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None of the countries of the world's southern hemisphere faces an across-the-board food problem. But many of them have population groups too poor to provide themselves with adequate diets throughout the year. Income is the foremost determinant of a family's quantitative and qualitative levels of food consumption. The principal data sources commonly used to quantify food consumption patterns are household budget inquiries and consumption surveys.

This paper deals with the Peruvian National Food Consumption Survey (ENCA), its methodology and analysis. Based on preliminary data that became successively available during the summer months of 1973, an attempt is made, with reference to the Peruvian capital, to sort out the variability in food consumption among various social groups defined on the basis of income. A brief overview of income distribution patterns in the Lima metropolitan area is presented at the outset as a background to the work of the survey analysis.

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THE EFFECT OF INCOME ON FOOD CONSUMPTION IN LIMA: SOME PRELIMINARY FINDINGS OF THE PERUVIAN NATIONAL FOOD CONSUMPTION SURVEY (ENCA)

By

Marco A. Ferroni

January 1974 No. 74-1

Department of Agricultural Economics
New York State College of Agriculture and Life Sciences
A Statutory College of the State University
Cornell University, Ithaca, New York 14850

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PREFACE AND ACKNOWLEDGEMENT

None of the countries of the world's southern hemisphere faces an across-the-board food problem. But many of them have population groups too poor to provide themselves with adequate diets throughout the year. Income is the foremost determinant of a family's quantitative and qualitative levels of food consumption. The principal data sources commonly used to quantify food consumption patterns are household budget inquiries and consumption surveys.

This paper deals with the Peruvian National Food Consumption Survey (ENCA), its methodology and analysis. Based on preliminary data that became successively available during the summer months of 1973, an attempt is made, with reference to the Peruvian capital, to sort out the variability in food consumption among various social groups defined on the basis of income. A brief overview of income distribution patterns in the Lima metropolitan area is presented at the outset as a background to the work of the survey analysis.

It is a pleasure to acknowledge the generous aid of others. The executive staff of ENCA in Lima was helpful to a fault. It was extremely gratifying to discover a governmental organization with heart and spirit, such as this one created by Ing/ Rómulo Grados.

The ENCA survey was brought to my attention by Professor William F. Whyte, who also kindly arranged for my summer to be financed by Cornell's Program on Policies for Science and Technology in Developing Nations. Accompanying me to Peru were Professors Donald K. Freebairn and R. Brooke Thomas, and I am grateful for their counsel and friendship.

THE EFFECT OF INCOME ON FOOD CONSUMPTION IN LIMA: SOME PRELIMINARY FINDINGS OF THE PERUVIAN NATIONAL FOOD CONSUMPTION SURVEY (ENCA)*

By

Marco A. Ferroni

I. Income Distribution Patterns in the Peruvian Capital

The distribution of income in the Greater Lima[1/] area is closely linked with regional and national population trends and the demand for labor, migration and urbanization.

The population in Peru has been growing by about three percent per annum during the past decade. At a growth rate of this magnitude, it will double in roughly 25 years. In 1940, 1961, and 1972, the three census years so far in the course of this century, population figures amounted to 6.2 million, 9.9 million, and 13.5 million respectively (1, p. 56). It appears from these figures that growth has sharply increased over the past ten years as compared to years before. This is largely due to a nationwide decrease in death rates. Intuitively, a rapid expansion of a country's population must decrease the share of national wealth available to the individual, if growth in GNP does not occur at the same rate. In addition, it will be seen in the elaboration of the Lorenz curve that social forces act to skew the distribution of wealth so that the poor tend to get poorer and the rich richer.

Job opportunities are insufficient to meet the needs of the rapidly growing labor force in Peru, both in rural and urban areas. In explaining the rural employment situation, it is instructive to point out the traditional agrarian system in Peru, which exhibits the typical Latin American Latifundio-Minifundio polarization, with a great number

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* In slightly modified form this paper was first submitted as part of the requirements for Agricultural Economics 560: Food, Population, and Employment, Fall Term 1973/74. Not to be quoted without permission.

1/ Greater Lima (Lima Metropolitana) roughly corresponds to the Provincia de Lima plus the Provincia Constitucional of Callao. It is not the departamento of Lima which includes a considerable rural population, and excludes Callao. It may be worthwhile to recall the structure of the Peruvian political division which, in descending order, groups departamentos (states), provincias (counties), and distritos (boroughs).

of landless families and significant incidence of unemployment. The present agrarian reform, possibly the most effective one on the Latin American Continent so far, is implementing a vigorous program of land redistribution and technical assistance. However, many years will be required to provide 500,000 2/ families with land and jobs.

In most developing countries, where population growth is rapid and job opportunities are few, people tend to migrate in search of a better future. Migration in such a context is, almost by definition, a migration from rural areas to towns (cf. Figure 1). Government figures indicate with respect to migration that, while the total population in Peru has increased by 60 percent between 1940 and 1961, the number of migrating citizens has increased by 167 percent (2, p. 12). A National Bureau of Census survey on migration into Lima showed that 54 percent of the migrating men and 34 percent of the women came to the capital directly for job motives (3, p. 17).

For a number of reasons, Lima has an enormous power of attraction, as evidenced by the large percentage of the migrants who direct themselves to the capital. From Figure 2 it follows that 41 percent, or 1,366,415 people out of a total population of 3,302,523 (4, p. 4) of the capital are born outside the Lima Department. This tremendous influx of migrants helps to bring the city population growth per year to five percent.

The main reason for the attracting power of the Peruvian capital lies in its economic predominance over the rest of the country. Lima is reported to have 50 percent of the national wealth, 60 percent of the country's manufacturing, 73 percent of its industrial wages, 55 percent of its government employment and 90 percent of its banking transactions. The Lima harbour, Callao, receives 80 percent of the country's imports, Central Reserve Bank records reveal that, in 1961, per capita income in the Department of Lima and the Callao Province amounted to 191 percent of the national average, while such highland departments as Cuzco, Puno and Huánuco showed per capita incomes which were respectively 72, 62, and 50 percent of the national average (5, pp. 2-3). Clearly, these figures document that the capital can offer more employment than any other area in the country. However, it cannot assure jobs for everyone.

The right-hand graph in Figure 2 shows that, in Lima, the rate of unemployment amounts to 10 percent of the economically active population. 3/ With reference to the 90 percent employed, no specification is available regarding the types of occupation and, thus, full employment cannot be

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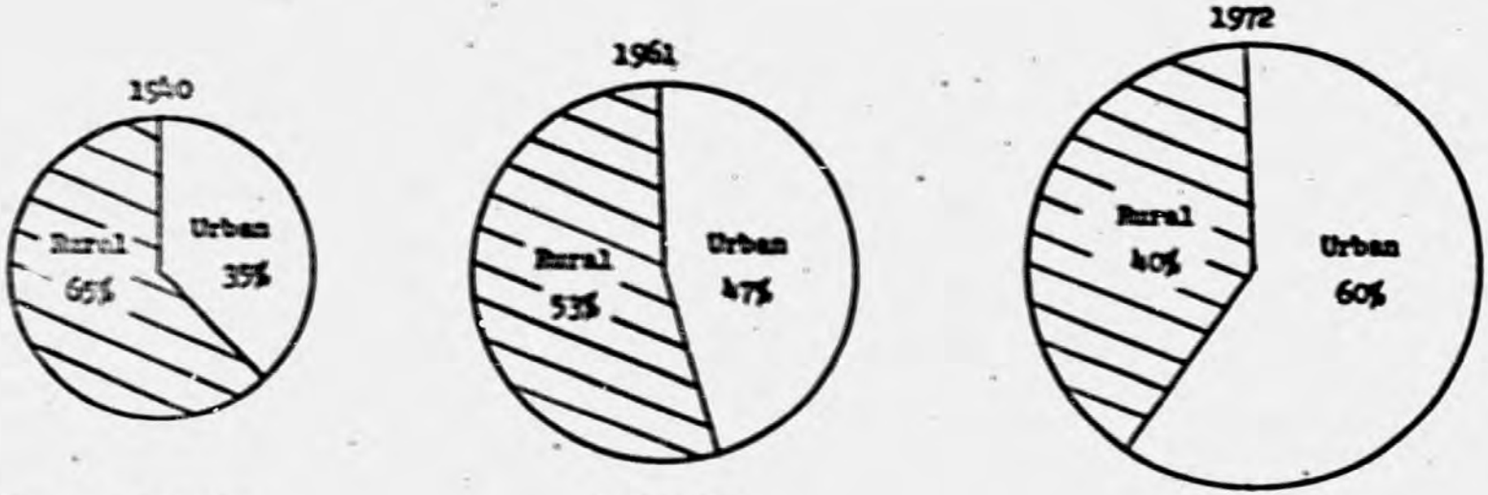
2/ This is the official number of beneficiaries from the Peruvian Agrarian Reform.

3/ The absolute figure of economically active in the Greater Lima area is 1,077,335.

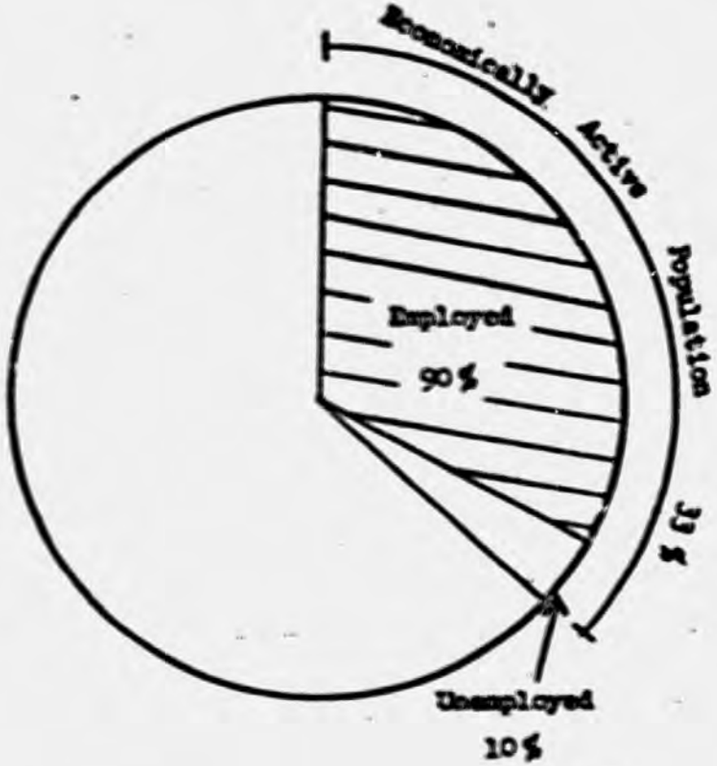
FIGURE 1. PERU: URBAN AND RURAL POPULATION IN PERCENT



	1940	1961	1972
Urban:	2,197,133	4,698,178	8,086,689
Rural:	4,010,834	5,208,568	5,485,363

Source: ONEC, 1972 Population Census, Cifras Provisionales, Lima, August 1972, p. 60.

FIGURE 2. GREATER LIMA: MIGRATION AND EMPLOYMENT STATISTICS, 1972



Source: ONEC, 1972 Population Census, Lima, June 1973.

distinguished from situations of underemployment. However, the latter is known to be widespread in Lima. An example is the several hundred thousand street vendors all over the city. In pointing out problem areas with regard to income distribution the underemployed have to be mentioned as well as the unemployed, because inadequate jobs cannot create adequate wages. In addition, newcomers to the capital often need a good deal of time to find work. The survey on migration into Lima states that 70 percent of the sampled migrant workers needed between one and three months to find fobs, 20 percent needed a period of 3 to 12 months and for 10 percent it took longer than a year to find a job.

This is the situation that drives people into the Pueblos Jóvenes (the slums) on the outskirts of the city. The settlement of the Lima Pueblos Jóvenes has taken place within a generation. These slums fill vacant desert spaces on the hills all around the city. The new communities are in several stages of development. Some have such facilities as electric power, water, and canalization, others have none of these amenities. In terms of physical occupation of the land, Pueblos Jóvenes now occupy about 25 percent of the total area of Greater Lima (5, p. 8).

An economy incapable of offering sufficient jobs creates dichotomies between social classes as defined on the basis of income. One of the most widely used methods to show income inequality is the Lorenz curve presented in Figure 3. It plots cumulative percentage of people ranked from the poorest up, on the horizontal axis and the cumulative percentage of total income they receive on the vertical axis. The diagram shows that 80 percent of the population in the Peruvian capital disposes of only 38 percent of the total income generated in this area. The Lorenz coefficient or concentration ratio calculated from the diagram is approximately .66.4/

The impact of this particular income distribution on dietary habits of the Greater Lima area will be illuminated in section 5 of this paper.

II. The Peruvian National Food Consumption Survey

The Peruvian Encuesta Nacional de Consumo de Alimentos (ENCA), a nationwide food consumption survey, was initiated by the Revolutionary Government of the Armed Forces in early 1970 with the objective of forming a data bank on socio-economic characteristics of the Peruvian population, to be used as a basis for policy decisions. Specifically ENCA was designed to collect information on the current status of income distribution, food consumption patterns and nutrition, level of employment, and education. ENCA is an organization within the Ministry of

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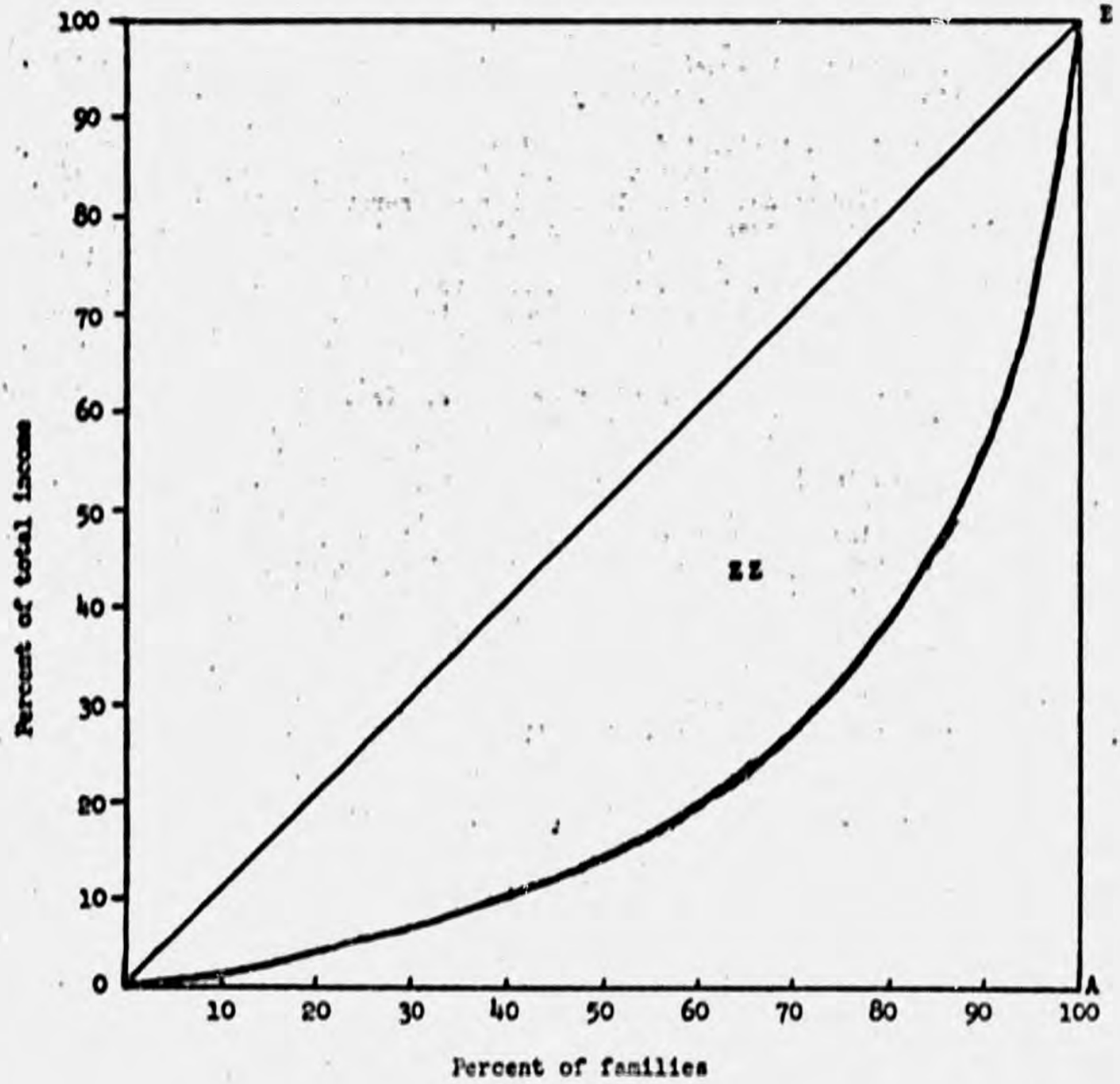
4/ The Lorenz coefficient measures the deviation of the Lorenz Curve from absolute equality. It is calculated as the ratio of the area ZZ (the area between the Lorenz Curve and the diagonal of equality) to the area of the triangle OAB. The maximum value of the Lorenz coefficient is unity and represents complete inequality; its minimum value is zero and occurs when the Lorenz curve coincides with the diagonal OB.

FIGURE 3. GREATER LIMA: LORENZ CURVE



Source: ENCA; and Ramos Castillo, D., Efecto de las Transformaciones Realizadas por el Gobierno Revolucionario Sobre la Estructura de la Distribucion de Ingresos en Lima Metropolitana, Lima, ONEC, 1973.

Agriculture, but dependent on the interests of a series of other Public Institutions, specifically the Ministries of Economy and of Health, the National Bureau of Census, and the National Planning Institute. Information about food consumption at the family level and its relation to income will be a strong basis for self-sufficiency oriented planning of agricultural production. The quantification of nutritional standards in the different regions of the country and the identification of vulnerable groups can be used for action in nutritional planning. Information about total expenditures of households, allocation of income, and data on the level of employment are being sought as a basis for investment planning and foreign trade adjustment.

The ENCA data are based on a sample of 8,000 observations covering the whole country (Table 1). It is difficult and extremely costly to conduct a national survey in a country like Peru, where a significant fraction of the population participates only marginally in the market economy, and where transportation is obviated by a mountainous topography. But substantial and successful efforts were made, for the first time in the history of Peruvian socio-economic investigation, to obtain a representative sample of the total population.

The mass of data collected by the survey is currently being processed at the central offices in Lima. A few partial analyses of the survey, among them the present one on Lima, prove that the data is of high quality, not only with respect to urban areas, which are relatively easy to survey, but also regarding the Andean Highlands and the jungle regions in the Amazon basin. It can be anticipated that, upon completion of the analysis of ENCA, the Peruvian food economy will be one of, if not the, best known on the South American Continent.

III. The Design of the Sample and the Mechanics of the Fieldwork[5]

The sample of the Peruvian National Food Consumption Survey was designed in order to allow inference at the regional level. To this end the country was first divided into nine major regions (Table 1). It was assumed that a national sampling fraction of three families out of every thousand would yield a sufficiently large sample for reliable and representative inferences. This ratio was based on suggestions by FAO, which has successfully carried out consumption surveys with this sampling fraction in several countries. Estimating the Peruvian population for 1970 at 13,613,510[6] and assuming an average of 5.6 persons per family, a sample of three out of a thousand has a size equal to 7,293. This was rounded to a final size of 8,000 observations.

5/ The following discussion is based on unpublished ENCA working documents as well as personal communication with Mr. R. Grados, Executive Director of ENCA, who always showed an active interest in this study.

6/ The figure is taken from unpublished population projections by the Oficina Nacional de Estadistica y Censos.

TABLE 1. GEOGRAPHIC DISTRIBUTION OF ENCA SAMPLE OBSERVATIONS

Regions	Number of Households	Sampling Fraction	Estimated Population
All Peru	8,000	1/311	13,932,800
Northern Coast	889	1/380	1,891,792
Northern Sierra a/	1,010	1/380	2,149,280
Central Coast	607	1/198	673,041
Central Sierra	1,009	1/380	2,147,152
Southern Coast	700	1/144	564,480
Southern Sierra	1,089	1/380	2,317,392
Selva Alta b/	650	1/186	677,040
Selva Baja	600	1/157	527,520
Greater Lima	1,446	1/380	3,077,088

Source: ENCA Working Documents, Spring 1972, adjusted.

a/ Sierra: Highlands. The line separating the Sierra from Coast and Jungle is arbitrarily set equal to the 2,000 meter level curve.

b/ Selva: Jungle.

PERU: REGIONS

For all the regions, except the metropolitan area of Greater Lima, a three-stage systematic sample was designed and selection was made with probability proportional to the population size of the sampling units. Primary sampling units (PSUs) were defined on the basis of the political districts that had served as census units for the 1961 national population census. It was expected that, on the average, 26 families were sampled per PSU. The PSUs were stratified in the following manner:

PSU I : urban areas with a population equal to or more than 50,000 in 1961
PSU II : towns and villages with from 2,000 to 50,000 inhabitants
PSU III: sparsely settled areas left after enumerating types I and II.

It was decided to consider types I and II as "urban" PSUs, whereas type III was said to be "rural".

After systematic selection of the PSUs, secondary sampling units (SSUs) were defined as conglomerates of housing units. In PSUs of types I and II, this was taken to mean city blocks, in type III it meant segments of between 80 and 200 housing units. Since for PSUs and SSUs the probability of being selected was proportional to the number of inhabitants living in each PSU, the sample can be said to be self-weighted.

Tertiary sampling units (TSUs), selected housing units, were chosen from the SSUs systematically with constant probability. The total number of TSUs was divided among the enumerators in such a way that each enumerator surveyed eighty adjacent TSUs at a rate of forty "weeks" of nine days 7/ working in two units of observation at a time.

Table 2 compares the TSU population and its sample characteristics by type of PSU and geographic region. To some extent, it permits measurement of how the country's population is stratified into urban and rural groups. It follows from the table that, for instance, in the area of the Northern Sierra, 91.5 percent of the population (more exactly: 91.5 percent of the housing units or TSUs) are found in strictly rural areas. The total figures show that, not counting Lima, 13.3 percent of the Peruvian population live in cities with more than 50,000 inhabitants, 17.4 percent live in urban agglomerations with between 2,000 and 50,000 inhabitants and 69.1 percent satisfy the definition of "rural."

We can also see that the sample covers the TSU population rather closely. With the exception of three cases, the sample representation is within three percent or less of the population values. The figures for the Northern Coast (PSUs I and II), the Central Coast (PSUs II and III), and the Selva Alta (PSU I).

7/ 40 X 9 = 360 days. Each enumerator spent 40 sequences of 7 days interviewing and 2 days travelling, completing the questionnaires and resting.

however, show considerable deviations from the population figures. This incidence must be attributed to discrepancies between office work in Lima and field work in the provinces and should not be interpreted as questionable sample representation of the population under study. The population distribution of TSUs was first developed in 1970 in the Lima headquarters, based on the 1961 census. The field enumeration of the sample TSUs took place in 1971 and adjusted the theoretical sample figures to the actual situation. Thus, the left-hand side of Table 2 shows office estimates of TSU population, whereas the right-hand side represents the results of sample field enumeration. To be sure, no statistical evidence has been found to suggest that the proportion of TSUs by types of PSU in the sample is significantly different from the proportion in the population.

In the case of metropolitan Lima a two-stage systematic sampling design was employed. The natural city blocks were referred to as PSUs; individual housing units were said to be the SSUs. From a total of roughly 20,000 PSUs, 360 were selected, covering the geographic area of metropolitan Lima in proportion to its population density. A total number of 1,488 observations was taken from these.

The fraction of families that refused to cooperate with the survey was highest in Lima. It totaled 32 percent (368) of all SSUs to be sampled. But 95 percent of these (349) were replaced and, therefore, the sample can be regarded as complete, with one note of caution: the replaced observations may not have the same socio-economic conditions as the ones originally chosen. However, since the selection of SSUs was systematic, the enumerator took the next housing unit on his list and due to proximity to the original unit, it is reasonable to assume that in most cases the differences were not too striking. Table C1 in Appendix C gives numbers and reasons relative to the incidence of non-cooperation.

ENCA carried out the field work during a twelve-month period, from August 1971 to August 1972. The units of observation were <u>households</u>, defined as groups of people who share a dwelling and who pool their earnings to provide themselves with food and other necessities of life. Each household was subjected to seven days of observation. One hundred and five enumerators were assigned families whom they visited twice a day, taking information on household characteristics.

The questionnaire used to this end merits attention since it was the major tool for the data collection (see Appendix A for main parts). Its special character lies in the fact that it is designed for the purposes of a food consumption survey as against the more frequent budget survey which is so far the most common source of information for the food economist in many less developed countries. The questionnaire can be divided into three general parts according to the type of information

TABLE 2. ENCA: DISTRIBUTION OF TSU POPULATION AND SAMPLE, BY REGION[a] AND TYPE OF PSU

(percent)

Region	Population				Sample			
	Total	PSU I	PSU II	PSU III	Total	PSU I	PSU II	PSU III
TOTAL	100.0	13.3	17.4	69.1	100.0	15.2	18.9	65.8
Northern Coast	100.0	29.4	37.3	33.2	100.0	33.1	30.6	36.1
Northern Sierra	100.0	-	8.4	91.5	100.0	-	7.5	92.4
Central Coast	100.0	6.6	42.0	51.2	100.0	5.7	53.8	40.3
Central Sierra	100.0	4.6	17.7	77.6	100.0	4.5	17.0	78.4
Southern Coast	100.0	34.5	19.5	45.8	100.0	36.7	21.0	42.2
Southern Sierra	100.0	17.5	6.6	75.7	100.0	19.0	9.8	71.1
Selva Alta	100.0	4.2	17.8	77.8	100.0	1.3	20.9	77.7
Selva Baja	100.0	24.2	7.4	68.2	100.0	22.6	6.0	71.2

Source: Laguna, L., and D. Curonisy, ENCA: Análisis del Comportamiento de la Muestra de Viviendas en el Terreno, Lima, July 1973; adjusted.

a/ Metropolitan Lima excluded because of different sample design.

sought. A first part covers the general characteristics of sampled families. It includes data on the composition of the households, educational achievement and anthropometric data of its members. Space is provided to list presence at meals during the survey period. The information in the first part is of importance for the calculation of per capita figures of food values purchased and consumed. Knowledge of the composition of the household may allow some tentative inference as to who in the family ate what, which will be of considerable interest to nutritionists. However, the survey was not designed (unfortunately, one might say) to yield exact data on food consumption of individual members of the household. While being of great value for an assessment of the global nutritional situation of the country, the survey has a greater potential as a data source for socio-economic investigation.

A second part of the questionnaire covers information on the household's food behavior. The core of the data on food purchases and consumption is summarized in two tables identified by ENCA as Tables 6 and 7 (see Appendix A). Table 6, on purchases, specifies value in soles, gross and net weight in grams, and origin of purchases. Space was provided for a detailed account of daily expenditures on goods and services other than food. Table 7, on consumption, details food eaten by the family. It asks for weight in grams, origin of the commodity, and data on residuals and waste (weight and destination). It is from the column on origins that homegrown food and commodities obtained through barter can be identified. The ENCA questionnaire can be called unique in that it breaks down food consumption into two tables. It is expected that this particular organization of the survey schedule will allow valuable cross-checks between intake and purchases of food. Additional information included meals eaten out and food eaten by children under five years of age. There was also a table on weaning practices.

A third part of the survey schedule deals largely with the economic situation of sampled families. The data include a detailed account of all household expenditures over a twelve-month period (including rent, services, equipment, clothing, medical care, education, and leisure), as well as information on economic activity and incomes of the gainfully occupied household members. The questionnaire details job category, time of contract, and children's work among other items. There is also information on the demographic situation of the households (fertility of mothers, mortality).

IV. The Analysis of the Survey

Through the intermediate of Cornell University, the writer had the opportunity to start a ten-week appointment in June 1973 at ENCA's central offices in Lima, where he was to carry out a study on food consumption patterns in the Greater Lima area. A number of delays associated with the recording of the Lima survey data on magnetic tapes as well as with a series of consistency checks delayed the running of analytical programs

and the available time period proved to be insufficient to carry out an exhaustive analysis of the Lima data. While the tapes underwent a lengthy item-by-item consistency checking procedure, time was spent studying the methodology of the survey and visiting some of the districts and individual SSUs that had been sampled. The roughly 1,500 sample observations were stratified into five income groups, since income was considered the crucial variable for initial research:

Income Group	Soles[a] Per Capita Per Year	Number of Observations	Relative Frequency (percent)	Cumulative Frequency (percent)
I	0 - 7,999	325	21.8	21.8
II	8,000 - 14,999	425	28.6	50.4
III	15,000 - 24,999	337	22.6	73.0
IV	25,000 - 34,999	157	10.6	83.6
V	35,000+	244	16.4	100.0

a/ U.S.$1 = 43.38 Peruvian soles.

It was necessary to organize the more than 1,500 food items that had been recorded from the questionnaires, and to prepare a food composition table.[8]

Criteria used in grouping the food commodities were a) to completely cover all Peruvian foods and b) to be as brief as possible in order to allow meaningful tables. The eleven food groups adopted are the ones that will appear in most tables throughout the next section and will therefore not be listed here. It was decided what commodities should appear individually in each food group and which ones were of little enough importance to be listed under a heading "others". A recurring problem was that within each of the eleven food groups identical foods were discovered under different names, reflecting regional differences in denomination or slightly differing ways of preparation. These were grouped together to avoid useless repetition.

In order to express physical quantities of food purchased by nutritionally meaningful denominators it was necessary to adopt conversion factors for nutrient equivalents. The Peruvian Institute of Nutrition has published a Food Composition Table for the country (6). As was to be expected, however, ENCA recorded a much larger number of food items than that covered by the Peruvian table. It was necessary to search elsewhere for nutritional values of a considerable number of commodities, and several weeks were spent elaborating the food composition table. Recourse was taken to the international literature on the subject (7, 8, 9) which helped in some cases and did not in others. Nutrient values, thus, had to be "created" for a significant number of foods, by considering each item and approximating its nutrient content by assigning it

8/ With regard to both, the commodity grouping and the food composition table, important work is owed to FAO advisors.

average values or the values of similar produce. The result of this effort is the ENCA Food Composition Table summarized in Appendix B.

In the table, nutrients were defined for 100 grams of the edible portion of the produce. This meant converting the commodities "as purchased" into their potentially usable part. On the basis of international references (10, 11) as well as common sense, coefficients by which to multiply the purchased quantities were defined as numbers between zero and one. For instance, several of the references suggest an edible portion of 88 percent for a fruit such as quince. Therefore, the total quantity of quince purchased should be multiplied by .88 and nutrients should be calculated for the resulting product to draw nutritional inferences. Such coefficients are, of course, approximations and it is important to remember that they vary between income groups. This should be kept in mind when considering the ensuing tables in calorie terms. The ENCA questionnaire asked for detailed information on residuals and waste, and this data, analyzed for our five income groups once it is available, will be used to adjust preliminary calorie and protein estimates. It may be indicated to estimate nutrient consumption in terms of a range rather than as a precise value.

When the nutrient values for all food items were punched and ready for computer use a complete summary program was run on the basis of the information on food purchases (questionnaire Table 6), specifying soles spent, and quantities of individual food items taken both in terms of kilograms and nutrients. The preliminary findings regarding the food behavior of the population of Greater Lima that will be presented in the following section are mainly based on this program. It should be stressed that the figures shown refer to quantities of food purchased, not consumed. The analysis is, therefore, partial and will have to be completed with evidence from the table on consumption.

V. Preliminary Findings for Greater Lima

The analysis of ENCA data as available at the time this study was carried out can be considered in terms of two main aspects: the variability in income spent on food, and the variability in quantity of food purchased.

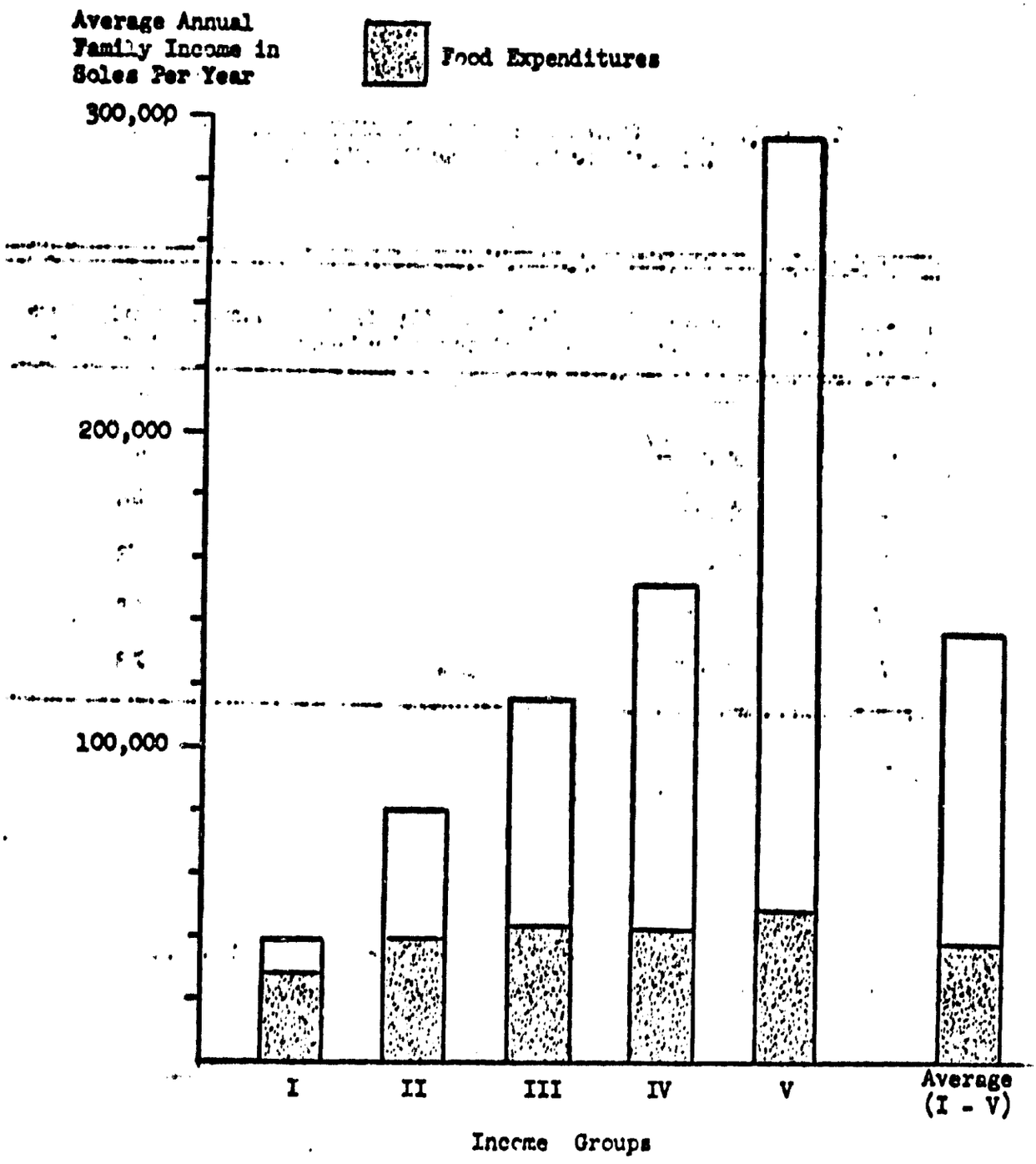
The proportion of income spent on food is subject to a high degree of variation between income classes. Table 3 gives percent values of annual family income spent on food over the five income groups. It can be immediately observed that the absolute figures in column two tend to increase as we move up the income bracket, while the relative figures in column three decrease. The expected phenomenon that, the lower the income level of the consumption unit, the higher the relative share of income spent on food is clearly confirmed. But Chart 1, which describes the data from Table 3 graphically, presents an interesting contrast to this: while family income levels vary widely, absolute food expenditures are almost constant, at least after the first income group.

TABLE 3. GREATER LIMA: PERCENT OF ANNUAL FAMILY INCOME SPENT ON FOOD, BY INCOME GROUP (ENCA)

Income Groups	1 Average Annual Family Income	2 Total Family Food Expenditures Per Year	3 Annual Family Income Spent on Food
	(soles)	(soles)	(percent)
I	35,500[a]	27,863	78
II	71,300	34,086	48
III	112,000	37,437	33
IV	153,000	35,469	23
V	292,400	39,197	13

a/ Ten observations with incomes below 2,000 soles are discarded as unreliable.

CHART 1. GREATER LIMA: FAMILY INCOME AND FOOD EXPENDITURES (ENCA)



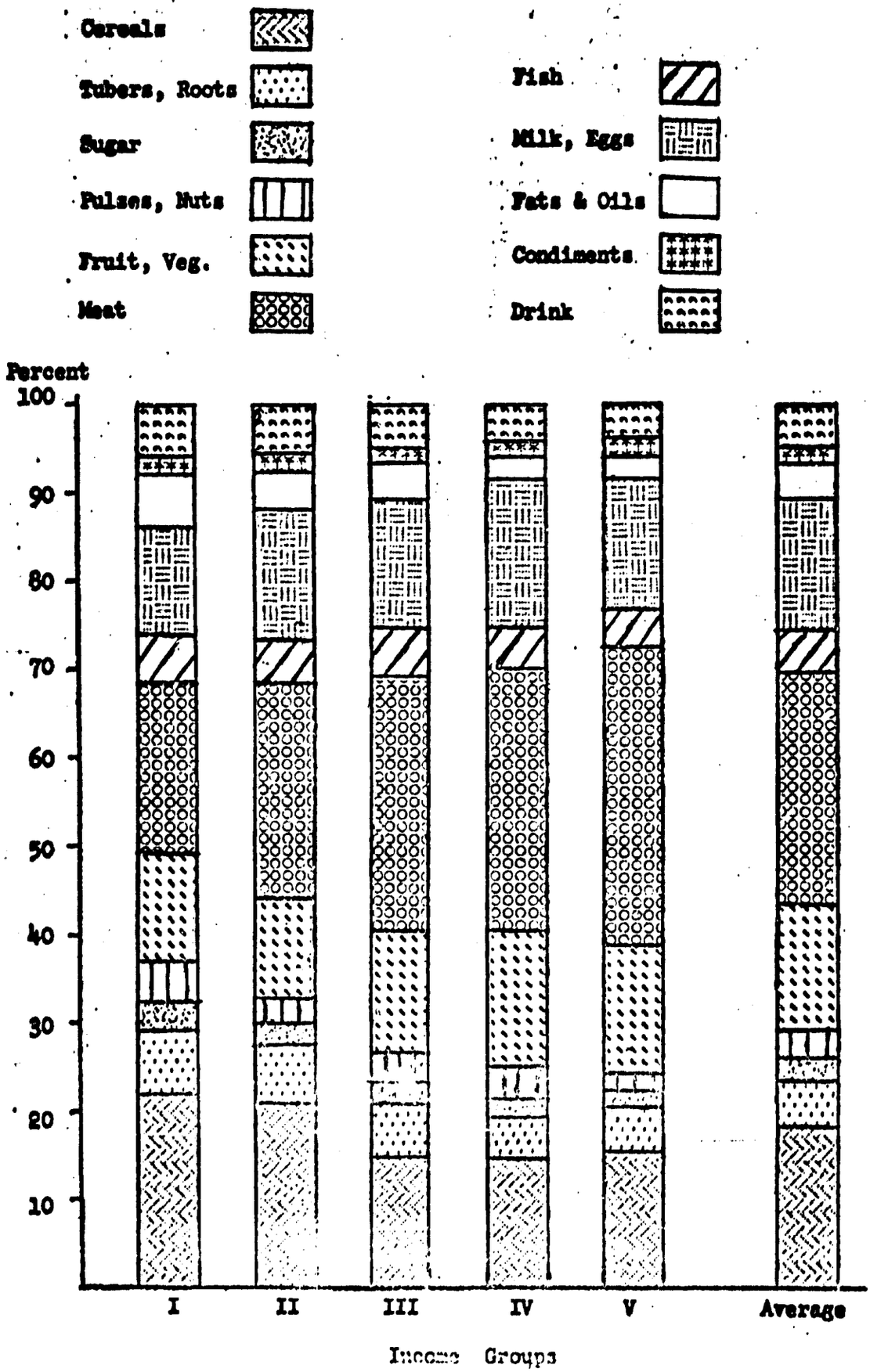
The value of 78 percent of income spent on food by the first income group seems extremely high. However, it is conceivable in a situation of low income housing, for example, where many other charges (such as rent, services, etc.) are minimal compared to food expenditures. It would be interesting to run a distribution of total expenditures and compare the percentage of this variable allocated to food with the values obtained by looking at income. Table 3 reveals the sharpest difference in the values of columns two and three between the lowest and the next following income group. Between the two groups, the proportion of income, allocated to food falls by as much as 30 percent, whereas, thereafter, the decline is first by about 14 percent and then in steady steps of 10 percent. The total food expenditure figures (column two) differ by 2,000 or 3,000 soles between the upper four income levels, but jump from 27,800 to 34,000 soles between the lowest and the next following income group. It will be seen that this particular pattern is repeated throughout the analysis, whether talking about money spent on food or kilos or nutrients purchased. One explanation of this is the fact that at the lowest income level saturation is not reached for any commodity (except sugar), and the consumer's consumption potential in terms of mere quantity is not fulfilled, whereas it is from the second income group on. We could express this by stating that in the lowest income group all types of food must be regarded as superior goods and their consumption increases as income increases--the change in demand for the commodity "All Food" associated with a change in income is positive. On the other hand, in higher income brackets, "food" cannot be regarded as a homogeneous commodity. Instead, the consumer will differentiate between inferior and superior foods (and any point between the two extremes). His demand for the former will decrease and for the latter increase as income goes up.

Chart 2, on food group preference, indicates percent values of food expenditures allocated between eleven food groups. It appears that the share of the relatively higher priced commodities such as meat and dairy products increase as income increases, while the starchy staples tend to decrease. Note that there are three commodities whose relative share in the food budget is constant over the income range: sugar, fish, fruit, and vegetables. This pattern may be explained by the particular nature of the Peruvian Coastal food economy. Sugar is usually available in generous quantities at relatively low prices and a saturation point seems to be already reached in the lowest income group. Fish, paradoxically, is an unpopular food in the world's largest fish catching nation. It is mainly for industrial use and export. Fruit and vegetables are constant only if they are looked at in this aggregated fashion. If they are considered separately, it is found that expenditure on fruit increases relative to expenditure on vegetables for increasing income.

On the average, the following percentagewise allocation of total food budget to eleven commodity groups is found: Cereals: 18%, Tubers and Roots: 5.2%, Sugar: 2.7%, Pulses and Nuts: 3.1%, Fruits and Vegetables: 14%, Meat: 27.2%, Fish: 4.6%, Dairy Products, including eggs: 14.9%, Fats and Oils: 4%, Condiments: 1%, Beverages: 4.4%.

CHART 2. GREATER LIMA: FAMILY FOOD EXPENDITURES BY FOOD GROUPS AND INCOME CLASSES (ENCA)

(percent)



As the consumer's income constraint is successively relaxed, his expenditures on food increase, both because quantity of food purchased increases and quality improves. Table 4 on quantities taken and Table 5 on average prices clearly illustrate this incidence. A look at the behavior of starchy staples in Table 4 (Cereals, Tubers, Pulses) reveals an increase in quantity taken between the first and the second income group and a steady decrease thereafter. On the other hand, quantity purchased of more expensive foods such as meat, dairy products, fruit and vegetables, as well as fats and oils, increase sharply with increasing income.

While it is not correct to judge quality of purchased food solely as a function of price (since there are several other factors that influence price, such as the interaction between supply and demand, the origin of the purchase, etc.), it can be assumed that a comparison of per unit prices does reflect the quality of the purchased foods. Table 5 gives an account, by food group and income classes, of average prices paid in Lima, as revealed by the ENCA survey. Average prices generally increase from one income group to the next, thus indicating higher quality and/or more processing and retailing services involved.

Chart 3 shows levels of calories purchased (see also Appendix C). In the lowest income group, a total of 922 daily calories per capita, or 53 percent of daily calorie purchases, is provided by starchy staples (cereals, tubers). This represents only 29 percent of total food expenditures (Chart 2). Starches are man's cheapest source of food energy. There is an increase of more than 100 calories from this source between income groups one and two. However, this higher calorie figure for income group two represents a smaller fraction of total calories (approximately 50 percent). It is at this second income level that the gradual shift to relatively more costly sources of nutrients begins.

In the highest income group, about 41 percent of all calories come from starchy staples. This corresponds to 20 percent of total food expenditures (Chart 2). The average starchy staple ratio9/ is estimated at 46 percent. This is a rather high figure, and, more important, it is almost constant throughout the income range, The reason for this seems to lie in regional dietary characteristics. In the coastal areas of Peru, cereals constitute 80 percent of the starchy staples. Among these, rice and bread, again, provide about 80 percent of all calories. This is not the case in all regions of the country. In the Sierra and partly in the Selva, the share of roots and tubers among starchy staples is known to be much higher. On the coast, rice consumption is almost constant throughout the income range and amounts to as much as 315 calories per person per day. The same is true for bread, whose consumption

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9/ The starchy staple ratio is the proportion of daily per capita calories originating from cereals and tubers. In the United States, the starchy staple ratio is estimated at about 25 percent.

TABLE 4. GREATER LIMA: QUANTITIES OF FOOD PURCHASED BY INCOME GROUPS (ENCA)

(kg. per capita per year)

Food Groups	Income Groups I	II	III	IV	V
Cereals	84.9	95.6	95.4	91.6	90.0
Roots, Tubers	54.7	62.6	60.8	54.9	51.9
Sugar	19.7	21.8	20.7	23.6	20.4
Pulses, Nuts	12.3	14.0	13.3	14.9	11.1
Fruits, Vegetables	66.6	91.0	121.2	117.7	136.8
Meat	18.4	28.9	38.7	47.8	50.2
Fish	11.2	14.6	16.0	14.8	14.0
Dairy, Eggs	33.7	50.9	76.3	90.2	115.1
Fats, Oils	7.8	9.6	10.1	9.2	10.2
Condiments	1.2	1.4	1.6	1.7	1.5
Drink	6.9	11.6	16.0	9.9	12.3
TOTAL	317.4	402.0	470.1	476.3	513.5

TABLE 5. GREATER LIMA: AVERAGE PRICES PAID FOR FOOD, 1971-1972 BY INCOME GROUP (ENCA)

(soles per kilo)

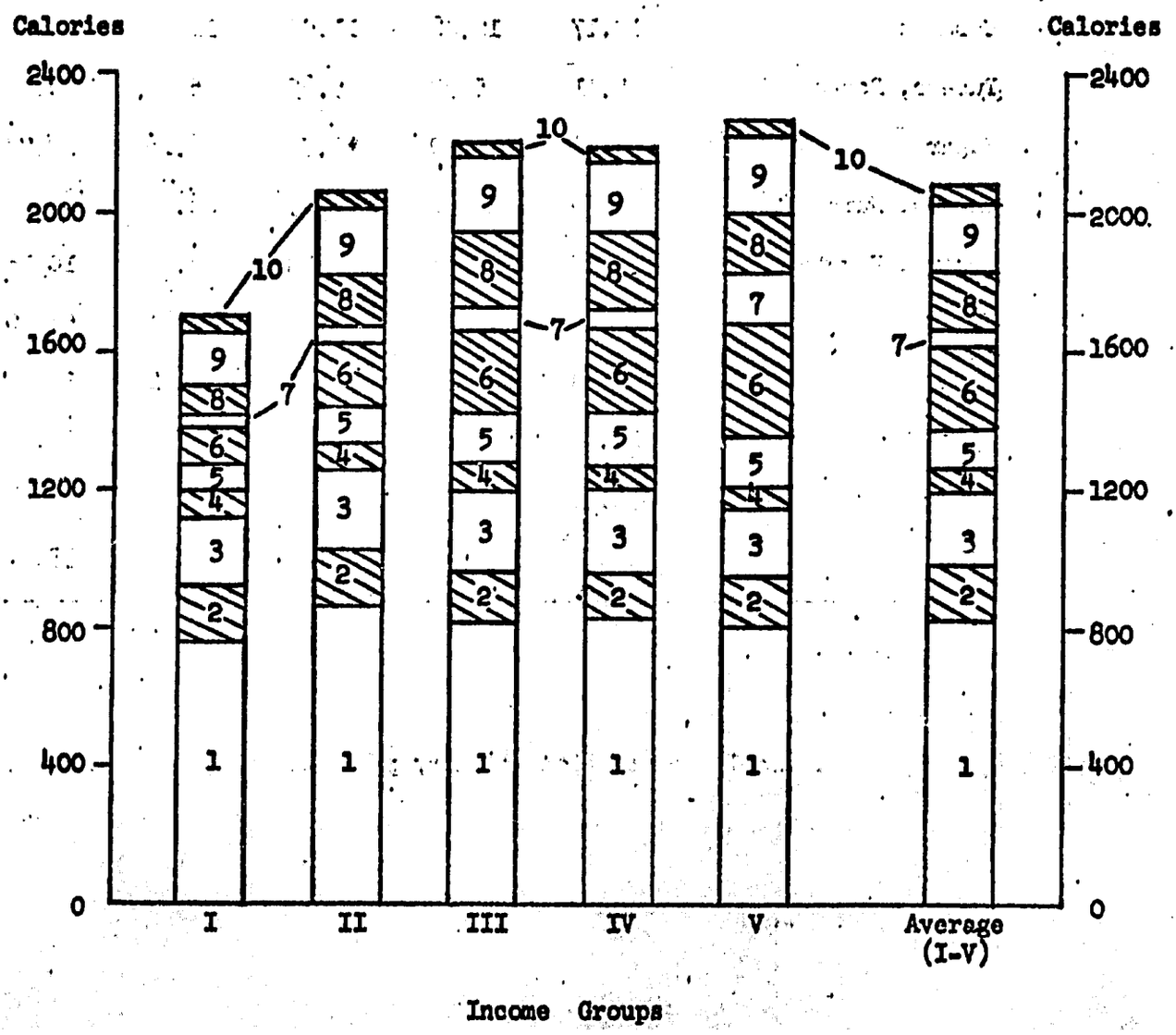
Food Groups[a]	Income Groups				
	I	II	III	IV	V
Cereals	10.17	12.28	11.00	11.48	17.07
Tubers, Roots	5.11	5.29	5.85	5.81	5.97
Sugar	6.60	6.89	7.79	8.16	10.77
Pulses, Nuts	24.79	25.90	27.49	28.66	29.06
Fruits, Vegetables	7.37	7.56	8.53	8.91	10.16
Meat	43.99	45.61	49.82	52.81	58.80
Fish	17.93	17.72	22.81	25.61	38.07
Fats, Oils	24.08	28.78	24.77	26.50	27.27
Condiments	55.45	54.78	43.11	41.34	62.04
Drink	18.00[b]	19.52	21.54	23.04	33.52

a/ No reliable information on dairy products and eggs available.

b/ Estimated.

CHART 3. GREATER LIMA: PER CAPITA DAILY CALORIE PURCHASES, BY FOOD GROUPS AND INCOME GROUPS (ENCA)

1 - Cereals
2 - Tubers, Roots
3 - Sugar
4 - Pulses and Nuts
5 - Fruit and Vegetables
6 - Meat
7 - Fish
8 - Milk and Eggs
9 - Fats and oils
10 - Drink



tends to increase as income increases. High bread consumption can be judged a general dietary feature of Latin societies. The 315 daily calories taken from bread represent 38 percent of all the calories from cereals and 15 percent of total calories (Table 6).

Chart 3 reveals that the three most expensive sources of food energy (meat, dairy products, fruit and vegetables) more than double their calorie contribution over the income range. Calories from sugar remain more or less constant at an average of 211, pulses and nuts decrease in importance, while fish increases but slightly. The values indicated for beverages (Drink) are the summarized values from the survey schedules, but the low numbers of calories from this source suggest that it is underreported. Underreporting of beverages, and especially alcoholic drink, is common to most consumption surveys. It is not possible, in the present study, to suggest more realistic values, due to a lack of data that would allow cross-checks. But it should be kept in mind that the true values are in all certainty significantly higher.

Chart 4 gives an account of levels of protein purchases over the income bracket. Cereal protein accounts for a range of 44 to 27 percent of total protein as we go from the lowest to the highest income level. The proportion of protein from meat varies between 17.4 percent and 33.4 percent. Dairy products contribute between 12 and 19 percent of total protein, whereas fish protein remains almost stable. On the average, 64.6 grams of protein are found to be purchased daily on a per capita basis. Almost 51 percent of this, or 33.6 grams, represent protein of animal origin. This figure, which for the lowest income group amounts to 40 percent, is rather high and translates into a significant demand for animal protein and, in particular, meat (see also Table C3, p. 46).

Chart 5 lists protein purchased from four types of meat. It can be concluded that beef is the preferred type of meat at all income levels, providing, on the average, more than 50 percent of meat protein. It is followed by chicken (30 percent) and pork (5 percent). It can be seen that the contribution of protein from these three types increases continually, whereas the type "other" increases only between the two lowest income groups and then tends to decrease.10/

This analysis for Lima demonstrates the effect on food behavior of income distribution. The level of purchasing power shows considerable differences across the income range, which could be reduced by improving the employment situation in the nation as a whole (this would stop migration to the capital) and in the Greater Lima area. The most salient

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10/ "Other"meats include mutton, game, cuy, llama.

TABLE 6. GREATER LIMA: BREAD AS AN ENERGY SOURCE, BY INCOME GROUPS (ENCA)

Income Group	Total Bread Calories (per capita per day)	Percent of Cereal Calories (Cereals = 100)	Percent of All Calories (All food = 100)
I	275	36.5	16.1
II	325	37.7	15.7
III	323	37.8	14.6
IV	317	38.7	14.4
V	339	42.4	14.9
Ave. (I-V)	315	38.6	15.1

CHART 4. GREATER LIMA: PER CAPITA DAILY PROTEIN PURCHASES, BY FOOD GROUPS AND INCOME GROUPS. (ENCA)

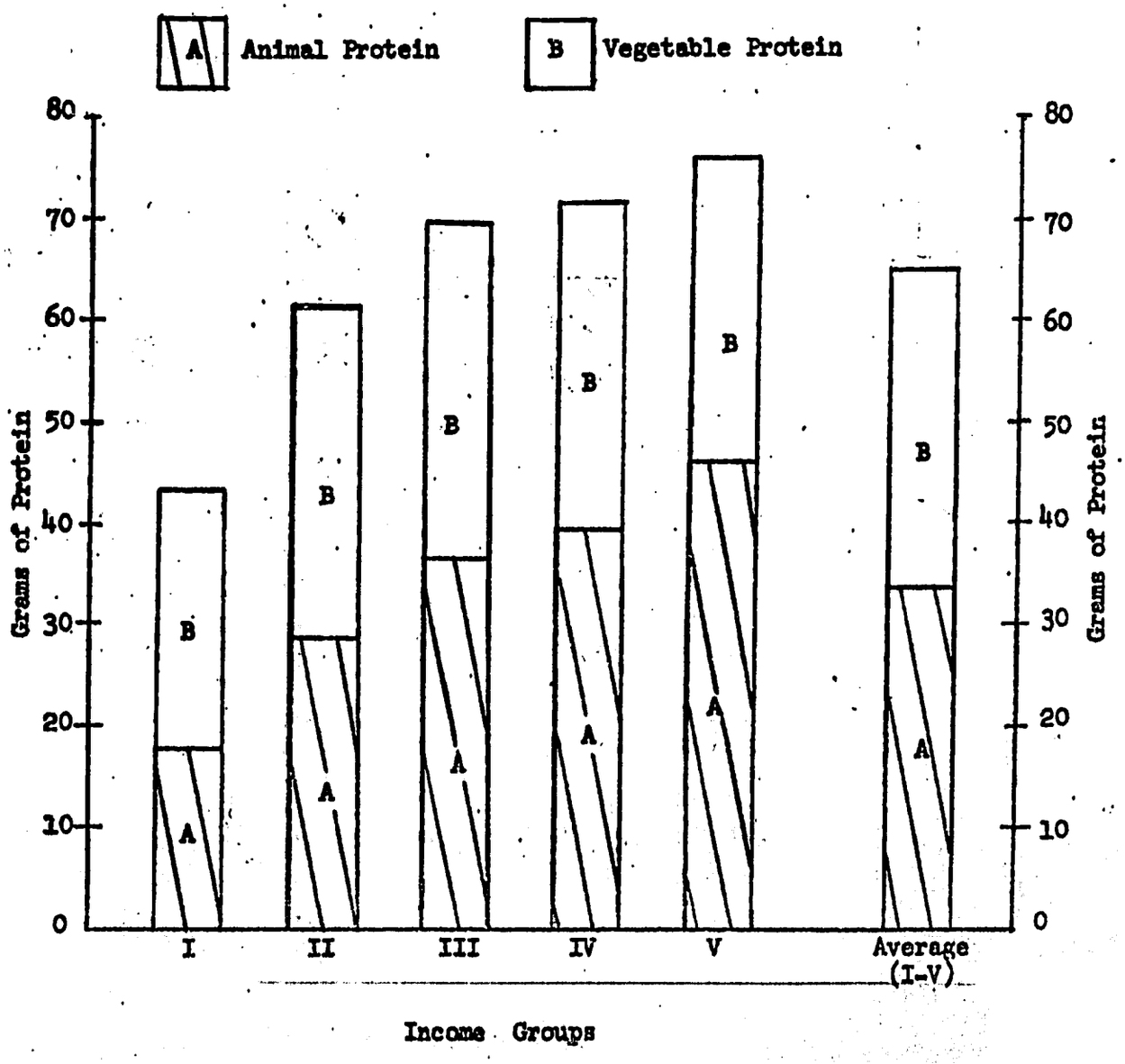
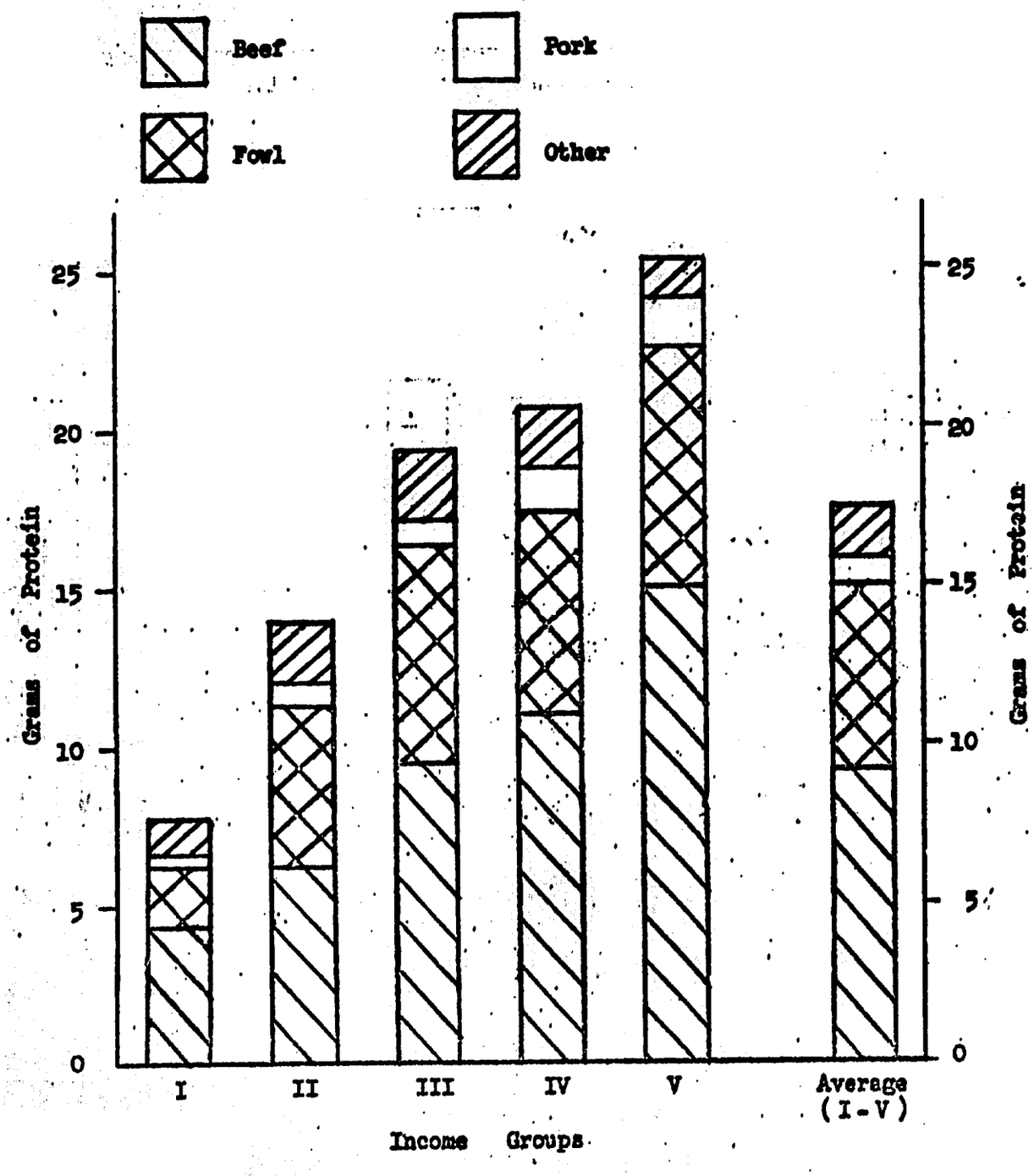


CHART 5. GREATER LIMA: PROTEIN PURCHASED FROM MEAT, BY TYPES OF MEAT AND INCOME GROUPS (ENCA)

(grams per capita per day)



feature encountered at all points of the analysis is the big gap in food behavior between income groups one and two, against which the difference between groups two to five looks rather small. The difference in total calories purchased amounts to 213 calories between the second and the highest income groups, but is 365 calories between the lowest and the second. For protein, the corresponding figures are 13.8 grams and 17 grams. Since there is no evidence of significant changes in income allocation to food (Chart 1) and in quantities of food purchased between income groups two to five, it may be concluded that the fraction of the population that falls in these groups (78 percent) does not face any food problems.11/ But what can be said about income group one?

Obviously, the level of income to be spent on food is lower in the first income group than in the second. But this is not sufficient evidence to conclude that the lowest income group lives at the margin of subsistence. Expenditure patterns in the first income group may be different. This seems intuitively correct when we assign such population groups as recent migrants and inhabitants of Pueblos Jóvenes to the first income group. Both are much more traditional than the rest of the inhabitants of the capital and presumably this has an effect on their food expenditure pattern. Food marketing, in the context of a Pueblo Jóven, is differently organized than in the city center and suburbs, where higher income groups tend to shop. It is largely based on the vendedor ambulante and barter is not infrequent.

From our data, it is neither possible to conclude the existence of a food problem for the lowest income group, nor can we prove the opposite. An answer to this question can only be provided when the whole ENCA survey is analyzed. The most crucial analytical step to be carried out next is to examine consumption levels (questionnaire Table 7) by income groups and to compare them to available information on purchases. It will be necessary to exploit data on origin of purchases in order to point out more detailed relationships with regard to the market process and the interaction between price and quantity. The data on origins in questionnaire Table 7 will allow to assess the importance of homegrown foodstuffs. Together with information on waste, this will allow a more accurate calculation of nutrient availability. It is probable that waste becomes smaller as income decreases and home production becomes larger. These two items are believed to bring the purchased number of 1,700 calories in the first income group to higher, more tolerable values. Several important cross-checks against the presently available information would be possible, were food behavior broken down according to income groups defined on the basis of total expenditures (since the latter are believed to be reported more reliably than income). Eventual problem groups could be narrowed down by regressing food behavior on a series of socioeconomic variables other than income, such as household size, level of

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11/ Food problem, in this context, is taken to refer to an individual's inability to provide himself with qualitatively and/or quantitatively correct amounts of food, either because he cannot afford it, or because there is insufficient supply.

education of members at least 14 years old, occupation of income earners, and migrational background. Finally, it might be indicated to calculate global regional food requirements per capita, in order to have rough standards against which to check per capita consumption figures. It is believed that an analysis of this sort will yield a more or less reliable picture of consumption patterns in the Greater Lima area and it should immediately be extended to the remainder of the country.

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APPENDIX A

The ENCA Questionnaire

(Main Parts)

3. COMPOSICION DEL HOGAR

I Cod.	II Nombre y Apellido	III Vive en la Residencia Principal	IV Relación con el Jefe del Hogar	c o d	V Sexo H. M.	c o d	VI Estado Civil C. Ca. Se. Sc. V. D. T.	c o d	VII Edad (en años o meses)	VIII Lugar de Nacimiento: Distrito	c o d	Provincia	c o d	IX Nivel de Educación: Nivel	Último año	c o d	X Donde se estudiaba?	XI Estadía en el hogar Pr. Pl. O.	c o d	XII Peso (kg.)	XIII Talla (cm.)	XIV Fecha de Nacimiento: Día	Mes	Año
01		SI 1 / NO 2	JH														SI 1 / NO 2							
02		SI 1 / NO 2															SI 1 / NO 2							
03		SI 1 / NO 2															SI 1 / NO 2							
04		SI 1 / NO 2															SI 1 / NO 2							
05		SI 1 / NO 2															SI 1 / NO 2							
06		SI 1 / NO 2															SI 1 / NO 2							
07		SI 1 / NO 2															SI 1 / NO 2							
08		SI 1 / NO 2															SI 1 / NO 2							
09		SI 1 / NO 2															SI 1 / NO 2							
10		SI 1 / NO 2															SI 1 / NO 2							
11		SI 1 / NO 2															SI 1 / NO 2							
12		SI 1 / NO 2															SI 1 / NO 2							
13		SI 1 / NO 2															SI 1 / NO 2							
14		SI 1 / NO 2															SI 1 / NO 2							

4. LISTA DE COMENSALES HABITUALES DEL HOGAR

Cod.	Día de la Semana y Fecha	1º Día				2º Día				3º Día				4º Día				5º Día				6º Día				7º Día				Observaciones
	Nombre y Apellido	D	A	T	C	D	A	T	C	D	A	T	C	D	A	T	C	D	A	T	C	D	A	T	C	D	A	T	C	

_____ día

Día de la semana y fecha_____

G- ADQUISICIONES DE LOS MIEMBROS DE LA UNIDAD DE GASTOS CORRESPONDIENTES AL DIA DE LA ENCUESTA

DETERMINE LOS MIEMBROS COMPONENTES DE LA UNIDAD DE GASTOS (ver instrucciones en el manual)

GA.- ADQUISICIONES DE COMESTIBLES Y BEBIDAS

I NOMBRE DE LOS COMESTIBLES Y BEBIDAS ADQUIRIDAS	C_{o_a}	II CANTIDAD	III UNIDAD DE MEDIDA	C_{o_c}	IV LUGAR DE ADQUISICION	C_{o_d}	V VALOR PAGADO S/	VI PESO EN GRAMOS BRUTO	TARA	NETO

IV (cuadros A,B) Mm = Mercado minorista MM = Mercado mayorista B = Bodega SM = Supermercado tienda de departamento E.E. = Establecimiento Especializado DP = Directamente del productor VA = Vendedor ambulante N = De la Tienda o negocio del hogar O = Otros (especifique)

GB.- ADQUISICIONES DE PRODUCTOS NO COMESTIBLES

I NOMBRE DE LOS PRODUCTOS ADQUIRIDOS	II CANTIDAD	III UNIDAD DE MEDIDA	C_{o_d}	IV LUGAR DE ADQUISICION	C_{o_d}	V VALOR PAGADO S/

GC.- COMESTIBLES Y BEBIDAS ADQUIRIDAS DE INSTITUCIONES DONANTES SEAN DEL GOBIERNO O PARTICULAR

I NOMBRE DE LOS COMESTIBLES Y BEBIDAS ADQUIRIDAS	II CANTIDAD	III UNIDAD DE MEDIDA		IV VALOR PAGADO S/	V ENTID. DONANTE (1)	VI PESO EN GRAMOS BRUTO	TARA	NETO

(1) CONAA, OFASA, CARITAS, etc.

7.-"PLATOS"(MENU) de las Comidas Principales del día, del Hogar; PESADA de los ingredientes y residuos

I	II	III	IV									V			
Instrucciones. Instruya al ama de casa para que guarde los sobrantes y desperdicios del día durante las	COMIDAS D. A. C.	"PLATOS" (MENU)	INGREDIENTES									RESIDUOS			
			A DESCRIPCION	Cód.	B ORIGEN (2)	Cód.	C CANTIDAD	D UNIDAD DE MEDIDA	Cód.	E PESO EN GRAMOS			A DESCRIPCION	Cód.	B PESO EN GRAMOS		
	Y HORA	Cód.								BRUTO	TARA	NETO			BRUTO	TARA	NETO
VISITAS: 1ª, 2ª, 3ª																	
Hay sobrantes y/o desperdicios guardados: 1ª VISITA NO SI; 2ª VISITA NO SI; 3ª VISITA NO SI																	
Sólo anotando los ingredientes de los platos de la comida principal. Pase a hacer el cuadro Nº 8																	
OBSERVACIONES																	

(2) Origen: C = Comprado, A = Autoconsumo, N = tienda, negocio; T = Trueque
R = Regalado P = recolectado, Pescado, cazado. D: Donación, PA: del Plato Anterior

Día de la semana y fecha.....

7.- "PLATOS" (MENU) de las Comidas Principales del día, del Hogar; PESADA de los Ingredientes y Residuos (continuación)

I OBSERVACIONES	II COMIDAS D. A. T. C. y		III "PLATOS" (MENU)		IV INGREDIENTES DESCRIPCION		ORIGEN (1)		CANTIDAD	UNIDAD DE MEDIDA		PESO EN GRAMOS BRUTO	TARA	NETO	V RESIDUOS DESCRIPCION		PESO EN GRAMOS BRUTO	TARA	NETO

OBSERVACIONES:

(1) Origen: C: Comprado A: Autoconsumo M: Tienda, Negocio, T: Trueque, R: Regalado, P: recolectado, Pescado, cazado D: Donación PA: del Plato Anterior

8.- SOBRANTES Y DESPERDICIOS DE LOS PLATOS DE LAS COMIDAS PRINCIPALES

I OBSERVACIONES	II DESCRIPCION DEL SOBRANTE		III DESTINO (1)		IV PESO EN GRAMOS BRUTO	TARA	NETO	V DESCRIPCION DE LOS DESPERDICIOS		VI DESTINO (1)		VII PESO EN GRAMOS BRUTO	TARA	NETO

(1) DESTINO: A: Animales; B: Basura, R: Regalado

17- ACTIVIDAD ECONOMICA E INGRESOS DE LOS MIEMBROS DE LA UNIDAD DE GASTO

ULTIMOS DOCE MESES

17.1 MIEMBROS DE LA UNIDAD DE GASTO QUE TRABAJARON DEL.....AL.....
mes año mes año

I Cód.	II NOMBRE DEL TRABAJADOR	III OCUPACION	Cód.	IV ¿CUALES SON LAS ACTIVIDADES DE LA EMPRESA O NEGOCIO?	Sector (1)	V Horas que le dedica (2)	VI ¿QUE MESES TRABAJO? 1	2	3	4	5	6	7	8	9	10	11	12	VII Sigue trabajando?	
						D													SI	1
						S													NO	2
						D													SI	1
						S													NO	2
						D													SI	1
						S													NO	2
						D													SI	1
						S													NO	2
						D													SI	1
						S													NO	2
						D													SI	1
						S													NO	2

OBSERVACIONES:

(1) Sector de la Actividad
- A = Agricultura, Ganadería y Pesca
- P = Pesquería
- AR = Artesanía
- M = Minería
- I = Industria
- C = Comercio
- S = Servicios
- SP = Servicio Público

(2) D: al Día
S: a la Semana

17.2 CATEGORIA DE INGRESO TOTAL ANUAL (en dinero) DE TODOS LOS MIEMBROS DE LA UNIDAD DE GASTO

¿En cuál de las siguientes categorías estima que están los ingresos anuales netos de todos los miembros de la Unidad de Gasto en todas sus ocupaciones?

OBSERVACIONES:

GRUPO 1		GRUPO 2	
Hasta 10,000 S/.	☐	250,001 a 500,000	☐
10,000 a 25,000	☐	500,001 a 1'000,000	☐
25,001 a 50,000	☐	Más de 1'000,000	☐
50,001 a 100,000	☐		
100,001 a 250,001	☐		

ULTIMOS DOCE MESES

17.3 INGRESOS DE MIEMBROS DE LA UNIDAD DE GASTO DE 6 A 13 AÑOS CUMPLIDOS

En caso que la Unidad de Gasto pertenezca al grupo I de ingresos preguntar al J.H. sobre la ocupación de todos los niños que tienen entre 6 y 13 años.

I Cód. de la persona	II Trabajó en el período del mes de..... al mes de.....		SI TRABAJA: III A ¿Cuál era su ocupación?	Cód.	B Cuáles son o eran las actividades de la empresa o negocio?	Cód.	C ¿A quien pertenece la empresa en que trabajó?	Cód.	D Cuanto tiempo trabajó del mes de..... al mes de.....	E ¿Cuánto ganó en dinero ó en especies durante todo ese tiempo?	Cód.
	SI	1									
	No	2									
	SI	1									
	No	2									
	SI	1									
	No	2									
	SI	1									
	No	2									
	SI	1									
	No	2									

17.4 CATEGORIA OCUPACIONAL DE LOS TRABAJADORES DE LA UNIDAD DE GASTO

Cod ☐ Nombre del trabajador..... Cod ☐ Ocupación.....

Que tarea realiza(ba) en esta ocupación.....

Trabaja por/para :

SU CUENTA Cod ☐

A quien pertenece la empresa?
- A él? SI NO
- A él y otra persona? SI NO

Tiene trabajadores? SI NO

¿Les paga remuneración? SI NO

Patrón SI NO

Independiente SI NO

EL GOBIERNO Cod ☐

- Trabajador nombrado SI NO
- Contratado SI NO
- Eventual SI NO
- Empleado SI NO
- Obrero SI NO

UNA COOPERATIVA Cod ☐

Es Ud. Socio? SI NO

UN EMPLEADOR PRIVADO Cod ☐

A quien pertenece la empresa?
- A otra persona? SI NO
- A un familiar? SI NO

¿Recibe Ud. algun sueldo o salario por su trabajo? SI NO

¿Que recibe por su trabajo?
- Propina SI NO
- Otro especifique: .....

Usted está considerado por su empresa como:
- empleado SI NO
- obrero SI NO
- empleado domestico SI NO
- otro SI NO

PATRON, INDEPENDIENTE

Si pertenece al grupo I de ingreso: pase los cuadros 17.6 para Agricultura, Gananadería y Pesca ó al cuadro 17.7 para otros sectores de actividad.

Si pertenece al grupo II de ingreso pase los cuadros 17.6 para Agricultura, Ganadería y pesca ó a la siguiente ocupación de esta persona ó tome los datos del siguiente trabajador.

TRABAJADOR REMUNERADO

Si el trabajador pertenece al grupo I de ingreso, pase al cuadro 17.6

Si el trabajador pertenece al grupo II de ingresos pase a la siguiente ocupación de esta persona ó tome los datos del siguiente trabajador

Si es el último trabajador, pase al cuadro 18

TRABAJ. FAMILIAR NO REMUNERADO

Pase a la siguiente ocupación de esta persona ó tome los datos del siguiente trabajador.

Si es el último trabajador (que pertenece al grupo I de ingreso pase al cuadro 17.6

Si pertenece al grupo II de ingresos pase al cuadro 18

17.4 CATEGORIA OCUPACIONAL DE LOS TRABAJADORES DE LA UNIDAD DE GASTO

Cod ☐ Nombre del trabajador..... Cod ☐ Ocupación.....

Que tarea realiza(ba) en esta ocupación.....

Trabaja por/para :

SU CUENTA Cod ☐

A quien pertenece la empresa?
- A él? SI NO
- A él y otra persona? SI NO

Tiene trabajadores? SI NO

¿Les paga remuneración? SI NO

Patrón SI NO

Independiente SI NO

EL GOBIERNO Cod ☐

- Trabajador nombrado SI NO
- Contratado SI NO
- Eventual SI NO
- Empleado SI NO
- Obrero SI NO

UNA COOPERATIVA Cod ☐

Es Ud Socio? SI NO

UN EMPLEADOR PRIVADO Cod ☐

A quien pertenece la empresa?
- A otra persona? SI NO
- SI NO A un familiar?

¿Que recibe por su trabajo?
- Propina SI NO
- Otro especifique: .....

Usted está considerada por su empresa como:
- empleado SI NO
- obrero SI NO
- empleado domestico SI NO
- otro SI NO

PATRON INDEPENDIENTE

Si pertenece al grupo I de ingreso: pase los cuadros 17.6 para Agricultura, Gananadería y Pesca ó al cuadro 17.7 para otros sectores de actividad.

Si pertenece al grupo II de ingreso pase los cuadros 17.6 para Agricultura, Ganadería y pesca ó a la siguiente ocupación de esta persona ó tome los datos del siguiente trabajador.

TRABAJADOR REMUNERADO

Si el trabajador pertenece al grupo I de ingreso, pase al cuadro 17.5

Si el trabajador pertenece al grupo II de ingresos pase a la siguiente ocupación de esta persona ó tome los datos del siguiente trabajador.

Si es el último trabajador, pase al cuadro 18

TRABAJ. FAMILIAR NO REMUNERADO

Pase a la siguiente ocupación de esta persona ó tome los datos del siguiente trabajador.

Si es el último trabajador (que pertenece al grupo I de ingreso pase al cuadro 17.6

Si pertenece al grupo II de ingresos pase al cuadro 18

APPENDIX B

ENCA Food Composition Table for Peru

ENCA Food Composition Table for Peru

(Nutrients per 100 g. of edible portion)

	Calories	Proteins	Fat	Calcium	Iron	Ascorbic Acid	Vitamin B_2
		(g.)	(g.)	(mg.)	(mg.)	(mg.)	(mg.)
CEREALS							
Rice	363	7.0	0.5	9	1.7	-	0.03
Oats	370	11.6	3.1	64	4.9	-	0.09
Barley	344	9.5	1.8	61	5.1	-	0.21
Maize	357	9.4	4.2	16	3.6	-	0.10
Tamales	110	2.5	5.2	32	1.4	0.1	0.04
Quinua	357	11.0	4.8	112	4.4	6.1	0.28
Wheat Flour	364	10.5	1.0	16	0.8	-	0.06
Bread	325	8.4	0.2	35	1.0	1.0	0.16
Tallarines	343	10.3	0.4	26	2.1	-	0.08
TUBERS, ROOTS							
Sweet Potato	117	1.4	0.2	35	2.2	11.1	0.04
Olluco	62	1.1	0.1	3	1.1	11.5	0.03
Papa (Potato)	97	2.1	0.1	9	0.5	14.0	0.09
Plantains	112	1.2	0.2	-	0.4	5.6	0.06
Yuca	162	0.8	0.2	25	0.5	30.7	0.04
SUGAR							
White Sugar	384	-	-	6	0.1	-	-
Granulated Brown Sugar	380	-	-	45	0.1	-	-
Honey	330	-	-	26	0.4	2.9	0.03
PULSES, NUTS							
Arverja	351	21.7	3.2	65	2.6	3.5	0.15
Frijoles	325	20.5	1.2	123	7.7	5.4	0.21

continued . . .

ENCA Food Composition Table for Peru (continued)

Pallar, Fresh	337	21.6	1.4	38	5.2	5.0	0.21
Pallar, Dried	332	19.7	1.2	63	5.4	6.5	0.24
Beans, Fresh	151	11.3	0.8	31	2.0	28.5	0.09
Beans, Dried	335	25.9	2.4	48	0.8	2.4	0.31
Lentils, Dried	331	23.2	1.2	110	4.7	-	0.21
Peanuts, Shelled	559	24.1	48.2	66	1.8	1.5	0.53
Tarwi	277	17.3	17.5	54	2.3	4.6	0.44
Soybeans	405	33.7	17.9	153	6.1	-	0.25
Soybean Flour	380	41.2	12.1	240	9.0	-	0.36
Olives	298	0.8	32.1	86	2.4	-	0.22
Nuts	657	15.6	64.4	-	-	-	-
FRUITS, VEGETABLES							
Chirimoya	53	1.1	0.4	16	0.2	3.4	0.23
Peaches	64	0.6	0.1	4	0.3	15.3	0.04
Lemons	30	0.5	0.2	18	0.5	44.2	0.03
Mamey	37	0.5	0.1	51	0.4	2.0	0.04
Mango	60	0.4	0.2	15	0.4	24.8	0.11
Apples	54	0.3	0.1	5	1.4	11.3	0.04
Oranges	40	0.6	0.2	23	0.2	2.3	0.04
Avocado	131	1.7	12.5	30	0.6	6.8	0.10
Papaya	32	0.4	0.1	23	0.3	47.7	0.07
Pears	53	0.4	0.6	7	0.1	6.5	0.06
Pineapples	38	0.4	0.2	10	0.3	25.0	0.06
Banana	91	0.9	0.4	8	0.6	4.2	0.07
Grapes	43	0.3	0.2	5	0.8	1.4	0.03
Lettuce	12	1.3	0.2	47	1.0	7.4	0.05
Spinach	30	2.8	0.7	601	3.2	4.6	0.17
Asparagus	23	2.2	0.2	35	4.2	8.0	0.05
Aji, Fresh	44	1.7	0.8	47	1.6	66.4	0.37
Artichokes	19	2.8	0.2	42	1.1	-	0.04
Caigua	15	0.5	0.2	34	0.9	11.4	0.02
Rocoto	36	1.2	0.5	6	0.5	14.9	0.14
Tomato	19	0.8	0.2	7	0.6	18.4	0.06

continued . . .

ENCA Food Composition Table for Peru (continued)

Eggplant	37	1.0	0.8	20	0.3	6.3	0.30
Cabbage	23	1.3	0.3	46	0.4	31.4	0.03
Cauliflower	28	2.2	0.6	26	0.6	75.3	0.07
Squash	26	0.7	0.2	26	0.6	5.7	0.04
Garlic	129	5.6	0.8	94	1.7	9.1	0.07
Onions	49	1.4	0.2	20	1.2	4.9	0.06
Red Beets	44	1.7	0.1	14	0.8	5.0	0.04
Carrots	41	0.6	0.5	33	0.5	17.4	0.04
MEAT							
Lamb	136	19.0	6.1	7	2.2	-	0.21
Pork	257	15.2	22.3	6	1.7	-	0.21
Bacon, Smoked	490	13.5	47.9	26	1.2	1.9	0.12
Cuy	96	19.0	1.6	29	1.9	-	0.14
Beef	260	20.1	19.3	11	3.8	-	0.19
Chicken	246	18.1	18.7	10	1.8	0.2	0.14
Duck	326	16.0	28.6	15	1.8	-	0.24
Game	146	29.5	2.2	20	3.5	-	0.28
Sachavaca, Dried	151	32.4	1.4	60	1.9	-	0.34
Punchana	150	30.4	2.2	65	2.1	-	0.28
Rabbit	162	21.0	8.0	20	1.3	-	0.06
FISH							
Fish Meal	317	60.3	6.6	4,578	41.0	-	0.62
Dried Fish	130	29.0	0.7	225	2.1	-	0.20
Fresh Fish	99	19.6	1.7	27	0.8	-	0.08
Preserved Fish	204	42.2	3.0	179	2.1	-	0.20
Canned Fish	172	21.0	9.8	67	1.0	-	0.50
DAIRY, EGGS							
Eggs	148	11.3	9.8	54	2.5	-	0.37
Cow Milk, Fresh	63	3.1	3.5	106	0.1	0.5	0.20
Powdered Milk	503	26.4	27.5	940	0.5	0.6	1.45
Pelargón	453	16.5	17.0	-	3.9	31.0	0.45
Fresh Cheese	398	19.2	33.1	674	1.9	-	0.44

(continued . . .)

ENCA Food Composition Table for Peru (continued)

FATS, OILS							
Aceite Cocinero	884	-	10.0	-	-	-	-
Olive Oil	930	-	10.0	-	-	-	-
Cebo de Llama	709	6.3	45.6	-	-	-	-
Butter	716	0.6	81.0	20	-	-	-
Margarine	720	0.6	81.0	20	-	-	-
CONDIMENTS							
Achiote (Powder)	308	11.3	5.3	11	4.7	-	0.16
Huacatay	47	5.0	0.8	412	8.7	17.1	0.27
Coriander	44	3.3	1.3	259	5.3	37.2	0.27
Mustard	75	4.7	4.4	84	2.0	-	-
Oregano	48	1.6	0.5	312	6.4	10.0	0.30
Black Pepper	309	5.8	6.5	127	10.3	-	-
Dried Mushrooms	262	10.4	1.7	174	-	-	-
Curry	237	9.5	10.8	637	75.5	-	-
BEVERAGES							
Brandy	275	-	-	-	-	-	-
Chicha (Corn)	28	0.4	0.3	22	1.5	2.4	0.10
Beer	42	0.3	0.5	-	-	-	0.30
Wine	85	0.1	-	9	0.4	-	0.10
Pisco	220	-	-	-	-	-	-
Tea	38	9.8	-	32	-	-	1.00
Coffee	46	4.5	-	56	-	-	1.00

Sources: ENCA, and FAO, Working Documents on Nutrient Contents of Foods, (unpublished).

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APPENDIX C

Statistical Tables

TABLE C1. GREATER LIMA: MAIN REASONS FOR REJECTION OF SURVEY, AS INDICATED BY ENUMERATORS (ENCA)

Reason	Percent of Households
Aversion to Surveys	24
Aversion to Government	3
Opposition of Family	15
Length of Survey	8
Fear of Tax Control	15
Suspicion Towards Enumerator	15
Other	20

Source: Laguna, L. and D. Curonisy, ENCA: Análisis del Comportamiento de la Muestra de Viviendas en el Terreno, Lima, July 1973.

TABLE C2. GREATER LIMA: PER CAPITA DAILY CALORIE PURCHASES, BY FOOD GROUPS AND INCOME CLASSES (ENCA)

Food Group	Income Class I	II	III	IV	V	Average (I - V)
Cereals	768	861	853	817	799	820
Tubers, Roots	154	176	175	154	146	161
Sugar	201	221	208	227	197	211
Pulses, Nuts	75	78	82	88	64	77
Fruit, Veg.	68	106	133	132	149	118
Meat	105	179	248	255	334	224
Fish	31	45	44	41	41	40
Milk, Eggs	101	151	200	238	279	194
Fats and Oils	181	222	233	212	235	216
Condiments	2	4	1	4	2	2
Drink	11	19	27	22	29	22
TOTAL	1,697	2,062	2,204	2,190	2,275	2,085

TABLE C3. GREATER LIMA: PER CAPITA DAILY PROTEIN PURCHASES, BY FOOD GROUPS AND INCOME CLASSES (ENCA)

Food Group	Income Class I	II	III	IV	V	Average (I - V)
Cereals	19.8	22.4	21.6	20.9	20.4	21.0
Tubers, Roots	0.9	3.3	3.0	2.6	2.6	2.4
Sugar					0.1	
Pulses, Nuts	4.8	5.3	5.1	5.9	3.7	4.9
Fruit, Veg.	0.9	1.9	2.5	2.4	1.9	1.9
Meat	7.8	14.0	19.1	20.7	25.3	17.3
Fish	4.7	6.4	7.1	6.6	6.1	6.1
Milk, Eggs	5.3	7.9	10.4	12.3	14.5	10.0
Fats and Oils						
Condiments			0.1	0.1		
Drink	0.4	0.4	0.6	0.5	0.5	0.4
TOTAL (g.)	44.6	61.6	69.5	71.9	75.7	64.6
Protein of	17.8	28.3	36.6	39.6	45.9	33.6
Animal Origin	(39.9%)	(46.2%)	(52.6%)	(55.0%)	(60.6%)	(50.8%)