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Household Economic Well-Being Study #2

Guatemala-CAP Income Generation Activities Project (AGIL)

Implemented by:
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Household Economic Well-Being Study – 2 (Encuesta Bienestar Familiar-2)

Prepared for

**Proyecto Ágil
Abt Associates
Guatemala City, Guatemala**

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Executive Summary

This report describes the socio-economic characteristics of six municipios in the Zonapaz area of Guatemala, effective September 2001, from a sample of 625 households drawn from the original Household Welfare Study conducted in November 1999.

In addition, this study develops an experimental non-income scale that replicates the Instituto Nacional de Estadística Poverty Index published in October 2001. This scale is slightly more conservative in grouping the sample into “poor” and “not poor” categories, in this case defining about 5% more of the sampled population as “not-poor” than the INE “Income Index”. The main reason is that it is based on behavior, not on income alone, which only measures earnings, not decisions of what to do with income. This development is important since, if it can be replicated in other studies, it will reduce the need for time-consuming and often inaccurate income measures for targeting the populations at greatest risk.

Major findings suggest that the rural population is significantly less well off than the urban population. Ethnicity plays a secondary, but strong role in many economic variables, especially those related to health and educational expenses. On the other hand, neither ethnicity nor residence, show statistically significant differences with educational achievement.

One interesting finding is that a higher level of education, normally directly associated with income measures, is inversely related to income in two municipios, and most dramatically in Rabinal. This municipio shows a number of statistical “anomalies” that merit further attention.

The basic findings for the entire sample are below

- **Household Size: 6.14**
- **Female Headed Households: 10.4%**
- **Ethnicity**
 - Ladinos 25%
 - Indígenas 75%
- **Residence**
 - Urban 19%
 - Rural 81%
- **Household Head Education 1.91 Years**

Ladinos	2.29
Indígena	1.79
Urban	2.97
Rural	1.66

Household Head Literacy 1.05 (Scale of 0-3)

Ladinos	1.29
Indígena	0.95
Urban	1.13
Rural	1.04

- **Housing & Utilities Scale 11.13 (Scale 1 – 23)**

Ladino	11.20
Indígena	11.12
Urban	13.78
Rural	10.50

- **Crowding Average 3+ People per Room**

- **Food Expenses (One Week) Q194.29**

Ladinos	Q228.36
Indígenas	Q183.29
Urban	Q237.49
Rural	Q174.57

- **Monthly Income Q374.17**

Ladino	Q575.49
Indígena	Q304.51
Urban	Q714.52
Rural	Q295.75

- **Land Owned and Controlled 6.5 Manzanas**

Ladino	19.6
Indígena	8.5
Urban	6.1
Rural	13.7

- **Income Based Poverty Index 87.5% Poor**

Ladino	80.6%
Indígena	89.7%
Urban	74.2%
Rural	90.7%

- **Non-Income Based Poverty Index 82.4% Poor**

Ladino	73.5%
Indígena	85.3%
Urban	69.2%
Rural	85.5%

Acknowledgements

Community Recognition

We recognize the unnamed community members who provided translation and other support, including meals and housing to our field staff. The support from the communities was essential to the success of the data collection efforts.

In each community, the Alcalde Auxiliar and other community leaders provided assistance and complete cooperation with the field teams. This included the recruitment of local translators where necessary; introduction to other leaders; and assistance in finding housing and food in isolated areas.

Field Teams

This report represents the efforts of many individuals. Principal among these are Mynor Flores, Technical Consultant, and Amilcar Garcia and Guillermo Menchú, Field Supervisors.

Data Collection Specialists:

- Alila Sis Gualim
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Data Coding and Data Entry Team:

- Patricia Elizabeth Gordillo Aguirre
- Alicia Moscoso de Duque
- Axel Santizo
- Donaldo Vasquez

Proyecto Ágil

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Introduction

The main purpose of this study is to provide up-to-date basic statistical socio-economic data on six municipios en la Zonapaz de Guatemala. This investigation is based on the original U.S. Agency for International Development (USAID) Family Economic Well-Being Study (Estudio de Bienestar Familiar or EBF) conducted by the Universidad del Valle, Guatemala (UVG), in collaboration with the Instituto Nacional de Estadística (INE) of Guatemala in 1999¹.

In 2000, Abt Associates² was awarded a contract by USAID to implement and manage the Ágil Project in the areas in which the original EBF was conducted. In 2001, USAID and Project Ágil determined that it would be beneficial for USAID program activities under the income generation/food security Strategic Objective to conduct a “barometer reading” of the current situation in a sample of the communities surveyed in 1999.

Based on findings of homogeneity in the original EBF, the sampling strategy was modified slightly, some variables were modified, and others eliminated. Nevertheless, most of the basic instruments used in this study are directly comparable to those in the original. In addition, all households interviewed in the present survey were included in the original study; hence, there is good comparability of the sample between Time (1) and Time (2).

This “Barometer Study” was conducted in six of the original twelve municipios in the Zonapaz: Barillas, Huehuetenango; Ixcán, Quiché; La Libertad, Petén; Nebaj, Quiché; Rabinal, Baja Verapaz; and Chisec, Alta Verapaz.

MUNICIPIO	Frequency	Percent
Barillas, Huehue.	125	20.0
Nebaj, Quiché	175	28.0
Ixcán, Quiché	125	20.0
Rabinal, Baja Verapaz	75	12.0
Chisec, Alta Verapaz	75	12.0
La Libertad, Petén	50	8.0
Total	625	100.0

A total of 625 households were surveyed, using the original maps, sectors, and housing units developed and updated by INE in 1999. The survey instrument³ consists of some 1200 items measuring basic demographics, education and literacy, occupation, migration, household expenditures and income, housing and household inventories, land tenure and value, credit, community participation and communication.

¹ Estudio Bienestar Familiar, 2000. Universidad del Valle, Guatemala. W. Timothy Farrell.

² Abt Associates, Washington, DC and Guatemala City.

³ See Appendix I for the data collection instruments and Appendix II for Instruction Manual.

The present study deliberately included a disproportionate number of rural households as per instructions from AID and Project Ágil. The following table indicates the Urban-Rural sampling percentages.

	Residence Area	Frequency	Percent
	Urban	120	19.2
	Rural	505	80.6
Total		625	100.0

The study was conducted from 30 August 2001 through 14 September 2001, by two teams of four interviewers and one supervisor each, and supported by a technical consultant and the principal investigators.

Methodology

The methodology employed in this study conforms to standard social survey research principles, using a sub-sample of the original simple random sampling strategy employed in EBF-1. Some modifications were made based on the findings of the earlier study that indicated a high degree of homogeneity in the most remote sectors⁴. In addition, findings had indicated that some variables could be improved and that some should be eliminated. These modifications and their anticipated impact, if any, are discussed below.

Sample Design and Modifications

One of the main concerns of the original study was to include the more isolated elements of the population in the Zonapaz. Earlier studies primarily focused on the “urban centers” of the municipios, and do not include significant parts of the rural population in cantons, fincas, and other smaller aldeas and hamlets. This is particularly true of the extremely isolated and dispersed population units.

However, based on analysis of the findings of EBF-1, where specific efforts in sampling were made to include even the most isolated units, we found that the marginal gain in variability would be negligible in comparison to cost. Further, because of the relatively brief time between T-1 and T-2, any change in these population units would be minimal and principally due to “secular” change rather than project intervention.

Because of this measured homogeneity and for reasons of economy, these sectors were reduced in the present study. It is important to note, nevertheless, that isolated communities were not ignored in this “barometer” survey. Some communities are as far away from municipal centers as 3-4 hours by car (Barillas) and some require 2-hour treks on foot to reach. Isolation, in many of the target communities is relative to vehicle access. Where in EBF-1 we used canoes and horses or mules to reach all isolated

⁴ In 1999, INE maps of all 12 municipios were up-dated by physical inspection and confirmed during that survey, and before the random selection of the households to be interviewed. The original sampling procedures are included as Appendix III.

units, in this study, we defined “not isolated” as being accessible principally by vehicle, rather than by boat or animals.

Instrument Design and Modifications

As noted, a number of improvements were made in order better to capture certain information, particularly among children under 12 and their participation in the economy, education and more uniform and precise information on land tenure. We also added items on information and communication resources.

In EBF-1, anthropometric data on nutritional status of infants and children were collected. This proved to be exceptionally difficult in terms of both collaboration⁵ and data validity. A very high error rate was experienced due to measurement problems⁶. This was statistically supportable in EBF-1 because the relatively large (n=2100) sample size but this strategy could not be supported with any confidence because of the reduced size of this sample. Further, errors in measurement in EBF-1 were not randomly distributed and often had to do with de-calibration of instruments due to journeys to isolated areas and between houses. Re-calibration could only be accurately achieved if each team had carried a set of precision weights to each community, which was not feasible from a logistical point-of-view. Further justification for eliminating anthropometric measures is that Project Ágil is not involved in direct nutritional supplementation, and changes in chronic malnutrition cases cannot be expected in such a brief period between measurements.

Staff Selection and Training

An experienced local survey operations management consultant was contracted as Technical Consultant. This individual supervised the previous EBF-1 Survey. Two supervisors, one the former Supervisor of Cartography from INE, and the other with extensive experience in rural health and in the Ixcan, Quiche area were contracted as Field Supervisors.

Eight experienced data collection interviewers were selected, all of who had recent survey experience. Of these, five were indigenous, and five were male and three female.

Formal training was conducted for three days. This included presentation and discussion of the interview schedules and Instruction Manual as well as role-playing of interviews.

There was no pre-testing because the previous database (EBF-1) provided adequate feedback on the instrument and question items.

⁵ Problems in collaboration were often due to concerns about kidnapping of children and other issues of security in this former civil war area.

⁶ About 17% of the nutritional data collected in EBF-1 had to be eliminated from the analysis because they were out of credible limits using EPIInfo 2000 parameters.

Interviewers' Instruction Manual

An Interviewers' manual was developed that defines the terminology used in the survey instruments, instructions on coding, instructions on interviewing in general, and all necessary codes not directly printed on the questionnaires. This Manual is in Appendix II.

Data Collection and Supervision

Two teams were formed: one team was responsible for data collection in Barillas, Ixcan and Chisec, and another for Nebaj, Rabinal and La Libertad. Both teams worked full time without holiday or weekend breaks.

The Technical Consultant and the Principal Investigator visited both teams in the field for a total of six days with the aims of reviewing completed instruments, resolving coding concerns, case substitutions and any other details in doubt. Additionally, these trips were used to collect informal ethnographic data on the communities visited.

Debriefing

A three-hour debriefing of all field staff, supervisors and consultants was held two days after completion of field data collection. This was valuable as it provided immediate feedback on administrative, logistical and technical aspects of the data collection process. This was especially true for coding issues and subsequent data entry.

Refusals

It is important to note here that the teams had seven (7) interview refusals, or 1.1% of the total cases originally selected. These refusals were distributed as follows:

Ixcan – 3
Chisec – 2
La Libertad – 1
Rabinal – 1

There were no refusals in Nebaj or Barillas.

Substitutions

Substitutions were employed in the case of refusals or in cases where families had moved (unless in the same sector), were in migratory status out of the sector, or for other reasons could not be found for interview after a reasonable effort.

Substitutions were made using the 1999 household list for the relevant sector. This did not compromise the random sampling methods since all were included in the original random sample. There were no instances of having to replace households from other sectors.

Municipio	Number Replaced	Percent of Replacements
Barillas	21/125	16.8
Chisec	15/75	20.0
Ixcán	27/125	21.6
La Libertad	10/50	20.0
Nebaj	36/175	20.1
Rabinal	13/75	17.3

The majority of the cases substituted were due to temporary migration⁷ or other temporary travel such as visiting relatives. In addition, there were cases where people had gone to nearby market towns and had not returned. Quoting from one supervisor:

“The team did everything possible to locate the selected households by asking the neighbors or a local authority...In cases where the household head or spouse was at work (or elsewhere locally) we did wait for them to return, sometimes till after dark. However, after trying all possibilities with out success – (usually) because of migration or because they were not going to return that day – then these was cases were substituted (from the original list in the same sector).”

Data Management

Quality Control

1. Field Reviews

Data were reviewed in the field each evening by the interviewers and the Field Supervisors. Errors or doubts about coding were corrected and re-interviews were conducted if supervisors considered it necessary

2. Full Review of Completed Questionnaires

A thorough review of each questionnaire was conducted on return from the field by the two supervisors, and an “alternate” interviewer who was thoroughly trained in this survey. Spot-checks of completed reviews were conducted by the Principal Investigators. Decisions were made regarding any coding ambiguities, missing data. Additional codes were added if necessary to account for any significant “other” codes that might have been discovered during data collection.

Data Organization and Coding Manuals

Three data sets were organized from the data and coding manuals or data dictionaries were developed. These are:

⁷ This may be important in interpreting the results of the “seasonal migration for work” question, which shows a smaller number than might be anticipated. See analysis section below.

- Data Set – 1. Household Characteristics including household-level summarized demographic, economic and migration data
- Data Set – 2. Individual data including individual economic and migration data
- Data Set – 3. Household expense and land tenure data

Programming

A locally contracted firm, with experience in the coding and management of EBF-1, conducted programming for data entry. Data entry programming was done in Visual Basic, translated into a data base file and incorporated into SPSS data files.

Data Entry

Contract staff, supervised by the Project Administrator, did data entry. A sample of randomly selected cases was spot-checked for both random and systematic errors. Where random errors were found, these were corrected on a case-by-case basis. Systematic errors – those occurring in specific sample sectors or attributable to a particular questionnaire section, a specific team, community or interviewer consistently – required another review of the corresponding series of questionnaires.

Data entry staff was trained by project staff on the substance of the questionnaire items, the organization of the data sets and the coding manuals. They also participated in reviewing some of the coding items – particularly the conversion of cuerdas to manzanas - the principal land-measure used in the analysis.

Data Verification

Aside from the steps outlined above to ensure data quality, once the data were prepared for analysis a number of statistical operations were conducted to discover other sorts of errors. These operations included:

Cross tabulation on key variables – age and civil status, education, income, expenses, land tenure and use were the primary variables used to discover potential error sources. Again, discovery of systematic vs. random error resulted in a more detailed and thorough check of the principal “causative” variables: interviewer, entry clerk, etc.

Based on these quality control measures, we feel that the data ultimately submitted for analysis is as accurate and clean as possible.

Data Analysis Procedures

The Statistical Package for the Social Sciences (SPSS version 9.0) was used for all analyses in this study. The same package was used for the analyses of EBF-1.

Because this is primarily a descriptive study, the basic procedures employed are descriptive statistics and cross-tabulation analysis for presentation. Factor analysis (Principal Components Analysis) has been used for scale reduction and construction. One-way Analysis of Variance was used to determine significance of differences between certain criterion variables such as municipios, ethnicities, language, education, income, expenses and others.

Relational analyses in the form of parametric and non-parametric correlations, multiple regression analysis, were used to explore the data rather than to assert relationships between or among variables. No causal models were developed or tested, as there is no hypothesized dependent variable (e.g. some anticipated outcome or result of some specific project or intervention), to test at this time.

Scale Development

Income scales

Income is notoriously difficult to measure or estimate in these populations. People often either really do not know what they earn or are reluctant to provide accurate estimates for fear of taxation or other intrusion into their lives. Consequently, income measures must be used with this caution in mind.

We do make one important assumption about income data, and that is that people tend to underestimate their income, not overestimate it. Therefore, we believe that while not necessarily truly accurate, monthly income data – measured by 12 distinct variables – can provide important information regarding the variability in the populations, and can be ranked (1...n) for further non-parametric analysis.

1. Monthly Income is a simple summative of the total stated income in Quetzales for the month of August 2001 (the month prior to the interview) for both Primary and Secondary Occupations. Scales are constructed for the Head of Household, the Spouse, and a sum score of all other remunerated household members.
2. Monthly Net Income from Sale of Products and Small Business is a summative scale of the net revenues derived from income from these sources (August 2001).
3. Total Monthly Income is the sum of these two scales
4. Imputed Total Annual Occupational Income is Total Monthly Income multiplied by 12 months. This is not a particularly satisfactory or definitive summative score as it will undoubtedly over- or under-estimate annual household income. It does have the benefit of increasing the variability between households, and that is valuable in trying to segment the relatively homogeneous population into ranked divisions.
5. Annual Non-Occupational Income is the sum of money (Quetzales) received from other than “work” sources. There are three categories (Transfers, Rental of Property, and “Other” – which includes sale of properties and income derived from migratory labor”) and is comprised of 13 variables.
6. Imputed Total Annual Household Income is the sum of #4 and #5 above, and the same caveat that applies to #4 applies to this variable because of the assumption in computing a 12-month income based on a single month estimate.

Expense Scales

Household expenses tend to be more accurate than income measures since people are particularly price conscious and generally must bargain for most of their common purchases. Other items at fixed prices also usually require some consideration and deliberation before purchase or commitment since these are usually relatively expensive items. Consequently, while something like monthly household “cash flow” cannot be computed, a good estimate of expenses is a decent indicator of household economic access and control.

Expenses are computed for four (4) points in the year.

1. Weekly – **food purchases** in the last week before the interview. These data include item-by-item cost and method of purchase for 65 different food items. There are benefits and risks using the weekly expense recall. The benefit is that data for the past week are probably highly accurate.

The risk is that it understates or overstates expenses for people who might be doing “bulk” purchasing. For example, if a household unit buys 10 quintales of maiz in a single purchase, we either not capture that purchase if it was not made in the previous week, or we will “artificially weight” that individual’s weekly expenses for maiz and food in general. On the other hand, we must make the assumption that people who do purchase in bulk do so at normally distributed times during a purchase cycle, and that such purchases will be reflected in the sampling strategy.

2. Monthly – includes monthly expenses for education, **health, house rent and maintenance including utilities, personal products, transportation, church contributions and other.**
3. Quarterly – **clothing and shoes**
4. Annually – purchase of **major items** (land, house, vehicles, and other durables), and purchase of **means of production investments** (seeds, fertilizers, tools and equipment)

These items in these categories have been summed to form four corresponding expense scales.

5. Total Expense Scale - formed by multiplying the time factor for each of the four summed scales (52 x weekly; 12 x monthly; 4 x quarterly; 1 x annually). As noted for the income scales, this scale may suffer from the assumptions made about extrapolating the various periods to an annual basis. Nevertheless, it does express the variability in household expenses, and can be rank ordered in order to look at segments of the population.

Housing, Crowding and Household Inventory Scales

These variables represent an important component of the wealth – poverty dimension. Their values are the result of past behaviors (purchasing of desired items) rather than potential to purchase. Ordinal and nominal measures were used for these variables rather than metric measures. The reason for this is that it would be difficult if not impossible to get exact prices, and prices would be tied to date-of-purchase, thus skewing price comparability with out complicated formulas to adjust for inflation, brand, etc.

Consequently, we ranked the “value” of materials in house construction, based on two concepts: 1) relative cost (i.e. a zinc roof costs more than a thatch roof); and, 2) temporal durability and resistance to the elements (rain, sun, cold). Vulnerability to natural disasters (earthquakes, landslides, mudslides) was not included in the scaled scores because of the complexity of measuring such things as supporting beams, foundation materials, locality, etc.).

Housing Scales⁸

- 1) Simple Housing Scale – sum of the ordinal values of roof, walls, and floor
- 2) Complex Housing Scale – sum of the Simple Housing Scale and the scale score for electricity, water source, sanitary facility and cooking facility.

Crowding – Measured as metric variables: number of household members divided by the number of rooms in the house. Results are interpreted as number of people per room.

Household Possessions Inventory – Measured as a nominal (has/does not have) scale of 21 possible household possessions ranging from simple (such as petate for sleeping, through complex and expensive such as installed Cable TV).

Previous experience demonstrates that house construction and inventory items have a high degree of validity and reliability since they are observable by the interviewer.

Work with Factor Analysis techniques also demonstrate that these items cluster in logical factors and the scales developed have a high statistical relationship (both positive and negative) with other measures of the wealth-poverty dimension.

⁸ The Kolmogorov-Smirnov One Sample Test is used to verify the scales have a normal distribution.

Data Structure

Identifiers

For subsequent analyses, the data sets are organized so that they can be disaggregated and a variety of levels of interest. Each data set has a complete set of identifiers for:

- Department
- Municipio
- Map Sector
- Rural-Urban Designation
- Housing Site Identifier
- Household Identifier within the Housing Site

Sequential ID Number

Each case on all three data sets can be identified by a unique and consecutive Identification number (CASEID), and specific groups can be selected for further analysis by keying on any specific variable of interest, e.g. ethnicity, maternal language, house construction, etc. Consequently, we believe this is a flexible database and can be used with relative ease for more detailed analyses.

Economic (Poverty) Indicator Development

One problem that causes difficulty in targeting⁹ sections of a population for external intervention is that of defining who should be the primary participants or beneficiaries of a particular intervention. Poor populations often are observationally homogeneously poor. In this study, we have experimented with the development of indicators that **may** assist in the efficient definition of households at highest risk of economic insecurity. This is elaborated on in the final analysis section of this report (pp 104-113).

⁹ We want to issue a cautionary note. This "Poverty Scale" is experimental and exploratory. Aside from this methodological caution, it is important to note that targeting by ethnicity (regardless of how significant the relationships might be between ethnicity and poverty) can backfire in terms of resistance or hostility towards project goals and objectives.

Data Analysis and Principal Findings

Household Portrait. The “average” household is headed by a 44 year old male (89%), married or in common union (87%) with about a 50-50 chance of being literate. He speaks at least some Spanish and has completed about 2 years of formal education. He leads a household of six people, two of whom children under 6 years of age.

There is a 75% chance that he identifies himself as Mayan Indian, whose mother tongue is one of the 12-15 Mayan languages found in the area. He lives in a rural area, but may reside in one of the “urban” municipal administrative seats or in a more remote but still “nuclear” residential area usually nearby his land-holdings.

His wife is about 37, also has about 2 years of education, speaks less Spanish is less likely to be fully literate. She generally shares his ethnicity and maternal language. There is a 50-50 chance that their children are in school or have at least attended school.

In August 2001, his household had a cash income of about Q1080 - or roughly Q180 per household member. On an annual per capita basis, this amounts to Q2160. This is about Q400 above the level that the Instituto Nacional de Estadística (INE) defines as “extreme poverty”¹⁰, but falls at the low end of the category of poverty.

1 Basic Household and Housing Information

Age, Sex, Ethnicity, Language, Education of Adults, Literacy, Religion

This section presents the results of the survey with respect to basic household descriptive characteristics (Tables 1-6). Explanatory comments are offered where appropriate. All definitions are as “self-defined” by the principal informant (e.g. ethnic group, maternal language, religion, civil status, etc.). We did not use pre-defined criteria assign categories.

**Table 1
Household Head (Informant Defined)**

	Frequency	Percent
Male HH Head	559	89.4
Female HH Head	65	10.4
Total	625	100.0

¹⁰ The INE “Encovi Study” Octubre, 2001, where Q1,911 or less defines *extreme poverty*: “Es el nivel de pobreza en el que se encuentran las personas que no alcanzan a cubrir el costo de consumo mínimo de alimentos”. *Moderate poverty* (Pobreza No Extrema), “es el nivel en el que se clasifican a las personas que alcanzan a cubrir el costo de consumo mínimo de alimentos pero no el costo mínimo adicional calculado para otros servicios básicos – Q4, 318 por persona por año”.

Table 2
Civil Status – Household Head

	Frequency	Valid Percent	Cumulative Percent
Single	3	.5	.5
Common-Law Union	192	30.8	31.3
Married	358	57.4	88.6
Separated	20	3.2	91.8
Divorced	3	.5	92.3
Widowed	48	7.7	100.0
Total	624	100.0	

Table 3
Maternal Language

	Frequency	Percent	Valid Percent	Cumulative Percent
Spanish	179	28.6	28.7	28.7
K'ichi'	5	.8	.8	29.5
Kaqchikel	6	1.0	1.0	30.5
Mam	4	.6	.6	31.1
Q'echi	76	12.2	12.2	43.3
Ixil	160	25.6	25.7	69.0
Pocomchi	6	1.0	1.0	70.0
Canjobal	114	18.2	18.3	88.3
Otro	73	11.7	11.7	100.0
Total	623	99.7	100.0	
Missing	2	.3		
	625	100.0		

Table 4
Household Head Literacy (in Spanish)

	Frequency	Percent	Valid Percent	Cumulative Percent
No	280	44.8	44.9	44.9
Reads Only	31	5.0	5.0	49.9
Reads and Writes	312	49.9	50.1	100.0
Total	623	99.7	100.0	
Missing	1	.2		
Total	2	.3		
	625	100.0		

Table 5
Household Head – Number of Years of Schooling Completed

	Years	Frequency	Percent	Valid Percent	Cumulative Percent	
	0	344	55.0	55.2	55.2	Never Attended – 55.2%
Primary 38.2%	1	36	5.8	5.8	61.0	
	2	57	9.1	9.1	70.1	
	3	58	9.3	9.3	79.5	
	4	24	3.8	3.9	83.3	
	5	17	2.7	2.7	86.0	
	6	46	7.4	7.4	93.4	
	7	6	1.0	1.0	94.4	Basic (Básico) 3.4%
	8	7	1.1	1.1	95.5	
	9	8	1.3	1.3	96.8	
Secondary – 2.5%	10	2	.3	.3	97.1	
	11	5	.8	.8	97.9	
	12	9	1.4	1.4	99.4	
	13	3	.5	.5	99.8	
	14	1	.2	.2	100.0	
	Total	623	99.7	100.0		
	Missing	2	.3			
		625	100.0			

Table 6
Household Head – Religion Professed

	Frequency	Valid Percent	Cumulative Percent
Catholic	314	50.4	50.4
Evangelical or Protestant	268	43.0	93.4
Mayan Religion	2	.3	93.7
None	36	5.8	99.5
Agnostic/Athiest	3	.5	100.0
Total	623	100.0	

House Structure, Composition and Crowding

The following tables and graphs (tables 7-14) represent the physical structure of the house, the number of inhabitants and an index of crowding (number of people per room). The typical house consists of one or two rooms, with an average of four people per room. A “room” is defined as a physical space set apart from other spaces by permanent divisions. This excludes spaces set aside by means of a curtain, moveable partition or other means of dividing personal space.

Table 7 – Household Population and Space

	Children Age 0 - 6	HH Members 7 and above	Total HH Members	Number of Rooms in House	Number of Sleeping Rooms
N	625	625	625	625	625
Mean	1.59	4.55	6.14	1.57	1.35
Median	2.00	4.00	6.00	1.00	1.00
Mode	0	2	6	1	1
Std. Deviation	1.30	2.24	2.73	.89	.66

Table 8 - Number of Children 0 to 6 Years Old

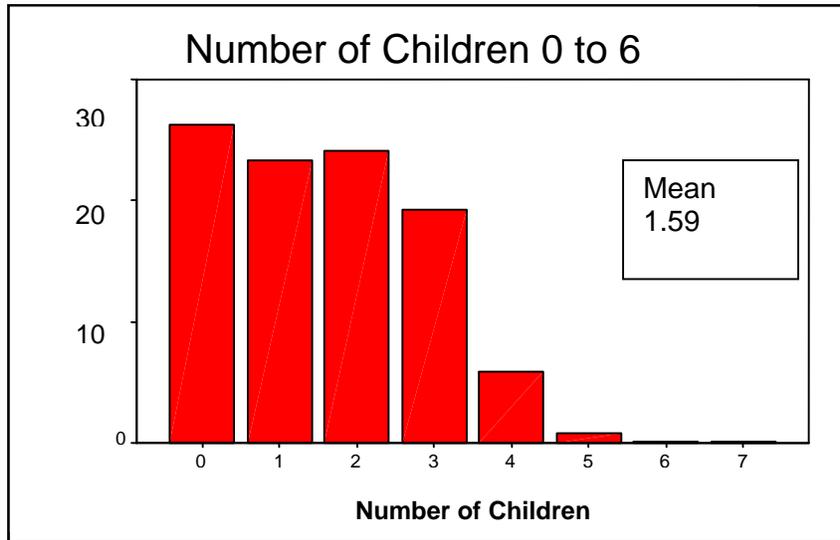


Table 9
Household Members 7 Years and Above

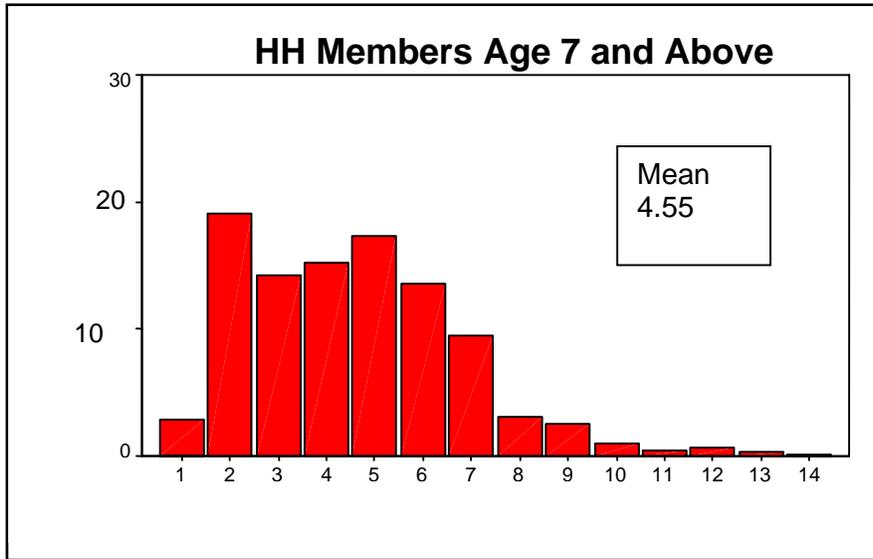


Table 10
Total Number of Household Members

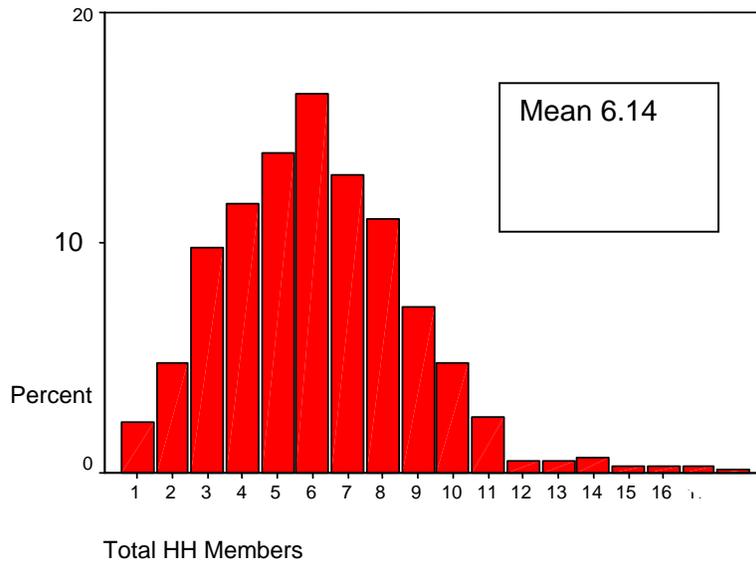


Table 11: Number of Rooms in Main House

(Includes Cooking Space if Incorporated to Main House)

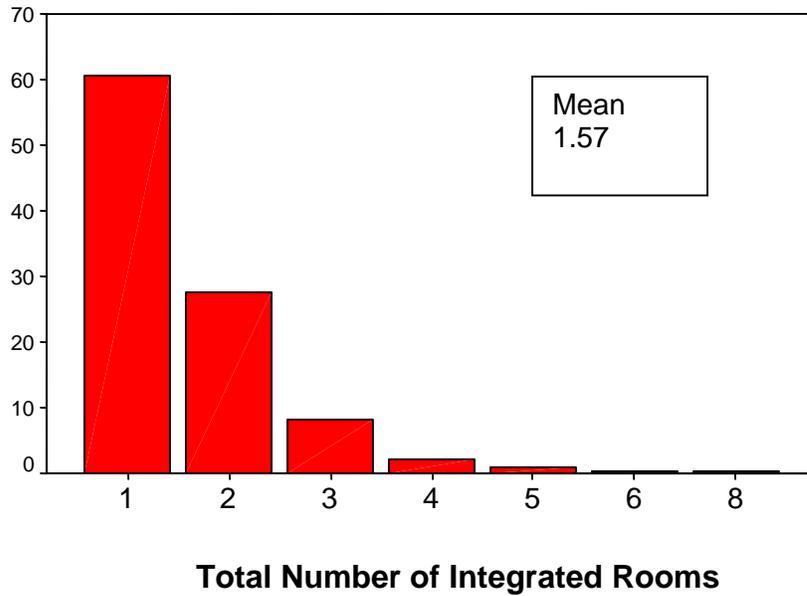
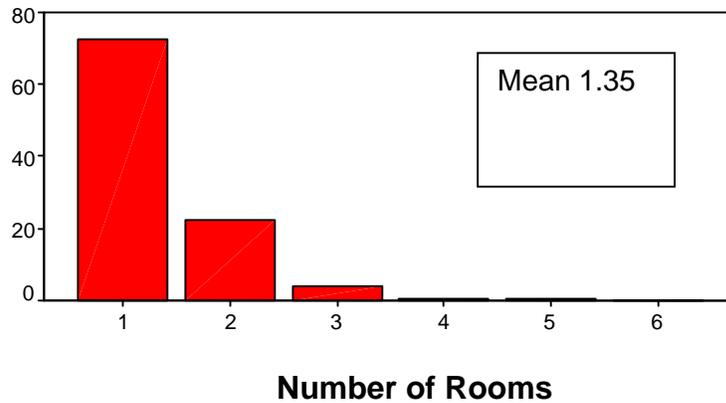


Table 12: Total Number of Rooms used for Sleeping in House

Number of Sleeping Rooms in House

One Sleeping Room is Usually Indicates Multipurpose



Multipurpose includes general family space, including eating & sleeping.

Table13 – Crowding

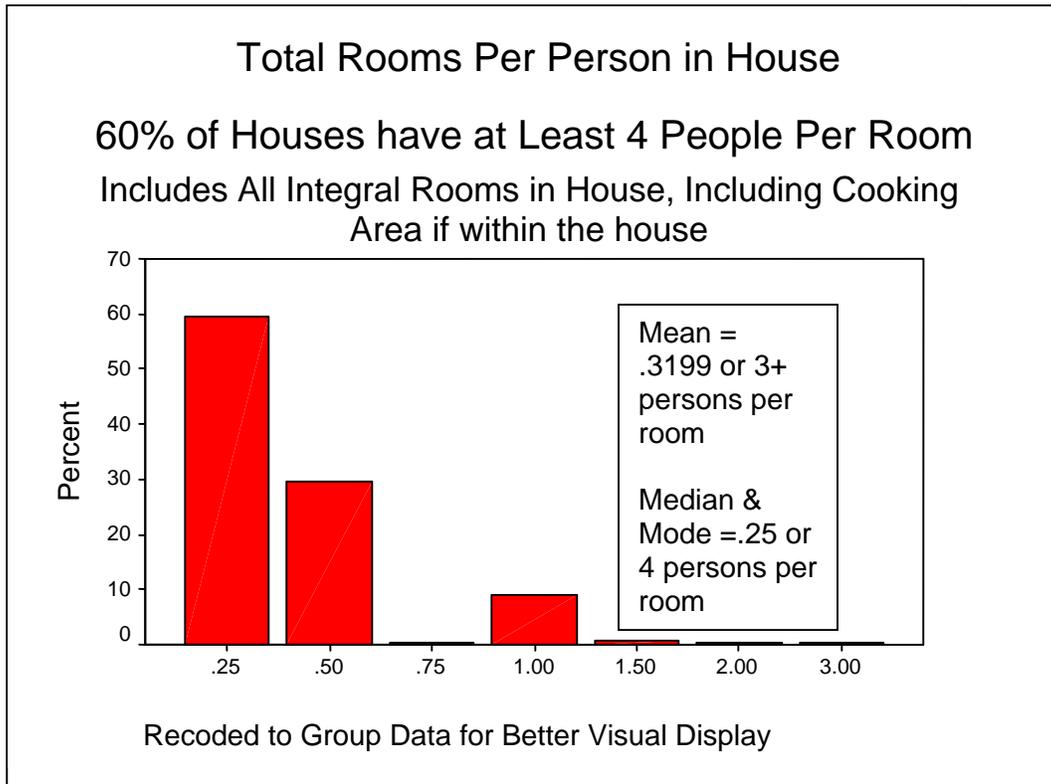


Table 14 - Number of People per Room in House

Statistic	N=625	Comment
Mean	.3199	3+ Per Room
Median	.2500	4 Per Room
Mode	.25	4 Per Room
Std. Dev.	.2869	
Minimum	.06	16 per room
Maximum	3.00	3 Rooms / Person

House Construction, Facilities and Utilities

Housing and Housing Scales

Housing is a major indicator of economic behavior. It represents past household economic performance and the allocation of resources to a desired end. It is also processual since it is not necessarily a fixed purchase (like a television) but can be added to and modified over time as household finances permit.

The housing scales in this study have been used in Guatemala for a number of years, and proved reliable measures of parts of the household economic domain. In this study, the following variables were used:

- Materials for Flooring
- Materials for Exterior Walls
- Materials for Roofing

Materials were measured and recorded on an ordinal scale basis, without reference to actual cost or value. For example zero (0) was assigned to dirt floors, while five (5) was assigned to a mosaic tile floor, with relative values in between. In that way we are able to assign relative value to construction materials (and labor) without having to infer absolute costs. Thus, a dirt floor has less value than a wooden floor, which has less value than a fired brick floor, etc.

The same assumptions and methods were used with exterior wall and roof materials, sanitary facilities, electricity and water. All scales were tested successfully for “normality” of their distributions using Kolmogorov-Smirnov tests. Because these ordinal scales have valid underlying interval values (that is, given enough time and money we could arrive at an absolute zero and a measurable (dollar or quetzal) value, we are justified in treating these scales as interval scales as necessary. For other purposes, the scales were converted to z-scores to avoid attenuating or contracting their distributions when used in other statistical operations. The general distribution of the basic housing scales is shown in the following tables and graphs (tables 15-17)

Table 15: House Construction and Utility Scale Scores (Percent)

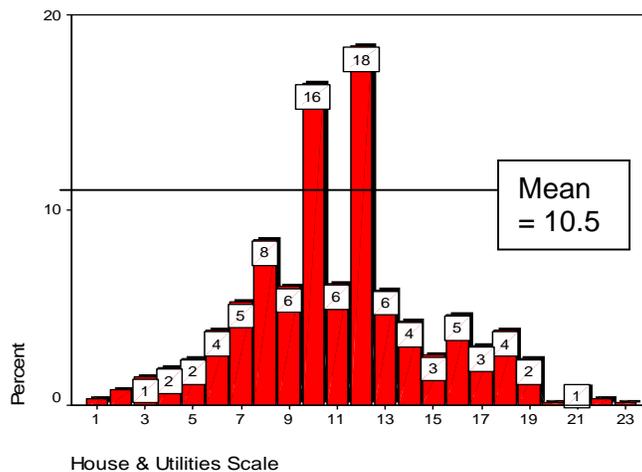


Table 15 a: Mean Scores by Municipios

Municipios	House & Utilities Scale
Ixcán, Quiché	8.51
La Libertad, Petén	9.24
Chisec, Alta Verapaz	9.33
Barillas, Huehue.	11.10
Nebaj, Quiché	11.56
Rabinal, Baja Verapaz	12.66
Total	10.50

Table 16: Urban Housing & Utilities Scale

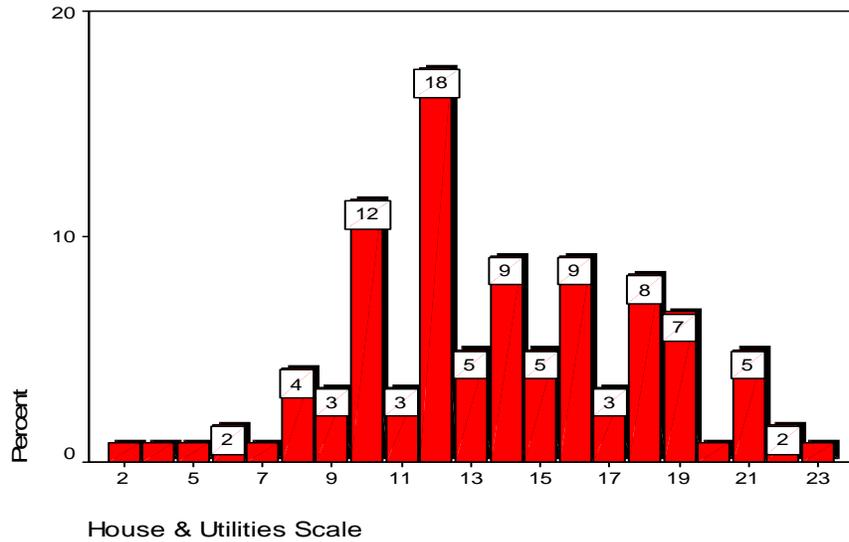
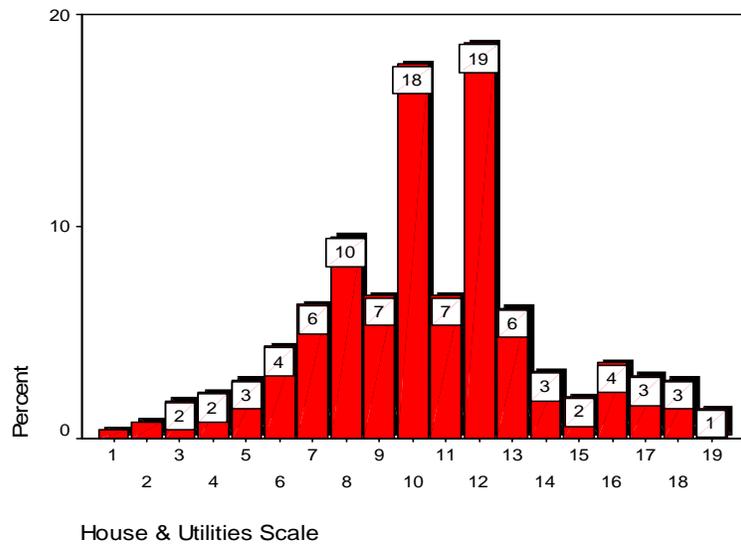
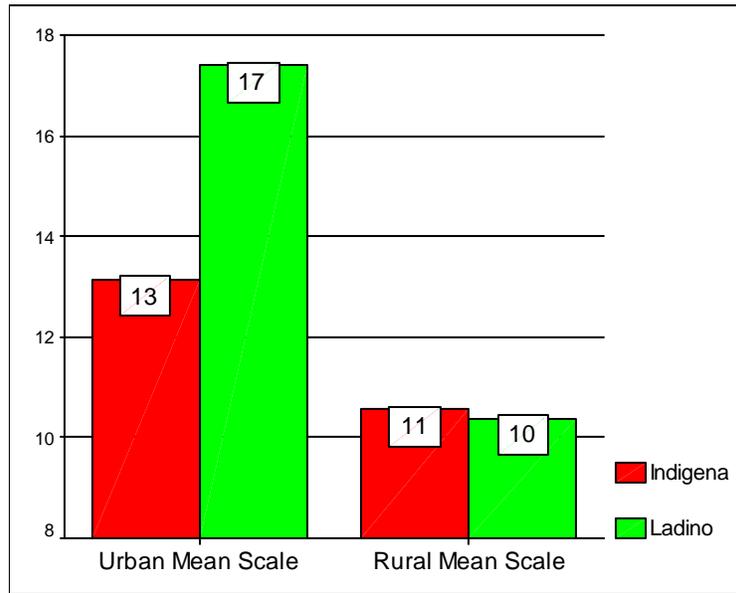


Table 17: Rural Housing & Utilities Scale



The interesting contrast between these two tables is that the statistical mode of each is about 12; the distribution of the urban sample is significantly skewed to the right (higher) while the rural sample is definitely skewed to the left. Additionally, the rural sample has no individual score above 20, while 9 percent of the urban houses are 20 or above.

Table 17 a: Housing Scale by Residence and Ethnicity



There is considerable disparity (4 scale points) in ethnicity in the urban sample, but very little (1-scale point) in the rural sample, suggesting that at least some of the urban – rural differences are infrastructure based.

House Facilities and Utilities

Housing configurations are important in the quality of life in terms of convenience, social interaction, privacy and health as well as an indication of economic condition. In this sample, the principal cooking areas are either inside in a common area; outside, in a separate cooking facility or on the “patio” or an outside hearth. Only about 15% have a separate kitchen inside the house.

Table 18

Cooking Area

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Patio or Outside	33	5.3	---	---
	In central room	256	41.0	41.2	46.5
	Outside RoomSep	241	38.6	38.8	85.3
	Inside Room - Sep	91	14.6	14.7	100.0
	Total	621	99.4	100.0	
Missing	Missing	4	.6		
Total		625	100.0		

Table 19

Cooking Facility

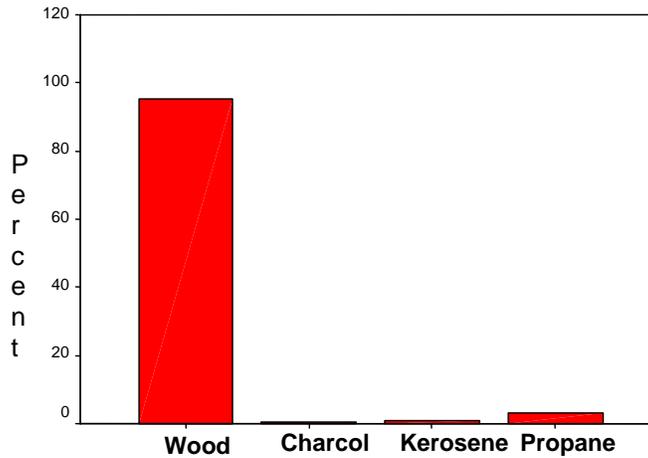
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3-ston hearth	193	30.9	31.0	31.0
	Simple Hearth	273	43.7	43.9	74.9
	Hearth Raised	137	21.9	22.0	96.9
	Formal Stove	14	2.2	2.3	99.2
	Stove & Oven	5	.8	.8	100.0
	Total	622	99.5	100.0	
Missing	9	3	.5		
Total		625	100.0		

Only about three percent of the houses have a formal cooking facility with or without an oven. 75% use very basic facilities and 31% prepare meals on the traditional three-stone hearth or *tenemastes*.

A major problem to both health and the environment is the fact that 95.5% use firewood as fuel. For those cooking indoors or for women who prepare meals in a separate outdoor facility, this clearly enhances the risk of pulmonary disease not only for women, but particularly for small children as well.

Additionally, there is an environmental threat due to the virtual total reliance on firewood for cooking and other activities requiring heat (boiled water for drinking), heat against a cold and harsh environment, etc. Such reliance on firewood risks deforestation, erosion, and all the environmental and economic risk that this entails.

Table20: Cooking Fuel



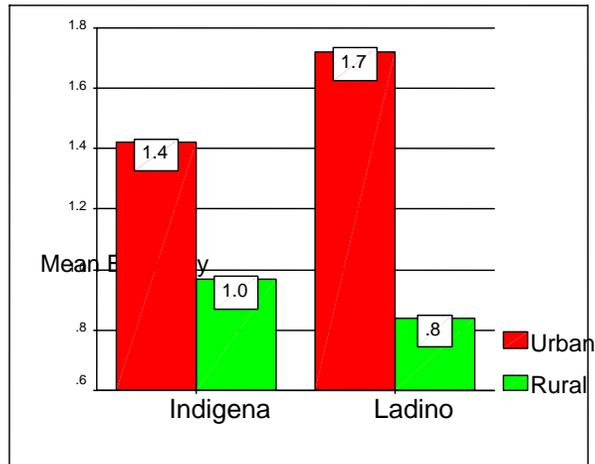
Cooking Fuel

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Wood	594	95.0	95.5	95.5
	Charcoal	4	.6	.6	96.1
	Kerosene	6	1.0	1.0	97.1
	Propane Gas	18	2.9	2.9	100.0
	Total	622	99.5	100.0	
Missing	Missing	3	.5		
Total		625	100.0		

About 55% of the houses have electricity installed. Five percent of the connections do not have a legitimate meter, indicating that they are usually “drop lines” from a neighbor or directly from a power line. This can be a fire-hazard and can overload circuits since the installation is usually done by non-professionals using sub-standard materials.

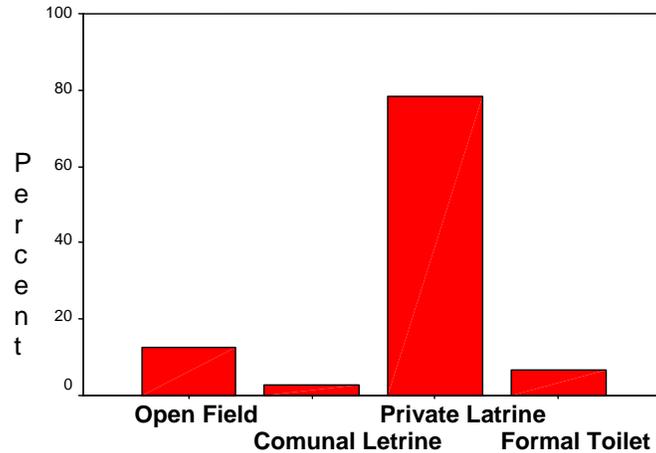
Table 21 Electricity

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	None	283	45.3	45.5	45.5
	Informal Install	34	5.4	5.5	51.0
	Formal Install	305	48.8	49.0	100.0
	Total	622	99.5	100.0	
Missing	3	1	.2		
	8	2	.3		
	Total	3	.5		
Total		625	100.0		



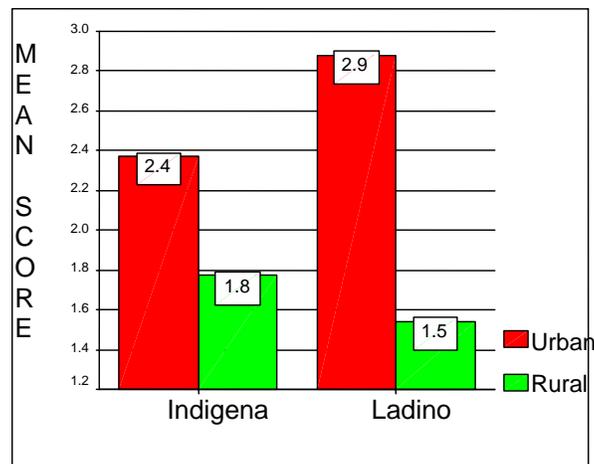
Nearly 85% of the houses have some form of sanitary facility, with about 80% possessing a private latrine. We did not check for latrine use, although the question was: "Where do you go to do your 'necesidades?' "

Table 22: SANITARY FACILITIES



Sanitary Facilities

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	None	79	12.6	12.7	12.7
	Comunal Letrine	16	2.6	2.6	15.2
	Private Letrine	487	77.9	78.2	93.4
	Formal Toilet	41	6.6	6.6	100.0
	Total	623	99.7	100.0	
Missing	Inodoro Comunal	2	.3		
Total		625	100.0		

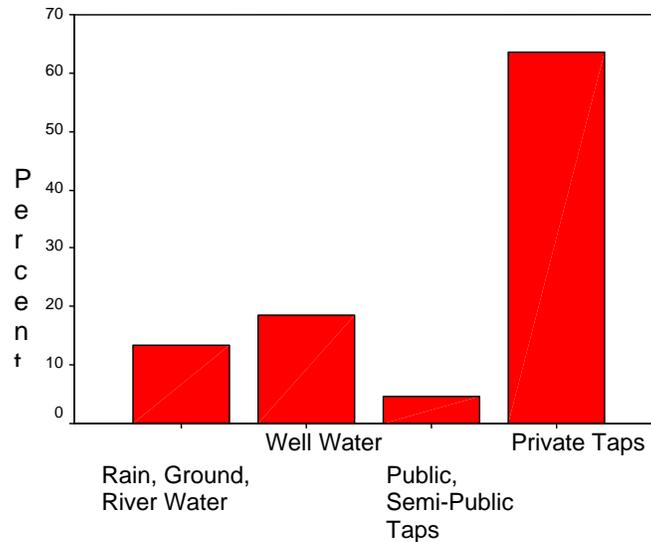


Roughly, 66% have water in their house or house site (sitio). This does not guarantee that this is safe drinking water, but it does provide both relatively constant volume and access to water. Nevertheless, over 21% are exposed to water-borne infections at source (rivers, lakes, streams, truck or cistern). When this is added to the risk of contamination from water storage, exposure to parasitic diseases increases.

Table 23: Water Source

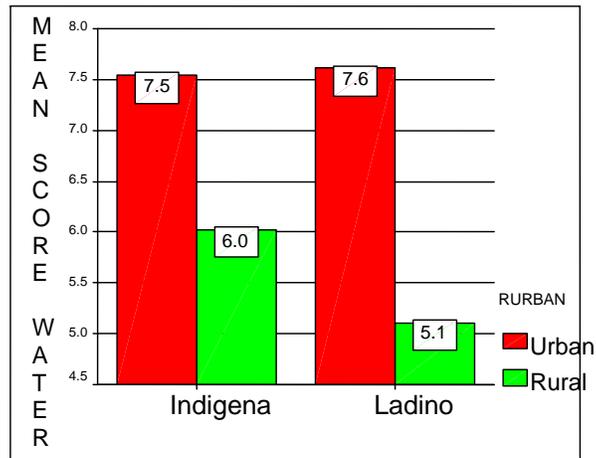
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Rain – Natural Spring	12	1.9	1.9	1.9
	River/Lake	69	11.0	11.0	13.0
	Truck / Cistern	2	.3	.3	13.3
	Community Well	52	8.3	8.3	21.6
	Private Well	64	10.2	10.2	31.8
	Public Taps	13	2.1	2.1	33.9
	Shared Taps	16	2.6	2.6	36.5
	Private Tap - Outside	4	.6	.6	37.1
	Private Tap – In House	393	62.9	62.9	100.0
	Total	625	100.0	100.0	

Water Source Type of Facility



Water Source By Type

	Frequency	Percent	Valid Percent	Cumulative Percent
Rain, Ground Water, River, Truck Water	83	13.3	13.3	13.3
Well Water	116	18.6	18.6	31.8
Public, Semi-Public Taps	29	4.6	4.6	36.5
Private Taps	397	63.5	63.5	100.0
Total	625	100.0	100.0	



Children's Education

Education, of course, is one of the main components of development and in general is highly related to economic well-being.

Pre-school (0 – 6 Years)

Because of high dropout rates, particularly among Indigenous children in primary school, early childhood education (at least some sort of pre-school or kindergarten) should be helpful in encouraging both educational achievement and retention. This section briefly reviews the data surrounding early childhood schooling. It also compares the attendance ratios of male and female children.

Table 24
Sex of Children 0-6 Years¹¹

	Frequency	Valid Percent
Boy	426	46.1
Girl	498	53.9
Total	924	100.0

The differences in the ratio of girls to boys is due to missing values in some of the variables, particularly age. As can be seen in the following table, when age and sex are tabled, the ratios are about equal as would be expected.

¹¹ There is a disparity in the ratio of girls to boys in this sample of about 8%. Under normal assumptions, the ratio should be about even, as it is in other age groups. This may be a methodological problem stemming from missing data on some children's ages and on some children's sex. After several re-examinations of the data, I cannot find any other satisfactory explanation.

Table 25

Age of Children (0-6) By Sex

Age (Up to...)	Statistics	Sex		Total
		Boys	Girls	
1	Count	74	58	132
	% within Sex	17.4%	13.7%	15.6%
2	Count	58	61	119
	% within Sex	13.6%	14.5%	14.0%
3	Count	84	79	163
	% within Sex	19.8%	18.7%	19.2%
4	Count	70	75	145
	% within	16.5%	17.8%	17.1%
5	Count	66	82	148
	% within Sex	15.5%	19.4%	17.5%
6	Count	73	67	140
	% within Sex Years	17.2%	15.9%	16.5%
Total	Count	425	422	847
Total	% within Sex of Children 0-6 Years	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	D.F.	Sig. (2- sided)
Pearson Chi- Square	4.317	5	.505

Table 26
Location of Birth by Sex

		Sex of Children 0-6 Years		Total
		Boys	Girls	
Same Municipio	Count	412	478	890
	% within Sex	96.9%	96.2%	96.5%
Other Muni, Same Depto	Count	8	13	21
	% within Sex	1.9%	2.6%	2.3%
Other Depto	Count	5	6	11
	% within Sex	1.2%	1.2%	1.2%
	Count	425	497	922

The vast majority of the children in this sample were born in their current municipio of residence

Table 27
Place of Birth of Children 0-6 Years of Age

		Sex of Children 0-6 Years		Total	
		Boys	Girls		
Where Was Child Born	Own House	Count	386	451	837
		% within Sex	90.6%	90.7%	90.7%
	Clinic or Hospital	Count	37	45	82
		% within Sex	8.7%	9.1%	8.9%
	Other - Not Specified	Count	3	1	4
		% within Sex	.7%	.2%	.4%
Total		Count	426	497	923

And 90% were born at home. Slightly more females were born in hospital or clinic than males.

Table 28
Children 0-6 Pre-School Attendance

		Sex of Children 0-6 Years		Total
		Boys	Girls	
Not Attend	Count	374	432	806
	% within Sex	87.8%	86.9%	87.3%
Attend	Count	52	65	117
	% within Sex	12.2%	13.1%	12.7%
Totals	Count	426	497	923
	% within Sex	100.0%	100.0%	100.0%

There is no difference between girls and boys with respect to pre-school attendance.

Chi-Square Tests

	Value	D.F.	. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Fisher's Exact Test				.766	.384

In terms of absolute numbers, girls are more likely to attend pre-school than boys.

(Table 28 continued)

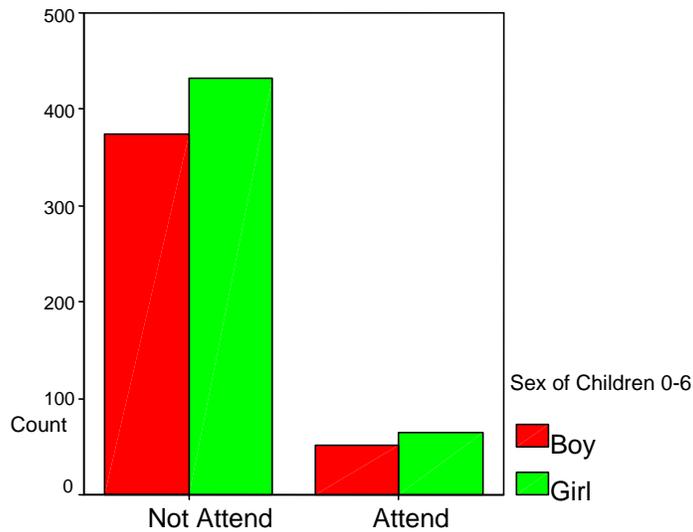


Table 29 - Reasons for Not Attending Pre-School

		Sex of Children 0-6 Years		Total
		Boys	Girls	
Parents Don't Want to Send	Count	11	13	24
	% within Sex	2.9%	3.0%	3.0%
Lack of Money	Count	5	9	14
	% within Sex	1.3%	2.1%	1.7%
No Pre-School in Community	Count	10	4	14
	% within Sex	2.7%	.9%	1.7%
Not Applicable - Age	Count	350	410	760
	% within Sex	93.1%	94.0%	93.6%
Total	Count	376 (46%)	436(54%)	812

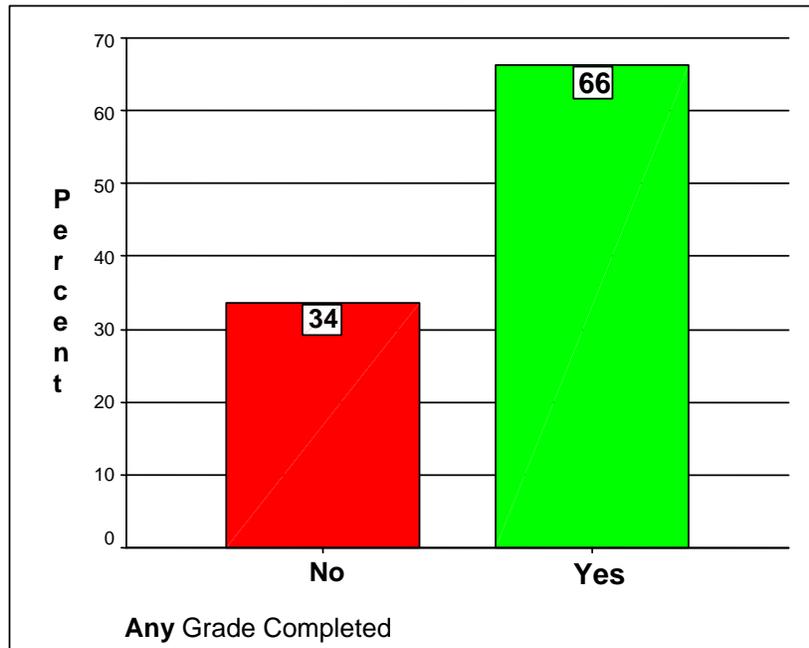
Most people (94%) claim age (too young to attend) for not attending preschool. However, only about 63% are less than 5 years of age. This can be interpreted in several ways. People may not know just what pre-school is and/or culturally, children under 6-7 are considered “too young” to attend formal education of whatever sort.

This certainly has implications for project planners involved with pre-school or early education-type projects. Not only is infrastructure and teachers important to success, but also community education needs to be emphasized as to what this activity is and can mean for children.

Ages 7-18

The following tables present a snapshot of educational status of Household Members in the 7-18 age group. Fully one-third have had completed no school-grade at all.

Table 30
Any Grade at all Completed – Total Sample



In addition, females are slightly less likely to complete grade 1 than males, although the difference is not particularly significant (5%).

Table 31
Any Grade Completed By Sex

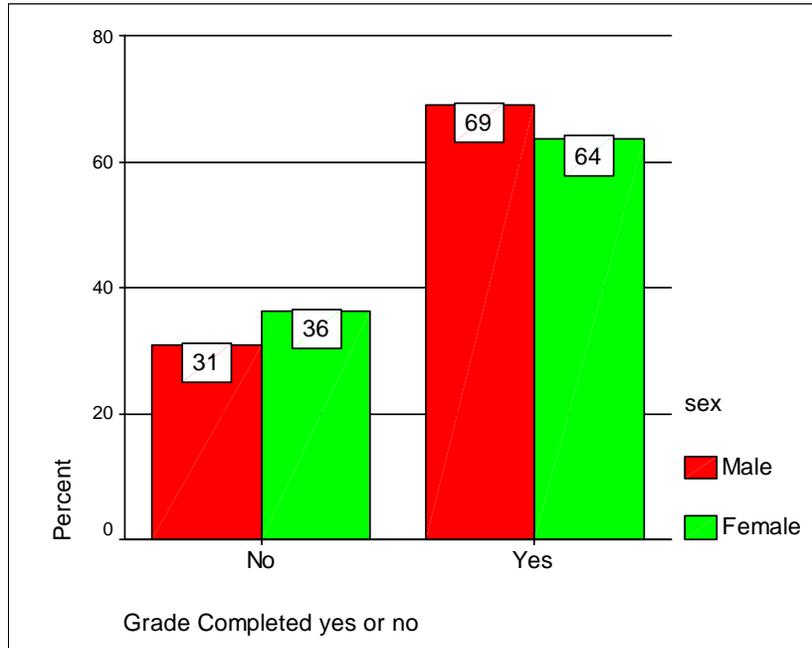
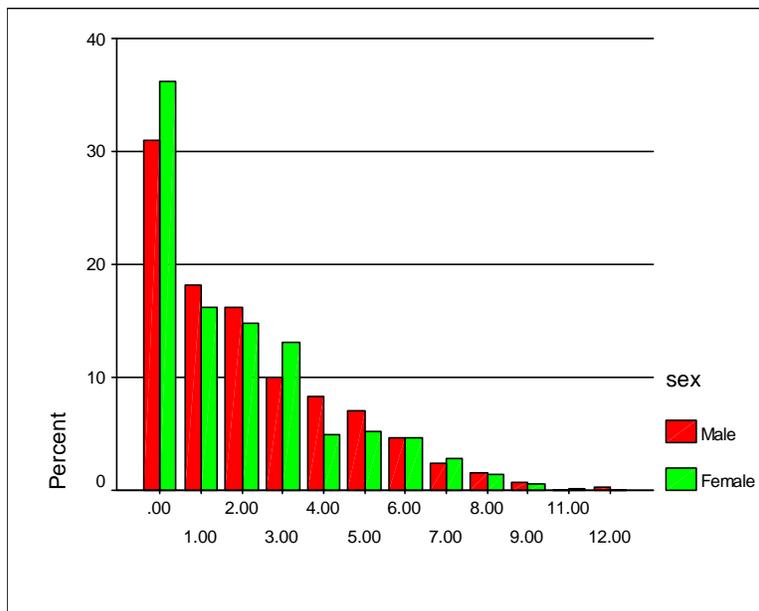
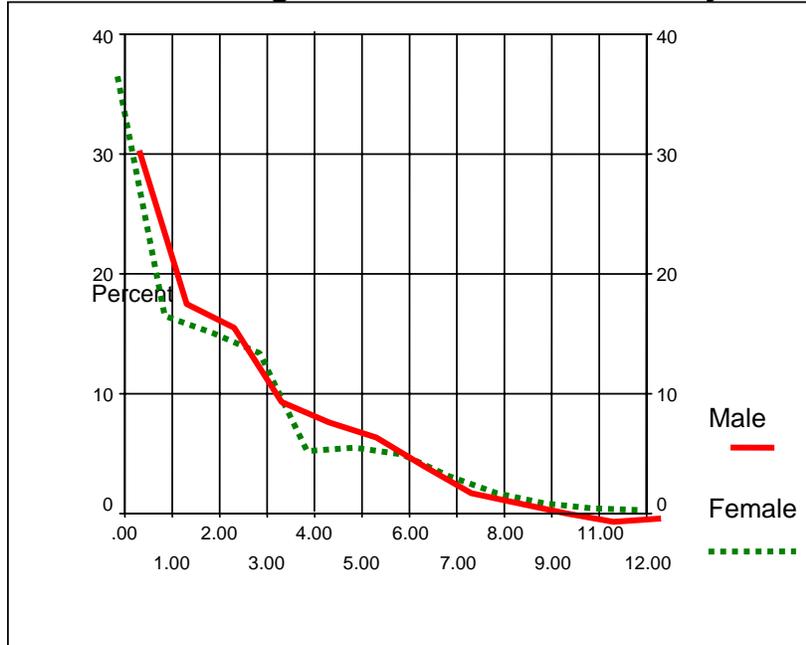


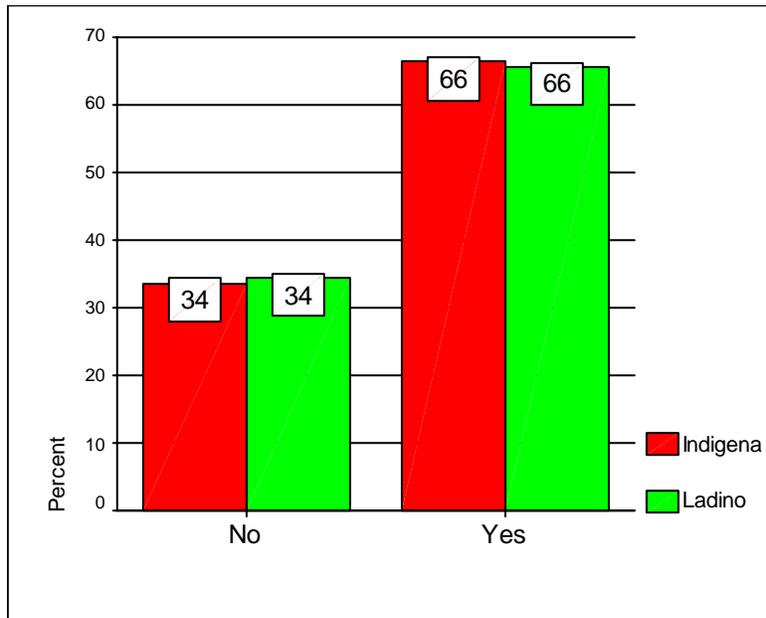
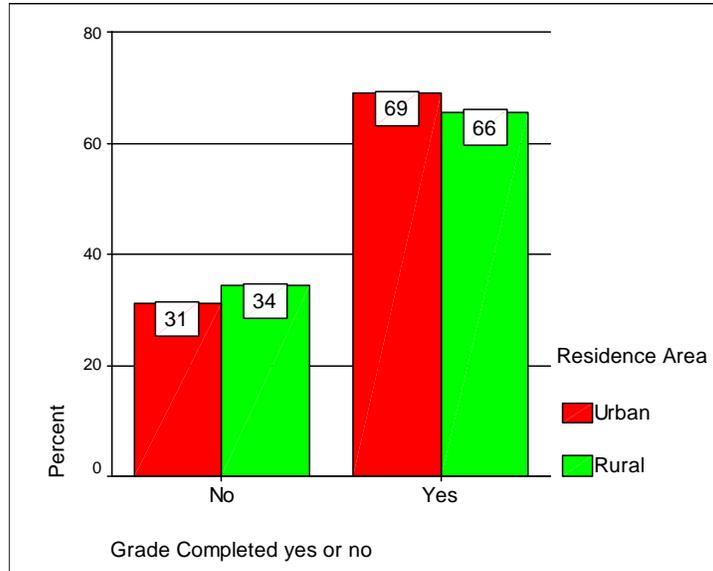
Table 32
Curve showing educational achievement by sex



While the numbers for grade 6 are small (due to dropouts), females who do stay in school, seem to “catch up” with their male cohorts.

A similar situation is true for the difference between urban and rural children with only 3% separating single-grade completion rate.

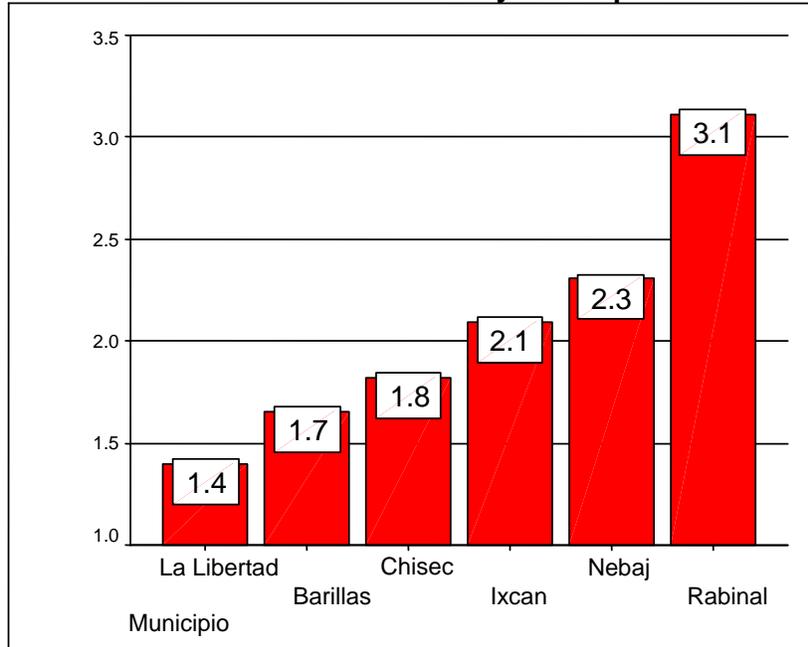
Table 33
Grade completion by Residence Area and Ethnicity



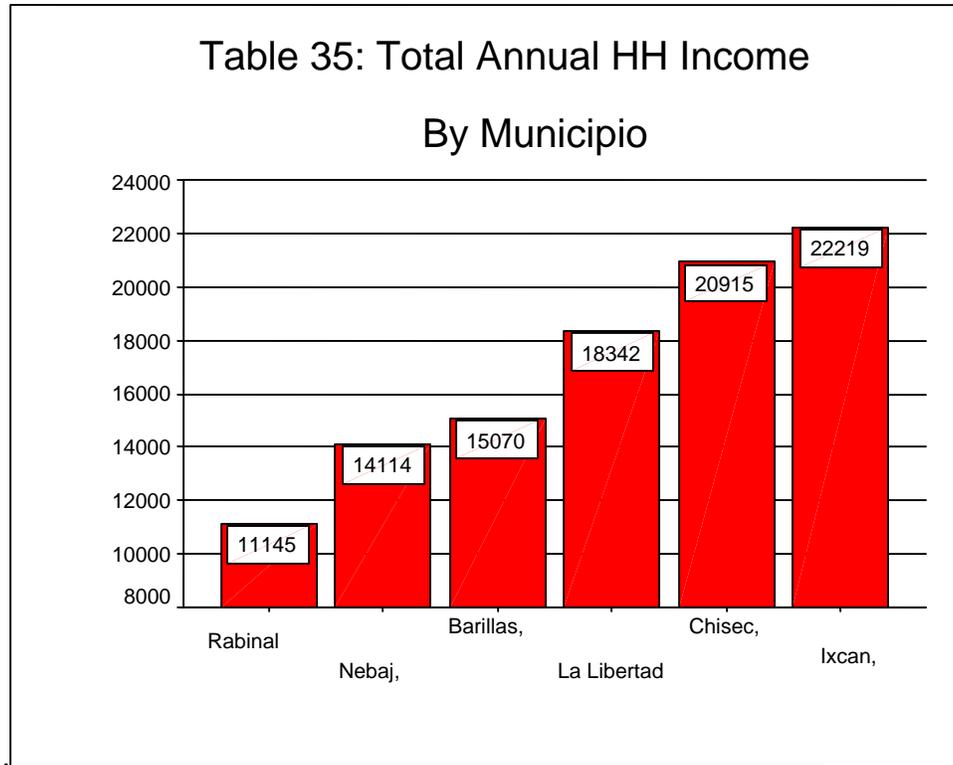
The proportion of children who have completed at least one grade of school is virtually identical between ethnic groups, and only slightly higher between rural and urban samples.

An interesting finding has to do with educational attainment and income. In the following tables educational attainment is charted from the lowest mean community value (La Libertad @ 1.4) to the highest (Rabinal @ 3.1). Table 34 (below) shows the mean grade achievement by municipio.

Table 34
Mean Grade Achieved by Municipio

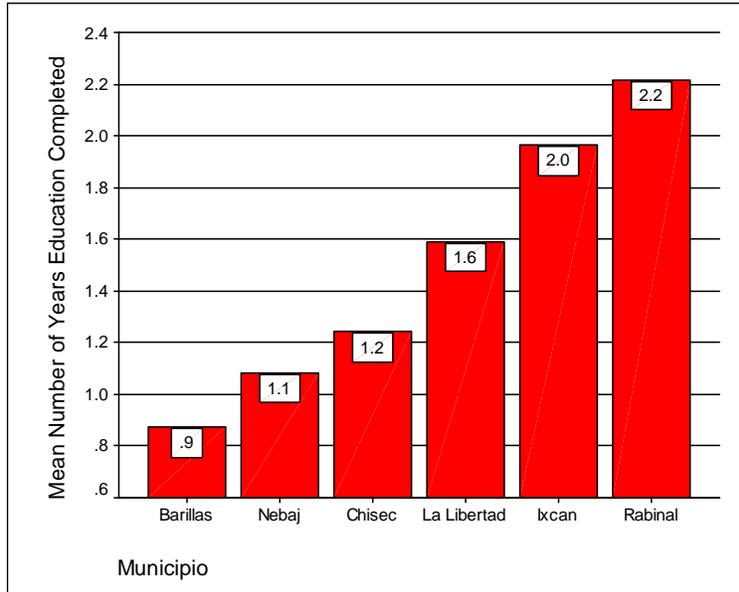


Nevertheless, Barillas ranks lowest in Total Annual Household Income, while La Libertad ranks third.



While this applies to children between the ages of 7-18, it might be argued that the relationship does not hold up with respect to adult household heads. This is not true, however, as can be seen in the following table of municipio by mean education achieved by adults. Because the differences (especially Rabinal and Barillas) seem so marked, more work needs to be done on the relationship of education to income (recalling that this income variable includes agricultural production as well as income).

Table 36: Adult Household Mean Education by Municipio



Occupation

Occupational categories are defined by INE. There are virtually no anomalies in the principal occupations in this sample. Fully 75% list some form of agricultural occupation.

The data available in the data set, however, permits for a much more profound examination of the intricacies of the labor population. That remains for specific questions to be formed by the users of this data set.

Table 37: Principal Occupation - Household Head (Men and Women)

	Frequency	Percent	Valid Percent
Recognized farmers, fishermen, animal raisers, cultivators	224	35.8	39.4
Agricultural Laborers	201	32.2	35.3
Sellers, Retail	20	3.2	3.5
Recognized Construction Craftsmen	19	3.0	3.3
Raw material processers	19	3.0	3.3
Teachers	12	1.9	2.1
Services	11	1.8	1.9
Drivers	11	1.8	1.9
Domestic Services	8	1.3	1.4
Housewife	6	1.0	1.1
Common laborer	6	1.0	1.1
Health services	5	.8	.9
Automobile mechanics	5	.8	.9
Office workers	4	.7	.7
Machine operators	3	.5	.5
Supervisors/managers	2	.3	.4
Administrators / Public Employees	1	.2	.2
Gerente - Empresas	1	.2	.2
Heavy Equipment Operators	1	.2	.2
Other machine operators	1	.2	.2
Total	569	91.0	100.0
Missing or Not Classifiable	64	10.5	
	625	100.0	

Table 38
Principal Occupation - Person 2 in Household (Men and Women)

	Frequency	Percent	Valid Percent
Ama de Casa	400	64.0	65.6
Food Processors & Artesans	58	9.3	9.5
Agricultural Laborer	49	7.8	8.0
Sellers, Retail	48	7.7	7.9
Domestic Services	21	3.4	3.4
Recognized Farmers, Fishermen, etc	15	2.4	2.5
Health Services	6	1.0	1.0
Other Services	3	.5	.5
Machine Operations - General	2	.3	.3
Teachers	1	.2	.2
Driver Trainer	1	.2	.2
Office Workers	1	.2	.2
Total	610	97.6	100.0
Missing or Not Classifiable	25	2.4	
	625	100.0	

Migration

Migration is divided into two general categories: Permanent and Seasonal Migration.

Permanent Migration

Permanent migration is defined as an individual or household physically moving from one community to another. In this study, because of its location (Zonapaz) we were interested to see the amount of permanent migration that might be attributed to the decade of civil strife. Consequently, we focused on the last ten years of “in-migration” to the current community of residence.

Table 39: No. HH Members Migrating "In" in last 10 years

	Frequency	Percent	Valid Percent	Cumulative Percent
None	533	85.3	85.3	85.3
1	42	6.7	6.7	92.0
2	31	5.0	5.0	97.0
3	9	1.4	1.4	98.4
4	6	1.0	1.0	99.4
5	4	.6	.6	100.0
Total	625 HH	100.0	100.0	
Sum	175 People			

As can be seen from the tables below, a very small number of respondents claimed that their migration was war-related. (2.4% of households and 37 individuals).

Table 40: Number of Households Migrating “In” @ War

	Frequency	Percent	Valid Percent	Cumulative Percent
No	610	97.6	97.6	97.6
Yes	15	2.4	2.4	100.0
Total	625	100.0	100.0	

Table 41: No. HH Members "in-migrating" @ war

	Frequency	Percent	Valid Percent	Cumulative Percent
None	610	97.6	97.6	97.6
1	1	.2	.2	97.8
2	9	1.4	1.4	99.2
3	3	.5	.5	99.7
4	1	.2	.2	99.8
5	1	.2	.2	100.0
Total	625 HH	100.0	100.0	
Sum	37 People			

What is notable, however, is that all permanent migration occurred in three municipios: Barillas, Nebaj and Ixcan. Of these three, Ixcan and Nebaj have received considerable post Peace Accord Agreement assistance.

Table 42: Migration @ War by Municipio

		Did not Migrate @ War	Migrated @ War	Total
Barillas	Count	124	1	125
	% within Municipio	99.2%	.8%	100.0%
Nebaj	Count	168	7	175
	% within Municipio	96.0%	4.0%	100.0%
Ixcan	Count	118	7	125
	% within Municipio	94.4%	5.6%	100.0%
Rabinal	Count	75		75
	% within Municipio	100.0%		100.0%
Chisec	Count	75		75
	% within Municipio	100.0%		100.0%
La Libertad	Count	50		50
	% within Municipio	100.0%		100.0%
	Count	610	15	625
Total	% within Municipio	97.6%	2.4%	100.0%

Seasonal Migration

Seasonal Migration is defined as temporarily moving to another area of the country (not abroad) for work opportunities. Traditionally this had involved moving many member of the household to the labor site (usually a large plantation such as coffee). The data in this study shows that this is not necessarily the case.

Table 43

Seasonal Migration in 12 Months - Household Head Only

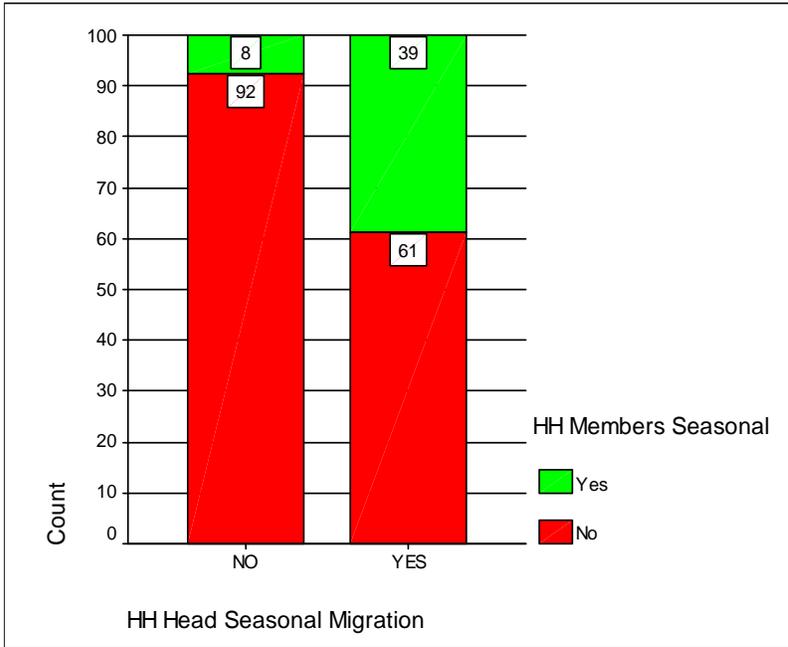
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	NO	447	71.5	75.3	75.3
	YES	147	23.5	24.7	100.0
	Total	594	95.0	100.0	
Missing	9	31	5.0		
Total		625	100.0		

Table 44

Members Seasonal Migration (excludes Household Head)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	529	84.6	84.6	84.6
	1	81	13.0	13.0	97.6
	2	9	1.4	1.4	99.0
	3	3	.5	.5	99.5
	4	3	.5	.5	100.0
	Total	625	100.0	100.0	

Table 45: HH Head and HH Member Migration



Of the HH Heads who migrated, only in about 39% of those cases did household members accompany them.

Economic Conditions

Household Expenses by Category of Expenses

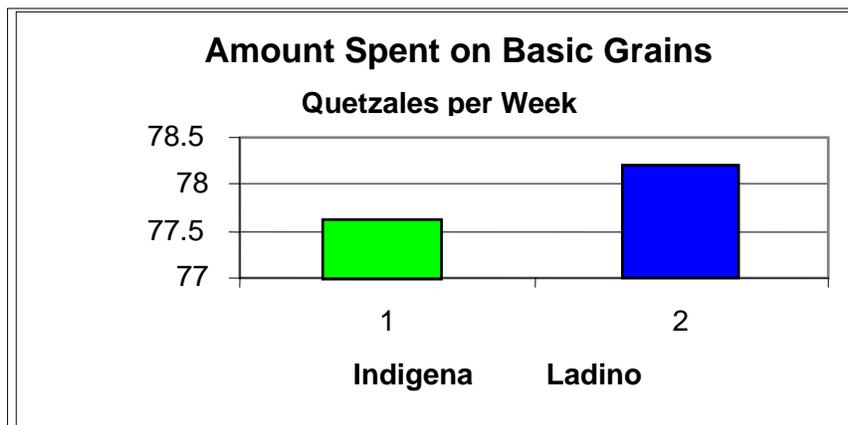
This section presents the expenses of households in considerable detail. As discussed in earlier parts of this report, household expenses are highly important in both defining and understanding the economic status of rural households. To ensure the comprehensive nature of the “expenses” construct, we measured 284 individual variables of consumption and expense. Consequently, we believe that this is a very accurate representation of reality. A complete and separate data set provides details of the weekly, monthly, quarterly and annual costs of all the individual variables that have been subsumed under the categories described in this report. All values are in Quetzales for the preceding time periods as stated (week, month, quarter, year).

Weekly – Food Expenses

Table 46 - Weekly Food Expenses

Expense Groups	N	Minimum	Maximum	Mean	Std. Deviation
Basic Grains	625	0	556	77.66	57.58
Meats & Eggs	625	0	282	36.50	33.65
Sugar	625	0	122	16.01	14.82
Cooking Oil & Fats	625	0	55	6.02	6.29
Fruit	625	0	172	10.40	14.16
Vegetables	624	0	106	19.99	14.74
Milk Products & Cheese	624	0	121	5.96	14.11
Pasta & Condiments	625	0	86	7.86	7.04
Beverages	625	0	127	11.72	15.66
Alcohol & Tobacco	625	0	234	2.13	16.70
Total Weekly Food Expense	625	.00	1048	194.21	123.27

Table47 Mean Amount Spent on Basic Grains (1 Week)



Ladinos spend only about 60 centavos more per week on basic grains than Mayans.

There is no significant difference in this weekly expense between ethnic groups.

Table48 - Mean Amount Spent on Meat and Eggs

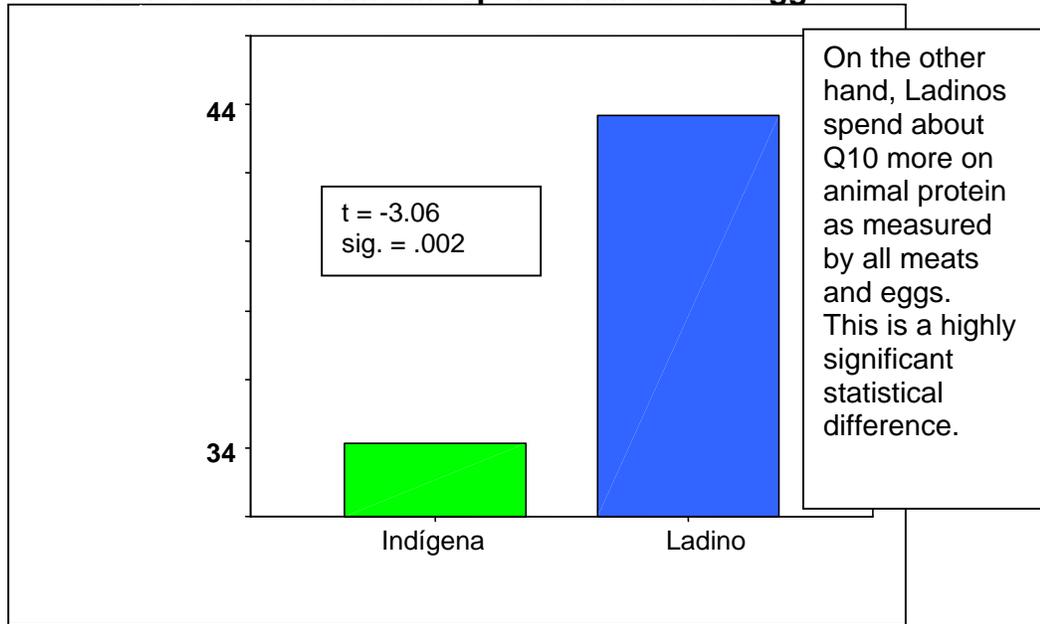
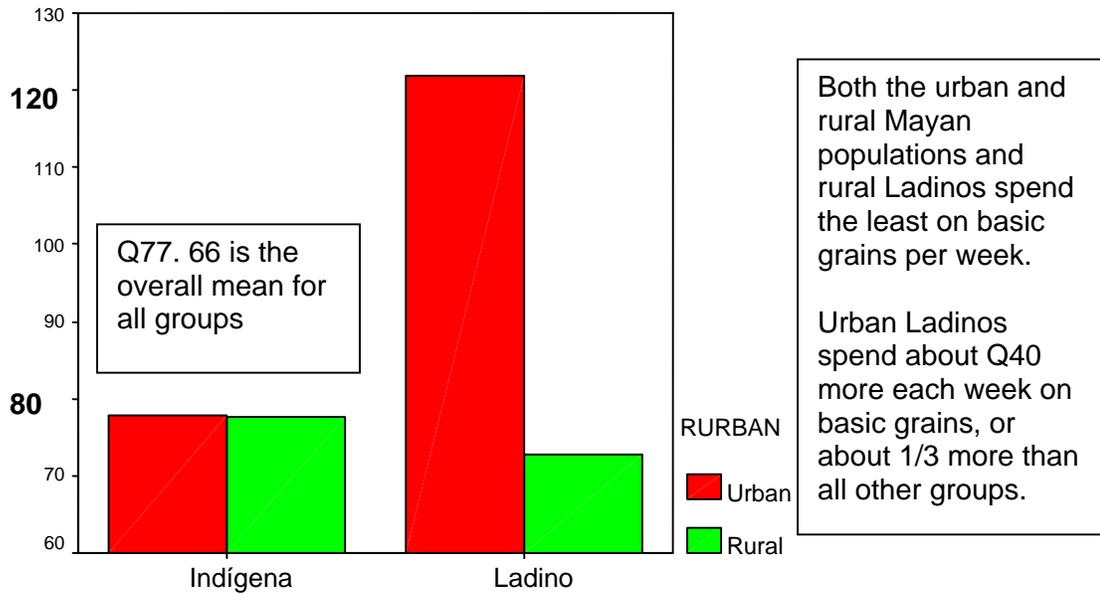


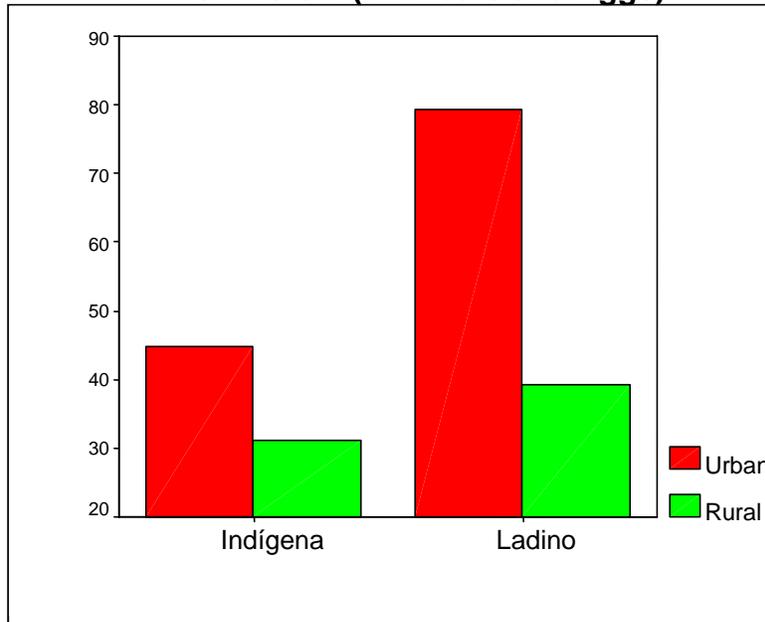
Table 49 – Differences in Basic Grain Purchases by Area and Ethnicity



One possible explanation for this is that Urban Ladinos may be in a position to purchase in larger quantities (by the quintal for corn, and the arroba for beans). It may also be the case that this figure is inflated by urban Ladino resellers buying in bulk. Data were not

collected to address this issue. "Extreme high" values appear to be valid; however, there are fewer "lower extreme" (and no zero) values in the urban areas than in rural areas. This would affect the mean and the distribution (the standard deviations for the urban sample is 84.38 and the rural is 76.14). Further, these data were not adjusted to account for the difference between producers who store their grain production against future household need, and non-producers or "non-storers".

Graph 50: Ethnic and Residence Area Differences in Amount Spent on Animal Protein (All Meats and Eggs)



The rural-Mayan part of the population spends the least amount of money on all animal protein (all meats & eggs) per week.

Rural Ladinos spend less than Urban Mayans.

Table 51 – Weekly Food Expenses by Ethnicity

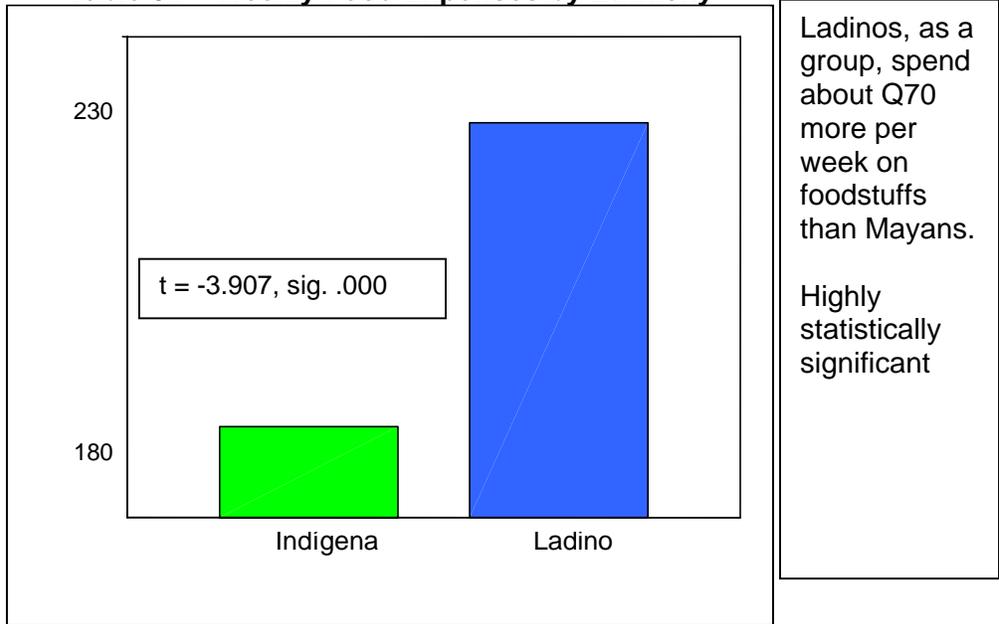


Table 52 – Weekly Food Expenses by Area of Residence

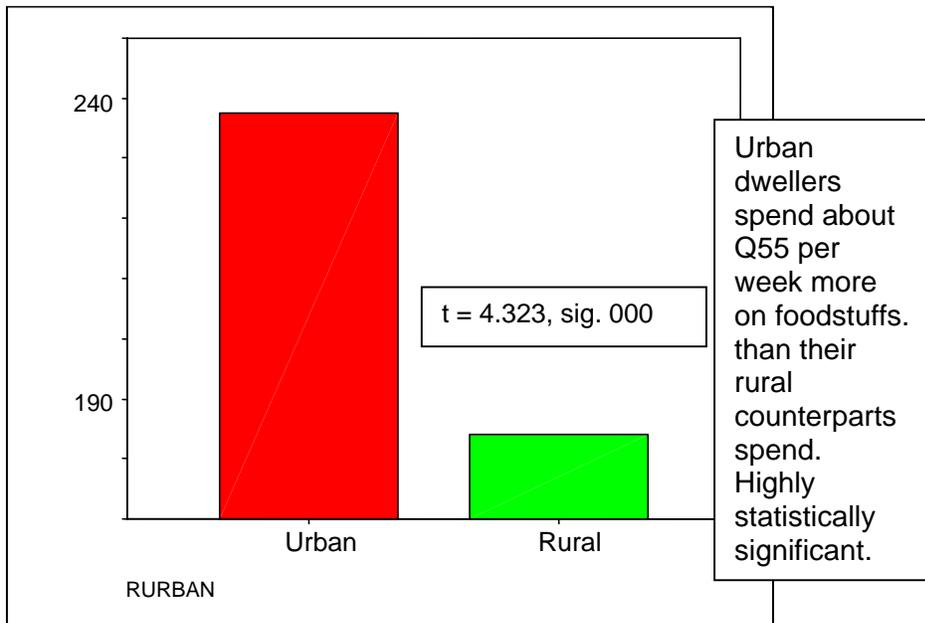
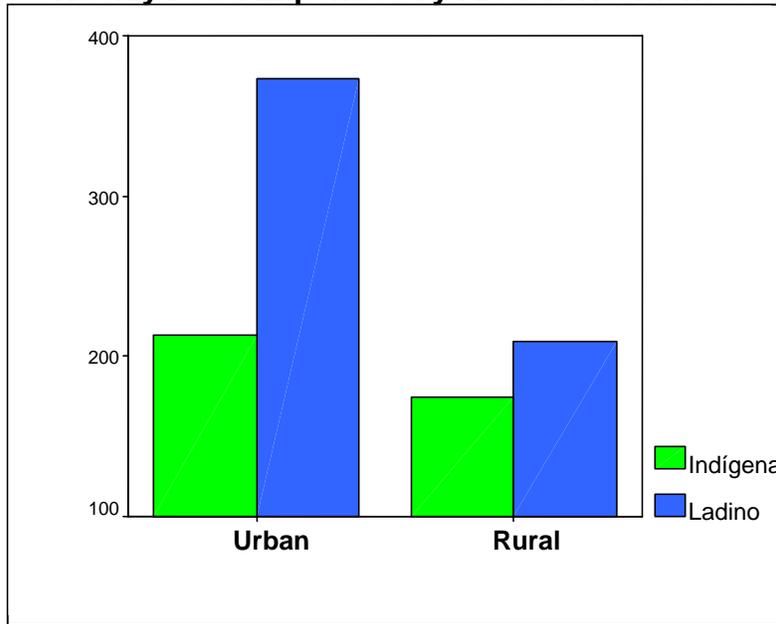


Table 53 – Weekly Food Expenses by Area of Residence & Ethnicity



The Urban sample spends more on food per week than the Rural groups.

Urban Mayans spend about the same as Rural Ladinos.

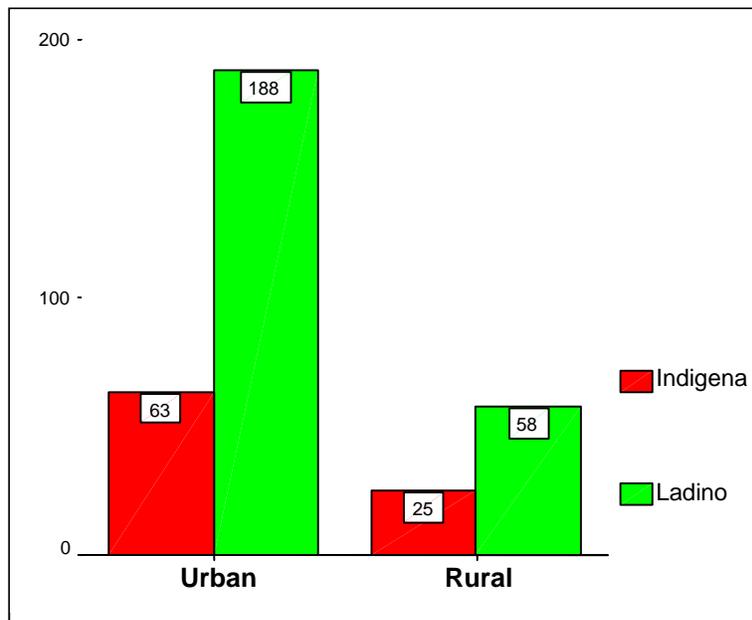
Monthly – Regular Monthly Expenses

These expenses are calculated on a monthly basis and represent a large portion of monthly income. There is, however a high degree of variability within items as demonstrated by the standard deviations. This makes the interpretation of between-group comparability complex.

**Table 54 – Mean Monthly Household Expenses (August 2001)
Quetzales**

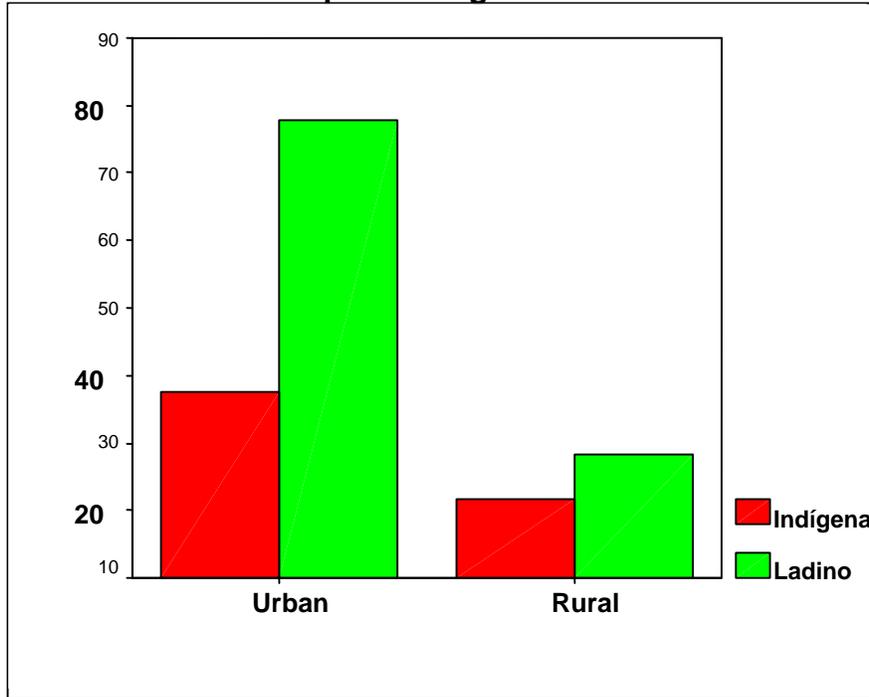
Expense	Mean (QQ)	s. d.
School Expenses - All	42.80	114.57
Health Expenses Children 0 - 5	27.46	76.75
Health Expenses Age 6 and above	51.83	112.91
Housing Costs	79.53	104.43
“Other Personal” Expenses	25.67	42.59
“Other General” Household Expenses	57.39	236.21
Total Monthly Expenses, August 2001	308.60	569.39

**Table 55 – Education Expenses by Area and Ethnicity
Mean Monthly Expenses by Groups in Quetzales**



Both Urban and Rural ladinos spend more on monthly educational expenses than Mayans in either area

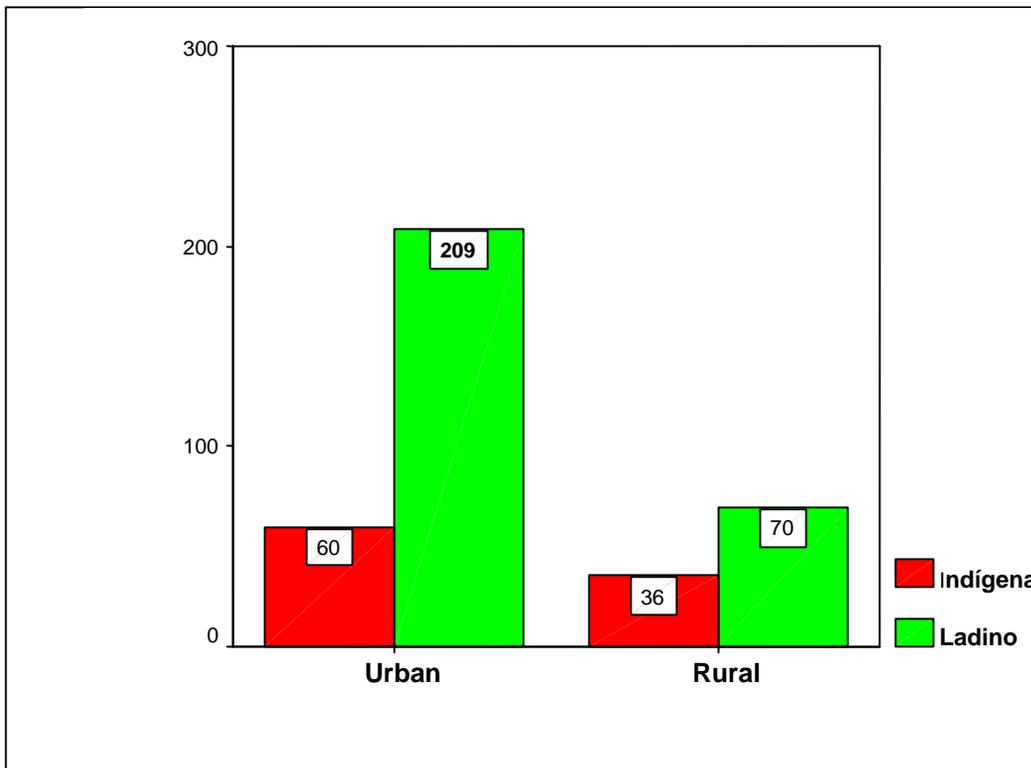
**Table 56 – Health Care Children 0-5 Years Old
Mean Amount Spent – August 2001 – Quetzales**



Urban ladinos spend about twice as much as any other group on child health.

Urban Mayans spend about twice as much as rural Mayans.

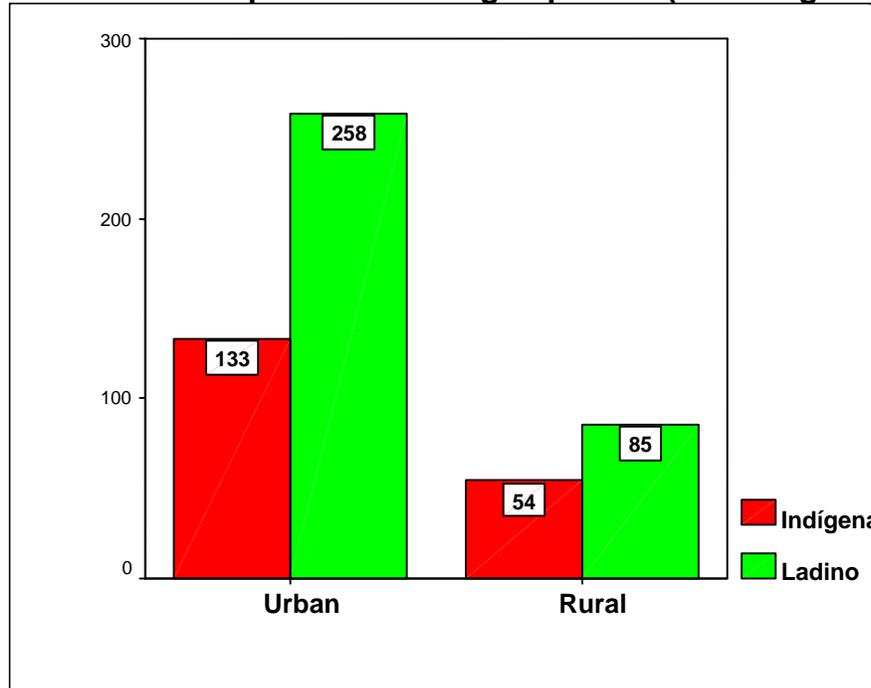
Table 57 – Mean Spent on Health Care All Members 6 Years and Older



Urban ladinos spend nearly three times as much on adult health care than any other group.

Urban Mayans spend about the same as rural ladinos.

Table 58 – Mean Spent on Housing Expenses (including Rent)



**Table 59 – Monthly Personal Expenses
Mean Amount Spent – August 2001 – Quetzales**

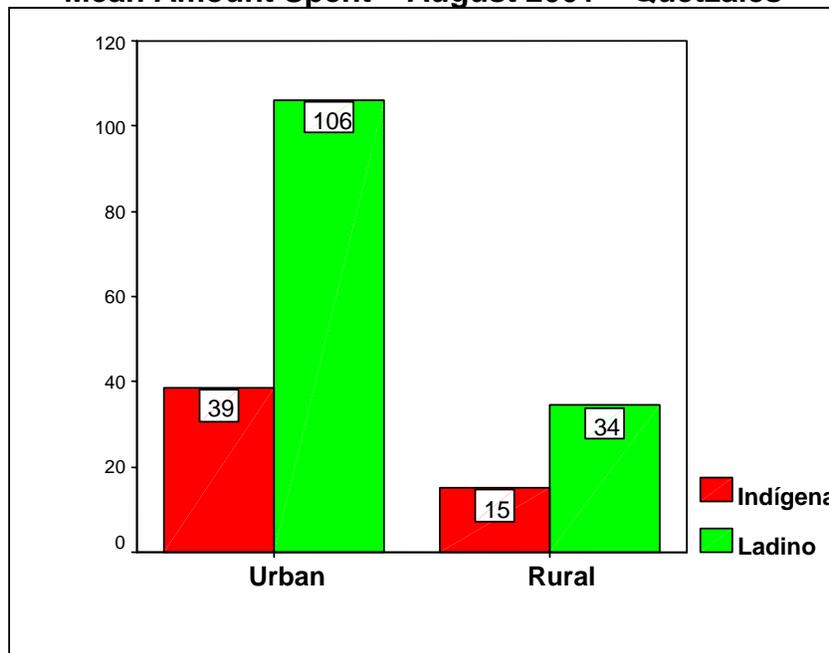
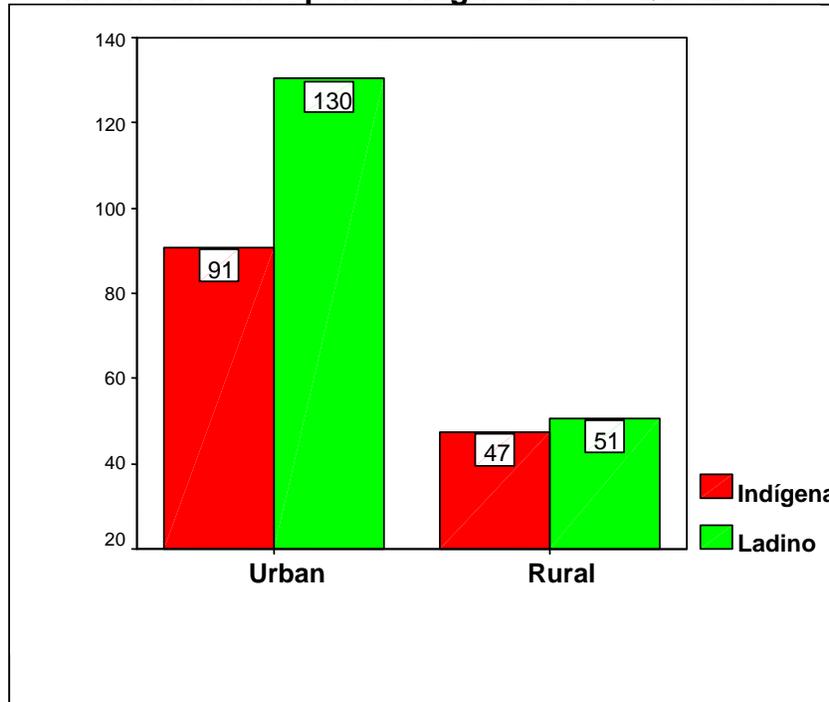
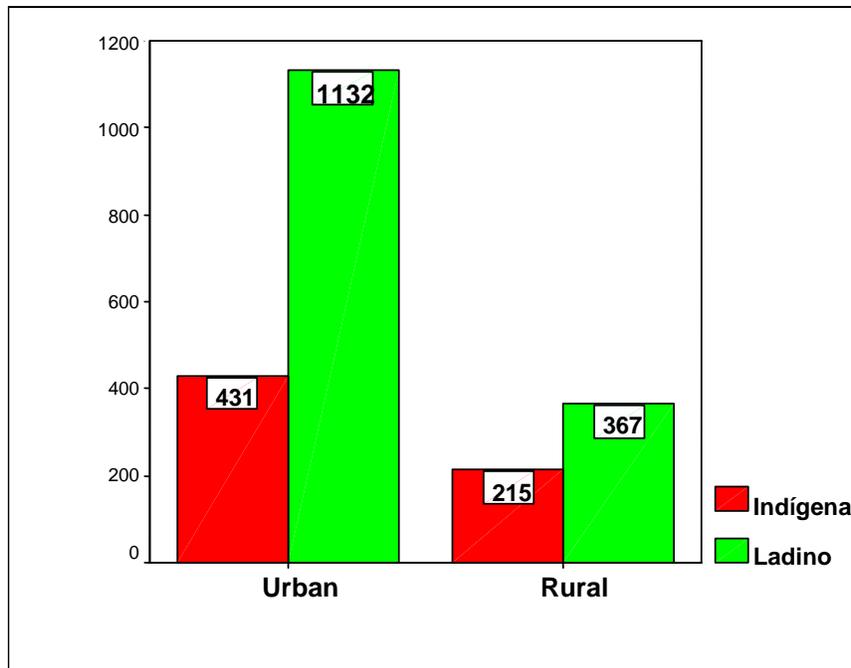


Table 60 – Other Monthly Household Expenses

Mean Amount Spent – August 2001 – Quetzales



**Table 61 – Total (non-Food) Monthly Household Expenses
Mean Amount Spent – August 2001**



Quarterly – Clothing**Table 62 – Mean Spent on Clothing (Quarterly) All Groups**

Variables	Min	Max	Mean	Std. Dev.
Shoes & Clothing – Children 0-5 Years	0	550	38.82	85.04
Shoes & Clothing – Ages 6 and Above	0	2450	144.83	281.30
Shoes & Clothing – All Members Combined	0	2800	183.98	319.02

Table 63 – Mean Spent on Clothing (Quarterly) by Urban and Rural

Variables	Area	Mean	Std. Deviation
Shoes & Clothing – Children 0-5 Years	Urban	53.75	118.28
	Rural	35.33	74.77
Shoes & Clothing – Ages 6 and Above	Urban	243.44	417.80
	Rural	121.64	232.30
Shoes & Clothing – All Members Combined	Urban	294.32	469.44
	Rural	158.07	265.48

Table 64 – Mean Spent on Clothing (Quarterly) by Indígena and Ladino

Variables	Area	Mean	Std. Deviation
Shoes & Clothing – Children 0-5 Years	Indígena	34.23	83.50
	Ladino	52.94	89.06
Shoes & Clothing – Ages 6 and Above	Indígena	137.38	289.74
	Ladino	168.94	256.50
Shoes & Clothing – All Members Combined	Indígena	170.77	327.32
	Ladino	225.75	292.56

Table 65: Mean Quarterly Expenses for Clothing and Shoes Children 0-5 years by Residence Area and Ethnic Group

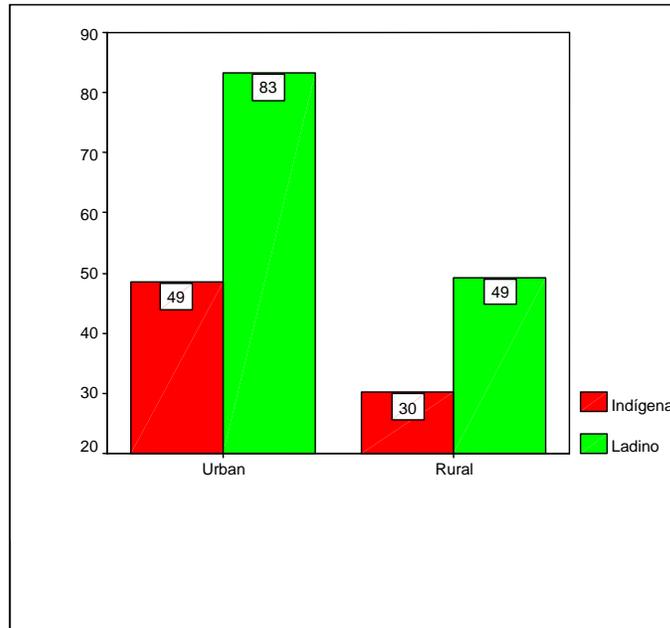


Table 66: Mean Quarterly Expenses for Clothing and Shoes Household Members 6 years and above by Residence Area and Ethnic Group

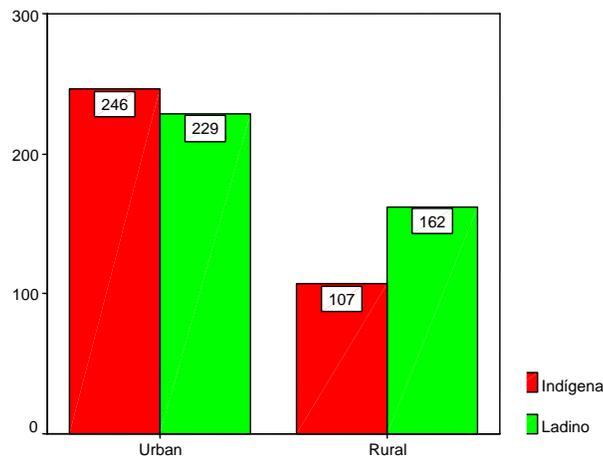
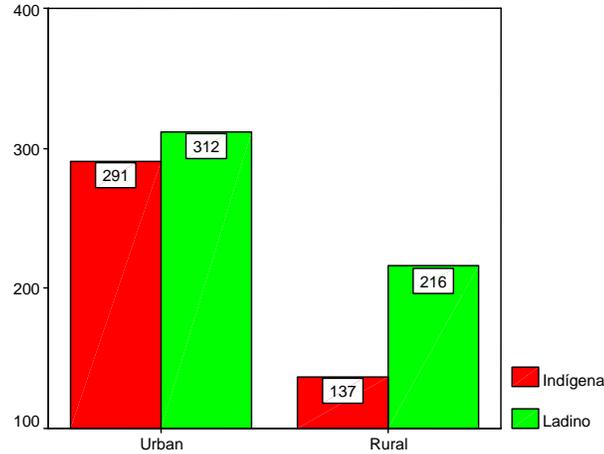


Table 67: Mean Quarterly Expenses for Clothing and Shoes ALL Household Members (all ages) by Residence Area and Ethnic Group



Annual Expenses

Table 68: Major Expenses Usually Calculated on an Annual Basis

Variables	Min	Max	Mean	s. d.
Major Purchases ¹²	0	51800	843.86	3916.16
Comercial & Agricultural Investments	0	33000	907.83	2710.58
Agricultural Land Rental	0	1000	29.46	110.94

Table 69 - Mean Annual Expenses and Investments

		N	Mean	Std. Deviation	Std. Error Mean
Major Purchases	Indígena	466	794.65	3648.66	169.02
	Ladino	153	1015.82	4687.79	378.99
Com & Ag Investments	Indígena	466	817.88	2616.72	121.22
	Ladino	155	1194.85	2996.02	240.65
Ag. Land Rental	Indígena	465	20.93	86.20	4.00
	Ladino	155	55.79	162.68	13.07

¹² Includes: house, land, animals, machinery, vehicles, furniture and electric appliances.

Table 70 -T-Tests of Annual Investments by Ethnic Group

Variable	Assume:	F	Sig.	t-values	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Major Purchases	Equal variances	.599	.439	-.604	617	.546	-221.18	366.21
	Unequal variances			-.533	215.690	.595	-221.18	414.97
Com & Ag. Investments	Equal variances	3.997	.046	-1.497	619	.135	-376.97	251.84
	Unequal variances			-1.399	237.010	.163	-376.97	269.45
Ag. Land Rental	Equal variances	41.776	.000	-3.406	618	.001	-34.85	10.23
	Unequal variances			-2.551	183.638	.012	-34.85	13.66

Table 71 : Mean of Annual Expenses by Residence and Ethnicity

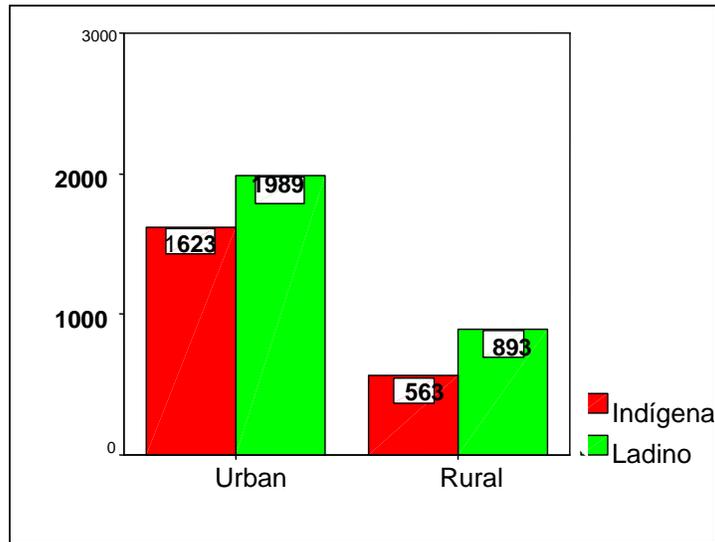
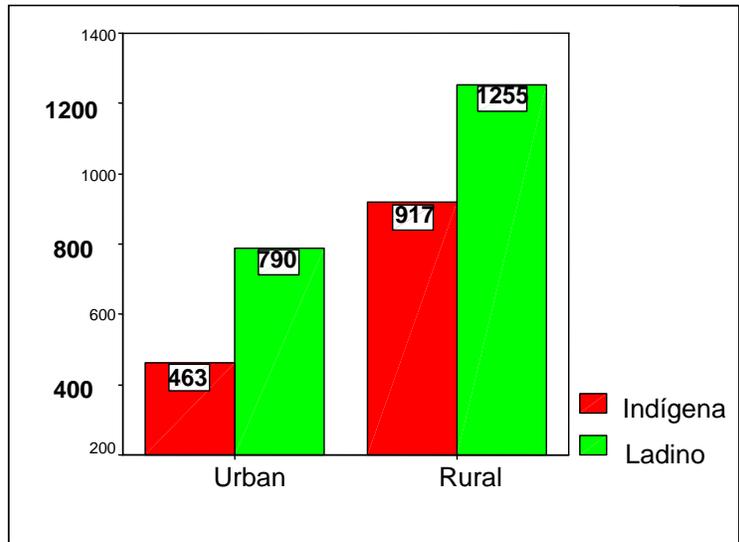
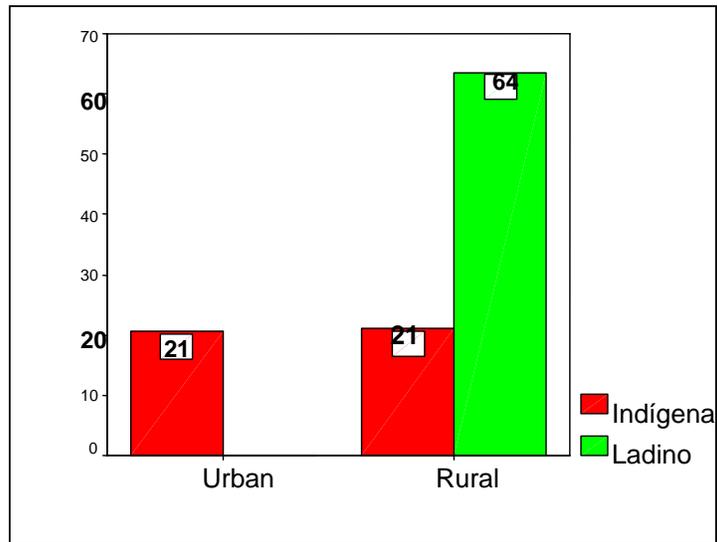


Table 72: Mean Value of Investments by Residence and Ethnicity



Graph 73: Mean Value of Land Rental Costs by Residence and Ethnicity



Household Income

Measuring income information in a developing country is difficult due to issues of privacy, fear of data use (taxes, possible loss of benefits from NGOs, and other perceptions of data use). Additionally, most people who are not in salaried positions really do not know how much money they make, since household record keeping is generally rare. Nevertheless, it is usually assumed that people tend to underestimate income and either be reasonably accurate or overestimate expenses.

The findings from this data accept the assumption of underestimation of income from all sources, but without estimating the percentage or degree of the underestimates. Consequently, the findings in this report should be viewed with this in mind. This is particularly true of the comparisons made with the 1999 data. While every effort has been made to assure comparability of the two data sets, the level of details within each of the two sets are somewhat different (i.e. different questions were used to obtain the same information – based on a critique of the 1999 questionnaire).

This being said, we believe that the data represent accurate differences or variability between and among individuals (i.e. that people underestimate by much the same degree) the amount of income received, and at the same time forget the same “kinds of” casual or irregular sources of income.

Salary and Labor (August 2001)

Salary and labor earnings and benefits include the following items:

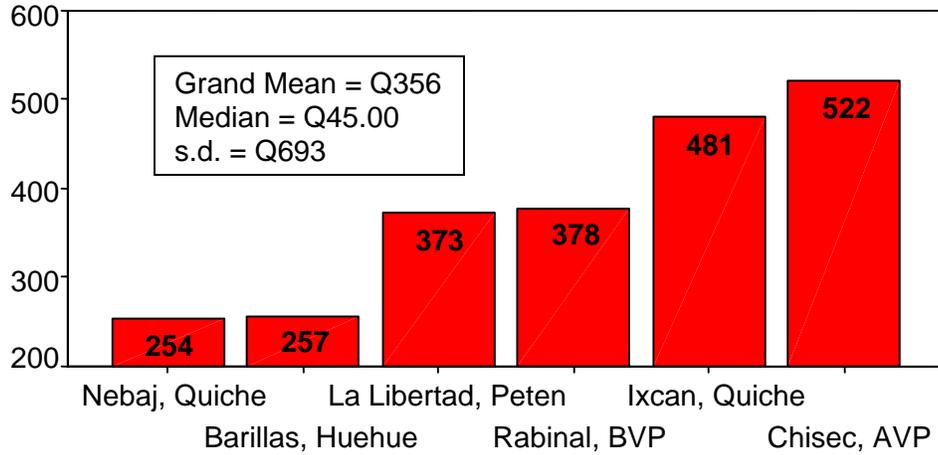
- Daily wages (day-converted for monthly salaries)
- Overtime
- Bonuses
- Expenses (*viáticos*)
- Return on Investment
- Payment in goods (*por especie*)

In the first part of this section, I have limited the analysis to the findings for the household head (house head) because usually by definition he or she is the principal wage earner. In the later sections, the secondary and tertiary wage earners (through wages, business or agricultural income) are presented. It is useful for the analysis to view the contribution of “other than house head” wage earners to the overall household income when considering strategies for economic improvement at the household level.

The following table (Graph 74) provides mean monthly income by municipio for the month of August 2001 for the primary wage earner (usually the household head). The data contains “0” (zero or no income) values, and therefore includes all families whether the primary “wage-earner” had income that month or not. It does not include income from business or agricultural production.

Table 74: Mean Monthly Wage & Benefit Income

Household Heads by Municipio



Does not include income from business or Ag. Production

Includes "0" (zero) values

HH Head Monthly Wage & Benefit Income

By Ethnic Group & Residence

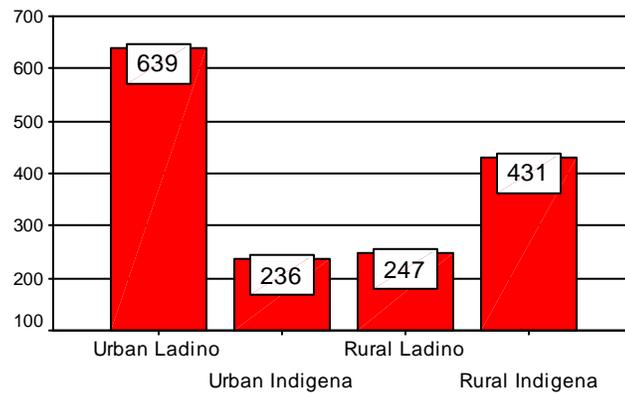
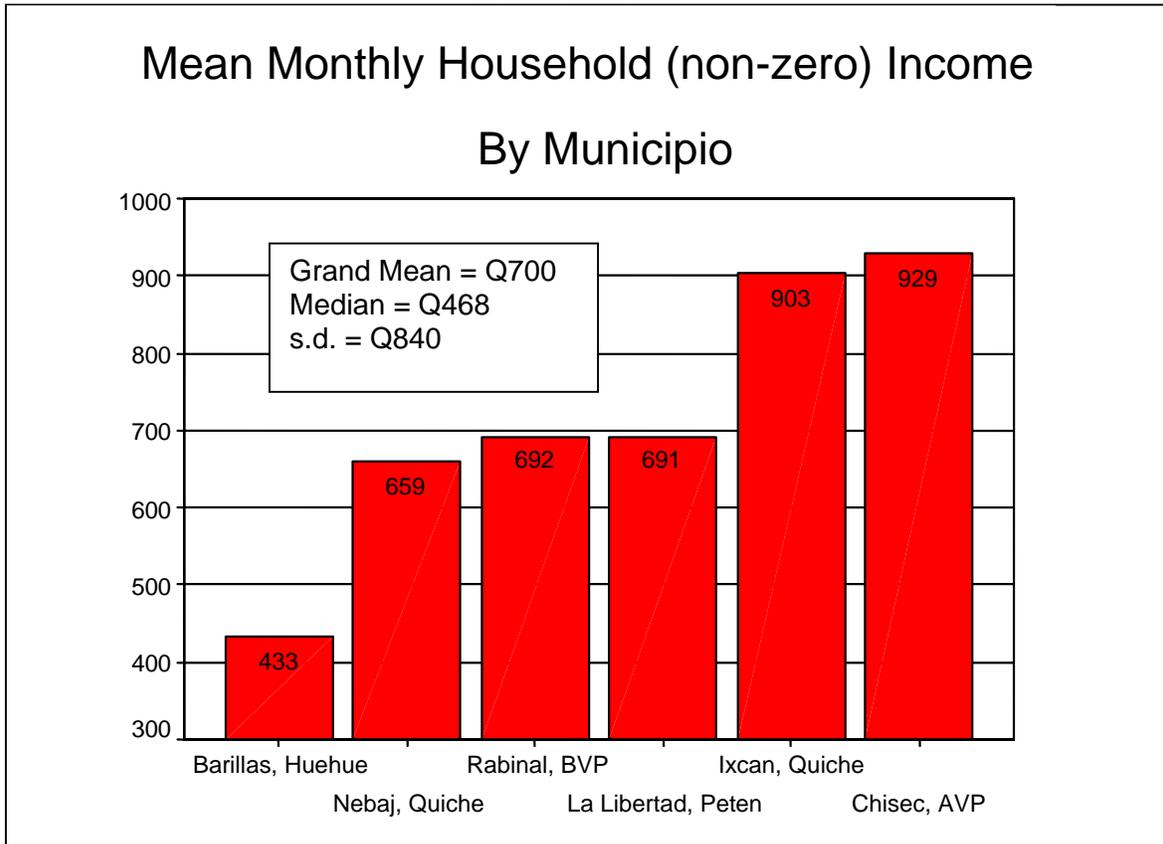


Table 75: limits the data to “non-zero” monthly income households



It is readily apparent from the above two graphs that removing non-earning households from the income equation results in dramatically different interpretations of a poverty level. The question becomes, does the income earned from business and agricultural production in the month of analysis, compensate for the distinction in wage-earning and non-wage-earning households. To be sure, these are not mutually exclusive categories, and analyses can become blurred or meaningless if this is not taken into consideration

Table 75, shows mean monthly income from business and agricultural production (including “0” zero) income from this source. This Graph again is for the household head only. In later Tables we will examine the impact of business and agricultural (including animal) production from all family sources.

Monthly Business, Forestry and Animal Products Income

This monthly category includes the following items of income.

- Forestry Products
- Animal Products (e.g. eggs, small animal (poultry) sales)
- Artisan and Handicraft Production
- Industrial Production
- Commercial Business
- Services (non-wage or irregular work)
- Value of in-kind products (agricultural and business inventory consumption)

Please note that agricultural production is classified as “annual income” since harvests and sales from producers are done on a “when harvested and sold” basis, rather than monthly.

The following graph shows the mean monthly income from these sources by municipio. It includes “zero value” data (i.e. households that have no income from any of these sources).

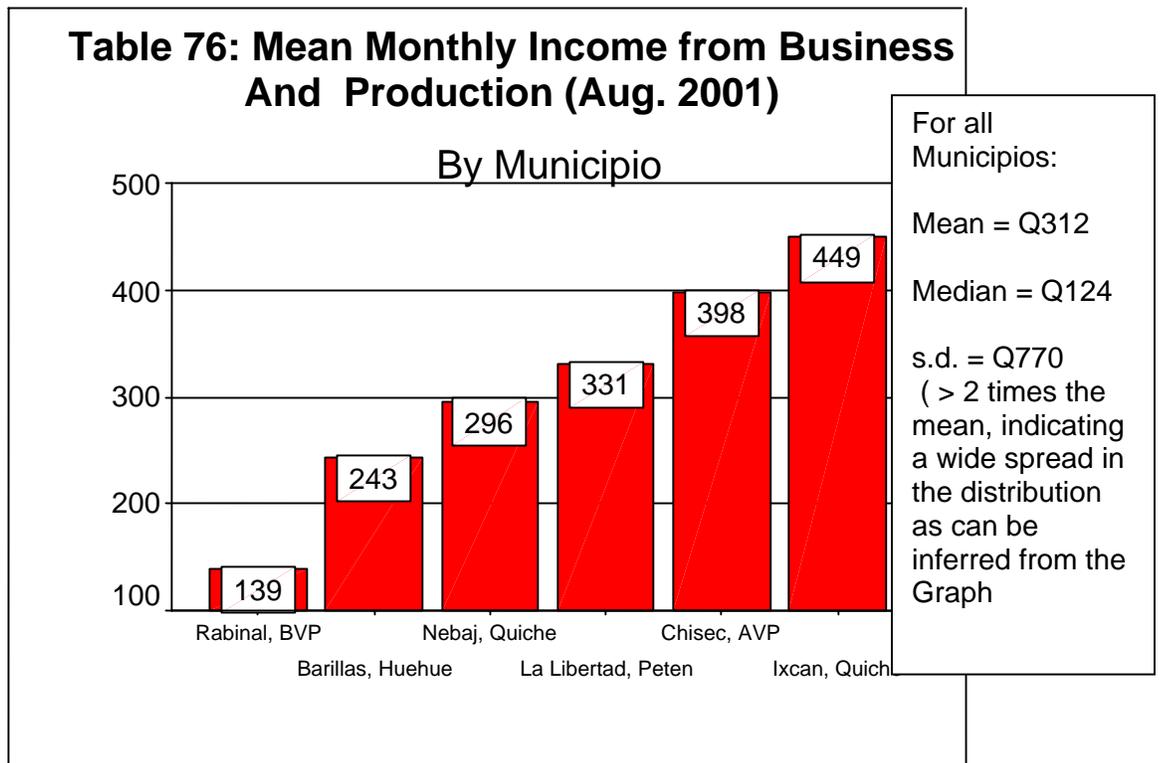
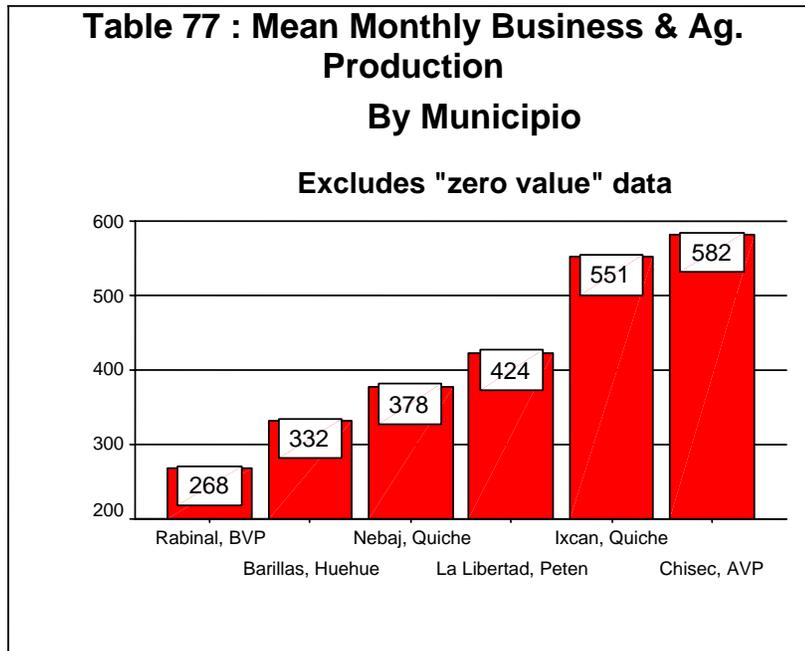


Table 77, below, examines the same data but excludes the “zero value” data. In other words, it includes only households that had some amount of income from business or agricultural sales.



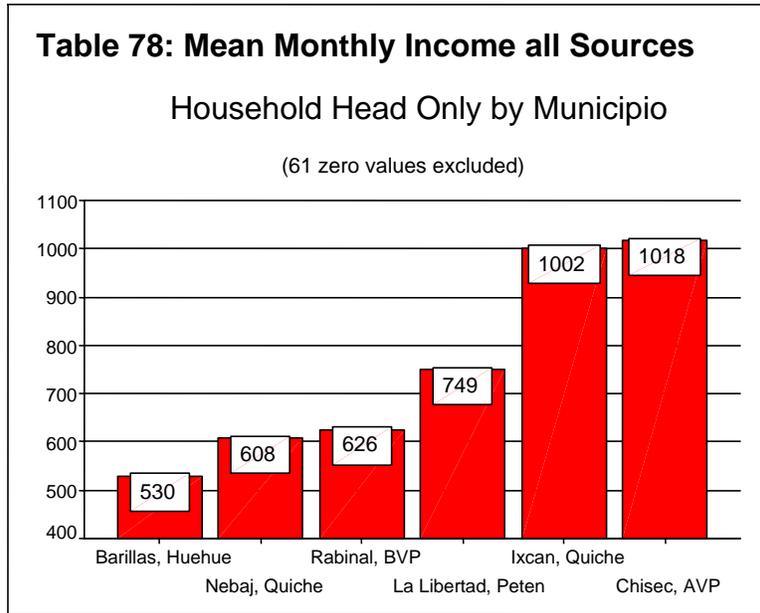
For all Municipios:
 Mean = Q424
 Median = Q190
 s.d. = Q871
 (2 times the mean, indicating a wide spread in the distribution as can be inferred from the Graph)

Combined Income – Household Head (Salaries & Business Income) – August 2001)

The following data combines both data from salaries, wages and benefits with business and production income to form as complete a monthly estimate of income as possible for the household head.

Readers are again reminded that these data are best estimates only and rely completely on the respondents’ interpretation of the questions, mental estimates (few, if any income items are documented) and his willingness to provide information.

Income by Municipio



Income by Residence and Ethnicity

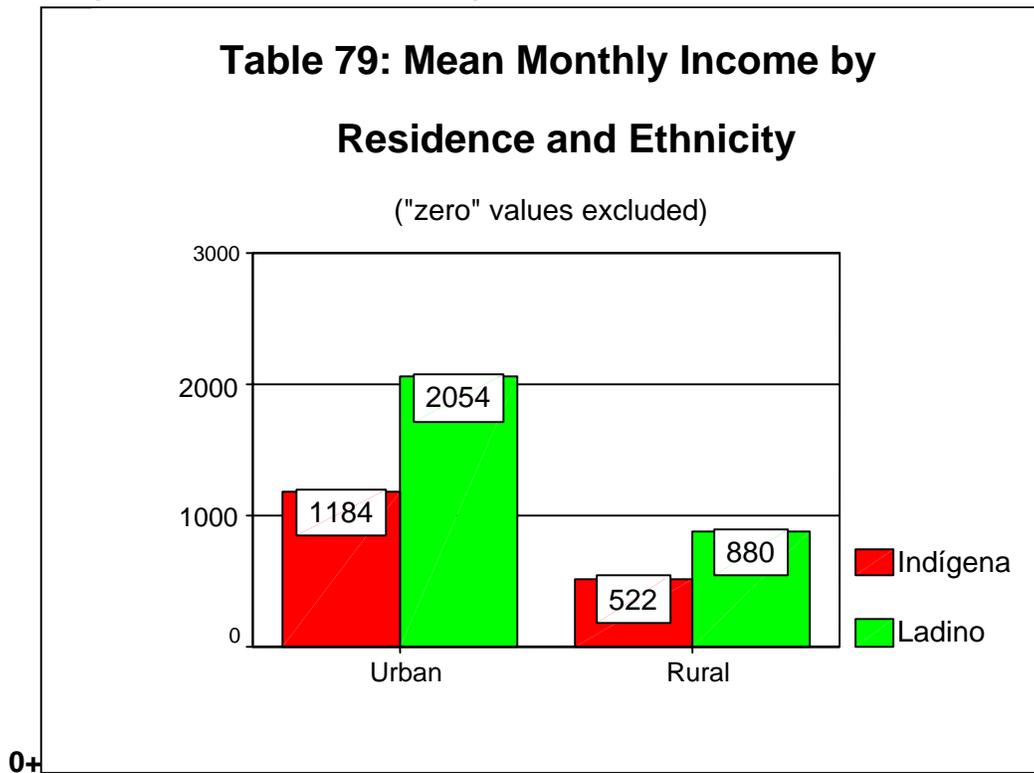
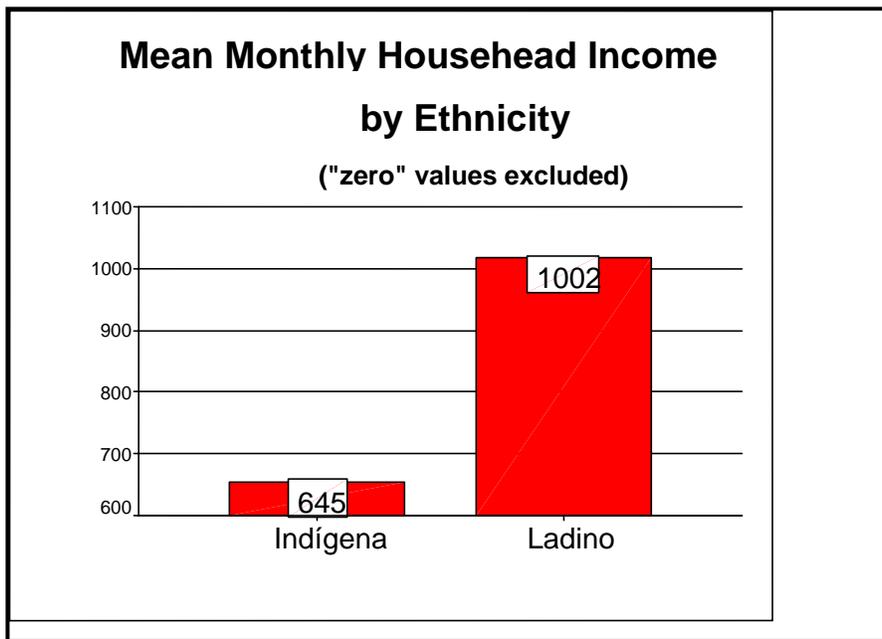
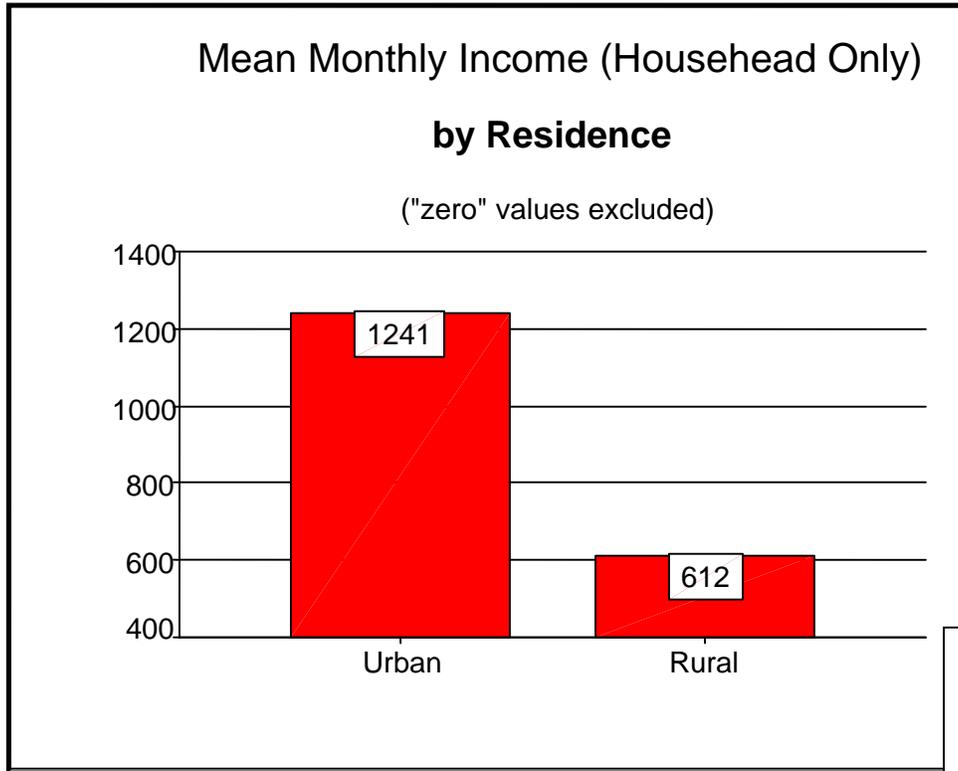


Table 80

Residence and Ethnicity



**Overall
Income
statistics for
both
Residence
and
Ethnicity:**

**Mean
= Q734**

**Median
= Q420**

**s.d.
= 995.50**

Salary, Labor, Business and Agricultural Income (Annualized)

Methodological Introduction

The main reason for extrapolation to annual income is to obtain reasonable estimates of per-capita income per household. Extrapolation was done in a straightforward manner: total monthly income (August 2001) from all sources plus income from business and agricultural sales in the same month times 12 months. (Thirteenth months and other annual bonuses (Christmas for example), are ignored, unless received in August.

This method was chosen because the alternatives would probably significantly underestimate reality. Those alternatives were to use the monthly median or the monthly mean. Either of these measure might more accurately represent the entire sample population, but would both over- and underestimate individual's scores.

Extrapolation from a single month in a single data set to an annual estimate has major assumptions. These include at a minimum:

- monthly income is relatively stable over at least a short-period of time;
- the basic data are reasonably valid and reliable (in the statistical sense, that means that a second or third observer using the same instrument would obtain the same information)

I think the first basic assumption, stability, is probably violated *prima facie*. Guatemala's high rate of under- and un-employment especially in the rural areas would suggest that much income is highly variable throughout the year.

The second assumption, reliability, is probably more valid. As indicated earlier, it is probable that people underestimate their income and income sources across the board, and are more accurate (or over-estimate) in reporting expenses. Previous experience in the northwestern highlands of Guatemala and elsewhere tend to lend validity to this assumption.

The statistical issue of face validity seems reasonably high. The questions used were straightforward (e.g. What is the income (value) of the (product, business, wages, etc) you received last month (August 2001)?). Follow-up: If you received a daily wage, how many days did you work last month at that wage?). The questions were asked in Spanish or local language (through a translator if necessary).

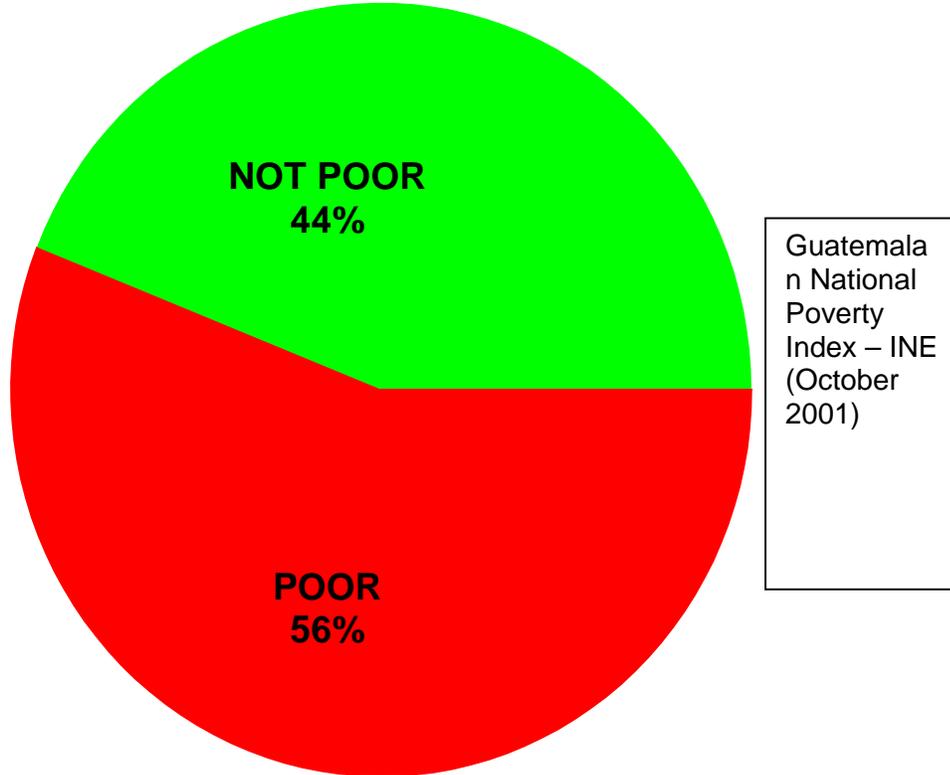
We have used these questions repeatedly, and they are guided by the INE questionnaire format. In addition, all of the interviewers have previously worked with INE (both on the ENIGFAM – 1998/99 and on the ENCOVI – December 2000 surveys. Consequently, we believe that the face validity and reliability of the items is very high.

The Instituto Nacional de Estadística (INE), based on a major national survey, Encuesta Nacional Sobre Condiciones de Vida (ENCOVI, 2000) established a Poverty Index based on individual consumption costs. The index posits the following annual per capita income levels and levels of poverty.

Table 81: INE Poverty Estimates based on Annual Per Capita Income

Category	Lower Limit	Upper Limit	Presentation Category
Extrema Pobreza	None	Q1911.00	Poor
Pobreza No Extrema	Q 1912.00	Q4318.00	Poor
No Pobre	Q4319.00	None	Not Poor

INE defines “Pobreza Total” as the sum of the first two categories. Based on the ENCOVI data, INE revealed the following analysis in October 2001. This model will be used in this section, since it provides a national baseline for comparison.¹³



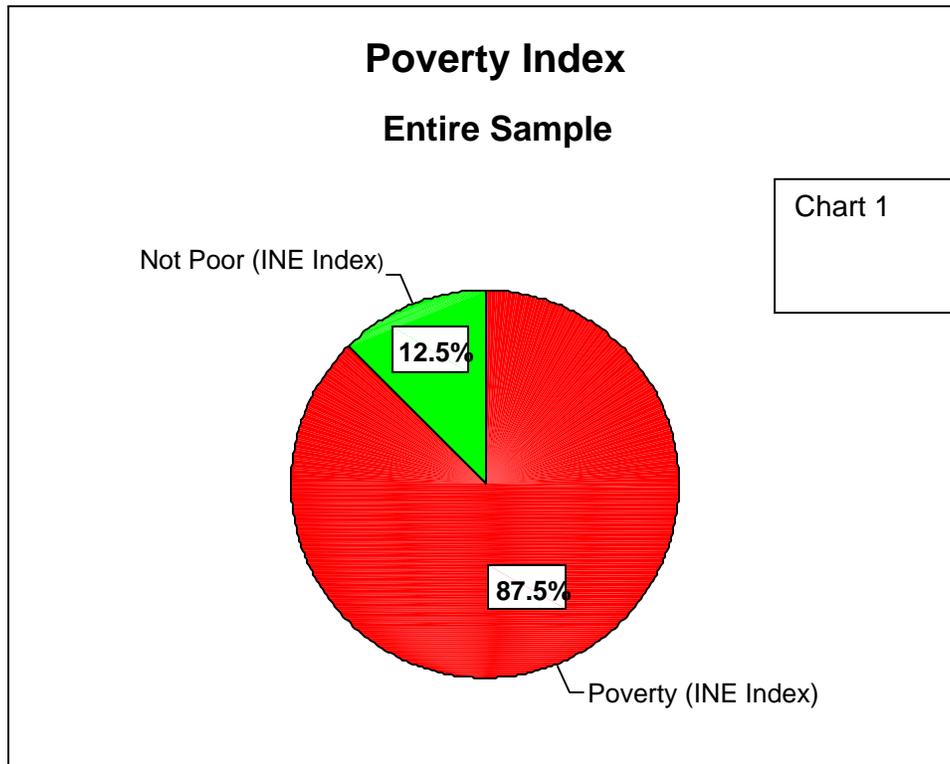
¹³ Similar data are included in a Guatemalan government draft publication, “El drama de la pobreza en Guatemala”, (febrero 2001), provides a similar estimate based on the ENIGFAM monthly data. This publication relies on the PNUD (Programa de las Naciones Unidas para el Desarrollo) “Informe sobre desarrollo humano 2000” (PNUD Madrid: Mundi-Prensa). “El drama” suggests that the PNUD international poverty level (converted to Guatemalan currency (\$1=Q6.49, the exchange rate used in the ENIGFAM report), is Q389.30. The government publication estimates that the “compra de una canasta mínima de bienes y servicios para asegurar la supervivencia (is) Q366.53 por persona por mes (línea nacional de pobreza)”.

The PNUD international figure extrapolates to Q4, 671.60 and the Guatemalan figure to Q4, 398.36 (12-month basis). The Guatemalan figure is only slightly above the INE numbers as presented above.

Even though these figures are very similar, I decided to use the annualized per capita data because it is not clear what is the month used as a basis for the ENIGFAM monthly estimates. If it is December, then it is possible that Christmas bonuses are included in that estimate. Therefore, and especially since we had excluded annual income from agricultural, land sales, migratory labor, and remittances, it seemed that this was the “purer measure” even with its questionable assumption of stability.

Poverty Levels – Annualized Per Capita Findings

The poverty levels for the entire sample are substantially higher than the reference sample. The Chart below presents the overall poverty findings.

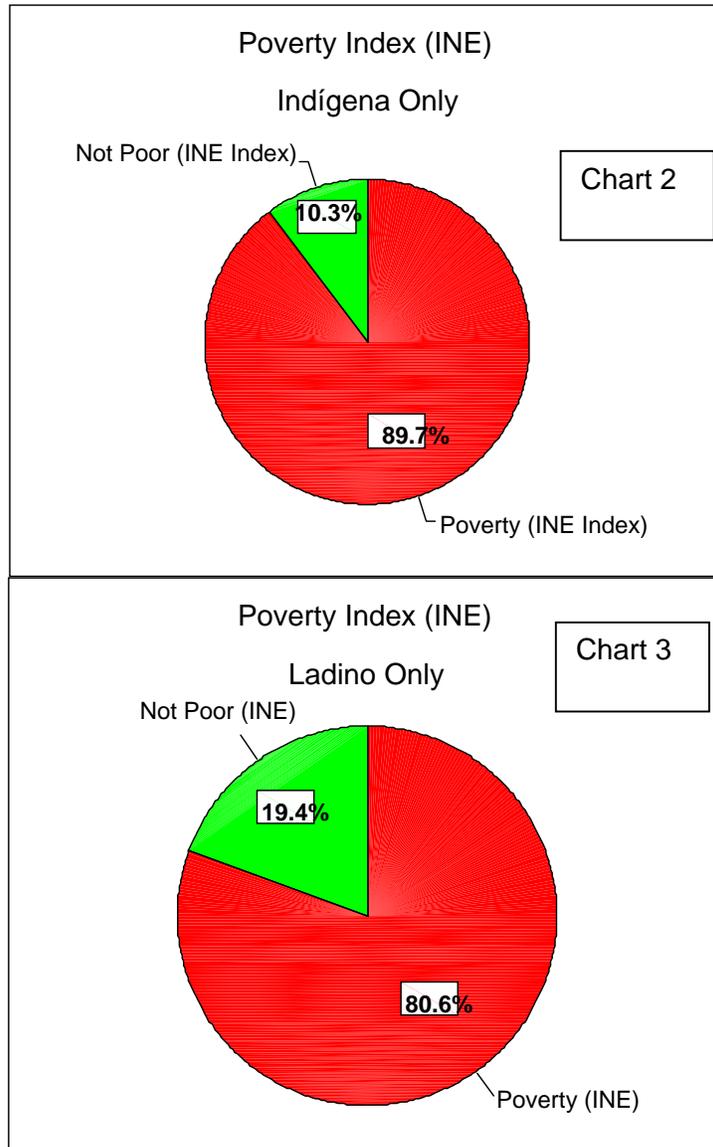


This is considerably higher than the national level INE findings of 56% in poverty. This is consistent with the original purpose of this study. The original study (EBF-1, 1999) as well as this one (EBF-2) was commissioned and designed to emphasize the more-isolated rural areas. These areas are often overlooked in most samples where the focus is on the municipal seat of government (*cabecera*). Consequently, our sample focused on isolated areas of the Zonapaz where there is often a lack of infrastructure, including roads, markets and commercial business activity.

The findings do approach and tend to cross-validate INE's Region VII findings where about 82% and Region II (84.3%) - (both in Zonapaz) of the population was classified as poor (INE ENCOVI 2000).

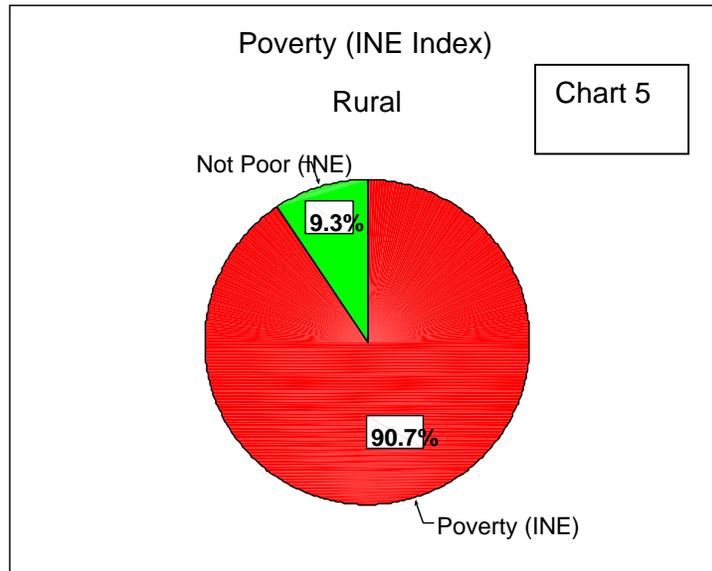
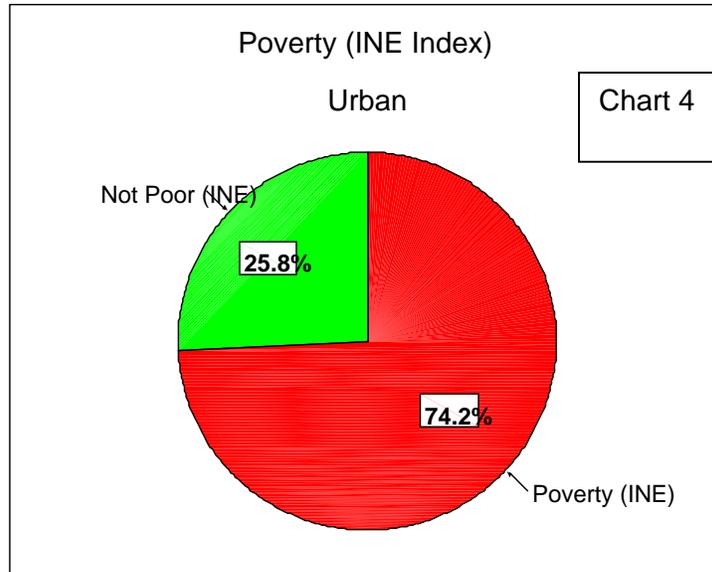
Within-Sample Poverty

The following pie charts demonstrate the variability among the sub-groups in the sample.



In the above charts highlighting ethnicity, it is clear that about 10% more indigenous households than ladino households fall in the poverty categories.

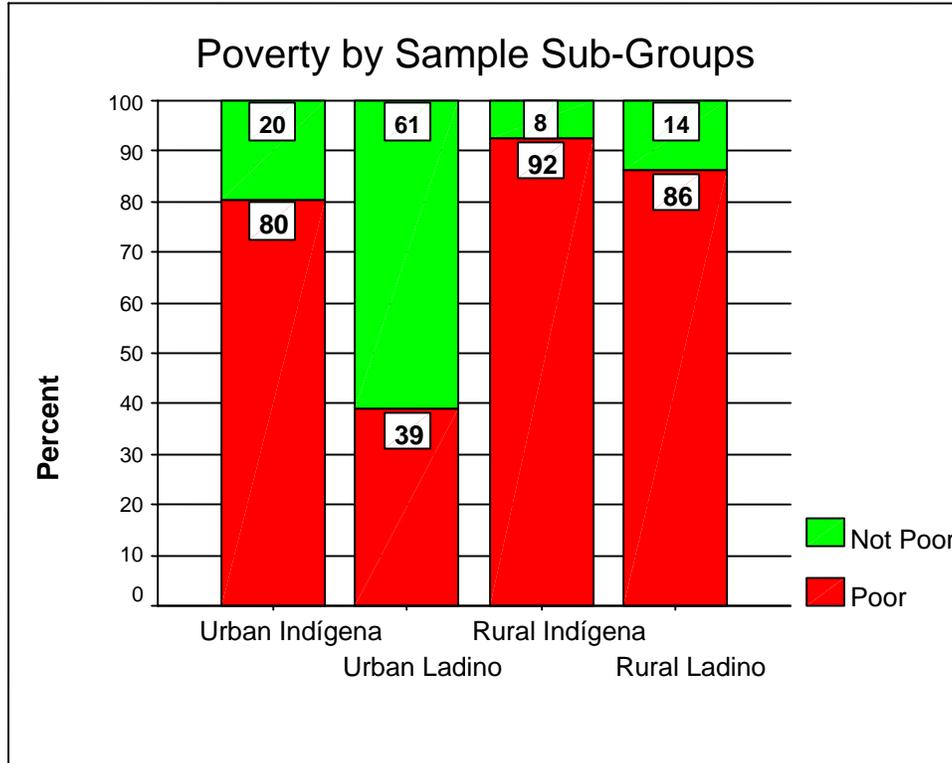
Similarly in the charts below which focus on residence area, the rural residents present 74% urban poor vs. 91% rural poor regardless of ethnicity.



The conclusion then is that the rural population in general and the rural indigenous population specifically, manifest the largest percentage of households suffering from poverty as measured by per capita annual income as defined in this report.

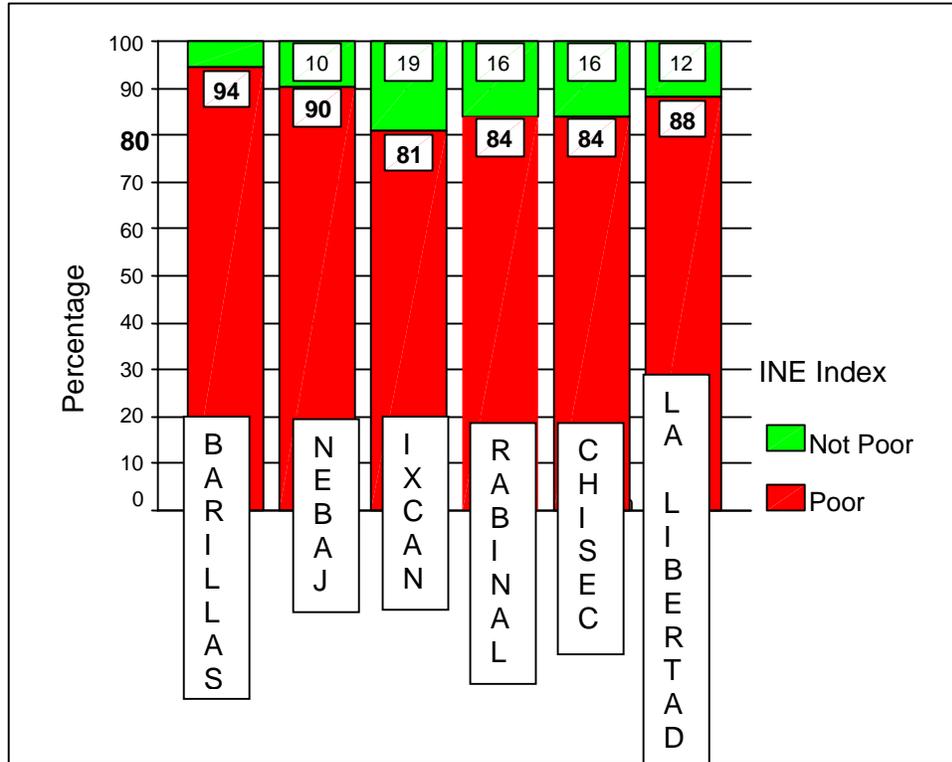
The following Table 82, makes the differences in the sample's sub-groups even more striking. The urban-ladino sample (while quite small n=20), only presents about 39% in poverty, while the rural-indigenous group shows a poverty index of 92%, followed by rural-ladinos at 86%, higher even than urban-Indígena at 80%.

Table 82



In the following graph, it is worth noting that none of the sampled municipios as a whole has a poverty index level of less than 80%.

Table 83
Poverty Index by Municipio



The statistical data for this graph is in the table on the following page.

Table 84: Municipio by INE Index

		Poor (INE)	Not Poor (INE)	Totals
Barillas, Huehue.	Count	118	7	125
	% within Municipio	94.4%	5.6%	100.0%
Nebaj, Quiche	Count	158	17	175
	% within Municipio	90.3%	9.7%	100.0%
Ixcán, Quiche	Count	101	24	125
	% within Municipio	80.8%	19.2%	100.0%
Rabinal, Baja Verapaz	Count	63	12	75
	% within Municipio	84.0%	16.0%	100.0%
Chisec, Alta Verapaz	Count	63	12	75
	% within Municipio	84.0%	16.0%	100.0%
La Libertad, Petén	Count	44	6	50
	% within Municipio	88.0%	12.0%	100.0%
Total	Count	547	78	625
	% within Municipio	87.5%	12.5%	100.0%

Summary of Income Poverty Index – Main Household Wage Earner

From the foregoing, it is clear that the households in the communities studied, 87% of families are below the locally defined poverty level, with the majority of these being rural populations, especially the rural-indigenous population.

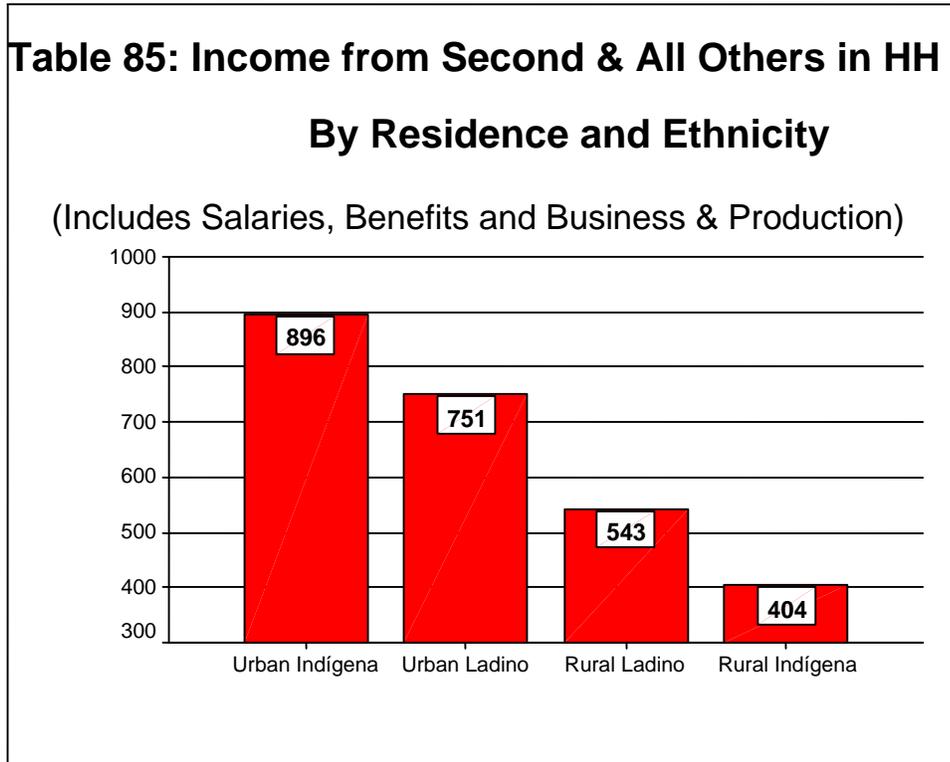
The urban populations are relatively better off, with the urban-ladino population having the least percentage of families below this poverty index.

This summary is based on principal wage-earner income and business revenues only. As indicated earlier in this report, secondary and other wage and business earners are considered separately in the next section.

Secondary and Additional Wage Earners

The main reason for separating these wage earners from the principal wage earner data is to determine if, and by how much, these earnings contribute to the household's ability to move above the poverty level.

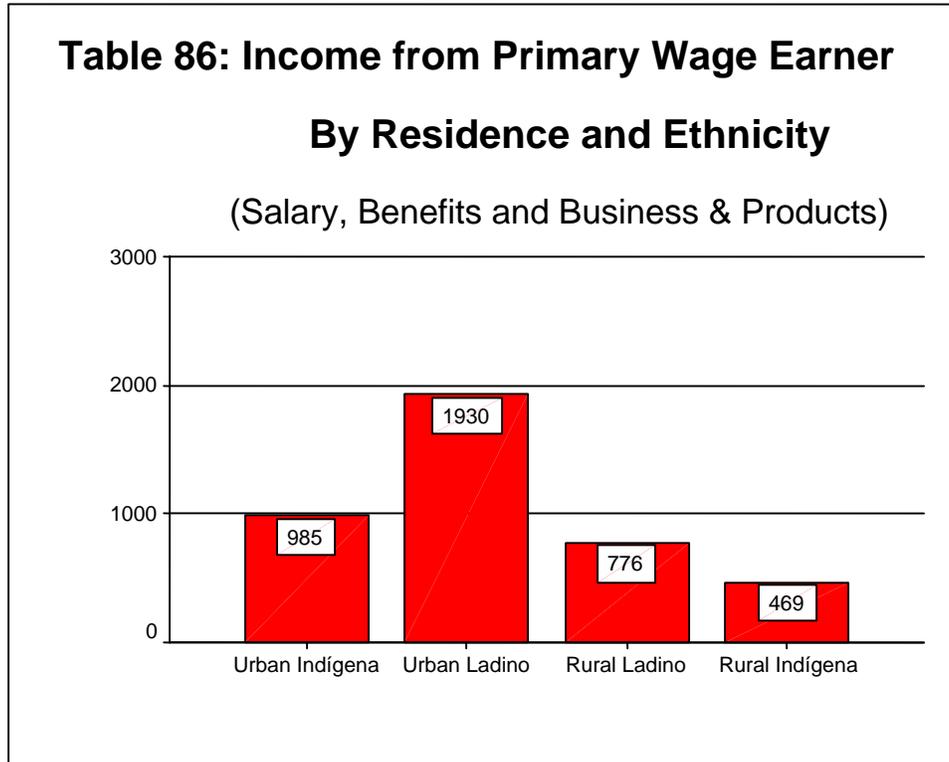
These data are presented in summary form. The raw data includes the same income variables as the principal wage earner. The following Table 85 shows the distribution of the mean income from secondary and additional wage earners in the household¹⁴. These data include the same variables as the primary wage earner and incomes derived from businesses and production (excluding agricultural sales).



It is important to note the differences between this graph and the one on the following page (Table 86). The relative positions between urban Ladinos and Indígenas reverses from primary earner income and secondary earner income. This suggests that urban

¹⁴ One case was deliberately excluded from this analysis. The household has additional income of Q10,900 per month. This is a valid data point that was determined by analyzing the complete case. It was withheld from this particular analysis because it seriously raised the mean for Urban Indígenas. Removing this case does not modify the order of the mean values for these four groups. While the sum of total household income for urban indigenas does not equal that of

Indígenas follow a different economic strategy either out of economic need or perhaps a different cultural ethic than urban ladinos. In addition, it is probably the case that Mayans primary wage earners are not hired (due to eligibility or discrimination) for more permanent higher-paying jobs.



Nevertheless, it is important to sum these two data points to arrive at a full view of the monthly household income. Table 87, on the next page, summarizes the monthly income from the primary and secondary (all others) wage earners in each household.

It will be noted that the total mean monthly household income for urban ladinos is about Q400 more than for urban Mayans. Nevertheless, Table 88 uses the standard Student's "t-test" for difference of means and indicates that the difference between these two sub samples is NOT statistically significant.

**Table 87: Mean Monthly HH Income - All Sources
By Residence and Ethnicity**

(Includes all HH members from all Monthly Sources)

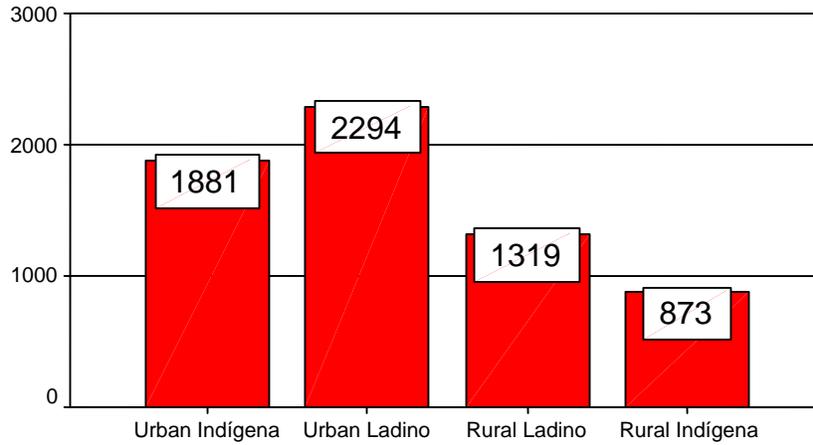


Table 88: “T-Tests for differences between Urban Ladinos and Indígenas

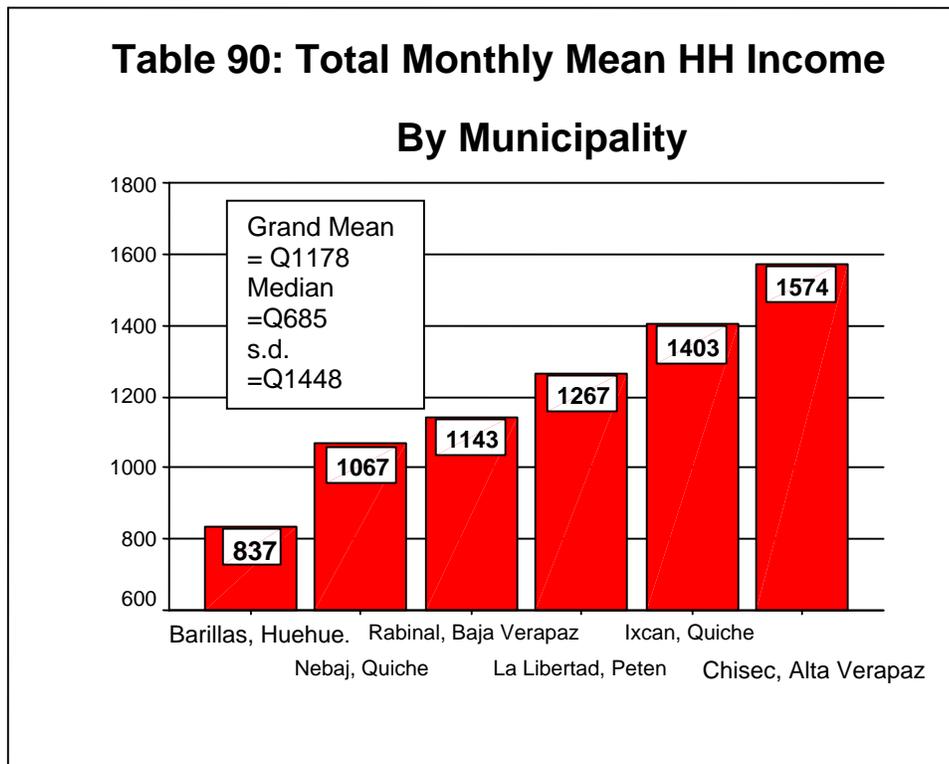
		Levene's Test for Equality of Variances		t-test for Equality of Means			
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference
Dependent variable	Assumptions						
Total Mean Monthly Income for all HH Members	Equal variances assumed	.483	.489	-.907	117	.366	-413.38
	Equal variances not assumed			-1.037	24.459	.310	-413.38

On the other hand, the difference between the two rural sub-samples is highly statistically significant, with rural ladinos earning about 1.6 times (Q500) more than their Mayan counterparts.

Table 89: “T-Tests for differences between Rural Ladinos and Indígenas

Total Mean Monthly Income for all HH Members	Levene's Test for Equality of Variances	t-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	
Equal variances assumed	19.195	.000	3.416	500	.001	445.30	130.35	
Equal variances not assumed			2.934	188.020	.004	445.30	151.75	

The variability among the six municipios surveyed is significant with Chisec having nearly double the mean monthly income of Barillas.



Other irregular income calculated for the month of August 2001

Irregular income in this study includes the following sources of income. The unit of analysis is the pooled total of all household members.

- Pensions and Retirement.
- Remittances from within Guatemala
- Remittances from abroad (mainly the USA)
- Rent from land, houses, storage space
- Rent from equipment and machinery

**Table 91: Irregular income: Monthly (August 2001)
(Treats 0 or Not Applicable as “Missing”¹⁵)**

		Pensions August 2001	Cash Remitted from Guate. (Cash Remitted from abroad	Total Cash Remitted (
N	Valid	5	47	22	69
	Missing	620	578	603	556
Mean		346.00	351.81	1151.27	606.71
Median		150.00	200.00	1331.50	390.00
Std. Deviation		411.68	438.93	618.25	623.88
Minimum		20	10	150	10
Maximum		1000	2700	2325	2700

The highlighted portions of the above table indicate that very few households are receiving irregular monthly income from these sources.

Monthly Income from Rent of Property and Equipment

This is not an important source of income for this population sample. Only 14 individuals report monthly rental income from all capital sources (houses, land, and equipment). The summary is in the following table.

Table 92: Rental Income – August 2001

		Land Rental Income	House, Storage Income	Equipment Rental Income	Total Rental Income
N	Valid	9	4	2	14
	Missing	616	621	623	611
Mean		415.00	662.50	805.00	571.07
Std. Dev		589.97	515.39	1124.30	637.39
Minimum		25	150	10	10
Maximum		1870	1200	1600	1870

¹⁵ We treat “zero” and “not applicable” as “Missing Values” so that the true income to the household is represented in calculating means and other statistics.

Annual and Other Irregular Income

A good deal of the household income is irregular (i.e. it does not come from regular monthly sources). This has been measured and calculated separately due to its potential annual variability (and volatility). Annual is defined as the last 12 months prior to the interview (September 2000 through August 2001).

- Agricultural production will vary from season-to-season and year-to-year depending on both national and international markets.
- Animal sales can vary annually based on the owner's own supply in addition to market demand.
- Land Sale.
- Vehicle, equipment and machinery sales.
- Loans received.
- Inheritance received.
- Migratory labor will also vary (as we have seen this year) due to international prices in coffee

Consequently, it is more reasonable to treat this income as a separate category, and not prorate it over a 12-month period. Because of this, **income calculated on an annual basis does not form part of the monthly income variables described in the previous sections.**

**Table 93: Total Irregular Annual Income
(Zero and N/A Values set to Missing)**

	N	Minimum	Maximum	Mean	Std. Deviation
Agricultural Production	276	10	77975	4058.07	7110.04
Land Sales	16	200	40000	11093.75	11806.18
Vehicle Sales	7	200	9000	3005.71	3116.66
Animal Sales	229	20	35000	1005.98	2652.06
Loan Cash Received	153	80	35000	3905.82	6965.05
Inheritances	5	1000	4800	2060.00	1586.82
Income from Migratory Labor	158	124	40000	3123.99	4265.45
Total Annual Irregular Income	619	0	82350	4203.47	8570.98

**Table 94: Annual Irregular HH Income by Municipio
Transfers, Pensions, Rents, Sales, Etc.
(Includes all valid (non-missing) Values
Ascending Order of Mean Values**

Municipio	N	Mean	Std. Deviation
Rabinal, Baja Verapaz	75	1411.29	2826.99
Nebaj, Quiche	174	2927.00	4613.72
La Libertad, Petén	50	3961.08	9013.31
Chisec, Alta Verapaz	73	4449.75	6283.78
Ixcán, Quiche	124	5397.67	9615.27
Barillas, Huehue	123	6460.24	13198.05
Total	619	4203.47	8570.98

Annualized Income

We have extrapolated an annualized income figure based on monthly income. The main purpose of this was for comparability with INE's Poverty Index, which is based on annual per capita income for household. Extrapolation is a risky endeavor when based on a single month data point, and the chances of over- or under-estimating annual results are high. We have been conservative in this calculation and ignored any additional income due to employed individuals from *alguinaldos* and other bonuses. The calculation was a done on a straightforward 12-month basis.

**Table 95: Total Annual HH Income by Municipio
(Includes all valid (non-missing) Values)**

Municipio	N	Mean	Std. Deviation
Rabinal, Baja Verapaz	75	11144.88	10867.30
Nebaj, Quiche	174	14188.48	15230.85
Barillas, Huehue.	123	15315.40	15706.84
La Libertad, Petén	50	18341.88	15661.20
Chisec, Alta Verapaz	73	21488.36	25698.77
Ixcán, Quiche	125	22214.93	31315.95
Total	620	16856.56	20861.38

This measure is the sum of all income from all sources annualized (for the 12 month period September 2000 thru August 2001).

The following two Graphs illustrate the differences between ethnic and residential groups and among departments.

Table 96
Total Annual Household Income by Residence, Ethnicity and Department

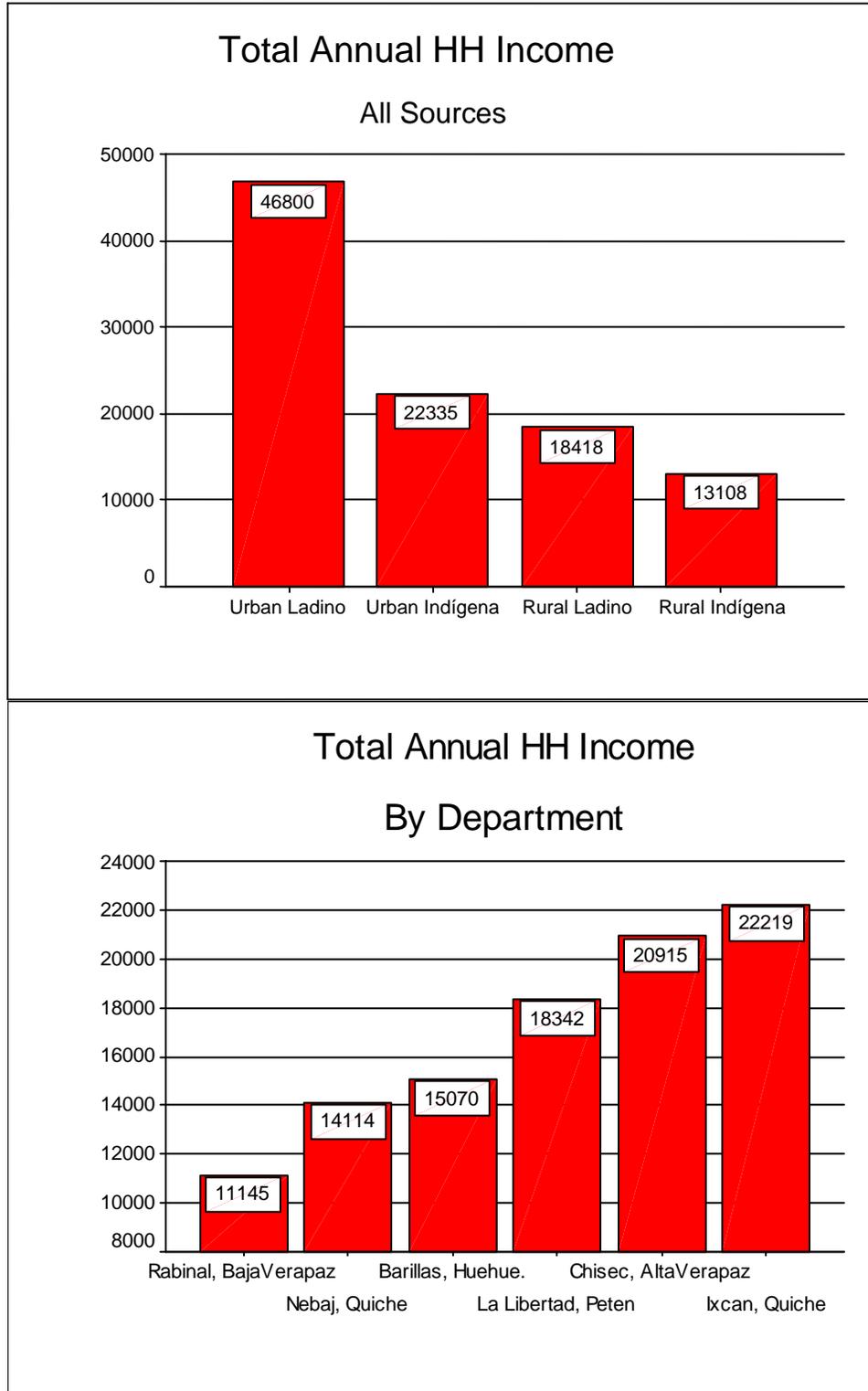


Chart 6
Income Poverty Indicators – Total Sample

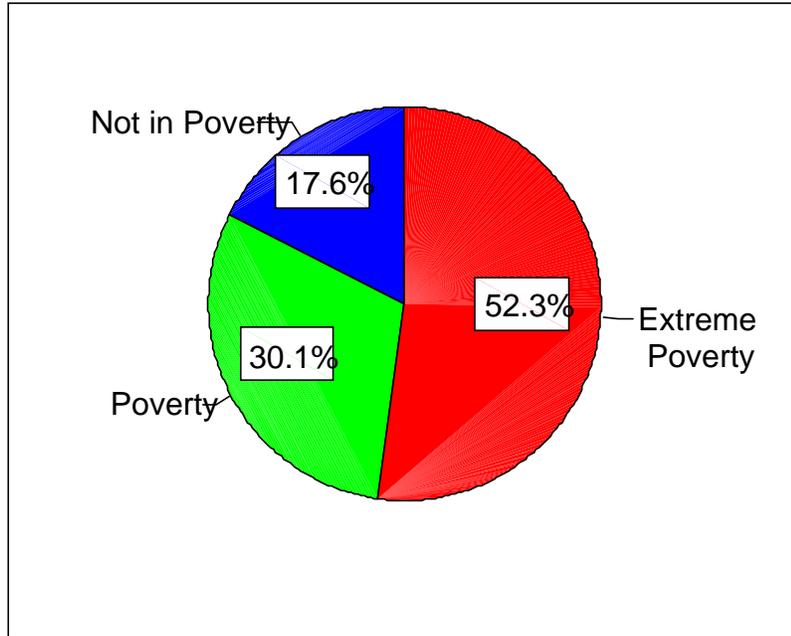
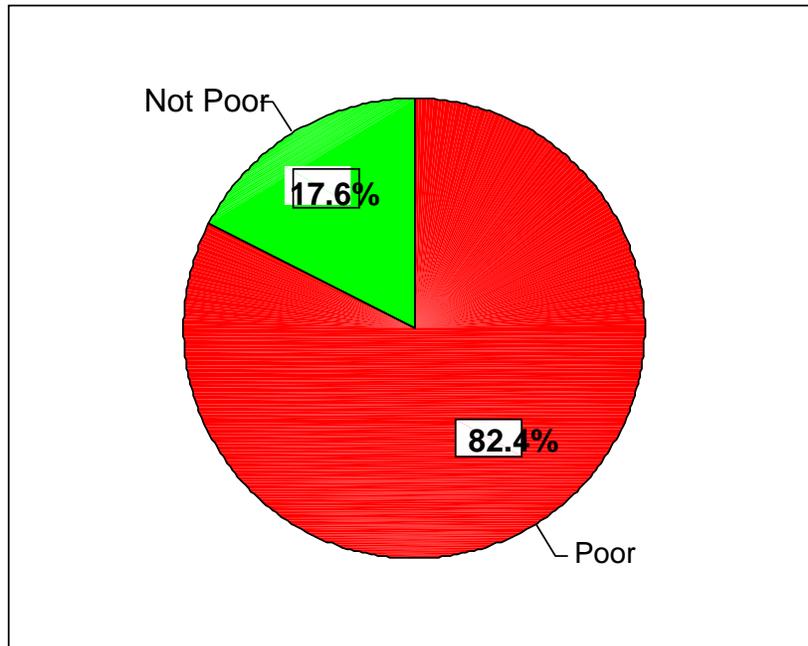


Chart 7



Credit

Lack of access to and use of credit often is said to be a major part of the “Poverty Cycle”. There is a variety of credit mechanisms available in the Guatemalan environment. For analysis purposes, I have categorized these as formal and non- formal as follows:

Formal Credit Mechanisms	Informal Credit Mechanisms
Cooperatives	Family
NGO Lending Schemes	Friends
Unions	Local Lenders
State Banks	Community Banks (These may or may not be part of an NGO mechanism)
Private Banks	

(No hierarchy or equivalence is implied in this table.)

Current credit sources and terms

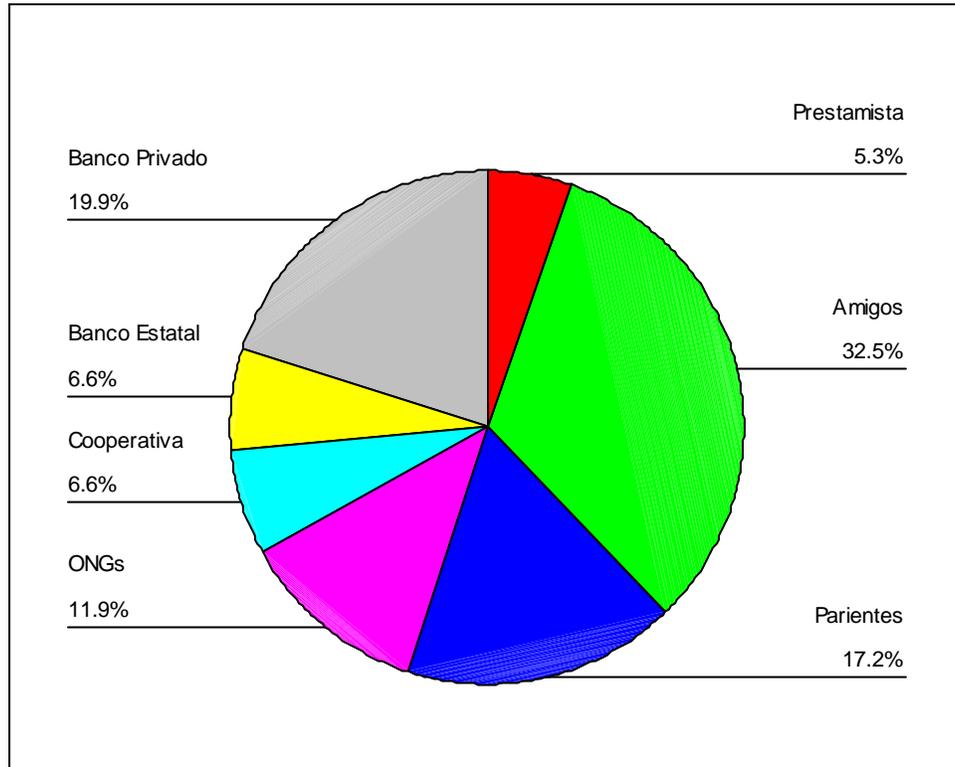
The majority of households¹⁶ have no current loan (76%, Table 97). “Friends” provide the majority of loan access, followed by Private Banks, and Family.

Table 97: Sources of Credit

Source	Frequency	Percent
No Current Loan	474	75.8
Friends	49	7.8
Private Bank	30	4.8
Family	26	4.2
NGOs	18	2.9
Cooperative	10	1.6
State Bank	10	1.6
Local Lender	8	1.3
Total	625	100.0

¹⁶ The unit of analysis remains the Household even if there are two or more individuals who presently have loans, or even if the Household Head is not the principal loan-holder.

Chart 8 Sources of Credit



When credit sources are divided by category, the results indicate that 55% of the 155 households with current credit have access to sources that can be termed “formal”.

Table 98 Formal & Non-Formal Credit

	Frequency	Percent
Informal Credit	83	55.0
Formal Credit	68	45.0
Total	151	100.0
No Credit	474	
Total	625	

Table 99 Interest Rates

Percentage Groups	Frequency	Percent	Cumulative Percent
1-10%	27	4.3	22.0
11-20%	30	4.8	46.3
21-30%	51	8.2	87.8
31-39%	6	1.0	92.7
41-50%	9	1.4	100.0
Total	123	19.7	
N/A	502	80.3	
Total	625	100.0	

Table 100 Duration of Loan

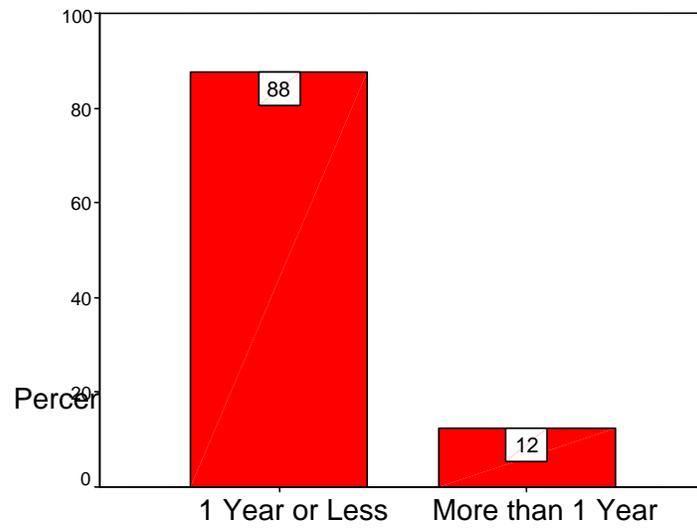


Table 101 Duration of Loan

	Frequency	Valid Percent	Cumulative Percent
1 Year or Less	134	87.6	87.6
More than 1 Year	19	12.4	100.0
Total	153	100.0	

Table 102 Type of Credit Guarantee

Type of Credit Guarantee	Frequency	Percent	Cumulative Percent
None	72	48.0	98.7
Mortgage	62	41.3	50.7
Co-Guarantor	13	8.7	8.7
Other	2	1.3	100.0
Collateral	1	.7	9.3
Total	150	100.0	
No Credit	473		

Table 103 - Duration of Loan by Type of Lender

Source	Duration of Loan		Total
	1 Year or Less	More than 1 Year	
State Bank Lender	6	4	10
Cooperative	8		8
NGOs	10		10
Private Bank	18		18
Family	23	7	30
Friends	24	2	26
Totals	43	6	49
Totals	132	19	151

Table 104 – Source of Credit by Type of Guarantee (Security)

	Signature – Co-Signer	Collateral	Mortgage	None	Other	Total
Friends	4		17	27	1	49
Private Bank	2	1	27			30
Family	2		2	21		25
NGOs	2		5	10		17
Cooperative			4	5	1	10
State Bank	3		6	1		10
Local Lender			1	7		8
Total	13	1	62	71	2	149

Table 105 – Source of Credit by Interest Rate Groups

Interest Rates	Local Lenders	Friends	Family	NGOs	Cooperative	State Bank	Private Bank	Total
1-10%	1	15	3	1	3		3	26
11-20%	4	9	4		2	3	8	30
21-30%	2	5	2	13	4	7	18	51
31-39%			1	3	1		1	6
41-50%	1	7	1					9
Totals	8	36	11	17	10	10	30	122

Credit Use**Table 106 - Use of Credit**

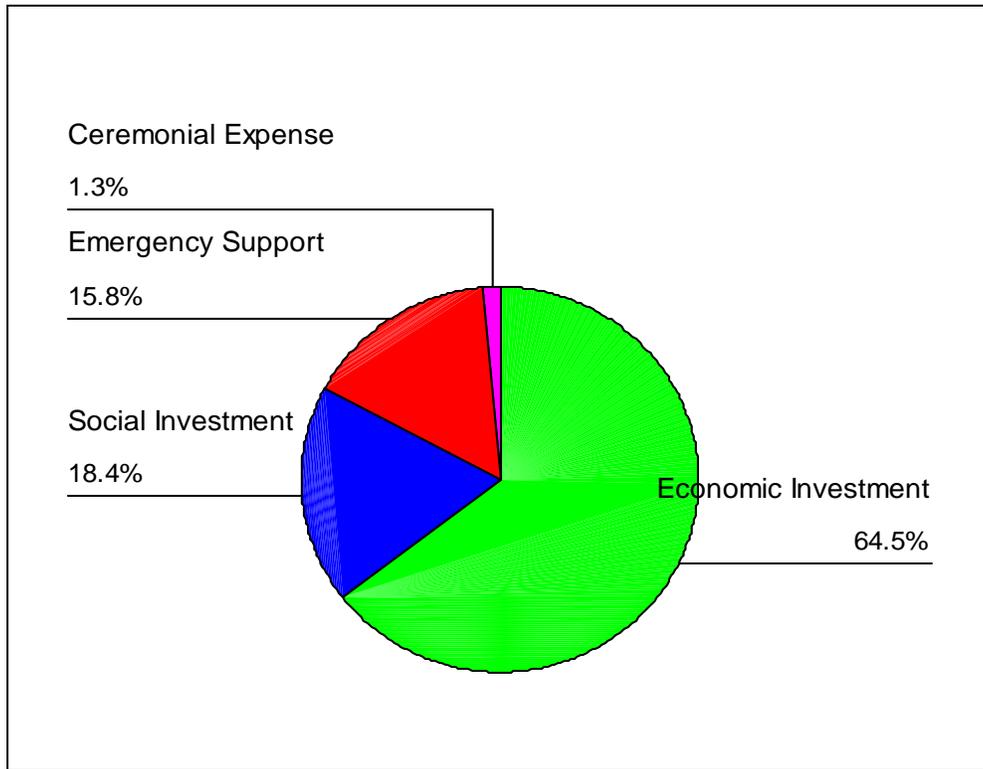
Use Category	Frequency	Percent	Cumulative Percent
Agriculture	67	44.1	44.1
Family Emergencies	24	15.8	98.7
Commercial	18	11.8	82.9
Housing	16	10.5	71.1
Livestock	13	8.6	52.6
Health	7	4.6	57.2
Education	5	3.3	60.5
Ceremonies/Fiestas	2	1.3	100.0
Sub Total	152	100.0	
No Loan	473		
Total	625		

Table 107 - Credit Use by Categories

	Frequency	Valid Percent	Cumulative Percent
Economic Investment	98	64.5	64.5
Social Investment	28	18.4	82.9
Emergency Support	24	15.8	98.7
Ceremonial Expense	2	1.3	100.0
Total	152	100.0	
No Current Loan	473		
Total	625		

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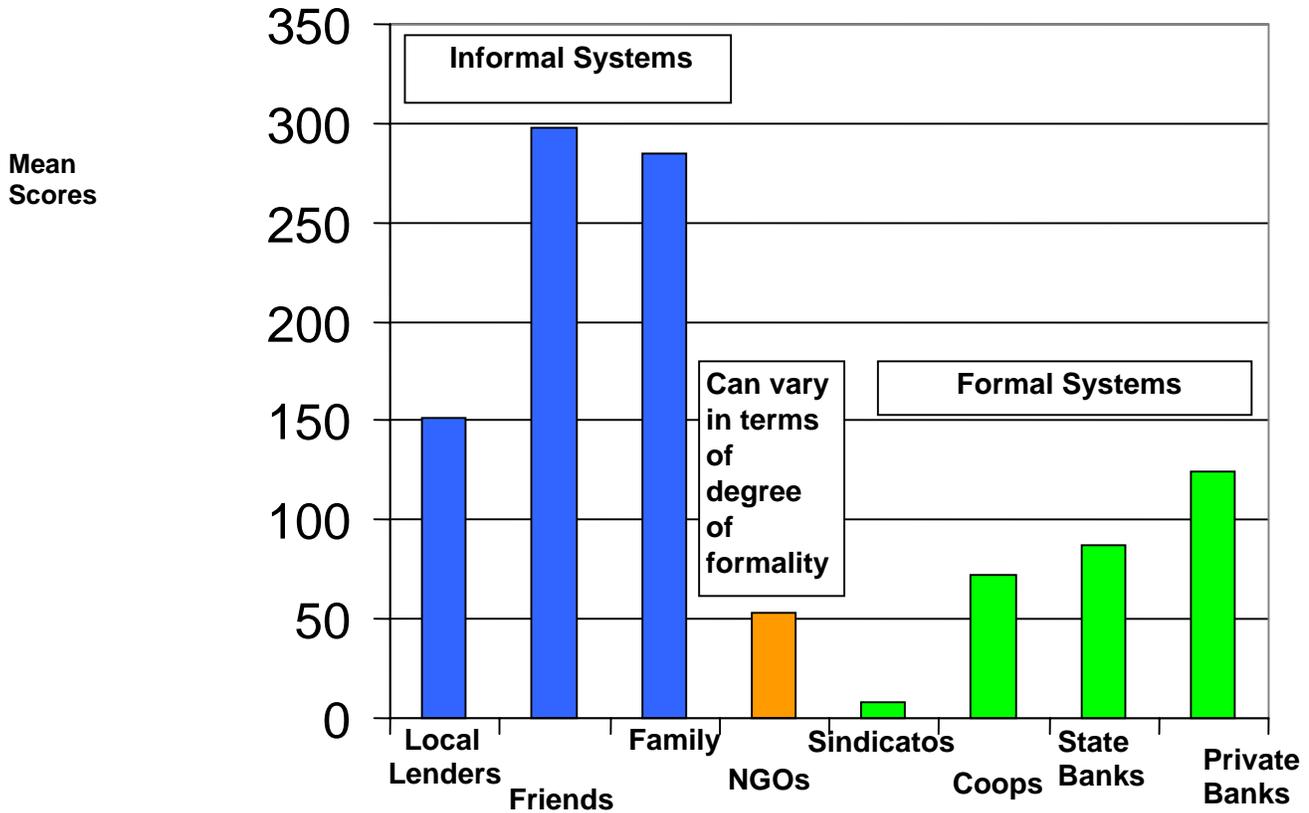
Chart 9 – Credit Use by Category of Investment



Perceived credit access and opinion

Credit systems form an ever-increasing part of many NGO development activities and there is considerable debate over interest rates, sources and other essential factors in designing credit systems. While this is a survey and we did not have the time to engage in a complete investigation of credit systems and access, we tried to obtain some opinion on credit sources and perceived access to these basic sources. Table 108 on the following page addresses perceived access to common sources of credit and categorizes these by “formality”.

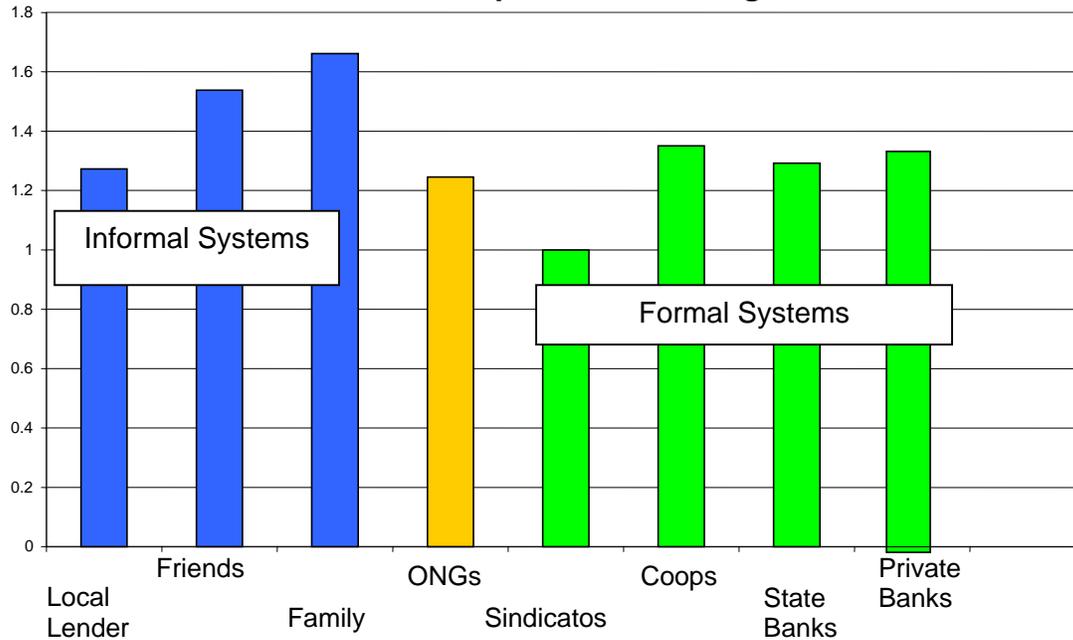
Number with Perceived Access
Table 108: Perceived Access to Loan by Sources



Clearly, there is an overwhelming perception that informal sources are more accessible than formal systems. However, it is interesting that within the formal system, private banks are perceived as more accessible than either cooperatives or state banks. Credit access from unions is limited to union members only, thus not perceived as a source for most people.

Table 109 (next page) reports the findings on questions designed to obtain opinions on the most favorable source of credit. Respondents were asked to opine regardless of whether they had current credit outstanding either now or in the past, and regardless of their perceived access.

Table 109
Mean Scores of Opinion of Lending Sources



The distribution of mean scores on this variable has multiple possible interpretations. The first observation is that it is measuring some psychological dimension such as “trust” and “locus of control” (very loosely defined). Informal systems are essentially “face-to-face” and have informal systems of control over both lender and borrower (social sanctions). On the other hand, formal systems (except for coops and unions) are not face-to-face (but coops and unions do have formal policies) and therefore formal systems encourage trust through legal control and sanctions.

The most interesting part of this table is the high regard people seem to have for NGOs even though few people perceive that they have access to these organizations.

While these are interesting findings, the measures are very weak and call for responses to hypothetical (i.e. “empathetic”) question items. At the least, nevertheless, it suggests a very fertile area for further focused investigation into the perception of and access to credit facilities.

If one were to form an operational conclusion based on these findings alone, it would be that NGOs have an advantage over the formal and informal sector in terms of credibility and trust. The issue for NGOs is to design credit systems that improve access to a wider population than those directly involved in their programs. This, of course, is in addition to other main policies such as terms-of-payment (interest, duration, collateral, etc.).

Land Tenure, Control and Value

For rural populations, access to and control of land is of critical importance both to their livelihood as well as an important measure of total wealth. This study measured 39 land variables that were then used to form 7 principal analysis variables. Measures were done in local “cuerdas” (which vary from area to area) and then converted to manzanas by supervisors using standard conversion equivalents for each size of cuerda. No conversions were done on the spot, thus assuring that standard equivalents were used for all calculations.

The reliability and validity of land variables in general, like income, is also questionable. Once again, the reluctance to provide accurate information for fear of tax issues, neighbor jealousy, and a respondent who may not really have the correct information confounds measurement in a survey instrument.

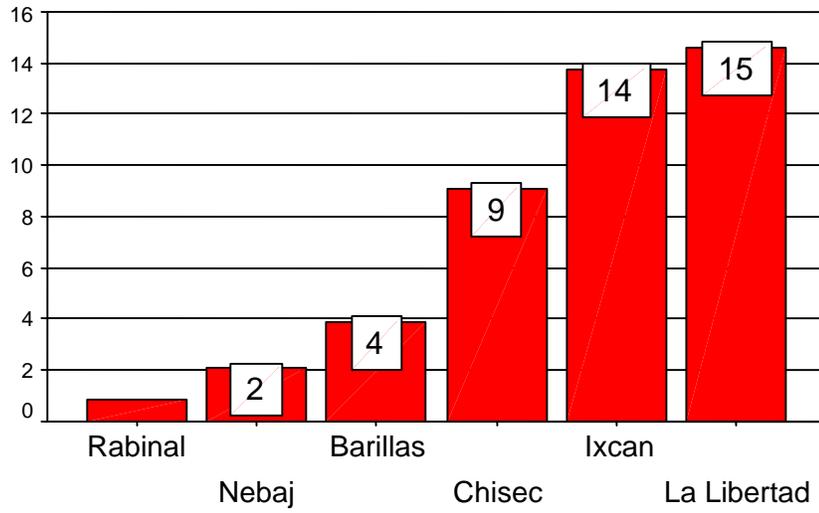
The following tables (110 – 115) and charts (10 – 11) provide the basic details of land tenure, access and control in the six municipios studied.

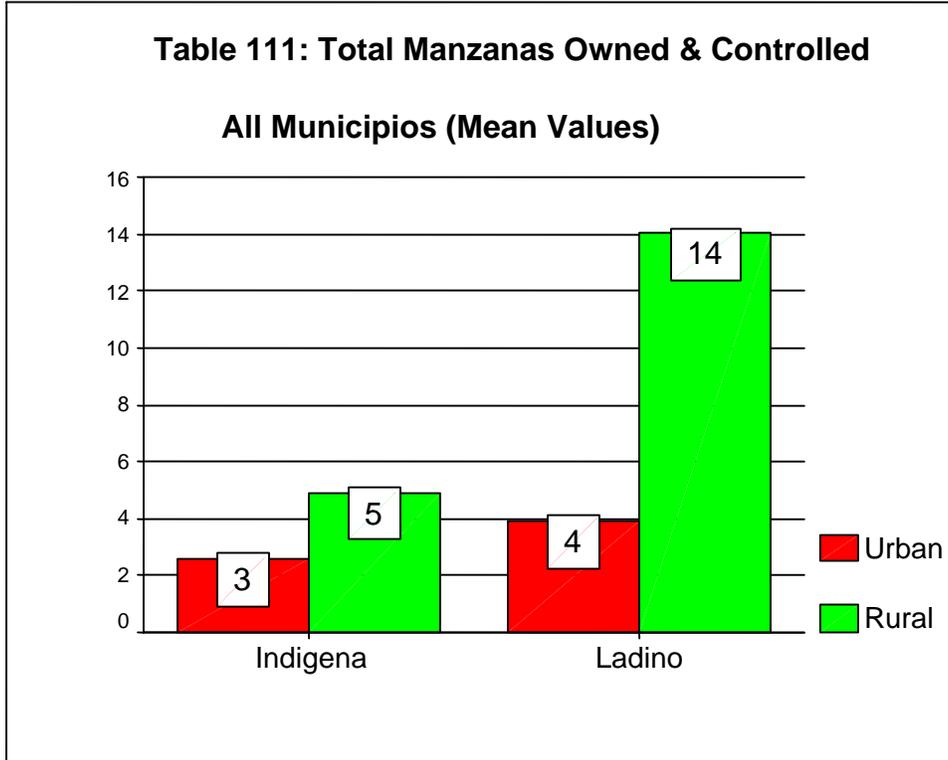
Table 110
Main Variables Used in Land Tenure Analysis

Principal Variables¹⁷	N	Min	Max	Mean	s.d.
1. Number of Owned Manzanas in Municipio of Residence	625	0	128	6.01	12.66
2. Number of Manzanas Owned planted in the last 12 months	625	.00	93	1.66	5.74
3. Value of all land owned in Municipio of Residence	621	.00	620000	28970.53	63703.98
4. Total Number of Manzanas CONTROLLED In Municipio of Residence	624	.000	128	6.45	12.76
5. Total Number of Manzanas (Owned and Controlled) in all Municipios	623	.000	128	6.48	12.76
6. Total Manzanas Planted in all Municipios	621	.000	30	1.72	2.93
7. Total Value of Land in all Municipios	624	0	620000	30737.07	67517.92

¹⁷ Refer to Appendix IV for complete data for all land variables.

Table 110 Cont'd.
Mean Total Land Owned & Controlled
By Municipios





Statistics
Total Mz (prop y control) en total (todos munis)

N	Valid	623
	Missing	2
Mean		6.48
Median		1.56
Mode		0
Std. Deviation		12.76
Min		0
Max		128

It is important to note the statistics for the preceding table. 11% have no access to land at all, and 38% have access to less than 1 manzana. Thus both the mode and the median are important statistics to consider. Further, one individual has 128 manzanas, which inflates the mean score considerably.

The following tables (112– 115) and Chart 11 provide detailed data in support of the preceding table.

Table 112: Landholding by Area of Residence

	Area of Residence	N	Mean	Std. Deviation	Std. Error Mean
Number of Owned Manzanas in Muni	Urban	120	2.58	6.23	.5690
	Rural	504	6.80	13.64	.6076
Number of Manzanas Owned planted in the last 12 months	Urban	120	1.66		.7502
	Rural	504	1.6508	4.99	.2223
Value of all land owned in Municipio of Residence	Urban	119	16273.10	24812.85	2274.5910
	Rural	501	31924.54	69554.47	3107.4646
Total Number of Manzanas Controlled In Municipio of Residence	Urban	120	2.76	6.21	.56716
	Rural	503	7.31	13.74	.61276
Total Number of Manzanas (Owned and Controlled) in all Municipios	Urban	120	2.76	6.21	.56697
	Rural	502	7.35	13.74	.61326
Total Manzanas Planted in all Municipios	Urban	119	1.046	2.41	.22099
	Rural	501	1.88		.13498
Total Value of Land in all Municipios	Urban	120	16804.17	25631.07	2339.79
	Rural	503	34002.85	73776.31	3289.52

Table 113**T-tests (Independent Samples Test) Landholding by Area of Residence**

Variables	Assumption	F	Sig.	t	df	Sig. (2-tailed)
Number of OWNED Manzanas in Muni	Equal variances	30.794	.000	-3.306	622	.001
Number of Manzanas Owned planted in the last 12 months	Equal variances	.644	.422	.022	622	.982
Value of all land owned in Municipio of Residence	Equal variances	11.020	.001	-2.417	618	.016
Total Number of Manzanas CONTROLLED In Municipio of Residence	Equal variances	29.464	.000	-3.544	621	.000
Total Number of Manzanas (Owned and Controlled) in all Municipios	Equal variances	29.300	.000	-3.570	620	.000
Total Manzanas Planted in all Municipios	Equal variances	4.250	.040	-2.807	618	.005
Total Value of Land in all Municipios	Equal variances	12.326	.000	-2.516	621	.012

Table 114
Landholding and Ethnicity

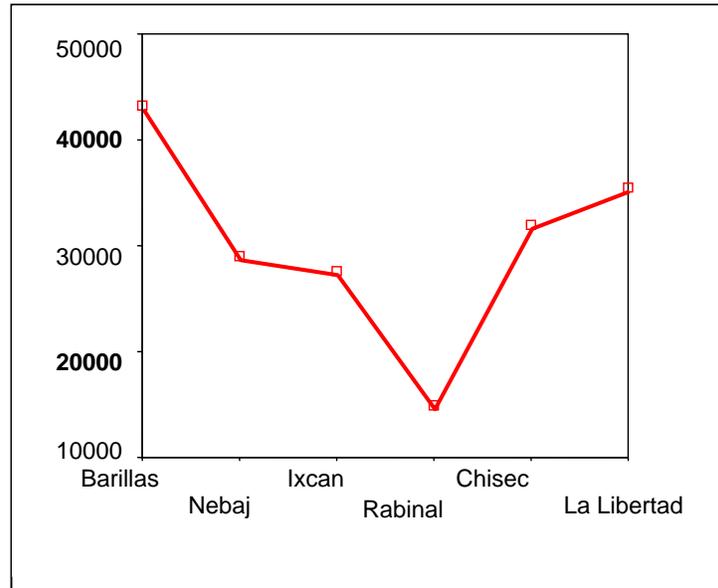
Variables	Ethnicity	N	Mean	Std. Deviation	Std. Error Mean
Number of Owned Manzanas in Municipio of Residence	Indígena	466	4.12	8.5941	.3981
	Ladino	155	11.78	19.5303	1.5687
Number of Manzanas Owned & Planted in the last 12 months	Indígena	466	1.53	6.3217	.2928
	Ladino	155	2.04	3.5578	.2858
Value of all land owned in Municipio of Residence	Indígena	462	27971.21	61067.0567	2841.0966
	Ladino	155	32519.34	71732.7094	5761.7099
Total Number of Manzanas Controlled In Municipio of Residence	Indígena	465	4.36	8.56851	.39736
	Ladino	155	12.84	19.56518	1.57151
Total Number of Manzanas (Owned and Controlled) in all Municipios	Indígena	464	4.40	8.57042	.39787
	Ladino	155	12.84	19.55390	1.57061
Total Manzanas Planted in all Municipios	Indígena	463	1.32	2.35590	.10949
	Ladino	154	2.93821	4.00163	.32246
Total Value of Land in all Municipios	Indígena	466	30401.15	66387.22	3075.33
	Ladino	154	32373.38	71756.17	5782.28

Table 115: t- Tests (Independent Samples Test) of Landholding by Ethnicity

Equal Variances Assumed

	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference
Number of Owned Manzanas in Muni	120.402	.000	-6.734	619	.000	-7.6571
Number of Manzanas Owned planted in the last 12 months	1.730	.189	-.965	619	.335	-.5154
Value of all land owned in Municipio of Residence	3.081	.080	-.767	615	.444	-4548.1363
Total Number of Manzanas Controlled In Municipio of Residence	108.748	.000	-7.450	618	.000	-8.47710
Total Number of Manzanas (Owned and Controlled) in all Municipios	108.158	.000	-7.415	617	.000	-8.44102
Total Manzanas Planted in all Municipios	42.604	.000	-6.078	615	.000	-1.61450
Total Value of Land in all Municipios	1.034	.310	-.313	618	.754	-1972.23

Chart 10: Mean Value of Land Owned by Municipio (Quetzales)



Land in Production as of August 2001

The following table 115, and Chart 11 graphs the means of land planted on “owned” land in the last 12 months.

Table 116: Mean No. Manzanas (Owned) planted in the last 12 months

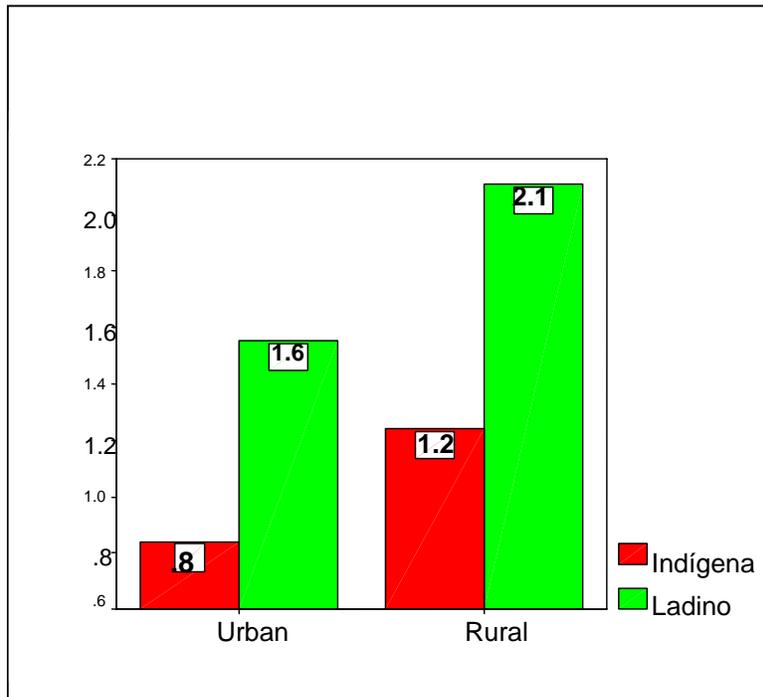
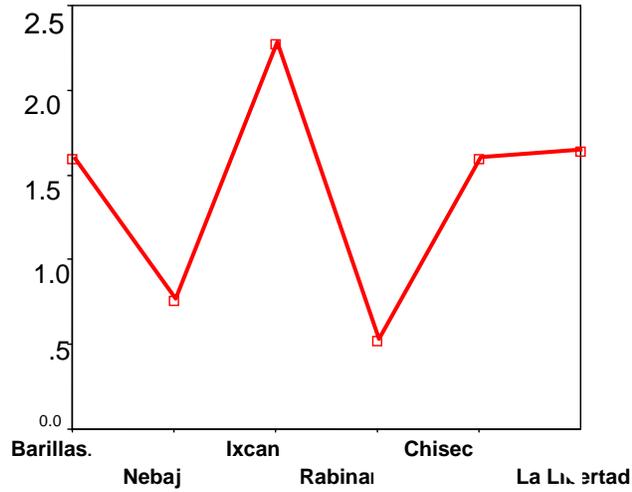


Chart 11: Mean of Number Owned Manzanas (propias) planted in the last 12 months



The above table and chart suggest that a relatively small amount of owned land was planted in 2001 in these municipios. This can be attributed to two possible factors. One, the land is being deliberately fallowed; and/or two, some (large?) percentage of the land is not appropriate for crops. Traditionally, the rural population fallows land for 2-3 seasons for it to regain its productivity. This is particularly true in “slash-and-burn” technologies.

Participation in Community Organizations and Non-Government Organizations

Community based development activities depend to a great extent upon the degree of willingness of community members to engage in development-focused activities. In virtually all rural communities in Guatemala, some form of community organization is extant. Traditionally in indigenous communities, the *cofradia* was the primary focus of community organization. Since the 1960's and particularly since the 1976 earthquake relief efforts numerous forms of community organizations have developed and evolved.

This section describes the current membership of community member in various general kinds of community organizations. It does not include any "evaluation" of the organizations with respect to their effectiveness, coherence or sustainability.

Table 117
Total of Memberships in All Organizations

	Frequency	Percent
None	460	73.6
1	135	21.6
2	26	4.2
3	3	.5
5	1	.2
Total	625	100.0

Only about 21% of the households in the sample claim membership in any local organization, with some 5% in more than 1.

Table 118
Memberships in Development Organizations excluding Religious, Cofradía & Food Aid

No. Orgs	Frequency	Percent	Cumulative Percent
None	492	79.2	79.2
1	114	18.4	97.6
2	13	2.1	99.7
3	1	.2	99.8
4	1	.2	100.0
Total	621	100.0	

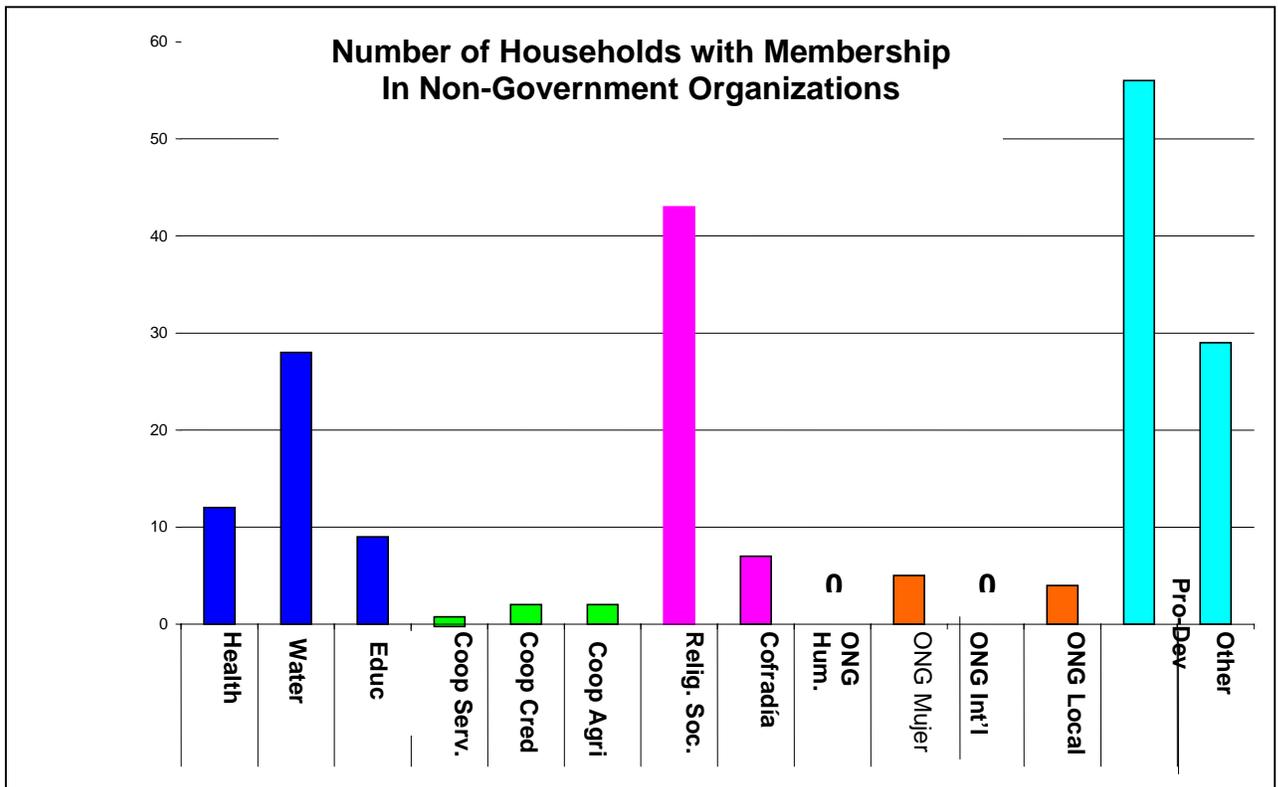
Table 119
Formal Posts Held in Development Organizations

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	512	81.9	81.9	81.9
	1	100	16.0	16.0	97.9
	2	12	1.9	1.9	99.8
	3	1	.2	.2	100.0
	Total	625	100.0	100.0	

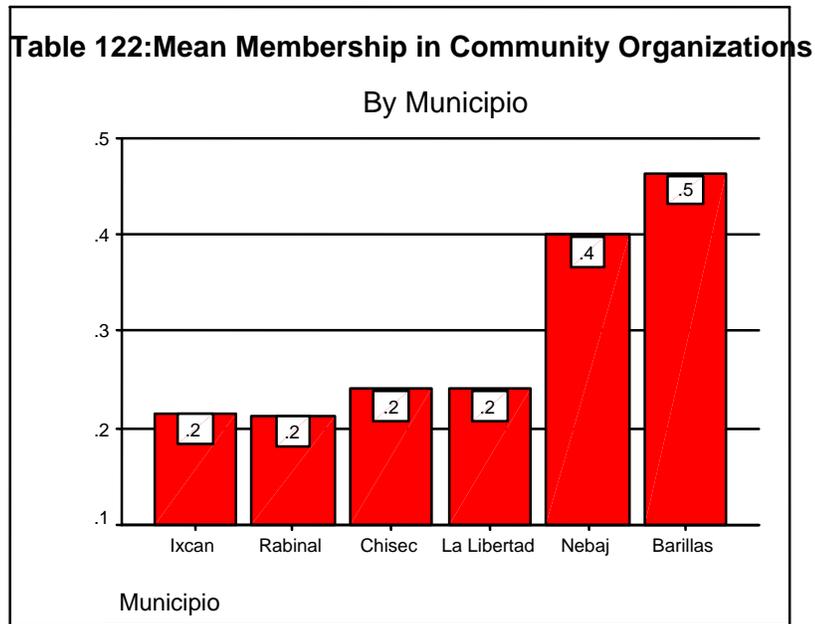
Table 120
Participación en programas alimentarias

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	NO	620	99.2	99.5	99.5
	YES	3	.5	.5	100.0
	Total	623	99.7	100.0	
Missing	8	2	.3		
Total		625	100.0		

Table 121



The above table shows a variety of types of organizations (12) with members existing in the sample population. The fragmentation is considerable given the small percentage of the total (26%) that are involved in them. One objective might be to rationalize membership through consolidation of some of the more general organizations (health, education, water and the “pro-development” and “other” types of organizations).



One possible impediment to this “merger approach” is that often these organizations mask competing political aspirations of their officers and/or competition for incoming development money and resources.

In any event, the existence of these kinds of organizations provide opportunities for development organizations to approach, evaluate and consider as partners for their activities. Local organizations that are spawned by outside agencies to serve their own needs rarely result in sustainable or effective entities.

Communication: Local, Guatemalan and International Information Access

Access to and use of mass communication (print, radio, television) is a major factor in modernization and development (cf. E. Rogers and others), and that face-to-face communication is critical for social and economic community cohesiveness.

In this study, we reviewed five channels of communication across three information dimensions:

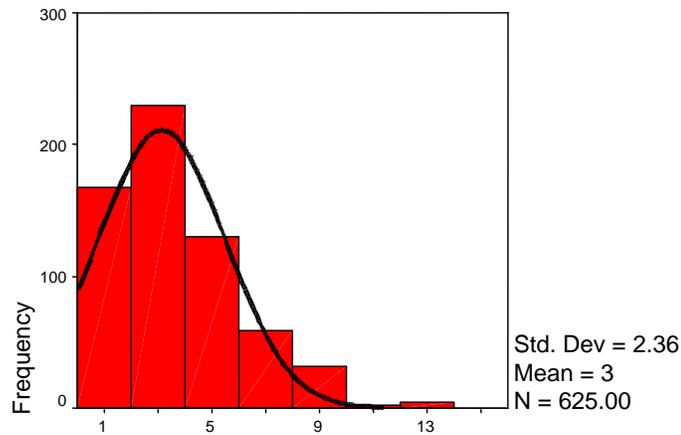
Dimensions & Channels	Home & Neighbors	Co-Workers	Press	Radio	Television
Local News					
Guatemala					
International					

Consequently, each respondent has a possible maximum score of 15 if he were to use all five channels for each of the three information dimensions. Similarly, for each dimension (local, national and international news) there is a maximum score of 5, if he were to access all five channels.

Table 123

Total Communication Score

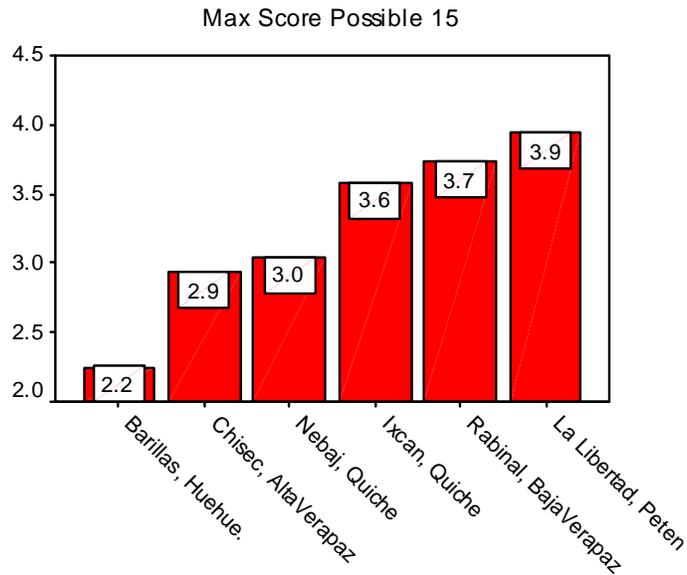
Maximum = 15



For the total sample studied, the mean is 3 (s.d. 2.36), suggesting that communication with respect to most “outside information” is relatively limited. This shows even more clearly when we examine the scores by municipio (below). Barillas, whose aldeas are the most isolated of all the municipios, has the lowest mean score of all the municipios.

In order to see if isolation or lack of electricity were a major factor in this, we checked access to electricity in the home (a requirement for a television set). This information is presented below in Table 124. From this data it seems apparent that having

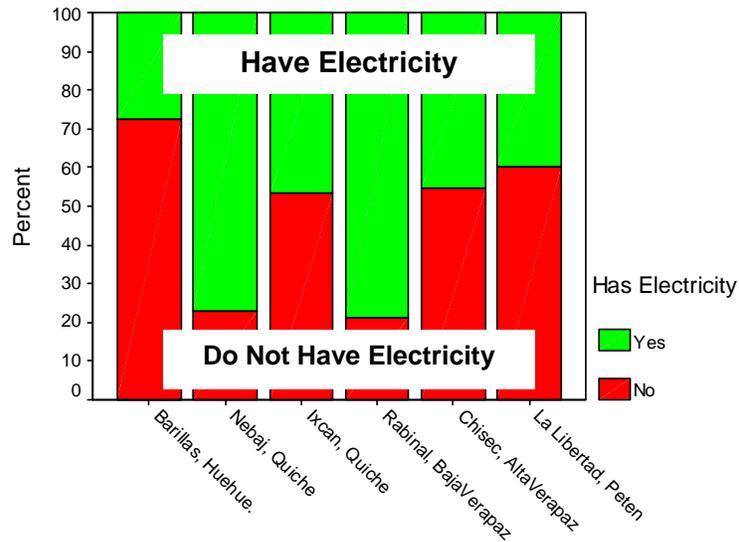
Table 124 – Communication Total by Communications Total



Municipios

electricity is not sufficient to explain the differences in communication use. For example, the communication score from La Libertad is 3.9, while from Nebaj it is only 3.0, yet the sample from Nebaj indicate 80% access to electricity vs. only about 58% for La Libertad.

Table 125 - Percent having Electricity in Home by Municipio



This same patten follows when we observe the scores for mass media (separated from the total communication score).

Table 126
Mean Number of Mass Communication Media Used – By Municipio

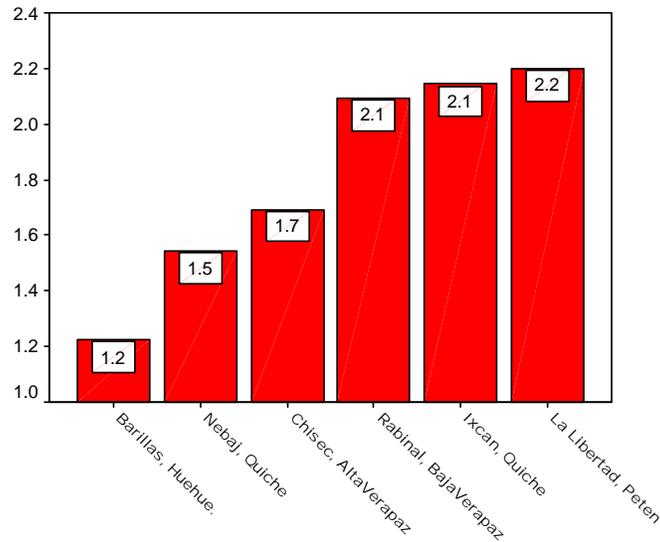
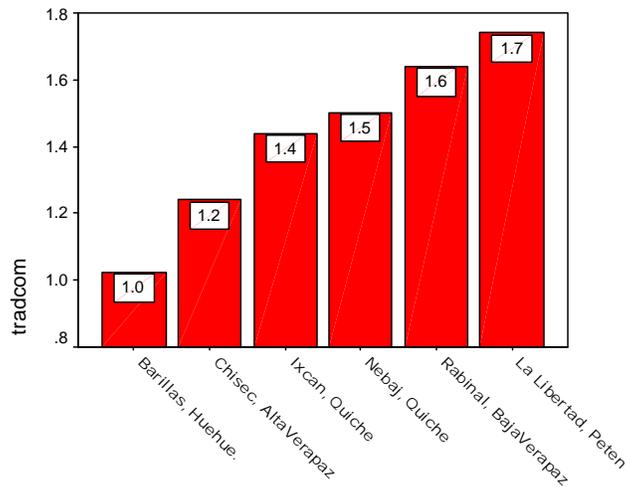


Table 127
Face-to-Face Communication Sources Used – By Municipio



The major differences in the sample as a whole can be seen in the area of residence and ethnicity variables that are shown in the tables on the following page.

It is clear from both these tables that the indigenous portion of this sample, who re rural areas, are the least likely to make use of mass media communication and in fact demonstrate even less traditional face-to-face communication than their urban counterparts.

Table 128 Continued Face-to-Face Communication Mean Scores

Max Score Possible - 6

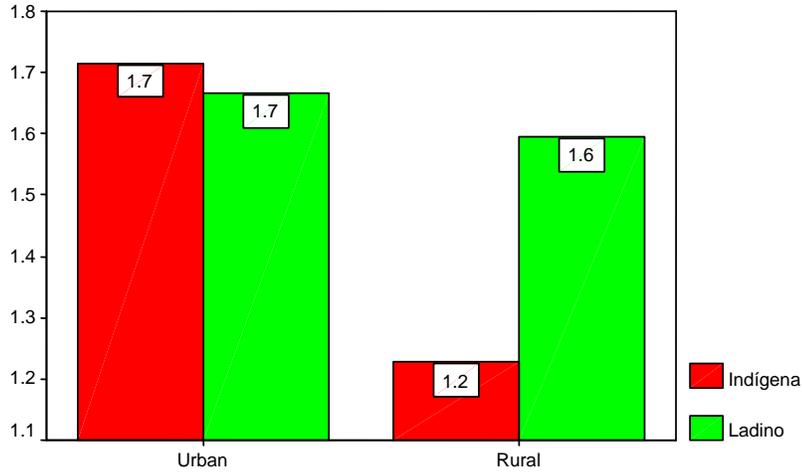
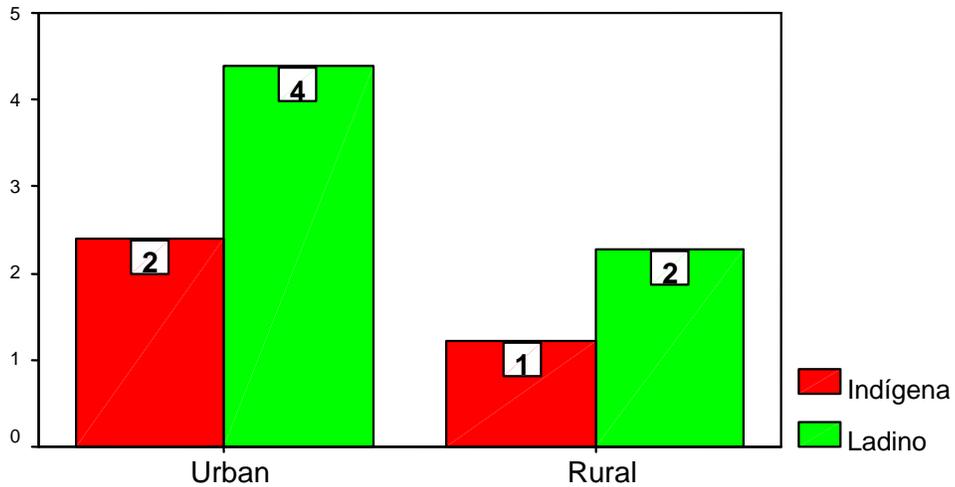


Table 129: Mass Media Communication Scores

Max Score Possible - 9



Use of mass communication is principally an urban phenomenon. As noted above, electricity does not seem to be a determining factor (and never has been since the advent of the transistor radio in the 1960s). Development activities, particularly those directed at health, education and agricultural production need to take this into account in

design and budgeting. Considerable local propaganda may be necessary in order to generate active listening to “technical” radio programs.

Progress toward an Experimental Poverty Indicator Development

As I have noted earlier, Income is a particularly difficult construct or variable to measure in third world rural economies. There are significant issues regarding its reliability and validity. Additionally, it is particularly time intensive for interviewers, since a very large number of very specific questions need to be asked to cover all possible significant sources of income, determine the cash value of auto-consumption and to gain the confidence of the respondent(s). Further, it is often difficult if not impossible to get access to the “right individual” to interview. If the household head (the usual source of income information) is male, he often is not at home during the day. If we interview his wife, eldest son or daughter (over 18), do they have the information we require.

Consequently, we are often stuck with surrogate interviewees and their “best guesstimate” of the household income, since this information is not often commonly shared among household members.

Further, curious neighbors and other on-lookers often confound the interview act itself. This often reduces the privacy of the interview, and probably leads to distorted information.

On the other hand, there are some variables are welcome points of discussion and freely given information – household expenses (everyone wants to complain about prices); and readily observable – physical house construction, household possessions, water, sanitation facilities and electricity.

With INE’s development of their Poverty Index in November 2000, we were able to use the income information collected in this survey to develop independent categories against which to test the utility of the income and wealth related variables mentioned above.

A reminder to the readers:

This is an experimental effort and needs to be replicated with more similar data sets where the same information is known (to the best of the ability of the data).

Methodology employed

Assumptions

1. Expenses, House Construction, Water, Sanitation and Electric Facilities and Household Possessions are valid behavioral expressions of income and wealth.
2. These variables are both directly and indirectly observable and have little resistance from interview subjects.
3. The underlying measurement dimensions for all of these variables is scalar. That is they have an absolute zero in both value and worth.

4. The higher the score on the scaled variables, the greater movement there is towards family well-being. Conversely, the lower the score on all variables is indicative of risk to family well-being.
5. Cash income is the most fungible of all assets. In and of itself, cash income indicates earning-power only. It does not, in and of itself, represent a behavioral commitment to family welfare as does the tangible results of purchase and investment in family welfare (food, housing, sanitation, education, health, and clothing).

Discarding simple and non-productive correlates

It is common in Guatemala to speak of the “Mayan” population as belonging to the group “poorest-of-the-poor”, and to consider the rural population as poor *de facto*. These generalizations (while essentially true as stereotypes) tend to make global targeting in development program and project interventions. The following graphs, however, challenge such generalizations.

1. There is a spread of only about 16 percentage points between “poor” and “not poor” indigenous household, and about the same (but reversed) in ladino households.

Table 130: Income Poverty by Ethnicity

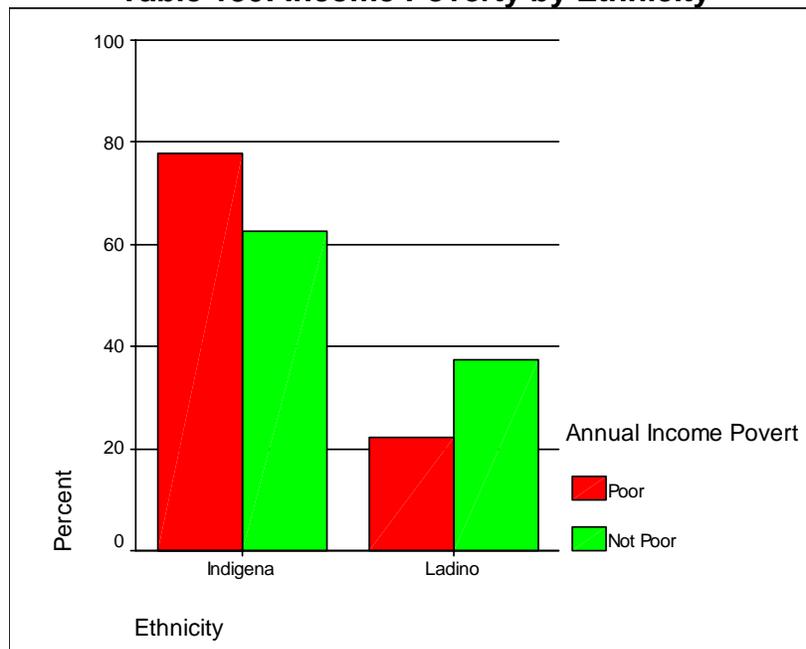
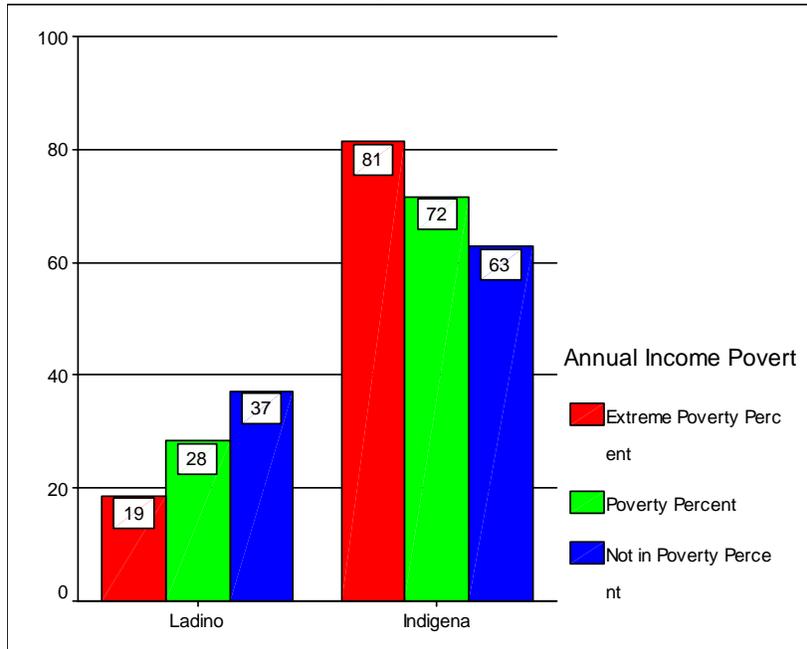


Table 130 Continued



2. While the rural population is clearly “poorer” than the urban population, both poor and not poor are separated by only about 20%, very similar to the spread in the urban population.

Table 131 Rural and Urban Poverty

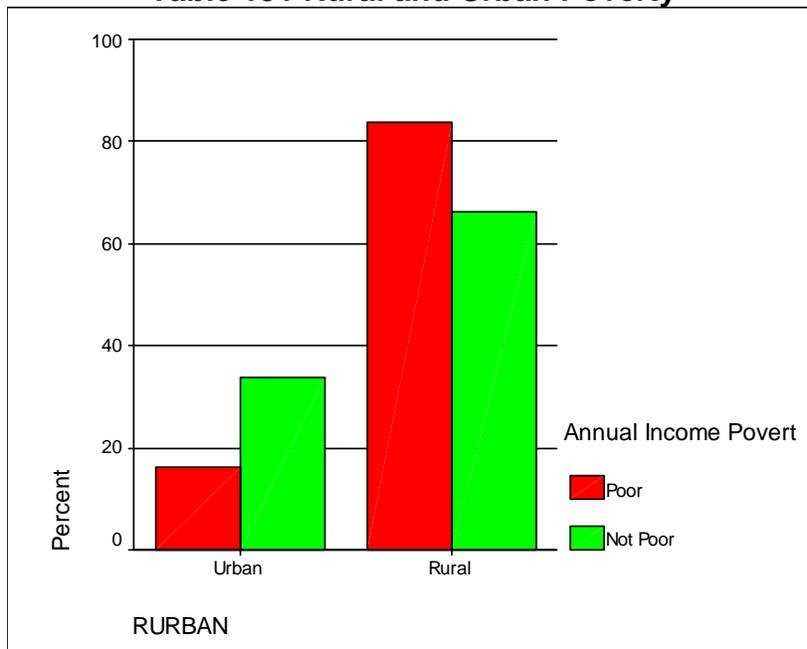
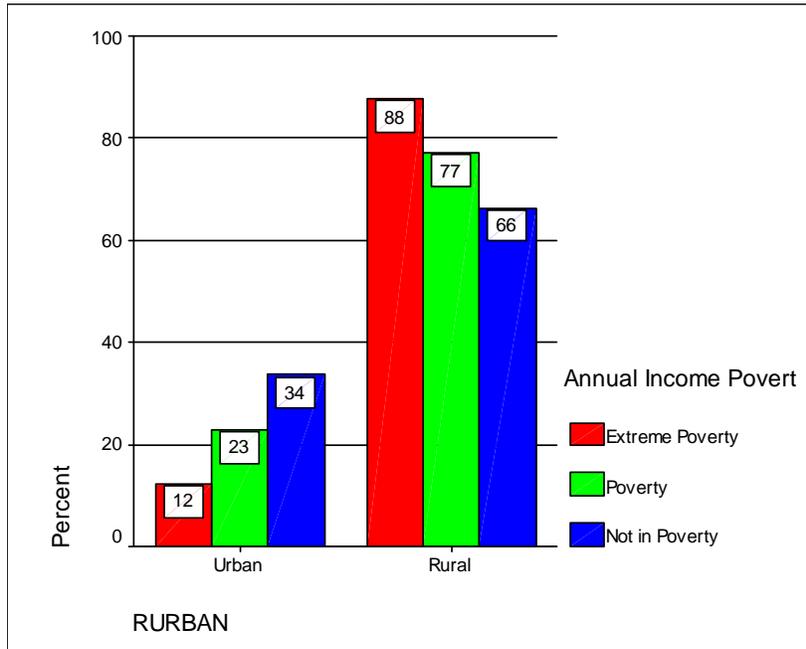
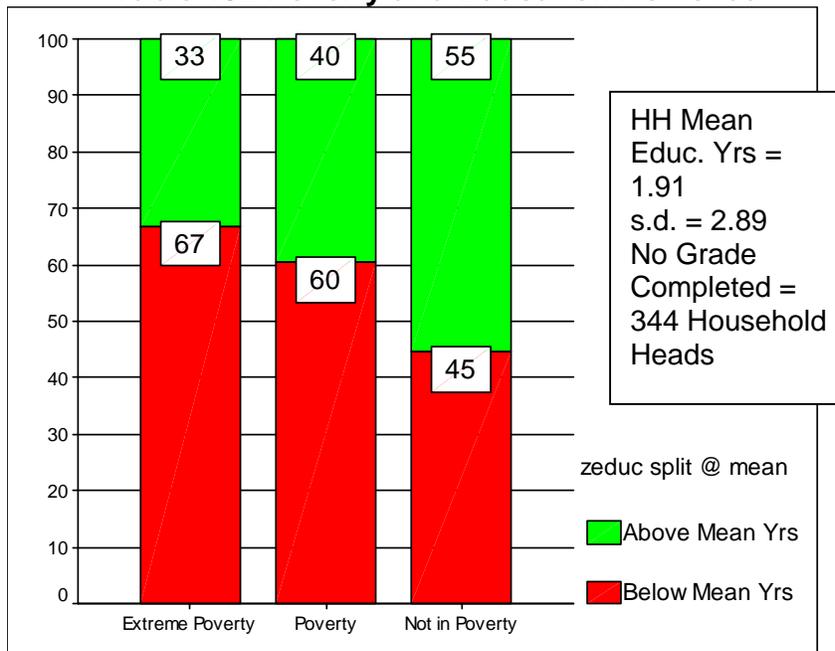


Table 131 Continued



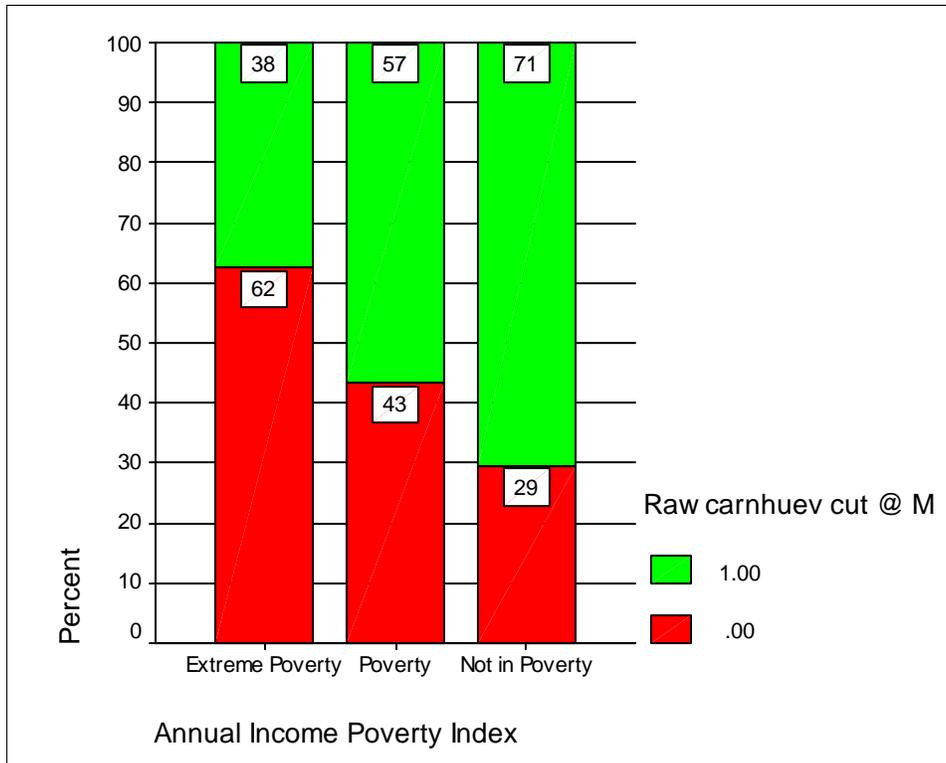
3. Education is a stronger indicator of poverty, but even when split at the mean, it still is a poor predictor, where even those above the mean still indicate 45% in the poverty range.

Table 132 Poverty and Education Achieved



6. The quetzal value of the amount of meat and eggs purchased in the last week prior to the interview provide a better although not excellent predictor of poverty levels. In this example, I split the weekly amount spent on meats and eggs at the mean (Q36.50). The following table “predicts” with a higher level of confidence than education, ethnicity or residence, the correspondence with the INE Poverty Index.

Table 133 – Poverty and Animal Protein Purchased



The following table presents data supporting the previous graph and shows a Chi-square values and significance levels.

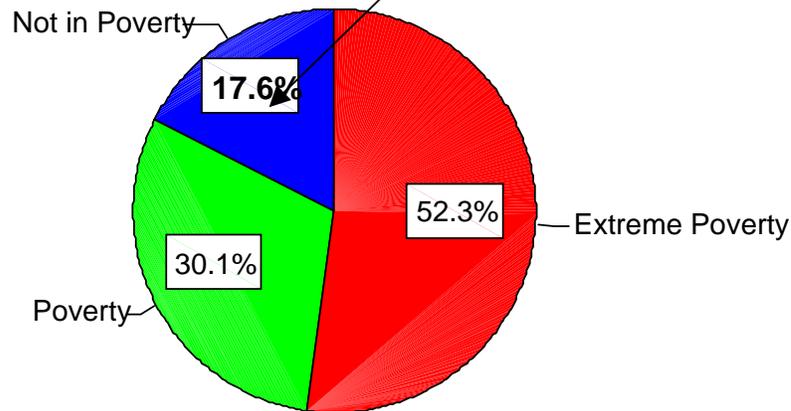
Chi-Square Tests

	Value	df	Sig. (2-sided)
Pearson Chi-Square	31.485	2	.000
Likelihood Ratio	30.971	2	.000
Linear-by-Linear Association	31.370	1	.000
N of Valid Cases	625		

Table 134: Quetzal Amount of Meat & Eggs Purchased in the Week prior to Interview by Per Capita Poverty Classification (INE Standards) Crosstabulation
Meat & Eggs Wk Split @ mean * INE Index

		Pobreza Extrema	Pobreza No Extrema	No Pobre	Total
Below Mean	Count	283	76	31	390
	% within Meat & Eggs Wk Split @ mean	72.6%	19.5%	7.9%	100.0%
	% within INE Index	69.9%	53.5%	39.7%	62.4%
Above Mean	Count	122	66	47	235
	% within Meat & Eggs Wk Split @ mean	51.9%	28.1%	20.0%	100.0%
	% within INE Index	30.1%	46.5%	60.3%	37.6%
Total	Count	405	142	78	625
	% within Meat & Eggs Wk Split @ mean	64.8%	22.7%	12.5%	100.0%

As can be seen in the pie chart below, the “meat and eggs” variable is more conservative than the data from the income-based measure of INE.



7. Other variables also showed close correspondence with the Poverty Index developed by INE. To determine the utility of these variables and their contribution to acting as proxies for the Poverty Index, I ran a “stepwise”

Discriminant Function Analysis in the SPSS 9.0 statistical package. The following variables were entered into the discriminant program:

- A behavioral economic scale consisting of house construction, sanitary facilities, electricity and consumer possessions
- Sex of Household Head
- Weekly expense for meats and eggs
- Total Household Members
- Spanish speaking ability (self-ranked)
- Expense scale removing meats and eggs
- Education
- Ethnicity
- Residence

The result of the discriminant program produced a component that retained 4 variables that made the greatest contribution to the variance in the dependent variable (the INE Index collapsed to “Poor” and “Not Poor”. These are in order of contribution to the variance in the INE Index:

- A behavioral economic scale consisting of house construction, sanitary facilities, electricity and consumer possessions
- Total Household Members
- Weekly expense for meats and eggs
- Expense scale removing meats and eggs

The inclusion level of F used was 3.84, and exclusion of F 2.71

The final variables forming the distance scale are in the following table:

Step		Tolerance	F to Remove	Wilks' Lambda
1	Povscal1 = cas_util + hh_poss1	1.000	69.000	
2	Povscal1 = cas_util + hh_poss1	.942	86.409	.946
	Total HH Members	.942	31.939	.810
3	Povscal1 = cas_util + hh_poss1)	.883	55.703	.833
	Total HH Members	.865	41.596	.799
	Gasto Carne & Huevos	.830	13.072	.731
4	Povscal1 = cas_util + hh_poss1 (COMPUTE)	.866	45.450	.787
	Total HH Members	.849	45.529	.787
	Gasto Carne & Huevos Semana	.829	13.179	.712
	Expenses minus Meat & Eggs	.950	8.158	.700

Please note that all variables are significantly above the inclusion level of F=3.84, indicating that these all strongly contribute to the variance in the Poverty Index.

Discriminant analysis computes new value based on distance scores in the matrices produces. This variable has been named **Predicted Group for Analysis 1**. This was analyzed using Crosstabulation with the Annual Income Poverty Index (dichotomized to Poor and Not Poor).

The results in the following table suggest that this variable is highly successful in acting as a proxy for the Income based INE Index. The correct classification of cases is 75.8% using this method. The Chi-Square statistics are all highly significant (second table below).

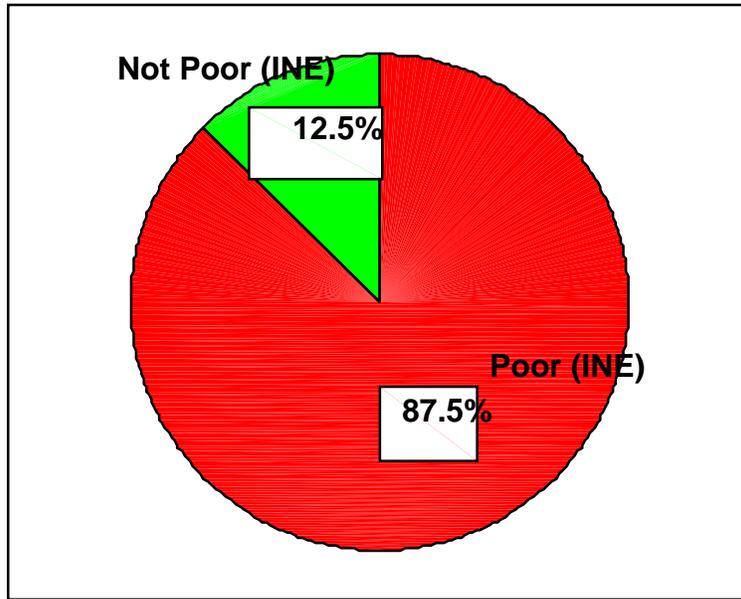
Table 135
Predicted Group for Analysis 1
By Annual Income Poverty Index Poor, Not Poor

			Poor	Not Poor	Total
Predicted Group for Analysis 1	Poor	Count	478	51	529
		% within Predicted Group for Analysis 1	90.4%	9.6%	100.0%
		% within Annual Income Poverty Index Poor, Not Poor	93.2%	46.4%	84.9%
	Not Poor	Count	35	59	94
		% within Predicted Group for Analysis 1	37.2%	62.8%	100.0%
		% within Annual Income Poverty Index Poor, Not Poor	6.8%	53.6%	15.1%
Total		Count	513	110	623
		% within Predicted Group for Analysis 1	82.3%	17.7%	100.0%

Chi-Square Tests

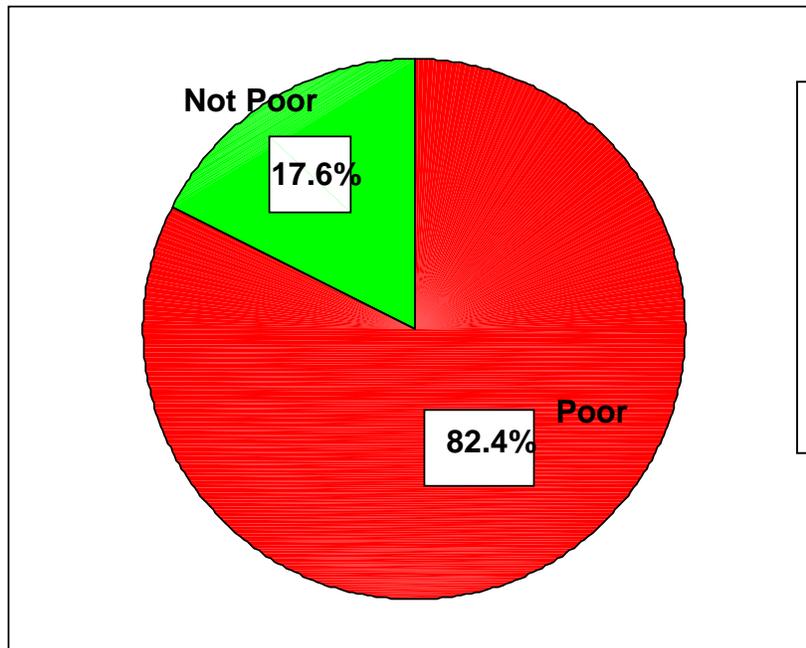
	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	154.939	1	.000		
Likelihood Ratio	121.189	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	154.691	1	.000		

**Chart 13
Poverty –
Not in
Poverty
Using
Income
Variables**



**Poverty
Index
Variable
RELYING
ENTIRELY
ON INCOME
VARIABLES**

**Chart 12
Poverty-
Not in
Poverty
by Non
Income
Variables**



**New Indicator
of Poverty
based on
Discriminant
Function
Análisis**

**Includes NO
INCOME
VARIABLES**

The correspondence between the two pie charts is striking, in fact showing that the non-income based indicator is more conservative than the income based Index.

As noted before, the replicability of this and the “meat and egg” indicator needs to be determined, but from this case, it seems clear that this is a positive step in defining poverty without the strict need for income measures.

This should be particularly relevant and helpful to NGOs, especially small organizations, who lack the resources to conduct time-consuming and potentially erroneous income data for planning and population targeting purposes.

Some Comparative Findings between 1999 and 2001

The two-year period between these samples is probably too short to discover any change directly linked to development interventions. The kinds of changes we may find in these data most probably are due mainly to two factors:

- Sampling probabilities
- General “secular” economic and demographic change

Demographic, cultural and some social indicators as described in the table below should show marginal, if any, change in such a short period.

	EBF1 – Oct 1999	EBF 2 – Sept 2001
Variables	Value	Value
Female Household Heads	11.2%	10.7%
Age of HH Head	43 Years	44 Years
Percent Indígena	81.3%	75.1%
Percent Rural	78.6%	80.8%
Primary Language Spanish	25.7%	28.7%
% Married or In Union	86.6%	88%
% Claiming Literacy	52.0%	50.1%
Household Size	5.93 Persons	6.14 Persons
Education 1 (Includes 0 years)	1.7 years completed	1.9 years completed
Education 2 (Excludes 0 years)	4.14 years	4.25 years
Crowding (% with more than 4 persons per room)	59%	59%

In fact, the information in the preceding table show remarkable stability, which tends to validate our sampling methodology rather than to highlight any particular change in the population with respect to these variables. This is what one would expect from repeatedly drawing sub-samples of the same population. In this sample, we have slightly more ladinos than mayans (percentage-wise), which accounts for the difference in language. This difference should also affect income (if in fact income is principally ethnic-dependent). The reduction in the number of female-headed households is not significant statistically. In general, then, no particular change or trend is suggested from the basic demographic, social and cultural data collected.

Some factors that may be more sensitive to change include the following:

- School-age school attendance
- Household Possession
- House Construction and Utilities
- Household Income
- Household Expenses

These are examined in the following tables.

Education – Children 7 – 18 years of age

	EBF1 – Oct 1999	EBF 2 – Sept 2001
Variables	Value	Value
Percent of School-Age Children Attending School	Data not directly comparable ¹⁸ 61%	85%
Percent of Girls NOT Attending	56%	Not Comparable
Percent NEVER Attending (Both Sexes)	24.6%	15%

The school data would suggest a marked increase in attendance. However, it is not directly comparable due to differences in kinds of measures used.

House Possessions

	EBF1 – Oct 1999	EBF 2 – Sept 2001
Variables	Value	Value
Household Possession Scale, Maximum Possible Score = 16	Mean = 3.49 Std Dev = 2.45	Mean = 3.6 Std Dev = 2.00

Clearly, there is no difference in the scores of possessions between 1999 and 2001. The scale of each data set was revised to include only those items common to both surveys. The reason for the greater standard deviation in 1999 is that 12 households had scores of 12, 13, and 14, reflecting the larger sample size. The 2001 data have a maximum score of 11, with no outliers. Nevertheless, the mean scores are basically equal, indicating that very little, if any, change has occurred with respect to the purchase of household items.¹⁹

House Construction and Utilities

	EBF1 – Oct 1999	EBF 2 – Sept 2001
Variables	Value	Value
House Construction Score (Basic) Maximum Score = 17	Mean = 6.60 Std Dev = 2.01	Mean = 6.07 Std Dev = 2.64
Utilities (Electricity, Water, Sanitary Facilities) Max = 8	Mean 3.34 Std Dev = 2.08	Mean 4.6 Std Dev 1.86
% with Water Seal Toilets	6.8%	6.6%

The basic house construction variables show no difference (recall the explanation in the preceding paragraph). There is a slight difference and probably statistically significant in the mean score on utilities, a mean difference of 1.2 points on the 8-point scale.

¹⁸ There is a difference in 1999 and 2001 due to using grouped data for 2001.

¹⁹ Items in the scale are: petate (sleeping mat), simple bed, simple mattress, formal bed, *baul* or *cofre* (storage chest), *ropero* (free-standing closet), dining room furniture (matching set), blender, refrigerator, stove, radio, bicycle, motorcycle, car, television, CD components.

Installation of utilities at the household level implies that they are available in the community, hence, access to water and electricity is greater once the community has these systems installed. On the other hand, access to sanitation requires a greater investment in for example, a water seal toilet (*inodoro* connected to a sewage system). As can be seen, there is no change in the percent of houses with water seal toilets over the two-year period.

Household Income (All Activities and All Earners)

	EBF1 – Oct 1999	EBF 2 – Sept 2001
Variables	Value	Value
Monthly Direct Income (Earnings & Sales) – Including Zero Values ²⁰	Not Directly Comparable	Mean = 1039.90 Median = 612 Std Dev = 1465.58 N = 625
Monthly Direct Income (Earnings & Sales) – Excluding Zero Values	Not Directly Comparable	Mean = 1154.41 Median = 703 Std Dev = 1500.81 N = 563
Monthly Salary	Mean = 547.49 Std Dev 510.18	Not Comparable
Monthly Ag & Animal Production	Mean = 559.28 Std Dev = 872.63	Not Comparable
Remittances (Both from Guatemala and the USA)	Mean = 426.11 Median = 200 Std Dev = 773.14 N = 252	Mean = 606.71 Median = 390.00 Std Dev = 623.88 N = 69
Annual Agricultural Production Sales	Not Directly Comparable	Mean = 1803.59 Median = 00 Std Dev = 5147.36 N = 621
Annual Sale of Animals	Not Directly Comparable	Mean = 370.37 Median = 00 Std Dev = 1678.72 N = 622
Annual Sales of Land	Not Directly Comparable	Mean = 11093 Median = 5100 Std Dev = 11806 N = 16
Income from Migration	Not Directly Comparable	Mean = 3124 Median = 1800 Std Dev = 4265 N = 158

²⁰ Includes “zero” values. This is the most conservative and realistic estimate since it includes all households whether they had contributory earnings or not. The next variable excludes zeros, which is more liberal (i.e. inflates earnings), by excluding (setting to “missing” all non-income earning households.t

	EBF1 – Oct 1999	EBF 2 – Sept 2001
Variables	Value	Value
		Contd...
Annual Per Capita Income ²¹ This is an estimate with a number of assumptions but is not exact.	Mean = 2820.56 Median = 1651.50 Std Dev 3680.68 N = 2078	Mean = 2524.19 Median = 1440.00 Std Dev = 3499.37 N = 563

Household Expenses

These are standard categories used to estimate household expenses. These expenses are recorded in detail in the basic data sets.

If the annual per capita income has increased slightly as indicated in the previous table, then it seems not to have caught up with household spending patterns. In fact, except for the amount of money spent per week on food, virtually all other expense indicators have decreased.

There are significant decreases in core household quality of life areas. These are clearly seen in education expenses, health and clothing.

	EBF1 – Oct 1999	EBF 2 – Sept 2001
Variables	Value	Value
Food Per Week	Mean = 176.06 Median = 147.00 Std Dev = 126.17	Mean = 194.21 Median = 163.00 Std Dev = 123.27
Meat and Eggs (Week)	Mean 38.87 Median 29.00 Std Dev =36.87 Mode = 3 (4.9%)	Mean = 36.50 Median = 29.00 Std Dev 33.65 Mode = 0 (4.8%)
Education (Month)	Mean = 82.50 Median = 17.00 Std Dev = 249.15 Mode = 10 (4.3%)	Mean = 42.80 Median 3.00 Std Dev 114.57 Mode 0 (46.9%)
Health (0-5) (Month)	Data Not Comparable	Mean 27.46 Median = 00 Std Dev =76.76
Heath (6 and above) (Month)	Data Not Comparable	Mean = 51.83 Median = 5.00 Std Dev = 112.91

²¹ For per capita income I use the “liberal” estimate. This **excludes** all households who claim no revenue from any source at all. Clearly, these are reporting errors, and the cases need to be defined as “missing”.

	EBF1 – Oct 1999	EBF 2 – Sept 2001
Variables	Value	Value
Health Expenses (All Members)	Mean = 115.78 Median = 30.00 Std Dev = 357.24 Mode = 29 (1.9%)	Mean = 79.29 Median 20.00 Std Dev 159.14 Mode = 0 (29%)
Clothing and Shoes (0-5) (Month)	Data Not Comparable	Mean = 38.82 Median 00 Std Dev 85.04
Clothing and Shoes (6 and above) (Month)	Data Not Comparable	Mean = 144.83 Median = 00 Std Dev 281.30
Clothing and Shoes (All Members)	Mean = 441.94 Median = 220.00 Std Dev = 591.63 Mode = 20 (1.9%)	Mean = 328.81 Median = 40.00 Std Dev 594.81 Mode = 0 (44.3%)
Means of Production & Investment (Year) A separate Expense Category	Mean = 1500.14 Median = 360.00 Std Dev = 5320.37	Mean 907.83 Median = 316.00 Std Dev = 2710.58

In terms of long-term family well being, there has been a very sharp decrease in capital investment and means of production (nearly 41.5%). The variables included in this indicator include the purchase of land, equipment, seeds, fertilizers, hand tools, etc. This clearly has implications for future agricultural and cottage industry production.

Changes in Income and Expenses

1. Annual Income

The two comparable²² data points from 1999 and 2001 show an increase in remittances and a decrease in annual per capita income over the two-year period.

The increase in non-inflation adjusted remittances is 42.3%. Since this variable is primarily dollar-denominated, inflationary adjustment in quetzales is not relevant. What is of note is the raw increase. This probably reflects a recognition on the parts of both recipients and senders of the rising costs of living in Guatemala. Note that the economic repercussions of September 11, 2001 terrorist bombings in New York are not relevant to this number since the data were collected using August 2001 as a base month.

On the other hand, the decrease in Annual Per Capita income is directly related to national economic factors. The decrease in annual per capita income between the two surveys is 16.86%. The following table highlights inflationary adjustments and percent change from T1, T1 (Adjusted) and T2.

²² Because of the way the data were coded in EBF-1 and EBF-2, there is a lack of direct comparability for a number of income variables.

2. Expense Items

Expense items are more readily comparable. Adjustments for the 8.91% inflation rate for 2001 were prorated based on the relevant measurement period, e.g. one week; one month; one quarter. For example to calculate the monthly rate of inflation, we used the average of 8.91% for 12 months (0.74/month). We then multiplied this figure by the number of months between measures (10 for months) to arrive at a reasonable estimate of the inflated value of the 1999 data.

Variables	T1 (October 1999)	T-1 (Adjusted for inflation)	T-2 (August 2001)	Percent Change T1(A) >T2
Mean Per Capita Income	2820.56	3036.37	2524.19	(16.86%)
All Food Expenses per Week	176.06	177.30	194.21	(8.6%)
Meat & Eggs (Week)	38.87	38.15	36.50	(4.3%)
Education (Month)	82.50	83.13	42.80	(48.51%)
Health (All Members – Month)	115.78	116.66	79.29	(32.03%)
Clothing & Shoes (All Members – Quarterly)	441.94	451.82	328.81	(27.43%)
Means of Production (Annual – 10 Months)	1500.14	1614.92	907.38	(43.81%)

Summary

This section explored some of the more critical variables in the two surveys that relate to household well being.

Most demographic and housing variables have remained stable over the two-year period.

Per capita income has fallen by over 16% in the ten-month period between measures, and expenses (the amount of money spent by a household on a particular budget item), have fallen across the board. The least decline in expenses is on food (an inflationary adjusted decline of 8.6% - about the same as inflation). The more “discretionary” budget items – education, clothing, health all show very steep declines.

The two most alarming decreases in terms of the future are in education (48.5%) and the amount spent on “means of production” – tools, agricultural supplies, etc. (43.8%).

The overall picture is one of decline in incomes more or less across the board, with a concomitant and serious decline in all economic measures of family well-being. This bodes poorly for the future of this population.

In order to keep food on the table for immediate survival, households are cutting expenditures in education, health, clothing and future investment. This pattern can expect to be repeated next year because of the steep decline in investment in the means of production.