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MONTHLY HOTEL SURVEY (MMH)
GENERAL METHODOLOGY

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NATIONAL ADMINISTRATIVE DEPARTMENT OF STATISTICS

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FOREWORD

The National Administrative Department of Statistics (DANE), a government agency, is responsible for coordinating and regulating the National Statistical System (SEN). Within the Statistical Planning and Harmonization project, it works for strengthening and consolidating the SEN. The following processes support this commitment: The production of strategic statistics; the generation, adaptation and dissemination of standards; the consolidation and harmonization of the statistical information and the coordination of instruments, actors, initiatives and products, all actions geared towards the improvement of the quality of strategic statistical information, its availability, timeliness and accessibility in order to respond to the increasing demand for such information.

Conscious of the need and obligation to offer the best possible products, DANE has developed a standard guide for the documentation of the methodologies of statistical operations so as to contribute to the visualization and understanding of the statistical process. Through this instrument, the organization produces methodological documents, for use by specialists and the general public. They present in a standard manner, the main technical characteristics of the processes of each research. They are complete, of easy reading, which allows its analysis, control and evaluation.

This series of documents, favors the transparency, confidence and credibility of the technical quality of the institution for a better understanding and use of the statistical information produced following the principles of coherence, comparability, integrality and quality.

INTRODUCTION

Services are the result of an ample set of activities developed by economic units. They are at the disposal of individuals, households and enterprises, whenever demanded. They are normally consumed simultaneously with their production. Users cannot exert on them property rights. In some cases they are referred to as intangible goods. Although DANE through the Annual Services Survey (EAS) covers the Services sector, it has been necessary to obtain short-term data with national coverage for the hotel services. The Monthly Hotel Survey began in July 2004. It is a research that complements the information of the EAS.

The objective of the Monthly Hotel Survey (MMH) is to produce short term information on the behavior of hotels based on indices and changes in income, occupied persons and remuneration, as well as on particular indicators of the hotel activity such as: the occupancy rate and average prices[1] per room according to the type of accommodation and guests purpose of trip.

The universe corresponds to formally established economic units with a fiscal identification number (NIT) and mercantile record in the Chamber of Commerce, located in the national territory and providing accommodation service in hotels.

Within this universe, those units employing more than 20 persons and income above 320 million (Col $, year 2000) belong to a segment of forced inclusion[2] .

The results refer to national totals with a precision of the results corresponding to three levels of errors: up to 5% is considered good; between 6% and 10% is considered as acceptable and between 11% and 15% it can be published but with restriction. As mentioned, the Monthly Hotel Surveys offers monthly results of the hotel activity beginning from July 2004.

[1] The average price is the ratio between the total income related to accommodation services and the number of rooms sold.

[2] The parameters of inclusion of this research take year 2000 as reference.

The Methodology of the Monthly Hotel Survey describes each stage and process carried out in the development of the research.

This document is divided into six chapters: the first one presents the background; the second one provides an in-depth description of the statistical design including the sample design, the design of indicators, and the data processing procedure; the third one describes the statistical production as such; in the fourth chapter the analysis of the statistical results and the analysis of context of the obtained figures is approached; the fifth refers to the procedures of dissemination of the results and the last one presents the reference documentation.

1. BACKGROUND

The National Administrative Department of Statistics (DANE) initiated the research of the services sector in 1995 with the Annual Services Survey (EAS) approaching, among others activities, those related to hotels and travel agencies. The information of that year was of a structural type, with figures on income, operational costs and expenses, average number of occupied persons and movement of fixed assets. Specific indicators of the hotel activity were set up such as the occupancy rate, average prices according to type of accommodation and number of guests' overnights.

In 2005, the Ministry of Commerce, Industry and Tourism and DANE agreed on a set of actions to provide statistical information to the tourist sector within the project "Support and Maintenance of a Tourism Information system". This statistical information consisted of having short-term information on hotels and travel agencies activities from which indicators could be elaborated that provided a short-term follow-up. This gave rise to the Monthly Hotel Survey.

Within the framework of this agreement a monthly sample was set up during twelve months for hotels and travel agencies. Later, in July 2006, DANE took over the whole project to proceed with the research and production of the information related to hotels and travel agencies.

2. DESIGN OF THE STATISTICAL OPERATION

2.1. METHODOLOGICAL DESIGN

2.1.1. Information needs

As it was previously mentioned, the Monthly Hotel Survey arises from an agreement between the Ministry of Commerce, Industry and Tourism and DANE on the need to provide statistical information on accommodation services in the country, since these were estimated through the Monthly Services Survey, that soon gave rise to the Monthly Hotel Survey and the Quarterly Survey of Travel agencies. The results of the Monthly Hotel Survey serve as reference to the organizations involved in the tourism sector as it observes the short-term situation of the sector and also to the National Government for decision-making and evaluations of the sector

2.1.2 Objectives

General mission

To produce short-term information on tourist accommodation, through indices, changes and indicators of the sector.

b. Specific objectives

- To determine the behavior and monthly changes in accommodation services.
- To construct sectoral indicators of accommodation services for short term economic analysis

2.1.3 Scope

The Monthly Hotel Survey (MMH) studies the behavior of the income of the hotels, the occupied persons and variable characteristics of the sector such as the occupancy rate, the purpose of trip of the guests, the average length of stay and the prices of the rooms. Altogether, these variables allow the short-term observation of the use of hotels and the analysis of the supply of accommodation services.

The MMH studies the behavior of the accommodation activities in: hotels, apartment hotels, inns, vacation centers and camping zones. Accommodation per hour in motor hotels, inns and motels is excluded. Households providing directly accommodation services in their homes are also excluded. The statistical operation is representative at the national level.

2.1.4 Reference framework

a. Theoretical framework

As previously mentioned, the services sector statistics initiated the measurement of the activities related to the tourism sector in 1995 through the Annual Services Survey (EAS), approaching, among others, the activities related to hotels and travel agencies, developing specific indicators of the hotel activity such as the occupancy rate, average prices according to type of room and guests overnights.

In 2005, the Ministry of Commerce, Industry and Tourism and DANE agreed on a set of actions in order to provide statistical information to the tourism sector within the project “Support and Maintenance of the Tourism Information system”. This statistical information consisted of having short term data on the activities of hotels and travel agencies for the construction of indicators and their short term follow up. This was the reason for the inclusion during twelve months, of the activities of Hotels and Travel agencies within the Monthly Services Sample (MMS).

Shortly later, in July 2006, DANE assumed the project consisting in continuing with the research and production of information related to hotels and the travel agencies but as an independent program.

b. Conceptual framework

The Monthly Hotel Survey presents information on the hotel sector at national level, through the follow up of: total revenues; average number of occupied persons; prices according to the type of room; occupancy rate and the guests’ purpose of the trip.

In the following, the main concepts used in the research are described:

- **Hotels**

Facilities dedicated to the provision of non-permanent accommodation to the public in general in rooms, apartments or camping areas, in exchange for a monetary payment. The hotels may also provide restaurant, bar and other services in combination with accommodation (CIIU 3 A.C). According to Article 78, Law 300 (July 26, 1996), hotel establishments include a set of goods dedicated by natural or legal persons to the provision of nonpermanent accommodation services, for less than 30 days, with or without food or other complementary services sustained on an accommodation contract.

- **Average number of occupied persons**

The number of persons, who in the month of reference were performing a job, remunerated or not, for the benefit of an accommodation establishment. It includes the different categories of workers, such as owners, partners and relatives, the permanent and temporary staff directly hired by the enterprise, the temporary personnel provided by other enterprises and the apprentices or students working under specific types of agreements (university, technologist or technician) [3].

- **Price according to type of room**

This price is the one that makes possible identifying the evolution of the prices overtime and it is defined as: "the average price paid by the guests for a room in the month of reference. Due to the difference in prices according to the type of room, it is broken down into categories such as single room, double room, suite and another type of room" [4].

- **Hotel occupancy rate**

It corresponds to "the percent ratio of the occupied rooms to the total rooms available in the month of reference"[5].

[3] Concepts adapted by the thematic staff according to the specific needs of the research.

[4] Ibid.

[5] Ibid.

- **Purpose of trip**

The main purpose of a tourism trip is defined as: "the purpose in the absence of which the trip would not have taken place". Some of the more frequent categories of purpose of trip for hotels guests are leisure and business. The leisure, holidays and recreation purpose includes, for example: tours, visits to natural sites, attendance to sport or cultural events, non-professional sports practice (golf, tennis, hiking, surfing, climbing, etc.), use of beaches, swimming pools and recreation and entertainment facilities, cruises, gambling, attendance to summer camps for youngsters, resting, honey-mooning, fine dining, visits to establishments specialized in well-being except in the context of medical treatments, etc."[6] .

The Monthly Hotel Survey measures the purpose of trip as the percentage of guests who stayed in the hotel for a specific reason such as leisure, businesses, conventions, health, inconveniences in transportation and other reasons.

The health and medical care purpose makes reference to the visitors who travel to receive medical treatments when these are based on medical advice (like cosmetic surgeries that use medical facilities and services. This category only includes short-term treatments because those requiring an over-stay of a year or more are not considered part of tourism).

The business purpose includes activities of independent and employed workers. Among this purpose it is possible to find: attendance to meetings; conferences or congresses; commercial topics and exhibitions; concerts; shows; trade; purchases; sales; participation in scientific or academic researches; work as tourist guides or other professionals In tourism activities; participation of professionals to sport activities and formal or informal attendance to trainings, among others.

[6] United Nations, Economic & Social Affairs Department, Statistics Division, Studies in Methods Series M No. 83/ Rev.1.International Recommendations for Tourism Statistics 2008.

c. Legal framework

According to Article 78, Law 300 (July 26 of 1996), hotel establishments include a set of goods dedicated by natural or legal persons to the provision of nonpermanent accommodation services, for less than 30 days, with or without food or other complementary services sustained on an accommodation contract. As it was mentioned previously, in 2005, the Ministry of Commerce, Industry and Tourism and DANE agreed on a set of actions to provide statistical information to the tourism sector within the "Support and Maintenance of the Tourism Information system" project, in particular short term data on the sector.

d. International references

The Monthly Hotel Survey considers the recommendations included in the United Nations (UN) World Tourism Organization (WTO) *document International Recommendations for Tourism Statistics 2008, Studies in Methods, Series M No. 83/Rev.1.*

Another document used as reference was published by Statistics Canada*, "Quality Guidelines for Statistical Research"* [7].It presents the steps to be followed in a research, their development and the interactions existing among them.

The Spanish Methodology of the Hotel Occupancy Survey is an important reference, given the experience acquired in the development of this kind of research. It applies the regulations of the Statistical Office of the European Union (Eurostat) and contains definitions and models of forms for services with the completion instructions for the enterprises.

e. National references

The national reference for this research is the Annual Services Survey (EAS). As previously stated, the EAS initiated the measurement of the structure of some activities related to the tourism sector (accommodation and travel agencies) in 1995, with operational figures on income, costs and expenses, average number of occupied persons and movement of fixed assets. Special indicators of the hotel activity were

[7] Statistics Canada**. Directrices de calidad en la investigación estadística.** Edited and translated by DANE Bogotá, 1994. Document originally published in 1985 and revised in 1987, 1989, 2003 and 2009.

studied as the occupancy rate, and average prices according to type of room and guests overnights.

2.1.5. Design of indicators

For the analysis of the behavior of income and the average number of occupied persons, annual changes and nominal and real indices are compiled in which the bias associated with the seasonality of the activity of the sector is eliminated.

Estimation of change

A change is a measure that indicates the relative change in the value of a variable in a given period in relation to its value in another**.**

a) Month-to-month annual change: percentage change calculated between the value of a variable in the month of the year under study and its value in the same month of the previous year.

$$v_{iy} = \left[\frac{\hat{t}_{iy}}{\hat{t}_{(i-1)y}} - 1\right] * 100$$

Where,

y = variable under study

v_{iy} = percentage change of the total of ***y*** in the month of year ***i*** with respect to the same month of year **i-1**

$\hat{t}_{iy}$ = = total estimate of ***y*** in the month under study of year ***i***

$\hat{t}_{(i-1)y}$ = total estimate of ***y*** in the same month of year ***i-1***

The change for a particular domain under study is calculated using the following formula

$$v_{iyd} = \left[\frac{\hat{t}_{iyd}}{\hat{t}_{(i-1)yd}} - 1\right] * 100$$

Where,

v_{iyd} = percentage change of the value of variable ***y*** for the domain ***d*** in the month under study of year ***i*** with respect to the value of the same variable in the same month of the previous year ***(i-1)***

$\hat{t}_{iyd}$ = total estimate of ***y*** in the domain of study ***d*** in the month under study of year ***i***

$\hat{t}_{(i-1)yd}$ = total estimate of ***y*** in the domain of study ***d*** in the same month of year ***i-1***

b) Current year change: percentage change of the sum of the values of the variable observed in the period from the first month of the year to the month under study and the sum of the values of the variable observed in equal period of the previous year.

c) Last twelve months change: percentage change of the sum of the values of the variable observed during the last 12 months until the month under study and the sum of the values of the variable observed in a similar period of the previous year.

Calculation of indices

An index is used to reflect the evolution or growth of a value in a period of time determined in relation to another one, called base period. This research uses simple indices with fixed base. The base year is 2007.

The simple index corresponds to the relative between the total of the variable in the month i and the monthly average of the variable in the base year, which is expressed as:

$$\hat{I}_{(i)y} = \frac{\hat{t}_{(i)y}}{\hat{t}_{i_0 y}} * 100$$

Where $\hat{t}_{(i)y}$ is the total of the variable ***y*** in the month ***i*** and the base of the index $\hat{t}_{(i0)y}$ is the monthly average of the variable ***y*** in the base year, calculated as follows:

$$\hat{t}_{i_0 y} = \frac{1}{12} \sum_{i=1}^{12} \hat{t}_{iy}$$

For calculation purposes $\hat{I}_{(i)y}$ may be expressed in a chained manner as:

$$\hat{I}_{(i)y}= \hat{I}_{(i-1)y}\,\frac{\hat{t}_{iy}}{\hat{t}_{(i-1)y}}$$

Where,

: Index of the variable ***y*** in the month ***i.***

: Index of the variable ***y*** in the month ***i -1***

Indices of income and of number of occupied persons: the indices of total income and average number of occupied persons are calculated with respect to base year 2005, as follows:

$$Index = \frac{X_t}{\frac{1}{12}\sum_{n=1}^{12} X_n}$$

Where,

X: variable (income, average number of occupied persons)

t: month under study

n: months of year 2005

Calculation of indicators

These indicators measure other variables of the accommodation activity in the country and serve as guide to analyze the behavior of the supply and demand of the output of the activity.

Room occupancy rate

It corresponds to the percent ratio of the occupied rooms to total available rooms of the period. Presently, it is only published for the establishments in the forced inclusion stratum.

$$Occupancy\ (\%) = \left(\frac{\sum_{nf=1}^{Nf} IHOA_{nf}}{\sum_{nf=1}^{Nf} IHDO_{nf}} \right) * 100$$

$$Occupancy\ Current\ year\ (\%) = \left(\frac{\sum_{1}^{T} \sum_{nf=1}^{Nf} IHOA_{nf}}{\sum_{1}^{T} \sum_{nf=1}^{Nf} IHDO_{nf}} \right) * 100$$

$$Occupancy\ Last\ twelve\ months\ (\%) = \left(\frac{\sum_{T-11}^{T} \sum_{nf=1}^{Nf} IHOA_{nf}}{\sum_{T-11}^{T} \sum_{nf=1}^{Nf} IHDO_{nf}} \right) * 100$$

Where,

IHOA: rooms occupied in the month

IHDO: total rooms available in the month

Nf = (1, 2… Nf) Number of forced inclusion enterprises

T= Month of study

Guests' purpose of trip

The Monthly Hotel Survey publishes information on the purpose of trip as the percentage of guests who stayed at the hotel classified according to leisure, businesses, conventions, health, **amercos**[8] or other reasons given by the sources of forced inclusion enterprises.

[8] Amercos is a local term with variable meaning. In this context it refers to the persons that demand the accommodation service due to "force majeure", normally due to change or cancelation of flights, etc.

For the calculation of the purpose of trip, it is necessary to establish first the number of resident and non-resident guests, for each purpose of trip. (The questionnaire provides the absolute number of resident and non- resident guests. (Chapter V, variables 6 and 7, and the percentage of each group in each purpose of trip, variable 10.)

$$\mathrm{ihpn_i} = \sum_{f}^{F} (\mathrm{mv}_i^f * \mathrm{ihpn}^f)$$

$$\mathrm{ihpnr_i} = \sum_{f}^{F} (\mathrm{mvnr}_i^f * \mathrm{ihpnr}^f)$$

Where:

i: purpose of trip (6 categories: business, leisure, conventions, health, amercos or other reasons)

f: source of forced inclusion

ihpn: guests resident in Colombia

ihpnr: guests nonresident in Colombia

mv: purpose of the trip (%)

mv_i^f : purpose of trip i for residents in source f (%)

mvnr_i^f: purpose of trip i for non-residents in source f (%)

Then, the share of each purpose of trip is calculated separately for the total of resident and of nonresident guests.

$\%mv_i = ihpn_i \div ihpn$

$\%mvnr_i = ihpnr_i \div ihpnr$

The total number of guests in each purpose of trip is:

$Guests_i = ihpn_i + ihpnr_i$

Finally the share of the number of guests according to the purpose of trip in the total of guests is:

$\% \, Guests_i = Guests_i \div Total\ guest$

2.1.6. Plan of results

As previously mentioned, the Monthly Hotel Survey, measures the behavior of the accommodation activity in the country. This analysis is realized through indices and changes. In some cases as in that of the purpose of trip and the distribution of the guests, these are expressed as percent shares.

In most cases, the results are presented through graphs with series for the case of income and number of occupied persons, or of distributions for the purpose of trip, the type of guests or the occupancy rate.

Design of output tables

The output tables that present in detail the results of The Monthly Hotel Survey, are found in the statistical Annexes of the operation and are listed below:

A.1 Changes (%) in real income

A.2 Changes (%) in number of occupied persons

A.3 Occupancy rate (only for units in the forced inclusion stratum)

A.4 Guests’ purpose of trip (monthly)

A.5 Guests’ purpose of trip (current year)

A.6 Resident Guests’ purpose of trip (monthly)

A.7 Resident Guests’ purpose of trip (current year)

A.8 Non-resident Guests’ purpose of trip (monthly)

A.9 Non-resident Guests' purpose of trip (current year)

A.10 Indices for income and number of employed persons

A.11 Indices for average prices per room

A.12 Coefficients of variation

2.1.7. Design of the form (questionnaire)

The instrument for collecting the Monthly Hotel Survey is an electronic form and includes five chapters (see Annex A).

The first chapter includes the variables of identification and location of the enterprise such as: name, trade name and address among others.

The second chapter makes reference to the number of establishments that make up the enterprise with the purpose of identifying the size of the enterprise and the hotel infrastructure, as well as the changes that have occurred in the month under study.

The third chapter requests the operational net income obtained in the month as a global value, and by type of product: accommodation, foods and nonalcoholic beverage, spirits and cigarettes, communication services, other hotel services, reception services, rent of halls for different kinds of events and other operational net income not previously reported[9].

The fourth chapter is used to report on the average number of occupied persons during the month, by type of contract to which wages and other supplements are associated.

The fifth chapter corresponds to all the variables characteristic of the sector such as: number of rooms, beds, guests, guests' purpose of trip, prices, etc. that are used to establish the characteristic indicators of the sector and to classify the type of services being offered.

[9] Value of income accrued in providing other operational services not reported previously and related to the hotel services as the sale of spare bottles, packaging material, barrels and rests of food.

2.1.8. Standards, editing rules, consistency and imputation

Editing rules and consistency

The consistency specifications are set down in order to design the software whose objective consists of detecting the inconsistent data from the moment of capturing the data in each form. When this happens the program sends a message requesting either a correction or a clarifying comment.

The detection of the first inconsistencies of low level is indicated to the enterprise when completing the form. The most severe controls are designed so that the editors review the information, identify the possible inconsistencies and necessary, and get in touch with the enterprise to ask for correction or explanation. These controls are made individually at the enterprise level.

The detection of other type of possible inconsistencies, as is the case of outliers, atypical data that do not agree with the validation specifications, is realized using SAS programs elaborated according to specific requests.

2.1.9. Classifications used

The research covers some of the activities corresponding to section H of the International Standard Industrial Classification of all economic activities (ISIC Rev. 3 adapted for Colombia). These activities correspond to the following ISIC codes:

- 5511 Accommodation in hotels, inns, hostels and apartment-hotels.
- 5513 Accommodation in holiday homes or vacation centers and camping areas.

They exclude accommodation per hours in residences, motor hotels (ISIC 5512) and other types of accommodation n.p.c. (ISIC 5519).

2.2. STATISTICAL DESIGN

2.2.1. Basic components of the statistical design

Type of statistical operation

The type of statistical operation used for the development of this research is a probabilistic sampling.

Universe

The enterprises formally established with fiscal identification number (NIT) and mercantile registry of the Chamber of Commerce that exclusively or predominantly provide accommodation services in hotels within the national territory.

Objective population

The enterprises formally established with fiscal identification number (NIT) and mercantile registry of the Chamber of Commerce that exclusively or predominantly provide accommodation services in hotels within the national territory.

Enterprises employing more than 20 persons or with an income of more than 320 million Colombian pesos (2.000) are grouped in a forced inclusion stratum.

Statistical Framework

The framework of the Monthly Hotel Survey is a list of the enterprises of the sector of accommodation in hotels, apartment-hotels, inns, vacation centers and camping areas.

The point of departure for this list was the EAS directory. It has a national coverage and the sources have been updated by the 2005 census and information provided by the Superintendency of Companies, the Colombian Confederation of Commerce Chambers (Confecámaras), the Vice-ministry of Tourism, the Yellow Pages, the annual surveys of DANE, the unions, cooperatives and other sources.

Indicators of coverage of the statistical framework

The Monthly Hotel Survey covers the national territory and provides results at national level for hotels.

Definition of variables

The definition of the variables of interest for the Monthly Hotel Survey, considered first the size of the enterprise (either defined according to income or to employed persons); in a later stage, other variables of interest were considered, following the international recommendations and the measurements realized by other Statistics Offices.

Domains of study

A study domain is a sub-population for which specific estimations are performed. Generally, the results of the Monthly Hotel Survey appear by study domains where the cells of the tables of results are considered as a domain of study and are formed by the units of the objective population, which fulfill one or more characteristics considered as of interest.

For the Monthly Hotel Survey, the main domains of study according to the variables of interest are:

- Income: scale of income
- Number of occupied persons: by categories
- Wages: scales of income and number of occupied persons
- Occupancy rate: scales of occupancy rates and income
- Purpose of trip: scales of purpose of trip and income
- Hotel prices: scale of income and type of room

In order to conform a domain, a new variable (control) is considered.

$$Z_{dk} = \begin{cases} 1 \text{ if } k \in Ud \\ 0 \text{ if } k \notin Ud \end{cases}$$

Where:

k = economic unit (enterprise)

Ud = domain d

This way, the Z_{dk} variable is generated in the file with values of 1 if the enterprise has permanent personnel and belongs to the activity of hotels and 0 if it does not. When considering all the records for which this variable has the value of 1 the domain of the companies with permanent personnel for the activity of hotels is obtained. There are as many domains as estimates in the output tables.

Source of data

The sampling units (also units of observation and analysis) correspond to the enterprises formally established with fiscal identification number (NIT) and mercantile registry of the Chamber of Commerce that provide the accommodation service in hotels within the national territory.

Geographical coverage and geographical breakdown

The sample presents information at national level, as the unit of observation is the enterprise.

Thematic breakdown

Some of topics considered by the MMH are the following:

The behavior of hotels' income, the number of occupied persons and variable characteristics of the sector such as: occupancy rate, guests' purpose of trip, average length of stay and prices of rooms.

The hotel occupancy rate provides the number of rooms sold by the hotel in relation to the total number of rooms available. This indicator is calculated in most countries, both by statistical institutes and hotel associations and allows comparisons at international level.

The purpose of trip allows analyzing the reasons that the guests have for travelling; the average price indicates how much the hotel receives according to the different types of room: simple, double, suite and other types of room.

The average length of stay estimates an average number of overnights for a guest staying in a given hotel. This indicator allows inferring the duration of accommodation and the average expenditure by guest for the accommodation service.

2.2.2. Statistical units

Observation unit

The analysis and observation, sampling units correspond to the enterprises formally established with fiscal identification number (NIT) and mercantile registry of the Chamber of Commerce that provide the accommodation service in hotels within the national territory.

Sampling unit

The sampling units are enterprises that are classified in two categories; those that given their size (income and/or number of occupied persons) may be represented by themselves (units of forced inclusion); and the rest of enterprises, which are considered, have a homogenous behavior in terms of income and occupied persons. Those units conform the stratum of probabilistic inclusion, and are selected by a simple random sampling procedure.

2.2.3. Period of reference and collection

Period of reference

The period of reference corresponds to a month.

Period of collection

It corresponds to the month that follows the month of reference of the information. The period of publication is 45 days after the end of the month of reference. The collection of the information is realized through DANE's webpage, with the support of one staff of the organization. (Broadly in terms of days, month of reference 1-30, collection period 31-60 and date of publication 75).

2.2.4. Sample design

Type of sampling

The design of the Monthly Hotel Survey is probabilistic- stratified. The distribution of the variables of interest is analyzed (income and number of occupied persons). As mentioned some enterprises are of forced inclusion. The rest of the enterprises are considered as having a homogenous behavior in terms of income and number of occupied persons. Those units make up the stratum of probabilistic inclusion and are selected by simple random sampling.

Sample size definition

The sample size is associated with the method consisting in identifying the enterprises that belong to the forced inclusion stratum and maintaining the rest of them in the probabilistic stratum. The method for identifying these companies is the Hidiroglou method[10] that consists of realizing iterative steps to find the sample in each stratum, considering a pre-established coefficient of variation (CV).

The total size of the sample is given by:

$$n = N - \frac{\left(N - n_{if}\right)(cv)^2\, t_y^2}{(cv)^2 t_y^2 + \left(N - n_{if}\right) S^2_{(N-n_{if})}}$$

Where:

[10] HIDIROGLOU, M.A. The construction of a self-representing stratum of large units in survey design, 1986.

n = sample size

n_{if} = number of forced inclusion enterprises

N = Total number of enterprises in the accommodation in hotels activity

CV = pre-established coefficient of variation

t_y = total value of the variable of interest

S2 = variance of the variable of interest

In order to obtain this sample, the enterprises to be included are selected if the variables of income or number of occupied persons fulfill the limits designated by the Hidiroglou method.

The algorithm used is a follows:

- The enterprises were ordered from largest to smallest according to the value of variable of interest.
- The largest enterprise was taken as of forced inclusion and the variance of the variable of interest of the remaining ones was calculated.
- The two largest enterprises were taken as of forced inclusion and the variance of the variable of interest of the remaining one was calculated.
- This process was repeated step-by-step, increasing in each step the number of enterprises of forced inclusion until the variance of the variable of interest of the remaining ones was deemed constant.

The first *nif* enterprises conformed the stratum of forced inclusion. This point was considered as the limit of the stratum.

For the selection of the companies of probabilistic inclusion ((*nip*) the negative coordinated method was used. It consist in realizing $(n- n_{if})_{trials}$ with a uniform distribution (0,1), assigning a number to each enterprise in the universe, ordering the enterprises according to this random value and to consider as sample the first

$\boldsymbol{n_{ip}=n-n_{if}}$ enterprises of the universe. Finally a sample of 509 hotels was obtained, 276 of which being of forced inclusion and 233 of probabilistic inclusion.

Expansion factor

With the data obtained through the sample, expansions and inferences are made to reconstruct the universe under study.

All the individuals of the probabilistic sample are assigned an expansion factor in order to expand the data of the sample to obtain the estimation of the parameters in the population.

It is necessary to adjust the expansion factor with the new features that present the enterprises (eliminated, change of sector, inactive, not found, in debt, etc.), at the time of compiling the information.

The design of the stratified simple random sampling (SSRS), implies that the expansion factor is:

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

Where:

Fh is the factor of expansion in the stratum h = 1, 2, ... , *H*; this factor is equal for all the elements of the probabilistic stratum h.

Nh: it is the size of the framework for stratum h

nh: it is the sample size in stratum h

Adjustment of the expansion factor

$$F\ adjust_{\ h} = F_h \frac{UE_h}{UE_h - UENR_h}$$

Where,

UE = expected number of economic units in the probabilistic stratum

= sample size

UENR = economic units that did not respond in the probabilistic stratum

= no answer = debt

Finally,

$$F\ adjust_h = F_h \frac{(Expected\ number\ of\ completed\ surveys)_h}{(Actual\ number\ of\ completed\ surveys)_h}$$

Estimation procedure

The parameters to be estimated in the Monthly Hotel Survey correspond to changes, shares and contributions of the variables income, number of occupied persons, wages, for which the nominal and real values are obtained.

Calculation of the estimates

- For each record the factor of expansion and the variable of interest y are taken.
- A new variable ***X*** is calculated as the product of the factor of expansion *fexp* and the variable of interest, that is, ***X*** = *fexp* * ***y***

Estimation of a total: the sum of a new variable ***X*** is realized on the domain of study. That is to say, on the records for which the value of the Zd variable is equal to one (1).

The resulting $t\hat{}yd$, is the estimate of the total of the variable ***y*** on the domain Zd.

This same algorithm is used to estimate the total of any variable for any domain of study.

Estimation of a ratio: for the changes, the estimate of a ratio is used.

$$\hat{R} = \frac{\hat{t}_{id}}{\hat{t}_z}$$

In which the totals of the numerator and of the denominator are established according to the previous specifications.

Estimation of the variance: it is used to calculate the accuracy of the estimator. In order to estimate the variance of a change. The formulas for the variance of the ratio are employed given the following considerations to show that these two variances are equal:

$$\hat{v}_{iy} = \frac{\hat{t}_{iy}}{\hat{t}_{(i-1)y}} - 1 = \hat{R}_{iy} - 1$$

$$\hat{V}(\hat{v}_{iy}) = \hat{V}\,(\hat{R}_{iy} - 1) = \hat{V}\,(\hat{R}_{iy})$$

Where:

$\hat{t}_{iy}$ = total estimate of the variable ***y*** in the month of year i.

$\hat{t}_{(i-1)y}$ = total estimate of the variable ***y*** in the same month of year i-1.

$\hat{v}_{iy}$ = change of totals of the variable ***y*** in the month of year i.

$\hat{V}(\hat{v}_{iy})$ = estimate of the variance of the calculated change.

Estimation of the variance of a ratio

The variance of a ratio is calculated as:

$$V(R) = \frac{N^2}{n}\,(1 - \frac{n}{N})S^2_{\hat{u}_k}$$

N = number of enterprises in the population.

n = number of enterprises in the sample.

In order to calculate the variance of the ratio a variable is used. It is generated for each record, using the formula:

$$\hat{u}_k = \frac{y_k - \hat{R}z_k}{\hat{t}_z}$$

Where

$$S^2_{\hat{u}_k} = \frac{\sum(\hat{u}_k - \hat{\bar{u}})^2}{n-1}$$

Calculation of the coefficient of variation:

By definition, the estimated coefficient of variation of a ratio is equal to the square root of the variance of the ratio divided by the estimate of the ratio for the domain of study multiplied by 100:

$$cve = \frac{\sqrt{\hat{V}(\widehat{R})}}{\hat{R}}\ x\ 100$$

Where:

$\hat{R}$ is the ratio estimator.

Calculation of the accuracy of the results

Sampling error: the estimate of the coefficient of variation (CVE) is used as the value that indicates the level of accuracy of a reported result. In other words, it is the magnitude indicating how far a result may be from its true value.

$$cve = \frac{\sqrt{Variance\ of\ the\ parameter\ estimator}}{Parameter\ estimator}$$

The result of the coefficient of variation is provided in percentage values. It is the uncertainty measurement of an estimate with respect to its true value. Therefore, the lower the sampling error the less uncertainty about a result; the result is more accurate. The coefficient of variation is a relative measurement of the variability of an estimator and allows quantifying the quality of a given result.

The levels of sampling errors established for the Monthly Hotel Survey are:

- Good: up to 5%
- Acceptable: from 6% to 10%
- Publishable with restriction: from 11% to 15%

2.2.5. Coverage Adjustments

According to the methodology of the Monthly Hotel Survey, 2% is the maximum imputation level for enterprises of probabilistic inclusion. For the sources of forced inclusion an exhaustive search of means is deployed until obtaining the data.

Once the established minimum coverage has been reached (98%), the statistical staff uses the consistent database for the imputation of missing data (enterprises “in debt”, or with particular issue Nr. 5). The historical series with existing data of each of them is reviewed and then the information is imputed with the support of a SAS program.

The file with the imputed information is sent to the enterprises logistics staff for the group of analysts to include the information in the system and make the corresponding verifications of validation. If the data are inconsistent they are sent back to the statistical staff or a manual estimation of the data is made.

The imputed information remains in the system until the real information of the source is obtained. The new database is used to produce the output tables.

Model imputed variables:

- Total operational income
- Total of occupied persons
- Total wages
- Total supplements to basic wages
- Beds available during the month
- Rooms available during the month
- Occupied rooms
- Resident guests nights
- Nonresident guests nights

- Total accrued VAT
- Single room price
- Double room price
- Suite price
- Other type of room price

Variables imputed by model considering the structure:

- Accommodation service income
- Foods and nonalcoholic beverage income
- Spirits and cigarettes income
- Services of communications income
- Other smaller services income
- Halls rentals services
- Other Guest services
- Other operational net income
- Owners, partners and relatives
- Permanent staff
- Temporary personnel directly hired by the enterprise
- Temporary personnel provided by other enterprises
- Permanent personnel basic wages
- Permanent personnel supplements to basic wages
- Basic wages of directly hired temporary personnel
- Supplements to basic wages of directly hired temporary personnel

- Remuneration of temporary personnel provided by third parties
- Apprentices' basic wages
- Apprentices' supplements to basic wages

Imputation of observation units

Once the database of the respective period is available, the new features codes (Annex B) identify the sources in debt (new issues 5) where the variables must be in zero.

The imputation methodology is applied to these sources to find the change of the main variables for the corresponding period. With this change and the value of the previous period the data for the month of reference is obtained. To obtain partial values, the same structure presented by the source in the previous period is applied.

Design of methods of processing and imputation

The change for imputing in "debt" records uses the growth rate of the series or the change of data presented in the activity or in the enterprise. This is defined as:

$Vart = \beta_1 Vac + \beta_2 Vem$

Where,

Vart = the change that is imputed in period t

Vac = average historical change within the activity

Vem = average historical change within the enterprise.

βi = weighing coefficients whose sum must be equal to 1 for convergence in the imputation

The model describes the imputation of the change of the missing data as a weighted average of the changes of the variables in the enterprise and the activity, where βi are the coefficients for weighing the changes. The intention is to estimate the unknown parameters βi, using an iterative least squares model and restricting them, so that their sum be equal to 1 for convergence in the imputation.

2.3. OPERATIVE DESIGN

2.3.1. Training system

The training is realized at DANE's headquarters for the participants coming from the regional directions and other units as well as headquarters staff. They receive qualification in a workshop-seminar that lasts three days and later they reproduce this exercise with their working team. The qualification includes methodological, thematic and operative aspects.

The method used includes:

- Presentations on methodological issues
- Analysis of variables: practical cases and exercises
- Distribution of didactic materials

The general plan of the seminar considers the following:

- General considerations
- Importance of the services activities
- Technical characteristics of the Monthly Hotel Survey
- Sample Designs
- Questionnaire (form) of the Monthly Hotel Survey: detailed explanation by chapters and variables
- Operational generalities
- The Monthly Hotel Survey operation
- Handling new features
- Specifications of software handling

2.3.2. Preparation activities

Awareness-raising process

The operation starts with a visit of the collectors to the informant sources. They deliver a letter signed by the director of the regional or unit to the manager of the enterprise. This letter is a brief description of the research and its objectives. In addition the user key for accessing the computer applications of the research is provided. The same collector supports the source in accessing the corresponding software.

Selection of personnel

The selection of the personnel who participates in the Monthly Hotel Survey starts with an open call. The CVs are reviewed to preselect those that fulfill the requested profile. The pre-selection list is published to initiate the qualification process that lasts one week. The last day of the qualification, technical tests are applied and the persons who obtain the best scores are selected and hired to participate in the survey.

The necessary positions and profiles for the Monthly Hotel Survey are: professional analysts; junior professionals, junior with university title in business administration, management, economics, accounting, statistics, industrial or food engineering with professional card according to law.

For the supervision and logistics staff, the candidates must hold three approved semesters of technical, technological or university education, in economics, accounting, business administration, statistics, industrial or systems engineering, and a year of labor experience. The alternative to the profile is high school approval and three years of related experience.

2.3.3. Design of instruments

For the process of data collection, some instruments as manuals, instruction leaflets, guidelines and new features are used, in which the main concepts are explained. These instruments help the staff in charge of the processes of edition and information analysis to know in detail the scope of the research, and serve as guide to the sources that provide the information.

Some of these instruments are the following:

- **Editing manual:** it is the instructive element for reviewing the information, once it has been received, in order to verify its consistency. The primary objective of this stage is to provide consistent information following the parameters established in this manual, for its later capture and refining through a specifically designed systems program.
- **Completion manual:** it is also an instructive element by which to know in detail each parts of the questionnaire (form) and explains how to record the information provided by the sources of information.
- **Operative guidelines:** it is the document that picks up the directives or guidelines to be followed in the collection process of the MMH in the different administrative units, in order to guarantee the required standards of quality.
- **New features handling manual:** this document presents the procedure that must be followed by the staff involved in the processing of information of the MMH, facilitating therefore the allocation of the new feature code and its respective treatment.

2.3.4. Data collection

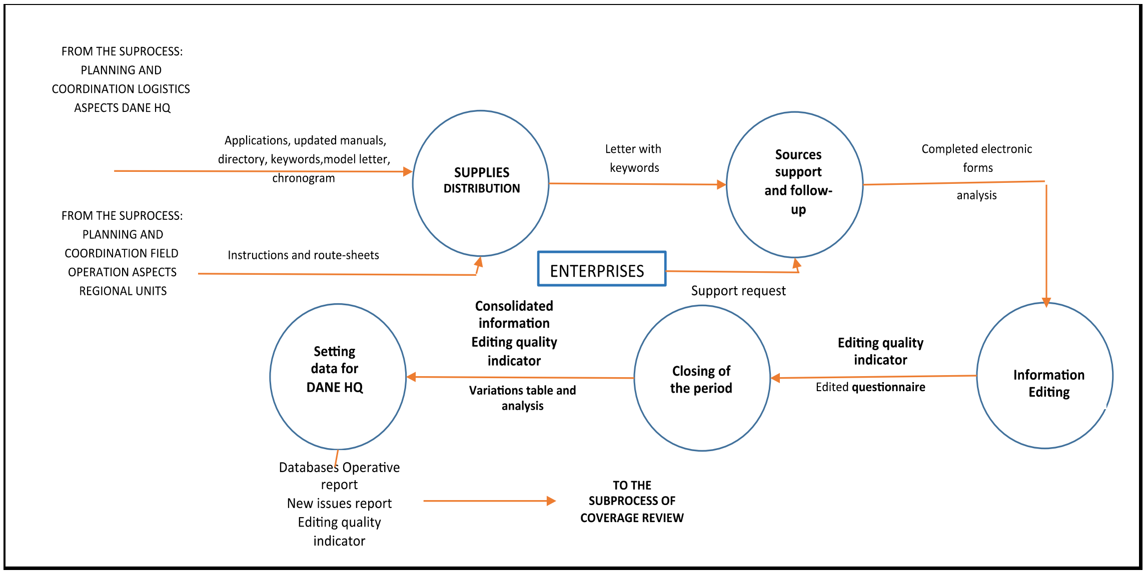
Operational scheme

The operative scheme makes reference to the stages in the collection, edition and recording processes of the information. Those stages are:

- To present the research to the sources together with the collection instrument.
- To assist each of the sources in the delivery and access to the collection instrument.

- To advise permanently the sources on the completion and registration of the information of the research.
- To follow up and control the provision of information from the sources according to the directory.
- To report (to the assistant and the technical support staff) any inconvenience presented throughout the operative process (collection, editing or delivery of the information).
- To review the information received; to consult and verify with the source about the inconsistencies or the changes presented before realizing any adjustment to the data and to report the relevant observations.
- To detect inconsistencies as soon as the information is reported and carry out the corresponding adjustments
- To guarantee the statistical quality of the information, in agreement with the guidelines established in the methodology of the research.
- To contact the sources by telephone to request explanations on the information presented in the respective forms.
- To carry out the capture and the adjustments of the forms that require them, following the processing system.

Graph 1. Scheme of processes of the Monthly Hotel Survey (MMH)

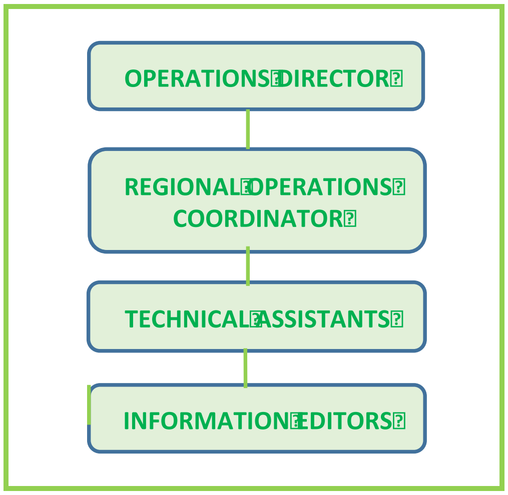


Source: DANE.

The process chart begins with the planning and coordination activities such as: elaboration of the chronogram; planning of resources and terms of reference; selection of personnel; flows and structure of the forms; requirements of the directories, design of the systems applications and tests of the system.

Later, the editing manuals are sent to the regional directions and offices. The opening of a new reporting period is communicated to the enterprises; they are offered all technical assistance they may require. The regional units edit the information, verify its consistency; close the period and establish the coverage and the quality indicators and finally they send that information to DANE's Headquarters, for its review and validation.

Graph 1. Organizational Chart Monthly Hotel Survey (MMH)



Source: DANE.

Collection methods and mechanisms

The MMH is a relatively new research for the organization. This explains why, from its beginning, the information has been collected using an electronic form. Visiting the enterprises by the organization staff is programmed, taking care of delivering the respective letter of presentation and advising the source on how to access the webpage collection application.

Pre-completed forms are also available for those enterprises that do not have Internet service or for others that indicate their refusal to complete the form with the electronic application. In these cases the form in paper is completed and sent later to DANE's regional offices. Once the paper form is received, it is reviewed and edited. In both cases assistance is offered by DANE to facilitate all the explanations that the person in charge of providing the information may require.

Collection procedure

The procedure for collection is settled down according to the option chosen by the source:

When DANE sends the form by certified mail, a telephone call to the enterprise is made to remind the source that the form should be sent back by the same way.

- If the DANE's collectors take the form to the enterprises, they collect them or decide with the enterprises so that they personally send them to the DANE's offices, for its respective review and pre-editing.
- When the enterprise comes for an appointment to DANE's offices (normally fixed by telephone), the form is given to the person in charge who will return it properly completed, after technical assistance of the organization staff.
- If the completion is done through the webpage, the collector knows the date in which the source has ended that process. By means of the application he verifies that the form is completed and has been sent for editing.

Data transmission to DANE's Headquarters

If the capture of data is realized directly by the enterprise with the electronic form in the webpage of DANE, the application directly stores the information in DANE`s servers. If the sources do not provide the information by this means, the paper form goes to the regional office staff in charge of include it the server by means of the application.

2.4. SYSTEMS DESIGN

Grouping files

Once the information has been collected it is stored in SAS format in the servers of DANE. The figures are consolidated that can be taken whichever times is required to realize the respective processing and to generate exit and revision pictures.

Verification of the internal consistency of the data and adjustments

With the data bases consolidated in DANE's server, the change of some of the data are calculated by enterprise in order to identify their internal consistency (income; average number of occupied persons; basic wages and supplements to basic wages). The inconsistencies are consulted with the source to realize adjustments to the information as needed.

Generation of output tables

Ten SAS programs are executed in the following order:

1. Creation of the databases for the calculation of the estimators.
2. Calculation of deflators for each period.
3. Calculation of the expansion factors for each period.
4. Calculation of the **estimates** for current year and last twelve months.
5. Nominal estimates.
6. Real estimates.
7. Calculation of indices.
8. Calculation of coefficients of variation.
9. Calculation of structure of income by type of room and length of stay (overnights)
10. Generation of tables on the basis of the results.

2.5. DESIGN OF METHODS AND MECHANISMS FOR QUALITY CONTROL

Validation and consistency standards

The consistency specifications are set down in order to design the software whose objective consists of detecting the inconsistent data from the moment of capturing the data in each form. When this happens the program sends a message requesting either a correction or a clarifying comment.

The detection of the first inconsistencies of low level is indicated to the enterprise when completing the form. The most severe controls are designed so that the editors review the information, identify the possible inconsistencies and necessary, and get in touch with the enterprise to ask for correction or explanation. These controls are made individually at the enterprise level.

The detection of other type of possible inconsistencies, as is the case of outliers, atypical data that do not agree with the validation specifications, is realized using SAS programs elaborated according to specific requests.

Reference instruments for supervision

The supervisor, according to the number of forms assigned to the corresponding regional office, controls and follows-up each enterprise and each of the editing staff in aspects such as coverage, quality of the information, timeliness and opportunity. The follow-up is realized according to the schedules of distribution, support to the companies and editing of the information provided by the enterprises.

The supervision instrument is the operative report generated by the systems application for each enterprise. It includes the opening of the period of information, the review of the information provided by the enterprise and its adjustments, the coverage and consistency of the data obtained by means of tables of analysis of variables and crosschecking of data between chapters.

The application is controlled and permanently supervised by the computer technical assistant in each administrative unit. The control of the application includes: the operation of the software; the operation of the application of capture; the follow-up of the new issues recorded and the table of analysis by enterprise of variables and crossing checking of data between chapters.

The regional units realize a permanent follow-up (through the systems application) of the coverage and of the maximum delay established for delivering the information. Additionally, they realize the final closing of the information that remains then under control of DANE headquarters for further processes.

A systems staff in each regional unit realizes the systems area supervision. The operative report contains: the coverage, the digitizing errors, the incomplete information and the inconsistencies. Finally, summary tables of analysis for each of the sources by variables and cross checking between chapters are obtained. The control of changes in the system is realized for each source and for each person in charge of editing, codification and digitizing.

Indicator for quality control of the processes of the research

The quality indicator is the tool for reviewing all the forms assigned by the system to each person in charge of the process since it allows the analysis of each variable in the internal report of each enterprise. The quality indicator is based on the diagnoses and the controls between chapters that the application generates for each enterprise. The technical assistant (person in charge of the system) will complete the evaluation table and obtain the indicator for each selected form. Afterwards the corrections made by the editors and the operators of the capture application are verified.

The Quality Indicator (IC) for each person responsible of the process (RP) is obtained as the arithmetic average of the scores for each of the electronic forms reviewed by the technical assistant of the project.

$$IC(RP)_{Sample} = \frac{\sum IC\ (Forms):}{Nr.of\ forms}$$

The Indicator of Quality (IC) by process for a regional unit is calculated as the average of the indicators of each person in charge of the MMH process (RP). If in the regional unit there are k persons in charge the indicator of quality by process is:

$$IC(Process)_{Sample} = \frac{\sum IC(RP):}{k}$$

The Indicator of total quality by regional unit will correspond to the simple average of the indicators of the process:

$$IC_{\ regional\ unit} = \frac{\sum Iindicators\ (capture+editing)}{Nr.of\ indicators\ (2)} * 100$$

The timeliness indicator corresponds to the follow-up and control of the main activities that are part of the processes of production, analysis and dissemination of the results. This allows identifying the causes of delays in the programming and it is accompanied by the action plans that guarantee the fulfillment of the conditions to deliver the product in satisfactory terms for the user.

This indicator records: the activity, the person in charge of the qualification; the programmed date; the actual date; the corresponding qualification (1 if it fulfills and 0 if it does not fulfill); the cause of the gap; actions to take against the gap and the corresponding examples.

2.6. DESIGN OF PILOT TESTS

OBJECTIVES

General objective

The evaluation and the design of the MMH.

Specific objectives

- To test the collection instruments.
- To test the information system developed for the research.
- To test the operative scheme.

Date of the operative: 2005 July

Number of sources to which the test was applied: 500

Collection Instruments

A form, which contains three parts: unique cover page, income and occupied persons.

Development of the data capture; instruments and computer requirements

The objective is to develop a system of data capture and editing for the MMH. The application includes modules of operational control, capture, validation, reports (quality and thematic indicators) and processing (output table).

For the collection of information a capture application was designed; it allows the enterprises to report the information through DANE's webpage. The option of completing the formats in paper is possible for those sources that are definitively reluctant to accede to electronic media or by possible difficulties that the application may present at the beginning.

Evaluation of the pilot test

A good rate of answer was obtained in the completion of the electronic form in DANE's webpage; nevertheless, some sources used the paper form due to the lack of access to Internet. In that case, a permanent assistance was necessary.

Some shortcomings with the directory were identified: incomplete or incorrect general performances, activity erroneously assigned, wrong NITs and companies with new features. These suggested the need to date it and to improve it.

The answering rate was 80%, the debt 20%, and 11,4% corresponded to new features such as: inactive companies, household with enterprise activity, change of sector due to erroneous classification.

2.7. DESIGN OF THE ANALYSIS OF RESULTS

2.7.1. Statistical analysis

The indicators by study domains (averages and variances) are analyzed. The structure of the population is studied using frequency distributions and the outliers are detected. Afterwards a sensitivity analysis is made for the processes of imputation and adjustment of coverage.

When the collection period is closed, the information goes to the logistic staff and an analysis of consistency is realized. After that process, the databases are ready for the economics staff to realize the last production of consistencies in order to detect variable changes outside the acceptance rank. Those cases are listed separately for validation of the logistic staff.

This group reviews the file of inconsistencies and gets into communication with the enterprises and requests the enterprises corrections or explanations concerning the outliers. When it is necessary to correct something, the logistic staff directly enters it to the application and again makes available the databases for analysis and for the production of the tables of results.

It should be mentioned that the specifications of consistency of the information are complemented with the ranks of acceptance of the changes, in such a way that if some of them fall outside the admitted range, this implies their revision, correction and the corresponding comment.

Indicator of quality of an estimate

As previously explained, the indicator used to evaluate the quality of the results of the MMH is the coefficient of variation:

$$CV(\hat{t}_y) = \frac{\sqrt{V(\hat{t}_y)}}{\hat{t}_y} * 100$$

Very good: Less or equal to 5%

Good: from 6% to 10%

Acceptable: from 11% to 15%

Results of restricted use according to the researcher criterion: more than 15%

2.7.2. Analysis of context

The analysis of context of the hotel activity, within a short term perspective, is performed by comparing the results obtained in the MMH with those presented by the Colombian Hotel Association (Cotelco), with the hotel indicators and the results corresponding to the transport of passengers provided by the Administrative Unit of Civil Aeronautics (Aerocivil).

The Cotelco research includes information on: annual occupancy rate (current year), average prices and employment index. The information of the Civil Aeronautics includes the number of passengers in domestic and international flights. These variables serve to compare the evolution and trends with those of the MMH.

2.7.3. Experts committee

Prior to the publication of the MMH, the figures are reviewed with the sector entities (public and private). To this Committee assist the Vice-minister of Tourism, Cotelco (National and Bogotá offices) and members of the academia.

2.8. DISSEMINATION DESIGN

2.8.1. Administration of the data depository

The information for dissemination is added at national level. The statistical reserve does not allow the access to the micro-data for the users of the information.

The tables of results and the statistical Annexes for dissemination are available in all DANE databanks.

2.8.2. Products and instruments of dissemination

Once DANE's chief statistician has endorsed the publication, the economics staff publishes it on DANE's webpage (http://www.dane.gov.co/index.php/comercio-y-servicios/servicios/muestramensual-de-hoteles). The published information contains the series of the main variables. The dissemination of the information happens through the databanks that the organization has in different cities of the country.

The results must be published monthly using a press bulletin and its annexes 45 days after the end of the period of reference. The information is also disseminated in statistical bulletins and in magnetic means through DANE's webpage.

The ten tables of results of the Monthly Hotel Survey are:

A.1 Changes (%) in real income

A.2 Changes (%) in number of occupied persons

A.3 Occupancy rate (only for units in the forced inclusion stratum)

A.4 Guests' purpose of trip (monthly)

A.5 Guests' purpose of trip (current year)

A.6 Resident Guests' purpose of trip (monthly)

A.7 Resident Guests' purpose of trip (current year)

A.8 Non-resident Guests' purpose of trip (monthly)

A.9 Non-resident Guests' purpose of trip (current year)

A.10 Indices for income and number of employed persons

2.9. EVALUATION OF MMH DESIGN

The Monthly Hotel Survey, as well as other DANE's researches, includes a process of validation of the results and consistency of the information that corresponds to the following stages:

1. Regional units:

The operative in the regional units aims at providing support and advice to the sources in the completion of the information, as well as implementing the joint work with DANE's Headquarters Logistic team to solve methodological or other relevant issues and to feed them back to the sources. When the operative is finished the regional units send the captured and edited information to DANE Headquarters.

2. Consistency review:

Once the information is sent to DANE's Headquarters, the Logistics staff is in charge of refining the information, reviewing the possible inconsistencies or errors in the digitizing or editing stages and finally of sending the validated and consistent base to the Sample Design team for the generation of tables of results[11].

3. Generation of tables of results:

When the databases arrive to the Sample Design staff, they are in charge of imputing the information for the "in debt" records for the period, as well as to generate the final tables of results for the final processing of the information. This is the most important stage, because the Sample Design staff makes the calculation of the figures for the period and of the indicators for their dissemination.

4. Thematic review:

The thematic staff is in charge of reviewing the macroeconomic context of the sector, generating publication products and realizing all the previous analysis for the generation of figures for the final publication. This group is also in charge of the three committees previous to the publication[12] and of verifying that the published figures are the correct ones. The thematic team must maintain communication and interrelate not only with the other staff involved in the publication process, but also with all the organizations related to the sector.

5. Dissemination:

Once fulfilled the publication prerequisites, the Chief Statistician Office is in charge of the contact with the press office for the final product to be uploaded to the webpage by the third week of every month.

[11] This validation has two stages: a preliminary delivery to the thematic staff to review some inconsistencies that may get through, using validation tables to be examined jointly by the Logistics staff and the regional units. In the second stage, the final closing of the databases is performed in order to generate the final tables of results.
[12] The organized committees are: the pre-committee to review the consistency of the indicators with the figures to be published; the internal committee: where all the other areas of DANE take part not only to know the figures to be published but to review eventual inconsistencies in the final data; external committee: in this group the results are communicated to other entities and associations involved in this sector.

3. RELATED DOCUMENTATION

For the development of MMH the following documentation is available:

Methodologies

- **Methodological card of the Monthly Hotel Survey (MMH):** it presents a summary of the relevant descriptive and methodological aspects of the research. The methodological card is available to the public on DANE's webpage (http://www.dane.gov.co/index.php/comercio-y-servicios/servicios/muestra-mensualde-hoteles)

- **Methodology for the calculation of deflator indices for hotels in the Monthly Hotel Survey (MMH):** this document presents the determination and the selection of price indexes, for the deflation of variables in monetary form.

- **Methodology of imputation:** it presents the method used to calculate values for the missing data approximated to reality. In addition it establishes that imputation should not go beyond 5%.

- **Systems design methodology:** it describes the scope of the electronic form for each working team.

- **Methodology for the calculation of the occupancy rate:** it presents the definition and the method used to calculate the occupancy rate for the sources belonging to the forced inclusion stratum.

Specifications

- **Specifications of estimation and variance determination in the Monthly Hotel Survey (MMH):** this document is part of the information compilation that suggests the research staff of the Monthly Hotel Survey, with the purpose of explaining the process of consolidation, estimation and calculation of the coefficient of variation of the parameters of interest.

Manuals

- **Editing Manual of the Monthly Hotel Survey (MMH):** the primary objective of this document is to illustrate the process of bringing consistency to the information according to the established parameters.

GLOSSARY[13]

Accommodation establishments. An accommodation establishment or hotel is a set of goods destined by a natural or a legal person to provide the service of nonpermanent accommodation (less than 30 days), with or without food service and/or a set of complementary services. The accommodation contract is a type of lease, of commercial character and adhesion, celebrated by an enterprise dedicated to this activity with the main intention to provide accommodation to another person denominated guest, by means of the payment of the respective daily price, during a term lower than 30 days. Registration in the National Tourism Register is compulsory for the establishments that exclusively provide accommodation services to persons who have the character of tourists. **Source:** DANE, concept suggested according to definitions used in the organization.

Accrued wages. Fixed or ordinary remuneration that the worker receives, in cash or in kind, in periodic or deferred form, as a payment for the work performed for the benefit of the enterprise, before any deduction for income tax retention, employees social insurance contributions, contributions to unions or employees mutual funds. **Source:** DANE, concept suggested according to definitions used in the organization.

Amercos. Travelers who must stay overnight by "force majeure" reasons, against their own will, generally due to transport problems: flight schedules change or cancellation, etc. Source: DANE, concept suggested according to definitions used in the organization.

Apprentices or student personnel by agreement (university, technologist or technician trainees). Corresponds to persons under a learning contract, for a defined period not longer than two years. They are granted a support that oscillates between 50% and 100% of the minimum wage, in agreement with the level of the apprentice. **Source:** DANE, concept suggested according to definitions used in the organization.

[13]The definitions presented have been taken from ISIC, Rev 3.0 Adapted for Colombia (1998), from the International Recommendations for Tourism Statistics (United Nations, WTO, 2008). Some of them are definitions given in the framework of this research.

Beds available. Number of beds of the hotel to be used by the guests. As in the case of rooms, each bed may be used 30 times in a month; therefore, if there are 200 beds, the availability for monthly occupation is 6,000 (200 beds* 30days); it is recommended to count double beds as two single ones and do not take into account the additional beds requested by the client. **Source:** DANE, concept suggested according to definitions used in the organization.

Beds sold. Number of beds occupied during the month. The daily figure is obtained in the registries of guests, adding the number of beds sold to clients; for example, if the totality of hotels have 200 beds, of which 160 remain occupied every day of the month, the number of sold beds is of 4 800 (160 beds × 30 days). **Source:** DANE, concept suggested according to definitions used in the organization.

Context. This concept includes the payments made by the employer in the name of its employees. In the National Accounts normally consider part of the income of the employees, but not of their wages. The following classes are included:

a) Contributions to the social security established by law.

b) Contributions collectively agreed contractual and non-compulsory private pensions and insurance plans.

c) Direct payments to the employees in cases of absence from work due to disease, maternity or working injury, and compensation linked to results, other direct payments to the employees comparable to the benefits. **Source:** DANE, concept suggested according to definitions used in the organization.

Double room. Room with double bed or two simple beds and bathroom; it is assimilated to those denominated twin rooms. **Source:** DANE, concept suggested according to definitions used in the organization.

Enterprise. Institutional units which characteristic is to produce goods or services. It is an economic agent with autonomy to make financial and investment decisions, with authority and responsibility to assign resources to the production of goods and services and may realize one or several productive activities. The enterprise is the statistical unit for compiling statistics on income and expenditure accounts and capital financing, in the System of National Accounts (SNA). Source: DANE, CIIU Rev. 4.0 A.C.

Expenses originating in apprenticeship or students special agreements (university, technologist or technician). Costs representing a contribution to the expenses of the apprenticeship personnel. A monthly payment is granted to them as support and oscillates between 50% and 100% of the minimum wage, according to the level of the apprentice. If the apprentice is a university student the monthly support should not be lower than the equivalent of the actual legal minimum wage. This support in no case constitutes a wage or salary. **Source:** DANE, concept suggested according to definitions used in the organization.

Income from accommodation. Income obtained from the letting of rooms to guests by means of the application of the price net of discounts. **Source:** DANE, concept suggested according to definitions used in the organization.

Income from communication services. Income perceived from services as telephone, fax, Internet, mobile communication and others telecommunications services jointly provided with the accommodation service. **Source:** DANE, concept suggested according to definitions used in the organization.

Income from foods and nonalcoholic beverages. It corresponds to the net income earned (deducing discounts and gratuities) in the sale of foods and nonalcoholic beverages, served in restaurants, cafeterias, ice-cream shops, swimming pools, room service, bars, and other similar. **Source:** DANE, concept suggested according to definitions used in the organization.

Income from leasing halls for different events. It makes reference to the income generated by the rent of halls for seminaries, conventions, receptions and other events. **Source:** DANE, concept suggested according to definitions used in the organization.

Income from other services of the hotels. Value generated by services as laundry, hairdressing salon, sauna, service of gymnasium, etc. **Source:** DANE, concept suggested according to definitions used in the organization.

Income from spirits and tobacco. Value received by the sale of: cocktails, wines, liquors, beers, etc. It also includes the sales of cigarettes. The sale excludes spare bottles, packages, barrels and leftovers. **Source:** DANE, concept suggested according to definitions used in the organization.

Integral wage. The integral wage cannot be less than ten (10) monthly legal minimum wages, plus the fringe benefits factor corresponding to the enterprise that could not be less than thirty percent (30%) of this quantity. The amounts of the fringe factor will be exempt of the payment of income tax retention. **Source:** DANE, concept suggested according to definitions used in the organization.

International Standard Industrial Classification (ISIC). It is a classification of economic activities by productive processes that group statistical units based on their main economic activity. Its intention is to offer a set of categories of activities that can be used for collecting, analyzing and presenting statistics in agreement with those activities. **Source:** DANE, CIIU Rev. 4.0 A.C.

Level of income. Classification of enterprises according to the rank of income perceived during the last year according to the Annual Survey of Services (EAS). **Source:** DANE, concept suggested according to definitions used in the organization.

Non-remunerated family workers. They are defined as all those individuals who live in the household of the owner (or owners) of the enterprise and work for the establishment. They work for a time above the third part of the normal working hours (fifteen hours a week), they do not participate in its direction, and they do not perceive any regular remuneration (that is to say, there is not an amount agreed as remuneration of the work carried out). **Source:** DANE, concept suggested according to definitions used in the organization.

Non-resident guests. Persons who do not have neither their center of economic interest nor a dwelling or main residence within the country. The center of economic interest of those persons is abroad, their economic activities, if any, are realized in the country for a defined or limited period. **Source:** DANE, concept suggested according to definitions used in the organization.

Occupancy rate. The hotel occupancy rate is the percent ratio of the number of rooms sold and the number of rooms available. **Source:** DANE, concept suggested according to definitions used in the organization.

Operational income. Total income perceived as a consequence of the provision of services, less discounts and rebates. In other words, the income is the value received by the enterprise in exchange of providing services to households and other enterprises. **Source:** DANE, concept suggested according to definitions used in the organization.

Overnight. Each of the nights that a traveler stays or is registered in an establishment of collective accommodation or a private tourist accommodation. It does not require the physical presence of the traveler (IET, Spain). The total of overnights in the month is calculated by adding the number of guests who stayed in the hotel per night. Example: a couple lodged during three consecutive nights will correspond to six overnights, similarly to six persons lodged for one night. **Source:** DANE, concept suggested according to definitions used in the organization.

Owners, partners and relatives without remuneration. This concept includes all the holders and associated individuals participating actively in the work of the establishment. It excludes the anonymous or inactive associates whose main activity is carried out outside the establishment. **Source:** DANE, concept suggested according to definitions used in the organization.

Permanent staff. It corresponds to the number of people occupied under the terms of a labor contract with indefinite term. (Article 47 of the Substantive Labor Code): DANE, concept suggested according to definitions used in the organization.

Reception services. Value received for services rendered as tourism guides, City Tours and other similar services. **Source:** DANE, concept suggested according to definitions used in the organization.

Resident guests. Those persons who have their center of predominant economic interest in the territory. That is to say, they circulate freely within the country and they have a dwelling, an establishment of production or other facilities within the national territory, where they realize economic activities indefinitely or for a prolonged period. **Source:** DANE, concept suggested according to definitions used in the organization.

Room availability. Classification in terms of the number of rooms or beds available. **Source:** DANE, concept suggested according to definitions used in the organization.

Rooms available. Monthly number of rooms that can be used by the guests. Potentially, it is feasible that each room be available, to be occupied, every day of the month; therefore, a room has, an availability of occupation of 30 days (or overnights) in a month. **Source:** DANE, concept suggested according to definitions used in the organization.

Rooms sold. Number of rooms occupied during the month. The number or rooms sold is obtained through the guests' registry. Day by day the number rooms rented is taken and added monthly; if the enterprise physically have 100 rooms, of which 70 remain occupied all the month, the number of sold rooms is of 2,100 (70 rooms × 30 days). **Source:** DANE, concept suggested according to definitions used in the organization.

Services. Set of activities developed by economic units, directed to generate or to put at the disposal of households or enterprises an ample range of intangible products. They present a diversity of characteristics according to the needs of those who request them. **Source:** DANE, concept suggested according to definitions used in the organization.

Single room. Room with individual or personal bed and bathroom. A cabin is counted as a room. **Source:** DANE, concept suggested according to definitions used in the organization.

Suite. Two or more rooms with their corresponding bathrooms, and at least a common hall. **Source:** DANE, concept suggested according to definitions used in the organization.

Supplements to basic wages. They correspond to the sums that the worker receives from the employer periodically or occasionally in agreement with the law, such as: the current social contributions, special social contributions, and extralegal or agreed social supplements. They are different from the wages. They are described in the Colombian Labor Law and the Substantive Code.

Wages of permanent personnel. Fixed or ordinary remuneration (in cash or in kind) that a person receives for the work done for the enterprise before any deductions. They include the integral wages, payments for supplementary work on Sundays or holidays, commissions on sales, bonus and permanent travel allowances for employees hired for an unlimited term. **Source:** DANE, concept suggested according to definitions used in the organization.

Wages of temporary personnel directly hired by the enterprise. Value paid to the temporary personnel directly hired by the enterprise, in compensation of the work done for a limited or fixed term. **Source:** DANE, concept suggested according to definitions used in the organization.

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ANNEXES

ANNEX 1

MONTHLY HOTEL SURVEY

NATIONAL ADMINISTRATIVE DEPARTMENT OF STATISTICS

Para tomar decisiones

INFORMATION OF	201___

IMPORTANT: The data that DANE requests in this form are strictly confidential and do not have tax purposes. They cannot be used as legal evidence.

FOR DANE's exclusive use

Order number	Activity code	Inclusion	NIT	1	Number of identification	Control
			CC	2		

PLEASE READ THE INSTRUCTIONS IN THE LEAFLET BEFORE PROCEEDING TO COMPLETE THE FORM

CHAPTER I. ENTERPRISE NAME AND ADDRESS

LEGAL NAME ______________________________

COMMERCIAL NAME ______________________ ACRONYM __________

Headquarters or Managing Office address ______________________

Municipality ______________ Department ______________

Telephone number __________ FAX __________ POBox __________

Managing office e-mail ______________________________

CHAPTER II. MONTHLY BALANCE OF THE ESTABLISHMENTS THAT ARE PART OF THE ENTERPRISE

Number of establishments in this report

1. Initial (+) ____ 2. Opened in the month (+) ____ 3. Closed in the month (-) ____ Final total (=) ____

CHAPTER III. ACCRUED NET OPERATIONAL INCOME IN THE MONTH (000 pesos)

Do not include in the partial values indirect taxes (VAT, consumption taxes)

1. Accomodation								
2. Food and non alcoholic beverages								
3. Spirits and cigarettes								
4. Communication services (telephone, fax, internet, mobile communications and others								
5. Other minor hotel services (laundry, hairdressing)								
6. Tourism guide services, city tours and similar activities								
7. Hall leasing for different events								
8. Other operational income not previously specified (please describe (in NOTES).								
9. Total net operational income (add lines from 1 to 8)	From	day	month	to	day	month		
10. Total accrued VAT (invoiced)	From	day	month	to	day	month		

CHAPTER IV. AVERAGE EMPLOYED PERSONNEL. ACCRUED WAGES AND SUPPLEMENTS TO WAGES

Type of contract	Persons (Average for the month)	Basic wages and supplements accrued in the month **(thousand pesos)**		Dates included		
		Basic Wages	Supplement to wages		Day	Month
1. Owners, associates and family without fixed remuneration						
2. Fixed personnel (permanent contract)				From To		
3. Temporary personnel (directly hired)				From To		
4. Temporary personnel from other enterprises		Charged by enterprises		From To		
5. Apprentices, students (special agreements)		Expenses contribution		From To		
6. Total (lines 1 to 5)						

CHAPTER V. CHARACTERISTICS OF THE HOTELS

1. Day to day accommodation service YES 1 NO 2		8. Room price (Complete following the specifications).		
Concept	Number	Type of room	Rooms sold in the month	Average price (Pesos)
2. Rooms available for rent in the month		8.1 Single		
3. Occupied rooms (sold) in the month		8.2 Double		
4. Available beds in the month		8.3 Suite		
5. Beds sold in the month		8.4 Other type (specify)		
6. Resident Guests (in the month)				
7. Non resident guests (in the month)		8.5 TOTAL (equal to line 3)		

9. Guest's length of stay	Percent (%)	10. Purpose of trip	Residents (%)	Non-residents (%)
9.1 One night		10.1 Business		
9.2 Two nights		10.2 Leisure,recreation, holidays		
9.3 Three night		10.3 Seminars, conferences		
9.4 Four nights		10.4 Health		
9.5 Five nights		10.5 Transportation problems		
9.6 Six nights				
9.7 Seven nights		10.6 Others (please specify)		
9.8 More than 7 less than 30				
9.9 Permanent guests		10.7 Total (lines 10.1 to 10.6)	100%	100%
9.10 Total (9.1 to 9.9)	**100%**			

Notes (please indicate all the required comments to the information provided)

____

____

____

Completion city and date	Enterprise responsible person	Contact person for consultations
City ____________	Name ____________	Name ____________
	Signature and seal	Position ____________
Date [ ] [ ] [ ]		Telephone ____________
dd mm yyyy	____________	E-mail ____________

For DANE exclusive use

Reception date	Person who receives	Person in charge of editing
[ ] [ ] [ ]	Name ____________	Name ____________
dd mm yyyy	Signature ____________	Signature ____________
	Identification ____________	Identification ____________

Failing to present this questionnaire in due time brings about the sanctions established in Law 079, 1993

Annex 2
Enterprises new issues table - Monthly Hotel Survey

CODE	DESCRIPTION
1	Liquidated with 0 months of operation
2	Change of sector because of changes in the operational process
3	Inactive
4	Not found
5	In debt
6	Duplicated
10	Merged
12	Splitted
13	Absorbed
18	Household with economic activity
19	Change of sector. Wrong original classification. Does not belong to the universe
97	Liquidated with 1 or more months of operation
98	To be imputed due to debt
99	Renders information

Source: DANE