampling. Since the people in register appear in irregular order, the systematic sampling is statistically equivalent to simple random sampling. As a result of sampling procedure the address persons were fixed, who formed the basis for households' sample.

Previously the households were repeatedly interviewed according to the rotation scheme. The rotation period was three months and each household was interviewed, in general, three times. Since 2000, each household is interviewed twice, the rotation period is 12 months, whereas every year half of the sample is replaced. Thus during the year the survey is cross-sectional – i.e. no household repeated in the same year – which guarantees the highest possible precision (under given sample size) for the level estimates of the parameters on the desired time moment – in month, quarter, half- year, year. Estimates of the level are the most important estimates for the internal statistics-user. Since also estimates of the changes are needed to compare progress in Estonia with other countries, half overlapped sample is recommended for neighboring years. This increases the precision when estimating changes between neighboring years and between the corresponding quarters of these years. The new method causes somewhat higher variability of variables (inequality indicators), as earlier the household data of different interviews were averaged.

Besides this, the two main changes of the sample design are: the change of the stratification rule and the use of two sampling procedures (instead of person-wise sampling).

1. Stratification rule

The stratification scheme was worked out to produce good estimates for various levels of the population with efforts to get comparable estimates also in county level. Three strata were formed: large counties (Tallinn, Harjumaa, Ida-Virumaa, Lääne-Virumaa, Pärnumaa, Tartumaa), small counties (Jõgevamaa, Järvamaa, Läänemaa, Põlvamaa, Raplamaa, Saaremaa, Valgamaa, Viljandimaa, Võrumaa) and Hiiumaa (the smallest county).
Different sampling fractions were proposed for these strata to ensure more equal sample sizes in counties. The table below presents these sampling fractions and corresponding monthly sample sizes.

Monthly sample of HBS in three strata *(Population Age Structure. Towns and Counties of Estonia, Jan.1, 1999)*

Strata	R	**n**	**f, %**	**Step**
BIG	**868775**	**500**	**0.0576**	**1737**
Tallinn	343999	200		
Hariu	99623	57		
Idaviru	162011	92		
Läänеviru	60634	35		
Pärnu	80720	46		
Tartu	121788	70		
SMALL	**298861**	**300**	**0.1004**	**996**
Jogeva	32572	33		
Järva	34238	34		
Lääne	25426	26		
Polva	28411	28		
Rapla	31561	32		
Saare	31837	32		
Valga	30911	31		
Viljandi	49570	50		
Voru	34333	34		
HIIU	**9110**	**20**	**0.2744**	**364**
Total	1176746	820		

R = population size in PR15+, n = sample size, f = sampling fraction, and step = interval for systematic sampling in PR15+.

Since Population Register is ordered by counties the systematic sampling procedure inside strata results with the proportional allocation of the sample for its counties. Sample size per month of the stratum BIG is 500. Stratum BIG consists of biggest (by population) counties. It is sampled with smallest sampling rate. Nevertheless Tallinn gets the biggest sample size. From the estimation viewpoint it is necessary to have

comparatively big sample size in Tallinn since it obeys the smallest response rate and is most variable by its HHs at the same time. Higher sampling rate for stratum SMALL guarantees bigger (and quite equal) sample sizes for its counties with total sample size 300. The last stratum comprises just of one county Hiiumaa. Hiiumaa is so small that to get approximately comparable sample size with the counties in stratum SMALL it has to be sampled with three times higher rate. Separate estimates for Hiiumaa are demanded by the users of regional statistics.

2. Sampling by two different rules

Together with every sampled record the size of the corresponding address in PR15+ is received. The household to be sampled is finally identified in Statistical Office by 2 alternative ways.

- If the address received from the database, was complete, i.e. identifies living place exactly, and it was represented by less than 9 persons aged 15 and more, then the address-wise approach is used; that means that the household or households living at the given address were included into the survey not considering if the address person lived at the address or not.
- If the address was represented in the database at least 9 times as the place of residence of a person aged 15 and more (e.g. in some administrative units all inhabitants of the village had the same address – the name of the village), then the person-wise approach was used: the address person and his/her household were included in the survey; they were included also in the case when the address person did not live at the given address, but lived in some other place in the same county; the persons who had left the county were excluded and not replaced.

No replacement households are used as they caused a bias in estimations. The reason for the bias was the fact that in general the replacement households were somewhat smaller compared with the initial households, and probably had also different values in other variables characterizing either household structure, income or consumption.

The cases, where the address does not exist in reality, or belongs to the non-living place, are rare. For example, in the quarterly samples of 1998 HBS, 1.7% of the addresses did not identify the household due to the reasons above.

Inclusion probabilities:

Inclusion probabilities are the most important components in the weights used to produce estimates from the survey data. Inclusion probabilities in the weights compensate for the selection bias. Randomly selected records together with address-rule cause over represented big-size addresses, together with person-rule over represented big-size households in the sample. Recorded sizes of the addresses (received from PR15+) and sizes of households (given by households) can be used to calculate the inclusion probabilities and to get rid of this bias.

Inclusion probability of any record of PR15+ in stratum h (h=BIG, SMALL, HIIUMAA) is

$$\frac{n_h}{R_h},$$

where n_h is the number of records to be sampled (preliminary sample size), R_h - the number of persons (records) in PR15+. Each record defines a cluster – a household or group of households on the same address. Inclusion probability of the cluster depends on the traces leading to that cluster. The inclusion probability of the household i in the stratum h selected by address-rule (also for all other households living at the given address) is

$$p_i = \frac{n_h q_i}{R_h},$$

where q_i is the size of the address in PR15+. The inclusion probability for the household i in the stratum h selected by person-rule is

$$p_i = \frac{n_h p_i}{R_h},$$

where p_i is the number of persons (15 and older) in this household, given by the household.

Sampling weights are inverses of inclusion probabilities and depending on the selection rule they are:

$$w_i = \begin{cases} \dfrac{R_h}{n_h q_i}, & i \in s_a \text{ in stratum } h, \\ \dfrac{R_h}{n_h p_i}, & i \in s_p \text{ in stratum } h. \end{cases}$$

The weight w_i shows how many population units will be represented by the HH i. Since the distributions of the address size and household size are very much alike, the two kinds of households we have (address-rule-households and person-rule households) have similar distribution of inclusion probabilities and therefore similar distribution of weights. Thus, weighting of data in the estimation stage takes place according to the similar pattern in both groups of households. Finally, the application of address-rule and new inclusion probabilities does not change the distribution of weights. Therefore, the estimates from the new survey are close to the estimates of the earlier HBS. Since the variability of the weights will not increase – the sampling errors of the estimates will not increase either.

C. Data collection and acquisition

Interviewing documents

The data are collected from households by face-to-face interviews and by diary questionnaire method.

1. Household Picture

The interviewer completed the questionnaire at the first meeting with the household. The questionnaire contains general questions about the household (number of members, structure, language spoken at home) and about its members (relation to head, sex, age, ethnic nationality, citizenship, marital status, education, employment characteristics, etc.). Moreover information about the economic situation, living conditions, existence of durable goods, usage of land and possibility of using free services is asked. Since the household participates in the survey once a year, there was no need to use the document "Changes of Household Picture" that had been in use earlier.

2. Diary book of food expenditure

This book contains data about food expenditure of the household during half a month. The cases of eating out and consumption of self-produced or free food products are registered as well. In general the contents of the diary was not changed but its form was made more user-friendly. Special coefficients are used for the calculation of monthly food consumption depending on the duration of measured days and the number of days in a given month.

3. The diary book of income, taxes and expenditure

It contains data about monetary and non-monetary income of the surveyed month, taxes paid by the household and goods and services bought by the household. The diary includes separate parts for recording the expenditure on reconstruction and renovation activities and expenditure related to the household's economic and production activities and expenditure on the investment of money and other transactions. Since 2000 the usage of bank services are not measured.

4. Post-interview

This is a new document whose aim is to determine the consumption household (i.e. fixing the number of persons who participated in consumption during the surveyed month). In the Post-Interview the changes in the household composition during the surveyed period were registered, and some questions containing the self-assessments of economic management were asked.

Field work

The statistical Office uses its own interviewrs (about 105 specially trained interviewrs are permanently involved in the survey).

The period of interviewer's work with each household consists of three stages:

- pre-survey month (begins on the 10th day of the month): Household Picture;
- surveyed month: month during which the household is filling in the diaries;
- post-survey month (from the 1st to 4th day of the month): Post-interview.

D. Definition of the survey units

Unit of measurement is household for some items (incomes and expenditures) and person for other items (sex, age and many other individual parameters).

Household is the group of persons living at the same main dwelling (at the same address) and using common financial and/or food resources and which members consider themselves a household. Household may also comprise of a single person.

Main dwelling is the dwelling where the person is spending / has spent during a longer period most of the year and most of free time from work (studies); Main dwelling of legally married persons or a person in cohabitation is the dwelling where he/she spends most time with his/her partner and/or children.

Composition of a household is uniquely specified, i.e. any person can not belong to several households, while each person belongs to some household. Population of households is defined for every month.

A *child* is a household member aged 0-15, while an *adult* is a household member aged 16 or more (as at 1 January of the reference year).

Head of the household (reference person) is an adult household member with the largest income (long-term contribution to the household).

E. Contents

Raw data available

In addition to income and expenditure, the survey provides information about the structure of households and the main demographic and social characteristics of households family relations, employment, education), but also on living conditions, existence of durable goods and additional sources of income (free services and goods, usage of land, foodstuffs received from household's own farm or kitchen plot). In the survey also the real estate owned by household and the self-assessment of the economic situation of household were clarified.

Parameters and data estimated

Most of the parameters estimated in the Estonian HBS are means and proportions. They can be considered as ratios of totals on the population level. For example, income per person in a month is a ratio of total income of all the households divided by the total number of people in the population. Proportion of an income type in the total income, for example income from salaries, is the total of all the incomes from salaries divided by the total income (on the population level, of course). The means and proportions in domains (for example, in the group of one-member households) can be considered as ratios of totals as well, but now on the domain level. Population total is estimated by the Horvitz-Thompson estimator. Population ratio is estimated by the ratio of Horvitz-Thompson estimators. The estimators are weighted for nonresponse.

The following parameters are estimated in HBS.

- Disposable income, separately income from labour, from self-employment (inc. income from agricultural activity and forestry and income from non-farm self-employment), property income, transfers (incl. income from pensions, unemployment benefits, child and child care benefits, sick benefits, alimonies and subsidies and social care), other income and non-monetary income.
- Expenditure, classified as consumption expenditure and other expenditure
- Consumption expenditure, classified as expenditure for food and non-alcoholic beverages (finer classification is also present), for alcoholic beverages and tobacco products, for clothing and footwear, dwelling (incl. repair), household equipment and operation, medical care and health, transport (inc. public transportation, petrol and oils), communication, recreation, leisure and entertainment (inc. newspapers, magazines and books), education, hotels-cafes-restaurants (inc. eating out, accommodations services), miscellaneous goods and services, non-monetary consumption (non-food items)

Parameters are estimated in the following domains:

- Estonia
- rural and urban area
- county level (Tallinn and 15 counties, only yearly estimates)
- income deciles (incomes) and expenditure deciles (expenditures)
- by the type of household (1 adult, 1 parent and children, couple without children, couple with children (incl. with 1 children, with 2 children, with 3 and more children))
- by the educational level of the reference person
- by the social status of the reference person (wage-earner, farmer, pensioner)
- by the age group and gender of reference person
- by the size of income per household member (lower than 0.5 minimum wages, 0.5-1 minimum wages, 1-2 minimum wages, 2-3 minimum wages, 3-4 minimum wages, more than 4 minimum wages).

Some parameters are estimated quarterly, some yearly. In the Yearbook of Household Budget Survey some additional parameters concerning the composition and the economic situation of the household are published.

F. Quality of data

Non-interview

Earlier the ersponse rate was barely over 50% (in 1999 the average response rate was 53.6%). Reasons for non-interview are divided into two groups: frame error and non-response

1. Frame error

This error contains inaccuracies of the population database of the Andmevara Ltd. Frame errors and corresponding households were excluded from the sample. The size of the

frame error was 671 households in 2000, the most common reason being inhabited dwelling in given address.

2. Non-response

The non-response characterizes the organization of data collection (interviewing) and attitudes of respondents. Reducing non-response needs additional efforts from interviewers and organizers of the survey. In redesigning the survey, the non-response rate was under special attention, and among the measures for improvement of the work were more complete training of interviewers and the refinement of their working schedule, instructions and report forms. The most frequent reason for non-response in 2000 was refusal (more than half of the cases), which is influenced by the diary-type questionnaire.

Weighting

To compensate the low response rate the estimates calculated were corrected using weighing to compensate the non-response and frame errors. The weighs were calculated in three stages.

1. Weighting by Poststratification

Poststratification in the analysis stage is used to raise the accuracy of estimates by compensating non-response. Poststratification helps to compensate it if there exist groups of households in the population, which differ by their response rates and by the average of the study variable. It was clear that Tallinn was so different for its characteristics (participation rate, income and expenditure level) that it should form a separate poststratum. The following poststrata were formed:

- Tallinn;
- East – Idaviru, Läänеviru, Jõgeva, Põlva, Valga, Viljandi, Võru;
- West – Harju, Hiiu, Järva, Lääne, Tartu, Rapla, Pärnu, Saare.

Together with predefined strata Big, Small and Hiiumaa, we end up with six different weighting groups (strata/poststrata) indexed by g (g=1,2,…,6):

- Tallinn;
- Big-East: Ida-Viru, Lääne-Viru;
- Big-West: Harju, Pärnu, Tartu;
- Small-East: Jõgeva, Põlva, Valga, Viljandi, Võru;
- Small-West: Järva, Lääne, Rapla, Saare;
- Hiiumaa.

Stratified random sampling scheme resulted with weights w_i given above.

Let the number of selected and responding HHs in group g be n_g and v_g respectively. Then each responding HH in group g represents n_g / v_g initially selected HHs. If the response and nonresponse are similar inside the group then it is correct to think that response really represents nonresponse. New weights are received by multiplying w_i in

group g by n_g / v_g. Since the sampling fraction is the same inside stratum h then it is also the same for all groups g in stratum h, $R_g / n_g = R_h / n_h$ for each g in stratum h, where R_g is the population count for group g in PR15+. Using this the new weight of the address-rule HH in group g can be transformed as follows:

$$w_i = \frac{R_h}{n_h q_i} \frac{n_g}{v_g} = \frac{R_g}{n_g q_i} \frac{n_g}{v_g} = \frac{R_g}{v_g q_i} \quad .$$

The same can be done for the person-rule HH. Finally, the poststratification weights compensating nonresponse are:

$$w_i = \begin{cases} \dfrac{R_g}{v_g q_i}, & i \in s_a \text{ in group } g, \\ \dfrac{R_g}{v_g p_i}, & i \in s_p \text{ in group } g, \end{cases}$$

where s_a denotes address-rule HHs and s_p person rule HHs. Population counts R_g are received from PR15+.

2. Weighting by demographic data

Due to non-exactness of the frame the computational population size, based on the 1989 Population Census and current population calculations by vital events was used. The population size on 1 January 2000 was 1,439,197 (the data were not adjusted according to the 2000 Population Census).

The weights were corrected as to make the population size estimated by sample coincide with the computational one. With this aim, the weights calculated on the recent stage were multiplied by the correcting factor:

$$w_i' = \frac{L}{\hat{L}} w_i,$$

where

$$\hat{L} = \sum_{i=1}^{v} w_i m_i$$

is the estimated total of people in HBS population, w_i is the initial weight of the HH I, v is the number of responding HHs and L is the total of people by demographic data with institutional people subtracted. As a result

$$\hat{L} = \sum_{i=1}^{v} w_i' m_i = L .$$

3. Calibration by the sex-age distribution

An additional calibration of weights was made so that estimated totals of people in certain sex-age groups are close to the actual number of people in these groups.

Let c be the number of considered sex-age groups and v the number of responding HHs. A $v \times c$ matrix $X = (x_{ij})$ is formed with elements

$$x_{ij} = w_i' m_{ij},$$

where m_{ij} is the number of members of the HH i in the sex-age group j.

Weights w_i' guarantee that

$$\sum_i \sum_j x_{ij} = L = \hat{L}.$$

The estimated number of people in sex-age group j according to HBS is received from the matrix X:

$$\hat{t}_j = \sum_i x_{ij}, \quad j = 1,2,\text{K}\ ,c.$$

Denoting by t_j – number of people in sex-age group j by demographic data we have

$$\sum_j t_j = L = \hat{L} = \sum_j \hat{t}_j.$$

The aim is to achieve the equality inside sex-age groups:

$$t_j = \hat{t}_j, \quad j = 1,2,\text{K}\ ,c.$$

For this the correction factors f_i are calculated. Least square method is used with the condition that the factors must be as close as possible to unity. The latter guarantees that the correction of the sampling weights is minimal.

Denote $T = (t_1, t_2, \text{K}\ , t_c)'$, $\hat{T} = (\hat{t}_1, \hat{t}_2, \text{K}\ , \hat{t}_c)'$, $F = (f_1, f_2, \text{K}\ , f_c)'$ and $I = (1,1,\text{K}\ 1)'$. Then the vector of correction factors can be presented in the following way:

$$F = I + X E, \tag{3.3.2}$$

where

$$E = (X'X)^{-1}(T - \hat{T}). \tag{3.3.3}$$

The elements of the vector $\hat{T}$ are the estimates in the sex-age groups given in (3.3.1). They can be calculated alternatively as

$$\hat{T} = X'I.$$

The corrected weight for the household i is:

$$w_i'' = w_i' \cdot f_i = \frac{L}{\hat{L}} \cdot w_i \cdot f_i. \tag{3.3.4}$$

Weights w_i'' guarantee that the estimated number of people coincides with the actual number of it (by demographic data) and in the sex-age groups these numbers are as close as possible. Institutional people are excluded from the demographic data.

Estimators:

Two basic formulae are used. A total is estimated by the weighted Horvitz-Thompson estimator

$$\hat{Y} = \sum_r w_i y_i, \tag{3.4.1}$$

where w_i is either the calibration weight given in (3.3.4) or (in case the calibration by sex-age distribution is not wanted) poststratification weight given in (3.2.1); y_i is the value of the variable measured on the HH i and r denotes sample of respondents. A mean is estimated by the ratio of weighted Horvitz-Thompson estimators

$$\hat{\bar{Y}} = \frac{\hat{Y}}{\hat{X}}, \qquad (3.4.2)$$

where $\hat{X} = \sum_r w_i x_i$ with x_i being some other variable measured on the HH i. Using different variables on the place of y_i and x_i all the totals and means of HBS can be estimated.

Below some special estimates are given as examples. The following notations are used in the formulae:

r_d – sample of respondents in domain d,
N – total number of HHs in the population,
L – number of people in the population,
L_d – number of people in the population domain d,
m_i – number of members in the HH i,
m_i^l – number of children in the HH i,
y_i – study variable value of the HH i.

1. Number of households

$$\hat{N} = \sum_r w_i \ .$$

2. Number of people in the population

$$\hat{L} = \sum_r w_i m_i \ .$$

3. Average size of the household

$$\frac{\hat{L}}{\hat{N}} .$$

4. Number of households in domain d

$$\hat{N}_d = \sum_{r_d} w_i \ .$$

5. Number of people in domain

$$\hat{L}_d = \sum_{r_d} w_i m_i \ .$$

6. Average size of the household in domain

$$\overline{m}_d = \frac{\hat{L}_d}{\hat{N}_d} .$$

7. Average number of children per household in domain

$$\overline{m}_d^l = \frac{\hat{L}_d^l}{\hat{N}_d}, \text{ where } \quad \hat{L}_d^l = \sum_{r_d} w_i m_i^l .$$

8. Average per household member of a study variable

$$\hat{\overline{Y}} = \frac{\hat{Y}}{\hat{L}} = \frac{\sum_r w_i y_i}{\sum_r w_i m_i},$$

9. Average per household member of a study variable in the domain

$$\hat{\overline{Y}}_d = \frac{\hat{Y}_d}{\hat{L}_d} = \frac{\sum_{r_d} w_i y_i}{\sum_{r_d} w_i m_i}.$$

Optimal usage of survey information

Taking into account the high cost of survey data, the earlier usage of data was replaced with the more effective one. In earlier studies only the data from households who had completed all questionnaires were used. In the current survey the households who gave only incomplete information were included in the survey as well.
This innovation caused more complexity of estimations, as for each document the different weights were calculated due to the different response frequencies. In addition, different weights were calculated for such characteristics that depended on several documents (e.g. average incomes in expenditure quartiles).

Reliability of estimates

In addition to the frame error and the non-response, also measurement error, processing error and random may occur. The first two can be avoided by good organization of survey work, but the random error is unavoidable.
To reduce the measuring errors, the concepts and definitions used in the survey were adjusted, and the interviewers got additional training. Also the advisory materials were revised and made more exact. To minimize the processing errors, the data-entering program BLAISE was taken into use. To discover and forestall measuring and processing errors, more than hundred procedures of logical check were used during the data-entering stage.
As to the random (or sampling) error, with the new methodology, all characteristic estimates of random errors are also calculated and only reliable estimates are published.