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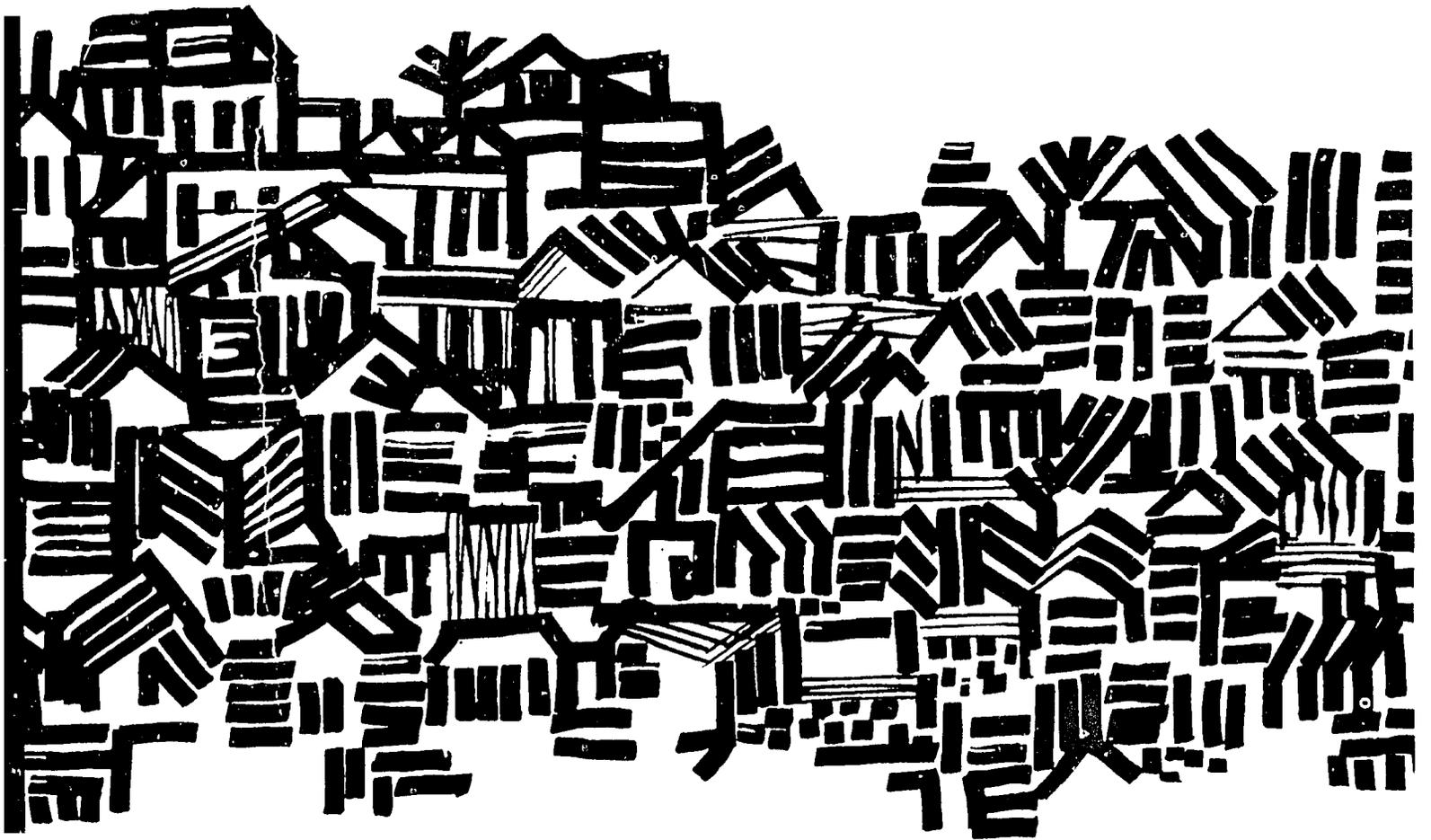
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INTERNATIONAL HOUSING PRODUCTIVITY STUDY



**RURAL-URBAN MIGRATION IN THE
GUAYANA REGION, VENEZUELA**

by

Phoebe Cottingham and Demetrius Gasparis

**International Housing Productivity Study
Housing, Real Estate, and Urban Land Studies Program
Graduate School of Business Administration
University of California, Los Angeles**

October, 1969

PRELIMINARY

**INTERNATIONAL HOUSING PRODUCTIVITY STUDY
GRADUATE SCHOOL OF BUSINESS ADMINISTRATION
UNIVERSITY OF CALIFORNIA, LOS ANGELES**

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Joyce Chamberlain and Joan Grier skillfully performed the computer work involved. Catherine Kroger directed the preparation of the final draft and the manuscript was typed by Connie Bishop, Jill Nichols and Marjorie Friedman.

Naturally, all errors remain those of the authors.

PREFACE

This study is concerned with the role of improved housing in altering the spatial distribution of people between the rural and urban sectors of a rapidly developing region. Economic theory has it that, under certain assumptions, the optimal spatial distribution of people is found at the point where the marginal productivity of labor is equalized. Since the productivity of labor is highly dependent upon the quantity of capital, the question of optimal population distribution cannot be separated from the capital distribution analogue. Since governments allocate much of the capital in developing countries, public policy with regard to the spatial distribution of capital investments is critically important.

The International Housing Productivity Study has been concerned with estimating the benefits of improved housing going beyond consumption benefits to include such items as increased productivity, improved health, better educational performance, and others. To the extent that housing is a productive investment--that is, to the extent that housing not only provides consumption benefits but also expands production possibilities--then government agencies would also want to incorporate consideration of these benefits into the process of policy-making and implementation. The spatial distribution of housing is, of course, one dimension of the policy decision.

This migration study, however, excludes the consideration of housing benefits such as productivity and health for two reasons. First, and foremost, the productivity aspects of housing are the center of attention in our other studies; second, it is likely that the productivity returns to housing investment in the rural portion of the Guayana Region (and most other rural

regions for that matter) are exceeded by some alternative investments such as farming equipment and education in agronomy and related subjects. Hence, consumption is the sole direct benefit to housing considered in this paper.

But even if the only benefit of improved housing lies in its consumption value, the spatial distribution of housing is still relevant, particularly for development programs such as the one implemented in the Guayana Region of Venezuela. The reasoning behind this statement must begin with a modification of the above statement of optimal population distribution. It is true that output will be greatest when the marginal productivities of labor are equalized, but when the cost-of-living and amenities vary from place to place, then welfare optimization would require that marginal productivities reflect these differences. Furthermore, according to this theory, migration will take place when changes in productivity, cost-of-living, amenities, or others disturb the equilibrium. The adjustment process, however, may sometimes be quite costly as is implied by those who feel that many cities in developing countries are "over-urbanized." If such is the case, then programs for retarding the flow of rural-urban migration may be desirable, and improved rural housing is one possible method.

Leland S. Burns
Project Director

I. INTRODUCTION

Descriptions and analyses of the causes and effects of rural-urban, or, more generally, inter-regional migration, have attracted much interest: economists stress the income equalization process; sociologists relate social mobility to migration; political scientists, the new demands on the political process; demographers, historians, and anthropologists, among others, also contribute, though from different perspectives, to the analysis of migration. Alarmed by what some consider to be "over-urbanization"¹ relative to the level of development, planners search for public policies which may inhibit or redirect migration flows--or allow for accommodation within the urban sector.

Much of the literature on migration, however, deals mainly with inter-urban or inter-state migration flows in developed countries, whereas we are concerned in this paper with rural-to-urban flows which characterize migration patterns in less-developed countries. The parameters of the explanatory variables and probably the variables themselves for such migration flows may vary from those used in models relevant to developed countries. For example, the mean distance traveled by a migrant in the developed countries may be somewhat greater than that of the migrant in the undeveloped country. Moreover, the dichotomy between the areas of out-migration and the areas of in-migration is thought to be greater in the under-developed countries than in the developed countries.² In the developed countries, for instance, population movements occur in both directions³ whereas in the less developed countries one area receives, while another area loses population. Few people leave the urban area (except for temporary labor found in some countries) for the rural area.

For the purposes of estimation, moreover, these differences are magnified by the disparities of data available. For example, the migration specialist in the United States can obtain recent estimates of population flows and accompanying measures of economic levels which can then be meshed into a model to explain net and gross flows. Such data is usually lacking, incomplete, or inaccurate for the less developed countries. Therefore, small samples, instead of national census data must provide the data in the latter case, though the possible range of error in this data can rarely be estimated or verified. The small sample also possesses an additional limitation in that it is usually of little value or reliability in estimating or predicting macro-population flows. Yet the small sample can provide considerable detail concerning the resources and choices made by the individual migrant.

In this paper we focus our attention on such a small sample, a sample of migrants and non-migrants in the Guayana region of Venezuela. Though the sample is too small for the analysis of population flows, it does allow for more intensive examination of changes experienced by the migrants in comparison with the non-migrants. We have directed our attention to specific changes in two areas of general welfare: wage income and housing. We ask: what were the measurable changes in wage income and level of housing welfare experienced by the migrants and non-migrants? That this objective parallels the traditional analysis of migration should be evident; by comparing the measurable costs and benefits received by the migrant with those obtained by the non-migrant, we are also analyzing possible determinants of migration.

A unique factor in the Guayana case, however, offers a new opportunity for comparative analysis: it is often assumed that changes in the standard of living and economic opportunities occur only at the "center" or in the urban area. In the Guayana, however, changes were also occurring in the rural

sector. In particular, the government was offering new housing on "easy terms." Did this opportunity absorb potential or probable migrants to the urban area? Before proceeding further with the analysis of the data, we shall describe briefly the economic analysis of the migration decision in order to suggest a theoretical perspective of the migration process that we are trying to evaluate.

II. MIGRATION: THEORETICAL BACKGROUND

Perhaps the most frequently cited explanations of migration in developing areas are the "push" theory and the "pull" theory. According to the "push" theory, circumstances such as extreme poverty are so severe in the resident area that the people are pushed out without much consideration of alternative opportunities. In an opposite fashion, the "pull" theory suggests that people are pulled to some migration destination due to some especially attractive features, and the migration decision is, in large part, independent of the person's situation at the origin.

Of course, one can combine these two theories into a single migration model which predicts rates of out-migration using push factors and then allocates the total migration volume to destinations as a function of pull factors. A variant of this approach was successfully used by Lowry⁴ in explaining inter-metropolitan migration rates in the United States. Lowry's work, however, is not likely to be of much help to those studying migration patterns in developing countries, where the dominant movement is the uni-directional one from rural to large urban areas.

A much simpler and probably more realistic unification of the push and pull theories for studying migration in developing regions is the comparative advantage model. According to this theory, which is receiving more frequent attention in the literature today,⁵ migration is simply a function of the benefits and costs of living at the origin and possible destination. It is this model which we will develop in more detail in the following paragraphs and adapt to special circumstances of this particular study.

According to the comparative advantage model, the migration decision is viewed theoretically as the evaluation and comparison of the expected

change in net real welfare from migrating as opposed to not migrating. If a positive change in real welfare is expected, the individual migrates; if not, he does not migrate. Placed in the framework of present values, the real welfare "value," V , of migrating can be conceived as the discounted stream of expected net benefits less the costs peculiar to migration as follows:

$$V = \sum_{t=1}^n \left[\frac{B_t^j - B_t^i}{(1+r)^t} \right] - \sum_{t=1}^n \left[\frac{C_t}{(1+r)^t} \right]$$

Let us assume that benefits in time t , B_t , are equivalent to the income receipts at the given location (i or j), while costs, C_t , are equal to the transportation costs associated with migration plus any other unique costs.⁶ We limit t to the expected life span (n), of the individual over which the income streams are aggregated. The discount rate, r , provides the time preference valuation between consumption today and consumption tomorrow. Choosing the appropriate discount rate raises both theoretical and empirical difficulties, which are beyond the scope of this paper.⁷

The psychic and social benefits and costs of migration for the individual and society have been an important topic in migration literature. Accordingly, rural-urban migration is stimulated by such factors as the bright lights of the city and the status implications of becoming an urban citizen rather than a rural peasant. It is interesting to note that definition of "urban" includes the synonyms "refined" and "polished" stemming from the latin root "urbanus." However, the measurement of these factors is problematical, so we must forego attempting to delineate the nature of psychic and social costs and benefits and assume that the measurement of future real income streams is approximated by the aggregation of future money income receipts. Nevertheless, one of the

presumed costs of migration--initial unemployment--is evaluated by the absence of income for that period. Changes in living costs are thought to be another variable in the migration process. They also merit attention because differences in money income may diminish once they are adjusted for changes in the cost of living.

The traditional procedure in accounting for variations in the purchasing power of money income between different locations is to develop a cost-of-living index in which the aggregate cost of similar items and quantities of consumption goods (food, clothing, shelter, services), representing a "bundle" of goods, are compared. For example, if we found that a comparable consumption bundle cost \$150 in the urban sector and \$100 in the rural area, then using the rural standard as base, the "real welfare" value of a \$5,000 income in the urban area equals \$3,332 or $(100/150) (5000)$. The difficulty common to this analysis is that comparable "baskets" of consumption goods are often not available. Indeed, the migration move may be related to a desired change in style of life so that the entire basket of goods to be compared changes. If so, there is very little one can say about changes in real welfare because not only have prices changed, but also the goods to be compared. This is one of the most serious problems in making rural-urban comparisons.

Another approach would be to assume that changes in the relative proportion of income spent on various categories of goods represent positive or negative effects. For example, a decrease from 80% to 60% in the amount of income spent on food is assumed to be a betterment. The assumption is that the greater the variety of consumption goods purchased, the "happier" the consumer. Finally, a third approach avoids aggregation of changes in consumer expenditures and simply describes separately particular components of these

expenditures. Our approach in this paper lies predominantly with the latter, in that we attempt to isolate the changes in money income streams and in levels of housing welfare. By focusing on these two variables as explanatory factors in the migration process, we are implicitly assuming, it should be pointed out, the following properties:

- (1) That the discount rate, r , is the same for either migration or non-migration;
- (2) That the expected life span, t , is the same for either choice;
- (3) That transportation and loss of property costs are zero;
- (4) That all living costs other than housing are identical for either choice.

If we knew the evaluations made by each potential migrant of the real welfare values or present values and, assuming a unique relationship between such evaluations and migration behavior, then we could simply state that a given individual, or group of individuals, will migrate or will not migrate. However, since normally one has only limited information on the magnitude and scope of real welfare evaluations, one can only partially predict migration choices or the probability that a person will migrate from i to j . We could hypothesize that this probability, M_{ij} , is a function of the expected net real welfare value of migration. Using the criteria of reasonableness and measurability, several variables could then be used as proxies for the real welfare evaluations. For the purposes of illustration, age, income, unemployment rates, living costs and housing costs, could be suggested.

The real welfare evaluation of migration for an older person may be less than that of the younger person because the older person expects a smaller increase in future wages by moving to the city. Age itself may possibly be an index of certain intangible costs and benefits of the migration move. The older a person, the greater the disruption of social ties and thus the greater the psychic cost of migrating.

A second explanatory variable of M_{ij} , could be the ratio of future income streams at location i to that at j (Y_i/Y_j). Also, if the prospect of unemployment is valued more heavily by the potential migrant than a loss of money income, the number of days of unemployment in a year, U_i/U_u , may be relevant. Because of the special attention we wish to direct in this study to changes in housing welfare levels and propensities to migrate, we propose to partition the cost-of-living index described earlier into two variables: (1) Non-Housing Cost-of-Living Index (C_i/C_j); (2) Housing Welfare Index (H_i/H_j). In sum, we postulate that the probability of migration is a function of the following variables:

$$M_{ij} = f(\text{Age}_i, \Sigma Y_i / \Sigma Y_j, \Sigma U_i / \Sigma U_j, \Sigma C_i / \Sigma C_j, \Sigma H_i / \Sigma H_j)$$

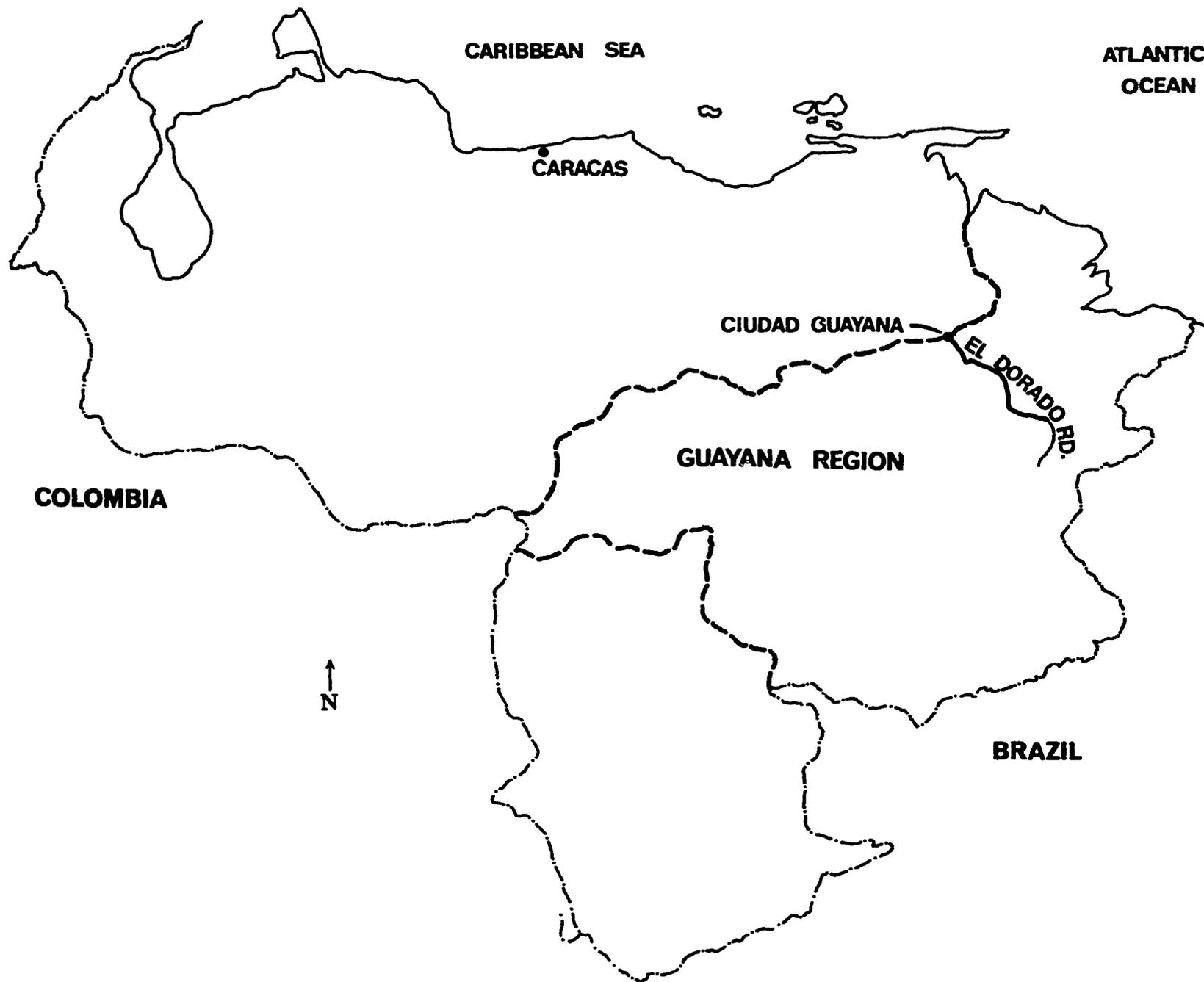
A basic property of this model is the comparative evaluations between i and j (except for Age, of course). In the model, let us assume a positive change in the housing welfare level at the site of origin, holding all other variables constant (i.e., no change in employment or income). We ask, what is the sensitivity of M_{ij} to this change? This is the basic model we explore in the case of Vivienda Rural in Venezuela.

III. CIUDAD GUAYANA AND THE GUAYANA REGION

Ciudad Guayana is the established core of the resource rich Guayana region in eastern Venezuela (See Figure 1). The Guayana Region and Ciudad Guayana, in particular, are the focus of a major government sponsored regional development program initiated in the 1950's. The Guayana is a sparsely settled region, dominated by expanses of tropical forests interrupted occasionally by grasslands, treacherous rivers, and low mountain ranges. Although agricultural potential is quite limited due to poor soil in most areas, the region is well endowed with other natural resources including iron ore, bauxite, gold, diamonds, several other nonferrous metals, and a large hydroelectric potential. The Guayana is not connected to markets by railroads, but has direct connection to the Atlantic Ocean via the deep channel Orinoco River and highways provide inland access.

The city of Ciudad Guayana, located at the confluence of the Orinoco and Caroni Rivers, exists as a series of settlements tied together by an 18 mile highway, with the town of San Felix on the east, the new steel mill on the west, and the town of Puerto Ordaz lying midway. The three major employers in the city as of 1967 were all connected with the iron ore deposits. The three were the Orinoco Mining Company, the Iron Mines Company, and the SIDOR Steel Mill, a modern, government-owned and operated producer of pig iron and basic steel products. SIDOR employed approximately 6,000 people as of 1966, the vast majority of whom were production workers.

The population of Ciudad Guayana has grown rapidly in recent years, rising from 4,000 in 1950 to 42,000 in 1961 and to 96,000 by 1967.⁸ As is the case for most large Latin American cities, the rate of population increase in Ciudad Guayana, due primarily to rural-urban migration, is considerably greater



MAP OF VENEZUELA

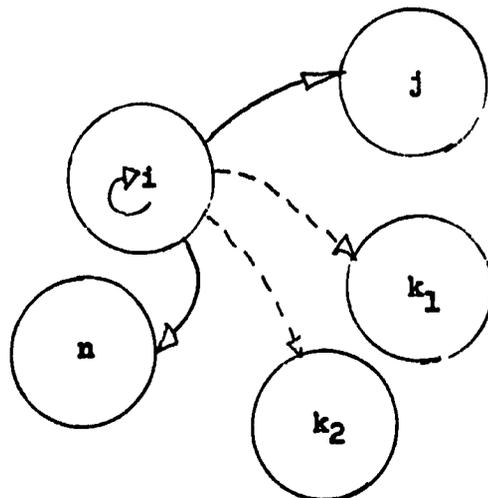
FIGURE 1

than the increase in job opportunities. This creates numerous problems not only in terms of sufficient consumption of food, shelter, clothes, etc., but also in terms of an adequate supply of public goods and services.

IV. VIVIENDA RURALE AND MIGRATION CHOICES IN THE GUAYANA

The Venezuela government has instituted a rural housing program through its Corporacion Venezolana de Guayana (CVG), a government corporation in charge of the overall development program in the region. The program is called Vivienda Rurale (VR) and approximately 2,000 houses were built by 1965 in the rural villages studied in connection with the research, though 43,186 houses have been constructed nationally. The VR houses are relatively low cost, selling for Bs. 5,000 (\$1,110) with a down payment of Bs. 100 and a thirty-year interest free mortgage. However, the lowest income rural residents cannot afford this modest house. The houses are available for areas with a population of from 200 to 10,000. Thus, persons living in the rural towns of Guayana had a choice: they could buy a VR house or migrate to the new boom town, Ciudad Guayana. Of course, other alternatives also existed; for example, migration to other cities (or areas) or making no change in housing or residence.

Diagrammatically, the potential migrant at location i (in the rural village sector) can (1) migrate to Ciudad Guayana at location j , (2) migrate to other cities at location k , (3) stay at location i but acquire new VR housing (n), or (4) stay at location i and not acquire new VR housing.



In the Guayana case, we have no information on migrants from i to k nor do we have information on migration rates from i to n or j . Instead, we could only sample, at one point in time, persons who have already chosen one of the three alternatives. This sample provides us with data on income, housing, consumption propensities, and reasons for migrating or not migrating.

We direct our attention in the remainder of this paper to answering the following questions:

- (1) Were the eventual migrants distinguishable from the non-migrants in their income and housing levels before migration?
- (2) Who experienced the greatest change in income, housing quality and housing costs; migrants, non-migrants, or VR purchasers?
- (3) Why did the migrants move to Ciudad Guayana, and why did the non-migrants remain in the rural villages?
- (4) Who feels stronger about improving their housing condition; migrants or non-migrants?
- (5) Did the Vivienda Rurale housing program reduce migration to Ciudad Guayana?

V. RESEARCH DESIGN

Before proceeding with the data analysis, we shall first describe some of the basic characteristics of the sample selected.

Selection and Location of Guayana Samples

The basic sampling design sought to obtain four samples of equal size (50 respondents) differentiated by the following characteristics:

- (1) Migrants to Ciudad Guayana who had never owned a Vivienda Rurale (VR) house.
- (2) Migrants to Ciudad Guayana who had previously owned a Vivienda Rurale house.
- (3) Non-migrants in the rural area not living in VR houses.
- (4) Non-migrants in the rural area now living in VR houses.

However, it proved very difficult to locate migrants who had previously owned Vivienda Rurale houses⁹ so this sample was dropped due to the small size. Instead, the "non-VR" migrants sample was increased in size to 91 respondents. The non-migrant, non-VR, rural sample (henceforth simply called "rural" sample) ended up close to the sampling design (52 respondents) as did the non-migrant VR rural sample (or "VR" sample of 51 respondents).

While the migrant sample was chosen within the city of Ciudad Guayana, the exact residential location of each respondent within the city was not analyzed for the purpose of this paper. Furthermore, although the village locations of the rural and VR samples are known, the sample sizes for each village are not large enough nor complete enough to accommodate extensive analysis of rural variations in levels of income and rates of migration to the urban sector.

Table 1 indicates the residential location of the VR and rural samples and the sites of origin of the migrant sample. All of the VR and rural respondents lived in towns along the El Dorado Road (See Figure 1) as did 88 of the 91 migrants. Agriculture is the primary source of employment in these towns and the strength of this sector is generally declining.

TABLE 1

LOCATION OF SAMPLE RESPONDENTS BEFORE MIGRATION

<u>Town or Village</u>	<u>No. of Migrants to Cd. G.</u>	<u>No. of VR Respondents</u>	<u>No. of Non-VR, Rural Respondents</u>
Upata	24	13	18
Sabanatica	1	13	8
Guissipati	6	7	1
El Palmer	6	13	21
El Callao	16	5	5
Tumeremo	10	0	0
Miamo	3	0	0
El Dorado	2	0	0
El Pao	15	0	0
Sta Barbara	1	0	0
El Peru	3	0	0
El Merey	1	0	0
Unknown	<u>3</u>	<u>0</u>	<u>0</u>
Total	91	51	53

VI. REASONS FOR MIGRATION

The primary question raised by researchers confronting the analysis of migration flows has been to determine the causes of migration in order to better deal with the associated problems. In the Guayana case, it is apparent that the principal explanation of migration is much the same as that found elsewhere: employment. Migrants to Ciudad Guayana were queried both as to (a) why they left their rural residence and (b) why they moved to Ciudad Guayana. Similarly, those in VR houses and in the rural sample were also asked as to (a) why they had chosen to remain in the rural area and (b) why they had not moved to the city.

The most outstanding features of the responses is the consistency and singularity of the answers given by migrants as compared with non-migrants. By consistency we refer to the extent to which the answer given by a respondent explaining why he left his rural residence (or did not leave) agrees with the reply by the same respondent to the question regarding why he came to Ciudad Guayana (or did not come). By singularity we mean the extent to which identical answers are given by all the respondents in the same sample. Table 2 shows the answers received by our three samples to the question as to what were their reasons for migrating.

In the migrant sample, the greatest majority of respondents gave the same answer to both questions. In the rural and VR samples, a rather low number of respondents gave identical responses to both questions. The high consistency rate of the migrant sample might be explained by the fact that those who have already made the explicit choice to migrate, a choice which requires a considerable investment of resources (i.e., moving of family, change of job, etc.) are in a better position to offer consistent explanations of

TABLE 2
REASONS GIVEN FOR MIGRATING OR NOT MIGRATING

Reasons	Migrants		Non-Migrants			
	Ciudad Guayana		VR Sample		Rural Sample	
	Number	%	Number	%	Number	%
Work	135	74.1	27	26.5	18	17.3
Family	17	9.3	20	19.6	23	22.1
Own People	0	0	7	6.9	13	12.5
Housing	4	2.2	27	26.5	25	24.0
Schools	15	8.2	0	0	0	0
Distance to work	2	1.1	6	5.9	3	2.9
No Money	3	1.6	3	2.8	7	6.7
Health	1	0.6	0	0	0	0
Sewers	1	0.6	0	0	0	0
Misc.	<u>4</u>	<u>2.3</u>	<u>12</u>	<u>11.2</u>	<u>15</u>	<u>14.4</u>
Total	182	100.0	102	100.0	104	100.0

Note: Our total migrant sample consists of 91 respondents, the VR sample of 51, and the Rural Sample of 52. Since we asked two questions to each member, we received $182 + 102 + 104 = 388$ answers. The two questions asked to members of the migrant group were: why did you leave your rural residence? Why did you move to the new city, Ciudad Guayana? The questions asked the non-migrant workers were: why did you remain in the rural area? Why did you not move into the city?

their behavioral choice than those who have not yet made the same choice. We do not know to what extent those in the rural and VR samples have considered migrating to Ciudad Guayana, so that to assume that they have "chosen" not to migrate may be misrepresenting what is really a situation of non-choice.

In addition to the consistency of the responses of the migrant sample to the two questions regarding reasons for migration, the data reveals a considerable homogeneity in the stated reasons: 74.1% of the migrant sample

cited work or employment as the reason for migration. Only 2% gave housing as the reason for migrating. For the non-migrant VR and rural samples, there was a wide variety of range or reasons given for not migrating, most of them stressing "family," "work," and "housing" reasons. It is important to note that the housing response rate was almost identical for the VR and rural samples. We will return to this fact later. As indicated above, the consistency in the responses of the non-migrant was very low. It is indeed quite probable that some of those who have not yet migrated may still do so; the earlier migrants may have given at an earlier date similarly vague answers before migration. Once the migrant has moved, his rationalization of the decision to migrate might be altered by his initial experiences in the urban sector. Once in the city, for example, the fact rather than the expectation of an income increase may provide additional rationalization in support of initial decisions to migrate.

Choosing a Vivienda Rurale House

We have also attempted to determine the reasons why some people in the rural area have chosen to purchase Vivienda Rurale houses and why others have preferred to remain in the rural area or moved to Ciudad Guayana. Since not all respondents in the migrant and rural samples had an opportunity to obtain a VR house, our ability to comment on this matter is somewhat limited. Only 22% of the urban migrant sample said that they had had an opportunity to purchase a VR house while 50% of the rural sample had the opportunity. The reasons for their decision not to buy a VR house display little agreement. Table No. 3 shows the reasons offered by 51 respondents. It could be concluded from this data, that house financing and satisfaction with current housing summarize the dominant explanations for non-purchase by rural respondents;

TABLE 3

REASONS CITED FOR CHOOSING NOT TO BUY A VR HOUSE

Reasons	Urban Migrants		Rural Residents	
	Number	%	Number	%
Wanted to Migrate	2	8.0		
Have a Good House	2	8.0	7	26.9
They would have destroyed my house			1	3.8
Do not want commitments			1	3.8
Been in this house for years			1	3.8
No work here	1	4.0		
Houses too far from work	3	12.0		
Do not like houses	3	12.0		
Family reasons	3	12.0	2	7.7
Lack of funds	1	4.0	6	23.2
To have a good house	4	16.0		
Did not complete arrangements	1	4.0	4	15.4
Do not like site	4	16.0	2	7.7
No answer	1	4.0	2	7.7
Total	25	100.0	26	100.0

the urban migrants' reasons appeared too varied to supply us with any concrete conclusions.

Length of Residence

The residential stability of a population, or the length of time lived at one residence, is one measure of change in a society. Table 4 details the length of residence statistics for the three Guayana samples. We would

TABLE 4
LENGTH OF RESIDENCE IN PRESENT HOUSE

Length of Residence	Migrants		VR		Rural	
	Number	%	Number	%	Number	%
Less than 1 year	30	33.0	19	37.3	2	3.8
1 - 2 years	30	33.0	10	19.6	4	7.7
2 - 3 years	12	13.2	10	19.6	3	5.7
3 - 4 years	2	2.2	3	5.9	6	11.6
4 - 5 years	13	14.3	6	11.8	7	13.5
6 - 10 years	0	0.0	1	2.0	10	19.2
10 + years	0	0.0	0	0.0	20	38.5
No answer	4	4.3	2	3.8	0	0.0
Total	91	100.0	51	100.0	52	100.0

expect that the lowest rate of residential mobility would be found among the rural area sample. Since property in the rural area is often a relatively larger proportion and source of family wealth, and therefore an impediment to mobility. Approximately 50% of the rural samples has lived in the same house for five years or longer. Unfortunately, however, we do not have directly comparable figures for the Ciudad Guayana and VR samples because by definitions, both of these samples contain persons who have moved from their rural houses within the past five years.

We can, however, offer some observations on the intra-urban mobility rate of residential changes once the migrants are in the urban area. Table 5 shows a cross-tabulation of the length of residence in the current house with the date of migration for the migrant sample. By matching the length of residence with an equal time period determined by the date of migration, we can

TABLE 5
YEAR OF MIGRATION AND LENGTH OF RESIDENCE OF MIGRANTS

Length of Residence	Year of Migration											
	1960		1961		1962		1963		1964		1965	
	#	%	#	%	#	%	#	%	#	%	#	%
Less than 1 year	6	6.6	6	6.6	3	3.3	2	2.2	4	4.4	9	9.9
1 - 2 years	9	9.9	4	4.4	6	6.6	2	2.2	8	8.8		
2 - 3 years	3	3.3	4	4.4	2	2.2	3	3.3				
3 - 4 years	1	1.1	0	0.0	1	1.1						
4 - 5 years	0	0.0	5	5.5								
5+ years	8	8.8										
No Answer	2	2.2	1	1.1	2	2.2	0	0.0	0	0.0	0	0.0
Total	29	31.9	20	22.0	14	15.4	7	7.7	12	13.2	9	9.9

then assume that the respondents located in the boxes shown in Table 5 are still living in their first urban house, while all the other migrants are now living in at least their second, if not their third home in the city. Thus, from this data we can distinguish the sub-group of migrants for each year of migration who are still living in their first urban houses. This is shown in Table 6. For the analysis of changes in housing welfare, we treat the 34 migrants still living in their first urban house as a separate sample ("urban-rural house movers") in contrast to the 52 migrants no longer living in their first urban house ("urban-urban house movers").

In closing, a comment should be made on the variation in the proportion of migrants in their first urban house according to year of migration. We might expect that a smaller proportion of the earlier migrants would still be living in their first urban house; however, those who migrated in 1962 had lower rates of "housing stability" than those who migrated in 1961 or 1960

TABLE 6

PERCENT OF MIGRANTS IN THEIR FIRST URBAN HOUSE

Migration	Migrants	Number of Migrants in First Urban House	Percent of Migrants in First Urban House by Year of Migration
1960	27	8	29.6%
1961	19	5	26.3
1962	12	1	8.3
1963	7	3	42.9
1964	12	8	66.7
1965	9	9	100.0
Unknown	<u>5</u>	—	—
Total	91	34	37 %

(8.3% versus 26.3% and 29.6% of previous year migrants). Sampling variation probably accounts for the 1962 dip in housing mobility.

VII. CHANGES IN INCOME: MIGRANTS AND NON-MIGRANTS

Inter-regional differences in the levels of income play a dominant role in the explanation of migration flows both in theoretical models and in descriptive studies. Similarly, in the case of Guayana, we hypothesized that real and/or expected variations in wage income contribute to the direction and intensity of the migration flows. As we have already emphasized earlier, we are unable to directly relate changes in wage income to changes in migration flows, but we are able to explore (a) the pre-migration differences in income between the three samples and (b) the extent that increases in wage income were realized by urban migrants, in comparison with changes experienced by the non-migrants.

Table 7 shows the data on annual wage incomes for the years 1962-65. The figures for the migrants and VR residents are further disaggregated by year of move and before versus after move income. Average income for 1965 was derived by using the two monthly income observations available for the year, averaging them and then multiplying them by 12. Hence, the 1965 average income figures are "estimations" only. Furthermore, since the income information was given as family income, per worker income, which will be discussed later, was obtained by dividing the family income observations by the number of persons in a family who were employed during the relevant time period.

The migrant sample was heavily biased in favor of those migrants who had found steady jobs in Ciudad Guayana, so the comparison of migrant and non-migrant experiences does not give an accurate picture of the advantages or disadvantages of migration. The comparative results should be interpreted as the difference between not migrating, and migrating and securing a steady job.

TABLE 7

Table 7a
MIGRANTS: ANNUAL MEAN FAMILY INCOME BEFORE/AFTER MIGRATION (BS)

Year of Move	Family Income Before Move (BS)				N	Family Income After Move (BS)			
	1962	1963	1964	1965		1962	1963	1964	1965
1965	7,500	7,300	6,800		9				12,800
1964	5,700	6,900			12		8,000		10,700
1963	8,000				$\frac{7}{28}$ out of 91	8,600	9,600		13,200

Table 7b

VR SAMPLE: ANNUAL MEAN FAMILY INCOME BEFORE/AFTER VR PURCHASE (BS)

Year of Move	Family Income Before Move				N	Family Income After Move			
	1962	1963	1964	1965		1962	1963	1964	1965
1965	7,600	8,200	9,300		20				10,100
1964	6,900	7,300			11		7,300		5,700
1963	3,800				$\frac{8}{39}$ out of 51	4,400	4,300		6,500

Table 7c

Rural Sample	Mean Family Income		N	Mean Family Income	
	1962	1963		1964	1965
	5,450	6,060	52	5,910	6,510

A simple overall comparison of pre-migration incomes and income changes among the three groups is not possible since the proportion of migrants and VR residents that moved in each year is different and since "pre-migration income" is irrelevant for the rural residents. The average incomes of migrants and VR residents can be compared for those subsets that moved in any given year and these figures can be further compared to a properly calculated rural resident figure. For example, the average before incomes of migrants and VR residents moving in 1965 are calculated simply by summing the incomes of these groups for the years 1962, 1963, and 1964 and dividing by three. The comparable ruralite figure would simply be the average rural resident's income for the same three years.

Table 8 displays average before and after family income levels for movers

TABLE 8

MEAN ANNUAL FAMILY INCOME BEFORE AND AFTER MOVE FOR MOVERS IN 1963, 1964, and 1965 (BS)

	Before	After*	Change
<u>1965 Movers</u>			
Migrant	7,200	12,800	5,600
VR	8,367	10,100	1,743
Rural	5,806	6,510	704
<u>1964 Movers</u>			
Migrant	6,300	9,350	3,050
VR	7,100	6,500	-600
Rural	5,750	6,210	460
<u>1963 Movers</u>			
Migrant	8,000	10,467	2,467
VR	3,800	5,067	1,267
Rural	5,450	6,160	720

* The after-move figure includes all income earned during the year of the move.

in each of the three years (1962, 1963, and 1964) calculated in the above manner. In all cases, migrant family income before moving is greater than that for the ruralite, and in two of the three years the average VR resident before income is above the migrants. The family income change of migrants is quite dramatic and well above the change for both VR and rural residents in all three years. In two of the three years, the income change of VR residents was greater than that for the rural residents.

Any overall average computed on the data in Table 8 requires a weighting scheme on the three groups of movers. Since the migrant group is so central to the study, it might be argued that the weighting scheme should be taken as the proportion of all migrants who moved in each of the three years. The averages computed in this manner are shown in Table 9a. The family income of

TABLE 9

MEAN ANNUAL FAMILY INCOME BEFORE AND AFTER MOVE FOR ALL MOVERS (BS)

Table 9a

Migrant Proportion Weighting

	Before	After	Change	% Change
Migrant	7,014	10,737	3,723	53.1
VR	6,682	7,298	616	9.2
Rural	5,694	6,294	600	10.5

Table 9b

VR Proportion Weighting

	Before	After	Change	% Change
Migrant	7,111	11,349	4,238	59.6
VR	7,073	8,053	980	13.9
Rural	5,717	6,354	637	11.1

migrants before moving is highest and the rural residents before income is lowest. The migrant-VR income difference is well below significance at the .05 level, whereas the migrant rural difference is significant at the .10 level.

The income change of migrants is very large and highly significant at the .05 level, but the income change of non-migrants is very low and far below significance at the .05 level.

Using the proportion of VR movers for each of the three years as the weighting scheme, the average before income (as shown in figure 9b) of migrants is slightly higher than that for VR residents and substantially higher than the ruralites' before income. Both the migrants' and VR residents' before income is significantly greater than that for the ruralites at the .10 level. The income change results are very similar to the prior case.

We conclude from this data that there is probably very little difference in the before-move family incomes of migrants and VR residents, and that the before family income of these movers is probably somewhat above that for ruralites. Furthermore, the family income increase for migrants who secure steady jobs in the city is quite high compared to the income increases of non-migrants.

How much of the urban-rural family income gap resulted from a money wage difference, how much can be attributed to job level changes, and how much resulted from changes in the number of family members employed? Lacking specific data on pre-migration occupational levels, we cannot fully isolate the job level effect; but the current occupational distributions by sector (as shown in Table 10) suggest the direction of such effects. In the rural sector, 34% of the household heads were engaged in agriculture as were 31% of the VR counterparts. In the urban sector, agriculture is the employment source for only 2% of the household heads, whereas the large steel plant owned by CVG employs the greatest proportion (31%).

An additional explanation for the income gap between the urban and rural samples lies in the distinction between family and per worker income. Migrants to the city increased their total money income because more members

TABLE 10
1965 EMPLOYED OCCUPATION OF HOUSEHOLD HEAD OF
GUAYANA RESPONDENTS

Occupational Type	Migrants		VR		Rural	
	Number	%	Number	%	Number	%
Government: CVG*	29	31.7	1	2.0	3	5.8
Other	3	3.3	4	7.8	14	26.9
Commerce	14	15.4	6	11.8	7	13.5
Agriculture	2	2.2	16	31.4	18	34.8
Mines	7	7.8	0	0.0	1	1.9
Transport	3	3.3	2	3.9	2	3.8
Private Industry	3	3.3	2	3.9	1	1.9
Education	2	2.2	3	5.9	0	0.0
Construction	2	2.2	0	0.0	0	0.0
Other: Services	14	15.4	5	9.8	0	0.0
Unclassified	9	9.9	7	13.5	1	1.9
Not working	3	3.3	5	10.0	5	9.6
Total	91	100.0	51	100.0	52	100.0

* Corporacion Venezolana de Guayana

of the family were employed. Thus, even if no rural-urban wage gap existed, family money income would increase because more members of the family were active in the urban money economy. As indicated in Table 11, the number of workers per migrant family jumped from 1.37 before migration to 1.53 following migration. The number of workers per family remained virtually unchanged for the VR and rural families with the VR at 1.03 and the rural at 1.22 before migration.

TABLE 11

NUMBER OF WORKERS PER FAMILY BEFORE (AFTER MIGRATION)
OR PURCHASE OF VR HOUSE (Bs)
1962--1965

<u>Sample</u>	<u>Before</u>	<u>After</u>
Migrants	1.37	1.53
VR	1.03	1.04
Rural	1.22	1.21

Holding constant the effect of variations in workers per family, Table 12 gives annual mean per worker income for the three samples before and after migration. The increase in migrant per worker income was 37% (whereas

TABLE 12

ANNUAL MEAN PER WORKER INCOME BEFORE/AFTER MIGRATION
OR PURCHASE OF VR HOUSE (Bs)
1962--1965

<u>Sample</u>	<u>Before</u>	<u>After</u>	<u>Change</u>	<u>% Change</u>
Migrants to City	5,118	7,017	1,899	37.1
VR	6,487	7,017	530	8.2
Rural	4,667	5,202	535	11.5

* This table was derived from the figures in Table 9a. However, the resulting conclusions are unaffected by choice of 9a versus 9b.

their family income increase was 53%) which is still significant (at the .05 level) and above the 9% increase for VR respondents and the 10% increase for the rural respondents. However, contrary to the family income results, the VR per worker income after moving is the same as the migrant per worker income. Hence, migrant family income superiority over VR families after moving is due entirely to the greater number of workers per family.¹⁰ Furthermore, the VR per worker income at the beginning of the period is significantly greater than that for both migrants¹¹ and rural residents.¹²

VIII. HOUSING IN GUAYANA: CHANGES IN QUALITY AND COST

In general, the trend in the Guayana samples was towards improvement in housing quality irrespective of the urban or rural village location of the house. However, the relative rates of improvement and the occupant's evaluations of housing changes do vary. We shall first summarize the changes in housing quality in terms of materials, facilities, and size, and then examine housing costs per square meter. Table 13 summarizes the distribution of various housing characteristics for both the current and previous houses of each respondent. As noted earlier, all 203 Guayana respondents were subdivided into four samples as defined by the location of the current and previous houses of the respondent; Urban-urban indicates that the current house is, and that the previous house was, in the urban sector; Rural-urban shows that the previous house was in the rural sector and that the current house is in the urban sector. Similarly, rural-rural includes those respondents whose current and previous homes were both in the rural sector; Rural-VR is the sample of respondents who chose the VR housing, their former house being in the rural sector.

The types of materials used to build houses in the rural and urban sectors of Guayana appear to be changing in the same direction. For example, cement floors are replacing dirt in both the rural and urban areas. Although walls do tend to remain predominantly wattle and daub in the rural sector, the trend is toward zinc or cement walls, as usually found in the urban houses. VR houses, however, represented a significant change in that they were constructed with cement floors and walls in nearly all cases. Their roofs of asbestos or tile also marked a departure from the zinc roof found on the average urban and rural houses included in the samples studied. The zinc roof appears to have replaced

TABLE 13

HOUSING CHARACTERISTICS: CURRENT AND PREVIOUS HOUSES

Characteristic	Urban-Urban House Movers				Rural-to-Urban House Movers			
	<u>this house</u>		<u>last house</u>		<u>this house</u>		<u>last house</u>	
	Number	%	Number	%	Number	%	Number	%
Floor:								
cement	51	90	49	85	27	84	21	66
dirt	6	10	8	15	5	16	11	34
wood								
		<u>100</u>		<u>100</u>		<u>100</u>		<u>100</u>
Walls:								
cement	17	30	8	15	14	43	5	16
wattle & daub	7	12	44	77	2	6	25	78
zinc	30	53	3	5	13	40		
wood	1	2	2	3			2	6
masonite	2	3			3	9		
		<u>100</u>		<u>100</u>		<u>100</u>		<u>100</u>
Roof:								
cement	4	7	1	2	2	6		
thatch	1	2	8	15			8	25
zinc	49	85	46	80	28	88	24	75
asbestos	3	5	2	3	2	6		
tile								
		<u>100</u>		<u>100</u>		<u>100</u>		<u>100</u>
Sanitation:								
bushes	6	10	9	16	6	22	6	19
privy	45	80	44	77	21	66	23	75
indoor flush	6	10	4	7	4	12	2	6
septic								
		<u>100</u>		<u>100</u>		<u>100</u>		<u>100</u>
Kitchen:								
inside	53	93	39	68	27	91	23	77
outside	4	7	18	32	3	9	7	23
		<u>100</u>		<u>100</u>		<u>100</u>		<u>100</u>
Water:								
inside	14	25	16	28	12	38	6	22
outside	43	75	41	72	20	62	26	78
		<u>100</u>		<u>100</u>		<u>100</u>		<u>100</u>
Electricity:								
yes	38	67	41	72	26	81	21	62
no	19	33	16	28	7	19	12	38
		<u>100</u>		<u>100</u>		<u>100</u>		<u>100</u>

TABLE 13 (continued)

Characteristic	Rural-Rural House Movers				Rural-to-VR House Movers			
	<u>this house</u>		<u>last house</u>		<u>this house</u>		<u>last house</u>	
	Number	%	Number	%	Number	%	Number	%
Floor:								
cement	42	82	33	67	51	100	43	84
dirt	8	16	15	30			8	16
wood	1	<u>2</u>	1	<u>3</u>		<u>100</u>		<u>100</u>
		<u>100</u>		<u>100</u>				
Walls:								
cement	15	29	12	24	46	94	12	24
wattle & daub	35	69	37	76	1	2	34	70
zinc					2	4	1	2
wood	1	2					2	4
masonite								
		<u>100</u>		<u>100</u>		<u>100</u>		<u>100</u>
Roof:								
cement	2	4	1	3			1	2
thatch	2	4	16	30	1	2	17	34
zinc	47	92	30	61	1	2	32	62
asbestos			1	3	29	57	1	2
tile			1	<u>3</u>	20	<u>39</u>		<u>100</u>
		<u>100</u>		<u>100</u>		<u>100</u>		<u>100</u>
Sanitation:								
bushes	4	8	11	22	2	4	6	12
privy	46	88	34	69	32	61	44	86
indoor flush	2	4	3	6	17	33	1	2
septic			2	<u>3</u>	1	<u>2</u>		<u>100</u>
		<u>100</u>		<u>100</u>		<u>100</u>		<u>100</u>
Kitchen:								
inside	35	69	38	78	51	100	40	79
outside	16	<u>31</u>	11	<u>22</u>		<u>100</u>	11	<u>21</u>
		<u>100</u>		<u>100</u>				<u>100</u>
Water:								
inside	24	48	15	33	32	63	21	42
outside	26	<u>52</u>	33	<u>67</u>	19	<u>37</u>	30	<u>58</u>
		<u>100</u>		<u>100</u>		<u>100</u>		<u>100</u>
Electricity:								
yes	32	60	20	40	33	65	28	56
no	20	<u>40</u>	29	<u>60</u>	17	<u>35</u>	22	<u>44</u>
		<u>100</u>		<u>100</u>		<u>100</u>		<u>100</u>

the thatched roofs which, until recently, were used in the construction of a substantial minority of both urban and rural houses.

As for utilities, it is surprising that in some respects the urban houses seem inferior to the rural non-VR house. Although it is generally assumed that social overhead is more developed in urban centers than in rural areas, only 30% of the Guayana urban houses studied had inside water taps, whereas 48% of the rural houses had this utility. Seventy-two percent of the urban houses had electricity compared to 60% for the rural houses, but in both sectors approximately one-third of the sample who moved to their last house changed from non-electric to electric houses. Thus, both rural and urban sample respondents showed overall improvement in utilities.

One major difference between the urban and the rural village house is the location of the kitchen. In the rural sector, nearly a third of the houses still had outside kitchens, while in the urban sector over 90% had inside kitchens.¹³ Sanitation facilities in both urban and rural samples remained predominantly outside privies: the highest proportion of houses (33%) with indoor flush toilets appears in the VR sample.

It is in house size and cost that urban-rural differences are revealed most clearly, which is a function, probably, of the more discrete measurement scales available for those characteristics (Table 14). On the average, the rural house is 13% larger (89 square meters versus 77 square meters) than the urban house. The VR rural house, however, is not significantly larger than the average urban house. Whereas rural house dwellers (not in the VR) appear to be increasing the size of their houses by house moves, those who chose VR housing showed no significant change in living space.

As for housing costs, respondents in all samples generally estimated the value of their present residence to be greater than the value of their

TABLE 14

HOUSING COSTS AND DENSITY

Sample	Cost (Bs.)	Value (Bs.)	Size (S.M.)	Value (per S.M. Bs.)	Cost (per S.M. Bs.)	Density ¹
Urban-to-Urban House Movers (n=57)						
this house	3,912	5,518	73	75	54	15
last house	-	4,811	71	56		
Rural-to-Urban House Movers (n=34)						
this house	5,595	8,186	89	78	72	26
last house	-	5,256	96	57		
Rural-to-Rural House Movers (n=52)						
this house	4,882	5,680	94	67	52	19
last house	-	4,830	86	49		
Rural-to-VR House Movers (n=51)						
this house	4,851	5,067	78	71	62	17
last house	-	3,293	80	39		

¹The number of square meters per person.

previous dwelling: those moving from the rural area to the city and those moving into VR housing claimed increases in house value averaging 60-70%. However, data on house values cannot always be interpreted as equivalent to house cost. House values in this study were the owners' evaluation of the market value of his house. The evaluation could have been based strictly on the purchase price and, thus, the change in value would reflect the increased cost of a particular house quality level between house moves (variations in money prices) or changes in real quality differences; it could also be based not so much on what the house will bring in the market but the owner's asking price.

However, assuming that house values bear some relationship to cost, we adjusted the house values for changes in house size (a rough proxy for house quality) and found the change in the rural-to-urban average house value to be no different from that experienced by house movers within the urban sector. Though the absolute level of value per square meter was lower in the rural sector, the rate of change was practically equivalent. This might indicate that housing costs are increasing at approximately the same rate in both the urban and rural sectors. On the other hand, the rural-to-VR house value change when adjusted for changes in house size accelerates to a 100% increase. It could be suggested that this confirms the weakness of using only house size as a measure of quality. We have already seen that the VR houses did represent a significant change in housing quality in terms of materials and utilities, though not in size.

In terms of house cost, the cheapest¹⁴ house is the urban house of those who have already acquired their second urban house. The most expensive house is that of the new urban migrant. This decrease in cost after the first urban house could be explained by the fact that the urban dweller either (a) learns how to economize on housing by improving his knowledge of local market conditions, or (b) faces higher living costs in other areas--food and clothing--and is forced to economize on housing. The new migrant, on the other hand, suffers from a lack of information on arrival in the city and thus could spend more on his urban house than the longer-term urban resident. It should be noted that the average VR house costs approximately the same as the average rural house (Bs. 4,851 to Bs. 4,882), but is almost 25% more than the urban house of Urban-Urban sample.

Finally, crowding (i.e., density or square meters per person) appears to be nearly as great in VR houses as in some urban houses: intra-urban house

movers average 15 square meters per person in their current house and VR occupants average 17 square meters per person. However, it is somewhat surprising that recent migrants to the urban area--or at least those who are still in their first urban house--have the most favorable density rate (26 square meters per person). This could explain why some of those who migrated several years ago are still in their first house--a preference for space. Unfortunately, we were unable to measure changes in housing density since the previous family size was not obtainable. Though we have stressed differences in the density rates, it should be obvious that all rates indicate "over-crowding" by the standards set in United Nations publications and elsewhere.

While this summary of housing quality characteristics for the different sectors has outlined the general types of housing found in the urban and rural areas of Guayana, we have not directly evaluated changes in housing welfare. Such an analysis would require the examination of either: (1) changes in housing quality per dollar of housing cost; (2) changes in housing cost holding the quality of the housing constant. Implicit in this analysis, however, is the assumption that housing quality can be indexed or measured along a single scale. However, housing quality is a composite of many housing characteristics; one house is not always superior in every respect to another house. While it may be true that one rarely finds an indoor flush toilet in a house with a dirt floor, the more general case is a house with, say, dirt floor and cement walls in comparison with a house with cement floor and zinc walls. Consideration of more than two characteristics further complicates the measurement of quality. In general, it is extremely difficult to match houses of entirely the same characteristics. On the other hand, if we match houses by cost, we are still faced with comparing houses that are mixed in their quality components. Can the qualities be combined into an overall index? To do so, one needs a judgment

of which qualities are "worth more." To even "add up" scores of 1=better, 2=worse implies an equality of merit for each quality.

A third alternative is to simply ask the respondent for his evaluation of whether his quality of housing has changed. In the next section we analyze the responses to this question, including the evaluation by the respondents of each type of quality change.

Evaluation by Guayana Respondents of Housing Changes

The 203 Guayana respondents were asked to compare, using the term "better," "worse," "same," a set of quality characteristics of their current and previous houses. In addition, the respondents were asked to state whether the current house was "better," "worse," or "the same" as the previous dwelling. The overall evaluations by the respondents of "this house" in comparison with the "previous house" are tabulated in Table 15. Owners of VR houses show the highest

TABLE 15

OVERALL EVALUATIONS BY RESPONDENTS OF HOUSES

Question: This house is better, worse, same as my previous house

<u>Sample of House Movers</u>	<u>Better</u>		<u>Worse</u>		<u>Same</u>		<u>n</u>	<u>No Response</u>
	Number	%	Number	%	Number	%		
Urban-Urban	31	55.0	25	45.0	0	0	56	1
Rural-to-Urban	20	60.0	11	33.0	2	7	33	0
Rural-Rural	30	67.0	14	31.0	1	2	45	7
Rural-to-VR	44	91.0	3	5.0	1	4	48	3

"betterment" evaluation (91%), whereas the intra-urban house movers had the lowest evaluation (55% better).

The respondents' evaluations of specific quality changes between the previous and current houses are summarized in Table 16. In order to match the

TABLE 16

EVALUATIONS OF HOUSING QUALITY CHANGES
BY RESPONDENTS AND THE HYPOTHETICAL PLANNER

Urban-Urban House Movers (n=53 to 56)								
House Quality	This House		This House		This House		n	
	Better %	Pl. Ev.	Worse %	Pl. Ev.	Same %	Pl. Ev.		
Size	40	33	50	58	10	9	53	
Floor	41	12	42	8	17	80	56	
Walls	35	27	53	53	2	20	56	
Roof	28	23	25	3	47	74	56	
Sanitation	21	21	44	12	35	67	56	
Kitchen	46	27	35	22	19	71	56	
Water	42	16	28	19	30	65	56	
Electricity	35	21	32	27	33	52	56	
No. of Rooms	20	40	52	49	28	11	55	

Urban-Rural House Movers								
House Quality	This House		This House		This House		n	
	Better %	Pl. Ev.	Worse %	Pl. Ev.	Same %	Pl. Ev.		
Size	56	26	43	63	1	11	30	
Floor	56	26	26	10	18	64	30	
Walls	46	35	50	46	4	19	28	
Roof	50	36	30	0	20	64	30	
Sanitation	44	21	13	13	43	66	29	
Kitchen	38	25	38	11	24	64	28	
Water	70	33	20	13	10	54	30	
Electricity	48	26	16	9	36	65	31	
No. of Rooms	41	27	48	39	11	55	31	

Rural-Rural House Movers								
House Quality	This House		This House		This House		n	
	Better %	Pl. Ev.	Worse %	Pl. Ev.	Same %	Pl. Ev.		
Size	67	56	21	39	11	5	41	
Floor	45	22	18	4	37	74	44	
Walls	36	20	25	2	39	78	44	
Roof	40	27	18	6	42	67	44	
Sanitation	39	20	15	15	46	65	44	
Kitchen	32	3	18	13	50	84	43	
Water	46	27	16	11	38	62	43	
Electricity	38	31	13	2	49	67	44	
No. of Rooms	59	47	27	31	14	78	44	

TABLE 16 (continued)

House Quality	This House		This House		This House		n
	Better %	Pl. Ev.	Worse %	Pl. Ev.	Same %	Pl. Ev.	
Size	88	65	66	31	6	4	44
Floor	57	10	42	0	1	90	47
Walls	82	71	2	6	16	23	45
Roof	98	95	0	0	2	5	47
Sanitation	70	40	8	2	22	58	47
Kitchen	70	23	0	0	30	77	47
Water	47	27	12	6	41	67	47
Electricity	34	10	4	2	62	88	46
No. of Rooms	93	76	4	19	3	5	47

respondents' evaluations of each quality change with the actual change as described in the previous section, it was necessary to impose an outside evaluation of the actual quality change. In the case of house size, for example, this is not too difficult to do (i.e., more space can be assumed to always be better than less). For other changes, general knowledge of construction materials used in the Guayana housing was applied. The resulting evaluation scheme, called "Planner's Evaluation," is summarized in Table 17, where P = "preferred to." By applying such an evaluation scale to the data summarized earlier in Table 13 and by combining it with the respondents' evaluations of each quality change, we were able to develop the comparative percentage scores of "better," "worse," and "same" shown in Table 16. For example, for the 53 Urban-Urban house movers, 40% considered the size of their current house to be "better" than their previous house, whereas only 33% of the houses appeared to be "better" by the Planner's Evaluation. In general, the respondents found more better/worse distinctions than the Planner's Evaluation could measure. For example, according to the Planner's Evaluation, one dirt floor is always the "same" as another dirt floor. However, it is quite reasonable that the home owner is able to distinguish between better and worse dirt floors. Thus, though the Planner's Evaluation often shows no change in housing quality, the

TABLE 17

PLANNER'S PREFERENCE ORDERING FOR EVALUATING
HOUSING QUALITY CHANGES

<u>Quality Characteristic</u>	<u>Preference Order</u>
Size	Larger house <u>P</u> smaller house
Floor	Cement, terrazo, tile, wood <u>P</u> ¹ dirt ²
Roof	Asbestos, tile <u>P</u> corrugated zinc <u>P</u> concrete <u>P</u> thatch
Walls	Cement block <u>P</u> wattle & daub <u>P</u> corrugated zinc
Sanitation	Indoor flush toilet <u>P</u> septic tank <u>P</u> privy <u>P</u> bushes
Kitchen	Indoors <u>P</u> outdoors
Water	Piped indoor <u>P</u> other
Electricity	Yes <u>P</u> No
Number of rooms	More rooms <u>P</u> less rooms

¹P = preferred to

²No other combinations found in samples so preference ordering is only in respect to dirt.

respondents were usually able to give better/worse evaluations.

The greater rate of housing quality improvement noted previously for the buyers of VR houses is clearly evident also in the respondents' evaluation. For each specific quality characteristic, the percent of respondents who stated that the characteristic was "better" in the VR house, was higher than for all other samples, except in the case of water and electricity in which rural-to-urban house movers expressed higher rates of betterment.

As a crude index of the overall rate of housing improvement, the nine quality characteristics were combined into one index by simply averaging the percentage scores for each characteristic by sample.¹⁵ This was done for both

the respondents' percentage scores and the planner's evaluation percentage scores. The results (Table 18) indicate that the averaged scores for the

TABLE 18

COMPOSITE EVALUATIONS OF HOUSING QUALITY CHANGES ¹						
Composite Percentage Evaluations ¹						
Sample	Respondent			Planner		
	This House Better %	This House Worse %	This House Same %	This House Better %	This House Worse %	This House Same %
Urban-Urban	36	40		20	25	
Rural-to-Urban	50	31		28	23	
Rural-Rural	45	19		28	13	
Rural-to-VR	71	9		45	9	

¹The percent of respondents in each sample answering "better" or "worse" in evaluating each of the nine quality characteristics were averaged over the nine characteristics to obtain one percentage for "better" and one percentage for "worse." Similarly, the planner evaluations were also averaged. See Table 16 for the nine characteristics and individual percentages.

respondents are roughly equivalent in their relative ranking by sector to the overall evaluations, although their level is lower. The Planner's Evaluation index displays even lower percentage scores of better/worse, but this is again a function of the lack of discreteness in the planner's scaling. In sum, those Guayana citizens living in the rural area who chose to buy a VR house did indeed secure the greatest increase in housing welfare, judging by their evaluations and by our analysis of certain housing characteristics. Migrants and rural respondents experienced a roughly equal increase in housing welfare.

Were there, however, significant differences in the housing standards of the respondents before some migrated, some bought VR houses and some bought other rural houses. To compare the housing levels, the data on previous houses for the VR-Rural, Urban-Rural, and Rural-Rural samples were matched (See Table 13). Without more discrete measures of housing qualities, the results are

somewhat mixed. Our qualitative conclusion, however, is that there was greater similarity than difference in the quality characteristics of previous houses. There appears to be a trend for VR respondents to have had slightly better houses in at least three aspects (floors, sanitation, water), but urban migrants on the average had better roofs. The rural sample does tend to show lower standards of housing qualities in previous housing qualities.

If, indeed, the VR respondents could be shown to have had significantly superior houses before purchasing VR houses, the question could then be raised whether the decision to buy a VR house is related positively to one's current housing welfare level (the higher the housing welfare level, the greater the propensity of the respondent to buy more housing welfare). Of course, income is also a determinant of housing welfare, but as we have already seen, the VR sample had essentially the same family income level as urban migrants prior to migration and both samples had significantly higher family income levels than the rural sample. It could be said that both the VR house buyers and migrants had higher propensities to choose new "things"--that is, a change of job, a move to the city, or a change of house--whereas the rural sample respondents, being already at the lower end of the income and housing scales had also a lower propensity for such changes. Obviously, level of income must also be a major explanatory variable for this difference; without resources one cannot move or make new choices.

Nevertheless, VR housing did attract persons who had similar income and housing levels to those who migrated. Whether these people were "potential" migrants whose choice to take VR housing substantially reduced the likelihood of their migrating is not easy to say. Certainly, some people who take VR housing are very satisfied with their rural life. The difficulty of determining who is and who is not a likely migrant would prevent the government

from offering VR houses to potential migrants only (even if they wanted to which is not likely to be the case). Whether it would be effective in reducing migration depends upon the relative importance of better housing to the rural people, and it is to the question of propensity to consume better housing that we now turn.

IX. PROPENSITY TO CONSUME HOUSING

Since a person's propensity to consume housing is a function of both his preference, his income and the market price of a house; the "un-revealed" preference for housing can be explored by hypothetically asking each respondent how he would dispose of certain discrete increases in his income. Naturally, this question is subject to the limitations of any hypothetical question--the respondent does not actually have to implement the action. However, since it is extremely difficult to observe such choices being made in the market for many various individuals, the above technique can at least approximate the range of behavioral orientations.

In this study, the respondents were asked to describe how they would totally expend two fairly large sums of money prizes, one of Bs. 20,000 (U. S. \$4,400) and the other of Bs. 5,000 (U. S. \$1,100). They were instructed that they could spend the money in any way they chose. Since the prize sizes were equivalent to about 2 years salary in the case of the Bs. 20,000 prize and about 8 months wage income for the average respondent in the case of the Bs. 5,000 prize, they are not small increments in income. On the other hand, the sums are not so great as to be beyond the realm of possibility. Moreover, we should mention that since Bs. 5,000 is the approximate cost of a Vivienda Rurale home and Bs. 20,000 could purchase a relatively comfortable house in the urban area, the responses may be somehow biased by these two considerations.

It can also be questioned whether the respondents considered the prize money as a windfall gain or as an increase in income. The windfall aspect is, of course, implicit in our question, we did not suggest that the prize money would be dispersed annually or over an extended period of time, but rather in one lump sum. However, the respondent could nevertheless decide for himself whether he wanted to use the prize for current consumption or for current

investment, which brings future income. Thus, if the respondent wanted to consider the prize as a permanent increase in income through investment earnings, his response would reflect this. Similarly, the respondent might have also considered the prize as an increase in his savings, so that his response would indicate how he would spend his savings rather than his income.

One further comment on the interpretation of the question is needed. That is, does ones response indicate how he would divide up the prize money over the five choices available to him or his preference ordering of the five choices, each of which would totally absorb the prize money. Judging by the large number of "no answers" beyond a first choice (i.e., most of the respondents could not name more than one or possibly two ways to spend the prize money) the respondents were probably making mutually exclusive choices. (See the discussion of response rates in the Appendix). Since the answers to the Bs. 5,000 prize question are more appropriate to the consideration of marginal propensity to consume, only they will be considered in the text that follows. Responses to the Bs. 20,000 prize question, which differ only slightly from the Bs. 5,000 responses, are given in the appendix.

Table 19 summarizes the major items of first choice among the three groups of respondents when they were asked how they would spend a prize of Bs. 5,000 (\$1,100). By their responses, the migrants are much more current consumption oriented, indicating that 63% of their first choices are for consumption goods. Only 32.7% of the migrant responses were for investment items compared to 64.5% for the VR residents and 52.6% for the ruralites. Investments in agriculture and business received 44.9% of the rural residents' responses, whereas the comparable figure is 22.1% for migrants and 27.5% for VR residents.

Improving current housing is most important to the migrants, 48.2% of whom voted for this item compared to only 22.1% for VR and 23.1% for rural residents.

TABLE 19

ANSWERS TO PRIZE QUESTION: 1ST CHOICE ON Bs. 5,000 PRIZE

Percentage of Actual Choices

Item	Migrants	VR Residents	Rural Residents
Current Consumption			
Housing (including furnishings)	48.2%	22.1%	23.1%
Other	14.8	8.3	20.5
Total	63.0	30.4	43.6
Investments			
Equity in House	7.5	28.0	0.0
Agriculture	5.3	15.4	20.5
Business	16.8	12.1	24.4
Education	3.1	9.0	7.7
Total	32.7	64.5	52.6
Savings	4.3	5.1	3.8
Total	100.0	100.0	100.0

The reason for the migrant's greater propensity to consume housing is somewhat puzzling since the move to the city increased their income which enabled the majority to obtain better housing in spite of the higher cost of housing in the city. One possible explanation is given by Duesenberry's relative income hypothesis, which suggests that one's propensity to consume is affected by visible consumption levels of others, ceteris paribus. Accordingly, since the average level of income and, therefore, housing consumption is much higher in the city than in rural areas and since housing is so visible, migrants require much better housing in order to preserve their relative position in the community.

The most important single item to the VR residents is paying off the existing mortgage, which received 28% of the votes. This item is clearly separate from housing consumption, since it does not represent an improvement in housing. The motive for paying off the mortgage on the VR house may simply stem from the desire to reduce the burden of monthly payments. Alternatively or additionally, owning a home free and clear may have status implications. Whatever the reason for wanting to pay off the mortgage, the motive is different in nature from the usual investment motive, since increases in value of the house accrue to the benefit of the owner whether or not he owns the property free and clear.

X. SUMMARY AND CONCLUSION

Summary

In the foregoing, we have analyzed data gathered on three groups of respondents in the Guayana Region during the 1962 to 1965 period; (1) families who migrated from rural villages in the Guayana Region (primarily along the El Dorado Road) to Ciudad Guayana during the study period, (2) families who lived in the rural Guayana villages and moved to Vivienda Rurale housing during the study period, and (3) families who remained in non-VR housing in the rural Guayana villages during the study period. The following summarizes our findings:

1. Seventy-four percent of migrants migrated for reasons of work; only 2% migrated for housing reasons.
2. Twenty-four percent of the ruralites and 26.5% of the VR residents did not migrate for housing reasons.
3. Of those migrants who said they had an opportunity to buy VR housing (22%), only 8% declined because they wanted to migrate. Of those ruralites who said they had an opportunity to buy VR housing (50%), many did not for financial reasons including 23% for "lack of funds" and 15% because they "did not complete arrangements" (which is probably associated with "lack of funds"). Nearly 27% of the rural respondents did not take the VR house because they already "have a good house."
4. Income is positively associated with the propensity for migration and the acquisition of VR housing. The average family income of VR residents and migrants before moving was quite similar and substantially above that for non-VR ruralites. In these terms, migrants and VR residents seem to be similar types.

5. The number of workers per family before moving was highest for migrants and lowest for VR residents. Taking this factor into consideration, VR resident per worker income before moving was higher than that for migrants with the rank of those remaining in the rural villages still last. Hence, the working members of VR households would appear to have had the best jobs in the rural sector and the ruralites that neither migrated nor took VR housing had the poorest jobs, although this is not readily apparent from our occupation data.

6. The migrants experienced the sharpest increase in both family and per worker income during the study period. The increase for VR and rural residents was very similar. The income of migrants increased so much that their per worker income after migration had reached the VR resident's level after moving. The fact that the number of workers per family increased for migrants and remained virtually constant for the VR's caused the family income of migrants to be well above that for VR residents after moving.

7. In 1965, thirty-four percent of the non-VR rural household heads were engaged in agriculture as were 31% of the VR counterparts. In the urban sector, agriculture was the employment source for only 2% of the migrant heads, whereas the large steel plant owned by CVG employed the greatest proportion-- 31%.

8. Those taking VR housing experienced the greatest housing improvement during the study period. Migrants and ruralites experienced about the same improvement in housing. The 1962 level of housing of VR residents was perhaps slightly better than that for the rural and migrant samples.

9. Answers to the Bs. 5,000 prize question indicate that improved housing is more than twice as important to the migrants than either the rural or VR respondents. Forty-four percent of the rural responses favored investments

in agriculture and business as compared to 27% for VR residents and 22% for migrants. Increasing the house equity is most important to the VR residents.

Conclusions

In addressing the question: "Did the VR housing program reduce migration to Ciudad Guayana?" we find the evidence hazy, somewhat inconsistent, but in our judgment weighted towards the answer, "not by an important amount." The reasoning is as follows:

1. The overwhelming motive voiced for migrating is to improve ones job and income situation in general rather than housing in particular.
2. If taking a VR house reduces the likelihood of migration, then one would expect (as per #1) fewer VR residents to give work as the reason for not migrating as compared to non-VR rural residents. Concomittantly, one would expect more VR residents to give housing as the reason for not migrating. The data indicate that the percentage of VR residents not migrating due to housing is only slightly greater than the non-VR ruralites, and, contrary to expectations, work as the reason for not migrating is given much more frequently by VR (26.5%) than non-VR residents (17.3%). This suggests that few of those who took VR housing were potential migrants to begin with.
3. The higher per worker income coupled with fewer workers per family for VR residents before taking VR housing may indicate that those who become VR owners are already quite satisfied with their rural work situation. Further support for the likelihood that VR residents were more satisfied with their work situation is given by the prize question in which only 27% of the responses were for business and agriculture investments compared to 44% for non-VR ruralites.
4. Even granting the possibility that some of the VR residents were potential migrants who changed their mind as a result of the better housing,

these few would probably not represent sufficient justification for the entire expense of the VR housing program which must serve rural people whether or not they are potential urban migrants. To illustrate this point, suppose that one out of five who take VR housing would have migrated without it whereas the other four would have remained in the rural sector without it. This implies that the cost of reducing migration by one household is five times the cost per house of the VR program. Furthermore, not all rural-urban migration is undesirable (if any is). The migration of those who are equipped to land and do land a good paying job in the city could hardly be deemed undesirable. If skills are related to income, our data suggest that those taking VR housing are most likely to secure a good city job. Hence, the power of VR housing in reducing undesirable migration would be even smaller and the cost even greater than in our illustration above.

Our overall conclusion, subject of course to our problems of data limitations and interpretation, is that improved housing of the magnitude made possible by the VR housing program in the rural areas of the Guayana Region is not likely to have much affect on the ultimate urban-rural population distribution. This conclusion is at odds with some recent theoretical work by Todaro¹⁶ who suggests that improving rural amenities may be the best way of reducing urban unemployment through its effect on rural-urban migration. Our empirical work suggests that Todaro's theoretical model allows too much weight to be placed on rural-urban amenity differences.

Our data indicate that the overwhelming force affecting migration is the search for better work. Amenity factors are seldom mentioned. The optimal distribution of housing is, therefore, probably best determined from thoughtful forecasts of future employment opportunities. If stemming the flow of urban migration is deemed desirable, then the first order of business should most

likely be investments that increase job opportunities in the rural sector with housing investments following at a later date when the employment opportunities have proven stable. Interim housing for the newly employed may easily take the form of simple-to-build temporary structures due to the temperate climate of the Guayana Region. It should be noted that this conclusion may not hold in areas where harsh weather requires more substantial dwellings for survival.

Finally, this research points once again to the great need for more theoretical and, in particular, empirical research on rural-urban migration as well as reverse migration from the cities. The forces which propel people out of certain areas and attract them to others are widely debated but continue to be poorly understood because validation is often lacking and judgments or impressions are introduced where careful analysis is called for. If job opportunities is the major force attracting people to cities in developing countries the role of the amount and quality of housing, infrastructure and community services would seem to be of lesser importance--at least on the surface. However, it is equally clear that when better paying jobs are available in cities the opportunity must be available for people who have made an investment in migration from the rural areas to the cities to be supplied with facilities that permit them to transform their income into a higher level of consumer satisfaction. To some extent they may be willing to defer a higher level of consumption, but not indefinitely. One may view the building up of squatters' towns, urban slums, lack of community facilities as being temporary phenomena, but when they persist for decades they clearly create problems that affect generations of people regardless of what conditions might be in rural areas. Their persistence, of course, helps explain the concern that cities in developing countries are "over-urbanized." This concept remains vague, which means that we still lack a basic understanding of the social costs and benefits

associated with migration to big cities. However, the concept does identify some of the crucial problems existing within cities without necessarily comparing them with those existing in the rural environs which tend to be more diffuse and less concentrated. How to resolve the problems of visible slums, uncertain property rights, insufficient or lacking community facilities and services for people who have moved to cities presents a research task of considerable magnitude. It also presents economic, social, and political challenges that must be overcome.

APPENDIX

Distribution of Bs. 20,000 Prize

Table A1 shows the percentage of actual choices by the respondents in each of our three categories when the prize money was Bs. 20,000. Our migrant sample expressed 18 different preferences for spending the Bs. 20,000 prize. Of all choices, buying or building a new house was the overwhelming selection, receiving nearly half the number of votes. Establishing and/or expanding a business was the second choice with 15.8% of all respondents choosing it. We should note that under our classification of housing, all items pertaining to housing are included, such as household furnishings, fixing up the house, enlarging it, paying of the mortgage, etc.

TABLE A1

ANSWERS TO PRIZE QUESTION: 1ST CHOICE ON 20,000 Bs. PRIZE

Item	Percentage of Actual Choices		
	Migrants	Vr Residents	Rural Residents
Housing (Including furnishings and equity)	42.9	32.0	26.8
Business	15.8	16.0	18.8
Education	10.1	12.0	10.9
Agriculture	8.5	14.4	22.8
Savings	8.1	11.2	5.9
Misc.	14.6	14.4	14.8
Total	100.0	100.0	100.0

Rural residents living in VR housing made sixteen distinct types of choices for spending the Bs. 20,000 prize. The first choice for expenditure among Vivienda Rurale occupants was paying off the house they occupied (19%). Business received 16.1% and agriculture 14.4%. When all expenditures for housing were considered, 32% of all choices revolved around housing. In this group, less emphasis was given to new housing. The sizeable number of preferences given to paying off the house, indicates the resident's willingness to accept the responsibility of their debt to the housing authority.

Expenditures for education were slightly higher--12.0% for this group than for the urban migrant group, 10.1%--and compared to the rural residents, expenditures for educational purposes was not much higher (12.0% vs. 10.9%). This may indicate that Vivienda Rurale residents elected to save twice as often as other rural respondents. This greater propensity for saving among the beneficiaries of the rural housing program suggests that these people have a strong orientation to the future.

Vivienda Rurale respondents chose housing, business, education and savings as objects of expenditure as often or more often than other rural people. The principal difference lies in their turning away from agriculture. When compared to the migrants, they placed less importance on housing as a whole.

Seventeen specific kinds of spontaneous choices were made by rural respondents in private housing. They were not identical with those made by urban respondents. Not one in the group of 52 families chose to spend the Bs. 20,000 prize to buy a car, save the money to get married, to pay off debts, or to pay off his house--categories mentioned by their urban counterparts.

On the other hand, they did choose expenditures not found on the urban list, e.g., health, migration, giving up work, and travel. The order of

preference for this group was different from urban residents. First choice was expenditure for agriculture (22.8%), reflecting the rural residents' primary concern. Housing was less important among this group of 52 families. Tying for second choice was buying a new house (20%) and establishing a business (18.8%). These three categories, i.e., agriculture, buying a new house, and business account for more than 65% of all preferences expressed.

Even when all the categories of expenditure for housing were aggregated, they accounted for only 27%. This is actually less than the expenditure for new housing alone among urban residents. The expenditures for business, education, savings, and helping relatives were practically the same as for urban residents. In effect, significant differences appeared only in the areas of housing and agriculture. Among urban residents, housing is the primary pre-occupation. Among rural residents in private housing, interest is divided between housing and their major source of income, agriculture.

Response Rates to Prize Questions

Tables A2 and A3 summarize the response rates of our three samples to the prize question concerning the disposition of a prize of Bs. 5,000 and an alternate prize of Bs. 20,000. The respondent for each family was asked to give the first five preferences for spending the prize money, but very few gave five responses. The response rates (i.e., the percentage that the actual number of answers bears to the number of possible answers) to the Bs. 5,000 prize were much less than that for the Bs. 20,000 prize, as one might expect. The fact that the average respondent gave only 1.5 answers (i.e., 30% of 5) to the Bs. 5,000 prize question justifies our sole reliance on first responses in the text analysis.

TABLE A2

RESPONSE RATES: Bs. 5,000 PRIZE

Sample	Number of families	Number of people	Number of possible answers	Number of answers	%
Migrants	91	533	455	131	28.8
VR	51	298	255	78	30.9
Rural	52	347	260	78	30.0

TABLE A3

RESPONSE RATES: Bs. 20,000 PRIZE

Sample	Number of families	Number of people	Number of possible answers	Number of answers	%
Migrants	91	533	455	247	54.3
VR	51	298	255	125	49.0
Rural	52	347	260	101	38.8

FOOTNOTES

1. See, for example, Urbanization in Asia and the Far East, Proceedings of the Joint UN/UNESCO Seminar, Bangkok, 8-18 August 1956 (Calcutta: UNESCO Research Center on the Social Implications of Industrialization in Southern Asia, 1957) and Kingsley Davis and Hilda H. Golden, "Urbanization and the Development of Pre-Industrial Areas," Economic Development and Cultural Change, III, No. 1 (October 1954). Also, see N. V. Solvani, "The Analysis of Over-Urbanization," Economic Development and Cultural Change, XII, No. 2, (January 1964).
2. Several specialists of Latin American migration have discerned a stepping-stone pattern to migrant behavior--small moves are made instead of long distance moves. See Bruce Herrick, Urban Migration and Economic Development, (Cambridge: M.I.T. Press, 1965).
3. Gross migration flows in and out of a population center of political jurisdiction are usually some multiple of the resulting net migration flow.
4. Ira. S. Lowry, Migration and Metropolitan Growth: Two Analytical Models. (Los Angeles: University of California, Institute of Government and Public Affairs), 1966.
5. See, for example, L. Sjaastad, "The Costs and Returns of Human Migration." Journal of Political Economy, Vol. 70, No. 5, Oct. 1962, p. 12, and Michael P. Todaro, "A Model of Labor Migration and Urban Unemployment in Less Developed Countries," American Economic Review, March 1969, pp. 138-148.
6. For example, the potential migrant may have to sell his rural property at a loss or even be unable to dispose of it.
7. It has been pointed out that the discount rate may vary inversely with income levels; lower income groups, near the subsistence margin, place greater preference on today's consumption. Thus, the discount rate would, in turn, be a function of $\sum_{t=1}^n B_t^i$. The discount rate could also reflect the probability or certainty of obtaining future income streams at the different locations.
8. U. S. Department of Housing and Urban Development, Urban Planning in Developing Countries, Ideas and Methods Exchange No. 61, p. 13 (Washington, D. C.: 1967); 1967 estimate from the May 1967 Preliminary Census, Center of Educational Services, Ciudad Guayana, Mimeographed.
9. The smallness in number of migrants who were prior VR residents may be due either to (1) the fact that only a small portion of ruralites live in VR housing (a fact which cannot be made precise due to the absence of rural population data) or (2) the possibility that a few VR residents migrate because of their VR house or because they are pleased with other aspects of their rural life. We will attempt to make some assessment of likelihood of these possibilities from the data we have gathered.

10. The far greater number of workers per family is not likely a result of larger families. At the end of the study period, the average family sizes were: migrants - 5.9, VR - 5.8, and rural - 6.7.
11. The difference is statistically significant at the .10 level.
12. The difference is statistically significant at the .05 level.
13. However, many of the intra-urban house movers, or movers from one urban house to another urban house, apparently had outside kitchens in their previous urban house.
14. With no adjustment for quality differences.
15. Thus assuming, as noted earlier, that each quality characteristic is equally important as every other quality characteristic.
16. Todaro, op. cit.