ECONOMIC CONSEQUENCES OF FREEWAY DISPLACEMENT TO RESIDENTS RELOCATED UNDER THE 1968 AND 1970 RELOCATION PROGRAMS

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Various studies have been made to determine the consequences to residents who were displaced by freeways and relocated under federal and state programs superseded by the 1968 and 1970 versions. Since the 1968 and 1970 relocation programs have provided relocatees with considerably more relocation assistance in terms of both services and payments, a study was needed to evaluate the effectiveness of such programs in reducing the adverse effects on residents displaced by freeways. A survey was made of 171 urban relocatees in 2 major urban areas in Texas to obtain facts and opinions concerning their freeway displacement experiences. The study revealed that more than two-thirds of the relocatees upgraded their housing, most of them doing so voluntarily. The extent of upgrading of housing by relocatees caused a significant increase in housing costs, and replacement housing payments did not cover adequately the increased costs. The extent to which relocatees upgraded their housing varied significantly with selected characteristics of relocatees. Relocatees who originally lived in substandard housing tended to move into standard or above-standard replacement housing. This paper compares findings of this study with those of former studies that dealt with the same subject.

•PRIOR to the acceleration of the urban renewal and road-building programs of the late 1950s, residential displacees were given very little relocation assistance. However, concern for those faced with relocation by governmental agencies dates back into the 1940s (3). Yet the historical governmental attitude toward displacement had been to pay owners fair market value for their properties and let them solve their own relocation problems (7, p. 2). This meant that displaced renters did not receive any money, even through a property settlement, to help cover relocation costs. In recent years, the government has changed its attitude as numerous persons, governmental and nongovernmental, have noted that benefits are not necessarily received by the same people who bear the costs of a project. The traditional attitude has been tempered by concern for the general good of society and the protection of minorities. Persons forced to relocate shouldered an unequal share of the social costs of governmental programs, causing an unfair redistribution of wealth or resources (2, p. 1). Government programs such as those that provide transportation facilities generate costs and benefits for both users or nonusers of those facilities. A divergence between private costs or benefits for users and social costs or benefits for both users and nonusers has been identified by economists (13, p. 183; 8, p. 215). Some economists say that supplementary government programs, such as relocation programs, have been enacted into law to help correct this apparent inequity.

The first relocation program passed by the Congress was authorized by the Federal-Aid Highway Act of 1962 that required the provision of certain relocation services and authorized the payment of up to $200 in moving expenses to each household displaced by federal-aid highway programs. However, moving payments were made only in states that legally authorized them. After passage of the 1962 Act, the Congress and federal agencies initiated several studies that dealt with various facets of the relocation problem (2, 5, 17, 18, 19, and 20).

1968 AND 1970 RELOCATION PROGRAMS

Perceiving a need for other types of relocation payments, the Congress passed the Federal-Aid Highway Act of 1968 that required a payment for actual moving expenses or a combined schedule payment and dislocation allowance of up to $300, a supplemental housing payment of up to $5,000 for long-term owner-residents and $1,500 for tenant-residents and short-term owner-residents, and a payment for miscellaneous expenses necessary to transfer the property to the governmental agency making the purchase. Also required by the 1968 Act were expanded relocation services that provided relocatees with current price and rental information on available replacement housing.

More recently, Congress passed the Uniform Relocation Assistance and Real Property Acquisition Act of 1970 that expanded the scheduled moving payment and displacement allowance to $500 and the supplemental housing payments to $15,000 for long-term owner-residents and to $4,000 for short-term owner-residents and tenant-residents. Also, the 1970 Act required the payment for increased interest expenses resulting from a change in mortgages and payment for incidental expenses incurred in the purchase of a replacement home. The 1970 Act further expanded the required relocation services offered to all residents displaced by federal-aid programs.

Both the 1968 and 1970 Acts required that residents relocate into "decent, safe, and sanitary" housing to qualify for the supplemental housing payments. Also, both Acts required that the supplemental housing payment be based, in part, on the price or rent of property "comparable" to that taken from the relocatee. The Federal Highway Administration's definition of a comparable replacement dwelling contains 9 requirements. They include size, quality, location, availability, and financial considerations.

A search of the literature revealed that only one study had been made to determine some of the effects of highway displacement to residents relocated under the 1968 relocation program (12). Only a limited determination of the economic effects of relocation was made in that study. No studies have been made of residents relocated under the 1970 relocation program. However, some studies were conducted to make economic evaluations of previous federal and state programs. One of these studies was conducted in Dallas in 1961 (1), when Texas had no relocation program that provided financial assistance to relocatees. Another study summarized the findings of 33 housing relocation surveys conducted prior to 1964 (10). Two of these surveys dealt with highways. The last study of the impacts on residents relocated under prior relocation programs was conducted in Ohio during 1971 (6).

Perceiving the need to assess the effectiveness of the 1968 and 1970 relocation programs in reducing the adverse economic effects on residents displaced by freeways, a study was conducted by the Texas Transportation Institute under the sponsorship of the Texas Highway Department (THD) and the Federal Highway Administration. Both the 1968 and the 1970 federal relocation programs were fully implemented in Texas (16, p. 396). This paper reviews the results of this study.

OBJECTIVES OF STUDY AND RESEARCH PROCEDURES

The objectives of the study were to determine the extent to which

1. The owner and tenant relocatees voluntarily and involuntarily upgraded their housing;
2. The payments received by relocatees were adequate to cover all compensable costs required to obtain replacement housing;
3. The changes in housing costs affected the financial status of owner and tenant relocatees; and
4. The different economic effects identified by the study varied by selected characteristics of relocatees.

Data were obtained from the THD records and from relocated residents through personal interviews. THD personnel helped to canvass freeway projects in urban areas to determine which would qualify for study. To qualify, a project was required to meet the following criteria: have residential relocatees that were relocated after April 1, 1969; have relocatees displaced from low-valued housing; be located in a city with a population of more than 200,000 people; and be in a city that had a considerable number of qualified residential relocatees.

As a result of this canvass, several projects located in 2 Texas cities, Austin and Houston, were selected for study. The original design called for a random sample of 240 relocatees, 120 owner-residents, and 120 tenant-residents, which met the following qualifications: vacated property taken for right-of-way after April 1, 1969; occupied property taken for right-of-way at least 90 days prior to the first date of negotiation for property; occupied a property that was a whole taking; occupied a dwelling or apartment unit valued by the THD at not more than $15,000 in residential use; and occupied a single-family residence if owner or any type of residence if tenant. The resulting number of relocatees qualifying was considered too small to sample; thus, all were included in the study.

The number qualifying for study consisted of 251 relocatees, 107 owners, and 144 tenants. Of that number, 187 (75 percent) relocatees were available for interview. The other 64 (25 percent) were not available for interview for various reasons. We do not know to what extent the results were biased by the exclusion of those not available for interview, but we assumed that this group had characteristics and experiences very similar to the group interviewed. Of those available for interview, 16 were rejected because their household composition changed in such a way as to make it almost impossible to make before-and-after comparisons. Therefore, the remaining 171 relocatees, 85 owners, and 86 tenants, who availed themselves for interviews formed the sample for study.

Objective 1

Objective 1 called for a determination of the extent to which relocatees voluntarily or involuntarily upgraded their housing. Economic, quantity, and quality measures were used to make the upgrading determination of whether each relocatee's housing had been upgraded. The economic measure was based on the market value of the original and replacement dwellings. In the case of original tenants, monthly rents were used for the original and replacement dwelling value comparisons. If the relocatees changed tenure, estimated purchase prices or rents of replacement dwellings were generated through the use of gross rent multipliers (11, pp. 48-49; 4, pp. 990-991). For the quantity measure of upgrading, 12 selected physical characteristics of the original and replacement dwellings were compared. These characteristics were type of construction, age of dwellings, size of dwelling, number of rooms, number of bedrooms, number of bathrooms, type of heating, type of cooling, automobile storage, driveway material, type of street, and size of lot. For the quality measure of upgrading, the opinions of the relocatees were used. These 3 independent measures of upgrading were compared to determine the extent of disagreement among them.

The next task under objective 1 was to establish whether a respondent relocatee who had upgraded his housing did so voluntarily or involuntarily. Since a relocatee was required to purchase or rent a replacement dwelling that met the decent, safe, and sanitary (DS&S) standards in order to obtain relocation housing payments, he may have upgraded his housing involuntarily. Also, even though the relocatee's original dwelling was DS&S, the fact that the THD established a value for comparable replacement dwelling higher than that for the original dwelling would indicate that he may have upgraded his housing involuntarily. For the above reasons, a relocatee who upgraded his housing, in economic terms, to the extent that the value of his replacement dwelling was higher than the value set on his original dwelling but not more than the value established on the comparable replacement dwelling was classified as one who involuntarily upgraded his housing. On the other hand, if the value of his replacement dwelling was higher than the value of the comparable replacement dwelling, he was classified as one who voluntarily upgraded. Then the data were aggregated into groups according to those who failed to upgrade, those who voluntarily upgraded, and those who involuntarily upgraded to reveal significant statistical differences and relations between the original and replacement housing values (9, 14).

Objective 2

To accomplish objective 2, a comparison was made between compensable relocation payments received and corresponding relocation costs incurred to obtain replacement housing. The essential difference between the relocation payment and the relocation cost measures of value used in this analysis is that the payments were based more or less on comparable values established by the THD whereas the costs were based on actual expenses obtained from the relocatees. In other words, the payments were constrained not only by the maximums established by law but also by the maximums set by comparable values. However, the moving and increased interest payments were limited not by comparable values but by other criteria. Relocatees were given 2 alternatives in claiming moving expenses. They could claim actual moving expenses up to 50 miles from their original dwelling, or they could accept payment under a scheduled payment up to $300, based on room count, plus a relocation allowance of $100 under the 1968 program or $200 under the 1970 program.

The interest payment made by the THD was based on the lesser size and the shorter term of the remaining mortgage loans on the original and replacement dwellings. Also, the interest rate of the replacement loan had to be greater than that of the original loan. Therefore, the difference in the series of monthly payments between the original and the replacement loans was determined. Such a difference was due only to a higher interest rate. Then the present worth of that series of differential monthly payments was obtained by discounting it at the rate of interest paid on savings accounts by commercial banks in the area. A 4.5 percent discount rate was used by the THD in all of these computations involving eligible respondent relocatees who had original and replacement loans.

TTI researchers computed the interest cost to respondents who had a mortgage on both their original and replacement dwellings by determining the net worth of the difference between the monthly payments of the original mortgage at the actual interest rate versus a 4.5 percent alternative investment rate and by determining the net worth of the difference between the monthly payments of the replacement mortgage at the actual rate versus the 4.5 percent alternative rate. The difference between these 2 net worth values was called the actual interest cost or saving. This value could be positive or negative, which meant that it was possible to save interest in the process of changing mortgages. The interest costs or savings were also computed for respondents who had an original mortgage and also for those who had only a replacement mortgage. Of course, these 2 groups of respondents were not eligible under the law to receive an interest payment.

The housing supplement, down payment, and rent supplement were payments made to relocatees to help purchase or rent a replacement dwelling. Since all the original owner respondents were long-term occupants (as defined by law), they were not eligible for the down-payment supplement. Also, the original tenants, short-term and long-term, were not eligible for the housing supplement. All 3 of these supplements were established by using the asking prices or rents and customary down payments of available comparable replacement property.

The rent supplement is a payment that could have been treated like a time series and discounted, as was the interest differential, because it was meant to cover the extra rental expenses during a 2-year period under the 1968 program and a 4-year period under the 1970 program. Under the 1970 program, the rent payment was made in 4 equal installments during the 4-year period. Those who received lump-sum payments could have invested it during the next 2 years and earned some interest to help pay future rent. Therefore, the original lump-sum payment plus the interest could have yielded enough funds to rent replacement dwellings for more than the 2-year period if no change occurred in the differential between original and comparable rents. So that it would be comparable to the lump-sum rental payment, the actual rental cost was made to represent the rental cost for the same period used to compute the rental payment. Individual relocation payment-cost differentials were generated by original replacement tenure of relocatees to reveal significant differences and relations.

Objective 3

Objective 3 was accomplished by making a study of the changes that occurred in each relocatee's housing costs and showing how these changes affected the relocatee's financial position measured in terms of changes in net worth, monthly cash flow, and household balance sheet items. Compensable and noncompensable costs were included in such measures. As an independent measure of the overall financial effects of the move, the opinion of each respondent relocatee was obtained. Each indicator of financial effect was cross tabulated with the type of economic change made in housing to determine statistically significant differences.

Objective 4

Objective 4 was accomplished by comparing the findings of objectives 1, 2, and 3 with the age and race or nationality of the heads of households, the number of persons per household, and type of persons in the household. Cross tabulations of these characteristics were made with the economic upgrading of housing, changes in monthly costs, payments received versus cash expenses, and respondents' opinions of financial effect. The frequency distributions of respondents formed by the above cross tabulations were tested for significant difference or degree of independence by use of the chi-square statistic (9, pp. 73-75).

CHARACTERISTICS OF RESIDENTS SAMPLED

About 75 percent of the respondents were relocated under the 1968 program, and all of them had lived in their dwellings long enough to receive relocation payments on replacement housing and moving expense payments. Many of the owners had lived in their dwellings at least 10 years before the date of notice of availability of relocation assistance, and many of the tenants had lived in their dwellings fewer than 5 years.

The mean and median age of all the respondent heads of households was 49 years at the time of interview. The owners were considerably older than the tenants; the median ages were 57 and 38 respectively. About one-third were females, regardless of tenure. A slight majority (56 percent) of all heads of households were Anglos; most of the others were black. On the other hand, non Anglos made up the majority (63 percent) of all tenants, and the reverse was true for owners. More than three-fourths (78 percent) of them had full-time or part-time jobs. Nearly one-fourth (24 percent) of the owners were retired.

The mean size of all respondent households was slightly more than 3 persons, and the tenant households were about 1 person larger on the average. One-third of the tenant households were composed of 5 or more persons, whereas nearly two-thirds of the owner households were composed of no more than 2 persons. The makeup of these households consisted primarily of the head of household living alone, living with spouse alone, or living with spouse and children. Owner households made up the majority of the first 2 groups, and tenant households made up a majority of the last group. The median annual income was about $7,000; owner households had slightly higher annual incomes than tenant households.

RESULTS OF STUDY

Extent and Nature of Economic Upgrading of Housing

Economic upgrading of housing was achieved by 126 (74 percent) of the 171 respondent relocatees. According to the quantity or physical characteristics measure, 73 percent of the relocatees upgraded their housing. In terms of the quality measure, 68 percent of the relocatees thought that they had upgraded the quality of their housing. The difference between each measure of upgrading was not statistically significant. Therefore, there was general agreement among the 3 measures as to the existence of upgrading of housing.

Nearly 79 percent of the owner relocatees accomplished economic upgrading. The earlier 1961 study revealed that 65 (77 percent) of 84 owner relocatees accomplished economic upgrading (1, p. 8). On a quality basis, 67 percent of the owner relocatees of the same study believed that their replacement housing was of superior quality to original housing compared to 72 percent of those of this study. The 1961 Texas study was conducted when no housing or rental supplements were paid relocatees, but the owner relocatees had personal and housing characteristics that were similar to those of this study.

Nearly 69 percent of the tenants accomplished economic upgrading of housing. The majority of the tenant relocatees that upgraded their housing were those who changed tenure. This study found that 50 percent of the displaced tenants purchased replacement housing. The 1971 Ohio study reported that more than 50 percent of the tenant relocatees became owners (6, p. 11). The Ohio study involved residents relocated prior to the 1968 relocation program.

Since the relocatees were required to purchase or rent a DS&S replacement dwelling to qualify for relocation housing payments and were required to use such payments in purchasing or renting a replacement dwelling, many of them may have involuntarily upgraded their housing to the comparable replacement value. However, if they entered the housing market and purchased or rented replacement housing at values higher than the comparable replacement values, upgrading was presumed to have been done more or less on a voluntary basis.

The existence of voluntary and involuntary upgrading was established by applying the above definitions to the relocatees' experiences. The results indicate that 55 percent of the respondents voluntarily upgraded, 19 percent involuntarily upgraded, and 26 percent failed to upgrade (Table 1). The number of original owners in each group differed significantly from that of original tenants. A higher percentage of owners than tenants voluntarily upgraded their housing. One explanation for the difference may be that there is more incentive for a relocatee to upgrade a considerable amount when he purchases rather than when he rents a dwelling. Another reason is that those who purchased a replacement dwelling had to pay all of the relocation housing payment as a down payment on it. No such restriction was placed on the 43 respondents remaining tenants in the use of the rental housing payment. At any rate, 56 percent of the tenants either failed to upgrade or involuntarily upgraded compared to 34 percent of owners. But those who involuntarily upgraded formed the smallest group for both owners and tenants, leaving fairly large groups that either voluntarily upgraded or simply failed to upgrade.

Other tabular data, not presented in this paper, indicated that about 77 percent of the relocatees who lived in non-DS&S original housing moved into DS&S replacement housing. Also, about 79 percent of those who lived in non-DS&S original housing upgraded their replacement housing. Of those who lived in non-DS&S original housing, tenants were less likely to upgrade or move into DS&S replacement housing than were owners.

Housing value differentials were used to measure the extent that respondents voluntarily upgraded, involuntarily upgraded, or failed to upgrade their housing. The mean differential values of the 3 groups varied widely for original owners and tenants (Table 2).

Original owners of the 2 upgraded groups upgraded more, in relative terms, than the original tenants, but both owners and tenants who downgraded did so by about the same amount. Also, both owners and tenants of the voluntary upgraded group accomplished a greater percentage of upgrading than did those of the involuntary upgraded group, although the latter group lived in much lower valued original housing.

All owners grouped together upgraded their housing by a mean differential value of $5,114, representing a 50 percent increase in the value of resources committed to housing (Table 2). In contrast, the owners in the 1961 Texas study upgraded their housing by a mean differential value of $2,480, representing a 26 percent increase in the value of resources committed to housing (1, p. 17). All tenants grouped together upgraded their housing by a mean differential rent value of $22, representing a 24 percent increase in the cost of housing.

The relation between the amount of upgrading and the original housing value was explored and measured by the use of a linear regression equation. Figures 1 and 2 show the relation of the 2 variables and the resulting regression line for owners and tenants respectively. There was very little relation between the amount that original owners upgraded and the value of the original dwelling (Fig. 1). Also, the variation of the observations about the positively sloped regression line is very large. For original tenants, a statistically significant relation existed between the 2 variables (Fig. 2). But only 13.6 percent of the variation in the amount of upgrading was explained by the rental value of the original dwelling. Yet this negative regression line suggests that tenant respondents who lived in higher valued housing tended to downgrade. Because of the lack of goodness of fit, the resulting regression equations would be unreliable for predictive purposes.

The relation between the amount of upgrading and the value of comparable replacement was explored and measured by the use of a linear regression equation. The results were highly similar to those shown in Figures 1 and 2. The relation between the amount of upgrading and the differential value of comparable replacement and original properties was also explored. The scatter diagram revealed only a random relation. The above differential was used to indicate whether the amount of upgrading, voluntary or involuntary, was dependent on the magnitude of the relocation housing payment.

Perhaps there are several reasons why so many relocatees voluntarily upgraded above the value of a comparable dwelling. There were those who thought that the comparable values were established on dwellings inferior to their original dwellings or on dwellings located in neighborhoods inferior to their original neighborhoods. Others felt that they needed more room than dwellings comparable to their original dwellings provided. Still others wanted replacement dwellings that were newer and in better condition than their original dwellings or they wanted replacement dwellings located in newer neighborhoods than their original neighborhoods. The results already presented indicate that many of the replacement dwellings were of higher value, higher quality, or larger size or all of these than the original dwellings. Some of these relocatees changed their tastes and preferences between the time they moved into their original dwellings and the time they were displaced. Consequently, they were just looking for a good opportunity to move.

Adequacy of Compensable Relocation Payments

Certain general conclusions can be made about the adequacy of relocation payments from the standpoint of covering actual relocation costs. The results given in Tables 3 and 4 indicate that the respondents, as a group, spent much more than they received. This was especially true for original owners. Most of this group upgraded their housing considerably (much of it voluntarily) in the process of relocation. In so doing, they incurred greater mortgage debt. This explains why the housing supplement and interest payment were not adequate to cover the increased principal and interest costs. However, these payments were not designed to cover that much upgrading.

Of the 5 types of relocation costs and payments analyzed, only the rental and moving payments, authorized under the 1968 and 1970 programs, adequately covered the expenditures actually incurred (Table 4). If spread over a much longer period of time, the rental payments would become insufficient to cover the increased rental costs incurred by many tenants. The maximum payment set by law prevented a few relocatees from collecting more money for moving, housing, and rental expenses. But in the case of down payments, nearly 50 percent of those who received a down-payment supplement paid an even greater down payment.

Financial Effects of Relocation

The selected indicators mentioned in the introductory section of the paper were used in the determination of the financial effects of relocation. The results are given in Tables 5 and 6, which show the number of relocatees experiencing a certain level of financial effect and the average and median dollar amounts for each type of economic change in housing.

The data indicate that 87 percent of the respondent relocatees experienced an in-

Table 1. Economic change in housing by original tenure of respondent.

Change	Owner	Tenant	Total
Voluntarily upgraded[a]	56	38	94
Involuntarily upgraded[b]	11	21	32
Other[c]	18	27	45
All respondents[d]	85	86	171

[a]Purchase price or rent of replacement dwelling was greater than both purchase value or rent of DS&S comparable replacement dwelling and value or rent of original dwelling.
[b]Purchase price or rent of replacement dwelling was less than or equal to purchase price or rent of DS&S comparable replacement dwelling, but was greater than the value or rent of original dwelling.
[c]Purchase price or rent of replacement dwelling was less than or equal to value or rent of original dwelling.
[d]$\chi^2 = 8.37^*$; χ^2 0.05 = 5.99; 2 d.f.

Table 2. Housing value differentials by economic change in housing and original tenure of respondent.

Economic Change by Original Tenure[a]	Housing Value (dollars) Original	Replacement	Difference
Original owner			
Voluntarily upgraded			
Mean	10,709	18,534	7,825
Minimum	5,641	9,000	1,500
Maximum	14,925	34,200	22,125
Median	11,000	17,585	6,820
Involuntarily upgraded			
Mean	6,304	9,093	2,789
Minimum	3,587	5,900	712
Maximum	10,441	12,000	4,913
Median	6,000	8,750	2,879
Other			
Mean	10,817	8,919	-1,898
Minimum	4,785	3,790	-6,000
Maximum	14,900	13,000	0
Median	11,113	10,000	-1,070
All original owners			
Mean	10,162	15,276	5,114[b]
Minimum	3,587	3,790	-6,000
Maximum	14,925	34,200	22,125
Median	10,925	13,750	3,749
Original tenant			
Voluntarily upgraded			
Mean	94	145	51
Minimum	40	79	15
Maximum	160	220	159
Median	90	148	45
Involuntarily upgraded			
Mean	65	86	21
Minimum	25	45	3
Maximum	125	148	50
Median	60	81	15
Other			
Mean	106	87	-19
Minimum	50	40	-75
Maximum	175	128	0
Median	113	87	-10
All original tenants			
Mean	91	112	22[c]
Minimum	25	40	-75
Maximum	175	220	159
Median	90	105	20

[a]Number of respondents on which housing values are based was given in Table 1. For tenant dwellings, figures are monthly rent.
[b]$t = 8.01^{**}$; t0.01 = 2.58; 84 d.f.
[c]$t = 5.20^{**}$; t0.01 = 2.58; 85 d.f.

Table 3. Relocation costs and payments to respondents by type of relocation payment.

Relocation Payment	Respondents Whose Costs Versus Payment Were: Less	More	Equal	Total
Housing supplement[a]	26	51	1	84
Interest payment[b]	5	78	7	90
Down payment	0	13	17	30
Rent supplement[c]	40	23	0	63
Moving payment[d]	148	6	3	157

[a]Includes 14 respondents who received no housing supplement.
[b]Includes 78 respondents who received no increased interest payment, but does not include 5 whose interest costs were not determined.
[c]Includes 6 respondents who received no rent supplement.
[d]Does not include 14 respondents whose moving costs were not determined, but does include 11 who had no moving costs.

Figure 1. Relation of amount of upgrading with value of original dwelling occupied by respondent owner.

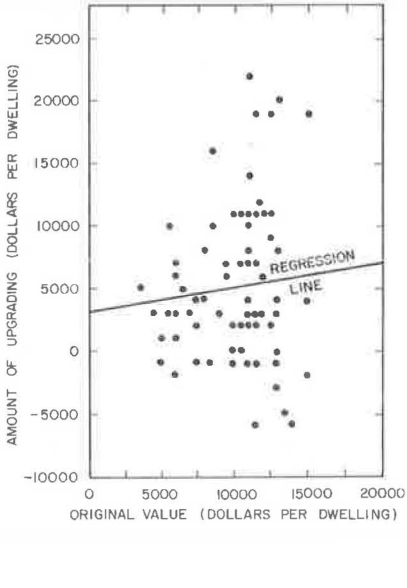
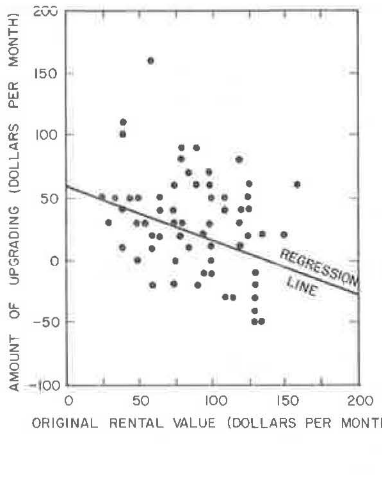


Figure 2. Relation of amount of upgrading with rental value of original dwelling occupied by respondent tenant.



crease in monthly cash flow costs (Table 5). The median increase was about $48 (Table 6). Owners and tenants had similar experiences. The changes in monthly costs reflect, in part, the changes that respondent relocatees made in their housing costs. Tabular data not presented in this paper showed that 85 percent increased their monthly house payments. The median increase was about $40. Relocatees of the 1971 Ohio study had a similar experience; 80 percent increased their monthly payments. The median increase was $53 (6, p. 10). The other monthly costs reflect changes in transportation and utility expenses. About 48 percent of the respondent relocatees experienced an increase in the former and 67 percent experienced an increase in the latter.

When the number of relocatees experiencing monthly cash flow changes was cross tabulated with the number experiencing certain economic changes in housing, significant differences appeared for both owners and tenants (Table 5). Such differences were primarily due to the fact that most of those who failed to upgrade decreased their monthly costs whereas those who upgraded, either voluntarily or involuntarily, increased their monthly costs. The mean monthly cost differentials for those who failed to upgrade or involuntarily upgraded were considerably smaller than those who voluntarily upgraded (Table 6). However, all 3 groups showed an increase in monthly costs resulting from the relocation experience.

Changes in the relocatees' household cash balances were reflected by the difference between all cash payments received and all cash expenditures incurred during the relocation process. The payments consisted of all relocation payments and also the payment for the original property less any mortgage indebtedness. The cash expenditures included those required for searching for a replacement dwelling, down payment on replacement dwelling, moving, repairs and improvements on replacement dwelling, and miscellaneous expenses. The overall results of this financial measure show that 72 percent of the relocatees added to their cash balances (Table 5). The average was $8,003 for owners and $320 for tenants (Table 6).

When the number of relocatees experiencing changes in cash balances was cross tabulated with the number experiencing economic changes in housing, no significant differences occurred for either owners or tenants (Table 5). In terms of the dollar differential between payments received and cash expended, original owners who voluntarily upgraded had a smaller mean differential than those who failed to upgrade or involuntarily upgraded (Table 6). This group obviously banked less cash than the other 2 groups. Original tenants who voluntarily upgraded actually spent more cash on the average than they received in relocation payments. The reverse was true for the other 2 groups of tenants.

The financial effects of relocation were also determined by using the opinion of each relocatee. Each was asked to consider his or her savings in relation to debts and choose the best multiple-choice answer to describe the financial effects of relocation. About 42 percent of the owner relocatees believed that their financial position had worsened (Table 5). In the 1961 Texas study, 62 percent of the owners reached the same conclusion (1, p. 23). About 34 percent of the tenant relocatees reached the above conclusion. A cross tabulation by type of economic change in housing revealed no significant differences in opinion of financial effect due to upgrading of housing.

Other tabular data not presented in this paper revealed that more than 90 percent of the relocatees increased their net worth because of relocation. The average increase was $1,485. Net worth was defined as total relocation payments less relocation expenses such as making home repairs and improvements, searching for dwellings, and miscellaneous items. The relocation experience had a very small negative or positive effect on the income or employment of the relocatees. Only 5 percent reported a change in household income as a result of relocation. In contrast, the 1961 Texas study reported that 20 percent experienced a change in income, and 17 percent reported a decline (1, p. 23). Although they may have had practically no change in income, many respondent relocatees chose to spend more on housing and related items and less on other items in the family budget. However, the majority of the relocatees were better off in terms of cash balances and net worth, the latter being directly attributable to the relocation payments.

Economic Effects of Relocation by Type of Relocatee

At the outset of the study, it was expected that the amount of economic upgrading, changes in monthly cash flow, changes in net worth, changes in cash balances, and opinions of relocatees used to measure the economic effects of relocation would vary according to the age and race or nationality of heads of household and the number and type of persons in the households. The results of the cross tabulations affirmed these expectations with respect to the amount of economic upgrading of housing.

The evidence indicates that the age distributions of the 3 levels of economic upgrading are independent of each other, i.e., the variations among them are statistically significant (Table 7). Most of those who involuntarily upgraded or failed to upgrade their housing were at least 50 years old. In contrast, most of those who voluntarily upgraded were under 50 years old. The results suggest that those over 50 had less need or incentive to upgrade their housing beyond the value of comparable replacement housing. Since their children were grown, many of them did not need a dwelling quite so large as that taken for right-of-way. Also, there may have been those who were not financially able to upgrade voluntarily.

Race or nationality of the head of household distributions for the 3 levels of economic upgrading are independent of each other. The results indicate that the majority of those who involuntarily upgraded or failed to upgrade were non-Anglos. Only 29 or 38 percent of the non-Anglos voluntarily upgraded beyond the comparable replacement value. On the other hand, 65 or 68 percent of the Anglos voluntarily upgraded. Apparently, the Anglos had more financial means or incurred more debt to upgrade voluntarily than did the non-Anglos.

The number of persons living in a household distributed across levels of economic change in housing revealed statistically significant differences. The tendency was that households with more than 2 persons voluntarily upgraded more readily than those with 1 or 2 persons. Those with larger families needed larger dwellings, and the relocation assistance program encouraged them to obtain such housing.

The distributions according to type of persons within households were also significantly different. The results indicate that those households that had a head of house with a spouse, particularly those with children, were more likely to voluntarily upgrade than those households that had a head of house with no spouse, especially if he or she lived alone. The latter group was less likely to have the financial means to voluntarily upgrade than the former group.

Cross tabulations with the other economic measures revealed no significant findings except between type of persons in household and changes in net worth. In this case, the results revealed that the households experiencing a decrease in net worth were married couples, especially those having no children or other persons living with them. Several in this group received no housing or rental supplements to cover additional housing costs.

CONCLUSIONS AND RECOMMENDATIONS

The findings of this study tended to confirm the following conclusions:

1. The extent of upgrading of housing by relocatees caused a significant increase in housing costs;
2. The extent to which relocatees upgraded their housing caused replacement housing payments not to cover adequately the increased housing costs to relocatees;
3. The ability of many of the relocatees to pay for additional monthly housing and operating costs declined;
4. The extent to which relocatees upgraded their housing varied significantly with selected characteristics of relocatees; and
5. Relocatees who originally lived in substandard housing tended to move into standard or better replacement housing.

The relocation programs apparently encouraged relocatees to upgrade their housing and thus were helpful in meeting the national goal of improving the standard of housing for persons in low-valued housing. Also, the relocation programs were helpful in reducing the amount of additional funds used in obtaining replacement housing, especially for those who involuntarily upgraded.

Table 4. Relocation cost and payment differentials by type of payment.

Relocation Payment	Relocation Cost Versus Payment (dollars)		
	Cost	Payment	Difference[a]
Housing supplement			
Mean	-5,272	1,866	-3,406[b]
Minimum	-22,125	0	-22,125
Maximum	5,656	5,000	8,010
Median	-3,770	1,774	-1,826
Interest payment			
Mean	-2,839	75	-2,764[c]
Minimum	-11,244	0	-9,417
Maximum	445	2,315	445
Median	-2,160	0	-2,043
Down payment			
Mean	-1,971	1,665	-306
Minimum	-4,000	458	-2,263
Maximum	-100	3,000	1,600
Median	-1,650	1,500	0
Rent supplement			
Mean	-739	877	138
Minimum	-4,560	0	-4,560
Maximum	-2,160	2,640	3,660
Median	-672	840	240
Moving payment			
Mean	-85	272	187[d]
Minimum	-444	115	-75
Maximum	0	450	425
Median	-59	250	-195

Note: Number of respondents used to determine differentials includes those given in Table 3, except those for whom costs were not determined.
[a]Difference was obtained through algebraic addition.
[b]$t = 4.79^{**}$; $t0.01 = 2.65$; 77 d.f.
[c]$t = 10.67^{**}$; $t0.01 = 2.64$; 89 d.f.
[d]$t = 24.23^{**}$; $t0.01 = 2.58$; 157 d.f.

Table 5. Financial effect of relocation by type of economic change in housing and original tenure of respondent.

Financial Effect by Original Tenure[a]	Respondents by Type of Economic Change Experienced			
	Upgraded Voluntarily	Upgraded Involuntarily	Other	Total
Original owner				
Monthly costs[b]				
Increased	52	11	8	71
Decreased	2	0	9	11
Payments versus cash expenses				
Payments greater	38	9	17	64
Payments less	5	0	1	6
Not determined	13	2	0	15
Opinions of financial effect				
Improved	10	3	7	20
Worsened	28	3	5	36
About the same	18	5	5	28
Not determined	0	0	1	1
All original owners	56	11	18	85
Original tenant				
Monthly costs[c]				
Increased	36	21	21	78
Decreased	2	0	6	8
Payments versus cash expenses				
Payments greater	23	14	22	59
Payments less	9	1	3	13
Not determined	6	6	2	14
Opinions of financial effect				
Improved	7	3	8	18
Worsened	11	6	12	29
About the same	18	12	7	37
Not determined	2	0	0	2
All original tenants	38	21	27	86

[a]Chi-square tests excluded the "not-determined" data cells.
[b]$\chi^2 = 28.96^{**}$; $\chi^2\ 0.01 = 9.21$; 2 d.f.
[c]$\chi^2 = 8.23^{*}$; $\chi^2\ 0.05 = 5.99$; 2 d.f.

Table 6. Financial effect of relocation by amount of economic change in housing and original tenure of respondent.

Financial Effect by Original Tenure[a]	Amount of Economic Change (dollars) Upgraded Voluntarily	Upgraded Involuntarily	Other	Total
Original owner				
Change in monthly costs				
Mean	73	25	12	54
Minimum	-37	1	-19	-37
Maximum	394	75	54	394
Median	61	22	4	43
Payments less cash expenses				
Mean	6,985	9,997	9,522	8,003
Minimum	-5,739	7,479	1,533	-5,739
Maximum	15,105	12,713	16,830	16,830
Median	7,210	9,535	8,981	8,580
Original tenant				
Change in monthly costs				
Mean	76	51	21	53
Minimum	-16	9	-99	-99
Maximum	188	127	110	188
Median	75	49	14	53
Payment less cash expenses				
Mean	-185	946	591	320
Minimum	-6,370	-221	-1,093	-6,370
Maximum	1,500	1,735	1,621	1,735
Median	292	940	673	549

[a]Values were based on all respondents given in Table 5, except those for whom data were not determined.

Table 7. Economic change in housing by selected characteristics of respondent.

Characteristic	Respondents by Type of Economic Change Experienced Upgraded Voluntarily	Upgraded Involuntarily	Other	Total
Age of head of household[a]				
Under 40	33	11	8	52
40 to 49	22	2	10	34
50 or more	39	19	27	85
Race or nationality of head[b]				
Anglo	65	13	17	95
Non-Anglo	29	19	28	76
Number of persons in household[c]				
1	10	11	10	31
2	29	4	16	49
3	27	5	5	37
4 or more	28	12	14	54
Persons in household[d]				
Head without spouse				
Head only	8	11	10	29
Children and/or others	16	6	11	33
Head with spouse				
Spouse only	22	2	10	34
Children and/or others	48	13	14	75
All respondents	94	32	45	171

[a]$\chi^2 = 17.73^{**}$; χ^2 0.01 = 13.28; 4 d.f.
[b]$\chi^2 = 17.15^{**}$; χ^2 0.01 = 9.21; 2 d.f.
[c]$\chi^2 = 25.82^{**}$; χ^2 0.01 = 16.81; 6 d.f.
[d]$\chi^2 = 25.56^{**}$; χ^2 0.01 = 16.81; 6 d.f.

The 1970 relocation assistance program would be more equitable to all relocatees if the statutory maximums on the size of housing, rent, and down-payment supplements were removed and only the comparable values allowed to control the level of these payments. Other ways in which the program might be made more equitable are as follows:

1. Allow relocatees who owned their dwellings at least 90 days prior to the initiation of negotiations for the acquisition of the property to have the option of receiving the down-payment supplement in lieu of the housing supplement for payment on replacement dwelling;
2. Make lump-sum payment to relocatees receiving the rent supplement instead of dividing the payment up into 4 annual installments; and
3. Allow all relocatees who lived in their original dwelling at least 90 days prior to initiation of negotiations for acquisition of the property to receive the relocation allowance in addition to the actual or estimated (using schedule) cost of moving personal property.

ACKNOWLEDGMENTS

The research on which this paper reports was performed under the sponsorship of and in cooperation with the Texas Highway Department and the Federal Highway Administration. The opinions, findings, conclusions, and recommendations expressed in this paper are not necessarily those of the state or the administration.

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DISCUSSION

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These comments are based on a comparison of the Texas study with the second portion of our Ohio project, which deals with relocatees who received relocation payments under the Federal-Aid Highway Act of 1968. Since about 75 percent of the respondents in the Texas study were relocated under the 1968 program, a comparison of the Ohio and the Texas projects should be of interest.

There are a number of similarities between the 2 studies. Ohio relocatees were asked to compare the new dwellings with their old ones. Nearly 63 percent of them liked their new homes at least "somewhat more" than their old ones. Buffington reports that 68 percent of the Texas relocatees thought they had upgraded the quality of their housing.

With respect to tenure changes (tenant to owner), Texas and Ohio agree on about 50 percent. Median increase in housing costs for original owners was $51 and $43 for Ohio and Texas respectively. Other parallel findings could be cited.

The Texas study pertained to relocatees who had occupied a dwelling or apartment unit valued at $15,000 or less. Since the Ohio data covered a wider range of dwelling values, the tendency toward voluntary upgrading was more discernible in Ohio. The relatively conservative behavior of tenants with respect to upgrading was observed in both studies. There was no opportunity in Cleveland to study non-Anglos relocatees. One wonders from the Texas data whether residential segregation patterns played a part in the comparatively small degree of voluntary upgrading among non-Anglos.

We feel that the results of our work in Ohio tend to support the author's conclusions. The author's recommendations are considered desirable. In particular, the removal of statutory limitations on the amount of housing, rent, and down-payment supplements should be particularly helpful. Not only could more equitable treatment be given to special cases if payments were controlled only by comparable values but also the legislation would contain a built-in provision for inflation, thus obviating the necessity for periodic legislative adjustments of maximum payments. Our data indicate that, in the current market, there would be relatively few cases in which the removal of statutory payment limits would increase the payments to relocatees.

The writer's feeling is that both the Texas and Ohio studies show that existing legislation is generally adequate. A desirable goal of highway agencies seems now to be the complete assimilation at every organizational level of the importance of relocation assistance as an integral part of the highway building process and the continued enhancement of the professional skills of relocation personnel. Studies such as that reported by Buffington provide valuable data to assist highway organizations in responding to the challenge offered by this complex and relatively new task of relocation.