REFORMING RENT CONTROL IN NEW YORK CITY: ANALYSIS OF HOUSING EXPENDITURES AND MARKET RENTALS

Joseph S. DeSalvo

July 1971

P-4683

REFORMING RENT CONTROL IN NEW YORK CITY: ANALYSIS OF HOUSING EXPENDITURES AND MARKET RENTALS

Joseph S. DeSalvo*

INTRODUCTION

The purpose of this paper is to present some of the analysis performed in our study of rent control for New York City.** There are two parts to the analysis, both using the same data base, the 1968 Housing and Vacancy Survey, about which more will be said later.

The first component of the analysis attempts to examine housing expenditure patterns of New York City households living in both controlled and uncontrolled dwelling units. This is done by relating housing expenditures to household characteristics by means of linear regression analysis. This part of our work is very much in the tradition of budget studies which have been performed at least since the time of Engel. However, these studies, even the most recent, usually confine themselves to examining the effect of income, and sometimes family size, on expenditures, whereas we are able to examine the effects of other variables as well: age, sex, and ethnicity of household head. Also, our data are better than those used in traditional budget studies: data at the level of the household and dwelling unit rather than one-way or two-way cross-tabulations of expenditures by income and family size.

---

*This paper was prepared for presentation at the Seventeenth North American Meetings of the Regional Science Association in Philadelphia, November 6-8, 1970, and will appear in Vol. 27 of the Papers. The author wishes to thank Ira S. Lowry for improving the exposition of the paper and helping to resolve many issues arising in the course of the research.

Any views expressed in this paper are those of the author. They should not be interpreted as reflecting the views of The Rand Corporation tion or the official opinion or policy of any of its governmental or private research sponsors. Papers are reproduced by The Rand Corporation as a courtesy to members of its staff.

**The complete analysis may be found in Ira S. Lowry, Joseph S. DeSalvo, and Barbara M. Woodfill, *Rental Housing in New York City*, Vol. II: "The Demand for Shelter," The New York City-Rand Institute, R-649-NYC, June 1971.

Our reasons for pursuing this approach were not to provide income elasticities of demand, which are the prime results of budget studies, but, rather, to shed light on two issues relating to rent control and housing policy. The first of these is simply to determine what effect rent control has on a household's expenditures on housing. We are able to provide a partial answer. The second issue concerns the "ability to pay" of households currently living in rent controlled housing. Our analysis is able to show how much these families would likely spend on housing in the absence of rent control. This is an important factor bearing on the cost of modifying rent control and in identifying households who might need public assistance in the absence of control.

The second major component of our analysis attempts to examine the factors determining apartment rentals by relating actual rentals of uncontrolled dwelling units to their physical characteristics. Again, we use the 1968 Housing and Vacancy Survey as our data base and regression analysis as our technique. This type of analysis does not have such a long history as that of budget studies. However, it has been used before, including some applications to housing.* With the aid of this analysis we can assess the contributions of individual dwelling unit characteristics to the market rental, for example, borough location, year built, number of rooms and furnishings, condition of structure, and so on. Furthermore, of particular relevance to a study of rent control, we can determine the market rental of controlled units by applying the estimated relationship obtained using data on uncontrolled units to data on controlled units. As will be seen, this permits us to estimate the tenant subsidy from rent control.

With this brief introduction, we indicated the nature of our analysis of housing expenditures and market rentals. We turn now to a detailed discussion of the analysis beginning with a general description of the data base. After that we take up the analysis of housing

---

*Housing examples include R. N. S. Harris, G. S. Tolley, and C. Harrell, "The Residence Site Choice," *Review of Economics and Statistics*, Vol. 50, No. 2, May 1968, pp. 241-247; J. F. Kain and J. M. Quigley, "Measuring the Value of Housing Quality," *Journal of the American Statistical Association*, Vol. 65, No. 330, June 1970, pp. 532-548.

expenditures and, next, the analysis of market rentals. A concluding section summarizes our findings.

THE DATA

Our data source is the NYC 1968 Housing and Vacancy Survey conducted by the Bureau of the Census under contract to the Office of Rent Control. Its principal purpose was to determine whether vacancy rates in any part of the housing stock had reached a level that would justify decontrol of rent-controlled housing, but the survey schedules included most of the items covered by the 1960 Census of Housing and a few key population characteristics as well. The sampling frame included only living quarters that qualified as housing units under 1960 census definitions, thus excluding inmates of institutions and residents of hotels, rooming houses, and dormitories.

The Bureau of the Census constructed stratified cluster samples for field interviewing. Based on their 1960 vacancy rates, census enumeration districts were assigned to "high vacancy" and "regular" strata within which clusters of either six or nine adjacent units were randomly chosen for interview. A third stratum, similarly sampled, consisted of listings of occupancy permits for buildings completed after the 1960 Census. Altogether, about 36,000 interviews were completed, of which about 22,000 were privately owned, renter occupied units. Weighting each observation by the reciprocal of its probability of selection, the Bureau of the Census estimated the size and characteristics of the universe of households and housing units without reference to external control totals other than the numbers of housing units in the listings comprising each stratum.*

In our analysis of housing expenditures and market rentals, we were unable to use the entire sample for various reasons discussed later. We now turn to discussion of these analyses.

---

*See U.S. Bureau of the Census, "New York City Housing and Vacancy Survey, Sample Design and Estimation Procedure," public release dated August 20, 1965; this is reproduced in Paul L. Niebanck, *Rent Control and the Rental Housing Market in New York City, 1968*, Department of Rent and Housing Maintenance, January 1970. When we refer subsequently to weighting, it will be understood we are using the Census weights, supplied for sample households.

ANALYSIS OF HOUSING EXPENDITURES

Our analysis was based on a selection of 11,461 survey records for occupied rental housing units, excluding those classified as public housing (operated by the New York City Housing Authority) and those classified as Single-Room Occupancy units (lacking full private bath and kitchen facilities). Only records with complete reporting of contract rent expenditures, household income, and certain specified household characteristics were included; the most common reason for rejecting a record was its failure to report household income. We also excluded records reporting household incomes of less than $1,000 or more than $25,000, for reasons discussed below.

All records included in our sample reported contract monthly rent; about 10 percent failed to report the respondent's estimate of tenant-paid utilities, and we estimated these missing components of gross rent.

Using those records for which utilities expenditures were reported, we regressed monthly utilities expenditures on number of rooms, getting the results shown in Table 1.

Table 1

UTILITIES EXPENDITURES AS A FUNCTION OF NUMBER OF ROOMS, CONTROLLED AND UNCONTROLLED HOUSING UNITS IN NEW YORK CITY, 1968

Regression Coefficients and Statistics	Controlled Housing	Uncontrolled Housing
Regression Coefficients ($/month)		
Intercept	6.56	6.94
Number of units	1.19[a]	1.24[a]
Regression Statistics		
t-value for units coefficient	30.09	31.55
Coefficient of determination	0.09	0.13
Standard error of estimate	4.45	4.23
F-value for regression	906[a]	995[a]
Number of observations	9655	6884

[a]Statistically significant at better than the .01 level.

Although these are not particularly good fits, the large F values indicate the regressions are better than using simply the sample means. We think they are reliable enough for our purposes, particularly since utilities expenditures amount to only about 10 percent of gross rent. These equations were used to predict the monthly utility expenditures of households not reporting that expense but claiming it was made. Adding this amount to the reported contract rent produced gross rent.

We transformed the monthly gross rents to annual figures and used these in our analysis. Our independent variables were the following:

1. Gross annual income of the household head and related persons.
2. Number of persons in the household.
3. Ethnic group of the household head.
4. Sex of the household head.

We distinguished only two ethnic categories, "white non-Puerto Rican," and "other," the latter consiting almost entirely of blacks and Puerto Ricans. While there are some a priori grounds for distinguishing blacks from Puerto Ricans, this distinction would have resulted in some small subsample sizes after the market disaggregations described below, and we found in earlier analysis that expenditure differences between blacks and Puerto Ricans were not very great.

Our 11,461 observations were divided into four files, each corresponding to a major housing submarket within New York City. The divisions were by location and control status, as follows:

1. Manhattan, controlled
2. Manhattan, uncontrolled
3. Non-Manhattan, controlled
4. Non-Manhattan, uncontrolled.

For each of these files, regression parameters were fitted separately, although the form of the equation was the same in each case. The regression model has as its dependent variable the ratio of gross annual rent to gross annual income, and the reciprocal of income appears on the right-hand side of the equation as an independent variable. These transformations were made to correct for the substantial heteroscedasticity we found in simple regressions of rent on income -- i.e., the variance of rent expenditures increases as income increases.

Rent-income ratios become extremely large for incomes close to zero, and extremely small for very high incomes. Because regression coefficients are selected to minimize squared deviations from the regression hyperplane, these extreme values would have influenced our results far out of proportion to their empirical significance. To avoid this bias, we excluded from our data file all records with reported incomes below $1,000 or above $25,000.

Household size and age of head are each represented in the regression equation by linear and quadratic terms in order to capture suspected nonlinear relationships with rent-income ratios. Ethnic background and sex of the head of the household are represented by (0,1) dummy variables, as required by the nature of the data. The particular treatment we used requires that differences in rent expenditures between ethnic groups or between male and female household heads be in the form of fixed percentages of income; we experimented with a form that required them to be fixed dollar amounts, but found it less satisfactory.

Table 2 presents the four fitted regression equations in tabular form. The dependent variables estimated by these equations are, once again, rent-income ratios. Because of the inverse and quadratic forms of various independent variables and the differences in their ranges of magnitude, these coefficients are not at all easy to interpret by inspection. To facilitate interpretation, we present transformations of these equations in Table 3. Each equation in Table 2 has been multiplied through by gross annual income, so that the dependent variable in Table 3 is gross annual rent expenditures.

Measures of goodness of fit and reliability of estimation are also given in Table 2. The coefficients of determination measure the proportions of the variance in rent-income ratios that are accounted for by the regression model. Outside Manhattan, our model "explains" over 80 percent of the variance in rent-income ratios; it is less successful in Manhattan, but even in the worst case explains 56 percent of this variance. We suspect that, if the data made it possible to do so, dividing Manhattan into several housing submarkets would greatly increase the explanatory power of the model. We doubt that any added household characteristics would help.

Even at its best, the model does not provide a very reliable estimator for the rent expenditures of individual households. The standard errors of estimate for individual rent-income ratios range from .08 to .12 in the various submarkets. In other words, if the regression equation were used to estimate a rent-income ratio for an individual household, the true value would fall within one standard error of the estimated value with probability two-thirds.* However, where the issue is one of estimating the mean rent-income ratio of any well-defined group of similar households, application of our regression model would be quite helpful. In the non-Manhattan-controlled case, for example, the standard error would be approximately $.08/\sqrt{4470} = .0012$ and similarly for the other regressions. In other words, when we later aggregate our estimates from the sample to the population, we can feel confident in the reliability of the results.

Table 2 also shows the results of significance (t) tests for the individual regression coefficients in each equation; the t scores are shown below their respective coefficients. Out of 28 estimates of the values of these coefficients, only 5 are not significantly different from zero at the .01 level. Thus, the influence of the size of household on rent-income ratios could easily be linear rather than quadratic in form for Manhattan controlled housing; the age and ethnic group of the head of the household may have no influence on rent-income ratios in controlled housing outside Manhattan; and there may be no difference in rent-income ratios between male and female heads of households in uncontrolled housing outside Manhattan.

We turn now to a detailed discussion of the relationship between housing expenditures and family characteristics.

---

*Strictly speaking we should present standard errors of forecast, but, for our large sample sizes, this quantity, which is not a constant but increases for values of the independent variables farther from their means, is approximately equal to the standard error of estimate.

Table 2

RENT-INCOME RATIOS AS FUNCTIONS OF INCOME AND HOUSEHOLD CHARACTERISTICS: FOUR HOUSING SUBMARKETS IN NEW YORK CITY, 1968

Item	Controlled Housing		Uncontrolled Housing	
	Manhattan	Non-Manhattan	Manhattan	Non-Manhattan
Regression Parameters				
Regression constant	.17784	.00917	.14014	.04555
1/(Income in $1,000)	.76638	.90718	1.22022	1.23049
	(54.34)	(114.91)	(33.16)	(110.89)
Number of persons	.01788	.01534	.05846	.01864
	(3.78)	(5.57)	(5.23)	(6.77)
(Number of persons)^2	-.00142[a]	-.00087	-.00636	-.00147
	(-2.34)	(-2.63)	(-3.42)	(-4.53)
Age of household head	-.00536	-.00009[a]	-.00486	-.00147
	(-6.26)	(-0.22)	(-3.40)	(-3.15)
(Age of household head)^2	.00004	.00000[a]	.00006	.00002
	(5.07)	(-0.93)	(3.82)	(4.22)
Sex of household head:				
Male	.00000	.00000	.00000	.00000
Female	.02923	.01004	.03899	.00078[a]
	(5.56)	(3.26)	(4.72)	(0.21)
Ethnic group of household head:				
White non-Puerto Rican	.00000	.00000	.00000	.00000
Nonwhite or Puerto Rican	-.03195	-.00067[a]	-.12650	-.01496
	(-6.10)	(-0.23)	(-11.02)	(-4.23)
Regression Statistics				
Coefficient of determination	.66	.81	.56	.82
Standard error of estimate	.10	.08	.12	.08
Number of observations	2,009	4,470	1,097	3,885

NOTE: t-values are shown in parentheses below their respective regression coefficients.

[a]Not significantly different from zero at the.01 level.

Table 3

GROSS RENT EXPENDITURES AS FUNCTIONS OF INCOME AND HOUSEHOLD CHARACTERISTICS: FOUR HOUSING SUBMARKETS IN NEW YORK CITY, 1968

Component of Annual Gross Rent Expenditure	Controlled Housing		Uncontrolled Housing	
	Manhattan	Non-Manhattan	Manhattan	Non-Manhattan
Basic expenditure for all households	$766.38	$907.18	$1,220.02	$1,230.49
Add, per $1,000 of annual income:				
For all households	177.84	9.17	140.14	45.55
Per household member	17.88	15.34	58.46	18.64
Per (household member)^2	-1.42	-.87	-6.36	-1.47
Per year of age of head	-5.36	-.09	-4.86	-1.47
Per (year of age of head)^2	.04	.00	.06	.02
For female head of household	29.23	10.04	28.99	.78
For nonwhite or Puerto Rican head of household	-31.95	-.67	-126.50	-14.96

Income and Rent Expenditures

When household characteristics are held constant, gross rent expenditures increase with household income, although not so rapidly. Consequently, rent-income ratios characteristically decline as income rises. This is true in all four submarkets, but with differences in the rate at which rent expenditures rise (rent-income ratios fall) as income increases.

Households Headed by White Males. Figure 1(a) shows these relationships for four-person households headed by white males 42 years of age. In the controlled sector, rent expenditures by such households in Manhattan are nearly identical with those in the outlying boroughs over the entire range of incomes, and the rate of increase with income is low: annual rent expenditures increase only by 6 or 7 cents for each additional dollar of annual income. With an income of $5,000, such a household typically spends 23 percent of its income for rent; with an income of $10,000, the proportion drops to about 15 percent.

A family of this type living in uncontrolled housing outside Manhattan typically pays $30-$40 more per month in rent than its counterpart in controlled housing, but the rate at which rent expenditures increase with income is not very different in the two submarkets. Over the entire range of incomes, the tenant of uncontrolled housing pays a larger proportion of his income for rent than does the tenant of controlled housing: about 32 percent at $5,000, falling to 19 percent at $10,000 and 15 percent at $15,000.

Except at very low levels of income, rent expenditures by families of this type living in uncontrolled Manhattan apartments are much higher than those of such families in any of the other three submarkets. For tenants of uncontrolled Manhattan apartments, about 18 cents of each additional dollar of income goes for housing (in contrast to the 6 or 7 cents characteristic of families in the other submarkets). Rent-income ratios are quite high throughout the income range; even at incomes of $20,000, about 23 percent ($400 per month) goes for rent.

Households Headed by Nonwhite or Puerto Rican Males. Figure 1(b) shows the same set of rent-income relationships for a family of four

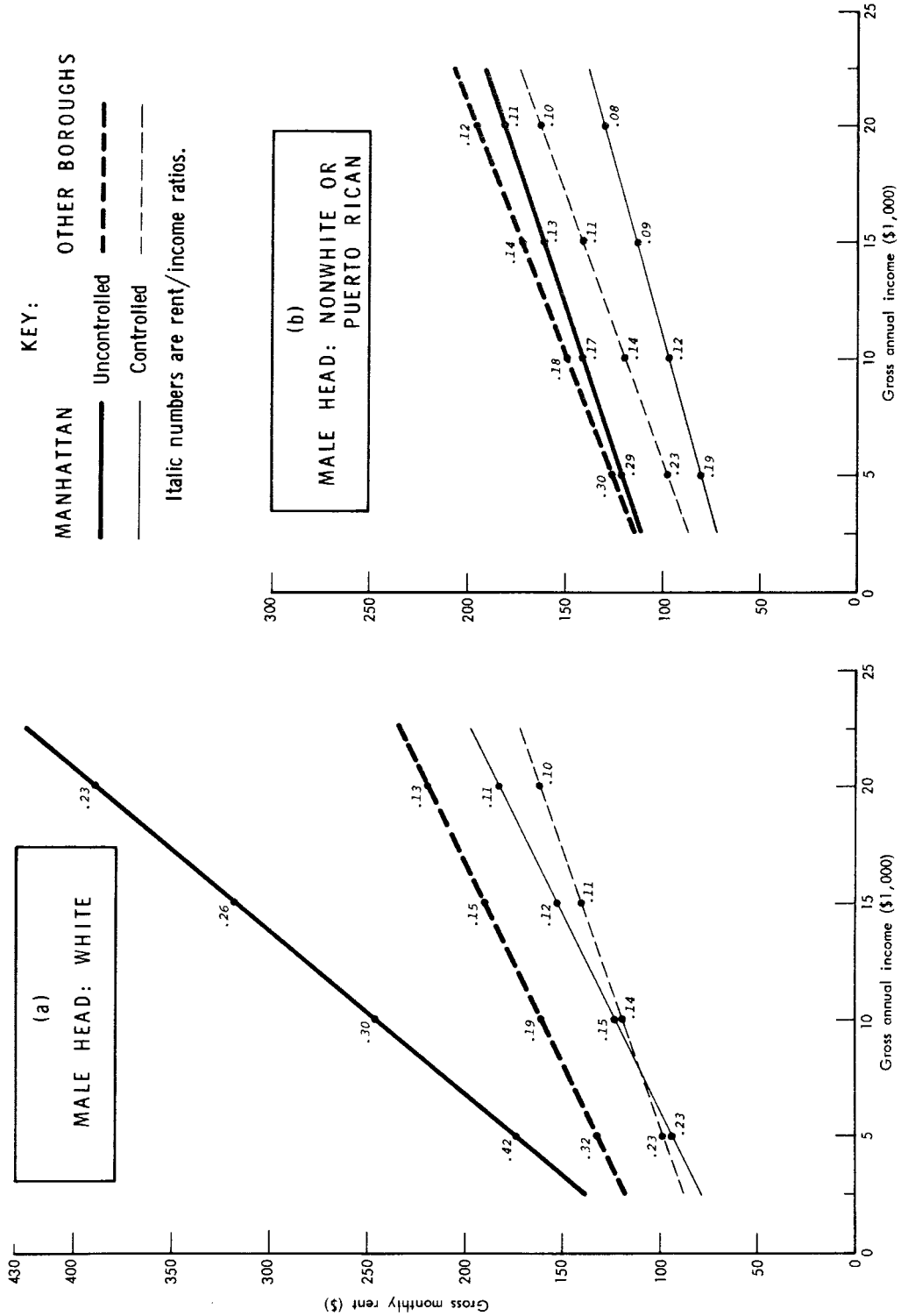

Fig. 1 — Gross rent expenditures as a function of income: four-person households headed by males 42 years of age

headed by a nonwhite or Puerto Rican male, age 42. In other words, this illustrative family differs from that of Fig. 1(a) only in ethnic background. The similarities of these schedules with those of white families are strong, but the differences, too, are striking.

Outside of Manhattan, the rent-income schedules of these ethnic minorities are virtually identical with those of whites for both controlled and uncontrolled housing. For residents of Manhattan, differences emerge. The most striking is that Manhattan nonwhites and Puerto Ricans in both controlled and uncontrolled apartments typically spend less for housing than their counterparts in the other boroughs. Whereas for whites, rent expenditures for uncontrolled housing in Manhattan increase very rapidly with income (18 cents per dollar), for nonwhites and Puerto Ricans, the rate of increase is actually less than for controlled Manhattan housing. In fact, in all four submarkets, housing expenditures by nonwhites and Puerto Ricans increase by only 4 to 7 cents for each added dollar of income.

Households Headed by Females. Figures 2(a) and (b) show rent-income schedules for white and for nonwhite/Puerto Rican households headed by females, but otherwise of the same composition as those represented in Figs. 1(a) and (b), respectively. Outside of Manhattan, these schedules are not significantly different in either level or slope from those for male-headed households. In Manhattan, however, households headed by females, both white and nonwhite or Puerto Rican, tend to spend more on housing at each level of income than their male counterparts. This is true for tenants of both controlled and uncontrolled apartments.

Summary. The basic finding illustrated in Figs. 1 and 2 is that rent expenditures increase with income for each type of family in all four of the City's major submarkets for housing, but rent-income ratios fall as income increases. This finding is quite consistent with a large body of data on consumer expenditure patterns in the United States and hardly requires explanation.

A second unsurprising finding is that tenants of uncontrolled housing almost always pay more than tenants of controlled housing even when

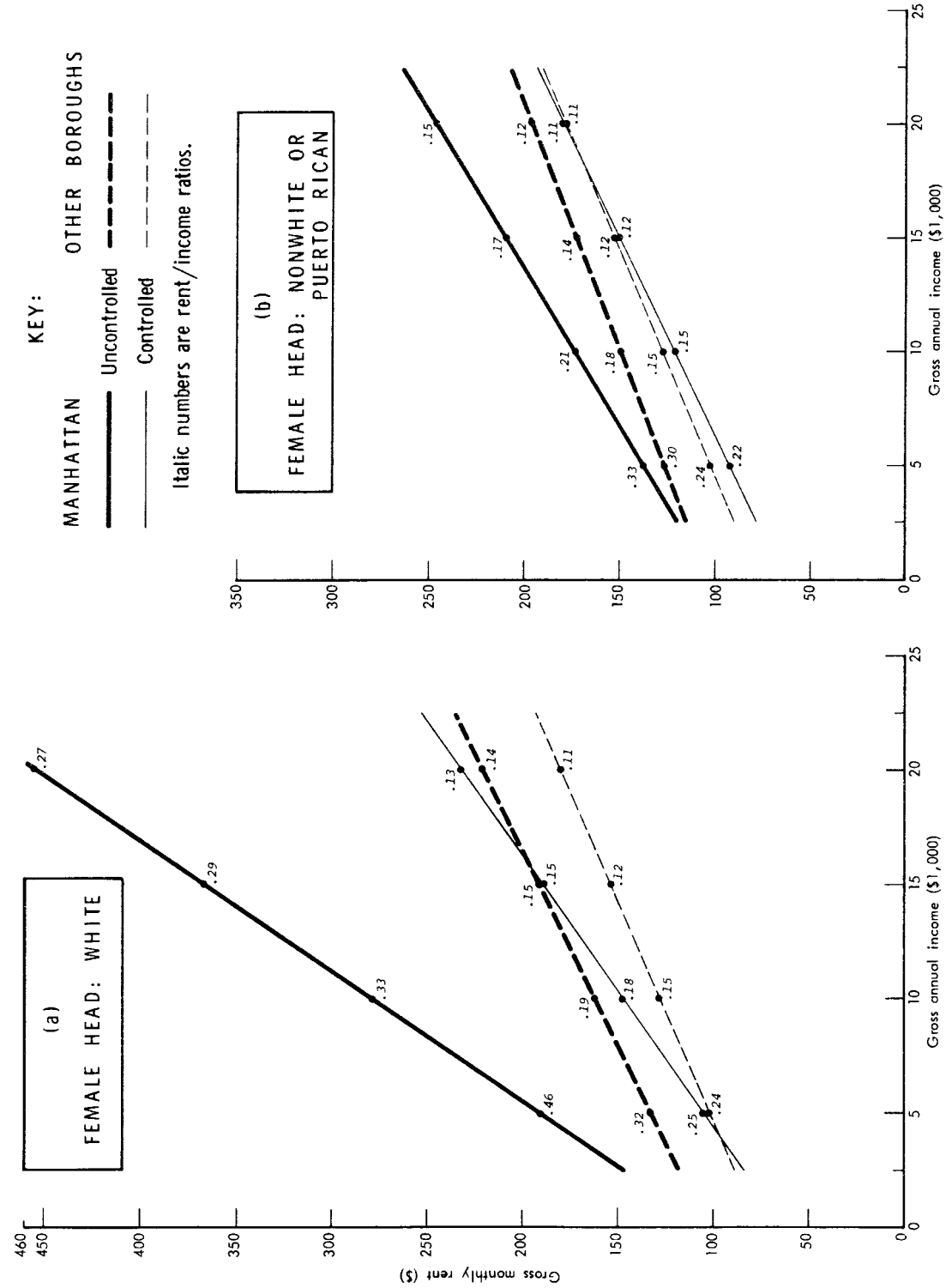

Fig. 2 — Gross rent expenditures as a function of income: four person households headed by females 42 years of age

income, family characteristics, and location are held constant. For all family types, however, the premium for uncontrolled housing is much greater in Manhattan, ranging from about 50 percent to about 100 percent, depending on income and family type. In the outlying boroughs, this premium ranges from about 25 percent to about 40 percent.

We do not mean to suggest that a family living in a controlled apartment gets housing that is equivalent in quality to that enjoyed by a counterpart family living in uncontrolled housing. Generally speaking, the controlled housing is older and less well-maintained. Evidently, however, its low rent makes it an acceptable substitute. Our finding does seem to suggest that controlled housing is a considerable bargain, especially in Manhattan.

Perhaps the most surprising discovery is that in all four housing submarkets, at every level of income, nonwhites and Puerto Ricans spend less for housing than their white counterparts. We cannot say from these data whether the housing they occupy is equivalent in quality to that occupied by their white counterparts, but if, as we suspect, it is worse housing, it also costs substantially less.

Another striking feature of Figs. 1 and 2 is that the ethnic group and sex of the household head affects the rent-income ratio much more strongly in Manhattan than in the outlying boroughs. The four household types may be ordered by rent expenditures at any arbitrarily chosen level of income, as shown in Table 4 for incomes of $5,000. Whites spend more than nonwhites and Puerto Ricans; females spend more than males.

Outside Manhattan, there are faint traces of this same ordering, but all four figures display rent-income schedules of roughly the same heights and slopes, with about the same differentials between tenants of controlled and uncontrolled housing.

Size of Household and Rent Expenditures

Figures 1 and 2, discussed above, showed rent-income relationships for four-person households. That household size was arbitrarily chosen for illustrative purposes; it is in fact larger than the average for renter households in any of the four submarkets. At other household

Table 4

COMPARISON OF TYPICAL RENT EXPENDITURES BY ETHNIC GROUP AND SEX OF HOUSEHOLD HEAD: MANHATTAN, 1968

Ethnic Group and Sex of Household Head	Controlled Housing		Uncontrolled Housing	
	Annual Rent Expenditure	Rent-Income Ratio	Annual Rent Expenditure	Rent-Income Ratio
White				
Female	$1,273	.25	$2,285	.46
Male	1,127	.23	2,090	.42
Nonwhite or Puerto Rican				
Female	1,113	.22	1,652	.33
Male	967	.19	1,457	.29

NOTE: All entries are for four-person households with annual incomes of $5,000 and whose heads are 42 years of age.

sizes, the rent-income schedules would have the same general configuration, with slight differences in the slope of the lines. Here, we will hold income and other household characteristics constant and examine the influence of household size on rent expenditures.

Figure 3(a) shows the schedules of typical rent expenditures for households of various sizes headed by white males, 42 years of age, with annual incomes of $5,000. For tenants of controlled housing, rent expenditures at each household size are about the same whether the household lives in Manhattan or in an outlying borough. The basic outlay for a one-person household is about $1,000 annually or $80 to $85 per month. This sum increases by about $5.50 per month when a second person is added, $4.50 for a third person, $3.60 for a fourth, and so on.

While the space required to accommodate two persons at a given level of comfort is not really much greater than that required by a single person, further increases in household size do call for added space. It is perhaps surprising to find that, all other things equal, a family of five typically spends only $17 per month more than a person living alone. We think that this result reflects two factors.

First, these schedules assume the same income ($5,000) for all

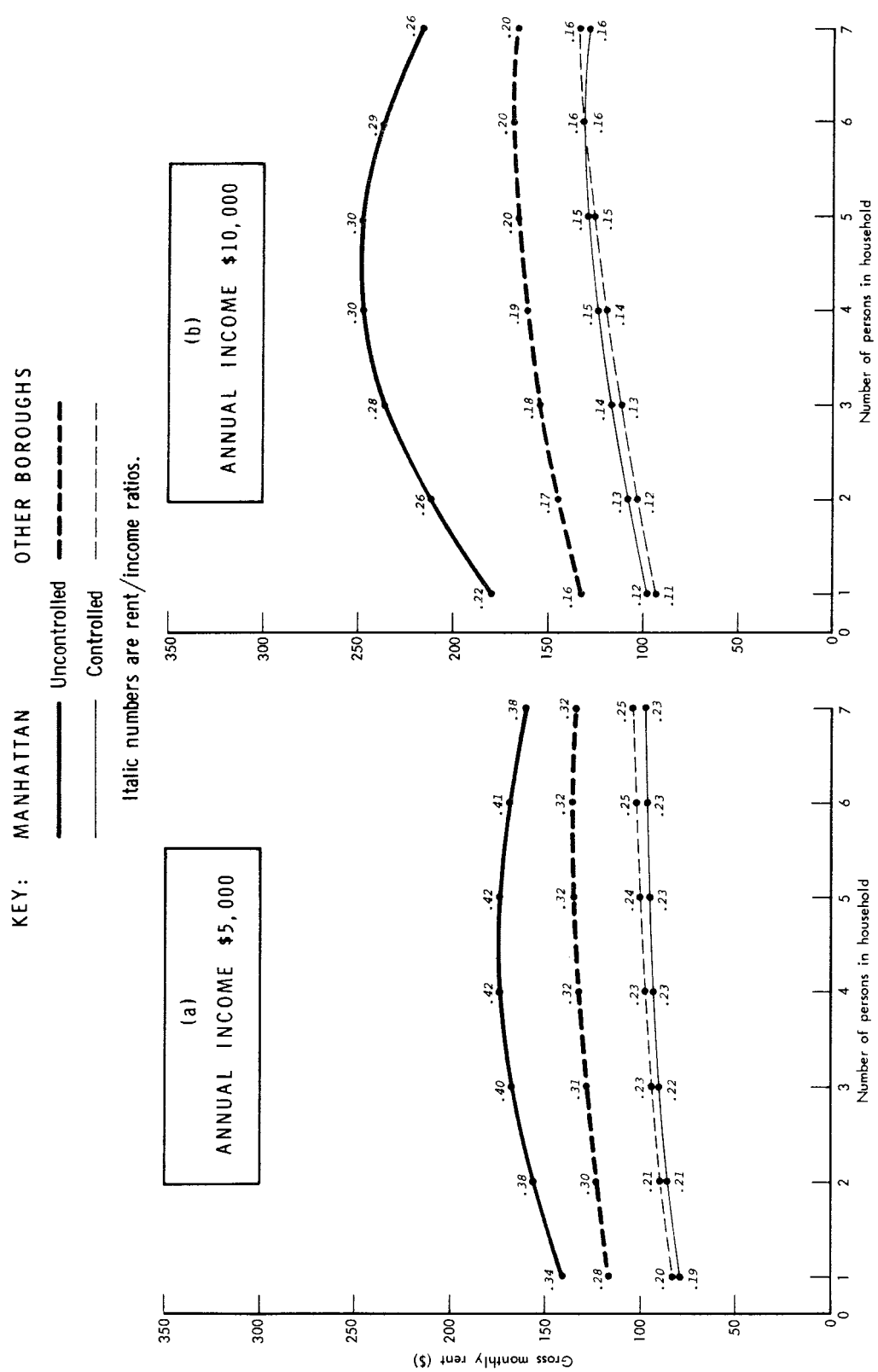

Fig. 3 — Gross rent expenditures as a function of household size: households headed by white males 42 years of age

sizes of household. The larger family's added requirements for food, clothing, etc. militate against diversion of a greatly increasing share of a fixed budget to housing as family size increases. More space can often be obtained without much increase in rent by choosing accommodations that are inferior in other respects. Second, in the controlled sector, the relationship between apartment size and rent is likely to be particularly weak inasmuch as the relative ceiling rents of different apartments depend more on their histories of tenant turnover than on their relative desirability as living accommodations.

The second explanation loses force, however, when we consider the relationship between rent expenditure and household size in uncontrolled housing outside Manhattan. At every family size, the tenants of uncontrolled housing typically pay about a third more than tenants of controlled housing, but the amount of the increase in rent expenditures as persons are added to the household is just as small in this sector of the uncontrolled market as in the controlled sector. Only for tenants of uncontrolled apartments in Manhattan are the marginal monthly outlays significantly larger than the $5.50, $4,50, $3.60 sequence described above. Even here, they are surprisingly modest: $16.40, $11.10, and $5.80 for the second, third, and fourth members, respectively. The peak outlay in this sector of the market is by families of four to five persons; larger families typically spend less.

As Fig. 3(b) shows, these patterns are not unique to families of modest income. With annual incomes of $10,000, families of every size in every submarket typically spend more than their counterparts with incomes of $5,000, but the marginal outlay for each added family member remains modest. A family of five persons spends about $33 per month more than a person living alone, except for tenants of uncontrolled housing in Manhattan, where the differential is $68.

Age of Household Head and Rent Expenditures

The rent-income relationships shown in Figs. 1 and 2 are for households headed by a person 42 years of age, slightly below the average for tenants of uncontrolled housing and about 6 years less than the

average for tenants of controlled housing. Again, the choice of some other age would not have changed the basic configuration of the schedules shown in Figs. 1 and 2, although the slope of each schedule would have been somewhat altered.

We now examine directly the relationship between age of household head and rent expenditure, holding income and other household characteristics constant. Fig. 4(a) shows the rent-age relationship for two-person households headed by white males with annual incomes of $5,000. (A two-person rather than a four-person household was used for this illustration because there are very few four-person households at the extremes of the age-distribution.)

Outside of Manhattan, the age of the head of the household has very little effect on rent expenditures by families of a given size and income. For residents of Manhattan, age has a more visible relationship to rent expenditures. The form of the relationship differs for tenants of controlled and uncontrolled housing. For the latter group, the young and the old typically pay more than those of middle age. In controlled housing, rent expenditures decline consistently with age.

As Fig. 4(b) shows, this pattern holds for prosperous families as well as those of modest means. The only submarket in which the age of the household head makes a substantial difference in rent expenditures is the controlled market in Manhattan. An explanation offers itself: the older families in controlled housing, if they have not moved for many years, pay especially low rents because the primary mechanism for raised ceiling rents has been the tenant turnover provision. But if we accept this explanation, we must also note that it barely applies to tenants of controlled housing in the outlying boroughs; while rent expenditures do decrease with age of head in that submarket, the decrease is very slight.

Effects of Rent Control on Housing Expenditures

In this subsection, we try to estimate the extent to which rent control has influenced aggregate housing expenditures in New York City. We do this by assuming that tenants of controlled housing spend as much

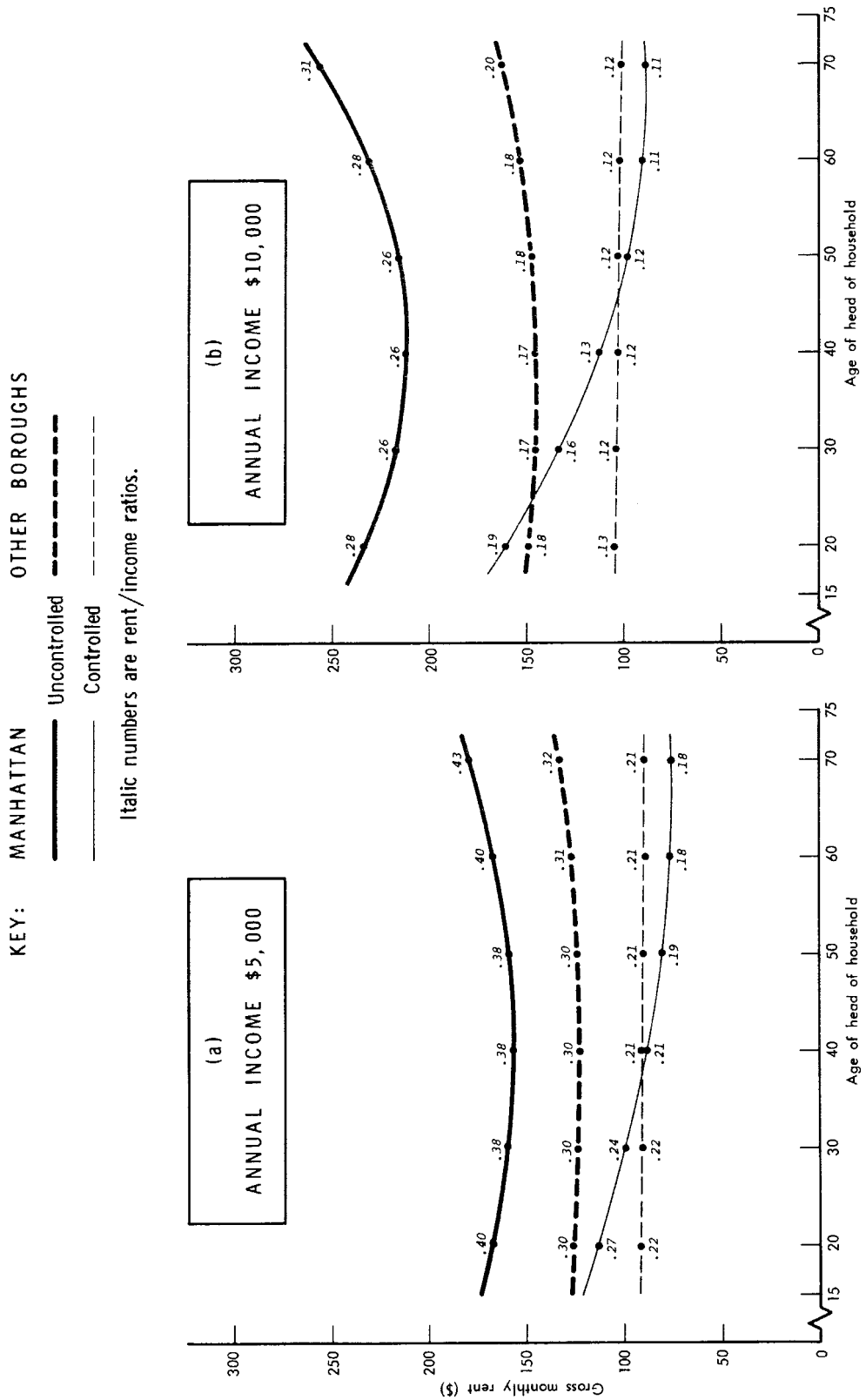

Fig. 4 — Gross rent expenditures as a function of age of head: two-person households headed by white males

on rent as their "uncontrolled" counterparts, matched on location, income, and family characteristics. In aggregate, how much would their housing expenditures then increase?

To make this calculation, we have taken the regression equations discussed previously, fitted to the observed expenditure behavior of "uncontrolled" tenants in Manhattan and in the other boroughs, and applied them to the observed incomes and family characteristics of a sample of 6,479 "controlled" tenants in those same locations.* This procedure yields the hypothetical rent expenditure of each controlled household in the sample: an estimate of the amount that the household would have spent for housing if its expenditure behavior had been the same as that of a similar household in the uncontrolled sector.

We then compared this estimate with the actual rent expenditure by that household for the controlled housing it occupied at the time of the survey. We interpret the difference as an estimate of the rent increase that the family would have tolerated if deprived of access to housing priced below its market value and offered housing equivalent in location, size, and quality to the housing occupied by its counterpart family in the uncontrolled sector.

Note that this counterpart housing might be better or worse in particular respects than the family's present quarters. In general, it was likely to be a smaller but better maintained unit in a newer building. Note also that the procedure assumes that by statistically controlling on location; income; household size; and age, sex, and ethnic background of the household head, we have captured all of the variables that systematically and substantially differentiate the housing expenditure preferences of New York City's residents, except for

---

*These households lived in controlled housing for which they paid cash rent. We chose only those records for which household income; household size; the age, sex, and ethnic background of the head of the household; and the household's gross rent expenditures were reported. We included cases in which contract rent was reported but utility payments were not; as explained above, we estimated utility payments for these cases. The records selected represented 708,000 households, about 57 percent of all households paying cash rent for controlled housing units. In nearly all cases, the records rejected lacked only data on income or age of head, items on which response was poor.

random differences in tastes or in constraints on expenditure not reflected in gross income.

Table 5 summarizes the results of this procedure, grouping sample households by income. The results are graphed in Fig. 5. The hypothetical and actual rents shown for each income group are mean values for households in that group. As one would expect, mean gross rents reported by these households increase with income, quite regularly for incomes up to $9,000, less regularly thereafter. Mean hypothetical rents computed for each household are substantially greater than reported rents at every level of income. The differences increase with income, from about $40 per month for families with incomes below $5,000 to about $280 per month for families with incomes over $25,000. Expressed as percentages of reported rent, the differences also generally increase with income, from a low of 44 percent for incomes under $4,000 up to 130 percent for incomes of $25,000 or more. These differences can be interpreted as the percentage rent increases that households in each income group could tolerate, on average, without exceeding the rent expenditures of their counterparts in the uncontrolled sector.*

To get another perspective on these data, we have divided the sample households into two groups: residents of Manhattan and residents of other boroughs. Within each group, Table 6 compares hypothetical and reported rents by ethnic background and sex of the household head.

Among white households, we find large differences in mean hypothetical rents, ranging from $218 for Manhattan households headed by males to $122 for households in other boroughs headed by females. Mean reported rents are much lower, but follow the same pattern of variation. Among nonwhite and Puerto Rican households of each type and location, variations in mean values of hypotehtical and reported rents are comparatively small and there is less difference ($25 to $34) between hypothetical and reported rents of each group than is the

---

*For incomes under $6,000, this interpretation is clouded by the fact that about 30 percent of these households are welfare recipients whose budget allocation between housing and other goods is determined by the Department of Social Services.

Table 5

COMPARISON OF HYPOTHETICAL AND ACTUAL RENTS PAID BY TENANTS OF CONTROLLED RENTAL HOUSING, BY INCOME OF TENANT: NEW YORK CITY, 1968

Annual Income	Gross Monthly Rent (weighted mean)			Difference as Percent of Reported Rent
	Hypothetical	Reported	Difference	
Under $1,000	$109	$ 68	$ 40	58.8
$1,000-1,999	112	75	36	48.5
2,000-2,999	118	82	36	44.5
3,000-3,999	121	84	37	44.2
4,000-4,999	128	87	41	47.5
5,000-5,999	136	89	47	53.1
6,000-6,999	143	95	48	50.1
7,000-7,999	150	99	50	50.7
8,000-8,999	157	103	54	52.3
9,000-9,999	161	100	61	61.3
10,000-10,999	176	116	60	52.3
11,000-11,999	182	111	71	64.6
12,000-12,999	195	121	75	62.0
13,000-13,999	185	112	73	64.5
14,000-14,999	204	111	93	83.7
15,000-19,999	237	136	100	75.1
20,000-24,999	305	147	158	107.4
25,000 or more	500	217	283	130.5
All households	146	94	52	54.9

NOTE: Based on sample of 6,479 households paying cash rent for controlled housing units. Differences and percentages were computed before rounding.

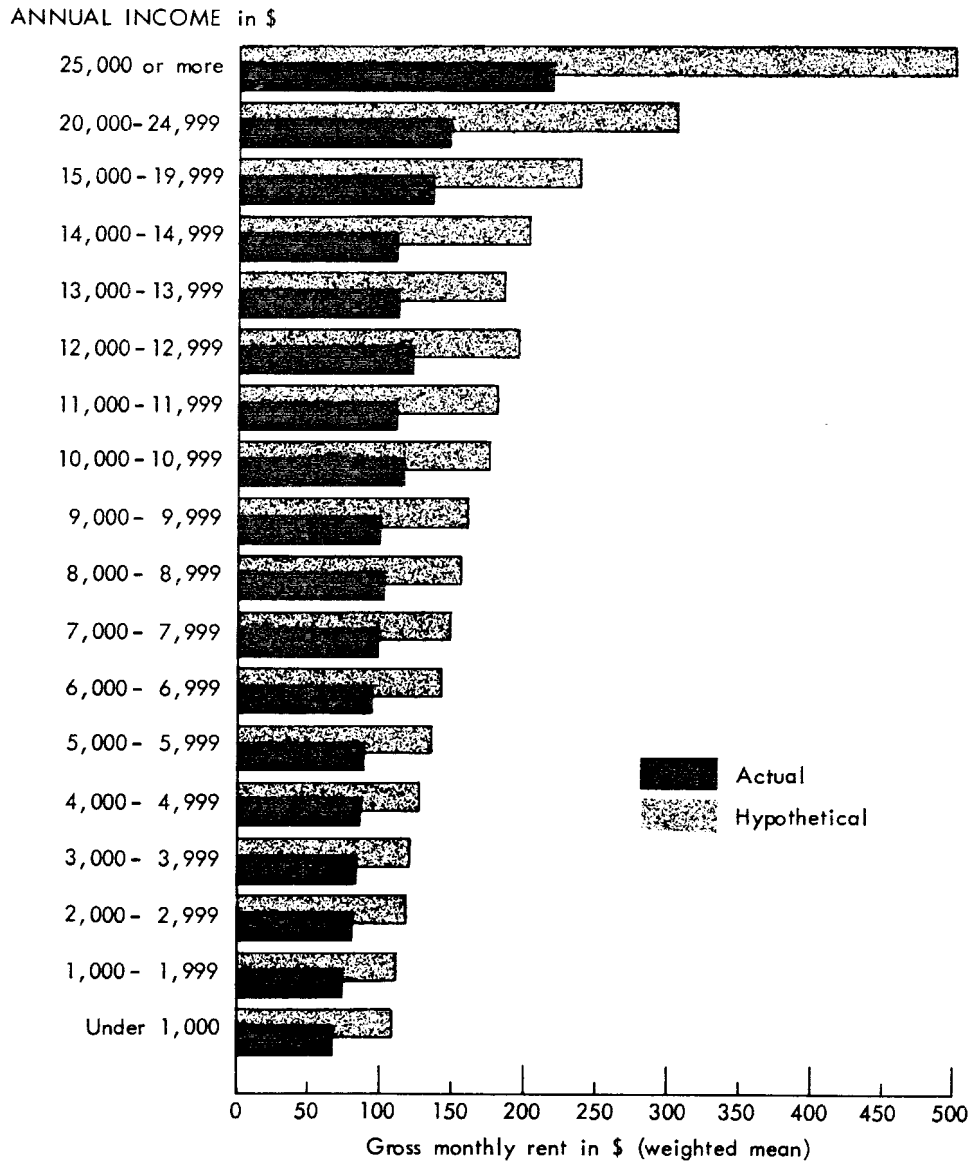

Fig. 5 — Comparison of hypothetical and actual rents paid by tenants of controlled housing, by income of tenant: New York City, 1968

Table 6

COMPARISON OF HYPOTHETICAL AND ACTUAL RENTS PAID BY TENANTS OF CONTROLLED HOUSING, BY ETHNIC GROUP AND SEX OF HOUSEHOLD HEAD: MANHATTAN AND OTHER BOROUGHS, 1968

Average[a] Gross Monthly Rent, by Ethnic Group of Household	Manhattan		Non-Manhattan	
	Male Head	Female Head	Male Head	Female Head
White Non-Puerto Rican				
Hypothetical rent	$218	$176	$144	$122
Actual rent	114	102	96	82
Difference	104	74	49	39
Percent of actual rent	*91.2*	*72.5*	*51.0*	*47.6*
Nonwhite or Puerto Rican				
Hypothetical rent	$116	$120	128	$117
Actual rent	82	83	91	92
Difference	34	36	37	25
Percent of actual rent	*41.5*	*43.4*	*40.7*	*27.2*

[a]Arithmetic means of sample observations, each observation weighted by its sample expansion factor.

case among white households.

These data imply that white households now living in controlled housing could tolerate rent increases ranging from 48 to 91 percent of their present rents without exceeding the rent expenditures of similar families now living in uncontrolled housing. For nonwhites and Puerto Ricans, the tolerable rent increases, by this standard, range from 27 to 43 percent. The differences reflect mostly the higher average incomes of white households, particularly those living in Manhattan. They also reflect the willingness of white households to spend a greater fraction of their incomes for housing than is the case for nonwhite and Puerto Rican households.

As noted above, our sample represents only about 57 percent of the parent population. The next step was to generalize our findings to include the remaining 43 percent of all households paying cash rent for controlled housing. To do this, we computed from our sample the arithmetic mean of both hypothetical and actual rent expenditures for each of the eight groups distinguished in Table 6, and assigned these mean values to the corresponding groups in the parent population. We chose these particular groups because reporting on location (Manhattan, non-Manhattan) was complete and reporting on sex and ethnic background of the head of the household was nearly complete.*

Multiplying the mean rental values assigned to each group by the number of households in that group, we estimated the total hypothetical rent expenditure in 1968 by tenants of controlled housing ($2,175 million) and the total actual rent expenditure ($1,406 million). In other words, judging by the budgetary behavior of families living in uncontrolled housing, those living in controlled housing were underspending by about $769 million annually.

Our procedure for generalizing from the sample data assumes that, within each of the eight groups, households failing to report income, age of head, or other pertinent information, were not systematically

---

*These two items were reported for about 97 percent of all households paying cash rent for controlled units; we allocated the remaining 3 percent among our eight household groups.

different in these respects from households reporting on these items. One check on this assumption is a separate tabulation of actual rent expenditures for almost all rent-paying households living in controlled units that were included in the Housing and Vacancy Survey's sample.* This tabulation yielded an annual gross rent expenditure of $1,408 million, negligibly different from the total of $1,406 million obtained by the stratified mean-value method described above.

ANALYSIS OF MARKET RENT

Our analysis of the factors determining the market rents (including tenant-paid utilities) of housing units in New York City is based on a sample of 6,747 units in multiple dwellings and 2,403 units in one- and two-family houses. These observations were drawn from the unit-record file of the 1968 Housing and Vacancy Survey, including only those uncontrolled units that were privately owned, occupied at the time of the survey by tenants paying cash rent, and for which all pertinent building and unit characteristics were recorded. Of the building and unit characteristics recorded by the survey, the following were found to have systematic relationships to market rent:

Multiple Dwellings

- Borough of location
- Type of structure and/or year built (e.g., old-law, new-law, post-1929, etc.)
- Condition of structure (sound/not sound)
- Number of units in structure (by class interval)
- Number of rooms in unit (1 to 7, 8 or more)
- Furnished/unfurnished
- Story of unit (1 to 6, 7 or higher)
- Elevator/no elevator
- Number of stories in structure (1 to 6, 7 or more)

*About 92 percent of these households reported gross rent, and virtually all reported contract rent; for those reporting contract rent but not gross rent, we estimated utility expenditures to derive their gross rents. See above.

One- and Two-Family Houses

Borough of location
Year built
Condition of structure (sound/not sound)
Resident/nonresident owner
Number of rooms in unit (1 to 7, 8 or more)
Furnished/unfurnished

The dependent variable was gross monthly rent, i.e., the sum of contract rent and utility expenditures reported by the tenant. In about 8 percent of the cases, utility expenditures by the tenant were indicated but the amount was not reported; we estimated these amounts using the empirically based relationship between utility expenditures and number of rooms per unit discussed earlier.

Estimating Market Rents for Multiple Dwelling Units

Because most multiple dwellings built before 1947 are subject to rent control, our sample of uncontrolled rental units is heavily weighted with buildings of more recent vintage, as shown in Table 7.

Table 7

DISTRIBUTION OF SAMPLE MULTIPLE DWELLING UNITS BY BUILDING TYPE

Type of Structure and Year Built	Number of Units	Percentage Distribution
Multiple dwelling, 1960-1968	4,732	70.1
Multiple dwelling, 1947-1959	1,278	18.9
Multiple dwelling, 1930-1946	31	0.5
New-Law tenement, 1901-1929	291	4.3
Old-Law tenement, 1900 or earlier	173	2.6
1-2 family house converted to apartments[a]	242	3.6
Total	6,747	100.0

[a]Includes a small number of miscellaneous Class B (transient) dwellings.

Given our intention to use the rent equation fitted from these data for estimating the market rents of controlled units, this characteristic difference in building age is unfortunate. Along the same lines, we should note that 97.5 percent of the units in our sample were reported to be "sound" structures, leaving about 172 observations of other-than-sound condition; in the controlled sector, deteriorated and dilapidated units account for about 29 percent of the total. With respect to the remaining seven physical characteristics, neither sector is so specialized as to raise problems of comparability.

By using dummy (0,1) variables to represent each type of structure shown above, we are able to make explicit the rental premium or discount associated with each type even though it may be represented in the sample by relatively few units. By including post-1947 multiple dwellings in the sample -- housing that is not directly relevant to the problem of assessing the value of pre-1947 controlled dwellings -- we are able to get enough observations on characteristics other than structure type to greatly buttress our estimates of the market values associated with such features as location and size of unit.

We should also note that the 737 multiple dwelling units in our sample that were built prior to 1947* are necessarily decontrolled units that may differ significantly from controlled units of the same age, condition, size, location, etc. Most decontrolled multiple dwellings fall into one of two classes: units renting for $250 or more in 1960 and units substantially altered by structural renovation. To some extent, these peculiarities may be accounted for by other variables in our estimating equation: location, size of unit, condition of structure. But there is doubtless a residual bias in allowing these units to "stand" for pre-1947 vintage.

After considerable experimentation, testing each result for explanatory and predictive power, as well as for ease of interpretation, we arrived at the regression equation shown in tabular form in Table 8. Fitted by the method of least squares, the equation "explains" about

---

*This figure includes "Conversions and Class B" structures, whose vintage, while pre-1947, is not more exactly determinable.

Table 8

MARKET RENTAL VALUE OF HOUSING UNITS IN MULTIPLE DWELLINGS AS A FUNCTION OF PHYSICAL CHARACTERISTICS: NEW YORK CITY, 1968

Characteristic of Unit or Structure	Amount added to Gross Monthly Rent	t-value of Coefficient
All units	$ -4.05[a]	----
Location of building:		
Bronx	9.27[c]	1.38
Brooklyn	12.83	1.96
Manhattan	109.41	16.83
Queens	23.14	3.58
Richmond	0.00	----
Type of structure and year built:		
Multiple dwelling, 1960-1968	41.89	8.33
Multiple dwelling, 1947-1959	21.91	4.17
Multiple dwelling, 1930-1946	97.07	7.29
New Law tenement, 1901-1929	21.28	3.56
Old-Law tenement, 1900 or earlier	-29.05	-4.13
1-2 family house converted to apartments[b]	0.00	----
Number of rooms and furnishings:		
Per room, unfurnished	41.87	54.54
Per room, furnished ($41.87 + $6.67)	48.54	4.21[d]
Condition of structure:		
Sound	23.08	3.74
Deteriorating or dilapidated	0.00	----
Number of units in structure:		
1-9 units	-45.44	-5.75
10-19 units	-29.24	-3.87
20-49 units	-6.12[c]	-1.54
50-99 units	-7.87	-3.57
100 units or more	0.00	----
Number of stories in structure:		
Per story, 1-6 stories	8.86	-3.90
7 or more stories	-51.18	-3.74
Story of unit and presence of elevator:		
Per story, 1-6 stories, no elevator	-10.69	-6.03
Per story, 1-6 stories, with elevator (-$10.69 + $12.40)	1.71	7.03[e]
7th or higher story (with elevator)	26.50	7.79

[a] Regression intercept.

[b] Includes a few miscellaneous Class B (transient dwellings).

[c] Not significantly different from zero at the .05 level (t value less than 1.96 numerically).

[d] t value refers to $6.67 which is amount added per furnished room.

[e] t value refers to $12.40 which is amount added per story for elevator

51 percent of the total variance of gross rent about its mean value; the standard error of estimate is $68 compared to a mean gross rent of $192. All but two of the estimated regression coefficients are statistically significant at the .05 level.

The signs and magnitudes of the regression coefficients shown in Table 8 strike us as generally reasonable and consistent with our intuitive perceptions of how people value particular characteristics of a dwelling place. All other things equal, they pay more for larger apartments, and more for furnished ones, more for those in sound buildings, and less for those in older buildings.* Apartments on upper floors carry a premium only if the building has an elevator.

The variations in rent by borough also fit our perception of the popular ranking of the boroughs as places to live: Manhattan, Queens, Brooklyn, Bronx, and Richmond in that order.

Within boroughs, we have no direct measures of locational advantage, but common observation suggests that tall buildings with many units are most commonly found in central locations. As Table 8 show, rents tend to <u>decrease</u> with number of stories and <u>increase</u> with number of units, suggesting that the preferred configuration is a large, low-rise building, such as those lining the Grand Concourse in the Bronx. Whether these preferences relate to the characteristics of the building itself or to the kind of neighborhood in which it usually occurs is hard to say.

The three variables that loom largest in determining the market rents of individual apartments are borough of location, type and age of structure, and number of rooms in the apartment itself. The first two (like all the minor variables except furnishings) are assumed by the

---

*For only one type and age of structure is the coefficient anomolous. The highest premium ($97) is associated with units in multiple dwellings built between 1930 and 1946, more than twice the premium associated with post-1960 buildings ($42). Our sample contained 31 units in buildings of 1930-1946 vintage, almost all of which were located in large structures in Manhattan. The apartments are large and the buildings are in sound condition; they were obviously decontrolled under the provision of the 1964 amendment that allowed decontrol for apartments whose rents were greater than $250 per month. Their tenants in 1968 were white, with middle-to-high incomes. This seems to be a case in which older buildings are simply better designed and more solidly constructed than newer ones.

regression model to affect rental value independently of apartment size: the borough and structure-type premiums are expressed per unit, not per room. Since fully 65 percent of the sample units had either three or four rooms, this assumption is fairly serviceable. The regression coefficient attached to "number of rooms," however, is more troublesome.

All other things equal, we found that each room (unfurnished) adds nearly $42 to gross rent, a marginal cost that is not permitted by the regression model to change with apartment size. We were bothered, however, by the apparently contrary evidence of simple cross-tabulations of gross rent per unit by size of unit. These tabulations, which do not standardize on other characteristics of the unit, seem to indicate that rent does not vary regularly with number of rooms. Consequently, we undertook a special regression analysis of the sample data, one designed to be more sensitive to variations in apartment size while controlling, as before, on other physical characteristics. In this analysis, each apartment size of two or more rooms was treated as a dummy variable whose fitted coefficient was unconstrained by the values of the coefficients of other apartment sizes. The results, not presented here, confirm the $42 per room finding for units with 2 to 6 rooms, which is the empirically relevant range.*

Estimating Market Rents for One- and Two-Family Houses

The estimating equation for market rents of units in one- and two-family houses is based on data for 2,403 privately owned renter-occupied units of this type whose tenants paid cash rent, units that were either decontrolled or never subject to control.

Our sample of uncontrolled units in one- and two-family houses differs from the multiple-dwelling sample in consisting predominantly of pre-1947 structures (57 percent of the total). Most of these pre-1947 units were once under rent-control; unlike units in multiple dwellings, they were subject to decontrol when a vacancy occurred. As a consequence

---

*See Lowry, DeSalvo, and Woodfill, op. cit., for a complete discussion of this point.

only 62,000 such units were still under rent control in 1968.

Table 9 shows the coefficients of the regression equation fitted to these data by the method of least squares. The equation "explains" only 42 percent of the total variance of gross rents about their mean value, but the standard error of estimate is only $32, compared to a mean rent of $132. All of the regression coefficients except that for furniture are significantly different from zero at the 5-percent level, but sampling variability could account for the differences between the coefficients for location in the Bronx and in Brooklyn, as well as the differences between Brooklyn and Queens.

It is noteworthy that the locational premiums for these units are quite similar to those for units in multiple dwellings (see Table 8). So are the premiums associated with age of structure, insofar as the two data-sets are comparable. The premium for sound condition is much lower for houses than for multiple dwellings. What is most striking, however, is the relatively low value of space in houses as contrasted with apartments: $15 vs. $42 per room. We think this reflects, more than anything else, the typically less central locations of one- and two-family houses.

Estimating Market Rents for Controlled Housing

To estimate the market rental values of controlled housing units, the regression equations presented in Tables 8 and 9 were applied to the 1968 Housing and Vacancy Survey's sample of such units, excluding from the test those that were unoccupied or for which the unit record failed to report either controlled gross rent or any of the physical characteristics needed to employ the formulas. Those with complete records represented about 1,056,000 of the City's 1,179,000 occupied controlled units in multiple dwellings and 54,700 of the City's 63,000 occupied controlled units in one- and two-family houses, excluding in both cases units whose tenants paid no cash rent. For each unit, the estimated market rent was compared with the actual controlled rent, with the results shown in Table 10 by type of structure and in Table 11 by location. The same results are shown graphically in Figs. 6 and 7.

Table 9

MARKET RENTAL VALUE OF HOUSING UNITS IN ONE- AND TWO-FAMILY STRUCTURES AS A FUNCTION OF PHYSICAL CHARACTERISTICS: NEW YORK CITY, 1968

Characteristic of Unit or Structure	Amount Added to Gross Monthly Rent	t Values of Coefficients
All units	$ 33.68[a]	----
Location of building:		
Bronx	7.71	2.31
Brooklyn	13.39	4.50
Manhattan	153.22	16.01
Queens	18.79	6.43
Richmond	0.00	----
Year built:		
1960-1968	39.39	24.83
1947-1959	28.37	14.85
1946 or before	0.00	----
Number of rooms and furnishings:		
Per room, unfurnished	14.74	27.71
Per room, furnished ($14.74 + $.78)	15.52[b]	0.74[c]
Condition of structure:		
Sound	6.16	2.66
Deteriorating or dilapidated	0.00	----
Residence of owner:		
Owner in structure	-6.31	-4.13
Owner not in structure	0.00	----

[a] Regression intercept.

[b] Not significantly different from "unfurnished" at the .05 level (t value less than 1.96 numerically).

[c] t value refers to $.78 which is amount added per furnished room.

In about 81 percent of the cases, the estimated market rent was greater than the reported (controlled) rent; in about 19 percent of the cases, the reported rent was larger. With rare and transient exceptions, one would not expect to find tenants paying higher-than-market rents. However, our market rent estimating formulas are far from infallible; we take these cases to be instances in which the estimated market rent was too low. If there were in fact no systematic differences between market rents and controlled rents, one would expect half our estimates of market rent to be greater than the reported rent and half to be smaller. The differences shown in Fig. 6 would then be normally distributed about mean zero.

Interestingly enough, this was almost precisely the case for units in "Conversions and Class B" structures and for units in one- and two-family houses. Over 80 percent of the first group are units in one- and two-family houses converted to apartments, perhaps the least desirable housing in the City. The units in the second group are the residuum of a much larger class of pre-1947 houses, units that have remained under rent control because of continuous occupancy by a pre-1953 tenant.

For units in all other types of structure, estimated market rents tended to exceed reported rents; for units in post-1929 multiple dwellings, estimated market rents exceeded reported rents in more than 98 percent of the cases, with a median difference of more than $100 per month. Overall, the median difference between estimated market rents and reported (controlled) rents was $48 per month and the arithmetic mean was $54. In other words, our analysis supports the general belief that in 1968 controlled housing was a substantial bargain for its tenants.

Altogether, we were able to make this comparison for sample units representing 1,110,673 out of a total of 1,239,000 controlled housing units occupied by tenants who paid cash rent. With our coverage so nearly complete, we could safely generalize to the full universe without resorting to complex stratifications. We simply computed the weighted arithmetic means of market rents and actual rents, separately for multiple dwellings and for one- and two-family houses, and multiplied these means by the numbers of units in the appropriate population.

Table 10

DISTRIBUTION OF CONTROLLED HOUSING UNITS BY ESTIMATED DIFFERENCE BETWEEN MARKET RENT AND CONTROLLED RENT, BY TYPE OF STRUCTURE: NEW YORK CITY, 1968

Difference between Market Rent and Controlled Rent	Number of Units by Age and Type of Structure					
	Multiple Dwellings 1930-46	New Law Tenements 1901-29	Old-Law Tenements 1900 or Earlier	Conversions and Class B Structures[a]	One- and Two-Family Houses	All Types
Market rent greater than controlled rent:						
$100 or more	85,828	137,423	34,177	4,274	210	261,912
75-99	28,745	63,367	24,433	4,771	1,460	122,776
50-74	14,714	97,726	31,238	7,733	2,290	153,701
25-49	5,420	135,234	29,995	11,480	8,100	190,229
1-24	835	108,718	31,938	16,150	12,990	170,631
Controlled rent equal to or greater than market rent:						
0-24	868	57,840	26,201	17,301	18,340	120,550
25-49	511	17,776	15,498	11,570	8,840	54,195
50-74	314	3,418	9,104	6,001	1,730	20,567
75-99	209	584	3,104	4,210	210	8,317
100 or more	313	1,252	1,689	4,021	520	7,795
Totals	137,757	623,338	207,377	87,511	54,690	1,110,673
Median difference	> + $100	+ $48	+ $38	+ $1	-$3	+ $48

NOTE: Medians calculated by linear interpolation within rent-difference groups.

[a]"Conversions" are one- and two-family houses converted to apartments; Class B structures are transient accommodations.

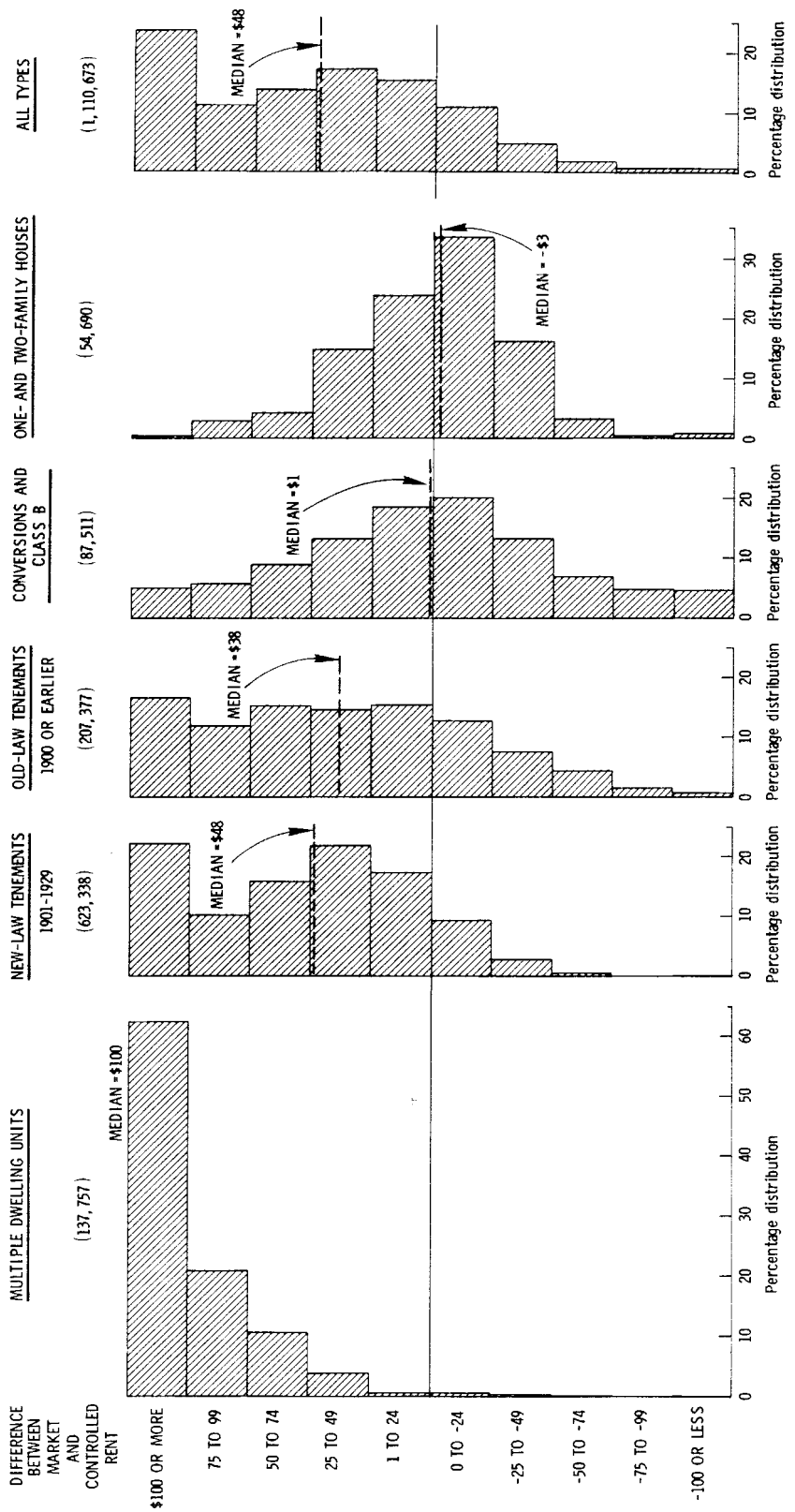

Fig. 6 — Percentage distribution of controlled housing units by estimated difference between market rent and controlled rent, by type of structure: New York City, 1968

Table 11

DISTRIBUTION OF CONTROLLED HOUSING UNITS BY ESTIMATED DIFFERENCE BETWEEN MARKET RENT AND CONTROLLED RENT, BY BOROUGH: NEW YORK CITY, 1968

Difference between Market Rent and Controlled Rent	Number of Units by Borough					
	Manhattan	Queens	Brooklyn	Bronx	Richmond	All NYC
Market rent greater than controlled rent:						
$100 or more	172,319	27,841	26,348	35,394	0	261,902
75-99	46,724	19,294	31,449	25,089	210	122,766
50-74	40,553	21,567	50,586	40,881	104	153,691
25-49	30,429	21,396	77,595	59,871	938	190,229
1-24	21,807	19,275	74,274	54,883	382	170,621
Controlled rent equal to or greater than market rent						
$ 0-24	15,753	14,128	54,194	35,670	785	120,530
25-49	8,732	6,356	24,470	14,527	100	54,185
50-74	4,794	1,671	10,391	3,292	419	20,567
75-99	2,337	168	4,499	1,313	0	8,317
100 or more	2,562	0	3,982	1,251	0	7,795
Totals	346,010	131,696	357,788	272,171	2,938	1,110,603[a]
Median difference	+ $100	+ $53	+ $27	+ $36	+ $11	+ $48

NOTE: Medians calculated by linear interpolation within rent-difference groups.

[a]Total number of units is 70 less than total in Table 10 due to rounding in calculation of differences for one- and two-family houses.

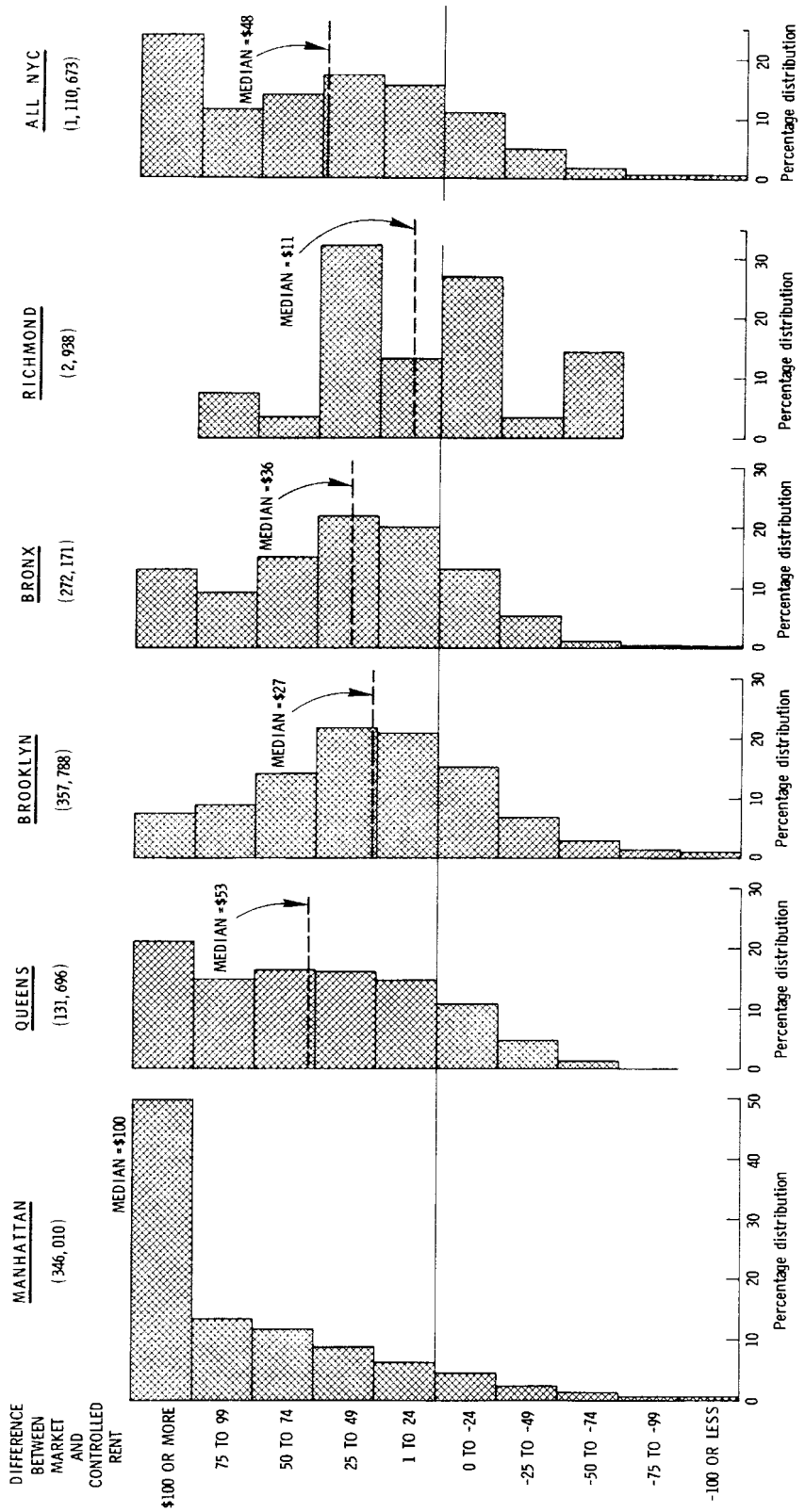

Fig. 7 — Percentage distribution of controlled housing units by estimated difference between market rent and controlled rent, by borough: New York City, 1968

We estimated by this method that the aggregate annual market rental value in 1968 of the 1,239,000 controlled units whose tenants paid cash rent was $2,209 million. Controlled rents for the same units amounted, on an annual basis, to $1,402 million.* In other words, tenants of rent-controlled housing were subsidized to the tune of about $807 million per year, roughly $650 per family.

As we have noted, many aspects of housing quality and building service that are likely to differ between controlled and uncontrolled housing cannot easily be measured and are not included in our market rent estimating formulas. We are inclined to think that the omission of these factors introduces a bias in our analysis, leading to an overestimate of the market value of controlled housing and therefore of the rent-savings enjoyed by its tenants. But even a very generous allowance for bias would not reverse the conclusion that in 1968 controlled housing in New York City was priced well under its market value. If this were not so, rent control would have no function.

SUMMARY

Multiple regression analysis of the relationships between rent expenditures, incomes, household sizes, and the age, sex, and ethnic background of household heads gives insight into the pattern of rent expenditures. We have applied this technique to four distinct submarkets for rental housing: Manhattan uncontrolled, Manhattan controlled, non-Manhattan uncontrolled, and non-Manhattan controlled. Otherwise comparable families spend substantially different amounts for housing in each of these submarkets because the prices at which comparable housing is offered in the four submarkets differ substantially. Families choosing a particular submarket adjust their housing budgets and the type and quality of housing they consume to fit the price structure of that market.

There may, of course, be many more than four distinguishable housing

---

*Alternative methods of expanding the sample data yield slightly different results. Our best estimate of annual gross rent expenditures in 1968 by tenants of controlled housing is $1,408 million. See above.

submarkets within the City. Other evidence indicates, for example, that the prices of comparable housing in each outlying borough differ perceptibly, though their differences are not nearly so dramatic as the distinction between housing in Manhattan and that in outlying boroughs. Even within a borough, neighborhood housing markets may be distinguished. We are confident, however, that the four submarkets named are the most important for broad policy analysis.

Although household characteristics, particularly the sex and ethnic background of the household head, account for some differences in the pattern of housing expenditures in each submarket, income is the variable of greatest importance. Outside Manhattan, differences in household income account for 81 percent of the observed variance in rent-income ratios for tenants of both controlled and uncontrolled housing. In Manhattan, the corresponding figures are 62 percent for controlled housing and 48 percent for uncontrolled housing. Once the four submarkets are distinguished, inclusion of variables other than income does not add much to the explanatory power of the model in any submarket except Manhattan uncontrolled housing, where another 8 percent of the variance is explained by household characteristics other than income, primarily the ethnic background of the household head.

Of the four basic household types distinguished in our analysis, families headed by white males are the most numerous among renter households in New York City, accounting for almost 60 percent of the total. Those living in controlled housing, whether in Manhattan or elsewhere, typically have rent-income ratios that are quite low by traditional standards, tending to exceed .25 only at incomes below $4,000. At incomes of $7,000 or more, the typical rent-income ratio for such households is less than .20. Rent-income ratios for households headed by nonwhites and Puerto Ricans are still lower.

High rent-income ratios are in fact characteristic only of very poor households and of white households living in uncontrolled Manhattan apartments. Among the poor, many are welfare clients whose rent allowances are set independently of their allowances for other consumption goods; for these cases, a high rent-income ratio is not a sign that the family is depriving itself of goods or clothing in order to pay for shelter.

The high rent-income ratios borne by white residents of uncontrolled Manhattan apartments could be avoided by these families if they were willing to move to one of the outlying boroughs. Their counterparts in uncontrolled housing outside Manhattan pay about half as much in rent. If some families choose to pay the stiff Manhattan premium, it is presumably because they consider the extra rent outlay a reasonable price to pay to avoid the out-of-pocket costs and rigors of commuting.

In estimating the extent to which rent control has influenced aggregate housing expenditures, we found that the 1,238,900 households living in controlled units spend $1,406 million annually on housing and that this amount would increase to $2,175 million were these families to live in uncontrolled housing. In other words, judging by the budgetary behavior of families living in uncontrolled housing, those living in controlled housing could tolerate an increase in rent of about $769 million annually, or about $620 per household on average.

Our analysis of market rentals provided functions relating rental to housing characteristics for units in multiple dwellings and for one- and two-family houses. For multiple dwellings, we found, all other things equal, more rent is commanded for larger apartments, and more for furnished ones, more for those in sound buildings, and less for those in older buildings. Apartments on upper floors carry a premium only if the building has an elevator. Manhattan location commands the greatest rent, followed by Queens, Brooklyn, Bronx, and Richmond. Rents tend to decrease with number of stories and increase with number of units. For one- and two-family houses, we found locational premiums similar to those for units in multiple dwellings as well as premiums associated with age of structure. The premium for sound condition is much lower for houses than for multiple dwellings and so is the premium on number of rooms.

Applying our market rent relationships to controlled units yields estimates of the rents these units would command if offered on the uncontrolled market. Despite the generally lower quality of controlled housing, it is a substantial bargain to its tenants in the sense that the rents they pay are typically well below the rents that their housing could command in an unregulated market. We estimate that the total

annual subsidy to tenants of rent-controlled housing is roughly $800 million, an average of $650 per unit.

It is interesting to note that our estimate of aggregate hypothetical rent ($2,175 million annually) is quite close to the estimate of the market rental value of controlled housing units ($2,209 million annually). In other words, our analysis indicates that if tenants of controlled housing were to pay the full market rents on the dwellings they occupy, they would, on average, be paying about the same as their counterparts who live in uncontrolled housing. The implication is that tenants of controlled housing consume neither substantially more nor substantially less housing than similar families who live in uncontrolled housing; the principal difference is that "controlled" tenants pay considerably less than the market value of the housing they consume.