



Data Resource Profile

Data Resource Profile: The Russia Longitudinal Monitoring Survey—Higher School of Economics (RLMS-HSE) Phase II: Monitoring the Economic and Health Situation in Russia, 1994–2013

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Why was the data resource set up?

The Russian Longitudinal Monitoring Survey (RLMS) was initially created by the G-7 countries in 1992 as a way to obtain objective nationally representative data on the social, health and economic situation in Russia. It was established to mirror a multipurpose survey—the China Health and Nutrition Survey¹—and provide in-depth reliable raw data on Russia, accessible for the first time to both Russian and global scholars and institutions. This was instituted in the period following January 1992, when the Russian Federation introduced a series of sweeping economic reforms, including eliminating most food and reducing fuel and other subsidies, using freely fluctuating market prices, privatizing many state enterprises and working to create a growing private sector with private land ownership.

The RLMS was created because the existing data, including a Family Budget Survey, were deemed unreliable, and adequate dietary, anthropometric and various other health-related behaviours were not measured in a nationally representative manner. These problems led to the initial Phase I

survey of four rounds (I–IV) which was discontinued and is described in [Supplement 1](#) (available as [Supplementary data](#) at *IJE* online). This was the first nationally representative random sample of economic and health data ever collected in Russia, with all earlier sampling based on quotas from enterprises and other organizations.

The ongoing longitudinal survey began in 1994 with the Phase II survey. In 2010, the Higher School of Economics (HSE) brought a number of the senior RLMS scholars onto its faculty and began to provide funding for the RLMS. Supplementary funding for subsequent nutrition and health-related data came from the University of North Carolina. At this time a decision was made to change the name to the RLMS-HSE.

Data resource basics for the phase II survey

Sample design Phase II

The target sample size was set at 4 000 households. A multistage probability sample of households was

employed to get a nationally representative sample for the Russian Federation. First, a list of 1850 consolidated raions (administrative-territorial districts), containing 95.6% of the population, was created to serve as primary sampling units (PSUs). These were allocated into 38 strata based largely on geographical factors and level of urbanization, but also based on ethnicity where there was salient variability. Three very large population units were selected with certainty: Moscow city, Moscow Oblast and St Petersburg city constituted self-representing (SR) strata. The remaining non self-representing raions (NSR) were allocated to 35 equal-sized strata. The total of 98 PSUs were selected: 63 PSUs in three self-representing strata and 35 PSUs in the rest non-representative strata. In urban areas of the selected PSUs, secondary sampling units (SSUs) were defined by the boundaries of census enumeration districts. In rural areas, villages were compiled to serve as SSUs.

This was designed as an annual survey. Two years were missed, 1997 and 1999, due to funding lapses between 1994 and 2014. The sample is described in more detail in [Supplement 2](#), Phase II (available as [Supplementary data](#) at *IJE* online) and on the RLMS-HSE websites [<http://www.cpc.unc.edu/projects/rlms-hse/project/sampling>].

In both urban and rural substrata, interviewers were required to visit each selected dwelling up to three times to secure the interviews. They were not allowed to make substitutions of any sort. 'Household' was defined as a group of people who live together in a given domicile and share common income and expenditures. Households were also

defined to include unmarried children, 18 years of age or younger, who were temporarily residing outside the domicile at the time of the survey.

The interviewer then conducted individual interviews with as many household members aged 14 and older as possible, acquiring data about their individual activities and health. Data for children aged 13 and younger were obtained from adults in the household. This provided a probability sample of Russian individuals without special weighting at baseline.

Nationally representative sample

The sample frame was essentially based on dwellings. In conducting rounds VI–XXII, interviewers in both urban and rural areas attempted to conduct interviews in the same dwellings that fell into the first round of Phase II, round V sample. They returned to each round V dwelling even if the household had refused to participate during previous rounds, and even if they found out that the household whom they interviewed in previous rounds had moved to a new dwelling before the interview. In Moscow and St Petersburg, where the greatest non-response and accordingly the greatest attrition rates of the sample were observed, the sample was replenished several times and this was undertaken once in a few other cities. [Figure 1](#) provides the dynamics of sample sizes of Phase II and describes the series of replenishments that occurred over time to get to the final RLMS-HSE sample size from the round XXII in 2013.

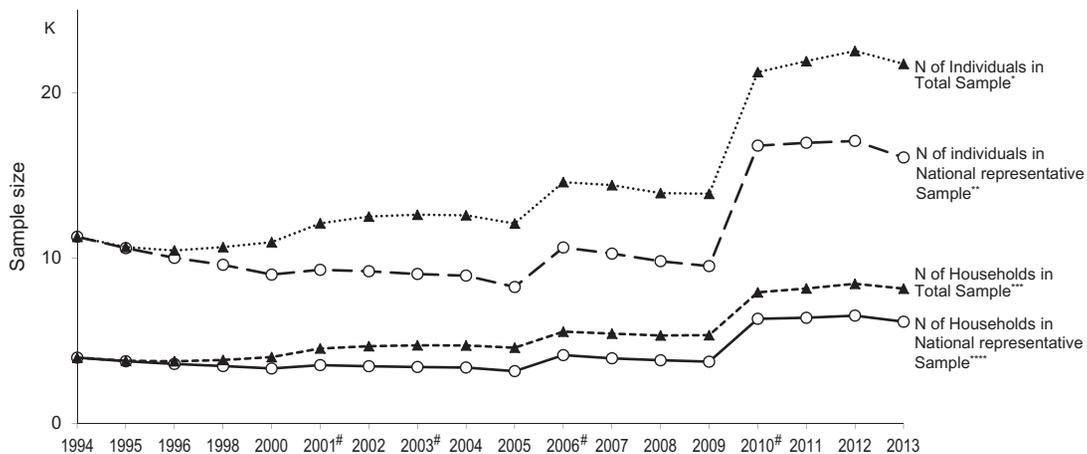


Figure 1. The dynamics of sample sizes Phase II RLMS-HSE2001. The nationally representative sample is followed by interviewing households and individuals residing at the addresses of 1994 sample and addresses of replenishments. The total sample includes in addition the movers (households or individuals who moved to new units for any reason, and were followed). #Replenishments: 2000, replenishment samples in Moscow and St Petersburg; 2003: replenishment of the region within a stratum in 2003 (Novosibirsk region instead of Khanty-Mansiisk region); 2006, replenishment to 1994 sample in most regions; 2010, a 50% increase in sample size following an identical sample selection approach.

*All individuals, participating in a given round, including movers who were followed. **Only individuals residing at the addresses of 1994 sample and addresses of replenishment. ***All households participating in a given round, including movers who were followed. ****Only households residing at the addresses of 1994 sample and addresses of replenishment.

Longitudinal cohort

The original sampling plan did not call for households to be followed if they moved from the round V (1994) sample dwelling unit. Likewise, individual household members who moved away were not to be followed. After round VII (1996), all individuals and households were followed when they moved out of the household units (families, separated, children got married, and so on) to live in the same secondary sampling unit (SSU) or move into one of the PSUs in the sample. This created the current longitudinal cohort. We attempted to find households who moved in the 1994–96 period also.

Multilevel design

An array of contextual economic, demographic, social and built environment infrastructure and related data are collected for each of the smallest sampling units or local communities (essentially SSUs or villages).

In all rounds of Phase II, questionnaires were obtained from over 97% of the individuals listed on the household rosters. The distribution of household size in the sample, within both rural and urban localities, corresponds well to the figures from the Russian census during all rounds of the survey (Supplement 2, Table 3, available as Supplementary data at *IJE* online). Bear in mind that single-member households are excluded from the comparison because the census includes many institutionalized people,

whereas our sample explicitly excludes them. Thus, there is no valid basis for comparison.

The multivariate distribution of the sample by sex, age, education and urban-rural location compares quite well with the corresponding multivariate distributions of the nearest census data (Supplement 2, Tables 4 and 5, available as Supplementary data at *IJE* online). There are usually the differences of only 1–2 percentage points between these distributions. The ethnic composition of the sample throughout all rounds also corresponds to the census figures, having about 86% of Russians, 2.4% of Tatars and 10% of other nationalities.

Response rates

The household response rate in round V (which was the first round of Phase II) exceeded 87.6% (for more detail see Supplement 2, Tables 6 and 7, available as Supplementary data at *IJE* online). Table 1 shows that over half of the households participated in 10 rounds of RLMS-HSE, and for individuals about half participated in eight rounds. This creates a good basis for longitudinal analysis.

The response rates varied across PSUs, depending on the proportion of households in rural areas. Obviously, in Moscow and St Petersburg, respondents and household response rates are substantially lower than in the Russian Federation as a whole and, of course, the whole of Russia without these two cities (Supplement 2, Tables 6 and 7). However, since this situation was expected and has been

Table 1. The duration of participation in the survey (participation rate) for 1994 households and individuals (including separated or moved out) 1994–2013

Rounds participated	Household		Individual	
	Percentage	Cumulative percentage	Percentage	Cumulative percentage
All 18 rounds	26.14	26.14	16.50	16.50
Seventeen rounds	6.59	32.73	6.18	22.68
Sixteen rounds	3.55	36.28	3.80	26.48
Fifteen rounds	2.74	39.02	3.46	29.95
Fourteen rounds	2.74	41.76	2.92	32.87
Thirteen rounds	2.77	44.53	2.69	35.56
Twelve rounds	2.67	47.19	2.95	38.51
Eleven rounds	3.22	50.42	2.96	41.47
Ten rounds	3.12	53.53	2.93	44.40
Nine rounds	2.74	56.28	3.08	47.48
Eight rounds	2.99	59.27	3.21	50.69
Seven rounds	2.92	62.19	3.22	53.91
Six rounds	3.19	65.38	3.90	57.80
Five rounds	3.47	68.86	4.09	61.90
Four rounds	5.69	74.54	6.32	68.22
Three rounds	6.99	81.53	8.97	77.19
Two rounds	6.67	88.20	8.32	85.51
One round	11.80	100.00	14.49	100.00

adjusted in oversampling procedures, the actual proportion of completed household interviews compares well to the proportion of the population in each stratum.

Since the highest non-response rate occurred in Moscow and St Petersburg, the duration of participation in the survey in these two cities was the lowest (Supplement 2, Tables 8–11, available as Supplementary data at *IJE* online).

Attrition rates

One of the most important questions is: ‘How misleading would it be to conduct pure panel analysis of households and individuals observed in any set of consecutive rounds?’ The obvious problem is that, by definition, pure panel analysis can include only those who continue to reside in the original sample dwelling units and participate in this set of consecutive rounds. To evaluate the possibility of such analysis, it is necessary to calculate attrition rates for any such sequence of rounds. As an example, we present calculations for two most popular types of attrition rates (Supplement 2, Tables 12–14, available as Supplementary data at *IJE* online), namely wave-to-wave and baseline-on-wave attrition rates for individuals and households. For all 18 rounds, only about 29% of households and 19% of individuals continued to participate (1994–2014) but, if we look at the first 10 years, the results were about 60% and 51%, respectively (rounds 1–9) (Supplementary Table 12). Table 2 presents death rates for the initial 1994 participants. Overall, 12.8% have passed away.

Data collected

Throughout the entire set of surveys, very detailed basic household and individual data have been collected. Table 3 details this set of economic, labour force, demographic, education, and related socioeconomic data. The full set of English and Russian survey instruments are available on the two RLMS-HSE websites. The household and individual core socioeconomic data are extremely detailed. They contain classic income and expenditures data on all categories, from weekly food purchases to consumer durables. The demographic data provide a classic triangle of the relationships of each person with each other within the household. The asset data include all sorts of details on household and other assets. The employment information

is in-depth for multiple jobs with detail on type of employment, earnings, hours and ownership status (public, private, joint) and provides the four-digit International Labour Organization occupation code. Both actual and perceived quality of life questions are interspersed.

Health data: for each wave, detailed data on alcohol and smoking were obtained. Health service use data are also collected but not in great detail. For selected rounds, direct measurement of weight, height and waist circumference were obtained (rounds V–XIV and XX). Also one-day 24-h recall dietary data were obtained in these rounds. In only one round were replicates of a second day collected for the sample.^{2,3} Nutrient intake levels are reported; however, actual detailed dietary data are not available as the food composition table and data are controlled by a collaborator and were not made available.

There have been attempts to obtain biomarkers; unfortunately, fasting blood or blood spot collection has been impossible as blood samples in any form cannot be taken out of Russia, and it has not been possible to find a laboratory equipped to handle full blood spot assays at reasonable cost and reliability. These data have yet to be collected.

Spatial coordinates

For some time we attempted to use global positioning technology and collect coordinates for all major social and economic and transport and health-related infrastructure as well as household coordinates. Politically this was not feasible until recently, and funding has not been obtained to undertake this collection. However, the survey team is able to provide (at cost) linkages of external data sets to the RLMS-HSE contextual data by using deductive disclosure controls to ensure anonymity of the identification of communities.

Data resource use

Hundreds of English-language publications have arisen from the RLMS-HSE data, authored by scholars globally. In addition, there are thousands of Russian-language publications which are not accessible to most scholars globally. Most of the focus has been on the poverty, economic, social and demographic data. These dietary and socioeconomic data were used to create the Russian poverty line, which established the pension level such that few

Table 2. Percentages of 1994 participants who died between 1994 and 2013

1995	1996	1998	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
0.69	1.05	1.70	1.49	0.88	0.98	0.88	0.74	0.70	0.60	0.49	0.54	0.47	0.43	0.44	0.39	0.34	12.80

Table 3. RLMS-HSE survey components

Round	Year of collection	Core household SES data ^a	Core individual SES data ^b	Time budget	24-h diet/weight-height-WC	Child care	Abortion/family planning	Sexual behaviour, confidential
V	1994	X	X	X	X	X	X	
VI	1995	X	X	X	X	X	X	
VII	1996	X	X	X	X	X	X	
VIII	1998	X	X	X	X	X	X	
IX	2000	X	X		X	X	X	
X	2001	X	X		X	X	X	X
XI	2002	X	X		X	X	X	
XII	2003	X	X		X	X	X	X
XIII	2004	X	X		X	X	X	
XIV	2005	X	X		X	X	X	
XV	2006	X	X			X	X	
XVI	2007	X	X			X	X	
XVII	2008	X	X			X	X	
XVIII	2009	X	X			X	X	
XIX	2010–11	X	X			X	X	
XX	2011–12	X	X		X	X	X	
XXI	2012–13	X	X			X	X	
XXII	2013–14	X	X			X	X	

WC, waist circumference.

^aThe core household data collected each year include: household composition/relationships; housing (structure, amenities, privatization, ownership); possession of consumer durables; raising food on private plots; in-depth food, clothes and consumer durables during 3 months, savings, transfer payments, gifts to others, utilities and many other expenditures; income from all wage and non-wage sources by public and private sector status, including transfer payments, gifts, stock market, and drawing down savings; and details on non-payment of wages and losses due to bank closures.

^bThe core individual data (questions on children age < 14, answered by parents): these include place of birth, some migration, language, marital status; work (primary, secondary, entrepreneur, independent, unofficial, unemployment, employment-seeking); years of work experience; willingness to be retrained; four-digit occupational coding according to the International Labour Organization protocol; education (current and past); self-ratings of satisfaction, well-being, poverty, relationship with others; use of medical services and medicines and insurance; childbearing and birth control (including child-bearing and abortion history); plans included are smoking and alcohol in-depth blocks of questions.

pensioners in Russia are in poverty^{4,5} and almost none suffer weight loss due to a lack of income.⁶ Related to the poverty line has been extensive research on poverty by the World Bank and many scholars globally.^{5,7,8}

Alcohol intake has been subject to serious examination by a vast number of scholars.⁹ One of the more interesting issues is the skewed distribution with a small proportion of men of all ages consuming about a half-litre of actual alcohol per day.^{10–12} The data showed a decreasing prevalence of drinking during this period but an increase in the amount of alcohol consumed by some members of this population, and important cohort effects with older Russians more likely to be drinking excessively.¹³ Partly because of the high alcohol intake levels and the stresses of the economic transformation, overall health, life expectancy and mortality have been studied extensively.^{14–17} A third topic is abortion, for which the RLMS-HSE results produced much lower estimates than previous research.¹⁸ According to RLMS-HSE data, the abortion rate in 1994 was 56 per 1000 women aged 15–44, with a 95% confidence interval of ± 12 per 1000, an estimate that varies from that advanced by official sources and other studies.

Part of the reason for this difference is that the government listed all miscarriages as induced abortions. In addition, we used the advice of demographers who had studied this issue for years (Professor Barbara Anderson, University of Michigan, and others) to create confidential interviews on this component.

Strengths and weaknesses

The major strengths of the RLMS-HSE are the national representativeness, collection of very high quality sociodemographic and economic data, and the long follow-up. The biggest weaknesses from the health side are the lack of biomarkers and erratic collection of dietary and body composition data based on outside funding availability. And as in all longitudinal surveys the attrition over time should be considered while analyzing the data.

Data resource access

The bulk of the RLMS-HSE data are completely free and available on the RLMS websites in English [http://www.

cpc.unc.edu/projects/rlms-hse/] and Russian and English [www.hse.ru/rlms]. The sexual behaviour data are highly confidential, as are spatial locations of sample recipients. Institutional Review Board approval for each survey has been provided by both the institutional review boards of the University of North Carolina and the Higher School of Economics. Contextual data require also special applications. To link other contextual measures to the RLMS-HSE data, this must be done at cost by contacting the Carolina Population Center.

Supplementary data

Supplementary data are available at *IJE* online.

Acknowledgments

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Profile in a nutshell

- The RLMS-HSE was established to create a nationally representative survey to monitor the economic and health impact of the massive set of reforms in the Russian Federation.
- Established in 1992 (Phase I) and, for Phase II (discussed in depth here) in 1994, this annual survey is both nationally representative plus has a longitudinal component. Both collect multipurpose health and economic studies with in-depth individual, household and community contextual data collected

in all rounds.

- The 1994 and 2013 samples collected the data from 11290 and 21753 individuals and 3975 and 8149 households, respectively. A multistage sample with 98 primary sampling units (Moscow city, Moscow Oblast and St Petersburg are self-representing) was designed to represent the Russian Federation.
- The major data components are: economic (detailed income, labour force behaviour and expenditures data); demographic/sociological (household structure and age-gender composition, background, education and school behaviour); and health (24-h dietary recall, smoking, drinking activity, body mass index direct measurement).
- Data can be linked to other contextual datasets.
- The bulk of the RLMS-HSE data are completely free and available on the UNC-CPC websites in English [<http://www.cpc.unc.edu/projects/rlms-hse/>] and the RLMS-HSE website in Russian and in English [<http://www.hse.ru/rlms/>]. Selected confidentiality forms are required for selected data such as sexual behaviour of adolescents.

(Penn State University), Ward Kingkade (US Census Bureau) and Vladimir Treml (Duke University). The entire group of laboratories, headed by Polina Kozyreva and Michael Kosolopov and many staff and doctoral students at CPC-UNC, has led a series of redesigns of the survey. Phil Bardsley at UNC and a set of programmers at Demoscope have created and continued the Web support for the survey, with no funding for data dissemination.

Funding

The first decade of funding was complex. Initially the G-7 team and the Russian Federation concurred in organizing this survey, and the World Bank was the lead agency to fund all aspects of the work. Phase I, round 1, was funded by the World Bank, whereas Phase I, rounds 2–4, were funded by both the World Bank and USAID. For Phase II, rounds V–VIII obtained USAID funding with supplementary support from NIH (R01-HD38700) and NSF (SBR-9223326). Throughout, support came from the University of North Carolina, Carolina Population Center (CPC) (5 R24 HD050924), and in later years the Government of Sweden (Stockholm Institute of Transition Economics), the Ford Foundation, the MacArthur Foundation, the Pension Fund of the Russian Federation, along with some supplementary NIH funding. Most recently, since 2010 the National Research University Higher School of Economics has provided core survey support. A variety of sources have funded ancillary surveys (e.g. the dietary and body composition data in 2011 funded by CPC).

Conflict of interest: None declared.

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Supplement 1. Phase I: The initial Russia Longitudinal Monitoring Survey

A. Motivation:

The lack of valid, reliable statistical data: From the 1950s through the 1990s, the former Soviet Union and then the Russian Federation relied on the State Committee on Statistics (Goskomstat) to provide it with information on income, expenditures, poverty, and employment patterns. The major instrument to provide this information was the Consumer Budget Survey (or often called the Family Budget Survey, FBS). This is essentially the equivalent of the income and budget survey of the US Bureau of Labor Statistics or similar instruments in other countries. There were significant problems related to the sampling, design, implementation, and use of the FBS. Goskomstat has been collecting its own series of household income and consumption data since the early 1950s in an effort to provide data for the planners of its command economy. During the 1990s, Goskomstat continued to survey 49,000 households twice monthly. Although this massive panel survey would seem to be an outstanding source of data on the material well-being of Russian citizens, it suffered from serious flaws in sampling, questionnaire design, training, quality controls, data entry and processing, and analysis.

The Sample: Since the economy at that date was organized around powerful economic ministries until the onset of economic reform, the survey was originally based on a sample of enterprises and organizations within each ministry. Even as a sample of households within ministries, the sample was always problematic. There was no documentation of the use of properly weighted standard probability procedures in the selection of enterprises, nor was there any effort to allocate households regionally in a way that would properly support the detailed oblast-level reports that have been routinely used as a basis for policy making. Russian policy makers who took charge of the economic during the reform period following the creation of the Russian Federation under Boris Yeltsin were acutely aware of the imprecision of their statistical estimates, since standard errors were never reported and could not be properly calculated given the procedures employed in drawing the sample.

Furthermore, even though the survey purports to represent households, the sample has been based on a list of individual full-time workers in enterprises, not an enumeration of households per se. This means, for example, that households with one worker in the economic ministries (i.e., state sector) had only one third the probability of selection that households with three such workers had (all else being equal). Households with no workers in the state sector had no probability of falling into the sample. For example, a two-person household consisting of two pensioners had no way of falling into the sample until Goskomstat appended a haphazard sample of pensioners. It later made an effort to represent households supporting themselves with work in the new private sector. However, this change did not adjust for the fact that the bulk of the sample was not based on an enumeration of dwellings or households over the decades.

Unfortunately, even the longitudinal potential of the FBS data cannot be exploited because a household drawn to replace another household that dropped out of the study is given the same ID number as the one that dropped out. Consequently, in attempting to study change at the level of individual households, one cannot determine whether observed differences over time should be attributed to real change within one household or to substantively uninteresting change reflecting the different households with the same ID involved in the survey at two points in time.

Questionnaire design: As noted already, the FBS used a variant of a classical income and expenditure survey. It was designed to collect monthly income from workers who relied mainly

on wages from enterprises in addition to a set of subsidies and bonuses. The latter were collected, but there was little attempt to quantify in-kind subsidies, and there was no attempt to collect nonmarket production. It failed to capture the hidden economy of barter, private sector income and employment, work outside the basic core public employment, and many other economic activities. The FBS differed in that it was changed into a booklet into which families were expected to record each expenditure and earning as they were received on a daily basis—a remarkably tedious task. At the end of each month, the questionnaires were collected by an interviewer who actually functioned as an auditor, making sure the numbers added up properly.

Data entry and processing: This was a centralized operation. Each oblast was provided with software developed in the 1950s that entered the information and created a set of tables. Verification of data entry was not performed. The tables were then sent to the next higher administrative level for aggregation at a national level. Analysts at Goskomstat did not have direct access to the FBS data tapes and could not analyze these rich data at the individual level or in any manner not reported on the tables provided by each oblast. This lack of standardization of data processing meant that it was impossible for Goskomstat to provide information in ways that might be responsive to a wide range of demands by the public sector.

Analysis: Absence of detailed data has not only hindered the work of Goskomstat but meant that there was little micro-information on the economy available for Russian economists and others involved in policy analysis. Skills in microdata analysis were not developed. Rather, Soviet scholars developed innovative and complex mathematical and theoretical frameworks based on the limited secondary data, macro-information, and a large element of speculation.

B. PHASE I SURVEY

The RLMS was a household-based survey designed to address many of the deficiencies of the Family Budget Survey. Initially this survey was implemented in conjunction with Goskomstat. The new survey instrument was designed not only to address deficiencies of the FBS but also to act as a multipurpose combination of income and expenditure, employment, and health surveys. This instrument collected data necessary for a wide array of analyses, programs, and policies critical to the design of social and economic programs and policies in the early reform period.

Design and training were organized and led by the team of researchers of the Institute of Sociology RAS, later created for RLMS realization the independent research center "Demoscope"; funding and overall leadership came from the CPC-UNC team. This included a fourth major person, Michael Swafford, who subsequently passed away. This team handled questionnaire design, training, quality control, design of the data entry software.

Sample Design Phase I

The sampling for Phase I came from adviser William Kalsbeek (a sampling expert at UNC-CH) and later with help from Leslie Kish, an eminent US scholar. The project developed a replicated three-stage, stratified cluster sample of residential addresses excluding military, penal, and other institutionalized populations. Briefly, in the first stage, a sample of 20 raions (PSU) was selected; in the second, a sample of 10 voting districts was selected in each of these raions; in the third, a sample of 36 households (not voters) was selected in each of these voting districts. This yielded a target sample of 7,200 households. With nonresponse, the actual number of households varied around 6,000 over the four rounds (see Tables 1 and 2). Weights and design effects measures were created.

Four rounds (I–IV) were conducted within Phase I of RLMS.

--Tables 1 and 2 about here--

Members of the research group of the Institute of Sociology conducted elaborate checks of the way the sample was drawn in each oblast, including direct checks of lists and households. As a result of large-scale checks, the correctness of the field phase of the first wave of the survey, conducted by Goskomstat, were marked by systematic violations of requirements for RLMS technology. It was not possible, however, during the period of work with Goskomstat, to get more than a small number of supervisors to actively check interviews on a day-to-day basis and send back interviewers to correct problems. Ultimately a decision was made to end work with Goskomstat.

Because of the questionable quality of the data and the sample, the inability to link households over time, and the dummy cases, we recommended to users that these data not be used, but we do provide them when requested. In contrast we have very high-quality Phase II data handling and keep those data accessible online.

Supplement 2. Sample design for Phase II: The Russia Longitudinal Monitoring Survey-Higher School of Economics

The sampling for Phase II came from a team led by Michael Swafford, Mikhail Kosolapov, and Leslie Kish. This probability sample was designed to overcome three of the shortcomings of the probability sample used in rounds I–IV (which was developed in a short time frame under constraints imposed by Goskomstat).

First, a list of 2,029 consolidated raions was created to serve as primary sampling units (PSUs). These were allocated into 38 strata based largely on geographical factors and level of urbanization, but also on ethnicity where there was salient variability. As in many national surveys involving face-to-face interviews, some remote areas were eliminated to contain costs. From among the remaining 1,850 raions (containing 95.6% of the population), three very large population units were selected with certainty: Moscow city, Moscow oblast, and St. Petersburg city constituted self-representing (SR) strata. The remaining non-self-representing raions (NSRs) were allocated to 35 equal-sized strata. One raion was then selected from each NSR stratum using the method "probability proportional to size" (PPS).

All NSR strata have approximately equal sizes because they were purposefully designed to improve the efficiency of estimates. As is often the case, we were obliged to use figures on the population of individuals as a surrogate of population of eligible households because of the unavailability of household figures in various regions. Although the target sample size was set at 4,000, the number of households drawn into the sample was inflated to 4,718 to allow for a nonresponse rate of approximately 15%. The number of households drawn from each of the NSR strata was approximately equal (averaging 108). However, because we expected response rates to be higher in urban areas than in rural areas, the extent of oversampling varies. An initial sample size was different for different NSRs. This also explains that the share of the original sample attributable to three SR strata more than would have been allotted based on strict proportionality.

Since there was no consolidated list of households or dwellings in any of the 38 selected PSUs, an intermediate stage of selection was introduced, as usual. The selection of second-stage units (SSUs) differed depending on whether the population was urban (located in cities and "villages of the city type," known as PGTs) or rural (located in villages). That is, within each selected PSU the population was stratified into urban and rural substrata, and the target sample size was allocated proportionately to the two substrata.

In rural areas of the selected PSUs, a list of all villages was compiled to serve as SSUs. The list was ordered by size and (where salient) by ethnic composition. Again, under the standard principles of PPS, once the required number of villages was selected, an equal number of households in the sample (10) was allocated to each village. Since villages maintain very reliable lists of households, in each selected village the 10 households were selected systematically from the household list.

In urban areas, SSUs were defined by the boundaries of 1989 census enumeration districts, if possible. If the necessary information was not available, 1994 microcensus enumeration districts and voting districts were employed in decreasing order of preference. Since census enumeration districts were originally designed to be roughly equal in population size, one district was selected systematically without using PPS for each 10 households required in the sample. In the few cases where voting districts were used, to compensate for the marked variation in population size PPS was employed to select one voting district for each of the 10 households. Given the lack of reliable official lists of households within the urban SSUs, we were obliged to develop the list of households from which 10 were selected. First, a list of

dwelling was made. Then, the required number of households was drawn systematically, starting with a random selection in the first interval.

The initial Phase II, beginning with round V in 1994, interviewed 3,975 households and 11,290 individuals. Beginning with round VII we actually created two samples—the nationally representative panel and then the longitudinal sample including all movers, households, and individuals that were possible. As each household entered the RLMS, they were followed if they moved and became part of the longitudinal sample.

A comparison of the unweighted representative RLMS-HSE sample of households and individuals with the census data.

--Tables 3, 4 and 5 about here--

Response Rates

We present response rates for the two samples. The first is the response rate for nationally representative sample of households, which are households residing at the address of the original sample of 1994 and addresses of replenishment 2006 and 2010.

--Table 6 about here--

Since there have been replenishment in RLMS-HSE sample over 20 years, it is difficult to compare response rates between rounds before and after replenishment. So we divided the columns for 2006 and 2010 in two parts.

--Table 7 about here--

To analyze response rate dynamics, we calculated the second type of the response rate for sample of households that reside at the address of the original sample of 1994. We excluded new addresses added in 2006 and 2010.

The duration of participation in the survey (participation rate) 1994-2013 is presented in tables 8-11.

--Tables 8-11 about here--

Attrition Rates

We provide much more detail on the sample attrition. Sample attrition due to nonresponse cannot be avoided. In longitudinal studies, it is very important to be able to assess attrition effects on simulated "pure panel" analysis.

--Tables 12-14 about here--

Table 1 - Phase I: Sample size – individuals and households

Survey Dates	July-Oct 1992	Dec 1992-Mar 1993	Jan-Sept 1993	Oct 1993-Jan 1994
Individual (no)	16,623	15,013	15,030	14,466
Household (no)	6,333	6,043	5,836	5,766

Table 2 - Phase I: Longitudinal cohorts: RLMS response rates at the individual and household levels.

Survey Dates	July-Oct 1992	Dec 1992-Mar 1993	Jan-Sept 1993	Oct 1993-Jan 1994
Individual				
<i>N</i>	16,623	15,013	15,030	14,466
Response rate (%)*	100	90.3	90.4	87.0
Household				
<i>N</i>	6,333	6,043	5,836	5,766
Response rate (%)*	100	95.4	92.1	91.0

Table 3 – Phase II: A comparison of the unweighted representative RLMS-HSE sample of households with the census data on household size

Area	HH size	2002 census (%)	Respondents in 2002 without weighting (%)	2010 census (%)	Respondents in 2010 without weighting (%)
Urban	1	16,64	15,17	19,82	15,56
	2	20,62	23,02	21,84	21,85
	3	18,60	17,63	17,70	18,51
	4	12,55	12,59	10,69	11,92
	5 and more	6,03	6,46	5,54	6,85
	Total	74,44	74,87	75,59	74,69
Rural	1	5,64	4,52	5,88	4,38
	2	6,95	7,32	6,69	7,54
	3	5,19	5,30	4,81	4,85
	4	4,42	4,02	3,81	4,71
	5 and more	3,37	3,97	3,23	3,83
	Total	25,56	25,13	24,41	25,31
Total		100	100,00	100,00	100,00

Table 4 - Phase II: A comparison of the unweighted representative RLMS-HSE sample of individuals with the census data on the distribution by age and gender

Area	Gender	Age	2002 census (%)	Respondents in 2002 without weighting (%)	2010 census (%)	Respondents in 2010 without weighting (%)
Urban	Men	0-14	5,71	5,58	5,42	5,48
		15-29	9,21	7,55	8,60	7,47
		30-44	8,07	6,78	7,80	6,59
		45-59	6,42	5,90	7,30	6,37
		60+	4,44	5,22	4,56	4,62
		Total	33,85	31,02	33,68	30,53
	Women	0-14	5,46	5,44	5,16	5,53
		15-29	9,18	8,93	8,57	8,58
		30-44	8,60	8,24	8,30	8,25
		45-59	7,76	8,51	9,19	9,06
		60+	8,46	10,24	8,82	10,00
		Total	39,45	41,36	40,04	41,41
	Total	73,30	72,39	73,71	71,95	

Table 5 - Phase II: A comparison of the unweighted representative RLMS-HSE sample of individuals with the census data on the distribution by education **

Area	Gender	Education	2002 census	2002 census (%)	Respondents in 2002	Respondents in 2002 (%)	2010 census	2010 census (%)		Respondents in 2010 (%)
Urban	Men	Secondary education and lower	14292866	35,6	918	39,3	11743874	30,2	1398	33,1
		Post-secondary non-tertiary education	18319797*	45,6	953	40,8	17007707*	43,8	1795	42,5
		Tertiary education and higher	7562779	18,8	464	19,9	10077326	26,0	1028	24,4
		<i>Subtotal</i>	<i>40175442</i>	<i>100,0</i>	<i>2334</i>	<i>100,0</i>	<i>38828907</i>	<i>100,0</i>	<i>4221</i>	<i>100,0</i>
		n/a	635363		8		1536590		4	
		Total	40810805		2343		40365497		4225	
	Women	Secondary education and lower	17510306	36,0	1316	39,9	13704010	28,5	1936	32,0
		Post-secondary non-tertiary education	21606895*	44,4	1306	39,6	20369050*	42,4	2439	40,3
		Tertiary education and higher	9500789	19,5	676	20,5	13941633	29,0	1675	27,7
		<i>Subtotal</i>	<i>48617990</i>	<i>100,0</i>	<i>3294</i>	<i>100,0</i>	<i>48014693</i>	<i>100,0</i>	<i>6051</i>	<i>100,0</i>
		n/a	690821		9		1800333		2	
		Total	49308811		3308		49815026		6053	
Total	90119616		5651		90180523		10278			
Rural	Men	Secondary education and lower	7542747	51,7	558	60,5	7743816	53,5	905	53,0
		Post-secondary non-tertiary education	5984727*	41,1	304	33,0	5243019*	36,2	652	38,2
		Tertiary education and higher	1050047	7,2	60	6,5	1488820	10,3	150	8,8
		<i>Subtotal</i>	<i>14577521</i>	<i>100,0</i>	<i>921</i>	<i>100,0</i>	<i>14475655</i>	<i>100,0</i>	<i>1707</i>	<i>100,0</i>
		n/a	18752		4		89896		5	
		Total	14596273		925		14565551		1712	
	Women	Secondary education and lower	9175736	55,4	685	59,4	8249695	50,5	1007	46,9
		Post-secondary non-tertiary education	6124354*	37,0	367	31,8	6037598*	37,0	842	39,2
		Tertiary education and higher	1264784	7,6	101	8,8	2032928	12,5	297	13,8
		<i>Subtotal</i>	<i>16564874</i>	<i>100,0</i>	<i>1153</i>	<i>100,0</i>	<i>16320221</i>	<i>100,0</i>	<i>2146</i>	<i>100,0</i>
		n/a	19472		6		87632		1	
		Total	16584346		1159		16407853		2147	
Total	31180619		2084		30973404		3859			
Total	121300235		7735		121153927		14137			

* Including incomplete higher education, i.e. there are individuals who entered the university but have not received a degree.

** Only respondents aged 15+. This design was applied due to the census data restriction.

Table 6 - Phase II. RLMS-HSE response rate for nationally representative sample of households, that are households residing at the address of the original sample of 1994 and addresses of replenishment 2006 and 2010 (without movers who were followed), 1994 – 2013, %

	1994	1995	1996	1998	2000	2001	2002	2003	2004	2005	2006	2006*	2006**	2007	2008	2009	2010	2010*	2010**	2011	2012	2013
All	87,6	82,1	79,4	77,7	75,1	57,9	57,3	54,8	55,0	51,1	45,6	51,9	32,7	43,2	42,2	44,4	41,8	50,9	27,6	38,7	37,3	37,7
All regions except Moscow and Saint Petersburg	91,8	87,3	84,9	83,4	82,0	80,4	78,8	76,8	76,4	72,6	56,1	70,3	35,3	53,7	52,5	52,7	49,0	57,8	33,6	44,8	46,3	45,3
Only Moscow and Saint Petersburg	62,9	51,7	47,0	42,6	32,7	20,5	21,8	17,8	18,9	15,8	18,8	19,3	15,9	18,1	16,8	21,0	18,5	23,8	12,7	17,3	16,2	15,9

* Only households residing at addresses that participated in the survey earlier

** Only households residing at new addresses

Table 7 - Phase II. RLMS-HSE response rate for sample of households that are households residing at the address of the original sample of 1994 without movers, 1994 – 2013 %

	1994	1995	1996	1998	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
All	87,6	82,1	79,4	77,7	75,1	57,9	57,3	54,8	55,0	51,1	51,9	49,1	47,9	46,6	47,8	49,9	50,1	47,7
All regions except Moscow and St. Petersburg	91,8	87,3	84,9	83,4	82,0	80,4	78,8	76,8	76,4	72,6	70,3	67,9	65,8	64,3	65,4	62,4	63,1	60,1
Only Moscow and St. Petersburg	62,9	51,7	47,0	42,6	32,7	20,5	21,8	17,8	18,9	15,8	19,3	18,3	17,9	17,6	18,0	21,1	20,8	19,2

Table 8 - Phase II: The duration of participation in the survey (participation rate) for 1994 households and individuals (including separated or moved out) (Moscow), 1994 – 2013*

Rounds participated	Household		Individual	
	Percentage	Cumulative percentage	Percentage	Cumulative percentage
All eighteen rounds	4,17	4,17	2,22	2,22
Seventeen rounds	4,92	9,09	3,33	5,56
Sixteen rounds	2,65	11,74	2,22	7,78
Fifteen rounds	2,65	14,39	2,50	10,28
Fourteen rounds	2,27	16,67	3,06	13,33
Thirteen rounds	0,76	17,42	0,97	14,31
Twelve rounds	2,27	19,70	2,78	17,08
Eleven rounds	2,27	21,97	1,11	18,19
Ten rounds	2,27	24,24	2,50	20,69
Nine rounds	3,79	28,03	2,22	22,92
Eight rounds	3,79	31,82	3,33	26,25
Seven rounds	2,65	34,47	2,50	28,75
Six rounds	2,27	36,74	2,50	31,25
Five rounds	6,82	43,56	5,56	36,81
Four rounds	10,98	54,55	8,61	45,42
Three rounds	17,42	71,97	19,44	64,86
Two rounds	10,98	82,95	12,36	77,22
One round	17,05	100,00	22,78	100,00

Table 9 - Phase II: The duration of participation in the survey (participation rate) for 1994 households and individuals (including separated or moved out) (St. Petersburg), 1994 – 2013*

Rounds participated	Household		Individual	
	Percentage	Cumulative percentage	Percentage	Cumulative percentage
All eighteen rounds	2,01	2,01	1,08	1,08
Seventeen rounds	3,36	5,37	1,73	2,81
Sixteen rounds	1,34	6,71	0,43	3,25
Fifteen rounds	2,01	8,72	1,95	5,19
Fourteen rounds	3,36	12,08	2,16	7,36
Thirteen rounds	3,36	15,44	1,08	8,44
Twelve rounds	2,01	17,45	0,65	9,09
Eleven rounds	2,68	20,13	1,73	10,82
Ten rounds	2,68	22,82	1,95	12,77
Nine rounds	0,00	22,82	0,43	13,20
Eight rounds	3,36	26,17	2,16	15,37
Seven rounds	2,68	28,86	3,03	18,40
Six rounds	4,03	32,89	4,76	23,16
Five rounds	3,36	36,24	4,98	28,14
Four rounds	6,71	42,95	6,49	34,63
Three rounds	7,38	50,34	9,31	43,94
Two rounds	14,09	64,43	12,99	56,93
One round	35,57	100,00	43,07	100,00

Table 10 - Phase II: The duration of participation in the survey (participation rate) for 1994 households and individuals (including separated or moved out) (Moscow Region), 1994 – 2013*

Rounds participated	Household		Individual	
	Percentage	Cumulative percentage	Percentage	Cumulative percentage
All eighteen rounds	20,2	20,20	12,00	12,00
Seventeen rounds	5,6	25,76	4,80	16,80
Sixteen rounds	4,5	30,30	4,20	21,00
Fifteen rounds	3,0	33,33	4,00	25,00
Fourteen rounds	4,0	37,37	3,60	28,60
Thirteen rounds	3,0	40,40	3,00	31,60
Twelve rounds	1,5	41,92	2,80	34,40
Eleven rounds	4,0	45,96	3,60	38,00
Ten rounds	7,6	53,54	5,60	43,60
Nine rounds	4,0	57,58	4,80	48,40
Eight rounds	5,1	62,63	4,80	53,20
Seven rounds	4,0	66,67	4,00	57,20
Six rounds	3,5	70,20	3,00	60,20
Five rounds	4,5	74,75	4,80	65,00
Four rounds	5,1	79,80	6,80	71,80
Three rounds	4,5	84,34	8,20	80,00
Two rounds	7,1	91,41	7,80	87,80
One round	8,6	100,00	12,20	100,00

Table 11 – Phase II: The duration of participation in the survey (participation rate) for 1994 households and individuals (including separated or moved out) (except Moscow, St. Petersburg and Moscow Region), 1994 - 2013

Rounds participated	Household		Individual	
	Percentage	Cumulative percentage	Percentage	Cumulative percentage
All eighteen rounds	29,28	29,28	18,55	18,55
Seventeen rounds	6,93	36,21	6,68	25,23
Sixteen rounds	3,66	39,86	4,06	29,29
Fifteen rounds	2,76	42,63	3,58	32,87
Fourteen rounds	2,68	45,30	2,91	35,78
Thirteen rounds	2,88	48,19	2,88	38,67
Twelve rounds	2,79	50,98	3,08	41,75
Eleven rounds	3,27	54,25	3,12	44,87
Ten rounds	2,94	57,19	2,87	47,74
Nine rounds	2,71	59,90	3,18	50,93
Eight rounds	2,79	62,69	3,16	54,09
Seven rounds	2,88	65,58	3,24	57,33
Six rounds	3,21	68,79	4,01	61,33
Five rounds	3,15	71,94	3,90	65,24
Four rounds	5,26	77,20	6,12	71,36
Three rounds	6,30	83,50	8,21	79,57
Two rounds	5,98	89,48	7,82	87,39
One round	10,52	100,00	12,61	100,00

Table 12 - Phase II: RLMS-HSE «Wave to wave» attrition rate for nationally representative sample (respondents / households at the address of the original sample of 1994 and addresses of replenishment 2001, 2003, 2006 and 2010 only) without movers who were followed, 1994 – 2013

	1994	1995	1996	1998	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Individual																		
$N_{Rrs\ t}^1$	11290	10603	10013	9592	8997	9290	9199	9036	8935	8248	10639	10272	9810	9511	16804	16976	17090	16087
$N_{Rrs\ t,t+1}^2$		8853	8396	7418	7200	7134	7696	7704	7480	7276	6890	8669	8358	8288	8098	12906	13138	13282
Wave to wave attrition rate (%)		21,6	20,8	25,9*	24,9*	20,7	17,2	16,3	17,2	18,6	16,5	18,5	18,6	15,5	14,9	23,2	22,6	22,3
Household																		
$N_{HHrs\ t}^3$	3975	3755	3591	3464	3319	3518	3454	3407	3375	3156	4127	3932	3816	3727	6325	6385	6516	6148
$N_{HHrs\ t,t+1}^4$		3296	3181	2913	2848	2766	3043	3026	2945	2906	2755	3459	3383	3379	3297	5110	5197	5278
Wave to wave attrition rate (%)		17,1	15,3	18,9*	17,8*	16,7	13,5	12,4	13,6	13,9	12,7	16,2	14,0	11,5	11,5	19,2	18,6	19,0

*There were no surveys in 1997 and 1999. So observed attrition rates in 1998 and 2000 include cumulative attrition rates for two years between rounds.

1. $N_{Rrs\ t}$ = «Individual @ wave_t» - the size of the representative sample of individuals, who participated in the round t
2. $N_{Rrs\ t,t+1}$ = «Individual @ wave_{t,t+1}» - the size of the representative sample of individuals in the round t, who participated in the round t + 1
3. $N_{HHrs\ t}$ = «Household @ wave_t» - the size of the representative sample of households, who participated in round t
4. $N_{HHrs\ t,t+1}$ = «Household @ wave_{t,t+1}» - the size of the representative sample of households in the round t, who participated in the round t+1

$$\text{Wave to wave attrition rate for individuals} = \frac{N_{Rrs\ t} - N_{Rrs\ t,t+1}}{N_{Rrs\ t}} \quad (1)$$

$$\text{Wave to wave attrition rate for households} = \frac{N_{HHrs\ t} - N_{HHrs\ t,t+1}}{N_{HHrs\ t}} \quad (2)$$

Table 13 - Phase II: RLMS-HSE «wave to wave» and «Baseline — on — wave» attrition rates for 1994 participants (individuals/households) only (Original individuals and households in the survey from 1994 (Baseline) with movers who were followed)*

	1994	1995	1996	1998	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Individual																		
$N_{R1994 t}^1$	11290	8886	8061	7108	6491	6138	5948	5548	5189	4878	4707	4381	4021	3925	3767	3539	3317	3076
$N_{R1994 t, t+1}^2$		8886	7629	6657	6050	5817	5606	5353	4966	4677	4471	4188	3888	3703	3556	3357	3165	2955
Wave to wave attrition rate (%)		21,3	14,1	17,4	14,9	10,4	8,7	10,0	10,5	9,9	8,3	11,0	11,3	7,9	9,4	10,9	10,6	10,9
Baseline — on — wave attrition rate (%)		21,3	28,6	37,0	42,5	45,6	47,3	50,9	54,0	56,8	58,3	61,2	64,4	65,2	66,6	68,7	70,6	72,8
Household																		
$N_{HH1994 t}^3$	3975	3317	3133	2940	2871	2826	2815	2723	2600	2504	2436	2323	2223	2213	2105	2062	1975	1871
$N_{HH1994 t, t+1}^4$		3317	3007	2795	2707	2695	2685	2646	2508	2404	2334	2236	2159	2113	2020	1971	1890	1808
Wave to wave attrition rate (%)		16,6	9,3	10,8	7,9	6,1	5,0	6,0	7,9	7,5	6,8	8,2	7,1	4,9	8,7	6,4	8,3	8,5
Baseline — on — wave attrition rate (%)		16,6	21,2	26,0	27,8	28,9	29,2	31,5	34,6	37,0	38,7	41,6	44,1	44,3	47,0	48,1	50,3	52,9

1. $N_{R1994 t}$ - 1994 individuals only (including separated or moved out), who participated in round t
2. $N_{R1994 t, t+1}$ - 1994 individuals only (including separated or moved out), who participated in round t + 1 and in round t
3. $N_{HH1994 t}$ - 1994 household only (including separated or moved out), who participated in round t
4. $N_{HH1994 t, t+1}$ - 1994 household only (including separated or moved out), who participated in round t + 1 and in round t

$$\text{Wave to wave attrition rate for individuals} = \frac{N_{R1994 t} - N_{R1994 t, t+1}}{N_{R1994 t}} \quad (3)$$

$$\text{Wave to wave attrition rate for households} = \frac{N_{HH1994 t} - N_{HH1994 t, t+1}}{N_{HH1994 t}} \quad (4)$$

$$\text{Baseline — on — wave attrition rate for individuals} = \frac{N_{R1994} - N_{R1994, t}}{N_{R1994}} \quad (5)$$

$$\text{Baseline — on — wave attrition rate for households} = \frac{N_{HH1994} - N_{HH1994, t}}{N_{HH1994}} \quad (6)$$

Table 14 - Phase II: RLMS-HSE «Wave to wave» and «Baseline — on — wave» attrition rates for 1994 participants (individual /household) only (Original households and individuals in the survey from 1994 (Baseline) without movers who were followed)*

	1994	1995	1996	1998	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Individual																		
$N_{R1994\text{-follow up, } t}^1$	11290	8853	7786	6544	5619	4892	4599	4210	3856	3597	3395	3113	2802	2699	2612	2393	2234	2048
$N_{R1994\text{-follow up, } t, t+1}^2$		8853	7406	6152	5281	4688	4380	4081	3708	3464	3257	2967	2700	2551	2461	2278	2139	1979
Wave to wave attrition rate (%)		21,6	16,3	21,0	19,3	16,6	10,5	11,3	11,9	10,2	9,5	12,6	13,3	9,0	8,8	12,8	10,6	11,4
Baseline — on — wave attrition— rate (%)		21,6	31,0	42,0	50,2	56,7	59,3	62,7	65,8	68,1	69,9	72,4	75,2	76,1	76,9	78,8	80,2	81,9
Household																		
$N_{HH1994\text{-follow up, } t}^3$	3975	3296	3014	2665	2388	2148	2049	1937	1800	1716	1634	1506	1394	1354	1316	1250	1180	1108
$N_{HH1994\text{-follow up, } t, t+1}^4$		3296	2903	2547	2290	2072	1988	1890	1743	1665	1583	1459	1360	1295	1263	1202	1130	1073
Wave to wave attrition rate (%)		17,1	11,9	15,5	14,1	13,2	7,4	7,8	10,0	7,5	7,8	10,7	9,7	7,1	6,7	8,7	9,6	9,1
Baseline — on — wave attrition— rate (%)		17,1	24,2	33,0	39,9	46,0	48,5	51,3	54,7	56,8	58,9	62,1	64,9	65,9	66,9	68,6	70,3	72,1

1. $N_{R1994\text{-follow up, } t}$ - 1994 individuals only without movers who were followed (those is 1994 participants who did not change their location during up to Round t)
2. $N_{R1994\text{-follow up, } t, t+1}$ - 1994 individuals only without movers who were followed (those is 1994 participants who did not change their location during up to Round t+1) and participated in round t + 1 and in round t
3. $N_{HH1994\text{-follow up, } t}$ - 1994 household only without movers who were followed (those is 1994 participants who did not change their location during up to Round t)
4. $N_{HH1994\text{-follow up, } t, t+1}$ - 1994 household only (those is 1994 participants who did not change their location during up to Round t+1) and participated in round t + 1 and in round t

$$\text{Wave to wave attrition rate for individuals} = \frac{N_{R1994\text{-follow up, } t} - N_{R1994\text{-follow up, } t, t+1}}{N_{R1994\text{-follow up, } t}}$$

(7)

$$\text{Wave to wave attrition rate for households} = \frac{N_{HH1994\text{-follow up, } t} - N_{HH1994\text{-follow up, } t, t+1}}{N_{HH1994\text{-follow up, } t}}$$

(8)

$$\text{Baseline — on — wave attrition rate for individuals} = \frac{N_{R1994} - N_{R1994\text{-follow up, } t}}{N_{R1994}}$$

(9)

$$\text{Baseline — on — wave attrition rate for households} = \frac{N_{HH1994} - N_{HH1994\text{-follow up, } t}}{N_{HH1994}}$$

(10)