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REPORT ON AN EXPERIMENTAL SURVEY CONDUCTED TO MEASURE  
OMISSIONS IN THE RECORDS OF BIRTHS AND  
DEATHS IN THE REPUBLIC OF PANAMA

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## I. THE PROBLEM

The accelerated rate of growth of the population experienced in some regions of the world has brought about the formulation of various plans for its adequate channeling. Unfortunately, the projects undertaken rest on uncertain bases when censal figures and data from the vital records are used in order to evaluate the demographic increase without the necessary adjustments to this statistical information. This situation is even more apparent in backward regions of the world because the deficient quality of statistics, especially vital statistics, is often an attendant factor with economic under-development. Thus the paradox exists that the very countries which most urgently need an exact measure of their demographic status are those which generally lack the basic statistics and even where they are obtainable they often contain serious errors both in quantity and in quality.

The precision of the demographic statistics, and as a result the accurate assessment of the dynamics of the population, is a function of the integrity of the records and the censal information from which such statistics are obtained. For this reason it becomes more and more important to ascertain the degree of efficiency of these sources of information. Recently, with regard to the population censuses, it has been recognized that before the actual census there exists the need for test surveys in the field designed mainly to provide those responsible for the formulation, execution and evaluation of economic and social programmes and other users of the censal information with a measure of the accuracy of the data. From another point of view, these experimental surveys have a further objective in assisting those officials who have accepted the responsibility to provide higher quality data in the future. Here it may be noted that Panama, for the first time in its censal history, carried out an experimental survey on a national level as a further part of its censal programme for 1960. 1/

Also with regard to vital statistics it has been recognized that any programme of evaluation of the same should at some point include studies designed to determine the completeness of the registration and transmission of the statistical information. 2/ Unfortunately, experience and consequently any bibliography on this subject is rare in Latin America and for this reason right up to the present time very few countries of the region could count on a measure of the efficiency of their vital records.

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1/ For further reference see the General Report - Part III Censuses of Population and Housing, 1960, published by the Statistics and Census Bureau of the Contraloría General of the Republic in October, 1962.

2/ "Principles for a System of Vital Statistics". Statistical Reports, Series "M" N° 19. Statistical Office of the United Nations, New York, August, 1953.

## II. BACKGROUND INFORMATION

For many years the Statistics and Census Bureau of the General Inspectorate has realized the importance and need for an evaluation of the integrity of the records of births and deaths, but the projects undertaken with this in view have not, for one reason or another, provided results that can be used without the risk of significant error.

The analysis of the infant population - under one year of age - outlined by the Census of 1950 suggests a minimum omission of 8 per cent of the births which occurred in the Republic in 1950. The term "minimum" is used because it is well-known that the population of under one year of age usually suffers some omission in the population censuses, and on the other hand, deaths in this group are often omitted also. Here it can be added that according to the results of research carried out by the Latin American Demographic Centre the omission percentages for the five year period 1945-1950 for births and deaths were 17 and 31 per cent respectively. <sup>3/</sup> The Report on the Social Situation in the World, prepared by the United Nations in 1957 seems to exaggerate the Panamanian anomaly estimating that during the period 1950-1955 the omission percentages for births and deaths were approximately 20 and 50 per cent respectively. In 1958 a comparison was drawn between the number of baptisms made in 1957 of children born in the same year and the number of births entered in the records of the Statistics and Census Bureau. This study, which covered a total of 48 districts <sup>4/</sup> showed that approximately only 7 per cent of births escaped the registrar. More recently in 1959 making use of the censal trials which preceded the VI National Population Census of 1960, a comparison was made between the number of children under one year of age noted in the Censal Trials of the City of Panama and in the rural areas and the entries of births at the Statistics and Census Bureau. The results of this comparison showed a 5 per cent omission in births.

As can be seen there do exist some records which indicate a possible measure of the under-registration of the principal vital events in Panama. But in spite of the concern shown by Panama for an examination of the degree of integrity of the records, an attempt based on solid technical grounds of investigation, is evidently necessary in order to avoid having future statistical estimates qualified as being rough approximations. In an effort to satisfy this need in the first place a short report - an internal document of the Statistics and Census Bureau, of which the most

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<sup>3/</sup> Araica, Hildebrando. "Determination of Some Demographic Data of the Republic of Panama: Period 1940-1950" Santiago, Chile, 1960.

<sup>4/</sup> The Republic of Panama is divided into nine provinces which together consist of 63 districts and a native district (San Blas).

noteworthy analytical parts are explained clearly later - was prepared and this constituted, in effect, the pillar upon which the plans of the survey with which this present report deals were built. The following paragraphs are extracted from the former short report.

#### Information at the national level

##### Birth-rate:

The changes experienced in this component of demographic growth reflect the achievements made in the registration of births throughout the Republic. The birth-rate of approximately 37 per thousand ruling in the larger part of the ten year period 1940-1950 has increased to over 40 per thousand in 1959. This increase is the result of the specific integrity of the records and is not due to real changes in fertility. A chronological analysis would clearly show the "changes" in the Panamanian birth-rate across the years. Although the trend of the birth-rate can be explained easily adducing the stability of the phenomena and attributing the increase to an improvement in registration, a similar explanation cannot be accepted with respect to the trend of the mortality-rate.

##### Mortality-rate:

On a study of the trend of the mortality-rate situations present themselves rendering its analysis difficult. The very low rate of mortality in Panama is due principally to two phenomena: a real decrease in mortality and omission in the records. The present state of our knowledge makes it difficult to determine exactly the part played by each phenomena.

A summary examination of the series 1941-1959 suggests considerable under-registration of deaths. In fact the series show a marked parallelism between the trends of the general mortality and infant mortality. The main difference to be seen between general and infant mortality in the years 1948-1951 is due to the relatively higher under-registration affecting the birth-rate during this period. During this time, specifically 1949-1950, there was an increase in the rate of infant mortality. The different rate of omission provoked an unusual and unreal increase in infant mortality, the numerator of the rate of infant mortality not being as influenced as the denominator.

##### Decrease in the mortality-rate:

In a growing population like that of the Isthmus where there exists the possibility that registration has improved a decrease in the number of deaths of persons between the ages of 5 and 55 years is an indication of a real decrease in the rate of mortality. The relevant information shows that from 1948-1959 the number of deaths within this mentioned age group decreased by approximately 14 per cent. It is to be added that the decrease was more pronounced in the case of the female population.

Another indicator of the decrease of the rate of mortality is provided by the ratio of the deaths of persons of 60 years of age and over to the deaths of those of 5 years and over. With an increase in the standard of

/living, it

living, it is to be expected that more people of advanced age will remain alive, and therefore, an increase in the previously mentioned ratio would be proof of a decrease in the mortality rate. In Panama this ratio increased, with some annual fluctuation, from 0.367 registered in 1948 to 0.486 in 1959.

Finally, the distribution by age of deaths and estimates of the rate of increase of the population were useful factors in calculating some approximation of average life expectancy which also showed a decrease in the rate of mortality.

#### Omissions in the Records:

Upon commentating on the parallelism between the trends of general and infant mortality, it was noted that there existed a suggestion of considerable under-registration of deaths. Both rates after reaching a "minimum" in 1952 seemed to undergo a process of "recuperation" which is evidenced in fact by the increase observed in the Registry from that year on. On the other hand it is difficult to conciliate the rate of annual demographic growth obtained from the censal figures of 1950 and 1960 with the population increase derived from the vital statistics of the period. The rate of increase between the censuses was a little over the figure of 29 per thousand inhabitants. If a rate of 40 per thousand is taken as constant for the rate of births, a rate which is of course lower than the real rate, then the rate of mortality for the period was 11 per thousand. This mortality rate is higher than that which is obtained from the mortality statistics, which is 9 per thousand or even less. This rough calculation would seem to suggest that the level of omissions of deaths was increased and that during the ten year period 1950-1960 it could have been over 20 per cent. It must be understood, of course, that such a calculation assumes that international migration was negligible during these ten years and that the errors of the censuses of 1950 and 1960 were of equal magnitude.

It is significant to note that deaths due to infectious and parasitical causes have increased rather than diminished. Their percentage as a percentage of total deaths was 6.8 in 1952 and this increased to 14.3 in 1959. If it is recognized that such deaths predominate when mortality is high and the standards of living low, then it will be realized that the mortality rate must have been higher than that indicated by the official figures. This relative increase in the number of deaths caused by infectious and parasitical diseases may perhaps be effected by better diagnosis and without doubt it is influenced by the fact that Panama is a young country and these illnesses affect principally the infant and adolescent population.

With regard to the low rates of infant mortality it can be assumed that they under-estimate the truth. According to the associations which set up the model tables of mortality of the United Nations, such rates imply levels of average life expectancy of over 60 years.

### Provincial Information:

After obtaining a panoramic view of the problem a study of it was then made at the provincial level. With this in mind the birth-rate in each province was compared with the percentage of effective minors of under 15 years of age, taken as a percentage of the total population of each province. In other words W.F. Wertheim's "test of 40 per cent" was applied to estimate or determine the level of fertility. Wertheim, in a paper presented to the World Population Conference held in Rome in 1954, postulated that in a population of which the effective minors of under 15 years of age represent a minimum of 40 per cent then it is more than probable that this population has a birth-rate of over 40 per thousand. Applying this test the provinces most effected by under-registration would be Darien, Herrera and Los Santos. It was possible to prove that the supposed error of omission in only these provinces would raise the birth-rate of the country in 1959 from 40.9 to 41.9 per thousand.

The examination of the provincial status in respect to the mortality rate was approached through some average calculations referring to the period 1954-1959 and through a rough estimate for the year 1959 of the life expectancy based on the distribution of deaths by age during this year and on the rates of increase made constant for all the provinces at 2.90 per cent. The results of this analysis also indicated the provinces of Darien, Herrera and Los Santos as being presumably most affected by omissions in the records. In Veraguas, the province with the highest mortality rate in the Isthmus where the population is most scattered, where there is the highest percentage of illiteracy and the highest percentage of housing without sanitation, observations over the years 1954-1959 indicate that the rate of mortality did not undergo fundamental changes and that the registration of deaths maintained the same, and of course unknown, standard of integrity. The basic hypotheses can be inferred from a comparison of the rates of mortality (as derived from the registers) with other statistical records which broadly illustrate the economic-social situation. When the rates of mortality in a relatively backward province appear more or less favourable then it can be assumed that omissions occurred in the registration of deaths.

Based on the data of the outlined study it was recommended that a preliminary field study be carried out in order to provide the final shape for an eventual investigation on a national scale which would have the following objectives:

### III. AIMS

1. To test and improve methods of investigation and questionnaires.
2. To obtain information which would later assist in the design of a sample corresponding to a survey on a larger scale (preferably at the national level) and to obtain pre-estimated calculations of this larger survey.

/3. To study

3. To study the possibility of using the results as part of this larger study.
4. To study the possibility of obtaining afterwards estimates of the integrity at the provincial level which would bring about an improvement in the population calculations of those areas.
5. To use the results to provide measures to eliminate omissions and to bring about improvements in the most affected provinces.

These points will be returned to at a later stage when the results of the survey they motivate are considered.

#### IV. METHOD OF INVESTIGATION

The method of investigation used was that of the direct interview by means of a visit to the home by an investigator. The interviews which were generally made with the lady of the house were conducted by the personnel of the Section of Social Statistics of the Statistics and Census Bureau.

The total number of homes to be interviewed having been fixed at approximately 2,000, 70 segments <sup>5/</sup> were then selected at random. When the Province of Chiriqui was chosen as a test area its 12 districts were arranged in order. They were graded according to the size of the indexes of illiteracy, the amount of professional assistance in childbirth, the extent of medical certification of death and the birth and mortality rates.

Once this grading had been effected the districts were divided into three large groups. The first group, the one graded lowest, consisted of the districts of Boquete and David. The second groups, with the middle grading, was the districts of Alanje, Baru, Boqueron, Bugaba, Gualaca and Remedios. The third group, with the highest grading, was formed by the districts of San Felix, San Lorenzo and Tole.

Analysing the different groups of districts, it was then decided to make a total of eight divisions as follows:

In Group (A) there were two divisions:

(a) A<sub>1</sub> consisting of all the areas of easy access.

(b) A<sub>2</sub> consisting of all the areas of difficult access.

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<sup>5/</sup> By segment is understood the geographical area that an interviewer in the Population and Housing Census of 1960 should cover in a day's work. The segment corresponds to the group of houses located in a marked area within physical limits of easy field work.

In Group (B), with the middle grading, before making divisions the districts were sub-divided into two narrower sub-groups - sub-group B<sub>1</sub> consisting of the districts of Baru, Bugaba, Gualaca, Remedios and B<sub>2</sub> consisting of the districts of Alanje, Boqueron and Dolega. When these two sub-groups had been formed, four divisions were made thus:

- (c) B<sub>1,1</sub> consisting of areas of easy access in group B<sub>1</sub>
- (d) B<sub>2,1</sub> consisting of areas of easy access in group B<sub>2</sub>
- (e) B<sub>1,2</sub> consisting of areas of difficult access in group B<sub>1</sub>
- (f) B<sub>2,2</sub> consisting of areas of difficult access in group B<sub>2</sub>

In the third Group (C) with the highest grading there were two divisions:

- (g) C<sub>1</sub> consisting of areas of easy access
- (h) C<sub>2</sub> consisting of areas of difficult access

At this stage of the report it should be made clear that the qualification of easy or difficult access in the areas mentioned is a function of the facility of communication of the area with the Registration Centre. Thus it may be added that this division according to ease and difficulty of access took into consideration the stratification which was used in the Post-Enumeration Survey of the Population Census of 1960.

With the intention of keeping cost at a minimum it was decided to select one district from each group instead of selecting areas in all the districts of each group. The selection of the districts was in proportion to the number of homes indicated by the VI National Population Census of 1960.

Before selecting the segments within each division, these were arranged in order according to their supervision zone. When this order had been established the segments were systematically selected, and the result was 52 in the areas of easy access and 18 in the areas of difficult access.

Reasons of cost and the size of the sample determined the adoption in the areas of difficult access of a sample as representative of the whole. As a result, in these areas the units which ought to have made up the sample were not chosen individually but by groups of units constituting the whole.

Well aware of the difficulty of such an investigation of this kind in the native regions it was decided from the beginning to exclude all the segments of the native region from this experimental survey. The "non-family" groups, that is those that dwell in collective housing such as boarding houses, prisons, boarding schools etc. were not included in the investigation.

The survey was directed at the population which lived during a part or the whole of the year 1962 in the district under investigation and which could be expected to be affected by the phenomena under survey. In view of the fact that the survey tried to establish a relationship between the facts revealed by it and the facts already entered in the registers, as well as those facts the details of which had been passed on to the Statistics and Census Bureau, the greatest possible effort was made to ensure that the population surveyed was in fact that section of the population connected with the subject under investigation. Trying then to evaluate the degree of legal registration as well as the degree of the integrity of the transmission of the statistical information, a questionnaire was designed which took into consideration the population that lived in the district for part or all of the year 1962 and was still living there, and the population that lived there for part of the year 1962 and was no longer resident there at the time of the survey. In this way the survey was able to obtain information for members of the families resident all the year in the district where there had been births and/or deaths which had or had not been registered. Also it was possible to obtain the same information for those members of families which were not resident in the district for the whole year 1962. Thus information was obtained for those persons who resided in the district for part of 1962 and who at the time of the survey were or were not resident there. In spite of all the provisos of the questionnaire form it is obvious that when all the family disappeared through death and/or migration the obtaining of information is practically impossible. Nevertheless, a great effort was made to obtain information concerning these cases, as presumably a large number of these people could be the explanation for closed or unoccupied houses. For this reason the interviewer was instructed to obtain information from the nearest neighbour to the empty house which would provide rough details as to the fate of the last residents. Also, the interviewer had with him a list of the persons who, according to the Census of 1960, lived alone. Using this list it was hoped to solve a problem inherent in an investigation of this kind regarding the verification of the registration of deaths of persons living alone.

It is necessary to make it absolutely clear that the sample as well as the methods used were decided upon as a result of the following considerations:

- (a) It is a first local experiment covering a subject in which there exist many difficulties and very little international background information which might indicate a specific pattern to be followed relating to the sample and methods used.
- (b) One of the aims of the investigation is precisely to test the methods used, as well as to explore the possibility of carrying out a study on a national scale at a later date.
- (c) Other alternatives did not afford the same conditions of time and cost.
- (d) The sample of areas under study reveals the characteristics of the homes investigated which were connected with the phenomena or subject-matter of the investigation.

## V. THE QUESTIONNAIRE

Each private home, which for the purpose of the survey was called simply each family, occupied a questionnaire basically designed to obtain all the information concerning births and deaths which had occurred to members of the family group. In those houses where in the same family more than one birth or death was declared additional forms were used.

The questionnaire, which is included in this Report as Appendix 1, is the result of the joint efforts of a group consisting of members of the Department of Social and Economic Studies and the Section of Social Statistics of the Department of Statistics who criticized and evaluated the various proposed projects in their different aspects. The form is made up of three parts. In the first part, which covers general information, an attempt is made to identify the persons who were liable to have children or to die and in the following two parts, specific data is requested about births and deaths.

## VI. ORGANIZATION OF THE FIELD WORK

The organization of the various phases of the field work came under the responsibility of the Section of Social Statistics. The interviewers, who numbered eight, as has been mentioned earlier in this Report, were recruited from the personnel of the Statistics and Census Bureau. Six of these were permanent employees of the Section of Social Statistics, the section which is precisely responsible for presenting vital statistics. The advantages of using these field workers in a preliminary test investigation are obvious. These eight investigators received training for two consecutive days (two afternoons) and as a result were completely informed on the proposals of the investigation and each question on the questionnaire was explained to them in detail. It is worth noting that before the survey, most of the interviewers had received instruction on the interpretation of cartographic material. Each interviewer was assigned work by the office which he was expected to accomplish and these assignments were supervised by observers of the Statistics and Census Bureau.

In this section dealing with the organization of the field work it is interesting to add under the title of complementary information the following points:

1. The interviews were carried out between 21 April and 6 May 1963.
2. With respect to the question of orientation in the field it is to be noted that the survey required the preparation of district maps with borders of the limits of the segments, as well as folders for each segment accompanied by its respective maps, outlines or plans in which were indicated the area corresponding to each segment.
3. A total of 3,000 questionnaires were printed and the same number of cards for leaving with each house visited. 100 copies of the instructions were made.

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4. With regard to the cost of the survey it should be pointed out that the estimated cost of the preliminary ground work, the execution of the survey, its presentation, analysis and the publication of the results, was 1,200 Balboas. <sup>6/</sup> Nevertheless the final expenses not including the production of this Report and the post survey work came to approximately 1,000 Balboas.

## VII. PRESENTATION OF THE DATA

This phase of the investigation taking into consideration its size and contents was carried out using both manual and mechanical methods. To summarize, the principal activities relating to this stage were as follows:

- (1) The preparation of outlines for the tabulation of the data. (16 for births and 5 for deaths.)
- (2) Manual coding of the data obtained using marginal cards.
- (3) Selection of the data to be punched in order to prepare the basic lists for comparison.
- (4) Mechanical preparation of the lists by month of occurrence and district.
- (5) Manual comparison of the returned questionnaires of the Survey with the lists.
- (6) Preparation of tables.

With respect to the first point it is interesting to note that practically no tabulation was planned for those events - which were very few - not legally registered or of which the statistical details had not been received by the Statistics and Census Bureau. It was thought that these cases needed to be treated in detail and for this reason it seemed better to consider individually the questionnaires which contained information about omitted events.

The data which was punched to prepare a basic list for the comparison of births refers to the numbers of the coupon and book and the number of the form. Also the following were punched: of the mother residence and name; of the child place of birth, sex, date of birth and name; of the event institution where it occurred.

With respect to deaths, the data selected for punching refers to the numbers of the book and part and number of the form. Thus it was intended to punch information relating to the place of death, the institution where it occurred, residence, sex, date of death, age and name. Nevertheless, because of the low number of cases declared in the survey, this data was not punched and consequently the list was not prepared.

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<sup>6/</sup> The Balboa is the national monetary unit, worth about one U.S. dollar.  
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As has been pointed out in preceding pages and for which indeed the investigation was conceived, this ought to provide a comparison between the events as declared in the survey and those entered in the registers or those the statistical details of which are to be found in the file of the Statistics and Census Bureau. It should be realized that this work of comparison was not so very complicated using the experience already gained through the efforts made in respect of the same subject earlier. In fact, the experiences of 1958, when a comparison was drawn between the number of baptisms carried out in 1957 corresponding to children born during that same year, with the respective registrations was a big step forward in this arduous task.

In the first place the questionnaires of the survey were compared with the lists searching for the information by district of occurrence and day of occurrence. When the fact could not be localized by day, it was sought through the whole month. Once this source was exhausted further probes were made in the two months previous and in the two months after the declared month. Then they continued to work with those still not matched-up looking through the twelve different lists (January to December) in district surveyed. Those still not found or discovered by means of the preceding processes were taken then to the Deposit of the General Inspectorate of the Republic for an examination of the books of 1961. Thus it was possible to match up nine of the remaining 20. Then in the Statistics and Census Bureau a search was made in the books corresponding to the four districts surveyed - from January to December - and one was found. Finally the 8 remaining births were sought in all the books of the Republic and one more was found. The following is a summary of this practical stage of the comparison:

<u>Comparison of Births</u>	<u>Total</u>	<u>Percentage of total</u>	<u>Time taken</u>	
			<u>Hrs.</u>	<u>Mins.</u>
Total compared in 1st search	377	87.1	21	06
Total compared in 2nd search	48	11.1	18	53
Total compared in 3rd search	1	0.2	30	00
Total not compared	7	1.6		..
<u>Total</u>	<u>433</u>	<u>100.0</u>	<u>69</u>	<u>59</u>
<u>Comparison of deaths</u>				
Total compared in 1st search	34	62.9	3	20
Total compared in 2nd search	11	20.4	4	45
Total compared in 3rd search	7	13.0	2	00
Total not compared	2	3.7		..
<u>Total</u>	<u>54</u>	<u>100.0</u>	<u>10</u>	<u>05</u>

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Finally it can be added that after elimination of the vital events which did not occur in 1962 a total of 418 births and 50 deaths was obtained.

Even though the preceding summary would seem to suggest that the comparison was a process which was carried out quickly, it is to be noted that in the case of births some difficulties caused delays. Among the main causes it is worth mentioning the difference in the month of occurrence as declared by the informant; events declared in the survey as occurring in 1962 were not found in the files of that year but in those of 1961; difference in the name of the mother which meant a consultation of the original statistical entry to verify the information.

At this stage in the Report the reasons why a mechanical comparison was not used should be stated. They are:

- (1) The number of cases did not seem to justify the mechanical approach.
- (2) It would involve punching not only the originals of the registrations of births and deaths but also the questionnaires used in the survey and naturally this operation would have been preceded by the respective coding of the corresponding information.
- (3) In the Department of Tabulation of the General Inspectorate of the Republic there is no equipment for comparing alphabetical information as a whole. Therefore, it would have only been possible to compare numerical facts.

#### VIII. RESULTS

A synthesis of the results of this survey can be obtained from the following points:

The survey covered a total of 2,106 private houses in the four districts selected. From these houses the following information was obtained:

Declared births	418
Declared deaths	50
Houses where no vital event was declared	1,429
Closed and unoccupied houses	230

After completion of the phase of comparison the results are the following:

	<u>Total of declarations</u>	<u>Total compared</u>	<u>Percentage of the comparison</u>
Births	418	411	98.3
Deaths	50	48	96.0

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As can be appreciated the very low rates of omissions practically deny the existence of the problem at all in the Province of Chiriqui, but to this more reference will be made later. For the moment it seems worthwhile to indicate some descriptive aspects of the population covered by the experimental survey. In the first place the classification of the households visited in the various districts surveyed should be clarified.

HOUSEHOLDS VISITED

District	Total	With vital events		With no vital events		Closed		Unoccupied	
		Num- ber	Per cent	Num- ber	Per cent	Num- ber	Per cent	Num- ber	Per cent
<u>Total</u>	<u>2,106</u>	<u>447</u>	<u>21.2</u>	<u>1,429</u>	<u>67.9</u>	<u>141</u>	<u>6.7</u>	<u>89</u>	<u>4.2</u>
Baru	744	168	21.7	487	62.9	86	11.1	33	4.3
David	897	187	20.8	659	73.4	31	3.5	20	2.2
Dolega	243	51	21.0	185	76.1	1	0.4	6	2.5
San Lorenzo	192	41	21.4	98	51.0	23	12.0	30	15.6

These figures show that on the average, in one out of five of the households visited some vital event was declared. This proportion seems to be consistent with the figures emanating from the Census of 1960 in which the rate of children of under one year for each 100 occupied households was 20.4. It is evident that this latter rate is an approximation - a minimum one - of the information shown in the table under examination. On the whole, it would seem that in respect to the percentage of households that declared vital events to the survey, there were no great deviations from the truth. What does attract the attention is the large number of empty households which were registered in the survey - one in every nine. This is, no doubt, a symbol of the abnormalities that confuse the results and consequently may be the key to the explanation of the reduced percentages of omission found in the survey. The cases of Baru and San Lorenzo are exceptional. In the first district the explanation given by the interviewers is that considering the activities of the population - this is the operations centre of the United Fruit Company in the Province of Chiriqui - there are a large number of households of one person only that are extremely difficult to investigate. Summing up, it can be said that the proportion of empty households in Baru can be explained by the difficulty of interviewing people who live alone. In San Lorenzo, on the other hand, the proportion is explained by the existence of residences intended for the workers which at the time of the interviewing were unoccupied or closed. Here in this Report it is not possible to analyse the accuracy of these attempts to explain such high proportions of empty households, nevertheless it should be emphasized that they could be responsible, to a large extent, for the rates of omission found in the survey.

INTERVIEWED HOUSEHOLDS ACCORDING TO THE NUMBER OF MEMBERS  
AND SEX OF THE INHABITANTS

Number of members	Households	Total	Male	Female
<u>Total</u>	<u>1,876</u>	<u>9,713</u>	<u>4,943</u>	<u>4,770</u>
1	153	153	108	45
2	227	454	235	219
3	228	684	345	339
4	236	994	476	468
5	237	1,185	631	554
6	221	1,326	683	643
7	180	1,260	648	612
8	146	1,168	568	600
9	116	1,044	512	532
10 and over	132	1,495	737	758

The figures of the preceding table provide an estimate of 5.2 for the average number of inhabitants per household in the population covered in the survey. Thus it can be seen that the modal number practically coincides with the arithmetical average. It is interesting to note on the other hand that according to the Census of 1960 in the Province of Chiriqui the average number of inhabitants per private household was 5.1.

A more pronounced similarity between the sample investigated and the population of the province is shown in the following table:

PERCENTAGE DISTRIBUTION OF THE POPULATION ACCORDING TO AGE

Age	Sample	Population of the districts surveyed according to the Census of 1960	Provincial Population of Chiriqui according to the Census of 1960
<u>Total</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>
Under 15 years	46.5	46.8	46.9
15 - 49 years	43.4	44.8	43.7
Over-50 years	10.1	8.4	9.4

/These figures

These figures throw into relief the close correspondence existing between the sample and the population it represents. Here however the reader should be warned that this report, by the inclusion of these tables, the only intention is to provide information necessary for a broad evaluation of the sample.

Examination of the information:

To continue, comment will be passed briefly on some of the facts that appear to be most outstanding in the tables presented in this investigation. In the first place, and even though the survey was not an attempt to obtain basic data for a calculation of rates, it is interesting to observe that according to the results of the survey the rate of birth is 43.4 per thousand inhabitants and the rate of mortality 5.2. In order to provide a comparison with the Province of Chiriqui the same rates were calculated for 1962 resulting in 45.5 for births and 6.8 for deaths. It would seem then that at least in the case of deaths there were omissions in the gathering of facts during the interviews. This becomes even more obvious when these rates are calculated for the group of districts surveyed, taken as a whole. In 1962, according to the official statistics of births and deaths, the birth rate of these districts rose to 45.1 per thousand and the rate of mortality rose to 6.3. This high birth rate can be the result not only of a higher rate of fertility but also of the flow of internal migration towards David and Puerto Armuelles, the urban centres of the districts surveyed, which was not taken into consideration in the population estimates which serve as denominators for the rates. Nevertheless, if the population calculation is an under-estimation of the truth it is evident that the registered rate of mortality would be even lower. In summary, it does not seem that a risk is taken in pointing out that with respect to the number of deaths the survey did not succeed in obtaining any better quality information than the civil registrar. In fact, attention is drawn to the possibility that important omissions occurred in the investigation, mainly because of the type of field workers used.

Regarding the characteristics of the births investigated it is extremely interesting to observe that for every two out of three the registration certificate was shown. Experience in the field in this respect indicates that a very high proportion - more than 50 per cent - of the Chiricanian mothers keep the birth registration certificates of all their children very carefully. An important detail that can be interpreted as a proof of the relative worth of the experimental survey is provided by the index of male births that is less than 100 whereas according to official statistics in 1961 the ratio of male to female births in the group of districts surveyed was 103. Also it is to be noted that three out of every four births declared in the survey occurred in the home residence of the mother and, as can be expected, in David and Baru - the urban districts - a smaller percentage of the births occurred in the home residence,

Out of the total births declared to the survey 60 per cent occurred in hospital. This proportion is fairly close to that which is given by the statistics for the group of the four districts surveyed but it is very much above the registration for the Province of Chiriqui. In fact, the former give a percentage of 63 and the latter a percentage of less than 44. Another important aspect which is worth mentioning is that 75 per cent of the births were registered within the first 20 days.

A figure which strongly attracts attention and which throws further doubt on the results of the investigation is that of the percentage of unmarried mothers which is 25. The classification of the marital status of these mothers is very serious when it is proved that more than half of the births declared by them have been preceded by at least three other births. If the figures of the survey are valid a situation is indicated for very serious consideration. Finally no reason whatsoever is given why children were not registered, because in every case where it was not possible to locate the corresponding entry in the files, in the survey the child was declared to be registered.

With respect to the 50 deaths declared in the survey nearly 67 per cent occurred in the home residence of the deceased. Half of them occurred in hospital and the deaths were divided equally among the sexes. With relation to the age of the deceased persons it is interesting to observe that practically one out of every four falls into the group of under one year of age. These deaths indicate a rate of infant mortality of 30 per thousand births which calculation seems one again to suggest deficiencies in the entering of deaths in the survey.

After absorbing the preceding information and examining the tables which accompany this report, some readers will query if all the persons really declared all the events, and if the information was correct, etc. This type of query is in fact applicable to a large number of statistical investigation especially to those where the human factor is both the subject and object of the study.

#### IX. CONCLUSIONS

1. It would be wrong to interpret the results of this trial survey as proof that the problem of omissions in the registers and deaths in Chiriqui is negligible and not worth consideration. The results - though this may seem paradoxical - in providing such low figures of under-registration indicate that the problem does exist.

2. Disregarding the limitations of the survey it seems certain that, in the Province of Chiriqui at least, under-registration of deaths provides a much more serious problem than under-registration of births.

3. The experience gained in this survey - for which a high price has been paid - indicates the need to consider making in similar investigations - and probably in many others of any type - a re-enumeration of some areas in order to measure the "degree of truth" of the information as on many occasions the results of a sample do not represent 100 per cent of the cases.

4. The preliminary survey only fulfilled its objective of trying out, for later possible improvement, questionnaire forms and methods of investigation. Perhaps also it can be said that its results fulfilled the aim of providing by means of the respective pre-estimated calculations, information to assist in the design of new samples and an eventual much larger sample. But the proposition that the results could serve as part of a larger survey must be rejected immediately.

5. The questionnaire used was not efficient enough to extract the required information. It is still necessary to introduce important modifications. It is logical that a greater number of questions and more probing of these can increase the chances of obtaining more complete information.

These points provide a broad outline of the main conclusions that can be drawn from this experiment conducted in an unknown field. Now as a final observation to this short Report some recommendations can be made which may serve in future operations.

#### X. RECOMMENDATIONS

1. Before proceeding to conduct a survey on a national scale, it is recommended to test the methods of investigation and questionnaire forms at least once in areas where there is reason to believe there might be omissions.

2. It is necessary to procure the advice of experts in the improvement of the questionnaire forms and methods of investigation and to this end the participation of the Latin American Demographic Centre should be requested in future experiments.

3. The next test survey should take place preferably in the early months of the year in order to avoid the rains.

4. In a larger survey the interviewing personnel should if possible be made up of persons resident or familiar with the region.

5. In future surveys the preparation of individual questionnaires of births and deaths is recommended in order to eliminate loss of material and to facilitate comparisons. On posing the question "Was the birth or death registered?" the answer "Does not know" should be included as a possibility.

6. The search for the registration certificate lengthens the interview, therefore if in the process of comparison the reply to the question about the certificate is disregarded then it should be omitted from the interview.

7. The question "Where was the body buried?" should be included in the questionnaire on deaths in order to obtain further ideas as to the possible place of registration.

8. It is necessary to define more precisely the population exposed to the risk of child-birth and deaths and to introduce questions to extract more complete information.

#### SUMMARY

The preliminary survey on omissions in the records of births and deaths in the Province of Chiriqui in the Republic of Panama constitutes one of the more serious efforts made by this country in its desire to assess as accurately as possible the limitations existing in a study of its demographic status. This investigation was based on the results of analytical studies of a regional nature which appear to be the necessary previous steps to be taken for the preparation of plans for designing similar surveys. The survey was conducted in a province of the country which as a result of the information obtained from the analytical studies was taken to be representative of the country as a whole. A sample of 2,000 private households was used, the same being distributed in well-defined geographical divisions in which it was assumed there existed as far as the registration of vital events was concerned, favourable, average and unfavourable conditions. The time-period of reference for the data was the year 1962 and the questionnaire which was used attempted to extract information about the events occurring to or connected with persons residing for part or all of the year 1962 in the district under investigation. The collection of the information was in the hands of the personnel of the Statistics and Census Bureau, the office which compiles vital statistics, and it took place between 21 April and 6 May, 1963. The processing of the data was both mechanical and manual and facilitated a comparison between the facts obtained in the survey and the registers. This comparison revealed omissions of 1.7 and 4.0 per cent in births and deaths respectively. These low rates of omission, plus other inconsistent information, suggest that the survey did not obtain either adequately or completely the information required. The experience gained through this experiment points to the advisability of continuing with preparatory test surveys to enable the formation of methods of investigation which will assure the success of future efforts.

GENERAL INSPECTORATE OF THE REPUBLIC  
 Statistics and Census Bureau

Questionnaire No. \_\_\_\_\_

PRELIMINARY SURVEY ON THE OMISSIONS IN THE RECORDS  
 OF BIRTHS AND DEATHS

April, 1963

I. Information as to place and identity

- |                                   |   |
|-----------------------------------|---|
| 1. _____<br>Province              | 5. _____<br>Number of segment           |
| 2. _____<br>District              | 6. _____<br>Street                      |
| 3. _____<br>Corregimiento         | 7. _____<br>Number of building          |
| 4. _____<br>City, town or village | 8. _____<br>Number of room or apartment |
| 9. _____<br>Name of interviewer   |   |
| 10. _____<br>Date of interview    |   |

II. General Information

1. How many people live here? \_\_\_\_\_ persons

	Name	Sex	Age	Lived here during the past year?	
				Yes	No
	(1)	(2)	(3)	(4)	
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					

2. Apart from the people living here now (question 1) who else lived here during the past year?

	Name	Sex	Age	Why are they not living here now?	
				Deceased	Specify any other reason
1.					
2.					
3.					
4.					
5.					

III. Births

1. How many live births occurred to members of this household during 1962?

\_\_\_\_\_ births

Remember that this question must be strictly applied to every woman between the ages of 12 and 50. Therefore, the answer you insert must be the result of all the possible positive answers from this group of women who theoretically speaking have been exposed to the risk of child-birth. (See the names, sex and age in the corresponding lists of answers to questions 1 and 2 of Section II.)

As you proceed enter the information obtained for the declared birth in the following part. If more than one birth is declared information about the second or third birth should be written up on the additional forms provided for these cases.

Information about the child

2. Full name \_\_\_\_\_
- 
- |  |            |             |               |                |
|--|------------|-------------|---------------|----------------|
|  | First Name | Second Name | First Surname | Second Surname |
|--|------------|-------------|---------------|----------------|

3. Sex M
- 
- 
- P
- 
4. Date of Birth \_\_\_\_\_
- 
- |  |     |       |      |
|--|-----|-------|------|
|  | Day | Month | Year |
|--|-----|-------|------|

5. Was the birth registered? Yes
- 
- No
- 
- 
- (If it was not registered continue with question 9)

6. Can you show me the birth registration certificate? Yes
- 
- No
- 
- 
- If yes, copy the number of the certificate and the Book

a) Number of Certificate \_\_\_\_\_ b) Number of Book \_\_\_\_\_

7. Where was the birth registered?

Town or village	Corregimento	District
-----------------	--------------	----------

8. When was the birth registered? \_\_\_\_\_
- 
- |  |     |       |      |
|--|-----|-------|------|
|  | Day | Month | Year |
|--|-----|-------|------|

9. Why was the birth not registered? \_\_\_\_\_

10. Is the child still living? Yes
- 
- No
- 

Information about the mother

11. Full name \_\_\_\_\_
- 
- |  |            |             |               |                |
|--|------------|-------------|---------------|----------------|
|  | First Name | Second Name | First Surname | Second Surname |
|--|------------|-------------|---------------|----------------|

12. Age \_\_\_\_\_ years

13. Marital status \_\_\_\_\_

14. Level of education \_\_\_\_\_

15. Where did the birth take place?

Town or village	Corregimento	District
-----------------	--------------	----------

16. Name of the Hospital where the birth took place \_\_\_\_\_

17. Place of residence at the moment of birth of the child

Town or village	Corregimento	District
-----------------	--------------	----------

18. How many live births have you had during your life including the child you have just told me about? \_\_\_\_\_

IV. Deaths

1. How many members of this household died during 1962? \_\_\_\_\_

As you proceed enter the information obtained for the declared death in the following part. If more than one death is declared information about the second or third deaths should be written up on the additional forms provided for these cases.

2. Full name: \_\_\_\_\_

First Name                      Second Name                      First Surname                      Second Surname

3. Sex:                      Male                       Female

4. Place of birth: \_\_\_\_\_  
Town or village                      Corregimento                      District

5. Date of birth: \_\_\_\_\_  
Day                      Month                      Year

6. Place where the death occurred : \_\_\_\_\_  
Town or village                      Corregimento

\_\_\_\_\_ District

7. Date of death \_\_\_\_\_  
Day                      Month                      Year

8. Name of the Hospital where the death occurred: \_\_\_\_\_

9. Place of residence of the deceased \_\_\_\_\_  
Town or village                      Corregimento

\_\_\_\_\_ District

10. Was the death registered                      Yes                       Do not know                       No   
(If the death was not registered continue with question 12)

11. Where was the death registered? \_\_\_\_\_  
Town or village                      Corregimento                      District

12. Why was the death not registered? \_\_\_\_\_

V. Observations \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

VI. Information as to place and identity

1. \_\_\_\_\_ Province                      5. \_\_\_\_\_ Number of segment

2. \_\_\_\_\_ District                      6. \_\_\_\_\_ Street

3. \_\_\_\_\_ Corregimento                      7. \_\_\_\_\_ Number of building

4. \_\_\_\_\_ City, town or village                      8. \_\_\_\_\_ Number of room or apartment

9. \_\_\_\_\_ Name of interviewer

10. \_\_\_\_\_ Date of interview

