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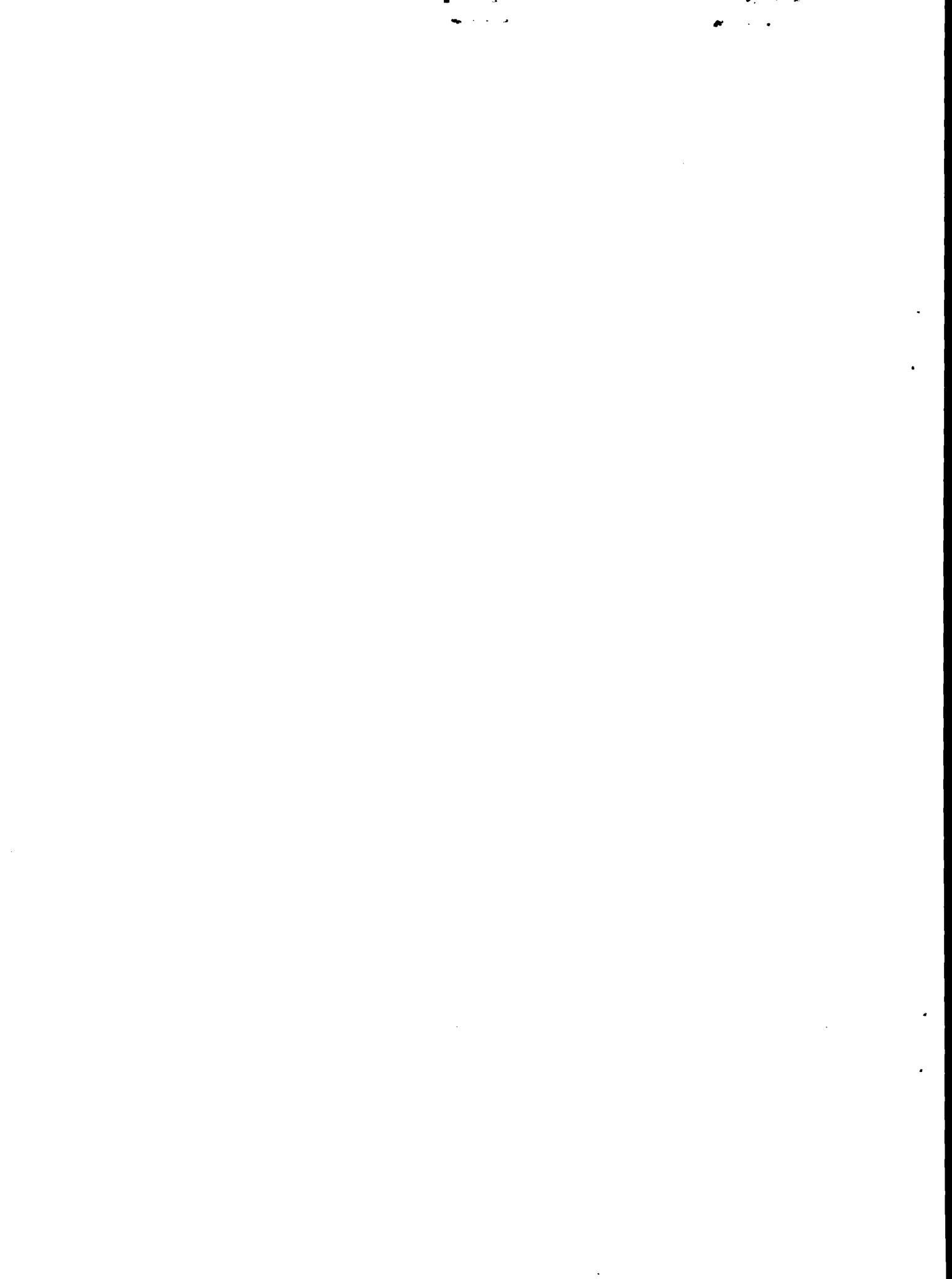
AGE DECLARATION, MORTALITY AND SELECTED  
SOCIOECONOMIC CHARACTERISTICS OF THE ELDERLY

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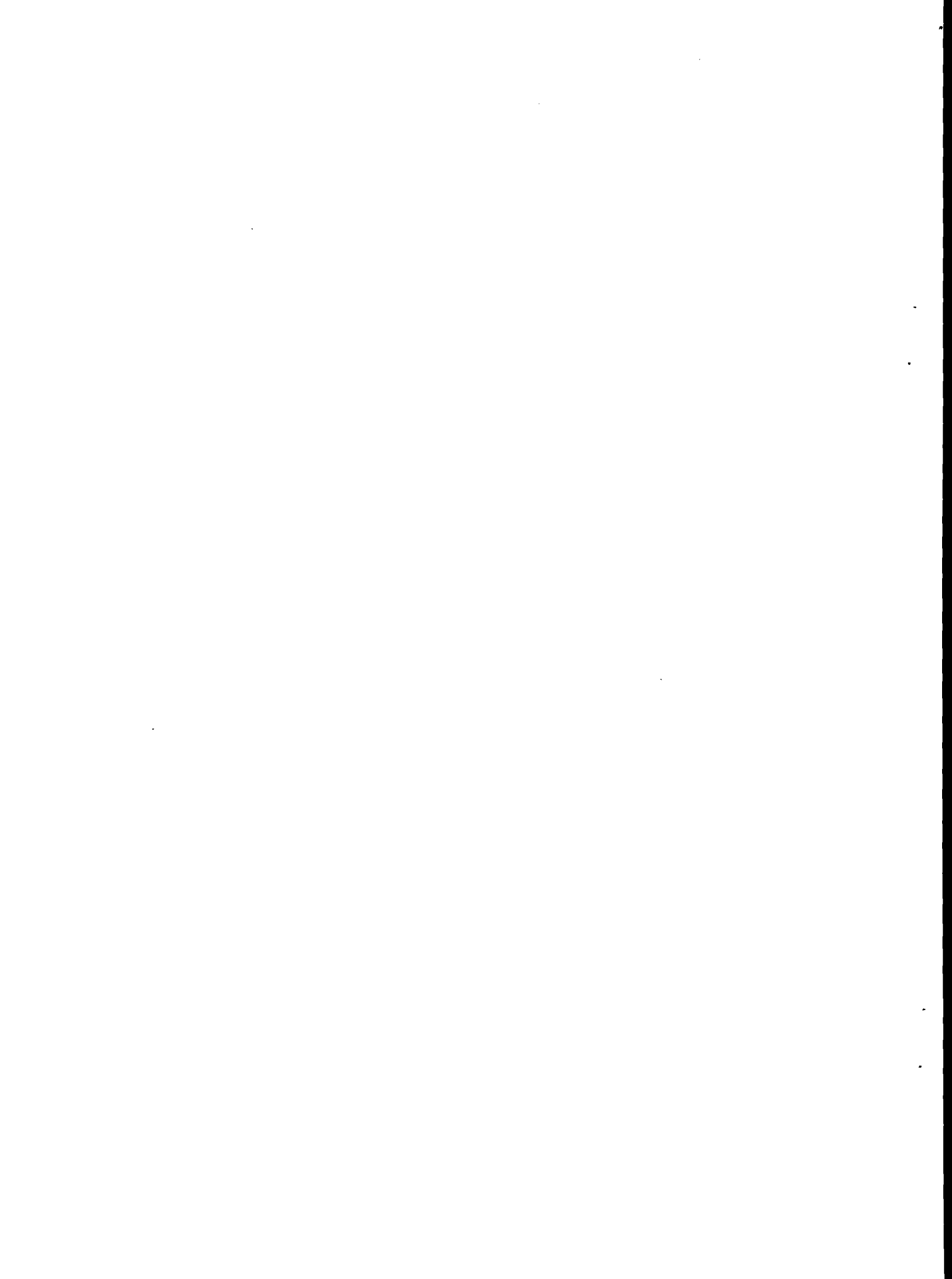


AGE DECLARATION, MORTALITY AND SELECTED SOCIOECONOMIC  
CHARACTERISTICS OF THE ELDERLY

Victor García and Antonio Ortega

A summary of the final report on the Experimental Survey of Selected Socioeconomic Characteristics of the Elderly, carried out in two cantons in Costa Rica in 1985-86

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## I. INTRODUCTION

It is a generally accepted fact that demographic and socioeconomic information for countries in Latin America suffers from data quality problems, a fact which considerably complicates the use of these data in economic and social planning. Data concerning the elderly is no exception in this respect.

There exists the belief that in Latin America the elderly tend to exaggerate their age. It is not just a question of someone 60 years old declaring their age as 62 or 63, but rather it is a case of large errors leading to census results that indicate, for example, the population 80 years and over to be twice or three times as large as it actually is.

In addition, it is believed that, as a consequence of these relatively important deficiencies, mortality rates based on conventional methods are in fact under-estimates.

On the other hand, some demographers argue that even if it is possible that mortality rates are under-estimated because of faulty vital statistics and census data, it is also not out of the question that mortality in Latin American countries is relatively low in late ages.

Consequently it is important to understand better not only the process of age declaration of the elderly but also the levels of mortality that exist for the population of the elderly.

In light of the above discussion, the United Nations Latin American Demographic Centre (CELADE) decided to carry out a survey in Costa Rica to improve the knowledge of mortality levels of the elderly, developing on an idea proposed by Jorge Somoza (Somoza, 1981<sup>a</sup>).

Starting with data collected in a population census it is possible to identify those individuals who declared themselves older than a certain age and to return one year later to find out whether the person is still alive and to determine with more accuracy the exact age of the person.

Taking advantage of this second visit, it was decided to include several questions to allow a better understanding of selected socioeconomic

characteristics of this sub-population.

This survey was co-sponsored by the Costa Rica Office of Census and Statistics (DGEC) and by the Institute for Research in Health of the University of Costa Rica (INISA).

The survey had the following objectives:

1. Survey the accuracy of age declaration of the elderly.
2. Estimate mortality of the elderly.
3. Survey selected social and economic conditions in which the elderly live.

This experimental survey was carried out in the cantons of Puriscal and Coronado, in the province of San José, using as a base the last National Population Census, carried out 11-16 June, 1984.

Approximately one year later, from 3 to 20 June 1985, persons of 60 years or older and residents of the above-mentioned cantons, were revisited and data were collected concerning their age and various selected socioeconomic characteristics. This document is a summary of the final survey report, published in 1986<sup>b</sup>.

## II. GENERAL CONSIDERATIONS

Broadly speaking, the survey was completed in two stages. The first was carried out in the Office of Census and Statistics identifying the areas selected, locating census questionnaires for households with at least one person 60 years or older, and extracting from these questionnaires the necessary information to locate these households in the field<sup>1</sup>.

The second stage was the data-collection stage and was carried out in the field. Taking into account the objective of the survey and the level of

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<sup>1</sup> The survey universe consisted of all persons 60 years and over and resident of the selected districts, according to the 1984 Census.

mortality of the elderly in Costa Rica, it was decided to interview 2,000 individuals which would give a sufficiently large sample size to survey mortality levels.

Two cantons, relatively close to San José, were selected each with different characteristics: Puriscal predominantly rural and Coronado mostly urban.

Two districts in Puriscal (Mercedes Sur and Chires) and two in Coronado (San Rafael and Jesús) were excluded from the survey, since they are areas of sparse population and difficult access.

**The questionnaire.** The questionnaire was kept short to compensate for the fact that a large number of interviews had to be carried out because of the low incidence of mortality.

The questionnaire is made up of two sections. Section A was filled out in the DGEC offices by copying some essential census characteristics from the original census document. Section B was designed to be completed in the field during a short and simple interview. It was largely a pre-coded questionnaire.

**Office work.** During this stage two type of information were gathered, namely data necessary for finding the individual in the field and selected characteristics of the person. These included:

- Number of household members
- Number of persons 60 years of age and over in the household
- Relationship to the household head
- Sex
- Age
- Type of social security
- Education
- Marital status
- Employment status
- Occupation





### III. RESULTS

1. **Age declaration.** Information on age was collected based on identity cards or other official documents in the case of 1,667 cases, representing a little less than 80% of the total.

In cases where no official document was available, age was assigned based on information on the survey questionnaire. In case of discrepancy between the census and the survey, preference was given to the survey information.

Table 2 presents results by age groups, according to errors in age declaration. Deviations are calculated as the difference between the age declared in the census and the age estimated by the survey (for the census date). Negative deviations indicate persons who at the time of the census declared an age lower than their true age. Positive deviations occur for persons who declare an age higher than their true age.

Table 2

SURVEY POPULATION CLASSIFIED BY AGE AND BY ERROR IN CENSUS AGE DECLARATION

Age according to the survey	Deviation in census age declaration with respect to true age																				Total	
	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	7	8	9		10+
<b>TOTAL</b>	<b>19</b>	<b>9</b>	<b>8</b>	<b>3</b>	<b>15</b>	<b>16</b>	<b>27</b>	<b>36</b>	<b>79</b>	<b>239</b>	<b>1055</b>	<b>430</b>	<b>86</b>	<b>39</b>	<b>16</b>	<b>9</b>	<b>2</b>	<b>6</b>	<b>1</b>	<b>11</b>	<b>21</b>	<b>2127</b>
46-59	-	-	-	-	-	-	-	-	-	-	-	22	6	4	3	1	-	1	-	2	2	41
60-64	-	-	-	-	-	-	6	5	17	51	328	122	21	11	7	4	2	1	-	2	6	583
65-69	-	2	-	2	3	5	4	15	25	75	262	85	15	3	-	2	-	1	-	5	9	513
70-74	7	3	4	1	5	4	7	5	13	53	209	69	20	9	2	1	-	1	1	-	-	414
75-79	5	1	-	-	5	3	5	6	13	32	123	60	13	5	2	1	-	1	-	1	4	280
80-84	6	2	2	-	1	4	2	2	7	15	72	39	7	3	2	-	-	-	-	1	-	165
85-89	-	-	1	-	-	-	1	1	1	10	45	23	3	3	-	-	-	1	-	-	-	89
90-94	1	-	-	-	1	-	2	1	3	2	11	7	1	-	-	-	-	-	-	-	-	29
95-99	-	1	1	-	-	-	-	1	-	1	5	3	-	1	-	-	-	-	-	-	-	13

The results indicate that:

- Almost one half of all persons correctly reported their age.
- More than 80% declared their age with no error or with an error of one year.

There is a slight tendency for persons to declare age older than their true age. Of 2,114 persons interviewed, 451 declared age younger than true age and 621 declared older.

It can be observed that this excess of persons over-declaring their age is concentrated almost exclusively in deviations of only one year. This is most likely due to the common practice of giving one's age as of the next birthday and not in completed years.

It can also be deduced from Table 2 that deviations increase slightly with age, in the age-group 60-74, 82.3 per cent declare without error, and 75 years and older, only do 77.8 per cent.

Table 3 presents survey data by five-year age groups, according to age declared in the census and age estimated by the survey. Clearly aggregating data results in fewer erroneous age declarations.

In conclusion, this survey does not confirm the widely held belief that the elderly in Latin American countries tend to exaggerate their age significantly. At least in the case of Costa Rica the opposite is indicated in that more than 80% of the survey population declared their age correctly or with an error of only one year. Furthermore, among the remaining 20%, there exists no obvious tendency to exaggerate age declaration.

Table 3

SURVEY POPULATION BY FIVE-YEAR AGE GROUPS AS  
ESTIMATED BY THE SURVEY AND BY THE CENSUS

Age according to survey	Age according to census								
	Total	60-64	65-69	70-74	75-79	80-84	85-89	90-94	95-99
TOTAL	2127	636	503	407	289	164	94	31	12
- 60	41	39	2	-	-	-	-	-	-
60-64	583	<u>535</u>	39	5	2	2	-	-	-
65-69	513	47	<u>420</u>	32	13	-	1	-	-
70-74	414	12	35	<u>337</u>	30	-	-	-	-
75-79	280	2	5	25	<u>218</u>	25	4	1	-
80-84	165	3	-	8	15	<u>130</u>	8	1	-
85-89	89	-	-	-	1	7	<u>76</u>	4	1
90-94	29	-	-	-	1	-	4	<u>23</u>	1
95-99	13	-	-	-	-	-	1	2	<u>10</u>

2. **Mortality.** Mortality data was collected for the 2,127 individuals included in the survey which confirmed that 2,086 persons were indeed 60 years of age or older (see Table 3) while the remaining 41 cases were in fact younger than 60. The following analysis is based on these 2,086 cases.

In order to survey mortality, an estimate was made of the time lived by persons between the census date (11 June 1984) and the interview date, for persons still alive, and the date of death for persons who died between the Census and the survey.

It is helpful first to establish the overall mortality of Puriscal, Coronado, and Costa Rica. Mortality rates were calculated based on 1983 vital statistics and 1984 Census results:

- Costa Rica	34.1 per thousand
- Puriscal and Coronado	33.0 per thousand
- Puriscal	34.8 per thousand
- Coronado	30.9 per thousand

The overall mortality of Puriscal and Coronado is similar to that of Costa Rica. It is important, however, to keep in mind that several rural districts were excluded from the survey, districts with less densely populated areas most likely with higher than average mortality.

a) Mortality of persons 60 years of age and older. In Table 4 are presented data concerning the number of persons for which survival information was obtained, the total length of time these persons were under observation, the number of deaths, and the gross death rate for the survey population.

Table 4

POPULATION, YEARS LIVED, NUMBER OF DEATHS AND MORTALITY RATES IN  
TWO CANTONS. 1984-1985

Canton	Survey population	Years lived	Number deaths	Mortality rates (per thousand)
<u>TOTAL</u>	<u>2 086</u>	<u>2 054.17</u>	<u>72</u>	<u>35.0</u>
Puriscal	1 226	1 205.04	48	39.8
Coronado	860	849.13	24	28.3

There is acceptable consistency between these results and the rates based on vital statistics (given above). It is informative to note that for both sets of mortality rates (based on vital statistics and on the survey) the more urban canton of Coronado has lower mortality than the socioeconomically less developed area of Puriscal. The difference is more marked in the case of the experimental survey than in the case of the census.

b) Mortality by age groups. In part (a) of Table 5 survey data are presented classified by five-year age groups. Calculation of time exposed in each group was based on the age estimated at census date. So, for example, a person who on Census day was 64 years old, contributes all years lived to the group 60-64, regardless of the date of his 65th birthday.

On the basis of this information, part (b) presents derived mortality rates together with those based on 1983 vital statistics for the country and for the two survey cantons. Also are presented model life table mortality rates based on Coale-Demeny, West, level 23 with a life expectancy of 73.1 years which is close the level of Costa Rica.

Mortality rates based on the survey follow a monotonically increasing pattern, as expected, except for the last age group (95-99 years) which has

only 13 persons. The rates are very similar to the rates based on vital statistics being slightly lower until the 75 year age level. In later ages the comparison is more difficult since vital statistic deaths are not available by age but it is interesting to note that the survey results indicate higher mortality than in the case of vital statistics rates.

Mortality rates based on model life tables confirm the hypothesis that older-age mortality in Latin America is lower than in other regions. In spite of having selected a model with a high life expectancy (73.1 years for both sexes) the resulting mortality rates are higher than both the survey rates and the rates based on vital statistics.

Table 5

SURVEY POPULATION, YEARS LIVED, DEATHS AND MORTALITY RATES FOR FIVE-YEAR AGE GROUPS

(a) Basic information				
Age groups	Survey Population	Years lived	Deaths	
60-64	583	580.27	5	
65-69	513	509.20	9	
70-74	414	409.37	11	
75-79	280	274.19	12	
80-84	165	159.95	11	
85-89	89	84.61	14	
90-94	29	25.03	8	
95-99	13	12.05	2	
(b) Mortality rates by age. Experimental survey, vital statistics and model life table (per thousand).				
Age groups	Experimental Survey 1984/1985	Vital statistics 1983 Puriscal & Costa Coronado Rica		Model life table Coale-Demeny West Family, N.23
60-64	8.6	15.6	11.6	15.4
65-69	17.7	17.8	20.0	26.0
70-74	26.9	34.3	28.9	44.0
75-79	43.8	44.3	50.1	74.4
80-84	68.8	46.9	77.8	120.1
85-89	166.4			193.9
90-94	319.6	127.6	148.6	310.4
95-99	166.0			491.6

c) Mortality for shorter time periods. Since the survey was limited to the elderly living in private households, excluding collectives and those who did not declare their age at the time of the Census, it is conceivable that the estimated mortality does not correspond to the true mortality of the areas' population. In order to find out whether a bias was introduced, mortality was studied over time.

The hypothesis presented is that if the studied population has been subject to some kind of selectivity at the time of the Census, this bias should diminish with time and the survey rates should more adequately represent the true population mortality rates.

Table 6 presents results by quarters (three-month periods) starting with the Census date (June 1984) and ending with the experimental survey one year later.

Table 6  
MORTALITY RATES BY QUARTER

Quarter	No. deaths	Original population	Years lived	Mortality rates
1	12	2086	520.00	23.1
2	18	2074	516.25	34.9
3	17	2056	511.88	33.2
4	25	2039	506.63	49.3

The indicated temporal changes in the mortality rates could be due to random factors, under-enumeration of deaths, or natural aging of the population.

However, the low level estimated in the first quarter is notable. Perhaps persons enumerated in the Census and who gave age information experience different mortality from those excluded from the survey, namely those living in collectives, those without age information, and those in general living outside households.

The results of the second wave of interviews carried out at the end of 1986, will permit a more accurate survey of mortality, a reduction of the likely selectivity effect, and a verification of the possible omission of deaths during the survey period.

In conclusion, the level of mortality estimated for the entire survey population appears reasonable, based on a comparison with vital statistics which in the Costa Rica case are of good quality.

Classifying the data by canton, age groups and time periods, the results follow expected patterns, possibly with slightly lower than expected mortality rates in Coronado. Furthermore, the survey produces mortality estimates lower than true levels during the first 2 or 3 months following the Census.

### 3. Selected socioeconomic and demographic characteristics.

a) Relationship with head of household. The vast majority (81.3%) of men in the survey were classified as heads of household. In the case of women, the percentage is lower if only heads are considered (34.9%) but adding the "Wife" category gives a percentage of 71.1%, almost as high as the male percentage.

This high proportion of persons classified as heads is probably due to the tendency, on the part of persons answering the Census questionnaire, to designate an older person as head regardless of whether this person contributes the major part of the household income or whether he has important decision making responsibilities in the household.

The proportion of male heads tends to decrease markedly with age while among women this proportion remains stable due mainly to male excess mortality.

The number of parents and in-laws increases notably with age as a consequence of children substituting their parents as heads of household.

b) With whom do the elderly live? Individuals were asked whether they lived with their spouse (legal or common-law), what was their relationship with others household members, and whether they had children still alive.

The results of the first question are presented in Table 7 which indicates that the elderly represent a sub-population different than the total population. About a third of all those aged 60-64 years of age live without a spouse, a proportion that increases to 63% for persons aged 75 years and over. These figures are much higher for women reaching 79% for women aged 75 years of age. This sexual distinction is due to lower male life expectancy, to the general tendency of women to marry older men, and to the more frequent marriage of widowers than of widows.

Elderly persons living with spouse tend to live mainly with spouse and children (69%) or only with the spouse (22%). On the other hand, of those living without a spouse the majority (56%) live with their children but this percentage is lower than the above percentages for those living with a spouse. In addition, it is noteworthy that 15% of those living without a spouse live completely alone.

The results also indicate that a majority of the elderly (1,702 out of 1,939) have surviving children on whom they can count should the need arise. The situation is due to the high fertility prevalent in Costa Rica in the not-too-distant past. It is worth mentioning that of those who stated they do not live with their children, 66% have surviving children with whom they could live possibly improving their quality of life. The data also indicate that those who live alone or alone with a spouse have on the average fewer children than do those who live with one of their children.

c) Economic activity. This section presents results concerning elderly persons' preference for retirement or continuing working and what are the principal sources of income.

The first question was asked only of those who were actually working or of those who used to work and were present in the household. Housewives and those who never worked were excluded.



Table 7

## DISTRIBUTION OF THE SURVEY POPULATION BY MARITAL STATUS

Age groups	Total			Men			Women		
	Total	Married or living common-law	Without spouse	Total	Married or living common-law	Without spouse	Total	Married or living common-law	Without spouse
TOTAL	100	54	46	100	71	29	100	38	62
60-64	100	65	35	100	77	23	100	54	48
65-74	100	57	43	100	75	25	100	41	59
75 +	100	37	63	100	56	44	100	21	79

Of 1,014 persons to whom this question was addressed, 85% responded that they would prefer to continue working. Many indicated that it was not for financial reasons but rather the need to do something useful that would keep them occupied. Persons who answered that they preferred not to work, health was given as the principal reason.

Taking into account the subjective ingredient in these data there is evidence based on these data that the elderly in general prefer to continue working, health permitting. This opinion has been observed elsewhere representing a growing resistance on the part of the elderly to join the ranks of the unemployed upon reaching retirement age. This issue merits more careful investigation for the repercussions it could have on the labour force and, more importantly, it underlines the fact the programs for the elderly are not being adequately designed to take advantage of the potential contribution offered by the elderly.

With respect to source of income, persons were asked for the two main sources. This question was answered by 1,770 individuals, of whom 505 mentioned two sources whereas the remainder declared only one source. The results are presented in Table 8.

The main source of income mentioned was family assistance (820 cases), followed by pension (608 cases), and own income (433 cases). The values on the

diagonal represent the 1,770 cases declaring only one source, which population experienced similar ordering of sources as the population as a whole.

It is interesting to note the high proportion of persons depending on family assistance, a result which supports the earlier postulated hypothesis that many of these individuals are called household heads more for reasons of prestige and respect than for reasons of exercising any kind of leadership in the household.

Table 8

SURVEY POPULATION DISTRIBUTED BY SOURCE OF INCOME

Source of income	Total	Employment assistance	Family	Pension	??????	Companion	Other
Employment	433	<u>247</u>	81	91	4	-	10
Family assistance	820	81	<u>459</u>	171	24	83	2
Pension	608	91	171	<u>309</u>	8	8	21
??????	86	4	24	8	<u>48</u>	1	1
Companion	266	0	83	8	1	<u>174</u>	-
Other	62	10	2	21	1	-	<u>28</u>

d) Health problems. In general it is accepted that health constitutes the single most important problem for the elderly population. This fact is confirmed by this survey which asked of each respondent whether they had experienced major health problems during the last 12 months. Of a total of 1,770 persons who answered this question, 1,459 answered in the affirmative.

The results differ widely depending on age. For the 60-64 age group, 3 out of 4 had health problems, whereas in the 75 and over group, the ratio was 9 out of 10, representing a major source of concern for members of this age group.

In order to survey the health phenomenon in more detail, two further questions were asked of those who indicated that they had experienced health problems. The questions concerned the type of problem and whether difficulty was experienced in obtaining necessary medical attention and medicines. Results concerning the type of problem are presented in Table 9.

Table 9

## ILLNESSES MENTIONED BY PERSONS WITH HEALTH PROBLEMS

Illnesses, by category	No. of cases
Diseases of the musculo-skeletal system and connective tissue	324
Hypertension	220
Endocrine glands and metabolic diseases	135
Other diseases of the digestive system*	120
Other diseases of the respiratory system**	102
Diseases of pulmonary circulation and other forms of heart disease	77
Complications with eyes and sight	68
Other diseases of the circulatory system***	28
Diseases of the hearing system and the mastoid process	27
Cerebrovascular diseases	27
Diseases of the skin and subcutaneous cell tissue	22
Physical disability	22
Other diseases of the blood and blood-forming organs	18
Diseases of male genitalia	13
Diseases of the urinary tract	9
Other	57
Ill-defined conditions	190
<u>Total with health problems</u>	<u>1 459</u>
Without health problems	375
<u>Total cases studied</u>	<u>1 834</u>

\* Includes gastric and duodenal ulcer, abdominal hernia, cirrhosis and other chronic diseases of the liver.

\*\* Includes pneumonia, influenza, chronic and unspecified bronchitis, emphysema, and asthma.

\*\*\* Includes arteriosclerosis, varicose veins of lower limbs and hemorrhoids.

This question, highly subjective as it is, furnished important information confirming what has recently been emphasized with respect to the health of the elderly. Namely, an elderly person's ability to perform various physical activities without assistance is more important than any given sickness, even if the latter is more closely related to death. This explains why articular and musculo-skeletal diseases such as rheumatism, and arthritis are more incapacitating for their pain and invalidity, and therefore provoke more suffering, than more lethal illnesses such as hypertension and diabetes, which if medically treated are not as important subjectively. A total of 324 persons complained of musculo-skeletal diseases as a principal health problem. If to this complaint are added all those problems limiting physical activity,

such as eyesight problems and others, the total is 468, 32.1% of all problems suffered by the elderly population.

This universally perceived importance of physical autonomy has not been sufficiently appreciated by health authorities nor by society thus making it of primordial importance to begin dissemination of information about this phenomenon<sup>2</sup>.

With respect to difficulties experienced in receiving medical attention and medication, almost 90% of the 1,459 persons indicated that they did not experience problems, a result which reflects favorably on the national social security system. The most frequent problems mentioned by the remaining 164 respondents were financial (67 cases), poor attention (50 cases), distance and lack of transport (15 cases), and lack of necessary medication in the health stations (15 cases).

e) Principal problems. Finally, all respondents were asked whether they suffered any major problems in the following areas: financial, housing, family, loneliness, other. Results are given below:

Table 10

SURVEY POPULATION CLASSIFIED BY PROBLEM

Type of problem	With problem	No problem	Percentage	
			Respond	With problems
Financial	890	914	5	49
Housing	302	1506	1	17
Family	109	1694	6	6
Loneliness	454	1343	12	25
Other	47	1738	24	3

From these data, it can be concluded that after the health problem discussed in the previous section, the most widely felt problem is financial, a not very surprising result, to some extent. The next most important problem is

<sup>2</sup> Autonomy refers to a person's ability to lead a normal life and to carry out all activities without requiring assistance of others.

somewhat less predictable, loneliness or isolation. It appears that the elderly have difficulty feeling at home in their household, being understood by their relatives, and in general participating in daily activities and recreation opportunities offered by society.

#### IV. SUMMARY AND CONCLUSIONS

1. The experimental survey concerning mortality and selected socioeconomic characteristics of the elderly, proposed by Jorge Somoza, allowed for the gathering of valuable information about the demographic and socioeconomic conditions in which the elderly live, providing the opportunity to learn more about this segment of society.

2. In general respondents were very cooperative, communicative, enthusiastic, and eager to collaborate in this type of survey.

3. With respect to age declaration, it was found that the vast majority of respondents were able easily to resort to an official identity document, allowing for an easy verification of the age declared in the Census. Fully 50% of respondents in this survey correctly reported their age while an additional 30% committed errors of only one year. Consequently, at least in the case of Costa Rica, the data disprove the claim that in Latin American countries age declaration for the elderly suffers from severe data quality problems.

4. With respect to mortality of the elderly, results based on the survey compared very favorably with results based on vital statistics, a satisfying conclusion since the vital registration system in Costa Rica is widely considered to be of high quality.

5. Mortality rates based both on the survey data and on vital statistics were lower than rates based on model life tables which suggests that the elderly in Latin America have mortality relatively lower than in other regions of the world.

6. Concerning economic activity, 85% of those working or who had worked answered that, in spite of not experiencing financial necessity, they would like to continue working in order to feel useful and to be occupied. Family assistance was given as the primary source of income followed by pension. It is worth mentioning that the majority of pensions mentioned refer to the "state pension", 900 colones monthly, an amount which the Costa Rican legislative system allocates to persons without economic means of subsistence.

7. Of the various complaints registered by the elderly, health ranks number one. Of 1,856 respondents to the question about whether they experienced health problems during the last year, 80% answered affirmatively. This subclass of respondents was then asked about any difficulties experienced in obtaining medical assistance and medication. The vast majority answered that no difficulties had been experienced, a result that reflects very favorably on the national social security system.

8. Another problem frequently mentioned by respondents was loneliness. It appears that as people age they find it increasingly difficult to participate in daily activities and recreation opportunities offered by society.

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