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Bogota's Unregulated Subdivisions

The Myths and Realities of Incremental Housing Construction

Andrew Marshall Hamer

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ABSTRACT

Over half of the recent housing construction in Bogota, Colombia has taken place in initially unregulated subdivisions. The households involved in the process are primarily former renter households entering the homeownership market with very limited savings. The residential lots are sold to the first owners with few if any public utilities present at the subdivision level. The developer frequently sells the lots on an installment credit plan and makes allowances for delayed payments. The lots are either developed by the buyer or resold, with or without a structure, to another household. As a rule, structures are built in discrete stages, with a mixture of hired and unpaid labor. The unregulated development process serves a useful purpose. Most subdivisions are eventually regularized and almost all lot owners do secure proof of ownership. In time, the owners gain access to public services. The structures built by these households are generally more spacious than their prior accommodations, are almost always built of durable materials, and are well-located with respect to jobs. Through this approach, large numbers of lower-income households acquire valuable assets and create much of the housing supply not only for homeowners but for renters as well.

PREFACE

This paper forms part of a larger program of research grouped under the rubric of the "City Study" of Bogota, Colombia, conducted by the World Bank in collaboration with the Corporacion Centro Regional de Poblacion. The goal of the City Study was to increase our understanding of the operation of major urban subsectors in the developing metropolis, so that the impact of policies could be assessed more accurately.

The author has benefitted from comments and discussions with Gregory Ingram and Rakesh Mohan, of the Bank; with Jose Fernando Pineda, of the Corporacion; with members of the Bogota District Planning Authority; and with Amparo de Ardila, who collaborated on various aspects of the research reported below. Sungyong Kang provided valuable research assistance.

Other City Study papers dealing with housing and housing markets include:

Alan Carroll, "Pirate Subdivisions and the Market for Residential Lots in Bogota," Washington, D.C., The World Bank, Staff Working Paper No. 435, 1980.

Jorge Ignacio Cifuentes, Rafael Stevenson, and L. Ricardo Paredes, "Housing and Urban Development in Bogota. The Institutional Backdrop," Water Supply and Urban Development Department Discussion Paper No. 51, 1984.

Andrew Hamer, "Households and Housing: Residential Mobility, Tenure Choice, and Space Consumption in The Developing Metropolis," Washington, D.C., The World Bank, Urban and Regional Discussion Paper No. 81-20, 1981.

Gregory Ingram, "Housing Demand in the Developing Metropolis," Washington, D.C., The World Bank, Staff Working Paper No. 663, 1984.

Jose Fernando Pineda, "Residential Location Decisions of Multiple Worker Households in Bogota, Colombia," unpublished Ph.D. dissertation, University of California, Berkeley, 1981.

Papers by Carroll, Ingram, and Stevenson were also published in Spanish, in the Revista Camara de Comercio de Bogota, in two issues dated December 1980 and June 1981.

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Summary

The informal housing supply market may be responsible for over half the units occupied by households in Bogota, Colombia. The manner in which that market operates has been examined, utilizing not only secondary sources, but also surveys of households at the city level and in 12 relatively new, peripheral subdivisions developed in an "unconventional manner."

The developments under consideration can be identified by a bundle of characteristics that generally occur together. The subdivision of the vacant land, usually a former rural property, is performed by a developer who fails to obtain permission or fulfill the infrastructural investment requirements of the Bogota District Planning Office. The buyers are usually former renter households entering the homeownership market for the first time, and doing so with limited resources. The lots are usually sold to the first owner with few if any public utilities present at the subdivision level. In an environment where credit is not available from conventional financial institutions, the developer usually sells the lots on an installment credit plan and makes allowances for delayed payments. The land is then either developed for own use by the buyer or resold, with or without a structure, to another household. As a general rule, the structures are built in discrete stages. Considerable reliance is placed on family members and friends to provide labor inputs, thus restricting out-of-pocket costs to materials and some hired labor. During the construction period, there is some recourse to loaned funds. There is clear evidence that the timely provision of public utilities accelerates the process of incremental construction.

Unregulated development has been viewed as pernicious for a number of reasons which are largely without foundation. It is possible to list seven such myths:

1. "Unregulated development is a process that is quite out of control, because District officials are incapable of incorporating most subdivisions into development patterns prescribed by law." In fact, by lowering patently unrealistic subdivision requirements and by actively intervening to upgrade old neighborhoods as well as to police new developments, the District has reduced the pockets of unauthorized subdivision to areas containing only 10% of the city's population.

2. "Developers fail to provide lot owners with secure title to their land, without which orderly property development is made very difficult." Under Colombian law, the mere possession of a document like a sales contract provides all the security needed legally to dispose of the property. The provision of a deed upon completion of installment payments appears widespread. There are administrative barriers, principally associated with the payment of property taxes in arrears at the subdivision level, which make it difficult to obtain clear title to the land. This creates problems in obtaining mortgages, but it does not affect property rights.

3. "The process, being unauthorized, ties the hands of the decentralized public entities in charge of providing public utilities, and leaves owners without access to public services." Public services are available at the lot level at an early stage of the subdivisions' development, usually through clandestine hookups to nearby neighborhood networks. The District has worked over time to revamp the administrative system to ease the process of upgrading the subdivisions' legal standing and, by extension, the availability of utilities. The record of achievement is impressive by any standard.

4. "The lot owners belong to 'marginal' households, defined variously as 'disproportionately' of migrant origin, poor, ignorant, and incapable of generating a steady income." While it is true that household heads are generally migrants to the city, the proportions are not unusual for Bogota nor do they imply a life of limited opportunities, since migrants compare favorably with native Bogotanos. Household incomes of surveyed lot owners are, on average, lower than that of all Bogota households, but roughly similar proportions earn less than one-half the citywide median income, which is taken as the poverty line. In addition, these households have limited housing expenses and pocket an implicit rent which adds substantially to their income.

5. "The structures built by the self-same household are, following (4), almost inevitably of low quality and overcrowded." Viewed by past residence standards, the present structures represent vast improvements in space and privacy. Only a tiny fraction of the structures could be characterized as "shacks."

6. "The subdivisions, being built on new additions to the urbanized area, are poorly located with respect to jobs, reinforcing the marginality already described." The transport system of Bogota is well-developed and job opportunities are scattered over space. Workers generally have full-time jobs and rarely commute over 60 minutes to get to work.

7. "Because of the above, and because the rule of one dwelling per household is far from being achieved, there is a huge housing 'deficit' crying out for supply-side intervention by the public sector." There is little to justify the first six assertions. Furthermore, concern over the use of shared housing mechanisms, where rooms are rented out, reflects a fundamental misunderstanding of the upward mobility path followed by lower-income households as they pass through their life cycle. For young household heads with small families and limited means, shared space is an excellent way to economize on resources prior to entering the market for a house. The public sector's performance, by contrast, inspires little confidence; it hardly seems able to undertake so costly and complex a mission as that required to replace the unconventional mechanisms described above.

In fact, public policy could best serve this segment of the population by reforming the system of housing assistance, by developing innovating systems of credit financing and technical assistance; by quickly providing basic public services, and by ensuring that ample supplies of land are zoned for unconventional development.

A. INTRODUCTION

Roughly one-third of all 1978 homeowners in Bogota and in Cali reported living in structures that they had built with the aid of family members, according to the Colombian National Planning Office (DANE)-World Bank household survey conducted in that year. This is a first approximation of the importance of an informal housing supply mechanism in existence in Colombian cities. Its importance is undoubtedly much larger, as reported below, for the 1978 household survey is not a survey of structures but of households; thus individuals renting an auto-constructed unit or buying a pre-owned unit constructed by "unconventional" methods would fail to report that fact to the surveyors.

There are other indicators that suggest the importance of this process. A review of single family dwelling units building permits granted in Bogota between 1971 and 1976, when compared to actual units constructed during that period and reported in the 1978 household survey, suggests that approximately 61% of all construction was unlicensed. This total provides an upper bound for the year-to-year importance of the incremental housing sector. Clearly, some building licenses did not result in dwellings being constructed, and some otherwise conventional housing might have been built without a license. 1/ Nevertheless, as an approximation, the cited proportion seems appropriate.

Further corroboration exists in the fact that one-third of the new land area incorporated into residential use during the cited period was developed in unauthorized subdivisions. 2/ Since the number of dwelling units built per hectare in such neighborhoods is more than twice that found in the

"commercial" residential areas, the proportions of dwellings built illegally, as implied by the new land area developed "clandestinely," should be over 50%. 3/

In spite of the importance of this mechanism, it is poorly explored in the existing literature, except in the case of Bogota. 4/ Furthermore the key features of the process are often misrepresented and surrounded by myths that result in a far more alarmist view of the phenomenon than is warranted by the evidence. This study relies primarily on two sources: the cited 1978 DANE-World Bank household survey conducted in Bogota and Cali and another 1978 (July-September) survey of 212 households living in 12 relatively new peripheral subdivisions developed in an "unconventional" manner. 5/

B. KEY FEATURES OF UNREGULATED DEVELOPMENT

The Unauthorized Subdivision

The developments under consideration are identified with a bundle of characteristics that generally occur together. It should be understood that some features of the process may take place independently of the rest.

The cited bundle of characteristics includes several features. The subdivision of the vacant land (usually a former rural holding) is done by a developer who fails to obtain permission from the District's Planning Office. 6/ The buyers are primarily former renter households entering the homeownership market for the first time, with limited resources. The lots are sold to the first owner with few if any public utilities present at the subdivision level. In an environment where credit is not available from conventional financial institutions, the developer frequently sells the lots on an installment credit plan and makes allowances for delayed payments. The land is then either developed for own use by the buyer or resold, with or without a

structure, to another household. As a general rule, structures are built in discrete stages. Considerable reliance is placed on family members and friends to provide labor inputs, thus restricting out-of-pocket costs to materials and some hired help. During the construction period, there is some recourse to loaned funds.

Some Characteristics of the Buyers of Lots

By 1978, at the time of the survey of 212 households, all the unit heads interviewed were owners, with 63% living in 3 to 6 rooms, 28% living in dwellings with a greater number of rooms and the rest occupying one or two rooms. These buyers were usually upwardly mobile former renters entering the homeownership market for the first time (at a household head mean age of 35) and making do with relatively modest incomes even at the time of the survey. Household heads were asked to specify prior residential histories between 1969 and 1978. Approximately one-third had arrived directly at the present site before 1969 or came from outside Bogota; a tenth were former owners; and the remainder were former tenants or usufructuaries. Among those listing prior tenancy, three-fifths previously lived in one room; only a tenth reported that the prior dwelling had three or more rooms. Other indicators suggest the improvements experienced by these households. Only a third of the reporting households had previous exclusive access to plumbing facilities. By 1978 exclusive plumbing facilities were available to 95% of the households. Roughly two-thirds of these were connected to a sewer system or a septic tank.

At the time of the survey, when the average exchange rate was US\$1.00 = Col.\$39.09, these households had a median income of approximately 6000 pesos per month, significantly below the city wide median of 8000 pesos reported in the 1978 DANE-World Bank survey. That statistic aggregates new

arrivals with more settled households. If one examines the monthly income of households occupying lots in 1977-1978, for example, the median income was only 5000 pesos per month.

The problems facing a household trying to become a first-time homeowner by buying a site and building a structure upon it can be easily, if very roughly, illustrated by an example loosely drawn from a profile of lot purchasers in 1977-1978. A prototypical household might decide to buy a lot which was large enough to permit eventual construction of a relatively ample residence with some land left over. Say that the lot measured 120 square meters. 7/ That land could vary considerably in value, but by 1978 prices of approximately 500 pesos per square meter were not unusual. 8/ This would require an investment of 60,000 pesos. If during that year a relatively modest 40 square meter structure 9/ were built for 2000 pesos 10/ per square meter, the investment would be increased by another 80,000 pesos. If, simultaneously, the lot owner required that his lot be fully serviced for utility hookups, he would have to face an additional cost of at least 20,000 pesos. 11/ Thus the household with an income of 5,000 pesos per month, or annual intake of 60,000 pesos, could face an investment worth 2.7 that amount in order to live in this modest quarters. If the entire package could be financed at 25 percent down and paid off over 36 months (terms which are available for some land sales and some utilities), the initial investment would equal 8 months wages and the monthly payments, excluding interest, would total 67% of the household's income. The use of the utilities installed would add another expenditure equal to say 300 pesos per month, or 5% of the cited median income. Unfortunately the mean percent of income spent on groceries alone totalled 60% for all the surveyed households. The point, then is simple: even with full scale, if short-term, financing at zero real interest

rates, there are important trade-offs that the household must make. These trade-offs are evident in numerous ways. The first is to by-pass all official utility connections, buying an unserviced lot and relying on clandestine hookups to power lines (which may exist in neighboring developments); clandestine, shared or delivered water supplies; and a simple latrine. A second is to delay occupancy of the lot until depleted savings can be partially rebuilt; this could take a year or more. A third is to fall behind on the monthly payments being made for the lot. A fourth is to phase in the construction of even a modest core.

If one examines the behavior of surveyed households who occupied their lots during 1977-1978, one finds evidence of some of these types of responses.

Thus, for example, two-thirds of the recent lot occupants reported no official connection to the water network, 90% reported no official connection to the power grid, and 80% reported no official connection to the sewer system. Nevertheless two-thirds of the same households reported access to piped water, 90% reported access to electric power, and over half reported the existence of toilets connected either to a sewer or a septic tank. With respect to the first two utilities, at least, "alternate" means of gaining access to utilities without incurring the installation costs are obviously prevalent.

Delayed lot occupancy is also not unusual. Among those who moved in during 1977-1978, only three-fifths did so during the year of purchase. Fully one-quarter waited two or more years.

Delayed payment of lot installment bills is apparently also common, as noted by Carroll. 12/ No evidence on this was gathered in the 1978 survey.

The phasing-in of the initial core is also common. A quarter of those occupying lots during 1977 and 1978 lived in units of 25 square meters or less and another third lived in units of between 26 and 40 square meters.

Further evidence that some trade-offs must be at work comes from a more detailed examination of the income of the households living in these barrios. Over one-third of those buying lots in 1977-1978, and one quarter of those who acquired lots before that, had incomes between 2,000 and 4,000 pesos, compared to the quartile of Bogota's households with incomes below 4,000 pesos. If sacrifices seem almost unavoidable for households with incomes of 5,000-6,000 pesos, they are imperative for those earning 4,000 or less a month.

The Nature of the Site Acquisition Process

Subdivision land is first sold by a developer or, less typically, by the estate owner or his heirs. Within a short time, land is resold by many lot owners, presumably to reap capital gains. In the cited survey, vacant land sales in newer barrios, created in 1972 and thereafter, were initiated by a developer in about half the cases and by previous lot owners in one-third of the cases. The same proportions reappear when pre-1971 transactions in barrios developed between 1963 and 1971 are considered. More recent transactions in barrios, however, were made primarily by the prior lot owners (58%) rather than by a developer (34%). This makes sense since the developer usually acts to sell his lots off relatively rapidly. 13/

The mean size of vacant lots 14/ sold was roughly 160 square meters, corresponding with the findings of other studies. 15/ Most lots were acquired without services, in the vast majority of cases. 16/ How disappointed the new lot owners were over this development is an interesting question not probed by

the 1978 survey. Borrero and Sanchez report, in an earlier study, that in 40% of the lot sales examined by them no services were ever promised by the developer. 17/ Service installation does eventually occur, as discussed below, but it follows a timetable which allows these households to pace their expenditures.

What service does the unauthorized developer provide? He provides access to installment credit and an opportunity, through it, to acquire what is likely to be the most important asset the household can aspire to own. 18/ Borrero and Sanchez report that, among households surveyed in the early 1970s, 89% bought lots on an installment plan with 25% or less as down payment and an average of 35 monthly payments. 19/ Among the 1978 surveyed households, two-thirds bought on credit. Those who bought on credit averaged a down payment equal to 30% of the lot price, if it was vacant, or 40% of the lot value, if it already had a structure (and thus owned by a less generous previous lot owner). If one examines only those cases where land was acquired from a developer one finds an even greater reliance on credit. Most developer-sold vacant lots involved installment credit, and the majority of these involved down payments of 30% of the cost or less. Previous owners relied on credit sales for only 50% of the cases, though down payments, again, usually involved less than 30% percent down. The 1978 survey reported the installment period variable by categories; thus no mean can be derived. Nevertheless most of those buying vacant lots on installment or those buying lots with structures on credit had between 1 and 3 years to pay off the debt.

The 1978 survey did not probe another "convenience" provided at least by the developer, if not the prior lot owner: delayed payments. Carroll reports that an average of 30% of the lot owners in unauthorized developments within the perimeter and fully half of the lot owners in similar

developments outside the perimeter were behind on their payments. Most of the latter and about half of the former were behind schedule by six months or more. 20/

Though the developer provides the possibility of payments on an installment plan, the household must still raise the down payment. The 1978 surveyed households were asked to specify the sources of funds for down payments or full payments. Forty percent reported the use of savings; one-fifth sold other urban or rural property. Gifts and inheritances or loans from unspecified sources were each listed by a tenth of the respondents; one-quarter were able to make partial use of cesantia or severance pay funds, which employers are required to set aside for payment to workers carrying an employment card when employment is terminated. National law authorizes the early use of cesantia funds as a source of loans for housing acquisition purposes. Strictly speaking, these funds are not supposed to finance acquisition of property in unauthorized subdivisions; 21/ clearly, this is not strictly enforced.

Some Features of the Structures Built by the Lot Owners

The 1978 survey did not inquire as to whether the lot owners acquired building permits to build or modify their dwellings. There is every reason to believe, however, that building permits are not sought. 22/

Earlier studies have stressed the incremental nature of the building process. Vernez, drawing on surveys conducted in the early 1970s, reports 90% of the lot owners built their unit in more than one discrete phase, averaging 2 to 4 stages over 5.5 years. The initial unit would amount to fewer than 20 square meters and subsequent phases would typically add 10+ square meters. 23/ Another detailed survey of 198 units

in Ciudad Kennedy, built initially by the Instituto de Credito Territorial (ICT) and possessing tenants at the time of the study, showed that over a 15 year period the initial mean size of 58 square meters was increased to a mean of 106 square meters. 24/

The 1978 survey suggests clear distinctions between different construction phases: tugurios, or shacks, average roughly 24 square meters; casalotes, or rooms added to the walled-in lot, average approximately 33 square meters; one story units, average 64 square meters; two story units, average 126 square meters; and three story units average 188 square meters. Tugurios and casalotes are generally viewed as transitional units, while the rest are classified as more or less advanced standard or conventional dwellings. Among the 1978 households surveyed, this phase-in method is evidently popular: two-thirds used some variant of a stage-by-stage approach in constructing their dwelling.

Reflecting the sampling approach taken (see footnote 5), the mean reported size of the units (72 square meters) and the mean self-evaluated sale value of the properties (201,000 pesos) incorporate considerable dispersion. The median size unit is roughly 45 to 50 square meters in size and two-thirds of the households occupy units below the mean size. Few units are very large: less than a tenth exceed 105 square meters in size. By way of contrast, the mean dwelling size recorded for all owner households in the DANE-World Bank 1978 survey was almost 150 square meters.

In value terms, two-thirds of those reporting occupied units self-assessed at 200,000 pesos or less, and very few reported unit values above 500,000 pesos. As an aside, it might be noted that precisely at the time of the survey, CENAC, the organization monitoring the construction industry's performance, reported that among new houses for sale only 20%

were valued at 400,000 pesos or less and these obviously included a substantial number of upgradable public housing units. 25/

The Determinants of Structure Size

An attempt was made to model the determinants of the desired housing stock (K^*), measured in square meters and based on a subsample of households who had made no modifications to their dwellings in 1977-1978, and were thus assumed to be in equilibrium. The initial assumption was that the desired stock varied, directly or indirectly, with the household's ability to mobilize resources and with the intended use of the structure.

Table 1 presents the results of a series of cross-tabulations which compare structure size with various household characteristics. As always, cross-tabular results are meant only as first approximations, since it is impossible to keep other variables constant in analyzing any one set of data.

There is some tendency for structure size to vary with household head age, but the differences are not great and the mean sizes of the intermediate age groups are lower than those for the youngest household heads. Similarly, household size, evaluated at above and below mean values, shows little association with structure size.

Household income, on the other hand, appears strongly related to structure size, with above means income structures being twice as large as those below the mean. Presumably, current resources are a key variable in determining the amount of construction; it may also act as proxy for savings.

Table 1

Structure Size ^{1/} versus Household Characteristics

A. Household Head Age

Structure Size	75 sq. m. and less	Over 75 sq. m.	Mean sq. m.
Age			
30 and under	69%	31%	61.2
31-40	83%	17%	52.4
41 and over	65%	35%	76.3
Total	73%	27%	64.6

B. Household Size

Structure Size	75 sq. m. and less	Over 75 sq. m.	Mean sq. m.
Household Size			
1-6	72%	28%	62.6
7+	75%	25%	67.9
Total	73%	27%	64.6

C. Household Income

Structure Size	75 sq. m. and less	Over 75 sq. m.	Mean sq. m.
Income			
Under 6,000	85%	15%	47.9
6,000 and over	46%	54%	101.5
Total	73%	27%	64.9

^{1/} "Equilibrium" structure size, computed by including only households that had not modified their unit during 1977-1978.

(Continued)

(Table 1 - Cont.)

D. Lot Size

Structure Size	75 sq. m. and less		Over 75 sq. m.	Mean sq. m.
	Lot Size			
100 sq. m. or less	85%		15%	49.0
101-180 sq. m.	73%		27%	66.4
Over 180 sq. m.	62%		38%	76.0
Total	74%		26%	64.2

E. Existence of Renters

Structure Size	75 sq. m. and less		Over 75 sq. m.	Mean sq. m.
	Renters			
No	77%		23%	58.5
Yes	55%		45%	92.3
Total	73%		27%	64.6

F. Existence of Business

Structure Size	75 sq. m. and less		Over 75 sq. m.	Mean sq. m.
	Business			
Business Exists	57%		43%	89.7
No Business	89		20%	53.1
Total	73%		27%	64.6

G. Utility Connections

Structure Size	75 sq. m. and less		Over 75 sq. m.	Mean sq. m.
	Utilities Present			
Only Water	67%		33%	45.4
Only Power	80%		20%	76.2
Water and Power	71%		29%	66.6
Water and Sewer	100%		-	34.0
All Utilities	40%		60%	103.6

To a lesser extent, there is some relationship between lot size and structure size, a relationship which is plausible to the extent that (a) horizontal construction is easier and less demanding of labor skills than vertical structures; (b) loans may be easier to obtain given the stronger asset position of households with relatively large lots; and (c) both lot size and structure size may reflect the income/assets position of the household. While the survey does not permit us to comment on a), it does provide evidence on b) and c). Households obtaining loans from unspecified sources or funds from the severance pay account (cesantia) do not have a distribution of lot sizes significantly different from that of all households. The only group, in fact, that has a noticeable concentration in the largest lots (above 150 square meters) includes those few (9 percent) who sold assets to finance the last phase construction. Among these households 65% exceed 150 meters compared to roughly 40% of each of the other categories. The third hypothesis does appear plausible. Higher income groups do live in larger structures, as already noted. Those with above mean incomes also tend to live on larger lots; 51% have lots in excess of 150 square meters compared to 32% for the poorer counterparts. Therefore income appears to provide a common link behind both lot and structure size.

Both the existence of renters and of businesses in the dwelling, generating income for the household, are associated with larger structures. In both cases, where income generation is present, nearly half of the structures exceed 75 square meters; while, where no activity is present, only 20% of the structures are that large.

There is evidence, based only on the official lot connection of each of three utilities (power, water, sewer), that utilities do matter

and are positively associated with structure size. Thus structures with only water or water and sewer together are relatively small, both below 50 square meters. Households with power only, or water and power together, live in structures that hover around 70 square meters in size. Where all utilities are present, the impact is quite dramatic, and structure sizes exceed 100 square meters.

It is unclear how the chain of causation operates. Evidently far greater numbers of households have water and power, in particular, than is revealed in official connections data, because of illegal connections. Thus, among households that built no additions to their dwelling during 1977-1978, 52% were officially connected to the water network, yet 99% reported the availability of running water. Similarly, 72% were officially connected yet 90% reported the availability of electrical outlets. Nevertheless, in modeling efforts the utility connection variables that performance in the most intuitively acceptable manner are those related to official connections. When all connections, regardless of legality, are used, the variables maintain the correct signs but are not significantly different from zero at either a 5% or 10% level. It may be that an element of security is present when the connections are official and provisional hookups are no longer necessary. Alternatively, and following the line of reasoning developed earlier, it may be that official connections arrive at a stage in the development of the subdivision where the typical household has overcome the initial financial difficulties connected with financing the lot and building a basic but permanent module. Thereafter resources can be channeled into expanding the size of the dwelling as well as paying for utility hookups and monthly user charges.

Table 2 reveals the modeling results, including the aforementioned plus two additional ones: one measuring the "neighborhood effect" of the existence of different proportions of the most substantial of structures, the multi-storied ones; the other measuring the impact of the location of a lot on the main street of the subdivision, and thus subject to feeling the impact of paved roads and official utilities before other lot owners. Some variables were excluded because of the low degree of variation found in the sample. Very few households lacked a promesa de compra y venta or an escritura, the documents associated with title to the land. Similarly, the number of female-headed households in the sample was too small to allow for the inclusion of household head sex as a variable.

Among the cited continuous variables, four perform quite well. Household income is significantly different from zero, applying a two-tail t-test at a 5% level. Its elasticity, evaluated at the mean, is equal to +0.54, implying that for every 1% increase in income, structure size increases by 0.5%. At a 10% level, the lot size proves to be significant, with an elasticity of +0.15. Also significant at a 5% level is an index of the number of tenants with a given structure; as that number increases, there is a slight tendency for the structure size to rise. The neighborhood effect variable coefficient approaches a value significantly different from zero at a 10% level test. The coefficients of other continuous variables examined, including age and family size, are not significantly different from zero at the 5% or 10% level.

All of the dummy variable coefficients have the intuitively correct sign. The existence of utilities -- all or some --, the location of the structure on the main street, and the existence of a business on the premises, all these have a positive sign. Only the coefficients of

Table 2

Estimation of Desired Stock

List of Variables

Dependent Variables

K* = structure size in square meters for those who had no construction activity in 1977 and 1978.

Independent Variables

AGE = Household head age

FS = Log of family size

Y = Household head income in 1000 pesos

LOTSIZE = Lot size in square meters

ROOMER = Square of roomers

TWOFLR = Square of % 2-floor houses in barrio

Dummy Variable

LOTSOME = 1 if one or more utility exist but not all at the lot

MAINST = 1 if the structure is on the main street

BUSINESS = 1 if the residence is used for business other than rental

(Continued)

(Table 2 - Cont.)

Estimation of Desired Stock

	Estimated	Elasticities	Sample
	Coefficients	At the Mean	Mean
CONSTANT	-11.606 (0.55) ^{1/}		
AGE	0.385 (0.99)	0.269	42.42
FS	- 6.367 (0.69)	-0.105	6.04
Y	5.503 (4.36)	0.535	5.91
LOTSIZE	0.052 (1.74)	0.149	173.72
RENTER	1.678 (3.88)	0.028	0.71
MULTFLR	0.014 (1.41)	0.073	12.62
LOTWPS	34.300 (2.63)		0.255
LOTSOME	2.269 (0.22)		0.532
MAINST	24.054 (2.41)		0.213
BUSINESS	6.256 (0.53)		0.170
<hr/>			
Adj. R ²	0.5579		K* =
# of observ.	94		60.78
<hr/>			

^{1/} Related "t" statistic.

"all utilities present" and "location on the main street" are significant at the 5% level, however. The coefficients of the latter two variables imply rather large shifts in the intercept term. Given that K^* in the model is only 61 square meters, the existence of all utilities adds 34 square meters to a structure, compared to the size of a similar dwelling without any utilities. This is dramatic evidence of some type of "multiplier" effect at work. A main street location adds 24 square meters over a comparable dwelling located elsewhere.

Resource Mobilization During the Last Major Addition to the Unit

One of the interesting issues raised by incremental housing construction is the role played by hired labor and the degree to which its use is constrained by the resources available to the household, including loaned funds.

Given the incremental nature of the construction undertaken, the 1978 survey inquired only about the last additions made. Unfortunately this information fails to include other useful data, such as the amount of total space added during the last 12 months. Some last phase projects took only a few weeks or months to build, while others took up to a year or more; there is no way of knowing if those who completed projects in short order constructed other phases immediately before that. While this makes an estimation of a housing stock adjustment model virtually impossible, it does allow one to draw inferences concerning several issues. The two treated in this section include the use of unpaid versus paid labor, and the use of credit versus savings.

Vernez, Lubell and McCallum 26/ have all pointed out that the use of subcontracted labor is quite widespread among these types of house-

holds, modifying the image of self-help, "sweat equity" associated with autoconstruction. Bender, drawing upon various sources, suggests that the largest savings over the commercial market do not come in the form of reduced out-of-pocket costs for materials or labor. Unskilled labor costs amount to only approximately one-third of the construction costs and these are likely to be the only ones where self-help labor is relevant. More important is the avoidance of a 20 to 30% additional overhead that comes from the elimination of public fees and licenses, professional fees, insurance, profits, and interest on construction loans. 27/

Among the 1978 households surveyed 10% added nothing or provided no information, 46% relied only on unpaid labor; 22% used paid and unpaid labor, and only 21% relied completely on paid labor. The general conclusions reached from an examination of cross-tabular information suggests that relatively high income households, those headed by relatively older household heads, those engaged in more elaborate last phase projects, those headed by females, and those engaged in income generation from the dwelling, tend to rely more heavily on the speed and/or the possible professionalism of hired labor, and less on unpaid labor, when compared to their counterparts. To a lesser extent, there appears to be a tendency for households financing last phase activity with loans to rely less on unpaid labor than households who rely on savings, with the former preferring a mix of unpaid and paid workers. (See Table 3.) 28/

What is the link between the ability to borrow and the opportunity to build shelter? Vernez, using data from the early 1970s, and the District Planning Office, in a report issued in 1980, both assert, for example, that 70% of these types of households have no access to

Table 3

Last Phase Labor

<u>Income:</u>	<u>Unpaid</u>	<u>Mixed</u>	<u>Paid</u>
6000 pesos and under	57%	24%	19%
Over 6000 pesos	49%	24%	27%
<u>Household Age:</u>			
40 and under	55%	25%	20%
Over 40	48%	25%	26%
<u>Type of Last Phase:</u>			
<u>Tugurio</u>	85%	10%	5%
<u>Casalote</u>	58%	15%	27%
Facade	59%	24%	18%
First floor - no slab ^{1/}	46%	26%	28%
First floor plus slab	55%	23%	23%
Second floor - no slab	36%	36%	25%
Second floor plus slab	35%	29%	35%
Third floor	20%	50%	30%
<u>Sex:</u>			
Male	52%	26%	22%
Female	42%	8%	50%
<u>Income Generation in Dwelling:</u>			
No	62%	23%	15%
Yes	34%	28%	38%
<u>Funding Source:</u>			
Savings	58%	23%	18%
<u>Cesantia</u>	50%	24%	26%
Property Sales	50%	19%	31%
Loan	42%	36%	22%
Other	56%	6%	39%

^{1/} A slab is placed over a given level when construction of an additional floor is planned.

institutional credit. 29/ Nevertheless, the 1978 survey allows us to conclude otherwise; credit plays an integral part in the building process; unspecified loans and cesantia withdrawals accounted for 29% and 19%, respectively, of the sources used for funding the last phase built. The rest came from savings or assets sold to acquire the necessary resources. 30/ The reliance on loans and cesantias by half of the households contrasts with the cited third who used such sources to buy the lot they occupy. This, in turn, suggests that increasing availability of assets facilitates access to loanable funds.

An additional feature of interest in the construction process is the influence of public policy. One way this may work is in the timely provision of public service connections to the dwelling unit. The existence of some correlation, be it causal or not, is evident from an examination of mean sizes of dwelling units assumed to be at their equilibrium size (i.e., having experienced no modification during 1977 and 1978). For each case where a particular utility is not connected to the lot, the mean dwelling size is below 50 square meters (no official water connection: 42.6 square meters; no official power connection: 37.9 square meters; no official sewer connection: 48.1 square meters). In all cases where a particular utility is connected to the lot, the mean structure size exceeds 70 square meters (official water connection: 71 square meters; official power connection: 85 square meters; official sewer connection: 89 square meters). These data are only suggestive for no other variable, including the presence or absence of other utilities, is being controlled.

Ideally, the last phase data should cover a standard time period, such as one year. Unfortunately, as noted, only the last project,

regardless of the time period involved, is recorded in the questionnaires. The full impact of a variable, if it finds expression in a series of short-term projects, will be lost in such an approach. Nevertheless the existing information does yield some interesting cross-tabulations. First, if one separates the projects into above and below the mean (35 square meters) then one finds that the presence or absence of any given utility has no particular impact on small projects. Among the larger projects, roughly half followed the installation of water and/or power connections; sewer connections, being rarer and subject to substitution by septic tanks, did not have the same impact.

In the case of water and sewer connections, large projects were greatest in size when undertaken simultaneously with or after the utility connection was made. The former projects ranged, on average, from 67 to 77 square meters whereas the latter were confined, on average, to 51 to 59 square meters. Where power connections are concerned, the largest projects coincide with the utility's arrival on site (mean: 82 square meters), but the size of before and after installation projects are identical at a mean size of 67-68 square meters. One thing, however, seems quite clear: in all cases examined, the above mean size projects with the smallest average size are those undertaken where no utility connection exists before or after the last phase was completed; such projects, in all three cases, have a mean size of 50 to 51 square meters.

Thus, though no modeling effort is possible that permits a more precise estimation of the multiplier effect of the availability of public utilities, it does appear that some such relationship exist providing the public sector with a way to influence housing consumption standards.

C. THE MYTHS CONCERNING UNREGULATED DEVELOPMENT

The Conventional Wisdom on Unregulated Development

Though documentation would be tedious and serve little purpose, the reading of the available literature reveals that the authors are often guilty of one or more of the following misstatements: 31/

1. Unregulated development is a process that is quite out of control, because District officials are incapable of incorporating most subdivisions into development patterns prescribed by law.
2. Developers fail to provide lot owners with secure title to their land, without which orderly property development is made very difficult.
3. The process, being unauthorized, ties the hands of the decentralized public entities in charge of providing public utilities, and leaves the lot owners without access to public services, dashing their prior expectations.
4. The lot owners belong to "marginal" households, defined variously as "disproportionately" of migrant origin, (as if that characteristic were a blemish), poor, ignorant, and incapable of generating a steady income.
5. The structures built by the self-same households are, following (4) almost inevitably of low quality, and overcrowded.
6. The subdivisions, being built on new additions to the urbanized area, are poorly located with respect to jobs, reinforcing the marginality characteristics already described.
7. Because of the above, and because the rule of one dwelling per household is far from being achieved, there is a huge housing

"deficit" crying out for supply-side intervention by the public sector by means of public housing construction.

The "Chaos" Hypothesis of Unregulated Development

The first fairly detailed estimate of the extent of unregulated development was made by Valenzuela and Vernez and elaborated upon by Vernez. 32/ Their estimate of the 1970 population in areas developed without authorization totalled about 1.2 million or half of the population; this incorporated about 5000 gross hectares or a third of the residential area of Bogota. Borrero and Sanchez suggest that, in 1972, 60% of the population lived in originally unauthorized settlements covering two-thirds of the city residential area. 33/ Losada and Pinilla have elaborated a very recent estimate of the area, population, and dwelling unit development in areas that once were or are still unauthorized. 34/ They suggest that 7000 hectares harboring 1.2 million persons were developed without initial permission. This covers almost 500 subdivisions and a formidable 175,000 dwelling units. By any measure, then, the importance of unauthorized developments is unquestionable and appears to suggest a vast process occurring totally outside official control.

The Valenzuela and Vernez calculations, though clearly based on a collection of fragmentary data, underline the important role of the unauthorized subdivision in the provision of particular types of housing services to particular groups. According to this study, 45% of the households in 1970 Bogota lived in units developed in unauthorized subdivisions, compared with 43% in "commercial" subdivisions, 11% in public developments, and only 1% in squatter settlements. By tenancy

category, the results are equally startling: half of the owner households, one-quarter of the renter households and almost 90% of the roomer households relied on the cited unauthorized market.

Among the poorest tenth of the households, units originating in the unregulated market provided only 28% of the dwellings, while the bulk were provided by presumably older "commercial" stock. The next poorest quarter of the households relied on the unauthorized market for three-quarters of their units. The third, intermediate-income set of households, again one-quarter of the city total, received over two-thirds of their stock from this source. Only among the wealthiest two-fifths did the illegal subdivision units fall back in importance, supplying a mere tenth of the units and being overshadowed by the presumably relatively new units provided by the "commercial" sector. 35/

Other estimates of the importance of unauthorized subdivisions place the subject in a different perspective by looking at its evolution over time. A detailed study by the District, completed in 1980 suggests that out of a total of 12,000 net residential hectares, one-third had initial characteristics which would have violated prevailing standards and regulations. 36/ Since most studies suggest that the number of persons per hectare in these subdivisions is higher than elsewhere, the existing population living in those areas is presumably a considerably higher proportion of the city total than that represented by the land area. The District data also suggest that unregulated developments have declined in relative importance over time while growing rapidly in absolute size. Between 1890 and 1930, such subdivisions exceeded 60% of the new net residential area incorporated into the city. In the next 30 years the proportion fell to around 35% of the new added area. Thereafter the

illegal developments accounted for one quarter of the new area incorporated. In absolute terms, however, the average number of hectares added annually by illegal subdivisions rose steadily from 4 hectares (1890-1910) to 82 hectares (1960-1980). This, as much as the total cumulative size of illegal settlements, undoubtedly contributed to the growing sense of panic with which the authorities viewed the phenomenon and the need to bring it under control. 37/

There is another way to view the extent of unregulated development and that is the level of such activity at any one point in time. Such statistics reflect the very active policy of the District to incorporate illegal subdivisions into the ranks of approved neighborhoods. Such data should help to discredit the "chaos" view of residential development by underlining the fact that, in any given year, most originally illegal subdivisions conform to existing urbanization rules.

Some clarification should be made about the latter point. Beginning with Acuerdo 22/1963, which attempted to upgrade the legal status of barrios initiated before 1961, and followed by Acuerdo 21/1972, the District government has attempted to pursue a policy of systematic incorporation of unauthorized subdivisions into the family of regulated barrios. These latter policies call for the emergency supply of provisional sources of water supplies and the installation of some public light on main barrio roads (habilitacion); this is paid for by the government itself. This is followed by legalization, when a subdivision plan and the installation of some public services are specified in an agreement between the original developer (or, in exceptional cases, a neighborhood association) and the District. Once these services, largely "collective" in character (for example: water stand pipes) and only

occasionally linked to the individual lots, are in place, a third phase follows. The District approves a resolution of regularization, permitting those responsible for the barrio and the District to work together to provide all remaining public services. 38/ Though the legislation is fuzzy on this point, the District has usually followed a policy of fairly straight-forward legalization and regularization of subdivisions which appeared before national law 66/1968. This law provided, for the first time, de jure stiff penalties for those violating development norms spelt out in Acuerdo 30/1961. Furthermore, adopting a practical viewpoint, which states that between the 1968 law and the issuance of upgrading norms in 1972, the new subdivider could make a case that he was unaware of the full consequence of his actions; the District and the main national enforcement agency, the Superintendencia Bancaria, have been lenient with the developer of unauthorized subdivisions created between 1966 and 1972. Developers have usually been held responsible for providing, on their own account, the minimal communal services required for legalization. Subdivisions created since 1973 have been treated more harshly, all the more so given the stiff penalties added to law 66/1968 by a new national Decreto 2610/1979. The developers of recent unauthorized subdivisions are often pressured to make greater financial contributions to the upgrading process, especially if a determination is made that they have the financial resources to do so. This toughened attitude faces two obstacles: it is unclear whether such well-intentioned coercion is, in fact, legal; and, it has proved extremely difficult to establish whether the developer does in fact have "surplus" resources, reinforcing the point made in Carroll's study that the returns to unauthorized developers are not, on average, very high. 39/

To date there has been no systematic review of the extent and efficacy of the policing undertaken by the District planners and the Superintendencia Bancaria. Nevertheless, there is evidence that new developments are now identified and regulated within a relatively short period of time. Thus, for example, Peralta and Vergara examined a group of 9 subdivisions known collectively as Patio Bonito, in the flood plain area of the Bogota River. 40/ These were created between 1974 and 1979. In general each subdivision developer was identified, charged with a list of violations, and compelled to complete a series of investments and/or face fines and imprisonment. In three of the barrios, the Superintendencia intervened and took over control of the subdivision development, having exhausted other options. Should these results prove generalizable, then the creation of unauthorized subdivisions is becoming more unattractive than in the past.

Concurrently, Acuerdo 20/1972, and its implementing decrees (Decretos del Alcalde 1259 and 1260 of 1973) established a plan for new and legal lower income subdivisions, to be known as normas minimas developments. These norms were meant to cut the costs of compliance with District regulations on public utility installation, open spaces, and maximum development densities. It was hoped that the normas minimas option would encourage the entrepreneur tempted to subdivide land without District authorization to choose a legal option instead.

Though at first stymied by a cumbersome processing system that seemed to place a premium on time-consuming hurdles, and by a lack of appropriately zoned land for such minimum norm development, the procedure has been recently modified. By late 1978, internal working documents produced by the District Planning Office began to reflect some of the

concerns of the Carroll study, already well-known among local planners. Only 600 hectares of land, at widely dispersed locations, many far from the favored lower-cost periphery, were available for the new subdivisions, causing most requests to be rejected or placed in limbo. 41/ Acuerdo 7/1979 and its implementing Decreto de Alcalde 2489/1980 have opened roughly 4000 hectares to minimum norm development, 1500 of which are outside the 1975 urban services perimeter. Alarmed by the historically high rates of return to minimum norm developers, as reported by Carroll, the local District planners have made minimum norm subdivisions beyond the perimeter subject to co-participation by public housing authorities such as the ICT or Bogota's Caja de Vivienda Popular (CVP). 42/

This same decree has allowed the Planning Office to proceed more expeditiously in processing applications, as has a provision in the national decree 2610/1979 controlling the actions of the Superintendencia Bancaria. Up to that point the bureaucratic maze faced by prospective minimum norm developers was aptly described by Carroll:

"The approval process consists of two stages: a preliminary review ..., which results in either rejection or clearance to begin drafting formal plans, and a final design ..., which results in either final approval (resolucion) or denial of the proposal ... If a resolucion is granted, the normas minimas developer must still obtain permission from the Housing Division of the Superintendencia Bancaria (permiso de venta) before he can begin to sell lots." 43/

Previously this meant that developers had to wait up to a year or more to get a definite answer. In fact, between 1973 and 1977, only 11% of the requests received resoluciones, while 38% were turned down (mostly for ignoring zoning restrictions) and 51% had received only the preliminary approval allowing work on final designs. Particularly irksome was the fact that the Superintendencia Bancaria was withholding legal permission to sell lots until 70% of the promised subdivision infrastructure investments had been completed, severely taxing the resources of the subdivider.

The new legislation permits the District Planning Office to collapse the two-stage approval process into one, and allows the Superintendencia Bancaria to issue license to begin lot sales well before the fulfillment of the cited investments. The test of the impact of this new flexibility lies in the future.

District statistics do suggest that the proportion of new residential land area located within unregulated developments is already falling and that new normas minimas plus new public housing subdivisions (some of which are not directed at the target income strata under consideration) exceeded the new unauthorized ones for the first time during the period 1978-1980. The two "sponsored" programs accounted for one quarter of the land developed, while the unauthorized subdivisions accounted for 20%. In the five previous years, when the new legislation was being put into place, the unauthorized subdivisions captured 32% of all new net residential land compared to 21% for the two other programs cited. 44/ Much the same conclusion can be obtained from estimates developed by Losada and Pinilla. They suggest that the percent of new residential land developed without authorization hovered around 30 percent between 1953 and 1975, falling sharply to 16% in the period 1975-1979.45/ These data may or may not be cause for

satisfaction on the part of local planners. The key unknown variable is the degree to which the District is merely exporting unauthorized developments to areas beyond its boundaries whose governments are less concerned about legal niceties.

One final point is in order. The process of upgrading also benefited, at least until mid-decade, by the flexible way in which the regulations have been applied to older unauthorized subdivisions. Given the absence of a clear-cut enforcement mechanism prior to the national law 66/1968, which provided such powers to the Superintendencia Bancaria, and given the absence of upgrading norms prior to Acuerdo 21/1972, compliance with the law was sometimes achieved by satisfying the desires of District planners for a formal lay-out plan of the barrio in question. Reflecting on this period, Fuentes and Losada note that a subdivision was legal if the District said so:

"The possibility exists, and is reflected in a large number of cases, that a subdivision will fail to meet the requirements but, nevertheless, will receive official approval from the District ..."^{46/}

In any case, the extent of the area and population living in unauthorized subdivisions has been sharply reduced below the level implied by the earlier estimates. A 1980 District publication suggests that only 207 barrios containing 1042 net residential hectares and 402,000 persons, remained illegal; this amounts to only 10% of the population. Earlier, Fuentes and Losada had suggested that by 1972/1973, the percentage of households living in unauthorized barrios hovered around 14%, with one percentage point accounted for by household living in squatter settlements.^{47/}

The Problem of Lot Titles

Nelson, among others, reflects deep concern with the fact that lot owners lack security of tenure: "The escritura (deed) ... is obtained, if ever, only after years of payments and endless haggling". 48/ Doebele 49/ dwelt on the hurdles that officially had to be crossed to get undisputed title to the land: the household had to get a deed from the developer together with a paz y salvo certificate showing that all outstanding property taxes had been paid by the prior owner of the subdivided estate. This deed had then to be notarized by a notary public and then registered at the Oficina de Registro de Instrumentos Publicos. Neither of these steps has historically been possible without proof that the subdivision itself was legally approved. 50/ Finally the deed had to be taken to the property tax authorities, where liability would be transferred officially to the new owner, enabling him to gain access to a paz y salvo certificate in the future. This too has been impossible, historically, for lot owners living in unregulated subdivisions. 51/

To some extent the problem is not as serious as implied by earlier studies. Under Colombian law, the mere possession of a document like a promesa de compra y venta (a sales contract) provides all the security needed legally to dispose of the property. 52/ The possession of a clear title is therefore more important in acquiring loans from the conventional mortgage market, for example, than in guaranteeing property rights.

The 1978 survey provides additional evidence that de facto, the restrictions may be less severe than envisioned, and that the developers are not, on average, guilty of malingering. One should keep in mind that titles are transferred after all land payments have been made and that given the data cited by Carroll, developers who are slow to provide deeds are probably dealing with the not uncommon individual who is in arrears. Half the lots

included in the 1978 survey were acquired by the households before 1971 and half in 1971 and thereafter. Of the 212 households, 71% had what they claimed to be a deed, though no further questions were asked about whether this represented a clear title. Sixteen percent had a sales contract, promising title after payment. The remainder had potential problems, with either limited documentation (receipts for payment) or none at all. By all measures, therefore, lack of secure tenure is a minor problem in Bogota.

It is also important to note the extent of resales of property within illegal subdivisions. Fully 45% of the lots were acquired from previous owners of the lots, suggesting that property transfers were taking place regardless of any de jure problems with the deed instruments. Other evidence, cited earlier, on household access to loans and to public services, suggest caution in blaming illegal deeds or the absence of title for a myriad of problems allegedly faced by the households in question. Such a conclusion applies, of course, to the types of subdivisions discussed in this paper. They may or may not be applicable to cities where development occurs primarily via the invasion of land.

Illegal Subdivisions, Cloudy Titles, Unauthorized Structures,
and Public Services

A literal reading of the laws, decrees, and regulations in existence over the period up to and beyond the time when the 1978 survey was conducted would suggest a widespread denial of public services to households such as those surveyed. Amparo de Ardila conducted three studies that essentially disproved this contention. A 1977 inventory of all the independent residential developments in Bogota, identified 431 barrios which were classified as low or very low in socio-economic status, and thus likely to be illegal in origin. Among these, 7% had no water network, 24% had no sewer

network, and 5% had no electric power network. 53/ A more detailed survey, during the same year, of a subsample of 26 of these barrios suggested a similar picture, except for sewer network availability: 92% were linked to the power grid, 81% had a water network at the barrio level and 54% had a sewer network. 54/ Among the 1978 surveyed units 74% were legally connected to the water system, 10% were connected illegally, and 15% had no connection, relying on wells, cisterns, trucked water, river water, or a standpipe (12% of the cases). Power connections were also widespread: 59% of the lots were legally connected to the District system; 34% were illegally connected; and 6% reported no connection. Households were asked to report on whether their toilets were connected to a sewer network or a septic tank; 38% answered yes to the first and 26% yes to the second; 36% had no such outlets.

It is possible that the situation has improved during the 1970s. Nevertheless even Vernez, reporting on illegal barrios surveyed in 1970 found only 18%-19% had no power or water network, and 66.5% had no sewer links. 55/

One needs to be reminded that, de jure, laws on public service provision have been very restrictive. The national Ley 66/1968 bars public services in illegal barrios and the District Planning Office of Bogota requires that all serviced barrios have a prior resolucion aprobatoria 56/ (or at least have received preliminary approval, if the subdivision is being regularized). Unlicensed buildings and, by extension, illegal deeds have also been reasons for prohibiting the installation of utility hookups. 57/

"Exceptions" obviously have been the rule. The reasons are not hard to fathom. The legal framework in existence over most of this period

was fairly straightforward. National regulation requires owners to initiate the request for connections to the local electric power grid; owners must be part of a legal subdivision, have clear title and a valid building license. 58/ Water and sewer connections are only made available, de jure, to individuals who have clear title to the lot and a building permit. Connection fees are a partial function of lot assessments, properly registered with the cadastral office. If a building already exists on the lot, additional documentation is required, including a District certificate of building license compliance and a property assessment which includes a valuation of the structure as well as the land. 59/ As with power connections, water and sewer links are barred from illegal subdivisions. 60/

This regulatory framework was clearly unrealistic as it stood, though it had been softened over time to allow for the post facto legalization and regularization of illegal subdivisions. In the latter case, the District Planning Office, in effect, set aside most legal norms, including clear title, construction licenses, proof of building license compliance, and the existence of a fully approved subdivision. Thus, for example, where property assessments did not exist, the utility companies would make their own preliminary assessments which, in theory, would later be updated by the Cadastral Office. Furthermore, even without such regularization procedures, the City Council had the authority to request the servicing of unauthorized subdivisions: this carries more weight than might be supposed because Council members sit on the boards of the utility companies.

Very recently there has been a veritable explosion of deregulation. National Decree 2610/1979 has separated the subdivision's

legal status from that of the lot owner's deed, allowing unimpeded notarization and registration of the deed. The Cadastral Office has been granted similar authority to transfer titles within illegal subdivisions, though such a transfer requires that all taxes due on the previously undivided estate be paid before any one lot can be separated out and granted legal standing by the municipal tax authorities. Building licenses are now routinely awarded after the fact to lot owners who made no effort to request permission prior to the construction of a unit which is likely to violate prevailing norms (Decreto de Alcalde 2489/1980). Public utility companies need not even request a building license, as long as the subdivision has itself entered the initial stages of regularization (Decreto de Alcalde 2548/1980).

Furthermore, even where there appear to be immovable obstacles to legalization, and thus the provision of utility connections, solutions are eventually found. The study of the nine Patio Bonito subdivisions by Peralta and Vergara illustrates this unintentionally. The report chronicles the tribulations of the six subdivisions created after Acuerdo 25, 1975 and thus barred unconditionally for the possibility of legalization without which utility companies were ostensibly barred from making investments in those communities. 61/ They note, for example:

The public utility companies don't provide services because they lack permission from DAPD [the District planners], and DAPD fails to grant that permission because the areas involved lie outside the urban perimeter and because the Superintendencia refuses to authorize [the development]; the Superintendencia intimidates the developer, occasionally fines him (or

issues arrest warrants), but cannot authorize the development because the latter either cannot get a DAPD permit, and/or because the developer cannot meet the Superintendencia requirements, or because he cannot meet the minimum norms demanded by DAPD. 62/

Yet at about the time the study was published, the District issued Acuerdo 7, 1979 and its implementing regulations (Decreto de Alcalde 2489, 1980) specifically incorporating these and other outlying communities into the perimeter, permitting all but the financial bottlenecks to be resolved in principle.

Finally, there have been cases, in the past, at least, where even these formalities were bypassed. In one case, for example, the mere promise of a former President to a group of community leaders of unauthorized Bogota subdivisions resulted in the widespread installation of water lines during the 1970s. 63/ In other cases the public utility companies acted to avoid the revenue losses that come from clandestine hookups to nearby facilities, a not uncommon phenomenon, as seen in the cited review of public service connections among the 1978 surveyed households. Finally, the utility companies sometimes succumbed to raw political pressure. The lot owners can vote and among those popularly elected are the District Council representatives, who, as noted, sit on the board of directors of the public service companies. The combination of realism, in the form of redrafted legislation, and political expediency have thus managed to overcome the de jure barriers to public services provisions to unauthorized subdivisions.

The Alleged "Marginality" of Lower Income Homeowner Households

A variety of sources have classified the target households groups as having low and unstable incomes, as being heavily migrant in background (and,

by implication, disadvantaged), and as being "ignorant and inexperienced and barely literate." 64/

The 1978 survey suggests that household mean incomes total 7,200 pesos, while median incomes are equal to 6000 pesos. Roughly 29% of the households earn less than 4,000 pesos per month. If one considers only the income at the regular disposal of the household head the total mean falls to 6,200 pesos and the median to 5,000 pesos, with 33% of the households earning less than 4,000 pesos per month. These households are, on average, poorer than the typical 1978 Bogota households interviewed in the larger DANE-World Bank study; their mean income is 12,529 pesos and their median income is 8,000 pesos. In Bogota as a whole, 23.5% of the households earned less than one-half the median, or 4,000 pesos.

In fact, if one were to distribute these households according to the proportion falling into each decile of the household income distribution for Bogota as a whole, one finds a remarkable dispersion of households across most deciles. Thus, 72% of these families are found in the bottom five deciles, 25% in the next three deciles, while only 3% in the top two deciles. To underline the degree to which this market reaches the poor, one should consider that 25% of the households fall into the lowest two deciles (Table 4). Nevertheless, one should be cautious about interpreting these estimates. The surveyed households in unauthorized subdivisions receive, like all owners, an implicit income from the rental of their housing unit to themselves. The mean value of that rental among the surveyed households is 2,000 pesos per month and is not offset, in most cases, by expenditures related to housing; only 60 of the 212 households reported housing-related expenditures in the month preceding the survey.

Table 4

Distribution of Surveyed Households by Income Decile

Distribution for all Bogota Households

<u>Bogota Household Income</u> <u>Deciles</u>	<u>Percent Surveyed Household</u>
2,500 pesos or less	7%
2,501 - 3,900	18%
3,901 - 5,000	18%
5,001 - 6,300	12%
6,301 - 8,000	16%
8,001 - 10,000	9%
10,001 - 13,000	8%
13,001 - 18,000	8%
18,001 - 30,000	2%
30,001 and over	1%

1/ Total does not add up to 100% due to rounding-off of totals.

If one examines the sources of household income, one can quickly understand that proxies such as the distribution of wages paid individual workers in the population are very poor substitutes for the more comprehensive measures cited below (Table 5). Fifty-five percent of the households have multiple workers, compared to 46% for the city as a whole. Those with multiple workers earn an average of 9,000 pesos, compared to 5,100 pesos for the single worker household. Business and rental income contribute 20% of the total income among all the surveyed barrio households, with but three percentage points made up of business earnings involving work within the dwelling unit. Among the 16% of households reporting a business, the mean income was 9,300 pesos (compared to the overall mean of 7,200) and 77% of this was, on average, derived from the business. For the 21% of the households reporting rental activity in the dwelling, the mean income was 7,500 pesos; the contribution of rentals to their income equalled 13%.

Turning to another allegedly disparaging indicator, one finds among the surveyed households, 81% of the family heads are migrants, compared to 76% for Bogota as a whole. This hardly represents a large difference; Bogota is a city of migrant household heads. Furthermore, of those migrants, 73% had been in Bogota over 10 years, well beyond any possible definition of transition one would care to elaborate.

Finally, the lot buyers and their households cannot be characterized as ignorant. On a purely formal level, 93% of those over 7 report themselves capable of reading, for example. It is equally hard to argue that they are, collectively, inexperienced. Those household heads acquired lots at a mean age of 35 years. Whether migrant or not, they probably had a decade or more of living in Bogota as independent adults. Throughout this chapter there is abundant evidence that the behavior of the households in purchasing lots,

Table 5

Sources of Income of Surveyed Households

Mean Income	7,200 (100%)
Mean Business Income	1,200 (17%)
Mean Rentals Income	200 (3%)
Mean Other Income	5,800 (80%)

All Households with Business in Unit [16%]

Mean Income	9,300 (100%)
Mean Business Income	7,200 (77%)
Mean Rentals Income	
Mean Other Income	2,100 (23%)

All Households with Rentals in Unit [21%]

Mean Income	7,500 (100%)
Mean Rental Income	1,000 (13%)
Mean Business Income	
Mean Other Income	6,500 (87%)

building structures, and acquiring public services, among others, follow patterns which appear rational in the aggregate.

The Quality of Lower Income Homeowner Household Structures

Given the incremental nature of construction activity among these households, one would expect to find a continuum of structure types in existence. Even so, at any one point in time, tugurios, or shacks, are unusual and should in no sense be taken as characteristic of living conditions in unauthorized subdivisions. The 1977 26 barrio survey by Amparo de Ardila classified only 15% of the units as tugurios and a further 21% as more solid casalote module housing. The 12 barrio survey examined here yielded similar proportions: 14% of the units were tugurios and 26% were casalotes. Even though the 1978 survey was meant explicitly to sample different structure types, the 26 barrio file confirms the rough representativeness of these results; the typical unit is a conventional house.

These conclusions are reinforced by an examination of materials used during last phase construction. Few of those building foundations reported these consisted of earth; the typical materials used were cement, cement and stone, stone blocks, reinforced concrete, and stone and brick. Bamboo, wood, and asphalt accounted for only a tenth of the interior walls built; the rest used brick, block, prefabricated sheets, cement, or other such materials. Exterior walls were similar fabricated out of sturdy materials; a mere tenth relied on bamboo, wood, or asphalt. Finally, only 17% reported relying on earth floors; instead a variety of materials were used, such as rubber, vinyl, cement, wood, tile, mosaic, and granite.

There is one point on which critics of autoconstruction are half right, and therefore half wrong. The land used in some subdivisions is

located in area which may not be desirable because of the social costs of servicing them. This is clearly the case with two of the twelve barrios surveyed, which are located on a flood plain. It is possible that some of the four 65/ built on hilly terrain may also pose problems. The remainder are clearly not a problem, proving that unauthorized developments need not be associated with undesirable landscape characteristics. The issue itself requires more work. Losada and Pinilla, for example, matched pairs of similar subdivisions which differed only in terms of legal status, being either normas minimas or unauthorized; note should be taken of the fact that normas minimas are located on land zoned for residential use. They found no clear cut tendency for barrio-level utility installation costs, estimated on a per household or a per meter basis, to be lower in legal barrios; the opposite was often true. This simply underlines the more general point that public utility companies are forced to make periodic "lumpy" investments to accommodate unexpected city growth which may or may not be unauthorized. Moreover, as the authors point out, even if cost differences proved prejudicial to the unauthorized developments it is hard to argue against the latter as long as the city fails to provide attractive alternatives for the population that flocks toward them. 66/

Are Peripheral, Unauthorized Subdivisions Poorly Located
with Respect to Jobs?

Amparo de Ardila reported, in a study of 26 barrios in 1977, that only 15% of the subdivisions had a bus stop more than 15 blocks from barrio boundaries, even though these subdivisions are typically small (19 have 20 hectares or less). 67/ Thus the transport system reaches well into the outlying areas of Bogota.

The 1978 unit survey identified 1244 dwellers, finding 414 workers, or 48% of those 12 years of age or over. Unemployment proved to be minimal, or 4%. Ten percent of the work force are self-employed in the dwelling. The remainder work primarily outside the home. Excluding the fifth who provided no information or for whom the question was inapplicable, for various reasons, virtually all the remainder, work 5 to 7 days per week. Most workers (77%) report work days of 8 or more hours, with all but a few of the remainder falling into the residual category of not applicable or no information.

Two-hundred and ninety-two of the 354 workers employed outside the dwelling report regular work trip travel times. Of these one-third travel less than 30 minutes to work; one-fifth travel for 31 to 45 minutes; and one-third travel for 46 to 60 minutes. Only 16% use more than one hour to get to work.

An examination of Bogota households as a whole had found a clustering of residences in and around the ring or sector of the household heads work place zone. (See Figure 1 and 2.) That pattern is repeated for the aforementioned lower income homeowner households. Thus 42% of those with heads living in Ring 4 work in Ring 4; 35% of those living in Ring 5 work in Ring 5 (and an additional 21% work in Ring 4); and 14% of those living in the partial Ring 6 work there, with 30% working in the adjoining Ring 5. The results by sector are also clear. Among those household heads residing in Sector 2, 30% work there. Residents of Sector 3 work primarily in Sector 3 (34%) or 4 (21%). Thirty-eight percent of Sector 6 household heads work in the self-same area. Finally, Sector 7 residents work principally in Sector 7 (23%) or 8 (30%). There is thus no reason to dwell upon the hypothesis that a conflict exists between the search for low cost, peripheral land and the location of jobs. 68/

BOGOTA: Ring System Based on 1973 Wards

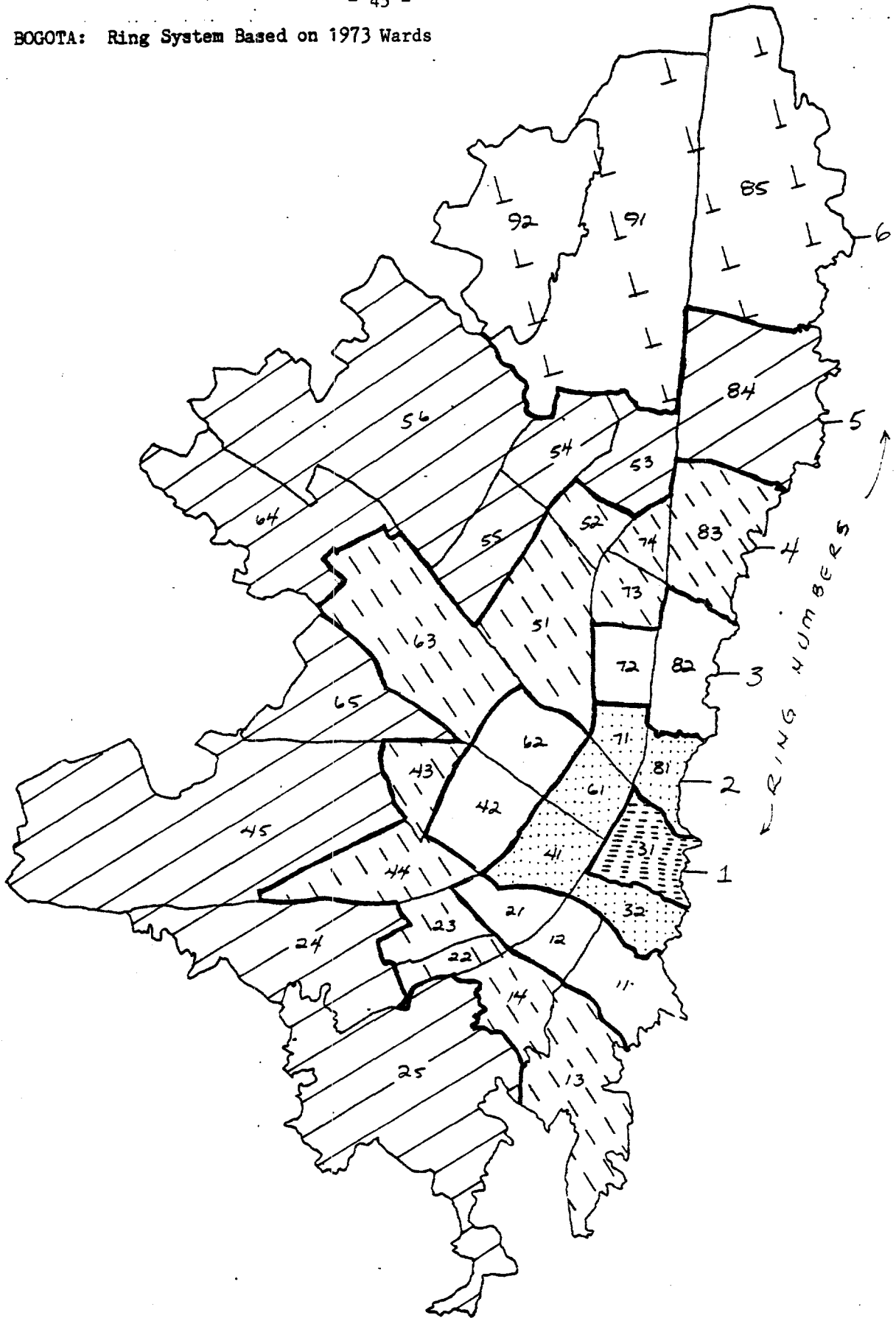


Figure 1

BOGOTA: Sector System Based on 1973 Wards

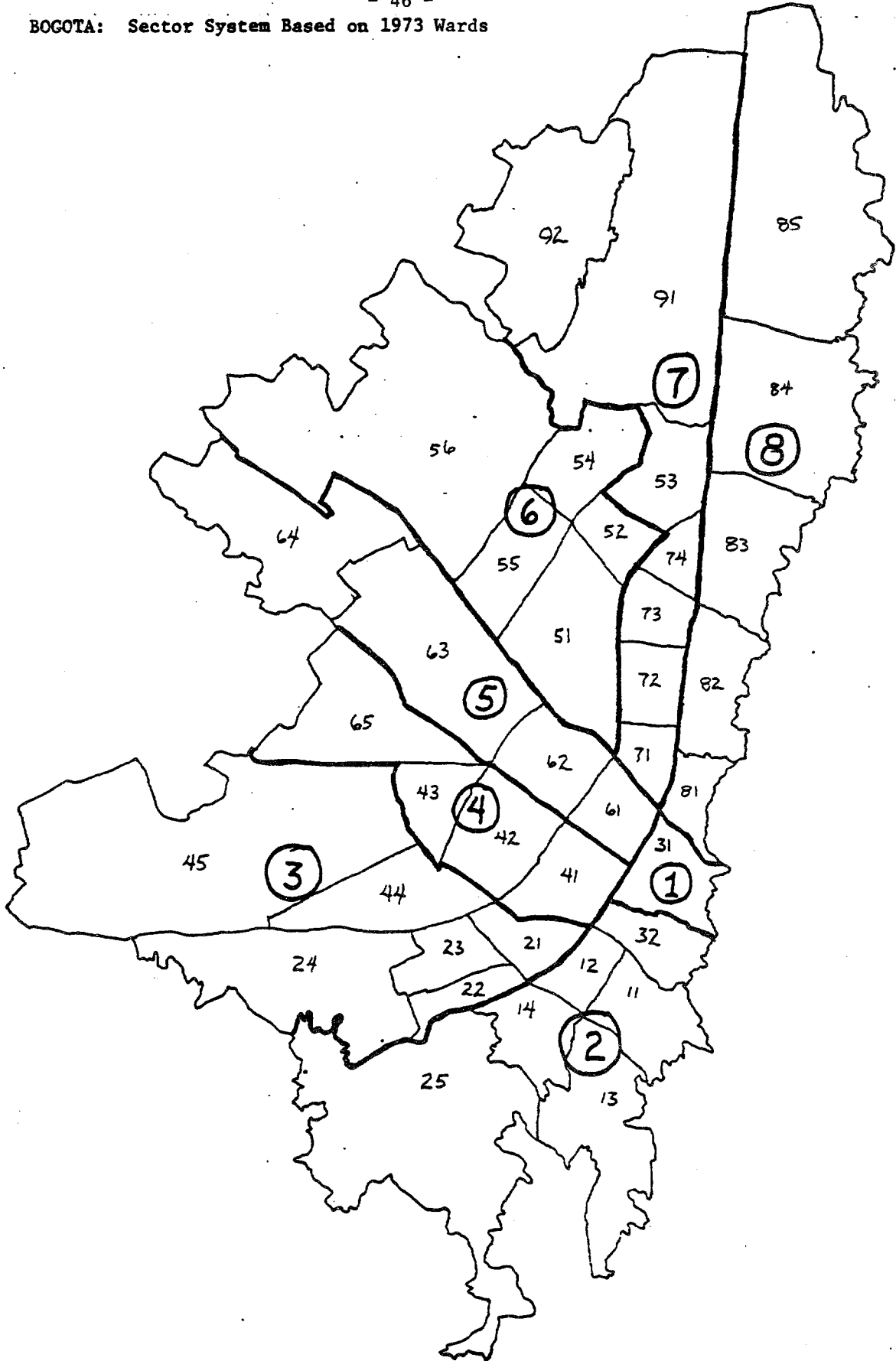


Figure 2

The Misleading Issue of Housing Deficits

It appears that a favorite pastime among urban planners is to calculate "housing deficits" totals for a city, with usually alarming results. The presumption would appear to be that public sector must "do something" about this issue, or be judged a failure.

A close reading of the housing deficit literature suggests that quantification is based primarily on the premise that each household or even each set of related individuals must have a house or apartment, and, to a lesser extent, that certain dwelling quality standards must be achieved. 69/ The results of this study, suggest that the "housing deficit" approach is not very fruitful, especially if it carries with it an implicit call for public housing activity.

There is evidence to indicate that the phenomenon of shared housing should be understood in a different way. Shared housing plays an important role in cities like Bogota, providing access to housing for households whose age, income, size and degree of residential relocation imply that they are, on average, at an early stage of their life cycle, when flexibility is at a premium. This is because of a combination of relatively undefined preferences with respect to future job and residence location, relative inexperience with the workings of urban markets, and resource constraints that make acquisition of assets very difficult.

Vernez and Valenzuela estimated that in 1970 20% of the households (or 93,000) rented rooms or otherwise shared a unit with one or more households. Of these, 55 percent were estimated to live in unauthorized subdivisions, one-third in commercial housing, nine percent in public housing, and the residual 13 percent in invasion settlements. 70/

The 1972 Phase II study 71/ arrived at a similar estimate, namely, 106,890 households, or 21% of the total, living in rooms. Of these, 45,652 lived in rooming houses, and the rest were divided up in roughly equal quantities between two family and multifamily structures. No estimates of the role of the unauthorized subdivisions can be derived from Phase II.

The 1973 Census identified 70,500 households in Bogota that were roomers, a total equal to 14% of the households in the city. Of these, 63,700 or 90%, were identified as living in rooming houses. The discrepancies between the two studies, done one year apart, have not been explained to date. The census results do not permit any estimates to be arrived at concerning the role of unauthorized subdivisions. 72/

The last major survey, the DANE-World Bank study, identified only 18,400 households, or 4% of the total, living in rooms. The building category "rooming house" was eliminated as a category in this survey. The method of payment of interviewers may have created a downward bias in the estimates, since the category "apartments" included only 1,100 of the total, and the remaining categories were only different types of independent houses. Once again, the participation of unauthorized subdivision units in the creation of the supply of rooms is an unknown.

Thus, with the exception of the DANE-World Bank survey, the roomer households loom large in the available data sets. Studies like that of Vernez and Valenzuela clearly underline the importance of the unauthorized subdivisions in this supply-enhancing phenomenon. It would be unfortunate if this solution, drawn, as noted below, to the specifications of the household types demanding this form of housing, were

turned into a "problem" demanding the application of scarce public resources.

Vernez and Valenzuela identified 55,000 roomer households living among the 106,000 owners and 43,000 renter households in unauthorized subdivisions. Though the breakdown of roomer household by owner and renter unit is unavailable, other sources suggest that the renting of rooms is quite widespread among autoconstruction owners. Thirty-seven percent of all owners who built their own unit in Bogota reported in the DANE-World Bank survey that they housed roomers. The 1978 survey of lower-income homeowner households indicates that 21% of those households rented out space to one or more individuals. A study of the public housing project, Ciudad Kennedy, uncovered shared dwellings in 27% of the 594 units surveyed in 1976. 73/

Various sources can be drawn upon to detail the characteristics of these roomer households. Case studies exist, for example. In the shared units surveyed in Ciudad Kennedy, tenants proved to be very mobile; 57% had been in the unit for under one year. Their households were relatively small, averaging 3.86 persons. They were relatively young, as indicated by the fact that, compared to the owner households surveyed, the renter household members under 25 were disproportionately concentrated in the 0-7 age bracket. Finally, they had relatively low household incomes, averaging approximately 70% the level of the owner households. 74/

Roomers were also identified in a survey of 288 rooming houses in central Bogota. Though few detailed characteristics were published, those that were, reinforce the above findings. Thus, for example, the average household size proved to be only 3.1 persons. These households generally lived in one room sharing services. 75/

Finally one can summarize the available evidence on roomers in Bogota drawn from the Phase II and DANE-World Bank surveys. First, household sizes are relatively small, falling below the mean for all households and being disproportionately concentrated in the "1 to 3" size category. Second, the household heads are relatively young, and are over-represented in the "30 years and under" category; only about one-third are over 40, while roughly half of all households fall into that category. Third, roomers have relatively low incomes. Roughly half have incomes that are below one-half the citywide median (the adopted poverty standard); fewer than a fifth have incomes above the citywide median. Fourth, these households tend to be unusually mobile. According to the 1972 results over half had moved during 1971-1972, compared with one-third of all households; the DANE-World Bank results, covering a reduced number of movers reveals no such hypermobility. Finally, these households are overwhelmingly non-owners. Only 17% of the roomer households but approximately half of all households, are classified as owning their unit. All of the above thus reinforces the view that these types of households are drawn to the "roomer" housing market for plausible reasons.

Such shared housing arrangements provide relatively low cost space for renters. Housing quality is usually good, at least in the unauthorized subdivisions, since tenants are rarely found in tugurios and casalotes. Furthermore, all we know about incremental development suggests that the quality of the housing stock most likely to be utilized by roomers improves over time, in size, in building quality, and in access to lot level utilities.

The 1978 lower income homeowner survey, for example, revealed that among the 15% of owner households living in tugurios, fewer than 5%

rented out rooms. In fact, while 40% of the owners lived in tugurios or casalotes, only 21% of the roomers did so. Over half of the roomers lived in two or three-story structures, compared to 28% of the interviewed households.

The Phase II and the DANE-World Bank surveys reinforce the above conclusions. The latter survey shows virtually no reliance on tugurios in the provision of rental rooms (3%); combining tugurios and casalotes, fewer than one-third of those roomers covered by the survey were found in unconventional housing. Both surveys suggest that piped water, sewer connections, and electric power are available to all roomers, if often on a shared basis. The DANE-World Bank survey demonstrates that building quality, measured by the materials used in the construction of the exterior walls and roofs, is almost always acceptable.

Both surveys, taken together, point to "rooms" as a form of housing that helps to economize scarce resources. The 1972 survey reported rent payments and household income in interval form; no ratios can therefore be derived. Nevertheless, virtually all roomer households paid under 500 pesos per month in rent, while almost half of all renter households paid more. The DANE-World Bank survey reveals that two-thirds of the roomer households reporting paid 25 percent or less of their income for rent and few paid more than 35 percent, a standard approached but not matched by all renter households.

Such housing has an additional benefit of being scattered across the city, and thus accessible to a wide variety of employment centers. Roomers have access to rooming houses in the center and to rooms in the autoconstruction units available in many of the city's rings and sectors. Such dispersion would be costly to duplicate if it had to be

done with public resources. In fact, one of the important benefits of the private provision of rooms is precisely that it helps to minimize the outlay of monetary and administrative resources by the public sector.

It should be kept in mind that the shared-housing population changes quite rapidly. As roomer households grow older, accumulate savings, and increase in size, the attractiveness of housing acquisition increases and many move on to become owners. Cross-sectional views of low-income renters are thus very misleading since they are not likely to remain poor or roomers over the long run. In the Ciudad Kennedy study, for example, 88.5 percent of the surveyed owners had rented their prior dwelling and 58% had shared that dwelling with another household. 76/ Very similar percentages were uncovered in the study of 212 lower income homeowner households: among those reporting only 11% had owned their previous unit and 61% shared the use of showers and plumbing in that dwelling. Finally the 1972 Phase II survey provides data on the previous dwelling types of those reporting themselves as owners. Twenty-three percent of all house owners, 17 percent of all apartment owners, and 24 percent of all owners previously lived in rooms. By 1972 these owner households relied on rooms for only 7% of their housing.

In sum, the concept of a "housing deficit" is derived from a perspective of arbitrary requirements and ignores the issue of effective demand. It is devoid of economic content. As such it is necessarily alarmist and not particularly useful as a basis for making public policy.

D. PUBLIC POLICY TOWARD INCREMENTAL HOUSING CONSTRUCTION:

SOME CONCLUDING THOUGHTS

A review of the evidence presented suggests some tentative recommendations with respect to three areas: the regulatory framework; the provision of credit for acquisition of lots, and housing construction; and definition of responsibilities for public service financing.

The Regulatory Framework

The history of subdivision regulation in Bogota can be read as a gradual and almost inevitably restructuring of rules and standards to more closely accommodate what the market dictates. The scarcity of public administrative resources and the lack of political will on the part of the authorities required such an overhaul if only to avoid the continuing mockery of the legal system.

Thus the concept of the urban perimeter remained, but expanded over time to accommodate new development. The concept of regulating lower-income subdivisions continued in existence, but lowered standards were set to permit existing neighborhoods to be upgraded and new neighborhoods to be created, legal from the state. The lot owners, after living in a world that formally penalized them by placing barriers in the way of obtaining clear title, were finally granted rights, independent of the sins of the subdivider. Procedures now exist for a more orderly phasing in of services to the neighborhoods and to the lots within those neighborhoods, reducing the restrictions previously placed on public utility companies. Further changes, involving the financing of public service installation, are suggested below.

More is still being done. It is not clear that a useful purpose was served by maintaining the hurdle of licensing building construction in these subdivisions where incremental development is the norm, since compliance appeared virtually nil. Late in 1980, via a Mayor's Decree 2489/1980, the District Public Works Secretariat was given the right to process all request for building licenses among households in such neighborhoods, thus easing the bureaucratic problems associated with the getting access to public services.

Thus, in general terms, the legal framework is approaching the point where it coincides with the preferences of homeowners in the "incomplete" subdivisions. For that reason it appears prudent to evaluate the impact of the changes made over the recent past before recommending any further modifications, excepting those suggested below for infrastructure cost-recovery.

Reforming the System of Housing Assistance

There is clear evidence that the type of households considered in this study are interested in access to credit financing. Their incomes do not allow for rapid accumulation of assets before the acquisition of urban property. In fact homeownership is attractive, in part, precisely because it is an investment whose potential capital gains provide an easy way to accumulate assets.

At present there appears to be only one fairly widespread credit mechanism at work among these households and that is the developers' extension of credit for land acquisition. 77/ What is needed is a mechanism that can be extended to housing construction activity. Since this typically takes place in incremental fashion over a period of years,

it would be useful to have a system of community-based and centrally-supervised savings and loan associations which could make short-term, small loans that would allow households to buy construction materials and/or hire skilled labor to perform certain specialized building tasks.

Given the size of the demand for building sites, the public sector should reconsider the use of administratively- and capital-intensive housing construction programs, for these are too small, in the main, to have a major impact on this target population. According to the DANE-World Bank 1978 survey, only 11 percent of all homeowners have availed themselves of the programs of the national housing authority, ICT. Of these approximately 70 percent have household incomes in excess of the 6000 pesos median uncovered among the 212 families examined in this study; this corresponds closely to the 71 percent of all Bogota homeowner households that have incomes over 6000 pesos. In fact it is difficult to find any difference between the income distribution across ICT-aided and all homeowner households.

The local housing authority of Bogota has a more definite tilt toward poorer households, with only 45 percent of those assisted earning more than 6000 pesos a month. However, the latter program only reaches 3 percent of the homeowner households of Bogota.

Redirecting the resources away from these programs could serve a useful purpose. The funds might be devoted to start up a variety of programs that could then, like the construction loan plan, be placed on a self-financed basis. Among these are site acquisition credit programs, modelled on those already offered by the developers of unauthorized subdivisions; and the sale of bulk-purchased materials from dispersed warehouses at cost. These along with the suggested housing finance plan

could be combined with a housing extension service, which would provide technical assistance aimed at insuring that the units built by auto-construction households meet realistic, minimum safety standards and avoid any mistakes and waste potentially associated with do-it-yourself work.

All of the above require, of course, a fundamental change in the philosophy of the public sector functionaries who work in this area. In particular, the housing "deficit" framework has to be discarded before these individuals can feel comfortable with administering programs that lack residential monuments as an end product. Politically it may be difficult to contemplate the fact that the inevitable official annual reports would contain only photographs of developable raw land, stockpiled materials, and loan offices, instead of showcase structures. Such obstacles should not be insurmountable if a realistic assessment of lower income homeowner housing supply mechanisms precedes the reforms suggested.

Public Service Provision to Lower Income Homeowners

There remains the need to improve the manner in which public services reach this group of households. The timely provision of utilities to these households is important not only in its own right but because it appears to act, indirectly, to increase the supply of housing space in the city. The regulatory agencies should consider stripping the requirements for authorized subdivision developments to a minimum, barring and swiftly enforcing bans on residential development on ecologically precarious land, which might prove extremely difficult to service without otherwise unjustifiable massive investments. Simultaneously, the public sector should be responsible enough to match such bans with a policy which guarantees ample supplies of properly zoned raw land so that recourse to

precarious land is made less attractive. Developers should then be required to allow the various public service and utility agencies to rapidly lay out the rights-of-way needed for the eventual servicing of the new communities. Thereafter the developer should be held responsible only for the most basic infrastructure (dirt roads, public standpipes, some public lighting). All else should be phased in slowly enough to meet the financial constraints of the dwellers. The developer, who on average makes a rather modest return on his investment, should not be held liable at this stage. This modification in de jure policy would force the public sector to discard the stereotype of developers as unscrupulous profiteers. De facto it would fit the reality repeatedly discovered by the interventor agencies, who find too few seized assets to apply to infrastructure financing.

A Final Note

These recommendations are not meant to promote the politics of laissez-faire, especially where the latter implies an abdication of responsibility to deal with market failures. The policy suggestions still leave a considerable role for the public sector. The changes would allow the planners to utilize their resources more effectively and therefore to ease the problems associated with the development of lower-income home-owner subdivisions.

Footnotes

1. The discussion of the regulatory environment reflect conditions in place as of August 1981.
2. Crecimiento de Bogota, D.E., Colombia, 1890-1980, Bogota, 1980, Division de Coordinacion y Programacion, Unidad de Mejoramiento y Coordinacion de Barrios, Departamento Administrativo de Planeacion Distrital, n.p.
3. Rule of thumb supplied by the Bogota District Planning Office. See also similar estimates by J. Valenzuela cited in Normas Minimas de Urbanizacion y de Desarrollo: Consideraciones A Su Aplicacion, Division de Coordinacion y Programacion, Unidad de Mejoramiento y Coordinacion de Barrios, Departamento Administrativo de Planeacion Distrital, September 1978, p. 17.
4. S. Bender, "Low Income Housing Development and Income Distribution: The Impact of Growth and Change," in A. Berry and R. Soligo, Economic Policy and Income Distribution in Colombia, Boulder, Colorado, Westview Press, 1980. O. Borrero and S. Sanchez, Mercados de Tierras en Barrios Clandestinos de Bogota, Bogota, Departamento Administrativo de Planeacion Distrital, April 1973. A. Carroll, Pirate Subdivisions and the Market for Residential Lots in Bogota, Washington, World Bank Staff Working Paper No. 435, October 1980. Crecimiento de Bogota, D.E., Colombia, 1890-1980, op.cit. Desarrollos Clandestinos: Consideraciones A Su Legalizacion, Informe, Comision de Mejoramiento Urbano, Unidad de Mejoramiento y Coordinacion de Barrios, Division de Coordinacion y Programacion, Departamento Administrativo de Planeacion Distrital, October 1980. W. Doebele, "The 'Pirate' Subdivisions of Bogota," Cambridge, Massachusetts, Department of City and Regional Planning, Harvard University, Discussion Paper D75-11, October 1975. A. Fuentes and R. Losada, "Implicaciones Socio-Economicas de la Ilegalidad en la Tenencia de la Tierra Urbana de Colombia," Coyuntura Economica, Vol. VIII, No. 1, April 1978. H. Handelman, "High-Rises and Shantytowns: Housing the Poor in Bogota and Caracas," Hanover, New Hampshire, American Universities Field Staff Report, 1979. R. Losada and H. Gomez, La Tierra en el Mercado Pirata de Bogota, Bogota, Fedesarrollo, June 1976. R. Losada and L. Pinilla, Los Barrios Ilegales de Bogota, Bogota, Centro de Investigacion y Desarrollo de Pedro Gomez y Cia., S.A., May 1980. H. Lubell and D. McCallum, Bogota, Urban Development and Employment, Geneva, I.L.O., 1978. J. Nelson, "Public Housing, Illegal Settlements, and the Growth of Colombia's Cities," Report to the Urban and Regional Development Division of USAID/Bogota, The Urban Institute, December 1975. Normas Minimas de Urbanizacion y de Desarrollo: Consideraciones A Su Aplicacion, op.cit. R. Paredes, "Colombia's Urban Legal Framework," draft report, City Study Project, April 1980. G. Vernez "Bogota's Pirate Settlements: An Opportunity for Metropolitan Development," Berkeley, Doctoral Dissertation, Department of City and Regional Planning University of California, June 1973.

5. The subdivisions were selected from the universe of lower "status" communities, as classified by the Bogota Planning Office. The selection followed a stratified random sample approach, and reflected the geographic location, legal standing, and socio-economic status inherent in the frames. Nine percent of the total number of subdivision structures was surveyed. Following the recommendations of local consultants, an effort was made to sample roughly the same number of households in each of several dwelling types across the neighborhoods. Furthermore, in each subdivision, roughly the same number of households were interviewed. By coincidence, the distribution of sampled structure types corresponds roughly with the actual distribution of structures across the twelve neighborhoods.
6. For details, see Carroll, op.cit.
7. This would be well within the broad 100-200 square meter band occupied by 63% of the respondents.
8. The reasonableness of these prices can be confirmed by studying other recent surveys such as G. Peralta and A. Vergara "Informe sobre la Zona de Patio Bonito," Bogota, Centro de Investigacion y Desarrollo, Pedro Gomez y Cia. S.A., February 1980, Table 15.
9. The mean structure size of those actually occupying their lots in 1977-78 was 47 square meters, compared to 75 square meters for those with prior occupancy. The 40 square meter size corresponds to the size of the spartan "beginner" units built by such public housing authorities as the Instituto de Credito Territorial (ICT).
10. As a point of comparison, the national public housing authority, (ICT), signed contracts for the construction in Bogota of two basic module housing developments during this time period, with initial unit sizes similar to those in question. In one case (Bachue) the construction costs averaged approximately 3000 pesos per square meter and in the other (Los Molinos) the costs averaged 2700 square meter. Assuming that construction contracted out to outside organizations involves extra expenditures (profits, various types of fees), the adopted value seems realistic. The ICT information was supplied by the central office's Departamento de Operacion de Obras, Subgerencia de Construcciones.
11. This would mean that the price of an unserviced lot would equal 70% of the price of the same lot, when the costs of services are added. The resale price of the serviced lot would be an even higher proportion of the price of an unserviced lot, since the acquisition of services would increase its market value. The 70% ratio corresponds roughly to similarly defined proportions found in Borrero and Sanchez, op. cit., p. 32; and Nelson, op. cit., p. iii. The infrastructure costs were provided by the ICT's Subgerencia Tecnica, Departamento de Politica Urbana, Seccion de Vivienda Subnormal.
12. Op. cit., p. 42.

13. According to the survey results reported in Carroll, op.cit., based on a sample of 149 illegal subdivisions, 61% of those reporting began selling lots no later than 12 months after acquiring the land. On average, 47 months were required to sell off 90% of the lots.
14. Eighteen percent of the lots were sold with structures already on them. Only 16% of these structures were conventional houses, the rest were tugurios (37%) or casalotes (47%).
15. Borrero and Sanchez, op. cit., pp. 57, 75, report a mean of 154 square meters on the basis of surveys made in the early 1970s.
16. Among the households surveyed, fewer than a fifth reported having either water, or sewer connections before or immediately after purchasing the lot. Carroll, op. cit., p. 16 reports the same conclusion.
17. Op. cit., pp. 141-142.
18. The credit terms provided by previous owners are far stiffer than those provided by a developer. Fifty percent of the vacant lots sold by previous owners involved no extension of credit, while only 8% of the vacant lots sold by developers involved full payment.
19. Op. cit., pp. 107, 109, 111. For a more recent case study reporting similar findings see G. Peralta and A. Vergara, op.cit.
20. Op. cit., p. 42. There is no information on the degree to which the effective price of land is reduced by the refusal of buyers ever to complete their payments.
21. See, for example, the discussion in Fuentes and Losada, op.cit., p. 19-20. Cesantia withdrawals require the presentation of a legally unchallengeable property deed, which de jure is not possible for the households under consideration. Commercial banks, financial and commercial institutions with employee loan programs also appear to be legally bound to require clear titles before lending. The Banco Central Hipotecario and the savings and loan institutions are supposed to request not only clear title but building permits.
22. The requirements written into law are nevertheless very strict. See Fuentes y Losada, op. cit., p.10.
23. Vernez, op. cit., p. 13 and 42.
24. Edgar Reveiz, Luis A. Triana, Juan M. Salazar, Vivienda Compartida en Arriendamiento en Ciudad Kennedy: Tercera Etapa, Bogota, CEDE, n.d. (1978), n.p.
25. See Actividad Edificadora y Oferta de Edificaciones Urbanas en Bogota, CEN-44-78, CENAC, Bogota, October 1978, Table 24. For other, corroborating data on the value of residences in unauthorized subdivisions see G. Peralta and A. Vergara, op. cit., pp. 48, 49.

26. Vernez, op. cit., p. 36; Lubell and McCallum, op. cit., p. 98.
27. Bender, op. cit., pp. 255-256. Vernez, op. cit., p. 40, suggests the overhead is lower (11%) but assumes it is possible to substitute all labor (30% of costs).
28. Similar behavior was uncovered for 1971 by Valenzuela y Vernez, and reported in "Construction Popular y Estructura del Mercado de Vivienda: El Caso de Bogota" Revista SIP, #31, September 1974. Work cited in Normas Minimas de Urbanizacion y de Servicios, op. cit., p. 20.
29. Vernez, op. cit., p. 53, Desarrollos Clandestinos ..., op. cit., p. 7.
30. A final 10% listed "other" means.
31. An additional myth is dealt with in Carroll, op.cit., namely that developers are unscrupulous individuals who derive "unjust" profits from the subdivision process.
32. See Appendix A in "Bogota's Pirate Settlements...", op. cit. These estimate excludes barrios granted legal recognition after the fact in the period prior to 1970.
33. P. 70, 79, and the four annexes in Borrero and Sanchez, op. cit.
34. Losada and Pinilla, op. cit., pp. 10, 17, 26.
35. Vernez, op.cit., p. 195.
36. Crecimiento de Bogota, D.E., Colombia: 1890-1980, op. cit.
Estimates excludes non-residential uses and undeveloped areas.
37. The cited document differentiates between barrios obreros and barrios clandestinos, labelling with the first the unauthorized developments before 1960 and with the second, all subsequent developments. These are, in fact, two terms for the same phenomenon.
38. See, Fuentes y Losada, op. cit., pp. 12-13.
39. This clarification of District policy benefitted from a discussion with representatives of Unidad de Mejoramiento y Coordinacion de Barrios, Division de Coordinacion y Programacion, in the District Planning Office. The same point is made by a former Superintendent of the Superintendencia Bancaria in his draft report for the City Study; see Paredes, op. cit., p. 35.
40. Op. cit.
41. A discussion of these issues is found in Carroll, op.cit., and in Normas Minimas de Urbanizacion de Servicios, op. cit., especially p. 54. Ricardo Paredes notes, in a paper prepared for the City Study (op.cit., p. 35) that all land for such developments was used up by the end of 1977.

42. This interpretation of factors lying behind new legislation was aided by discussions with representatives of the District Planning Office, especially its Departamento de Mejoramiento y Coordinacion de Barrios, Division de Coordinacion y Programacion.
43. Op. cit., p. 92.
44. The slow growth in the officially sanctioned programs is due to a declining importance of public housing hectarage being offset by an increasing role for normas minimas.
45. Losada and Pinilla, op.cit., p. 10.
46. Op. cit., footnote 29. Translated from Spanish.
47. Op. cit., p. 3, footnote 5.
48. Op. cit., p. 14.
49. Op. cit., p. 35.
50. This prohibition was applied nationally to all municipal authorities. See, for example, Decreto Nacional 1380, 1972, amending Ley 66, 1968. There is little evidence of enforcement (see Fuentes and Losada, op. cit. p. 12). The prohibitions were lifted in 1979, via Decreto Nacional 2610, 1979.
51. This was based on National Decree 1380/1972. The Superintendencia Bancaria, charged with the responsibility for enforcing the upgrading and legalization of unauthorized developments by Law 66/1968, has had the authority to bypass the above restriction in exceptional circumstances to protect individuals who bought lots in unauthorized subdivisions. The injunction was finally lifted by National Decree 1644/1978, which replaced portions of Decree 1380.
52. This point was clarified by Ricardo Paredes, former Superintendent of the Superintendencia Bancaria, which is charged with overseeing the legalization and regularization of unauthorized subdivisions.
53. Ardila, op. cit., p. 64.
54. Ardila and Hamer, op. cit., p. 31.
55. Vernez, op. cit., p. 149.
56. Fuentes and Losada, op. cit., p. 11. See Acuerdo 30, 1961; Acuerdo 65, 1967; Decreto de Alcalde 973, 1969; Decreto de Alcalde 1020, 1974.
57. Ibid, p. 12. See Decreto de Alcalde 1190, 1975. Decreto de Alcalde 2489, 1980 implementing Acuerdo 7, 1979 permits the District Public Works Secretariat to grant building licenses to lot owners who constructed a house in an unauthorized subdivision. This is the case even when the building fails to meet the requisite code requirements.

58. Fuentes and Losada, op. cit., p. 12 and 17. As noted, Decreto de Alcalde 2489, implementing Acuerdo 7, 1979 now permits the granting of building licenses to owners of structures built in unauthorized subdivisions.
59. Ibid, p. 16. As already noted, Decreto de Alcalde 2489, 1980 allows the District Public Works Secretariat to grant the building licenses without prior compliance with code requirements to building owners in unauthorized subdivisions. Decreto de Alcalde 2548, 1980 further loosens the restrictions, allowing the public utility companies to grant domestic hookups even when no license is available, as long as the legalization of the subdivision has begun.
60. Ibid, p. 11. Ley 66, 1968 and various District regulations, including Acuerdo 30, 1961, Acuerdo 65, 1967, Decreto de Alcalde 973, 1969, and Decreto de Alcalde 1020, 1974, mandate this.
61. Unexplained is the fact that one of these has its own power network, 2 have operating water standpipes and 3 have standpipe networks in place, awaiting community payments of collective obligations.
62. Op. cit., p. 34.
63. Fuentes y Losada, op. cit., p. 18.
64. Nelson, op. cit., p. 14. See also Borrero and Sanchez, op. cit., p. 79 Desarrollos Clandestinos ... op. cit., p. 5; Losada and Gomez, op. cit., p. 24. Also worth noting is a study by the public housing authority the Instituto de Credito Territorial, entitled Inscredial Informe 72, Bogota, 1972, p. 9 which exaggerates the implications of its "affordability tables" by using individual wage earner data as a proxy for household income.
65. Two barrios, Quindio Viejo and Quindio Nuevo are contiguous and are generally treated as one neighborhood.
66. Op. cit., pp. 46-49.
67. Ardila and Hamer, op. cit., p. 33.
68. That hypothesis is advanced, for example, by Vernez, op. cit.
69. For two examples of this type of argument see Oscar Borrero and Sonia Sanchez, op. cit., and Oscar Borrero, "Deficit de Vivienda en Colombia: Dos Hipotesis Para el Periodo 1973-1980 y Proyecciones 1980-1985," Documento de Trabajo Presentado por CENAC a la XXIII Asamblea Nacional de Camacol, Bogota, October 23-24, 1980.
70. Vernez, op. cit., p. 30 and p. 195.
71. The Bogota Urban Development Study Phase II was undertaken to establish a 1980 plan for the metropolis. In 1972 a survey of 4,674 households was done from which this and other cited results are taken.

72. XIV Censo Nacional de Poblacion y III de Vivienda, Octubre 24 de 1973, Bogota D.E., Bogota, DANE, September 1980, p. 29.
73. Carlos Zorro Sanchez and Edgar Reveiz Roldan, Estudio Sobre los Inquilinatos de Bogota: Segunda Parte, Bogota, CEDE, Document Number 034, June 1976, pp. 46.
74. Ibid, pp. 46, 53, 119, and 128.
75. Edith Guttman S. Centro Historico y Gubernamental de Bogota, Renovacion Urbana: Estudio Socio-Economico de la Poblacion Residente, Proyecto Banco Central Hipotecario: Bogota - Programa Renovacion Urbana, Vol. 2, Obregon, Valenzuela y Cia. Ltda., May 1977.
76. Zorro and Reveiz, op. cit., p. 73.
77. Excluded from consideration is the availability of informal credit from relatives and friends, the availability of which may depend on factors other than the repayment capacity of the household. Also excluded is the cesantia withdrawal program, since it is not a loan plan but involves, instead, using up severance pay allowances.

Annex A: Background Information on Survey of 212 Households

The 26 barrios were drawn from two separate universes of low and very low socio-economic status 1/ subdivisions created either between 1963-1971, or after 1971. These lists were further reduced to exclude barrios for which there was no information on the legal standing of the development at the District Planning Office. In addition, areas of the city with little new low or very low status subdivision formation were eliminated from consideration. Given these two universes, one for each time period, a stratified random sample of 10% of the barrios was extracted from each, reflecting the geographic location, the legal standing and the socio-economic status inherent in the sample frames. From the set of 26 barrios, 13 were eliminated from the household survey sample frame because they were either government-sponsored, had very low lot occupancy (below 50%), or were very small (fewer than 50 dwelling units). Other corrections were subsequently made, and the result was the set of barrios listed in Table A-2. 2/

1/ The classification scheme was developed for the Special District of Bogota by Jairo Arias and reported in "Estudio de Estratificacion de Desarrollo Social," Departamento Administrativo de Planeacion Distrital, n.d. The scheme was based on a points index based on type of dwelling, type of structure, type of construction, level of crowding, availability of public services, and family incomes.

2/ A fourteenth barrio was removed from the list because of community hostility and replaced by another candidate barrio. A fifteenth barrio was removed subsequently because it had already been extensively surveyed in a previous study. The number of barrios to be surveyed was thus reduced to 11. In mid-stream, one of the barrios chosen terminated its links with the survey team before all interviews were completed. Thus a substitute barrio was chosen to complete the requisite number of surveys. This returned the number of barrios to 12. See Table A-2 for the final list and Annex B for a listing of general barrio characteristics.

The number of structures in the surveyed barrios totalled 2433; of these 9% were surveyed. Following the recommendations of local consultants, a decision was made not to take a completely random sample. Instead, given the paramount interest in the characteristics of the different prevailing dwelling types and in the way in which they were modified over time, an effort was made to sample roughly the same number of households in each of several dwelling types across the barrios taken as a whole. Furthermore, in each barrio roughly 20 households were interviewed. This meant, in particular, that the dwelling types surveyed in any given barrio did not necessarily correspond to the distribution in place. In addition, on entering any given barrio, the surveyors carried instructions on which types of units to sample randomly on that particular day, in order to maintain the required structural diversity at the aggregate 12 barrio level. That could result, for example, in the inclusion of only one or two dwelling types in a given barrio, simply because earlier survey work had not managed to uncover enough units with those characteristics in other barrios. Thus the survey cannot be used to characterize the conditions in any one barrio. Finally, and by definition, the survey was not designed to derive means or medians even for the barrios as a whole, except for illustrative and very rough approximations of actual behavior. It is only a felicitous coincidence that the distribution of sampled structure types corresponds in a rough way with the actual distribution of structures in the 12 barrios, as noted in Table A-1. Such a coincidence allows the cited means and/or medians to be taken more seriously than would otherwise be possible, since it can be shown that the different

structure types are associated with a fairly predictable and distinct set of characteristics. 3/ Table A-2 presents a breakdown of actual interviews by neighborhood.

3/ This can be demonstrated from the survey data, even though these suffer from a peculiarity, namely that the bulk of the casalote dwellers are drawn from barrios which have a somewhat higher socio-economic ranking than those from which single story occupants were selected. Thus, for example, the mean household income of tugurio dwellers is 4,400 pesos; for casalote and single-story occupants it is 6,500 pesos; for households living in two-story structures it is 9,300 pesos; and for families found in three-story structures it is 13,900 pesos. For definitions of the underlined terms see Table A-1. For a description of such variables as "income" and "household," see Annex C.

Table A-1

Percentage Distribution of Structure Types: ^{1/}

Survey and Universe

<u>Category</u>	<u>Survey</u>	<u>Universe</u>
Tugurio ^{2/}	14%	16%
Casalote ^{3/}	26%	24%
Single Story	32%	39%
Multi Story	29%	21%

^{1/} These categories are aggregations of yet more carefully differentiated structure types.

^{2/} A shack, usually of very small dimension and intended as temporary shelter.

^{3/} One or two multiple use rooms attached to the wall defining the perimeter of the lot.

Table A-2

Number of Households Interviewed, by Barrio

<u>Barrio Name</u>	<u>DANE Code Number</u>	<u>Households</u>
Quindio Viejo	1318	13
Quindio Nuevo	1399	8
Managua	1406	14
Molinos del Sur	2506	20
Pachon de la Torre	2528	21
Pastranita	4525	21
De Gaulle	4527	21
San Ignacio	5607	21
Prado Pinzon	9105	12
Los Naranjos	9204	20
Rincon	9205	21
Tibabuyes	9209	20

Note: The two Quindio neighborhoods were treated as one during the interview phase, though they are distinct communities with different development patterns. They are separated for purposes of analysis. The number of households surveyed in Managua falls short of that targeted because community resistance prevented completion of the work there; for that reason, some work was undertaken in the Prado Pinzon neighborhood. Molinos del Sur was chosen to replace Las Colinas, which was dropped from the list of communities because it has already been extensively studied.

Annex B: Some General Characteristics of the Surveyed Subdivisions

	AGE	STRA TUM	DIST	LEGAL A	LEGAL 72	WATER	SEWER	POWER	UNITS 77	GROSS AREA	NET AREA	POP DEN-N	POP DEN-G	1 FLOOR	2 FLOORS	3 FLOORS	CASA 77	TUGURIOS 77
Quindío Viejo	4	1	2	3	2	78	0	62	370	20	7	430	300	99	1	0	15	32
Pachon de la Torre	4	1	3	4	2	77	0	73	218	7	5	320	228	99	1	0	27	19
Molinos del Sur	4	2	2	2 ^{b/}	1	62	62	62	541	13	9	400	266	56	42	2	10	1
Rincon	4	2	3	4	2	74	78	64	195	6	5	308	243	82	17	1	25	6
Los Naranjos	4	2	3	3	1	75	0	65	119	4	3	300	225	87	13	0	20	2
Prado Pinzon	4	3 ^{a/}	3	3	1	64	72	64	497	24	18	222	166	76	22	2	20	7
De Gaulle	4	1	3	4	2	0	0	10	88	1	1	508	430	91	9	0	39	9
Managua	5	2	2	3	2	73	0	73	221	8	5	300	170	90	10	0	31	11
Pastranita	5	1	3	3	2	75	0	70	195	5	4	303	236	85	15	0	25	1
San Ignacio	5	2	2	3	1	70	74	68	209	8	6	300	225	85	15	0	30	10
Tibabuyes	5	1	3	4	0	75	0	75	54	2	1	260	175	96	4	0	31	15
Quindío Nuevo	5	1	2	5	3	0	0	0	223	3	2	659	467	99	1	0	1	54

a/ While the Prado Pinzon barrio as a whole is classified as having a middle low status, the area interviewed is a recent nucleus which has an atypical, low status.

b/ While the Molinos barrios as a whole is classified as legal, the area interviewed is a recent nucleus which has been developed illegally.

Notes

Age:

1. Barrios classified as "4" were formed between 1963 and 1971. Those labelled "5" were formed thereafter.
2. Stratum: Barrios labelled "1" are classified as having the lowest socio-economic rank. The ranking runs from "1" to "5".
3. Distance: Barrios labelled as "2" are located at intermediate distances from the CBD (between 1750 and 8750 meters). Those listed as "3" are farther out.
4. Legal A: Provides 1978 status of the barrio before the District's Planning Department. Thus "1" means a minimum norm development; "2" is a legal, standard barrio; "3" defines a barrio being regularized; "4" identifies an unauthorized barrio; and "5" points to a squatter settlement.
5. Legal 72: Presents 1972 status before Planning Commission. "1" is "legal;" "2" is "the process of legalization or regularization;" "3" is illegal; "0" is not applicable.
6. Water, Sewer, Power: List year that the barrio was connected to each network.
7. Units 77: Dwelling units in place in 77.
8. Gross Area, Net Area: Number of 1977 hectares including, then excluding, non-residential uses.
9. Pop Den-N, Pop Den-G: Net and gross population density per hectare, for 1977.
10. 1 Floor, 2 Floors, 3 Floors: Percent distribution adding up to 100, of all conventional housing units.

11. Casa 77, Tugurio 77: Percent of total barrio housing stock that was classified as "casalotes" or "tugurios" in 1977. If the sum of the two is subtracted from "100" the resulting percentage is equal to the proportion of barrio units that are conventional.

Annex C: Definitions of Key Variables Used in the Survey of 212 Households

Though most variables are self-explanatory, some may be subject to confusion:

1. Household: The survey was directed at homeowner households, where household members were defined as that grouping of persons who generally eat their meals together. The word "household" may be, therefore, more all encompassing than the concept of "family" and less inclusive than "dwelling unit inhabitants." In a dwelling unit, there may be several families but only one household, various families living as separate households, or one family which is simultaneously one household.

The survey, itself, was directed at all the members of the homeowner household. Other than recording their presence, other dwellers in a surveyed unit were ignored. That would include, for example, relatives of the household head who might rent an apartment yet eat their meals independently from the targeted household.

2. Marital status: To get around what would be a rather sensitive issue which might produce misleading answers, the categories "legal marriage" and "common law marriage" were merged.

3. Workers: In the original coding of the data on "work force characteristics," information was confined to individuals working outside of the dwelling unit. Self-employed persons working at home were excluded from consideration, their activities being picked up under "income generating uses of the dwelling." In this report, those workers are considered along with all others.

4. Work income and other income: Work income includes that earned from the primary job (with primacy being measured in hours) worked per week. Other income includes earnings from any other permanent job, sporadic work (monthly average), and retirement income (when there is source of work income as well). Excluded from consideration in this category is:

- income from dwelling unit activities, when these are run by another household member;
- income received from other household members.

5. Household member contributions to household head: This includes only pre-established and regular contributions. It excludes sporadic payments to cover unforeseen eventualities.

6. Previous residence status: During the course of the survey work, it became clear that individuals were not always sure if they had been leasees or subleasees. For purposes of analysis, these two categories were considered as one. Usufructuaries were defined as those individuals who occupied a unit without paying rent.

7. Rooms occupied (previous residence): These counts excluded kitchens, and bathrooms. The data refer to households. Thus the reference to shared uses of services applies to other households living in the same unit.

8. Property documents: The word "deed" is more all-encompassing here than it usually the case. It refers not only to a document that is obtained after all legal requisites have been met, but also to any sale-purchase contract in which the property transfer is specified. While the latter has no legal standing, it provides the basis for transactions, past and future, among the types of lower income households that are the object of this survey.

9. Stages of construction: The stages developed during the case study phase of the project differentiated between tugurios, casalotes, one-story structures with and without a next-floor foundation slab, two-story structures with and without slabs, and three-story units. If the surveyed household reached the present dwelling unit configuration by following all the listed stages, then that fact was so recorded. If some stages were skipped, then a notation was made that "only some stages" applied. If any of the construction consisted of only a small modification, then it was listed as "independent rooms."

Much the same can be said concerning the coding of responses to questions on future construction.

10. Area built - number of rooms (last stage): In a few cases, the appropriate answer was "not applicable." This occurred when construction was confined to slabs or the facades of the structures.

11. Number of persons working (last stage): In cases where the reported number of workers is high, it generally reflects the installation of a slab for an additional floor. This type of work is usually done in a day, using very labor-intensive methods.

12. Income-expenditures: Two types of income were recorded:

a. Total income earned from all sources by all family members taken together; and

b. Total household head income, which includes all sources of income controlled by that individual, including monthly contributions by other family members (who nevertheless retain discretionary income for their own use).

All spending totals were expressed in monthly equivalents, to make them comparable with the income data. They reflect expenditures of total household head income. Expenditures on health usually include social security deductions, inflating the total.

Annex D: Selected Characteristics of Roomer Households in Bogota

A. 1972 Bogota (Phase II)

1. Household Size Distribution

Size	1-3	4-6	Over 6	Mean
Status				
Roomers	39.2%	44.6%	16.2%	4.4
All Households	21.1%	46.1%	32.8%	5.7

2. Household Head Age Distribution

Age	30 and under	31-40	Over 40	Mean
Status				
Roomers	35.6%	30.1%	34.3%	N.A.
All Households	18.7%	29.8%	51.5%	N.A.

3. Household Income

Income	1000 or less	1001-2000	Over 2000	Mean
Status				
Roomers	46.4%	41.1%	12.5%	N.A.
All Households	23.05	34.1%	42.9%	N.A.

4. Rental Payments for Renter Households

Rent	0-200 pesos	201-500	501-1000	Over 1000
Status				
Roomers	36.3%	50.9%	10.3%	2.5%
All Households	21.6%	33.3%	20.1%	25.0%

5. Type of Building by Dwelling Choice

Building Type	1- and 2- Family House	Multi-family Building	Rooming House
Status			
Roomers	26.2%	31.1%	42.7%
All Households	74.4%	14.9%	10.7%

6. Mobility by Dwelling Choice

Mobility	Moved in 1971-1972	Non-Mover
Status		
Roomers	53.0%	47%
All Households	32.1%	67.9%

7. Tenancy Type by Dwelling Choice

Tenancy	Owner	Renter	Usufructuary and Other
Status			
Roomer	17.4%	77.3%	5.3%
All Households	51.9%	44.9%	3.2%

8. Dwelling Utilities by Dwelling Choice

Utility Availability	Piped Water Available <u>1/</u>	Electricity Available	Sewer Available
Status			
Roomers	95.3%	95.3%	95.5%
All Households	95.8%	97.1%	95.9%

1/ Within building or dwelling

B. 1978 Bogota (DANE-World Bank)

1. Household Size Distribution

Size	1-3	4-6	Over 6	Mean
Status				
Roomer	40.2%	47.8%	12.0%	4.2
All Households	30.7%	48.5%	20.8%	4.8

2. Household Head Age Distribution

Age	30 and under	31-40	Over 40	Mean
Status				
Roomer	37.9%	25.3%	36.8%	39.0
All Households	23.7%	28.5%	47.8%	41.6%

3. Household Income

Income	Under 4000	4000-8000	Over 8000	Mean
Status				
Roomer	55.2%	25.5%	19.3%	4,999
All Households	24.1%	27.5%	48.4%	13,082

4. Rent Income Ratio for Renter Households

Rent-Income Ratio					Mean
	0-25%	25%-35%	35%-50	Over 50%	
Status					
Roomer-Renters	65.9%	18.2%	6.0%	10.0%	25.9%
All Renter Households	61.2%	17.6%	10.7%	10.5%	28.6%

5. Type of Building by Dwelling Choice

Building Type					
	Apartment	House	Casalote	Under Construction	Tugurio
Status					
Roomer	6.6%	87.3%	29.1%	3.8%	3.0%
All Households	9.5%	77.5%	9.6%	2.3%	1.0%

6. Mobility by Dwelling Choice

Mobility Status	Moved Within Last Year	Non-Mover
Roomer	25.2%	74.8%
All Households	22.3%	77.7%

7. Tenancy Type by Dwelling Choice

Tenure Status	Owner	Renter	Usufructuary
Roomer	17.3%	64.1%	18.6%
All Households	46.6%	47.6%	5.9%

8. Dwelling Quality by Dwelling Choice

a) Roof

Roof Materials Status	Concrete, Cement, Zinc, Eternit Tile, Clay Tile	Vegetable Material or Scrap Material
Roomer	98.6%	1.4%
All Households	97.9%	2.1%

b) Exterior Walls

Exterior Wall Materials Status	Brick, Pre- fabricated	Adobe, Vegetable Material, Wood, Scrap Material
Roomer	93.7%	6.3%
All Households	95.3%	4.7%

9. Dwelling Utilities by Dwelling Type

Status	Has Piped Water	Has Electric Power	Has Sewer Connections
Roomer	95.8%	97.1%	95.7%
All Households	95.5%	99.5%	95.9%

Annex E: Selected Findings from Other Cities

Two surveys of interest have been recently analyzed, using data from Cali and Cartagena. Miguel Urrutia Montoya and Hernando Gomez Duque analyzed the results of a longitudinal survey of an invasion settlement in Cali, the Union de Vivienda Popular, in which between 183 and 186 household histories were collected for the period 1970-1980. 1/ Using 1970 prices, household incomes increased at a rate of 8.7% per annum, from 728 pesos to 1546 pesos. This was accomplished both by increasing the household head income (from 646 pesos to 916 pesos) and by raising the mean number of household workers from 1.33 to 2.10. Public service provision to the households rose dramatically over the period from 0% to 99% for sewer and from 6% to 100% for water. Dwelling quality also improved dramatically. Earthen floors were found in roughly 42% of the units in 1970, but only 9% of the dwellings in 1980; brick walls rose from approximately 45% to 80% of the sampled dwellings. By 1980, 48% of the households had refrigerators, 72% had television sets, and 55% had sewing machines; 1970 ownership rates were not available.

These results suggest rather clearly that fairly dramatic improvements can be expected among lower income homeowner households over time. The poor of yesterday are not typically poor today.

W.P. Strassmann has reviewed dwelling upgrading in Cartagena, utilizing a survey of 293 households drawn from all socio-economic strata and administered in July 1978. 2/ He found households with aggregate

1/ "Los de Arriba y los de Abajo," prepared for the Fundacion para la Promocion de la Investigacion y la Tecnologia del Banco de la Republica, Bogota, September, 1980.

2/ W.P. Strassmann, The Transformation of Urban Housing: The Experience of Upgrading in Cartagena, Baltimore, Johns Hopkins University Press, 1982.

characteristics not unlike those of Cali, and Bogota in the same year. ^{3/} Median incomes totalled 7,500 pesos: 22% earned under 4,000 pesos, the poverty cut-off line defined for Bogota in 1978 in the cited study; these proportions are similar to those uncovered in the capital metropolis. The mean incomes of households living in the unauthorized subdivisions on the periphery are not very different from the results reported for Bogota in this study: 6,700 pesos compared to 7,200 pesos.

Strassmann confirms the importance of housing construction methods that are tell-tale signs of incremental construction in unauthorized subdivisions. Fifty-five percent of the owners reporting said that they had built their units primarily by utilizing mutual aid, self-help, or the subcontracting of workers paid by the household head.

A review of housing types in Cartagena suggests owner-occupied dwellings form part of a continuum similar to that uncovered in Bogota. Thirteen percent were defined as tugurios, with average values of 30,000 pesos and 1 to 3 rooms; these served income groups earning less than 2000 pesos per month. Substandard units, presumably similar to the casalotes of Bogota, had from 2 to 4 rooms, averaged 60,000 pesos in value, and totalled 17% of the stock; the typical incomes of these households is listed as 2000 to 4000 pesos. Neither of these first two types is generally connected to the networks of the public utility companies. Among the conventional housing units, Strassmann identifies minimal units, with 2 to 4 rooms and valued at 120,000 pesos; these units typically have piped water and septic tanks and no longer rely on inferior building materials. Such dwellings number 28% of the

^{3/} See A. Hamer, "Households and Housing: Residential Mobility, Tenure Choice, and Space Consumption in the Developing Metropolis," draft, May, 1981.

stock and cover the typical income range found in the 1978 lower-income homeowner households, 4000 to 8000 pesos per month. Households with incomes in the 8000 to 16,000 pesos range generally lived in the 26% of the units classified as basic. These contained 3 to 5 rooms and had a mean value of 240,000 pesos; piped water and public sewer connections were found in the majority of cases. The remaining 26% of the population lived in intermediate or excellent housing with 4 or more rooms and units averaging 480,000 pesos and above.

Reviewing the upgrading process, Strassmann supports the contention that construction tends to exhibit a high degree of self-financing and a reliance on both paid and unpaid labor:

"In 73.5% of the households ... [home improvements were] done with family resources. Those earning less than 8000 pesos primarily supplied labor themselves ..."

He also stresses the importance of the arrival of public utilities at the lot level, putting primary emphasis on piped water:

"More than any other variable is water correlated with floor space, number of rooms, a kitchen, sanitary facilities, adequate roofing, and superior walls. Insofar as a line of causation from one variable to others exists, it is from water to better materials and fixtures."

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The Johns Hopkins University Press, 1982. 239 pages.

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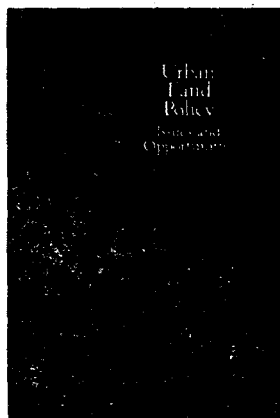
The Johns Hopkins University Press, 1979. 192 pages (including bibliography, author index).

LC 78-8437. ISBN 0-8018-2141-X, Stock No. JH 2141, \$7.50 paperback.

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Harold B. Dunkerley, coordinating editor, with the assistance of Christine M.E. Whitehead
Various authors with experience in

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