region. Baltimore-region county impacts were estimated to illustrate the methodology's capability to generate county-level impact estimates. Impact estimates for counties outside of the Baltimore region were not made.

10. Plan implementation will result in accessibility improvements throughout the state. Travel time to port and commercial and general aviation services and facilities will decrease by 1, 75, and 15 percent, respectively, by the year 2000 with the implementation of these programs. Intrastate highway travel times may be reduced by 8 percent by the year 2000. Quantitative measures of state-level accessibility improvements resulting from the rail and mass transit programs could not be calculated. However, it is obvious that accessibility improvements of significance will occur as a result of implementation of the rail program. Without the program, rail freight service to some areas of the state would be discontinued. The personal-income impact of the program (an annual average of $10 million) attests to the potential significance of maintaining this accessibility. Significant accessibility improvements may be experienced as a result of the mass transit program as well. The program includes construction of a rail rapid transit system in the Baltimore region and completion of the 160-km (100-mile) Metrorail system. It also provides financial assistance to nonurbanized areas for the purchase of vehicles and equipment. This may provide transit dependents in these areas with new social and economic opportunities. Because a large percentage of the transit-disadvantaged reside in nonurbanized areas, the program may be of tremendous significance to persons residing in these areas of Maryland.

11. The primary safety impact of plan implementation will occur in the highway area. A conservative estimate is that 19 300 highway injuries and 270 highway deaths may be prevented with implementation of the plan.

SUGGESTIONS FOR FURTHER RESEARCH

As previously noted, several systems-level, socioeconomic-impact methodology deficiencies remain. The deficiencies described in this report provide several areas for potentially fruitful research. However, it is recommended that, before this type of research is conducted, the credibility and usefulness of the methodology in Maryland's transportation system planning process should be determined. Specifically, the researchers recommend that the following additional research be conducted.

First, determine the methodology's sensitivity to plans and programs. The methodology is designed to provide impact estimates of alternative plans and programs including alternative implementation-staging assumptions. However, this capability cannot be fully tested by evaluating a single plan. The transportation department could carry out this test by applying the methodology to estimate the socioeconomic impacts of the other two system plans it is considering for adoption. In addition, the detail of the impact estimate could be refined to permit the estimation of the incidence of the impacts for different socioeconomic or geographic areas.

Second, clarify the accuracy of the methodology's output. The methodology could be applied by using reasonable alternative assumptions concerning the values of constants and variables used in the case-study analysis. This could reveal the change of values the impact estimates could take and further test the accuracy of the results provided by the methodology. One of the alternative assumptions could be the use of historical expenditure patterns and analysis of their consequences to validate the accuracy of the equations used in this model.

Third, establish the credibility and usefulness of the methodology's output in state transportation planning and programming. This is the most important "next step" in establishing an effective system-level socioeconomic analysis capability. The case study suggests that the methodology output is responsive to the socioeconomic impact concerns of Maryland citizens, public officials, and planners in evaluating state transportation system plans and programs. Thus, it suggests that the methodology will be useful in deciding transportation system changes in Maryland. The extent to which the methodology and its output will actually be used for these purposes, however, is a major question. It will be answered only when the methodology is actually applied in planning and in public debate of alternative state transportation plans and programs. These steps will determine if additional basic research to develop improved measurement techniques is required, or if the present methodology is satisfactory for the state's purposes. They also would reveal the deficiencies in the methodology that, if resolved, would be most beneficial to socioeconomic impact analysis and evaluation of transportation system plans and programs.

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Residential Dislocation: Costs and Consequences

Jon E. Burkhardt, Ecosometrics, Inc., Bethesda, Maryland

This study investigated methods for predicting the dislocation consequences of alternative highway route and design proposals. It also assessed existing compensation practices in light of significant consequences. Data for these purposes were primarily derived from two household surveys before and after relocation. Interviews were conducted at six sites that represented a variety of project characteristics and geographic

regions. The study found that specific dislocation consequences of alternative route and design proposals cannot be accurately predicted using data concerning the characteristics of the displaced households, the communities, or the projects. Compensation practices and relocation procedures have more effect on the nature and extent of changes incurred by those relocated than do demographic or geographic characteristics. Thus, current compensation practices, which constitute significant improvements over previous practices, do not discriminate for or against any particular population subgroup. However, the elderly are more likely to be in a worse position after the move than others due to essentially noncompensable factors rather than compensation practices. Therefore, planning procedures to avoid disrupting large concentrations of the elderly are required. The study concluded that, although the relocation process works well for many persons, certain improvements are still required.

Residential dislocation is one of the major direct consequences of urban highway projects, and some of the recent opposition to specific urban highway proposals is based on the fear of citizens that they might be inadequately compensated for the effects of being dislocated from their homes. In light of these considerations, the primary objective of the study (1) discussed in this paper was to improve the highway planning process (a) by increasing the planner's ability to forecast the dislocation consequences of particular location and design decisions and (b) by suggesting techniques for more adequately compensating persons adversely affected by right-of-way acquisition.

BASIC CONCEPTUAL OVERVIEW

Inputs to Policies and Procedures

Procedures and techniques for predicting the socioeconomic consequences of residential dislocation should be principally directed toward satisfying the requirements of the Federal Aid Highway Program Manual (FHPM), Volume 7, Chapter 5, Section 1 (formerly FHWA IM 80-1-71, particularly paragraphs 14 and 15). They should also consider the role of dislocation and relocation prediction and planning in satisfying the requirements of other directives, such as those outlined by FHPM 7-7-1 and 7-7-5.

The first prediction step in either the conceptual stage or right-of-way stage is the estimation of the socioeconomic consequences of the proposed right-of-way dislocation. In general, they can be grouped in the following three categories:

1. Changes to wealth and cash flow, including asset position before and after relocation, one-time expenses, ongoing income and expense items (e.g., rental and travel expenses), and housing expenditures as a proportion of income;
2. Changes to social status and interactions, including social status as a member of a community, interactions with and support from other members of that community, and relationships with friends; and
3. Changes to psychological status, including happiness and life satisfaction, sense of personal efficacy, psychic benefits derived from a familiar location, and overall physical and mental health.

Once the probable impacts are quantified, one must determine the compensation or alternative courses of action required to eliminate, alleviate, minimize, or avoid adverse consequences. Compensation can be made available to those affected in three ways (2): money, in-kind replacement, and services. The applicability, effectiveness, and efficiency of each method in any given dislocation and relocation situation depends on the following factors (3, 4): (a) whether dollar values may be attached to the consequences incurred; (b) whether the individual, family, or neighborhood can by itself convert monetary compensation into an effective replacement; and (c) whether it is more effective to replace in kind or to provide services instead of monetary payments.

Finally, the consequences of proposed acquisitions must be compared to the maximum relocation compensation and program services that can be made available. This step identifies the effects that can only be partially compensated or avoided or that cannot be compensated or avoided at all. It is possible that the uncompensated adverse consequences for a particular highway location or design will be great enough to be unacceptable and, therefore, will result in a decision not to build.

Prediction of Effects

To predict the major consequences that will result from a specific highway plan, one must be able to answer these questions: Who is most likely to be affected by the relocation process and in what ways?, What will be the magnitude of the effect experienced?, and Under what circumstances will the effect occur? In attempting to answer these questions, one must analyze the complex interrelationships that exist between relocation effects (considered dependent variables for the purposes of analysis) and three sets of independent variables—highway characteristics, community characteristics, and household characteristics.

Relocation Effects

A review of the existing literature on relocation (5-12) was used to identify the consequences most worthy of attention in terms of frequency of occurrence or severity of impact on certain persons. These high-priority effects may be grouped as follows:

1. Economic effects—moving costs (actual costs of moving to a new location), transportation costs from new location to work or business, changes in housing costs (all housing costs, including rents or mortgages, utilities, and taxes);
2. Overall household effects—price and quality changes in housing, long-run expectations;
3. Social effects—changes in neighborhood social interaction, changes in relations with friends, attitudes concerning effects on the old neighborhood; and
4. Psychological effects—changes in overall level of happiness, changes in life satisfaction.

Factors Influencing Relocation Effects

The independent variables that were tested for their influence on relocation effects are listed below:

1. Description of the project (highway characteristics)—(a) numbers of units displaced, as determined by factors such as width of highway planned, type of highway (e.g., elevated, depressed), location of interchanges and (b) relocation practices (2-4), such as monetary compensation provided, availability of additional nonmonetary assistance, and time available for relocation.
2. Description of the environment—(a) individual and family (household) characteristics, such as age of head of household (5, 6, 11, 13, 14); race and ethnicity of household (11, 16); amount and source of household income (3, 6, 17); employment (location, continuity, skill level) (5, 6); household composition, including sex of head, number of members, and relationships between members (5, 6, 17); social class, a composite measure

that includes education, occupation, income, and lifestyle of the household (5, 6, 12); household's transportation mode (public or private) (18); length of residency (19, 20); tenure (owner, renter) (17, 21) and (b) community characteristics—neighborhood cohesiveness (19, 20) and tightness of housing market (18, 21).

According to the various sources consulted, these independent variables are among the most important in analyzing the relocation experience of an individual household. But previous research studies have ascribed different weights to them. For example, Key (6) and others (11, 13, 14) found a significant relationship between the age of the household head and the household's difficulty with relocation; Mogey (5) found no such relationship. However, Mogey did find age correlated with other important dependent variables.

RESEARCH APPROACH

Data-Collection Strategies

The overall approach to resolving the basic objectives of this research effort centered on interviews with persons who had actually been through the relocation process. It was decided to interview persons both before and after relocation to collect information on changes in their status and to see which changes could be attributed to the relocation process itself. The sample of persons interviewed was large enough to be statistically representative of persons being relocated at sites that, in turn, generally represented the relocation experiences of the country as a whole. Because particular sites tend to have unique characteristics (some of which are created by state policies and procedures), information was also collected about each site and about the relocation process occurring there. Statistical analyses of the combination of survey and site data were used to develop conclusions with nationwide validity about the predictability of dislocation consequences and the adequacy of current compensation practices.

Six sites were studied intensively for over 2 years. Data were collected concerning dislocation compensation provided (monetary, in-kind replacement, services) in terms of both quantity and quality; the relocation process, including its mechanics, extent, and adequacy; and the net consequences of dislocation and relocation. Data were gathered from household surveys and secondary sources. Only those dislocated were reinterviewed due to constraints on the study's budget. The sites included several different neighborhood types and socioeconomic groups. The details of the sampling strategy are summarized below:

Factor	Description
Universe	Federally assisted urban highway projects in those states in compliance with the Uniform Relocation Assistance and Real Property Acquisition Act.
Number of sites	6
Stratification	National regions (5 categories); number of households displaced (3 categories).
Number of interviews	First wave—549 (390 scheduled to be relocated and 159 to remain near the highway right-of-way); second wave—190 (chosen from the 390 displaced households interviewed in first wave).
Sampling strategy	Two one-half size independent systematic samples per wave; three callbacks were made for persons not at home.
Questionnaire	Personal 45-min interview administered in respondent's home.
Statistical validity	±10 percent at the 90 percent confidence limit, assuming the true proportion is 50 percent, for the 190 households.

Two surveys were conducted. The first survey was conducted in both the area contained in the proposed right-of-way and in the band adjacent to the right-of-way. The second survey traced the individuals and families who were relocated; they were reinterviewed to assess the consequences of their relocation and their attitudes toward the relocation process and agency. Much of the household socioeconomic data collected in the second survey was identical to the data collected in the first survey and included income, tenancy, housing characteristics, family composition, employment, and family shopping, business, and social activities. Additional data were collected concerning the contacts and relations with the relocation agency, attitudes toward the mechanics of the relocation process and the relocation agency, problems and issues encountered in the relocation process, attitudes and reactions to the quality and sufficiency of the compensation received, and the families' long-run condition and prospects at their new location.

Timing of Interviews

The two surveys were conducted at the six sites approximately 18 to 24 months apart. The initial survey was conducted after specific locations had been determined and the right-of-way requirements had been detailed. Relocation was scheduled to take place no later than 6 to 8 months after the first survey to give relocatees 4 to 6 months in which to become oriented to their new location before the reinterview survey. In fact, the second wave was conducted much later than initially planned because relocation did not take place on schedule at several sites.

Within these general timing conditions, a range of time variations was included in the interview and reinterview scheme. Thus, surveys at the six sites were conducted differently in relation to five variables: length of time after specific right-of-way was officially decided, length of time before actual relocation of residents would occur, proportion of residents already relocated (ranging from none to approximately 50 percent), type and scope of relocation program and services, and presence or absence of an on-site relocation office. Additional variables in the site selection included socioeconomic groups and neighborhood characteristics.

Field Sites for Case Studies

Some 22 sites in 11 states that could have been used for this study were identified. This was a much smaller number than originally expected because of the large number of urban highway projects delayed for various reasons, including the preparation and adequacy of project environmental impact statements, reduced levels of funding, unavailability of sufficient replacement housing to meet the demand of the dislocated person, and previous system urban projects. From the list of available sites, six were selected as case studies because of the sufficiently large numbers of relocated persons there and conformance to the other site-selection criteria. Details of these sites are presented in Table 1. Interviews were also conducted with the residents of the remaining neighborhoods at two of the sites where interviews with those relocated also took place.

Interviews Obtained

A total of 390 valid questionnaires were obtained from households to be relocated before their dislocation; 190 of the same households were reinterviewed after they

had established themselves at new locations. Also, 159 residents of the remaining neighborhood were interviewed at the same time as those households about to be dislocated.

Achieving the quota for the second-wave sample was more difficult than expected. The primary reason was that households were not relocated as quickly as expected, thus substantially reducing the number of households available for interviewing. This problem was especially serious in Birmingham, Alabama, where only 39 of the original 101 respondents (less than 40 percent of the sample) had moved at the time of the survey. This was also a problem—although not to such a large extent—in Fresno, California, where only 75 percent of the sample had moved at the time of the second wave of interviews. Besides those who had not moved, 12 percent of the sample could not be located. This meant that mail sent to the new address (obtained from the state highway department) was returned, that the person had moved and no one in the area knew where, or that there was no such address. Another 9 percent of the sample had moved more than 24 km (15 miles) from their previous residences; these persons were not reinterviewed. Thus, approximately 54 percent of the original sample was available for interviewing, and 49 percent furnished valid interviews (a completion rate of 90 percent of available respondents).

EXPERIENCES OF RELOCATED HOUSEHOLDS

Most of those persons who were displaced and relocated had never experienced such a situation before and did not know what to expect. Afterwards, many persons had positive feelings about the relocation process. This section discusses their experiences in terms of the study's specific list of dislocation effects, the relocated person's view of the compensation and assistance received, and personal evaluations of the relocation process.

Dislocation Effects

Economic Effects

The study considered (a) search costs, that is, time spent searching for a new home (both total search time and time off from work); (b) moving costs, that is, actual costs of transferring possessions from the old location to the new; and (c) compensation constraints, that is, if the amount of compensation available significantly constrained the choice of a new location, then the extent of this influence should be counted as a cost of relocation. As expected, these costs were found to be much less significant in the eyes of those relocated than other monetary issues (3). None of the households contacted after the move felt that search costs were a burden to them (although most would not have incurred such costs on their own volition) and only 1 percent of the sample reported that the current moving allowances were inadequate for them.

Several significant compensation constraints now operate in the relocation process. Although most persons felt that they had sufficient time to find their new homes, 16 percent felt that the time available was not adequate. One-quarter of this group felt that they would move again within the next 2 years. Thus, the insufficient time available forced them into a situation that was so unsatisfactory that they planned to change it, thus incurring additional moving expenses that would not be paid by the highway department. Another problem was the slowness in payments due those relocated. This created temporary hardships for 6 percent of the sample.

There was no evidence of a substantial change in transportation costs for the households in the sample after they had been relocated. This was not surprising;

Table 1. Summary of sites selected for case studies.

State	City	Highway and Project Type	Socioeconomic Characteristics	Location Within Standard Metropolitan Statistical Area	City Size	No. of Qualified Families to Be Displaced
California	Fresno	CA-41 and CA-180 (arterial)	CA-41: 85% white, 10% Mexican-American, 2% black, 3% other nonwhite; low-to-middle income; single-family housing	Urban		244
			CA-180: 65% white, 30% Mexican-American, 2% black, 3% other nonwhite; low-to-middle income; single and some multiple-family housing	Urban		84
			Total site[a]	Urban	310 000	328
Alabama	Birmingham	I-59, I-65, I-459	Mixed areas: I-59 and I-65—old and new neighborhoods and housing, low and middle income	Urban		84
			I-459—mostly new areas, middle and some high income	Suburban		62
			Total site[b]	Urban, suburban	590 000	146
Arkansas	Little Rock	I-630	Predominantly white; single-family old and new housing; income predominantly middle, some low, some high	Suburban	259 000	100+
New York	Auburn	NY-5 (arterial)	Old area; housing prices $5000-$15 000; heterogeneous multiple-, duplex-, and single-family housing; low-to-middle income	Urban	40 000	100+
California	Gardena	CA-91 and CA-111 (arterial and freeway)	71% white, 25% Oriental, 3% American-Indian, 1% Mexican-American; single-family housing prices, $20 000-$40 000; rental, $200-$300; apartment rental, $175-$200	Urban	Metropolitan area	50
Florida	St. Petersburg	I-275 (freeway)	Mixed racial area; low-to-moderate income; single and multifamily housing; some commercial uses; high proportion of elderly	Urban	216 000	278

[a] Two contiguous highway projects to be combined as one site.
[b] Five project segments combined as one site.

the average household relocated moved only 4.8 km (3 miles) from their previous locations—excluding the 8.5 percent of the prerelocation sample who moved more than 24 km (15 miles) away and the 12.1 percent for whom there was no known address. Distances traveled generally decreased, even though people traveled outside the neighborhood more often than before. Trip frequencies tended to decrease slightly, but trip purposes per household increased.

For those relocated, the average work trip decreased in length by 16 percent, but three times as many persons worked in their neighborhood before the move compared to afterwards. This suggests that fewer of both the longest and shortest work trips occurred after the move. Frequencies and costs were the same before and after. Grocery shopping trips also decreased in distance and increased in the percentage of trips outside the neighborhood. There was a substantial decline in the frequency of trips to the doctor and for religious services. Visiting trips decreased by 27 percent, and it was in this area that those relocated suffered a measurable loss. Walking trips decreased by one-third, and trips within the neighborhood decreased by one-half.

Overall Household Effects

A relocation dilemma has remained unresolved for some time. If, as experience shows, a household is in a better house after relocation but is paying a greater proportion of the household's income for housing than before the move, is that household in a better or worse condition (7, 8)? The possible combinations of price and quality changes are given in Burkhardt, Kent, and Martin (1).

The relocated persons were asked, "Considering all the things about your new home—how much it costs, how big it is, the neighborhood, and everything—would you say that you are better off, the same, or worse off than you were in your old home?" Some 60 percent of the respondents were more pleased with their new homes than with their old homes; the reverse was true for 27 percent. The results varied considerably from city to city. Improvements in housing welfare were significantly correlated with perceptions of the new neighborhood as better than the old, the sufficiency of relocation information, the positive effect of the total compensation package, and the positive long-run effects of the move. Improvements in housing welfare were not significantly correlated with basic demographic variables, including age, income, sex, education, or race. Location (the specific city) was also a significant variable.

For homeowners, it was possible to establish a statistically significant relationship explaining half of the variance in housing welfare using age, income, satisfaction with the house itself, and the assessment of relocation assistance and adequacy of information. Age and income were negatively related to increases in housing welfare; that is, older persons tended to fare worse in relocation as did those with higher incomes.

Of the respondents, 70 percent felt that they would be better off in the long run, 20 percent thought they would be worse off, and 10 percent did not know. Age, race, income, satisfaction with the new home, sufficient assistance from the relocation department, and clear information from the relocation department were significant variables in explaining long-run expectations. Together, these variables accounted for 38 percent of the variance in overall household welfare. Because the standard error of the estimate was relatively low, it may be possible to predict with some degree of certainty whether households will be better or worse off under a particular relocation program. As indicated by the nature of the variables entering the equation, the way in which the relocation process was actually carried out on the local level made a strong difference in the resulting long-run expectations.

Social Effects

Social impacts are impacts on people. The basic unit of measurement is the number of people affected. Most social impacts focus on how people interact with others and how the interaction patterns change over time (5, 6, 9, 10, 15, 20).

The analysis of social interaction changes focuses on each of the components of the Neighborhood Social Interaction Index (19). It was found that

1. Neighboring decreased to about one-half of its prerelocation level;
2. The use of local facilities decreased substantially, especially in terms of neighborhood-oriented work trips, doctor visits, religious services, and visiting;
3. Participation in neighborhood activities declined slightly (the percentage of households participating remained the same but the number of organizations they participated in declined);
4. Identification with the neighborhood as a place of shared customs, beliefs, and aspirations dropped 30 percent;
5. Commitment to staying in their new neighborhood was not different from their commitment to stay in the old one;
6. Evaluation of the neighborhood as a place for persons like themselves to live showed a 25 percent drop after relocation.

Although it is possible that neighborhood social interaction will increase over time and return to its prerelocation levels, some negative feelings toward relocation do not change over time (23).

After relocation, the percentage of persons with all or most of their friends in the neighborhood declined dramatically from 23 to 8; the percentage of persons with none of their friends in the neighborhood increased substantially, from 27 to 43. Of the 22 percent of those relocated who expected to keep in touch with all of their friends, 22 percent did so. However, 6 percent had not expected to keep in touch with any of their friends from the old neighborhood, but 22 percent actually had no contact with their former friends after moving.

Before they moved, more than half of those relocated felt that the changes to their old neighborhood were for the worse; one-quarter said that there was no significant change. After relocation, half of the respondents felt that the highway-related changes had a negative effect on the neighborhood, 17 percent felt that the neighborhood had improved, almost as many thought that it had stayed the same, and the rest did not know. Persons who felt that the neighborhood had deteriorated tended to feel that way strongly, which is consistent with findings by Fried (22) that many relocated persons felt a strong sense of grief concerning the loss of their homes and neighborhoods.

Changes in Psychological Well-Being

The framework for representing the level of psychological well-being of an individual consisted of two dependent variables (life satisfaction and happiness-unhappiness) and also included four factors (independent variables) that could be expected to influence the level of psychological well-being following relocation—three

sets of individual characteristics (socioeconomic, psychological, and stress) and the relocation project characteristics.

The measure of life satisfaction showed a very slight increase (2 percent), while the measure of happiness showed a 10 percent decline for those relocated. These changes were difficult to explain or predict, but certain socioeconomic characteristics and relocation project constraints had more influence than other factors, especially level of income, source of income, education, age, the adequacy of payments received, size of the new dwelling and whether or not it was owned or rented, the desirable features of the new neighborhood, and differences in project sites. To avoid negative psychological effects, the relocation agency should maximize the relocation process factors shown to be significant: payments for the previous dwelling, the quality of the post-relocation neighborhood, and the amount of information available to those relocated. The number of elderly persons being relocated should be minimized.

Compensation and Assistance

The relocated persons reported generally favorable reactions to the compensation and assistance received, just as they had concerning the dislocation effects. Within this generally positive response there were, however, some substantial site-to-site variations.

The expectations of homeowners did not often match the actual payments for dwellings owned by the respondents. Expectations most often matched the payments in Fresno and Gardena, California, where 60 percent received what they expected. More persons in St. Petersburg, Florida, and Fresno than in the other sites got more than they expected, while three-quarters of the owners in Birmingham got less than they expected.

In response to one question asked, "Did the payments you received for moving and everything else make your new housing situation better, worse, or the same as your old housing situation?", 58 percent said it was better, 19 percent said it was the same, and 22 percent reported a worse situation. Persons in Fresno and Auburn, New York, more often reported better housing, while persons in Gardena and St. Petersburg more often reported a worse housing situation after the move.

When asked how they felt about the total amount of compensation received, the responses varied widely from site to site. Overall, 35 percent said they "came out as good as possible," 39 percent "came out even," and 26 percent "lost money." The ranges are 5 to 63 percent, 11 to 53 percent, and 4 to 68 percent, respectively. Persons in Fresno were the most pleased with the compensation received and those in Birmingham were the least pleased.

These factors stand out as key variables in the responses to various questions about compensation: satisfaction with the new dwelling, adequacy of assistance and information, clarity of information, attitudes of highway personnel, price paid for the former dwelling, total funds received, and future expectations. These factors indicate the importance of the so-called subjective aspects of relocation in determining attitudes toward the so-called objective factor—that is, money. The general lack of demographic variables in the correlations and regressions indicates that compensation is being equally distributed among all types of people. To the extent that they are required, compensation changes should focus on practices and prices.

Personal Evaluations

Many of those displaced found themselves better off as a result of the move. In fact, the relocation process seems to have worked well for almost two-thirds of those interviewed both before and after relocation. However, some people complained bitterly about changes in their lives that they attributed to their uprooting. The responses indicate that, although the Uniform Relocation Act of 1970 made many significant improvements to relocation practices, substantial room for improvement still exists in both the letter of the law and its application. Responses to specific questions appear below:

Question	Response
Do you feel that enough information and assistance were made available to you and your family to allow you to obtain financial help from the highway department?	76 percent, yes
Was the information you received clear and understandable?	82 percent, yes
In general, what was the overall attitude of the highway relocation people—positive, neutral, or negative?	80 percent, positive
Did anything particularly good happen in your dealing with the highway department?	50 percent, yes (in Fresno, 80 percent, yes)
Did you have any particularly bad incidents with the highway department?	20 percent, yes (in Birmingham, 50 percent, yes)
Following notification, do you feel that you had too much, too little, or just about the right amount of time to relocate?	80 percent, about right
Did the relocation office assist you in finding this place?	80 percent were offered assistance (75 percent declined)
Do you think the average person is capable of dealing with the highway department in all this without legal or other professional assistance?	70 percent, yes
In the long run, do you think you and your family will be better off for having moved?	71 percent, yes

The intercorrelations of the relocation process variables were examined, and it was found that, if a person had received enough money for relocating and had moved to a better neighborhood, then everything else seemed to be positive. The overall adequacy of compensation received and the adequacy of information and assistance were also often associated with the values of other process variables. Once again, it is remarkable that demographic characteristics were not significantly correlated with relocation process assessments, as was also true for assessments of compensation. The long-run expectations were dependent on a greater variety of factors than were the other factors. The bad events and attitudes of the relocation personnel also had high correlations with a number of factors.

Several lessons are apparent here. The first is the interrelated nature of many of the relocation process variables. The second is the significance of monetary payments in shaping attitudes toward the relocation process. The third is the importance of post-relocation satisfaction with the new house and neighborhood. If outcomes pertaining to these factors can be successfully managed, relocation can work well for most people.

The long-run effects of the relocation process appear to be somewhat predictable given commonly available data. The particular results should not be surprising to anyone familiar with relocation problems. Relocation is a burden for the elderly. Many of them have a great attachment to their homes and neighborhoods that is difficult, if not impossible, to reestablish in other

locations. Similarly, the more affluent have established individualistic patterns of satisfaction that are hard to re-create elsewhere. The tightness of the housing market is probably an excellent proxy for the probability that a given household will be pleased with its new dwelling following relocation. This fact is well recognized in current highway practice. Finally, given current patterns of residential distribution of nonwhite subgroups of the population, it is possible that a well-managed relocation program can significantly upgrade the housing and general welfare of nonwhite families.

CONCLUSIONS AND RECOMMENDATIONS

This study showed, with one notable exception, that specific dislocation consequences of alternative route and design proposals are not predictable using data concerning the characteristics of the community or the nature of the highway improvements. The best predictive equations explained only one-half of the variance in the dependent variables. Fine details of relocation and compensation practices had much more effect on the nature and extent of changes incurred by those relocated than did demographic or geographic characteristics. This conclusion is a credit to the equity of current compensation practices in that it indicates these practices do not systematically treat particular groups of people very much better or very much worse than others.

The one exception to this general pattern of equity concerns the elderly. Despite increased attention and services at the project level, age is a statistically significant factor in explanatory relationships for a variety of changes. The elderly suffer the most. The negative effects experienced by them do not appear amenable to changes in relocation procedures or amounts of compensation. One is forced to conclude that, all other factors being equal, a highway location and design plan that displaces fewer elderly is far preferable to one that displaces more.

This study examined economic, social, and psychological consequences of residential dislocation. It has concluded that the policies implementing the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 represent a very significant advance over previous relocation policies. The economic consequences of dislocation are now basically covered by existing compensation techniques, but social and psychological consequences remain, for the most part, not compensated at all. Despite this disparity, the few currently uncompensated or undercompensated economic effects cause more concern to the relocated persons than do the generally uncompensated social and psychological effects. This is a clear indication that immediate policy improvements should focus on economic issues. Certain modification, or "fine tuning," of the current law and procedures could raise the present assessment of generally good treatment and compensation for displaced households to generally excellent treatment and compensation.

A great deal has been written about the suffering of disadvantaged persons faced with relocation either by urban renewal or highway projects. The results of this study do not support such contentions. It was found that the overall housing status of nonwhites improved more than that of whites and that nonwhites were more satisfied than whites with the overall changes (including the cost of housing). In addition, it was found that persons dissatisfied with relocation tended to be of higher rather than lower incomes.

From this analysis of the experiences of those relocated, certain changes in relocation policies and practices are recommended. These changes fall into three categories: compensation, relocation practices, and the highway planning process.

Compensation Changes

No factor caused as much upset and anger as the price paid to homeowners for their former dwellings. The heart of the matter is the so-called "additive payment," and the problems include confusion and apparent inequities.

Under the 1970 act, if payment of the fair market value for a person's home is not sufficient for the purchase of a comparable dwelling unit, then that person is to receive an additive payment equal (within limits) to the difference between the cost of the comparable dwelling and the payment for the dwelling acquired by the highway department. In fact, the practice of receiving fair market value plus an additive is confusing to many relocated persons. Homeowners who were interviewed often felt that the fair market value offered for their home was too low, not realizing that their concern should have been the total compensation payment. Some persons were willing to pursue court action concerning the fair market value of their former home. They went to court, even though it caused them to lose money in lawyer's fees, because the total compensation to be received was fixed by the cost of the comparable replacement dwelling.

Current practice should be changed to allow an owner to receive, as payment for the taking of his or her dwelling, the cost of a comparable replacement dwelling. The legal basis for the amount to be paid will be the fair market value of the individual's former home plus the additive payment.

The second issue is one of equity. Some persons apparently received more of an additive payment if they moved into a larger home after displacement (and some persons moving to apartments from homes reportedly received no additive at all). Such practices were a source of extremely bitter complaints. Persons in essentially similar situations before displacement should receive approximately equal payments. More of a focus on a locally determined standard for a comparable replacement dwelling would rectify this situation.

The relocation payments are too slow. This results in a substantial inequity for persons of limited financial means or others who are "cash poor," when it comes to matters such as down payments or closing costs on a new home. Procedures should be changed so that either (a) the money is available more quickly, or (b) the highway department will guarantee and pay the interest charges on short-term loans that can be used to expedite the purchase and occupancy of the new dwelling.

Some persons may have invested considerable money, labor, and time in ancillary improvements to their property such as gardens, special trees and shrubs, and other unique features. Such improvements are generally considered part of the property and therefore become owned by the highway department when acquisition is final. However, assessors seldom feel that such improvements add as much to the value of the property as it would cost to replace or repurchase these improvements. This turned out to be a particularly serious problem at one site, where the prevalence of such improvements and their lack of compensation created more dissatisfaction with relocation than would otherwise have been expected. These improvements should either be compensated at their replacement cost or the relocatee should be permitted to move as much of them as possible at government expense.

The separation in the law between residential and

business relocation neglects the actual commingling of these activities in many instances. For example, persons who rent a portion of their home to another household are likely to be worse off after dislocation under current compensation practices. Replacement dwellings are located and priced according to the space currently occupied by the household as a household, despite the fact that other space in the structure may be owned and rented to a second household. This income-producing aspect of a basically residential unit may be of critical importance to a household in terms of cash flow. To the extent possible, such persons must be relocated in a comparable structure (returned to their former position) for them to be treated equitably. Specific changes should include increased payments for the former property or cash payments to finance construction of improvements to the new property.

The survey conducted for this study showed that the $300 moving allowance (or other scheduled allowance) was considered sufficient by all but 1 percent of those interviewed. However, those relocated felt that not enough of the cost of reestablishing a residence was covered. Increasing the dislocation allowance to more than the currently available $200 should be considered.

The 4-year limitation on rent supplements is insufficient for a small but significant number of households. An extension of the time and dollar limits is warranted, but there does not appear to be a clear means of determining how long and how much would be equitable.

Changes in Relocation Practices

The attitudes and assistance of the relocation personnel were crucial—and nearly as significant as monetary payments—in determining a relocated person's attitude toward the process. Most of those relocated reported excellent dealings with highway personnel, but some reported encounters with rude, belligerent, or arrogant relocation agents. Additional care, training, and professionalism on the part of the relocation agents will substantially reduce the number of such complaints. Early acquisition programs have substantially increased the number of occupied housing units owned by highway departments. This is looked on with extreme disfavor by those who remain in such dwellings after they no longer own them. Renting acquired property, with rents established on current fair market values, often results in the practice of charging the former owners more per month than they had paid as owners. Those who suffer this practice view it as extremely unjust. Such persons are trapped between two homes; they are forced to remain in their current homes at higher rents and are not yet allowed to reinvest the equity they had in their former dwellings.

The practice is especially burdensome for elderly persons and others who have already paid off a mortgage because it creates a substantial (and noncompensable) financial hardship. Acquisition of the property should not occur until the owner-occupants can be relocated and can receive full compensation.

Changes in the Highway Planning Process

The consideration of displacement effects can be brought into the highway planning process by avoiding areas of potentially serious uncompensated impacts, such as neighborhoods with a high proportion of elderly people. These and other social-impact calculations should be brought to bear on decisions concerning route location by mapping demographic characteristics of subareas (census tracts, enumeration districts, or blocks) in relation to proposed route locations. It is proposed that highways not be built through areas where more than 16 percent of the population is elderly, and that great caution be used where the proportion of elderly is between 6 and 16 percent of the population. (There are differences of opinion as to an appropriate definition of "elderly." The numbers used in this paper refer to the proportion of the population that is 65 years old or older. In the United States, 10.3 percent of the population is 65 or older according to a 1974 census estimate.) The effect of this suggestion would be to narrow the possible routes for highway locations at the corridor planning level.

A great discomfort to many persons to be dislocated and to remain in areas near the highway was that they simply did not know what was going on or what to expect. Psychological research has shown that persons can more readily accept adverse decisions if they have been a party to the decision-making process. Highway agencies should publicize their plans as much as possible and should establish "hot lines" for persons with questions about the relocation process.

SUMMARY

The study found that specific dislocation consequences of alternative route and design proposals cannot be accurately predicted using data concerning the characteristics of the displaced households, the communities, or the projects. Compensation practices and relocation procedures have more effect on the nature and extent of changes incurred by relocatees than do demographic or geographic characteristics. Our conclusion from this particular finding is that current compensation practices do not discriminate for or against any particular population subgroup. However, the elderly are more likely to be worse off after the move than others, not because of compensation practices, but because of factors that are essentially noncompensable. Therefore, planning procedures to avoid disrupting large concentrations of the elderly are required.

The relocation process appears to work well for about two-thirds of those forced to move. Almost one-half of those relocated feel that the relocation process is as good as possible. The actions of the relocation agency personnel significantly influence the average satisfaction level upwards or downwards. The elderly and higher-income households feel that relocation has made them worse off overall more often than other persons.

In conclusion, although the relocation process works well for many persons, certain improvements are still required.

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Dynamic Social and Economic Effects of the Connecticut Turnpike

Annette M. Gaegler and James W. March, Office of Program and Policy Planning, Federal Highway Administration
Paul Weiner, Department of Economics, University of Connecticut

This paper summarizes the findings of a study of the long-term social and economic impacts of the Connecticut Turnpike on the eastern Connecticut region. Data developed in a 1965 report, The Connecticut Turnpike—A Ribbon of Hope, were updated and the dynamics of change in the highway corridor were investigated. Changes in population, manufacturing employment, retail sales, and assessed property values were related to increases in accessibility afforded by the Connecticut Turnpike and were compared for towns adjacent to the turnpike and for control towns in the eastern Connecticut region that were not located on the turnpike. Findings from the study indicate that the Connecticut Turnpike has had a continuing influence on the level and distribution of population and economic activity in the eastern Connecticut region. During the first 6