



Mexican Health and Aging Study MHAS 2015
ENASEM
Methodological Document



INSTITUTO NACIONAL
DE ESTADÍSTICA Y GEOGRAFÍA

Instituto Nacional de Estadística y Geografía

**Mexican Health and Aging
Study MHAS 2015**

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**INSTITUTO NACIONAL
DE ESTADÍSTICA Y GEOGRAFÍA**

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**Methodological document of the Mexican Health and
Aging Study MHAS (ENASEM) 2015**

Presentation

The **Instituto Nacional de Estadística y Geografía (INEGI)**, in the framework of the powers conferred by the Ley del Sistema Nacional de Información Estadística y Geográfica, develops and implements strategies aimed to consolidate the Sistemas Nacionales de Información Estadística y Geográfica (SNIEG), among which is the documentation of the different projects carried out.

In this context, the **Methodological Document of the Mexican Health and Aging Study MHAS (ENASEM) 2015**, is presented with the purpose of providing an overview of characteristics used in terms of its objectives, background and planning, conceptual, technical and methodological aspects.

Thus, **INEGI** offers users a document that shows a detailed overview of the schemes and procedures applied in the execution of the survey in order to transparent the processes and offer a tool that allows better understanding and analysis of the data produced. Also, to leave a testimony of usefulness in the future perspective for the accomplishment of statistical projects with similar characteristics.

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1. General Planning

This section addresses the core aspects that characterize ENASEM 2015 which form the general planning process, from the objectives to the programming of activities and the expenditure budget.

1.1 Objectives

Due to the need to know the health condition, through the aging process of older adults in Mexico, the University of Texas *Medical Branch* and the Instituto Nacional de Estadística y Geografía (INEGI) were given the task of a longitudinal study in the years 2001, 2003, 2012 and 2015. Through the study, they have collected information from a baseline sample that has been updated. The objectives that were established for the works of 2015 were:

General

Update and follow up on the statistical information collected in the previous surveys (2001, 2003, and 2012) on the population aged 50 and over in Mexico, with urban and rural representation, to assess the aging process, the impact of diseases and disability in the performance of their activities, whatever these are.

Specifics

- Update the sociodemographic characteristic of the people, their spouses and the other residents in the interviewees' homes in 2001, 2003, and 2012.
- Obtain extensive demographic data of selected individuals, including migratory history.
- Update or collect sociodemographic characteristics of non-resident children and the deceased.
- Obtain data that allows us to know the general health of the population interviewed and identify the health services that they use, as well as the expenses incurred in obtaining this service.
- Apply a series of cognitive exercises that allow researchers to determine the level of memory and mental health of people.
- Obtain information about the survival of the parents of the people interviewed, as well as the relationship with them and the help they are given.
- Collect information that makes it possible to quantify the amount and identify the type of help that is given and received from the children.
- Generate information to determine the state of functionality and the assistance that the interviewee receives for the development of their daily activities.
- Provide information about the employment history, activity status and characteristics of the current employment of the persons interviewed.
- Obtain the characteristics, the property condition and the estimated value of the house, as well as the services that it has.

- Collect information on income received by pensions or other sources other than employment, the existence of real estate and capital, as well as the receipt of income through work.

1.2 Methodological Bases

In order to provide the lines of action to the survey, the following methodological references are presented:

Selection unit. People who in 2001 and 2012 were 50 years old and, if applicable, their spouse or partner, regardless of age.

Unit of observation. It corresponds to the people who were selected in the ENASEM 2001 and 2012 surveys, their partner, regardless of their age in the latter, as well as the possible new partners that would have been integrated in the survey of ENASEM 2003 and 2015.

Geographical coverage. The sample is distributed throughout the country, both in urban and rural locations, so that it will be possible to generate information at the national level.

Reference period. The survey investigates facts and situations that occurred in different periods, among which are:

1. Date of interview, which is considered in practically all sections of the questionnaire.
2. Before you turn 10 years to capture *demographic data* for a new person.
3. Last 10 years, last two years, last year and last week, in topics on *Health, Parents and Parental Help, Help and Children, Pension, Income and Assets, and Employment*.
4. Last month in the section *Functionality and Help*.
5. Throughout your life and once in your life for *Employment*.

Sampling period. The collection of information took place from October 12 to December 4, 2015.

Size of the national sample. The sample consisted of 17,813 people at the beginning of the 2015 survey; At the end the figure increased to 17,986 due to the incorporation of the new pairs of study subjects.

Method of collection. The information was obtained through a direct interview using questionnaires in an electronic format on a mini laptop and, in some cases, on paper, addressed to the study subject or to a substitute informant. The recruitment instruments are structured with questions that are posed to the informant in an orderly way, with mostly closed option answers, and open on some topics.

In those cases where the selected person had an impediment, such as illness, disability or death, the person who provided the data was the substitute informant who has or had frequent and close contact with her and who is well acquainted with the information object of the survey.

1.3 General Program of Activities

The tasks for the implementation of ENASEM 2015 were organized as follows:

General program of activities

Activity	Duration estimated (days)	Period	
		Start	Finish
1. Preparation and design	135	13/04/15	16/10/15
1.1 Elaboration and capture of budget and programmatic criteria	50	13/04/15	19/06/15
1.2 Review and adjustments to the questionnaire	40	20/04/15	12/06/15
1.3 Training strategy	65	25/05/15	21/08/15
1.4 Design and development of the catchment system	65	15/06/15	11/09/15
1.5 Integral test	10	31/08/15	11/09/15
1.6 Strategy for operational monitoring	80	29/06/15	16/10/15
1.7 Planning	52	22/07/15	01/10/15
2. Execution of the collection process	85	10/08/15	04/12/15
2.1 Verification tour and previous visit	20	17/08/15	11/09/15
2.2 Training	35	24/08/15	09/10/15
2.3 Sampling	40	12/10/15	04/12/15
3. Development of systems for central processing	90	24/08/15	25/12/15
4. Central processing operation	170	14/12/15	05/08/16
4.1 National integration	10	14/12/15	25/12/15
4.2 Coding	25	10/02/16	15/03/16
4.3 Central validation	60	16/03/16	07/06/16
4.4 Calculation of expansion factors	10	15/06/16	28/06/16
4.5 Integration of biomarkers data	15	06/07/16	26/07/16
4.6 Preparation of database for delivery	5	27/07/16	02/08/16
5. Documentation	185	24/08/15	29/07/16
6. Delivery of results	3	03/08/16	05/08/16

1.4 Expenditure Budget

The resources that went to the development of the project came from the University of Texas *Medical Branch* and were distributed, as an expense, as follows:

Budget assigned to ENASEM

Concept	Amount (pesos)	Percentage
Total	33 529 201	100.00
Template	15 567 738	46.43
Travel and field expenses	13 651 388	40.71
Flights	2 252 393	6.72
Office supplies and training expenses	387 422	1.16
Messaging and telephone	39 600	0.12
Vehicles and tolls	1 550 660	4.62
Connectivity and IT services	80 000	0.24

2. Conceptual Aspects

The conceptual design of ENASEM 2015 was developed with the fundamental purpose of capturing quality information to meet the objectives of the project and cover the broad thematic issues associated with aging, health, disability, family and financial support networks, among other aspects.

2.1 Determination of Information needs

The project was developed on the initiative of the University of Texas *Medical Branch*, in order to meet the information needs of the aging process in Mexico, through a longitudinal survey through which information was updated on the status of subjects interviewed in 2001, 2003 and 2012.

The theme of interest and the variables to be captured correspond to the continuity of the project. This implies that, in general terms, the original conceptual framework was maintained in order to ensure the possibilities of comparison with the results of previous years and with it, the possibilities of analysis of the evolution of the object to study.

The definitive conceptual design was the result of various exchanges between the University of Texas and the INEGI, as well as the field test that was implemented.

2.2 Delimitation of the Conceptual framework

The conceptual framework of the ENASEM, presented in the annex, allows you to appreciate the thematic organization of the project into categories, variables and classifications.

Below are the topics covered by the survey. It should be noted that the level of detail differs by questionnaire.

Sociodemographic characteristics of the selected person. Place and date of birth, schooling, marital status, fecundity, previous unions or marriages, migratory history. With these variables, it is sought to know the context of life of the interviewee.

Characteristics of the house. Type of housing, building materials and other quality indicators, regularity of ownership and availability of durable consumer goods.

Economic data. Amounts for labor income and other sources, including pensions and government subsidies; type and value of real estate and monetary assets.

Migratory experiences. Relative to the selected, their parents, brothers and children.

Family. Listings of all children including those who do not reside with the person and those already deceased; for each one, their demographic attributes, indicators that summarize their present and childhood health, education, current economic activity.

Personal Impressions. Self-evaluation of health in general, personal opinion of individual economic status, level of control in decisions and level of family support.

Health measures. Reports of conditions, symptoms, functional status, lifestyle (for example, history of smoking, alcohol consumption and exercise), depression, disease, reading performance and cognitive status.

Work. Work history, occupation, position at work and current place of work.

Transfers. Help with money of any kind and time to provide or receive it, from their children, and the selected informant to their parents.

Widowhood. For people in this condition, inquiries about the economic, work and residence changes that occurred as a result of the death of your spouse.

Conceptual coverage

The basic concepts that are essential to understand both the conceptual design and the collection procedures are as follows:

Single home key (CUNICAH). It is a consecutive number that was assigned to the original home; Consists of 5 digits, the 2001 follow-up sample ranges from 00001 to 11,000; of 2012 was numbered from 11,001 onwards.

Future contact. Person who has a direct relationship with the subject of study, does not live in the same dwelling, but can give information in case of change of address in the following projects. It can be mother, father, brother, son, uncle, nephew.

Geographical address. According to the technical norm, it is the space within a locality or referred to a communication channel that occupies a property (building or land) where one or more persons or economic units can be established, in order to fulfill their obligations or rights.

Age. Number of years completed that the person has, from the date of birth to the time of the interview.

Follow-up interview. This is called the conversation or dialogue between the interviewer of the ENASEM and the informants who were previously visited, in connection with the collection of information in 2001, 2003 and 2012.

Marital status. Union or marriage condition of the person aged 12 and over at the time of the interview, in accordance with the laws or customs of the country. It is classified in:

- Married. Person who has contracted civil or religious marriage.
- Free Union. Person who lives in a couple without legalizing or formalizing, either civilly or religiously, their union.
- Divorced. A person legally separated from his / her spouse by a divorce decree and who, at the time of the interview, does not live with another couple or has not remarried.
- Separated. Person who no longer lives with his partner, nor has he divorced her.
- Widowed. Person whose partner or spouse has died and has not remarried, or lives in a free union.
- Single. Person who has not married, civilly or religiously, and has never lived in free union.

Home. It is made up of one or more persons, whether linked or not by ties of kinship, who habitually resides in the same private home and are supported by the same expenditure for food.

Suitable informant. It is the person of 18 years or older, resident of the dwelling and who knows the sociodemographic data of the residents the same.

Informant of the deceased. Person who had frequent contact with the study subject before dying (family or responsible), who can provide information about the personal situation and cause of death.

Substitute informant. Person who has frequent and close contact with the study subject (family or responsible), who can provide information about his personal and health situation, among other topics.

Number of person (NP). It is the code that identifies the people in the sample. The key is made up of three digits and allows you to differentiate the people originally selected, the spouses of the originally selected individuals and the later couples of both. The original (basal) selection always has the number 010.

Couple or spouse. Person recognized as a life partner, regardless of whether or not he lives in the same dwelling and whether or not his union is legalized.

Relationship. Link that the members of the household have with the head of the same, whether consanguineous, conjugal, affinity, adoption or custom.

Prison or jail (CERESO). It is an institution authorized by the government where persons considered by law as perpetrators of a particular crime, are imprisoned. They can be prisoner-of-war installations. They are part of the penitentiary system, which is the set of prisons and the respective organization that administers them.

Regular resident. A person who normally lives in the home, where he usually sleeps, prepares his food, eats and protects himself from the environment, and therefore recognizes it as his habitual residence.

Subhogar. It is the code that identifies the new homes that are created by separations or new unions of the study subjects (sample 2001, 2003 and 2012), which are followed up in the survey.

Subjects of study. Persons aged 50 and over, selected in 2001 or 2012, and their spouses or partners (identified in the 2001 survey or in the follow-up in 2003 and 2012); The deceased of this sample, those who survive today, and are habitual residents in the same private or collective dwelling within the country, with the exception of prisons or social rehabilitation centers of any governmental level.

- Study subject 1 (SE1). Person originally selected in the 2001 or 2012 sample.
- Study subject 2 (SE2). Partner or spouse of SE1 detected in the previous course or in the previous survey.
- Study subject 3 (SE3). New spouse of SE1 detected in 2015.
- Study subject 4 (SE4). New spouse of SE2 detected in 2015.

Subject of death. Person who is part of the study for being selected or a partner in 2001, 2003 or 2012, which at the time of applying the survey of 2015 is detected that died.

2.3 Survey Instruments

Based on the lessons learned from previous surveys, as well as considerations derived from the current environment and the information needs of the University of Texas *Medical Branch*, some detailed adjustments were made to enrich the survey instruments.

Although the INEGI made observations on the questionnaires, it was responsible for the design and development of data collection and data processing.

Five survey instruments were used with different purposes and characteristics.

Questionnaire of introductory questions

The questionnaire was composed of two sections that are in fact different instruments, used for specific purposes. In this questionnaire, a complete picture of the study subjects is obtained to specify which instrument of collection to apply.

Thematic section of questions in the Introductory questionnaire

Thematic Section	Number of questions
Total	33
I Homes with a single person	9
II Homes with a couple	24

Basic questionnaire

Contains two home resident registration cards: one for the follow-up person and one for the new person; a format for first interview (control sheet), an interview control, eleven sections and information for future contact.

Thematic sections of the basic questionnaire

Sections	Number of questions
Total	639
TRH Household resident registration card for person of tracking	26
B Non-resident children for follow-up persons	32
Subtotal	58
TRH Home resident registration card for new person	23
B Non-resident children for new person	36
Subtotal	59
A Sociodemographic data for follow-up person	41
AA Sociodemographic data for new person	44
C Health	75
D Control and health services	36
F Parents and parent help	59
G Help and children	35
H Functionality and help	36
I Employment	31
J Housing	39
K Pension, income and assets	118
SA Widow	8
Subtotal	522

Cognitive exercise booklet

This questionnaire is composed of an instrument to measure the motor and cognitive abilities of the follow-up study subjects and their respective spouses.

Questionnaire on deceased person

The questionnaire contains an interview format about the deceased person (control sheet), nine sections to capture information and general observations about the interview.

Thematic sections of the deceased person questionnaire

Sections	Number of questions
Total	125
SA Demographics	22
SB Temporary arrangements of the residence	8
SC Health	31
SD Health services	13
SE Cognitive status	10
SG Help and children	11
SH Functionality and help	12
SI Employment	6
SJ Housing and property	12

Questionnaire for substitute informant

The questionnaire contains two home resident registration cards, one for the follow-up person and one for the new person, an interview format for substitute informant (control sheet), an interview control, eleven sections and information for future contact.

Thematic sections of the questionnaire for substitute informant

Sections	Number of questions
Total	496
TRH Home resident registration card for person of tracing	26
B Non-resident children for follow-up	32
Subtotal	58
TRH Home resident registration card for new person	23
B Non-resident children for new person	36
Subtotal	59
A Sociodemographic data for follow-up person	14
AA Sociodemographic data for new person	21
C Health	50
D Control and health services	15
PC Cognitive proxy	63
F Parents and parent help	20
G Help and children	16
H Functionality and help	12
I Employment	21
J Housing	35
K Pension, income and assets	112
Subtotal	379

2.4 Definition of Validation criteria

The purpose of the validation process is to identify and solve inconsistencies in the answers obtained, which are expressed in the information recorded in the questionnaires and concentrated in the database, which is an indispensable requirement to generate statistical data of quality.

As part of the conceptual design, the validation or revision criteria are determined, as well as the solution of inconsistencies from the field. It includes the revision of consistency between related variables, sequence jumps, multi resolution and integrity of information, among other problems, as well as the logical solutions to be applied in each case, trying not to distort the original informant's statement.

The validation criteria of the ENASEM 2012 were defined for both the field survey stage and the central level for its automated execution.

The field validation included instructions for reviewing the questionnaires, in order to eliminate possible errors generated during the collection of information. The criteria established for each of the sections was applied to instruments designed to capture information about followers, new people and deceased persons.

During this stage, the errors that were reviewed were response omission, logical sequences, data outside valid ranges and inconsistency problems. The process managers of each the INEGI state office carried out the review and analysis of information in the field and reported errors and inconsistencies to be corrected in due course.

Regarding the central validation process, a mixed procedure was implemented that consisted of applying the validation in a form directed to the records that presented inconsistency, when their frequency was reduced; and the integral in those cases in which the errors reported were frequent.

The treatment of these inconsistencies was determined through a semiautomatic form or by condition. The validation criteria are presented in the document: Automatic Validation Criteria ENASEM 2015, which contains a series of mathematical algorithms and the definition of specific values whose application guarantees the consistency of the information captured in the field.

The sequence in which the requirement addresses the review of the information, is in the order in which the sections and questions of the questionnaires are found.

The validation requirement consists of the following modules:

Validation. Its objective is to detect errors and, through defined procedures, to eliminate them. Before making any changes to the data, it was saved to a file with either the previous, the current or the modified value.

The application of the criteria foresees that all the data are in valid ranges for each variable and allows you to detect inconsistencies, which were corrected by means of a predefined systematic procedure, seeking at all times, to preserve the quality of the information captured in the field.

Reports. The purpose of the module is to provide control figures of the records contained in the database, the consistent and inconsistent cases, as well as of the modifications applied to each of the records during the validation process.

3. Statistical Design

It comprises the set of activities related to the selection of the sample, the size sufficient to allow estimates to be made for the target population, the sampling frame, and the construction and evaluation of the estimates for the expansion of the information, from the data obtained in the field.

3.1 Framework of the Survey

The framework of the survey was integrated by the study subjects selected in 2001 and 2012, regardless of whether they had been interviewed, as well as their respective partners.

3.2 Sample Size

It is the group of people included in the sample of the ENASEM 2012. The table distribution of the sample by federative entity at the end of this chapter shows how it was conformed.

In this study, anthropometric and biometric tests were applied, for which two subsamples of the follow-up sample were used.

Subsample for anthropometric measurements

Anthropometric tests were applied to a sample of 1,653 people from four entities.

Subsample for taking biometric measurements

For the study of biomarkers, a sample of 2,056 people from four other entities were considered. In the table distribution of the sample of people for anthropometric and biometric measurements, by federative entity at the end of the chapter, the information is broken down.

3.3 Adjustments to expansion factors due to non-response

The expansion factors prepared in 2012 were adjusted for non-response using the following expression:

$$F'_{ehik\ell} = F_{ehik\ell} \frac{npe_{ehi}}{npecr_{ehi}}$$

Where:

$F'_{ehik\ell}$ = the expansion factor adjusted by non-response of the ℓ -th person, the k -th housing, the i -th UPM, of the h -th stratum, of the e -th entity.

$F_{ehik\ell}$ = the expansion factor of the ℓ -th person, the k -th housing, the i -th UPM, of the h -th stratum, of the e -th entity.

npe_{ehi} = the number of people selected in the i -th UPM, in the h -th stratum, in the e -th entity.

$npecr_{ehi}$ = the number of people selected with response in the i -th UPM, in the h -th stratum, in the e -th entity.

Estimators

The estimator of the total characteristic X, at the national level:

$$\hat{X} = \sum_e \sum_h \sum_i \sum_k \sum_l F_{ehikl} X_{ehikl}$$

For the estimation of proportions, rates and averages, the reason estimator is used:

$$\hat{R} = \frac{\hat{X}}{\hat{Y}}$$

Where the variable \hat{Y} is defined in a way analogous to \hat{X} .

3.4 Estimation of sampling errors

For the evaluation of the sampling errors of the main national estimates, the Last Conglomerates method is used, based on the fact that the largest contribution to the variance of an estimator in a multistage design is that between the Primary Sampling Units (UPM). The term Last Conglomerates is used to denote the total units in sample of a primary sampling unit.

In order to obtain the precision of the ratio estimators, in conjunction with the Last Conglomerates method, the Taylor series is applied, obtaining the following formula to estimate the precision of R:

$$\hat{V}(\hat{R}) = \frac{1}{\hat{Y}^2} \sum_{e=1}^{32} \left\{ \sum_{h=1}^{L_e} \frac{n_{eh}}{n_{eh}-1} \sum_{i=1}^{n_{eh}} \left[\left(\hat{X}_{ehi} - \frac{1}{n_{eh}} \hat{X}_{eh} \right) - \hat{R} \left(\hat{Y}_{ehi} - \frac{1}{n_{eh}} \hat{Y}_{eh} \right) \right]^2 \right\}$$

Where:

\hat{X}_{ehi} = weighted total of the study variable X in the i-th UPM, in the h-th stratum, in the e-th entity.

\hat{X}_{eh} = weighted total of the study variable X in the h-th stratum, in the e-th entity.

n_{eh} = number of UPM in the h-th stratum, in the e-th entity.

L_e = number of strata in the e-th entity.

These definitions are analogous to the study variable Y.

The estimate of the accuracy of the total estimator is calculated using the following formula:

$$\hat{V}(\hat{X}) = \sum_{e=1}^{32} \sum_{h=1}^{L_e} \frac{n_{eh}}{n_{eh}-1} \sum_{i=1}^{n_{eh}} \left(\hat{X}_{ehi} - \frac{1}{n_{eh}} \hat{X}_{eh} \right)^2$$

The estimates of the standard deviation (D.E.), coefficient of variation (C.V.) and design effect (DEFF) are calculated by the following expressions::

$$D.E. = \sqrt{\hat{V}(\hat{\theta})} \quad C.V. = \sqrt{\frac{\hat{V}(\hat{\theta})}{\hat{\theta}}} \quad DEFF = \frac{\hat{V}(\hat{\theta})}{\hat{V}(\hat{\theta})_{mas}}$$

^a Véase: Hansen, M.H., W.N. y Madow W.G., *Sample Survey Methods and Theory*, (1953), Vol. 1, pág. 242.

Where:

$\hat{\theta}$ = estimator of the population parameter θ .

$\hat{V}(\hat{\theta})_{\text{mas}}$ = estimator of the variance under simple sampling θ .

$\hat{V}(\hat{\theta})$ = variance estimator under the sampling design described herein.

Finally, the confidence interval at $100(1 - \alpha)\%$, is constructed as follows:

$$I_{1-\alpha} = \left(\hat{\theta} - z_{1-\alpha/2} \sqrt{\hat{V}(\hat{\theta})}, \hat{\theta} + z_{1-\alpha/2} \sqrt{\hat{V}(\hat{\theta})} \right)$$

Distribution of the sample by federative entity

Federal Entity	Total
National	17 813
Aguascalientes	478
Baja California	389
Baja California Sur	448
Campeche	458
Coahuila de Zaragoza	479
Colima	455
Chiapas	488
Chihuahua	443
Ciudad de México	474
Durango	546
Guanajuato	997
Guerrero	444
Hidalgo	437
Jalisco	908
México	475
Michoacán de Ocampo	743
Morelos	468
Nayarit	657
Nuevo León	484
Oaxaca	426
Puebla	970
Querétaro	430
Quintana Roo	418
San Luis Potosí	882
Sinaloa	480
Sonora	455
Tabasco	431
Tamaulipas	429
Tlaxcala	458
Veracruz de Ignacio de la Llave	1 051
Yucatán	444
Zacatecas	668

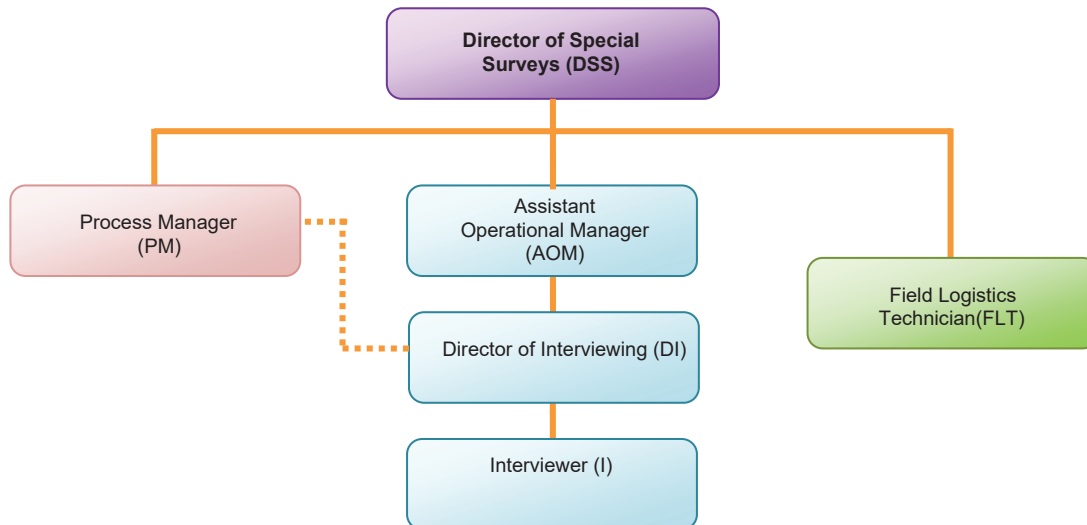
4. Design and execution of data collection

The execution phase of a statistical project is crucial to obtain sufficient, reliable and timely information that makes it possible to better understand the characteristics of the object of interest and to contribute to decisions based on objective data. This section presents aspects related to both the design and the application of strategies and procedures, as well as the results obtained from an operational point of view.

4.1 Organization

The structure responsible for development of the information gathering activities was designed with the intention of having adequate personnel, adequately trained to develop the operational procedures, as well as the supervision and control of the process, which facilitates the timely resolution of the problems or special cases that may arise during the survey.

In this way, the staff was able to put into practice the data collection processes, under an organized structure of different levels of command and functional control sections.



The workforce was structured into four levels: three coordination posts, supervision and control posts, and the interviewer who was responsible for the implementation of the questionnaires.

General functions per post^b

Director of Special Surveys

Recruit, select and hire directors of interviewing; Perform operational planning in the entity; Coordinate, advise, supervise and support the collection of information, as well as collaborate in the transfer of information to central offices, task in charge of the process manager.

^b The description of the functions and activities for the position of the process manager, as well as the characteristics of their profile, will be addressed in the chapter corresponding in the processing of information.

Assistant Operations Manager

Support the survey leader in the recruitment and hiring of Director of Interviewers and in the development of operational planning; Coordinate, advise, supervise and collaborate in information gathering activities.

Activities of the person in charge of surveys and of his assistant, according to stage of the field operation

Activities		
Before	During	After
<ul style="list-style-type: none"> Recruit and select operational staff. Set up and prepare classroom and equipment. Provide training to the Chief of Interviewers. Prepare and distribute (mapping and office) material for each figure and assign areas of responsibility. Verify the delivery of mobile equipment. Verify that the process manager uploads the survey system to the computer equipment for the interviewers. 	<ul style="list-style-type: none"> Respond and send the activity report form to headquarters. Supervise and advise field managers of interviewers. Capture and send the field supervision report to headquarters. Support field verification. Receive and capture control form <i>L 01 Workload assignment and progress control</i>. Perform an analysis of the progress, coverage and problems of the operation. Prepare and send progress report and coverage to headquarters. Develop, together with the heads of interviewers, the pending recovery strategy. 	<ul style="list-style-type: none"> Receive packets of questionnaires. Recover and return surplus material. Prepare and send the final report to headquarters.

Director of Interviewers

Plan, coordinate, advise, support and control the activities of the interviewers; Allocate workloads and monitor the collection of information. Inform the person, Head of Special Surveys, on the issues in the field and the operational progress of the work team, as well as transfer the information collected to the process manager.

Activities of the Director of Interviewers according to stage of the field operation

Activities		
Before	During	After
<ul style="list-style-type: none"> Attend the course of the Chief of Interviewers and interviewers. Receive documentation, material and computer equipment. Know your team. Deliver material and mini-laptops already configured by the RP to the interviewers. 	<ul style="list-style-type: none"> Deliver input and survey instruments. Move to work area. Respond to the questionnaire of the informant. Supervise, advise and support the interviewers in the field. Receive and review electronic questionnaires. Validate questionnaires and report errors. Back up information. Verify in the field and give interviewers questionnaires for re-examination. Take control of progress and coverage by Interviewer. Transfer the information to the process manager. Receive, review, and form a packet of cognitive exercise booklets. Hold work meetings. 	<ul style="list-style-type: none"> Prepares packages of questionnaires. Recover material and documentation. Respond to the final activity report questionnaire. Return documentation and material.

Interviewer

It is the base position of the operative structure, in which the responsibility of gathering the information of the study subjects falls; It is also their responsibility for transferring the information collected in a working day to the Chief of Interviewers and to take control of the study subjects visited.

Interviewer's activities according to field operation stage

Activities		
Before	During	After
<ul style="list-style-type: none"> • Receive training. • Receive and review materials, equipment and work area. • Receive selected housing listings and cartographic material. • Identify the assigned area in the cartographic material. • Locate the block or location in the list of selected dwellings. 	<ul style="list-style-type: none"> • Move to the work area and place the study subject's domicile in the field. • Establish contact with the study subject and introduce himself/herself. • Start the interview using the electronic or paper questionnaire. • At the end of the interview, thank the informant for their collaboration in providing the information requested in the questionnaire. • Assign the result of the home visit in the printed questionnaire. • Register in the form, <i>L 01 Workload assignment and progress control</i>, the result code assigned to the dwelling. • Continue visiting study subjects. • Transfer the information collected to the Director of Interviewers, at the end of each working day. • Receive from your boss the list of questionnaires that require some correction. • Correct or reconsider, in the field, the questionnaires that require it. 	<ul style="list-style-type: none"> • Return material and documentation.

Field Logistics Technician

Perform the administrative procedures of hiring personnel, support the reception and distribution of materials; develop field and travel expense applications, credentials, vehicles and stationery.

Considering that each state coordination had a Special Surveys Manager and a Field Logistics Technician, the distribution of the rest of the operational staff is presented in the following table:

Staffing by state coordination

State coordination	Assistant of Operations Manager	Process Manager	Director of Interviewers	Interviewer
National	39	39	40	156
Aguascalientes	1	1	1	4
Baja California	2	2	1	3
Baja California Sur	1	1	1	4
Campeche	1	1	1	4
Ciudad de México	1	1	1	4
Coahuila de Zaragoza	1	1	1	4
Colima	1	1	1	4
Chiapas	1	1	1	4
Chihuahua	2	2	1	4
Durango	1	1	1	5
Guanajuato	1	1	2	8
Guerrero	2	2	1	4
Hidalgo	1	1	1	4
Jalisco	1	1	2	8
México	2	2	2	5
East	1	1	1	3
West	1	1	1	2
Michoacán de Ocampo	1	1	2	7
Morelos	1	1	1	4
Nayarit	1	1	1	5
Nuevo León	1	1	1	4
Oaxaca	1	1	1	5
Puebla	1	1	2	8
Querétaro	1	1	1	4
Quintana Roo	2	2	1	4
San Luis Potosí	1	1	2	7
Sinaloa	1	1	1	4
Sonora	1	1	1	4
Tabasco	1	1	1	4
Tamaulipas	2	2	1	4
Tlaxcala	1	1	1	4
Veracruz de Ignacio de la Llave	2	2	2	9
Yucatán	1	1	1	4
Zacatecas	1	1	2	6

4.2 Integration of human resources

The job profiles of the organizational structure are general models that guide the process of recruiting and selecting personnel, in order to achieve a balance between personal characteristics, academic training and experience in field activities, in the context of the importance and thematics of the survey, among other aspects.

The process of integration of human resources plays a fundamental role, since the operation of the project is in the hands of the positions to be contracted so it must be punctual and careful, to ensure, through the teaching-learning process, understanding of the thematic of the project and the correct application of operative procedures.

The profiles that were proposed as desirable models with respect to the operational personnel contracted for the project, Chief of Interviewers and Interviewers, were the following:

Chief Interviewer Profile

Age and sex	Education	Essential Requirements	Desirable Requirements
Preferably: <ul style="list-style-type: none"> • 23 years or older. • Indistinct. 	Preferably: <ul style="list-style-type: none"> • Some college or completed in careers: Sociology, Psychology, Social work, Nursing, Public health and related. 	<ul style="list-style-type: none"> • Availability of full-time office and fieldwork activities. • Availability to travel within the entity. • Knowledge of the geographic area of your selected state or area in the sample. • Capacity for detailed analysis of information and decision making. • High sense of responsibility. • Clear and fluent oral expression. • Organization of work groups. 	<ul style="list-style-type: none"> • Knowledge and management of cartographic products. • Basic knowledge of <i>Office and Windows</i>. • Experience in field supervision. • Experience in the control and monitoring of information on field operations. • Programming and assignment of workloads. • Know how to drive standard vehicle. • Current driver's license.

Interviewer Profile

Age and sex	Education	Essential Requirements	Desirable Requirements
Preferably: <ul style="list-style-type: none"> • 23 years or older. • Indistinct. 	<ul style="list-style-type: none"> • Bachelor's degree or technical degree in Social work, Nursing, Public health or related. 	<ul style="list-style-type: none"> • Availability of full-time office and fieldwork activities. • Availability to travel within the entity. • Knowledge of the geographic area of your selected state or area in the sample. • High sense of responsibility. • Clear and fluent oral expression. • Know how to listen. • Know how to follow instructions. • Know how to work as a team. 	<ul style="list-style-type: none"> • Knowledge and management of cartographic products. • Basic knowledge of <i>Office and Windows</i>. • Experience in gathering information from special surveys (field work).

During the recruitment and selection of personnel, survey officials recorded through the survey follow-up system, the Identification Card and profile corresponding to each of the people who were hired to carry out the operational tasks of the project. The information obtained through the ID card constitutes the basis for carrying out the follow-up on the level of compliance of the proposed profiles, whose results are analyzed below, considering the basic aspects of the profile, such as age, sex, schooling and experience.

Due to the fact that information was available on all the personnel that made up the workforce plus three field logistics technicians who acted as interviewers, the following analysis is based on the figures of the 40 interviewer heads and 159 interviewers.

Age

The proposed age profile for Interviewer heads was met at 99% because an Interviewer Chief was under 23 years old and Interviewers reached 100%. Regarding the distribution of ranks, 92.5% of heads were grouped between the ages of 23 and 50 and only 6.9% were older than 50 years. For Interviewers in the range of 23 to 50 years, 87.5% participated and over 50 years was 12.5%.

Distribution of operating personnel by age group

Position	Under 23 years old		From 23 to 50 years		Older than 50 years old	
	Absolute	Percentage	Absolute	Percentage	Absolute	Percentage
Director of Interviewers	1	0.6	147	92.5	11	6.9
Interviewer	0	0.0	35	87.5	5	12.5

Sex

Membership of a specific gender did not really constitute a requirement of the proposed profile; However, it is interesting to note how the template was distributed, according to this characteristic.

Distribution of operational staff by job then sex

Sex	Director of Interviewers		Interviewer	
	Absolute	Percentage	Absolute	Percentage
Total	40	100	159	100
Female	26	65	127	79.9
Male	14	35	32	20.1

In the group, heads of Interviewers and Interviewers predominated the incorporation of female staff by a margin of about 30 percentage points for the first and with a difference of 60 percentage points for the Interviewers.

Education

The minimum schooling required in the job profiles of the Chief Executives of Interviewers was some college and for the Interviewer, technical degree or completed baccalaureate.

Distribution of operational staff per job according to educational level

Education	Director of Interviewers		Interviewer	
	Absolute	Percentage	Absolute	Percentage
Total	40	100	159	100
Primary	0	0.0	0	0.0
Secondary	1	2.5	0	0.0
Technical or commercial career with finished primary	1	2.5	2	1.3
Technical or commercial career with completed secondary	0	0.0	0	0.0
Basic normal	0	0.0	0	0.0
Technical or commercial career with finished high school	1	2.5	22	13.8
High school or baccalaureate	8	20.0	28	17.6
Professional	29	72.5	107	67.3
Postgraduate	0	0.0	0	0.0

As a result of the analysis of the levels of schooling of the personnel that participated in the collection of information from the survey, in contrast to the proposed profiles, it is observed that in the segment of the heads of Interviewers compliance was 72.5% since they had an undergraduate degree.

As for the Interviewers, 80.1% of them covered the suggested profile regarding the minimum level of education. Out of the expected range, there were two Interviewers with a technical or commercial career with secondary education and 28 with high school education who participated.

The area of knowledge of operational staff with professional training is important in the context of a project whose target population was formed by older adults, who in many cases require special treatment during the interview.

Distribution of operational staff per position by area of knowledge

Area of Knowledge	Director of Interviewers		Interviewer	
	Absolute	Percentage	Absolute	Percentage
Total	29	100	107	100
Sociology	1	3.45	5	4.67
Psychology	3	10.34	18	16.82
Social work	1	3.45	14	13.08
Nursing	0	0.00	1	0.93
Public health	1	3.45	3	2.80
Related	8	27.59	22	20.56
Other	15	51.72	44	41.12

The foregoing table shows that both Interviewer and Interviewer heads had a considerable percentage of professionals in health and social sciences.

Work experience

Work experience is important in staff performance since individuals who have engaged in operational information and gathering activities have experience in materials management, such as questionnaires and cartography, and are familiar with the application of operational procedures. In this project, about 80% of the workforce had prior experience in census operations or surveys conducted by the Institute.

Distribution of operational personnel per position according to the experience of INEGI

Census experience or INEGI surveys	Director of Interviewers		Interviewer	
	Absolute	Percentage	Absolute	Percentage
Total	40	100	159	100
With experience	34	85	120	75.5
Without experience	6	15	39	24.5

The following table presents information of the institutional projects in which the people contracted for the survey participated, considering exclusively the last project in which the personnel declared to have participated:

Operational personnel with experience by position according to INEGI project

Institutional Project	Total		Director of Interviewers		Interviewers	
	Absolute	Percentage	Absolute	Percentage	Absolute	Percentage
Total	154	100	34	22.1	120	77.9
Economic Censuses	1	0.6	1	2.19	0	0.0
National Survey of Demographic Dynamics	2	1.3	1	2.19	1	0.8
National Survey on Productivity and Competitiveness of Companies	4	2.6	1	2.19	3	2.5
National Survey on Health and Aging in Mexico	4	2.6	2	5.9	2	1.7
Intercensal Survey	16	10.4	3	8.8	13	10.8
National Survey on Availability and use of TIC in homes	101	65.6	26	76.5	75	62.5
National Survey of Victimization and Perception on Public Security	5	3.2	0	0	5	4.2
Census of Social Welfare Accommodations	9	5.8	0	0	9	7.5
Census of Municipal and Delegation Governments	3	1.9	0	0	3	2.5
National Survey of Financial Inclusion	1	0.6	0	0	1	0.8
Other	4	0.6	0	0	1	0.8

The experience acquired in the development of institutional projects contributes to the correct application of operational procedures and has a favorable impact on the quality of the information obtained. The events that stood out for the participation of the personnel were the National Survey on Availability and Use of IT in Homes with 65.6% and the Intercensal Survey, with 10.4%.

Essential and desirable requirements

The following table shows that between 92.5 and 100% of the heads of Interviewers met the indispensable and desirable requirements of their job profile.

Distribution of operational staff per position according to requirements

Essential and desirable aspects	Director of Interviewers		Interviewer	
	Absolute	Percentage	Absolute	Percentage
Availability of full-time office activities and field work	40	100	156	98.1
Availability of traveling within the entity	40	100	154	96.9
Knowledge of the geographical area of your state or the area selected in the sample	40	100	155	97.5
Capacity for detailed analysis of information and decision making	38	95	NA	NA
Experience in the organization of work groups	40	100	NA	NA
Ease into the management of human relations and personnel management	40	100	NA	NA
Knowledge and management of cartographic products	40	100	154	96.9
Basic knowledge in the handling of <i>Office and Windows</i> operating system	40	100	155	97.5
Experience in field supervision	40	100	NA	NA
Experience in scheduling and assigning workloads	38	95	NA	NA
Experience in the control and monitoring of information on field operations	37	92.5	NA	NA
Knowing how to handle a standard vehicle	39	97.5	NA	NA
Have a valid driver's license	40	100	NA	NA
Experience in surveying information from special surveys	NA	NA	146	91.8
High sense of responsibility	40	100	155	97.5
Clear and fluent oral expression	40	100	150	94.3
Knows how to listen	NA	NA	146	91.8
Knows how to follow instructions	NA	NA	146	91.8
Knows how to work as a team	NA	NA	147	92.5

NA: Not applica.

In the case of the Interviewers, almost all of them fulfilled the requirements to fill the position. Those with the lowest compliance rate (91.8%) were experienced in special surveys, listening and following instructions, which did not affect the performance of their duties since the commitment and disposition of these during the training and surveying in the field added to the guidance and support of the heads of Interviewers and process managers, favorably paid for the correct application of operational procedures to collect quality information.

4.3 Preparation of support materials

The execution of the projects carried out by the Institute requires input that guide and facilitate the application of operational procedures, such as cartographic products in the surveyed areas and manuals for the different positions that make up the operational structure, among other types of materials.

Previous Tour

The development of the previous course involved the design of an informative triptych aimed at the study subject both to learn about the purposes and characteristics of the project and to generate in them the confidence and willingness to provide their data and collaborate with INEGI staff. In addition, the production of materials that could guide the development of this preliminary stage to the operation of gathering information and recording the results of the update.

The following documents were available:

- *Certificate for the previous trip*
- *Directory of study subjects*
- *Verified Instruction for previous trip*
- *Planning document for the previous trip*
- *Exercises for the filling of the ballot*
- *Letter to the informant*
- *Triptych*
- *Diptych*

Manuals

In addition to the manual to know the type of questionnaires, their structure and management, the procedure for each one of the positions that directly participated in the collection and initial revision of the quality of the information was elaborated with the purpose of knowing, with the greatest possible detail, the activities to be carried out in the field, to reinforce the learning obtained in the training courses and to provide consultation material during the execution of the project.

- *Handbook of Special Surveys*
- *Interviewer's Manual*
- *Interviewer's Manual. Handling of questionnaires*
- *Interviewer's Manual. Operating Procedures*
- *Survey system user manual SICAPENASEM*

Planning and follow-up

The procedures for carrying out the planning and specifying the mechanisms to control the development of the field operation were discussed in the following documents:

- *Operational planning manual*
 - *Formation of interviewer headquarters*
 - *Shaping work areas*
- *Operational tracking guide*
- *Incomplete and non-response interview follow-up and verification card*

Supervision

The control formats were designed for direct supervision during the operation, which provided the personnel responsible for such activity with a guide on the procedures to be observed, as well as the solution strategies that, if applicable, were implemented.

- *Interviewer supervision, advice and support report*
- *Report of supervision, advice and support to the Chief of Interviewers*
- *Report on supervision, advice and support to the Field Logistics Technician*
- *Report on supervision, advice and support to the Process Manager*
- *Supervision, advisory and support report to the Special Surveys and Assistant Operator*

Training

In order to support the development of training courses for the staff responsible for applying the questionnaires, the *didactic guide for the course* was developed for the *Interviewer* and the *Work Agenda* documents proposing the appropriate way to administer the questionnaire. The most appropriate didactic techniques were proposed based on timing of the course, the means required to teach and depending on the topics to be addressed.

In addition, a *Workbook* was implemented for the participants with the objective of putting it into practice during the training, concepts and filling procedures for the data collection during the field operation.

Evaluation

Documents were produced to obtain information that the personnel responsible for the survey would provide with respect to various aspects related to the resources, materials, inputs and functionality of the operating procedures, so as to have sufficient data to evaluate the stage of data collection.

- *Start-up questionnaire for the Director of Interviewers and the Head of Special Surveys*
- *Questionnaire of the previous travel report for the Chief of Interviewers and for the person in charge of Special Surveys*
- *Questionnaire of the final report for the Chief of Interviewers and for the person in charge of Special Surveys*
- *Questionnaire for the Interviewer*

4.4 Training strategy

The objective of the training was to ensure that the personnel of the operational structure acquired the knowledge and developed the necessary skills to adequately fulfill their responsibilities.

The strategy adopted was cascade training, which consists of direct instruction by central instructors to the personnel who occupy the positions of coordination, supervision and control of the decentralized operational structure, who are then responsible for imparting the courses to managers of Interviewers and Interviewers, in their respective entities. Under such a strategy, it is possible to optimize resource utilization and develop the instructional process over a relatively short period.

The training courses were developed in two stages; The first was the preparation for the development of the verification and previous course, which consisted of directly instructing, at the central level, those responsible for special surveys and auxiliaries of operational manager, on August 10 and 11, so that later they transmitted the knowledge and instructions to their personnel in the state coordinations on days 13 and 14 of the same month. The second consisted of the theoretical and operative preparation of personnel for the collection of information in the field, which was carried out under the cascade training scheme, according to the following calendar and operative figures:

Training Calendar

Position	Date	Headquarters
Head of surveys and Regional Supervisor	7th to 18th September	Central offices
Process Manager	August 31 to September 11	Central offices
Director of Interviewers	September 24th and 25th	State coordination
Interviewer	September 28 to October 10	State coordination

During the development of the training, the conceptual aspects of the survey, the content and characteristics of the recruitment instruments, operating procedures and management of the *mini laptop*, the electronic questionnaire was discussed.

Likewise, practical exercises were performed filling out the questionnaire, with the idea of familiarizing the staff in the management of the instrument and the technique of the interview, as well as to recapitulate the most relevant conceptual aspects.

The personnel involved in the training process included recruitment instruments, operating manuals, *Power Point* presentations, exercises, videos, training agendas, didactic guides and socio-dramas, as well as materials to support the learning process of proper handling of the questionnaire and the effective operational strategy in the field.

4.5 Communication and concertation

Because surveys are statistical projects targeting a subset of the target population, extensive communication and consensus-building campaigns are not usually developed, as in the case of censuses, counts and massive full coverage surveys.

In this case, the rapprochement with the informant was carried out through informational materials, both to learn about the purposes and characteristics of the project and to generate the trust and willingness to provide their data and collaborate with INEGI staff.

Letter to the informant. It is a document signed by the Director General of Sociodemographic Statistics of INEGI, which states that the main purpose of ENASEM is to gather information to evaluate the aging process, the impact of diseases and disability, to explain the need to update the information on the sociodemographic characteristics of the informants of previous surveys, and to capture those who were just incorporated into the sample. It enumerates the most relevant issues that the project addresses and the usefulness of the information for the decision making and the design of public policies. It also requests the collaboration of the informant to provide the data, delimits the period of removal and expresses the confidential nature of the information. Finally, it provides the institutional telephone number for consultation or verification of information and thanks participation.

Triptych. It was used in two moments. During the previous course, the informants or relatives were handed over to inform them about the next ENASEM 2015 execution, and to make them aware of the questions on the identification card of the previous course and survey, and during the execution of the survey in the homes where there was reluctance to give the information to the Interviewer.

Diptych. Material provided by the Interviewer to the selected informants in 2012 in the Federal District (now Mexico City), Jalisco, Oaxaca and Veracruz; And in 2015, in Zacatecas, Yucatan, Nuevo León and Chihuahua for the application of biomarkers tests, as a complement to the survey, and were carried out from February 29 to April 25, 2016 by personnel of the National Institute of Public Health (INSP). They consisted of performing some physical exercises, measurement of height, weight, waist and hip, as well as taking a blood sample from one of the veins of the arm, and one of their fingers, but only to selected study subjects in 2015.

4.6 Procedures for the survey operation

This section presents the planning of the collection process and the operational procedures that made it possible to locate the study subjects to obtain the information.

4.6.1 Previous Tour

The ENASEM is a longitudinal statistical project designed to follow the same study subjects that integrated the sample of the previous surveys. It is highly probable that the frame of reference will be outdated in some proportion, in relation to the most recent visit, in 2012. This is due to the characteristics of age, the formation of new couples and the natural dynamism of the study subjects.

Under such conditions, and as has happened in other projects, it was indispensable to carry out a previous tour that would facilitate the operational execution in two aspects: to update the information of the sample frame and to sensitize the informants for a next visit.

General objective

To update the directory of interviewees who were visited in 2001, 2003 and 2012, with the purpose of identifying changes in address, marital status or any other special situation that requires adjustments to the planning or to take preventive measures for special cases.

Specific objectives

- Visit the homes of the people interviewed in 2012 to confirm if they are still in the place and identify the days and the most convenient time for the interview during the survey period.
- Visit the homes of people who were interviewed in 2001 and 2003, but who refused to answer the interview or could not be reached during the survey period in 2012.
- Visit the homes of people who were not interviewed in 2001, 2003 and 2012, because they refused to answer or because they could not be located in any of those surveys.
- Obtain information about: changes of address, formation of new partners in different domiciles to the original directory, among other situations that allow tracking of the subjects.
- Identify changes of addresses that involve movements outside the municipality or entity to make the corresponding exchanges between the areas of work or state offices and adjust the planning of the information collection.
- Collect information that allows the Chief of Interviewers to keep track of the situation that the Interviewers will encounter during the survey.
- To sensitize the target population, both to follow-up subjects and to those who will enter the sample, through the delivery of a triptych, with results of ENASEM 2012, its importance and appreciation for their participation.
- Know the proportion of study subjects that are locatable and those that are not, and also find out the causes that did not allow locating them.
- Identify the instrument to be applied during the survey to each study subject.

Planning the previous trip

In order to attend to the verification of the directory and the conjugal situation of the study subjects in an organized manner in the established period, the activity was planned in due course. The person in charge of Special Surveys counted on the personnel in his position available during this activity: Assistant of Operative Responsible, Head of Processes, Director of Interviewers and Technician in Field Logistics and with personnel of state, regional and central support.

The Head for Special Surveys formed the work areas according to the minimum of areas established by central offices, the availability of personnel during the period, the distance and accessibility to the addresses to be visited and the number of vehicles assigned to carry out the work.

The period of execution of the previous course was from August 17 to September 11, 2015. The information in the field was collected in a traditional manner, through the application of an instrument in printed format.

Survey Instrument

In order to organize the work operationally and uniformly, an identification card was designed from the previous course, a document that allowed you to capture any change in the survival status or conjugal situation of the study subjects, as well as the updating of their address and their personal references for purposes of planning the operation.

This certificate was applied individually; That is, one for each study subject related in the directory of study subjects by figure and control of progress.

The structure of the previous travel document is made up as follows.

Cover page questions

1. Control of the study subject
2. Filter for the verifier
3. Identification and location of the study subject
4. Days and hours of location of the study subject
5. Identification and location of the contact
6. Contact location days and times

Section of questions:

7. Age and marital status of the study subject
8. New spouse or partner of the study subject
9. Identification and residence of deceased informant
10. Data of the substitute informant
11. Contact data of the study subject

Back cover

- A. Outcome code 2012
- B. 2003 result code
- C. Responsible
- D. Package control

4.6.2 Operational planning

Operational planning consists of distributing and assigning the sample calculated for the survey to the operational personnel that will visit each study subject, so that during the planning process the areas of responsibility of the operational structure are formed and to seek that the distribution of workload is as equitable as possible and the coverage is effected within the period established for that purpose.

The execution of the planning makes it possible to perform other tasks such as scheduling and requesting field and travel expenses, requesting special supports such as vehicles, among others.

The operational planning of the ENASEM basically consisted of shaping the interviewers' offices, as well as the interviewers' work areas and scheduling the week in which each of the sample subjects would be visited. The formation of the interviewers' headquarters was an activity carried out by those responsible for surveys in the seven entities that had more than one Interviewer director (Guanajuato, Jalisco, Michoacán, Puebla, San Luis Potosí, Veracruz and Zacatecas), based on the experience in the field and knowledge of the characteristics of their state, to determine the best distribution of the sample among the headquarters in charge.

Schedule of Activities

The inputs, forms and materials needed to develop the planning were:

- *P 01 Catalog of folios in sample.* Contains municipality, locality, AGEB, block, control number, folio and address of each of the study subjects. It is used to schedule travel expenses and field expenses during the survey.
- *P 02 Formation of Interviewer headquarters.* The purpose of this form is to assign each Director of Interviewers the records that correspond to work.
- *File with the fraction of Interviewer by municipality.*
- *P 03 Assignment of study subjects by Interviewer.* It records the Interviewer keys assigned to each subject of study, as well as the total of Interviewers by headquarter.

- *P 04 Weekly programming by Interviewer.* It aims to distribute the workload weekly by Interviewer.
- Office supplies. Notepad, highlighter, pen, etcetera.
- *Mini laptop* to access the tracking system located on the site share point of the survey through which the forms of planning were printed and captured and the revision and validation of the conformation of Interviewer headquarters and work areas was carried out.
- *Cartographic material.* Necessary and specific to refer geographically to the dwellings of the study subjects. This material may vary depending on the distribution of the sample, it can be:
 - *State Condensate*
 - *Municipal drawing*
 - *Index of locality with two or more AGEB*
 - *Urban or rural locality plan*
 - *List and sketch of housing*

Activities

In principle, the review and comparison of the sample was carried out through the housing listings, to ensure that the geographic identification data correspond to the surveyed areas, which was consistent with the data of the form *P 01 Catalog of folios in sample* and with the cartographic materials, in addition to the sketches of houses being surveyed.

Conformation of Interviewer leaders

In the seven entities where two interviewer heads were available, the following activities were carried out:

Identification of the sampling frame. Detailed analysis of the distribution of the sample in the state, supported by the form *P 01 Catalog of folios in sample*.

Operational key assignment. It consisted in the assignment of a numerical key to each Director of Interviewers in order to identify them, assign them their scope of responsibility and have adequate control for supervision and support during the survey, among other aspects.

Determination of Interviewers by management. Three to five Interviewers were assigned by management. The accuracy of the number of interviewers to be assigned, within the aforementioned range, was determined considering the characteristics of the sample, such as its dispersion, the type of area where the AGEBs are located, access difficulties, means of communication and means of transport in the areas, social, political, religious or insecure conflicts that hindered the uprising.

Transcription of Interviewer fractions to cartographic material. In order to have a complete graphical view of the sample dispersion and to form the Interviewers' offices, the Interviewer fractions (calculations carried out in central offices) were transcribed into the cartographic material.

Formation of areas of responsibility of the Heads of Interviewers. It consisted in the grouping of municipalities considering scheduled routes, routes and means of transport, vehicles available and the sum of fractions of Interviewer of each municipality until completing the figure established for the leadership. In some cases it was necessary to divide the municipalities and carry out the same activity at the AGEB level. Once the interviewers' headquarters were formed, the survey leader recorded the information in the form *P 02 Conformation of interviewer headquarters* and transcribed it to the tracking system.

Delimitation in cartography. The Head of Special Surveys marked the geographic scope of responsibility of each Interviewer's head in the cartography and registered inside the operative key, for later delivery to the Director of Interviewers.

Conformation of Interviewer work areas

This activity was carried out by the Chief of Interviewers and consisted of:

Assigning a key to each interviewer with the purpose of identifying it operationally and delimiting the workload.

- Transcribe the fraction of Interviewer by municipality in the state condensate, and by AGEB in the index of locality and municipal sketch.
- Form workloads as a result of the sum of fractions of Interviewer by AGEB, folio or municipality until completing or approaching the unit (1.00), in a valid range of 0.7 to 1.3 Interviewer per workload, which allows the Interviewer to maintain loads of reasonably balanced work. The ideal way is to group complete AGEBs; However, it is not possible to do so in all cases, due to the geographical distribution of study subjects. The Chief of Interviewers made the formation of work areas more than once, analyzed the alternatives and decided what he considered more operative.
- Capture in each of the folios, the study subjects registered form of control *P 03 Assignment of study subjects by Interviewer*, the key of the Interviewer in charge of raising the information.
- Define the geographic area corresponding to each of the Interviewers in the cartographic material and record the operative code that identifies it as responsible for the area.

4.6.3 Gathering Information

The data collection stage was carried out from October 12 to December 4, 2015, during which the interviewing staff went to the selected dwellings, identified the study subjects and applied the electronic questionnaires on the *mini-laptop*, except in those cases where it was necessary to apply the printed instrument. For reasons of safety of the personnel, possible damage of the equipment, failure or discharge of the battery, among others, as well as the application of cognitive exercises that, in all cases, by their content and procedure necessarily need to be registered on printed material.

After interviewing Interviewers, surveyors and their assistants, they formed the work teams and distributed to each one the necessary material. Likewise, the Interviewer Chief gave each Interviewer the necessary materials to perform his daily tasks, which consisted of a blue ink pen, support chart, field notepad, backpack, badge, waistcoat and cap, which identified him as Employee of INEGI. He also assigned a key with which he identified during the operation.

The computer staff provided each Interviewer with a *mini laptop*, charger and stylus, as well as a user password and password to enter the system. They also received daily printed questionnaires, selected housing listings and cartographic material corresponding to the areas to be visited.

Using the form *L 01 Workload assignment and progress control*, the Director of Interviewers designated the work area that corresponded to each Interviewer, while the latter identified their areas with support in cartography and in the control form *L 00 Directory of study subjects by Interviewer*.

The interviewers, prior to each working day in the field, checked that the different inputs corresponded to the assigned area. They also verified that the folios of the subjects of study related in the form *L 01 Workload assignment and progress control* were the same that appeared in *L 00 Directory of subjects of study by Interviewer*, where they reviewed the data corresponding to the entity, Municipality, locality and folio (CUNICAH, Subhogar and person number).

They also organized their workload according to the order in which they would visit the homes of the study subjects on a weekly basis, noting the registration numbers on the corresponding geographical location, with the support of the *L 01 Workload assignment and progress control*.

Subsequently, they moved to their work areas, in accordance with the instructions of the Chief of Interviewers regarding the means of transportation available and the instructions to reach the homes of the study subjects registered in the form *L 00 Directory of study subjects by Interviewer*.

At the end of the interviews, they gave a diptych to those study subjects selected in 2012 for the Federal District (now Mexico City), Jalisco, Oaxaca and Veracruz, and in this survey includes the states of Zacatecas, Yucatan, Nuevo Leon and Chihuahua, for the application of biomarkers tests as a complement to the survey. This test was carried out from February 29 to April 25, 2016 by personnel of the National Institute of Public Health (INSP), and consists of performing some physical exercises, measurement of height, weight, waist and hip. In addition to the 2015 study subjects, a blood sample was taken from the arm and a finger.

In cases where the Interviewers used questionnaires in printed format, they had the responsibility to later capture the information on their *mini laptop*.

The tasks of supervision, counseling and support to the Interviewers during the survey were carried out by the heads of Interviewers, who verified the correct location of the study subjects' domicile, the adequate application of the interview, the record of the result of the visit in the form L 01, the correct functioning of the system, and the assignment of results to the study subject when no questionnaire was applied. Likewise, they verified that the Interviewer was timely in performing the data capture in the system, when they applied paper questionnaires, and, in case of detecting errors or inconsistencies, applying the corresponding corrective measures. The Director of Interviewers filled out and captured daily the form *S 01 Report of supervision, advice and support to the Interviewer*.

Interviewers transferred their questionnaires to their interviewing bosses at the end of each day, using USB devices. Once the information was transferred to their teams, the Interviewers' heads executed the automatic validation system to generate the error report and proceed to correct them at that moment or return the questionnaires to be reconsidered in the field, if necessary.

At the end of the reception of questionnaires, the Director of Interviewers requested the form of control L 01 to transcribe the information concerning the result codes, particularly in the cases of codes 01 Complete interview and some 02 Interview incomplete, that had to have information regarding the date of removal of the *Cognitive Exercise Booklet*. If for some reason they did not apply the booklet, the reason must be noted in the observations, photocopied the cover with the required data and saved it in the package corresponding to the booklet. Cognitive exercise booklets were sent to central offices by the survey leader, throughout the operation on previously established dates.

In each Interviewer's headquarters, the recovery and organization of printed questionnaires were carried out, which were kept in packages.

The questionnaires that met the validation requirements were sent to process managers, who reviewed the coverage and proceeded to release the Interviewers' headquarters, once the survey stage was concluded.

As a conclusion of the information collection stage, the documentation, material and equipment used, such as canceled or blank printed questionnaires, cartographic products, forms of control, credentials and *mini-laptop* were retrieved.

Work meetings

Periodic meetings were held from the first day of the survey, with the purpose of maintaining permanent communication between the members of the operational structure, both to raise problems presented and to propose solutions.

The first meeting, at the beginning of the operational phase, was chaired by the Head of Special Surveys, with the assistance of the members of the work teams (heads of Interviewers, Interviewers, Assistant Operator and Process Manager) for the purpose of commenting and proposing solutions to the doubts and problems that were presented during the day.

Each Director of Interviewers met with his work team once a week, with the freedom to call whenever he saw fit.

On Monday, from the second week of the survey, the Special Surveys Officer met with the interviewers, the Process Manager and the Assistant Operator to discuss the issues of the survey. The central points to be discussed were:

- Problems presented in the field and solutions adopted.
- Reading releases from central offices on the share point site.
- Field progress analysis, validation report and results of monitoring and verifications.
- Resolution of doubts and unification of criteria of the operating structure.

Likewise, if necessary, agree on strategies to implement to complete the operation in a timely manner.

Verification in field

The objective of the activity was to verify that the interview was made to the study subject, to the substitute informant, or to the informant of the deceased person, and that the assigned result code was correct. In those cases in which it was not possible to perform the interview, the home was also visited to verify data and references that justified the result. In both cases, the verification activities were carried out in coordination with the survey leader and the Chief of Interviewers to verify the correct application of the established operating procedures.

Overall, verification was performed as follows:

Interviews with complete information (code 01). It was carried out by applying a questionnaire for substitute informant or informant of the deceased person when from the previous course it had been identified that a basic questionnaire would be applied. The execution depended on the number of subjects to verify and their dispersion.

If in the confrontation of the information obtained in the field were different with respect to the data captured by the Interviewer, it was made known to the Director of Interviewers responsible, assessing the advisability of re-instructing, if necessary. In all cases, the errors detected were tracked to ensure that they were not re-committed.

Interviews with incomplete information (code 02) and without information (codes 03 to 17) Released by the Interviewer. These interviews were verified by the Chief of Interviewers, with the recommendation that he be supported in the execution of this activity by the person in charge of surveys, to verify the correct allocation of the result codes, and when, by the number of interviews in this situation, The Chief of Interviewers did not have enough time to verify in its entirety.

After verification, the required data was recorded in the form SV 02 to be subsequently captured in the tracking system.

Verifications were carried out as soon as possible to avoid the accumulation of both queries and travel. In all cases, the Interviewers' heads were informed about the results of the verifications so that they could do the right thing (receiving information on their mini laptop, capturing information, changing the code in *L 01 Workload assignment and progress control* to assign a situation to the study subject, etcetera).

Final survey report

At the conclusion of the field survey activities, survey respondents and Interviewer bosses were required to respond to the final report questionnaire based on the results of the Interviewers' work meetings, field book entries, and activities carried out from the scope of responsibility of each figure.

The information registered in this instrument had an objective to document the development of the activities in each entity, with respect to the planning, execution and closing of the project.

Those responsible for preparing the final report answered the questions asked in the guide through the share point page of the project to access the editable file, which addressed the following aspects:

- Planning
- Training
- Material and documentation
- Administrative aspects
- Staff defections and resignations
- Operating procedures
- Forms of control and monitoring
- Survey system
- General features

For their part, the Interviewers answered a questionnaire designed to obtain information that would enrich the evaluation of the field operation, in which the following aspects were addressed:

- Training
- Location of domicile and location of study subjects
- Selection of type of questionnaire and filling of the questionnaire
- Problems with the survey system and computer equipment
- Recovery of slopes
- Work day
- Grants and resources awarded
- Other activities
- Experiences

4.6.4 Operator Controls

Good communication between the state operating structure and central office staff is a key factor in meeting the objectives of the special surveys; For this reason, the central area of special surveys, responsible for field operations, designed and developed the monitoring system of ENASEM 2015, in order to facilitate the planning, monitoring, control and evaluation of the sample.

The tracking system consists of two computer tools, the collaborative share point and forum, which operates in the institutional cloud, and the tracking system, three-layer client-server tool, user interface (UI), web server and server database, which works on the Internet.

Access to the monitoring system is done based on user accounts for each state coordination, regional management and central supervisors, delimiting access to the modules, as a measure of information security.

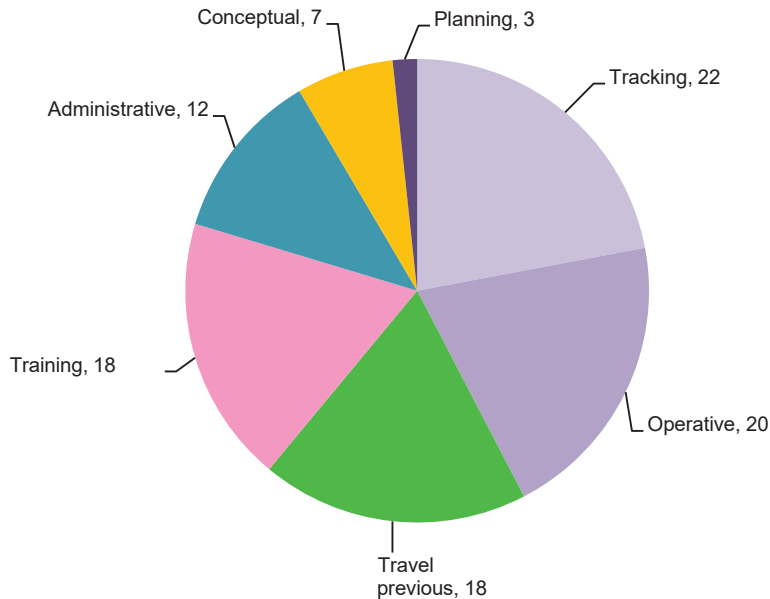
Collaborative share point

It is a tool that operates from the institutional computing cloud through the Internet and allows access to the indispensable documents for the collection of information and data processing, such as:

- Forms of control, schedule of activities and budgetary criteria
- Operational planning
- Printing questionnaires
- Monitoring, monitoring reports
- Training, manuals, agendas, teaching materials and assessment formats

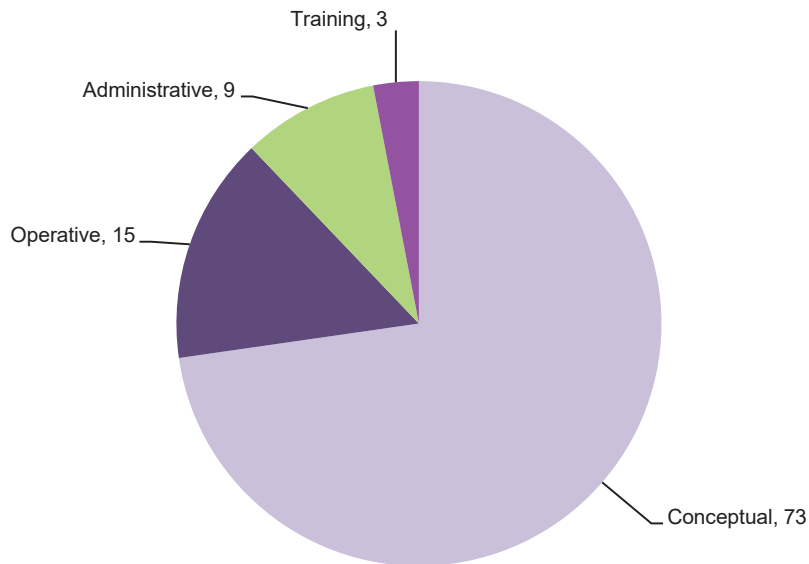
On the main page of the community 59 notices were published to show important indications to the whole structure; It dealt with aspects from the organization of the survey and the filling of control forms, to indications for the preparation of the closing report of the operation. Of these, the most representative were the follow-up of the sample with 22%; Operating procedures, 20%, while those related to training and previous courses recorded 18% each.

Percentage distribution of the notices published on the site share point, according to their classification



In the forum, there were open dialogues for the exchange of information regarding mainly clarifications or clarifications to the field staff of the entities on the execution of operational procedures, monitoring and conceptual aspects. The following graph shows the distribution of queries by topic.

Percentage distribution of the queries published on the site share point, according to their classification



In addition, a panel was added to the regional structure that served as a supervisor, and documents such as the *Regional and Central Supervisor Manual of Special Surveys in Households* were included, as well as the observation guides to supervise the operational training, as well as the application of control form *L 01 Workload assignment and progress control*.

Monitoring system (SISEE)

Through the monitoring system it was possible to capture data on operational planning, final reports, Interviewer questionnaire information for the field operation evaluation, weekly progress, monitoring reports prepared by the survey officer, identification and profile of hired staff. Likewise, reports on outcome codes, progress indicators, coverage and target population were generated by interviewing and the Interviewer. The monitoring system was structured in four modules:

Travel module

- *RP 01 Directory of study subjects to program the course.*
- *RP 02 Total sub-households by municipality and locality.*
- *RP 03 Directory of study subjects per figure and advance control.*

Planning module

It includes the tools to print and capture the forms of control and, at the end of each planning phase, execute the revision and automatic validation of the conformation of the work areas.

They were visualized for consultation of the forms on the first phase:

- *P 01 Catalog of folios in sample.*
- *P 02 Formation of interviewer headquarters.*
- *P 03 Assignment of study subjects by Interviewer.*
- *P 04 Weekly programming by Interviewer.*

Lifting module

This module concentrated and published the information related to the results of the coverage of workloads allocated from the operational planning, and it was possible to consult the data of the control form *L 01 Workload assignment and progress control*.

For the field supervision the control forms could be generated:

- *S 01 Report on supervision, advice and support to the Interviewer.*
- *S 02 Report on supervision, advice and support to the Director of Interviewers.*
- *S 03 Report on supervision, advice and support to the Field Logistics Technician.*
- *S 04 Report on supervision, advice and support to the PR / ARP.*
- *S 05 Report on supervision, advice and support to the REE / ARO.*

Tracking module

It provided information on the evolution of key indicators of the planning and surveying stages, as well as relevant data that contributed to assessing the progress of operational activities. The forms of control generated were:

- *SV 02 Monitoring and verification certificate incomplete interview and no response.* Used by central and regional supervisors, survey officers and their assistants, interviewer heads, process managers and their assistants. The format is generated with blank fields, so all data will be recorded by the responsible figure (generating the PDF of the questionnaire of the study subject to verify). This document seeks to confirm that the information is no longer recoverable and the result codes have been applied correctly, verifying that the interview was applied with the study subject and, in the case of non-response, that the situation is definitive.
- *SAR 01 Log of visits of monitoring and regional supervision.*

In a complementary way, the module was conformed by the sections:

Planning follow-up. Based on the information from the report *SP 01 Progress control of the surveying of the planning phases*, it was corroborated that the capture and validation of each phase in the scheduled period was elaborated, since it was necessary to conclude it to print the form of control L 01 to be used in the survey. The *SP 02 form was also generated and assigned to the Interviewer*, per week. At the moment the information on planning is captured, the monitoring system applies an automatic validation process to the composition of the areas of responsibility, showing in this form of control the results of the second and third phases of planning. When planning meets the validation criteria, the information is shaded green; Otherwise, it is shaded red. Red marked cases must be corrected, notified and fully justified to the planning area for review and approval; Otherwise, the forms *L 00 can not be generated Directory of study subjects by Interviewer and L 01 Workload assignment and progress control* for the field operation.

Follow-up to the survey. With respect to the evaluation indicators of the survey stage, information on the operational result codes of each of the eight weeks scheduled for this phase could be visualized.

The different formats were integrated to the tracking system for its automatic generation from the data survey in the control form *L 01 Workload assignment and progress control*. The information provided by the formats integrated in this section allows you to have an accurate and detailed vision on the evolution of the planned coverage and the status of the study subjects visited for each federative entity.

The result code numbers are presented on the basis of the information received from the state coordinations and processed in central offices in order to facilitate the comparison between the field data derived from the control form L 01 and that resulting from the surveying of the electronic questionnaire.

The module includes follow-up indicators that present the national data by code and its percentage distribution for study subjects visited and not visited, as well as complete, incomplete and unanswered interviews, which provided a general idea of the operational progress national.

As a result of the weekly analyzes carried out in central offices on the progress recorded during the operational phase at different levels of responsibility, comments and recommendations were prepared and sent to each state coordination in order to promote timely adoption of corrective measures, where required.

The forms of control generated in this section are listed below:

- *SAM 01 Frequency of result codes of study subjects by federative entity.* It provides an overview of the behavior of the results of the visits that are made to the study subjects.
- *SAM 02 National synthesis of results of study subjects by type of questionnaire and federative entity.* It concentrates the total of the study subjects visited in which total or partial information has been obtained, as well as those that for some reason it was not possible to obtain it.
- *SAM 03 Frequency of result codes of study subjects by federal entity and by operative figure.* It allows you to have an overview of the behavior of the result codes of the visits that are made to the study subjects, according to areas of responsibility by federative entity.
- *SAM 04 State summary of results of the study subjects by federal entity and by operative figure.* It allows you to observe, by areas of responsibility and federative entity, the total of study subjects visited in which total or partial information has been obtained, as well as those in which, for some reason, it was not possible to obtain it, as well as the type of questionnaire applied.
- *SAM 04a Productivity of interviewers by management.* Graphically shows the behavior of the result codes of the visits to the study subjects, by Director of Interviewers and Interviewer.

- *SAM 05 Inconsistencies in the register of result code in forms L 01 Workload assignment and progress control with the electronic questionnaire.* It presents the weekly inconsistencies of surveying of the result codes of the visit in the form L 01 and the one registered in the electronic questionnaire.
- *SAM 06 Subjects for follow-up.* It presents the total of the study subjects to follow up for its supervision or verification in the field.
- *SAM 06a Supervised subjects.* It presents the study subjects that were supervised in the field.
- *SAM 06b Subjects checked.* It presents the study subjects that were verified in the field.
- *SAM 07 Control of questionnaires identified in the previous course and those applied in the survey.* It presents the type of questionnaire detected in the previous course, as well as the one applied in the survey of the information and the key of the interviewer who applied it.

4.6.5 Assessment of recruitment results

The monitoring and control of the sample is a process through which feedback is obtained in terms of the progress that is being recorded to reach the goals and objectives; Continuously observe the evolution of the performance obtained compared to the expected, by gathering and analyzing information from the field on the established indicators, with the purpose of taking preventive or corrective measures in a timely manner.

This activity is fundamental to guarantee the coverage and to assure the quality of the information, which is carried out by means of the selection of indicators and the design of parameters that orient and facilitate the execution of the tasks.

The process begins at the moment in which both the target population of the survey and the result codes of the visits to the dwellings are defined, information from which the indicators that are object of monitoring and control are established, which are:

Advance. It refers to the number of houses visited by the Interviewers in relation to those planned, regardless of the outcome of the visit.

It was established based on the expected productivity in each week of the survey period. The parameters for this project were determined in agreement with the elaborated planning in each federative entity.

Complete housing interview. It corresponds to the total of questionnaires where the information of the study subjects was obtained completely, that is, with result code of the visit 01.

A sufficient number of complete interviews guarantees the calculation of reliable estimates, according to the statistical design of the survey.

No answer. It considers all study subjects who were visited by the Interviewers and who, for some reason, did not provide the information. The non-response is reviewed both to size its volume and the causes that explain its behavior.

The monitoring of the sample is carried out under a procedure consisting of establishing benchmarks for each of the indicators, according to the experience gained in other projects, as well as the degree of conceptual and operational difficulty of the survey. Its evolution is progressive throughout the stage of data collection in the field, with the purpose of detecting notable deviations from the expected behavior.

The theoretical limits or values expected for full interview and non-response indicators are calculated as complements and, in contrast, to be calculated for the sample size. Its weekly values were programmed from the value expected to be reached for the close of the operation. This is because indicators have a high level of interaction; That is, if the percentage of non-response is significant, that of the complete interviews will be relatively low, and will only increase when the non-response occurs, which usually occurs during the last weeks of survey as an effect of slope retrieval.

The estimated values for each indicator, according to the survey week, have been established in accordance with the weekly schedule performed by each entity in the planning stage. Thus, the national parameters were as follows:

Percentage values expected per indicator according to survey week

Week	Advance		Complete Interview		No answer	
	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
1	15.82	19.82	9.76	13.76	0.56	4.56
2	33.54	37.54	21.46	25.46	6.19	10.19
3	49.90	53.90	34.33	38.33	9.27	13.27
4	62.71	66.71	47.18	51.18	8.83	12.83
5	76.08	80.08	60.46	64.46	8.22	12.22
6	87.18	91.18	73.80	77.80	7.18	11.18
7		100	87.00	89.00	8.50	9.50
8		NA	89.00	NA	NA	9.50

NA: No applica.

The tracking system is the source from which the data necessary to carry out the monitoring and control of the sample are available. Specifically, the formats that provide such information correspond to those of the monitoring module to the survey.

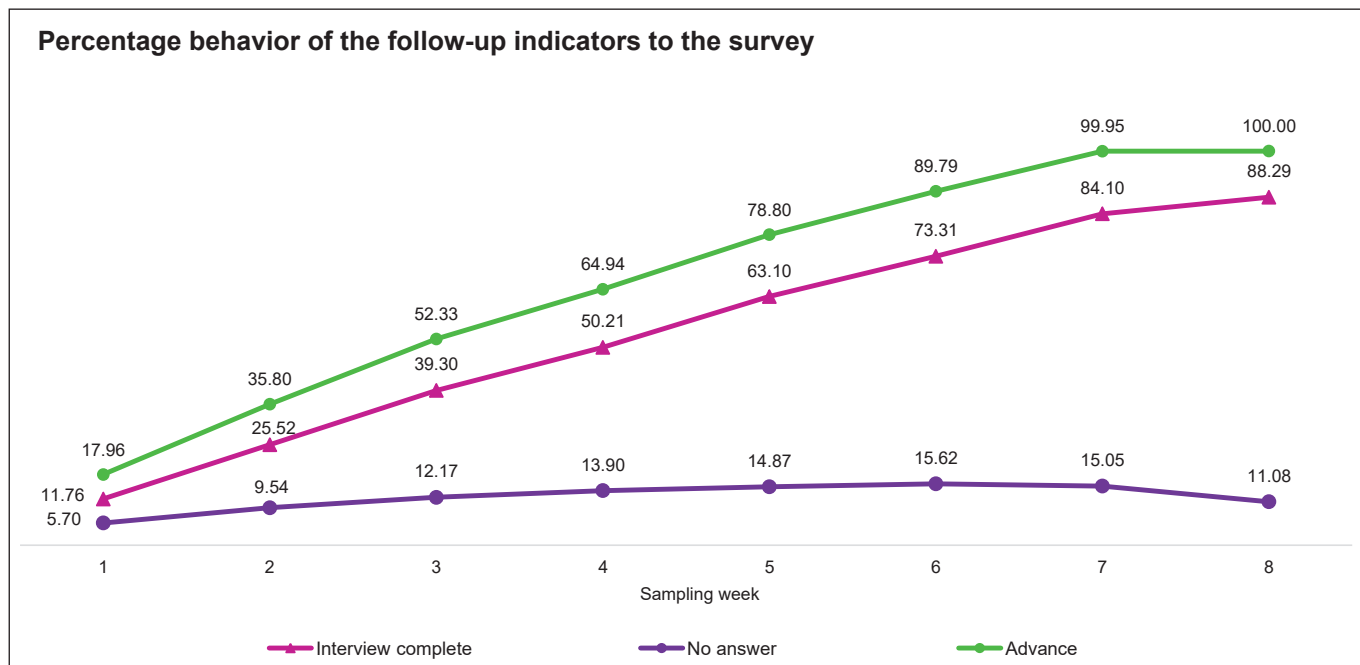
The monitoring and control of the sample started after the second week of the survey period, once the survey managers began capturing the information that fed the control form *L 01 Workload assignment and progress control*, in the follow-up system, and the data were examined at the central level. The analysis was performed by entity and area of responsibility to detect possible deviations from the predetermined parameters, or some other type of operational problem.

As a result of the central evaluation, weekly operational reports were drawn up for survey respondents in order to inform them of those cases where the indicators did not meet the expected parameters: progress, complete interviews or no response at the state level.

Under these circumstances, respondents were asked to review the result code frequencies of the study subjects by federal entity, Assistant Operator, Interviewer Headquarters and Interviewer to locate the area where the potential problem was being presented, for the purpose of orienting supervision, advice and support based on their experience in the field, and timely correcting the observed deviation.

4.7 Results of the field operation

The following graph shows the national behavior of the indicators during the eight weeks dedicated to the harvesting operation:



According to the graph, the number of study subjects visited by the interviewers was maintained throughout the information collection period, at favorable levels, when presenting values within the programmed parameters.

As for the volume of completed interviews reported weekly, it is observed that the operation starts within the established parameter, while in the following two weeks it slightly exceeded the expected maximum level in its national performance. Subsequently, for the fourth and fifth figures were kept in line with the pre-established limits, and during the last three levels were lower than those proposed.

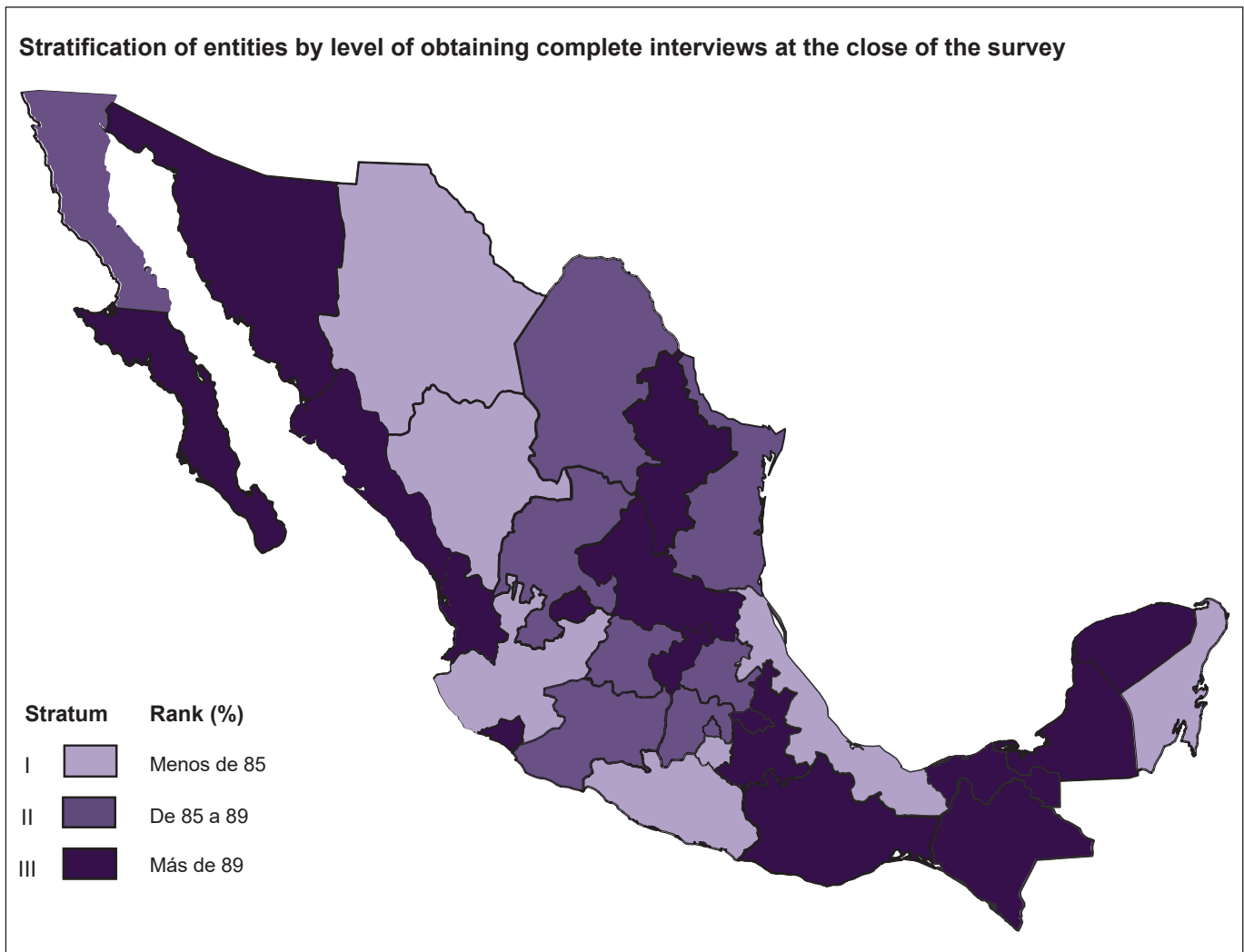
In the case of non-response, the recorded levels exceeded the maximum values expected, except for weeks two and three that were in the average allowed range.

The following is a more detailed analysis on the development of monitoring parameters, incorporating their behavior at the state level.

Complete Interviews

From a national sample of 18,006 study subjects, complete interviews represent 88.29% of the cases. At the national level, there are 19 entities that exceeded this average, and it was Nayarit's coordination that obtained more than 94% of complete interviews. In contrast, Estado de México Oriente and Chihuahua registered less than 83%.

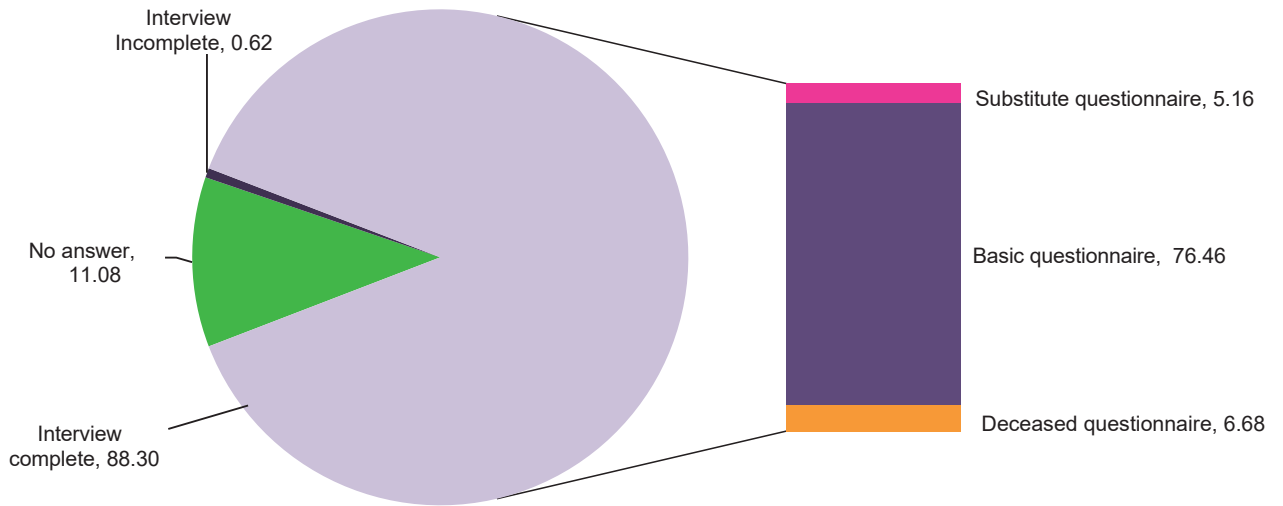
The following map shows the level of complete interviews obtained by entity, at the conclusion of the operation.



Full interview by type of questionnaire

As for the disaggregation by type of instrument obtained during the field survey, it concluded with a higher frequency in the collection of basic questionnaires (76.46%), applied to followers and new people. This type of instrument captured information from the study subject, who provided the information, ie, it was a direct interview, the application of which is crucial to guarantee project coverage.

Percentage distribution of the complete interview, by type of questionnaire



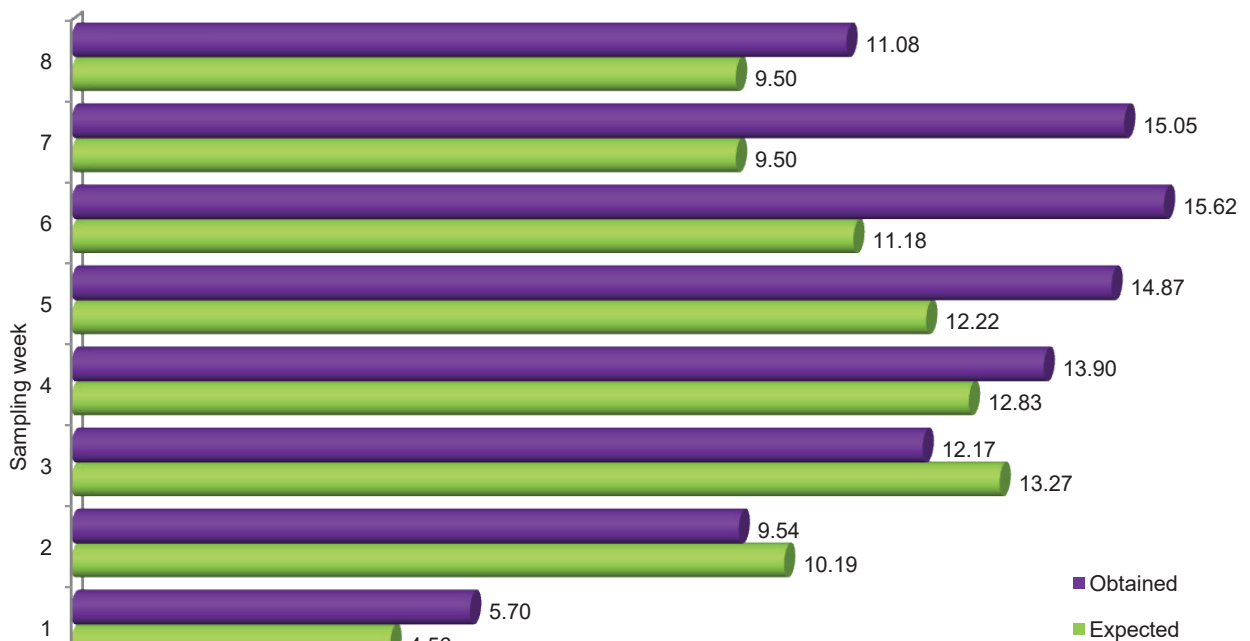
No answer

Practically, throughout the period of the field operation, the national average of non-response registered levels higher than the established maximum limits, except for weeks two and three. Thus, for the last week, almost 67% of the state coordinations were above the expected maximum value.

The performance of Sonora, Nayarit and Campeche was positively highlighted, with less than 6% of non-response; In contrast to East Mexico, which failed to beat the unanswered codes for the closure of the operation, and exceeded 17% of its sample.

The following chart presents a comparison of this indicator with the data obtained in the field and the parameters established:

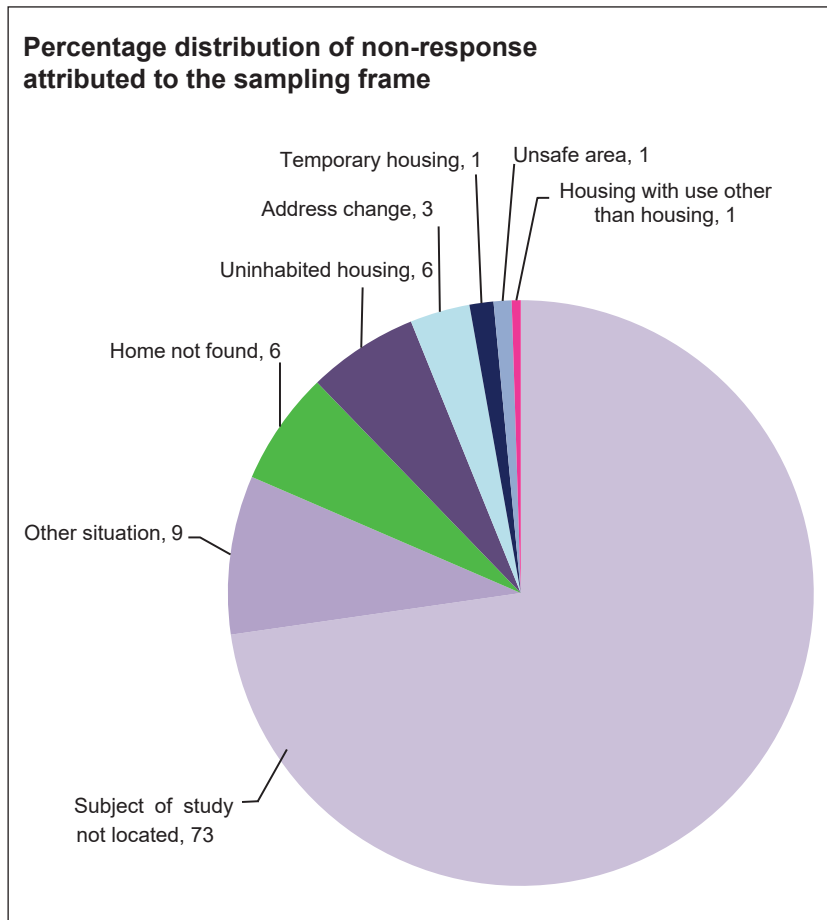
Comparative percentage of the non-response obtained and expected, per survey week



In general terms, the non-response can be attributed to the sampling frame or to the informant. The first occurs when there is a change of address, study subject or domicile not located, uninhabited dwellings, temporary use with different use to the housing, demolished, in ruins, merged or located in unsafe areas, which for such reason are inaccessible. The attributed to the respondent is presented in cases where the interview was postponed, the informant was not adequate to provide the data, the study subjects were absent at the time of the visit or the substitute informants for deceased person were denied the opportunity to provide the information.

Considering only the set of study subjects from whom no information was obtained, that is, only taking into account the non-response (1,997 cases), almost half the time was due to causes associated with the sampling frame, while 45% was attributable to the respondent.

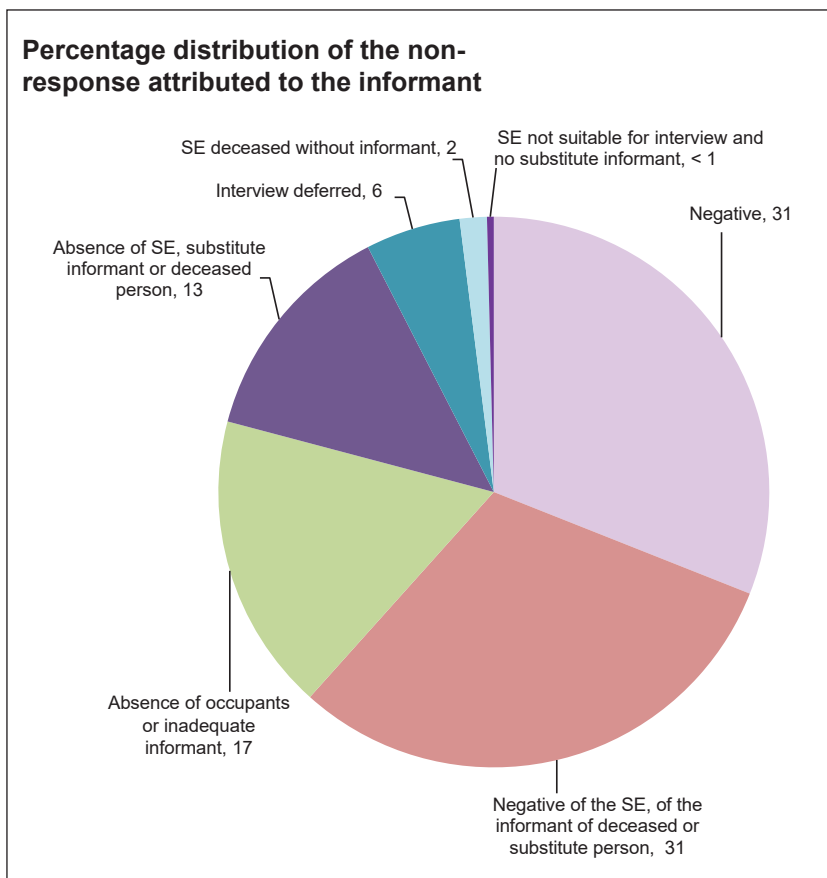
Regarding the causes of non-response associated with the sampling frame, 73% were due to the fact that it was not possible to locate the study subject (793 cases of the national sample, representing 4.40% of the 18,006 subjects).



The coordinations with the highest incidence of non-localized study subjects were Mexico City and East Mexico, with more than 9% of their sample. In contrast, the entities with the lowest frequency in that code were Baja California Sur, Chiapas, Sinaloa, Sonora, Tamaulipas and Tlaxcala with less than 2% each.

Description of housing outcome codes for non-responses associated with the sampling frame

Code	Description
Address change	In this code are the cases in which, after verifying that the address is correct and when investigating with the current residents of the domicile or with the neighbors, they are assured that the study subject changed address and they provide the present or the one of some family or known (as long as it is within the country). Also, this code is assigned when only a telephone number is obtained from the study subject or from a relative or acquaintance.
Study subject not found	This code is assigned when it is not possible to get a reference in order to locate the study subject, that is, there is no possibility of finding it. It was assigned in the following cases: <ul style="list-style-type: none"> • After verifying that the address is correct and when investigating with the current residents of the domicile or with the neighbors, they are assured that they do not know the study subject, or that they knew him and knew that he changed his address, but did not know the new address or some reference. • When inquiring at the residence with the residents (being able to be known or relatives of the study subject) or with neighbors, they are informed they went to live in another country, even when they provided the current address.
Uninhabited housing	To allocate this code, the main condition is that the address registered in the Directory of study subjects by Interviewer corresponds to a dwelling that is uninhabited at the time of the visit and that, even when investigating with the neighbors, the whereabouts of the subject study.
Temporary housing	They are the dwellings that, at the time of the visit may or may not be occupied, and the people that are declared do not live there normally because the place is only used at certain times of the year; either for recreation, work or other purposes. If, when asking for the study subject, a reference is obtained, the research line is followed and the code Change of address is registered, although if it is at that moment, the interview is applied at that address.
Housing with use other than housing	It is assigned when the dwelling, at the time of the visit, has a different use to the housing, such as cellar or office, among others. Also included in this code are houses that no longer exist because they were demolished or are uninhabitable due to their deterioration.
Address not found	This code is used in those cases in which, despite having considered the data of the directory to locate in the field the domicile of the study subject, it is not possible to locate it.
Unsafe area	It is assigned when the home of the study subject can not be accessed in the selected dwelling due to conditions that prevent access to the area (either under threats, verbal aggression, etc.) or neighbors inform that the house is a safety hazard or illegal activity is performed, so it is not advisable to go. It is also assigned if there is any situation where the Interviewer perceives that his / her physical integrity may be at risk.



Regarding the non-responses associated with the informant (906 cases), which represents 5% of the national sample, negative codes predominated both by the first informant and the study subject. The first respondent or habitual resident of the domicile in the first approach (with 281 cases at national level, representing 31% of the total non-responses and 1.56% of the national sample), the entities with the highest incidence were Morelos, 25 (5.24%); Followed by San Luis Potosí, with 41 (4.58%). On the contrary, it was remarkable the performance of 14 coordinations that registered less than one percentage point, Sinaloa, Chihuahua, Estado de México Poniente and Tamaulipas, with only one case of their sample, and Campeche, who did not present any.

Regarding the second type of refusal, the one corresponding to the study subject, the substitute informant or informant about deceased person presented 277 cases at the national level (31% of the non-responses and 1.54 of the total sample). It was observed that Jalisco had a higher incidence, with 5.77% of its sample, whereas Chiapas reported a single case, and Sinaloa none.

Description of housing result codes for the non responder associated with the informant

Code	Description
Interview deferred	It is assigned when the subject is contacted at the address or an appropriate informant (for the questionnaire for substitute informant or deceased person) and for some reason can not provide the information at that time, but gives an appointment to go thereafter to apply questionnaire.
Absence of study subject, substitute informant or informant of deceased person	Assigned when at the time of the visit to the address one of the following situations occurs: <ul style="list-style-type: none"> • The study subject lives there, but is not at that moment since he is working, is hospitalized, went on a trip for study, work, vacation or unforeseen reasons, and so on. • The study subject lives there but is unable to answer the questionnaire and the substitute informant is not there at the moment. • The study subject has already died, and the informant about deceased person is not in that moment.
Absence of occupants or inadequate informant	Code assigned when, at the time of the visit at the home, the occupants of the house are absent, only minors are found, or non-residents who do not know the information.
Study subject not suitable for interview and no substitute informant	Corresponds when the study subject, due to illness, advanced age, language, etc., is not able to answer the questionnaire and there is no person who can respond as a substitute informant.
Study subject deceased and there is no informant for deceased person	It is assigned when the subject is deceased and there is no person who can answer the questionnaire about the deceased person.
Negative	It is assigned when the resident person, with whom you have the first approach when you arrive at the address of the study subject, refuses to provide information.
Negative of the study subject, the substitute informant or of the informant of deceased person	Assigned when the study subject, the substitute informant or the informant about deceased person refuses to provide information.

Finally, the national information on each of the result codes of visits to study subjects, at the conclusion of the ENASEM 2015 information collection operation, was as follows:

Operational results by result code

Code	Description	Absolute	Percentage
	Total	18,006	100.00
01	Complete Interview	15,898	88.29
02	Incomplete Interview	111	0.62
	No answer	1,997	11.08
03	Interview deferred	50	0.28
04	Absence of the study subject, substitute informant or informant of deceased person	121	0.67
05	Absence of occupants or inadequate informant	158	0.88
06	Study subject not suitable for interview and no substitute informant	4	0.02
07	Study subject deceased and there is no informant for deceased person	15	0.08
08	Negative	281	1.56
09	Negative of the study subject, of the substitute informant or of the informant of the deceased person	277	1.54
10	Address change	36	0.20
11	Study subject not found	793	4.40
12	Uninhabited housing	67	0.37
13	Temporary housing	14	0.08
14	Dwelling with use other than housing, demolished or uninhabitable	6	0.03
15	Address not found	69	0.38
16	Unsafe area	10	0.06
17	Other situation	96	0.53

4.7.1 Productivity by Interviewer

Productivity is a measure of the efficiency with which labor factors are used and combined as economic and human capital, with the inputs needed to produce some good, in this case, obtaining complete interviews.

In the context of information collection operations, the expected productivity which is progressively monitored through follow-up, is a very sensitive indicator because it is subject to the behavior of several factors that frequently appear to the Interviewer.

When the sample is widely dispersed geographically it is necessary that the field staff have to travel long distances, which competes disadvantageously with the expected productivity and can be made even more difficult when the roads and transport are not in adequate conditions. Likewise, access to certain communities are extremely complicated, especially in rural areas away from localities that concentrate more population. Extreme weather conditions, resulting from cyclones or hurricanes that trigger strong winds and torrential rains, prevent the development of harvesting activities, which are usually delayed for some days, while the services are restored and the roads repaired.

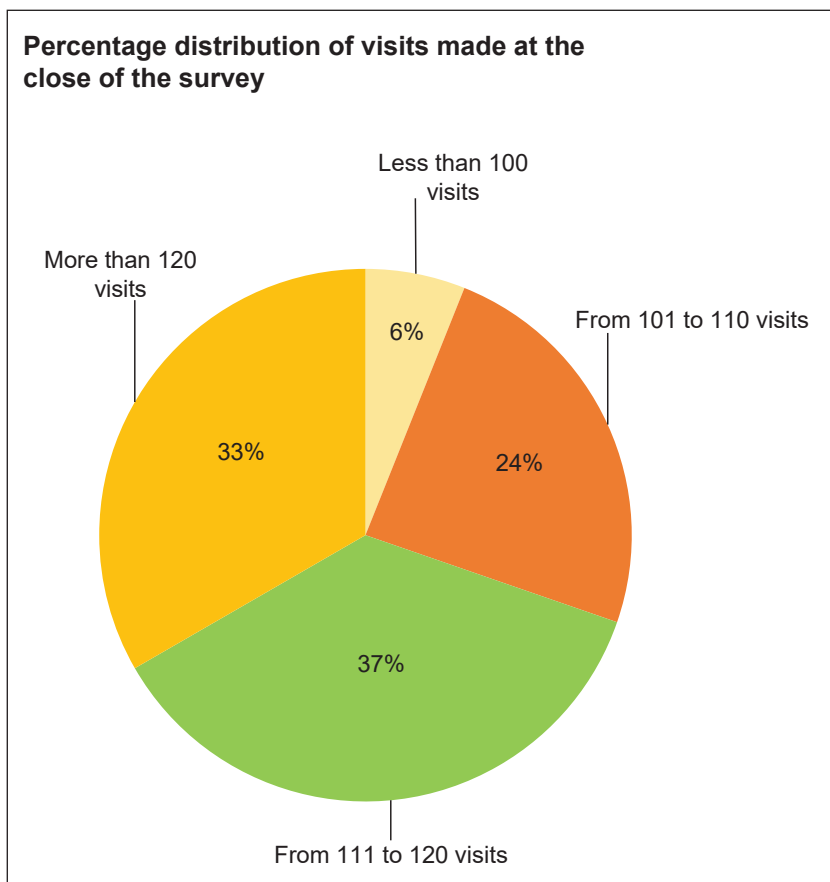
Likewise, there are high-risk areas where violence prevails, in which Interviewers apply special strategies, such as visiting in broad daylight and going in groups, or when extreme is avoided to not put the staff at risk. Such conditions contribute to explain the notable differences in Interviewer productivity.

The possibility of knowing the performance of the Interviewers in the field allows evaluating the suitability of the profiles requested, the volume of the contracted workforce, the distribution of workloads and the allocation of resources, among other administrative and operational issues.

The relationship between the number of study subjects visited and the number of Interviewers employed was considered for the measurement of performance during the survey period and until closure. In addition to the weekly average obtained, the following should be taken into account:

- The study subjects assigned to each Interviewer for field practice, performed during the training, and are counted as workload for the first week of the survey; This is so that the official start of the operation already has a progress in the coverage, in addition to that the amount of outstanding is not yet considerable.
- In subsequent weeks, the Director of Interviewers ensures that the assignment of study subjects to his work team is not excessive, as they are likely to have pending visits or interviews and should avoid dispersion of the members of the team.
- As the operation progresses, the number of pages programmed per week decreases gradually.

In the graph below, it can be seen that 12 state coordinations (37%) showed an average productivity or performance of between 111 and 120 interviewees visited by Interviewer, followed in almost equal proportion (11 entities, equivalent to 33%) of those who managed to visit more than 120 subjects in the field. In contrast, only 2 entities (6%) visited less than 100:



The following table shows the number of homes visited by Interviewer, weekly and in total at the close of the operation:

Visits made by Interviewer according to state coordination

State coordination	Subjects of study	Interviewer	Visits by Interviewer	
			Total	Weekly
National	18,006	156	115.42	14.43
Aguascalientes	486	4	121.50	15.19
Baja California	396	3	132.00	16.50
Baja California Sur	448	4	112.00	14.00
Campeche	449	4	112.25	14.03
Ciudad de México	477	4	119.25	14.91
Coahuila de Zaragoza	492	4	123.00	15.38
Colima	460	4	115.00	14.38
Chiapas	486	4	121.50	15.19
Chihuahua	446	4	111.50	13.94
Durango	560	5	112.00	14.00
Guanajuato	1,000	8	125.00	15.63
Guerrero	445	4	111.25	13.91
Hidalgo	441	4	110.25	13.78
Jalisco	918	8	114.75	14.34
México	476	5	201.83	25.23
East	217	3	72.33	9.04
West	259	2	129.50	16.19
Michoacán de Ocampo	755	7	107.86	13.48
Morelos	477	4	119.25	14.91
Nayarit	659	5	131.80	16.48
Nuevo León	489	4	122.25	15.28
Oaxaca	431	5	86.20	10.78
Puebla	995	8	124.38	15.55
Querétaro	432	4	108.00	13.50
Quintana Roo	428	4	107.00	13.38
San Luis Potosí	896	7	128.00	16.00
Sinaloa	487	4	121.75	15.22
Sonora	456	4	114.00	14.25
Tabasco	437	4	109.25	13.66
Tamaulipas	430	4	107.50	13.44
Tlaxcala	460	4	115.00	14.38
Veracruz de Ignacio de la Llave	1,086	9	120.67	15.08
Yucatán	443	4	110.75	13.84
Zacatecas	665	6	110.83	13.85

4.7.2 Subjects of study. Definitive data.

The results of the operational indicators from which the behavior and evolution of the gathering stage were analyzed, as well as the situation at the end of the operation, correspond to reliable data at the conclusion of fieldwork.

However, the information is subjected to rigorous processes of analysis, purification and validation, which even demand, in some cases, revisions and re-interviews after study subjects to complete, confirm

or correct specific situations and data that appear imprecise or inconsistent. In such a way, the expectation about the subjects to interview was obtained as a result of the previous course is subject to checks and possible modifications.

In this context, the table below shows the definitive results of the number of study subjects.

Operational results by result code

Code	Description	Absolute	Percentage
	Total	17,986	100.00
01	Interview complete	15,884	88.31
02	Interview incomplete	125	0.70
	No answer	1,977	10.99
03	Interview deferred	50	0.28
04	Absence of the subject of study, substitute informant or informant of deceased person	119	0.66
05	Absence of occupants or inadequate informant	157	0.87
06	Study subject not suitable for interview and no suitable informant	4	0.02
07	Study subject deceased and there is no informant for deceased person	14	0.08
08	Negative	274	1.52
09	Negative of the study subject, of the substitute informant or of the informant of the deceased person	278	1.55
10	Address change	35	0.19
11	Study subject not found	786	4.37
12	Uninhabited housing	68	0.38
13	Temporary housing	14	0.08
14	Dwelling with use other than housing, demolished or uninhabitable	6	0.03
15	Address not found	69	0.38
16	Unsafe area	10	0.06
17	Other situation	93	0.52

As can be seen, the difference in the number of study subjects is marginal, of only 1% and the most notable structural changes occurred in the decrease of the non-response by the reduction in the negative ones and in the non-localized study subjects.

5. Design and execution of information processing

The collection of information from ENASEM 2015 was carried out through five different catchment instruments; Four of them were applied in electronic media and one in a traditional way. The Cognitive Exercise Booklet was applied in printed format, because it asked questions and involved the execution of exercises to evaluate the state of memory, mental health and ability of the Interviewer.

For expository purposes, the data processing of the survey will be addressed, describing, in the first instance, the processing of the instruments raised in magnetic media and subsequently, the one of the printed instrument.

5.1 Processing of instruments lifted in magnetic media

The collection in magnetic media was done through the SICAPENASEM 2015 Surveying and Processing System, installed in the computer equipment that each Interviewer took with him. This allowed the Interviewer to capture the information provided by the informant during the interview. Information in electronic files was stored on the computer's hard drive.

The direct surveying by the Interviewers helped to make the process of generating statistical information more efficient and improves the quality of the data, since during the survey phase the data revision and validation process was executed.

The system, in addition to allowing the surveying and storage of information, facilitated the organization, distribution and control of the information throughout the survey process.

Organization

The state structure designed for information processing responded to the operational needs and the use of the electronic questionnaires for the collection of information. The figures directly involved in the information processing were:

Interviewer. In charge of capturing the information, sending its workload, performing backups and attending field validation observations.

Director of Interviewers. He received information from the Interviewers and sent it to the Process Manager. He attended, along with the Interviewer, the field validation observations.

Head of Processes. He was in charge of installing and configuring the system on the computers, received files with information, executed the field validation to deliver the reports to the heads of Interviewers. He supported the resolution of the observations of field validation and the solution of problems related to the operation of the equipment and the system, as well as the sending to the central offices the files with the information captured, according to the established schedule.

39 process managers were hired, one by state coordination and six distributed in Mexicali, Ciudad Juárez, Acapulco, Chetumal, Tampico and Veracruz.

In addition, another figure who had access to the processing system was the Head of Special Surveys, who was part of the operational area and used the system to generate reports.

Profile of the Process Manager

In order to guide the selection of the personnel that would participate in this stage of the survey, the profile of the Process Manager was designed in accordance with the roles and responsibilities that he / she should perform:

Profile of the Process Manager

Age and Sex	Education	Essential Requirements	Desirable requirements
Preferably: • Over 21 years old. • Indistinct.	Preferably: • Bachelor's degree in computer science, systems engineering or related (intern or titled)	• Knowledge of <i>MS Office and Windows operating system</i> • Availability full time and to travel within the entity. • Analysis capacity. • Easy handling of interpersonal relationships.	• Experience in personnel management. • Experience in organizing work areas.

Note: The schooling requirement can be offset by experience in previous special survey projects.

5.2 Schedule of Activities

The general activities of information processing, considering its scope of execution, were carried out according to the following schedule:

Schedule of processing activities

Activity	Period	
	Start	Finish
Survey of information (capture)	12/10/2015	04/12/2015
Monitoring the use of the surveying system	12/10/2015	11/12/2016
Integration of the database	14/12/2015	09/02/2016
Coding	03/02/2016	15/03/2016
Central validation	16/03/2016	07/06/2016
Preparation of inputs for calculation of expansion factors	25/05/2016	07/06/2016
Calculation of the expansion factor	08/06/2016	21/06/2016
Integration of expansion factors	06/07/2016	12/07/2016
Integration of bio-marker data	13/07/2016	26/07/2016
Preparation of validated database for its exploration	27/07/2016	02/08/2016
Delivery of results	03/08/2016	05/08/2016

5.3 Equipment Requirement

The Interviewers, whose primary task consisted in capturing information with quality and adherence to the institutional methodology, required a lightweight computer, discreet and with sufficient capacity to operate the SICAPENASEM 2015 system appropriately throughout the working day. The rest of the figures required equipment with superior characteristics, which would support the storage and processing of greater volume of information.

Under such considerations, the system requirements for contracted personnel teams were:

System Requirements for Operational Personnel Teams

Characteristics	Laptop	Mini laptop
CPU	Core 2 Dual	Intel Celeron (<i>Touch Screen</i>)
Memory	Minimum 2 GB	Minimum 2 GB
Hard Disk	Minimum 40 GB	Minimum 20 GB
Operating system	<i>Windows 7</i>	<i>Windows 8 Professional</i>
Software/Connection	<i>Open Office, Adobe Reader, Internet Explorer</i> and surveying and processing system.	<i>MS Office pro Plus 2013, Adobe Reader, Internet explorer</i> and surveying and processing system.

A total of 406 computers were used for the operation of the survey, of which 132 were laptops and 274 were mini laptops. The former is considered a replacement stock distributed in the regional offices, as a preventive measure to address the failures that could arise during the field operation.

The following table shows the assignment of equipment that was performed by operational figure and state coordination, also considering the stock of replacement at the regional directorates.

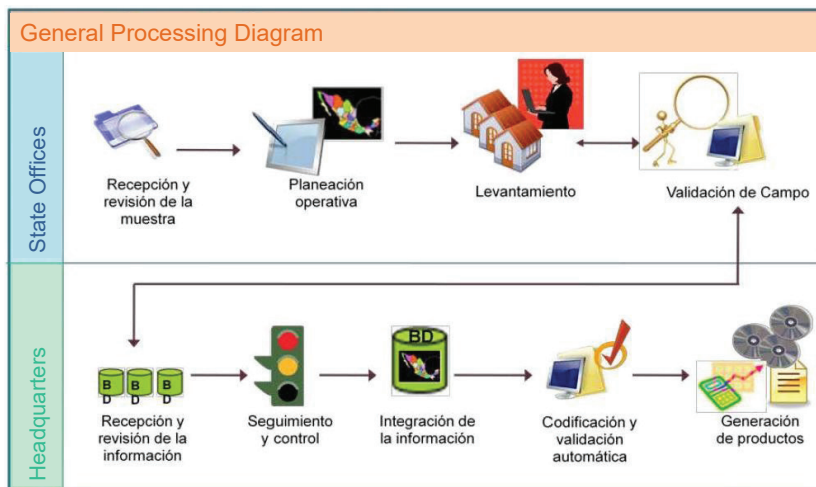
Requirement of computer equipment

State Coordination	ARO		RP		JE	E	Regional addresses
	Laptop	Mini laptop	Laptop	Mini laptop	Mini laptop with additional battery installed	Mini laptop with additional battery installed	Stock replacement (Laptop and USB stick)
National	39	39	39	39	40	156	54
Aguascalientes	1	1	1	1	1	4	1
Baja California	2	2	2	2	1	3	2
Baja California Sur	1	1	1	1	1	4	1
Campeche	1	1	1	1	1	4	1
Ciudad de México	1	1	1	1	1	4	2
Coahuila de Zaragoza	1	1	1	1	1	4	2
Colima	1	1	1	1	1	4	1
Chiapas	1	1	1	1	1	4	1
Chihuahua	2	2	2	2	1	4	2
Durango	1	1	1	1	1	5	2
Guanajuato	1	1	1	1	2	8	3
Guerrero	2	2	2	2	1	4	1
Hidalgo	1	1	1	1	1	4	1
Jalisco	1	1	1	1	2	8	3
México	2	2	2	2	2	5	2
East	1	1	1	1	1	2	1
West	1	1	1	1	1	3	1
Michoacán de Ocampo	1	1	1	1	2	7	2
Morelos	1	1	1	1	1	4	1
Nayarit	1	1	1	1	1	5	1
Nuevo León	1	1	1	1	1	4	2
Oaxaca	1	1	1	1	1	5	1
Puebla	1	1	1	1	2	8	3
Querétaro	1	1	1	1	1	4	2
Quintana Roo	2	2	2	2	1	4	2
San Luis Potosí	1	1	1	1	2	7	2
Sinaloa	1	1	1	1	1	4	1
Sonora	1	1	1	1	1	4	1
Tabasco	1	1	1	1	1	4	1
Tamaulipas	2	2	2	2	1	4	2
Tlaxcala	1	1	1	1	1	4	1
Veracruz de Ignacio de la Llave	2	2	2	2	2	9	3
Yucatán	1	1	1	1	1	4	2
Zacatecas	1	1	1	1	2	6	2

5.4 Computer model

Information processing comprises four major subprocesses: surveying, validation, coding and exploitation.

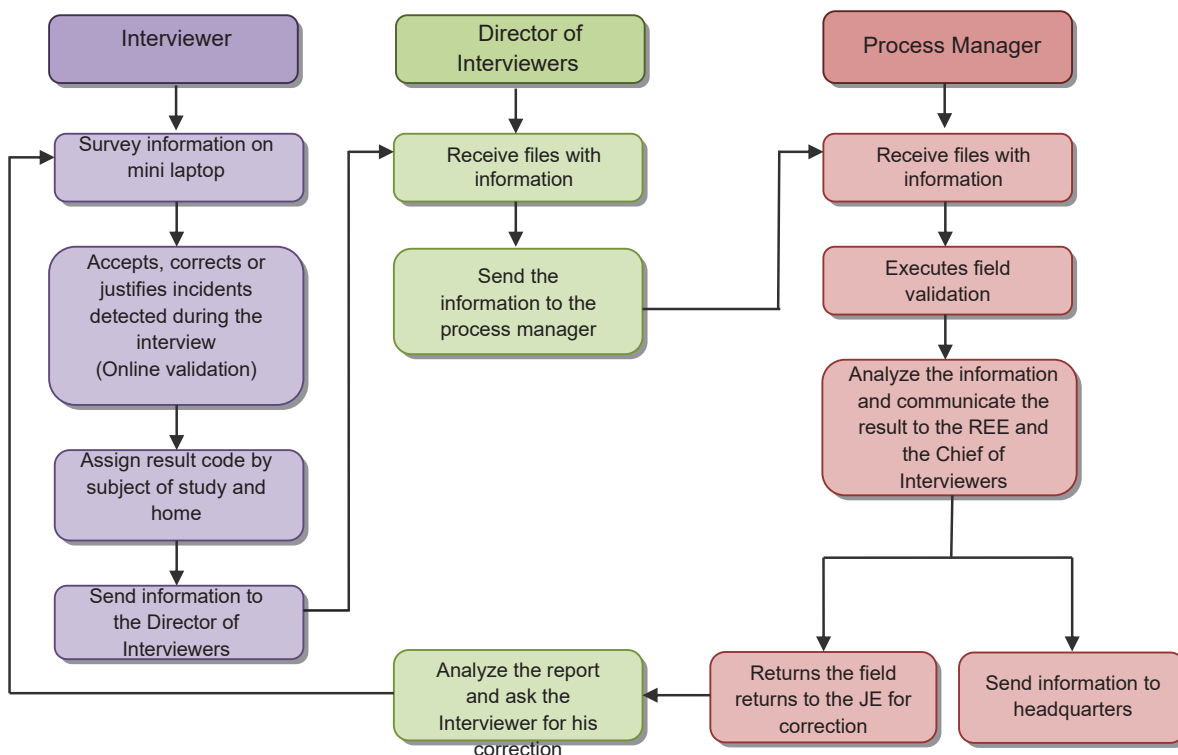
The capture and the first phase of the field validation and integrity of the sample, at the office level, was carried out in a decentralized manner in the federative entities taking advantage of the Institutes IT infrastructure at the national level.



In central offices, integrity was carried out at the state level and the second phase of validation to later carry out the codification, generation of databases and exploitation of information.

During the data processing of the survey in the state offices, each figure was assigned certain tasks within the system based on the methodology designed for processing, which is described in the following scheme:

Diagram of state processing



Surveying

The information was captured by the Interviewers using a mobile device (mini laptop). The system contained the list of subhogars to be visited, so that when the Interviewers selected the subhogar corresponding to the visited home, they could visualize the questions of the questionnaire depending on the sequence that was marked in the system and the answers previously obtained.

Regarding the follow-up sample, the Interviewers had a pre-filled out version (preloaded) that provided previous data to verify during the survey, unlike the sample that was added during the survey as a result of the new unions of the study subjects.

The reception of questionnaires was carried out at least twice a week. During this operation, the Chief of Interviewers handed over a USB stick to the Process Manager with the records of his work team. Internet and FTP were also used.

Validation of information

Validation is a process that cleans the information coming from the field to avoid possible inconsistencies and omission of information. Previously, the field validation criteria were elaborated and the routines that validated the information in terms of integrity, sequences, valid codes and basic congruence were programmed, in order to ensure compliance with the required quality parameters.

The validation was applied in two moments:

1. During the interview, the Interviewers were responsible for accepting, correcting or justifying the incidents detected (online validation).
2. Upon receiving the information from the heads of Interviewers in charge, the Process Manager was in charge of executing the field validation.

As a result of the field validation, the system presented a table with the list of the subhogars in which it differentiated those with incidences of those that did not present errors.

Of the subhogars with incidents, the Process Manager generated a report of errors which indicated by questionnaire, the CUNICAH and Subhogar selected that required reconsult in the field. The Director of Interviewers, as much as possible, delivered daily the file to the Interviewer to make the re-consults and, if necessary, the necessary corrections.

In order to facilitate and control the analysis of incidents, the Process Manager could generate the validation report in a format similar to a spreadsheet with the same information displayed in the system errors screen. The report allowed him to make more detailed annotations or to analyze the type and frequency of errors, or to keep a historical file of each validation process that was executed in the system. It also had the option to view the information of the subhogar questionnaire in PDF format.

It is important to emphasize the questionnaires endorsed during this process, the system assigning the status of validated and releasing them, while those with return to the field had to be delivered to field operations personnel and re-enter the validation process since the interviewers had the responsibility to correct them.

5.5 Transfer of Information

The transfer of information was carried out by the Process Managers through the system on October 14, 19 and 26; For November, on days 3, 9, 17, 23 and 30. The last information was sent on Monday, December 7.

Once the information was received in central offices, the files were reviewed and analyzed and weekly reports and reports were generated for all offices, with the results of the information received.

Nine updates were made, which were made available to Process Managers and their assistants on the share point page or via FTP, to update the system used in the survey and processing of the survey data.

The updates, in addition to including adjustments to the system, were applied to make changes to the sample which were sent to the processing area by the operative, in order to join or split subhogars that had been reported by state offices.

5.6 Processing of instruments sampled on paper

The information processing of the Cognitive Exercise Booklet of ENASEM 2015 was carried out in its entirety in central offices, due to the fact that it was required to be recorded on paper.

To this end, at the central level, support was requested from the data surveying services department for the digitization of the instruments.

Reception and storage of questionnaires

The reception of the collection instruments, traditionally collected, took place on October 27, November 10 and 24, and December 8 and 12.

The sending and delivery of the information of the state offices to central offices was done through parcels.

Most of the entities issued a communication to central offices via e-mail to find out the shipment of the packages, including the guide numbers, which allowed follow-up and confirmation of receipt.

In order to expedite the survey of information during the reception of packages, the following verification activities were performed by the operating area:

- Confrontation that the instruments contained in the package against those registered in the identification were the same.
- Review of the information of CUNICAH, Subhogar and person number of the cover of the instruments against the *L01 Allocation of work load and control of advance*.

The instruments were received by field operative personnel who carried out the basic verification of the contents of the packages and sent them to the conceptual area, which was in charge of reviewing the content of the questionnaires. After completing the review, the questionnaires were sent to the processing area for digitization.

Once the survey is completed, automatic debugging, coding and validation processes will be applied to finally integrate the captured data to the base of the survey.

Survey

The application of this process that manages both capture and processing of the survey instrument was developed with web programming and the information was recorded on a central server.

During the execution of the process, the capturing supervisors, based on their experience, solved the doubts that arose as well as solved any situations that were presented in the questionnaires, such as lack of information and housing not identified in the sample, among others.

Primary Validation

Subsequently, the validation process was carried out consisting of the reception, verification, storage and analysis of the data to identify errors in the information and to correct them, in order to leave the information free of impurities prior to the integration of the database of data. The subprocesses that include the validation are the following:

- Integrity. It consists of ensuring that the information is complete, ie verify that each consecutive sample has its questionnaire, or its non-response sheet.

- Sequence and valid codes. At this stage it is reviewed in each questionnaire that the question passes have been respected and that there are no omissions.
- Basic congruence. It consists of reviewing the logical relationships between the answers to different questions, as well as the exclusive answers.

5.7 Automatic Validation

In central offices, the requirement for automatic validation was made, which included the revision of the logical consistency of the information through a system that analyzes the answers to certain questions and their congruence with those obtained in others, with which they are related.

5.8 Integration of the database

It will consist of the integration of three databases: questionnaires collected in electronic media, on paper and the database of biomarkers that will be delivered to INEGI by the National Institute of Public Health.

6. Design and presentation of results

The information from the Encuesta Nacional sobre Salud y Envejecimiento en Mexico 2015 will be available to users in an open and free form. In the section dedicated to the survey, from the INEGI web page, you can find the link where you can contact the University of Texas Medical Branch website or, directly, through the electronic address:

http://www.enasem.org/index_Esp.aspx

The site is organized in five sections:

Start. As an introduction, an explanation of the antecedents of the statistical exercise is given: importance of the study, considerations explaining the origin of the project, the institutions that financed the different surveys and collaborators, as well as the periods of data collection in the various editions.

Documents and questionnaires. The section offers users the following documents and materials for download in PDF format:

Documents available by language and year of publication

Document	Language	Year
<i>Methodological document</i>	Spanish	2001, 2012, 2015 ^a
	English	2012, 2015 ^a
Methodological document (Biomarkers and anthropometric measures)	Spanish, English	2012
<i>Critical coder manual</i>	Spanish, English	2001, 2003
Imputation of economic variables	English	2001, 2003, 2012
<i>Interviewer's Manual</i>	Spanish	2001, 2003, 2012, 2015 ^a
	English	2001, 2003
Interviewer's Manual (Summary)	Spanish, English	2003
Code Manual (by section)	English	2001, 2003, 2012, 2015 ^a
Contents of the files (by section)	English	2001, 2003
Duration of ENASEM interviews 2001–2003	English	2001–2003
Monitoring master file ENASEM 2001–2003/ 2001–2012	English	2001–2003, 2012, 2015 ^a
Response rate / Field operation report	Spanish	2012, 2015 ^a
	English	2003
ENASEM File description	Spanish, English	2001–2003–2012

^a The website indicates that it will be available soon.

Questionnaires available by language and year of publication

Questionnaire	Language	Year
Basic questionnaire	Spanish, English	2001, 2003, 2012, 2015
Questionnaire by substitute	Spanish, English	2001, 2003, 2012, 2015
Questionnaire of deceased person	Spanish, English	2001, 2003, 2012, 2015
Comparison of questions 2001-2003	English	2003, 2015 ^a

^a The website indicates that it will be available soon.

Data. In raw data, the databases of micro data are published for download by type of interview, with option to import to SPSS, STATA and SAS formats. It is required that the user register before to the site and agrees to observe some terms of use and confidentiality for the treatment of the information, as well as giving credit in the references that publish or disseminate.

Micro-databases of Direct Interviews by Substitute Years 2001, 2003, 2012^a

Home level
Section PS/ENT. Interview cover Home Resident Registration
Section B. Non-resident children
Section G. Help and children
Section J. Housing
Section K. Pension, income and assets
Section SA. Demographics: Widowed
Individual level
Section A. Demographics
Section A. New person demographics
Section C. Health
Section D. Health services
Section E. Cognition
Section PC. Cognition with substitute informant
Section F. Parents and parental help
Section H. Functionality and help
Section I. Employment
Greater Events
Section L. Anthropometrics / Biomarkers
Monitoring master file

^a The website indicates the year 2015, although the sections are not yet defined.

Databases of interviews about deceased persons Years 2003 and 2012^a

Home level
Section SG. Help and children
Section SJ. Housing
Individual level
Section SA. Demographics
Section SB. Temporary housing arrangements
Section SC. Health
Section SD. Health services
Section SE. Cognition
Section SH. Functionality and help
Section SI. Employment

^aThe website indicates the year 2015, although the sections are not yet defined.

In the imputed / harmonized data sub-section, the user is advised to take the document of economic variables as reference, which is available in the documents and questionnaires section. Then you can choose the type of data download format, it can be SPSS, STATA or SAS.

Imputed / constructed databases of direct interviews by substitute.

Years 2001, 2003, 2012^a

Home level
Section G. Help and children
Section J. Housing
Section K. Pension, income and assets (Total value of goods)
Individual level
Section D. Health services
Section F. Parents and parental assistance
Section K. Pension and individual ^b Income

^aThe website indicates the year 2015, although the sections are not yet defined.

^bInformation that will be available soon.

The imputed databases of interviews about deceased persons, from year 2012, at the household level, contemplate only section *SD. Health services*. Like other bases, it is indicated that the information corresponding to the year of sampling 2015, will be available soon.

With regard to harmonized databases and the codebook, it is mentioned that they will be available for the years 2001, 2003 and 2012 in the near future.

On the other hand, there is a last sub-section that refers to databases of restricted use, available only under specific contractual conditions due to their nature of investigation and consultation. The following linked files are offered on the site:

Restricted Use Database^a

Product	Description
Community-level features	<ul style="list-style-type: none"> • Linkage of ENASEM 2001 with data from community services (categorical variables). • Linkage of ENASEM 2001 with the data of community services (numerical variables).
Number of deaths per cause, 1998-2011	<ul style="list-style-type: none"> • Linkage of ENASEM 2001 with the number of deaths caused at municipal and community level. • Linkage of ENASEM 2003 with the number of deaths caused at municipal and community level. • Linkage of ENASEM 2012 with the number of deaths caused at municipal and community levels.
Number of violent and non-violent deaths, 1998-2011	<ul style="list-style-type: none"> • Linkage of ENASEM 2001 with the number of violent and non-violent deaths at the municipal and community levels. • Linkage of ENASEM 2003 with the number of violent and non-violent deaths at the municipal and community levels. • Linkage of ENASEM 2012 with the number of violent and non-violent deaths at the municipal and community levels.

^aThe website is indicated in the year 2015, although the sections are not yet defined

3. Publication. Your search, with option to import to Excel file, can be done by type of publication, author(s) and keyword(s), such as:

- Social and family support
- Psychological aspects
- Help for older adults
- Biomarkers
- Cognition
- Health behaviors
- Health care
- Demographic
- Depression
- Diabetes
- Gender differences
- Disability
- Divorce
- Early age
- Employment
- Chronic diseases
- Infectious diseases
- Fragility
- Functionality
- Childhood
- Anthropometric measures
- Methodology of the survey
- Migration
- Mortality
- Socioeconomic level
- Nutrition
- Obesity
- Social networks
- Rural / Urban
- Health
- Social security / Pensions
- Work

4. Description of the study. In addition, in order to provide a broader picture of the characteristics and particularities of the project, the following are included in this section:

Description of the study. Details the research objectives of the survey.

General Information. Feel the methodological bases, as well as the protocols followed in the project surveys. It includes the subject addressed and a league to consult the chronological table which refers to the people interviewed, according to the period of the survey.

Places of Interest. It provides links to some of the sites in countries that have developed studies similar to the ENASEM, as part of a global family of longitudinal studies that try to understand the process of human aging under different living conditions, through comparative studies.

Sites and elements available include:

G2 Aging: The Gateway to Global Aging Data (www.g2aging.org) is an electronic resource with access to multidisciplinary data on aging, health, and retirement that is part of the International Family of Health and Retirement (*Health and Retirement*).

HRS: Health and Retirement Study. Longitudinal panel survey that examines, every two years, a representative sample of more than 26 thousand Americans over 50. The study is supported by the *National Institute on Aging* and the *Social Security Administration*.

CHARLS: China Health and Retirement Longitudinal Study. It is a biennial survey conducted by the National Development School (China Economic Research Center) at Peking University. CHARLS aspires to be representative of 45 year old residents, with no upper age limit.

ELSA: English Longitudinal Study of Aging. It is the first study in the United Kingdom that brings together a wide range of subjects that are indispensable for understanding the economic, social, psychological and health aspects of the aging process.

IFLS: Indonesia Family Life Survey. It is the only large-scale longitudinal survey available to the public.

JSTAR: Japanese Study of Aging and Retirement. It is a panel survey of people over 50 years old, conducted by the Institute of Economic Research in Japan.

KLoSA: *Korean Longitudinal Study of Aging*. It is a nationally representative sample of more than 10 thousand people over 45 years of age in the Republic of Korea.

SHARE: *Survey of Health, Aging and Retirement in Europe*. It is a multidisciplinary and transnational micro-data panel database on health, socioeconomic status, and social and family networks of more than 45 thousand adults over 50 years.

TILDA: *The Irish Longitudinal Study on Aging*. Study of a representative cohort of more than 8,500 people in Ireland, of at least 8 thousand people over 50 years.

ELSI: *The Longitudinal Study of Health, Aging and Welfare in Brazil* (ELSI) is a longitudinal study of older adults in Brazil, representative at the national level, which began in 2015.

NICOLA: *The Northern Ireland Cohort Longitudinal Study of Aging* follows closely the comprehensive approaches adopted by other aging studies.

THSLS: *The Scottish Longitudinal Survey of Aging* is planned to begin in 2015/2016; Will include about 10,000 elderly people in a period of ten years.

SAGE: The *WHO Global Study on Aging and Adult Health* is a longitudinal project on adults over 50 years of age, with representative national samples in China, Ghana, India, Mexico, Russia and South Africa.

CLSA: *The Canadian Longitudinal Study on Aging* will track approximately 50,000 men and women between the ages of 45 and 85 for at least 20 years. The study will collect information on aspects of people's lives related to biological, medical, psychological, social, lifestyle and economic changes. Recruitment of study participants began in 2012.

HAALSI: *The Health and Aging Study in Africa: Longitudinal Studies of INDEPTH communities* will interview and evaluate a cohort of about 5,000 adults aged 40 and over, to identify HIV infection and risk factors for cardiometabolic diseases. Data will include information on household income and socioeconomic status, biomarkers and measurements taken at the interview site; dry blood sampling, and a follow-up clinic assessment.

6. Contact. Research team:

- Rebeca Wong. University of Texas Medical Branch.
- Alberto Palloni. University of Wisconsin–Madison.
- National Institute of Statistic and Ggeography.
- Luis Miguel Gutiérrez. National Institute of Geriatrics.
- Martha María (Mara) Téllez–Rojo. National Institute of Public Health.
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Glossary

A

Access to health services. It is considered that a person has access to these when he has the opportunity to receive health services from a public or private institution to which he is affiliated or enrolled. He has not stopped receiving medical attention for causes attributable to the health system.

Accident. Event in which people suffer a physical injury that warrants the medical care provided by a doctor or a health institution.

Accompany to the doctor. It refers to the person who goes with the informant to the visits in which he receives care from a medic or doctor. These are not necessarily emergencies.

Activity. It is human behavior in terms of what is done, where, for whom and for what, in a specific time span.

Affiliation to health institute. It refers to cases where someone in the household is enrolled in an institution that provides health services, because another person has incorporated it as a beneficiary.

Age. Number of completed years that the person has, from the date of birth to the time of the interview.

Ambulatory surgery. Ambulatory surgery procedures are included, such as any operation performed in a clinic or hospital, in which the interviewee does not spend the night in the hospital.

Angina pectoris. It is a pain or discomfort in the chest that is felt when the heart muscle does not get enough blood supply.

Apartment building. It is a private dwelling that is part of a building of several floors or levels; Shares a wall, roof or floor with another dwelling and has entrance from a common area (corridor, staircase, etc.).

Apartment on rooftop. Private dwelling of fixed construction that is located on the roof of an apartment building and that at the time of the uprising is inhabited by people independent of those who reside in the department to which it belongs. It has access from a common space: staircase and hallway.

Arrhythmia. It is any disorder in the heartbeat or rhythm; Means the heart beats too fast, too slow or has an irregular pattern.

Arthritis. It is the inflammation, pain or restricted movement of joints or the back area.

B

Basic questionnaire (CB). Survey instrument through which information is collected from the selected study subjects.

Benefit of program 70 or older. Federal Government Program that supports adults aged 70 and over, who live in communities of up to 30 thousand inhabitants.

Biological father. It is the man who has contributed to the genetic makeup of the child.

Block. Area that forms part of a locality with perfectly identifiable boundaries, such as streets, gaps, walkers, sidewalks, streams; May contain one or more grouped or dispersed houses, as well as vacant or local lots destined for commerce, schools, factories, offices or temples, among others.

Blood pressure. It is the result of the force exerted by the blood against the walls of the arteries every time the heart contracts. When blood pressure drops from the normal level, it causes states of hypertension (elevation above the normal level) or hypo tension (decrease below the normal level).

Brother. A sibling will be understood as any biological brother, stepbrother, brother adopted, or recognized, that the parents of the interviewee have created.

C

Capital goods. All those goods that have a monetary value, but unlike those previously reported, these are not tangible, but are found in both cash and documents.

Cerebral embolism. The term cerebral embolus is also known as stroke. TCI (Transient Cerebral Ischemia), sometimes called a "mini-attack" is also classified as a cerebral embolism.

Chronic disease. It is a set of disorders that have the same evolution that come from a specific cause of origin not always known, whose process is slow and long lasting; As compared to the course of an acute (short-course) disease.

Chronic degenerative disease. It is the physical or mental illness that, after its appearance is prolonged, causes a deterioration, wear or malfunction of the part(s) of the affected body(s).

Clinic. Establishment of the Ministry of Health where people access medical services of the highest level of medical care. The first level services are those provided by general practitioners and family members and only require medical consultation and follow-up. They can also do basic laboratory and / or diagnostic tests.

Cognitive exercise booklet. Survey instrument formed by a series of instructions that has the purpose of knowing the mental agility of the study subject. This questionnaire is only on paper and applies to those who answered the basic questionnaire.

Collective housing. Local to provide accommodation to large groups of people who are subject to living and behavioral standards for health, education, discipline, religion, social work and welfare, among others, and who have habitual residents at the time of the uprising.

Collective housing is classified as:

1. Hotel, motel, inn
2. Pension, guest house, house of assistance
3. Hospital, sanatorium, health home, medical treatment center
4. Home for children, orphanage, home crib
5. Home, Home for Seniors, Nursing Home
6. Shelter for victims of domestic violence
7. Shelter or public bedroom for destitute
8. School boarding, student residence
9. Convent, monastery, religious congregation, seminary
10. Prison, prison, prison, penitentiary, penal colony
11. Rehabilitation Center for Juvenile Offenders, Correctional
12. Work camp, workers' tent, medical residence
13. Barracks, camp, military, naval or police detachment Campamento
14. Homelessness Camps
15. Migrant shelter
16. Other class

Common expenditure. It is part of the income that is destined to the purchase of food for the group of people that form the home, and can be contributed by one or several, including the economic dependents: children and/or elders.

Condition of occupation. Situation that distinguishes the economically active population (EAP) in occupied and unemployed, depending on the performance of an economic activity or the search for a job.

Congestive heart failure. It is not a heart attack. Sometimes it can be confused with other types of acute events like fainting or chest pains.

Contact future. Person who has a direct relationship with the study subject, does not live in the same dwelling, but can give information in case of change of address in the following projects. It can be: mother, father, brother, son, uncle, nephew.

Contribution to any social security institution. All monetary contributions made by members of the household to social security institutions throughout their productive lives, in order to enjoy the benefits of it. They can be national or foreign institutions.

Country of residence. Nation where the international migrant person currently lives.

Couple or spouse. Person recognized as life partner, regardless of whether or not he or she is in the same home and whether or not his or her union legalized.

D

Deafness. It is the total inability to hear. It can be caused by injuries or defects in the inner ear, from birth or after birth. It is the loss of the ability to receive audible messages or understand words, even when they are amplified.

Deal. Economic unit for the purpose of producing goods or services to increase income for a person or group of persons, and that has a value of its own with the intention of producing profits. It may also be a land for the cultivation or breeding of animals for commercial purposes, that is, it is produced with the intention of selling the product.

Deficiency. It refers to any loss or abnormality of a body structure or psychological, physiological or anatomical function, whatever its cause. Deficiencies represent disorders at the level of the organs of the body.

Definitive absentee. Person who stopped being a resident of the house because they had been absent for more than three months, regardless of the reason.

Degenerative illness. It is one in which some part of the body wears off, stops working or works improperly as a product of deterioration or decay of physical and / or mental characters.

Depression. It is a mood disorder, either from the psychological point of view or from the point of view of psychiatry. According to the medical model, psychiatry describes it as a mood disorder and its usual symptom is a state of dejection and unhappiness that may be transient or permanent.

Diabetes (mellitus). It is a disease of the body's metabolism in which the blood sugar level is high and there is often sugar in the urine. Treatments include injections of insulin (a necessary hormone), pills, special diets and weight loss.

Disability. It is any restriction or absence of the ability to perform an activity in the form or within the margin that is considered normal for a human being because of a deficiency. Disabilities therefore reflect disturbances at the level of the person.

Disability insurance. A person contracts with a private institution to secure a certain amount of money in case of suffering a disability.

Discomfort. Lack of comfort or impediment for the free movements of the body.

Disease. Alteration of health conditions.

E

Economic support. All support in local or foreign currency that has been given or transferred to the informants by their children.

Employer. Self-employed person who occupies people in return for an economic remuneration in money or in kind.

Employment. Circumstance that gives a person the status of employed by virtue of an employment relationship that he maintains with a higher instance whether this is a person or a collegiate body, which allows him to occupy a place or job. People in employment are a specific case of those who carry out an occupation.

Employment benefits. Goods and services, other than access to health institutions, in cash or in kind, in addition to their salary, received by subordinate and paid workers from the economic unit for which they work as a complement to their earned income.

F

First informant. Person with whom the Interviewer has an approach when arriving at the house and can inform the situation of the study subjects or his new address.

Follow-up interview. This is called the conversation or dialogue between the Interviewer of the ENASEM and the informants who were previously visited, in connection with the collection of information in 2001, 2003 and 2012.

Fourth. Space bounded by walls and fixed ceilings of any material that forms part of the dwelling (for accommodation purposes) such as bedroom, living room, dining room, study, etc.

Fourth on roof. Room located on the roof of a house or apartment building.

Fourth in the neighborhood. Private housing that is part of a group of houses grouped in the same land; Can share the wall, ceiling, or floor with another home; Has independent entrance from a common space or area (patio, corridor or staircase). Generally, its inhabitants can share the water and / or sanitary service.

G

Geographical address. According to the technical standard, it is the space within a locality or referred to a communication channel that occupies a building (building or land) where one or more persons or economic units can be established, in order to fulfill their obligations or rights.

Goods. It is understood as value of property; all movable or immovable property that implies an economic value. Therefore, the total sum of all transfers, business, deposits, cash deliveries, real estate, etc., which were made in the last year to the children or grandchildren of the respondent or his / her spouse and must reach a total value of 75,000 pesos or more.

H

Habitual residence. It is a specific accommodation (dwelling or dwelling where you usually sleep or eat) that the person can return at the time you want; ie the place that the person would give in response to the question where "Do you live?"

Heart attack. Myocardial infarction or heart attack is the presence of dead or dying tissue in and / or around the heart caused by obstruction of blood passages.

Heart failure. It is the dilation of the heart that does not allow it to pump blood efficiently throughout the body.

Herpes zoster. A disease caused by a reactivation of the latent varicella zoster virus, which affects the peripheral nerves and the skin, in which small, ring-shaped painful blisters are grouped along a dermatome. Colloquially it is better known as shingles, soap opera or "fire of St. Augustine".

Home. It is formed by one or more persons, linked or not by ties of kinship, who usually reside in the same private home and is supported by the same expenditure for food.

Homeopath or healer. All visits to the healer or homeopath are considered, either for checking or to attend to a specific health problem. Healer includes all that are denominated with that category and includes the bones. Homeopath includes all those who are referred to by that category, either in general or specialists, as health care professionals.

Hospital or Institute of the Ministry of Health. Establishment that provides care to people with a disease or health problem, in which hospitalization is possible, not only in case of emergencies, but also for chronic conditions, surgeries or interventions that can be programmed; Rehabilitations, medical examinations, observation of symptoms, among others.

Hours of work. Number of hours normally worked by the employed population in their main job.

House of care. It shall be understood as any place or collective dwelling in which adults of 60 years or older reside, such as a nursing home or residence where people receive medical care and not only asylum, shelter or food.

Housing in the neighborhood. Private dwelling of fixed construction that is part of a group of houses grouped in the same land, that generally share some wall, ceiling or floor with another house, as well as the water and toilet facilities. It has access from a common area: patio or hallway.

Housing inhabited. At the time of the visit is occupied by one or more people who claim to live normally in it.

Hypertension or high blood pressure. It refers to persistent high blood pressure in the blood. The cause may be unknown or associated with other primary diseases. It may or may not be being treated properly.

I

IMSS-Opportunities. Federal government program that provides health services at IMSS clinics or hospitals to people living in areas of greatest social marginalization and poverty. Program beneficiaries are enrolled in a registry by which they and their family members receive medical care.

Income from loans received from people outside the home or institutions. Perceptions in money derived from financing, coming from private financial institutions, people outside the home or otherwise.

Income from other countries. Cash transfers received from institutions or persons residing outside the country.

Income from property rent. Cash receipts received in exchange for making available to others (households, businesses, etc.) your money, assets, or property.

Income from retirement or pensions originated within the country. Transfers in money or transferable deposits, which are received as a consequence of a retirement or pension, coming from other homes, institutions or companies that are within the country, with no counterpart.

Income from withdrawals of investments, savings, bundles, savings banks, and so on. Perceptions in money, arising from the withdrawal of money from investment accounts in financial institutions or individuals.

Income from wages or newspaper. Regular cash payments paid to workers as remuneration for the work performed by them during a specified period, established in a verbal or written contract.

Income for work. Monetary or in-kind perception received or obtained by the population occupied by the performance of their occupation. Only net income, that is, the amount of money received by the employed, free of tax deductions, union dues, or a social security institution, in the case of subordinate workers or the economic unit, in the case of self-employed workers.

Independent house. It is a private dwelling that does not share a wall, ceiling or floor with another dwelling and that has an independent entrance from a street, road or field; There can be several in the same land or property. Includes private housing with local or accessory.

Indigenous language. Verbal communication system used by one or more groups in Mexico and other American countries since pre-Hispanic times.

Informant of the deceased. Person who had frequent contact with the study subject before dying (family or responsible), who can provide information about his personal situation and cause of death.

Interest income from loans to third parties. Cash receipts received from people outside the home, which they pledged to pay, as a result of loans made.

International Migrant. Person who changed his place of habitual residence from one country of origin to another destination.

Internal migrant. Person who changed place of habitual residence of a municipality or delegation, or federative entity, to another of destination.

Interview. It is defined as a meeting of a cordial and respectful character whose purpose is to establish a conversation or dialogue between the informant and the Interviewer to obtain the desired information. The interview is developed through a questionnaire that establishes the order and sequence of the questions.

Interview with substitute informant. This is called the conversation or dialogue between the Interviewer of the ENASEM and the informant who knows the information of the study subject and that for some reason has a health impediment to answer the questionnaire; this is derived from an accident or illness, advanced age, language or temporary absence.

L

Legal parent or guardian. It is the man that the law recognizes as the child's father.

Life insurance. Insurance that guarantees that when the owner dies, the beneficiaries will receive a certain amount of money.

Limitation to personal care. Difficulty performing activities related to personal care, such as dressing, bathing and feeding on its own.

Limitation for walking and moving. Difficulty moving, flexing lower extremities and going up or down steps, due to the total or partial lack of legs or their immobility.

Limitation to listen. Difficulty in perceiving and discriminating sounds. It includes total loss of ability to hear, as well as hearing weakness in one or both ears, even using hearing aids.

Limitation to talk or communicate. Difficulty producing and transmitting messages through oral language. It includes loss or restriction of speech, as well as difficulties in maintaining and understanding a conversation.

Limitation to pay attention or learn. Difficulty to bring something to memory, learn new tasks or skills and maintain attention.

Limitation to see. Difficulty distinguishing the shape, size and color of a visual stimulus, even using lenses; As well as loss and weakness of sight in one or both eyes.

Limitations on the activity. Difficulties that a person can have in performing tasks of daily living.

Living place. It is every place usually delimited by walls and ceilings of any material, which is used to live; That is, feeding and protecting oneself from the environment, where people can enter or leave without going through the interior of the rooms of another dwelling.

Loans to third parties. All kinds of non-for-profit economic loans are occasional loans.

Local. It refers to the site where the activities of a business are developed.

Local not built for room. Places that were built for a purpose other than room, but at the time of the visit are inhabited. It includes economic activity, as well as the one that is empty and that is used to live or simply to sleep.

Location. Any place occupied with one or more dwellings, which may or may not be inhabited; This place is recognized by a name given by law or custom.

Level of instruction. It is defined as the highest year (degree) of study achieved (completed or approved) by a person within one of the levels of the National Educational System (or equivalent).

The levels are:

- Primary education
- Secondary Education
- High school or high school
- Basic Normal
- Technical or Commercial Career
- Professional education
- Postgraduate

M

Main work. It is the work that the informant recognizes as such.

Marital status. Marriage or marriage status of persons aged 12 and over at the time of the interview, in accordance with the laws or customs of the country. It is classified in:

- Married. Person who has contracted civil and / or religious marriage.
- Free Union. Person who lives in a couple without legalizing or formalizing, either civilly or religiously, their union.
- Divorced. A person legally separated from his / her spouse by a divorce decree and who, at the time of the interview, does not live with another couple or has not remarried.
- Separated. Person who no longer lives with his partner, nor has he divorced her.
- Widowed. Person whose partner or spouse has died and has not remarried, or live in a free union.
- Single. Person who has not married civilly or religiously and has never lived in a free union.

Material in ceilings. Classification of private dwellings according to the basic building element and predominant in the roofs.

Material in floors. Classification of the particular houses according to the predominant element in the floors.

Material in walls. Classification of the particular houses according to the element of basic construction and predominant in the walls.

Medical care. Professional health care service provided by a physician, other health professionals, or a qualified person and offered at institutions or facilities intended for it. The purpose is to improve the health of the person or to provide services to physical and emotional well-being.

Medical treatment. It is some therapy, rehabilitation or surgery performed by a doctor.

Medical visits. Includes visits to a physician or other medical and health personnel, including clinic and hospital nurses. It includes specialists such as dermatologists, psychiatrists, ophthalmologists, as well as medical practitioners, osteopaths, physician assistants, and general practitioners. Visits to homeopaths, healers, herbalists are not considered.

Members of the household. People who habitually reside in the same dwelling and are supported by a common expense, mainly for food.

Memory. It is a function of the brain of the people and, at the same time, a phenomenon of the mind that allows the you to encode, store and evoke the information of the past. In practical terms, memory (or, better, memories) are the expression of learning.

Mental deficiency. Decreased intellectual capacity to varying degrees, from severe and profound evidence to less severe but also limiting the development of those who suffer. In addition to some physical problems is characterized by a defect in the ability to learn.

Migration. Change of place of habitual residence of the people from a municipality or delegation, federative entity or country of origin, to another of destination.

Minor skin cancers. They are not considered a cancer because they occur frequently and are rarely fatal. As an example of these, we have basal cell carcinoma, basal epithelial cells, as well as squamous cell carcinoma, which are considered as minor skin cancers.

Mortality. Demographic phenomenon that observes the deaths or deaths that occur in a population during a determined time.

Muteness. It is the loss of the ability to speak, as a consequence of problems of the organs of phonation or by circumstances of another origin.

Myocardial infarction or heart attack. It is the presence of dead or dying tissue in and / or around the heart caused by obstruction of the blood conduits. It is a painful and sometimes fatal incident caused by the blockage of one or more of the coronary arteries.

N

National Geostatistical Framework. Unique and national system designed by INEGI to correctly reference the statistical information of censuses and surveys, with the corresponding geographic locations. It divides the national territory into areas with identifiable limits in the field, called geostatistical areas which have three levels of disaggregation: State Geostatistics (AGEE), Municipal Geostatistics Area (AGEM) and Basic Geostatistics Area (AGEB). The latter can be urban or rural.

Neighbor. Neighbor is understood as the person who lives in the same immediate area, close to where the interviewee lives.

Number of children. Total number of children born alive to women 12 and over, regardless of whether they were alive or dead at the time of the interview.

Number of person (NP). It is the code that identifies the people in the sample. The key is made up of three digits and allows you to differentiate the people originally selected, the spouses of the originally selected individuals and the later couples of both. The original (basal) selection always has the number 010.

Number of rooms. Classification of private homes according to the number of rooms they have.

O

Occupation. Performing an economic activity, either independently or subordinate.

Office and private hospitals. Establishments where people come to receive professional medical services by doctors or trained personnel who are in the private sector.

Osteoporosis. A disease consisting of the loss of bone tissue in the bones by decalcification.

Own housing. Private dwelling where the legal or legal owner resides.

P

Pain. Sensation or discomfort in the body manifested by the informant.

Paraplegia. It is the paralysis of the lower limbs of the person produced by injuries below the level of the first dorsal vertebra.

Pensioner. Person, to whom as a benefit, is granted 75% of the salary he received as a worker when withdrawing from the economic unit, definitively, due to health problems as a result of diseases or accidents at work.

Pharmacy consultations. Occasions in which the informant went to a clinic dependent in a pharmacy or asked the manager or employee of the same orientation when presented with a health problem.

Prison or jail (CERESO). It is an institution authorized by the government where persons considered, by law as perpetrators of a particular crime, are imprisoned. They can be prison facilities where prisoners of war are imprisoned. They are part of the penitentiary system, which is the set of prisons and the respective organization that administers them.

Private health insurance. People who voluntarily contract a private institution to cover the cost of medical services required by the insurance holder or the persons who are enrolled in it.

Private housing. Dwelling, constructed or adapted for the lodging of people who form homes.

Preload. Information gathered by ENASEM during the last interview, 2001, 2003 or 2012, which will serve as a reference during the 2015 survey.

Preload report. Function available in the utilities menu of the ENASEM 2015 surveying system. It includes the set of data collected in 2001, 2003 or 2012 and is useful to raise a follow-up interview when using paper questionnaires.

Popular insurance. Public and voluntary health insurance aimed both at reducing people's healthcare costs and ensuring that they receive such care in a timely manner. This insurance is given to the population that does not have access to social security as provided by the IMSS, ISSSTE or other institutions.

Proceeds from PROCAMPO. Cash receipts received as direct benefit to the field for agricultural activities.

Profit of PROCAMPO. Perceptions of cash derived as direct aid to the field for agricultural activities.

Prosthesis. It is the artificial replacement of an organ or part of it; For example, artificial leg or arm.

Q

Questionnaire on deceased person (CF). An instrument that captures information about the deceased subject through the substitute informant.

Questionnaire for introductory questions. Survey instrument formed by a series of questions that have the purpose of delimiting the instrument that must be applied to collect the information of the study subject of the ENASEM.

Questionnaire by substitute informant (CS). Survey instrument that obtains information from selected study subjects through an alternate informant who knows the information of the selected people.

R

Real estate. It is all property that generates income, that is, that the informant sells or rents.

Regular resident. A person who normally lives in the dwelling, where he usually sleeps, prepares his food, eats and protects himself from the environment and therefore recognizes it as his habitual residence.

Rehabilitation. A set of methods whose purpose is the recovery of an activity or function, lost or diminished by trauma or illness.

Relationship. Link that the members of the household have with the head of the same, whether conjugal, affinity, adoption or custom.

Religion. Belief or spiritual preference declared by the population, regardless of whether or not it is represented by an organized group.

Remission of cancer. Decrease or disappearance of cancer signs and symptoms. In the case of partial remission, some signs and symptoms of cancer have disappeared, but not all of them. In complete remission, all signs and symptoms of cancer have disappeared, but the cancer may still be in the body.

Rented housing. Private dwelling whose residents occupy it in exchange for an agreed payment.

Retired. Person withdrawn from work who continues to receive a payment as a result of having completed a certain number of years worked by his age (55 or 60 years, according to his contract).

Retirement or pension income from other countries. Transfers in cash or transferable deposits, which are received as a result of a retirement or social security pension from other households, institutions or companies that are outside the country, without any compensation.

Retreat center. It shall be understood as any place or collective dwelling in which adults of 60 years or older reside and in which housing, food and recreation services are provided; For example a nursing home.

Revenue for Opportunity benefit. Cash receipts derived from direct benefit for health, food and education, provided by the Ministry of Social Development (SEDESOL), through the Opportunities program.

Revenue per piece. Cash receipts received by workers, employees, or day laborers, determined by the amount of work or service they perform.

Rheumatism. A disease usually manifested by inflammation of the joints of the extremities (it is currently used colloquially. It is no longer used in the medical literature, now the term arthritis is used).

Right to a private institution. Right of people to receive medical services in private health institutions for having paid health insurance directly, or through the company / institution where they work.

Right to health services. The right of persons to receive medical services in public or private health institutions, as a result of a work benefit for being pensioned or retired, for enrolling / acquiring medical insurance or for being a designated family beneficiary.

Right to Pemex, Defense or Navy. Right to medical services of Petróleos Mexicanos (PEMEX), Secretariat of National Defense (SEDENA) and Secretariat of Marine (SEMAR), for being an insured worker, member of the armed forces, retired or because he is a designated beneficiary family member.

Right to Popular Insurance or Medical Insurance for a New Generation. Right of people to receive medical services from the Social Protection System in Health (SPSS) provided by the Ministry of Health (SA).

Right to the IMSS. Right to medical services of the Mexican Social Security Institute (IMSS) for being an insured, retired worker; Designated family beneficiary or by having acquired an optional or voluntary insurance.

Right to the ISSSTE / ISSSTE State. Right to medical services of the Institute of Security and Social Services of State Workers (ISSSTE) for being an insured, retired or retired worker of this institution; Or be a designated beneficiary family member.

Room condition. Classification of private dwellings according to whether they are inhabited, uninhabited or of temporary use, at the time of removal.

Rural location. The one with a population smaller than 2,500 inhabitants, and that is not municipal head.

S

Sanitary, toilet, bath rate or W.C. Hydraulic work that works or acts by means of water, that is to say, an installation that allows the elimination of black waters.

Secondary work. If the informant identifies it as such, according to his own assessment, when the interviewee has more than one job in the reference week after having determined which is the principal.

Self-employed. Occupied person who performs his trade or profession alone or associated with others; Does not have paid workers, but may have workers (family or non-family) without payment.

Sequel to polio. Residual paralysis, which exists throughout life without expecting further recovery. Paralytic deformity including muscular imbalance, muscular contracture, muscular atrophy and during childhood longitudinal bone loss of the affected limb.

Serious problem or limitation. It refers to being prevented from performing normal age activities such as studying, working, or playing sports.

Several floors. It refers to climbing three or four stories without stopping to rest.

Sex. Biological condition that distinguishes people either as men or women.

Sharecropper. Person who alone or with another, exploits an agricultural land or a livestock installation by means of a sharecropping contract.

Single home key (CUNICAH). It is a consecutive number that was assigned to the original home; Consists of five digits, the 2001 follow-up sample ranges from 00001 to 11,000; The 2012 sample was numbered from 11,001 onwards.

Son born alive. Product of pregnancy of the female, 12 years and over, who at birth shows some signs of life, such as breathing, heartbeat, crying or some movement.

Special help. All non-monetary support given to informants by their children, for example, time of care, food, medicine.

Subhogar. It is the code that identifies the new homes that are created by separations or new unions of the study subjects (sample 2001, 2003 and 2012), which are followed up in the survey.

Subject of death. Person who is part of the study to be selected or partner in 2001-2003, and that when applying introductory questions in 2012 is detected that he died.

Subject of death. Person who is part of the study to be selected or partner in 2001, 2003 or 2012 that at the time of applying the survey of 2015 is detected that died.

Subjects of study. Persons aged 50 and over, selected in 2001 or 2012, and their spouses or partners (identified in the 2001 survey or in the follow-up in 2003 and 2012); The deceased of this sample, those who survive today, and are habitual residents in the same private or collective dwelling within the country, with the exception of prisons or social rehabilitation centers of any governmental level.

- Study subject 1 (SE1). Person originally selected in sample 2001 or 2012.
- Study subject 2 (SE2). SE1 partner or spouse detected in the previous course or in the previous survey.
- Study subject 3 (SE3). New spouse of SE1 detected in 2015.
- Study subject 4 (SE4). New spouse of SE2 detected in 2015.

Substitute informant. Person who has frequent and close contact with the study subject (familiar or responsible), who can provide information on personal and health situation, among other topics.

Suitable informant. Person 18 years and older and resident of the dwelling who knows the sociodemographic data of the residents.

Surviving child. Product of pregnancy of the female, 12 years and over who at the time of the interview is still alive even if she does not reside with the mother.

T

Temporarily absent. Person, who at the time of the visit, is not in the dwelling but intends to return during the period of the survey or before three months, regardless of the reason for his absence.

Temporary housing. At the time of the visit, may or may not be occupied by people but none of them declares to live there normally, since it is destined to be used at certain times of the year either for leisure, work or other purposes. This type of housing is ready to live in with or without furniture, and is not available for rent or sale.

Tenure. Classification of private dwellings according to the legal or de facto situation by virtue of which occupants inhabit the dwelling.

Transfer income. Regular or frequent receipts received in cash or delivery of transferable deposits coming from institutions, companies or other households, without providing any counterpart.

Transfers in kind. Benefit granted by private organizations or the government for the help of a population, individual or family, so that they can enjoy certain articles or services. This aid consists of part or all of the value of the good or service.

U

Uninhabited housing. Residential use with or without furniture, in which at the time of the visit no person lives, and can be inhabited at any time. In some cases they can be identified because they have a sign of rent, sale or transfer.

Urban location. Population equal to or greater than 2,500 inhabitants or municipal heads, regardless of its number of inhabitants.

Use of health services. Use of medical services provided by a physician or trained personnel in health institutions or in private establishments.

V

Voluntary work. They are the activities that people perform to serve a community or a cause by their own decision. It is an important part of the workforce of non-profit organizations and is characterized by not receiving payment in exchange for the time dedicated.

W

Water piped inside the house. Private homes that have pipelines that carry the liquid so that people can be supplied by taps located in the kitchen, toilet, bathroom or other similar facilities.

Water supply network. It is a pipeline installation that is planned and constructed to supply water to homes, buildings and schools, among others. It is not necessarily an underground pipe-based installation and it can be superficial regardless of the type of materials it is made of.

Work. In operational terms, a person who performs any kind of productive activity, develops a job or spends his time in work activities; whether or not within the limits of the production of the System of National Accounts. However, it distinguishes between what is done within the general production boundary (SNA work) and the one outside the frontier, but it remains productive (not SCN work).