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Analysis of Base Line
Survey/Evaluation Data

Demonstration Site and Services
Project

Tegucigalpa, Honduras

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May 1980

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APPENDIX

Introduction

During 1978 and 1979, the Foundation for Cooperative Housing was involved in the provision of technical assistance in the development of three pilot projects designed to demonstrate new approaches to the creation of low cost housing for families of limited income in Honduras, Central America. The principal Honduran organizations involved as project developers in this program were INVA (The Honduran Housing Institute) and FEHCOVIL (The Honduran Federation of Housing Cooperatives), with important contributions made also by the CMDC (Tegucigalpa Municipal Government). Financing for the houses was provided by CABEI (Central American Bank for Economic Integration) with funds provided in large measure by the AID Housing Guaranty program and rollovers. The three housing projects developed will provide homes for approximately 900 low income Honduran families.

A number of elements were involved in the program of technical assistance provided by the Foundation. Important among these elements were initiatives to improve the socio-economic standing of the families which will move into the new houses. In this context, it was considered important to gather information to make possible an evaluation, over time, of the effects of the altered housing conditions on the families involved. Accordingly, a survey was conducted for the purpose of assembling base-line data on the participant families and also on a control group with essentially similar socio-economic characteristics.

A comprehensive survey form was developed, and was administered in mid-1979 to the control group and to a randomly-selected group of families who will be residents in the La Centroamericana Housing Cooperative, one of the two projects sponsored and developed by FEHCOVIL. The information gathered in the survey was transferred by computer to magnetic tape, and was converted into a suitable format for study by means of the computer-assisted analysis method known as Statistical Package for the Social Sciences (SPSS). The raw data as well as the master lists and taped program are currently at the head office of the Foundation in Washington, D.C.

An analysis has been made of the survey results. This study has yielded useful information, not only in terms of data which provide a detailed portrait of the target group of project beneficiaries at the moment of the survey (several months prior to occupancy of the new homes), but as valuable base-line data to permit in-depth longitudinal studies of the effect of improved housing conditions on low income families.

The document which follows presents the key findings of the analysis that has been made of the survey carried out by the Foundation. It is hoped not only that this effort will prove of intrinsic interest to those concerned with the effects of development efforts on families of limited income, but also that a way can be found to take advantage of the opportunity which is here offered, to carry out a significant long-term evaluation of the social and economic consequences of improved housing on a clearly identified set of families participating in a given development program.

I. Population Characteristics

The population to be described is composed of 105 low income residents in Tegucigalpa, Honduras. Of that number, 53 families will be participants in a cooperative housing project developed and administrated by the Honduran Federation of Housing Cooperatives (FEHCOVIL), and 52 families will not. The characteristics of both groups, which are virtually identical, are compared in the Appendix.

A. Demographic Characteristics

1. Marital Status

The dominant marital status of the respondents is one of being currently in a union: two thirds of the respondents are currently legally or consensually married; one fourth of the respondents have never had a long term relationship; the residual 10 percent are either divorced, separated, or widowed.

The sex of the respondent is significantly related to marital status, as seen in Table 1. Virtually all males are either in unions or are single while 15 percent of the female respondents hold the status of past relationships - as separated, divorced, etc.

2. Age Distribution

Figure 1 compares the age distribution of the study population with that of Honduras in general. The comparison is not exact as the survey grouped the population into ages 0-5, 6-10, 11-15, etc., while the census uses the convention groupings 0-4, 5-9, 1-14 etc. These groupings are close enough, however, for providing general profiles.

This comparison first shows that the age distribution of the sample is not nearly as pyramidal as that of the country as a whole, reflecting that the urban low income population has been formed by past migration streams which are selective for young adults. This typical pattern provides a second

Table 1

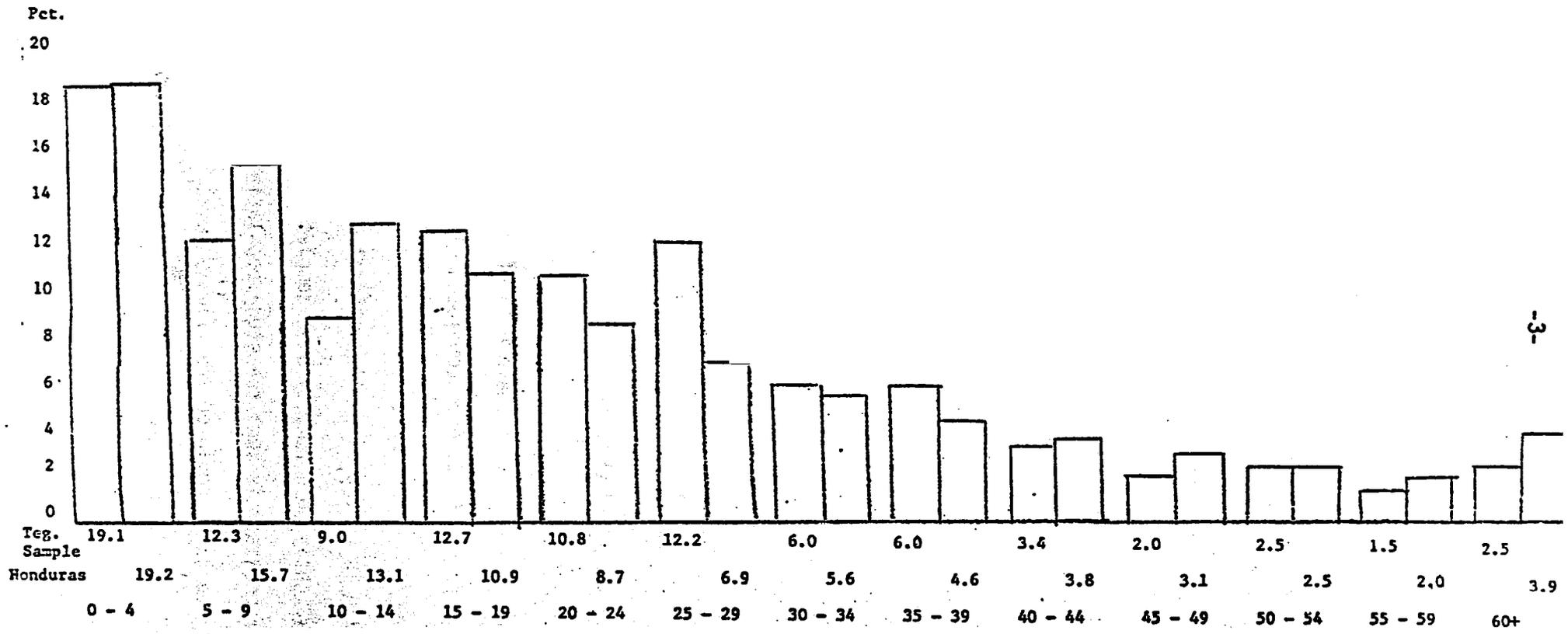
Marital Status
by
Sex of Respondent

<u>Marital</u> <u>Status</u>	Male		Female		Total	
	N	Pct.	N	Pct.	N	Pct.
Married	21	50.0	20	31.7	41	39.0
Consensual union	15	35.7	13	20.6	28	26.7
Single	3	7.1	13	20.6	16	15.2
Single, with children	2	4.8	8	12.7	10	9.5
Abandoned	0	0.0	3	4.8	3	2.9
Separated	0	0.0	2	3.2	2	1.9
Divorced	0	0.0	3	4.8	3	2.9
Widowed	1	2.4	1	1.6	2	1.9
N =	42		63		105	

Degree signif = 0.0446

Figure 1

Age Composition Comparing Tegucigalpa Sample (1979) with Total Honduras Pop. (1974)



observation: the majority of those surveyed are of working ages, 15-60: 57.1 percent of the study population falls in those ages whereas only 48 percent of the country as a whole is in the economically active ages. A third observation should be made: for both the country in 1974 and the study population in 1979, one-fifth is under age five, which indicates a particularly strong demand for future educational and other services.

3. Fertility

While the questions were not posed according to the criterion of mother's age at time of each child's birth (which would allow a more refined fertility estimates to be tabulated), the following distribution shows that half of respondents who had either been in a union or who had become parents had at least three children.

<u>No. of Children</u>			
1	23.3%	5	5.8%
2	26.7	6	7.0
3	17.4	7	0.0
4	18.6	8	1.2

B. Socio-economic Characteristics

1. Educational Level

Table 2 compares male and female head of household's educational attainment. The female heads have completed slightly more years of schooling than the male heads.

This pattern is reflected on the national level, as well. The figures indicate that slightly more females have completed primary school. The most remarkable contrast is that the study population is two and one-half times as likely to have completed the primary level than the population of Honduras in general, which can only be partly attributable to this being an urban population.

Table 2
Educational Attainment of
Heads of Household

Years completed

	<u>Male Head</u>			<u>Female Head</u>		
	<u>N</u>	<u>Pct.</u>	<u>Pct. Adjusted</u>	<u>N</u>	<u>Pct.</u>	<u>Pct. Adjusted</u>
Does not apply	43	41.0		28	26.7	-
1 - 6 years	18	17.1	29.0	21	20.0	27.3
7 - 11 years	28	26.7	45.2	34	32.4	44.2
12+ years	16	15.2	25.8	22	21.0	28.6

Percent completing primary grades, by sex

	Male	Female
Study population	71.0%	72.7%
Honduras, total population	29.7%	30.3%

Of the respondents (either sex), the median number of years of school completed was eight.

2. Occupation

As can be seen in Figures 2 and 3, the majority of the men in the sample worked as craftsmen, or operatives, in transportation and communication or in sales. Females worked almost entirely in three areas: personal service, professional and technical jobs or in office work.

In general, the study population's occupations departed from those of urban Honduras in the absence of laborers and in having strong showing of transportation workers (taxi and bus drivers) among the males and the strong participation of the study population females in professional, technical and office related - white collar - occupations.

A closer look at specific occupations would reveal the following top five occupations currently held by respondents and their "compañeros", i.e., spouse or cohabitant.

Top Five Occupations

	<u>Respondent</u>		<u>Compañero/a</u>	
1	Domestic worker	13.5%	Domestic worker	20 %
2	Secretary	10.4	Tailor/dress maker	15
3	Auxiliary nurse	7.3	Merchant	6.7
4	Mechanic	6.3	Taxi driver	6.7
5	Taxi driver	6.3	Vender	5.0

Figure 2

onal Sector for Males, Comparing Tegucigalpa Sample (1979) with
the Urban Population of Honduras (1974)

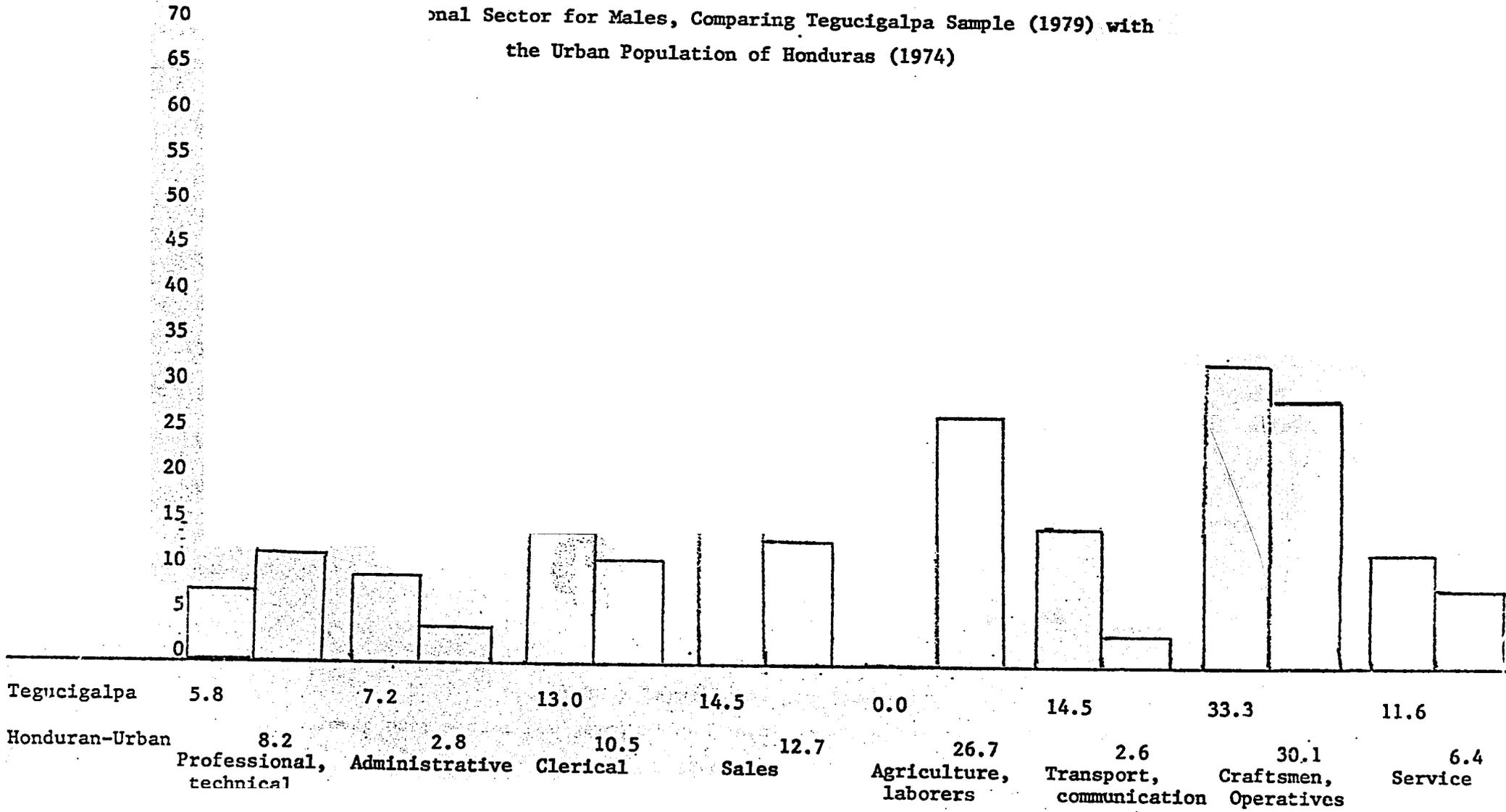
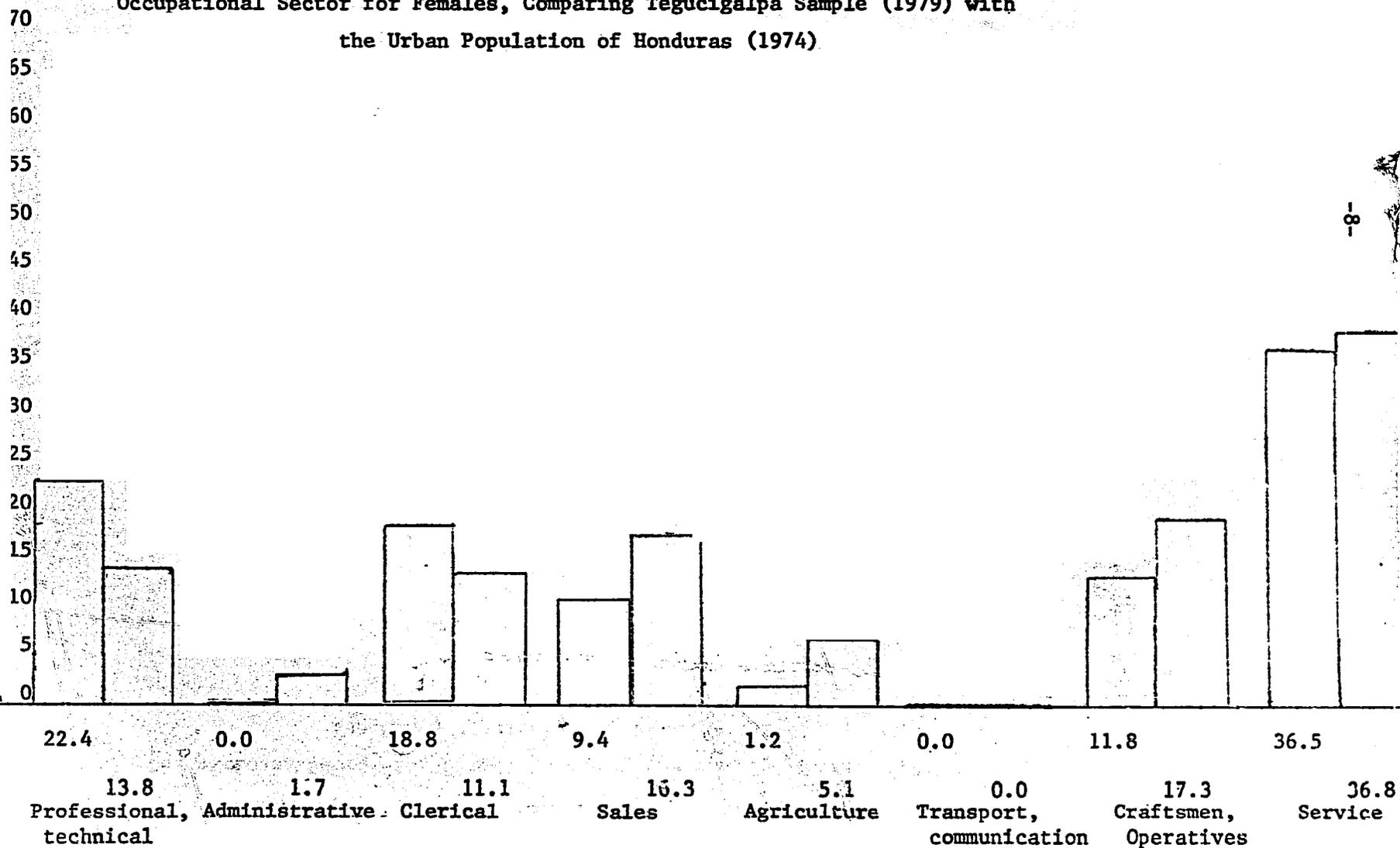


Figure 3

Occupational Sector for Females, Comparing Tegucigalpa Sample (1979) with the Urban Population of Honduras (1974)



3. Income

While this is a low income population, it is not among the city's poorest; the average median income is 510 lempiras per month. (2.00 Lempiras = 1.00 US Dollar) This is in part contributed to by most households having at least two income earners. But in general, total household income is not grossly affected if the household is lacking either a male or female head.

4. Impact of Education on Income and Occupation.

As can be expected, educational attainment has considerable impact on current occupational status and total household income. As Table 3 demonstrates, the higher level of schooling, the greater the family income. This is statistically significant for only female education though - most likely because the female head of households income is the secondary one, one which is capable of determining if the total household income will be high or low.

Table 3

Educational Attainment of Heads of Household and Family Income

Household Monthly Income (in Lempiras)	Female Grades Completed			Male Grades Completed		
	1-6	7-11	12+	1-6	7-11	12+
1-365	14.3%	14.7%	18.2%	27.8%	35.7%	18.8%
370-520	23.8	29.4	18.2	38.9	28.6	6.3
521-770	38.1	32.4	22.7	5.6	21.4	37.5
775+	23.8	23.5	40.9	27.8	14.3	37.5
N =	21	34	22	N = 18	28	16

Degree signif = 0.0172

Degree signif = 0.1758

Educational attainment affects the heads of household's current occupational status as shown in Tables 4 and 5. It is interesting to note that the educational attainment of the spouse does not strongly affect the male's occupation, but the female's occupation is related both to her and her spouse's educational level, reaffirming that a male's status can be independent of his spouse's, but not necessarily so in reverse.

Table 4 indicates that if one is a male with 1-6 years of schooling in this survey, his occupation is most likely to be a craftsmen or an operative; with 7-11 years of school, the primary possibilities are in office work, sales or unemployment. The highest level of education is a requirement for managerial occupations, while the lowest level of education characterizes those working in transportation and communications. For females (Table 5), low levels of education bring a woman to domestic employment, high levels of education to professional, technical and clerical employment, with intermediate levels of school not being strongly related to any one field.

5. Duration of Employment

Apparently, job turnover is not particularly rapid--half of the respondents have held their current jobs for at least 5 years. Briefly one can summarize job tenancy in the following statistics:

<u>Duration of employment</u>	<u>Percentage of Respondents</u>
<u>In months</u>	<u>Having worked for at least that duration</u>
19	80%
44	60%
66	40%
108	20%

Table 4

Educational Attainment of Heads of Household
and Male Head's Occupation

<u>Occupational Category</u>	<u>Female Grades Completed</u>			<u>Male Grades Completed</u>		
	<u>1-6</u>	<u>7-11</u>	<u>12+</u>	<u>1-6</u>	<u>7-11</u>	<u>12+</u>
Unemployed	0%	14.8%	0.0%	5.6%	17.9%	18.8%
Professional, Technical	8.3%	3.7%	9.1%	0.0%	3.6%	6.3%
Administrative, Managerial	0.0%	7.4%	27.3%	0.0%	3.6%	25.0%
Clerical	0.0%	11.1%	18.2%	5.6%	21.4%	12.5%
Commercial and Sales	16.7%	14.8%	27.3%	0.0%	17.9%	18.8%
Transportation and Communication	25.0%	11.1%	0.0%	22.2%	10.7%	0.0%
Craftsmen and Operatives	25.0%	29.6%	18.2%	50.0%	14.3%	18.8%
Service Sector	25.0%	7.4%	0.0%	16.7%	10.7%	0.0%
	N = 12	27	11	N = 18	28	16
	deg. signif = 0.1301			deg. signif = 0.0101		

Table 5

Educational Attainment of Heads of Household
2nd Female Head's Occupation

<u>Occupational Category</u>	Female Grades Completed			Male Grades Completed		
	1-6	7-11	12+	1-6	7-11	12+
Unemployed	0.0%	20.6%	9.1%	29.4%	24.0%	6.3%
Professional, technical	14.3	23.5	36.4	0.0	20.0	12.5
Clerical	4.8	17.6	40.9	0.0	4.0	43.8
Commercial and sales	14.3	8.8	4.5	0.0	16.0	0.0
Craftswomen & operatives	14.3	11.8	0.0	11.8	12.0	12.5
Service sector	52.4	17.6	9.1	58.8	24.0	25.0

N = 21 34 22 N = 17 25 16

Deg. signif = 0.0001

Deg. signif = 0.0048

C. Migration and Housing History

On the average, it has been 10 years since the respondents have moved from their parental home. The first house after leaving the parent's home was lived in for five and one-half years; many are still living in those post-parental first houses. It is interesting to note the shift in ownership status made between the moves. For the most part, the parental homes were owned; the first homes were rented in spite of the relatively long stays in them and homes being currently resided in are owned by almost none:

	<u>Home Ownership</u>		
	<u>Parental Home</u>	<u>First Residence</u>	<u>Current Residence</u>
Owned	60.8	6.0	1.0
Rented	34.0	61.0	78.4
Deeded	5.2	33.0	20.6

It is interesting to compare the reasons for moving from the parental and first post-parental residences. That first move was definitely attributable to life cycle issues; marriage, job and studies (see Table 6). While marriage and work remain major reasons for moving from the first post-parental household, housing issues per se figure very strongly--the house is outgrown, the landlord wants to sell, house needs rebuilding etc. The major reasons are also presented in Table 6a.

D. Household Composition

Households are of intermediate sizes--5 or 6 persons on the average with adults generally outnumbering children. Table 7 outlines these general parameters.

Table 6

Major Reason for Moving
from Parental Household

<u>Rank</u>		<u>N</u>	<u>Pct.</u>
1	To get married	28	31.1%
2	For work	24	26.7
3	For schooling	11	12.2
4	Death of parent	7	7.8
5	To gain independence	3	3.3
6	Military draft	3	3.3

Table 6a

Major Reasons for Moving Out of
First Post Parental Household

<u>Rank</u>		<u>N</u>	<u>Pct.</u>
1	For work	10	15.2
2	Reconstruction of house	6	5.7
3	Location of house	5	7.6
3	To get married	5	7.6
3	Transfer	5	7.6
4	Owners moved in	4	6.1
4	Owners sold house	4	6.1
5	To build own house	3	4.5
5	To seek cheaper housing	3	4.5

Table 7

Household Composition

No. of Persons Per Household

<u>Number</u>	<u>N</u>	<u>Pct.</u>	<u>Number</u>	<u>N</u>	<u>Pct.</u>
1	1	1.0	9	6	5.8
2	3	2.9	10	3	2.9
3	5	4.9	11	5	4.9
4	14	13.6	12	3	2.9
5	19	18.4	14	1	1.0
6	20	19.4	16	3	2.9
7	12	11.7	26	3	2.9
8	5	4.9			

No. Adults Per Household

No. Children Per Household

<u>No.</u>	<u>N</u>	<u>Pct.</u>	<u>No.</u>	<u>N</u>	<u>Pct.</u>
1-2	32	31.1	0-1	27	25.7
3-4	37	35.9	2-3	47	44.8
5+	34	33.0	4+	31	29.5

Table 7a

Household Configuration

<u>No. Adults</u>	<u>No. Children</u>	<u>N</u>	<u>Pct.</u>
2	0-1	6	5.9
2	2-3	17	16.8
2	4+	7	6.9
3-4	0-1	11	10.9
3-4	2-3	19	18.8
3-4	4+	7	6.9
5+	0-3	18	17.8
5+	4+	16	15.8

It is interesting to note the dominant household configurations, where adults are defined as being age 16 or greater. The most dominant household types are the older families--with 3-4 adults and 2-3 children or five or more adults with 0-3 children. The young family is a minority group in this sample. The configurations are also shown in Table :

II. Housing Conditions

A. Physical Description of House

Table 8 summarizes the physical attributes of the current houses of the study population. They may be briefly described as being 3-4 rooms in size, walls of brick or wood, floors of tile or cement and roofing materials of clay or asbestos shingles. Other characteristics mentioned by the respondents are that at least 80 percent of the houses have patios and latrines while at least 90 percent have separate kitchens, running water and bathrooms.

Due to the lack of variation in the physical attributes of the houses, a housing quality index could not be computed. The most variation exists in the size of the house (number of rooms). This variable is related not to the educational attainment of either male or female head of household but to the monthly household income. (See Table 9). This relationship, number of rooms per house and monthly income is highly significant. For example, three-fifths of those in the lowest income group (1-365 lempiras per month) live in houses of 1-2 rooms whereas two-thirds of those in the highest income group (775+ lempiras per month) live in houses of 5 or more rooms.

B. Cost of Living

For those who are paying rent, the usual monthly rent is 26-50 lempiras. In general, most of the respondents admit their willingness to pay more for rent

Table 8

Physical Characteristics of the Houses

No. Rooms Per House

<u>Number</u>	<u>N</u>	<u>Pct.</u>	<u>Number</u>	<u>N</u>	<u>Pct.</u>
1	10	10.2	6	10	10.2
2	25	25.5	7	9	9.2
3	12	12.2	9	2	2.0
4	13	13.3	10	2	2.0
5	14	14.3	12	1	1.0

Floor Material

<u>Material</u>	<u>N</u>	<u>Pct.</u>
Dirt	3	2.9
Cement	22	21.0
Wood	7	6.7
Tile	60	57.1
Brick	12	11.4
Other	1	1.0

Roofing Material

<u>Material</u>	<u>N</u>	<u>Pct.</u>
Zinc	10	9.7
Clay tile	44	42.7
Wood	4	3.9
Asbestos	43	41.7
Other	2	.9

Table 9

Size of House (No. of Rooms)
By Educational and Income Characteristics

No. Grades completed	<u>Number of Rooms</u>							
	<u>Male</u>		1 - 2		3 - 4		5+	
	N	Pct.	N	Pct.	N	Pct.		
N.A.	12	34.3	9	36.0	19	50.0		
1-6	7	20.0	5	20.0	5	13.2		
7-11	13	37.1	6	24.0	8	21.1		
12+	3	8.6	5	20.0	6	15.8		
N =	35		25		38			

Deg. signif = 0.6847

No. Grades completed	<u>Female</u>					
	1 - 2		3 - 4		5+	
	N	Pct.	N	Pct.	N	Pct.
N.A.	12	34.3	6	24.0	7	18.4
1-6	8	22.9	6	24.0	7	18.4
7-11	12	34.3	7	28.0	13	34.2
12+	3	8.6	6	24.0	11	28.9
N =	35		25		38	

Deg. signif = 0.4790

Household Monthly
Income (in lempiras)

No. Grades completed	Household Monthly Income (in lempiras)							
	1-365		370-520		521-771		775+	
	N	Pct.	N	Pct.	N	Pct.		
1-365	14	40.0	5	20.0	5	13.2		
370-520	13	37.1	9	36.0	4	10.5		
521-771	7	20.0	5	20.0	14	36.8		
775+	1	2.9	6	24.0	15	39.5		
N =	35		25		38			

Deg. signif = 0.0005

or a mortgage. The respondents report that they pay considerably more for food than for rent. These amounts are summarized in Table 10. (Other costs were solicited--such as cost of cooking fuel but they are difficult to verify.

Table 10
Cost of Living, Selected Items

<u>Monthly Rent</u>		
<u>(In Lempiras)</u>	<u>N</u>	<u>Pct.</u>
Nothing or no response	16	15.2
1-25	8	7.6
26-50	40	38.1
51-75	21	20.0
76-100	10	9.5
100+	10	9.5
<u>Amount could pay in rent or mortgage per month (in lempiras)</u>		
	<u>N</u>	<u>Pct.</u>
1-25	1	1.0
26-50	41	39.4
51-75	35	33.7
76-100	17	16.3
100+	10	9.6
<u>Monthly Food Costs (in lempiras)</u>		
	<u>N</u>	<u>Pct.</u>
0-50	10	9.5
51-100	31	29.5
101-150	16	15.2
151-200	15	14.3
201-250	8	7.6
251+	25	23.8

C. Convenience of Current Residence to Public Places

The current residences lie close to the most used public places--schools, health centers, etc. These public places are accessed by foot or bus. Their average distance is summarized below:

<u>Place</u>	<u>Distance - in Meters</u>	<u>- In minutes</u>
Bus stop	100	-
School	500	10-15
Health center	750-800	12-15
Store	170-200	4-5
Movie theater	500	12
Work		15-20

III. Conditions of Family Groups

A. Health Conditions

The respondents reported their families to be in remarkably good health at both the time of the survey and in the past 6 months. In only one household out of ten was there any illness reported; and only 20 percent of the respondents could recall any illness occurring to either adults or children in the past 6 months.

A better idea of disease prevalence was elicited when respondents were asked to name the most common diseases experienced by adults and children in the households. It has been found in other studies that children's diseases in developing countries fall into three general categories: infections, gastrointestinal and respiratory. Similarly, adult diseases fall into 3 categories as well: stress related, gastrointestinal and respiratory. It has been found that these groups are related to household composition more than socio-economic characteristics. The diseases mentioned were placed into general disease groupings. Because the first two diseases mentioned were combined, no test of significance was run on the results in Tables 11-13. For adult diseases, such dominance is held by respiratory

diseases that household composition can have little impact in determining which type of diseases adults experience. The picture is different for children's diseases, however. While children, like adults, are more apt to experience respiratory diseases (as reported by the respondents), gastrointestinal diseases figure in importantly. Table 13 shows that the relative risk of a child experiencing a gastrointestinal disease is indeed affected by house composition--the larger the household, the more adults per household and the greater number of small children per household leads to a greater probability of a child experiencing a gastrointestinal disease. This observation leads to interesting questions on behavioral interactions with water storage, treatment, disposal and human waste disposal.

B. Treatment of Drinking Water

The respondents appear to be well aware that drinking water should be treated and the vast majority report they do so. It is interesting to look at the patterns of treatment of drinking water and socio-economic status. (See Table 14.) Of all forms of treatment, the female's educational attainment is most strongly related. But the most regular pattern is found with the male's educational attainment; as education increases, the proportion of households reporting not treating their drinking water rapidly declines. It is very interesting to note that household income is not related to drinking water--which is quite clear in the lack of differentiation among those who have not treated their water--among the four income levels. Whether awareness of the need to treat drinking water is affected by educational level or actual behavior is determined by education can only be determined by observation.

Table 11

Adult Diseases (First two mentioned)
and Household Characteristics

No. Persons per Household	<u>Respiratory</u>		<u>Gastrointestinal</u>		<u>Tension/Stress</u>	
	<u>N</u>	<u>Pct.</u>	<u>N</u>	<u>Pct.</u>	<u>N</u>	<u>Pct.</u>
1-4	30	22.7	2	13.3	0	0.0
5-6	48	36.4	5	33.3	1	25.0
7+	54	40.9	8	53.3	3	
N	132		15		4	

No. Adults
per Household

1-2	44	33.3	0	0.0	1	25.0
3-4	44	33.3	6	40.0	1	25.0
5+	44	33.3	9	60.0	2	50.0
N	132		15		4	

No. Children
per Household

0-1	34	27.0	4	26.7	0	0.0
2-3	60	47.6	6	40.0	3	75.0
4+	42	33.3	5	33.3	1	25.0
N	126		15		4	

No. Children
Age 5 per
Household

0	63	50.0	5	33.3	2	50.0
1-2	41	32.5	6	40.0	1	25.0
3+	22	17.5	4	26.7	1	25.0
N	126		15		4	

Table 12

Children's Diseases (First two mentioned)
and Household Characteristics

<u>No. Persons per Household</u>	<u>Respiratory</u>		<u>Gastrointestinal</u>	
	<u>N</u>	<u>Pct.</u>	<u>N</u>	<u>Pct.</u>
1-4	19	16.5	2	7.1
5-6	49	42.6	9	32.1
7+	<u>47</u>	<u>40.9</u>	<u>17</u>	<u>60.7</u>
N	115		28	

<u>No. Adults per Household</u>	<u>N</u>	<u>Pct.</u>	<u>N</u>	<u>Pct.</u>
1-2	37	32.1	6	21.4
3-4	40	34.8	9	32.1
5+	<u>38</u>	<u>33.0</u>	<u>13</u>	<u>46.4</u>
N	115		28	

<u>No. Children in Household</u>	<u>N</u>	<u>Pct.</u>	<u>N</u>	<u>Pct.</u>
0	18	15.1	4	14.3
2-3	64	53.8	11	39.3
4+	<u>37</u>	<u>47.9</u>	<u>13</u>	<u>46.4</u>
N	119		28	

<u>No. Children under Age 5 in Household</u>	<u>N</u>	<u>Pct.</u>	<u>N</u>	<u>Pct.</u>
0	69	58.0	12	42.9
1-2	29	24.4	6	21.4
3+	<u>21</u>	<u>17.6</u>	<u>10</u>	<u>35.7</u>
N	119		28	

Table 13

Impact of Household Composition
on Type of Children's Diseases:
Per Cent Mentioning Disease Class
by Household Characteristic

<u>No. Persons</u> <u>in Household</u>	<u>Respiratory</u>	<u>Gastrointestinal</u>
1-4	96.5	9.5
5-6	84.5	15.5
7+	73.4	26.6

<u>No. Adults</u> <u>in Household</u>	<u>Respiratory</u>	<u>Gastrointestinal</u>
1-2	86.0	14.0
3-4	81.6	18.4
5+	74.5	25.5

<u>No. Children</u> <u>in Household</u>	<u>Respiratory</u>	<u>Gastrointestinal</u>
0-1	81.8	18.2
2-3	85.3	14.7
4+	74.0	26.0

<u>No. Children</u> <u>Under age 5</u> <u>in Household</u>	<u>Respiratory</u>	<u>Gastrointestinal</u>
0	85.2	14.8
1-2	82.9	17.1
3+	67.7	32.2

Table 14
Treatment of Drinking Water
by
Educational and Income Characteristics

	<u>Water Treatment</u>				
	<u>Nothing</u>	<u>Boiled</u>	<u>Distilled</u>	<u>Filtered</u>	<u>"Electr</u>
<u>Female Head's Educational Attainment (in grades)</u>					
1-6	40.0	21.2	0.0	42.9	100.0
7-11	40.0	48.1	100.0	14.3	0.0
12+	20.0	30.8	0.0	42.9	0.0
N =	15	52	2	7	1
deg. signif = 0.00329					
<u>Male Head's Educational Attainment (in grades)</u>					
1-6	47.4	23.7	0.0	0.0	0.0
7-11	36.8	50.0	0.0	40.0	0.0
12+	15.8	35.7	0.0	60.0	0.0
N =	19	38	0	5	0
deg. signif = 0.3694					
<u>Household Monthly Income (in lempiras)</u>					
1-365	27.6	21.5	100.0	25.0	0.0
376-520	27.6	27.7	0.0	12.5	0.0
521-770	20.7	24.6	0.0	50.0	0.0
775+	24.1	26.2	0.0	12.5	100.0
N =	29	65	2	8	1
deg. signif = 0.3722					

C. Organizational Participation

Organizational involvement of the respondents is quite low; only ten percent belong to either a religious or civic organization. The reasons for non-involvement given are: 1) lack of time

2) unawareness of any organization's existence .

3) lack of organizations that would interest the respondent.

In general, these responses relate more to personal perceptions than to qualities of existing organizations, per se.

IV. Issues for Evaluating the Impact of Low Cost Housing

A suggested experimental design to evaluate the impact of low cost housing on its recipients is to follow-up the original respondents in each group and to expand the sample size in each group. A follow-up appears feasible due to the general residential and occupational stability exhibited in this survey. An increase in sample size would permit a more sophisticated analysis than has been possible in this report and would be mandatory for any adequate impact evaluation.

The study design would then be to compare certain indicators for the two groups between points in time in order to control for secular changes.

The proposed evaluation would look at three principal areas: demographic and socioeconomic characteristics of the respondents, satisfaction of housing expectations (for recipients of the cooperative low cost housing, only) and quality of life items which would be affected by housing quality, health status, organizational participation and access to public places and employment.

A. Socioeconomic and Demographic Characteristics

Demographic and socioeconomic characteristics need to be measured in a second survey because they are independent variables that affect "quality of life items" that would be affected also by the principal independent variable of interest: housing. The socioeconomic and demographic variables would principally be used to compare the two housing groups and where they differ, to control for the differences.

It is suggested that the following variables which appeared in this first survey be asked again:

- marital status of heads of household
- age/sex respondent
- educational attainment of heads of household - and all members age 15+
- occupational and current employment status of heads of household and all members ages 15+
- household income
- number of persons per household

In addition it is suggested that the following questions be asked:

- age, sex, marital status of each member of the household
- place of birth for each member of the household
- age at marriage for both heads of household
- duration of residency for both heads of household

In sum, more flexible and thorough analysis could be performed if the first section of the survey were organized like a census, with a small set of socio-demographic questions asked of the heads of household, and a subset for all members of the household.

B. Satisfaction of Housing Expectations

Almost without exception, the participants in the low cost housing program had high expectations of life in the new house. This they attributed principally to two reasons:

- more self determination
- pleasures of ownership

These subjective issues dominated possible financial or material considerations. Moving plans and expectations have been communicated through social networks with the following prevalence:

Discussions about the new house held with:

Family	98.1%
Friends	94.3%
Co-workers	88.7%
Neighbors	81.1%

Specifically, these expectations are translated into material expectations about home improvement and reflections on family expectations.

The respondents felt that life in the new house was now anticipated to be better by the:

Respondents	92.5%	
Compañeros/as	74.4%	(25.6% = don't know)
Children	80.8%	(17.0% = don't know)

Of those responding, plans had been made for the following material inputs into the new house:

Patio	96.0%
Additional rooms	94.0%
New furniture	60.8%
Electrical applicances	40.8%
Decor(plants, pictures)	32.0%

A subsequent study could ascertain what physical improvements had been to the new house, but verification of satisfaction with the new residence would be rather difficult to assess.

C. Quality of Life Items

It is suggested that three areas may be looked at which theoretically would be affected by residence:

- social relations
- physical access
- family health

Social relations may be looked at in two areas: degree of organizational involvement and subjective evaluation of social relations. This first study showed that only one-tenth of the respondents were currently involved in either religious or community organizations. The same question, as well as questions on degree of involvement and commitment, could be asked in a second survey.

When respondents were asked to evaluate the quality of the relationship between self and others, almost without fail, the respondent felt his or her social relations to be good. (See Table 15.) The question, as asked, does not reveal a good assesment of personal interaction. More variation was shown in frequency of contact with family, co-workers, etc. This series may be asked again to evaluate the impact of housing on frequency of social relations.

It is of particular significance to evaluate whether or not the change in residence will affect access to public places. As shown earlier, currently respondents have easy access to work, school, shopping, recreation and health care. They live within one-half kilometers from these places and can reach all with about 15 minutes. This same series of questions should be asked in a second series.

Table 15
Frequency & Quality of Social Relations

	<u>Quality</u>		<u>Frequency</u>	
<u>Co-workers</u>	Good	91.4	Constant	85.7
	Bad	0.0	Sporadic	5.7
	No relations	8.7	No relations	8.7
<u>Friends</u>	Good	8.1	Constant	47.6
	Bad	0.0	Sporadic	50.5
	No relations	2.0	No relations	2.0
<u>Neighbors</u>	Good	96.2	Constant	44.8
	Bad	1.0	Sporadic	53.3
	No relations	2.9	No relations	1.9
<u>Respondent's family</u>	Good	98.1	Constant	36.2
	Bad	0.0	Sporadic	61.9
	No relations	1.9	No relations	2.0
<u>Compañeros(as) family</u>	Good	64.8	Constant	24.8
	Bad	1.0	Sporadic	41.0
	No relations	34.3	No relations	34.3
<u>Household members (including respondent)</u>	Good	97.1	Constant	88.6
	Bad	0.0	Sporadic	7.6
	No relations	2.9	No relations	3.8
<u>Household members (excluding respondent)</u>	Good	99.0	Constant	95.2
	Bad	1.0	Sporadic	4.0
	No relations	0.0	No relations	0.0

Family health can be better evaluated through a two week recall morbidity survey. As asked in the current survey, the population appears amazingly healthy primarily because a 24 hour illness question is used ("is anyone sick now?") Consequently, very small numbers will result both due to exposure period and the small numbers in the survey. Also much information is lost in the 6 month question due to recall problems and the lack of specific stimulus of naming a series of symptoms.

It is suggested that a two week symptom oriented morbidity survey be implemented which asks the respondents if any of a set of symptoms had been experienced by (1) adults in the family or (2) children in the family. A good framework for looking at symptomology is to list individual symptoms under the following headings:

- (1) gastrointestinal
- (2) respiratory
- (3) stress related
- (4) communicable/infections (not included in respiratory or infectious groupings)
- (5) trauma/accidents

For each symptom elicited, health seeking behavior should be checked off. The current questionnaire recognizes only delivery systems: nurses, hospitals, etc. A more accurate picture of source of care is provided by a checklist like the following:

- (1) home remedies
- (2) pharmacy
- (3) curanderno and other non-professional healers
- (4) clinic
- (5) hospital
- (6) no treatment

In sum, a second survey to evaluate the impact of low cost housing on its recipients would include an expanded sample of the recipients of the housing and a control group. The parts of this survey would be divided into two areas:

(1) independent variables - socioeconomic and demographic variables

- . to standardize between and within groups
- . to organize in a "census format", i.e., by each household member

(2) dependent variables

- . repeat the social relations and physical access questions of the first survey
- . symptom oriented two week morbidity survey

It is felt that a survey organized in this fashion would provide more valid, reliable and statistically significant results while eliminating work for the interviewer and those involved in data processing.

Appendix

It was important to look at basic characteristics of the two sub-groups of the survey, the group which will be receiving low-cost cooperative housing in the FEHCOVIL project and those who were "controls", to review the representativeness of the responses. Almost without exception, the two groups did not show statistically significant differences. The single exception is in the number of children ever born.

Table A-1 Demographic characteristics

No statistically significant differences in: sex, marital status, age, level of education.

The housing recipient sample has on the average 0.74 children more than the control group, which is significant at the 0.026 level.

A-2 Household composition

No statistically significant differences were observed for number of adults, children, young children or number of persons per household

A-3 Employment

While the groups did not statistically differ in terms of occupational groups, unemployment was definitely higher for the control group

A-4 Group mobility

Again, no differences found in duration of employment, or duration of residence

A-5 Household income

Household incomes were virutally identical; this was unaffected by whether or not there were one or two heads of household

A-6 Physical description of house

A-6 Physical description of house

In all parameters looked at: number of rooms, separate bedrooms for heads of household, or material of roof, floor, or walls - the houses were undifferentiated by sub-sample

A-7 Housing costs

The two groups did not differ in either what they were paying for rent or food or what they could pay for rent

A-8 Diseases experienced

Epidemiologically, these groups did not differ

A-9 Miscellaneous

The groups showed no significant differences in either their reported treatment of drinking water or satisfaction with current dwelling

Demographic Characteristics of Respondents
by Group Status

<u>Sex</u>	<u>Experiential</u>		<u>Control</u>	
	<u>N</u>	<u>Pct.</u>	<u>N</u>	<u>Pct.</u>
Male	17	32.1	25	48.1
Female	36	67.9	27	51.9

deg. signif = 0.1404

Marital Status

Single	9	17.0	7	13.5
Married or in unions	33	62.3	36	69.2
Separated, divorced, widowed	5	9.4	5	9.6
Single with children	6	11.3	4	7.7

deg. signif = .8564

Age

20-24	11	21.2	6	11.5
25-29	14	26.9	17	32.7
30-34	7	13.5	13	25.0
35-39	7	13.5	10	19.2
40-44	5	9.6	4	7.7
45-49	8	15.3	2	3.8

deg. signif = 0.1856

Demographic Characteristics of Respondents
by Group Status - (continued)

<u>Level of Education - Completed Years</u>	<u>Experimental</u>		<u>Control</u>	
	<u>N</u>	<u>Pct.</u>	<u>N</u>	<u>Pct.</u>
1-6	20	37.7	19	36.5
7-11	16	30.2	23	44.2
12+	17	32.1	10	19.2

deg. signif = 0.2136

Average No. Children

\bar{x}	3.24	2.47
standard deviation	1.84	1.24
degree signif =	0.026	

Household Composition of the Two Groups

<u>Number of Children</u> <u>0-5 years</u>	<u>Experimental</u>		<u>Control</u>	
	<u>N</u>	<u>Pct.</u>	<u>N</u>	<u>Pct.</u>
0	16	30.2	16	30.8
1-2	31	58.5	26	50.0
3+	6	11.3	10	19.2

deg. signif = 0.4894

<u>Number of Children</u> <u>0-15 years</u>	<u>N</u>	<u>Pct.</u>	<u>N</u>	<u>Pct.</u>
0-1	18	34.0	9	17.3
2-3	20	37.7	27	51.9
4+	15	28.3	16	30.8

deg. signif = 0.1510

<u>Number of Adults</u>	<u>N</u>	<u>Pct.</u>	<u>N</u>	<u>Pct.</u>
1-2	15	28.8	17	33.3
3-4	18	34.6	19	37.3
5+	19	16.5	15	29.4

deg. signif = 0.8934

<u>Total Number of Persons</u>	<u>N</u>	<u>Pct.</u>	<u>N</u>	<u>Pct.</u>
1-4	12	23.1	11	21.6
5-6	17	32.7	22	43.1
7+	23	44.2	18	35.2

deg. signif = 0.7329

Mean no. of persons	6.40	7.56
Standard deviation	3.03	5.57
deg. signif =	0.190	

Employment Groups
by Sex and Group Status

<u>Male Heads of Household</u> <u>of Household</u>	<u>Experimental</u>		<u>Control</u>	
	<u>N</u>	<u>Pct.</u>	<u>N</u>	<u>Pct.</u>
Unemployed	3	7.7	6	15.4
Professional, technical	2	5.1	2	5.1
Administrative, managerial	5	12.8	0	0.0
Clerical	4	10.3	5	12.8
Commercial and sales	4	10.3	6	15.4
Transportation and communications	2	5.1	8	20.5
Craftsment and operatives	13	33.3	10	25.6
Service sector	6	15.4	2	5.1

deg. signif = 0.0852

Female Heads of Household

Unemployed	6	11.8	10	20.0
Professional, technical	9	17.6	10	20.0
Administrative, managerial	0	0	0	0
Clerical	10	19.6	6	12.0
Commercial and sales	1	2.0	7	14.0
Transportation and communications	0	0	0	0
Craftsmen and operatives	5	9.8	6	12.0
Service sector	20	39.2	11	22.0

deg. signif = 0.1182

Group Mobility

<u>Duration of current job</u> <u>(in years)</u>	<u>Experimental</u>		<u>Control</u>	
	N	Pct.	N	Pct
Unemployed	6	11.3	1	1.9
Less than 1 year	1	1.9	3	5.8
1-2	4	7.5	12	23.1
3-4	11	20.8	10	19.2
5-6	10	18.9	9	17.3
7-9	8	15.1	7	13.5
10+	13	24.5	10	19.2

deg. signif = 0.1669

Duration of residence
(in years)

Less than 1 year	6	7.5	5	9.6
1-2	13	24.5	16	30.8
3-4	10	18.9	7	13.5
5-6	12	22.6	7	13.5
7-9	6	11.3	6	11.5
10+	8	15.1	11	21.2

deg. signif = 0.7414

Home Ownership of Current Residence

Owned	1	1.9	0	0.0
Rented	40	76.9	40	80.0
Deeded	11	21.2	10	20.0

deg. signif = .4008

Monthly Household Incomes (in Lempiras)
by Head of Household and Group Status

<u>All Households</u>	<u>Experimental</u>		<u>Control</u>	
	<u>N</u>	<u>Pct.</u>	<u>N</u>	<u>Pct.</u>
1-365	13	24.5	13	25.0
370-520	14	26.4	13	25.0
521-770	13	24.5	13	25.0
775+	13	24.4	13	25.0

deg. signif = 0.9998

Male, Alone of Household

1-365	2	100.0	1	50.0
521-770	0	0	1	50.0

deg. signif = ****

Female, Alone Head of Household

1-365	3	21.4	3	23.1
370-520	2	14.3	4	30.8
521-770	6	42.9	3	23.1
775+	3	21.4	3	23.1

deg. signif = 0.6522

Two Heads of Household

1-365	8	21.6	9	24.3
370-520	12	32.4	9	24.3
521-770	7	18.9	9	24.3
775+	10	27.0	10	27.0

deg. signif = 0.8644

Physical Description of Household
by Group Status

<u>NO. OF ROOMS</u>	<u>Experimental</u>		<u>Control</u>	
	<u>N</u>	<u>Pct.</u>	<u>N</u>	<u>Pct.</u>
1-2	16	32.7	19	38.8
3-4	11	22.4	14	28.6
5+	22	44.9	16	32.7

deg. signif = 0.6374

Separate bedrooms for
Heads of Household

Yes	14	26.9	16	31.4
No	19	36.5	19	37.3
N compañero/a	19	36.5	16	31.4

deg. signif = 0.9441

Roofing material

Zinc	5	9.4	5	10.0
Tile	21	39.6	23	46.0
Wood	1	47.2	18	36.0
Asbestos	25	47.2	18	36.0
Other	1	1.9	1	2.0

deg. signif = 0.5180

Physical Description of Household
by Group Status - (cont.)

<u>Floor material</u>	<u>Experimental</u>		<u>Control</u>	
	<u>N</u>	<u>Pct.</u>	<u>N</u>	<u>Pct.</u>
Dirt	1	1.9	2	3.9
Cement	12	22.6	10	19.6
Wood	5	9.4	2	3.9
Tile	27	50.9	33	64.7
Brick	8	15.1	4	7.8

deg. signif = 0.4503

Wall Material

Adobe	3	5.8	2	4.1
Wood	14	16.9	16	32.7
Stone	6	1.5	7	14.3
Cement block	8	5.4	5	10.2
Brick	21	0.4	19	38.8

deg. signif = 0.8218

Housing Costs
by Group Status

<u>Current monthly rent</u> <u>or mortgage (in lempiras)</u>	<u>Experimental</u>		<u>Control</u>	
	<u>N</u>	<u>Pct.</u>	<u>N</u>	<u>Pct.</u>
Free	9	17.0	7	13.5
1-25	4	7.5	4	7.7
26-50	18	34.0	22	42.3
51-75	12	22.6	9	17.3
76-100	4	7.5	6	11.5
100+	6	11.3	4	7.7

deg. signif = 0.8669

\bar{x}	56.28	51.08
stan. dev.	49.49	37.02

deg. signif = 0.543

Current monthly food
Expenditures (in lempiras)

0-50	7	13.2	3	5.8
51-100	12	22.6	19	36.5
101-150	7	13.2	9	36.5
151-200	9	17.0	6	11.5
201-250	4	7.5	4	7.7
251+	14	26.4	11	21.2

deg. signif = 0.4959

Housing Costs
by Group Status (cont.)

<u>Amount could pay</u> <u>monthly for Housing</u> <u>(in lempiras)</u>	<u>Experimental</u>		<u>Control</u>	
	<u>N</u>	<u>Pct.</u>	<u>N</u>	<u>Pct.</u>
1-25	1	1.9	0	0
26-50	24	46.2	17	32.7
51-75	18	34.6	17	32.7
76-100	6	11.5	11	21.2
100+	3	5.8	7	13.5
deg. signif = 0.2794				
\bar{x}		66.83		78.56
stan. dev.		39.70		40.91
deg. signif = 0.139				

Dominant Disease Categories
Experienced by the Two Groups

<u>First Mention</u>	<u>Experimental</u>		<u>Control</u>	
	<u>N</u>	<u>Pct.</u>	<u>N</u>	<u>Pct.</u>
<u>For Adults</u>				
Respiratory	47	97.9	44	100.0
Gastrointestinal	1	2.1	0	0.0
deg. signif = 1.000				
<u>Second Mention</u>				
<u>For Adults</u>				
Respiratory	24	70.6	21	72.4
Stress Related	3	8.8	1	3.4
Gastrointestinal	7	20.6	7	24.1
deg. signif = 0.6676				
<u>First Mention</u>				
<u>For Children</u>				
Respiratory	39	90.7	40	87.0
Gastrointestinal	4	9.3	6	13.0
deg. signif = 0.8238				
<u>Second Mention</u>				
<u>For Children</u>				
Respiratory	20	66.7	20	71.4
Gastrointestinal	10	33.3	8	28.6
deg. signif = 0.9142				

Miscellaneous Characteristics

<u>Water Treatment</u>	<u>Experimental</u>		<u>Control</u>	
	<u>N</u>	<u>Pct.</u>	<u>N</u>	<u>Pct.</u>
Nothing done	12	22.6	17	32.7
Boiled	36	67.9	29	55.8
Distilled	1	1.9	1	1.9
Filtered	4	7.5	4	7.7
"Electropura"	0	0.0	1	1.9

deg. signif = 0.6256

Feelings about life in house

Good	18	34.0	11	21.2
Bad	9	17.0	12	23.1
Noncommittal	26	49.1	29	55.8

deg. signif = .3210